Nitsch Engineering

Traffic Impact Study

North Intermediate School

320 Salem Street
Wilmington, MA

April 9, 2025

Prepared for:

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1 Executive Summary

Nitsch Engineering (Nitsch) has completed a detailed Traffic Impact Study (TIS) to evaluate the potential impacts of redeveloping the North Intermediate elementary school on the existing site, combining the student population of the existing North Intermediate school, Woburn Street elementary school, and Wildwood Early Childhood Center to accommodate the larger student population.

The proposed school will provide enhancements to traffic circulation and controls such as providing a dedicated parent loop, extended bus loop with dedicated driveway to separate cars and buses, separate emergency access driveway, and increased parking.

1.1 Trip Generation and Access

The proposed school is anticipated to generate 243 weekday morning peak school hour (8:00 AM – 9:00 AM) trips and 403 weekday afternoon peak school hour (3:15 PM – 4:15 PM) trips. This represents a net increase of 172 trips during the morning peak hour and 285 trips during the afternoon peak hour compared to the existing North Intermediate school on site.

Access and egress to the site will be provided via two primary driveways. The driveway at the southern end of the parcel (south driveway) will provide access and egress to and from Salem Street. The driveway to the east of the site (east driveway) will allow access and egress to and from Ballardvale Street, to be located just north of the existing school driveway. The south driveway will be the designated visitor entrance and the east driveway will be used for deliveries. A staff parking lot at the east end of the site will be accessed by both driveways. There are two site layout alternatives, with Option A designating the south driveway for parent drop-off and pick-up and the east driveway for bus drop-off and pick-up. Option B swaps this arrangement, providing more queueing space for parents. With either site layout, buses and most passenger cars will have separate circulation routes that will minimize conflicts with each other and streamline the student arrival and dismissal patterns.

In addition to the two driveways, a proposed access road will be located west of the school leading to and from Arlene Avenue. This driveway will be designated for emergency access only.

1.2 Parking

A total of 193 parking spaces will be provided on-site. A dedicated parent pick-up/drop-off loop is proposed on-site so parents will be able to circulate through the site to queue in the loop instead of in the parking lot or the surrounding roadways.

1.3 Conclusions and Recommendations

After adding the expected new traffic to the existing traffic on the adjacent intersections, the proposed school is expected to worsen operations at the intersection of Salem Street at Middlesex Avenue and Route 62 at Middlesex Avenue/High Street. Our analysis shows that the expected operational issues can be mitigated through signal retiming at the intersection of Route 62 at Middlesex Avenue/High Street. It is recommended that further study be conducted by the Town of Wilmington to address the existing operational deficiencies at the intersection of Salem Street and Middlesex Avenue in a manner that also provides excess capacity for the projected new trips from the proposed school. No significant impact is expected at the other study intersections.

2 Introduction

Nitsch has prepared this Traffic Impact Study (TIS) for the proposed North Intermediate Elementary School redevelopment, located at 320 Salem Street, Wilmington, Massachusetts. This TIS will review existing roadway conditions, access/egress, crash data, and traffic volumes, and it will assess existing and future traffic conditions at intersections in the study area.

2.1 Existing Site

The site for the proposed redevelopment is located on an approximate twelve-acre lot located at 320 Salem Street, which currently holds the North Intermediate School and a playground, baseball fields, soccer fields, tennis courts, and a basketball court. The school is one of two intermediate schools in the Wilmington Public School system and serves the east region of the Town.

The existing North Intermediate School consists of a building with two stories for a total of 54,569 square feet. A paved play area and a parking lot are also present on the site. The North Intermediate School serves approximately 250 students in grades four and five.

Primary access to the North Intermediate School is provided by a loop on Salem Street, providing access to the main entrance at the south of the building. The loop accommodates one-way traffic, with an ingress driveway at the southeast corner of the building and an egress driveway at the southwest corner of the building. Bus drop-off and pick-up occurs at this loop. Additional access is located to the east of the building and is served by another pair of one-way driveways off Ballardvale Street. Parent drop-off and pick-up occurs in this area, which also provides approximately 52 parking spaces for school staff.

Figure 1 shows the Locus Map and Figure 2 shows the project area.

2.2 Proposed Development

The project consists of the construction of an approximate 163,573-square-foot, three-story elementary school building to replace the existing school facility at 320 Salem Street and will serve 855 students from pre-kindergarten through grade five. The redeveloped building will consolidate students from the Wildwood Early Childhood Center and the Woburn Street Elementary School with the students at the existing North Intermediate school. The Wildwood Early Childhood Center is located at 182 Wildwood Street and serves pre-kindergarten and kindergarten. The building at 182 Wildwood Street was closed in 2023 and the students are temporarily being housed between the West Intermediate School and the Wilmington Middle School. The Woburn Street School is located at 227 Woburn Street and currently serves grades one through three.

A total of 193 parking spaces will be provided on-site. A dedicated parent pick-up/drop-off loop is proposed on-site so parents will be able to circulate through the site to queue in the loop instead of in the parking lot or the surrounding roadways.

Access and egress to the site will be provided via three driveways. The driveway at the south of the parcel (south driveway) will provide access and egress to and from Salem Street. The driveway at the east of the parcel (east driveway) will provide access and egress to and from Ballardvale Street. The driveway at the west of the parcel will provide access and egress to and from Arlene Avenue for emergency use only.

2.3 Study Area

The study area includes seven roadways and five intersections as follows:

Roadways

1. Salem Street
2. Middlesex Avenue
3. Ballardvale Street
4. Baland Road
5. I-93 Southbound Ramps
6. Route 62
7. High Street

Intersections

1. Salem Street and Middlesex Avenue
2. Ballardvale Street and Salem Street
3. Ballardvale Street and Baland Road/School Driveway
4. Ballardvale Street and I-93 Southbound Ramps
5. Route 62 and Middlesex Avenue/High Street

2.4 Methodology

We have conducted this traffic assessment in three phases. The first phase involves an evaluation of existing traffic conditions within the study area, including an inventory of existing roadway and intersection geometry, observations of traffic volumes, review of vehicular crash data, and evaluation of parking utilization.

The second phase of the study establishes the framework for evaluating the transportation impacts of the proposed elementary school development project. We assessed travel demand forecasts for the project, along with future traffic demands on the study area intersections due to projected background traffic growth and other proposed area developments that will occur, independent of the proposed development. We used 2031 as the design year for analysis, reflecting a seven-year horizon. This phase also includes an evaluation of parking demand generated by the project.

The third and final phase involves conducting traffic analyses to evaluate both existing and projected future intersection operations. We used this analysis as the basis for determining the potential project impacts and potential mitigation measures for the elementary school development.

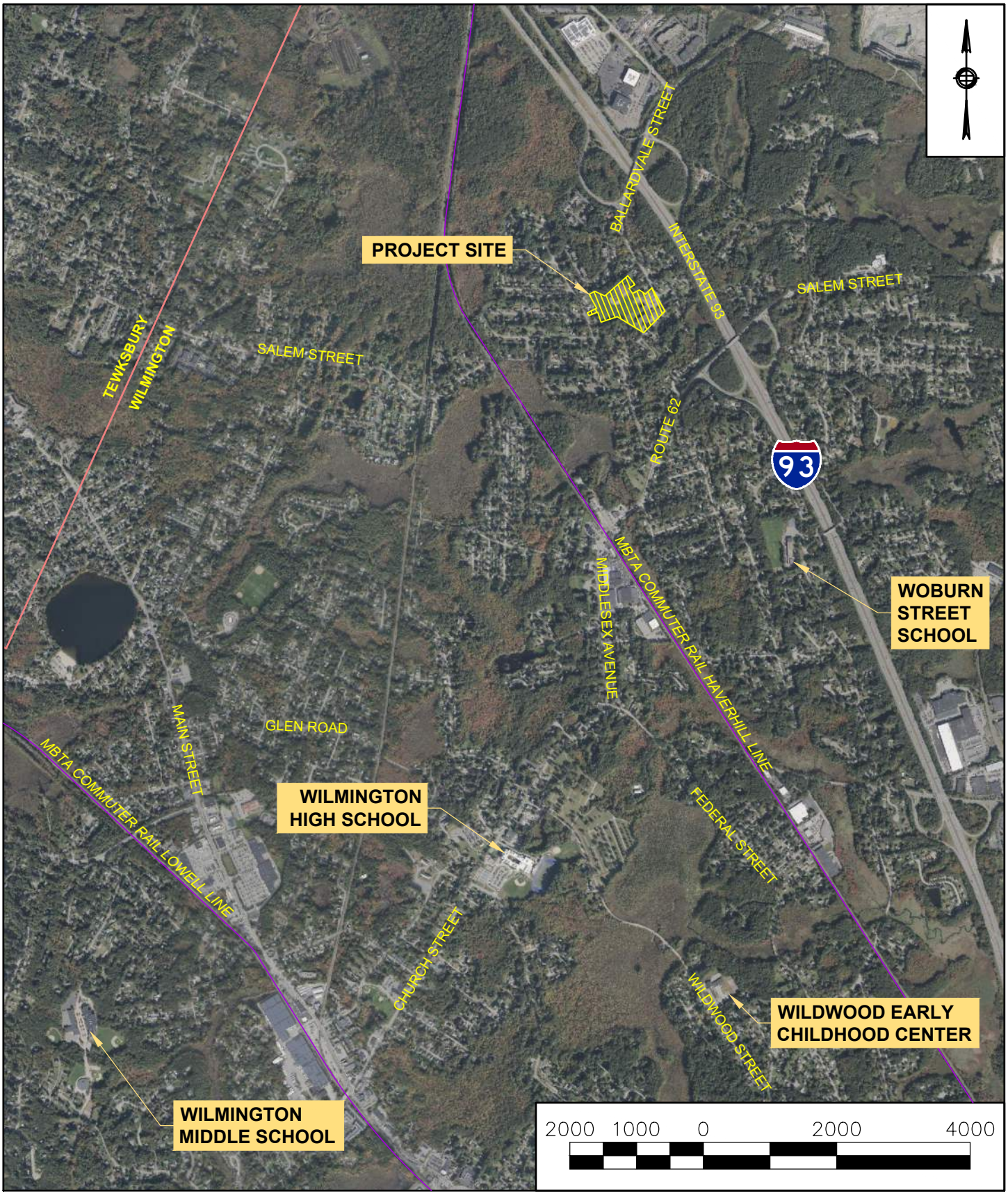

Figure 1 - Locus Map

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

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Figure 2 - Study Area

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

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3 Existing Conditions

Nitsch conducted a site visit on Wednesday, October 23, 2024 to observe the roadway conditions and existing traffic. The observations occurred during sunny conditions when school was in-session. The following is a summary of the existing roadways and intersections.

3.1 Roadways

Salem Street

Within the study area, Salem Street is an urban major collector that runs in the east-west direction from the Tewksbury town line east to a dead-end just past the intersection with Ballardvale Street. Salem Street is discontinuous, starting again on the opposite side of I-93 and running concurrently with Route 62 to the North Reading town line. Land use on Salem Street is primarily residential, with some industrial uses on the east segment.

Near the study area, Salem Street is approximately 26 feet wide and has a narrow sidewalk on the north side of the road. Directional travel is separated by a double-yellow center line and the speed limit is 25 mph. Salem Street is under the jurisdiction of the Town of Wilmington.

Middlesex Avenue

Middlesex Avenue is an urban minor arterial that generally runs north-south in Wilmington from the intersection with Salem Street approximately 2.3 miles south to its terminus at Main Street. A portion of Middlesex Avenue runs concurrent with Route 62. After branching off from Route 62 at Church Street, Middlesex Avenue becomes a local roadway until its southern terminus at Route 62. The width of Middlesex Avenue varies but typically measures around 34 feet. The roadway is under the jurisdiction of the town of Wilmington and features a speed limit of 25 mph. The land use along the corridor includes residential neighborhoods, commercial areas, and some recreational spaces. Sidewalks are present on one side of the street in most sections, and on-street parking is mainly restricted.

Ballardvale Street

Ballardvale Street runs north-south and spans approximately 2.5 miles, extending south from the Andover town line to the intersection with Salem Street. Between the Andover Town Line and Route 125, Ballardvale Street is an urban minor arterial that runs through an industrial park and is wide to accommodate large trucks, with two southbound lanes in some places. As it runs concurrently with Route 125, Ballardvale Street is an urban principal arterial that intersects the beginning of Route 125 and a pair of ramps to access Interstate 93 before approaching the study area. Within the study area, Ballardvale Street is an urban major collector that is approximately 24 feet wide, with one lane in each direction. Sidewalks are provided on the west side of Ballardvale Street near the school but terminate as the roadway approaches the I-93 ramps.

The speed limit on Ballardvale Street near the I-93 ramps is 35 mph but it decreases to 25 mph as it approaches the North Intermediate School. During school arrival and dismissal periods, a school zone speed limit of 20 mph is enforced with flashing beacons. Ballardvale Street is under the jurisdiction of the Town of Wilmington, apart from the bridge over I-93 and the ramp intersections, which are owned by MassDOT. Within the study area, land use is primarily residential, with a single institutional use being the North Intermediate School.

Baland Road

Baland Road is a local roadway that runs east-west in the study area. Baland Road begins across from the school driveway off Ballardvale Street and terminates as a dead-end approximately 500 feet to the east. There are several single-family homes on Baland Road, with sidewalks on both sides of the street and no pavement markings. Baland Road is approximately 28 feet wide and has no posted speed limit, assuming the statutory speed limit of 30 mph in thickly settled areas. The roadway is under the jurisdiction of the Town of Wilmington.

Interstate 93 Southbound Ramps

The Interstate 93 (I-93) Southbound Ramps are a pair of cloverleaf-style ramps connecting Ballardvale Street to I-93 southbound. To the north of I-93 are another pair of cloverleaf-style ramps connecting to I-93 northbound, but are outside of the study area. Directional travel on the ramps is separated by a six-foot raised median and bounded by guardrails on both sides of the roadway, with each travel lane being approximately 20 feet wide. There is no posted advisory speed on the ramps and guardrails are provided on both sides of the roadway. The ramps are under the jurisdiction of MassDOT.

Route 62

Route 62 runs east-west through Wilmington and is classified as an urban minor arterial. Extending from the Burlington town line to the North Reading town line, Route 62 spans approximately 4.5 miles. The roadway varies in width, averaging around 36 feet, and accommodates two-way traffic separated by a double-yellow center line. Route 62 has a posted speed limit of 35 miles per hour (mph) and the southbound approach in the study area under the jurisdiction of MassDOT and the northbound approach in the study area is under the jurisdiction of the Town of Wilmington. Near the study area, land use on Route 62 is primarily residential. Sidewalk availability is inconsistent, with some sections having well-maintained sidewalks on one or both sides, while other sections lack pedestrian pathways. On-street parking is generally restricted.

High Street

High Street is classified as a local road that runs primarily north-south from the intersection with Route 62 and Middlesex Avenue approximately two-thirds of a mile to the intersection with Woburn Street. At the intersection with Route 62 and Middlesex Avenue, High Street has an east-west orientation. High Street is approximately 22 feet wide, with directional travel separated by a double yellow centerline and a sidewalk provided on the west/south side of the roadway.

Land Use on High Street is primarily residential. The Woburn Street School is located at the southern end of High Street, as it intersects Woburn Street. The posted speed limit on High Street is 30 mph. The roadway is under the jurisdiction of the Town of Wilmington.

3.2 Study Intersections

Salem Street and Middlesex Avenue

Salem Street and Middlesex Avenue intersect to form a three-way unsignalized intersection, with Salem Street approaching from the west and north and Middlesex Avenue approaching from the south. The three roadways intersect in a triangular shape with several raised median islands and the control is atypical from that of a standard three-way intersection. There are no posted stop signs or yield signs.

The Salem Street eastbound approach is approximately 26 feet wide, providing for two lanes in the unmarked approach. The right-most lane is used as a right-turn lane, where vehicles must yield to southbound traffic. The left-most lane is used as a left-turn lane onto Salem Street heading northbound. From the north, the Salem Street southbound approach consists of a single 12-foot lane. The approach operates freely, with through-moving vehicles getting the right-of-way and right-turning vehicles diverging into a channelized departure lane. From the south, the Middlesex Avenue northbound approach consists of a single lane as it passes a conflict point where eastbound traffic passes through to turn left at the intersection. No right-of-way signs are posted, suggesting eastbound traffic must yield to northbound traffic. However, northbound vehicles in the field were frequently observed yielding to eastbound traffic turning left onto Salem Street, particularly during periods of congestion. North of this conflict point, the northbound approach opens into a 12-foot through lane and a 12-foot left-turn lane. Northbound left-turning vehicles must yield to southbound traffic.

The medians and multiple conflict points have the effect of a modified circular intersection, with eastbound-left and northbound-left turning vehicles yielding to oncoming traffic before entering the intersection and circulating around the median islands. The unusual geometry of the intersection presents multiple challenges including driver confusion, limited sight lines, and limited deflection promoting high speeds. Significant congestion was observed during field observations, particularly in the northbound direction. A sidewalk is present on the north side and west side of the intersection, with a single pedestrian crossing across the west Salem Street leg. There are no bicycle facilities present at the intersection.

Salem Street and Ballardvale Street

Salem Street and Ballardvale Street intersect to form a three-way unsignalized intersection, with Salem Street approaching from the west and east and Ballardvale Street approaching from the north. The Salem Street eastbound approach and the Ballardvale Street southbound approach are free movements, forming the main line of the intersection. The Salem Street westbound approach is under stop control.

The Salem Street eastbound approach and Ballardvale Street southbound approach both consist of a single 12-foot general purpose lane. The Salem Street westbound approach is approximately 20 feet wide and unmarked. A sidewalk is provided on the northwest side of the intersection and a three-foot paved shoulder is present on both sides of the main line. There are no marked crosswalks provided at the intersection.

Ballardvale Street and School Driveway/Baland Road

Ballardvale Street intersects with Baland Road and the North Intermediate School driveway to form a four-way unsignalized intersection, with Ballardvale Street approaching from the north and south, Baland Road approaching from the east, and the school driveway approaching from the west. The school driveway is divided into separate legs for the entrance and exit that are separated by a raised concrete sidewalk approximately 65 feet long. The school driveway entrance is located slightly north of Baland Road and is approximately 26 feet wide. The school driveway exit is located just south of Baland Road and is approximately 60 feet wide.

The Ballardvale Street northbound and southbound approaches each consist of a single 12-foot general purpose lane and operate free. Baland Road is approximately 26 feet wide and is unmarked. While no signs are explicitly posted, the Baland Road and school driveway approaches operate under stop control. Sidewalks are provided on the west side of the intersection. There are no marked crosswalks at the intersection.

Ballardvale Street and I-93 Southbound Ramps

Ballardvale Street intersects with the I-93 southbound ramps to form a three-way signalized intersection, with Ballardvale Street approaching from the north and south and the I-93 southbound ramps approaching from the west. The Ballardvale Street northbound approach consists of an 11-foot left-turn lane and an 11-foot through lane. The Ballardvale Street southbound approach consists of a 12-foot through lane and a 12-foot right-turn lane. The right-turn lane provides channelized access to the I-93 southbound ramp and vehicles must yield to oncoming traffic turning left from Ballardvale Street northbound as they merge onto the ramp. The I-93 southbound ramp eastbound approach consists of two 11-foot left-turn lanes and a 16-foot channelized right turn lane. Vehicles turning right must yield to oncoming traffic from Ballardvale Street southbound.

The intersection is controlled by a fully-actuated, uncoordinated traffic signal. The signal operates in three phases. The first phase serves the Ballardvale Street northbound and southbound through movements. The second phase serves the eastbound left-turn movements from the I-93 southbound ramp. The third phase provides a protected left-turn phase for northbound traffic. The Ballardvale Street southbound right and I-93 southbound ramp eastbound right movements are yield-controlled. There are no crosswalks, sidewalks, or bicycle facilities provided at the intersection.

Route 62 and Middlesex Avenue/High Street

Route 62 intersects Middlesex Avenue and High Street to form a four-way signalized intersection, with Route 62 approaching from the north, Middlesex Avenue approaching from the west and south, and High Street approaching from the east. The Route 62 southbound approach consists of an 11-foot left-turn lane, an 11-foot through lane, and an 11-foot right-turn lane. The Middlesex Avenue northbound approach consists of an 11-foot left-turn lane and a 12-foot shared through/right lane. The Middlesex Avenue eastbound approach consists of an 11-foot shared left/through lane and a 12-foot right-turn lane. The High Street westbound approach consists of an 11-foot shared left/through lane and an 11-foot right turn lane. The right turn lanes on the eastbound and westbound approaches are very short, providing storage for only one or two vehicles. The Middlesex Avenue west leg and High Street east leg both have a narrow street-level concrete median separating the approaches and departures. Crosswalks are provided across all four intersection legs and concrete sidewalks are provided on all intersection corners, although the northeast corner sidewalk ends just past the intersection.

The traffic signal is controlled by a fully-actuated, uncoordinated signal. The first phase serves the Route 62 southbound left turn movement, the Middlesex Avenue northbound left-turn movement, and the Middlesex Avenue eastbound right-turn overlap. The second phase serves the Route 62 southbound through and right movements and the Middlesex Avenue northbound through movement. The third phase serves the Middlesex Avenue eastbound and High Street westbound movements. The fourth phase is an exclusive pedestrian phase.

4 Existing Traffic Conditions

4.1 Traffic Count Data

Nitsch retained Precision Data Industries, Inc. (PDI) of Hudson, Massachusetts to collect traffic data within the study area, including both Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMC).

ATR Data

PDI collected ATR counts for a continuous 48-hour period at three locations from Wednesday, October 23, 2024 to Thursday, October 24, 2024. The ATR volumes are summarized in Table 1 and the bi-directional average daily traffic (ADT) volumes are shown graphically in Figure 3. The ATR speeds are summarized in Table 1. The full ATR dataset is included in Appendix A.

Table 1 - Automatic Traffic Recorder (ATR) Volume Summary

Location	ADT[a]		Peak Hour Traffic			K Factor[e]
	Volumes (vpd)[b]	Directional Distribution[c]	Period	Volumes (vph)[d]	Directional Distribution[c]	
Ballardvale Street north of Salem Street	7,991	61% SB	Morning Afternoon	644 939	54% SB 69% SB	0.08 0.12
Middlesex Avenue south of Salem Street	12,533	55% SB	Morning Afternoon	902 1,172	67% SB 50% NB/SB	0.07 0.09
Route 62 north of High Street	17,779	55% SB	Morning Afternoon	1,308 1,494	54% NB 56% NB	0.07 0.08

[a]Average Daily Traffic; [b]Vehicles per day; [c]NB = Northbound, SB = Southbound [d]Vehicles per hour; [e]Proportion of daily traffic

Table 2 - Automatic Traffic Recorder (ATR) Speed Summary

ATR Location	2-Way Speed (MPH)		Directional Speed (MPH)		
	Average	85th Percentile	Direction	Average	85th Percentile
Ballardvale Street north of Salem Street	27	31	NB	28	29
			SB	30	32
Middlesex Avenue south of Salem Street	32	36	NB	34	34
			SB	34	36
Route 62 north of High Street	37	42	NB	40	40
			SB	38	40

TMC Data

PDI collected TMC data at the five study intersections on Thursday, October 24, 2024. TMC data was recorded from 8:00 AM to 10:00 AM and from 2:30 PM to 4:30 PM to capture the peak traffic hours during the school day. The counts included passenger vehicles, heavy vehicles, bicycles, and pedestrians.

The morning peak hour for the study area occurred from 8:00 AM to 9:00 AM and the afternoon vehicle peak hour occurred between 3:30 PM and 4:30 PM. However, the afternoon vehicle peak hour for the North Intermediate School driveway, which captures parents and buses entering and exiting the school for pick-up, occurred between 3:15 PM and 4:15 PM. Because of this, traffic volumes occurring between 3:15 PM and 4:15 PM were used for analysis purposes at the intersections of Ballardvale Street at Baland Road/School Driveway and Ballardvale Street at Salem Street to most accurately capture the traffic associated with the existing school during the afternoon peak hour. We used traffic volumes occurring between 3:30 PM and 4:30 PM to analyze the afternoon peak hour at all other study intersections.

Existing Queuing Observations

The Wilmington Department of Public Works (DPW) notes significant queuing issues southbound along Ballardvale Street through the Salem Street and Middlesex Avenue intersection Avenue intersection to the Route 62 and Middlesex Avenue/High Street intersection during morning commuting hours. The first ATR located at Ballardvale Street north of Salem Street captured northbound and southbound traffic in 15-minute increments. According to the ATR data the largest morning southbound 15-minute commuting spikes occurred at 7:00, 8:30, and 9:00 on Wednesday, October 23, 2024, and 7:30, 8:15, and 8:45 on Thursday, October 24, 2024. Notably, measured volumes were higher in the afternoon although the same issue was not noted by the DPW.

Queuing issues present before, during, and after the morning drop-off peak hour of the proposed development according to past DPW observations and the data collected for this study. Additional field observations and data collection would be required to analyze this existing queuing issue.

4.2 Seasonal Adjustment

Nitsch queried MassDOT traffic data for counts nearby that would establish a seasonal adjustment for the volumes we measured in November. No local data was available, so Nitsch used MassDOT's 2023 Weekday Seasonal Adjustment Factors, the most recent year of available data.

All study roadways fall in groups U4-U7 as Urban Minor Arterials, Urban Major Collectors, or Urban Local Roads. Counts within Groups U4-U7 collected during the month of October experience volumes that are 14% higher, respectively, than average counted volumes. To present a conservative approach, we did not seasonally adjust the counted volumes since it would result in lower traffic volumes. MassDOT's 2023 Weekday Seasonal Factors are included in Appendix B.

Figure 4 shows the 2024 existing peak-hour traffic volumes at the study intersections in the form of turning movements. The full TMC dataset is included in Appendix A. Figure 5 shows the 2024 existing peak hour pedestrian and bicycle volumes.

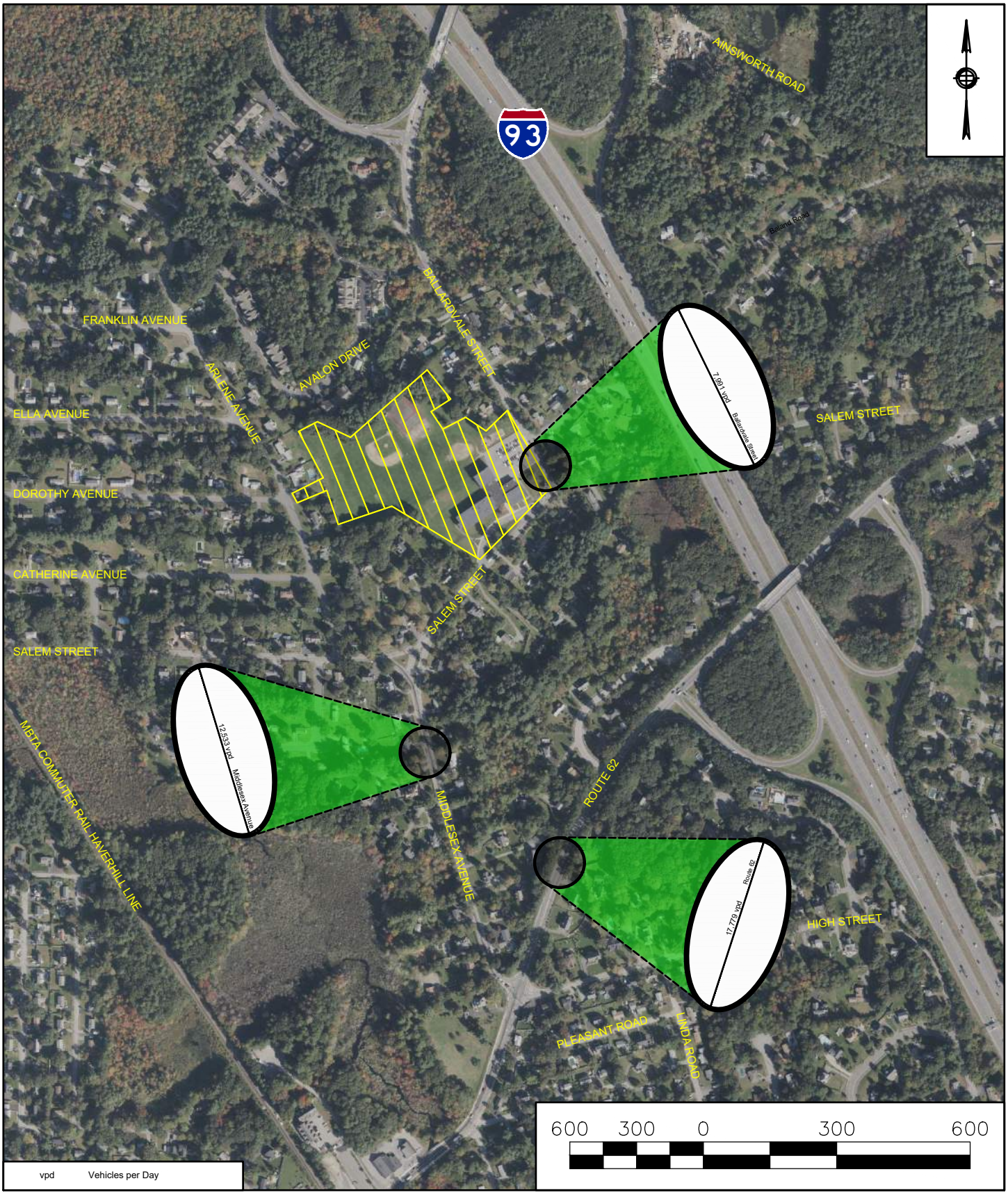

Figure 3 - 2024 Existing Weekday Daily Traffic Volumes

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

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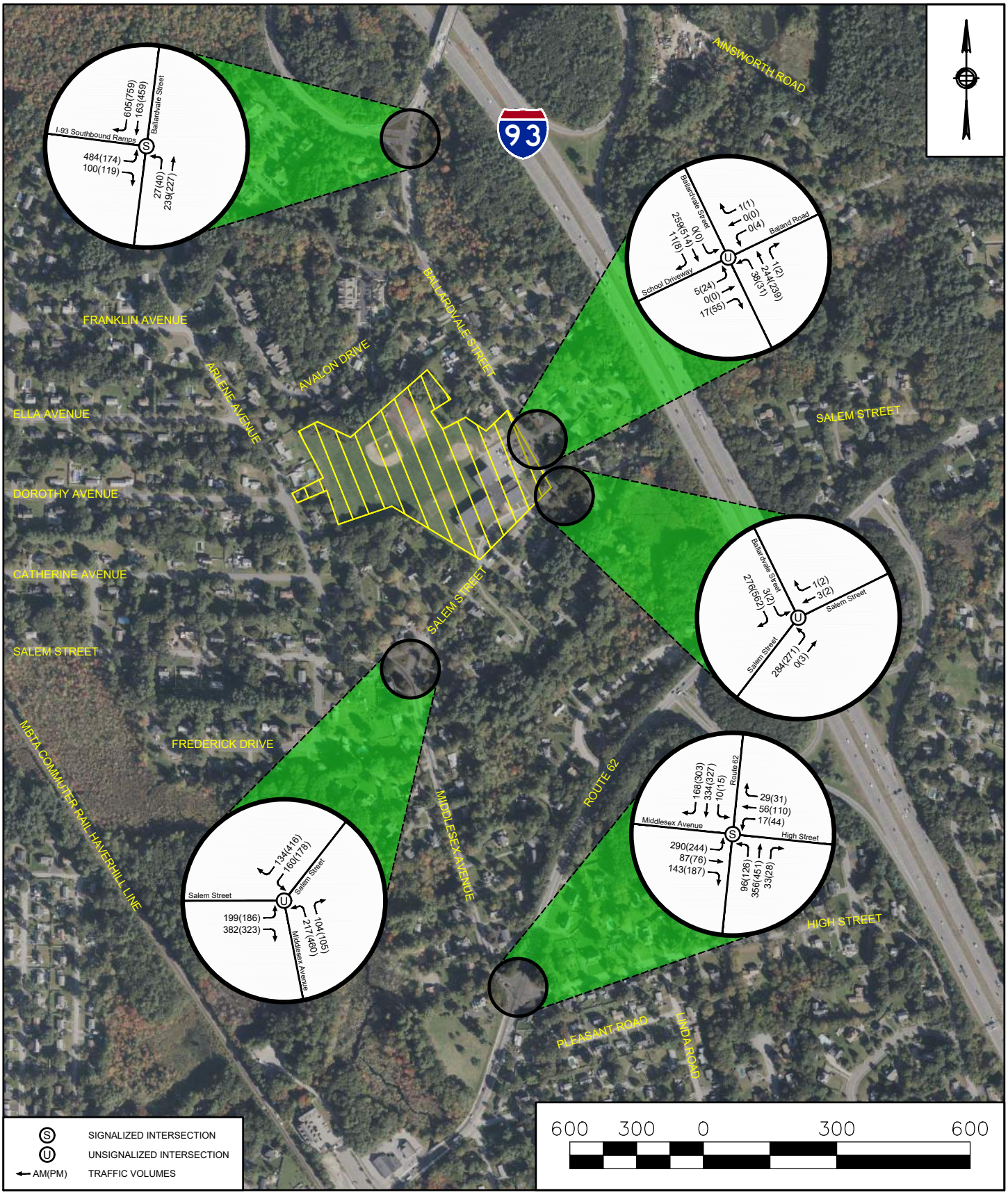

Figure 4 - 2024 Existing Weekday Peak Hour Traffic Volumes

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

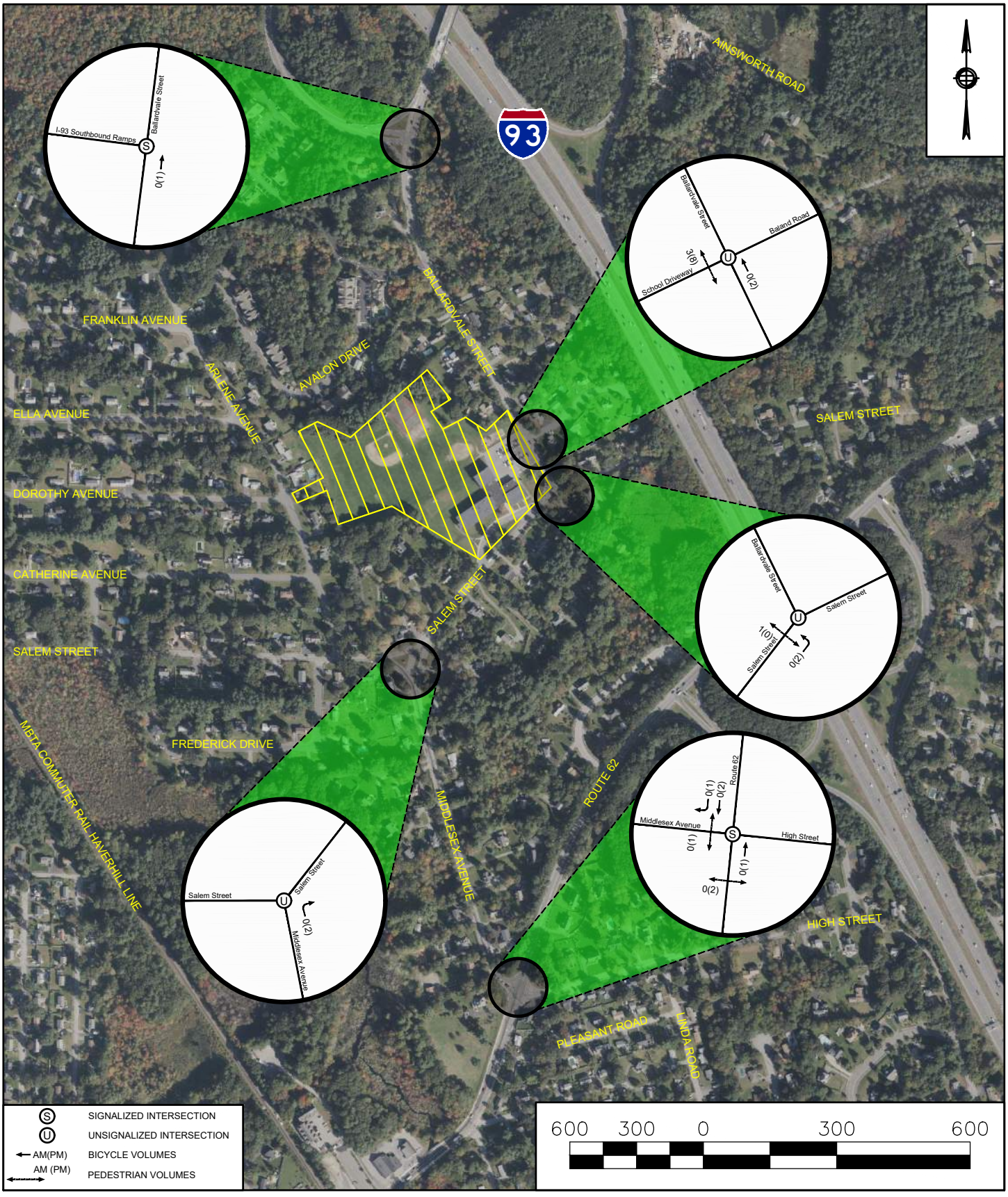

Figure 5 - 2024 Existing Weekday Peak Hour Pedestrian and Bicycle Volumes

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

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5 Safety Analysis

5.1 Crash Data

We obtained crash data for the study intersections from MassDOT's IMPACT Crash Data Portal for the five most recent complete years of data, 2016-2020. Table 3 summarizes the crash statistics for the five study-area intersections.

A total of 45 crashes were reported within the study area from 2016 to 2020. Twenty-six crashes occurred at the intersection of Route 62 and Middlesex Avenue/High Street, nine crashes occurred at the intersection of Ballardvale Street and I-93 Southbound ramps, eight crashes occurred at the intersection of Salem Street and Middlesex Avenue, and two crashes occurred at the intersection of Ballardvale Street and Baland Road/School Driveway. No crashes occurred at the intersection of Ballardvale Street and Salem Street during the study period.

In terms of severity, eight crashes (18%) resulted in personal injury, and there were no crashes with fatalities. Rear-end crashes were the most frequent type of crash with a total of 26 crashes (58%), followed by angle crashes with 12 (27%), and single vehicle crashes with 4 (9%). One each crash (2% each) occurred of types head-on, same-direction sideswipe, and opposite-direction sideswipe. No crashes involved pedestrians or cyclists. Five crashes (11%) occurred during peak travel hours and seven crashes (16%) occurred during adverse weather or roadway conditions.

At the intersection of Route 62 and Middlesex Avenue/High Street, where 26 of the 45 (58%) crashes occurred, the most common crash type was rear-end, with 17 (65%). This is a common crash type at signalized intersections, and may be attributed to incorrectly timed clearance intervals, poor sight distance, stop-and-go traffic, high speeds, or roadway grades. Both minor street legs have limited stopping sight distance, with curved approaches near the intersection which may contribute to rear-end crashes. At the southbound approach, the speed limit is 45 mph, which can also contribute to rear-end crashes. While this intersection had the most crashes during the study period, only 3 (12%) resulted in personal injury.

Table 3 - Crash Statistics

Intersection	Ballardvale St at I-93 SB Ramps	Ballardvale St at Baland Rd/ School Driveway	Salem Street at Middlesex Ave	Route 62 at Middlesex Ave/ High St	Overall
Total Crashes	**9**	**2**	**8**	**26**	**45**
2016	1	0	2	6	***9***
2017	0	1	0	7	***8***
2018	1	1	2	4	***8***
2019	6	0	1	5	***12***
2020	1	0	3	4	***8***
Severity of Crash					
Property damage only (none injured)	5	1	8	23	***37***
Non-fatal injury	4	1	0	3	***8***
Fatal Injury	0	0	0	0	***0***
Unknown	0	0	0	0	***0***
Not Reported	0	0	0	0	***0***
Manner of Collision					
Angle	4	0	1	7	***12***
Rear-end	4	1	4	17	***26***
Sideswipe, same direction	1	0	0	0	***1***
Single vehicle crash	0	1	2	1	***4***
Sideswipe, opposite direction	0	0	0	1	***1***
Head-on	0	0	1	0	***1***
Involving Cyclists or Pedestrians					
Pedestrian	0	0	0	0	***0***
Cyclist	0	0	0	0	***0***
Percent Occurring During					
Peak Hours (7-9 AM, 4-6 PM)	11%	50%	13%	8%	***11%***
Adverse Weather/Roadway Conditions[a]	11%	0%	38%	12%	***16%***

[a] Rain, snow, sleet/hail/freezing rain/freezing drizzle, blowing sand/snow; Wet, icy, snowy, or slushy road surface

5.2 Intersection Crash Rates

The intersection crash rate is recognized as an effective tool to measure the safety of intersections. Crash rates for intersections are expressed by the number of crashes per million entering vehicles (MEV). Table 4 compares the crash rates for the study intersections with the Statewide and District 4 averages, as appropriate. The intersection crash rate calculations are included in Appendix C.

Table 4 - Crash Rate Summary

Location	Facility Type	Number of Crashes[a]	Crash Rate[b]	Average Rates[b,c]		Comparison to Average Rates	
				District 4	Statewide	District 5	Statewide
Ballardvale St at I-93 SB Ramps	Signalized Intersection	9	0.33	0.73	0.78	55% Lower	58% Lower
Ballardvale St at Baland Rd/ School Driveway	Unsignalized Intersection	2	0.14	0.57	0.57	57% Lower	57% Lower
Salem Street at Middlesex Ave	Unsignalized Intersection	8	0.25	0.57	0.57	68% Lower	68% Lower
Route 62 at Middlesex Ave/ High St	Signalized Intersection	26	0.62	0.73	0.78	16% Lower	21% Lower

[a] Based on 5-year crash history from MassDOT, 2016-2020
[b] Crashes per million entering vehicles (MEV),
[c] Based on the full set of MassDOT crash database entries as queried October 2024

Based on Table 4, crash rates at the five study intersections are all lower than both the district and statewide averages. No crashes occurred at the intersection of Ballardvale Street and Salem Street, so a crash rate was not calculated.

6 Future No-Build Traffic Conditions

Nitsch used the 2024 existing traffic volumes as the baseline for projecting traffic volumes to future 2031 No-Build conditions. To determine future 2031 conditions, the following steps are included:

- Project existing 2024 traffic volumes seven years in the future to the horizon year (2031) using an annual background traffic growth factor to account for regional growth;
- Add traffic volumes associated with any planned developments that may impact the study area;
- Include any planned roadway improvements that may affect traffic volumes; and
- Analyze the study area location to determine future traffic operations.

6.1 Background Growth

General economic shifts and population growth can drive increased traffic volumes in an area over time. Nitsch consulted with MassDOT's Office of Transportation Planning (OTP) to establish a background growth rate to apply to the seven-year planning horizon. Based on recent population trends and the current planning forecasts, OTP recommended an annual growth rate of 0.25 percent per year, which was applied to this study.

6.2 Additional Development

Nitsch contacted the Town of Wilmington's Planning Department to identify any planned developments that will potentially add traffic to the study area. The City identified four development projects that have the potential to impact traffic within the study area, and these projects are described below. The traffic assessments or studies received for these four projects are provided in Appendix D.

Nitsch also queried the MassDOT project information website to identify any planned roadway projects. There are no planned roadway projects in the study area.

181-187 Ballardvale Street

181-187 Ballardvale Street is an approximate 66,100 square-foot (sf) life science research and development building, to be located on the corner of Route 125 and Ballardvale Street, north of the study area. The site currently holds the Ballardvale Technology Center. The Traffic Memo provided by the Town for the project concludes that the project will have nominal impact to the intersection of Route 125 and Ballardvale Street and the intersection of Ballardvale Street and the I-93 Ramps. The trips shown in the Traffic Memo were distributed throughout the network and assigned to the study intersections accordingly.

800 Salem Street

A 237,880 sf warehouse building was recently constructed at 800 Salem Street, approximately 1.5 miles north of the intersection of Route 62 and Middlesex Avenue/High Street. At the time of this report, the building is not yet occupied, so the anticipated traffic from the development was not captured in the traffic counts. A traffic study was provided by the Town of Wilmington for this project and the additional trips estimated by the study were assigned to the intersection of Route 62 and Middlesex Avenue/High Street accordingly. No other study intersection is anticipated to be impacted by this development.

Jefferson Road Multifamily Development

A 108 unit residential development is approved to be located at the corner of Middlesex Avenue and Jefferson Road, approximately one-quarter mile south of the intersection of Route 62 and Middlesex Avenue/High Street. The traffic study received for this project identified the net vehicle trip generation during the weekday morning and weekday afternoon peak hours. We estimate that 50% of the new trips will travel north/south on Route 62 through the study intersection of Route 62 and Middlesex Avenue/High Street. The additional trips were assigned to the intersection accordingly.

Upton Park

Upton Park is a recently constructed office/warehouse development located at 36 and 38 Upton Drive, approximately 1.5 miles north of the project site. At the time of this report, the building is not yet occupied, so the anticipated traffic from the development was not captured in the traffic counts. The traffic study received for this project shows the anticipated new trips from this project at the study intersection of Ballardvale Street and I-93 Southbound ramps. These trips were distributed throughout the network and assigned to the study intersections accordingly.

6.3 2031 No-Build Traffic Volumes

We developed the 2031 No-Build volumes by applying annual growth rates for seven years to the 2024 Existing conditions volumes turning movements and then added the trips generated by the development projects described above. Figure 7 presents the peak hour traffic volumes for 2031 No-Build conditions.

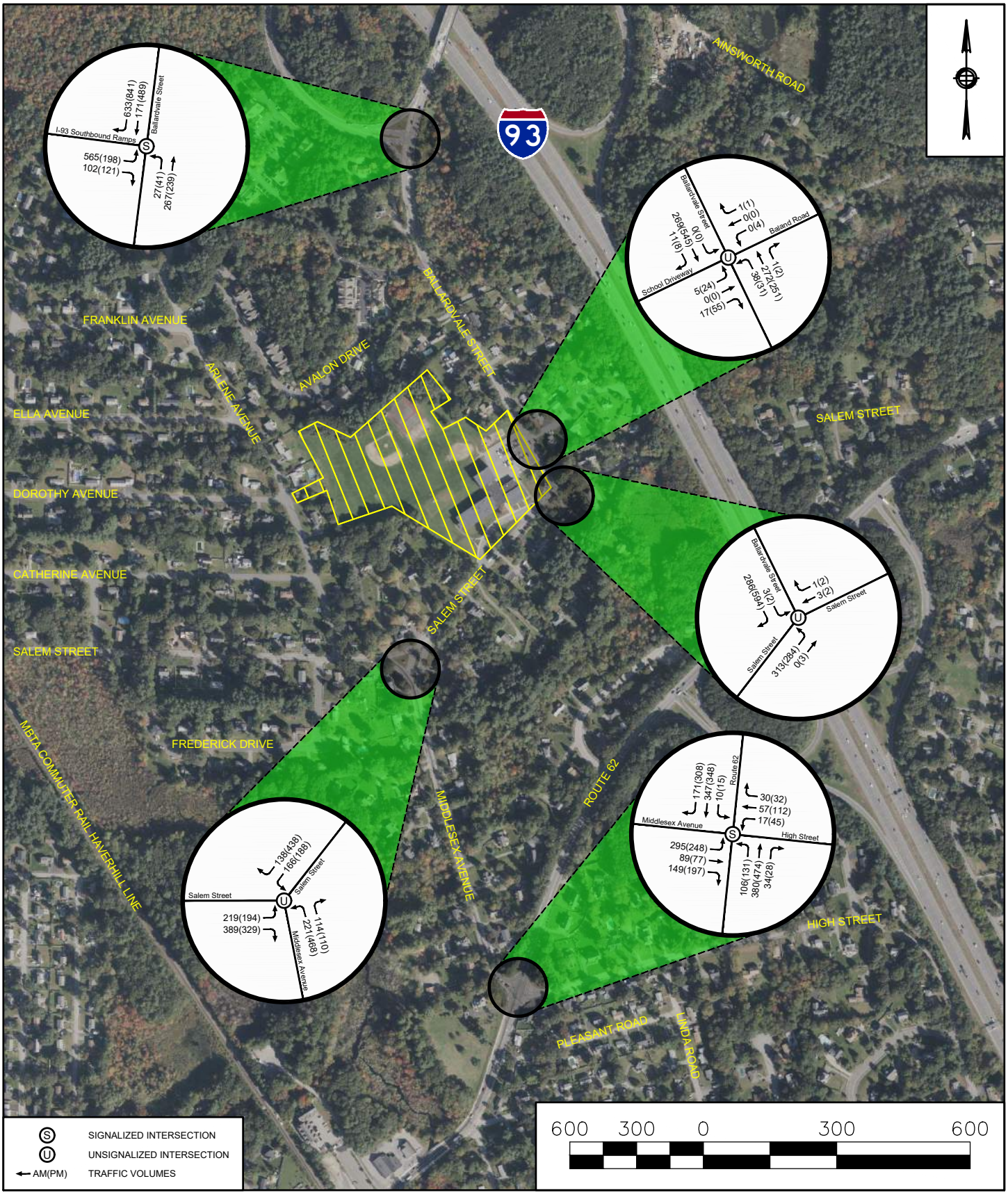

Figure 6 - 2031 No-Build Weekday Peak Hour Traffic Volumes

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

7 Proposed Future Conditions

7.1 Proposed Development

The existing school will be demolished and a new school will be constructed on the existing site. The new schoolhouse will have 3 stories and an approximate 163,573 square feet of gross floor area (gfa) to accommodate 855 students in Pre-K through 5th grade. The redeveloped building will consolidate three existing schools - the North Intermediate school located at the existing site, the Woburn Street school currently located at 227 Woburn Street, and the Wildwood Early Childhood Center formerly located at 182 Wildwood Street. Two different site layouts were considered during the design, each with their own circulation patterns which are described below. The site plans are provided in Appendix E.

Option A:

Option A provides two primary driveways for access and egress. The driveway at the southern end of the parcel (south driveway) will provide access and egress to and from Salem Street. This driveway will be located near the existing bus loop at the North Intermediate School and will be the designated entrance for visitors and parent-student drop-off and pick-up. The driveway to the east of the site (east driveway) will allow access and egress to and from Ballardvale Street, to be located just north of the existing school driveway. This will be the designated entrance and exit for buses, deliveries, and school staff. With this setup, buses and most passenger cars will have separate circulation routes that will minimize conflicts with each other and streamline the student arrival and dismissal patterns.

In addition to the two driveways, a proposed access road will be located west of the school leading to and from Arlene Avenue. This driveway will be designated for emergency access only.

The bus drop-off/pick-up will occur at the designated loading/unloading zone located at the northeast of the school. Buses will enter from Ballardvale Street and continue west around the school before utilizing the turn-around area at the northwest corner of the school and circling back to the east to stop at the loading/unloading zone. Parents will be directed to enter at the south driveway on Salem Street and drop-off/pick-up at the southeast corner of the school in the designated parent loop, exiting back onto Salem Street. Staff will park in the parking area east of the school accessed by both driveways.

Adjacent to Salem Street and Ballardvale Street, new sidewalks will be constructed as needed to tie into the pedestrian circulation within the site.

A total of 193 parking spaces will be provided on-site. Approximately 600 feet of queuing capacity (approximately 24 vehicles) is proposed on-site for parents, matching the existing amount of on-site queueing.

Option B:

Option B provides two primary driveways for access and egress at the same locations as Option A. However, the driveway at the southern end of the parcel (south driveway) will be the designated entrance and exit for buses and visitors. The east driveway will be the designated entrance and exit for parent-student drop-off and pick-up.

Buses will enter from Salem Street and park in the designated bus loop as they drop-off and pick-up students before circling around and exiting back out onto Salem Street. Parents will be directed to enter on Ballardvale Street near where the existing school entrance is located. They will continue west before utilizing the turn-around

area at the northwest corner of the school and circling back to the east to stop at the loading/unloading zone. The bus loop and driveway provides queuing space for 10 buses at a time and the parent loop provides over 1,700 feet of on-site queuing, enough for approximately 70 passenger vehicles at a time. This is expected to adequately accommodate the morning and afternoon demand due to the staggered arrival rates of parent vehicles.

Note: For the purposes of this traffic study, Option A was used as the preferred option and the analysis presented in this report reflects this driveway use. In follow-up meetings with the Town and discussions with the School Building Committee, Option B later emerged as the preferred alternative based on the additional queuing capacity. While the driveway uses are slightly different, the gross impacts to adjacent intersections under Option B will be the same as presented in the following sections of this study.

7.2 Proposed Trip Generation

Nitsch reviewed the Institute of Transportation Engineers' (ITE) publication *Trip Generation, 11th Edition* to estimate the vehicle trip rates for the existing and the proposed reconstructed school. ITE compiles studies based on similar land uses to establish average trip generation rates based on an independent variable.

Trip generation rates for the elementary school were based on Land Use Code (LUC) 520 (elementary school). The weekday morning drop-off and weekday afternoon pick-up trips are outlined in Table 5 and the ITE data is provided in Appendix F.

Table 5 - ITE Trip Generation

Time	Elementary School (LUC 520)	
	Existing with 250 Students	Redeveloped with 855 Students
Weekday Daily	568	1942
Entering	284	971
Exiting	284	971
Weekday Morning Peak	188	641
Entering	101	346
Exiting	87	295
Weekday Afternoon Peak	113	385
Entering	52	177
Exiting	61	208

Since the existing school driveway is used for staff and parent drop-off/pick-up, the actual number of peak-hour trips generated by the existing land use can be taken from the TMCs at the driveway. The existing land use serves 250 students, meaning the peak-hour trip generation for the proposed redevelopment serving 855 students can be extrapolated by multiplying the existing trip generation by a factor of 3.42, given in the equation:

$$\frac{Future\ Enrollment}{Current\ Enrollment} = \frac{855}{250} = 3.42$$

Table 6 shows the peak-hour trip generation based on the existing counts, the predicted trip generation for the redeveloped school, and the net increase.

Table 6 - Existing and Proposed Trip Generation (As Counted)

Time	Elementary School (LUC 520)		
	North Intermediate School		
	Existing with 250 Students	Redeveloped with 855 Students	Net Increase
Weekday Morning Peak	71	243	172
Entering	49	168	119
Exiting	22	75	53
Weekday Afternoon Peak	118	403	285
Entering	39	133	94
Exiting	79	270	191

As shown in Table 6, the proposed redeveloped School with 855 students would result in approximately 172 additional trips (119 trips in and 53 trips out) during the weekday morning drop-off time and 285 additional trips (94 trips in and 191 trips out) during the weekday afternoon pick-up time. Note that the weekday morning peak hour trips are lower than the ITE estimates, but the weekday afternoon peak hour trips are higher than the ITE estimates.

7.2.1 Bus Trips

Additionally, Nitsch reached out to the principal at the North Intermediate School for bus volumes. In the existing condition, 12 full-size buses are used for pick-up, and 10 full-size buses are used for drop-off. These buses currently serve both the Woburn Street school and North Intermediate School, dropping students off at North Intermediate in the morning before dropping off the remaining first through third graders at Woburn Street (and vice-versa in the afternoon). Since the proposed redevelopment consolidates these two schools, the bus volumes will remain the same as in the existing condition and buses will only need to stop at one school. Bus trips will have a separate distribution pattern than the trips described above, which will be referred to as Passenger Car Trips. Existing Wildwood Early Childhood Center bus trips were not considered separately and were consolidated with North Intermediate School and Woburn Street School routes to remain conservative with Passenger Car Trip distribution. Since the redeveloped school will serve the same catchment area as the existing school, there is expected to be minimal change to the school bus routes.

7.2.2 2031 No-Build (Without School) Traffic Volumes

Due to the relocation of the school driveways, the net trips cannot be directly applied to the existing traffic volumes. Before the new trips can be added into the network, all existing school trips must be removed from the network and then added back in heading to and from the proposed site driveways. We estimated the trip distribution for the existing North Intermediate school based on the school's catchment area (a process discussed in Section 7.3) and removed those trips from the network. Figure 7 shows the 2031 No-Build (Without School) Peak Hour traffic volumes.

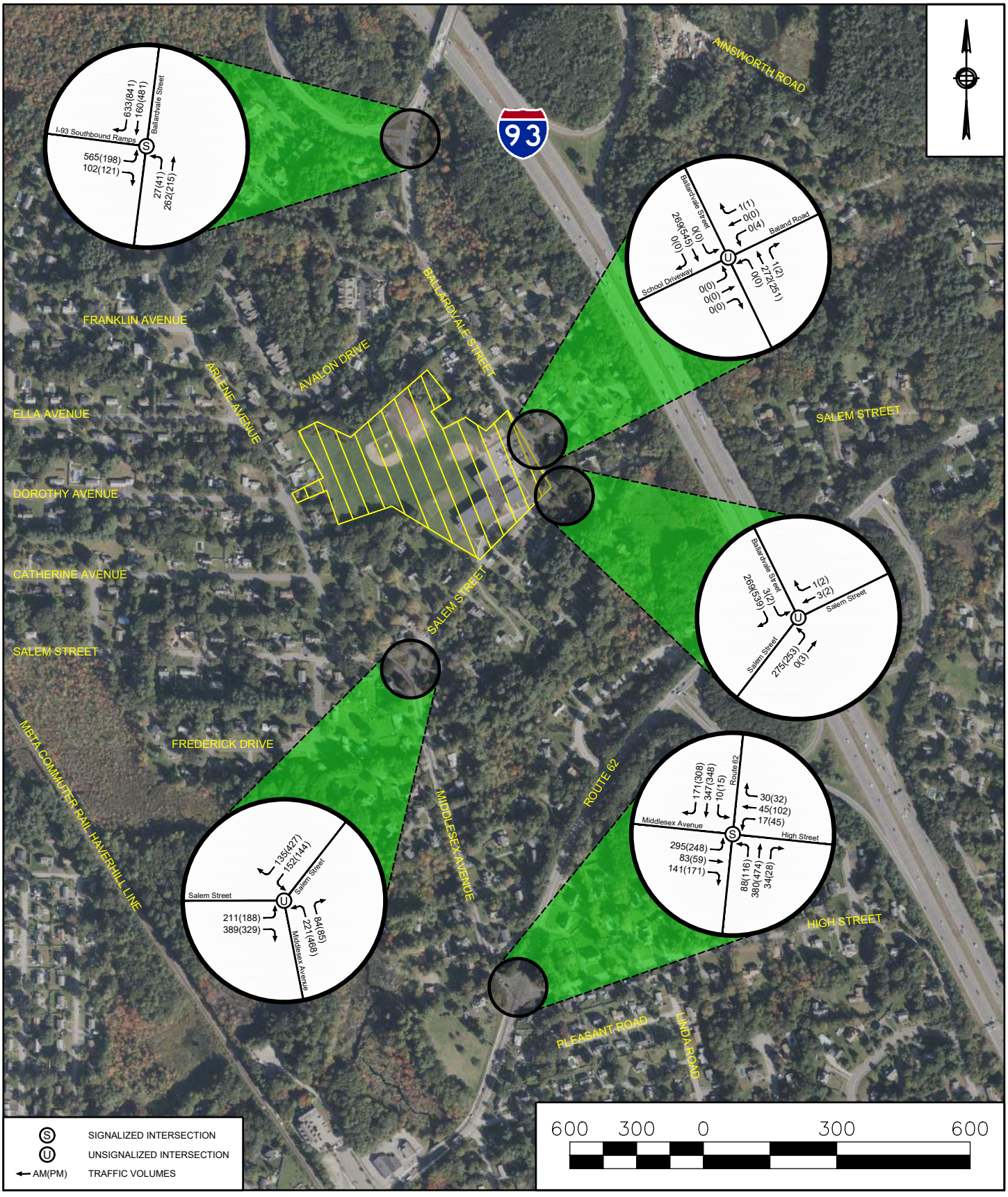

Figure 7 - 2031 No-Build (Without School) Weekday Peak Hour Traffic Volumes

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

7.3 Trip Distribution

The trips to/from the proposed school were distributed and assigned based on the logical travel routes through the existing roadway network within the town of Wilmington. Similar to trip generation, the distribution patterns were split between passenger car trips and bus trips.

Cropper GIS Consulting, LLC completed a Time and Distance Analysis for Wilmington Public Schools in 2023 as part of a long-range planning effort. To determine passenger car distributions, Nitsch used a map included in that analysis displaying the catchment area and student population density for the east school district, which the Wildwood, Woburn Street, and North Intermediate schools serve. Using this map, the catchment area was subdivided based on the most likely route to take to the school and a weight was assigned to it based on the student population density within the subdivision. These weights were then converted into percentages. The catchment map is provided in Appendix G. Table 7 shows the distribution of how passenger cars are predicted to enter and exit the network.

Table 7 - Passenger Car Distribution

Street and Direction	Distribution
Ballardvale Avenue, to/from the north	5%
Salem Street, to/from the west	15%
Middlesex Avenue to/from the southeast	50%
High Street, to/from the southwest	30%

These percentages were carried through the network based on the appropriate route the vehicles would take through the network. It is assumed all of these passenger cars will be entering and exiting through the south driveway on Salem Street. The passenger car trip distribution percentages are shown in Figure 8.

For the bus trips, a slightly different method was used. As discussed in section 7.2.1, the bus routes at the proposed school are not expected to change significantly from the routes at the existing school. As such, the existing school bus routes were converted into a distribution that was carried through the network. Table 8 shows the distribution of how buses are predicted to enter and exit the network.

Table 8 - Bus Distribution

Street and Direction	Distribution
Ballardvale Avenue, to/from the north	10%
Salem Street, to/from the west	20%
Middlesex Avenue to/from the southeast	50%
High Street, to/from the southwest	20%

It is assumed that all buses will enter and exit through the driveway on Ballardvale Street. The Bus Trip Distribution percentages are shown in Figure 9.

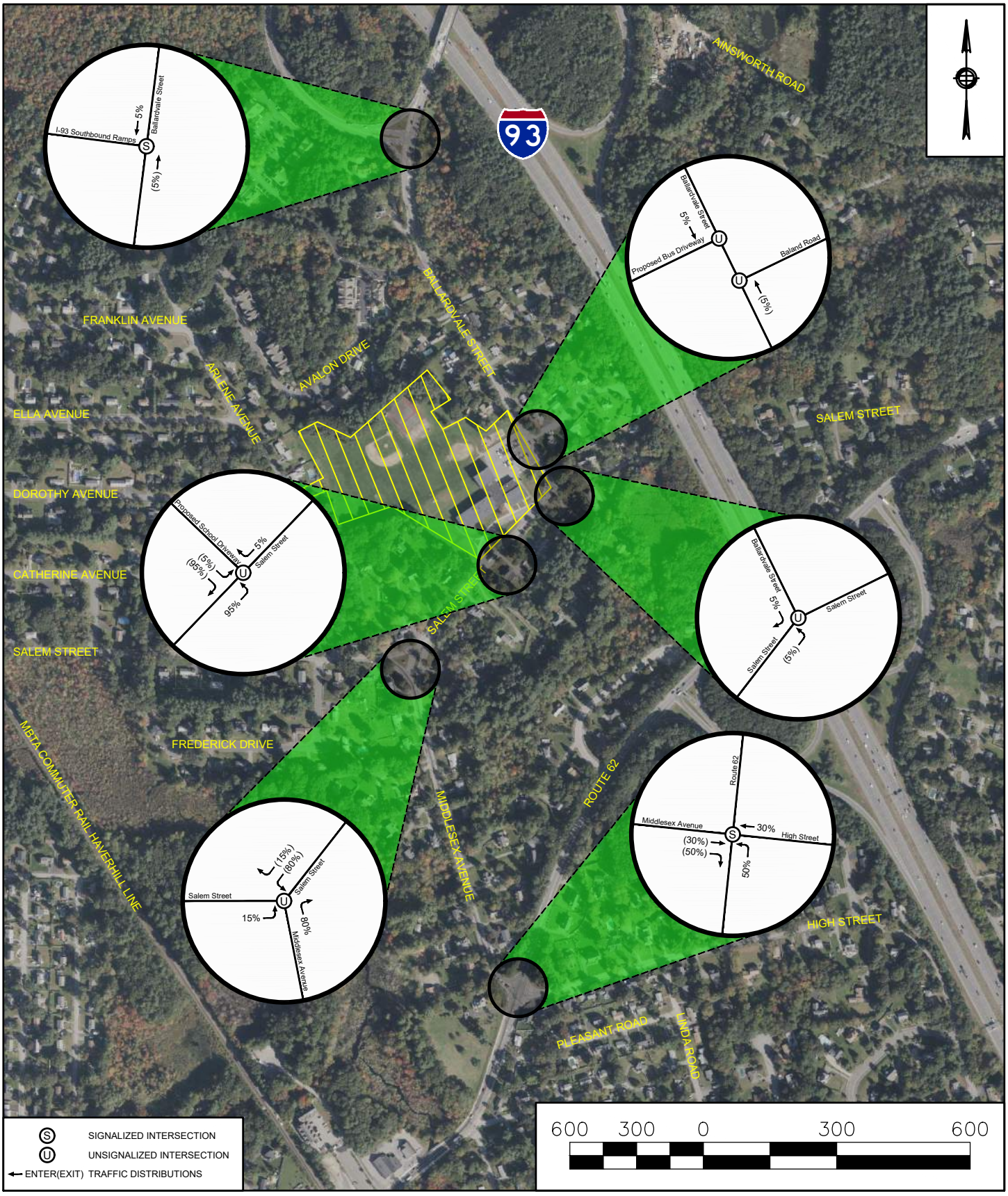

Figure 8 - Passenger Car Trip Distribution

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

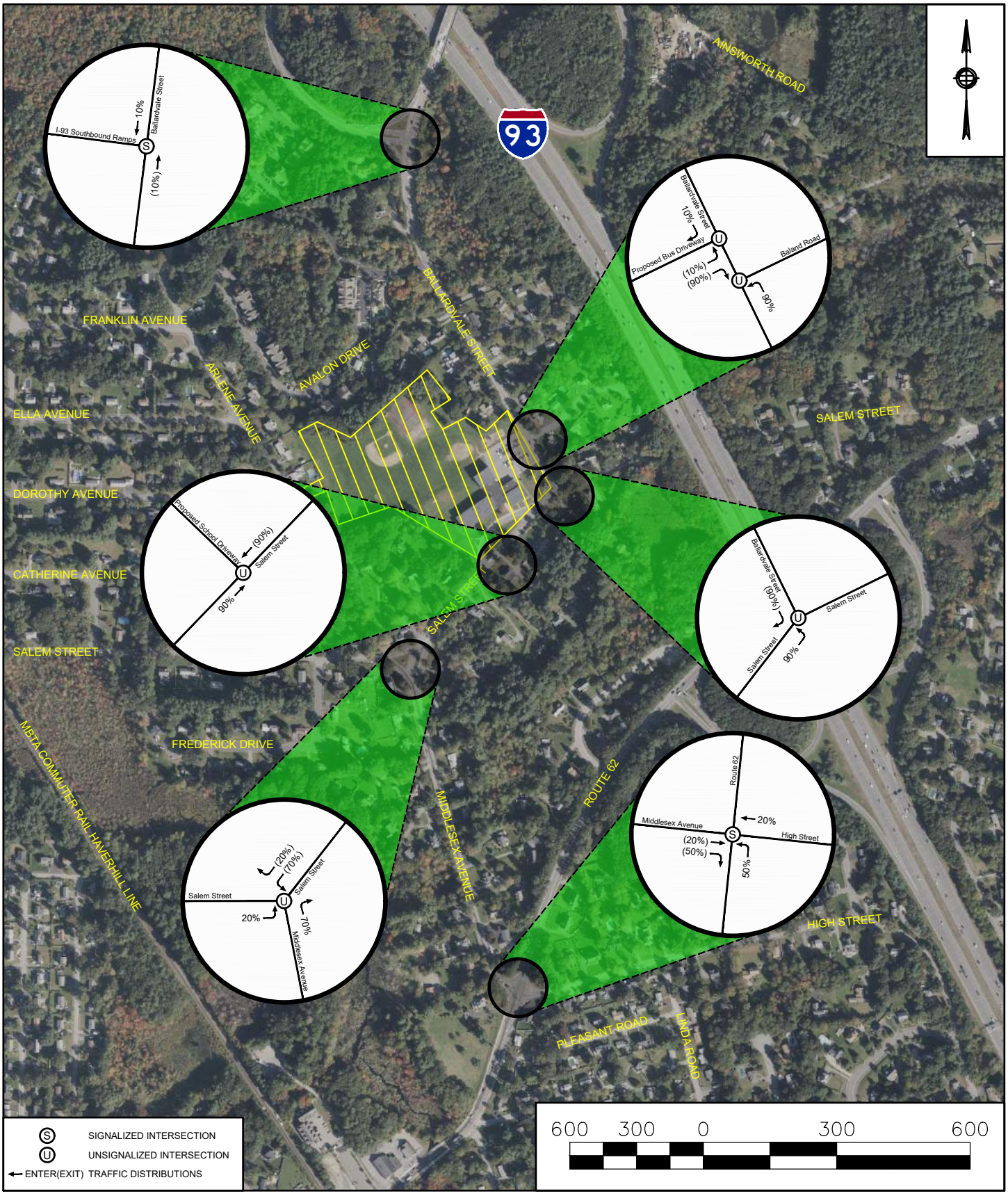

Figure 9 - Bus Trip Distribution

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

7.4 Mode Split and Assignment

To accurately determine the traffic impacts of the proposed school, alternative modes of transportation were considered in the trip assignment calculations. Since the school is located in a residential area, some students may walk to school. However, this is not expected to be a significant portion of the trips due to most students living outside of a 1/2 mile radius from the school. Based on information received from Wilmington Public Schools, approximately 5% of students (12 students) at the existing North Intermediate school walk to school, 65% take the bus, and the remaining 30% are picked up/dropped off by a parent or guardian.

The number of students walking to the proposed school is not expected to increase compared to existing, since the additional students the school serves will be younger and less likely to commute on foot. As discussed in earlier sections, the number of bus trips are not expected to increase since the current buses serve both the North Intermediate and Woburn Street schools. The passenger car trips, which were calculated based on the existing driveway counts, are expected to increase in proportion to the increase in number of students the school serves.

The peak hour trip generation includes the total amount of pre-kindergarten through fifth grade students (855) including all three schools. The specific mode split of the Wildwood Early Childhood Center was not indicated, therefore we proceeded using mode split information from the North Intermediate School principal. As the grades kindergarten through fifth grade are going to be the primary trip generation driver, it is deemed appropriate to maintain the existing mode split. Table 9 shows the project trips by mode for the proposed school.

Table 9 - Project Trips by Mode

Time	Mode		
	Walking Trips	Passenger Car Trips	Bus Trips
Weekday Morning Peak	24	243	24
Entering	12	168	12
Exiting	12	75	12
Weekday Afternoon Peak	24	403	20
Entering	12	133	10
Exiting	12	270	10

The passenger car and bus distributions were then applied to their respective trips shown in Table 9. The project trip assignment to the study intersections is shown in Figures 10, 11, 12, and 13.

7.5 Proposed 2031 Build Volumes

For the proposed school, the corresponding trip assignment volumes were added to the 2031 No-Build (Without School) Volumes that yield the 2031 Build Volumes. The 2031 Build Peak Hour Turning Movement Volumes are shown in Figure 14.

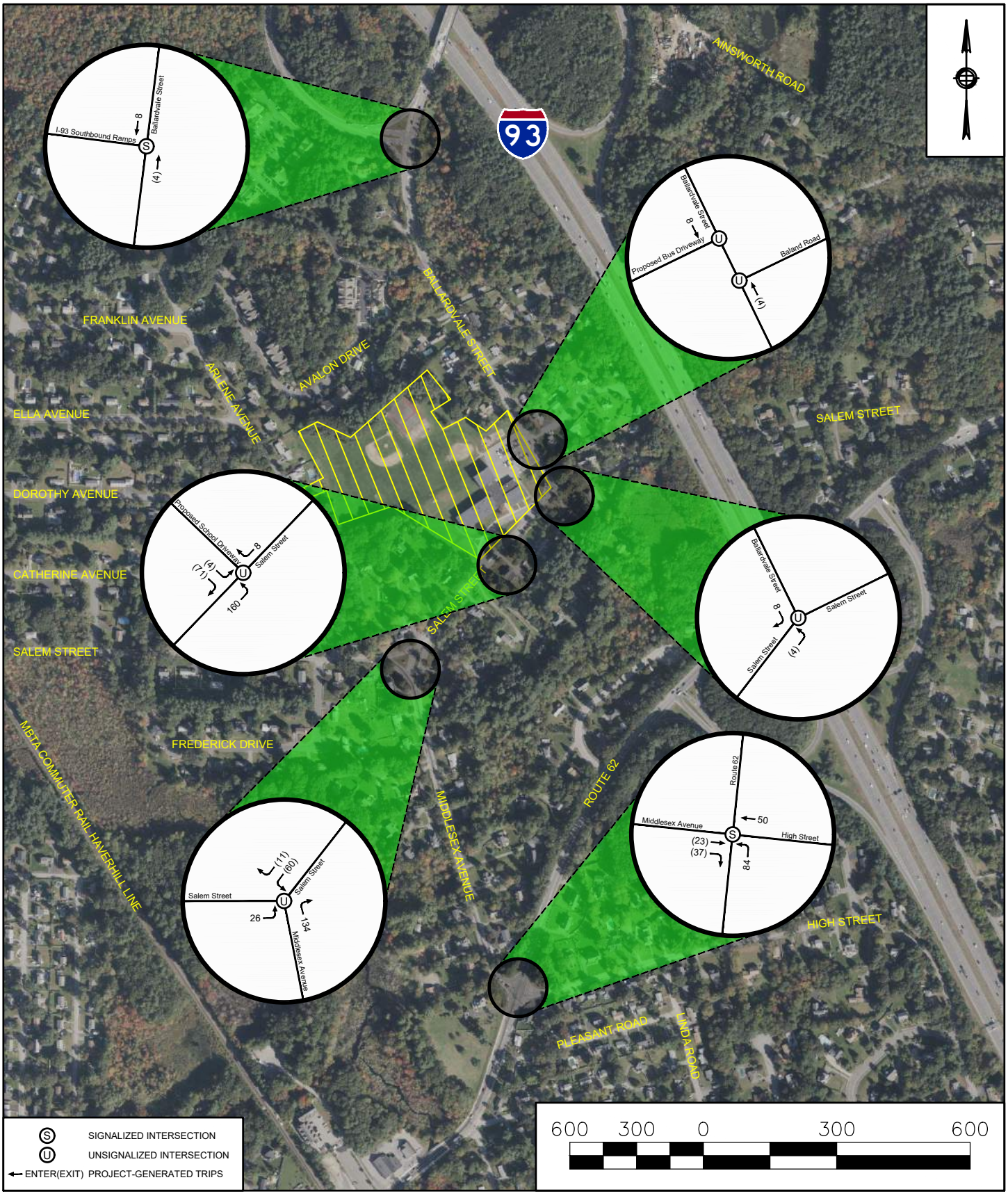

Figure 10 - AM Passenger Car Trip Assignment

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

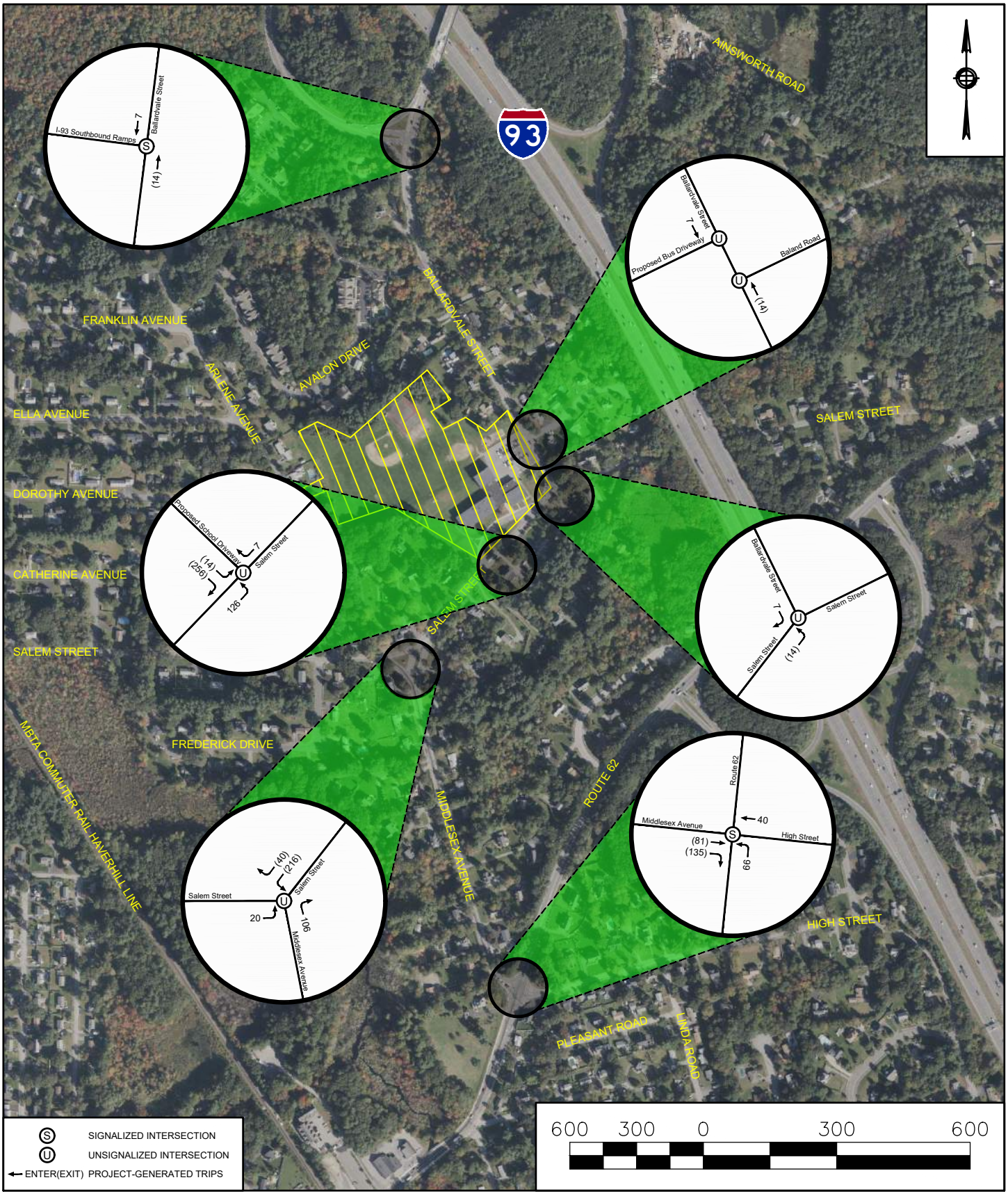

Figure 11 - PM Passenger Car Trip Assignment

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

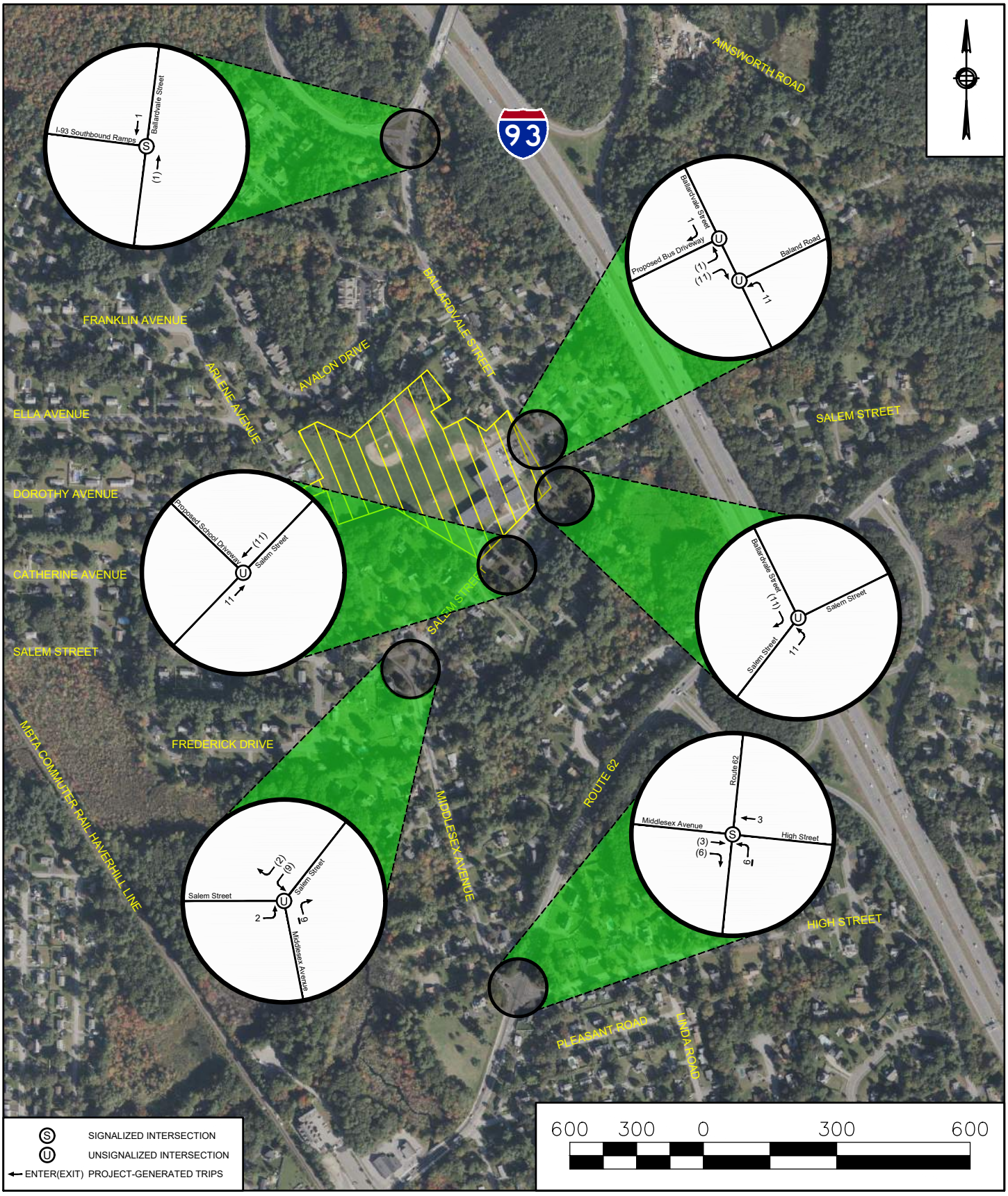

Figure 12 - AM Bus Trip Assignment

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

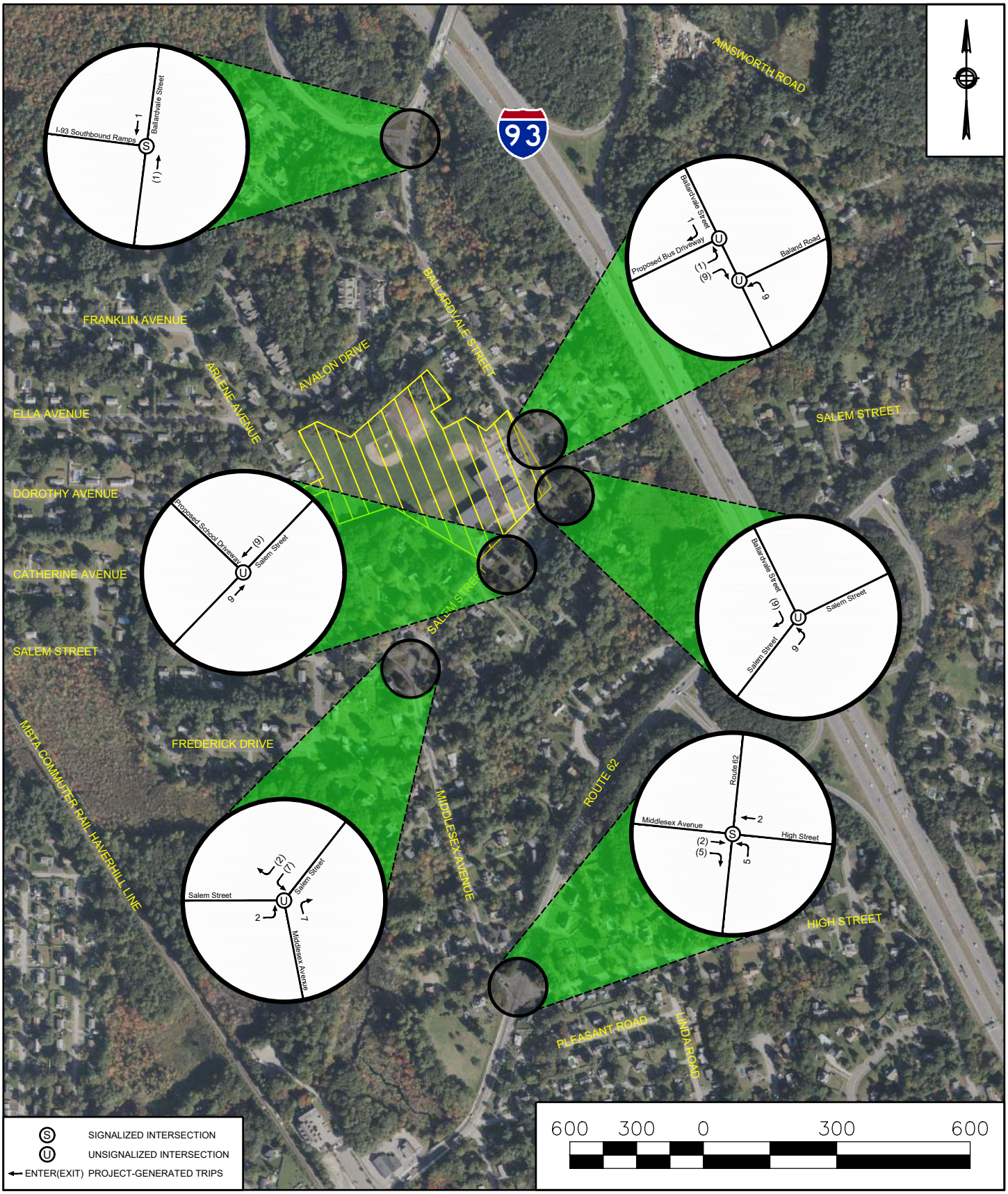

Figure 13 - PM Bus Trip Assignment

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

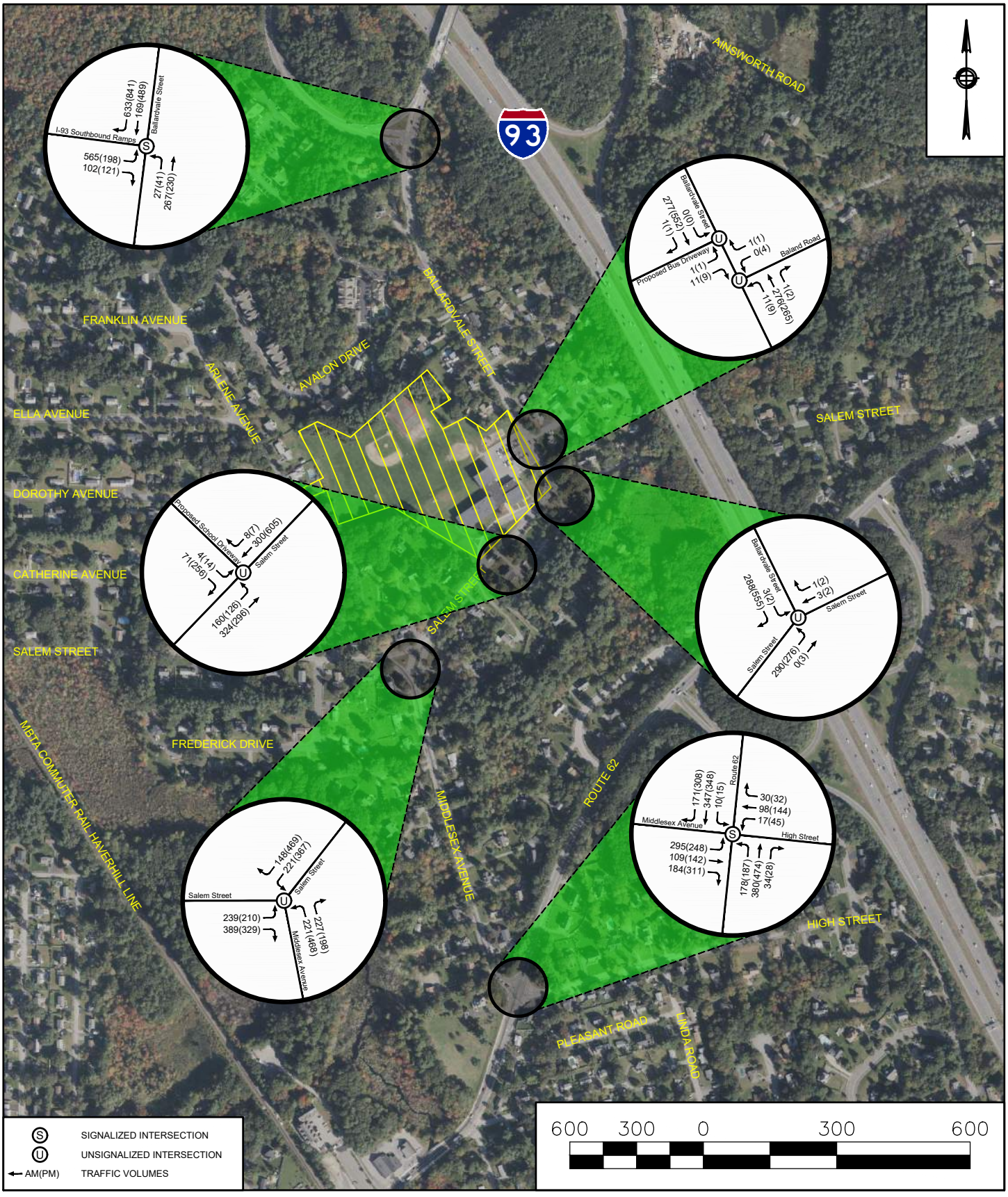

Figure 14 - 2031 Build Weekday Peak Hour Traffic Volumes

North Intermediate School
320 Salem Street
Wilmington, MA

Data Source: BingMaps
Nitsch Project #: 15428

Nitsch Engineering

7.6 Parking Generation and Adequacy

Nitsch used the Institute of Transportation Engineers' (ITE) publication *Parking Generation Manual, 6th Edition* to estimate the parking demand for the proposed development. Parking generation rates for the proposed school were based on Land Use Code (LUC) 520 (Elementary School). The calculated parking demand for the combined school with projected student population of 855 students is 120 spaces. The parking generation worksheet is provided in Appendix F.

As shown in Table 10, the 193 striped parking spaces exceed the 120 parking spaces recommended by ITE and thereby provide adequate capacity for the required parking demand.

Table 10 - Proposed Parking Summary

Parking Spaces Provided	ITE Parking Generation for LUC 520
193 Striped	120

8 Traffic Analysis

8.1 Evaluation Criteria

Traffic operations at intersections are evaluated using the performance measures of average vehicular delay, level of service (LOS), volume-to-capacity (v/c) ratio, and average and 95th percentile queue lengths.

LOS is a qualitative measure that describes operating conditions through letter designations, from A to F. It is defined for intersections in terms of average control delay per vehicle. LOS A indicates the most favorable condition, with minimum traffic delay. LOS F represents the worst condition where there is significant traffic delay. LOS D or better is typically considered desirable for peak-hour operation in urban and suburban settings. The delay designations for each LOS level differ slightly between signalized and unsignalized intersections due to driver expectations and behavior. Table 11 summarizes the LOS criteria for intersections as used in this analysis.

Table 11 - Intersection Level of Service Criteria

Level of Service	Average Control Delay (sec/veh)	
	Signalized	Unsignalized
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50
Source: HCM 6th Edition		

For signalized intersections, LOS is reported by lane group, by approach, and for the entire intersection. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. As such, an unsignalized intersection's LOS is generally reported for left-turns on the mainline and all side street movements, and an overall intersection LOS is not always determined.

The v/c ratio is a measure of congestion at an intersection approach. The capacity of a facility is the maximum hourly rate at which persons or vehicles can be expected to traverse a point or a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions. A v/c ratio below one indicates that the intersection approach has adequate capacity to serve the arriving traffic demand. A v/c ratio that approaches or exceeds 1.0 indicates traffic congestion or poor operating conditions. In that situation, vehicles arrive faster than they can be served, so queue lengths can theoretically grow indefinitely, which is the unstable condition.

Since arrival volumes fluctuate throughout the peak hour, queue lengths vary. The average (50th percentile) queue length represents the maximum back of queue on a typical cycle for a signalized intersection. Average queue lengths are not reported for unsignalized intersections. The 95th percentile queue, reported for both signalized and unsignalized intersections, occurs with 95th percentile traffic volumes, and its length commonly denotes the farthest extent of the vehicle queue.

8.2 Capacity Analyses

We performed capacity analyses for the study intersections under 2024 Existing conditions, 2031 No-Build conditions, and 2031 Build conditions during the weekday morning and afternoon peak hours using Trafficware's Synchro 11 software. Synchro uses, in part, the traffic operational analysis methodology of the Transportation Research Board's *Highway Capacity Manual* (HCM).[1] Since HCM 6th Edition does not support exclusive pedestrian phases, we generated the results of the capacity analyses using Synchro's Percentile Delay Method for delay, v/c ratio, and queue lengths, supported by HCM 2000 Edition methodology for unsignalized intersection analysis and Synchro's Lane, Volumes, and Timings for signalized intersection analysis. The Synchro output sheets for the capacity analyses are included in Appendix H.

8.2.1 2024 Existing Conditions Capacity Analysis

The first analysis evaluated traffic operations with 2024 existing traffic volumes under existing geometric conditions and signal timing/phasing. We derived peak hour factors (PHFs) and heavy vehicle percentages from the TMC data. We applied PHFs on an approach-by-approach basis, and we applied heavy vehicle percentages by lane group. Table 12 summarizes the capacity analysis results for the 2024 Existing conditions.

[1] *Highway Capacity Manual 6th Edition (HCM 6th)*, Transportation Research Board, Washington, D.C., 2016.

Table 12 - Capacity Analysis Summary: 2024 Existing Conditions

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th	v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th
Middlesex Avenue at Salem Street *[unsignalized]*	Salem St EB - L	0.13	6.6	A	-	11	1.21	140.5	F	-	534
	Middlesex Ave NB - L	0.26	7.7	A	-	26	0.90	45.7	E	-	268
	Overall	***-***	***5.3***	***A***	***-***	***-***	***-***	***58.6***	***F***	***-***	***-***
Salem Street at Ballardvale Street *[unsignalized]*	Salem St WB - LR	0.02	12.9	B	-	1	0.02	13.9	B	-	1
	Ballardvale St SB - L	0.00	0.1	A	-	0	0.00	0.0	A	-	0
	Overall	***-***	***0.2***	***A***	***-***	***-***	***-***	***0.1***	***A***	***-***	***-***
Ballardvale Street at School Driveway/ Baland Road *[unsignalized]*	School Driveway EB - LTR	0.14	12.1	B	-	12	0.42	22.4	C	-	51
	Baland Rd WB - LTR	0.01	9.9	A	-	0	0.04	25.3	D	-	3
	Ballardvale St NB - L	0.04	1.4	A	-	3	0.04	1.4	A	-	3
	Overall	***-***	***2.0***	***A***	***-***	***-***	***-***	***3.6***	***A***	***-***	***-***
Ballardvale Street at I-93 Southbound Ramps *[signalized]*	I-93 SB Ramp EB - L	0.25	8.1	A	72	117	0.30	19.6	B	16	61
	I-93 SB Ramp EB - R	0.06	0.1	A	0	0	0.07	0.1	A	0	0
	Ballardvale St NB - L	0.32	62.3	E	24	55	0.18	22.8	C	8	41
	Ballardvale St NB - T	0.79	57.1	E	203	259	0.29	6.7	A	33	61
	Ballardvale St SB - T	0.58	55.9	E	125	189	0.60	14.5	B	69	232
	Ballardvale St SB - R	0.37	0.6	A	0	0	0.49	1.0	A	0	0
	Overall	***0.76***	***18.5***	***B***	***-***	***-***	***0.60***	***7.5***	***A***	***-***	***-***
Route 62 at Middlesex Avenue/ High Street *[signalized]*	Middlesex Ave EB - LT	0.78	39.7	D	199	#695	0.85	46.8	D	160	#566
	Middlesex Ave EB - R	0.18	7.9	A	26	77	0.24	7.0	A	29	78
	High St WB - LT	0.18	24.9	C	40	97	0.37	26.5	C	65	193
	High St WB - R	0.07	5.0	A	0	0	0.06	3.3	A	0	4
	Middlesex Ave NB - L	0.59	60.3	E	63	164	0.59	50.7	D	64	178
	Middlesex Ave NB - TR	0.62	29.5	C	195	452	0.73	32.0	C	192	516
	Route 62 SB - L	0.15	61.2	E	7	33	0.17	53.1	D	7	37
	Route 62 SB - T	0.86	55.8	E	219	433	0.81	48.6	D	157	369
	Route 62 SB - R	0.40	15.6	B	35	110	0.57	12.9	B	28	138
	Overall	***0.81***	***34.8***	***C***	***-***	***-***	***0.85***	***32.1***	***C***	***-***	***-***

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ 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

Under 2024 Existing conditions, the intersection of Middlesex Avenue and Salem Street operates overall at LOS A in the morning peak hour and LOS F in the afternoon peak hour. It is important to note that due to the atypical layout of this intersection, most modelling software and HCM methodology does not have the full capability to portray the actual operations of the intersection. However, the capacity issue shown in the weekday afternoon peak hour was confirmed in the field. Additionally, conversations with the DPW indicate the intersection experiences significant queues in the morning peak hour, primarily in the southbound direction, and operates below LOS A. Significant queues were observed for the northbound direction primarily in the afternoon peak hour.

Both the unsignalized intersections of Salem Street at Ballardvale Street and Ballardvale Street at School Driveway/Baland Road operate at LOS A during both peak hours in the existing condition. During the weekday afternoon peak hour, the Baland Road westbound movement operates at LOS D and the Driveway eastbound movement operates at LOS C. All other movements operate at LOS B or better.

The signalized intersection of Ballardvale Street at I-93 Southbound Ramps operates overall at LOS B during the weekday morning peak hour and LOS A during the weekday afternoon peak hour. The Ballardvale Street northbound left, northbound through, and southbound through movements operate at LOS E during the weekday morning peak hour. All other movements operate at LOS C or better during both peak hours and indicate no significant queueing.

The signalized intersection of Route 62 at Middlesex Avenue/High Street operates overall at LOS C during both peak hours. The Middlesex Avenue eastbound left/through movement operates at LOS D during both peak hours. According to conversations with the DPW, the Middlesex eastbound approaches may experience longer queues and a lower LOS than modeled. The 95th percentile volume exceeds capacity at this movement for both peak hours in the existing condition. The Middlesex Avenue northbound left and Route 62 southbound left turn movements both operate at LOS E during the weekday morning peak hour and LOS D during the weekday afternoon peak hour. The Route 62 southbound through movement operates at LOS E during the morning peak hour and D in the afternoon peak hour, and all other movements operate at LOS C or better.

8.2.2 2031 No-Build Conditions Capacity Analysis

Under future No-Build conditions, we kept lane geometry, traffic control, and signal timing parameters the same as existing and applied the future volumes determined in Section 6.3 with the same heavy vehicle percentages and PHFs as existing. Table 13 summarizes the analysis results for 2031 No-Build conditions.

Table 13 - Capacity Analysis Summary: 2031 No-Build Conditions

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th	v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th
Middlesex Avenue at Salem Street *[unsignalized]*	Salem St EB - L	0.13	6.7	A	-	11	4.71	*Err*	F	-	*Err*
	Middlesex Ave NB - L	0.27	7.7	A	-	27	0.97	61.9	F	-	323
	Overall	***-***	***5.4***	***A***	***-***	***-***	***-***	***3063.7***	***F***	***-***	***-***
Salem Street at Ballardvale Street *[unsignalized]*	Salem St WB - LR	0.02	13.4	B	-	1	0.02	14.5	B	-	2
	Ballardvale St SB - L	0.00	0.1	A	-	0	0.00	0.0	A	-	0
	Overall	***-***	***0.2***	***A***	***-***	***-***	***-***	***0.1***	***A***	***-***	***-***
Ballardvale Street at School Driveway/ Baland Road *[unsignalized]*	School Driveway EB - LTR	0.14	12.4	B	-	12	0.45	24.4	C	-	57
	Baland Rd WB - LTR	0.01	10.2	B	-	0	0.05	27.3	D	-	4
	Ballardvale St NB - L	0.04	1.3	A	-	3	0.04	1.4	A	-	3
	Overall	***-***	***2.0***	***A***	***-***	***-***	***-***	***3.8***	***A***	***-***	***-***
Ballardvale Street at I-93 Southbound Ramps *[signalized]*	I-93 SB Ramp EB - L	0.29	8.9	A	89	144	0.36	22.0	C	30	70
	I-93 SB Ramp EB - R	0.06	0.1	A	0	0	0.07	0.1	A	0	0
	Ballardvale St NB - L	0.32	62.3	E	24	55	0.19	25.3	C	13	43
	Ballardvale St NB - T	0.81	59.5	E	231	287	0.29	6.4	A	35	66
	Ballardvale St SB - T	0.57	54.1	D	131	195	0.67	17.3	B	140	258
	Ballardvale St SB - R	0.39	0.7	A	0	0	0.54	1.2	A	0	0
	Overall	***0.81***	***19.1***	***B***	***-***	***-***	***0.67***	***8.5***	***A***	***-***	***-***
Route 62 at Middlesex Avenue/ High Street *[signalized]*	Middlesex Ave EB - LT	0.81	43.5	D	217	#740	0.90	54.2	E	174	#599
	Middlesex Ave EB - R	0.18	8.4	A	28	83	0.26	7.5	A	33	87
	High St WB - LT	0.19	26.5	C	43	101	0.40	28.4	C	70	203
	High St WB - R	0.07	5.3	A	0	0	0.06	3.8	A	0	5
	Middlesex Ave NB - L	0.62	62.2	E	72	182	0.60	52.0	D	68	187
	Middlesex Ave NB - TR	0.64	29.5	C	212	486	0.73	31.8	C	204	546
	Route 62 SB - L	0.15	63.0	E	7	34	0.17	54.8	D	7	38
	Route 62 SB - T	0.86	55.4	E	234	457	0.82	48.9	D	172	398
	Route 62 SB - R	0.40	16.1	B	38	117	0.58	13.9	B	36	153
	Overall	***0.86***	***36.2***	***D***	***-***	***-***	***0.90***	***33.9***	***C***	***-***	***-***

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ 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
Err Volume significantly exceeds capacity

Under 2031 No-Build conditions, the intersection of Middlesex Avenue and Salem Street continues to operate overall at LOS A in the morning peak hour and LOS F in the afternoon peak hour. The capacity issues shown in the existing conditions analysis and observed in the field are expected to get slightly worse in the no-build condition.

Both the unsignalized intersections of Salem Street at Ballardvale Street and Ballardvale Street at School Driveway/Baland Road continue to operate at LOS A during both peak hours in the no-build condition. During the

weekday afternoon peak hour, the Baland Road westbound movement operates at LOS D and the Driveway eastbound movement operates at LOS C. All other movements continue to operate at LOS B or better.

Under 2031 No-Build conditions, the intersection of Ballardvale Street at I-93 Southbound Ramps continues to operate overall at LOS B during the weekday morning peak hour and LOS A during the weekday afternoon peak hour. The Ballardvale Street northbound left movement and northbound through movement both operate at LOS E during the weekday morning peak hour. The Ballardvale Street southbound through movement continues to operate at LOS D during the weekday morning peak hour, with all other movements operating at LOS C or better during both peak hours and no significant queueing. There are slight increases in delay at each movement due to the expected increase in vehicle traffic but no anticipated capacity issues.

The signalized intersection of Route 62 at Middlesex Avenue/High Street degrades from LOS C overall to LOS D overall during the weekday morning peak hour. The Middlesex Avenue eastbound left/through movement degrades from LOS D to LOS E during the weekday afternoon peak hour. The Middlesex Avenue northbound left and Route 62 southbound left turn and southbound through movements both operate at LOS E during the weekday morning peak hour and LOS D during the weekday afternoon peak hour. All other movements operate at LOS C or better.

8.2.3 2031 Build Conditions Capacity Analysis

We performed capacity analyses for the proposed Build conditions for the additional traffic generated by the proposed school. Under these future Build conditions, we kept lane geometry, traffic control, and signal timing parameters the same as existing for intersections, with the exception of the intersection of Ballardvale Street and Baland Road, where the existing school driveway leg will be removed. We applied the future volumes determined in Section 7.5 with the same heavy vehicle percentages and PHFs as existing. We also included the two new intersections with access driveways for the proposed school: Salem Street at Proposed School Driveway and Ballardvale Street at Proposed Bus Driveway. Table 14 summarizes the analysis results for the 2031 Build conditions.

Table 14 - Capacity Analysis Summary: 2031 Build Conditions

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th	v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th
Middlesex Avenue at Salem Street *[unsignalized]*	Salem St EB - L	0.17	6.9	A	-	15	Err	Err	F	-	Err
	Middlesex Ave NB - L	0.30	7.5	A	-	32	1.44	242.1	F	-	658
	Overall	***-***	***5.4***	***A***	***-***	***-***	***-***	***Err***	***F***	***-***	***-***
Salem Street at Ballardvale Street *[unsignalized]*	Salem St WB - LR	0.02	13.1	B	-	1	0.02	13.9	B	-	1
	Ballardvale St SB - L	0.00	0.1	A	-	0	0.00	0.0	A	-	0
	Overall	***-***	***0.2***	***A***	***-***	***-***	***-***	***0.1***	***A***	***-***	***-***
Ballardvale Street at School Driveway/ Baland Road *[unsignalized]*	Baland Rd WB - R	0.01	10.2	B	-	0	0.02	16.4	C	-	2
	Overall	***-***	***0.1***	***A***	***-***	***-***	***-***	***0.1***	***A***	***-***	***-***
Ballardvale Street at I-93 Southbound Ramps *[signalized]*	I-93 SB Ramp EB - L	0.29	8.9	A	89	144	0.36	22	C	30	70
	I-93 SB Ramp EB - R	0.06	0.1	A	0	0	0.07	0.1	A	0	0
	Ballardvale St NB - L	0.32	62.3	E	24	55	0.19	25.3	C	13	43
	Ballardvale St NB - T	0.81	59.7	E	231	287	0.28	6.4	A	33	64
	Ballardvale St SB - T	0.57	54.0	D	129	193	0.67	17.3	B	140	258
	Ballardvale St SB - R	0.39	0.7	A	0	0	0.54	1.2	A	0	0
	Overall	***0.81***	***19.1***	***B***	***-***	***-***	***0.67***	***8.5***	***A***	***-***	***-***
Route 62 at Middlesex Avenue/ High Street *[signalized]*	Middlesex Ave EB - LT	1.04	90.5	F	~307	#909	1.2	142.9	F	~304	#822
	Middlesex Ave EB - R	0.22	8.6	A	40	102	0.4	9.2	A	64	156
	High St WB - LT	0.34	32.9	C	84	166	0.62	37.7	D	105	#319
	High St WB - R	0.07	5.7	A	0	0	0.06	4.0	A	0	5
	Middlesex Ave NB - L	0.75	65.3	E	131	291	0.71	55.2	E	103	265
	Middlesex Ave NB - TR	0.61	28.6	C	212	480	0.68	28.7	C	204	540
	Route 62 SB - L	0.16	68.8	E	8	36	0.18	58.7	E	8	40
	Route 62 SB - T	0.87	60.1	E	257	502	0.81	50.5	D	183	425
	Route 62 SB - R	0.4	17.7	B	42	128	0.57	14.4	B	38	162
	Overall	***1.04***	***47.9***	***D***	***-***	***-***	***1.2***	***50.7***	***D***	***-***	***-***
Salem Street at South Driveway *[unsignalized]*	Salem St EB - L	0.17	4.1	A	-	15	0.16	4.3	A	-	15
	South Driveway SB - LR	0.13	11.6	B	-	11	0.71	32.8	D	-	136
	Overall	***-***	***3.4***	***A***	***-***	***-***	***-***	***8.0***	***A***	***-***	***-***
Ballardvale Street at East Driveway *[unsignalized]*	East Driveway EB - LR	0.03	12.2	B	-	2	0.04	17.0	C	-	3
	Ballardvale St NB - L	0.02	0.6	A	-	1	0.02	0.6	A	-	1
	Overall	***-***	***0.5***	***A***	***-***	***-***	***-***	***0.4***	***A***	***-***	***-***

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ 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
Err Volume significantly exceeds capacity

Under 2031 Build conditions, operations at the intersection of Middlesex Avenue and Salem Street are expected to further degrade due to the significant increase in trips traveling north and south through the intersection. The modeling software shows a capacity error in place of calculating a v/c ratio or delay values, further demonstrating the limitations of the software and HCM methodology at this non-traditional intersection.

Both the unsignalized intersections of Salem Street at Ballardvale Street and Ballardvale Street at Baland Road continue to operate at LOS A during both peak hours in the build condition, indicating no operational issues. Operations at the intersection of Ballardvale Street and Baland Road improve slightly due to the absence of the existing school driveway leg.

Under Build conditions, the intersection of Ballardvale Street at I-93 Southbound Ramps continues to operate overall at LOS B during the weekday morning peak hour and LOS A during the weekday afternoon peak hour. The Ballardvale Street northbound left movement and northbound through movement both operate at LOS E during the weekday morning peak hour. The Ballardvale Street southbound through movement continues to operate at LOS D during the weekday morning peak hour, with all other movements operating at LOS C or better during both peak hours and no significant queueing. The proposed school adds very few trips to the intersection and consequently has little to no impact on delay for each movement.

The signalized intersection of Route 62 at Middlesex Avenue/High Street degrades from LOS C to LOS D overall during the weekday afternoon peak hour. The Middlesex Avenue eastbound left/through movement degrades to LOS F during both peak hours. The Route 62 southbound left movement degrades from LOS D to LOS E during the weekday afternoon peak hour. The High Street westbound throughleft movement degrades from LOS C to LOS D during the weekday afternoon peak hour. All other movements operate at LOS C or better.

The two proposed intersections at the proposed school's driveway each operate overall at LOS A. The southbound movement at the south driveway onto Salem Street operates at LOS D during the weekday afternoon peak hour, which is typical during the busy dismissal period at a large school. Any queuing at this intersection will occur onsite, with no spillover to the surrounding local roadways.

This Build condition analysis indicates no issues at either proposed site driveway. However, existing capacity issues present at the intersection of Salem Street at Middlesex Avenue and Route 62 at Middlesex Avenue/High Street are expected to worsen under the proposed Build condition.

8.2.4 2031 Build Conditions (With Mitigation) Capacity Analysis

The 2031 Build Conditions capacity analysis indicated a capacity issue at the signalized intersection of Route 62 at Middlesex Avenue/High Street and at the unsignalized intersection of Salem Street at Middlesex Avenue during both peak hours. At the intersection of Salem Street at Middlesex Avenue, the 2024 Existing Conditions analysis shows that the capacity issue is a pre-existing condition and is not caused by additional traffic generated by the school so mitigation will not be included in this project.

Using 2031 Build Conditions volume inputs, we analyzed the intersection of Route 62 at Middlesex Avenue/High Street under a mitigated scenario using signal retiming. Signal retiming is a cost-effective way to reduce congestion and delays. This scenario keeps the existing geometry and phasing but adjusts phase splits and cycle length. Table 15 shows the 2031 Build Conditions (With Mitigation).

Table 15 - Capacity Analysis Summary: 2031 Build Conditions (With Mitigation)

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th	v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th
Route 62 at Middlesex Avenue/ High Street *[signalized]*	Middlesex Ave EB - LT	1.01	75.3	E	259	#624	1.00	71.4	E	260	#579
	Middlesex Ave EB - R	0.22	6.0	A	30	53	0.38	6.2	A	51	74
	High St WB - LT	0.32	23.9	C	72	113	0.46	24.6	C	97	190
	High St WB - R	0.07	0.2	A	0	0	0.05	0.1	A	0	0
	Middlesex Ave NB - L	0.85	73.2	E	120	#310	0.87	76.7	E	117	#320
	Middlesex Ave NB - TR	0.63	29.1	C	198	#531	0.75	35.9	D	251	#701
	Route 62 SB - L	0.17	55.5	E	7	29	0.23	58.2	E	9	35
	Route 62 SB - T	0.92	64.1	E	233	#513	0.91	66.7	E	207	#508
	Route 62 SB - R	0.40	13.1	B	24	92	0.59	13.3	B	28	138
	Overall	***1.01***	***44.7***	***D***	***-***	***-***	***1.00***	***41.2***	***D***	***-***	***-***

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ 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

As shown above, the optimized signal timing at the intersection of Route 62 at Middlesex Avenue/High Street indicates an improvement in operations compared to the 2031 Build Conditions. During the weekday morning peak hour, the intersection remains overall at LOS D, with delay reduced by three seconds. The Middlesex Avenue eastbound shared left/through movement improves from LOS F to LOS E, with delay reduced by 15 seconds. All other movements remain at the same LOS as in the 2031 Build Conditions.

During the weekday afternoon peak hour, the intersection remains overall at LOS D, with delay reduced by nine seconds. The Middlesex Avenue eastbound shared left/though movement improves from LOS F to LOS E, with a significant decrease in delay. The High Street westbound left/though movement improves from LOS D to LOS C, with delay reduced by 13 seconds. All other movements operate at LOS E or better.

The analysis suggests that potential capacity issues from the increased trips due to the proposed development can be mitigated at the intersection of Route 62 and Middlesex Avenue/High Street through signal retiming.

9 Sight Distance

Stopping Sight Distance (SSD) is the length of the roadway ahead that is visible to the driver and should be long enough to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Stopping sight distance is the sum of the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied, and the distance needed to stop the vehicle from the instant brake application begins.

According to Case B1 in Section 9 from *AASHTO: A Policy on Geometric Design of Highways and Streets 6th edition*, Intersection Sight Distance (ISD) is the recommended length of the leg of the departure sight triangle along the major road in both directions for a vehicle stopped on the minor road waiting to depart that would cause a vehicle on the major roadway to slow down to 70% of its speed. The critical departure sight triangles for the Site Driveway(s) at Ballardvale Street and Salem Street are for traffic approaching from either the left or right. The SSD and ISD values associated with a given design speed are shown in Table 16.

Table 16 – Sight Distance Criteria

Design Speed (mph)	Design Stopping Sight Distance[1] (feet)	Recommended Intersection Sight Distance[2] (feet)
15	80	170
20	115	225
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610
60	570	665
65	645	720
70	730	775
75	820	830
80	910	885

Source: *A Policy on Geometric Design of Highways and Streets, AASHTO, Washington DC (2011)*

[1]Design value based on a grade of less than 3%, a brake reaction distance predicted on a time of 2.5 seconds and a deceleration rate of 11.2 feet per second squared

[2]Recommended value based on Case B1 - a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less

Standard practice is to use the 85th percentile speed or 5 MPH over the posted speed limit as the design speed. The posted speed limit for Ballardvale Street and Salem Street is 25 mph. Just north of the intersection of Ballardvale Stret and Salem Street, there is a 20 mph posted speed limit for the southbound direction. However, a posted speed limit of 25 mph was assumed for sight distance purposes to be conservative. According to their respective speed limit, the sight distances were selected for comparison between the site-measured and the

calculated. For both streets, sight distance was measured at approximately 10 feet from the edge of pavement based on observed driving behavior. Table 17 summarizes the sight distance evaluation.

Table 17 – Sight Distance Evaluation

Intersecting Street	Stopping Sight Distance (SSD)			Intersection Sight Distance (ISD)		
	Traveling	Calculated	Measured	Looking	Calculated	Measured
Ballardvale Street and Proposed Bus Driveway	NB	200’	375’	Left	335’	>500’
	SB	200’	> 500’	Right	335’	375’
Salem Street and Proposed School Driveway	EB	200’	> 500’	Left	335’	425’
	WB	200’	425’	Right	335’	350’

As shown in Table 17, the geometries of the adjacent roadways provide ample sight distance. The SSD is adequate for both the northbound and southbound traffic on Ballardvale Street and the eastbound and westbound traffic on Salem Street, and the ISD is also adequate for vehicles exiting the Site Driveways onto Ballardvale Street and Salem Street.

10 Conclusions and Recommendations

10.1 Conclusions

Nitsch has prepared this Traffic Impact Study (TIS) for the proposed redevelopment of the North Intermediate school at 320 Salem Street in Wilmington, MA.

We studied five existing intersections, two signalized and three unsignalized, to establish the impact the proposed school would have on intersection traffic operations.

The crash data over the last five years available from MassDOT indicates that all five study intersections have crash rates below the District 4 and statewide averages. No fatalities occurred amongst the crashes identified.

For future conditions, we projected the existing traffic volumes within the study area over a 7-year period to the horizon year 2031 using an annual growth rate of 0.25%, based on expected regional growth and added vehicle trips expected to be generated by four development projects in the study area.

We used the projected student enrollment to estimate the volume of vehicle trips the proposed school would generate based on the traffic data we collected at the existing school driveway. We distributed the new vehicle trips through the roadway network using the assumed travel routes based on a student population density map and applied a separate distribution to buses based on their existing routes.

We performed a vehicle capacity analysis to compare the weekday morning and afternoon peak hours of the 2024 Existing conditions, 2031 No-Build conditions, and 2031 Build Conditions for each of the study intersections. Under existing conditions, our analysis indicates operational issues at the intersection of Salem Street and Middlesex Avenue. The delay and v/c ratios for the study intersections are expected to increase under 2031 No-Build Conditions, and they would continue to increase under 2031 Build Conditions. At the intersection of Route 62 and Middlesex Avenue/High Street, traffic generated from the proposed development causes the Middlesex Avenue eastbound shared through/left movement to operate at LOS F during both peak hours under the 2031 Build Conditions. The proposed site driveways are both expected to operate well at LOS D or better.

While our analysis was based on site layout Option A, the gross impacts to adjacent intersections will be the same as the current preferred alternative, Option B. Option B will also provide significantly more on-site queueing capacity so that the additional school traffic will not spill over onto local roadways.

Stopping sight distance and intersection sight distance was evaluated at the proposed driveways, with all driveways meeting or exceeding the minimum required sight distance.

10.2 Recommendations

The proposed school is expected to cause operational issues at the intersection of Route 62 and Middlesex Avenue/High Street. We performed a vehicle capacity analysis at that intersection under 2031 Build Conditions using optimized signal timing, which shows all movements operating at LOS E or better and the intersection improving to an overall LOS D during both peak hours. Nitsch recommends that this intersection be retimed as part of the project to minimize delay from the added traffic.

The existing conditions analysis indicates a capacity issue at the intersection of Salem Street and Middlesex Avenue. Based off an initial review, a roundabout may be an appropriate control strategy to increase capacity at this intersection. Nitsch recommends that the town explore this and other potential strategies to reconfigure the intersection and alleviate the existing operational deficiencies.

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G	School Catchment Map
H	Capacity Analysis

Appendix A: Traffic Count Data

Ballardvale Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-A

Count Date: **Wednesday, October 23, 2024**
Direction: **NB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	2	0	0	0	2
12:15 AM	0	0	2	0	0	0	2
12:30 AM	0	0	3	0	0	0	3
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	1	0	0	0	1
1:30 AM	0	0	2	0	0	0	2
1:45 AM	0	0	1	0	0	0	1
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	1	0	0	0	1
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	3	0	0	0	3
3:30 AM	0	0	3	0	0	0	3
3:45 AM	0	0	5	0	0	0	5
4:00 AM	0	0	5	0	0	0	5
4:15 AM	0	0	7	0	0	0	7
4:30 AM	0	0	5	0	0	0	5
4:45 AM	0	0	9	0	0	0	9
5:00 AM	0	0	6	0	2	0	8
5:15 AM	0	0	8	0	1	0	9
5:30 AM	0	0	21	0	2	0	23
5:45 AM	0	0	32	0	1	0	33
6:00 AM	0	0	20	1	0	0	21
6:15 AM	0	0	28	0	0	0	28
6:30 AM	0	1	35	0	0	0	36
6:45 AM	0	0	59	0	1	0	60
7:00 AM	0	1	55	0	0	0	56
7:15 AM	0	0	95	0	1	2	98
7:30 AM	0	0	75	1	1	0	77
7:45 AM	0	2	99	0	0	0	101
8:00 AM	0	0	74	0	2	0	76
8:15 AM	0	0	71	1	1	0	73
8:30 AM	1	1	72	0	3	0	77
8:45 AM	0	0	96	0	4	0	100
9:00 AM	0	0	68	0	3	0	71
9:15 AM	0	1	43	0	2	0	46
9:30 AM	0	0	37	0	2	0	39
9:45 AM	0	0	35	0	6	0	41
10:00 AM	0	0	24	0	1	0	25
10:15 AM	0	0	32	0	2	0	34
10:30 AM	0	0	27	0	2	0	29
10:45 AM	0	1	34	0	2	1	38
11:00 AM	0	0	36	0	1	0	37
11:15 AM	0	0	40	0	2	0	42
11:30 AM	0	1	34	0	0	0	35
11:45 AM	0	0	38	0	0	0	38
AM Total	**1**	**8**	**1346**	**3**	**42**	**3**	**1403**
Percentage	**0.07%**	**0.57%**	**95.94%**	**0.21%**	**2.99%**	**0.21%**	
AM Peak	**7:45 AM**	**7:00 AM**	**7:15 AM**	**7:30 AM**	**9:00 AM**	**6:30 AM**	**7:15 AM**
Volume	**1**	**3**	**343**	**2**	**13**	**2**	**352**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	45	0	2	0	47
12:15 PM	0	1	35	1	3	1	41
12:30 PM	0	1	54	0	0	1	56
12:45 PM	0	0	54	0	1	0	55
1:00 PM	0	0	41	0	1	0	42
1:15 PM	0	2	39	0	3	0	44
1:30 PM	0	0	40	1	1	0	42
1:45 PM	0	0	41	0	0	0	41
2:00 PM	0	1	33	0	1	0	35
2:15 PM	0	0	44	1	1	0	46
2:30 PM	0	0	51	0	2	0	53
2:45 PM	0	0	66	0	1	0	67
3:00 PM	0	1	52	0	2	0	55
3:15 PM	0	1	79	1	2	0	83
3:30 PM	0	0	67	0	1	0	68
3:45 PM	0	0	66	0	0	1	67
4:00 PM	0	0	70	0	1	0	71
4:15 PM	0	0	60	0	1	0	61
4:30 PM	1	1	69	0	0	0	71
4:45 PM	0	0	72	0	0	0	72
5:00 PM	0	1	71	0	0	0	72
5:15 PM	0	0	67	0	0	0	67
5:30 PM	0	1	68	0	0	0	69
5:45 PM	0	0	56	0	0	1	57
6:00 PM	0	0	57	0	2	0	59
6:15 PM	0	1	45	0	1	0	47
6:30 PM	0	0	29	0	0	0	29
6:45 PM	0	0	31	0	0	0	31
7:00 PM	0	0	26	0	0	0	26
7:15 PM	0	1	27	0	0	0	28
7:30 PM	0	0	24	0	0	0	24
7:45 PM	0	0	22	0	0	0	22
8:00 PM	0	0	14	0	0	1	15
8:15 PM	0	0	28	0	0	0	28
8:30 PM	0	0	22	0	0	0	22
8:45 PM	0	0	15	0	0	0	15
9:00 PM	0	0	10	0	0	0	10
9:15 PM	0	0	12	0	0	0	12
9:30 PM	0	0	6	0	0	0	6
9:45 PM	0	0	11	0	0	0	11
10:00 PM	0	0	9	0	0	0	9
10:15 PM	0	0	7	0	0	0	7
10:30 PM	0	0	3	0	0	0	3
10:45 PM	0	0	4	0	0	0	4
11:00 PM	0	0	1	0	0	0	1
11:15 PM	0	0	9	0	0	0	9
11:30 PM	0	0	3	0	0	0	3
11:45 PM	0	0	1	0	0	0	1
PM Total	**1**	**12**	**1756**	**4**	**26**	**5**	**1804**
Percentage	**0.06%**	**0.67%**	**97.34%**	**0.22%**	**1.44%**	**0.28%**	
PM Peak	**3:45 PM**	**12:30 PM**	**3:15 PM**	**1:30 PM**	**2:30 PM**	**12:00 PM**	**3:15 PM**
Volume	**1**	**3**	**282**	**2**	**7**	**2**	**289**
Day Total	**2**	**20**	**3102**	**7**	**68**	**8**	**3207**
Percentage	**0.06%**	**0.62%**	**96.73%**	**0.22%**	**2.12%**	**0.25%**	

Ballardvale Street
north of Salem Street
City, State: Wilmington, MA
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Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-A

Count Date: **Thursday, October 24, 2024**
Direction: **NB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	4	0	0	0	4
12:15 AM	0	0	1	0	0	0	1
12:30 AM	0	0	1	0	0	0	1
12:45 AM	0	0	2	0	0	0	2
1:00 AM	0	0	1	0	0	0	1
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	1	0	0	0	1
1:45 AM	0	0	1	0	0	0	1
2:00 AM	0	0	1	0	0	0	1
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	1	0	0	0	1
2:45 AM	0	0	1	0	0	0	1
3:00 AM	0	0	1	0	0	0	1
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	1	0	0	0	1
3:45 AM	0	0	6	0	0	0	6
4:00 AM	0	0	1	0	0	0	1
4:15 AM	0	0	4	0	0	0	4
4:30 AM	0	0	2	0	0	0	2
4:45 AM	0	0	8	0	0	0	8
5:00 AM	0	1	4	0	0	0	5
5:15 AM	0	0	14	0	0	0	14
5:30 AM	0	0	18	0	0	0	18
5:45 AM	0	0	26	0	1	0	27
6:00 AM	0	0	22	0	0	0	22
6:15 AM	0	0	30	0	0	0	30
6:30 AM	0	0	34	0	0	0	34
6:45 AM	0	0	52	0	0	0	52
7:00 AM	0	1	62	0	0	0	63
7:15 AM	0	0	71	0	0	0	71
7:30 AM	0	1	77	0	2	0	80
7:45 AM	0	1	89	0	2	0	92
8:00 AM	0	0	56	0	2	1	59
8:15 AM	0	0	73	0	0	0	73
8:30 AM	0	0	56	0	2	0	58
8:45 AM	0	0	92	0	1	0	93
9:00 AM	0	0	49	0	1	0	50
9:15 AM	0	1	40	0	1	0	42
9:30 AM	0	0	49	1	2	0	52
9:45 AM	0	0	32	0	1	0	33
10:00 AM	0	0	44	0	3	0	47
10:15 AM	0	1	22	1	3	0	27
10:30 AM	0	0	19	0	1	0	20
10:45 AM	0	0	29	0	3	0	32
11:00 AM	0	0	45	0	2	0	47
11:15 AM	0	0	27	0	2	0	29
11:30 AM	0	1	31	0	1	0	33
11:45 AM	0	0	37	0	0	0	37
AM Total	**0**	**7**	**1238**	**2**	**30**	**1**	**1278**
Percentage	**0.00%**	**0.55%**	**96.87%**	**0.16%**	**2.35%**	**0.08%**	
AM Peak	**12:00 AM**	**7:00 AM**	**7:00 AM**	**9:30 AM**	**10:00 AM**	**7:15 AM**	**7:00 AM**
Volume	**0**	**3**	**299**	**2**	**10**	**1**	**306**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	36	0	0	0	36
12:15 PM	0	0	50	0	0	0	50
12:30 PM	0	0	46	0	1	0	47
12:45 PM	0	0	48	0	0	0	48
1:00 PM	0	0	43	0	3	0	46
1:15 PM	0	0	51	0	1	0	52
1:30 PM	0	0	48	1	4	0	53
1:45 PM	0	1	43	0	1	0	45
2:00 PM	0	0	35	0	3	0	38
2:15 PM	0	0	41	1	0	0	42
2:30 PM	0	0	45	0	1	0	46
2:45 PM	0	0	55	0	0	0	55
3:00 PM	0	0	63	0	3	0	66
3:15 PM	0	0	67	0	2	0	69
3:30 PM	0	0	83	0	1	0	84
3:45 PM	0	0	54	1	0	0	55
4:00 PM	0	0	64	0	0	0	64
4:15 PM	0	0	79	0	1	1	81
4:30 PM	0	0	67	0	4	0	71
4:45 PM	0	0	79	0	0	0	79
5:00 PM	0	0	76	0	0	0	76
5:15 PM	0	0	65	1	0	0	66
5:30 PM	0	0	72	0	0	0	72
5:45 PM	0	0	72	0	1	0	73
6:00 PM	0	1	46	0	0	0	47
6:15 PM	0	0	42	0	0	0	42
6:30 PM	0	0	34	0	0	0	34
6:45 PM	0	0	23	0	0	0	23
7:00 PM	0	0	26	0	0	0	26
7:15 PM	0	0	27	0	0	0	27
7:30 PM	0	0	25	0	0	0	25
7:45 PM	0	0	30	0	0	0	30
8:00 PM	0	0	18	0	0	0	18
8:15 PM	0	0	22	0	0	0	22
8:30 PM	0	0	29	0	0	0	29
8:45 PM	0	0	19	0	0	0	19
9:00 PM	0	0	13	0	0	0	13
9:15 PM	0	0	9	0	0	0	9
9:30 PM	0	0	7	0	0	0	7
9:45 PM	0	0	4	0	0	0	4
10:00 PM	0	0	6	0	0	0	6
10:15 PM	0	0	7	0	0	0	7
10:30 PM	0	0	4	0	0	0	4
10:45 PM	0	0	7	0	0	0	7
11:00 PM	0	0	3	0	0	0	3
11:15 PM	0	0	3	0	0	0	3
11:30 PM	0	0	4	0	0	0	4
11:45 PM	0	0	1	0	0	0	1
PM Total	**0**	**2**	**1791**	**4**	**26**	**1**	**1824**
Percentage	**0.00%**	**0.11%**	**98.19%**	**0.22%**	**1.43%**	**0.05%**	
PM Peak	**12:00 PM**	**1:00 PM**	**4:15 PM**	**1:30 PM**	**1:00 PM**	**3:30 PM**	**4:15 PM**
Volume	**0**	**1**	**301**	**2**	**9**	**1**	**307**
Day Total	**0**	**9**	**3029**	**6**	**56**	**2**	**3102**
Percentage	**0.00%**	**0.29%**	**97.65%**	**0.19%**	**1.81%**	**0.06%**	

Ballardvale Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-A

Count Date: **Wednesday, October 23, 2024**
Direction: **SB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	2	0	0	0	2
12:15 AM	0	0	5	0	1	0	6
12:30 AM	0	0	2	0	0	0	2
12:45 AM	0	0	3	0	0	0	3
1:00 AM	0	0	1	0	0	0	1
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	6	0	0	0	6
2:00 AM	0	0	5	0	0	0	5
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	2	0	0	0	2
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	5	0	0	0	5
3:15 AM	0	0	1	0	0	0	1
3:30 AM	0	0	3	0	0	0	3
3:45 AM	0	0	5	0	0	0	5
4:00 AM	0	0	2	0	0	0	2
4:15 AM	0	0	6	0	0	0	6
4:30 AM	0	0	1	0	0	0	1
4:45 AM	0	0	5	0	0	0	5
5:00 AM	0	0	2	0	0	0	2
5:15 AM	0	0	6	0	0	0	6
5:30 AM	0	0	9	0	1	0	10
5:45 AM	0	0	16	0	1	0	17
6:00 AM	0	1	17	1	1	0	20
6:15 AM	0	0	29	0	1	0	30
6:30 AM	0	0	51	1	1	0	53
6:45 AM	0	0	74	0	1	0	75
7:00 AM	0	1	115	2	2	0	120
7:15 AM	0	1	87	0	0	1	89
7:30 AM	0	0	76	1	4	0	81
7:45 AM	0	0	76	0	0	0	76
8:00 AM	0	0	65	0	1	2	68
8:15 AM	0	0	73	0	3	1	77
8:30 AM	0	0	136	1	3	0	140
8:45 AM	0	0	94	0	2	1	97
9:00 AM	0	0	115	1	5	2	123
9:15 AM	0	0	42	0	1	0	43
9:30 AM	0	0	45	0	5	1	51
9:45 AM	0	0	50	0	4	0	54
10:00 AM	0	0	42	0	4	0	46
10:15 AM	0	0	31	0	2	0	33
10:30 AM	0	0	35	0	4	0	39
10:45 AM	0	0	37	0	2	1	40
11:00 AM	0	0	52	0	1	0	53
11:15 AM	0	0	49	0	4	0	53
11:30 AM	0	0	67	0	2	0	69
11:45 AM	0	0	67	0	1	0	68
AM Total	**0**	**3**	**1615**	**7**	**57**	**9**	**1691**
Percentage	**0.00%**	**0.18%**	**95.51%**	**0.41%**	**3.37%**	**0.53%**	
AM Peak	**12:00 AM**	**6:30 AM**	**8:15 AM**	**6:15 AM**	**9:00 AM**	**8:00 AM**	**8:15 AM**
Volume	**0**	**2**	**418**	**3**	**15**	**4**	**437**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	1	77	0	3	0	81
12:15 PM	0	0	74	0	2	0	76
12:30 PM	0	0	67	0	0	0	67
12:45 PM	0	1	52	0	0	0	53
1:00 PM	0	0	63	0	2	1	66
1:15 PM	0	0	55	0	2	0	57
1:30 PM	0	0	86	0	2	0	88
1:45 PM	1	0	75	1	1	0	78
2:00 PM	0	2	107	0	4	0	113
2:15 PM	0	0	73	0	1	0	74
2:30 PM	0	0	89	0	1	0	90
2:45 PM	0	0	82	0	0	0	82
3:00 PM	0	0	85	2	0	0	87
3:15 PM	0	1	131	0	3	0	135
3:30 PM	0	1	115	1	2	0	119
3:45 PM	0	2	142	0	1	0	145
4:00 PM	0	0	140	0	1	2	143
4:15 PM	1	0	167	1	2	0	171
4:30 PM	0	3	169	0	0	0	172
4:45 PM	0	1	130	0	3	0	134
5:00 PM	1	1	162	0	0	1	165
5:15 PM	0	1	143	0	1	0	145
5:30 PM	0	1	95	0	0	0	96
5:45 PM	0	2	99	0	1	0	102
6:00 PM	0	0	85	0	1	0	86
6:15 PM	0	2	66	0	0	0	68
6:30 PM	0	2	72	0	1	1	76
6:45 PM	0	0	53	1	0	0	54
7:00 PM	0	0	39	0	0	2	41
7:15 PM	0	0	49	0	1	0	50
7:30 PM	0	0	42	0	1	0	43
7:45 PM	0	0	50	0	0	0	50
8:00 PM	0	0	38	0	0	0	38
8:15 PM	0	0	33	0	0	0	33
8:30 PM	0	1	24	0	0	0	25
8:45 PM	0	1	33	0	0	0	34
9:00 PM	0	0	29	0	0	0	29
9:15 PM	0	1	24	0	0	0	25
9:30 PM	0	0	16	0	0	0	16
9:45 PM	0	0	11	0	0	0	11
10:00 PM	0	0	9	0	0	0	9
10:15 PM	0	0	11	0	0	0	11
10:30 PM	0	0	9	0	0	0	9
10:45 PM	0	0	11	0	0	0	11
11:00 PM	0	0	13	0	0	0	13
11:15 PM	0	0	3	0	0	0	3
11:30 PM	0	0	11	0	0	0	11
11:45 PM	0	0	4	0	0	0	4
PM Total	**3**	**24**	**3213**	**6**	**36**	**7**	**3289**
Percentage	**0.09%**	**0.73%**	**97.69%**	**0.18%**	**1.09%**	**0.21%**	
PM Peak	**4:15 PM**	**4:30 PM**	**4:15 PM**	**2:45 PM**	**1:15 PM**	**6:15 PM**	**4:15 PM**
Volume	**2**	**6**	**628**	**3**	**9**	**3**	**642**
Day Total	**3**	**27**	**4828**	**13**	**93**	**16**	**4980**
Percentage	**0.06%**	**0.54%**	**96.95%**	**0.26%**	**1.87%**	**0.32%**	

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Direction: **SB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	5	0	0	0	5
12:15 AM	0	0	3	0	0	0	3
12:30 AM	0	0	2	0	0	0	2
12:45 AM	0	0	2	0	0	0	2
1:00 AM	0	0	2	0	0	0	2
1:15 AM	0	0	2	0	0	0	2
1:30 AM	0	0	1	0	0	0	1
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	4	0	0	0	4
2:15 AM	0	0	2	0	0	0	2
2:30 AM	0	0	1	0	0	0	1
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	5	0	0	0	5
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	3	0	0	0	3
3:45 AM	0	0	1	0	0	0	1
4:00 AM	0	0	3	0	0	0	3
4:15 AM	0	0	3	0	1	0	4
4:30 AM	0	0	3	0	0	0	3
4:45 AM	0	0	4	0	0	0	4
5:00 AM	0	0	2	0	0	0	2
5:15 AM	0	0	5	0	0	0	5
5:30 AM	0	0	13	1	2	0	16
5:45 AM	0	0	17	0	1	0	18
6:00 AM	0	0	16	1	0	0	17
6:15 AM	0	0	25	0	1	0	26
6:30 AM	0	0	46	0	1	0	47
6:45 AM	0	0	68	1	2	0	71
7:00 AM	0	0	53	1	1	0	55
7:15 AM	0	0	66	0	0	0	66
7:30 AM	0	0	73	1	2	0	76
7:45 AM	0	0	67	0	1	0	68
8:00 AM	0	1	67	0	1	0	69
8:15 AM	0	1	70	0	4	1	76
8:30 AM	0	0	57	0	1	0	58
8:45 AM	0	0	73	2	0	0	75
9:00 AM	0	0	45	0	1	0	46
9:15 AM	0	0	45	0	0	0	45
9:30 AM	0	0	44	0	2	1	47
9:45 AM	0	0	33	0	0	0	33
10:00 AM	0	0	33	0	7	0	40
10:15 AM	0	1	37	0	2	0	40
10:30 AM	0	1	41	0	5	0	47
10:45 AM	0	0	47	0	2	1	50
11:00 AM	0	1	44	0	2	0	47
11:15 AM	0	0	66	0	5	1	72
11:30 AM	0	0	55	0	3	0	58
11:45 AM	0	1	71	0	0	0	72
AM Total	**0**	**6**	**1325**	**7**	**47**	**4**	**1389**
Percentage	**0.00%**	**0.43%**	**95.39%**	**0.50%**	**3.38%**	**0.29%**	
AM Peak	**12:00 AM**	**10:15 AM**	**7:30 AM**	**6:45 AM**	**10:00 AM**	**10:30 AM**	**7:30 AM**
Volume	**0**	**3**	**277**	**3**	**16**	**2**	**289**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	1	82	0	2	0	85
12:15 PM	0	0	74	0	4	0	78
12:30 PM	0	0	72	0	3	0	75
12:45 PM	0	0	61	0	2	0	63
1:00 PM	0	0	63	0	2	0	65
1:15 PM	0	0	67	1	1	0	69
1:30 PM	0	1	81	0	1	0	83
1:45 PM	0	0	66	1	0	0	67
2:00 PM	0	1	73	1	0	0	75
2:15 PM	0	0	74	0	1	0	75
2:30 PM	1	0	83	0	0	0	84
2:45 PM	0	1	73	0	0	0	74
3:00 PM	0	0	100	2	1	1	104
3:15 PM	0	0	133	0	1	0	134
3:30 PM	0	0	131	0	3	0	134
3:45 PM	0	0	154	1	1	1	157
4:00 PM	0	1	134	1	1	0	137
4:15 PM	0	1	169	1	0	0	171
4:30 PM	0	0	170	0	3	0	173
4:45 PM	0	1	146	0	0	0	147
5:00 PM	0	1	159	0	2	0	162
5:15 PM	0	1	110	0	2	0	113
5:30 PM	0	1	106	0	0	0	107
5:45 PM	0	1	93	0	0	0	94
6:00 PM	0	0	87	1	0	0	88
6:15 PM	0	0	86	0	0	0	86
6:30 PM	0	0	58	0	0	1	59
6:45 PM	0	0	57	0	1	0	58
7:00 PM	0	0	48	0	0	0	48
7:15 PM	0	0	36	0	1	0	37
7:30 PM	0	0	47	0	2	0	49
7:45 PM	0	0	41	0	0	0	41
8:00 PM	0	0	47	0	0	0	47
8:15 PM	0	0	36	0	0	0	36
8:30 PM	0	0	40	0	0	0	40
8:45 PM	0	0	21	0	0	0	21
9:00 PM	0	0	23	0	0	0	23
9:15 PM	0	0	29	0	0	0	29
9:30 PM	0	0	16	0	0	0	16
9:45 PM	0	0	13	0	0	0	13
10:00 PM	0	0	27	0	0	0	27
10:15 PM	0	0	8	0	0	0	8
10:30 PM	0	0	9	0	0	0	9
10:45 PM	0	0	9	0	0	0	9
11:00 PM	0	0	10	0	0	0	10
11:15 PM	0	0	8	0	0	0	8
11:30 PM	0	0	11	0	0	0	11
11:45 PM	0	0	4	0	0	0	4
PM Total	**1**	**11**	**3245**	**9**	**34**	**3**	**3303**
Percentage	**0.03%**	**0.33%**	**98.24%**	**0.27%**	**1.03%**	**0.09%**	
PM Peak	**1:45 PM**	**4:45 PM**	**4:15 PM**	**1:15 PM**	**12:00 PM**	**3:00 PM**	**4:15 PM**
Volume	**1**	**4**	**644**	**3**	**11**	**2**	**653**
Day Total	**1**	**17**	**4570**	**16**	**81**	**7**	**4692**
Percentage	**0.02%**	**0.36%**	**97.40%**	**0.34%**	**1.73%**	**0.15%**	

Ballardvale Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # **2540244 ATR-A**

Direction: **NB**

Weekly Report

Day	Wednesday		Thursday												Week	
Date	10/23/24		10/24/24												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	2	47	4	36	0	0	0	0	0	0	0	0	0	0	3	42
12:15	2	41	1	50	0	0	0	0	0	0	0	0	0	0	2	46
12:30	3	56	1	47	0	0	0	0	0	0	0	0	0	0	2	52
12:45	0	55	2	48	0	0	0	0	0	0	0	0	0	0	1	52
1:00	0	42	1	46	0	0	0	0	0	0	0	0	0	0	1	44
1:15	1	44	0	52	0	0	0	0	0	0	0	0	0	0	1	48
1:30	2	42	1	53	0	0	0	0	0	0	0	0	0	0	2	48
1:45	1	41	1	45	0	0	0	0	0	0	0	0	0	0	1	43
2:00	0	35	1	38	0	0	0	0	0	0	0	0	0	0	1	37
2:15	1	46	1	42	0	0	0	0	0	0	0	0	0	0	1	44
2:30	1	53	1	46	0	0	0	0	0	0	0	0	0	0	1	50
2:45	2	67	1	55	0	0	0	0	0	0	0	0	0	0	2	61
3:00	0	55	1	66	0	0	0	0	0	0	0	0	0	0	1	61
3:15	3	83	0	69	0	0	0	0	0	0	0	0	0	0	2	76
3:30	3	68	1	84	0	0	0	0	0	0	0	0	0	0	2	76
3:45	5	67	6	55	0	0	0	0	0	0	0	0	0	0	6	61
4:00	5	71	1	64	0	0	0	0	0	0	0	0	0	0	3	68
4:15	7	61	4	81	0	0	0	0	0	0	0	0	0	0	6	71
4:30	5	71	2	71	0	0	0	0	0	0	0	0	0	0	4	71
4:45	9	72	8	79	0	0	0	0	0	0	0	0	0	0	9	76
5:00	8	72	5	76	0	0	0	0	0	0	0	0	0	0	7	74
5:15	9	67	14	66	0	0	0	0	0	0	0	0	0	0	12	67
5:30	23	69	18	72	0	0	0	0	0	0	0	0	0	0	21	71
5:45	33	57	27	73	0	0	0	0	0	0	0	0	0	0	30	65
6:00	21	59	22	47	0	0	0	0	0	0	0	0	0	0	22	53
6:15	28	47	30	42	0	0	0	0	0	0	0	0	0	0	29	45
6:30	36	29	34	34	0	0	0	0	0	0	0	0	0	0	35	32
6:45	60	31	52	23	0	0	0	0	0	0	0	0	0	0	56	27
7:00	56	26	63	26	0	0	0	0	0	0	0	0	0	0	60	26
7:15	98	28	71	27	0	0	0	0	0	0	0	0	0	0	85	28
7:30	77	24	80	25	0	0	0	0	0	0	0	0	0	0	79	25
7:45	101	22	92	30	0	0	0	0	0	0	0	0	0	0	97	26
8:00	76	15	59	18	0	0	0	0	0	0	0	0	0	0	68	17
8:15	73	28	73	22	0	0	0	0	0	0	0	0	0	0	73	25
8:30	77	22	58	29	0	0	0	0	0	0	0	0	0	0	68	26
8:45	100	15	93	19	0	0	0	0	0	0	0	0	0	0	97	17
9:00	71	10	50	13	0	0	0	0	0	0	0	0	0	0	61	12
9:15	46	12	42	9	0	0	0	0	0	0	0	0	0	0	44	11
9:30	39	6	52	7	0	0	0	0	0	0	0	0	0	0	46	7
9:45	41	11	33	4	0	0	0	0	0	0	0	0	0	0	37	8
10:00	25	9	47	6	0	0	0	0	0	0	0	0	0	0	36	8
10:15	34	7	27	7	0	0	0	0	0	0	0	0	0	0	31	7
10:30	29	3	20	4	0	0	0	0	0	0	0	0	0	0	25	4
10:45	38	4	32	7	0	0	0	0	0	0	0	0	0	0	35	6
11:00	37	1	47	3	0	0	0	0	0	0	0	0	0	0	42	2
11:15	42	9	29	3	0	0	0	0	0	0	0	0	0	0	36	6
11:30	35	3	33	4	0	0	0	0	0	0	0	0	0	0	34	4
11:45	38	1	37	1	0	0	0	0	0	0	0	0	0	0	38	1
Total	**1403**	**1804**	**1278**	**1824**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1341**	**1814**
Day Total	**3207**		**3102**		**0**		**0**		**0**		**0**		**0**		**3155**	
Peak HR	**7:15 AM**	**3:15 PM**	**7:00 AM**	**4:15 PM**											**7:15 AM**	**4:15 PM**
Volume	**352**	**289**	**306**	**307**											**327**	**292**

Ballardvale Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # 2540244 ATR-A

Direction: SB

Weekly Report

Day	Wednesday		Thursday												Week	
Date	10/23/24		10/24/24												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	2	81	5	85	0	0	0	0	0	0	0	0	0	0	4	83
12:15	6	76	3	78	0	0	0	0	0	0	0	0	0	0	5	77
12:30	2	67	2	75	0	0	0	0	0	0	0	0	0	0	2	71
12:45	3	53	2	63	0	0	0	0	0	0	0	0	0	0	3	58
1:00	1	66	2	65	0	0	0	0	0	0	0	0	0	0	2	66
1:15	0	57	2	69	0	0	0	0	0	0	0	0	0	0	1	63
1:30	0	88	1	83	0	0	0	0	0	0	0	0	0	0	1	86
1:45	6	78	0	67	0	0	0	0	0	0	0	0	0	0	3	73
2:00	5	113	4	75	0	0	0	0	0	0	0	0	0	0	5	94
2:15	1	74	2	75	0	0	0	0	0	0	0	0	0	0	2	75
2:30	2	90	1	84	0	0	0	0	0	0	0	0	0	0	2	87
2:45	2	82	0	74	0	0	0	0	0	0	0	0	0	0	1	78
3:00	5	87	5	104	0	0	0	0	0	0	0	0	0	0	5	96
3:15	1	135	0	134	0	0	0	0	0	0	0	0	0	0	1	135
3:30	3	119	3	134	0	0	0	0	0	0	0	0	0	0	3	127
3:45	5	145	1	157	0	0	0	0	0	0	0	0	0	0	3	151
4:00	2	143	3	137	0	0	0	0	0	0	0	0	0	0	3	140
4:15	6	171	4	171	0	0	0	0	0	0	0	0	0	0	5	171
4:30	1	172	3	173	0	0	0	0	0	0	0	0	0	0	2	173
4:45	5	134	4	147	0	0	0	0	0	0	0	0	0	0	5	141
5:00	2	165	2	162	0	0	0	0	0	0	0	0	0	0	2	164
5:15	6	145	5	113	0	0	0	0	0	0	0	0	0	0	6	129
5:30	10	96	16	107	0	0	0	0	0	0	0	0	0	0	13	102
5:45	17	102	18	94	0	0	0	0	0	0	0	0	0	0	18	98
6:00	20	86	17	88	0	0	0	0	0	0	0	0	0	0	19	87
6:15	30	68	26	86	0	0	0	0	0	0	0	0	0	0	28	77
6:30	53	76	47	59	0	0	0	0	0	0	0	0	0	0	50	68
6:45	75	54	71	58	0	0	0	0	0	0	0	0	0	0	73	56
7:00	120	41	55	48	0	0	0	0	0	0	0	0	0	0	88	45
7:15	89	50	66	37	0	0	0	0	0	0	0	0	0	0	78	44
7:30	81	43	76	49	0	0	0	0	0	0	0	0	0	0	79	46
7:45	76	50	68	41	0	0	0	0	0	0	0	0	0	0	72	46
8:00	68	38	69	47	0	0	0	0	0	0	0	0	0	0	69	43
8:15	77	33	76	36	0	0	0	0	0	0	0	0	0	0	77	35
8:30	140	25	58	40	0	0	0	0	0	0	0	0	0	0	99	33
8:45	97	34	75	21	0	0	0	0	0	0	0	0	0	0	86	28
9:00	123	29	46	23	0	0	0	0	0	0	0	0	0	0	85	26
9:15	43	25	45	29	0	0	0	0	0	0	0	0	0	0	44	27
9:30	51	16	47	16	0	0	0	0	0	0	0	0	0	0	49	16
9:45	54	11	33	13	0	0	0	0	0	0	0	0	0	0	44	12
10:00	46	9	40	27	0	0	0	0	0	0	0	0	0	0	43	18
10:15	33	11	40	8	0	0	0	0	0	0	0	0	0	0	37	10
10:30	39	9	47	9	0	0	0	0	0	0	0	0	0	0	43	9
10:45	40	11	50	9	0	0	0	0	0	0	0	0	0	0	45	10
11:00	53	13	47	10	0	0	0	0	0	0	0	0	0	0	50	12
11:15	53	3	72	8	0	0	0	0	0	0	0	0	0	0	63	6
11:30	69	11	58	11	0	0	0	0	0	0	0	0	0	0	64	11
11:45	68	4	72	4	0	0	0	0	0	0	0	0	0	0	70	4
Total	**1691**	**3289**	**1389**	**3303**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1540**	**3296**
Day Total	**4980**		**4692**		**0**		**0**		**0**		**0**		**0**		**4836**	
Peak HR	**8:15 AM**	**4:15 PM**	**7:30 AM**	**4:15 PM**											**8:15 AM**	**4:15 PM**
Volume	**437**	**642**	**289**	**653**											**346**	**648**

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-B

Count Date: **Wednesday, October 23, 2024**
Direction: **NB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	14	0	0	0	14
12:15 AM	0	0	7	0	0	0	7
12:30 AM	0	0	5	0	0	0	5
12:45 AM	0	0	2	0	0	0	2
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	3	0	0	0	3
1:45 AM	0	0	2	0	0	0	2
2:00 AM	0	0	3	0	0	0	3
2:15 AM	0	0	4	0	0	0	4
2:30 AM	0	0	3	0	0	0	3
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	1	0	0	0	1
3:15 AM	0	0	2	0	0	0	2
3:30 AM	0	0	2	0	0	0	2
3:45 AM	0	0	5	0	0	0	5
4:00 AM	0	0	2	0	1	0	3
4:15 AM	0	0	4	0	0	0	4
4:30 AM	0	0	1	0	0	0	1
4:45 AM	0	0	3	0	0	0	3
5:00 AM	0	0	2	0	0	0	2
5:15 AM	0	0	4	0	0	0	4
5:30 AM	0	0	7	0	0	0	7
5:45 AM	0	0	20	0	1	0	21
6:00 AM	0	0	27	0	0	0	27
6:15 AM	0	0	21	0	1	0	22
6:30 AM	0	0	28	0	0	0	28
6:45 AM	0	0	45	0	0	1	46
7:00 AM	0	0	44	1	1	0	46
7:15 AM	1	0	56	0	0	0	57
7:30 AM	0	0	59	0	2	0	61
7:45 AM	0	0	75	0	0	0	75
8:00 AM	0	0	90	0	3	1	94
8:15 AM	0	0	83	0	3	1	87
8:30 AM	0	0	82	0	2	1	85
8:45 AM	0	0	68	5	2	0	75
9:00 AM	0	0	75	4	2	0	81
9:15 AM	0	2	66	0	5	0	73
9:30 AM	0	0	67	0	4	0	71
9:45 AM	0	0	49	0	1	0	50
10:00 AM	0	0	55	0	0	0	55
10:15 AM	0	0	63	0	3	0	66
10:30 AM	0	0	61	0	1	0	62
10:45 AM	0	0	58	0	4	0	62
11:00 AM	0	0	66	0	0	0	66
11:15 AM	0	0	68	0	6	0	74
11:30 AM	0	0	53	0	1	0	54
11:45 AM	0	0	81	0	1	0	82
AM Total	**1**	**2**	**1538**	**10**	**44**	**4**	**1599**
Percentage	**0.06%**	**0.13%**	**96.19%**	**0.63%**	**2.75%**	**0.25%**	
AM Peak	**6:30 AM**	**8:30 AM**	**7:45 AM**	**8:15 AM**	**8:45 AM**	**7:45 AM**	**7:45 AM**
Volume	**1**	**2**	**330**	**9**	**13**	**3**	**341**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	1	97	0	3	0	101
12:15 PM	0	0	76	1	5	0	82
12:30 PM	0	1	89	0	2	0	92
12:45 PM	0	0	82	0	2	0	84
1:00 PM	0	0	77	0	3	0	80
1:15 PM	1	1	75	0	3	0	80
1:30 PM	0	0	69	0	1	0	70
1:45 PM	0	0	87	0	3	0	90
2:00 PM	0	1	90	0	0	0	91
2:15 PM	0	0	127	0	1	0	128
2:30 PM	0	0	110	0	3	0	113
2:45 PM	0	0	141	0	1	0	142
3:00 PM	0	1	169	2	2	0	174
3:15 PM	0	1	134	4	1	0	140
3:30 PM	0	2	147	1	4	0	154
3:45 PM	1	0	144	1	0	0	146
4:00 PM	0	1	153	0	2	0	156
4:15 PM	0	0	146	0	0	0	146
4:30 PM	0	0	141	0	0	0	141
4:45 PM	0	2	164	0	0	0	166
5:00 PM	0	2	159	0	0	0	161
5:15 PM	0	1	149	0	1	0	151
5:30 PM	1	1	141	0	1	0	144
5:45 PM	0	1	126	0	0	0	127
6:00 PM	0	1	97	1	2	0	101
6:15 PM	0	1	105	0	0	0	106
6:30 PM	0	1	81	0	0	0	82
6:45 PM	0	0	82	0	0	0	82
7:00 PM	0	0	59	0	0	0	59
7:15 PM	0	0	76	0	0	0	76
7:30 PM	0	1	77	0	0	0	78
7:45 PM	0	0	64	0	0	0	64
8:00 PM	0	0	63	0	0	0	63
8:15 PM	0	0	67	0	0	0	67
8:30 PM	0	0	46	0	0	0	46
8:45 PM	0	2	45	0	0	0	47
9:00 PM	0	0	45	0	0	1	46
9:15 PM	0	0	39	0	0	0	39
9:30 PM	0	0	19	0	0	0	19
9:45 PM	0	1	17	0	0	0	18
10:00 PM	0	0	18	0	0	0	18
10:15 PM	0	0	20	0	0	0	20
10:30 PM	0	0	25	0	0	0	25
10:45 PM	0	0	13	0	0	0	13
11:00 PM	0	0	21	0	0	1	22
11:15 PM	0	0	26	0	0	0	26
11:30 PM	0	0	8	0	0	0	8
11:45 PM	0	0	11	0	0	0	11
PM Total	**3**	**23**	**4017**	**10**	**40**	**2**	**4095**
Percentage	**0.07%**	**0.56%**	**98.10%**	**0.24%**	**0.98%**	**0.05%**	
PM Peak	**12:30 PM**	**4:45 PM**	**4:30 PM**	**3:00 PM**	**12:00 PM**	**8:15 PM**	**4:45 PM**
Volume	**1**	**6**	**613**	**8**	**12**	**1**	**622**
Day Total	**4**	**25**	**5555**	**20**	**84**	**6**	**5694**
Percentage	**0.07%**	**0.44%**	**97.56%**	**0.35%**	**1.48%**	**0.11%**	

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-B

Count Date: **Thursday, October 24, 2024**
Direction: **NB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	13	0	0	0	13
12:15 AM	0	0	7	0	0	0	7
12:30 AM	0	0	5	0	0	0	5
12:45 AM	0	0	4	0	0	0	4
1:00 AM	0	0	2	0	0	0	2
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	5	0	0	0	5
1:45 AM	0	0	2	0	0	0	2
2:00 AM	0	0	2	0	0	0	2
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	2	0	0	0	2
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	2	0	0	0	2
3:15 AM	0	0	1	0	0	0	1
3:30 AM	0	0	3	0	0	0	3
3:45 AM	0	0	4	0	0	0	4
4:00 AM	0	0	3	0	1	0	4
4:15 AM	0	0	0	0	0	0	0
4:30 AM	0	0	4	0	0	0	4
4:45 AM	0	0	3	0	0	0	3
5:00 AM	0	1	7	0	0	0	8
5:15 AM	0	0	8	0	0	0	8
5:30 AM	0	0	17	0	0	0	17
5:45 AM	0	0	17	1	1	1	20
6:00 AM	0	0	15	0	0	0	15
6:15 AM	0	0	21	0	0	0	21
6:30 AM	0	0	31	0	0	0	31
6:45 AM	0	0	40	0	0	0	40
7:00 AM	0	0	43	0	0	0	43
7:15 AM	0	0	54	1	0	0	55
7:30 AM	0	1	58	0	1	0	60
7:45 AM	0	0	73	0	1	0	74
8:00 AM	0	0	64	0	1	0	65
8:15 AM	0	0	84	0	0	0	84
8:30 AM	0	0	80	0	1	0	81
8:45 AM	0	0	84	5	1	0	90
9:00 AM	0	0	68	3	0	0	71
9:15 AM	0	1	52	0	5	0	58
9:30 AM	0	0	58	0	2	0	60
9:45 AM	0	0	50	1	1	0	52
10:00 AM	0	0	59	0	0	0	59
10:15 AM	0	0	55	0	4	0	59
10:30 AM	0	0	44	0	1	0	45
10:45 AM	0	0	51	0	1	0	52
11:00 AM	0	1	74	0	3	0	78
11:15 AM	0	0	60	0	2	0	62
11:30 AM	0	0	78	0	2	0	80
11:45 AM	0	0	56	0	3	0	59
AM Total	**0**	**4**	**1466**	**11**	**31**	**1**	**1513**
Percentage	**0.00%**	**0.26%**	**96.89%**	**0.73%**	**2.05%**	**0.07%**	
AM Peak	**12:00 AM**	**4:15 AM**	**8:15 AM**	**8:15 AM**	**11:00 AM**	**5:00 AM**	**8:15 AM**
Volume	**0**	**1**	**316**	**8**	**10**	**1**	**326**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	83	0	3	0	86
12:15 PM	1	0	87	0	2	0	90
12:30 PM	0	0	72	0	2	0	74
12:45 PM	0	0	76	0	2	0	78
1:00 PM	0	0	76	0	3	0	79
1:15 PM	0	0	81	0	0	0	81
1:30 PM	0	0	76	1	1	0	78
1:45 PM	0	0	106	0	4	0	110
2:00 PM	0	0	111	0	1	0	112
2:15 PM	0	0	118	0	2	0	120
2:30 PM	0	0	118	1	1	0	120
2:45 PM	0	0	144	1	1	0	146
3:00 PM	0	0	130	2	1	0	133
3:15 PM	0	0	150	4	2	0	156
3:30 PM	0	1	140	2	0	0	143
3:45 PM	1	0	140	0	0	0	141
4:00 PM	0	0	129	0	0	0	129
4:15 PM	0	0	144	0	1	0	145
4:30 PM	0	0	118	1	3	0	122
4:45 PM	0	0	135	1	0	0	136
5:00 PM	0	0	150	0	0	0	150
5:15 PM	0	0	145	0	0	0	145
5:30 PM	0	0	145	0	0	0	145
5:45 PM	0	2	150	0	0	0	152
6:00 PM	0	1	105	0	1	0	107
6:15 PM	0	0	107	1	0	0	108
6:30 PM	0	1	96	0	1	0	98
6:45 PM	0	0	86	0	0	0	86
7:00 PM	0	0	79	0	0	0	79
7:15 PM	0	0	66	0	0	0	66
7:30 PM	0	0	80	0	0	0	80
7:45 PM	0	0	67	1	1	0	69
8:00 PM	0	0	64	0	1	0	65
8:15 PM	0	0	62	0	0	0	62
8:30 PM	0	0	49	0	1	0	50
8:45 PM	0	0	48	0	0	0	48
9:00 PM	0	0	35	0	0	0	35
9:15 PM	0	0	41	0	0	0	41
9:30 PM	0	0	28	0	0	0	28
9:45 PM	0	0	26	0	0	0	26
10:00 PM	0	0	34	0	0	0	34
10:15 PM	0	0	26	0	0	0	26
10:30 PM	0	0	27	0	0	0	27
10:45 PM	0	0	21	0	0	0	21
11:00 PM	0	0	13	0	1	0	14
11:15 PM	0	0	16	0	0	0	16
11:30 PM	0	0	19	0	0	0	19
11:45 PM	0	0	16	0	0	1	17
PM Total	**2**	**5**	**4035**	**15**	**35**	**1**	**4093**
Percentage	**0.05%**	**0.12%**	**98.58%**	**0.37%**	**0.86%**	**0.02%**	
PM Peak	**12:00 PM**	**5:45 PM**	**5:00 PM**	**2:45 PM**	**12:00 PM**	**11:00 PM**	**5:00 PM**
Volume	**1**	**4**	**590**	**9**	**9**	**1**	**592**
Day Total	**2**	**9**	**5501**	**26**	**66**	**2**	**5606**
Percentage	**0.04%**	**0.16%**	**98.13%**	**0.46%**	**1.18%**	**0.04%**	

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-B

Count Date: **Wednesday, October 23, 2024**
Direction: **SB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	4	0	0	0	4
12:15 AM	0	0	6	0	1	0	7
12:30 AM	0	0	2	0	0	0	2
12:45 AM	0	0	1	0	0	0	1
1:00 AM	0	0	3	0	0	0	3
1:15 AM	0	0	0	1	0	0	1
1:30 AM	0	0	2	0	0	0	2
1:45 AM	0	0	4	0	0	0	4
2:00 AM	0	0	3	0	0	0	3
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	3	0	0	0	3
2:45 AM	0	0	3	0	0	0	3
3:00 AM	0	0	3	0	0	0	3
3:15 AM	0	0	2	0	0	0	2
3:30 AM	0	0	6	0	0	0	6
3:45 AM	0	0	3	0	0	0	3
4:00 AM	0	0	7	0	0	0	7
4:15 AM	0	0	17	0	0	0	17
4:30 AM	0	0	21	0	1	0	22
4:45 AM	0	0	34	0	0	0	34
5:00 AM	0	0	36	0	0	0	36
5:15 AM	0	0	47	0	0	0	47
5:30 AM	0	0	95	0	0	0	95
5:45 AM	0	0	109	0	3	0	112
6:00 AM	0	0	108	0	3	0	111
6:15 AM	0	0	122	0	4	0	126
6:30 AM	0	0	148	0	1	0	149
6:45 AM	0	0	179	1	2	0	182
7:00 AM	0	1	177	0	2	0	180
7:15 AM	0	2	162	0	2	0	166
7:30 AM	0	0	172	1	3	0	176
7:45 AM	0	1	157	1	2	0	161
8:00 AM	0	0	125	0	4	2	131
8:15 AM	0	0	131	1	5	2	139
8:30 AM	0	0	151	1	2	0	154
8:45 AM	0	0	143	5	3	0	151
9:00 AM	0	0	121	1	6	0	128
9:15 AM	0	0	112	0	3	0	115
9:30 AM	0	0	96	0	3	0	99
9:45 AM	0	0	105	0	2	0	107
10:00 AM	0	0	92	1	4	0	97
10:15 AM	0	1	72	0	1	0	74
10:30 AM	0	0	100	0	2	0	102
10:45 AM	0	0	82	0	0	0	82
11:00 AM	0	1	86	0	2	0	89
11:15 AM	0	0	98	0	1	0	99
11:30 AM	0	0	94	0	2	0	96
11:45 AM	0	0	76	0	4	1	81
AM Total	**0**	**6**	**3321**	**13**	**68**	**5**	**3413**
Percentage	**0.00%**	**0.18%**	**97.30%**	**0.38%**	**1.99%**	**0.15%**	
AM Peak	**12:00 AM**	**7:00 AM**	**6:45 AM**	**8:15 AM**	**8:15 AM**	**7:30 AM**	**6:45 AM**
Volume	**0**	**4**	**690**	**8**	**16**	**4**	**704**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	1	82	0	1	1	85
12:15 PM	0	0	107	0	2	0	109
12:30 PM	0	1	100	0	3	0	104
12:45 PM	0	1	68	0	0	0	69
1:00 PM	0	0	81	0	4	1	86
1:15 PM	0	0	84	0	3	0	87
1:30 PM	0	0	119	1	2	0	122
1:45 PM	0	0	93	0	1	0	94
2:00 PM	0	1	108	0	1	0	110
2:15 PM	0	0	87	0	0	0	87
2:30 PM	0	0	91	0	0	0	91
2:45 PM	0	0	85	0	1	0	86
3:00 PM	0	0	85	1	2	1	89
3:15 PM	0	0	125	2	4	0	131
3:30 PM	1	0	112	7	3	0	123
3:45 PM	0	1	116	0	1	1	119
4:00 PM	0	0	109	2	3	1	115
4:15 PM	1	0	135	1	1	0	138
4:30 PM	0	0	132	0	1	1	134
4:45 PM	0	1	141	0	2	0	144
5:00 PM	0	3	135	0	1	0	139
5:15 PM	0	1	140	1	0	1	143
5:30 PM	0	1	105	0	0	0	106
5:45 PM	1	2	102	1	0	0	106
6:00 PM	0	1	109	0	2	0	112
6:15 PM	0	1	103	0	0	0	104
6:30 PM	1	2	96	0	1	0	100
6:45 PM	0	0	69	0	1	0	70
7:00 PM	0	0	59	0	0	0	59
7:15 PM	0	0	56	0	1	0	57
7:30 PM	0	0	56	0	0	0	56
7:45 PM	0	0	59	0	0	0	59
8:00 PM	0	0	39	0	0	0	39
8:15 PM	0	0	49	0	0	0	49
8:30 PM	0	0	42	0	0	0	42
8:45 PM	0	2	38	0	1	0	41
9:00 PM	0	0	42	0	0	0	42
9:15 PM	0	0	36	0	0	0	36
9:30 PM	0	0	25	0	0	0	25
9:45 PM	0	1	18	0	0	0	19
10:00 PM	0	0	10	0	0	0	10
10:15 PM	0	0	17	0	0	0	17
10:30 PM	0	0	9	0	0	0	9
10:45 PM	0	0	7	0	0	0	7
11:00 PM	0	0	5	0	0	0	5
11:15 PM	0	0	4	0	0	0	4
11:30 PM	0	0	5	0	0	0	5
11:45 PM	0	0	2	0	0	0	2
PM Total	**4**	**20**	**3497**	**16**	**42**	**7**	**3586**
Percentage	**0.11%**	**0.56%**	**97.52%**	**0.45%**	**1.17%**	**0.20%**	
PM Peak	**3:30 PM**	**5:00 PM**	**4:30 PM**	**3:15 PM**	**3:15 PM**	**3:45 PM**	**4:30 PM**
Volume	**2**	**7**	**548**	**11**	**11**	**3**	**560**
Day Total	**4**	**26**	**6818**	**29**	**110**	**12**	**6999**
Percentage	**0.06%**	**0.37%**	**97.41%**	**0.41%**	**1.57%**	**0.17%**	

Middlesex Avenue
south of Salem Street
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Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-B

Count Date: **Thursday, October 24, 2024**
Direction: **SB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	3	0	0	0	3
12:15 AM	0	0	2	0	0	0	2
12:30 AM	0	0	3	0	0	0	3
12:45 AM	0	0	1	0	0	0	1
1:00 AM	0	0	1	0	0	0	1
1:15 AM	0	0	1	0	0	0	1
1:30 AM	0	0	2	0	1	0	3
1:45 AM	0	0	1	0	0	0	1
2:00 AM	0	0	2	0	0	0	2
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	4	0	0	0	4
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	3	0	0	0	3
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	4	0	0	0	4
3:45 AM	0	0	9	0	0	0	9
4:00 AM	0	0	10	0	0	0	10
4:15 AM	0	0	16	0	1	0	17
4:30 AM	0	0	30	0	0	0	30
4:45 AM	0	0	38	0	0	0	38
5:00 AM	0	0	43	0	0	0	43
5:15 AM	0	0	55	0	0	0	55
5:30 AM	0	0	87	0	3	0	90
5:45 AM	0	0	97	0	2	0	99
6:00 AM	0	0	86	1	0	0	87
6:15 AM	0	0	89	0	0	0	89
6:30 AM	0	0	99	1	1	0	101
6:45 AM	0	0	176	1	4	1	182
7:00 AM	0	0	165	0	2	0	167
7:15 AM	0	0	140	0	0	0	140
7:30 AM	0	0	160	1	5	0	166
7:45 AM	0	1	138	0	2	0	141
8:00 AM	0	0	143	0	2	0	145
8:15 AM	0	3	135	0	6	1	145
8:30 AM	0	0	116	0	1	0	117
8:45 AM	0	0	131	7	1	0	139
9:00 AM	0	0	92	1	0	0	93
9:15 AM	0	0	87	0	1	1	89
9:30 AM	0	0	82	0	1	0	83
9:45 AM	0	0	83	0	3	0	86
10:00 AM	0	0	72	0	7	0	79
10:15 AM	0	0	75	0	1	0	76
10:30 AM	0	1	81	0	5	0	87
10:45 AM	0	0	61	0	2	0	63
11:00 AM	0	2	68	0	2	0	72
11:15 AM	0	0	110	0	5	0	115
11:30 AM	0	0	86	0	3	1	90
11:45 AM	0	0	96	1	1	0	98
AM Total	**0**	**7**	**2986**	**13**	**62**	**4**	**3072**
Percentage	**0.00%**	**0.23%**	**97.20%**	**0.42%**	**2.02%**	**0.13%**	
AM Peak	**12:00 AM**	**7:30 AM**	**6:45 AM**	**8:15 AM**	**9:45 AM**	**6:00 AM**	**6:45 AM**
Volume	**0**	**4**	**641**	**8**	**16**	**1**	**655**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	1	0	103	0	1	0	105
12:15 PM	0	0	91	0	3	0	94
12:30 PM	0	0	99	0	1	0	100
12:45 PM	0	0	103	0	0	0	103
1:00 PM	0	0	79	0	0	0	79
1:15 PM	0	0	93	0	2	0	95
1:30 PM	0	1	94	1	2	0	98
1:45 PM	0	0	85	0	0	0	85
2:00 PM	0	0	84	1	0	0	85
2:15 PM	0	0	94	0	1	0	95
2:30 PM	0	1	86	0	1	0	88
2:45 PM	0	0	97	0	1	0	98
3:00 PM	0	0	103	1	0	0	104
3:15 PM	0	0	121	3	3	0	127
3:30 PM	0	0	106	5	1	0	112
3:45 PM	0	0	132	1	0	0	133
4:00 PM	0	0	111	0	0	0	111
4:15 PM	0	1	141	1	0	0	143
4:30 PM	0	0	161	0	2	0	163
4:45 PM	0	0	149	0	2	0	151
5:00 PM	0	1	156	0	0	0	157
5:15 PM	0	1	138	0	2	0	141
5:30 PM	0	1	115	0	1	0	117
5:45 PM	0	0	97	0	0	0	97
6:00 PM	0	0	108	0	2	0	110
6:15 PM	0	0	106	0	1	1	108
6:30 PM	0	0	102	0	0	0	102
6:45 PM	0	0	68	0	0	0	68
7:00 PM	0	0	57	0	0	0	57
7:15 PM	0	0	51	0	1	0	52
7:30 PM	0	0	48	0	0	1	49
7:45 PM	0	0	56	0	0	0	56
8:00 PM	0	0	51	0	0	0	51
8:15 PM	0	1	53	1	0	0	55
8:30 PM	0	0	42	0	1	0	43
8:45 PM	0	0	32	0	2	0	34
9:00 PM	0	0	37	0	0	0	37
9:15 PM	0	0	39	0	0	0	39
9:30 PM	0	0	21	0	0	0	21
9:45 PM	0	0	24	0	0	0	24
10:00 PM	0	0	22	0	0	0	22
10:15 PM	0	0	19	0	0	0	19
10:30 PM	0	0	15	0	0	0	15
10:45 PM	0	0	10	0	0	0	10
11:00 PM	0	0	14	0	0	0	14
11:15 PM	0	0	8	0	0	0	8
11:30 PM	0	0	10	0	0	0	10
11:45 PM	0	0	9	0	0	0	9
PM Total	**1**	**7**	**3640**	**14**	**30**	**2**	**3694**
Percentage	**0.03%**	**0.19%**	**98.54%**	**0.38%**	**0.81%**	**0.05%**	
PM Peak	**12:00 PM**	**4:45 PM**	**4:15 PM**	**3:00 PM**	**4:30 PM**	**5:30 PM**	**4:15 PM**
Volume	**1**	**3**	**607**	**10**	**6**	**1**	**614**
Day Total	**1**	**14**	**6626**	**27**	**92**	**6**	**6766**
Percentage	**0.01%**	**0.21%**	**97.93%**	**0.40%**	**1.36%**	**0.09%**	

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # **2540244 ATR-B**

Direction: **NB**

Weekly Report

Day	Wednesday		Thursday												Week	
Date	10/23/24		10/24/24												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	14	101	13	86	0	0	0	0	0	0	0	0	0	0	14	94
12:15	7	82	7	90	0	0	0	0	0	0	0	0	0	0	7	86
12:30	5	92	5	74	0	0	0	0	0	0	0	0	0	0	5	83
12:45	2	84	4	78	0	0	0	0	0	0	0	0	0	0	3	81
1:00	0	80	2	79	0	0	0	0	0	0	0	0	0	0	1	80
1:15	0	80	0	81	0	0	0	0	0	0	0	0	0	0	0	81
1:30	3	70	5	78	0	0	0	0	0	0	0	0	0	0	4	74
1:45	2	90	2	110	0	0	0	0	0	0	0	0	0	0	2	100
2:00	3	91	2	112	0	0	0	0	0	0	0	0	0	0	3	102
2:15	4	128	1	120	0	0	0	0	0	0	0	0	0	0	3	124
2:30	3	113	2	120	0	0	0	0	0	0	0	0	0	0	3	117
2:45	2	142	2	146	0	0	0	0	0	0	0	0	0	0	2	144
3:00	1	174	2	133	0	0	0	0	0	0	0	0	0	0	2	154
3:15	2	140	1	156	0	0	0	0	0	0	0	0	0	0	2	148
3:30	2	154	3	143	0	0	0	0	0	0	0	0	0	0	3	149
3:45	5	146	4	141	0	0	0	0	0	0	0	0	0	0	5	144
4:00	3	156	4	129	0	0	0	0	0	0	0	0	0	0	4	143
4:15	4	146	0	145	0	0	0	0	0	0	0	0	0	0	2	146
4:30	1	141	4	122	0	0	0	0	0	0	0	0	0	0	3	132
4:45	3	166	3	136	0	0	0	0	0	0	0	0	0	0	3	151
5:00	2	161	8	150	0	0	0	0	0	0	0	0	0	0	5	156
5:15	4	151	8	145	0	0	0	0	0	0	0	0	0	0	6	148
5:30	7	144	17	145	0	0	0	0	0	0	0	0	0	0	12	145
5:45	21	127	20	152	0	0	0	0	0	0	0	0	0	0	21	140
6:00	27	101	15	107	0	0	0	0	0	0	0	0	0	0	21	104
6:15	22	106	21	108	0	0	0	0	0	0	0	0	0	0	22	107
6:30	28	82	31	98	0	0	0	0	0	0	0	0	0	0	30	90
6:45	46	82	40	86	0	0	0	0	0	0	0	0	0	0	43	84
7:00	46	59	43	79	0	0	0	0	0	0	0	0	0	0	45	69
7:15	57	76	55	66	0	0	0	0	0	0	0	0	0	0	56	71
7:30	61	78	60	80	0	0	0	0	0	0	0	0	0	0	61	79
7:45	75	64	74	69	0	0	0	0	0	0	0	0	0	0	75	67
8:00	94	63	65	65	0	0	0	0	0	0	0	0	0	0	80	64
8:15	87	67	84	62	0	0	0	0	0	0	0	0	0	0	86	65
8:30	85	46	81	50	0	0	0	0	0	0	0	0	0	0	83	48
8:45	75	47	90	48	0	0	0	0	0	0	0	0	0	0	83	48
9:00	81	46	71	35	0	0	0	0	0	0	0	0	0	0	76	41
9:15	73	39	58	41	0	0	0	0	0	0	0	0	0	0	66	40
9:30	71	19	60	28	0	0	0	0	0	0	0	0	0	0	66	24
9:45	50	18	52	26	0	0	0	0	0	0	0	0	0	0	51	22
10:00	55	18	59	34	0	0	0	0	0	0	0	0	0	0	57	26
10:15	66	20	59	26	0	0	0	0	0	0	0	0	0	0	63	23
10:30	62	25	45	27	0	0	0	0	0	0	0	0	0	0	54	26
10:45	62	13	52	21	0	0	0	0	0	0	0	0	0	0	57	17
11:00	66	22	78	14	0	0	0	0	0	0	0	0	0	0	72	18
11:15	74	26	62	16	0	0	0	0	0	0	0	0	0	0	68	21
11:30	54	8	80	19	0	0	0	0	0	0	0	0	0	0	67	14
11:45	82	11	59	17	0	0	0	0	0	0	0	0	0	0	71	14
Total	**1599**	**4095**	**1513**	**4093**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1556**	**4094**
Day Total	**5694**		**5606**		**0**		**0**		**0**		**0**		**0**		**5650**	
Peak HR	**7:45 AM**	**4:45 PM**	**8:15 AM**	**5:00 PM**											**8:00 AM**	**4:45 PM**
Volume	**341**	**622**	**326**	**592**											**331**	**599**

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # **2540244 ATR-B**

Direction: **SB**

Weekly Report

Day	Wednesday		Thursday												Week	
Date	10/23/24		10/24/24												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	4	85	3	105	0	0	0	0	0	0	0	0	0	0	4	95
12:15	7	109	2	94	0	0	0	0	0	0	0	0	0	0	5	102
12:30	2	104	3	100	0	0	0	0	0	0	0	0	0	0	3	102
12:45	1	69	1	103	0	0	0	0	0	0	0	0	0	0	1	86
1:00	3	86	1	79	0	0	0	0	0	0	0	0	0	0	2	83
1:15	1	87	1	95	0	0	0	0	0	0	0	0	0	0	1	91
1:30	2	122	3	98	0	0	0	0	0	0	0	0	0	0	3	110
1:45	4	94	1	85	0	0	0	0	0	0	0	0	0	0	3	90
2:00	3	110	2	85	0	0	0	0	0	0	0	0	0	0	3	98
2:15	1	87	1	95	0	0	0	0	0	0	0	0	0	0	1	91
2:30	3	91	4	88	0	0	0	0	0	0	0	0	0	0	4	90
2:45	3	86	2	98	0	0	0	0	0	0	0	0	0	0	3	92
3:00	3	89	3	104	0	0	0	0	0	0	0	0	0	0	3	97
3:15	2	131	0	127	0	0	0	0	0	0	0	0	0	0	1	129
3:30	6	123	4	112	0	0	0	0	0	0	0	0	0	0	5	118
3:45	3	119	9	133	0	0	0	0	0	0	0	0	0	0	6	126
4:00	7	115	10	111	0	0	0	0	0	0	0	0	0	0	9	113
4:15	17	138	17	143	0	0	0	0	0	0	0	0	0	0	17	141
4:30	22	134	30	163	0	0	0	0	0	0	0	0	0	0	26	149
4:45	34	144	38	151	0	0	0	0	0	0	0	0	0	0	36	148
5:00	36	139	43	157	0	0	0	0	0	0	0	0	0	0	40	148
5:15	47	143	55	141	0	0	0	0	0	0	0	0	0	0	51	142
5:30	95	106	90	117	0	0	0	0	0	0	0	0	0	0	93	112
5:45	112	106	99	97	0	0	0	0	0	0	0	0	0	0	106	102
6:00	111	112	87	110	0	0	0	0	0	0	0	0	0	0	99	111
6:15	126	104	89	108	0	0	0	0	0	0	0	0	0	0	108	106
6:30	149	100	101	102	0	0	0	0	0	0	0	0	0	0	125	101
6:45	182	70	182	68	0	0	0	0	0	0	0	0	0	0	182	69
7:00	180	59	167	57	0	0	0	0	0	0	0	0	0	0	174	58
7:15	166	57	140	52	0	0	0	0	0	0	0	0	0	0	153	55
7:30	176	56	166	49	0	0	0	0	0	0	0	0	0	0	171	53
7:45	161	59	141	56	0	0	0	0	0	0	0	0	0	0	151	58
8:00	131	39	145	51	0	0	0	0	0	0	0	0	0	0	138	45
8:15	139	49	145	55	0	0	0	0	0	0	0	0	0	0	142	52
8:30	154	42	117	43	0	0	0	0	0	0	0	0	0	0	136	43
8:45	151	41	139	34	0	0	0	0	0	0	0	0	0	0	145	38
9:00	128	42	93	37	0	0	0	0	0	0	0	0	0	0	111	40
9:15	115	36	89	39	0	0	0	0	0	0	0	0	0	0	102	38
9:30	99	25	83	21	0	0	0	0	0	0	0	0	0	0	91	23
9:45	107	19	86	24	0	0	0	0	0	0	0	0	0	0	97	22
10:00	97	10	79	22	0	0	0	0	0	0	0	0	0	0	88	16
10:15	74	17	76	19	0	0	0	0	0	0	0	0	0	0	75	18
10:30	102	9	87	15	0	0	0	0	0	0	0	0	0	0	95	12
10:45	82	7	63	10	0	0	0	0	0	0	0	0	0	0	73	9
11:00	89	5	72	14	0	0	0	0	0	0	0	0	0	0	81	10
11:15	99	4	115	8	0	0	0	0	0	0	0	0	0	0	107	6
11:30	96	5	90	10	0	0	0	0	0	0	0	0	0	0	93	8
11:45	81	2	98	9	0	0	0	0	0	0	0	0	0	0	90	6
Total	**3413**	**3586**	**3072**	**3694**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3243**	**3640**
Day Total	**6999**		**6766**		**0**		**0**		**0**		**0**		**0**		**6883**	
Peak HR	**6:45 AM**	**4:30 PM**	**6:45 AM**	**4:15 PM**											**6:45 AM**	**4:30 PM**
Volume	**704**	**560**	**655**	**614**											**680**	**586**

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-C

Count Date: Wednesday, October 23, 2024
Direction: NB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	11	0	0	0	11
12:15 AM	0	0	3	0	0	0	3
12:30 AM	0	0	6	0	0	0	6
12:45 AM	0	0	2	0	0	1	3
1:00 AM	0	0	4	0	0	0	4
1:15 AM	0	0	2	0	0	0	2
1:30 AM	0	0	4	0	2	0	6
1:45 AM	0	0	5	0	0	0	5
2:00 AM	0	0	4	1	0	0	5
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	4	0	0	0	4
2:45 AM	0	0	9	0	0	0	9
3:00 AM	0	0	5	0	0	0	5
3:15 AM	0	0	10	0	0	0	10
3:30 AM	0	0	6	0	0	0	6
3:45 AM	0	0	10	0	0	0	10
4:00 AM	0	0	9	0	0	0	9
4:15 AM	0	0	21	0	0	0	21
4:30 AM	0	0	27	0	1	0	28
4:45 AM	0	0	48	0	1	0	49
5:00 AM	0	0	47	0	3	1	51
5:15 AM	0	0	55	0	2	0	57
5:30 AM	0	0	113	0	0	0	113
5:45 AM	0	0	124	0	3	0	127
6:00 AM	0	0	127	0	1	0	128
6:15 AM	0	0	138	0	1	0	139
6:30 AM	0	0	145	0	1	0	146
6:45 AM	0	0	168	1	2	1	172
7:00 AM	0	0	119	0	3	0	122
7:15 AM	0	2	161	1	4	0	168
7:30 AM	0	0	187	0	4	0	191
7:45 AM	0	0	181	0	6	1	188
8:00 AM	0	0	184	0	12	1	197
8:15 AM	0	0	164	4	10	0	178
8:30 AM	0	0	132	1	3	1	137
8:45 AM	0	0	125	0	1	1	127
9:00 AM	0	0	146	0	4	1	151
9:15 AM	0	0	149	0	3	1	153
9:30 AM	0	0	122	0	8	2	132
9:45 AM	0	0	131	0	9	2	142
10:00 AM	0	0	119	0	15	3	137
10:15 AM	0	0	137	0	8	0	145
10:30 AM	0	0	157	0	3	0	160
10:45 AM	0	0	136	0	8	2	146
11:00 AM	0	1	121	0	4	2	128
11:15 AM	0	0	141	0	7	3	151
11:30 AM	0	0	153	0	3	0	156
11:45 AM	0	0	112	0	16	6	134
AM Total	**0**	**3**	**3985**	**8**	**148**	**29**	**4173**
Percentage	**0.00%**	**0.07%**	**95.49%**	**0.19%**	**3.55%**	**0.69%**	
AM Peak	**12:00 AM**	**6:30 AM**	**7:30 AM**	**7:45 AM**	**9:30 AM**	**11:00 AM**	**7:30 AM**
Volume	**0**	**2**	**716**	**5**	**40**	**11**	**754**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	1	127	0	4	1	133
12:15 PM	0	0	143	1	3	0	147
12:30 PM	0	0	146	0	4	3	153
12:45 PM	0	1	129	0	2	1	133
1:00 PM	0	1	141	0	10	1	153
1:15 PM	0	1	140	1	5	0	147
1:30 PM	0	0	132	0	5	1	138
1:45 PM	0	0	146	0	4	3	153
2:00 PM	0	1	132	0	3	1	137
2:15 PM	0	0	118	0	5	0	123
2:30 PM	0	1	129	0	5	0	135
2:45 PM	0	0	155	2	2	1	160
3:00 PM	0	0	169	0	5	2	176
3:15 PM	0	0	165	0	4	0	169
3:30 PM	0	0	167	1	1	0	169
3:45 PM	0	1	160	0	1	0	162
4:00 PM	0	0	192	0	4	2	198
4:15 PM	0	1	190	2	4	1	198
4:30 PM	0	0	178	0	4	1	183
4:45 PM	0	1	221	0	3	1	226
5:00 PM	0	1	187	0	1	1	190
5:15 PM	0	1	208	0	1	1	211
5:30 PM	0	2	196	0	2	0	200
5:45 PM	0	1	175	1	0	0	177
6:00 PM	0	1	166	0	1	0	168
6:15 PM	0	0	150	0	2	0	152
6:30 PM	0	1	143	0	0	0	144
6:45 PM	0	0	91	0	0	0	91
7:00 PM	1	0	112	0	1	0	114
7:15 PM	0	0	90	0	1	1	92
7:30 PM	0	0	82	0	2	0	84
7:45 PM	0	0	76	0	0	0	76
8:00 PM	0	0	67	0	1	0	68
8:15 PM	0	0	82	0	0	0	82
8:30 PM	0	0	62	0	0	0	62
8:45 PM	0	0	41	0	1	1	43
9:00 PM	0	1	61	0	0	0	62
9:15 PM	0	1	47	0	0	0	48
9:30 PM	0	0	35	0	0	0	35
9:45 PM	0	0	31	0	0	0	31
10:00 PM	0	0	24	0	0	0	24
10:15 PM	0	0	23	0	0	0	23
10:30 PM	0	0	17	0	0	0	17
10:45 PM	0	0	11	0	0	0	11
11:00 PM	0	0	25	0	0	0	25
11:15 PM	0	0	14	0	0	0	14
11:30 PM	0	0	7	0	0	0	7
11:45 PM	0	0	3	0	0	0	3
PM Total	**1**	**18**	**5306**	**8**	**91**	**23**	**5447**
Percentage	**0.02%**	**0.33%**	**97.41%**	**0.15%**	**1.67%**	**0.42%**	
PM Peak	**6:15 PM**	**4:45 PM**	**4:45 PM**	**2:45 PM**	**1:00 PM**	**12:00 PM**	**4:45 PM**
Volume	**1**	**5**	**812**	**3**	**24**	**5**	**827**
Day Total	**1**	**21**	**9291**	**16**	**239**	**52**	**9620**
Percentage	**0.01%**	**0.22%**	**96.58%**	**0.17%**	**2.48%**	**0.54%**	

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-C

Count Date: Thursday, October 24, 2024
Direction: NB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	4	0	0	1	5
12:15 AM	0	0	3	0	0	0	3
12:30 AM	0	0	4	0	0	0	4
12:45 AM	0	0	7	0	0	0	7
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	1	0	0	0	1
1:30 AM	0	0	5	0	1	0	6
1:45 AM	0	1	2	0	0	0	3
2:00 AM	0	0	2	0	0	0	2
2:15 AM	0	0	3	0	0	0	3
2:30 AM	0	0	6	0	0	0	6
2:45 AM	0	0	4	0	0	0	4
3:00 AM	0	0	5	0	0	0	5
3:15 AM	0	0	4	0	1	0	5
3:30 AM	0	0	7	0	1	0	8
3:45 AM	0	0	11	0	2	0	13
4:00 AM	0	0	13	0	0	0	13
4:15 AM	0	0	20	0	0	0	20
4:30 AM	0	0	31	0	1	0	32
4:45 AM	0	1	44	0	1	0	46
5:00 AM	0	1	54	0	2	0	57
5:15 AM	0	0	69	0	0	2	71
5:30 AM	0	0	108	0	1	0	109
5:45 AM	0	0	114	0	1	0	115
6:00 AM	0	0	131	0	2	0	133
6:15 AM	0	0	163	0	0	0	163
6:30 AM	0	0	153	0	1	0	154
6:45 AM	0	0	172	1	7	1	181
7:00 AM	0	0	153	0	2	0	155
7:15 AM	0	0	182	1	3	1	187
7:30 AM	0	0	167	0	6	2	175
7:45 AM	1	0	186	0	9	1	197
8:00 AM	0	0	180	0	8	0	188
8:15 AM	0	2	170	3	8	0	183
8:30 AM	0	0	147	1	4	0	152
8:45 AM	0	0	152	0	6	0	158
9:00 AM	0	0	127	0	6	3	136
9:15 AM	0	0	134	0	5	2	141
9:30 AM	0	0	140	0	4	6	150
9:45 AM	0	0	133	0	9	1	143
10:00 AM	1	0	107	0	6	2	116
10:15 AM	0	0	106	0	5	4	115
10:30 AM	0	0	130	0	8	1	139
10:45 AM	0	0	100	1	9	3	113
11:00 AM	0	1	128	0	7	2	138
11:15 AM	0	0	142	0	8	6	156
11:30 AM	0	0	151	0	4	1	156
11:45 AM	0	0	133	0	3	0	136
AM Total	**2**	**6**	**4008**	**7**	**141**	**39**	**4203**
Percentage	**0.05%**	**0.14%**	**95.36%**	**0.17%**	**3.35%**	**0.93%**	
AM Peak	**7:00 AM**	**4:15 AM**	**7:15 AM**	**7:45 AM**	**10:30 AM**	**9:30 AM**	**7:15 AM**
Volume	**1**	**2**	**715**	**4**	**32**	**13**	**747**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	159	0	2	1	162
12:15 PM	0	0	127	0	2	2	131
12:30 PM	0	0	144	0	3	0	147
12:45 PM	0	1	157	0	7	2	167
1:00 PM	0	1	157	0	5	4	167
1:15 PM	0	0	139	1	4	0	144
1:30 PM	0	0	158	0	3	1	162
1:45 PM	0	0	128	0	2	1	131
2:00 PM	0	0	155	0	4	1	160
2:15 PM	0	1	175	0	10	1	187
2:30 PM	1	0	151	0	6	1	159
2:45 PM	0	0	138	1	5	2	146
3:00 PM	0	0	176	0	1	2	179
3:15 PM	0	0	148	0	2	0	150
3:30 PM	0	0	176	2	2	0	180
3:45 PM	0	0	184	1	2	1	188
4:00 PM	0	0	180	0	1	0	181
4:15 PM	0	1	187	1	2	0	191
4:30 PM	0	2	207	0	4	0	213
4:45 PM	0	0	217	0	2	0	219
5:00 PM	0	2	185	0	1	0	188
5:15 PM	0	0	203	0	4	1	208
5:30 PM	0	0	214	0	5	0	219
5:45 PM	0	0	157	0	0	0	157
6:00 PM	0	0	155	0	2	0	157
6:15 PM	0	0	139	0	1	1	141
6:30 PM	0	1	136	0	2	0	139
6:45 PM	0	0	113	1	1	0	115
7:00 PM	0	0	101	0	4	0	105
7:15 PM	0	1	104	0	0	0	105
7:30 PM	0	0	90	0	1	1	92
7:45 PM	0	0	78	0	1	0	79
8:00 PM	0	0	76	0	0	0	76
8:15 PM	0	0	76	1	0	0	77
8:30 PM	0	0	68	0	1	0	69
8:45 PM	0	0	52	0	2	0	54
9:00 PM	0	0	64	0	0	0	64
9:15 PM	0	0	54	0	0	0	54
9:30 PM	0	0	33	0	0	0	33
9:45 PM	0	0	26	0	1	0	27
10:00 PM	0	0	38	0	0	0	38
10:15 PM	0	0	38	0	0	0	38
10:30 PM	0	0	26	0	0	0	26
10:45 PM	0	0	26	0	0	0	26
11:00 PM	0	0	28	0	0	0	28
11:15 PM	0	0	14	0	0	0	14
11:30 PM	0	0	14	0	0	0	14
11:45 PM	0	0	16	0	0	0	16
PM Total	**1**	**10**	**5587**	**8**	**95**	**22**	**5723**
Percentage	**0.02%**	**0.17%**	**97.62%**	**0.14%**	**1.66%**	**0.38%**	
PM Peak	**1:45 PM**	**4:15 PM**	**4:45 PM**	**3:30 PM**	**2:00 PM**	**12:15 PM**	**4:45 PM**
Volume	**1**	**5**	**819**	**4**	**25**	**8**	**834**
Day Total	**3**	**16**	**9595**	**15**	**236**	**61**	**9926**
Percentage	**0.03%**	**0.16%**	**96.67%**	**0.15%**	**2.38%**	**0.61%**	

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-C

Count Date: **Wednesday, October 23, 2024**
Direction: **SB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	13	0	0	0	13
12:15 AM	0	0	8	0	0	0	8
12:30 AM	0	0	6	0	0	1	7
12:45 AM	0	0	3	0	0	0	3
1:00 AM	0	0	3	0	0	0	3
1:15 AM	0	0	1	0	0	0	1
1:30 AM	0	0	5	0	0	0	5
1:45 AM	0	0	3	0	0	1	4
2:00 AM	0	0	5	0	0	0	5
2:15 AM	0	0	5	0	0	0	5
2:30 AM	0	0	3	0	0	0	3
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	3	0	0	0	3
3:15 AM	0	0	6	0	0	1	7
3:30 AM	0	0	7	0	0	0	7
3:45 AM	0	0	7	0	0	0	7
4:00 AM	0	0	2	0	1	0	3
4:15 AM	0	0	7	0	1	0	8
4:30 AM	0	0	3	0	0	0	3
4:45 AM	0	0	12	0	1	1	14
5:00 AM	0	0	16	0	0	0	16
5:15 AM	0	0	22	0	0	0	22
5:30 AM	0	0	18	0	3	0	21
5:45 AM	0	0	44	0	2	0	46
6:00 AM	0	0	40	0	1	0	41
6:15 AM	0	0	57	0	5	0	62
6:30 AM	0	0	60	0	2	0	62
6:45 AM	0	0	110	1	5	1	117
7:00 AM	0	0	132	1	5	0	138
7:15 AM	0	0	105	0	1	0	106
7:30 AM	0	0	118	1	3	1	123
7:45 AM	0	1	118	0	4	1	124
8:00 AM	0	0	139	0	4	1	144
8:15 AM	0	0	153	0	4	0	157
8:30 AM	0	0	204	0	6	2	212
8:45 AM	0	0	190	0	7	1	198
9:00 AM	0	0	149	0	6	2	157
9:15 AM	0	1	121	0	7	0	129
9:30 AM	0	0	107	0	7	0	114
9:45 AM	0	0	88	0	7	3	98
10:00 AM	0	0	106	0	4	2	112
10:15 AM	0	2	91	0	8	2	103
10:30 AM	0	0	92	0	9	2	103
10:45 AM	0	0	104	0	4	2	110
11:00 AM	0	0	95	0	7	1	103
11:15 AM	0	1	89	0	8	3	101
11:30 AM	0	0	104	1	4	4	113
11:45 AM	0	0	100	0	3	0	103
AM Total	**0**	**5**	**2876**	**4**	**129**	**32**	**3046**
Percentage	**0.00%**	**0.16%**	**94.42%**	**0.13%**	**4.24%**	**1.05%**	
AM Peak	**12:00 AM**	**9:30 AM**	**8:15 AM**	**6:45 AM**	**9:45 AM**	**10:45 AM**	**8:15 AM**
Volume	**0**	**2**	**696**	**3**	**28**	**10**	**724**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	1	136	1	8	1	147
12:15 PM	0	0	107	0	17	0	124
12:30 PM	0	1	134	0	8	3	146
12:45 PM	0	0	116	0	3	0	119
1:00 PM	0	0	97	0	8	0	105
1:15 PM	0	1	112	0	6	0	119
1:30 PM	0	0	108	1	5	0	114
1:45 PM	0	0	122	0	6	1	129
2:00 PM	0	0	120	0	3	0	123
2:15 PM	0	0	159	0	1	0	160
2:30 PM	0	0	133	2	1	1	137
2:45 PM	0	0	148	0	5	1	154
3:00 PM	1	1	168	0	3	0	173
3:15 PM	0	1	125	0	2	0	128
3:30 PM	0	1	162	1	4	0	168
3:45 PM	0	1	165	1	1	0	168
4:00 PM	0	1	171	0	3	0	175
4:15 PM	0	3	168	0	0	0	171
4:30 PM	0	3	138	0	1	0	142
4:45 PM	0	1	196	0	0	0	197
5:00 PM	0	1	158	0	0	2	161
5:15 PM	0	1	154	0	3	0	158
5:30 PM	0	0	147	0	1	0	148
5:45 PM	0	1	144	0	1	0	146
6:00 PM	0	1	137	0	1	0	139
6:15 PM	1	0	125	0	0	1	127
6:30 PM	0	0	98	0	0	0	98
6:45 PM	0	1	104	0	0	0	105
7:00 PM	0	0	79	1	0	0	80
7:15 PM	0	0	87	0	2	0	89
7:30 PM	0	0	88	0	0	0	88
7:45 PM	0	0	85	0	1	0	86
8:00 PM	0	0	83	0	0	0	83
8:15 PM	0	0	83	0	2	0	85
8:30 PM	0	0	65	0	1	0	66
8:45 PM	0	2	62	0	1	0	65
9:00 PM	0	0	50	0	1	0	51
9:15 PM	0	0	54	0	0	0	54
9:30 PM	0	0	34	0	0	1	35
9:45 PM	0	1	21	0	0	1	23
10:00 PM	0	0	33	0	0	0	33
10:15 PM	0	0	24	0	0	0	24
10:30 PM	0	0	38	0	0	0	38
10:45 PM	0	0	27	0	0	0	27
11:00 PM	0	0	31	0	1	0	32
11:15 PM	0	0	29	0	0	0	29
11:30 PM	0	0	23	0	0	0	23
11:45 PM	0	0	19	0	0	0	19
PM Total	**2**	**23**	**4867**	**7**	**100**	**12**	**5011**
Percentage	**0.04%**	**0.46%**	**97.13%**	**0.14%**	**2.00%**	**0.24%**	
PM Peak	**2:15 PM**	**3:45 PM**	**4:00 PM**	**1:45 PM**	**12:00 PM**	**12:00 PM**	**4:00 PM**
Volume	**1**	**8**	**673**	**2**	**36**	**4**	**685**
Day Total	**2**	**28**	**7743**	**11**	**229**	**44**	**8057**
Percentage	**0.02%**	**0.35%**	**96.10%**	**0.14%**	**2.84%**	**0.55%**	

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 2540244 ATR-C

Count Date: **Thursday, October 24, 2024**
Direction: **SB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	12	0	0	0	12
12:15 AM	0	0	10	0	0	0	10
12:30 AM	0	0	4	0	1	0	5
12:45 AM	0	0	4	0	0	0	4
1:00 AM	0	0	5	0	0	0	5
1:15 AM	0	0	3	0	0	0	3
1:30 AM	0	0	7	0	0	0	7
1:45 AM	0	0	2	0	0	0	2
2:00 AM	0	0	3	0	0	0	3
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	3	0	0	0	3
2:45 AM	0	0	4	0	0	0	4
3:00 AM	0	0	4	0	0	0	4
3:15 AM	0	0	4	0	1	0	5
3:30 AM	0	0	8	0	0	0	8
3:45 AM	0	0	5	0	2	0	7
4:00 AM	0	0	5	0	1	0	6
4:15 AM	0	0	4	0	0	0	4
4:30 AM	0	0	9	0	0	0	9
4:45 AM	0	0	10	0	0	0	10
5:00 AM	0	1	18	0	0	0	19
5:15 AM	0	0	23	0	0	0	23
5:30 AM	0	0	30	0	1	0	31
5:45 AM	0	0	39	1	2	0	42
6:00 AM	0	0	39	0	1	1	41
6:15 AM	0	0	75	0	1	0	76
6:30 AM	0	0	67	0	2	1	70
6:45 AM	0	0	82	1	4	2	89
7:00 AM	0	0	97	1	6	0	104
7:15 AM	0	0	105	0	4	4	113
7:30 AM	0	0	120	1	2	0	123
7:45 AM	0	0	146	0	7	1	154
8:00 AM	0	0	119	0	4	1	124
8:15 AM	0	0	122	0	4	2	128
8:30 AM	0	0	149	0	3	1	153
8:45 AM	0	0	108	1	6	0	115
9:00 AM	0	0	106	0	4	3	113
9:15 AM	0	1	89	0	5	2	97
9:30 AM	0	0	84	0	5	3	92
9:45 AM	0	0	96	0	11	5	112
10:00 AM	0	0	75	0	2	1	78
10:15 AM	0	0	99	0	4	1	104
10:30 AM	0	1	92	0	1	1	95
10:45 AM	0	0	102	0	6	5	113
11:00 AM	0	0	98	1	7	1	107
11:15 AM	0	0	89	0	5	1	95
11:30 AM	0	0	105	0	3	1	109
11:45 AM	0	1	112	1	6	1	121
AM Total	**0**	**4**	**2593**	**7**	**111**	**38**	**2753**
Percentage	**0.00%**	**0.15%**	**94.19%**	**0.25%**	**4.03%**	**1.38%**	
AM Peak	**12:00 AM**	**4:15 AM**	**7:45 AM**	**6:45 AM**	**9:00 AM**	**9:00 AM**	**7:45 AM**
Volume	**0**	**1**	**536**	**3**	**25**	**13**	**559**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	128	0	11	3	142
12:15 PM	0	0	106	0	4	1	111
12:30 PM	0	0	119	0	9	1	129
12:45 PM	0	0	119	0	5	2	126
1:00 PM	0	0	129	0	7	0	136
1:15 PM	0	0	135	0	2	0	137
1:30 PM	0	1	127	2	6	1	137
1:45 PM	0	1	150	0	5	1	157
2:00 PM	0	0	140	0	6	1	147
2:15 PM	0	0	153	0	11	2	166
2:30 PM	0	0	146	1	1	2	150
2:45 PM	0	0	151	1	7	1	160
3:00 PM	0	0	144	1	0	0	145
3:15 PM	0	0	159	1	2	0	162
3:30 PM	1	0	154	0	0	2	157
3:45 PM	1	1	165	1	1	1	170
4:00 PM	0	0	156	2	1	1	160
4:15 PM	1	0	167	0	4	0	172
4:30 PM	0	0	147	1	0	0	148
4:45 PM	0	0	153	0	1	1	155
5:00 PM	0	0	150	0	1	0	151
5:15 PM	0	0	186	0	1	0	187
5:30 PM	1	0	166	0	2	1	170
5:45 PM	0	0	179	0	0	0	179
6:00 PM	0	0	131	0	0	1	132
6:15 PM	0	1	128	1	0	0	130
6:30 PM	0	0	115	0	1	0	116
6:45 PM	0	0	106	1	0	0	107
7:00 PM	0	0	105	0	0	0	105
7:15 PM	1	0	88	0	0	0	89
7:30 PM	0	0	96	0	0	0	96
7:45 PM	0	0	90	0	1	0	91
8:00 PM	0	0	73	0	2	0	75
8:15 PM	0	0	61	0	0	0	61
8:30 PM	0	0	61	0	1	0	62
8:45 PM	0	0	59	0	1	0	60
9:00 PM	0	0	43	0	0	0	43
9:15 PM	0	0	56	0	0	0	56
9:30 PM	0	0	39	0	0	0	39
9:45 PM	0	0	40	0	0	0	40
10:00 PM	0	0	51	0	1	0	52
10:15 PM	0	0	42	0	0	0	42
10:30 PM	0	0	38	0	0	0	38
10:45 PM	0	0	31	0	0	0	31
11:00 PM	0	0	17	0	1	0	18
11:15 PM	0	0	18	0	0	0	18
11:30 PM	0	0	31	0	0	0	31
11:45 PM	0	0	15	0	1	0	16
PM Total	**5**	**4**	**5063**	**12**	**96**	**22**	**5202**
Percentage	**0.10%**	**0.08%**	**97.33%**	**0.23%**	**1.85%**	**0.42%**	
PM Peak	**3:30 PM**	**1:00 PM**	**5:00 PM**	**2:30 PM**	**12:00 PM**	**12:00 PM**	**5:00 PM**
Volume	**3**	**2**	**681**	**4**	**29**	**7**	**687**
Day Total	**5**	**8**	**7656**	**19**	**207**	**60**	**7955**
Percentage	**0.06%**	**0.10%**	**96.24%**	**0.24%**	**2.60%**	**0.75%**	

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # **2540244 ATR-C**

Direction: **NB**

Weekly Report

Day	Wednesday		Thursday												Week	
Date	10/23/24		10/24/24												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	11	133	5	162	0	0	0	0	0	0	0	0	0	0	8	148
12:15	3	147	3	131	0	0	0	0	0	0	0	0	0	0	3	139
12:30	6	153	4	147	0	0	0	0	0	0	0	0	0	0	5	150
12:45	3	133	7	167	0	0	0	0	0	0	0	0	0	0	5	150
1:00	4	153	0	167	0	0	0	0	0	0	0	0	0	0	2	160
1:15	2	147	1	144	0	0	0	0	0	0	0	0	0	0	2	146
1:30	6	138	6	162	0	0	0	0	0	0	0	0	0	0	6	150
1:45	5	153	3	131	0	0	0	0	0	0	0	0	0	0	4	142
2:00	5	137	2	160	0	0	0	0	0	0	0	0	0	0	4	149
2:15	1	123	3	187	0	0	0	0	0	0	0	0	0	0	2	155
2:30	4	135	6	159	0	0	0	0	0	0	0	0	0	0	5	147
2:45	9	160	4	146	0	0	0	0	0	0	0	0	0	0	7	153
3:00	5	176	5	179	0	0	0	0	0	0	0	0	0	0	5	178
3:15	10	169	5	150	0	0	0	0	0	0	0	0	0	0	8	160
3:30	6	169	8	180	0	0	0	0	0	0	0	0	0	0	7	175
3:45	10	162	13	188	0	0	0	0	0	0	0	0	0	0	12	175
4:00	9	198	13	181	0	0	0	0	0	0	0	0	0	0	11	190
4:15	21	198	20	191	0	0	0	0	0	0	0	0	0	0	21	195
4:30	28	183	32	213	0	0	0	0	0	0	0	0	0	0	30	198
4:45	49	226	46	219	0	0	0	0	0	0	0	0	0	0	48	223
5:00	51	190	57	188	0	0	0	0	0	0	0	0	0	0	54	189
5:15	57	211	71	208	0	0	0	0	0	0	0	0	0	0	64	210
5:30	113	200	109	219	0	0	0	0	0	0	0	0	0	0	111	210
5:45	127	177	115	157	0	0	0	0	0	0	0	0	0	0	121	167
6:00	128	168	133	157	0	0	0	0	0	0	0	0	0	0	131	163
6:15	139	152	163	141	0	0	0	0	0	0	0	0	0	0	151	147
6:30	146	144	154	139	0	0	0	0	0	0	0	0	0	0	150	142
6:45	172	91	181	115	0	0	0	0	0	0	0	0	0	0	177	103
7:00	122	114	155	105	0	0	0	0	0	0	0	0	0	0	139	110
7:15	168	92	187	105	0	0	0	0	0	0	0	0	0	0	178	99
7:30	191	84	175	92	0	0	0	0	0	0	0	0	0	0	183	88
7:45	188	76	197	79	0	0	0	0	0	0	0	0	0	0	193	78
8:00	197	68	188	76	0	0	0	0	0	0	0	0	0	0	193	72
8:15	178	82	183	77	0	0	0	0	0	0	0	0	0	0	181	80
8:30	137	62	152	69	0	0	0	0	0	0	0	0	0	0	145	66
8:45	127	43	158	54	0	0	0	0	0	0	0	0	0	0	143	49
9:00	151	62	136	64	0	0	0	0	0	0	0	0	0	0	144	63
9:15	153	48	141	54	0	0	0	0	0	0	0	0	0	0	147	51
9:30	132	35	150	33	0	0	0	0	0	0	0	0	0	0	141	34
9:45	142	31	143	27	0	0	0	0	0	0	0	0	0	0	143	29
10:00	137	24	116	38	0	0	0	0	0	0	0	0	0	0	127	31
10:15	145	23	115	38	0	0	0	0	0	0	0	0	0	0	130	31
10:30	160	17	139	26	0	0	0	0	0	0	0	0	0	0	150	22
10:45	146	11	113	26	0	0	0	0	0	0	0	0	0	0	130	19
11:00	128	25	138	28	0	0	0	0	0	0	0	0	0	0	133	27
11:15	151	14	156	14	0	0	0	0	0	0	0	0	0	0	154	14
11:30	156	7	156	14	0	0	0	0	0	0	0	0	0	0	156	11
11:45	134	3	136	16	0	0	0	0	0	0	0	0	0	0	135	10
Total	**4173**	**5447**	**4203**	**5723**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4188**	**5585**
Day Total	**9620**		**9926**		**0**		**0**		**0**		**0**		**0**		**9773**	
Peak HR	**7:30 AM**	**4:45 PM**	**7:15 AM**	**4:45 PM**											**7:30 AM**	**4:45 PM**
Volume	**754**	**827**	**747**	**834**											**749**	**831**

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # **2540244 ATR-C**

Direction: **SB**

Weekly Report

Day	Wednesday		Thursday												Week	
Date	10/23/24		10/24/24												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	13	147	12	142	0	0	0	0	0	0	0	0	0	0	13	145
12:15	8	124	10	111	0	0	0	0	0	0	0	0	0	0	9	118
12:30	7	146	5	129	0	0	0	0	0	0	0	0	0	0	6	138
12:45	3	119	4	126	0	0	0	0	0	0	0	0	0	0	4	123
1:00	3	105	5	136	0	0	0	0	0	0	0	0	0	0	4	121
1:15	1	119	3	137	0	0	0	0	0	0	0	0	0	0	2	128
1:30	5	114	7	137	0	0	0	0	0	0	0	0	0	0	6	126
1:45	4	129	2	157	0	0	0	0	0	0	0	0	0	0	3	143
2:00	5	123	3	147	0	0	0	0	0	0	0	0	0	0	4	135
2:15	5	160	1	166	0	0	0	0	0	0	0	0	0	0	3	163
2:30	3	137	3	150	0	0	0	0	0	0	0	0	0	0	3	144
2:45	2	154	4	160	0	0	0	0	0	0	0	0	0	0	3	157
3:00	3	173	4	145	0	0	0	0	0	0	0	0	0	0	4	159
3:15	7	128	5	162	0	0	0	0	0	0	0	0	0	0	6	145
3:30	7	168	8	157	0	0	0	0	0	0	0	0	0	0	8	163
3:45	7	168	7	170	0	0	0	0	0	0	0	0	0	0	7	169
4:00	3	175	6	160	0	0	0	0	0	0	0	0	0	0	5	168
4:15	8	171	4	172	0	0	0	0	0	0	0	0	0	0	6	172
4:30	3	142	9	148	0	0	0	0	0	0	0	0	0	0	6	145
4:45	14	197	10	155	0	0	0	0	0	0	0	0	0	0	12	176
5:00	16	161	19	151	0	0	0	0	0	0	0	0	0	0	18	156
5:15	22	158	23	187	0	0	0	0	0	0	0	0	0	0	23	173
5:30	21	148	31	170	0	0	0	0	0	0	0	0	0	0	26	159
5:45	46	146	42	179	0	0	0	0	0	0	0	0	0	0	44	163
6:00	41	139	41	132	0	0	0	0	0	0	0	0	0	0	41	136
6:15	62	127	76	130	0	0	0	0	0	0	0	0	0	0	69	129
6:30	62	98	70	116	0	0	0	0	0	0	0	0	0	0	66	107
6:45	117	105	89	107	0	0	0	0	0	0	0	0	0	0	103	106
7:00	138	80	104	105	0	0	0	0	0	0	0	0	0	0	121	93
7:15	106	89	113	89	0	0	0	0	0	0	0	0	0	0	110	89
7:30	123	88	123	96	0	0	0	0	0	0	0	0	0	0	123	92
7:45	124	86	154	91	0	0	0	0	0	0	0	0	0	0	139	89
8:00	144	83	124	75	0	0	0	0	0	0	0	0	0	0	134	79
8:15	157	85	128	61	0	0	0	0	0	0	0	0	0	0	143	73
8:30	212	66	153	62	0	0	0	0	0	0	0	0	0	0	183	64
8:45	198	65	115	60	0	0	0	0	0	0	0	0	0	0	157	63
9:00	157	51	113	43	0	0	0	0	0	0	0	0	0	0	135	47
9:15	129	54	97	56	0	0	0	0	0	0	0	0	0	0	113	55
9:30	114	35	92	39	0	0	0	0	0	0	0	0	0	0	103	37
9:45	98	23	112	40	0	0	0	0	0	0	0	0	0	0	105	32
10:00	112	33	78	52	0	0	0	0	0	0	0	0	0	0	95	43
10:15	103	24	104	42	0	0	0	0	0	0	0	0	0	0	104	33
10:30	103	38	95	38	0	0	0	0	0	0	0	0	0	0	99	38
10:45	110	27	113	31	0	0	0	0	0	0	0	0	0	0	112	29
11:00	103	32	107	18	0	0	0	0	0	0	0	0	0	0	105	25
11:15	101	29	95	18	0	0	0	0	0	0	0	0	0	0	98	24
11:30	113	23	109	31	0	0	0	0	0	0	0	0	0	0	111	27
11:45	103	19	121	16	0	0	0	0	0	0	0	0	0	0	112	18
Total	**3046**	**5011**	**2753**	**5202**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2900**	**5107**
Day Total	**8057**		**7955**		**0**		**0**		**0**		**0**		**0**		**8006**	
Peak HR	**8:15 AM**	**4:00 PM**	**7:45 AM**	**5:00 PM**											**8:15 AM**	**3:30 PM**
Volume	**724**	**685**	**559**	**687**											**617**	**671**

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Cars and Heavy Vehicles (Combined)**

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	37	40	0	77	14	52	0	66	104	51	0	155	298
8:15 AM	34	41	0	75	27	58	0	85	105	52	1	158	318
8:30 AM	33	31	0	64	17	63	0	80	83	38	0	121	265
8:45 AM	30	48	0	78	46	44	0	90	90	57	0	147	315
Total	134	160	0	294	104	217	0	321	382	198	1	581	1196
9:00 AM	26	30	0	56	20	50	0	70	64	32	0	96	222
9:15 AM	25	16	0	41	10	46	0	56	77	33	0	110	207
9:30 AM	22	25	0	47	16	44	0	60	72	37	0	109	216
9:45 AM	19	15	0	34	12	39	0	51	73	22	0	95	180
Total	92	86	0	178	58	179	0	237	286	124	0	410	825
Grand Total	226	246	0	472	162	396	0	558	668	322	1	991	2021
Approach %	47.9	52.1	0.0		29.0	71.0	0.0		67.4	32.5	0.1		
Total %	11.2	12.2	0.0	23.4	8.0	19.6	0.0	27.6	33.1	15.9	0.0	49.0	
Exiting Leg Total				484				914				623	2021
Cars	216	233	0	449	151	388	0	539	658	312	1	971	1959
% Cars	95.6	94.7	0.0	95.1	93.2	98.0	0.0	96.6	98.5	96.9	100.0	98.0	96.9
Exiting Leg Total				463				891				605	1959
Heavy Vehicles	10	13	0	23	11	8	0	19	10	10	0	20	62
% Heavy Vehicles	4.4	5.3	0.0	4.9	6.8	2.0	0.0	3.4	1.5	3.1	0.0	2.0	3.1
Exiting Leg Total				21				23				18	62

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	37	40	0	77	14	52	0	66	104	51	0	155	298
8:15 AM	34	41	0	75	27	58	0	85	105	52	1	158	318
8:30 AM	33	31	0	64	17	63	0	80	83	38	0	121	265
8:45 AM	30	48	0	78	46	44	0	90	90	57	0	147	315
Total Volume	134	160	0	294	104	217	0	321	382	198	1	581	1196
% Approach Total	45.6	54.4	0.0		32.4	67.6	0.0		65.7	34.1	0.2		
PHF	0.905	0.833	0.000	0.942	0.565	0.861	0.000	0.892	0.910	0.868	0.250	0.919	0.940
Cars	132	148	0	280	97	215	0	312	375	190	1	566	1158
Cars %	98.5	92.5	0.0	95.2	93.3	99.1	0.0	97.2	98.2	96.0	100.0	97.4	96.8
Heavy Vehicles	2	12	0	14	7	2	0	9	7	8	0	15	38
Heavy Vehicles %	1.5	7.5	0.0	4.8	6.7	0.9	0.0	2.8	1.8	4.0	0.0	2.6	3.2
Cars Enter Leg	132	148	0	280	97	215	0	312	375	190	1	566	1158
Heavy Enter Leg	2	12	0	14	7	2	0	9	7	8	0	15	38
Total Entering Leg	134	160	0	294	104	217	0	321	382	198	1	581	1196
Cars Exiting Leg				287				523				348	1158
Heavy Exiting Leg				15				19				4	38
Total Exiting Leg				302				542				352	1196

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Cars**

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	36	40	0	76	14	51	0	65	102	48	0	150	291
8:15 AM	34	37	0	71	27	58	0	85	102	52	1	155	311
8:30 AM	32	30	0	62	17	62	0	79	82	36	0	118	259
8:45 AM	30	41	0	71	39	44	0	83	89	54	0	143	297
Total	132	148	0	280	97	215	0	312	375	190	1	566	1158
9:00 AM	21	29	0	50	17	50	0	67	64	31	0	95	212
9:15 AM	25	16	0	41	10	42	0	52	76	33	0	109	202
9:30 AM	19	25	0	44	15	44	0	59	72	36	0	108	211
9:45 AM	19	15	0	34	12	37	0	49	71	22	0	93	176
Total	84	85	0	169	54	173	0	227	283	122	0	405	801
Grand Total	216	233	0	449	151	388	0	539	658	312	1	971	1959
Approach %	48.1	51.9	0.0		28.0	72.0	0.0		67.8	32.1	0.1		
Total %	11.0	11.9	0.0	22.9	7.7	19.8	0.0	27.5	33.6	15.9	0.1	49.6	
Exiting Leg Total				463				891				605	1959

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	36	40	0	76	14	51	0	65	102	48	0	150	291
8:15 AM	34	37	0	71	27	58	0	85	102	52	1	155	311
8:30 AM	32	30	0	62	17	62	0	79	82	36	0	118	259
8:45 AM	30	41	0	71	39	44	0	83	89	54	0	143	297
Total Volume	132	148	0	280	97	215	0	312	375	190	1	566	1158
% Approach Total	47.1	52.9	0.0		31.1	68.9	0.0		66.3	33.6	0.2		
PHF	0.917	0.902	0.000	0.921	0.622	0.867	0.000	0.918	0.919	0.880	0.250	0.913	0.931
Entering Leg	132	148	0	280	97	215	0	312	375	190	1	566	1158
Exiting Leg				287				523				348	1158
Total				567				835				914	2316

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	1	0	1	2	3	0	5	7
8:15 AM	0	4	0	4	0	0	0	0	3	0	0	3	7
8:30 AM	1	1	0	2	0	1	0	1	1	2	0	3	6
8:45 AM	0	7	0	7	7	0	0	7	1	3	0	4	18
Total	2	12	0	14	7	2	0	9	7	8	0	15	38
9:00 AM	5	1	0	6	3	0	0	3	0	1	0	1	10
9:15 AM	0	0	0	0	0	4	0	4	1	0	0	1	5
9:30 AM	3	0	0	3	1	0	0	1	0	1	0	1	5
9:45 AM	0	0	0	0	0	2	0	2	2	0	0	2	4
Total	8	1	0	9	4	6	0	10	3	2	0	5	24
Grand Total	10	13	0	23	11	8	0	19	10	10	0	20	62
Approach %	43.5	56.5	0.0		57.9	42.1	0.0		50.0	50.0	0.0		
Total %	16.1	21.0	0.0	37.1	17.7	12.9	0.0	30.6	16.1	16.1	0.0	32.3	
Exiting Leg Total				21				23				18	62
Buses	4	8	0	12	8	0	0	8	0	2	0	2	22
% Buses	40.0	61.5	0.0	52.2	72.7	0.0	0.0	42.1	0.0	20.0	0.0	10.0	35.5
Exiting Leg Total				10				8				4	22
Single-Unit Trucks	6	4	0	10	3	6	0	9	9	7	0	16	35
% Single-Unit	60.0	30.8	0.0	43.5	27.3	75.0	0.0	47.4	90.0	70.0	0.0	80.0	56.5
Exiting Leg Total				10				13				12	35
Articulated Trucks	0	1	0	1	0	2	0	2	1	1	0	2	5
% Articulated	0.0	7.7	0.0	4.3	0.0	25.0	0.0	10.5	10.0	10.0	0.0	10.0	8.1
Exiting Leg Total				1				2				2	5

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:15 AM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:15 AM	0	4	0	4	0	0	0	0	3	0	0	3	7
8:30 AM	1	1	0	2	0	1	0	1	1	2	0	3	6
8:45 AM	0	7	0	7	7	0	0	7	1	3	0	4	18
9:00 AM	5	1	0	6	3	0	0	3	0	1	0	1	10
Total Volume	6	13	0	19	10	1	0	11	5	6	0	11	41
% Approach Total	31.6	68.4	0.0		90.9	9.1	0.0		45.5	54.5	0.0		
PHF	0.300	0.464	0.000	0.679	0.357	0.250	0.000	0.393	0.417	0.500	0.000	0.688	0.569
Buses	4	8	0	12	8	0	0	8	0	2	0	2	22
Buses %	66.7	61.5	0.0	63.2	80.0	0.0	0.0	72.7	0.0	33.3	0.0	18.2	53.7
Single-Unit Trucks	2	4	0	6	2	0	0	2	5	4	0	9	17
Single-Unit %	33.3	30.8	0.0	31.6	20.0	0.0	0.0	18.2	100.0	66.7	0.0	81.8	41.5
Articulated Trucks	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated %	0.0	7.7	0.0	5.3	0.0	100.0	0.0	9.1	0.0	0.0	0.0	0.0	4.9
Buses	4	8	0	12	8	0	0	8	0	2	0	2	22
Single-Unit Trucks	2	4	0	6	2	0	0	2	5	4	0	9	17
Articulated Trucks	0	1	0	1	0	1	0	1	0	0	0	0	2
Total Entering Leg	6	13	0	19	10	1	0	11	5	6	0	11	41
Buses				10				8				4	22
Single-Unit Trucks				6				9				2	17
Articulated Trucks				0				1				1	2
Total Exiting Leg				16				18				7	41

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	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
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	7	0	7	5	0	0	5	0	2	0	2	14
Total	0	7	0	7	5	0	0	5	0	2	0	2	14
9:00 AM	4	1	0	5	3	0	0	3	0	0	0	0	8
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	1	0	5	3	0	0	3	0	0	0	0	8
Grand Total	4	8	0	12	8	0	0	8	0	2	0	2	22
Approach %	33.3	66.7	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	18.2	36.4	0.0	54.5	36.4	0.0	0.0	36.4	0.0	9.1	0.0	9.1	
Exiting Leg Total				10				8				4	22

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:15 AM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:15 AM	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
8:45 AM	0	7	0	7	5	0	0	5	0	2	0	2	14
9:00 AM	4	1	0	5	3	0	0	3	0	0	0	0	8
Total Volume	4	8	0	12	8	0	0	8	0	2	0	2	22
% Approach Total	33.3	66.7	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.286	0.000	0.429	0.400	0.000	0.000	0.400	0.000	0.250	0.000	0.250	0.393
Entering Leg	4	8	0	12	8	0	0	8	0	2	0	2	22
Exiting Leg				10				8				4	22
Total				22				16				6	44

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	1	0	1	2	2	0	4	6
8:15 AM	0	3	0	3	0	0	0	0	3	0	0	3	6
8:30 AM	1	1	0	2	0	0	0	0	1	2	0	3	5
8:45 AM	0	0	0	0	2	0	0	2	1	1	0	2	4
Total	2	4	0	6	2	1	0	3	7	5	0	12	21
9:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
9:15 AM	0	0	0	0	0	3	0	3	1	0	0	1	4
9:30 AM	3	0	0	3	1	0	0	1	0	1	0	1	5
9:45 AM	0	0	0	0	0	2	0	2	1	0	0	1	3
Total	4	0	0	4	1	5	0	6	2	2	0	4	14
Grand Total	6	4	0	10	3	6	0	9	9	7	0	16	35
Approach %	60.0	40.0	0.0		33.3	66.7	0.0		56.3	43.8	0.0		
Total %	17.1	11.4	0.0	28.6	8.6	17.1	0.0	25.7	25.7	20.0	0.0	45.7	
Exiting Leg Total				10				13				12	35

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	1	0	1	2	2	0	4	6
8:15 AM	0	3	0	3	0	0	0	0	3	0	0	3	6
8:30 AM	1	1	0	2	0	0	0	0	1	2	0	3	5
8:45 AM	0	0	0	0	2	0	0	2	1	1	0	2	4
Total Volume	2	4	0	6	2	1	0	3	7	5	0	12	21
% Approach Total	33.3	66.7	0.0		66.7	33.3	0.0		58.3	41.7	0.0		
PHF	0.500	0.333	0.000	0.500	0.250	0.250	0.000	0.375	0.583	0.625	0.000	0.750	0.875
Entering Leg	2	4	0	6	2	1	0	3	7	5	0	12	21
Exiting Leg				7				11				3	21
Total				13				14				15	42

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Articulated Trucks**

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	1	0	1	0	1	0	1	3
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	1	0	1	1	0	0	1	2
Grand Total	0	1	0	1	0	2	0	2	1	1	0	2	5
Approach %	0.0	100.0	0.0		0.0	100.0	0.0		50.0	50.0	0.0		
Total %	0.0	20.0	0.0	20.0	0.0	40.0	0.0	40.0	20.0	20.0	0.0	40.0	
Exiting Leg Total				1				2				2	5

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	1	0	1	0	1	0	1	3
% Approach Total	0.0	100.0	0.0		0.0	100.0	0.0		0.0	100.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.250	0.750
Entering Leg	0	1	0	1	0	1	0	1	0	1	0	1	3
Exiting Leg				1				1				1	3
Total				2				2				2	6

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Salem Street from North						Middlesex Avenue from South						Salem Street 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	1	0	0	0	0	1	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Approach %	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		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						1						0						0	1

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:30 AM	Salem Street from North						Middlesex Avenue from South						Salem Street 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Exiting Leg						1						0						0	1
Total						1						1						0	2

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Salem Street from North						Middlesex Avenue from South						Salem Street 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	1	1	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	100		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	
Exiting Leg Total						0						0						1	1

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:30 AM	Salem Street from North						Middlesex Avenue from South						Salem Street 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	0.0	100.0		
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	0.250	0.250	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Exiting Leg						0						0						1	1
Total						0						0						2	2

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Cars and Heavy Vehicles (Combined)

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	67	19	0	86	15	104	0	119	69	34	1	104	309
2:45 PM	42	26	0	68	22	126	0	148	76	36	0	112	328
Total	109	45	0	154	37	230	0	267	145	70	1	216	637
3:00 PM	73	30	0	103	33	104	0	137	76	36	0	112	352
3:15 PM	87	49	0	136	35	113	0	148	74	41	0	115	399
3:30 PM	102	39	0	141	30	120	0	150	75	54	0	129	420
3:45 PM	108	40	0	148	21	119	0	140	92	36	0	128	416
Total	370	158	0	528	119	456	0	575	317	167	0	484	1587
4:00 PM	106	41	0	147	19	104	0	123	70	45	0	115	385
4:15 PM	100	58	0	158	35	117	0	152	86	51	0	137	447
Total	206	99	0	305	54	221	0	275	156	96	0	252	832
Grand Total	685	302	0	987	210	907	0	1117	618	333	1	952	3056
Approach %	69.4	30.6	0.0		18.8	81.2	0.0		64.9	35.0	0.1		
Total %	22.4	9.9	0.0	32.3	6.9	29.7	0.0	36.6	20.2	10.9	0.0	31.2	
Exiting Leg Total				543				920				1593	3056
Cars	675	292	0	967	200	899	0	1099	613	324	1	938	3004
% Cars	98.5	96.7	0.0	98.0	95.2	99.1	0.0	98.4	99.2	97.3	100.0	98.5	98.3
Exiting Leg Total				524				905				1575	3004
Heavy Vehicles	10	10	0	20	10	8	0	18	5	9	0	14	52
% Heavy Vehicles	1.5	3.3	0.0	2.0	4.8	0.9	0.0	1.6	0.8	2.7	0.0	1.5	1.7
Exiting Leg Total				19				15				18	52

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
3:30 PM	102	39	0	141	30	120	0	150	75	54	0	129	420
3:45 PM	108	40	0	148	21	119	0	140	92	36	0	128	416
4:00 PM	106	41	0	147	19	104	0	123	70	45	0	115	385
4:15 PM	100	58	0	158	35	117	0	152	86	51	0	137	447
Total Volume	416	178	0	594	105	460	0	565	323	186	0	509	1668
% Approach Total	70.0	30.0	0.0		18.6	81.4	0.0		63.5	36.5	0.0		
PHF	0.963	0.767	0.000	0.940	0.750	0.958	0.000	0.929	0.878	0.861	0.000	0.929	0.933
Cars	409	172	0	581	103	458	0	561	322	182	0	504	1646
Cars %	98.3	96.6	0.0	97.8	98.1	99.6	0.0	99.3	99.7	97.8	0.0	99.0	98.7
Heavy Vehicles	7	6	0	13	2	2	0	4	1	4	0	5	22
Heavy Vehicles %	1.7	3.4	0.0	2.2	1.9	0.4	0.0	0.7	0.3	2.2	0.0	1.0	1.3
Cars Enter Leg	409	172	0	581	103	458	0	561	322	182	0	504	1646
Heavy Enter Leg	7	6	0	13	2	2	0	4	1	4	0	5	22
Total Entering Leg	416	178	0	594	105	460	0	565	323	186	0	509	1668
Cars Exiting Leg				285				494				867	1646
Heavy Exiting Leg				6				7				9	22
Total Exiting Leg				291				501				876	1668

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	66	19	0	85	15	102	0	117	68	33	1	102	304
2:45 PM	42	26	0	68	22	123	0	145	75	36	0	111	324
Total	108	45	0	153	37	225	0	262	143	69	1	213	628
3:00 PM	72	30	0	102	30	104	0	134	75	34	0	109	345
3:15 PM	86	45	0	131	30	112	0	142	73	39	0	112	385
3:30 PM	98	34	0	132	29	119	0	148	74	52	0	126	406
3:45 PM	107	40	0	147	21	118	0	139	92	35	0	127	413
Total	363	149	0	512	110	453	0	563	314	160	0	474	1549
4:00 PM	104	40	0	144	19	104	0	123	70	45	0	115	382
4:15 PM	100	58	0	158	34	117	0	151	86	50	0	136	445
Total	204	98	0	302	53	221	0	274	156	95	0	251	827
Grand Total	675	292	0	967	200	899	0	1099	613	324	1	938	3004
Approach %	69.8	30.2	0.0		18.2	81.8	0.0		65.4	34.5	0.1		
Total %	22.5	9.7	0.0	32.2	6.7	29.9	0.0	36.6	20.4	10.8	0.0	31.2	
Exiting Leg Total				524				905				1575	3004

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
3:30 PM	98	34	0	132	29	119	0	148	74	52	0	126	406
3:45 PM	107	40	0	147	21	118	0	139	92	35	0	127	413
4:00 PM	104	40	0	144	19	104	0	123	70	45	0	115	382
4:15 PM	100	58	0	158	34	117	0	151	86	50	0	136	445
Total Volume	409	172	0	581	103	458	0	561	322	182	0	504	1646
% Approach Total	70.4	29.6	0.0		18.4	81.6	0.0		63.9	36.1	0.0		
PHF	0.956	0.741	0.000	0.919	0.757	0.962	0.000	0.929	0.875	0.875	0.000	0.926	0.925
Entering Leg	409	172	0	581	103	458	0	561	322	182	0	504	1646
Exiting Leg				285				494				867	1646
Total				866				1055				1371	3292

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	1	0	0	1	0	2	0	2	1	1	0	2	5
2:45 PM	0	0	0	0	0	3	0	3	1	0	0	1	4
Total	1	0	0	1	0	5	0	5	2	1	0	3	9
3:00 PM	1	0	0	1	3	0	0	3	1	2	0	3	7
3:15 PM	1	4	0	5	5	1	0	6	1	2	0	3	14
3:30 PM	4	5	0	9	1	1	0	2	1	2	0	3	14
3:45 PM	1	0	0	1	0	1	0	1	0	1	0	1	3
Total	7	9	0	16	9	3	0	12	3	7	0	10	38
4:00 PM	2	1	0	3	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
Total	2	1	0	3	1	0	0	1	0	1	0	1	5
Grand Total	10	10	0	20	10	8	0	18	5	9	0	14	52
Approach %	50.0	50.0	0.0		55.6	44.4	0.0		35.7	64.3	0.0		
Total %	19.2	19.2	0.0	38.5	19.2	15.4	0.0	34.6	9.6	17.3	0.0	26.9	
Exiting Leg Total				19				15				18	52
Buses	3	8	0	11	6	4	0	10	2	3	0	5	26
% Buses	30.0	80.0	0.0	55.0	60.0	50.0	0.0	55.6	40.0	33.3	0.0	35.7	50.0
Exiting Leg Total				9				10				7	26
Single-Unit Trucks	7	2	0	9	4	4	0	8	3	4	0	7	24
% Single-Unit	70.0	20.0	0.0	45.0	40.0	50.0	0.0	44.4	60.0	44.4	0.0	50.0	46.2
Exiting Leg Total				8				5				11	24
Articulated Trucks	0	0	0	0	0	0	0	0	0	2	0	2	2
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.2	0.0	14.3	3.8
Exiting Leg Total				2				0				0	2

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:45 PM	0	0	0	0	0	3	0	3	1	0	0	1	4
3:00 PM	1	0	0	1	3	0	0	3	1	2	0	3	7
3:15 PM	1	4	0	5	5	1	0	6	1	2	0	3	14
3:30 PM	4	5	0	9	1	1	0	2	1	2	0	3	14
Total Volume	6	9	0	15	9	5	0	14	4	6	0	10	39
% Approach Total	40.0	60.0	0.0		64.3	35.7	0.0		40.0	60.0	0.0		
PHF	0.375	0.450	0.000	0.417	0.450	0.417	0.000	0.583	1.000	0.750	0.000	0.833	0.696
Buses	3	7	0	10	6	3	0	9	2	3	0	5	24
Buses %	50.0	77.8	0.0	66.7	66.7	60.0	0.0	64.3	50.0	50.0	0.0	50.0	61.5
Single-Unit Trucks	3	2	0	5	3	2	0	5	2	2	0	4	14
Single-Unit %	50.0	22.2	0.0	33.3	33.3	40.0	0.0	35.7	50.0	33.3	0.0	40.0	35.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	10.0	2.6
Buses	3	7	0	10	6	3	0	9	2	3	0	5	24
Single-Unit Trucks	3	2	0	5	3	2	0	5	2	2	0	4	14
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Entering Leg	6	9	0	15	9	5	0	14	4	6	0	10	39
Buses				9				9				6	24
Single-Unit Trucks				5				4				5	14
Articulated Trucks				1				0				0	1
Total Exiting Leg				15				13				11	39

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Buses

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
2:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	2	0	2	0	0	0	0	2
3:00 PM	1	0	0	1	2	0	0	2	1	0	0	1	4
3:15 PM	0	3	0	3	3	1	0	4	0	1	0	1	8
3:30 PM	2	4	0	6	1	1	0	2	1	2	0	3	11
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	7	0	10	6	2	0	8	2	3	0	5	23
4:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	3	8	0	11	6	4	0	10	2	3	0	5	26
Approach %	27.3	72.7	0.0		60.0	40.0	0.0		40.0	60.0	0.0		
Total %	11.5	30.8	0.0	42.3	23.1	15.4	0.0	38.5	7.7	11.5	0.0	19.2	
Exiting Leg Total				9				10				7	26

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
3:00 PM	1	0	0	1	2	0	0	2	1	0	0	1	4
3:15 PM	0	3	0	3	3	1	0	4	0	1	0	1	8
3:30 PM	2	4	0	6	1	1	0	2	1	2	0	3	11
Total Volume	3	7	0	10	6	3	0	9	2	3	0	5	24
% Approach Total	30.0	70.0	0.0		66.7	33.3	0.0		40.0	60.0	0.0		
PHF	0.375	0.438	0.000	0.417	0.500	0.750	0.000	0.563	0.500	0.375	0.000	0.417	0.545
Entering Leg	3	7	0	10	6	3	0	9	2	3	0	5	24
Exiting Leg				9				9				6	24
Total				19				18				11	48

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	1	0	0	1	0	1	0	1	1	1	0	2	4
2:45 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
Total	1	0	0	1	0	3	0	3	2	1	0	3	7
3:00 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
3:15 PM	1	1	0	2	2	0	0	2	1	1	0	2	6
3:30 PM	2	1	0	3	0	0	0	0	0	0	0	0	3
3:45 PM	1	0	0	1	0	1	0	1	0	1	0	1	3
Total	4	2	0	6	3	1	0	4	1	3	0	4	14
4:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	2	0	0	2	1	0	0	1	0	0	0	0	3
Grand Total	7	2	0	9	4	4	0	8	3	4	0	7	24
Approach %	77.8	22.2	0.0		50.0	50.0	0.0		42.9	57.1	0.0		
Total %	29.2	8.3	0.0	37.5	16.7	16.7	0.0	33.3	12.5	16.7	0.0	29.2	
Exiting Leg Total				8				5				11	24

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	1	0	0	1	0	1	0	1	1	1	0	2	4
2:45 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
3:00 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
3:15 PM	1	1	0	2	2	0	0	2	1	1	0	2	6
Total Volume	2	1	0	3	3	3	0	6	3	3	0	6	15
% Approach Total	66.7	33.3	0.0		50.0	50.0	0.0		50.0	50.0	0.0		
PHF	0.500	0.250	0.000	0.375	0.375	0.375	0.000	0.750	0.750	0.750	0.000	0.750	0.625
Entering Leg	2	1	0	3	3	3	0	6	3	3	0	6	15
Exiting Leg				6				4				5	15
Total				9				10				11	30

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Articulated Trucks

	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	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
3:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	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	1
4:00 PM	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	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	0	0	0	0	0	0	0	0	0	2	0	2	2
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	
Exiting Leg Total				2				0				0	2

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Salem Street from North				Middlesex Avenue from South				Salem Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
3:15 PM	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	1
% Approach Total	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	0.250	0.000	0.250	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	1	0	1	1
Exiting Leg				1				0				0	1
Total				1				0				1	2

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Salem Street from North						Middlesex Avenue from South						Salem Street 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
2:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 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	1	0	0	0	1	2	0	0	0	0	2	0	0	0	0	0	0	3
Approach %	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		
Total %	0.0	33.3	0.0	0.0	0.0	33.3	66.7	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						2						1						0	3

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Salem Street from North						Middlesex Avenue from South						Salem Street 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
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2
Exiting Leg						2						0						0	2
Total						2						2						0	4

PDI File #: **240268 A**
Location: **N: Salem Street S: Middlesex Avenue**
Location: **W: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Salem Street from North						Middlesex Avenue from South						Salem Street 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 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
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 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
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
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 02:30 PM to 04:30 PM begins at:

2:30 PM	Salem Street from North						Middlesex Avenue from South						Salem Street 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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 #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	69	0	0	69	0	0	0	0	0	59	0	59	128
8:15 AM	76	0	0	76	0	1	0	1	0	76	0	76	153
8:30 AM	58	0	0	58	1	1	0	2	0	57	0	57	117
8:45 AM	73	2	1	76	0	1	0	1	0	92	0	92	169
Total	276	2	1	279	1	3	0	4	0	284	0	284	567
9:00 AM	46	0	0	46	0	0	0	0	0	50	0	50	96
9:15 AM	45	0	0	45	0	0	0	0	0	43	0	43	88
9:30 AM	47	0	0	47	1	0	0	1	1	52	0	53	101
9:45 AM	32	1	0	33	0	1	0	1	0	33	0	33	67
Total	170	1	0	171	1	1	0	2	1	178	0	179	352
Grand Total	446	3	1	450	2	4	0	6	1	462	0	463	919
Approach %	99.1	0.7	0.2		33.3	66.7	0.0		0.2	99.8	0.0		
Total %	48.5	0.3	0.1	49.0	0.2	0.4	0.0	0.7	0.1	50.3	0.0	50.4	
Exiting Leg Total				465				4				450	919
Cars	433	3	1	437	2	4	0	6	1	447	0	448	891
% Cars	97.1	100.0	100.0	97.1	100.0	100.0	0.0	100.0	100.0	96.8	0.0	96.8	97.0
Exiting Leg Total				450				4				437	891
Heavy Vehicles	13	0	0	13	0	0	0	0	0	15	0	15	28
% Heavy Vehicles	2.9	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	3.2	0.0	3.2	3.0
Exiting Leg Total				15				0				13	28

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	69	0	0	69	0	0	0	0	0	59	0	59	128
8:15 AM	76	0	0	76	0	1	0	1	0	76	0	76	153
8:30 AM	58	0	0	58	1	1	0	2	0	57	0	57	117
8:45 AM	73	2	1	76	0	1	0	1	0	92	0	92	169
Total Volume	276	2	1	279	1	3	0	4	0	284	0	284	567
% Approach Total	98.9	0.7	0.4		25.0	75.0	0.0		0.0	100.0	0.0		
PHF	0.908	0.250	0.250	0.918	0.250	0.750	0.000	0.500	0.000	0.772	0.000	0.772	0.839
Cars	267	2	1	270	1	3	0	4	0	275	0	275	549
Cars %	96.7	100.0	100.0	96.8	100.0	100.0	0.0	100.0	0.0	96.8	0.0	96.8	96.8
Heavy Vehicles	9	0	0	9	0	0	0	0	0	9	0	9	18
Heavy Vehicles %	3.3	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	3.2	0.0	3.2	3.2
Cars Enter Leg	267	2	1	270	1	3	0	4	0	275	0	275	549
Heavy Enter Leg	9	0	0	9	0	0	0	0	0	9	0	9	18
Total Entering Leg	276	2	1	279	1	3	0	4	0	284	0	284	567
Cars Exiting Leg				277				2				270	549
Heavy Exiting Leg				9				0				9	18
Total Exiting Leg				286				2				279	567

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	68	0	0	68	0	0	0	0	0	56	0	56	124
8:15 AM	71	0	0	71	0	1	0	1	0	75	0	75	147
8:30 AM	57	0	0	57	1	1	0	2	0	55	0	55	114
8:45 AM	71	2	1	74	0	1	0	1	0	89	0	89	164
Total	267	2	1	270	1	3	0	4	0	275	0	275	549
9:00 AM	45	0	0	45	0	0	0	0	0	48	0	48	93
9:15 AM	45	0	0	45	0	0	0	0	0	42	0	42	87
9:30 AM	44	0	0	44	1	0	0	1	1	50	0	51	96
9:45 AM	32	1	0	33	0	1	0	1	0	32	0	32	66
Total	166	1	0	167	1	1	0	2	1	172	0	173	342
Grand Total	433	3	1	437	2	4	0	6	1	447	0	448	891
Approach %	99.1	0.7	0.2		33.3	66.7	0.0		0.2	99.8	0.0		
Total %	48.6	0.3	0.1	49.0	0.2	0.4	0.0	0.7	0.1	50.2	0.0	50.3	
Exiting Leg Total				450				4				437	891

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	68	0	0	68	0	0	0	0	0	56	0	56	124
8:15 AM	71	0	0	71	0	1	0	1	0	75	0	75	147
8:30 AM	57	0	0	57	1	1	0	2	0	55	0	55	114
8:45 AM	71	2	1	74	0	1	0	1	0	89	0	89	164
Total Volume	267	2	1	270	1	3	0	4	0	275	0	275	549
% Approach Total	98.9	0.7	0.4		25.0	75.0	0.0		0.0	100.0	0.0		
PHF	0.940	0.250	0.250	0.912	0.250	0.750	0.000	0.500	0.000	0.772	0.000	0.772	0.837
Entering Leg	267	2	1	270	1	3	0	4	0	275	0	275	549
Exiting Leg				277				2				270	549
Total				547				6				545	1098

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	0	0	0	0	3	0	3	4
8:15 AM	5	0	0	5	0	0	0	0	0	1	0	1	6
8:30 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:45 AM	2	0	0	2	0	0	0	0	0	3	0	3	5
Total	9	0	0	9	0	0	0	0	0	9	0	9	18
9:00 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
9:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
9:30 AM	3	0	0	3	0	0	0	0	0	2	0	2	5
9:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	4	0	0	4	0	0	0	0	0	6	0	6	10
Grand Total	13	0	0	13	0	0	0	0	0	15	0	15	28
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	46.4	0.0	0.0	46.4	0.0	0.0	0.0	0.0	0.0	53.6	0.0	53.6	
Exiting Leg Total				15				0				13	28
Buses	2	0	0	2	0	0	0	0	0	0	0	0	2
% Buses	15.4	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1
Exiting Leg Total				0				0				2	2
Single-Unit Trucks	10	0	0	10	0	0	0	0	0	12	0	12	22
% Single-Unit	76.9	0.0	0.0	76.9	0.0	0.0	0.0	0.0	0.0	80.0	0.0	80.0	78.6
Exiting Leg Total				12				0				10	22
Articulated Trucks	1	0	0	1	0	0	0	0	0	3	0	3	4
% Articulated	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	20.0	0.0	20.0	14.3
Exiting Leg Total				3				0				1	4

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	0	0	0	0	3	0	3	4
8:15 AM	5	0	0	5	0	0	0	0	0	1	0	1	6
8:30 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:45 AM	2	0	0	2	0	0	0	0	0	3	0	3	5
Total Volume	9	0	0	9	0	0	0	0	0	9	0	9	18
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.450	0.000	0.000	0.450	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.750
Buses	2	0	0	2	0	0	0	0	0	0	0	0	2
Buses %	22.2	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1
Single-Unit Trucks	6	0	0	6	0	0	0	0	0	6	0	6	12
Single-Unit %	66.7	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	66.7	0.0	66.7	66.7
Articulated Trucks	1	0	0	1	0	0	0	0	0	3	0	3	4
Articulated %	11.1	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	22.2
Buses	2	0	0	2	0	0	0	0	0	0	0	0	2
Single-Unit Trucks	6	0	0	6	0	0	0	0	0	6	0	6	12
Articulated Trucks	1	0	0	1	0	0	0	0	0	3	0	3	4
Total Entering Leg	9	0	0	9	0	0	0	0	0	9	0	9	18
Buses				0				0				2	2
Single-Unit Trucks				6				0				6	12
Articulated Trucks				3				0				1	4
Total Exiting Leg				9				0				9	18

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Buses**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	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
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	0	0	2	0	0	0	0	0	0	0	0	2
Total	2	0	0	2	0	0	0	0	0	0	0	0	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	0	0	2	0	0	0	0	0	0	0	0	2
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				2	2

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	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
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	0	0	2	0	0	0	0	0	0	0	0	2
Total Volume	2	0	0	2	0	0	0	0	0	0	0	0	2
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	2	0	0	2	0	0	0	0	0	0	0	0	2
Exiting Leg				0				0				2	2
Total				2				0				2	4

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:15 AM	4	0	0	4	0	0	0	0	0	0	0	0	4
8:30 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	6	0	0	6	0	0	0	0	0	6	0	6	12
9:00 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
9:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
9:30 AM	3	0	0	3	0	0	0	0	0	2	0	2	5
9:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	4	0	0	4	0	0	0	0	0	6	0	6	10
Grand Total	10	0	0	10	0	0	0	0	0	12	0	12	22
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	45.5	0.0	0.0	45.5	0.0	0.0	0.0	0.0	0.0	54.5	0.0	54.5	
Exiting Leg Total				12				0				10	22

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:15 AM	4	0	0	4	0	0	0	0	0	0	0	0	4
8:30 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	6	0	0	6	0	0	0	0	0	6	0	6	12
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.750
Entering Leg	6	0	0	6	0	0	0	0	0	6	0	6	12
Exiting Leg				6				0				6	12
Total				12				0				12	24

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Articulated Trucks**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:15 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
8:30 AM	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	1
Total	1	0	0	1	0	0	0	0	0	3	0	3	4
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	1	0	0	0	0	0	3	0	3	4
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	75.0	
Exiting Leg Total				3				0				1	4

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
8:15 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
8:30 AM	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	1
Total Volume	1	0	0	1	0	0	0	0	0	3	0	3	4
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.500
Entering Leg	1	0	0	1	0	0	0	0	0	3	0	3	4
Exiting Leg				3				0				1	4
Total				4				0				4	8

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Ballardvale Street from North						Salem Street from East						Salem Street 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Salem Street from East						Salem Street 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
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 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 #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Ballardvale Street from North						Salem Street from East						Salem Street 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
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	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	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 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Salem Street from East						Salem Street 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
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	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 #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Cars and Heavy Vehicles (Combined)**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	84	0	0	84	1	0	0	1	1	45	0	46	131
2:45 PM	74	0	0	74	0	0	0	0	1	57	0	58	132
Total	158	0	0	158	1	0	0	1	2	102	0	104	263
3:00 PM	105	0	0	105	0	1	0	1	0	66	0	66	172
3:15 PM	133	0	0	133	0	1	0	1	1	69	0	70	204
3:30 PM	132	0	0	132	2	0	0	2	1	82	0	83	217
3:45 PM	155	1	0	156	0	0	0	0	1	55	0	56	212
Total	525	1	0	526	2	2	0	4	3	272	0	275	805
4:00 PM	142	1	0	143	0	1	0	1	0	65	0	65	209
4:15 PM	173	0	0	173	0	0	0	0	0	81	0	81	254
Total	315	1	0	316	0	1	0	1	0	146	0	146	463
Grand Total	998	2	0	1000	3	3	0	6	5	520	0	525	1531
Approach %	99.8	0.2	0.0		50.0	50.0	0.0		1.0	99.0	0.0		
Total %	65.2	0.1	0.0	65.3	0.2	0.2	0.0	0.4	0.3	34.0	0.0	34.3	
Exiting Leg Total				523				7				1001	1531
Cars	985	2	0	987	3	3	0	6	5	509	0	514	1507
% Cars	98.7	100.0	0.0	98.7	100.0	100.0	0.0	100.0	100.0	97.9	0.0	97.9	98.4
Exiting Leg Total				512				7				988	1507
Heavy Vehicles	13	0	0	13	0	0	0	0	0	11	0	11	24
% Heavy Vehicles	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1	1.6
Exiting Leg Total				11				0				13	24

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:30 PM	132	0	0	132	2	0	0	2	1	82	0	83	217
3:45 PM	155	1	0	156	0	0	0	0	1	55	0	56	212
4:00 PM	142	1	0	143	0	1	0	1	0	65	0	65	209
4:15 PM	173	0	0	173	0	0	0	0	0	81	0	81	254
Total Volume	602	2	0	604	2	1	0	3	2	283	0	285	892
% Approach Total	99.7	0.3	0.0		66.7	33.3	0.0		0.7	99.3	0.0		
PHF	0.870	0.500	0.000	0.873	0.250	0.250	0.000	0.375	0.500	0.863	0.000	0.858	0.878
Cars	594	2	0	596	2	1	0	3	2	280	0	282	881
Cars %	98.7	100.0	0.0	98.7	100.0	100.0	0.0	100.0	100.0	98.9	0.0	98.9	98.8
Heavy Vehicles	8	0	0	8	0	0	0	0	0	3	0	3	11
Heavy Vehicles %	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.1	1.2
Cars Enter Leg	594	2	0	596	2	1	0	3	2	280	0	282	881
Heavy Enter Leg	8	0	0	8	0	0	0	0	0	3	0	3	11
Total Entering Leg	602	2	0	604	2	1	0	3	2	283	0	285	892
Cars Exiting Leg				282				4				595	881
Heavy Exiting Leg				3				0				8	11
Total Exiting Leg				285				4				603	892

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Cars**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	84	0	0	84	1	0	0	1	1	44	0	45	130
2:45 PM	74	0	0	74	0	0	0	0	1	57	0	58	132
Total	158	0	0	158	1	0	0	1	2	101	0	103	262
3:00 PM	101	0	0	101	0	1	0	1	0	63	0	63	165
3:15 PM	132	0	0	132	0	1	0	1	1	65	0	66	199
3:30 PM	129	0	0	129	2	0	0	2	1	82	0	83	214
3:45 PM	153	1	0	154	0	0	0	0	1	54	0	55	209
Total	515	1	0	516	2	2	0	4	3	264	0	267	787
4:00 PM	139	1	0	140	0	1	0	1	0	65	0	65	206
4:15 PM	173	0	0	173	0	0	0	0	0	79	0	79	252
Total	312	1	0	313	0	1	0	1	0	144	0	144	458
Grand Total	985	2	0	987	3	3	0	6	5	509	0	514	1507
Approach %	99.8	0.2	0.0		50.0	50.0	0.0		1.0	99.0	0.0		
Total %	65.4	0.1	0.0	65.5	0.2	0.2	0.0	0.4	0.3	33.8	0.0	34.1	
Exiting Leg Total				512				7				988	1507

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:30 PM	129	0	0	129	2	0	0	2	1	82	0	83	214
3:45 PM	153	1	0	154	0	0	0	0	1	54	0	55	209
4:00 PM	139	1	0	140	0	1	0	1	0	65	0	65	206
4:15 PM	173	0	0	173	0	0	0	0	0	79	0	79	252
Total Volume	594	2	0	596	2	1	0	3	2	280	0	282	881
% Approach Total	99.7	0.3	0.0		66.7	33.3	0.0		0.7	99.3	0.0		
PHF	0.858	0.500	0.000	0.861	0.250	0.250	0.000	0.375	0.500	0.854	0.000	0.849	0.874
Entering Leg	594	2	0	596	2	1	0	3	2	280	0	282	881
Exiting Leg				282				4				595	881
Total				878				7				877	1762

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
3:00 PM	4	0	0	4	0	0	0	0	0	3	0	3	7
3:15 PM	1	0	0	1	0	0	0	0	0	4	0	4	5
3:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
3:45 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
Total	10	0	0	10	0	0	0	0	0	8	0	8	18
4:00 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	3	0	0	3	0	0	0	0	0	2	0	2	5
Grand Total	13	0	0	13	0	0	0	0	0	11	0	11	24
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	54.2	0.0	0.0	54.2	0.0	0.0	0.0	0.0	0.0	45.8	0.0	45.8	
Exiting Leg Total				11				0				13	24
Buses	4	0	0	4	0	0	0	0	0	0	0	0	4
% Buses	30.8	0.0	0.0	30.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7
Exiting Leg Total				0				0				4	4
Single-Unit Trucks	8	0	0	8	0	0	0	0	0	8	0	8	16
% Single-Unit	61.5	0.0	0.0	61.5	0.0	0.0	0.0	0.0	0.0	72.7	0.0	72.7	66.7
Exiting Leg Total				8				0				8	16
Articulated Trucks	1	0	0	1	0	0	0	0	0	3	0	3	4
% Articulated	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	27.3	0.0	27.3	16.7
Exiting Leg Total				3				0				1	4

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:00 PM	4	0	0	4	0	0	0	0	0	3	0	3	7
3:15 PM	1	0	0	1	0	0	0	0	0	4	0	4	5
3:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
3:45 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
Total Volume	10	0	0	10	0	0	0	0	0	8	0	8	18
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.643
Buses	3	0	0	3	0	0	0	0	0	0	0	0	3
Buses %	30.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7
Single-Unit Trucks	6	0	0	6	0	0	0	0	0	6	0	6	12
Single-Unit %	60.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	75.0	66.7
Articulated Trucks	1	0	0	1	0	0	0	0	0	2	0	2	3
Articulated %	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	25.0	16.7
Buses	3	0	0	3	0	0	0	0	0	0	0	0	3
Single-Unit Trucks	6	0	0	6	0	0	0	0	0	6	0	6	12
Articulated Trucks	1	0	0	1	0	0	0	0	0	2	0	2	3
Total Entering Leg	10	0	0	10	0	0	0	0	0	8	0	8	18
Buses				0				0				3	3
Single-Unit Trucks				6				0				6	12
Articulated Trucks				2				0				1	3
Total Exiting Leg				8				0				10	18

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	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
3:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	3	0	0	3	0	0	0	0	0	0	0	0	3
4:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	0	0	0	1
Grand Total	4	0	0	4	0	0	0	0	0	0	0	0	4
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				4	4

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Volume	3	0	0	3	0	0	0	0	0	0	0	0	3
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
Entering Leg	3	0	0	3	0	0	0	0	0	0	0	0	3
Exiting Leg				0				0				3	3
Total				3				0				3	6

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
3:00 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
3:15 PM	1	0	0	1	0	0	0	0	0	3	0	3	4
3:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
3:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	6	0	0	6	0	0	0	0	0	6	0	6	12
4:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	2	0	0	2	0	0	0	0	0	1	0	1	3
Grand Total	8	0	0	8	0	0	0	0	0	8	0	8	16
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	
Exiting Leg Total				8				0				8	16

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:00 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
3:15 PM	1	0	0	1	0	0	0	0	0	3	0	3	4
3:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
3:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	6	0	0	6	0	0	0	0	0	6	0	6	12
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.750
Entering Leg	6	0	0	6	0	0	0	0	0	6	0	6	12
Exiting Leg				6				0				6	12
Total				12				0				12	24

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Articulated Trucks**

	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	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
3:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
3:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	2	0	2	3
4:00 PM	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	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	1	0	0	1	0	0	0	0	0	3	0	3	4
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	75.0	
Exiting Leg Total				3				0				1	4

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Ballardvale Street from North				Salem Street from East				Salem Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
3:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	1	0	0	1	0	0	0	0	0	2	0	2	3
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.375
Entering Leg	1	0	0	1	0	0	0	0	0	2	0	2	3
Exiting Leg				2				0				1	3
Total				3				0				3	6

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Ballardvale Street from North						Salem Street from East						Salem Street 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
2:30 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
3:45 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	2	0	0	0	2	2
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
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	0	0	0	0	2	0	0	0	2	3
Approach %	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	33.3	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	66.7	
Exiting Leg Total						2						0						1	3

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North						Salem Street from East						Salem Street 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
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
% Approach Total	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	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	0.500	0.000	0.000	0.000	0.500	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
Exiting Leg						2						0						0	2
Total						2						0						2	4

PDI File #: **240268 B**
Location: **N: Ballardvale Street S: Salem Street**
Location: **E: Salem Street**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Ballardvale Street from North						Salem Street from East						Salem Street 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 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
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 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
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
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 02:30 PM to 04:30 PM begins at:

2:30 PM	Ballardvale Street from North						Salem Street from East						Salem Street 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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

PRECISION DATA INDUSTRIES, LLC

157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

Cars and Heavy Vehicles (Combined)

	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	2	0	69	0	0	71	0	0	0	0	0	0	1	56	2	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	130
8:15 AM	1	0	74	0	0	75	1	0	0	0	0	1	0	74	2	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	152
8:30 AM	3	0	58	0	0	61	0	0	0	0	0	0	0	46	11	1	0	58	1	0	1	0	0	2	0	0	0	0	0	0	121
8:45 AM	5	0	58	0	0	63	0	0	0	0	0	0	0	68	22	0	0	90	16	0	4	0	0	20	0	0	0	0	0	0	173
Total	11	0	259	0	0	270	1	0	0	0	0	1	1	244	37	1	0	283	17	0	5	0	0	22	0	0	0	0	0	0	576
9:00 AM	2	0	37	0	0	39	0	0	0	0	0	0	0	45	8	0	0	53	9	0	3	0	0	12	0	0	0	0	0	0	104
9:15 AM	0	0	44	0	0	44	1	0	0	0	0	1	0	43	0	0	0	43	1	0	0	0	0	1	0	0	0	0	0	0	89
9:30 AM	1	0	45	0	0	46	0	0	0	0	0	0	0	53	1	0	0	54	1	0	0	0	0	1	0	0	0	0	0	0	101
9:45 AM	1	0	32	0	0	33	0	0	0	0	0	0	0	30	1	0	0	31	1	0	0	0	0	1	0	0	0	0	0	0	65
Total	4	0	158	0	0	162	1	0	0	0	0	1	0	171	10	0	0	181	12	0	3	0	0	15	0	0	0	0	0	0	359
Grand Total	15	0	417	0	0	432	2	0	0	0	0	2	1	415	47	1	0	464	29	0	8	0	0	37	0	0	0	0	0	0	935
Approach %	3.5	0.0	96.5	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.2	89.4	10.1	0.2	0.0		78.4	0.0	21.6	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	1.6	0.0	44.6	0.0	0.0	46.2	0.2	0.0	0.0	0.0	0.0	0.2	0.1	44.4	5.0	0.1	0.0	49.6	3.1	0.0	0.9	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						425						1						446						1						62	935
Cars	15	0	404	0	0	419	2	0	0	0	0	2	1	402	46	1	0	450	29	0	8	0	0	37	0	0	0	0	0	0	908
% Cars	100.0	0.0	96.9	0.0	0.0	97.0	100.0	0.0	0.0	0.0	0.0	100.0	100.0	96.9	97.9	100.0	0.0	97.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	97.1
Exiting Leg Total						412						1						433						1						61	908
Heavy Vehicles	0	0	13	0	0	13	0	0	0	0	0	0	0	13	1	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	27
% Heavy Vehicles	0.0	0.0	3.1	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	2.1	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9
Exiting Leg Total						13						0						13						0						1	27

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	2	0	69	0	0	71	0	0	0	0	0	0	1	56	2	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	130
8:15 AM	1	0	74	0	0	75	1	0	0	0	0	1	0	74	2	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	152
8:30 AM	3	0	58	0	0	61	0	0	0	0	0	0	0	46	11	1	0	58	1	0	1	0	0	2	0	0	0	0	0	0	121
8:45 AM	5	0	58	0	0	63	0	0	0	0	0	0	0	68	22	0	0	90	16	0	4	0	0	20	0	0	0	0	0	0	173
Total Volume	11	0	259	0	0	270	1	0	0	0	0	1	1	244	37	1	0	283	17	0	5	0	0	22	0	0	0	0	0	0	576
% Approach Total	4.1	0.0	95.9	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.4	86.2	13.1	0.4	0.0		77.3	0.0	22.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.550	0.000	0.875	0.000	0.000	0.900	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.824	0.420	0.250	0.000	0.786	0.266	0.000	0.313	0.000	0.000	0.275	0.000	0.000	0.000	0.000	0.000	0.000	0.832
Cars	11	0	250	0	0	261	1	0	0	0	0	1	1	236	37	1	0	275	17	0	5	0	0	22	0	0	0	0	0	0	559
Cars %	100.0	0.0	96.5	0.0	0.0	96.7	100.0	0.0	0.0	0.0	0.0	100.0	100.0	96.7	100.0	100.0	0.0	97.2	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	97.0
Heavy Vehicles	0	0	9	0	0	9	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	17
Heavy Vehicles %	0.0	0.0	3.5	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	2.8	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
Cars Enter Leg	11	0	250	0	0	261	1	0	0	0	0	1	1	236	37	1	0	275	17	0	5	0	0	22	0	0	0	0	0	0	559
Heavy Enter Leg	0	0	9	0	0	9	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	17
Total Entering Leg	11	0	259	0	0	270	1	0	0	0	0	1	1	244	37	1	0	283	17	0	5	0	0	22	0	0	0	0	0	0	576
Cars Exiting Leg						242						1						267						1						48	559
Heavy Exiting Leg						8						0						9						0						0	17
Total Exiting Leg						250						1						276						1						48	576

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

Cars

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	2	0	68	0	0	70	0	0	0	0	0	0	1	53	2	0	0	56	0	0	0	0	0	0	0	0	0	0	0	0	126
8:15 AM	1	0	69	0	0	70	1	0	0	0	0	1	0	74	2	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	147
8:30 AM	3	0	57	0	0	60	0	0	0	0	0	0	0	44	11	1	0	56	1	0	1	0	0	2	0	0	0	0	0	0	118
8:45 AM	5	0	56	0	0	61	0	0	0	0	0	0	0	65	22	0	0	87	16	0	4	0	0	20	0	0	0	0	0	0	168
Total	11	0	250	0	0	261	1	0	0	0	0	1	1	236	37	1	0	275	17	0	5	0	0	22	0	0	0	0	0	0	559
9:00 AM	2	0	36	0	0	38	0	0	0	0	0	0	0	43	8	0	0	51	9	0	3	0	0	12	0	0	0	0	0	0	101
9:15 AM	0	0	44	0	0	44	1	0	0	0	0	1	0	42	0	0	0	42	1	0	0	0	0	1	0	0	0	0	0	0	88
9:30 AM	1	0	42	0	0	43	0	0	0	0	0	0	0	52	0	0	0	52	1	0	0	0	0	1	0	0	0	0	0	0	96
9:45 AM	1	0	32	0	0	33	0	0	0	0	0	0	0	29	1	0	0	30	1	0	0	0	0	1	0	0	0	0	0	0	64
Total	4	0	154	0	0	158	1	0	0	0	0	1	0	166	9	0	0	175	12	0	3	0	0	15	0	0	0	0	0	0	349
Grand Total	15	0	404	0	0	419	2	0	0	0	0	2	1	402	46	1	0	450	29	0	8	0	0	37	0	0	0	0	0	0	908
Approach %	3.6	0.0	96.4	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.2	89.3	10.2	0.2	0.0		78.4	0.0	21.6	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total %	1.7	0.0	44.5	0.0	0.0	46.1	0.2	0.0	0.0	0.0	0.0	0.2	0.1	44.3	5.1	0.1	0.0	49.6	3.2	0.0	0.9	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						412						1						433						1						61	908

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	2	0	68	0	0	70	0	0	0	0	0	0	1	53	2	0	0	56	0	0	0	0	0	0	0	0	0	0	0	0	126
8:15 AM	1	0	69	0	0	70	1	0	0	0	0	1	0	74	2	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	147
8:30 AM	3	0	57	0	0	60	0	0	0	0	0	0	0	44	11	1	0	56	1	0	1	0	0	2	0	0	0	0	0	0	118
8:45 AM	5	0	56	0	0	61	0	0	0	0	0	0	0	65	22	0	0	87	16	0	4	0	0	20	0	0	0	0	0	0	168
Total Volume	11	0	250	0	0	261	1	0	0	0	0	1	1	236	37	1	0	275	17	0	5	0	0	22	0	0	0	0	0	0	559
% Approach Total	4.2	0.0	95.8	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.4	85.8	13.5	0.4	0.0		77.3	0.0	22.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.550	0.000	0.906	0.000	0.000	0.932	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.797	0.420	0.250	0.000	0.790	0.266	0.000	0.313	0.000	0.000	0.275	0.000	0.000	0.000	0.000	0.000	0.000	0.832
Entering Leg	11	0	250	0	0	261	1	0	0	0	0	1	1	236	37	1	0	275	17	0	5	0	0	22	0	0	0	0	0	0	559
Exiting Leg						242						1						267						1						48	559
Total						503						2						542						23						48	1118

PRECISION DATA INDUSTRIES, LLC
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PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

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

	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	0	0	5	0	0	5	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
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	0	0	9	0	0	9	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	17
9:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
9:15 AM	0	0	0	0	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	1
9:30 AM	0	0	3	0	0	3	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5
9:45 AM	0	0	0	0	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	1
Total	0	0	4	0	0	4	0	0	0	0	0	0	0	5	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	10
Grand Total	0	0	13	0	0	13	0	0	0	0	0	0	0	13	1	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	27
Approach %	0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	92.9	7.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	48.1	0.0	0.0	48.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.1	3.7	0.0	0.0	51.9	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						13						0						13						0						1	27
Buses	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Buses	0.0	0.0	15.4	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
Exiting Leg Total						0						0						2						0						0	2
Single-Unit Trucks	0	0	10	0	0	10	0	0	0	0	0	0	0	11	1	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	22
% Single-Unit	0.0	0.0	76.9	0.0	0.0	76.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.6	100.0	0.0	0.0	85.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.5
Exiting Leg Total						11						0						10						0						1	22
Articulated Trucks	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
% Articulated	0.0	0.0	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1
Exiting Leg Total						2						0						1						0						0	3

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	0	0	5	0	0	5	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
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5
Total Volume	0	0	9	0	0	9	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	17
% Approach Total	0.0	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.450	0.000	0.000	0.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.850
Buses	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Buses %	0.0	0.0	22.2	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8
Single-Unit Trucks	0	0	6	0	0	6	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	12
Single-Unit %	0.0	0.0	66.7	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.6
Articulated Trucks	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Articulated %	0.0	0.0	11.1	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6
Buses	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Single-Unit Trucks	0	0	6	0	0	6	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	12
Articulated Trucks	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Total Entering Leg	0	0	9	0	0	9	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	17
Buses						0						0						2						0						0	2
Single-Unit Trucks						6						0						6						0						0	12
Articulated Trucks						2						0						1						0						0	3
Total Exiting Leg						8						0						9						0						0	17

PRECISION DATA INDUSTRIES, LLC
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PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

Buses

	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
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	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	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	0	0
8:45 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	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
Grand Total	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Approach %	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	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	0.0	0.0	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						2						0						0	2

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
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	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	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	0	0
8:45 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Approach Total	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.250	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	0.000	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	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Exiting Leg						0						0						2						0						0	2
Total						2						0						2						0						0	4

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	4	0	0	4	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
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	6	0	0	6	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	12
9:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
9:15 AM	0	0	0	0	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	1
9:30 AM	0	0	3	0	0	3	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5
9:45 AM	0	0	0	0	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	1
Total	0	0	4	0	0	4	0	0	0	0	0	0	0	5	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	10
Grand Total	0	0	10	0	0	10	0	0	0	0	0	0	0	11	1	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	22
Approach %	0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	91.7	8.3	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	45.5	0.0	0.0	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	4.5	0.0	0.0	54.5	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						11						0						10						0						1	22

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	4	0	0	4	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
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	6	0	0	6	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	12
% Approach Total	0.0	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	0	6	0	0	6	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	12
Exiting Leg						6						0						6						0						0	12
Total						12						0						12						0						0	24

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

Articulated Trucks

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	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	1
8:15 AM	0	0	1	0	0	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	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	0	0
8:45 AM	0	0	0	0	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	1
Total	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	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
Grand Total	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Approach %	0.0	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	66.7	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						2						0						1						0						0	3

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	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	1
8:15 AM	0	0	1	0	0	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	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	0	0
8:45 AM	0	0	0	0	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	1
Total Volume	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
% Approach Total	0.0	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Exiting Leg						2						0						1						0						0	3
Total						3						0						3						0						0	6

PRECISION DATA INDUSTRIES, LLC

157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

Bicycles (on Roadway and Crosswalks)

	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
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	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	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	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	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	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	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	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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								0	0

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg								0								0								0								0								0	0
Total								0								0								0								0								0	0

PRECISION DATA INDUSTRIES, LLC
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PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

Pedestrians

	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
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	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	2	0	2	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	0	1	1	0	0	0	0	0	0	1	1	2
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	0	0	0	0	0	0	0	0	0	2	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	3	3	6
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	2
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	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	1	1	0	0	0	0	0	0	1	1	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	4	4	8
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	50	50		0	0	0	0	0	0	100		
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	25	25	50	0	0	0	0	0	0	50	50	
Exiting Leg Total								0								0								0								4								4	8

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
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	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	2	0	2	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	0	1	1	0	0	0	0	0	0	1	1	2
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	0	0	0	0	0	0	0	0	0	2	2	2
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	2	1	3	0	0	0	0	0	0	3	3	6
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		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	100.0		
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	0.250	0.250	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.375	0.750
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	2	1	3	0	0	0	0	0	0	3	3	6
Exiting Leg								0								0								0								3								3	6
Total								0								0								0								6								6	12

PRECISION DATA INDUSTRIES, LLC

157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

Cars and Heavy Vehicles (Combined)

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
2:30 PM	2	0	77	0	0	79	0	0	0	0	0	0	1	42	4	0	0	47	4	0	1	0	0	5	0	0	0	0	0	0	131
2:45 PM	2	0	72	0	0	74	0	0	0	0	0	0	0	52	4	1	0	57	2	0	1	0	0	3	0	0	0	0	0	0	134
Total	4	0	149	0	0	153	0	0	0	0	0	0	1	94	8	1	0	104	6	0	2	0	0	8	0	0	0	0	0	0	265
3:00 PM	2	0	104	0	0	106	0	0	0	0	0	0	0	51	15	0	0	66	1	0	0	0	0	1	0	0	0	0	0	0	173
3:15 PM	2	0	100	0	0	102	0	0	0	1	0	1	0	54	14	0	0	68	32	0	5	0	0	37	0	0	0	0	0	0	208
3:30 PM	2	0	128	0	0	130	1	0	0	0	0	1	0	77	8	0	0	85	10	0	11	0	0	21	0	0	0	0	0	0	237
3:45 PM	3	0	149	0	0	152	0	0	0	2	0	2	2	49	4	0	0	55	5	0	4	0	0	9	0	0	0	0	0	0	218
Total	9	0	481	0	0	490	1	0	0	3	0	4	2	231	41	0	0	274	48	0	20	0	0	68	0	0	0	0	0	0	836
4:00 PM	0	1	137	0	0	138	0	0	0	1	0	1	0	59	5	0	0	64	7	0	4	0	0	11	0	1	0	0	0	1	215
4:15 PM	2	0	156	0	0	158	0	0	0	1	0	1	0	71	10	0	0	81	17	0	1	0	0	18	0	0	0	0	0	0	258
Total	2	1	293	0	0	296	0	0	0	2	0	2	0	130	15	0	0	145	24	0	5	0	0	29	0	1	0	0	0	1	473
Grand Total	15	1	923	0	0	939	1	0	0	5	0	6	3	455	64	1	0	523	78	0	27	0	0	105	0	1	0	0	0	1	1574
Approach %	1.6	0.1	98.3	0.0	0.0		16.7	0.0	0.0	83.3	0.0		0.6	87.0	12.2	0.2	0.0		74.3	0.0	25.7	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	1.0	0.1	58.6	0.0	0.0	59.7	0.1	0.0	0.0	0.3	0.0	0.4	0.2	28.9	4.1	0.1	0.0	33.2	5.0	0.0	1.7	0.0	0.0	6.7	0.0	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total						483						3						1007						2						79	1574
Cars	15	1	910	0	0	926	1	0	0	5	0	6	3	445	63	1	0	512	77	0	27	0	0	104	0	1	0	0	0	1	1549
% Cars	100.0	100.0	98.6	0.0	0.0	98.6	100.0	0.0	0.0	100.0	0.0	100.0	100.0	97.8	98.4	100.0	0.0	97.9	98.7	0.0	100.0	0.0	0.0	99.0	0.0	100.0	0.0	0.0	0.0	100.0	98.4
Exiting Leg Total						473						3						993						2						78	1549
Heavy Vehicles	0	0	13	0	0	13	0	0	0	0	0	0	0	10	1	0	0	11	1	0	0	0	0	1	0	0	0	0	0	0	25
% Heavy Vehicles	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.6	0.0	0.0	2.1	1.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
Exiting Leg Total						10						0						14						0						1	25

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
3:30 PM	2	0	128	0	0	130	1	0	0	0	0	1	0	77	8	0	0	85	10	0	11	0	0	21	0	0	0	0	0	0	237
3:45 PM	3	0	149	0	0	152	0	0	0	2	0	2	2	49	4	0	0	55	5	0	4	0	0	9	0	0	0	0	0	0	218
4:00 PM	0	1	137	0	0	138	0	0	0	1	0	1	0	59	5	0	0	64	7	0	4	0	0	11	0	1	0	0	0	1	215
4:15 PM	2	0	156	0	0	158	0	0	0	1	0	1	0	71	10	0	0	81	17	0	1	0	0	18	0	0	0	0	0	0	258
Total Volume	7	1	570	0	0	578	1	0	0	4	0	5	2	256	27	0	0	285	39	0	20	0	0	59	0	1	0	0	0	1	928
% Approach Total	1.2	0.2	98.6	0.0	0.0		20.0	0.0	0.0	80.0	0.0		0.7	89.8	9.5	0.0	0.0		66.1	0.0	33.9	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
PHF	0.583	0.250	0.913	0.000	0.000	0.915	0.250	0.000	0.000	0.500	0.000	0.625	0.250	0.831	0.675	0.000	0.000	0.838	0.574	0.000	0.455	0.000	0.000	0.702	0.000	0.250	0.000	0.000	0.000	0.250	0.899
Cars	7	1	561	0	0	569	1	0	0	4	0	5	2	253	27	0	0	282	39	0	20	0	0	59	0	1	0	0	0	1	916
Cars %	100.0	100.0	98.4	0.0	0.0	98.4	100.0	0.0	0.0	100.0	0.0	100.0	100.0	98.8	100.0	0.0	0.0	98.9	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	100.0	98.7
Heavy Vehicles	0	0	9	0	0	9	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	12
Heavy Vehicles %	0.0	0.0	1.6	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Cars Enter Leg	7	1	561	0	0	569	1	0	0	4	0	5	2	253	27	0	0	282	39	0	20	0	0	59	0	1	0	0	0	1	916
Heavy Enter Leg	0	0	9	0	0	9	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	12
Total Entering Leg	7	1	570	0	0	578	1	0	0	4	0	5	2	256	27	0	0	285	39	0	20	0	0	59	0	1	0	0	0	1	928
Cars Exiting Leg						274						2						605						1						34	916
Heavy Exiting Leg						3						0						9						0						0	12
Total Exiting Leg						277						2						614						1						34	928

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

Cars

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
2:30 PM	2	0	77	0	0	79	0	0	0	0	0	0	1	41	4	0	0	46	4	0	1	0	0	5	0	0	0	0	0	0	130
2:45 PM	2	0	72	0	0	74	0	0	0	0	0	0	0	52	4	1	0	57	2	0	1	0	0	3	0	0	0	0	0	0	134
Total	4	0	149	0	0	153	0	0	0	0	0	0	1	93	8	1	0	103	6	0	2	0	0	8	0	0	0	0	0	0	264
3:00 PM	2	0	100	0	0	102	0	0	0	0	0	0	0	48	15	0	0	63	1	0	0	0	0	1	0	0	0	0	0	0	166
3:15 PM	2	0	100	0	0	102	0	0	0	1	0	1	0	51	13	0	0	64	31	0	5	0	0	36	0	0	0	0	0	0	203
3:30 PM	2	0	124	0	0	126	1	0	0	0	0	1	0	77	8	0	0	85	10	0	11	0	0	21	0	0	0	0	0	0	233
3:45 PM	3	0	146	0	0	149	0	0	0	2	0	2	2	48	4	0	0	54	5	0	4	0	0	9	0	0	0	0	0	0	214
Total	9	0	470	0	0	479	1	0	0	3	0	4	2	224	40	0	0	266	47	0	20	0	0	67	0	0	0	0	0	0	816
4:00 PM	0	1	135	0	0	136	0	0	0	1	0	1	0	59	5	0	0	64	7	0	4	0	0	11	0	1	0	0	0	1	213
4:15 PM	2	0	156	0	0	158	0	0	0	1	0	1	0	69	10	0	0	79	17	0	1	0	0	18	0	0	0	0	0	0	256
Total	2	1	291	0	0	294	0	0	0	2	0	2	0	128	15	0	0	143	24	0	5	0	0	29	0	1	0	0	0	1	469
Grand Total	15	1	910	0	0	926	1	0	0	5	0	6	3	445	63	1	0	512	77	0	27	0	0	104	0	1	0	0	0	1	1549
Approach %	1.6	0.1	98.3	0.0	0.0		16.7	0.0	0.0	83.3	0.0		0.6	86.9	12.3	0.2	0.0		74.0	0.0	26.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	1.0	0.1	58.7	0.0	0.0	59.8	0.1	0.0	0.0	0.3	0.0	0.4	0.2	28.7	4.1	0.1	0.0	33.1	5.0	0.0	1.7	0.0	0.0	6.7	0.0	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total						473						3						993						2						78	1549

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
3:30 PM	2	0	124	0	0	126	1	0	0	0	0	1	0	77	8	0	0	85	10	0	11	0	0	21	0	0	0	0	0	0	233
3:45 PM	3	0	146	0	0	149	0	0	0	2	0	2	2	48	4	0	0	54	5	0	4	0	0	9	0	0	0	0	0	0	214
4:00 PM	0	1	135	0	0	136	0	0	0	1	0	1	0	59	5	0	0	64	7	0	4	0	0	11	0	1	0	0	0	1	213
4:15 PM	2	0	156	0	0	158	0	0	0	1	0	1	0	69	10	0	0	79	17	0	1	0	0	18	0	0	0	0	0	0	256
Total Volume	7	1	561	0	0	569	1	0	0	4	0	5	2	253	27	0	0	282	39	0	20	0	0	59	0	1	0	0	0	1	916
% Approach Total	1.2	0.2	98.6	0.0	0.0		20.0	0.0	0.0	80.0	0.0		0.7	89.7	9.6	0.0	0.0		66.1	0.0	33.9	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
PHF	0.583	0.250	0.899	0.000	0.000	0.900	0.250	0.000	0.000	0.500	0.000	0.625	0.250	0.821	0.675	0.000	0.000	0.829	0.574	0.000	0.455	0.000	0.000	0.702	0.000	0.250	0.000	0.000	0.000	0.250	0.895
Entering Leg	7	1	561	0	0	569	1	0	0	4	0	5	2	253	27	0	0	282	39	0	20	0	0	59	0	1	0	0	0	1	916
Exiting Leg						274						2						605						1						34	916
Total						843						7						887						60						35	1832

PRECISION DATA INDUSTRIES, LLC
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PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

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

	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	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	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	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	1
3:00 PM	0	0	4	0	0	4	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	7
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	1	0	0	0	0	1	0	0	0	0	0	0	5
3:30 PM	0	0	4	0	0	4	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
3:45 PM	0	0	3	0	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	11	0	0	11	0	0	0	0	0	0	0	7	1	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	20
4:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
Grand Total	0	0	13	0	0	13	0	0	0	0	0	0	0	10	1	0	0	11	1	0	0	0	0	1	0	0	0	0	0	0	25
Approach %	0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	90.9	9.1	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	52.0	0.0	0.0	52.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	4.0	0.0	0.0	44.0	4.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						10						0						14						0						1	25
Buses	0	0	3	0	0	3	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
% Buses	0.0	0.0	23.1	0.0	0.0	23.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
Exiting Leg Total						0						0						3						0						0	3
Single-Unit Trucks	0	0	8	0	0	8	0	0	0	0	0	0	0	7	1	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	17
% Single-Unit	0.0	0.0	61.5	0.0	0.0	61.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.0	100.0	0.0	0.0	72.7	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	68.0
Exiting Leg Total						7						0						9						0						1	17
Articulated Trucks	0	0	2	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5
% Articulated	0.0	0.0	15.4	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	27.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
Exiting Leg Total						3						0						2						0						0	5

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North						Baland Road from East						Ballardvale Street from South						School Lot South Drive from Southwest						School Lot North Drive from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	4	0	0	4	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	7
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	1	0	0	0	0	1	0	0	0	0	0	0	5
3:30 PM	0	0	4	0	0	4	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
3:45 PM	0	0	3	0	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Total Volume	0	0	11	0	0	11	0	0	0	0	0	0	0	7	1	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	20
% Approach Total	0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	87.5	12.5	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.688	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.250	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.714
Buses	0	0	3	0	0	3	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
Buses %	0.0	0.0	27.3	0.0	0.0	27.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
Single-Unit Trucks	0	0	6	0	0	6	0	0	0	0	0	0	0	5	1	0	0	6	1	0	0	0	0	1	0	0	0	0	0	0	13
Single-Unit %	0.0	0.0	54.5	0.0	0.0	54.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.4	100.0	0.0	0.0	75.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0
Articulated Trucks	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
Articulated %	0.0	0.0	18.2	0.0	0.0	18.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
Buses	0	0	3	0	0	3	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
Single-Unit Trucks	0	0	6	0	0	6	0	0	0	0	0	0	0	5	1	0	0	6	1	0	0	0	0	1	0	0	0	0	0	0	13
Articulated Trucks	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
Total Entering Leg	0	0	11	0	0	11	0	0	0	0	0	0	0	7	1	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	20
Buses						0						0						3						0						0	3
Single-Unit Trucks						5						0						7						0						1	13
Articulated Trucks						2						0						2						0						0	4
Total Exiting Leg						7						0						12						0						1	20

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
2:30 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	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
3:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 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	0	0
3:45 PM	0	0	1	0	0	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	1
Total	0	0	3	0	0	3	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
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	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	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
Grand Total	0	0	3	0	0	3	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
Approach %	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	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	0.0	0.0	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						3						0						0	3

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 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	0	0
3:45 PM	0	0	1	0	0	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	1
Total Volume	0	0	3	0	0	3	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
% Approach Total	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.375	0.000	0.000	0.375	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	0.375
Entering Leg	0	0	3	0	0	3	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
Exiting Leg						0						0						3						0						0	3
Total						3						0						3						0						0	6

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	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	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	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	1
3:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	4
3:30 PM	0	0	4	0	0	4	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
3:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	6	0	0	6	0	0	0	0	0	0	0	5	1	0	0	6	1	0	0	0	0	1	0	0	0	0	0	0	13
4:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	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	1
Total	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	0	0	8	0	0	8	0	0	0	0	0	0	0	7	1	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	17
Approach %	0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	87.5	12.5	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	47.1	0.0	0.0	47.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.2	5.9	0.0	0.0	47.1	5.9	0.0	0.0	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						7						0						9						0						1	17

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	4
3:30 PM	0	0	4	0	0	4	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
3:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	6	0	0	6	0	0	0	0	0	0	0	5	1	0	0	6	1	0	0	0	0	1	0	0	0	0	0	0	13
% Approach Total	0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	83.3	16.7	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.250	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.813
Entering Leg	0	0	6	0	0	6	0	0	0	0	0	0	0	5	1	0	0	6	1	0	0	0	0	1	0	0	0	0	0	0	13
Exiting Leg						5						0						7						0						1	13
Total						11						0						13						1						1	26

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
2:30 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	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
3:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	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	1
3:30 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	0	0
3:45 PM	0	0	1	0	0	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	1
Total	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
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	0	0
4:15 PM	0	0	0	0	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	1
Total	0	0	0	0	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	1
Grand Total	0	0	2	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5
Approach %	0.0	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	60.0	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						3						0						2						0						0	5

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street						Baland Road						Ballardvale Street						School Lot South Drive						School Lot North Drive						
	from North						from East						from South						from Southwest						from West						
	Right	Bear Righ	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Righ	Bear Righ	Bear Left	Hard Left	U-Turn	Total	Hard Righ	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	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	1
3:30 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	0	0
3:45 PM	0	0	1	0	0	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	1
Total Volume	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
% Approach Total	0.0	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	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
Exiting Leg						2						0						2						0						0	4
Total						4						0						4						0						0	8

PRECISION DATA INDUSTRIES, LLC

157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

Bicycles (on Roadway and Crosswalks)

	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:30 PM	0	0	1	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	0	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	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	0	0	0	0	0	0	0	0	0	0	0	1
3:00 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	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	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	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	0	0	0	0	0
Grand Total	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Approach %	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	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	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	0.0	0.0	33.3	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	0.0	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								2								0								1								0								0	3

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 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	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	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	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	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	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	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	0.500	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Exiting Leg								2								0								0								0								0	2
Total								2								0								2								0								0	4

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: **240268 C**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **E: Baland Road W: School Lot North Drive SW: School Lot South Drive**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

Pedestrians

	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:30 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	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0
3:00 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	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	4	0	4	9
3:30 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	0	1	1	0	0	0	0	0	0	1	1	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
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	7	1	8	0	0	0	0	0	5	1	6	14
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	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	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	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	8	0	0	0	0	0	5	1	6	14
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	88	13		0	0	0	0	0	83	17		
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	50	7.1	57	0	0	0	0	0	36	7.1	43	
Exiting Leg Total								0								0								0								8								6	14

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:00 PM	Ballardvale Street from North								Baland Road from East								Ballardvale Street from South								School Lot South Drive from Southwest								School Lot North Drive from West								
	Right	Bear Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 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	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	4	0	4	9
3:30 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	0	1	1	0	0	0	0	0	0	1	1	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
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	7	1	8	0	0	0	0	0	5	1	6	14
% 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	0.0	0.0	87.5	12.5		0.0	0.0	0.0	0.0	0.0	83.3	16.7		
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	0.350	0.250	0.400	0.000	0.000	0.000	0.000	0.000	0.313	0.250	0.375	0.389
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	7	1	8	0	0	0	0	0	5	1	6	14
Exiting Leg								0								0								0								8								6	14
Total								0								0								0								16								12	28

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
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Cars and Heavy Vehicles (Combined)

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	154	42	0	196	55	6	0	61	27	106	0	133	390
8:15 AM	149	40	0	189	64	7	0	71	32	118	0	150	410
8:30 AM	152	36	0	188	49	7	0	56	23	133	1	157	401
8:45 AM	150	45	0	195	71	7	0	78	18	127	0	145	418
Total	605	163	0	768	239	27	0	266	100	484	1	585	1619
9:00 AM	129	25	0	154	43	8	0	51	12	106	0	118	323
9:15 AM	158	23	0	181	42	4	0	46	10	92	0	102	329
9:30 AM	134	35	0	169	48	3	0	51	13	76	0	89	309
9:45 AM	134	27	0	161	35	4	0	39	6	68	0	74	274
Total	555	110	0	665	168	19	0	187	41	342	0	383	1235
Grand Total	1160	273	0	1433	407	46	0	453	141	826	1	968	2854
Approach %	80.9	19.1	0.0		89.8	10.2	0.0		14.6	85.3	0.1		
Total %	40.6	9.6	0.0	50.2	14.3	1.6	0.0	15.9	4.9	28.9	0.0	33.9	
Exiting Leg Total				1233				414				1207	2854
Cars	990	259	0	1249	395	45	0	440	141	721	1	863	2552
% Cars	85.3	94.9	0.0	87.2	97.1	97.8	0.0	97.1	100.0	87.3	100.0	89.2	89.4
Exiting Leg Total				1116				400				1036	2552
Heavy Vehicles	170	14	0	184	12	1	0	13	0	105	0	105	302
% Heavy Vehicles	14.7	5.1	0.0	12.8	2.9	2.2	0.0	2.9	0.0	12.7	0.0	10.8	10.6
Exiting Leg Total				117				14				171	302

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	154	42	0	196	55	6	0	61	27	106	0	133	390
8:15 AM	149	40	0	189	64	7	0	71	32	118	0	150	410
8:30 AM	152	36	0	188	49	7	0	56	23	133	1	157	401
8:45 AM	150	45	0	195	71	7	0	78	18	127	0	145	418
Total Volume	605	163	0	768	239	27	0	266	100	484	1	585	1619
% Approach Total	78.8	21.2	0.0		89.8	10.2	0.0		17.1	82.7	0.2		
PHF	0.982	0.906	0.000	0.980	0.842	0.964	0.000	0.853	0.781	0.910	0.250	0.932	0.968
Cars	556	154	0	710	233	26	0	259	100	438	1	539	1508
Cars %	91.9	94.5	0.0	92.4	97.5	96.3	0.0	97.4	100.0	90.5	100.0	92.1	93.1
Heavy Vehicles	49	9	0	58	6	1	0	7	0	46	0	46	111
Heavy Vehicles %	8.1	5.5	0.0	7.6	2.5	3.7	0.0	2.6	0.0	9.5	0.0	7.9	6.9
Cars Enter Leg	556	154	0	710	233	26	0	259	100	438	1	539	1508
Heavy Enter Leg	49	9	0	58	6	1	0	7	0	46	0	46	111
Total Entering Leg	605	163	0	768	239	27	0	266	100	484	1	585	1619
Cars Exiting Leg				671				254				583	1508
Heavy Exiting Leg				52				9				50	111
Total Exiting Leg				723				263				633	1619

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	143	41	0	184	53	5	0	58	27	99	0	126	368
8:15 AM	134	35	0	169	64	7	0	71	32	107	0	139	379
8:30 AM	140	35	0	175	47	7	0	54	23	115	1	139	368
8:45 AM	139	43	0	182	69	7	0	76	18	117	0	135	393
Total	556	154	0	710	233	26	0	259	100	438	1	539	1508
9:00 AM	112	24	0	136	41	8	0	49	12	92	0	104	289
9:15 AM	129	22	0	151	40	4	0	44	10	74	0	84	279
9:30 AM	101	32	0	133	47	3	0	50	13	65	0	78	261
9:45 AM	92	27	0	119	34	4	0	38	6	52	0	58	215
Total	434	105	0	539	162	19	0	181	41	283	0	324	1044
Grand Total	990	259	0	1249	395	45	0	440	141	721	1	863	2552
Approach %	79.3	20.7	0.0		89.8	10.2	0.0		16.3	83.5	0.1		
Total %	38.8	10.1	0.0	48.9	15.5	1.8	0.0	17.2	5.5	28.3	0.0	33.8	
Exiting Leg Total				1116				400				1036	2552

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	143	41	0	184	53	5	0	58	27	99	0	126	368
8:15 AM	134	35	0	169	64	7	0	71	32	107	0	139	379
8:30 AM	140	35	0	175	47	7	0	54	23	115	1	139	368
8:45 AM	139	43	0	182	69	7	0	76	18	117	0	135	393
Total Volume	556	154	0	710	233	26	0	259	100	438	1	539	1508
% Approach Total	78.3	21.7	0.0		90.0	10.0	0.0		18.6	81.3	0.2		
PHF	0.972	0.895	0.000	0.965	0.844	0.929	0.000	0.852	0.781	0.936	0.250	0.969	0.959
Entering Leg	556	154	0	710	233	26	0	259	100	438	1	539	1508
Exiting Leg				671				254				583	1508
Total				1381				513				1122	3016

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	11	1	0	12	2	1	0	3	0	7	0	7	22
8:15 AM	15	5	0	20	0	0	0	0	0	11	0	11	31
8:30 AM	12	1	0	13	2	0	0	2	0	18	0	18	33
8:45 AM	11	2	0	13	2	0	0	2	0	10	0	10	25
Total	49	9	0	58	6	1	0	7	0	46	0	46	111
9:00 AM	17	1	0	18	2	0	0	2	0	14	0	14	34
9:15 AM	29	1	0	30	2	0	0	2	0	18	0	18	50
9:30 AM	33	3	0	36	1	0	0	1	0	11	0	11	48
9:45 AM	42	0	0	42	1	0	0	1	0	16	0	16	59
Total	121	5	0	126	6	0	0	6	0	59	0	59	191
Grand Total	170	14	0	184	12	1	0	13	0	105	0	105	302
Approach %	92.4	7.6	0.0		92.3	7.7	0.0		0.0	100.0	0.0		
Total %	56.3	4.6	0.0	60.9	4.0	0.3	0.0	4.3	0.0	34.8	0.0	34.8	
Exiting Leg Total				117				14				171	302
Buses	1	2	0	3	0	0	0	0	0	0	0	0	3
% Buses	0.6	14.3	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Exiting Leg Total				0				2				1	3
Single-Unit Trucks	130	11	0	141	12	0	0	12	0	48	0	48	201
% Single-Unit	76.5	78.6	0.0	76.6	100.0	0.0	0.0	92.3	0.0	45.7	0.0	45.7	66.6
Exiting Leg Total				60				11				130	201
Articulated Trucks	39	1	0	40	0	1	0	1	0	57	0	57	98
% Articulated	22.9	7.1	0.0	21.7	0.0	100.0	0.0	7.7	0.0	54.3	0.0	54.3	32.5
Exiting Leg Total				57				1				40	98

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

9:00 AM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
9:00 AM	17	1	0	18	2	0	0	2	0	14	0	14	34
9:15 AM	29	1	0	30	2	0	0	2	0	18	0	18	50
9:30 AM	33	3	0	36	1	0	0	1	0	11	0	11	48
9:45 AM	42	0	0	42	1	0	0	1	0	16	0	16	59
Total Volume	121	5	0	126	6	0	0	6	0	59	0	59	191
% Approach Total	96.0	4.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.720	0.417	0.000	0.750	0.750	0.000	0.000	0.750	0.000	0.819	0.000	0.819	0.809
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	102	5	0	107	6	0	0	6	0	28	0	28	141
Single-Unit %	84.3	100.0	0.0	84.9	100.0	0.0	0.0	100.0	0.0	47.5	0.0	47.5	73.8
Articulated Trucks	19	0	0	19	0	0	0	0	0	31	0	31	50
Articulated %	15.7	0.0	0.0	15.1	0.0	0.0	0.0	0.0	0.0	52.5	0.0	52.5	26.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	102	5	0	107	6	0	0	6	0	28	0	28	141
Articulated Trucks	19	0	0	19	0	0	0	0	0	31	0	31	50
Total Entering Leg	121	5	0	126	6	0	0	6	0	59	0	59	191
Buses				0				0				0	0
Single-Unit Trucks				34				5				102	141
Articulated Trucks				31				0				19	50
Total Exiting Leg				65				5				121	191

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
8:15 AM	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
8:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	1	2	0	3	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	2	0	3	0	0	0	0	0	0	0	0	3
Approach %	33.3	66.7	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	33.3	66.7	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				2				1	3

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
8:15 AM	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
8:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Volume	1	2	0	3	0	0	0	0	0	0	0	0	3
% Approach Total	33.3	66.7	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.250	0.250	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
Entering Leg	1	2	0	3	0	0	0	0	0	0	0	0	3
Exiting Leg				0				2				1	3
Total				3				2				1	6

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	5	1	0	6	2	0	0	2	0	4	0	4	12
8:15 AM	9	4	0	13	0	0	0	0	0	5	0	5	18
8:30 AM	6	1	0	7	2	0	0	2	0	4	0	4	13
8:45 AM	8	0	0	8	2	0	0	2	0	7	0	7	17
Total	28	6	0	34	6	0	0	6	0	20	0	20	60
9:00 AM	12	1	0	13	2	0	0	2	0	7	0	7	22
9:15 AM	27	1	0	28	2	0	0	2	0	9	0	9	39
9:30 AM	27	3	0	30	1	0	0	1	0	5	0	5	36
9:45 AM	36	0	0	36	1	0	0	1	0	7	0	7	44
Total	102	5	0	107	6	0	0	6	0	28	0	28	141
Grand Total	130	11	0	141	12	0	0	12	0	48	0	48	201
Approach %	92.2	7.8	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	64.7	5.5	0.0	70.1	6.0	0.0	0.0	6.0	0.0	23.9	0.0	23.9	
Exiting Leg Total				60				11				130	201

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

9:00 AM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
9:00 AM	12	1	0	13	2	0	0	2	0	7	0	7	22
9:15 AM	27	1	0	28	2	0	0	2	0	9	0	9	39
9:30 AM	27	3	0	30	1	0	0	1	0	5	0	5	36
9:45 AM	36	0	0	36	1	0	0	1	0	7	0	7	44
Total Volume	102	5	0	107	6	0	0	6	0	28	0	28	141
% Approach Total	95.3	4.7	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.708	0.417	0.000	0.743	0.750	0.000	0.000	0.750	0.000	0.778	0.000	0.778	0.801
Entering Leg	102	5	0	107	6	0	0	6	0	28	0	28	141
Exiting Leg				34				5				102	141
Total				141				11				130	282

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:00 AM	5	0	0	5	0	1	0	1	0	3	0	3	9
8:15 AM	6	1	0	7	0	0	0	0	0	6	0	6	13
8:30 AM	6	0	0	6	0	0	0	0	0	14	0	14	20
8:45 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
Total	20	1	0	21	0	1	0	1	0	26	0	26	48
9:00 AM	5	0	0	5	0	0	0	0	0	7	0	7	12
9:15 AM	2	0	0	2	0	0	0	0	0	9	0	9	11
9:30 AM	6	0	0	6	0	0	0	0	0	6	0	6	12
9:45 AM	6	0	0	6	0	0	0	0	0	9	0	9	15
Total	19	0	0	19	0	0	0	0	0	31	0	31	50
Grand Total	39	1	0	40	0	1	0	1	0	57	0	57	98
Approach %	97.5	2.5	0.0		0.0	100.0	0.0		0.0	100.0	0.0		
Total %	39.8	1.0	0.0	40.8	0.0	1.0	0.0	1.0	0.0	58.2	0.0	58.2	
Exiting Leg Total				57				1				40	98

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:15 AM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
8:15 AM	6	1	0	7	0	0	0	0	0	6	0	6	13
8:30 AM	6	0	0	6	0	0	0	0	0	14	0	14	20
8:45 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
9:00 AM	5	0	0	5	0	0	0	0	0	7	0	7	12
Total Volume	20	1	0	21	0	0	0	0	0	30	0	30	51
% Approach Total	95.2	4.8	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.833	0.250	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.536	0.000	0.536	0.638
Entering Leg	20	1	0	21	0	0	0	0	0	30	0	30	51
Exiting Leg				30				1				20	51
Total				51				1				50	102

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
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 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 #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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 08:00 AM to 10:00 AM begins at:

8:00 AM	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
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 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 #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	149	57	0	206	38	4	0	42	27	41	0	68	316
2:45 PM	129	46	0	175	52	1	0	53	30	72	0	102	330
Total	278	103	0	381	90	5	0	95	57	113	0	170	646
3:00 PM	149	80	0	229	50	7	0	57	25	42	0	67	353
3:15 PM	170	77	0	247	46	5	0	51	26	56	0	82	380
3:30 PM	170	107	0	277	63	16	0	79	27	45	0	72	428
3:45 PM	150	126	0	276	37	11	0	48	32	48	0	80	404
Total	639	390	0	1029	196	39	0	235	110	191	0	301	1565
4:00 PM	226	96	0	322	61	7	0	68	27	41	0	68	458
4:15 PM	213	130	0	343	66	6	0	72	33	40	0	73	488
Total	439	226	0	665	127	13	0	140	60	81	0	141	946
Grand Total	1356	719	0	2075	413	57	0	470	227	385	0	612	3157
Approach %	65.3	34.7	0.0		87.9	12.1	0.0		37.1	62.9	0.0		
Total %	43.0	22.8	0.0	65.7	13.1	1.8	0.0	14.9	7.2	12.2	0.0	19.4	
Exiting Leg Total				798				946				1413	3157
Cars	1297	709	0	2006	405	53	0	458	225	326	0	551	3015
% Cars	95.6	98.6	0.0	96.7	98.1	93.0	0.0	97.4	99.1	84.7	0.0	90.0	95.5
Exiting Leg Total				731				934				1350	3015
Heavy Vehicles	59	10	0	69	8	4	0	12	2	59	0	61	142
% Heavy Vehicles	4.4	1.4	0.0	3.3	1.9	7.0	0.0	2.6	0.9	15.3	0.0	10.0	4.5
Exiting Leg Total				67				12				63	142

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
3:30 PM	170	107	0	277	63	16	0	79	27	45	0	72	428
3:45 PM	150	126	0	276	37	11	0	48	32	48	0	80	404
4:00 PM	226	96	0	322	61	7	0	68	27	41	0	68	458
4:15 PM	213	130	0	343	66	6	0	72	33	40	0	73	488
Total Volume	759	459	0	1218	227	40	0	267	119	174	0	293	1778
% Approach Total	62.3	37.7	0.0		85.0	15.0	0.0		40.6	59.4	0.0		
PHF	0.840	0.883	0.000	0.888	0.860	0.625	0.000	0.845	0.902	0.906	0.000	0.916	0.911
Cars	732	452	0	1184	223	38	0	261	118	150	0	268	1713
Cars %	96.4	98.5	0.0	97.2	98.2	95.0	0.0	97.8	99.2	86.2	0.0	91.5	96.3
Heavy Vehicles	27	7	0	34	4	2	0	6	1	24	0	25	65
Heavy Vehicles %	3.6	1.5	0.0	2.8	1.8	5.0	0.0	2.2	0.8	13.8	0.0	8.5	3.7
Cars Enter Leg	732	452	0	1184	223	38	0	261	118	150	0	268	1713
Heavy Enter Leg	27	7	0	34	4	2	0	6	1	24	0	25	65
Total Entering Leg	759	459	0	1218	227	40	0	267	119	174	0	293	1778
Cars Exiting Leg				373				570				770	1713
Heavy Exiting Leg				28				8				29	65
Total Exiting Leg				401				578				799	1778

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	137	57	0	194	37	3	0	40	27	35	0	62	296
2:45 PM	120	46	0	166	52	1	0	53	30	61	0	91	310
Total	257	103	0	360	89	4	0	93	57	96	0	153	606
3:00 PM	142	77	0	219	48	6	0	54	25	35	0	60	333
3:15 PM	166	77	0	243	45	5	0	50	25	45	0	70	363
3:30 PM	163	104	0	267	62	15	0	77	27	40	0	67	411
3:45 PM	146	124	0	270	37	10	0	47	32	41	0	73	390
Total	617	382	0	999	192	36	0	228	109	161	0	270	1497
4:00 PM	217	95	0	312	60	7	0	67	26	35	0	61	440
4:15 PM	206	129	0	335	64	6	0	70	33	34	0	67	472
Total	423	224	0	647	124	13	0	137	59	69	0	128	912
Grand Total	1297	709	0	2006	405	53	0	458	225	326	0	551	3015
Approach %	64.7	35.3	0.0		88.4	11.6	0.0		40.8	59.2	0.0		
Total %	43.0	23.5	0.0	66.5	13.4	1.8	0.0	15.2	7.5	10.8	0.0	18.3	
Exiting Leg Total				731				934				1350	3015

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
3:30 PM	163	104	0	267	62	15	0	77	27	40	0	67	411
3:45 PM	146	124	0	270	37	10	0	47	32	41	0	73	390
4:00 PM	217	95	0	312	60	7	0	67	26	35	0	61	440
4:15 PM	206	129	0	335	64	6	0	70	33	34	0	67	472
Total Volume	732	452	0	1184	223	38	0	261	118	150	0	268	1713
% Approach Total	61.8	38.2	0.0		85.4	14.6	0.0		44.0	56.0	0.0		
PHF	0.843	0.876	0.000	0.884	0.871	0.633	0.000	0.847	0.894	0.915	0.000	0.918	0.907
Entering Leg	732	452	0	1184	223	38	0	261	118	150	0	268	1713
Exiting Leg				373				570				770	1713
Total				1557				831				1038	3426

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	12	0	0	12	1	1	0	2	0	6	0	6	20
2:45 PM	9	0	0	9	0	0	0	0	0	11	0	11	20
Total	21	0	0	21	1	1	0	2	0	17	0	17	40
3:00 PM	7	3	0	10	2	1	0	3	0	7	0	7	20
3:15 PM	4	0	0	4	1	0	0	1	1	11	0	12	17
3:30 PM	7	3	0	10	1	1	0	2	0	5	0	5	17
3:45 PM	4	2	0	6	0	1	0	1	0	7	0	7	14
Total	22	8	0	30	4	3	0	7	1	30	0	31	68
4:00 PM	9	1	0	10	1	0	0	1	1	6	0	7	18
4:15 PM	7	1	0	8	2	0	0	2	0	6	0	6	16
Total	16	2	0	18	3	0	0	3	1	12	0	13	34
Grand Total	59	10	0	69	8	4	0	12	2	59	0	61	142
Approach %	85.5	14.5	0.0		66.7	33.3	0.0		3.3	96.7	0.0		
Total %	41.5	7.0	0.0	48.6	5.6	2.8	0.0	8.5	1.4	41.5	0.0	43.0	
Exiting Leg Total				67				12				63	142
Buses	0	3	0	3	1	0	0	1	0	0	0	0	4
% Buses	0.0	30.0	0.0	4.3	12.5	0.0	0.0	8.3	0.0	0.0	0.0	0.0	2.8
Exiting Leg Total				1				3				0	4
Single-Unit Trucks	36	6	0	42	4	4	0	8	2	30	0	32	82
% Single-Unit	61.0	60.0	0.0	60.9	50.0	100.0	0.0	66.7	100.0	50.8	0.0	52.5	57.7
Exiting Leg Total				34				8				40	82
Articulated Trucks	23	1	0	24	3	0	0	3	0	29	0	29	56
% Articulated	39.0	10.0	0.0	34.8	37.5	0.0	0.0	25.0	0.0	49.2	0.0	47.5	39.4
Exiting Leg Total				32				1				23	56

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	12	0	0	12	1	1	0	2	0	6	0	6	20
2:45 PM	9	0	0	9	0	0	0	0	0	11	0	11	20
3:00 PM	7	3	0	10	2	1	0	3	0	7	0	7	20
3:15 PM	4	0	0	4	1	0	0	1	1	11	0	12	17
Total Volume	32	3	0	35	4	2	0	6	1	35	0	36	77
% Approach Total	91.4	8.6	0.0		66.7	33.3	0.0		2.8	97.2	0.0		
PHF	0.667	0.250	0.000	0.729	0.500	0.500	0.000	0.500	0.250	0.795	0.000	0.750	0.963
Buses	0	2	0	2	1	0	0	1	0	0	0	0	3
Buses %	0.0	66.7	0.0	5.7	25.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	3.9
Single-Unit Trucks	18	0	0	18	1	2	0	3	1	16	0	17	38
Single-Unit %	56.3	0.0	0.0	51.4	25.0	100.0	0.0	50.0	100.0	45.7	0.0	47.2	49.4
Articulated Trucks	14	1	0	15	2	0	0	2	0	19	0	19	36
Articulated %	43.8	33.3	0.0	42.9	50.0	0.0	0.0	33.3	0.0	54.3	0.0	52.8	46.8
Buses	0	2	0	2	1	0	0	1	0	0	0	0	3
Single-Unit Trucks	18	0	0	18	1	2	0	3	1	16	0	17	38
Articulated Trucks	14	1	0	15	2	0	0	2	0	19	0	19	36
Total Entering Leg	32	3	0	35	4	2	0	6	1	35	0	36	77
Buses				1				2				0	3
Single-Unit Trucks				17				1				20	38
Articulated Trucks				21				1				14	36
Total Exiting Leg				39				4				34	77

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
3:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	3	0	3	0	0	0	0	0	0	0	0	3
4:00 PM	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
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	3	0	3	1	0	0	1	0	0	0	0	4
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	75.0	0.0	75.0	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				1				3				0	4

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	2	1	0	0	1	0	0	0	0	3
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	2	0	2	1	0	0	1	0	0	0	0	3
Exiting Leg				1				2				0	3
Total				3				3				0	6

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	5	0	0	5	0	1	0	1	0	2	0	2	8
2:45 PM	6	0	0	6	0	0	0	0	0	7	0	7	13
Total	11	0	0	11	0	1	0	1	0	9	0	9	21
3:00 PM	6	0	0	6	1	1	0	2	0	0	0	0	8
3:15 PM	1	0	0	1	0	0	0	0	1	7	0	8	9
3:30 PM	4	3	0	7	1	1	0	2	0	3	0	3	12
3:45 PM	3	1	0	4	0	1	0	1	0	4	0	4	9
Total	14	4	0	18	2	3	0	5	1	14	0	15	38
4:00 PM	7	1	0	8	1	0	0	1	1	3	0	4	13
4:15 PM	4	1	0	5	1	0	0	1	0	4	0	4	10
Total	11	2	0	13	2	0	0	2	1	7	0	8	23
Grand Total	36	6	0	42	4	4	0	8	2	30	0	32	82
Approach %	85.7	14.3	0.0		50.0	50.0	0.0		6.3	93.8	0.0		
Total %	43.9	7.3	0.0	51.2	4.9	4.9	0.0	9.8	2.4	36.6	0.0	39.0	
Exiting Leg Total				34				8				40	82

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
3:30 PM	4	3	0	7	1	1	0	2	0	3	0	3	12
3:45 PM	3	1	0	4	0	1	0	1	0	4	0	4	9
4:00 PM	7	1	0	8	1	0	0	1	1	3	0	4	13
4:15 PM	4	1	0	5	1	0	0	1	0	4	0	4	10
Total Volume	18	6	0	24	3	2	0	5	1	14	0	15	44
% Approach Total	75.0	25.0	0.0		60.0	40.0	0.0		6.7	93.3	0.0		
PHF	0.643	0.500	0.000	0.750	0.750	0.500	0.000	0.625	0.250	0.875	0.000	0.938	0.846
Entering Leg	18	6	0	24	3	2	0	5	1	14	0	15	44
Exiting Leg				17				7				20	44
Total				41				12				35	88

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Articulated Trucks

	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	7	0	0	7	0	0	0	0	0	4	0	4	11
2:45 PM	3	0	0	3	0	0	0	0	0	4	0	4	7
Total	10	0	0	10	0	0	0	0	0	8	0	8	18
3:00 PM	1	1	0	2	1	0	0	1	0	7	0	7	10
3:15 PM	3	0	0	3	1	0	0	1	0	4	0	4	8
3:30 PM	3	0	0	3	0	0	0	0	0	2	0	2	5
3:45 PM	1	0	0	1	0	0	0	0	0	3	0	3	4
Total	8	1	0	9	2	0	0	2	0	16	0	16	27
4:00 PM	2	0	0	2	0	0	0	0	0	3	0	3	5
4:15 PM	3	0	0	3	1	0	0	1	0	2	0	2	6
Total	5	0	0	5	1	0	0	1	0	5	0	5	11
Grand Total	23	1	0	24	3	0	0	3	0	29	0	29	56
Approach %	95.8	4.2	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	41.1	1.8	0.0	42.9	5.4	0.0	0.0	5.4	0.0	51.8	0.0	51.8	
Exiting Leg Total				32				1				23	56

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Ballardvale Street from North				Ballardvale Street from South				I-93 SB Ramps from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
2:30 PM	7	0	0	7	0	0	0	0	0	4	0	4	11
2:45 PM	3	0	0	3	0	0	0	0	0	4	0	4	7
3:00 PM	1	1	0	2	1	0	0	1	0	7	0	7	10
3:15 PM	3	0	0	3	1	0	0	1	0	4	0	4	8
Total Volume	14	1	0	15	2	0	0	2	0	19	0	19	36
% Approach Total	93.3	6.7	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.250	0.000	0.536	0.500	0.000	0.000	0.500	0.000	0.679	0.000	0.679	0.818
Entering Leg	14	1	0	15	2	0	0	2	0	19	0	19	36
Exiting Leg				21				1				14	36
Total				36				3				33	72

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 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
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
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
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	1	0	0	0	0	1	0	0	0	0	0	0	1
Approach %	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		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						1						0						0	1

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Exiting Leg						1						0						0	1
Total						1						1						0	2

PDI File #: **240268 D**
Location: **N: Ballardvale Street S: Ballardvale Street**
Location: **W: I-93 SB Ramps**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 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
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 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
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
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 02:30 PM to 04:30 PM begins at:

2:30 PM	Ballardvale Street from North						Ballardvale Street from South						I-93 SB Ramps 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
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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 #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:00 AM	41	77	0	0	118	4	7	2	0	13	4	94	18	0	116	34	24	89	0	147	394
8:15 AM	39	85	6	0	130	7	17	3	0	27	3	89	26	0	118	45	16	85	0	146	421
8:30 AM	56	92	3	0	151	7	10	3	0	20	11	85	15	0	111	36	18	59	0	113	395
8:45 AM	32	80	1	0	113	11	22	9	0	42	15	88	37	0	140	28	29	57	0	114	409
Total	168	334	10	0	512	29	56	17	0	102	33	356	96	0	485	143	87	290	0	520	1619
9:00 AM	31	80	1	0	112	7	18	12	0	37	7	65	19	0	91	35	14	65	0	114	354
9:15 AM	30	65	3	0	98	6	8	3	0	17	7	76	20	0	103	27	7	59	0	93	311
9:30 AM	29	62	4	0	95	7	6	3	0	16	7	85	24	0	116	30	8	58	0	96	323
9:45 AM	37	74	1	0	112	7	4	7	0	18	8	80	15	0	103	23	8	56	0	87	320
Total	127	281	9	0	417	27	36	25	0	88	29	306	78	0	413	115	37	238	0	390	1308
Grand Total	295	615	19	0	929	56	92	42	0	190	62	662	174	0	898	258	124	528	0	910	2927
Approach %	31.8	66.2	2.0	0.0		29.5	48.4	22.1	0.0		6.9	73.7	19.4	0.0		28.4	13.6	58.0	0.0		
Total %	10.1	21.0	0.6	0.0	31.7	1.9	3.1	1.4	0.0	6.5	2.1	22.6	5.9	0.0	30.7	8.8	4.2	18.0	0.0	31.1	
Exiting Leg Total					1246					205					915					561	2927
Cars	287	566	18	0	871	55	86	41	0	182	61	608	165	0	834	250	116	520	0	886	2773
% Cars	97.3	92.0	94.7	0.0	93.8	98.2	93.5	97.6	0.0	95.8	98.4	91.8	94.8	0.0	92.9	96.9	93.5	98.5	0.0	97.4	94.7
Exiting Leg Total					1183					195					857					538	2773
Heavy Vehicles	8	49	1	0	58	1	6	1	0	8	1	54	9	0	64	8	8	8	0	24	154
% Heavy Vehicles	2.7	8.0	5.3	0.0	6.2	1.8	6.5	2.4	0.0	4.2	1.6	8.2	5.2	0.0	7.1	3.1	6.5	1.5	0.0	2.6	5.3
Exiting Leg Total					63					10					58					23	154

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:00 AM	41	77	0	0	118	4	7	2	0	13	4	94	18	0	116	34	24	89	0	147	394
8:15 AM	39	85	6	0	130	7	17	3	0	27	3	89	26	0	118	45	16	85	0	146	421
8:30 AM	56	92	3	0	151	7	10	3	0	20	11	85	15	0	111	36	18	59	0	113	395
8:45 AM	32	80	1	0	113	11	22	9	0	42	15	88	37	0	140	28	29	57	0	114	409
Total Volume	168	334	10	0	512	29	56	17	0	102	33	356	96	0	485	143	87	290	0	520	1619
% Approach Total	32.8	65.2	2.0	0.0		28.4	54.9	16.7	0.0		6.8	73.4	19.8	0.0		27.5	16.7	55.8	0.0		
PHF	0.750	0.908	0.417	0.000	0.848	0.659	0.636	0.472	0.000	0.607	0.550	0.947	0.649	0.000	0.866	0.794	0.750	0.815	0.000	0.884	0.961
Cars	164	318	10	0	492	28	53	16	0	97	32	335	91	0	458	137	80	284	0	501	1548
Cars %	97.6	95.2	100.0	0.0	96.1	96.6	94.6	94.1	0.0	95.1	97.0	94.1	94.8	0.0	94.4	95.8	92.0	97.9	0.0	96.3	95.6
Heavy Vehicles	4	16	0	0	20	1	3	1	0	5	1	21	5	0	27	6	7	6	0	19	71
Heavy Vehicles %	2.4	4.8	0.0	0.0	3.9	3.4	5.4	5.9	0.0	4.9	3.0	5.9	5.2	0.0	5.6	4.2	8.0	2.1	0.0	3.7	4.4
Cars Enter Leg	164	318	10	0	492	28	53	16	0	97	32	335	91	0	458	137	80	284	0	501	1548
Heavy Enter Leg	4	16	0	0	20	1	3	1	0	5	1	21	5	0	27	6	7	6	0	19	71
Total Entering Leg	168	334	10	0	512	29	56	17	0	102	33	356	96	0	485	143	87	290	0	520	1619
Cars Exiting Leg					647					122					471					308	1548
Heavy Exiting Leg					28					8					23					12	71
Total Exiting Leg					675					130					494					320	1619

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Route 62 from North					High Street from East					Middlesex Avenue (Route 62) from South					Middlesex Avenue 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	39	72	0	0	111	4	7	2	0	13	4	90	18	0	112	34	24	86	0	144	380
8:15 AM	39	80	6	0	125	7	17	3	0	27	2	80	25	0	107	40	16	83	0	139	398
8:30 AM	54	91	3	0	148	7	10	3	0	20	11	81	15	0	107	35	18	58	0	111	386
8:45 AM	32	75	1	0	108	10	19	8	0	37	15	84	33	0	132	28	22	57	0	107	384
Total	164	318	10	0	492	28	53	16	0	97	32	335	91	0	458	137	80	284	0	501	1548
9:00 AM	31	74	1	0	106	7	16	12	0	35	7	56	19	0	82	34	14	65	0	113	336
9:15 AM	28	60	3	0	91	6	7	3	0	16	7	70	19	0	96	27	6	58	0	91	294
9:30 AM	29	55	3	0	87	7	6	3	0	16	7	75	22	0	104	29	8	58	0	95	302
9:45 AM	35	59	1	0	95	7	4	7	0	18	8	72	14	0	94	23	8	55	0	86	293
Total	123	248	8	0	379	27	33	25	0	85	29	273	74	0	376	113	36	236	0	385	1225
Grand Total	287	566	18	0	871	55	86	41	0	182	61	608	165	0	834	250	116	520	0	886	2773
Approach %	33.0	65.0	2.1	0.0		30.2	47.3	22.5	0.0		7.3	72.9	19.8	0.0		28.2	13.1	58.7	0.0		
Total %	10.3	20.4	0.6	0.0	31.4	2.0	3.1	1.5	0.0	6.6	2.2	21.9	6.0	0.0	30.1	9.0	4.2	18.8	0.0	32.0	
Exiting Leg Total					1183					195					857					538	2773

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Route 62 from North					High Street from East					Middlesex Avenue (Route 62) from South					Middlesex Avenue 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	39	72	0	0	111	4	7	2	0	13	4	90	18	0	112	34	24	86	0	144	380
8:15 AM	39	80	6	0	125	7	17	3	0	27	2	80	25	0	107	40	16	83	0	139	398
8:30 AM	54	91	3	0	148	7	10	3	0	20	11	81	15	0	107	35	18	58	0	111	386
8:45 AM	32	75	1	0	108	10	19	8	0	37	15	84	33	0	132	28	22	57	0	107	384
Total Volume	164	318	10	0	492	28	53	16	0	97	32	335	91	0	458	137	80	284	0	501	1548
% Approach Total	33.3	64.6	2.0	0.0		28.9	54.6	16.5	0.0		7.0	73.1	19.9	0.0		27.3	16.0	56.7	0.0		
PHF	0.759	0.874	0.417	0.000	0.831	0.700	0.697	0.500	0.000	0.655	0.533	0.931	0.689	0.000	0.867	0.856	0.833	0.826	0.000	0.870	0.972
Entering Leg	164	318	10	0	492	28	53	16	0	97	32	335	91	0	458	137	80	284	0	501	1548
Exiting Leg					647					122					471					308	1548
Total					1139					219					929					809	3096

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

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

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:00 AM	2	5	0	0	7	0	0	0	0	0	0	4	0	0	4	0	0	3	0	3	14
8:15 AM	0	5	0	0	5	0	0	0	0	0	1	9	1	0	11	5	0	2	0	7	23
8:30 AM	2	1	0	0	3	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	9
8:45 AM	0	5	0	0	5	1	3	1	0	5	0	4	4	0	8	0	7	0	0	7	25
Total	4	16	0	0	20	1	3	1	0	5	1	21	5	0	27	6	7	6	0	19	71
9:00 AM	0	6	0	0	6	0	2	0	0	2	0	9	0	0	9	1	0	0	0	1	18
9:15 AM	2	5	0	0	7	0	1	0	0	1	0	6	1	0	7	0	1	1	0	2	17
9:30 AM	0	7	1	0	8	0	0	0	0	0	0	10	2	0	12	1	0	0	0	1	21
9:45 AM	2	15	0	0	17	0	0	0	0	0	0	8	1	0	9	0	0	1	0	1	27
Total	4	33	1	0	38	0	3	0	0	3	0	33	4	0	37	2	1	2	0	5	83
Grand Total	8	49	1	0	58	1	6	1	0	8	1	54	9	0	64	8	8	8	0	24	154
Approach %	13.8	84.5	1.7	0.0		12.5	75.0	12.5	0.0		1.6	84.4	14.1	0.0		33.3	33.3	33.3	0.0		
Total %	5.2	31.8	0.6	0.0	37.7	0.6	3.9	0.6	0.0	5.2	0.6	35.1	5.8	0.0	41.6	5.2	5.2	5.2	0.0	15.6	
Exiting Leg Total					63					10					58					23	154
Buses	0	1	0	0	1	0	5	1	0	6	0	4	3	0	7	1	7	0	0	8	22
% Buses	0.0	2.0	0.0	0.0	1.7	0.0	83.3	100.0	0.0	75.0	0.0	7.4	33.3	0.0	10.9	12.5	87.5	0.0	0.0	33.3	14.3
Exiting Leg Total					4					7					3					8	22
Single-Unit Trucks	6	32	1	0	39	1	0	0	0	1	1	38	6	0	45	6	0	8	0	14	99
% Single-Unit	75.0	65.3	100.0	0.0	67.2	100.0	0.0	0.0	0.0	12.5	100.0	70.4	66.7	0.0	70.3	75.0	0.0	100.0	0.0	58.3	64.3
Exiting Leg Total					47					2					38					12	99
Articulated Trucks	2	16	0	0	18	0	1	0	0	1	0	12	0	0	12	1	1	0	0	2	33
% Articulated	25.0	32.7	0.0	0.0	31.0	0.0	16.7	0.0	0.0	12.5	0.0	22.2	0.0	0.0	18.8	12.5	12.5	0.0	0.0	8.3	21.4
Exiting Leg Total					12					1					17					3	33

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

9:00 AM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
9:00 AM	0	6	0	0	6	0	2	0	0	2	0	9	0	0	9	1	0	0	0	1	18
9:15 AM	2	5	0	0	7	0	1	0	0	1	0	6	1	0	7	0	1	1	0	2	17
9:30 AM	0	7	1	0	8	0	0	0	0	0	0	10	2	0	12	1	0	0	0	1	21
9:45 AM	2	15	0	0	17	0	0	0	0	0	0	8	1	0	9	0	0	1	0	1	27
Total Volume	4	33	1	0	38	0	3	0	0	3	0	33	4	0	37	2	1	2	0	5	83
% Approach Total	10.5	86.8	2.6	0.0		0.0	100.0	0.0	0.0		0.0	89.2	10.8	0.0		40.0	20.0	40.0	0.0		
PHF	0.500	0.550	0.250	0.000	0.559	0.000	0.375	0.000	0.000	0.375	0.000	0.825	0.500	0.000	0.771	0.500	0.250	0.500	0.000	0.625	0.769
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	20.0	3.6
Single-Unit Trucks	4	21	1	0	26	0	0	0	0	0	0	21	4	0	25	1	0	2	0	3	54
Single-Unit %	100.0	63.6	100.0	0.0	68.4	0.0	0.0	0.0	0.0	0.0	0.0	63.6	100.0	0.0	67.6	50.0	0.0	100.0	0.0	60.0	65.1
Articulated Trucks	0	12	0	0	12	0	1	0	0	1	0	12	0	0	12	0	1	0	0	1	26
Articulated %	0.0	36.4	0.0	0.0	31.6	0.0	33.3	0.0	0.0	33.3	0.0	36.4	0.0	0.0	32.4	0.0	100.0	0.0	0.0	20.0	31.3
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3
Single-Unit Trucks	4	21	1	0	26	0	0	0	0	0	0	21	4	0	25	1	0	2	0	3	54
Articulated Trucks	0	12	0	0	12	0	1	0	0	1	0	12	0	0	12	0	1	0	0	1	26
Total Entering Leg	4	33	1	0	38	0	3	0	0	3	0	33	4	0	37	2	1	2	0	5	83
Buses					0					0					1					2	3
Single-Unit Trucks					23					1					22					8	54
Articulated Trucks					12					1					12					1	26
Total Exiting Leg					35					2					35					11	83

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:00 AM	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	3	0	0	3	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:45 AM	0	1	0	0	1	0	3	1	0	4	0	0	3	0	3	0	7	0	0	7	15
Total	0	1	0	0	1	0	3	1	0	4	0	4	3	0	7	0	7	0	0	7	19
9:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	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	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3
Grand Total	0	1	0	0	1	0	5	1	0	6	0	4	3	0	7	1	7	0	0	8	22
Approach %	0.0	100.0	0.0	0.0		0.0	83.3	16.7	0.0		0.0	57.1	42.9	0.0		12.5	87.5	0.0	0.0		
Total %	0.0	4.5	0.0	0.0	4.5	0.0	22.7	4.5	0.0	27.3	0.0	18.2	13.6	0.0	31.8	4.5	31.8	0.0	0.0	36.4	
Exiting Leg Total					4					7					3					8	22

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:15 AM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:45 AM	0	1	0	0	1	0	3	1	0	4	0	0	3	0	3	0	7	0	0	7	15
9:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3
Total Volume	0	1	0	0	1	0	5	1	0	6	0	4	3	0	7	1	7	0	0	8	22
% Approach Total	0.0	100.0	0.0	0.0		0.0	83.3	16.7	0.0		0.0	57.1	42.9	0.0		12.5	87.5	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.417	0.250	0.000	0.375	0.000	0.333	0.250	0.000	0.583	0.250	0.250	0.000	0.000	0.286	0.367
Entering Leg	0	1	0	0	1	0	5	1	0	6	0	4	3	0	7	1	7	0	0	8	22
Exiting Leg					4					7					3					8	22
Total					5					13					10					16	44

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:00 AM	2	3	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	3	0	3	12
8:15 AM	0	3	0	0	3	0	0	0	0	0	1	6	1	0	8	4	0	2	0	6	17
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	1	0	1	0	2	6
8:45 AM	0	4	0	0	4	1	0	0	0	1	0	4	1	0	5	0	0	0	0	0	10
Total	2	11	0	0	13	1	0	0	0	1	1	17	2	0	20	5	0	6	0	11	45
9:00 AM	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	9
9:15 AM	2	3	0	0	5	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	11
9:30 AM	0	5	1	0	6	0	0	0	0	0	0	4	2	0	6	1	0	0	0	1	13
9:45 AM	2	10	0	0	12	0	0	0	0	0	0	7	1	0	8	0	0	1	0	1	21
Total	4	21	1	0	26	0	0	0	0	0	0	21	4	0	25	1	0	2	0	3	54
Grand Total	6	32	1	0	39	1	0	0	0	1	1	38	6	0	45	6	0	8	0	14	99
Approach %	15.4	82.1	2.6	0.0		100.0	0.0	0.0	0.0		2.2	84.4	13.3	0.0		42.9	0.0	57.1	0.0		
Total %	6.1	32.3	1.0	0.0	39.4	1.0	0.0	0.0	0.0	1.0	1.0	38.4	6.1	0.0	45.5	6.1	0.0	8.1	0.0	14.1	
Exiting Leg Total					47					2					38					12	99

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

9:00 AM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
9:00 AM	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	9
9:15 AM	2	3	0	0	5	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	11
9:30 AM	0	5	1	0	6	0	0	0	0	0	0	4	2	0	6	1	0	0	0	1	13
9:45 AM	2	10	0	0	12	0	0	0	0	0	0	7	1	0	8	0	0	1	0	1	21
Total Volume	4	21	1	0	26	0	0	0	0	0	0	21	4	0	25	1	0	2	0	3	54
% Approach Total	15.4	80.8	3.8	0.0		0.0	0.0	0.0	0.0		0.0	84.0	16.0	0.0		33.3	0.0	66.7	0.0		
PHF	0.500	0.525	0.250	0.000	0.542	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.500	0.000	0.781	0.250	0.000	0.500	0.000	0.750	0.643
Entering Leg	4	21	1	0	26	0	0	0	0	0	0	21	4	0	25	1	0	2	0	3	54
Exiting Leg					23					1					22					8	54
Total					49					1					47					11	108

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Articulated Trucks**

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
8:30 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	4	0	0	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7
9:00 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
9:15 AM	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	6
9:30 AM	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	8
9:45 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
Total	0	12	0	0	12	0	1	0	0	1	0	12	0	0	12	0	1	0	0	1	26
Grand Total	2	16	0	0	18	0	1	0	0	1	0	12	0	0	12	1	1	0	0	2	33
Approach %	11.1	88.9	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		50.0	50.0	0.0	0.0		
Total %	6.1	48.5	0.0	0.0	54.5	0.0	3.0	0.0	0.0	3.0	0.0	36.4	0.0	0.0	36.4	3.0	3.0	0.0	0.0	6.1	
Exiting Leg Total					12					1					17					3	33

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

9:00 AM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
9:00 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
9:15 AM	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	6
9:30 AM	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	8
9:45 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
Total Volume	0	12	0	0	12	0	1	0	0	1	0	12	0	0	12	0	1	0	0	1	26
% Approach Total	0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.600	0.000	0.000	0.600	0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.250	0.813
Entering Leg	0	12	0	0	12	0	1	0	0	1	0	12	0	0	12	0	1	0	0	1	26
Exiting Leg					12					1					12					1	26
Total					24					2					24					2	52

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	0	0	0	0	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 %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		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	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	0

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
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 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 #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **8:00 AM**
End Time: **10:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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	0	0	0	0	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 %	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	
Exiting Leg Total							0							0							0							0	0

Peak Hour Analysis from 08:00 AM to 10:00 AM begins at:

8:00 AM	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
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 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 #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:30 PM	84	66	1	0	151	7	17	7	0	31	5	92	19	0	116	27	11	59	0	97	395
2:45 PM	79	75	4	0	158	10	31	6	0	47	9	86	36	0	131	31	16	47	0	94	430
Total	163	141	5	0	309	17	48	13	0	78	14	178	55	0	247	58	27	106	0	191	825
3:00 PM	61	77	5	0	143	13	29	4	0	46	14	126	41	0	181	38	14	54	0	106	476
3:15 PM	88	70	4	0	162	9	31	4	0	44	12	91	34	0	137	27	14	52	0	93	436
3:30 PM	67	82	4	0	153	9	33	20	0	62	4	117	32	0	153	38	25	47	0	110	478
3:45 PM	80	82	4	0	166	7	29	11	0	47	8	98	25	0	131	44	24	85	0	153	497
Total	296	311	17	0	624	38	122	39	0	199	38	432	132	0	602	147	77	238	0	462	1887
4:00 PM	76	81	4	0	161	10	19	7	0	36	9	118	34	0	161	50	8	47	0	105	463
4:15 PM	80	82	3	0	165	5	29	6	0	40	7	118	35	0	160	55	19	65	0	139	504
Total	156	163	7	0	326	15	48	13	0	76	16	236	69	0	321	105	27	112	0	244	967
Grand Total	615	615	29	0	1259	70	218	65	0	353	68	846	256	0	1170	310	131	456	0	897	3679
Approach %	48.8	48.8	2.3	0.0		19.8	61.8	18.4	0.0		5.8	72.3	21.9	0.0		34.6	14.6	50.8	0.0		
Total %	16.7	16.7	0.8	0.0	34.2	1.9	5.9	1.8	0.0	9.6	1.8	23.0	7.0	0.0	31.8	8.4	3.6	12.4	0.0	24.4	
Exiting Leg Total					1372					228					990					1089	3679
Cars	609	593	27	0	1229	69	210	63	0	342	66	823	251	0	1140	302	122	451	0	875	3586
% Cars	99.0	96.4	93.1	0.0	97.6	98.6	96.3	96.9	0.0	96.9	97.1	97.3	98.0	0.0	97.4	97.4	93.1	98.9	0.0	97.5	97.5
Exiting Leg Total					1343					215					958					1070	3586
Heavy Vehicles	6	22	2	0	30	1	8	2	0	11	2	23	5	0	30	8	9	5	0	22	93
% Heavy Vehicles	1.0	3.6	6.9	0.0	2.4	1.4	3.7	3.1	0.0	3.1	2.9	2.7	2.0	0.0	2.6	2.6	6.9	1.1	0.0	2.5	2.5
Exiting Leg Total					29					13					32					19	93

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
3:30 PM	67	82	4	0	153	9	33	20	0	62	4	117	32	0	153	38	25	47	0	110	478
3:45 PM	80	82	4	0	166	7	29	11	0	47	8	98	25	0	131	44	24	85	0	153	497
4:00 PM	76	81	4	0	161	10	19	7	0	36	9	118	34	0	161	50	8	47	0	105	463
4:15 PM	80	82	3	0	165	5	29	6	0	40	7	118	35	0	160	55	19	65	0	139	504
Total Volume	303	327	15	0	645	31	110	44	0	185	28	451	126	0	605	187	76	244	0	507	1942
% Approach Total	47.0	50.7	2.3	0.0		16.8	59.5	23.8	0.0		4.6	74.5	20.8	0.0		36.9	15.0	48.1	0.0		
PHF	0.947	0.997	0.938	0.000	0.971	0.775	0.833	0.550	0.000	0.746	0.778	0.956	0.900	0.000	0.939	0.850	0.760	0.718	0.000	0.828	0.963
Cars	303	314	14	0	631	31	109	43	0	183	27	441	124	0	592	179	68	242	0	489	1895
Cars %	100.0	96.0	93.3	0.0	97.8	100.0	99.1	97.7	0.0	98.9	96.4	97.8	98.4	0.0	97.9	95.7	89.5	99.2	0.0	96.4	97.6
Heavy Vehicles	0	13	1	0	14	0	1	1	0	2	1	10	2	0	13	8	8	2	0	18	47
Heavy Vehicles %	0.0	4.0	6.7	0.0	2.2	0.0	0.9	2.3	0.0	1.1	3.6	2.2	1.6	0.0	2.1	4.3	10.5	0.8	0.0	3.6	2.4
Cars Enter Leg	303	314	14	0	631	31	109	43	0	183	27	441	124	0	592	179	68	242	0	489	1895
Heavy Enter Leg	0	13	1	0	14	0	1	1	0	2	1	10	2	0	13	8	8	2	0	18	47
Total Entering Leg	303	327	15	0	645	31	110	44	0	185	28	451	126	0	605	187	76	244	0	507	1942
Cars Exiting Leg					714					109					536					536	1895
Heavy Exiting Leg					12					10					22					3	47
Total Exiting Leg					726					119					558					539	1942

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:30 PM	83	63	1	0	147	7	15	7	0	29	5	88	19	0	112	27	11	58	0	96	384
2:45 PM	77	70	4	0	151	9	31	5	0	45	9	81	36	0	126	31	16	46	0	93	415
Total	160	133	5	0	298	16	46	12	0	74	14	169	55	0	238	58	27	104	0	189	799
3:00 PM	61	77	4	0	142	13	27	4	0	44	14	124	40	0	178	38	13	54	0	105	469
3:15 PM	85	69	4	0	158	9	28	4	0	41	11	89	32	0	132	27	14	51	0	92	423
3:30 PM	67	80	3	0	150	9	32	19	0	60	4	115	31	0	150	32	18	45	0	95	455
3:45 PM	80	79	4	0	163	7	29	11	0	47	8	95	25	0	128	44	23	85	0	152	490
Total	293	305	15	0	613	38	116	38	0	192	37	423	128	0	588	141	68	235	0	444	1837
4:00 PM	76	77	4	0	157	10	19	7	0	36	9	116	34	0	159	49	8	47	0	104	456
4:15 PM	80	78	3	0	161	5	29	6	0	40	6	115	34	0	155	54	19	65	0	138	494
Total	156	155	7	0	318	15	48	13	0	76	15	231	68	0	314	103	27	112	0	242	950
Grand Total	609	593	27	0	1229	69	210	63	0	342	66	823	251	0	1140	302	122	451	0	875	3586
Approach %	49.6	48.3	2.2	0.0		20.2	61.4	18.4	0.0		5.8	72.2	22.0	0.0		34.5	13.9	51.5	0.0		
Total %	17.0	16.5	0.8	0.0	34.3	1.9	5.9	1.8	0.0	9.5	1.8	23.0	7.0	0.0	31.8	8.4	3.4	12.6	0.0	24.4	
Exiting Leg Total					1343					215					958					1070	3586

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:30 PM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
3:30 PM	67	80	3	0	150	9	32	19	0	60	4	115	31	0	150	32	18	45	0	95	455
3:45 PM	80	79	4	0	163	7	29	11	0	47	8	95	25	0	128	44	23	85	0	152	490
4:00 PM	76	77	4	0	157	10	19	7	0	36	9	116	34	0	159	49	8	47	0	104	456
4:15 PM	80	78	3	0	161	5	29	6	0	40	6	115	34	0	155	54	19	65	0	138	494
Total Volume	303	314	14	0	631	31	109	43	0	183	27	441	124	0	592	179	68	242	0	489	1895
% Approach Total	48.0	49.8	2.2	0.0		16.9	59.6	23.5	0.0		4.6	74.5	20.9	0.0		36.6	13.9	49.5	0.0		
PHF	0.947	0.981	0.875	0.000	0.968	0.775	0.852	0.566	0.000	0.763	0.750	0.950	0.912	0.000	0.931	0.829	0.739	0.712	0.000	0.804	0.959
Entering Leg	303	314	14	0	631	31	109	43	0	183	27	441	124	0	592	179	68	242	0	489	1895
Exiting Leg					714					109					536					536	1895
Total					1345					292					1128					1025	3790

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

	Route 62 from North					High Street from East					Middlesex Avenue (Route 62) from South					Middlesex Avenue 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
2:30 PM	1	3	0	0	4	0	2	0	0	2	0	4	0	0	4	0	0	1	0	1	11
2:45 PM	2	5	0	0	7	1	0	1	0	2	0	5	0	0	5	0	0	1	0	1	15
Total	3	8	0	0	11	1	2	1	0	4	0	9	0	0	9	0	0	2	0	2	26
3:00 PM	0	0	1	0	1	0	2	0	0	2	0	2	1	0	3	0	1	0	0	1	7
3:15 PM	3	1	0	0	4	0	3	0	0	3	1	2	2	0	5	0	0	1	0	1	13
3:30 PM	0	2	1	0	3	0	1	1	0	2	0	2	1	0	3	6	7	2	0	15	23
3:45 PM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	7
Total	3	6	2	0	11	0	6	1	0	7	1	9	4	0	14	6	9	3	0	18	50
4:00 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	7
4:15 PM	0	4	0	0	4	0	0	0	0	0	1	3	1	0	5	1	0	0	0	1	10
Total	0	8	0	0	8	0	0	0	0	0	1	5	1	0	7	2	0	0	0	2	17
Grand Total	6	22	2	0	30	1	8	2	0	11	2	23	5	0	30	8	9	5	0	22	93
Approach %	20.0	73.3	6.7	0.0		9.1	72.7	18.2	0.0		6.7	76.7	16.7	0.0		36.4	40.9	22.7	0.0		
Total %	6.5	23.7	2.2	0.0	32.3	1.1	8.6	2.2	0.0	11.8	2.2	24.7	5.4	0.0	32.3	8.6	9.7	5.4	0.0	23.7	
Exiting Leg Total					29					13					32					19	93
Buses	2	4	1	0	7	0	5	1	0	6	0	3	3	0	6	2	8	1	0	11	30
% Buses	33.3	18.2	50.0	0.0	23.3	0.0	62.5	50.0	0.0	54.5	0.0	13.0	60.0	0.0	20.0	25.0	88.9	20.0	0.0	50.0	32.3
Exiting Leg Total					4					9					7					10	30
Single-Unit Trucks	4	10	0	0	14	1	3	1	0	5	2	15	2	0	19	6	0	4	0	10	48
% Single-Unit	66.7	45.5	0.0	0.0	46.7	100.0	37.5	50.0	0.0	45.5	100.0	65.2	40.0	0.0	63.3	75.0	0.0	80.0	0.0	45.5	51.6
Exiting Leg Total					20					2					17					9	48
Articulated Trucks	0	8	1	0	9	0	0	0	0	0	0	5	0	0	5	0	1	0	0	1	15
% Articulated	0.0	36.4	50.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	21.7	0.0	0.0	16.7	0.0	11.1	0.0	0.0	4.5	16.1
Exiting Leg Total					5					2					8					0	15

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Route 62 from North					High Street from East					Middlesex Avenue (Route 62) from South					Middlesex Avenue 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
2:45 PM	2	5	0	0	7	1	0	1	0	2	0	5	0	0	5	0	0	1	0	1	15
3:00 PM	0	0	1	0	1	0	2	0	0	2	0	2	1	0	3	0	1	0	0	1	7
3:15 PM	3	1	0	0	4	0	3	0	0	3	1	2	2	0	5	0	0	1	0	1	13
3:30 PM	0	2	1	0	3	0	1	1	0	2	0	2	1	0	3	6	7	2	0	15	23
Total Volume	5	8	2	0	15	1	6	2	0	9	1	11	4	0	16	6	8	4	0	18	58
% Approach Total	33.3	53.3	13.3	0.0		11.1	66.7	22.2	0.0		6.3	68.8	25.0	0.0		33.3	44.4	22.2	0.0		
PHF	0.417	0.400	0.500	0.000	0.536	0.250	0.500	0.500	0.000	0.750	0.250	0.550	0.500	0.000	0.800	0.250	0.286	0.500	0.000	0.300	0.630
Buses	2	0	1	0	3	0	4	1	0	5	0	2	3	0	5	1	8	1	0	10	23
Buses %	40.0	0.0	50.0	0.0	20.0	0.0	66.7	50.0	0.0	55.6	0.0	18.2	75.0	0.0	31.3	16.7	100.0	25.0	0.0	55.6	39.7
Single-Unit Trucks	3	5	0	0	8	1	2	1	0	4	1	5	1	0	7	5	0	3	0	8	27
Single-Unit %	60.0	62.5	0.0	0.0	53.3	100.0	33.3	50.0	0.0	44.4	100.0	45.5	25.0	0.0	43.8	83.3	0.0	75.0	0.0	44.4	46.6
Articulated Trucks	0	3	1	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
Articulated %	0.0	37.5	50.0	0.0	26.7	0.0	0.0	0.0	0.0	0.0	0.0	36.4	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	13.8
Buses	2	0	1	0	3	0	4	1	0	5	0	2	3	0	5	1	8	1	0	10	23
Single-Unit Trucks	3	5	0	0	8	1	2	1	0	4	1	5	1	0	7	5	0	3	0	8	27
Articulated Trucks	0	3	1	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
Total Entering Leg	5	8	2	0	15	1	6	2	0	9	1	11	4	0	16	6	8	4	0	18	58
Buses					3					9					2					9	23
Single-Unit Trucks					9					1					11					6	27
Articulated Trucks					4					1					3					0	8
Total Exiting Leg					16					11					16					15	58

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:30 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
2:45 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	4
3:00 PM	0	0	1	0	1	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	4
3:15 PM	1	0	0	0	1	0	3	0	0	3	0	0	1	0	1	0	0	0	0	0	5
3:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	1	7	1	0	9	12
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	1	1	0	3	0	4	1	0	5	0	1	3	0	4	1	8	1	0	10	22
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
Grand Total	2	4	1	0	7	0	5	1	0	6	0	3	3	0	6	2	8	1	0	11	30
Approach %	28.6	57.1	14.3	0.0		0.0	83.3	16.7	0.0		0.0	50.0	50.0	0.0		18.2	72.7	9.1	0.0		
Total %	6.7	13.3	3.3	0.0	23.3	0.0	16.7	3.3	0.0	20.0	0.0	10.0	10.0	0.0	20.0	6.7	26.7	3.3	0.0	36.7	
Exiting Leg Total					4					9					7					10	30

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:45 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
3:00 PM	0	0	1	0	1	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	4
3:15 PM	1	0	0	0	1	0	3	0	0	3	0	0	1	0	1	0	0	0	0	0	5
3:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	1	7	1	0	9	12
Total Volume	2	0	1	0	3	0	4	1	0	5	0	2	3	0	5	1	8	1	0	10	23
% Approach Total	66.7	0.0	33.3	0.0		0.0	80.0	20.0	0.0		0.0	40.0	60.0	0.0		10.0	80.0	10.0	0.0		
PHF	0.500	0.000	0.250	0.000	0.750	0.000	0.333	0.250	0.000	0.417	0.000	0.500	0.750	0.000	0.625	0.250	0.286	0.250	0.000	0.278	0.479
Entering Leg	2	0	1	0	3	0	4	1	0	5	0	2	3	0	5	1	8	1	0	10	23
Exiting Leg					3					9					2					9	23
Total					6					14					7					19	46

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Single-Unit Trucks

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:30 PM	1	0	0	0	1	0	1	0	0	1	0	4	0	0	4	0	0	1	0	1	7
2:45 PM	1	3	0	0	4	1	0	1	0	2	0	1	0	0	1	0	0	1	0	1	8
Total	2	3	0	0	5	1	1	1	0	3	0	5	0	0	5	0	0	2	0	2	15
3:00 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2
3:15 PM	2	1	0	0	3	0	0	0	0	0	1	2	1	0	4	0	0	1	0	1	8
3:30 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	5	0	1	0	6	9
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total	2	3	0	0	5	0	2	0	0	2	1	6	1	0	8	5	0	2	0	7	22
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
4:15 PM	0	3	0	0	3	0	0	0	0	0	1	2	1	0	4	1	0	0	0	1	8
Total	0	4	0	0	4	0	0	0	0	0	1	4	1	0	6	1	0	0	0	1	11
Grand Total	4	10	0	0	14	1	3	1	0	5	2	15	2	0	19	6	0	4	0	10	48
Approach %	28.6	71.4	0.0	0.0		20.0	60.0	20.0	0.0		10.5	78.9	10.5	0.0		60.0	0.0	40.0	0.0		
Total %	8.3	20.8	0.0	0.0	29.2	2.1	6.3	2.1	0.0	10.4	4.2	31.3	4.2	0.0	39.6	12.5	0.0	8.3	0.0	20.8	
Exiting Leg Total					20					2					17					9	48

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:45 PM	1	3	0	0	4	1	0	1	0	2	0	1	0	0	1	0	0	1	0	1	8
3:00 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2
3:15 PM	2	1	0	0	3	0	0	0	0	0	1	2	1	0	4	0	0	1	0	1	8
3:30 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	5	0	1	0	6	9
Total Volume	3	5	0	0	8	1	2	1	0	4	1	5	1	0	7	5	0	3	0	8	27
% Approach Total	37.5	62.5	0.0	0.0		25.0	50.0	25.0	0.0		14.3	71.4	14.3	0.0		62.5	0.0	37.5	0.0		
PHF	0.375	0.417	0.000	0.000	0.500	0.250	0.500	0.250	0.000	0.500	0.250	0.625	0.250	0.000	0.438	0.250	0.000	0.750	0.000	0.333	0.750
Entering Leg	3	5	0	0	8	1	2	1	0	4	1	5	1	0	7	5	0	3	0	8	27
Exiting Leg					9					1					11					6	27
Total					17					5					18					14	54

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2:45 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Total	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	7
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	3
Total	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	6
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	8	1	0	9	0	0	0	0	0	0	5	0	0	5	0	1	0	0	1	15
Approach %	0.0	88.9	11.1	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	53.3	6.7	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	6.7	0.0	0.0	6.7	
Exiting Leg Total					5					2					8					0	15

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:30 PM	Route 62					High Street					Middlesex Avenue (Route 62)					Middlesex Avenue					
	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
2:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2:45 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
% 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	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.400
Entering Leg	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
Exiting Leg					4					0					4					0	8
Total					8					0					8					0	16

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
2:30 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	1	0	1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	0	1	1
3:00 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
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	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
3:45 PM	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	1	0	1	2
Total	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
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	1	1	1
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
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	1	1	1
Grand Total	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	5
Approach %	50.0	50.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	66.7	33.3		
Total %	20.0	20.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	20.0	60.0	
Exiting Leg Total							0							0							1							4	5

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

3:15 PM	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	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
3:45 PM	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	1	0	1	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Volume	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4
% Approach Total	50.0	50.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		
PHF	0.250	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.500
Entering Leg	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4
Exiting Leg							0							0							1							3	4
Total							2							0							1							5	8

PDI File #: **240268 E**
Location: **N: Route 62 S: Middlesex Avenue (Route 62)**
Location: **E: High Street W: Middlesex Avenue**
City, State: **Wilimngton, MA**
Client: **Nitsch/ B. Zimolka**
Site Code: **15428**
Count Date: **Thursday, October 24, 2024**
Start Time: **2:30 PM**
End Time: **4:30 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
2:30 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
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
3:00 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
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	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	1	0	1	3
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
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	0	1	3
Approach %	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	100		0	0	0	0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66.7	66.7	0	0	0	0	33.3	0	33.3	
Exiting Leg Total							0							0							2							1	3

Peak Hour Analysis from 02:30 PM to 04:30 PM begins at:

2:45 PM	Route 62 from North							High Street from East							Middlesex Avenue (Route 62) from South							Middlesex Avenue 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
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 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
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	2
Total Volume	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	1	0	1	3
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	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	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.375
Entering Leg	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	1	0	1	3
Exiting Leg							0							0							2							1	3
Total							0							0							4							2	6

Ballardville Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 240268 ATR-A (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	2	1	0	0	0	0	0	0	0	0	4	30.2	27.8
1:00 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	4	27.1	25.3
2:00 AM	0	0	1	2	1	0	0	0	0	0	0	0	0	4	31.3	28.0
3:00 AM	0	0	0	8	2	1	0	0	0	0	0	0	0	11	30.0	28.6
4:00 AM	0	0	8	14	2	0	0	0	0	0	0	0	0	24	27.0	25.4
5:00 AM	3	1	13	39	5	1	0	0	0	0	0	0	0	62	29.0	25.6
6:00 AM	1	3	29	71	9	0	0	0	0	0	0	0	0	113	29.0	25.7
7:00 AM	2	3	36	153	29	0	0	0	0	0	0	0	0	223	29.0	26.5
8:00 AM	3	5	39	97	26	2	0	0	0	0	0	0	0	172	30.0	26.1
9:00 AM	0	6	24	76	12	1	0	0	0	0	0	0	0	119	29.0	26.0
10:00 AM	1	1	25	64	13	1	0	0	0	0	0	0	0	105	29.0	26.2
11:00 AM	2	1	21	74	17	1	0	0	0	0	0	0	0	116	29.8	26.6
12:00 PM	3	5	32	85	22	1	0	0	0	0	0	0	0	148	30.0	26.5
1:00 PM	2	2	25	68	20	3	0	0	0	0	0	0	0	120	30.0	26.3
2:00 PM	2	4	26	78	19	2	0	0	0	0	0	0	0	131	30.0	26.4
3:00 PM	5	9	52	71	18	2	0	0	0	0	0	0	0	157	29.0	25.0
4:00 PM	3	2	32	101	33	2	0	0	0	0	1	0	0	174	30.0	27.0
5:00 PM	5	2	40	98	34	1	1	0	0	0	0	0	0	181	30.0	26.6
6:00 PM	1	0	18	98	13	1	0	0	0	0	0	0	0	131	29.0	26.7
7:00 PM	1	1	7	51	17	4	0	0	0	0	0	0	0	81	31.0	27.5
8:00 PM	0	1	10	46	10	1	0	0	0	0	0	0	0	68	30.0	27.0
9:00 PM	0	0	7	16	10	0	0	0	0	0	0	0	0	33	31.0	27.6
10:00 PM	1	0	4	14	3	1	0	0	0	0	0	0	0	23	29.7	26.8
11:00 PM	0	0	4	5	3	0	0	0	0	0	0	0	0	12	31.4	27.8
Total	35	46	456	1333	319	25	1	0	0	0	1	0	0	2216	30.0	26.4
Percent	1.58%	2.08%	20.58%	60.15%	14.40%	1.13%	0.05%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%			
AM Peak	5:00 AM	9:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM								7:00 AM		
Volume	3	6	39	153	29	2	0	0	0	0	0	0	0	223		
PM Peak	3:00 PM	3:00 PM	3:00 PM	4:00 PM	5:00 PM	7:00 PM	5:00 PM				4:00 PM			5:00 PM		
Volume	5	9	52	101	34	4	1	0	0	0	1	0	0	181		

15th Percentile:	23.0 MPH	Average Speed:	26.4 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	27.0 MPH	10 MPH Pace:	22 to 31 MPH	Number of Vehicles > 25 MPH:	1444
85th Percentile:	30.0 MPH	Number in Pace:	1949	Percent of Vehicles > 25 MPH:	65.2%
95th Percentile:	32.0 MPH	Percent in Pace:	88.0%		

Ballardville Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-A (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	3	7	1	1	0	0	0	0	0	0	12	33.8	32.1
1:00 AM	0	0	1	2	3	1	0	0	0	0	0	0	0	7	34.1	29.4
2:00 AM	0	0	0	5	4	1	0	0	0	0	0	0	0	10	33.3	30.3
3:00 AM	0	0	2	8	1	3	0	0	0	0	0	0	0	14	35.0	28.8
4:00 AM	0	0	0	9	5	0	0	0	0	0	0	0	0	14	31.0	28.9
5:00 AM	0	2	4	18	9	0	1	0	0	0	0	0	0	34	31.1	28.1
6:00 AM	1	0	25	93	46	6	0	0	0	0	0	0	0	171	31.5	27.9
7:00 AM	2	8	41	157	83	17	0	2	0	0	0	0	0	310	32.0	28.0
8:00 AM	14	6	19	107	86	12	1	0	0	0	0	0	0	245	32.0	27.8
9:00 AM	17	21	22	77	41	5	1	1	0	0	0	0	0	185	32.0	25.3
10:00 AM	0	3	22	73	44	10	0	0	0	0	0	0	0	152	31.0	28.2
11:00 AM	1	6	33	85	80	3	1	1	0	0	0	0	0	210	32.0	28.1
12:00 PM	1	3	32	121	71	9	1	1	0	0	0	0	0	239	32.0	28.1
1:00 PM	1	6	39	129	61	5	0	1	0	0	0	0	0	242	31.0	27.5
2:00 PM	2	9	51	143	81	9	0	0	0	0	0	0	0	295	31.0	27.5
3:00 PM	7	36	57	176	73	5	3	0	0	0	0	0	0	357	31.0	26.1
4:00 PM	2	21	56	219	138	11	3	0	0	0	0	0	0	450	32.0	27.7
5:00 PM	1	14	62	184	109	16	2	0	0	0	0	0	0	388	32.0	27.8
6:00 PM	2	3	22	144	75	6	1	0	0	0	0	0	0	253	32.0	28.2
7:00 PM	0	0	26	81	51	8	0	1	0	0	0	0	0	167	32.0	28.4
8:00 PM	0	0	12	62	41	7	0	0	0	0	0	0	0	122	32.0	28.8
9:00 PM	1	1	8	38	26	5	2	0	0	0	0	0	0	81	33.0	28.8
10:00 PM	0	0	3	14	17	4	0	0	0	0	0	0	0	38	33.0	30.1
11:00 PM	0	0	5	9	14	3	0	0	0	0	0	0	0	31	32.0	29.0
Total	52	139	542	1957	1166	147	17	7	0	0	0	0	0	4027	32.0	27.7
Percent	1.29%	3.45%	13.46%	48.60%	28.95%	3.65%	0.42%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	9:00 AM	9:00 AM	7:00 AM	7:00 AM	8:00 AM	7:00 AM	12:00 AM	7:00 AM						7:00 AM		
Volume	17	21	41	157	86	17	1	2	0	0	0	0	0	310		
PM Peak	3:00 PM	3:00 PM	5:00 PM	4:00 PM	4:00 PM	5:00 PM	3:00 PM	12:00 PM						4:00 PM		
Volume	7	36	62	219	138	16	3	1	0	0	0	0	0	450		

15th Percentile:	24.0 MPH	Average Speed:	27.7 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	28.0 MPH	10 MPH Pace:	24 to 33 MPH	Number of Vehicles > 25 MPH:	3028
85th Percentile:	32.0 MPH	Number in Pace:	3256	Percent of Vehicles > 25 MPH:	75.2%
95th Percentile:	34.0 MPH	Percent in Pace:	80.9%		

Ballardville Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-A (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	5	8	1	1	0	0	0	0	0	0	16	32.0	31.0
1:00 AM	0	0	3	4	3	1	0	0	0	0	0	0	0	11	33.0	27.9
2:00 AM	0	0	1	7	5	1	0	0	0	0	0	0	0	14	34.0	29.6
3:00 AM	0	0	2	16	3	4	0	0	0	0	0	0	0	25	33.2	28.7
4:00 AM	0	0	8	23	7	0	0	0	0	0	0	0	0	38	30.0	26.7
5:00 AM	3	3	17	57	14	1	1	0	0	0	0	0	0	96	30.0	26.5
6:00 AM	2	3	54	164	55	6	0	0	0	0	0	0	0	284	30.6	27.0
7:00 AM	4	11	77	310	112	17	0	2	0	0	0	0	0	533	31.0	27.4
8:00 AM	17	11	58	204	112	14	1	0	0	0	0	0	0	417	32.0	27.1
9:00 AM	17	27	46	153	53	6	1	1	0	0	0	0	0	304	30.6	25.6
10:00 AM	1	4	47	137	57	11	0	0	0	0	0	0	0	257	31.0	27.4
11:00 AM	3	7	54	159	97	4	1	1	0	0	0	0	0	326	31.0	27.6
12:00 PM	4	8	64	206	93	10	1	1	0	0	0	0	0	387	31.0	27.5
1:00 PM	3	8	64	197	81	8	0	1	0	0	0	0	0	362	31.0	27.1
2:00 PM	4	13	77	221	100	11	0	0	0	0	0	0	0	426	31.0	27.1
3:00 PM	12	45	109	247	91	7	3	0	0	0	0	0	0	514	30.0	25.8
4:00 PM	5	23	88	320	171	13	3	0	0	0	1	0	0	624	31.0	27.5
5:00 PM	6	16	102	282	143	17	3	0	0	0	0	0	0	569	32.0	27.4
6:00 PM	3	3	40	242	88	7	1	0	0	0	0	0	0	384	31.0	27.7
7:00 PM	1	1	33	132	68	12	0	1	0	0	0	0	0	248	32.0	28.1
8:00 PM	0	1	22	108	51	8	0	0	0	0	0	0	0	190	31.0	28.1
9:00 PM	1	1	15	54	36	5	2	0	0	0	0	0	0	114	32.0	28.4
10:00 PM	1	0	7	28	20	5	0	0	0	0	0	0	0	61	33.0	28.8
11:00 PM	0	0	9	14	17	3	0	0	0	0	0	0	0	43	32.0	28.6
Total	87	185	998	3290	1485	172	18	7	0	0	1	0	0	6243	31.0	27.2
Percent	1.39%	2.96%	15.99%	52.70%	23.79%	2.76%	0.29%	0.11%	0.00%	0.00%	0.02%	0.00%	0.00%			
AM Peak	8:00 AM	9:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	12:00 AM	7:00 AM						7:00 AM		
Volume	17	27	77	310	112	17	1	2	0	0	0	0	0	533		
PM Peak	3:00 PM	3:00 PM	3:00 PM	4:00 PM	4:00 PM	5:00 PM	3:00 PM	12:00 PM			4:00 PM			4:00 PM		
Volume	12	45	109	320	171	17	3	1	0	0	1	0	0	624		

15th Percentile:	24.0 MPH	Average Speed:	27.2 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	28.0 MPH	10 MPH Pace:	23 to 32 MPH	Number of Vehicles > 25 MPH:	4472
85th Percentile:	31.0 MPH	Number in Pace:	5155	Percent of Vehicles > 25 MPH:	71.6%
95th Percentile:	33.0 MPH	Percent in Pace:	82.6%		

Ballardville Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-A (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	4	3	0	0	0	0	0	0	0	0	8	32.0	28.9
1:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	2	26.7	26.0
2:00 AM	0	1	2	2	0	0	0	0	0	0	0	0	0	5	25.0	22.8
3:00 AM	0	0	1	3	2	0	0	0	0	0	0	0	0	6	30.0	27.3
4:00 AM	0	0	3	11	1	0	1	0	0	0	0	0	0	16	28.8	26.9
5:00 AM	1	1	11	39	7	1	0	0	0	0	0	0	0	60	29.0	26.4
6:00 AM	4	2	37	64	11	1	0	0	0	0	0	0	0	119	28.0	25.2
7:00 AM	3	4	45	139	31	1	0	0	0	0	0	0	0	223	29.0	26.3
8:00 AM	6	3	72	96	28	2	1	0	0	0	0	0	0	208	29.0	25.5
9:00 AM	3	3	40	78	21	0	0	0	0	0	0	0	0	145	29.0	25.9
10:00 AM	1	2	26	69	10	1	0	0	0	0	0	0	0	109	28.8	26.2
11:00 AM	2	1	25	74	15	0	0	0	0	0	0	0	0	117	29.0	26.1
12:00 PM	2	2	23	76	24	1	0	0	0	0	0	0	0	128	30.0	26.8
1:00 PM	2	1	32	76	37	2	0	0	0	0	0	0	0	150	30.0	27.1
2:00 PM	3	4	24	92	18	2	0	0	0	0	0	0	0	143	29.0	26.4
3:00 PM	6	4	64	96	11	0	0	0	0	0	0	0	0	181	28.0	24.6
4:00 PM	3	4	25	121	31	1	0	0	0	0	0	0	0	185	30.0	26.9
5:00 PM	2	1	21	129	43	2	0	0	0	0	0	0	0	198	31.0	27.5
6:00 PM	0	1	23	75	13	0	0	0	0	0	0	0	0	112	29.0	26.6
7:00 PM	0	1	13	67	12	0	0	0	0	0	0	0	0	93	29.0	26.9
8:00 PM	1	0	10	51	13	2	0	0	0	0	0	0	0	77	30.0	27.2
9:00 PM	0	2	5	14	5	1	0	0	0	0	0	0	0	27	30.1	26.5
10:00 PM	0	0	1	16	3	0	0	0	0	0	0	0	0	20	29.3	27.8
11:00 PM	0	0	1	8	1	0	0	0	0	0	0	0	0	10	29.0	27.3
Total	39	37	505	1402	340	17	2	0	0	0	0	0	0	2342	30.0	26.3
Percent	1.67%	1.58%	21.56%	59.86%	14.52%	0.73%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	8:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM	4:00 AM							7:00 AM		
Volume	6	4	72	139	31	2	1	0	0	0	0	0	0	223		
PM Peak	3:00 PM	2:00 PM	3:00 PM	5:00 PM	5:00 PM	1:00 PM								5:00 PM		
Volume	6	4	64	129	43	2	0	0	0	0	0	0	0	198		

15th Percentile:	23.0 MPH	Average Speed:	26.3 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	27.0 MPH	10 MPH Pace:	22 to 31 MPH	Number of Vehicles > 25 MPH:	1511
85th Percentile:	30.0 MPH	Number in Pace:	2111	Percent of Vehicles > 25 MPH:	64.5%
95th Percentile:	31.0 MPH	Percent in Pace:	90.1%		

Ballardville Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-A (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	6	5	1	0	0	0	0	0	0	0	12	34.0	30.3
1:00 AM	0	1	1	2	1	0	0	0	0	0	0	0	0	5	29.6	25.8
2:00 AM	0	0	2	3	2	0	0	0	0	0	0	0	0	7	31.3	27.9
3:00 AM	0	0	0	5	3	1	0	0	0	0	0	0	0	9	31.0	30.1
4:00 AM	0	0	2	4	5	1	0	0	0	0	0	0	0	12	32.0	29.0
5:00 AM	2	1	6	18	12	1	0	0	0	0	0	0	0	40	31.0	26.8
6:00 AM	0	1	37	76	36	4	1	0	0	0	0	0	0	155	31.0	27.5
7:00 AM	3	2	30	121	66	3	0	0	0	0	0	0	0	225	31.0	27.6
8:00 AM	0	8	26	103	82	8	1	1	0	0	0	0	0	229	32.0	28.4
9:00 AM	1	3	21	82	41	6	1	0	0	0	0	0	0	155	31.0	27.9
10:00 AM	0	0	36	80	40	4	4	0	0	0	0	0	0	164	31.0	27.9
11:00 AM	1	3	25	100	84	7	1	0	0	0	0	0	0	221	32.0	28.6
12:00 PM	0	5	38	119	102	11	3	0	0	0	0	0	0	278	33.0	28.6
1:00 PM	1	6	29	139	68	3	0	0	0	0	0	0	0	246	31.0	27.9
2:00 PM	3	6	37	139	74	4	0	0	0	0	0	0	0	263	31.0	27.5
3:00 PM	2	19	75	196	69	12	1	0	1	0	0	0	0	375	31.0	26.8
4:00 PM	3	15	69	211	132	14	1	0	0	0	0	0	0	445	32.0	27.6
5:00 PM	2	4	22	205	120	13	2	0	0	0	0	0	0	368	32.0	28.7
6:00 PM	0	4	27	139	69	13	1	0	0	0	0	0	0	253	32.0	28.2
7:00 PM	1	0	17	73	66	12	0	0	0	0	0	0	0	169	32.0	29.1
8:00 PM	0	0	7	77	49	2	3	0	0	0	0	0	0	138	32.0	29.1
9:00 PM	0	1	5	36	32	7	0	0	0	0	0	0	0	81	33.0	29.2
10:00 PM	0	1	6	23	17	3	2	0	0	0	0	0	0	52	33.0	29.3
11:00 PM	0	0	5	17	9	2	0	0	0	0	0	0	0	33	32.0	28.4
Total	19	80	523	1974	1184	132	21	1	1	0	0	0	0	3935	32.0	28.1
Percent	0.48%	2.03%	13.29%	50.17%	30.09%	3.35%	0.53%	0.03%	0.03%	0.00%	0.00%	0.00%	0.00%			
AM Peak	7:00 AM	8:00 AM	6:00 AM	7:00 AM	11:00 AM	8:00 AM	10:00 AM	8:00 AM						8:00 AM		
Volume	3	8	37	121	84	8	4	1	0	0	0	0	0	229		
PM Peak	2:00 PM	3:00 PM	3:00 PM	4:00 PM	4:00 PM	4:00 PM	12:00 PM		3:00 PM					4:00 PM		
Volume	3	19	75	211	132	14	3	0	1	0	0	0	0	445		

15th Percentile:	24.0 MPH	Average Speed:	28.1 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	28.0 MPH	10 MPH Pace:	24 to 33 MPH	Number of Vehicles > 25 MPH:	3069
85th Percentile:	32.0 MPH	Number in Pace:	3263	Percent of Vehicles > 25 MPH:	78.0%
95th Percentile:	34.0 MPH	Percent in Pace:	82.9%		

Ballardville Street
north of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-A (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	10	8	1	0	0	0	0	0	0	0	20	33.2	29.8
1:00 AM	0	1	1	4	1	0	0	0	0	0	0	0	0	7	28.4	25.9
2:00 AM	0	1	4	5	2	0	0	0	0	0	0	0	0	12	29.7	25.8
3:00 AM	0	0	1	8	5	1	0	0	0	0	0	0	0	15	30.9	29.0
4:00 AM	0	0	5	15	6	1	1	0	0	0	0	0	0	28	32.0	27.8
5:00 AM	3	2	17	57	19	2	0	0	0	0	0	0	0	100	30.0	26.6
6:00 AM	4	3	74	140	47	5	1	0	0	0	0	0	0	274	30.0	26.5
7:00 AM	6	6	75	260	97	4	0	0	0	0	0	0	0	448	30.0	27.0
8:00 AM	6	11	98	199	110	10	2	1	0	0	0	0	0	437	31.0	27.0
9:00 AM	4	6	61	160	62	6	1	0	0	0	0	0	0	300	31.0	26.9
10:00 AM	1	2	62	149	50	5	4	0	0	0	0	0	0	273	30.0	27.2
11:00 AM	3	4	50	174	99	7	1	0	0	0	0	0	0	338	31.0	27.7
12:00 PM	2	7	61	195	126	12	3	0	0	0	0	0	0	406	32.0	28.0
1:00 PM	3	7	61	215	105	5	0	0	0	0	0	0	0	396	31.0	27.6
2:00 PM	6	10	61	231	92	6	0	0	0	0	0	0	0	406	31.0	27.1
3:00 PM	8	23	139	292	80	12	1	0	1	0	0	0	0	556	30.0	26.1
4:00 PM	6	19	94	332	163	15	1	0	0	0	0	0	0	630	31.0	27.4
5:00 PM	4	5	43	334	163	15	2	0	0	0	0	0	0	566	31.0	28.3
6:00 PM	0	5	50	214	82	13	1	0	0	0	0	0	0	365	31.0	27.7
7:00 PM	1	1	30	140	78	12	0	0	0	0	0	0	0	262	31.9	28.3
8:00 PM	1	0	17	128	62	4	3	0	0	0	0	0	0	215	32.0	28.4
9:00 PM	0	3	10	50	37	8	0	0	0	0	0	0	0	108	32.0	28.5
10:00 PM	0	1	7	39	20	3	2	0	0	0	0	0	0	72	32.0	28.9
11:00 PM	0	0	6	25	10	2	0	0	0	0	0	0	0	43	30.7	28.1
Total	58	117	1028	3376	1524	149	23	1	1	0	0	0	0	6277	31.0	27.4
Percent	0.92%	1.86%	16.38%	53.78%	24.28%	2.37%	0.37%	0.02%	0.02%	0.00%	0.00%	0.00%	0.00%			
AM Peak	7:00 AM	8:00 AM	8:00 AM	7:00 AM	8:00 AM	8:00 AM	10:00 AM	8:00 AM						7:00 AM		
Volume	6	11	98	260	110	10	4	1	0	0	0	0	0	448		
PM Peak	3:00 PM	3:00 PM	3:00 PM	5:00 PM	4:00 PM	4:00 PM	12:00 PM		3:00 PM					4:00 PM		
Volume	8	23	139	334	163	15	3	0	1	0	0	0	0	630		

15th Percentile:	24.0 MPH	Average Speed:	27.4 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	28.0 MPH	10 MPH Pace:	23 to 32 MPH	Number of Vehicles > 25 MPH:	4580
85th Percentile:	31.0 MPH	Number in Pace:	5291	Percent of Vehicles > 25 MPH:	73.0%
95th Percentile:	33.0 MPH	Percent in Pace:	84.3%		

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION D A T A INDUSTRIES, LLC

PDI File #: 240268 ATR-B (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	11	13	2	0	0	0	0	0	0	27	39.0	35.3
1:00 AM	0	0	0	1	3	1	0	0	0	0	0	0	0	5	34.2	31.2
2:00 AM	0	0	0	1	4	6	1	0	0	0	0	0	0	12	38.4	35.5
3:00 AM	0	0	0	0	4	4	2	0	0	0	0	0	0	10	42.3	36.6
4:00 AM	0	0	0	3	3	3	2	0	0	0	0	0	0	11	40.5	34.6
5:00 AM	0	0	3	2	18	15	2	0	0	0	0	0	0	40	37.2	33.4
6:00 AM	0	0	0	18	63	35	5	0	0	0	0	0	0	121	36.0	33.1
7:00 AM	0	1	1	47	123	64	8	0	1	0	0	0	0	245	36.0	32.6
8:00 AM	1	1	8	75	175	73	7	1	0	0	0	0	0	341	36.0	31.9
9:00 AM	2	0	11	66	129	56	8	0	0	0	0	0	0	272	36.0	31.4
10:00 AM	1	0	1	52	129	62	8	0	0	0	0	0	0	253	36.0	32.4
11:00 AM	0	6	11	43	131	77	12	1	0	0	0	0	0	281	36.0	32.4
12:00 PM	0	0	3	46	193	106	17	2	0	0	0	0	0	367	37.0	33.2
1:00 PM	0	0	2	49	156	91	16	1	0	0	0	0	0	315	37.0	33.3
2:00 PM	0	1	11	123	217	98	17	0	0	0	0	0	0	467	36.0	31.8
3:00 PM	8	19	44	164	203	76	12	2	0	0	0	0	0	528	35.0	29.7
4:00 PM	9	30	49	170	181	69	6	1	0	0	0	0	0	515	34.0	29.0
5:00 PM	5	22	31	141	208	66	10	1	0	0	0	0	0	484	35.0	29.8
6:00 PM	1	2	9	112	178	68	7	0	0	0	0	0	0	377	35.0	31.3
7:00 PM	2	1	13	81	132	46	5	1	0	0	0	0	0	281	35.0	31.0
8:00 PM	1	0	3	41	106	72	11	0	0	0	0	0	0	234	37.0	32.9
9:00 PM	0	0	0	21	62	39	10	0	0	0	0	0	0	132	37.0	33.4
10:00 PM	1	0	0	8	37	27	6	1	0	0	0	0	0	80	38.0	33.6
11:00 PM	0	0	1	5	35	20	6	1	0	0	0	0	0	68	38.0	33.7
Total	31	83	201	1270	2501	1187	180	12	1	0	0	0	0	5466	36.0	31.6
Percent	0.57%	1.52%	3.68%	23.23%	45.76%	21.72%	3.29%	0.22%	0.02%	0.00%	0.00%	0.00%	0.00%			
AM Peak	9:00 AM	11:00 AM	9:00 AM	8:00 AM	8:00 AM	11:00 AM	11:00 AM	8:00 AM	7:00 AM					8:00 AM		
Volume	2	6	11	75	175	77	12	1	1	0	0	0	0	341		
PM Peak	4:00 PM	4:00 PM	4:00 PM	4:00 PM	2:00 PM	12:00 PM	12:00 PM	12:00 PM						3:00 PM		
Volume	9	30	49	170	217	106	17	2	0	0	0	0	0	528		

15th Percentile:	27.0 MPH	Average Speed:	31.6 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	27 to 36 MPH	Number of Vehicles > 30 MPH:	3453
85th Percentile:	36.0 MPH	Number in Pace:	4214	Percent of Vehicles > 30 MPH:	63.2%
95th Percentile:	39.0 MPH	Percent in Pace:	77.1%		

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION
D A T A
INDUSTRIES, LLC

PDI File #: 240268 ATR-B (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	9	6	0	0	0	0	0	0	0	16	36.8	33.3
1:00 AM	0	0	0	2	6	5	1	0	0	0	0	0	0	14	38.0	34.0
2:00 AM	0	0	0	0	4	5	1	0	0	0	0	0	0	10	39.0	35.0
3:00 AM	0	0	0	2	14	9	3	0	0	0	0	0	0	28	37.0	33.9
4:00 AM	0	0	0	8	45	24	8	0	0	0	0	0	0	85	38.0	34.0
5:00 AM	0	0	0	29	175	103	8	0	0	1	0	0	0	316	37.0	33.7
6:00 AM	5	3	11	125	315	93	4	0	0	0	0	0	0	556	35.0	31.3
7:00 AM	110	24	27	84	167	52	13	1	0	0	0	0	0	478	34.0	25.8
8:00 AM	58	30	15	72	186	77	4	1	0	0	0	1	0	444	35.0	28.0
9:00 AM	36	17	5	55	157	78	7	0	0	0	0	0	0	355	36.0	29.5
10:00 AM	0	0	3	61	216	87	11	0	0	0	0	0	0	378	36.0	32.6
11:00 AM	0	0	5	49	209	107	11	0	0	0	0	0	0	381	36.0	32.8
12:00 PM	1	0	0	53	201	114	12	2	1	0	0	0	0	384	36.0	33.2
1:00 PM	0	0	4	80	214	100	12	2	0	0	0	0	0	412	36.0	32.5
2:00 PM	0	1	7	69	203	101	12	1	1	0	0	0	0	395	36.0	32.6
3:00 PM	0	0	12	123	232	71	10	0	0	0	0	0	0	448	35.0	31.5
4:00 PM	0	0	4	107	302	94	11	2	0	0	0	0	0	520	35.0	32.0
5:00 PM	0	3	14	112	238	89	13	2	0	0	0	0	0	471	36.0	31.8
6:00 PM	0	0	3	86	227	69	11	1	0	0	0	0	0	397	36.0	32.1
7:00 PM	0	1	0	33	149	47	6	0	0	0	0	0	0	236	36.0	32.6
8:00 PM	0	1	0	23	93	49	8	2	2	0	0	0	0	178	37.0	33.5
9:00 PM	0	0	1	14	71	34	3	0	0	0	0	0	0	123	36.0	33.0
10:00 PM	0	0	0	8	36	16	1	0	0	0	0	0	0	61	36.0	32.9
11:00 PM	0	0	0	4	7	11	1	0	0	0	0	0	0	23	36.7	33.7
Total	210	80	111	1200	3476	1441	171	14	4	1	0	1	0	6709	36.0	31.5
Percent	3.13%	1.19%	1.65%	17.89%	51.81%	21.48%	2.55%	0.21%	0.06%	0.01%	0.00%	0.01%	0.00%			
AM Peak	7:00 AM	8:00 AM	7:00 AM	6:00 AM	6:00 AM	11:00 AM	7:00 AM	7:00 AM		5:00 AM		8:00 AM		6:00 AM		
Volume	110	30	27	125	315	107	13	1	0	1	0	1	0	556		
PM Peak	12:00 PM	5:00 PM	5:00 PM	3:00 PM	4:00 PM	12:00 PM	5:00 PM	12:00 PM	8:00 PM					4:00 PM		
Volume	1	3	14	123	302	114	13	2	2	0	0	0	0	520		

15th Percentile:	28.0 MPH	Average Speed:	31.5 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	28 to 37 MPH	Number of Vehicles > 30 MPH:	4574
85th Percentile:	36.0 MPH	Number in Pace:	5462	Percent of Vehicles > 30 MPH:	68.2%
95th Percentile:	38.0 MPH	Percent in Pace:	81.4%		

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-B (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	2	20	19	2	0	0	0	0	0	0	43	38.0	34.6
1:00 AM	0	0	0	3	9	6	1	0	0	0	0	0	0	19	37.3	33.3
2:00 AM	0	0	0	1	8	11	2	0	0	0	0	0	0	22	39.0	35.3
3:00 AM	0	0	0	2	18	13	5	0	0	0	0	0	0	38	38.5	34.6
4:00 AM	0	0	0	11	48	27	10	0	0	0	0	0	0	96	38.0	34.1
5:00 AM	0	0	3	31	193	118	10	0	0	1	0	0	0	356	37.0	33.7
6:00 AM	5	3	11	143	378	128	9	0	0	0	0	0	0	677	35.0	31.6
7:00 AM	110	25	28	131	290	116	21	1	1	0	0	0	0	723	35.0	28.1
8:00 AM	59	31	23	147	361	150	11	2	0	0	0	1	0	785	35.0	29.7
9:00 AM	38	17	16	121	286	134	15	0	0	0	0	0	0	627	36.0	30.3
10:00 AM	1	0	4	113	345	149	19	0	0	0	0	0	0	631	36.0	32.5
11:00 AM	0	6	16	92	340	184	23	1	0	0	0	0	0	662	36.0	32.6
12:00 PM	1	0	3	99	394	220	29	4	1	0	0	0	0	751	36.0	33.2
1:00 PM	0	0	6	129	370	191	28	3	0	0	0	0	0	727	36.0	32.8
2:00 PM	0	2	18	192	420	199	29	1	1	0	0	0	0	862	36.0	32.2
3:00 PM	8	19	56	287	435	147	22	2	0	0	0	0	0	976	35.0	30.5
4:00 PM	9	30	53	277	483	163	17	3	0	0	0	0	0	1035	35.0	30.5
5:00 PM	5	25	45	253	446	155	23	3	0	0	0	0	0	955	35.0	30.8
6:00 PM	1	2	12	198	405	137	18	1	0	0	0	0	0	774	36.0	31.7
7:00 PM	2	2	13	114	281	93	11	1	0	0	0	0	0	517	35.0	31.7
8:00 PM	1	1	3	64	199	121	19	2	2	0	0	0	0	412	37.0	33.2
9:00 PM	0	0	1	35	133	73	13	0	0	0	0	0	0	255	36.0	33.2
10:00 PM	1	0	0	16	73	43	7	1	0	0	0	0	0	141	37.0	33.3
11:00 PM	0	0	1	9	42	31	7	1	0	0	0	0	0	91	38.0	33.7
Total	241	163	312	2470	5977	2628	351	26	5	1	0	1	0	12175	36.0	31.5
Percent	1.98%	1.34%	2.56%	20.29%	49.09%	21.59%	2.88%	0.21%	0.04%	0.01%	0.00%	0.01%	0.00%			
AM Peak	7:00 AM	8:00 AM	7:00 AM	8:00 AM	6:00 AM	11:00 AM	11:00 AM	8:00 AM	7:00 AM	5:00 AM		8:00 AM		8:00 AM		
Volume	110	31	28	147	378	184	23	2	1	1	0	1	0	785		
PM Peak	4:00 PM	4:00 PM	3:00 PM	3:00 PM	4:00 PM	12:00 PM	12:00 PM	12:00 PM	8:00 PM					4:00 PM		
Volume	9	30	56	287	483	220	29	4	2	0	0	0	0	1035		

15th Percentile:	28.0 MPH	Average Speed:	31.5 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	28 to 37 MPH	Number of Vehicles > 30 MPH:	8027
85th Percentile:	36.0 MPH	Number in Pace:	9619	Percent of Vehicles > 30 MPH:	65.9%
95th Percentile:	38.0 MPH	Percent in Pace:	79.0%		

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION D A T A INDUSTRIES, LLC

PDI File #: 240268 ATR-B (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	2	4	13	7	3	0	0	0	0	0	0	29	38.0	32.8
1:00 AM	0	0	0	0	6	3	0	0	0	0	0	0	0	9	35.8	33.3
2:00 AM	0	0	0	2	2	2	1	0	1	0	0	0	0	8	41.8	36.1
3:00 AM	0	0	0	0	3	7	0	0	0	0	0	0	0	10	37.3	35.5
4:00 AM	0	0	0	0	5	6	1	0	0	0	0	0	0	12	36.4	34.4
5:00 AM	0	0	3	10	25	15	2	0	0	0	0	0	0	55	36.0	32.1
6:00 AM	1	0	5	27	45	30	4	0	0	0	0	0	0	112	36.0	31.7
7:00 AM	0	0	4	40	125	58	5	0	1	0	0	0	0	233	36.0	32.7
8:00 AM	0	0	3	54	167	88	16	0	0	0	0	0	0	328	36.0	32.8
9:00 AM	1	0	2	37	127	64	6	1	0	0	0	0	0	238	36.0	32.7
10:00 AM	0	0	3	38	105	70	8	0	0	0	0	0	0	224	37.0	32.8
11:00 AM	1	2	11	48	131	74	11	4	0	0	0	0	0	282	37.0	32.5
12:00 PM	1	0	2	41	144	114	16	1	1	0	0	0	0	320	37.0	33.6
1:00 PM	1	0	13	59	177	87	12	0	0	0	0	0	0	349	37.0	32.3
2:00 PM	0	3	19	100	242	107	15	0	0	0	0	0	0	486	35.0	31.8
3:00 PM	8	10	36	132	211	89	10	1	0	0	0	0	0	497	35.0	30.5
4:00 PM	6	9	29	136	224	91	9	0	0	0	0	0	0	504	35.0	30.6
5:00 PM	8	17	35	179	229	73	2	1	0	0	0	0	0	544	34.0	29.7
6:00 PM	0	1	16	111	201	66	8	1	1	0	0	0	0	405	35.0	31.1
7:00 PM	0	0	6	67	173	52	5	1	0	0	0	0	0	304	35.0	31.7
8:00 PM	0	0	4	36	109	69	4	0	0	0	0	0	0	222	37.0	32.7
9:00 PM	0	0	1	29	71	36	9	0	0	0	0	0	0	146	37.0	32.9
10:00 PM	0	0	1	13	53	38	2	1	0	0	0	0	0	108	38.0	33.7
11:00 PM	0	0	0	8	32	19	6	1	0	0	0	0	0	66	38.0	34.1
Total	27	42	195	1171	2620	1265	155	12	4	0	0	0	0	5491	36.0	31.8
Percent	0.49%	0.76%	3.55%	21.33%	47.71%	23.04%	2.82%	0.22%	0.07%	0.00%	0.00%	0.00%	0.00%			
AM Peak	6:00 AM	11:00 AM	11:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	11:00 AM	2:00 AM					8:00 AM		
Volume	1	2	11	54	167	88	16	4	1	0	0	0	0	328		
PM Peak	3:00 PM	5:00 PM	3:00 PM	5:00 PM	2:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM					5:00 PM		
Volume	8	17	36	179	242	114	16	1	1	0	0	0	0	544		

15th Percentile:	28.0 MPH	Average Speed:	31.8 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	27 to 36 MPH	Number of Vehicles > 30 MPH:	3592
85th Percentile:	36.0 MPH	Number in Pace:	4280	Percent of Vehicles > 30 MPH:	65.4%
95th Percentile:	39.0 MPH	Percent in Pace:	77.9%		

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-B (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	5	7	0	0	0	0	0	0	0	12	37.4	35.1
1:00 AM	0	1	0	2	2	1	0	0	0	0	0	0	0	6	34.0	29.2
2:00 AM	0	0	0	2	5	3	0	0	0	0	0	0	0	10	35.7	32.5
3:00 AM	0	0	0	2	12	6	3	0	0	0	0	0	0	23	38.1	34.4
4:00 AM	0	0	0	3	57	36	3	2	0	0	0	0	0	101	37.0	34.1
5:00 AM	0	0	0	33	162	101	9	0	0	0	0	0	0	305	37.0	33.4
6:00 AM	6	14	50	105	313	77	9	2	0	0	0	0	0	576	35.0	30.6
7:00 AM	44	48	57	159	167	59	8	3	0	0	0	0	0	545	34.0	27.3
8:00 AM	0	1	18	121	281	118	11	3	0	0	0	0	0	553	36.0	32.0
9:00 AM	0	2	7	66	203	104	12	0	0	0	0	0	0	394	36.0	32.6
10:00 AM	0	0	1	54	186	62	9	1	0	0	0	0	0	313	36.0	32.6
11:00 AM	0	1	0	52	222	106	12	1	0	0	0	0	0	394	36.0	32.9
12:00 PM	0	0	1	70	208	114	12	2	0	0	0	0	0	407	36.0	33.0
1:00 PM	0	0	2	68	195	98	11	3	1	0	0	0	0	378	36.5	33.0
2:00 PM	0	0	1	52	211	96	17	1	1	0	0	0	0	379	37.0	33.1
3:00 PM	6	8	32	126	203	78	7	1	0	0	0	0	0	461	35.0	30.5
4:00 PM	5	4	19	109	302	94	7	3	1	0	0	0	0	544	35.0	31.5
5:00 PM	41	15	31	108	146	44	6	0	0	0	0	0	0	391	34.0	27.8
6:00 PM	0	0	1	71	224	97	10	1	1	0	0	0	0	405	36.0	32.6
7:00 PM	0	0	3	51	148	52	6	1	0	0	0	0	0	261	36.0	32.2
8:00 PM	0	0	2	32	92	59	6	0	0	0	0	0	0	191	36.0	32.9
9:00 PM	0	0	6	17	99	29	5	0	0	0	0	0	0	156	36.0	32.5
10:00 PM	0	0	0	12	37	19	2	0	0	0	0	0	0	70	36.7	32.8
11:00 PM	0	0	0	6	23	11	5	0	0	0	0	0	0	45	37.4	33.6
Total	102	94	231	1321	3503	1471	170	24	4	0	0	0	0	6920	36.0	31.6
Percent	1.47%	1.36%	3.34%	19.09%	50.62%	21.26%	2.46%	0.35%	0.06%	0.00%	0.00%	0.00%	0.00%			
AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	6:00 AM	8:00 AM	9:00 AM	7:00 AM						6:00 AM		
Volume	44	48	57	159	313	118	12	3	0	0	0	0	0	576		
PM Peak	5:00 PM	5:00 PM	3:00 PM	3:00 PM	4:00 PM	12:00 PM	2:00 PM	1:00 PM	1:00 PM					4:00 PM		
Volume	41	15	32	126	302	114	17	3	1	0	0	0	0	544		

15th Percentile:	28.0 MPH	Average Speed:	31.6 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	28 to 37 MPH	Number of Vehicles > 30 MPH:	4652
85th Percentile:	36.0 MPH	Number in Pace:	5553	Percent of Vehicles > 30 MPH:	67.2%
95th Percentile:	38.0 MPH	Percent in Pace:	80.2%		

Middlesex Avenue
south of Salem Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-B (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	2	4	18	14	3	0	0	0	0	0	0	41	38.0	33.4
1:00 AM	0	1	0	2	8	4	0	0	0	0	0	0	0	15	35.9	31.7
2:00 AM	0	0	0	4	7	5	1	0	1	0	0	0	0	18	37.0	34.1
3:00 AM	0	0	0	2	15	13	3	0	0	0	0	0	0	33	38.2	34.7
4:00 AM	0	0	0	3	62	42	4	2	0	0	0	0	0	113	37.0	34.1
5:00 AM	0	0	3	43	187	116	11	0	0	0	0	0	0	360	37.0	33.2
6:00 AM	7	14	55	132	358	107	13	2	0	0	0	0	0	688	35.0	30.8
7:00 AM	44	48	61	199	292	117	13	3	1	0	0	0	0	778	35.0	28.9
8:00 AM	0	1	21	175	448	206	27	3	0	0	0	0	0	881	36.0	32.3
9:00 AM	1	2	9	103	330	168	18	1	0	0	0	0	0	632	36.0	32.6
10:00 AM	0	0	4	92	291	132	17	1	0	0	0	0	0	537	36.0	32.7
11:00 AM	1	3	11	100	353	180	23	5	0	0	0	0	0	676	36.0	32.7
12:00 PM	1	0	3	111	352	228	28	3	1	0	0	0	0	727	37.0	33.2
1:00 PM	1	0	15	127	372	185	23	3	1	0	0	0	0	727	37.0	32.6
2:00 PM	0	3	20	152	453	203	32	1	1	0	0	0	0	865	36.0	32.4
3:00 PM	14	18	68	258	414	167	17	2	0	0	0	0	0	958	35.0	30.5
4:00 PM	11	13	48	245	526	185	16	3	1	0	0	0	0	1048	35.0	31.1
5:00 PM	49	32	66	287	375	117	8	1	0	0	0	0	0	935	34.0	28.9
6:00 PM	0	1	17	182	425	163	18	2	2	0	0	0	0	810	35.0	31.9
7:00 PM	0	0	9	118	321	104	11	2	0	0	0	0	0	565	35.4	32.0
8:00 PM	0	0	6	68	201	128	10	0	0	0	0	0	0	413	36.2	32.8
9:00 PM	0	0	7	46	170	65	14	0	0	0	0	0	0	302	36.0	32.7
10:00 PM	0	0	1	25	90	57	4	1	0	0	0	0	0	178	37.0	33.3
11:00 PM	0	0	0	14	55	30	11	1	0	0	0	0	0	111	38.0	33.9
Total	129	136	426	2492	6123	2736	325	36	8	0	0	0	0	12411	36.0	31.7
Percent	1.04%	1.10%	3.43%	20.08%	49.34%	22.04%	2.62%	0.29%	0.06%	0.00%	0.00%	0.00%	0.00%			
AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	8:00 AM	8:00 AM	11:00 AM	2:00 AM					8:00 AM		
Volume	44	48	61	199	448	206	27	5	1	0	0	0	0	881		
PM Peak	5:00 PM	5:00 PM	3:00 PM	5:00 PM	4:00 PM	12:00 PM	2:00 PM	12:00 PM	6:00 PM					4:00 PM		
Volume	49	32	68	287	526	228	32	3	2	0	0	0	0	1048		

15th Percentile:	28.0 MPH	Average Speed:	31.7 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	32.0 MPH	10 MPH Pace:	28 to 37 MPH	Number of Vehicles > 30 MPH:	8244
85th Percentile:	36.0 MPH	Number in Pace:	9819	Percent of Vehicles > 30 MPH:	66.4%
95th Percentile:	38.0 MPH	Percent in Pace:	79.1%		

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-C (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	2	7	14	5	1	0	0	0	0	29	45.0	41.3
1:00 AM	0	0	0	2	1	2	4	3	1	0	0	0	0	13	46.0	40.2
2:00 AM	0	0	0	0	2	3	9	2	0	0	0	0	0	16	44.0	41.1
3:00 AM	0	0	0	0	2	9	11	2	1	0	0	0	0	25	44.0	40.3
4:00 AM	0	0	0	1	4	12	5	5	0	1	0	0	0	28	46.0	39.1
5:00 AM	0	0	0	0	14	35	41	14	0	0	1	0	0	105	44.0	40.0
6:00 AM	0	2	3	14	64	114	76	21	3	0	0	0	0	297	42.0	37.4
7:00 AM	1	4	6	26	117	198	148	25	1	0	0	0	0	526	42.0	36.9
8:00 AM	9	11	52	87	174	188	94	18	3	0	0	0	0	636	40.0	33.4
9:00 AM	3	2	26	52	102	151	97	16	3	1	0	0	0	453	41.0	35.2
10:00 AM	0	0	0	8	58	200	150	28	0	0	0	0	0	444	42.6	38.5
11:00 AM	0	0	0	10	48	193	131	23	9	0	0	0	0	414	43.0	38.6
12:00 PM	1	0	2	11	80	192	212	46	6	1	0	0	0	551	43.0	38.9
1:00 PM	0	0	1	6	64	192	157	45	5	0	0	0	0	470	43.7	39.0
2:00 PM	0	0	6	25	98	244	192	27	6	1	0	0	0	599	42.3	37.8
3:00 PM	1	1	6	25	103	301	175	32	0	0	0	0	0	644	42.0	37.5
4:00 PM	0	1	3	18	77	292	248	45	6	1	0	0	0	691	43.0	38.7
5:00 PM	1	1	2	7	83	251	214	48	2	0	0	0	0	609	43.0	38.6
6:00 PM	0	0	1	16	108	220	116	19	2	0	0	0	0	482	42.0	37.2
7:00 PM	0	0	1	9	54	152	98	26	3	0	0	0	0	343	43.0	38.2
8:00 PM	0	0	0	4	28	117	112	36	4	0	0	0	0	301	44.0	39.7
9:00 PM	0	0	1	1	13	53	72	19	2	0	0	0	0	161	44.0	40.1
10:00 PM	0	0	0	0	16	36	49	23	3	0	0	0	0	127	45.0	40.6
11:00 PM	0	0	0	1	14	36	35	15	3	0	0	0	0	104	45.0	39.9
Total	16	22	110	323	1326	3198	2460	543	64	5	1	0	0	8068	43.0	37.8
Percent	0.20%	0.27%	1.36%	4.00%	16.44%	39.64%	30.49%	6.73%	0.79%	0.06%	0.01%	0.00%	0.00%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	10:00 AM	10:00 AM	10:00 AM	11:00 AM	4:00 AM	5:00 AM			8:00 AM		
Volume	9	11	52	87	174	200	150	28	9	1	1	0	0	636		
PM Peak	12:00 PM	3:00 PM	2:00 PM	2:00 PM	6:00 PM	3:00 PM	4:00 PM	5:00 PM	12:00 PM	12:00 PM				4:00 PM		
Volume	1	1	6	25	108	301	248	48	6	1	0	0	0	691		

15th Percentile:	33.0 MPH	Average Speed:	37.8 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	38.0 MPH	10 MPH Pace:	34 to 43 MPH	Number of Vehicles > 35 MPH:	5761
85th Percentile:	43.0 MPH	Number in Pace:	5765	Percent of Vehicles > 35 MPH:	71.4%
95th Percentile:	46.0 MPH	Percent in Pace:	71.5%		

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-C (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	8	8	6	2	0	0	0	0	0	24	42.1	37.1
1:00 AM	0	0	0	1	2	4	12	0	0	0	0	0	0	19	43.0	39.3
2:00 AM	0	0	0	1	2	7	7	2	1	0	0	0	0	20	43.3	39.4
3:00 AM	0	0	0	0	6	15	5	3	1	0	0	0	0	30	43.3	38.7
4:00 AM	0	0	0	0	15	54	32	5	0	0	0	0	0	106	42.0	38.3
5:00 AM	1	0	0	2	75	202	77	5	1	0	0	0	0	363	41.0	37.1
6:00 AM	3	1	2	24	131	320	83	8	1	0	0	0	0	573	40.0	36.1
7:00 AM	1	3	2	8	159	336	126	5	2	0	0	0	0	642	40.0	36.5
8:00 AM	5	4	3	16	151	250	95	8	0	0	0	0	0	532	40.0	35.9
9:00 AM	5	1	2	20	170	234	87	9	2	0	0	0	0	530	40.0	35.6
10:00 AM	3	0	0	10	162	283	105	7	2	0	0	0	0	572	40.0	36.3
11:00 AM	2	1	3	31	158	262	83	5	1	0	0	0	0	546	40.0	35.8
12:00 PM	5	1	1	11	124	274	101	10	2	0	0	0	0	529	40.0	36.4
1:00 PM	3	2	4	12	175	285	92	11	0	0	0	1	0	585	40.0	36.1
2:00 PM	3	5	5	14	114	254	118	17	2	1	0	0	0	533	41.0	36.7
3:00 PM	1	4	9	17	169	289	99	11	1	0	0	0	0	600	40.0	35.9
4:00 PM	1	1	1	17	160	402	151	14	0	0	0	0	0	747	40.0	36.9
5:00 PM	4	2	3	16	196	372	116	17	2	0	0	0	0	728	40.0	36.2
6:00 PM	4	1	2	18	200	250	52	3	0	1	0	0	0	531	39.0	35.1
7:00 PM	3	2	2	12	100	196	35	5	0	0	0	0	0	355	39.0	35.3
8:00 PM	0	0	0	4	65	140	44	5	0	0	0	0	0	258	40.0	36.6
9:00 PM	0	0	0	8	45	90	29	0	1	0	0	0	0	173	40.0	36.1
10:00 PM	0	0	0	3	18	36	18	0	0	1	0	0	0	76	40.0	36.6
11:00 PM	0	0	0	0	14	15	17	3	2	0	0	0	0	51	43.5	38.5
Total	44	28	39	245	2419	4578	1590	155	21	3	0	1	0	9123	40.0	36.2
Percent	0.48%	0.31%	0.43%	2.69%	26.52%	50.18%	17.43%	1.70%	0.23%	0.03%	0.00%	0.01%	0.00%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	11:00 AM	9:00 AM	7:00 AM	7:00 AM	9:00 AM	7:00 AM					7:00 AM		
Volume	5	4	3	31	170	336	126	9	2	0	0	0	0	642		
PM Peak	12:00 PM	2:00 PM	3:00 PM	6:00 PM	6:00 PM	4:00 PM	4:00 PM	2:00 PM	12:00 PM	2:00 PM		1:00 PM		4:00 PM		
Volume	5	5	9	18	200	402	151	17	2	1	0	1	0	747		

15th Percentile:	33.0 MPH	Average Speed:	36.2 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	36.0 MPH	10 MPH Pace:	32 to 41 MPH	Number of Vehicles > 35 MPH:	5447
85th Percentile:	40.0 MPH	Number in Pace:	7547	Percent of Vehicles > 35 MPH:	59.7%
95th Percentile:	43.0 MPH	Percent in Pace:	82.7%		

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-C (Speed)

Count Date
Wednesday, October 23, 2024

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	10	15	20	7	1	0	0	0	0	53	44.2	39.4
1:00 AM	0	0	0	3	3	6	16	3	1	0	0	0	0	32	44.0	39.7
2:00 AM	0	0	0	1	4	10	16	4	1	0	0	0	0	36	44.0	40.1
3:00 AM	0	0	0	0	8	24	16	5	2	0	0	0	0	55	44.0	39.4
4:00 AM	0	0	0	1	19	66	37	10	0	1	0	0	0	134	42.0	38.4
5:00 AM	1	0	0	2	89	237	118	19	1	0	1	0	0	468	42.0	37.8
6:00 AM	3	3	5	38	195	434	159	29	4	0	0	0	0	870	41.0	36.5
7:00 AM	2	7	8	34	276	534	274	30	3	0	0	0	0	1168	41.0	36.7
8:00 AM	14	15	55	103	325	438	189	26	3	0	0	0	0	1168	40.0	34.5
9:00 AM	8	3	28	72	272	385	184	25	5	1	0	0	0	983	41.0	35.4
10:00 AM	3	0	0	18	220	483	255	35	2	0	0	0	0	1016	41.0	37.2
11:00 AM	2	1	3	41	206	455	214	28	10	0	0	0	0	960	41.0	37.0
12:00 PM	6	1	3	22	204	466	313	56	8	1	0	0	0	1080	42.0	37.6
1:00 PM	3	2	5	18	239	477	249	56	5	0	0	1	0	1055	42.0	37.4
2:00 PM	3	5	11	39	212	498	310	44	8	2	0	0	0	1132	42.0	37.3
3:00 PM	2	5	15	42	272	590	274	43	1	0	0	0	0	1244	41.0	36.8
4:00 PM	1	2	4	35	237	694	399	59	6	1	0	0	0	1438	42.0	37.7
5:00 PM	5	3	5	23	279	623	330	65	4	0	0	0	0	1337	41.6	37.3
6:00 PM	4	1	3	34	308	470	168	22	2	1	0	0	0	1013	40.0	36.1
7:00 PM	3	2	3	21	154	348	133	31	3	0	0	0	0	698	41.0	36.7
8:00 PM	0	0	0	8	93	257	156	41	4	0	0	0	0	559	42.3	38.3
9:00 PM	0	0	1	9	58	143	101	19	3	0	0	0	0	334	42.0	38.0
10:00 PM	0	0	0	3	34	72	67	23	3	1	0	0	0	203	44.0	39.1
11:00 PM	0	0	0	1	28	51	52	18	5	0	0	0	0	155	44.0	39.4
Total	60	50	149	568	3745	7776	4050	698	85	8	1	1	0	17191	41.0	37.0
Percent	0.35%	0.29%	0.87%	3.30%	21.78%	45.23%	23.56%	4.06%	0.49%	0.05%	0.01%	0.01%	0.00%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	10:00 AM	11:00 AM	4:00 AM	5:00 AM			7:00 AM		
Volume	14	15	55	103	325	534	274	35	10	1	1	0	0	1168		
PM Peak	12:00 PM	2:00 PM	3:00 PM	3:00 PM	6:00 PM	4:00 PM	4:00 PM	5:00 PM	12:00 PM	2:00 PM		1:00 PM		4:00 PM		
Volume	6	5	15	42	308	694	399	65	8	2	0	1	0	1438		

15th Percentile:	33.0 MPH	Average Speed:	37.0 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	37.0 MPH	10 MPH Pace:	32 to 41 MPH	Number of Vehicles > 35 MPH:	11208
85th Percentile:	41.0 MPH	Number in Pace:	13043	Percent of Vehicles > 35 MPH:	65.2%
95th Percentile:	44.0 MPH	Percent in Pace:	75.9%		

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-C (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	4	7	15	3	2	1	0	0	0	32	45.0	41.6
1:00 AM	0	0	0	0	1	4	6	5	1	0	0	0	0	17	46.2	42.0
2:00 AM	0	0	0	1	1	2	2	5	0	0	0	0	0	11	48.0	41.0
3:00 AM	0	0	0	1	0	5	9	8	1	1	0	0	0	25	46.0	42.8
4:00 AM	0	0	0	0	2	10	12	5	0	1	0	0	0	30	46.0	41.1
5:00 AM	0	0	0	1	10	48	44	15	2	0	0	0	0	120	44.0	39.8
6:00 AM	1	0	7	17	57	106	85	9	3	0	0	0	0	285	42.0	36.9
7:00 AM	1	1	8	20	101	217	103	26	4	3	0	0	0	484	42.0	36.9
8:00 AM	0	1	4	20	78	197	158	51	11	1	0	0	0	521	44.0	38.5
9:00 AM	5	1	6	28	84	146	113	34	5	0	1	0	0	423	43.0	37.2
10:00 AM	0	0	0	2	47	148	165	35	4	0	0	0	0	401	44.0	39.4
11:00 AM	0	0	0	5	53	183	151	43	8	1	0	0	0	444	44.0	39.2
12:00 PM	1	0	9	16	72	173	177	45	8	0	0	0	0	501	44.0	38.6
1:00 PM	2	0	0	9	76	206	203	63	5	2	0	0	0	566	44.0	39.1
2:00 PM	0	0	2	11	74	271	243	55	7	2	0	0	0	665	44.0	39.1
3:00 PM	1	2	8	21	91	246	243	55	8	1	0	0	0	676	43.0	38.6
4:00 PM	0	1	7	17	63	235	236	66	5	1	0	0	0	631	44.0	39.1
5:00 PM	0	1	10	19	86	303	226	39	4	0	0	0	0	688	43.0	38.2
6:00 PM	0	0	1	21	86	227	134	14	2	0	0	0	0	485	42.0	37.4
7:00 PM	0	0	0	13	64	177	103	23	5	0	0	0	0	385	43.0	38.1
8:00 PM	0	0	0	1	27	90	102	33	3	0	0	0	0	256	44.0	39.9
9:00 PM	0	0	0	0	12	54	84	26	4	0	0	0	0	180	45.0	40.8
10:00 PM	0	0	0	1	10	52	77	20	7	0	0	0	0	167	45.0	40.6
11:00 PM	0	0	0	2	7	32	32	12	5	0	0	0	0	90	46.0	40.4
Total	11	7	62	226	1106	3139	2723	690	104	14	1	0	0	8083	43.0	38.6
Percent	0.14%	0.09%	0.77%	2.80%	13.68%	38.83%	33.69%	8.54%	1.29%	0.17%	0.01%	0.00%	0.00%			
AM Peak	9:00 AM	7:00 AM	7:00 AM	9:00 AM	7:00 AM	7:00 AM	10:00 AM	8:00 AM	8:00 AM	7:00 AM	9:00 AM			8:00 AM		
Volume	5	1	8	28	101	217	165	51	11	3	1	0	0	521		
PM Peak	1:00 PM	3:00 PM	5:00 PM	3:00 PM	3:00 PM	5:00 PM	2:00 PM	4:00 PM	12:00 PM	1:00 PM				5:00 PM		
Volume	2	2	10	21	91	303	243	66	8	2	0	0	0	688		

15th Percentile:	34.0 MPH	Average Speed:	38.6 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	39.0 MPH	10 MPH Pace:	35 to 44 MPH	Number of Vehicles > 35 MPH:	6179
85th Percentile:	43.0 MPH	Number in Pace:	5862	Percent of Vehicles > 35 MPH:	76.4%
95th Percentile:	46.0 MPH	Percent in Pace:	72.5%		

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-C (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	1	11	4	2	1	0	0	0	0	19	44.2	39.7
1:00 AM	0	0	0	1	2	5	3	0	0	0	0	0	0	11	40.0	36.5
2:00 AM	0	0	0	1	2	8	2	3	0	0	0	0	0	16	44.0	38.6
3:00 AM	0	0	0	1	5	15	8	3	0	0	0	0	0	32	43.0	38.1
4:00 AM	0	0	0	1	23	59	24	4	0	0	0	0	0	111	41.0	37.3
5:00 AM	0	0	1	2	67	206	68	4	0	0	0	0	0	348	40.0	37.0
6:00 AM	0	1	5	11	181	340	75	8	3	0	0	0	0	624	39.0	35.9
7:00 AM	2	2	3	16	210	324	114	9	0	0	0	0	0	680	40.0	36.0
8:00 AM	5	4	3	19	167	319	120	21	1	0	0	0	0	659	40.0	36.3
9:00 AM	1	2	0	12	155	288	96	9	0	1	0	0	0	564	40.0	36.4
10:00 AM	3	2	2	20	123	245	74	10	1	0	0	0	0	480	40.0	36.1
11:00 AM	1	1	6	23	157	298	83	13	1	0	0	0	0	583	40.0	36.0
12:00 PM	1	5	0	20	184	272	99	5	0	0	0	0	0	586	40.0	35.7
1:00 PM	6	1	5	27	144	282	103	8	1	0	0	0	0	577	40.0	35.9
2:00 PM	2	7	4	17	158	311	111	15	3	1	0	0	0	629	40.0	36.3
3:00 PM	2	3	0	7	140	355	139	12	0	0	0	0	0	658	40.0	36.8
4:00 PM	1	7	3	18	187	370	152	8	1	0	0	0	0	747	40.0	36.3
5:00 PM	4	3	4	11	177	372	111	11	0	0	0	0	0	693	40.0	36.2
6:00 PM	0	2	4	13	165	266	89	6	0	1	0	0	0	546	40.0	36.1
7:00 PM	3	4	1	13	112	183	43	6	2	0	0	0	0	367	39.0	35.5
8:00 PM	1	0	0	11	87	125	45	2	0	0	0	0	0	271	40.0	35.8
9:00 PM	0	0	2	7	46	90	33	2	0	0	0	0	0	180	40.0	36.1
10:00 PM	0	0	0	4	20	68	23	3	2	0	0	0	0	120	40.2	37.2
11:00 PM	0	1	0	0	19	33	18	3	0	1	0	0	0	75	41.9	37.3
Total	32	45	43	255	2532	4845	1637	167	16	4	0	0	0	9576	40.0	36.2
Percent	0.33%	0.47%	0.45%	2.66%	26.44%	50.60%	17.09%	1.74%	0.17%	0.04%	0.00%	0.00%	0.00%			
AM Peak	8:00 AM	8:00 AM	11:00 AM	11:00 AM	7:00 AM	6:00 AM	8:00 AM	8:00 AM	6:00 AM	9:00 AM				7:00 AM		
Volume	5	4	6	23	210	340	120	21	3	1	0	0	0	680		
PM Peak	1:00 PM	2:00 PM	1:00 PM	1:00 PM	4:00 PM	5:00 PM	4:00 PM	2:00 PM	2:00 PM	2:00 PM				4:00 PM		
Volume	6	7	5	27	187	372	152	15	3	1	0	0	0	747		

15th Percentile:	33.0 MPH	Average Speed:	36.2 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	36.0 MPH	10 MPH Pace:	32 to 41 MPH	Number of Vehicles > 35 MPH:	5707
85th Percentile:	40.0 MPH	Number in Pace:	8001	Percent of Vehicles > 35 MPH:	59.6%
95th Percentile:	42.0 MPH	Percent in Pace:	83.6%		

Route 62
north of High Street
City, State: Wilmington, MA
Client: Nitsch/ B. Zimolka
Site Code: 15428

PRECISION DATA INDUSTRIES, LLC

PDI File #: 240268 ATR-C (Speed)

Count Date
Thursday, October 24, 2024

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	5	18	19	5	3	1	0	0	0	51	45.0	40.9
1:00 AM	0	0	0	1	3	9	9	5	1	0	0	0	0	28	45.0	39.9
2:00 AM	0	0	0	2	3	10	4	8	0	0	0	0	0	27	46.1	39.6
3:00 AM	0	0	0	2	5	20	17	11	1	1	0	0	0	57	45.0	40.1
4:00 AM	0	0	0	1	25	69	36	9	0	1	0	0	0	141	43.0	38.1
5:00 AM	0	0	1	3	77	254	112	19	2	0	0	0	0	468	41.0	37.7
6:00 AM	1	1	12	28	238	446	160	17	6	0	0	0	0	909	40.0	36.2
7:00 AM	3	3	11	36	311	541	217	35	4	3	0	0	0	1164	41.0	36.4
8:00 AM	5	5	7	39	245	516	278	72	12	1	0	0	0	1180	42.0	37.3
9:00 AM	6	3	6	40	239	434	209	43	5	1	1	0	0	987	41.0	36.7
10:00 AM	3	2	2	22	170	393	239	45	5	0	0	0	0	881	42.0	37.6
11:00 AM	1	1	6	28	210	481	234	56	9	1	0	0	0	1027	42.0	37.4
12:00 PM	2	5	9	36	256	445	276	50	8	0	0	0	0	1087	42.0	37.1
1:00 PM	8	1	5	36	220	488	306	71	6	2	0	0	0	1143	42.0	37.5
2:00 PM	2	7	6	28	232	582	354	70	10	3	0	0	0	1294	42.0	37.7
3:00 PM	3	5	8	28	231	601	382	67	8	1	0	0	0	1334	42.0	37.7
4:00 PM	1	8	10	35	250	605	388	74	6	1	0	0	0	1378	42.0	37.6
5:00 PM	4	4	14	30	263	675	337	50	4	0	0	0	0	1381	41.0	37.2
6:00 PM	0	2	5	34	251	493	223	20	2	1	0	0	0	1031	41.0	36.7
7:00 PM	3	4	1	26	176	360	146	29	7	0	0	0	0	752	41.0	36.8
8:00 PM	1	0	0	12	114	215	147	35	3	0	0	0	0	527	43.0	37.8
9:00 PM	0	0	2	7	58	144	117	28	4	0	0	0	0	360	43.0	38.5
10:00 PM	0	0	0	5	30	120	100	23	9	0	0	0	0	287	43.0	39.2
11:00 PM	0	1	0	2	26	65	50	15	5	1	0	0	0	165	44.0	39.0
Total	43	52	105	481	3638	7984	4360	857	120	18	1	0	0	17659	42.0	37.3
Percent	0.24%	0.29%	0.59%	2.72%	20.60%	45.21%	24.69%	4.85%	0.68%	0.10%	0.01%	0.00%	0.00%			
AM Peak	9:00 AM	8:00 AM	6:00 AM	9:00 AM	7:00 AM	7:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	9:00 AM			8:00 AM		
Volume	6	5	12	40	311	541	278	72	12	3	1	0	0	1180		
PM Peak	1:00 PM	4:00 PM	5:00 PM	12:00 PM	5:00 PM	5:00 PM	4:00 PM	4:00 PM	2:00 PM	2:00 PM				5:00 PM		
Volume	8	8	14	36	263	675	388	74	10	3	0	0	0	1381		

15th Percentile:	33.0 MPH	Average Speed:	37.3 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	37.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 35 MPH:	11886
85th Percentile:	42.0 MPH	Number in Pace:	13384	Percent of Vehicles > 35 MPH:	67.3%
95th Percentile:	45.0 MPH	Percent in Pace:	75.8%		

Appendix B: MassDOT's 2023 Weekday Seasonal Adjustment Factors

Massachusetts Highway Department
Statewide Traffic Data Collection
2023 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.23	1.14	1.11	1.06	1.01	0.96	0.93	0.91	1.00	0.97	1.04	1.08	0.77
R3	1.11	1.07	1.02	0.95	0.90	0.89	0.87	0.87	0.92	0.89	0.95	0.99	0.98
R4-R7	1.19	1.16	1.10	1.00	0.92	0.91	0.87	0.88	0.93	0.93	1.01	1.06	0.98
U1-Boston	1.07	1.05	1.00	0.95	0.93	0.92	0.92	0.92	0.94	0.93	0.96	0.99	0.94
U1-Essex	1.14	1.11	1.06	1.00	0.95	0.91	0.87	0.87	0.94	0.95	1.00	1.03	0.96
U1-Southeast	1.12	1.09	1.04	0.96	0.91	0.87	0.84	0.86	0.92	0.94	0.98	1.03	0.96
U1-West	1.05	1.02	0.98	0.96	0.94	0.93	0.94	0.94	0.95	0.92	0.96	0.98	0.81
U1-Worcester	1.06	1.04	0.97	0.93	0.92	0.90	0.92	0.92	0.93	0.92	0.94	0.97	0.88
U3	1.05	1.02	0.96	0.92	0.89	0.89	0.91	0.92	0.91	0.90	0.94	0.96	0.98
U4-U7	1.02	1.00	0.94	0.89	0.86	0.88	0.91	0.92	0.89	0.88	0.91	0.91	0.99
UR2	1.05	1.01	0.97	0.92	0.90	0.90	0.91	0.91	0.91	0.90	0.94	0.97	0.98
Rec - East	1.17	1.16	1.09	1.04	0.92	0.84	0.76	0.80	0.93	1.00	1.03	1.06	0.98
Rec - West	1.46	1.38	1.32	1.06	0.94	0.79	0.59	0.69	0.97	0.99	1.18	1.28	0.98

Round off:
0-999 = 10
>1000 = 100

U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

UR2 Group - Combination of Urban Freeways and Expressways and Rural Freeways and Expressways.

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113, 1114,1116,2196,2197 and 2198.

Appendix C: Crash Rate Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington, MA COUNT DATE : Oct-24

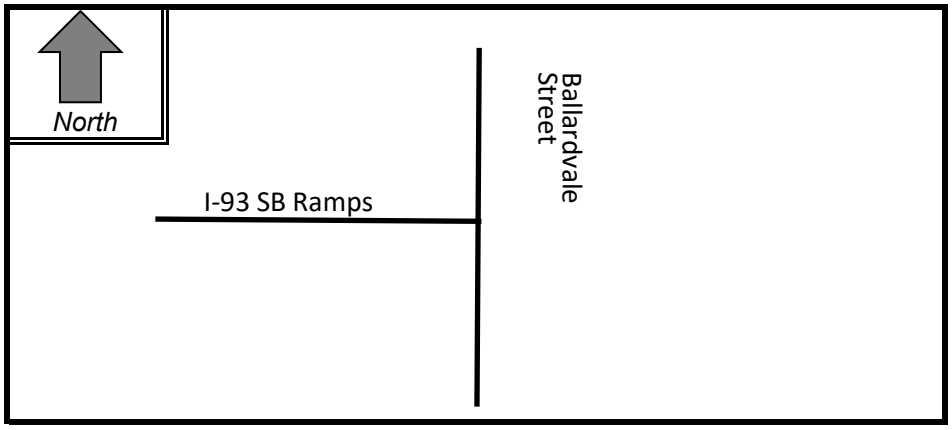
DISTRICT : 4 UNSIGNALIZED : [ ] SIGNALIZED : [X]

~ INTERSECTION DATA ~

MAJOR STREET : Ballardvale Street

MINOR STREET(S) : I-93 Southbound Ramps

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB			
PEAK HOURLY VOLUMES (AM/(PM)) :	267	1,218	293			**1,778**

" K " FACTOR : **0.118** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **15,132**

TOTAL # OF CRASHES : 9 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **1.80**

CRASH RATE CALCULATION : **0.33** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : District 4 [Statewide] Average: 0.73 [0.78] Crashes per Million Entering Vehicles (MEV).

Project Title & Date: North Intermediate School - Nitsch Project #15428

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington, MA COUNT DATE : Oct-24

DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

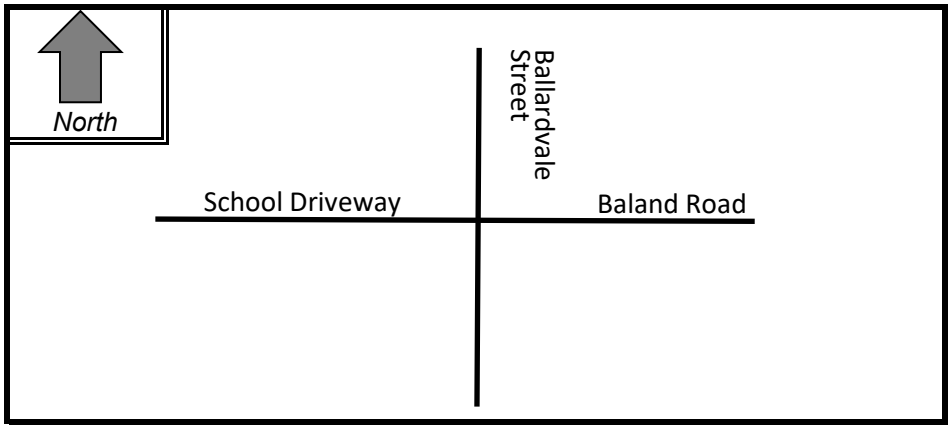
~ INTERSECTION DATA ~

MAJOR STREET : Ballardvale Street

MINOR STREET(S) : Baland Road

School Driveway

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	285	578	60	5		928

" K " FACTOR : **0.118**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **7,898**

TOTAL # OF CRASHES : 2

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : **0.14**

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

Comments : District 4 [Statewide] Average: 0.57 [0.57] Crashes per Million Entering Vehicles (MEV).

Project Title & Date: North Intermediate School - Nitsch Project #15428

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington, MA COUNT DATE : Oct-24

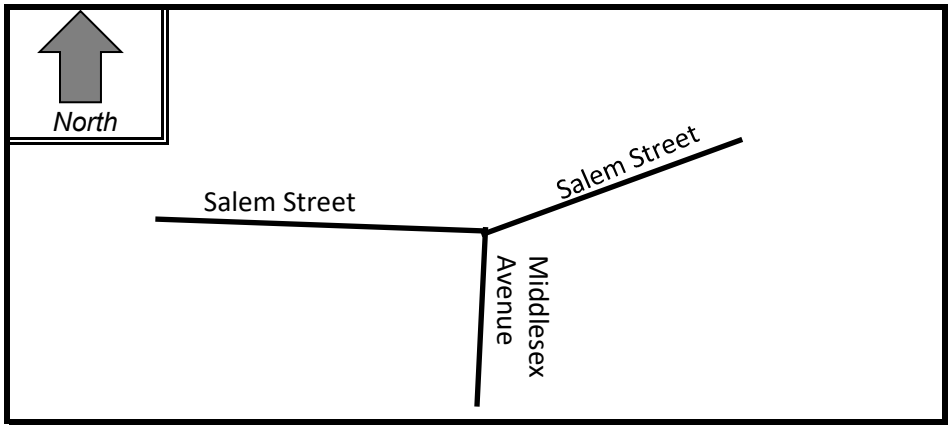
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Salem Street

MINOR STREET(S) : Middlesex Avenue

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	565	509	594			**1,668**

" K " FACTOR : **0.094** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **17,840**

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

CRASH RATE CALCULATION : **0.25** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : District 4 [Statewide] Average: 0.57 [0.57] Crashes per Million Entering Vehicles (MEV).

Project Title & Date: North Intermediate School - Nitsch Project #15428

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington, MA COUNT DATE : Oct-24

DISTRICT : 4 UNSIGNALIZED : [ ] SIGNALIZED : [X]

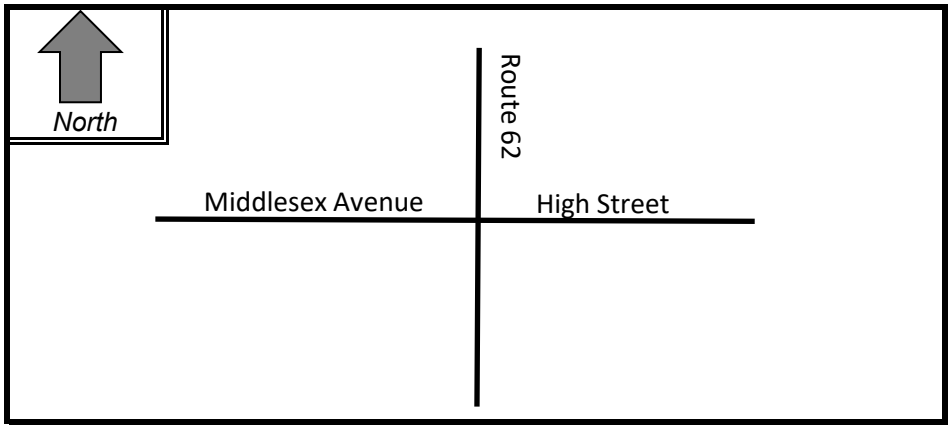
~ INTERSECTION DATA ~

MAJOR STREET : Ballardvale Street

MINOR STREET(S) : Middlesex Avenue

High Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/(PM)) :	605	645	507	185		**1,942**

" K " FACTOR : **0.084** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **23,119**

TOTAL # OF CRASHES : 26 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **5.20**

CRASH RATE CALCULATION : **0.62** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : District 4 [Statewide] Average: 0.73 [0.78] Crashes per Million Entering Vehicles (MEV).

Project Title & Date: North Intermediate School - Nitsch Project #15428

Appendix D: Additional Developments' Traffic Studies

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

M E M O R A N D U M

DATE: November 8, 2023

TO: Christopher Neelon
Ciminelli Real Estate Corp.
Managing Director – Massachusetts Investments
800 Hingham Street, Ste. 31
Rockland, MA 02370

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Proposed Life Science/Biomanufacturing Facility**
181-187 Ballardvale Street, Wilmington, Massachusetts

MDM Transportation Consultants, Inc. (MDM) has conducted this traffic impact assessment (TIA) for a proposed facility to be located at 181-187 Ballardvale Street in Wilmington, Massachusetts. The location of the site relative to the adjacent roadway network is shown in **Figure 1.** This TIA provides a primary summary of the baseline traffic conditions at the Site and adjacent roadways/ intersections, evaluates existing and projected trip generation, quantifies incremental traffic impacts of the Site development on area roadways, and evaluates safety-related conditions at key study locations that provide access to the Site.

Key findings of the assessment are as follows:

- *Baseline Traffic Volumes.* Ballardvale Street carries approximately 19,956 vehicles per day (vpd) on weekdays. Peak hour traffic flow on Ballardvale Street ranges from approximately 935 to 1,060 vehicles per hour (vph) which represents 6 to 7 percent of daily traffic flow. The traffic flow on Ballardvale Street is skewed heavily in the northbound direction during the weekday morning peak hour and southbound during the weekday evening peak hour. The travel patterns are consistent with employee patterns for the commercial uses along that section of Ballardvale Street.

- *Safety Review.* Based on extensive review of MassDOT crash data, the study intersections all experienced crash rates well below the District 4 average and none of the intersection are listed as HSIP locations. No immediate safety countermeasures are warranted based on the crash history at the remaining study intersections.

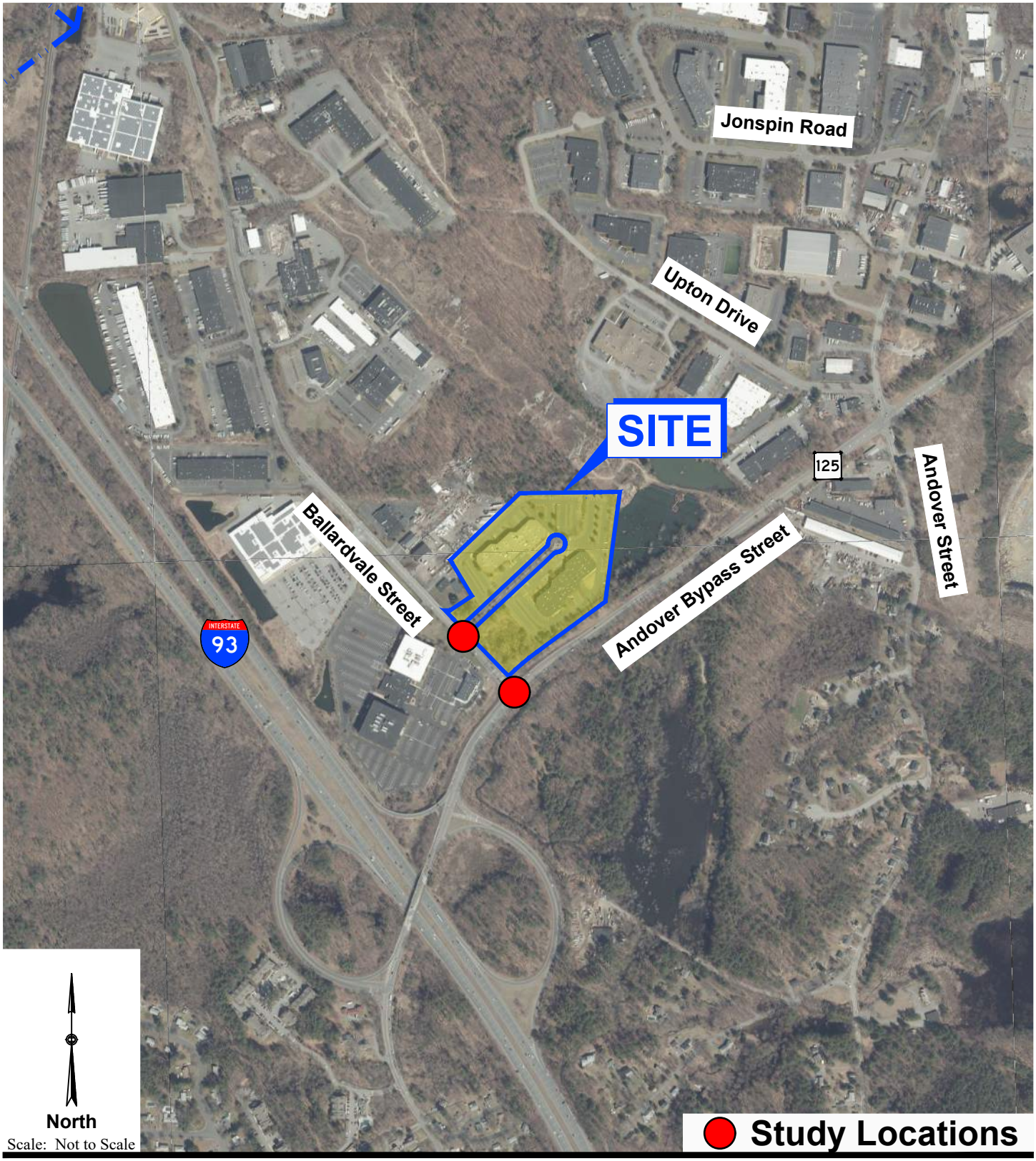


Figure 1

Site Location

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: October 2023
Dwg No. 1325 TIS.dwg
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- *Traffic Generation*. Projected trip generation for the Site based on industry-standard trip rates the proposed development is estimated to generate approximately 72 vehicle trips (60 entering and 12 exiting) during the weekday morning peak hour and 73 vehicle trips (17 entering and 56 exiting) during the weekday evening peak hour. On a daily basis, the proposed development is estimated to generate approximately 512 vehicle trips.

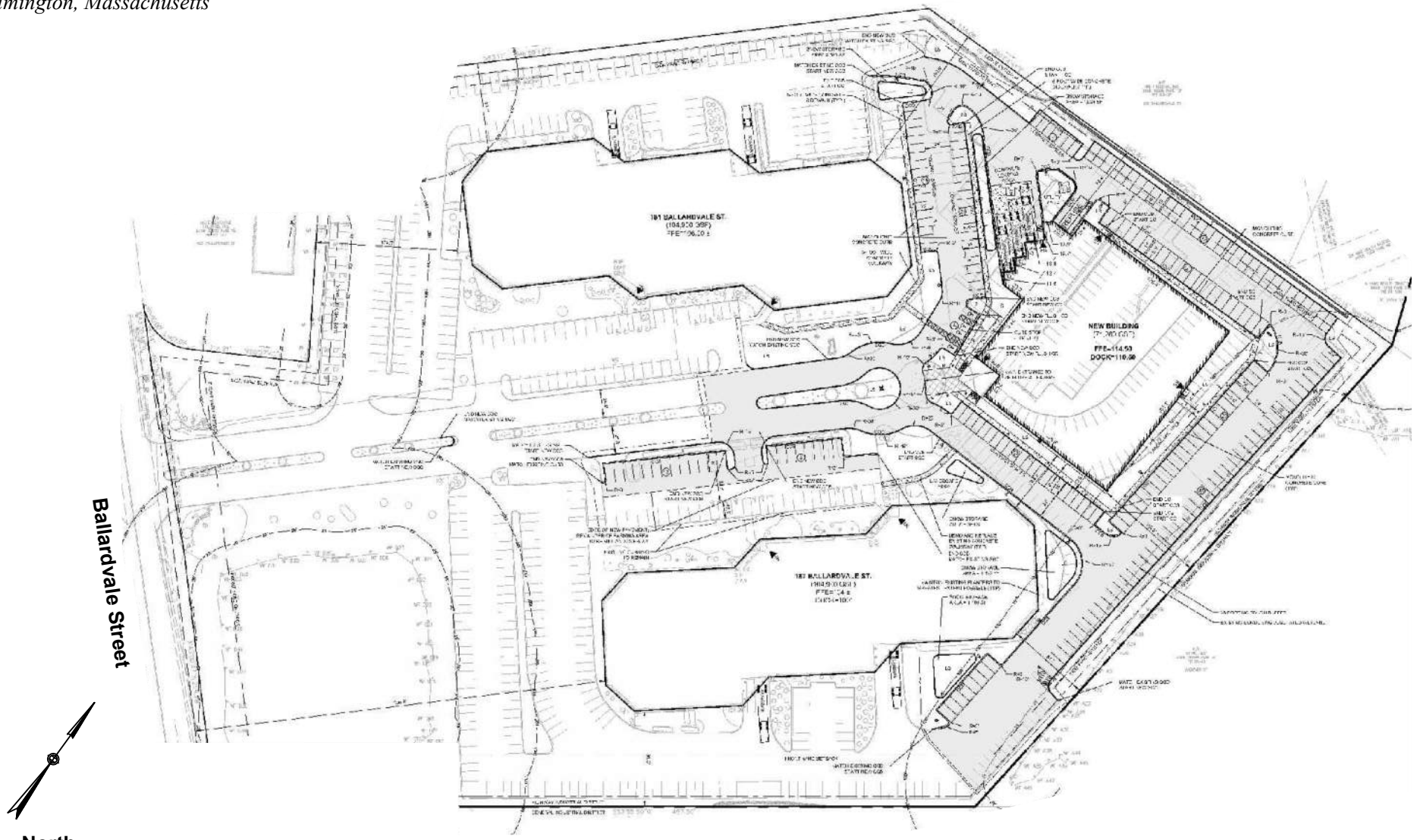
- *Nominal Impact.* The project at full buildout will result in less than 5% increase in traffic along Ballardvale Street and the gateway intersection at Route 125. The increase in trips due to the project are not expected to alter operating conditions compared to No-Build conditions with less than 2 new total vehicle trip or less every minute.

In summary, MDM finds that incremental traffic associated with the proposed development is not expected to materially impact operating conditions at the study intersections. Implementation of access/egress improvements, proposed pedestrian improvements, and a TDM program as outlined under *Recommendations and Conclusions* will establish a framework of minimizing Site traffic impacts.

PROJECT DESCRIPTION

The site consists of approximately 5.38± acres of land located at the northeastern corner of the Route 125 at Ballardvale intersection. The existing Site includes the Ballardvale Technology Center with includes two 104,900 sf office/manufacturing buildings. Access/egress is via a full access driveway along Ballardvale Street.

Under the proposed Site programming, the proposed facility will provide a total building area of approximately 71,300 square feet (sf) of life science/biomanufacturing space use within an expansion of the existing office park. Access/egress to the site will remain via a single driveway connection to Ballardvale Street. The preliminary site layout prepared by HighPoint Engineering, Inc. is presented in **Figure 2**.



Scale: Not to Scale

Source: High Point Engineering, Inc.

Figure 2

Preliminary Site Layout

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: October 2023
Dwg No. 1325 TIS.dwg
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BASELINE TRAFFIC & SAFETY CHARATERISTICS

An overview of roadway classification and geometric characteristics is provided below for the adjacent study roadway.

Ballardvale Street

Ballardvale Street is generally a north-south roadway under local jurisdiction and is classified by the Massachusetts Department of Transportation (MassDOT) as an Urban Minor Arterial roadway. The roadway becomes River Street to the north before connecting to Andover Street in Andover. To the south of the site, Ballardvale Street connects to Route 125 before becoming Middlesex Avenue and providing a connection to Route 62. Adjacent to the site, Ballardvale Street provides a single travel lane in the northbound direction and two travel lanes in the southbound direction, separated by a double yellow centerline. Additional turn lanes are provided at its major intersections. No pedestrian or bicycle facilities are provided withing the study area. Land use along Ballardvale Street in the immediate study area are primarily commercial uses including industrial and office uses in addition to a Target and retail plaza.

Baseline Traffic Data

Daily Traffic Counts

Daily traffic volumes along Ballardvale Street in the site vicinity are summarized in **Table 1** and included in the **Attachments**.

TABLE 1
ROADWAY TRAFFIC-VOLUME SUMMARY – BALLARDVALE STREET

Time Period	Daily Volume (vpd)[1]	Percent Daily Traffic[2]	Peak Hour Volume (vph)[3]	Peak Flow Direction[4]	Peak Hour Directional Volume (vph)
Weekday Morning Peak Hour	19,956	6%	1,251	75% NB	935
Weekday Evening Peak Hour	19,956	7%	1,434	74% SB	1,060

[1]Two-way daily traffic expressed in vehicles per day.
[2]The percent of daily traffic that occurs during the peak hour.
[3]Two-way peak-hour volume expressed in vehicles per hour.
[4]NB = Northbound, SB = Southbound

As summarized in **Table 1**, Ballardvale Street carries approximately 19,956 vehicles per day (vpd) on weekdays. Peak hour traffic flow on Ballardvale Street ranges from approximately 935 to 1,060 vehicles per hour (vph) which represents 6 to 7 percent of daily traffic flow. The traffic flow on Ballardvale Street is skewed heavily in the northbound direction during the weekday morning peak hour and southbound during the weekday evening peak hour. The travel patterns are consistent with employee patterns for the commercial uses along that section of Ballardvale Street.

Existing Trip Generation Characteristics

Observed trip generation for the Ballardvale Technology Center (181-187 Ballardvale Street) has been determined based on turning movement counts conducted at the site driveway along Ballardvale Street in November 2023. **Table 2** presents the existing trip generation characteristics of the Center during the study periods.

TABLE 2
EXISTING TRIP GENERATION – BALLARDVALE TECHNOLOGY CENTER

Period/Direction	OBSERVED TRIPS[1]
Weekday Morning Peak Hour:	
Entering	77
Exiting	4
Total	81
Weekday Evening Peak Hour:	
Entering	11
Exiting	63
Total	74
Weekday Daily (24 hours)	610

[1]Based on turning movement counts conducted at the Ballardvale Technology Center in November 2023.

As summarized in **Table 2**, the existing Ballardvale Technology Center at 181-187 Ballardvale Street is currently fully occupied and observed to generate approximately 81 vehicle trips (77 entering and 4 exiting) during the weekday morning peak hour and 74 vehicle trips (11 entering and 63 exiting) during the weekday evening peak hour. On a daily basis, the existing center was observed to generate 610 vehicle trips on a weekday

Peak Hour Traffic

Traffic volume data were collected at the study intersections in November 2023 during the weekday morning (7:00 AM - 9:00 AM) and weekday evening (4:00 PM – 6:00 PM) periods to coincide with peak traffic activity of the proposed use and the adjacent streets. Review of MassDOT permanent count station data indicates that November an average traffic month. Therefore, then traffic volumes represent an average season analysis and no seasonal adjustment factor is needed. The weekday morning and weekday evening peak hour traffic volumes for the study intersections are shown in **Figure 3**. Traffic count data, MassDOT permanent count station data, and pandemic adjustment calculations are provided in the **Attachments.**

SIGHT LINE EVALUATION

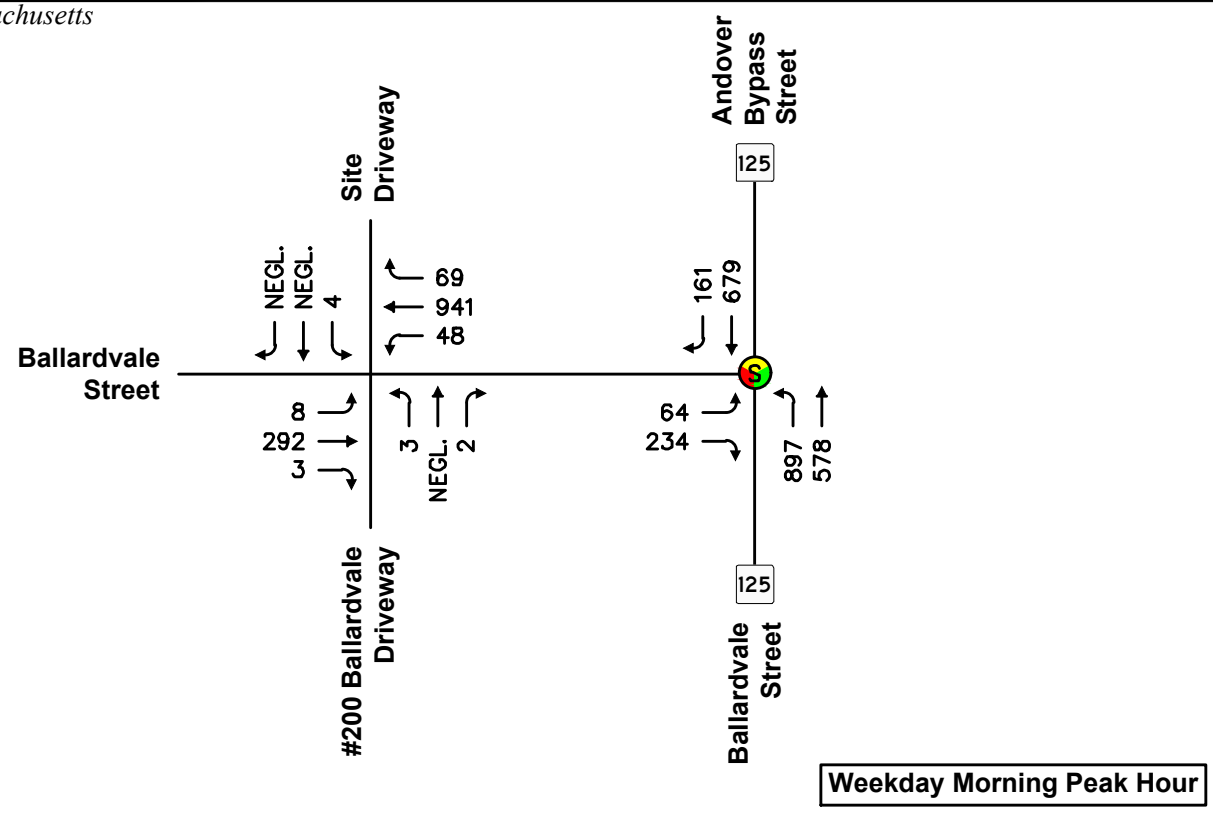
An evaluation of sight lines was conducted at the existing site driveway to ensure that minimum recommended sight lines are available to safely exit onto Ballardvale Street. The evaluation documents existing sight lines for vehicles as they relate to Ballardvale Street with comparison to recommended guidelines for the regulatory speed limit.

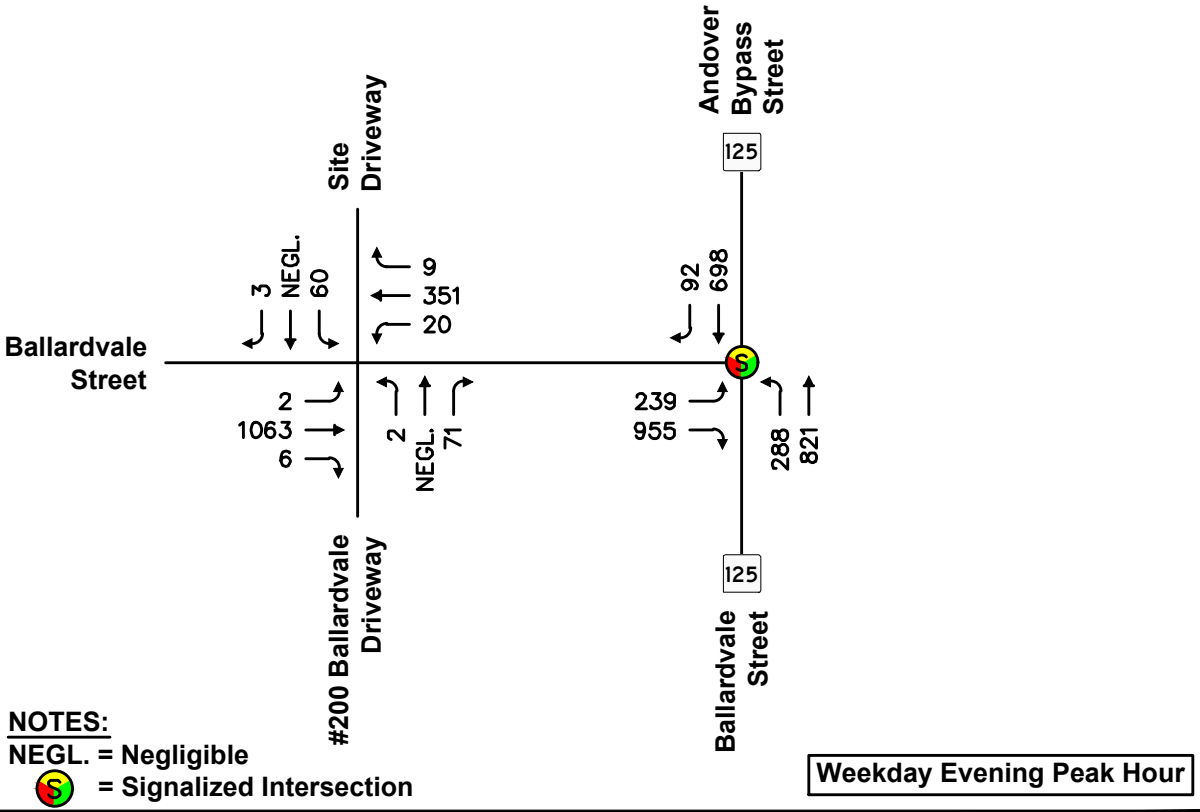
The American Association of State Highway and Transportation Officials' (AASHTO) standards[1] reference two types of sight distance which are relevant at the proposed site driveway intersection on Ballardvale Street: stopping sight distance (SSD) and intersection sight distance (ISD). Sight lines for critical vehicle movements at the site driveway intersection with Ballardvale Street were compared to minimum SSD and ISD for the regulatory speed limit in the Site vicinity.

Stopping Sight Distance

Sight distance is the length of roadway visible to the motorist to a fixed object. The minimum sight distance available on a roadway should be sufficiently long enough to enable a below-average operator, traveling at or near a regulatory speed limit, to stop safely before reaching a stationary object in its path, in this case, a vehicle exiting onto Ballardvale Street. The SSD criteria are defined by AASHTO based on design and operating speeds, anticipated driver behavior and vehicle performance, as well as physical roadway conditions. SSD includes the length of roadway traveled during the perception and reaction time of a driver to an object, and the distance traveled during brake application on wet level pavement. Adjustment factors are applied to account for roadway grades when applicable.

[1] *A policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials (AASHTO), 2018.





North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 3

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

2023 Baseline Conditions
Weekday Peak Hour Volumes

Date: October 2023
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SSD was estimated in the field using AASHTO standards for driver's eye (3.5 feet) and object height equivalent to the taillight height of a passenger car (2.0 feet) for the northbound and southbound Ballardvale Street approaches to the Site driveway. **Table 3** presents a summary of the available SSD as they relate to Ballardvale Street and AASHTO's recommended SSD.

TABLE 3
STOPPING SIGHT DISTANCE SUMMARY
BALLARDVALE STREET APPROACHES TO SITE DRIVEWAY

Approach/ Travel Direction	Available SSD	AASHTO Recommended[1] Regulatory Speed Limit[2]
Northbound	450± Feet	305 Feet
Southbound	>500 Feet	305 Feet

[1]Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet.
[2] Regulatory speed limit: Ballardvale Street = 40 mph

As summarized in **Table 3,** analysis results indicate that the available sight lines exceed AASHTO's recommended SSD criteria for the northbound and southbound travel directions along Ballardvale Street based on the regulatory (posted) speed limit.

Intersection Sight Distance

Clear sight lines provide sufficient sight distance for a stopped driver on a minor-road approach to depart from the intersection and enter or cross the major road. As stated under AASHTO's Intersection Sight Distance (ISD) considerations, "…*If the available sight distance for an entering …vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to avoid collisions…To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road*." AASHTO's ISD criteria are defined into several "cases". For the unsignalized Site driveway location, which is under STOP sign control, the ISD in question relates to the ability to turn left or turn right from the proposed driveway.

Available ISD was estimated in the field using AASHTO standards for driver's eye (3.5 feet), object height (3.5 feet) and decision point (8 feet from the edge of the travel way) for the northbound and southbound directions along Ballardvale Street. **Table 4** presents a summary of the available ISD for the departure from the Site driveway and AASHTO's minimum recommended ISD.

TABLE 4
INTERSECTION SIGHT DISTANCE SUMMARY
SITE DRIVEWAY DEPARTURES TO BALLARDVALE STREET

Approach/ Travel Direction	Available ISD	AASHTO Minimum[1] Regulatory Speed Limit[2]	AASHTO Ideal[1] Regulatory Speed Limit[2]
Looking North	>500 Feet	305 Feet	445 Feet
Looking South	450± Feet	305 Feet	385 Feet

[1] Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet. Minimum value as noted represents SSD per AASHTO guidance.
[2] Regulatory speed limit: Ballardvale Street = 40 mph

The results of the ISD analysis presented in **Table 4** indicate that the available sight lines looking from the Site driveways onto Ballardvale Street will exceed the recommended sight line requirements from AASHTO. MDM recommends that any new plantings (shrubs, bushes) or physical landscape features to be located within the driveway sight lines should also be maintained at a height of 2 feet or less above the adjacent existing roadway grade to ensure unobstructed lines of sight.

Intersection Crash History

In order to identify crash trends and safety characteristics for study area intersections, crash data were obtained from MassDOT for the Town of Wilmington for the five-year period covering 2018-2022 (the most recent full year of data currently available from MassDOT). A summary of the crash data with crash rates for the study intersections with reported crashes is provided in **Table 5** with detailed data provided in the **Attachments.**

Crash rates were calculated for the study intersections as reported in **Table 5**. These rates quantify the number of crashes per million entering vehicles. MassDOT has determined the official District 4 (which includes the Town of Wilmington) crash rate to be 0.73 for signalized intersections and 0.57 for unsignalized intersections. This rate represents MassDOT's "average" crash experience for District 4 communities and serves as a basis for comparing reported crash rates for the study intersections. Where calculated crash rates notably exceed the district average, some form of safety countermeasures may be warranted. A review of Highway Safety Improvement Project (HSIP) locations was also conducted.

TABLE 5
INTERSECTION CRASH SUMMARY
2018 THROUGH 2022[1]

Data Category	Route 125 at Ballardvale Street	Ballardvale Street at 181-187 and 200 Driveway
Traffic Control	Signalized	Unsignalized
Crash Rate[2]	**0.40**	**0.28**
MHD District 4 Avg[3]	0.73	0.57
Year:		
2018	9	1
2019	4	1
2020	2	0
2021	4	3
2022	6	4
Total	**25**	**9**
Type:		
Angle	7	4
Rear-End	11	5
Head-On	0	0
Sideswipe	7	0
Single-Vehicle	0	0
Unknown	0	0
Severity:		
P. Damage Only	21	7
Personal Injury	4	2
Fatality	0	0
Not Reported	0	0
Conditions:		
Dry	23	8
Wet	1	1
Snow	0	0
Unknown	1	0
Time:		
7:00 to 9:00 AM	3	1
4:00 to 6:00 PM	3	3
Rest of Day	19	5

[1] Source: MassDOT Crash Database
[2] Crashes per million entering vehicles
[3] District 4 Average Crash Rate

As summarized in **Table 5**:

- *Route 125 at Ballardvale Street*: A total of twenty-five (25) crashes were reported for the Route 125 signalized intersection with Ballardvale Street. The resulting crash rate of 0.40 is lower than the District 4 average. The reported crashes included fourteen (14) angle/sideswipe type collisions and eleven (11) rear-end type collisions. Eighty-four percent (84%) of the crashes resulted in property-damage only, generally indicative of low-speed crashes. Ninety-two percent (92%) of the crashes occurred under dry roadway conditions, and seventy-six percent (76%) occurred outside of peak travel times. No fatalities or pedestrian-related incidents were reported during the study period.

- *Ballardvale Street at 181-187 and 200 Ballardvale Street Driveways*: A total of nine (9) crashes were reported for the unsignalized Site Driveway intersection with Ballardvale Street. The resulting crash rate of 0.28 is lower than the District 4 average. The reported crashes included four (4) angle/sideswipe type collisions and five (5) rear-end type collisions. Seventy-eight percent (78%) of the crashes resulted in property-damage only, eighty-nine percent (89%) occurred under dry roadway conditions, and fifty-six percent (56%) occurred outside of peak travel times. No fatalities or pedestrian-related incidents were reported during the study period.

In summary, based on extensive review of MassDOT crash data, the study intersections, experienced crash rates below the District 4 averages and none of the intersection are listed as HSIP locations; therefore, no immediate safety countermeasures are warranted based on the crash history at the study intersections.

PROJECTED FUTURE TRAFFIC CONDITIONS

Evaluation of the proposed development impacts requires the establishment of a future baseline analysis condition. This section estimates future roadway and traffic conditions with and without the proposed development. For planning purposes, a seven-year planning horizon (year 2030) was selected consistent with standard industry practice.

To determine the impact of site-generated traffic volumes on the roadway network under future conditions, baseline traffic volumes in the study area were projected to a future year condition. Traffic volumes on the roadway network at that time, in the absence of the development (that is, the No-Build condition), includes existing traffic, new traffic due to general background traffic growth, and traffic related to specific developments by others that are currently under review at the local and/or state level. Consideration of these factors resulted in the development of No-Build traffic volumes. Anticipated site-generated traffic volumes were then superimposed upon these No-Build traffic-flow networks to develop future Build conditions.

The following sections provide an overview of future No-Build traffic volumes and Build traffic volumes.

Historical Area Growth

Nearby permanent count station data published by MassDOT indicates a 0.5 percent per year growth rate. For purposes of this evaluation, a 1.0 percent compounded annual growth rate was used (7.2 percent increase over a 7-year horizon). This growth rate is higher than historic rates and is also expected to account for any small fluctuation in hourly traffic as may occur from time to time in the study area and traffic associated with other potential small developments or vacancies in the area. MassDOT permanent count station data and background growth calculations are provided in the **Attachments**.

Background Development-Related Growth

Development of future No-Build traffic volumes also considers traffic generated through the study area from other specific area developments. Review of Massachusetts Environmental Policy Act (MEPA) files and correspondence with the Town of Wilmington Planning Staff indicates that there are several Site-specific development projects in the area that may increase baseline traffic at the study intersections:

- *36 & 38 Upton Drive*. The commercial development is currently proposed to include 19,800± sf of R&D space, 39,000± sf of light industrial space, 78,500± sf of manufacturing space and 125,300± sf of warehouse space to be located at 36 and 38 Upton Drive in Wilmington. The site-specific trip tracings were obtained from the TIA prepared by Greenman-Pedersen, Inc. in September 2022. Trip tracings for the proposed development are provided in the **Attachments**.

- *30 Upton Drive*. The commercial redevelopment is proposed to include 91,305± sf of warehouse space and 38,935± sf of office space to be located at 30 Upton Drive in Wilmington. The site-specific trip tracings were obtained from the TIA prepared by Greenman-Pedersen, Inc. in December 2021. Trip tracings for the proposed development are provided in the **Attachments**.

- *225 Andover Street*. The 27,395± sf self-storage facility is proposed to be located at 225 Andover Street in Wilmington. The site-specific trips associated with the development are proposed to minimal and accounted for in the conservative background growth.

- *100 Research Drive*. The proposed development includes the construction of approximately 20,000± sf of commercial space. A Traffic Impact Assessment prepared by Vanasse Hangen Brustlin Inc. (VHB) dated July 2019 compares the impact of three land use scenarios. Background trip tracings for the proposed development are based on the highest generating land use, LUC 180 Specialty Contractor, and are provided in the **Attachments**.

2030 No-Build Traffic Volume Networks

In summary, to account for future traffic growth in the study area future No-Build traffic volumes are developed by increasing the Baseline (2023) volumes by approximately 7.2 percent (1.0 percent compounded annually over 7 years). The resulting 2030 No-Build traffic volumes are displayed in **Figure 4**.

Trip Generation

The trip generation estimates for the proposed development are provided for the weekday morning and weekday evening, which correspond to the critical analysis periods for the proposed uses and adjacent street traffic flow. In this case, ITE's land use code (LUC) for General Office (LUC 710) and Manufacturing (140) were selected for analysis purposes; the use category generally aligns with the proposed characterization of the Site. New traffic generated by the project was estimated using trip rates published in ITE's *Trip Generation*[2] for the Land Use Code (LUC) 710 – General Office and LUC 140 – Manufacturing. **Table 6** presents the trip-generation comparison for the proposed development based on ITE methodology and trip rates based on the exiting site uses.

[2]*Trip Generation,* Eleventh Edition; Institute of Transportation Engineers; Washington, DC; 2021.

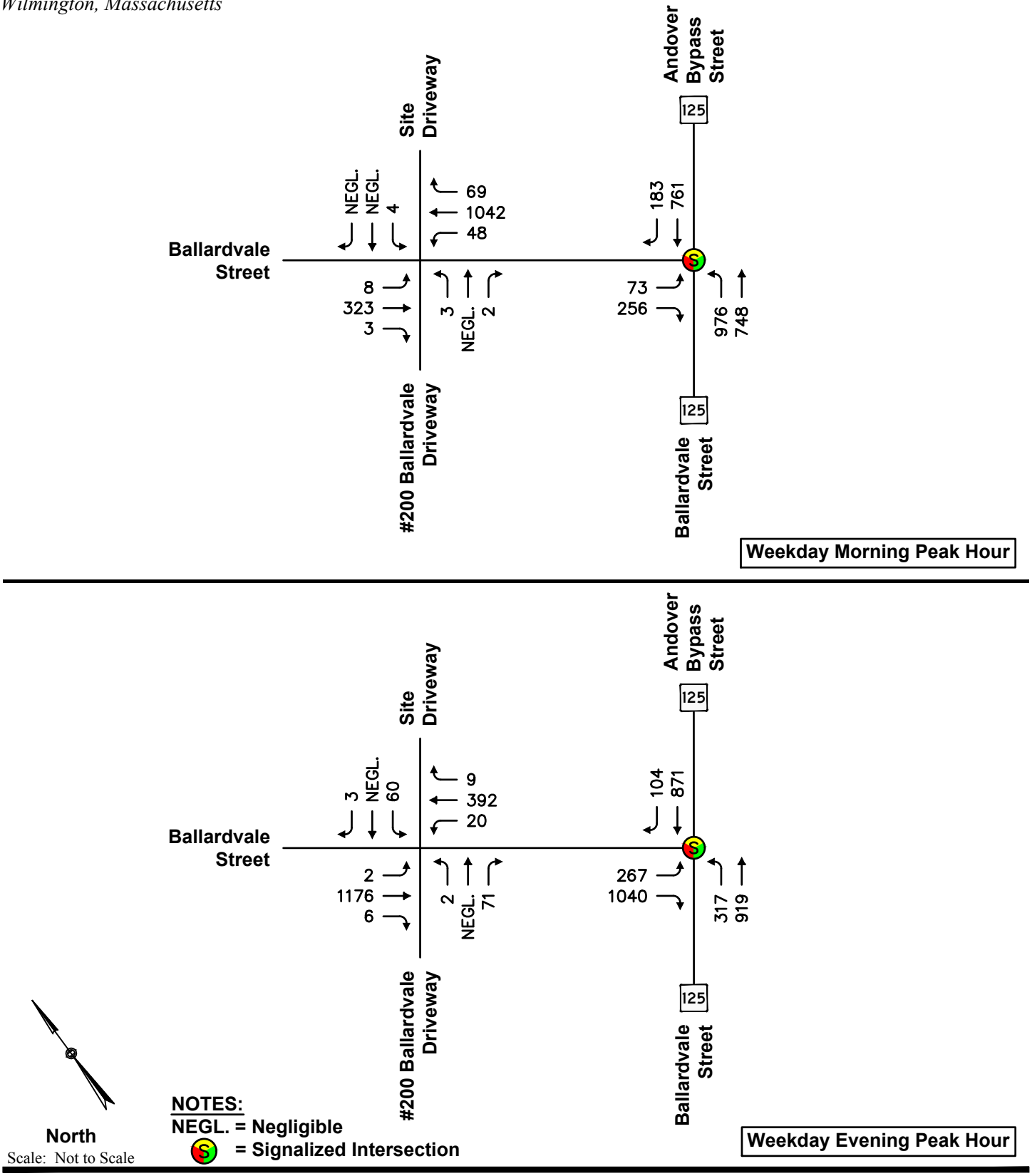

Figure 4

MDM TRANSPORTATION CONSULTANTS, INC.
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2030 No-Build Conditions
Weekday Peak Hour Volumes

Date: October 2023
Dwg No. 1325 TIS.dwg
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TABLE 6
TRIP-GENERATION SUMMARY

Peak Hour/Direction	Empirical Basis[1]	ITE Basis: Office (28,500 sf)[2]	ITE Basis: Manufacturing (42,800 sf)[3]	ITE Basis: Total	Used for Report
Weekday Morning Peak Hour:					
Entering	27	38	22	60	**60**
Exiting	2	5	7	12	**12**
Total	29	43	29	72	**72**
Weekday Evening Peak Hour:					
Entering	4	7	10	17	**17**
Exiting	22	34	22	56	**56**
Total	26	41	32	73	**73**
Weekday Daily:	208	308	204	512	**512**

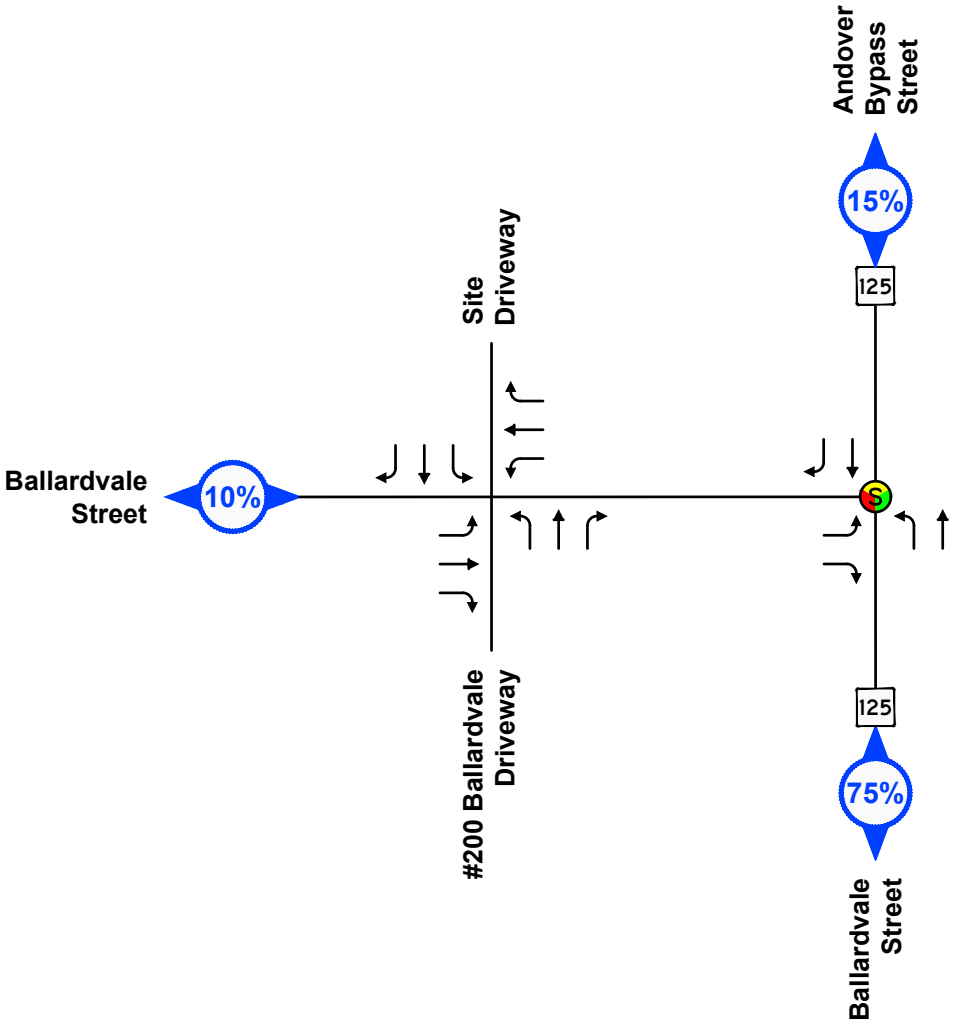
Source: ITE *Trip Generation*, 11th Edition; 2021.
[1]Based on Table 2 applied to 71.3ksf.
[2]ITE LUC 710 – General Office trip rates applied to 28,500 sf.
[3]ITE LUC 140 – Manufacturing Park trip rates applied to 42,800 sf.

As summarized in **Table 6**, based on industry-standard trip rates the proposed development is estimated to generate approximately 72 vehicle trips (60 entering and 12 exiting) during the weekday morning peak hour and 73 vehicle trips (17 entering and 56 exiting) during the weekday evening peak hour. On a daily basis, the proposed development is estimated to generate approximately 512 vehicle trips.

Trip Distribution

The directional distribution of development-generated trips on the roadway network is a function of a number of variables including local area populations and the efficiency of the roadways leading to the Site. Existing roadway travel patterns served as the primary basis for determining the trip distribution pattern for the proposed development. The distribution of the site generated trips is displayed in **Figure 5**. Trip distribution calculations are provided in the **Attachments**.

Development-related trips for the proposed development are assigned to the roadway network using the trip-generation estimates shown in **Table 6** and the distribution patterns presented in **Figure 5**. Development-related trips at each intersection approach for the weekday morning and weekday evening peak hours are quantified in **Figure 6**.



North
Scale: Not to Scale

NOTES:
S = Signalized Intersection

Figure 5

Trip Distribution

MDM TRANSPORTATION CONSULTANTS, INC.
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Date: October 2023
Dwg No. 1325 TIS.dwg
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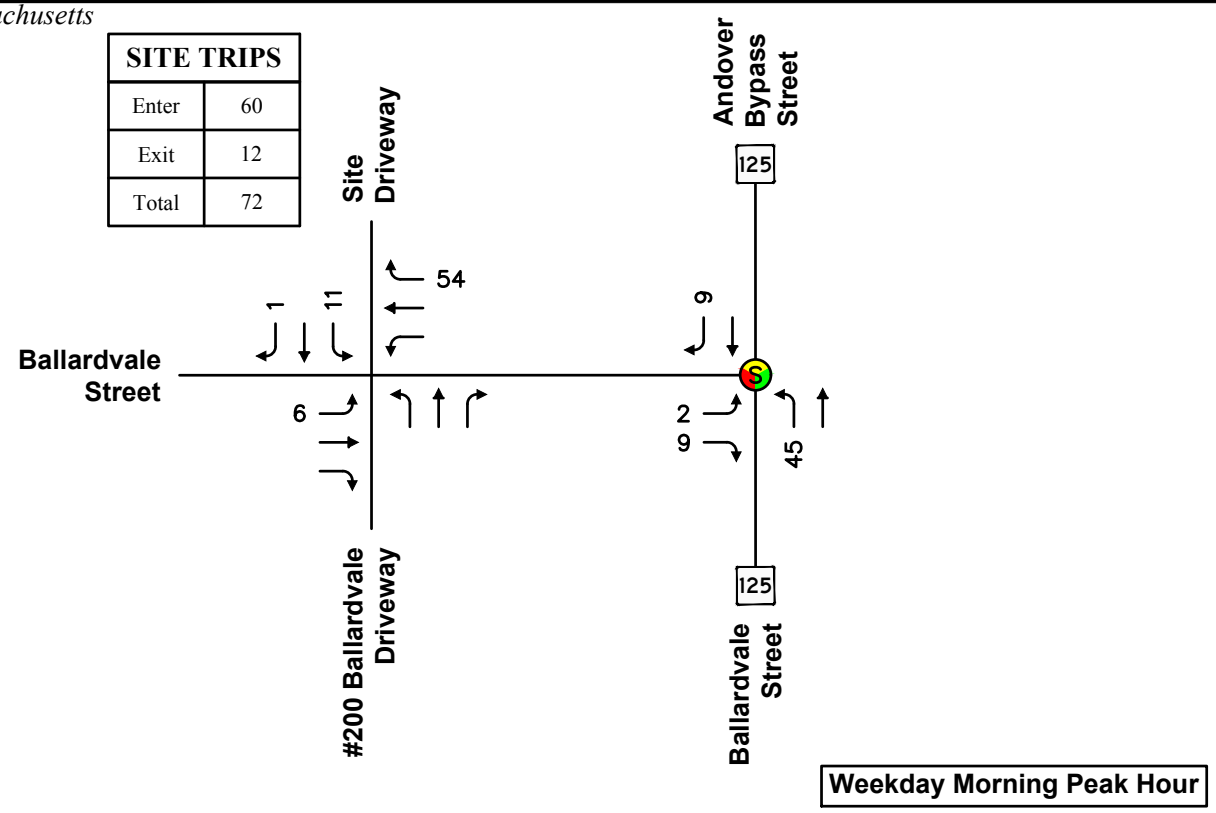

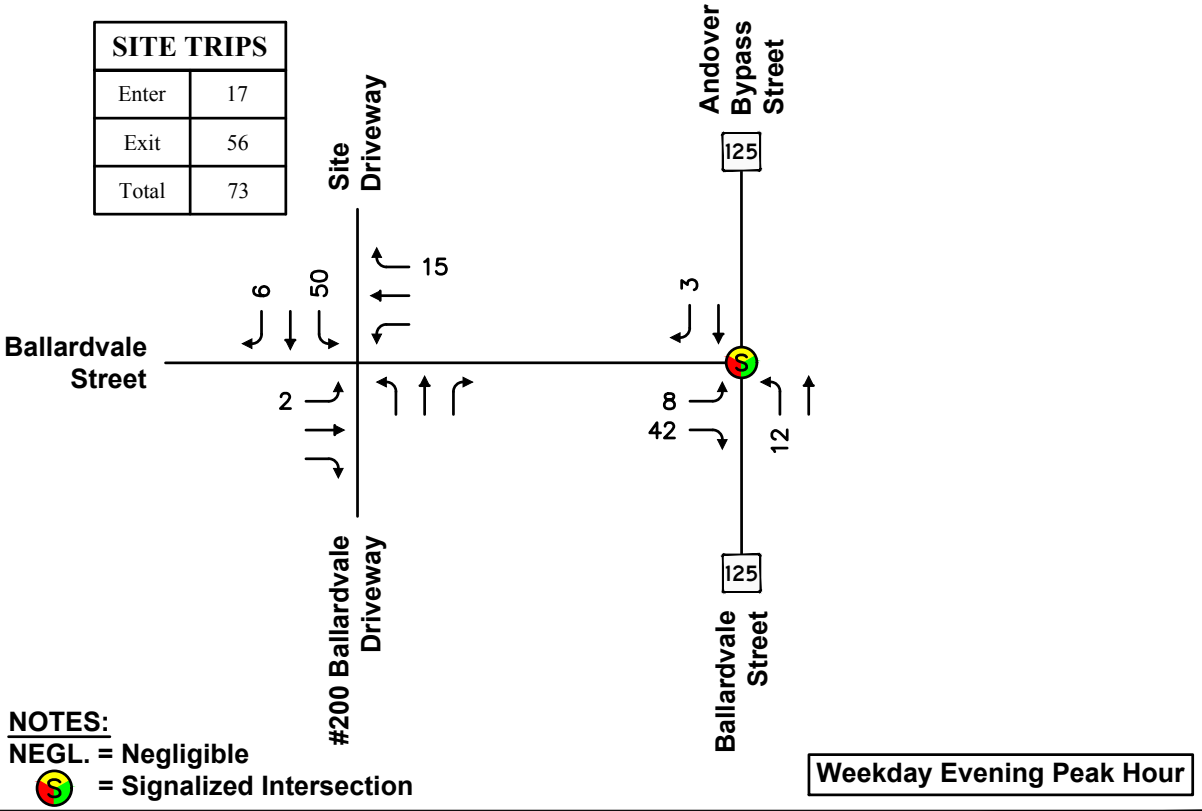

North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 6

Site Generated Trips

MDM TRANSPORTATION CONSULTANTS, INC.
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Date: October 2023
Dwg No. 1325 TIS.dwg
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2030 Build Traffic Conditions

2030 Build condition traffic volumes are derived by adding incremental traffic increases for the proposed development of the Site to the 2030 No-Build conditions. **Figure 7** presents the 2030 Build condition traffic-volume networks for the weekday morning and weekday evening peak hours.

QUALTATIVE STATEMENT OF IMPACT

This section provides a quantitative statement of impact and described trip increases associated with the development relative to future 2030 No-Build conditions along Ballardvale Street. A comparison of the total intersection entering volume for the two gateway study intersections during the weekday morning peak hour and weekday evening peak hour, are summarized in **Table 7**.

TABLE 7
ROADWAY TOTAL ENTERING VOLUME

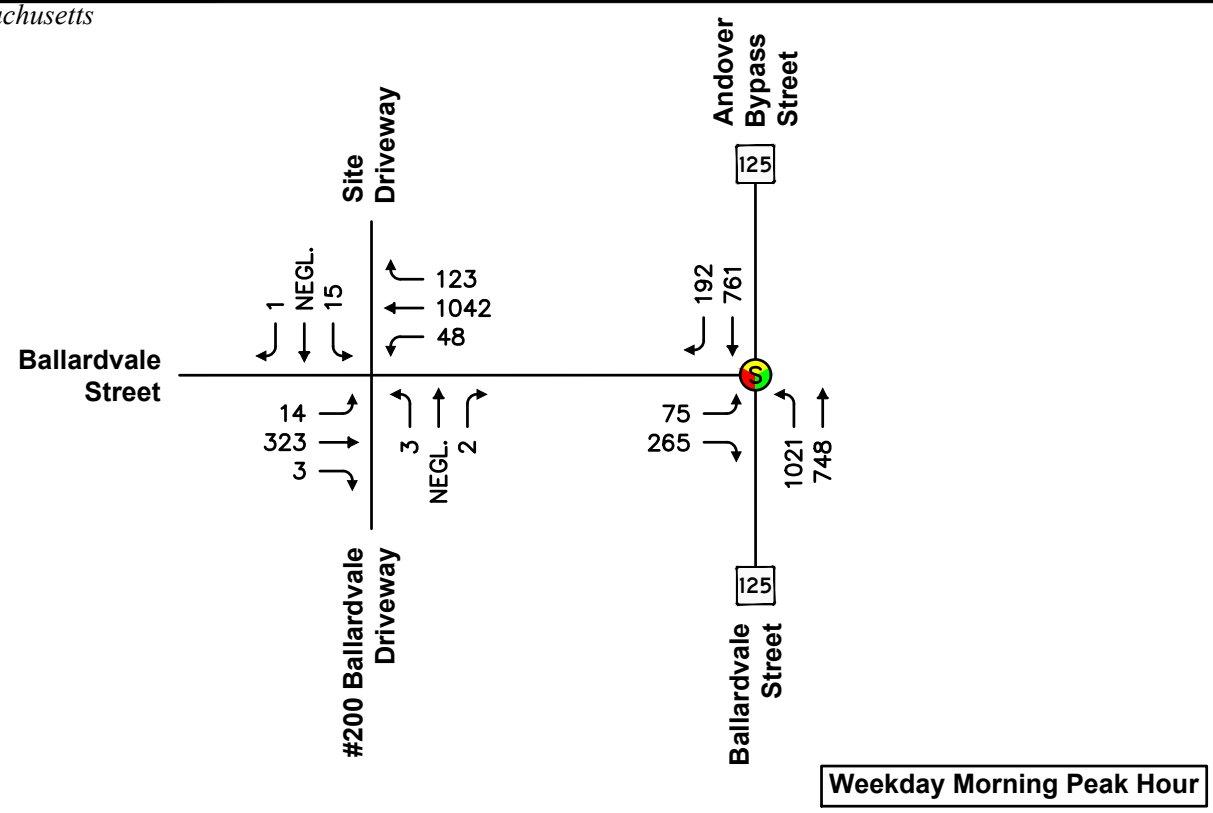
	Peak Hour	2030 No-Build Entering Volume[1]	Project Impact # of New Trips	Project Impact %Δ
Route 125 at Ballardvale Street	Weekday AM	2,997	65	2.2%
	Weekday PM	3,518	65	1.8%
Ballardvale Street at Site Driveway	Weekday AM	1,502	72	4.8%
	Weekday PM	1,741	73	4.2%

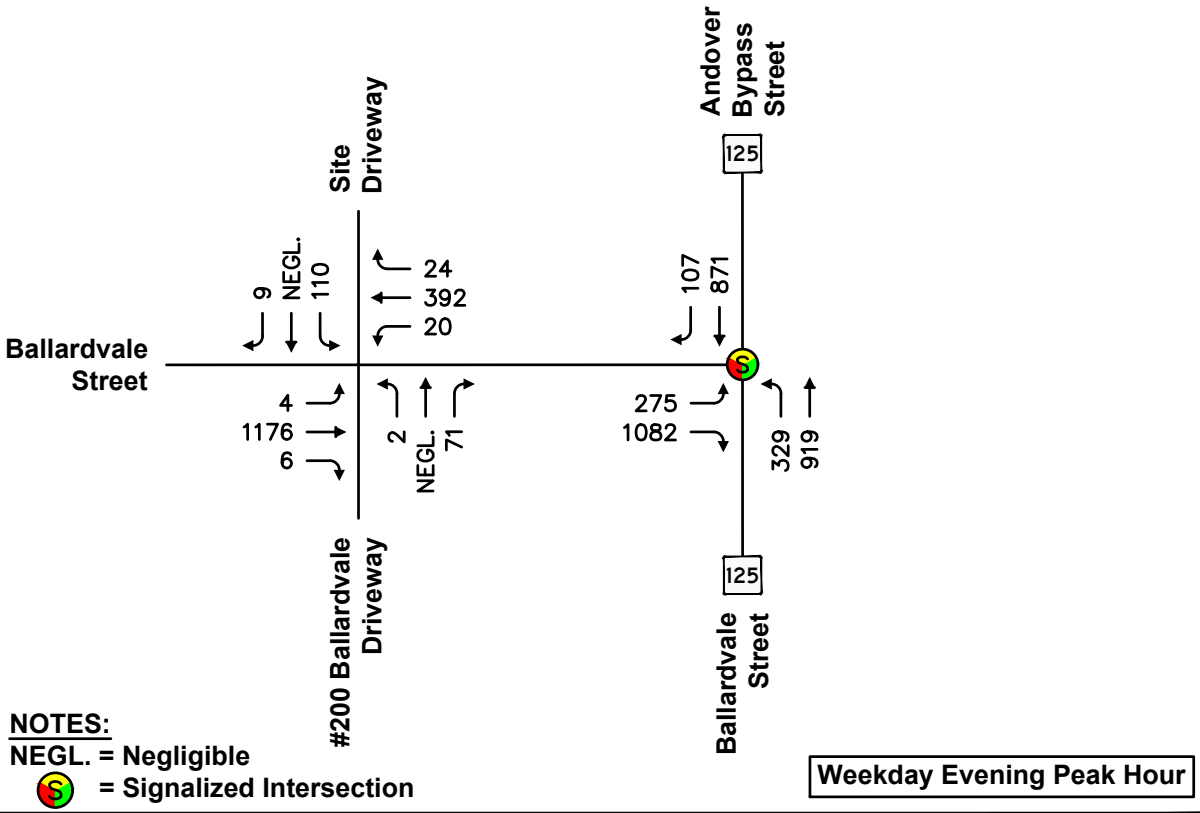
[1] Volumes based on traffic peak hour turning movement counts conducted in November 2023.

As shown in **Table 7**, the project at full buildout will result in less than 5% increase in traffic along Ballardvale Street and the gateway intersection at Route 125. The increase in trips due to the project are not expected to alter operating conditions compared to No-Build conditions with less than 2 new total vehicle trip or less every minute.

RECOMMENDATIONS AND CONCLUSIONS

Based on this preliminary report, MDM has identified several mitigation actions that are likely to be required through the local permitting process to support the project. These include (a) access-related improvements, (b) pedestrian and bicycle accommodations, and (c) a transportation demand management (TDM) program to enhance traffic operations and travel safety:





North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 7

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

2030 Build Conditions
Weekday Peak Hour Volumes

Date: October 2023
Dwg No. 1325 TIS.dwg
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Access/Egress Improvements

- *Signs and Pavement Markings.* A STOP sign (R1-1) and STOP line pavement marking should be installed on the Site Driveway approach to Ballardvale Street. The sign and pavement markings shall conform to Manual on Uniform Traffic Control Devices (MUTCD) standards.

- *Sight Line Maintenance.* The sight lines for the Sight Driveway approach to Ballardvale Street should be maintained with the construction of the Site. Any new plantings (shrubs, bushes) or physical landscape features to be located within the sight lines should also be maintained at a height of 2 feet or less above the adjacent roadway grade to ensure unobstructed lines of sight.

Pedestrian and Bicycle Accommodations

- *Pedestrian Accommodation.* The design shall incorporate sidewalks that connect the proposed building entrances with the proposed parking areas.

- *Bicycle Amenities*. The Proponent shall incorporate secure and weather-protected bicycle racks to encourage and facilitate this mode of transportation to/from the Site by employees.

Transportation Demand Management (TDM)

A preliminary list of potential TDM program elements may include the following, subject to refinement of the development program and further evaluation by the Proponent:

- *On-Site Transportation Coordinator*
- *TMA Membership*
- *Public Transportation Information & Promotion*
- *Preferential Parking for Carpools, Vanpools*
- *Electric Vehicle Charging Station*
- *Preferential Parking for Low-Emission Vehicles*
- *Workforce Transportation Program*
- *Off-Peak Shift Changes*
- *Automatic Employee Payroll Reduction*
- *Commuter Assistance Programs*
- *Guaranteed Ride Home*
- *Pedestrian Infrastructure*
- *Bicycle Racks*
- *Secure Covered Bike Parking*
- *On-Site Support Services/Amenities*

CONCLUSIONS

In summary, MDM finds that incremental traffic associated with the proposed development is not expected to materially impact operating conditions at the study intersections. Implementation of access/egress improvements, proposed pedestrian improvements, and a TDM program as outlined under *Recommendations and Conclusions* will establish a framework of minimizing Site traffic impacts.

ATTACHMENTS

- Traffic Volume Data
- Seasonal/Yearly Growth Data
- Sight Distance Calculations
- Crash Data
- Background Projects
- Trip Generation
- Trip Distribution Calculations

□ Traffic Volume Data

Ballardvale Street
Wilmigton, MA

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA 01752

Site Code:

Start Time	02-Nov-23 Thu	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		9	140			11	174				
12:15		10	138			11	163				
12:30		6	140			19	163				
12:45		8	150	33	568	9	166	50	666	83	1234
01:00		6	94			8	158				
01:15		4	140			9	133				
01:30		7	126			13	132				
01:45		11	130	28	490	7	139	37	562	65	1052
02:00		11	114			16	231				
02:15		17	114			10	163				
02:30		22	115			8	219				
02:45		38	98	88	441	6	160	40	773	128	1214
03:00		26	101			23	228				
03:15		19	114			10	215				
03:30		19	107			14	238				
03:45		33	119	97	441	12	208	59	889	156	1330
04:00		35	107			16	291				
04:15		42	103			25	235				
04:30		62	83			20	278				
04:45		113	81	252	374	19	256	80	1060	332	1434
05:00		98	85			33	290				
05:15		101	64			55	248				
05:30		119	79			63	185				
05:45		204	75	522	303	66	182	217	905	739	1208
06:00		145	62			66	131				
06:15		133	47			69	108				
06:30		124	65			58	98				
06:45		159	54	561	228	74	81	267	418	828	646
07:00		179	60			90	80				
07:15		158	38			79	73				
07:30		182	38			83	62				
07:45		235	26	754	162	84	61	336	276	1090	438
08:00		213	34			88	52				
08:15		244	30			68	48				
08:30		243	19			76	29				
08:45		235	32	935	115	68	53	300	182	1235	297
09:00		223	32			80	48				
09:15		200	18			126	41				
09:30		162	28			109	36				
09:45		122	23	707	101	100	29	415	154	1122	255
10:00		104	10			92	35				
10:15		116	12			85	13				
10:30		100	9			87	28				
10:45		127	16	447	47	107	26	371	102	818	149
11:00		103	16			110	36				
11:15		93	12			104	30				
11:30		117	10			125	27				
11:45		145	6	458	44	154	15	493	108	951	152
Total		4882	3314			2665	6095			7547	9409
Percent		59.6%	40.4%			30.4%	69.6%			44.5%	55.5%
Total		4882	3314			2665	6095			7547	9409
Percent		59.6%	40.4%			30.4%	69.6%			44.5%	55.5%
Combined Total		8196				8760				16956	

Site Driveway
Wilmington, MA

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA 01752

Site Code:

Start Time	02-Nov-23 Thu	Entering Morning	Entering Afternoon	Hour Totals Morning	Hour Totals Afternoon	Exiting Morning	Exiting Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	2			0	12				
12:15		0	9			0	8				
12:30		0	10			0	7				
12:45		0	5	0	26	0	2	0	29	0	55
01:00		0	2			0	4				
01:15		0	4			0	5				
01:30		0	8			0	2				
01:45		0	2	0	16	0	2	0	13	0	29
02:00		0	3			0	6				
02:15		1	5			1	1				
02:30		0	4			0	6				
02:45		0	1	1	13	0	4	1	17	2	30
03:00		0	3			0	11				
03:15		0	2			0	5				
03:30		0	3			0	10				
03:45		0	2	0	10	0	5	0	31	0	41
04:00		0	0			0	12				
04:15		0	4			0	10				
04:30		0	1			0	18				
04:45		0	1	0	6	0	11	0	51	0	57
05:00		0	4			0	25				
05:15		0	4			0	14				
05:30		2	0			0	17				
05:45		1	1	3	9	1	18	1	74	4	83
06:00		2	1			0	10				
06:15		2	0			1	7				
06:30		3	0			0	5				
06:45		6	0	13	1	0	3	1	25	14	26
07:00		7	0			1	1				
07:15		9	0			2	2				
07:30		9	0			2	6				
07:45		9	0	34	0	2	2	7	11	41	11
08:00		14	0			2	3				
08:15		17	0			1	0				
08:30		22	0			1	0				
08:45		25	0	78	0	0	1	4	4	82	4
09:00		22	0			3	0				
09:15		13	0			2	0				
09:30		15	0			1	0				
09:45		16	0	66	0	3	0	9	0	75	0
10:00		6	0			1	0				
10:15		6	0			1	0				
10:30		3	0			1	0				
10:45		3	0	18	0	2	0	5	0	23	0
11:00		2	0			1	0				
11:15		1	0			4	0				
11:30		3	0			6	0				
11:45		4	0	10	0	11	0	22	0	32	0
Total		223	81			50	255			273	336
Percent		73.4%	26.6%			16.4%	83.6%			44.8%	55.2%
Total		223	81			50	255			273	336
Percent		73.4%	26.6%			16.4%	83.6%			44.8%	55.2%
Combined Total		304				305				609	

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

N/S: Ballardvale Street
WB: 181-187 Ballardvale Dwy
Wilmington, MA

File Name : 1325_Ballardvale_at_Site_11-02-2023
Site Code : 1325
Start Date : 11/2/2023
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Ballardvale Street From North					181 Ballardvale - Site From East					Ballardvale Street From South					Business Plaza Dwy From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	88	3	0	92	1	0	0	0	1	6	178	4	0	188	0	0	0	0	0	281
07:15 AM	0	78	2	0	80	1	0	1	0	2	8	156	9	0	173	1	0	0	0	1	256
07:30 AM	1	80	2	0	83	1	0	1	0	2	6	180	8	0	194	1	0	1	0	2	281
07:45 AM	1	81	0	0	82	1	0	1	0	2	9	232	5	0	246	3	0	1	0	4	334
Total	3	327	7	0	337	4	0	3	0	7	29	746	26	0	801	5	0	2	0	7	1152
08:00 AM	1	86	3	0	90	0	0	2	0	2	11	211	11	0	233	1	0	1	0	2	327
08:15 AM	1	65	2	0	68	0	0	1	0	1	15	246	11	0	272	0	0	1	0	1	342
08:30 AM	1	73	3	0	77	0	0	1	0	1	19	247	6	0	272	0	0	1	0	1	351
08:45 AM	0	68	0	0	68	0	0	0	0	0	24	237	20	0	281	1	0	0	0	1	350
Total	3	292	8	0	303	0	0	4	0	4	69	941	48	0	1058	2	0	3	0	5	1370
03:00 PM	4	220	0	0	224	1	0	9	0	10	3	101	4	0	108	8	0	1	0	9	351
03:15 PM	3	213	0	0	216	0	0	7	0	7	2	113	1	0	116	14	1	4	0	19	358
03:30 PM	3	232	1	0	236	1	0	8	0	9	2	108	6	0	116	11	0	0	0	11	372
03:45 PM	2	207	0	0	209	1	0	5	0	6	2	117	2	0	121	10	0	2	0	12	348
Total	12	872	1	0	885	3	0	29	0	32	9	439	13	0	461	43	1	7	0	51	1429
04:00 PM	7	282	0	0	289	0	0	12	0	12	0	103	6	0	109	18	0	5	0	23	433
04:15 PM	2	234	0	0	236	1	0	9	0	10	4	103	4	0	111	26	0	2	0	28	385
04:30 PM	0	281	1	0	282	1	0	16	0	17	0	82	7	0	89	8	0	0	0	8	396
04:45 PM	1	254	0	0	255	0	0	12	0	12	1	80	5	0	86	17	0	0	0	17	370
Total	10	1051	1	0	1062	2	0	49	0	51	5	368	22	0	395	69	0	7	0	76	1584
05:00 PM	3	294	1	0	298	1	0	23	0	24	4	86	4	0	94	20	0	0	0	20	436
05:15 PM	2	254	0	0	256	2	0	13	0	15	3	65	9	0	77	17	0	0	0	17	365
05:30 PM	4	180	0	0	184	2	0	16	0	18	0	77	5	0	82	11	0	1	0	12	296
05:45 PM	5	176	1	0	182	3	0	15	0	18	0	71	4	0	75	10	1	0	0	11	286
Total	14	904	2	0	920	8	0	67	0	75	7	299	22	0	328	58	1	1	0	60	1383
Grand Total		3446	19	0	3507	17	0	152	0	169	119	2793	131	0	3043	177	2	20	0	199	6918
Apprch %	1.2	98.3	0.5	0		10.1	0	89.9	0		3.9	91.8	4.3	0		88.9	1	10.1	0		
Total %	0.6	49.8	0.3	0	50.7	0.2	0	2.2	0	2.4	1.7	40.4	1.9	0	44	2.6	0	0.3	0	2.9	
Lights	37	3182	18	0	3237	16	0	149	0	165	119	2436	130	0	2685	174	0	20	0	194	6281
% Lights	88.1	92.3	94.7	0	92.3	94.1	0	98	0	97.6	100	87.2	99.2	0	88.2	98.3	0	100	0	97.5	90.8
Mediums	4	146	1	0	151	1	0	3	0	4	0	224	1	0	225	2	2	0	0	4	384
% Mediums	9.5	4.2	5.3	0	4.3	5.9	0	2	0	2.4	0	8	0.8	0	7.4	1.1	100	0	0	2	5.6
Articulated Trucks																					
% Articulated Trucks	2.4	3.4	0	0	3.4	0	0	0	0	0	0	4.7	0	0	4.3	0.6	0	0	0	0.5	3.6
Bicycles on Road	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

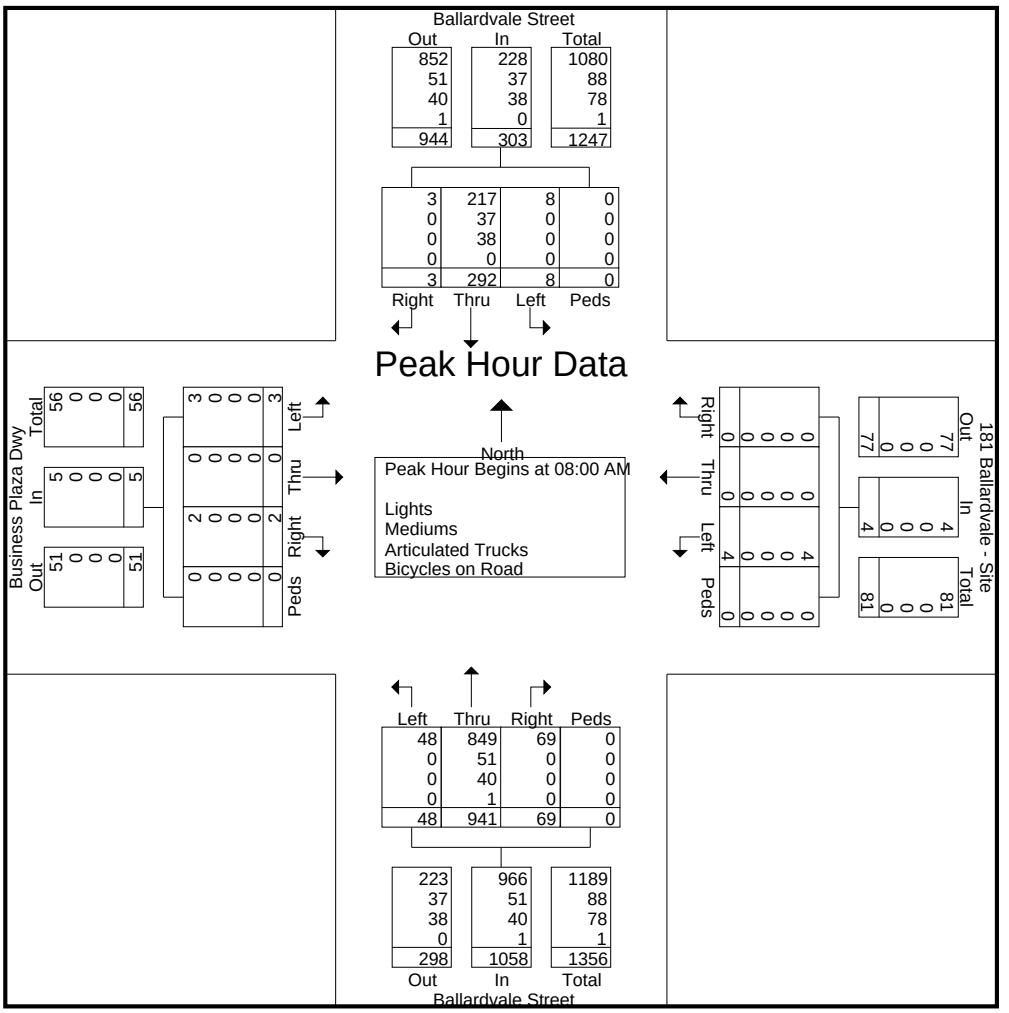
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

N/S: Ballardvale Street
WB: 181-187 Ballardvale Dwy
Wilmington, MA

File Name : 1325_Ballardvale_at_Site_11-02-2023
Site Code : 1325
Start Date : 11/2/2023
Page No : 2

	Ballardvale Street From North					181 Ballardvale - Site From East					Ballardvale Street From South					Business Plaza Dwy From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	**1**	**86**	**3**	0	**90**	0	0	**2**	0	**2**	11	211	11	0	233	**1**	0	**1**	0	**2**	327
08:15 AM	1	65	2	0	68	0	0	1	0	1	15	246	11	0	272	0	0	1	0	1	342
08:30 AM	1	73	3	0	77	0	0	1	0	1	19	**247**	6	0	272	0	0	1	0	1	**351**
08:45 AM	0	68	0	0	68	0	0	0	0	0	**24**	237	**20**	0	**281**	1	0	0	0	1	350
Total Volume	3	292	8	0	303	0	0	4	0	4	69	941	48	0	1058	2	0	3	0	5	1370
% App. Total	1	96.4	2.6	0		0	0	100	0		6.5	88.9	4.5	0		40	0	60	0		
PHF	.750	.849	.667	.000	.842	.000	.000	.500	.000	.500	.719	.952	.600	.000	.941	.500	.000	.750	.000	.625	.976
Lights	3	217	8	0	228	0	0	4	0	4	69	849	48	0	966	2	0	3	0	5	1203
% Lights	100	74.3	100	0	75.2	0	0	100	0	100	100	90.2	100	0	91.3	100	0	100	0	100	87.8
Mediums	0	37	0	0	37	0	0	0	0	0	0	51	0	0	51	0	0	0	0	0	88
% Mediums	0	12.7	0	0	12.2	0	0	0	0	0	0	5.4	0	0	4.8	0	0	0	0	0	6.4
Articulated Trucks	0	38	0	0	38	0	0	0	0	0	0	40	0	0	40	0	0	0	0	0	78
% Articulated Trucks	0	13.0	0	0	12.5	0	0	0	0	0	0	4.3	0	0	3.8	0	0	0	0	0	5.7
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0.1



MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

N/S: Ballardvale Street
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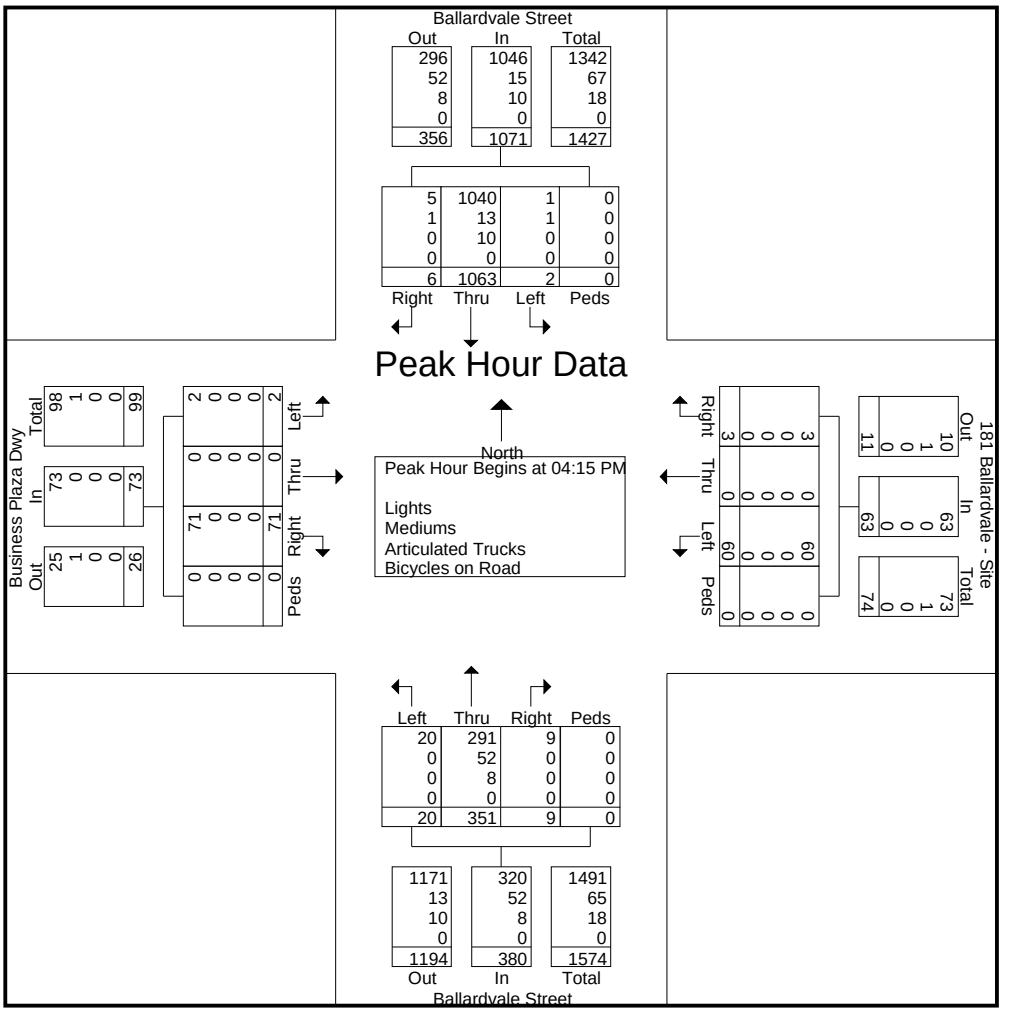
Wilmington, MA

File Name : 1325_Ballardvale_at_Site_11-02-2023
Site Code : 1325
Start Date : 11/2/2023
Page No : 3

	Ballardvale Street From North					181 Ballardvale - Site From East					Ballardvale Street From South					Business Plaza Dwy From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	2	234	0	0	236	**1**	0	9	0	10	**4**	**103**	4	0	**111**	**26**	0	**2**	0	**28**	385
04:30 PM	0	281	**1**	0	282	1	0	16	0	17	0	82	**7**	0	89	8	0	0	0	8	396
04:45 PM	1	254	0	0	255	0	0	12	0	12	1	80	5	0	86	17	0	0	0	17	370
05:00 PM	**3**	**294**	1	0	**298**	1	0	**23**	0	**24**	4	86	4	0	94	20	0	0	0	20	**436**
Total Volume	6	1063	2	0	1071	3	0	60	0	63	9	351	20	0	380	71	0	2	0	73	1587
% App. Total		99.3						95.2				92.4				97.3					
PHF	.500	.904	.500	.000	.898	.750	.000	.652	.000	.656	.563	.852	.714	.000	.856	.683	.000	.250	.000	.652	.910
Lights	5	1040	1	0	1046	3	0	60	0	63	9	291	20	0	320	71	0	2	0	73	1502
% Lights	83.3	97.8	50.0									82.9									
Mediums	1	13	1	0	15	0	0	0	0	0	0	52	0	0	52	0	0	0	0	0	67
% Mediums	16.7	1.2	50.0	0	1.4	0	0	0	0	0	0	14.8	0	0	13.7	0	0	0	0	0	4.2
Articulated Trucks	0	10	0	0	10	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	18
% Articulated Trucks	0	0.9	0	0	0.9	0	0	0	0	0	0	2.3	0	0	2.1	0	0	0	0	0	1.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

E/W: Route 125
SB: Ballardvale Street
Wilmington, MA

File Name : 1325_Route_125_at_Ballardvale_TMC_11-02-2023
Site Code : 1325
Start Date : 11/2/2023

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Ballardvale Street From North				Route 125 From East				Route 125 From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	69	12	0	81	24	169	0	193	110	164	0	274	548
07:15 AM	69	13	0	82	40	193	0	233	137	138	0	275	590
07:30 AM	68	15	0	83	35	207	0	242	157	159	0	316	641
07:45 AM	70	16	0	86	53	172	0	225	174	202	0	376	687
Total	276	56	0	332	152	741	0	893	578	663	0	1241	2466
08:00 AM	70	13	0	83	40	177	0	217	167	195	0	362	662
08:15 AM	45	20	0	65	43	171	0	214	134	220	0	354	633
08:30 AM	63	18	0	81	44	160	0	204	137	226	0	363	648
08:45 AM	54	13	0	67	33	171	0	204	140	255	0	395	666
Total	232	64	0	296	160	679	0	839	578	896	0	1474	2609
03:00 PM	205	43	0	248	22	131	0	153	148	87	0	235	636
03:15 PM	196	39	0	235	13	146	0	159	131	106	0	237	631
03:30 PM	217	56	0	273	30	163	0	193	160	82	0	242	708
03:45 PM	200	37	0	237	21	149	0	170	167	97	0	264	671
Total	818	175	0	993	86	589	0	675	606	372	0	978	2646
04:00 PM	241	67	0	308	20	182	0	202	166	95	0	261	771
04:15 PM	207	57	0	264	23	133	0	156	196	91	0	287	707
04:30 PM	235	62	0	297	27	188	0	215	208	61	0	269	781
04:45 PM	231	56	0	287	14	164	0	178	215	70	0	285	750
Total	914	242	0	1156	84	667	0	751	785	317	0	1102	3009
05:00 PM	261	59	0	320	26	213	0	239	202	61	0	263	822
05:15 PM	228	68	0	296	18	182	0	200	145	57	0	202	698
05:30 PM	160	34	0	194	24	190	0	214	152	57	0	209	617
05:45 PM	163	40	0	203	11	155	0	166	146	65	0	211	580
Total	812	201	0	1013	79	740	0	819	645	240	0	885	2717
Grand Total	3052	738	0	3790	561	3416	0	3977	3192	2488	0	5680	13447
Apprch %	80.5	19.5	0		14.1	85.9	0		56.2	43.8	0		
Total %	22.7	5.5	0	28.2	4.2	25.4	0	29.6	23.7	18.5	0	42.2	
Lights	2811	712	0	3523	519	3275	0	3794	3073	2178	0	5251	12568
% Lights	92.1	96.5	0	93	92.5	95.9	0	95.4	96.3	87.5	0	92.4	93.5
Mediums	121	19	0	140	38	108	0	146	89	177	0	266	552
% Mediums	4	2.6	0	3.7	6.8	3.2	0	3.7	2.8	7.1	0	4.7	4.1
Articulated Trucks	120	7	0	127	4	33	0	37	30	132	0	162	326
% Articulated Trucks	3.9	0.9	0	3.4	0.7	1	0	0.9	0.9	5.3	0	2.9	2.4
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	1	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0

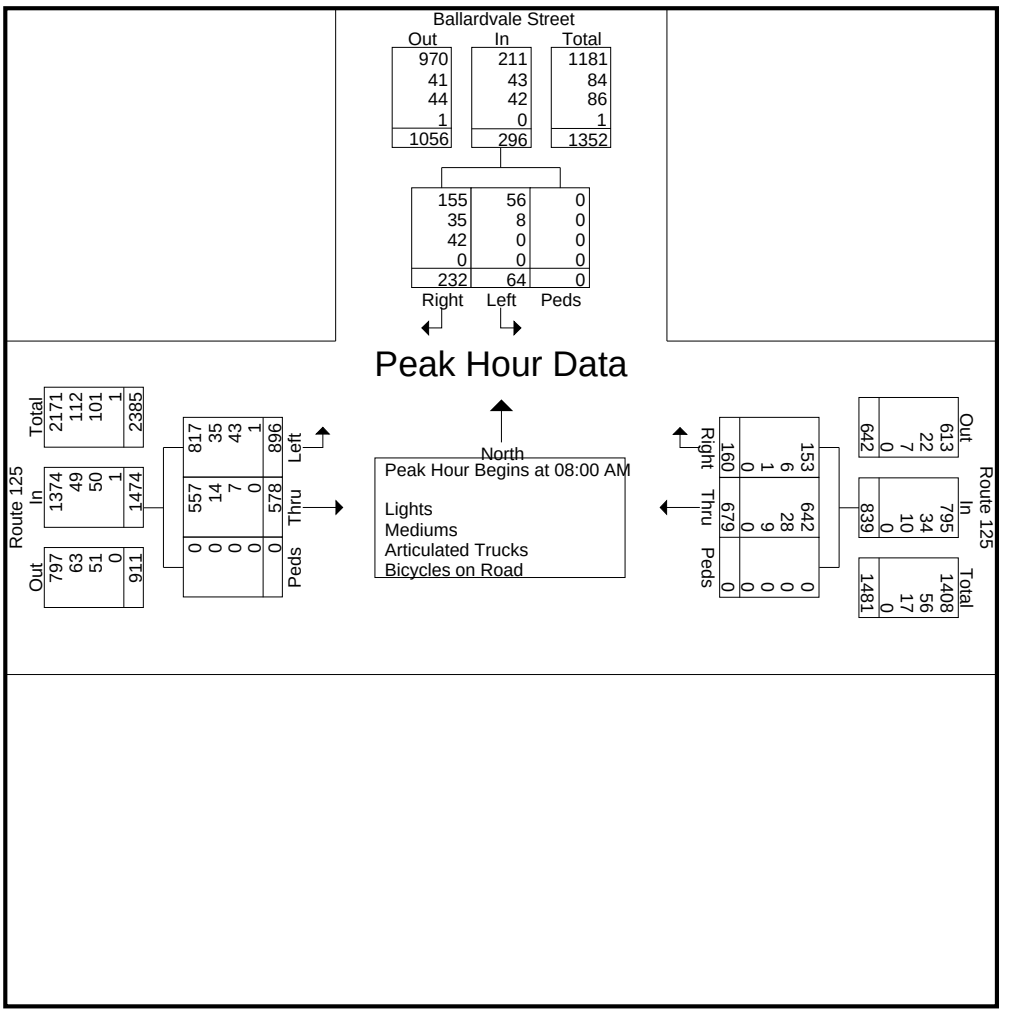
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

E/W: Route 125
SB: Ballardvale Street
Wilmington, MA

File Name : 1325_Route_125_at_Ballardvale_TMC_11-02-2023
Site Code : 1325
Start Date : 11/2/2023
Page No : 2

	Ballardvale Street From North				Route 125 From East				Route 125 From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	**70**	13	0	**83**	40	**177**	0	**217**	**167**	195	0	362	662
08:15 AM	45	**20**	0	65	43	171	0	214	134	220	0	354	633
08:30 AM	63	18	0	81	**44**	160	0	204	137	226	0	363	648
08:45 AM	54	13	0	67	33	171	0	204	140	**255**	0	**395**	**666**
Total Volume	232	64	0	296	160	679	0	839	578	896	0	1474	2609
% App. Total	78.4	21.6	0		19.1	80.9	0		39.2	60.8	0		
PHF	.829	.800	.000	.892	.909	.959	.000	.967	.865	.878	.000	.933	.979
Lights	155	56	0	211	153	642	0	795	557	817	0	1374	2380
% Lights	66.8	87.5	0	71.3	95.6	94.6	0	94.8	96.4	91.2	0	93.2	91.2
Mediums	35	8	0	43	6	28	0	34	14	35	0	49	126
% Mediums	15.1	12.5	0	14.5	3.8	4.1	0	4.1	2.4	3.9	0	3.3	4.8
Articulated Trucks	42	0	0	42	1	9	0	10	7	43	0	50	102
% Articulated Trucks	18.1	0	0	14.2	0.6	1.3	0	1.2	1.2	4.8	0	3.4	3.9
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	1	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.1	0	0.1	0.0



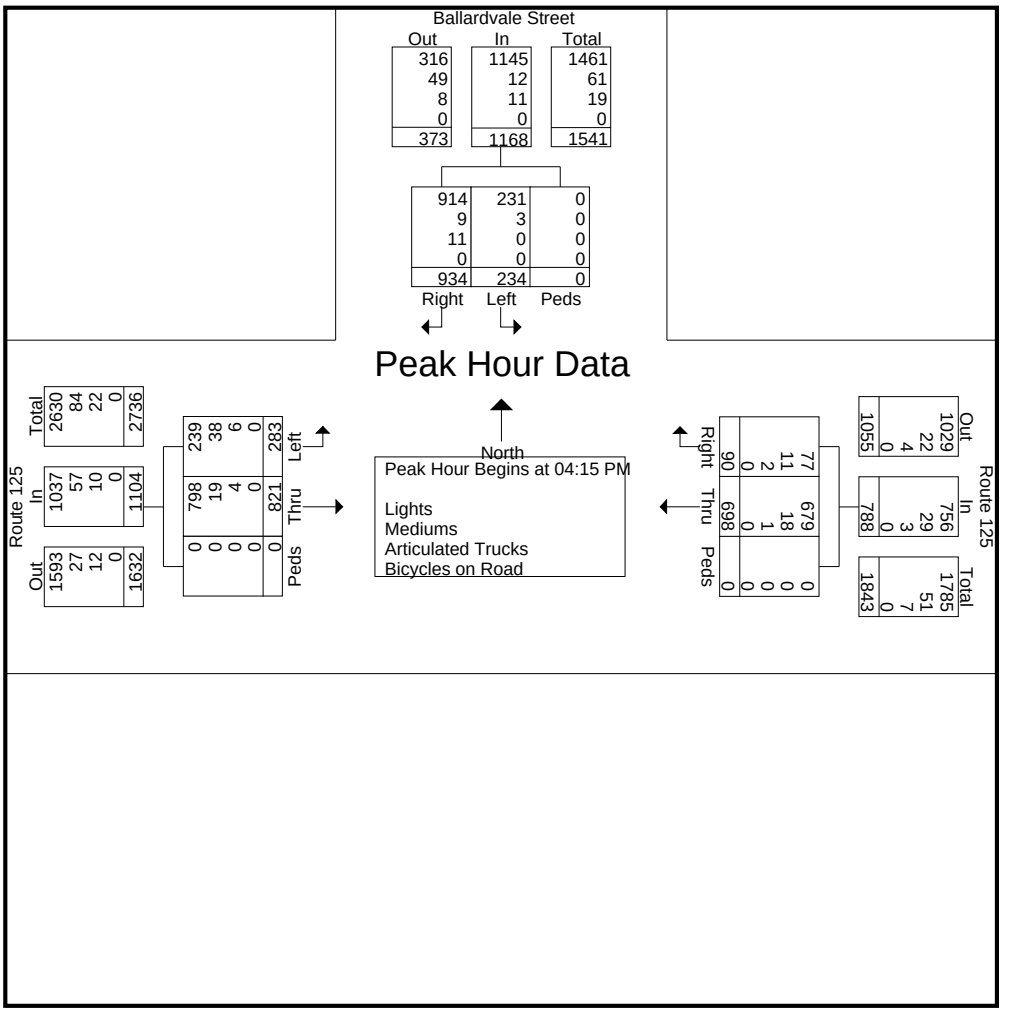
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

E/W: Route 125
SB: Ballardvale Street
Wilmington, MA

File Name : 1325_Route_125_at_Ballardvale_TMC_11-02-2023
Site Code : 1325
Start Date : 11/2/2023
Page No : 3

	Ballardvale Street From North				Route 125 From East				Route 125 From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	207	57	0	264	23	133	0	156	196	**91**	0	**287**	707
04:30 PM	235	**62**	0	297	**27**	188	0	215	208	61	0	269	781
04:45 PM	231	56	0	287	14	164	0	178	**215**	70	0	285	750
05:00 PM	**261**	59	0	**320**	26	**213**	0	**239**	202	61	0	263	**822**
Total Volume	934	234	0	1168	90	698	0	788	821	283	0	1104	3060
% App. Total	80	20	0		11.4	88.6	0		74.4	25.6	0		
PHF	.895	.944	.000	.913	.833	.819	.000	.824	.955	.777	.000	.962	.931
Lights	914	231	0	1145	77	679	0	756	798	239	0	1037	2938
% Lights	97.9	98.7	0	98.0	85.6	97.3	0	95.9	97.2	84.5	0	93.9	96.0
Mediums	9	3	0	12	11	18	0	29	19	38	0	57	98
% Mediums	1.0	1.3	0	1.0	12.2	2.6	0	3.7	2.3	13.4	0	5.2	3.2
Articulated Trucks	11	0	0	11	2	1	0	3	4	6	0	10	24
% Articulated Trucks	1.2	0	0	0.9	2.2	0.1	0	0.4	0.5	2.1	0	0.9	0.8
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



□ Seasonal/Yearly Growth Data

STATION 5127 - ANDOVER - ANDOVER BYPASS SOUTH OF ROUTE 28

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
06	14,564	14,358	15,099	14,994	16,032	15,800	14,113	14,688	15,104	15,000	14,836	12,599	14,766
	-22%	-13%	-5%	-3%	-14%	-7%	5%	-5%	-2%	-2%	-2%	24%	-1%
09	11,428	12,502	14,278	14,509	13,736	14,681	14,800	13,939	14,846	14,700	14,486	15,580	14,124
	27%	3%	1%	5%	12%	-5%	-1%	9%	9%	12%	14%	-17%	1%
13	14,509	12,825	14,383	15,177	15,418	13,989	14,587	15,137	16,205	16,471	16,534	12,907	14,845
	-6%	8%	4%	2%	2%	15%	1%	2%	1%	3%	-13%	5%	2%
14	13,612	13,830	14,898	15,465	15,677	16,134	14,732	15,426	16,368	16,917	14,392	13,615	15,089
	17%	16%	6%	13%	12%	11%	10%	9%	9%	9%	19%	12%	3%
18	15,928	16,034	15,719	17,431	*17,499*	*17,924*	*16,198*	16,774	17,839	18,505	17,126	15,313	16,858
	0%	3%	5%	0%	1%	1%	2%	2%	2%	0%	-10%	-36%	-2%
19	15,970	16,473	16,543	17,355	*17,613*	*18,119*	*16,507*	17,114	18,128	18,454	15,464	9,843	16,465
	-33%	-36%	-28%	-25%	-22%	-19%	-16%	-17%	-16%	-16%	-6%	18%	-10%
21	10,625	10,593	11,924	12,951	*13,780*	*14,607*	*13,825*	14,178	15,150	15,570	14,518	11,602	13,277
	9%	33%	12%	13%	9%	4%	6%	2%	1%	1%	2%	18%	8%
22	11,621	14,081	13,414	14,623	15,041	*15,162*	*14,699*	14,476	15,339	15,775	14,741	13,662	14,386
Seasonal Adjustment Factor (to average month)	1.12	1.07	1.03	0.99	0.97	0.95	1.00	0.99	0.94	0.93	1.00	1.15	
												Growth	**0.1%**

Average Yearly Growth Calculated 0.1%

ITALICS = ESTIMATED DATA

MADT

□ Sight Distance Calculations

Stopping Sight Distance - Posted Speed

Ballardvale Street

		SPEED (MPH)	BRAKE REACTION DISTANCE (FT)	BRAKING DISTANCE (FT)	CALCULATED STOPPING SIGHT DISTANCE (FT)
Direction 1	NB	40	147	153.3	300.3
Direction 2	SB	40	147	153.3	300.3

INPUTS	Direction 1	Direction 2
Travel Direction	NB	SB
Speed	40	40
Grade	0	0
t	2.5	2.5
a	11.2	11.2

Stopping Sight Distance (SSD) - Source: AASHTO

SSD = Reaction Distance + Brake Distance

Reaction Distance = 1.47 x t x V

Brake Distance = V^2 / (30 x ((a/32.2)+G))

Where:
t = reaction time (sec)
V = travel speed (mph)
G= roadway grade
a - deceleration rate (ft/sec^2)

Intersection Sight Distance Calculations

Source: *A Policy on Geometric Design of Highways and Street, 6th Edition;* AASHTO; 2011.

Passenger Car
ISD = 1.47 * V * t

V = speed
t = time gap

t = 7.5 s for a passenger car for Left Turn from a Stop
t = 6.5 s for a passenger car for Right Turn from a Stop

Ballardvale Street

		Average Speed		Ideal ISD	SAY
Looking North (left-turn from a stop)	ISD = 1.47*	40	* 7.5 =	441	**445 feet**
		Average Speed		Ideal ISD	SAY
Looking South (right-turn from a stop)	ISD = 1.47*	40	* 6.5 =	382.2	**385 feet**

- Crash Data

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington, MA COUNT DATE : Nov-23

DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

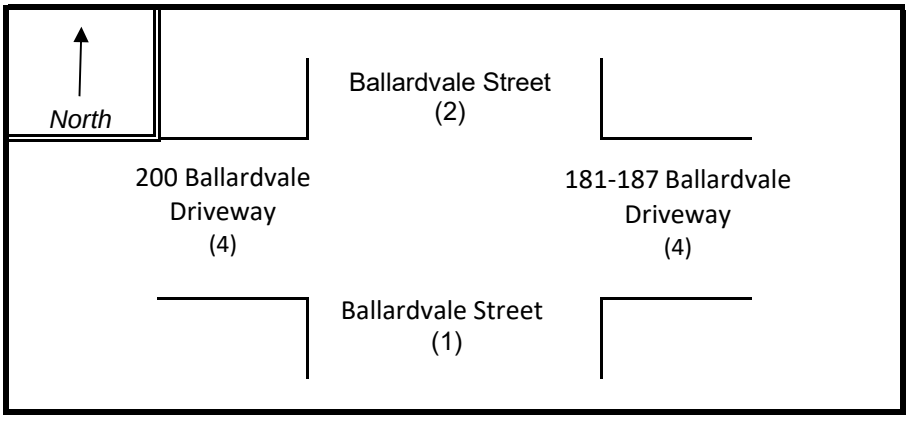
~ INTERSECTION DATA ~

MAJOR STREET : Ballardvale Street

MINOR STREET(S) : 181-187 Ballardvale Street Driveway

200 Ballardvale Street Driveway

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	390	1,071	73	63		**1,597**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **17,744**

TOTAL # OF CRASHES : 9

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.80**

CRASH RATE CALCULATION : **0.28**

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date: 1325 - Wilmington

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington, MA COUNT DATE : Nov-23

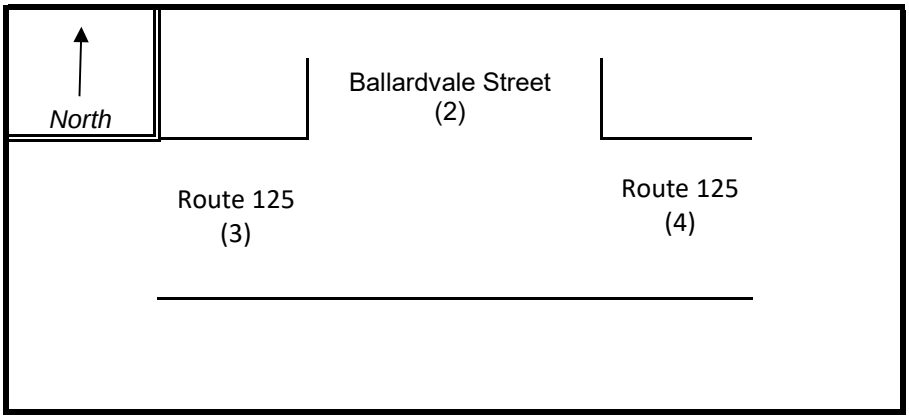
DISTRICT : 4 UNSIGNALIZED : [ ] SIGNALIZED : [X]

~ INTERSECTION DATA ~

MAJOR STREET : Route 125

MINOR STREET(S) : Ballardvale Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :		1,194	1,109	790		**3,093**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **34,367**

TOTAL # OF CRASHES : 25

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **5.00**

CRASH RATE CALCULATION : 0.40

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date: 1325 - Wilmington

Crash Number	Crash Date	Crash Severity	Crash Time	Number of Vehicles	Light Conditions	Manner of Collision	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Most Harmful Event (All Vehicles)	X	Y	Roadway
4482490	01/05/2018	Property damage only (none injured)	1:56 PM	2	Daylight	Rear-end	Dry		0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.2655	926374.0197	ROUTE 125 Rte 125 N
4507826	01/11/2018	Non-fatal injury	3:00 AM	2	Dark - lighted roadway	Rear-end	Dry		2	V2: Travelling straight ahead / V1: Slowing or stopped in traffic	V2:(Passenger car) / V1:(Unknown heavy truck, cannot classify)	V2: E / V1: E	Clear	V2:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic)	228283.2468	926373.8573	BALLARDVALE STREET / ROUTE 125
4518223	02/06/2018	Property damage only (none injured)	12:28 PM	2	Daylight	Angle	Dry		0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: W	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.4225	926373.8617	BALLARDVALE STREET Rte W / ROUTE 125
4519491	03/09/2018	Property damage only (none injured)	9:47 AM	3	Daylight	Angle	Dry		0	V1: Turning left / V3: Slowing or stopped in traffic / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (2-axle, 6-tires))	V1: N / V3: S / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.7872	926374.4057	BALLARDVALE STREET / ROUTE 125 Rte SR125 N
4556628	05/15/2018	Property damage only (none injured)	7:46 AM	2	Daylight	Sideswipe, same direction	Dry		0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228278.2157	926378.0975	BALLARDVALE ST
4605057	08/15/2018	Non-fatal injury	6:33 AM	3	Daylight	Sideswipe, opposite direction	Dry		1	V1: Turning right / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: W / V2: E / V3: E	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	228282.7872	926374.4057	BALLARDVALE STREET Rte 125 N / ROUTE 125 Rte SR125 N
4614528	09/20/2018	Property damage only (none injured)	6:45 AM	2	Dawn	Sideswipe, same direction	Dry		0	V1: Turning right / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	Rte SR125 S / BALLARDVALE STREET
4624998	10/25/2018	Property damage only (none injured)	1:05 PM	2	Daylight	Sideswipe, same direction	Dry		0	V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Other)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	BALLARDVALE ST / Rte 125 E
4640488	11/30/2018	Property damage only (none injured)	11:01 PM	2	Dark - roadway not lighted	Sideswipe, same direction	Dry		0	V1: Slowing or stopped in traffic / V2: Overtaking/passing	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	/ Rte SR125 N / BALLARDVALE STREET
4732837	06/18/2019	Property damage only (none injured)	6:21 PM	2	Daylight	Angle			0	V1: Turning right / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Cloudy/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.7872	926374.4057	BALLARDVALE STREET / ROUTE 125 Rte SR125 W
4755462	08/19/2019	Property damage only (none injured)	9:42 AM	2	Daylight	Rear-end	Dry		0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.7872	926374.4057	BALLARDVALE STREET / ROUTE 125 Rte SR125 N
4779766	10/12/2019	Property damage only (none injured)	2:14 PM	2	Daylight	Angle	Dry		0	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	BALLARDVALE ST Rte 125 / ROUTE 125 HWY
4795011	12/05/2019	Property damage only (none injured)	9:50 AM	2	Daylight	Sideswipe, same direction	Dry		0	V1: Turning right / V2: Turning right	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1: W / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.7872	926374.4057	BALLARDVALE STREET / ROUTE 125 Rte SR125 W
4876417	08/20/2020	Property damage only (none injured)	10:49 AM	2	Daylight	Angle	Dry		0	V1: Making U-turn / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	ROUTE 125 Rte SR125 N
4895002	10/30/2020	Non-fatal injury	12:45 PM	2	Daylight	Rear-end	Wet		0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy/Snow	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	ROUTE 125 Rte SR125 N / BALLARDVALE STREET
4930472	01/12/2021	Property damage only (none injured)	1:37 PM	1	Daylight	Rear-end	Dry		0	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1: N	Clear	V1:(Collision with motor vehicle in traffic)	228282.8433	926373.438	BALLARDVALE STREET Rte SR125 N / ROUTE 125 Rte SR125
5033980	11/14/2021	Property damage only (none injured)	4:18 PM	2	Daylight	Sideswipe, opposite direction	Dry		0	V1: Turning right / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	BALLARDVALE STREET / ROUTE 125 Rte SR125 S
5079418	12/14/2021	Property damage only (none injured)	10:19 AM	2	Daylight	Rear-end	Dry		0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228272.367	926383.9865	BALLARDVALE ST
5079423	12/14/2021	Property damage only (none injured)	12:21 PM	2	Daylight	Rear to Side	Dry		0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228272.367	926383.9865	BALLARDVALE ST
5091177	04/04/2022	Property damage only (none injured)	4:13 PM	2	Daylight	Rear-end	Dry		0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8433	926373.438	Rte SR125 S
5099287	04/22/2022	Property damage only (none injured)	12:23 PM	2	Daylight	Rear-end	Dry		0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Truck/trailer) / V2:(Tractor/semi-trailer)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228274.7557	926366.0612	BALLARDVALE STREET Rte SR125 S
5160353	10/07/2022	Property damage only (none injured)	4:02 PM	2	Daylight	Angle	Dry		0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8434	926373.4379	Rte SR125 N
5171518	10/29/2022	Property damage only (none injured)	11:15 PM	2	Dark - roadway not lighted	Rear-end	Dry		0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8434	926373.4379	ROUTE 125 Rte 125 N
5184910	11/23/2022	Non-fatal injury	7:04 AM	2	Daylight	Rear-end	Dry		1	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8434	926373.4379	ROUTE 125 Rte SR125 N / BALLARDVALE STREET
5194730	12/19/2022	Property damage only (none injured)	8:05 AM	2	Daylight	Rear-end	Dry		0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Truck/trailer) / V2:(Truck/trailer)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228282.8434	926373.4379	ROUTE 125 Rte SR125 S / BALLARDVALE STREET

Crash Number	Crash Date	Crash Severity	Crash Time	Number of Vehicles	Light Conditions	Manner of Collision	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Most Harmful Event (All Vehicles)	X	Y	Roadway
4507624	01/10/2018	Property damage only (none injured)	12:12 PM	2	Daylight	Angle	Dry	0	0	V1: Changing lanes / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228150.9252	926508.1291	BALLARDVALE ST
4812872	12/31/2019	Property damage only (none injured)	9:53 AM	2	Daylight	Front to Rear	Wet	0	0	V1: Travelling straight ahead / V2: Backing	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228142.5987	926516.7653	BALLARDVALE ST
4956735	03/19/2021	Property damage only (none injured)	7:36 AM	2	Daylight	Angle	Dry	0	0	V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228142.5987	926516.7653	BALLARDVALE ST
5047518	07/31/2021	Property damage only (none injured)	6:41 PM	2	Daylight	Rear-end	Dry	0	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228160.2683	926498.4386	BALLARDVALE ST
5054859	09/23/2021	Non-fatal injury	5:39 PM	5	Daylight	Rear-end	Dry	0	2	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic / V4: Slowing or stopped in traffic / V5: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car) / V4:(Passenger car) / V5:(Tractor/semi-trailer)	V1: S / V2: S / V3: S / V4: S / V5: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic) / V4:(Collision with motor vehicle in traffic) / V5:(Collision with motor vehicle in traffic)	228156.4205	926502.4294	BALLARDVALE ST
5117342	06/06/2022	Property damage only (none injured)	3:38 PM	2	Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228156.4205	926502.4294	BALLARDVALE STREET
5117343	06/06/2022	Non-fatal injury	5:09 PM	2	Daylight	Angle	Dry	0	2	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: S	Clear/Other	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228160.2683	926498.4386	BALLARDVALE STREET
5117346	06/07/2022	Property damage only (none injured)	5:38 PM	2	Daylight	Rear-end	Dry	0	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	228160.2683	926498.4386	BALLARDVALE STREET
5166844	10/06/2022	Property damage only (none injured)	2:47 PM	3	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car) / V3:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S / V3: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	228156.4205	926502.4294	BALLARDVALE STREET

- Background Projects

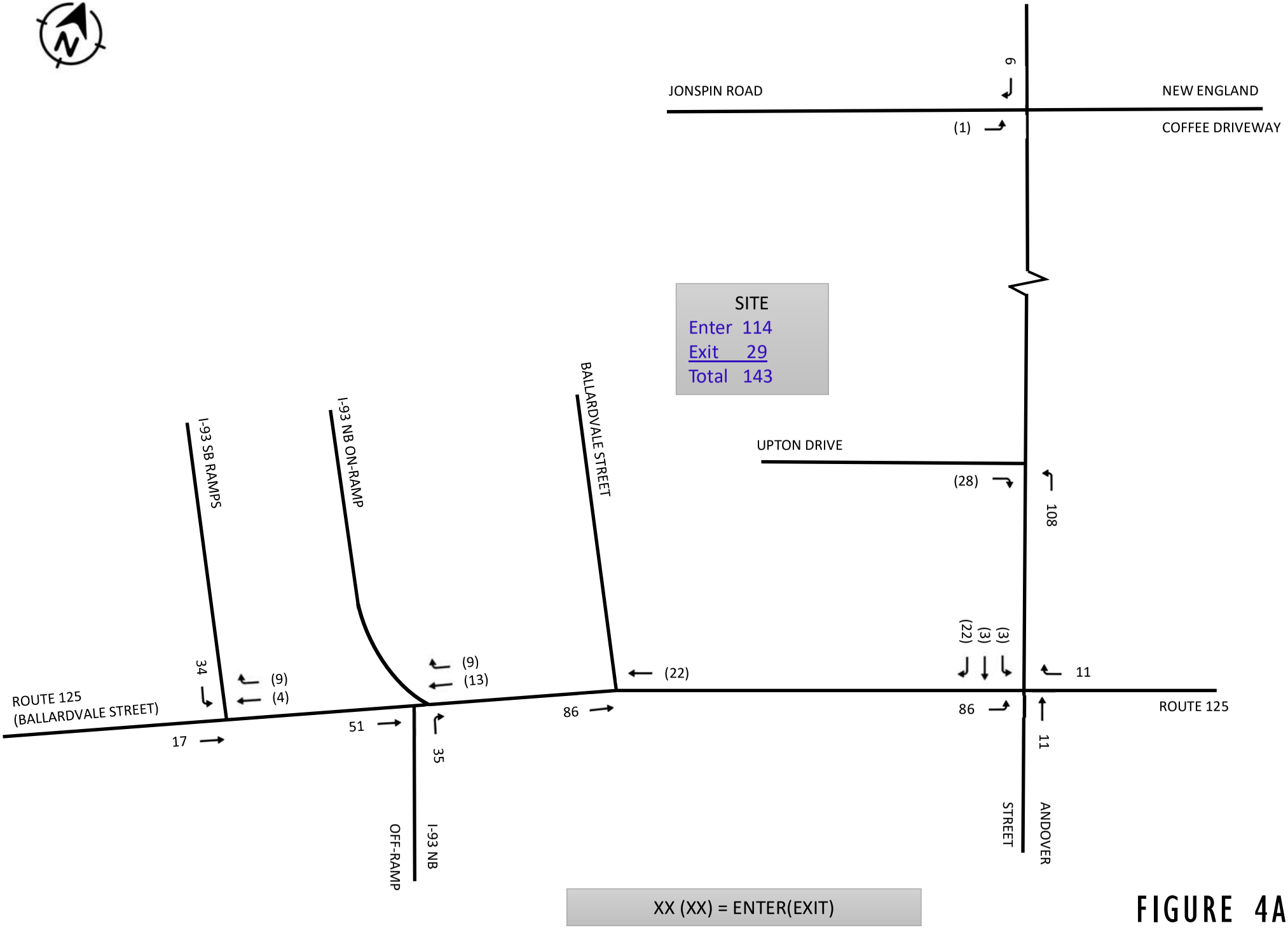


FIGURE 4A

AM SITE-GENERATED WEEKDAY PEAK HOUR TRAFFIC VOLUMES

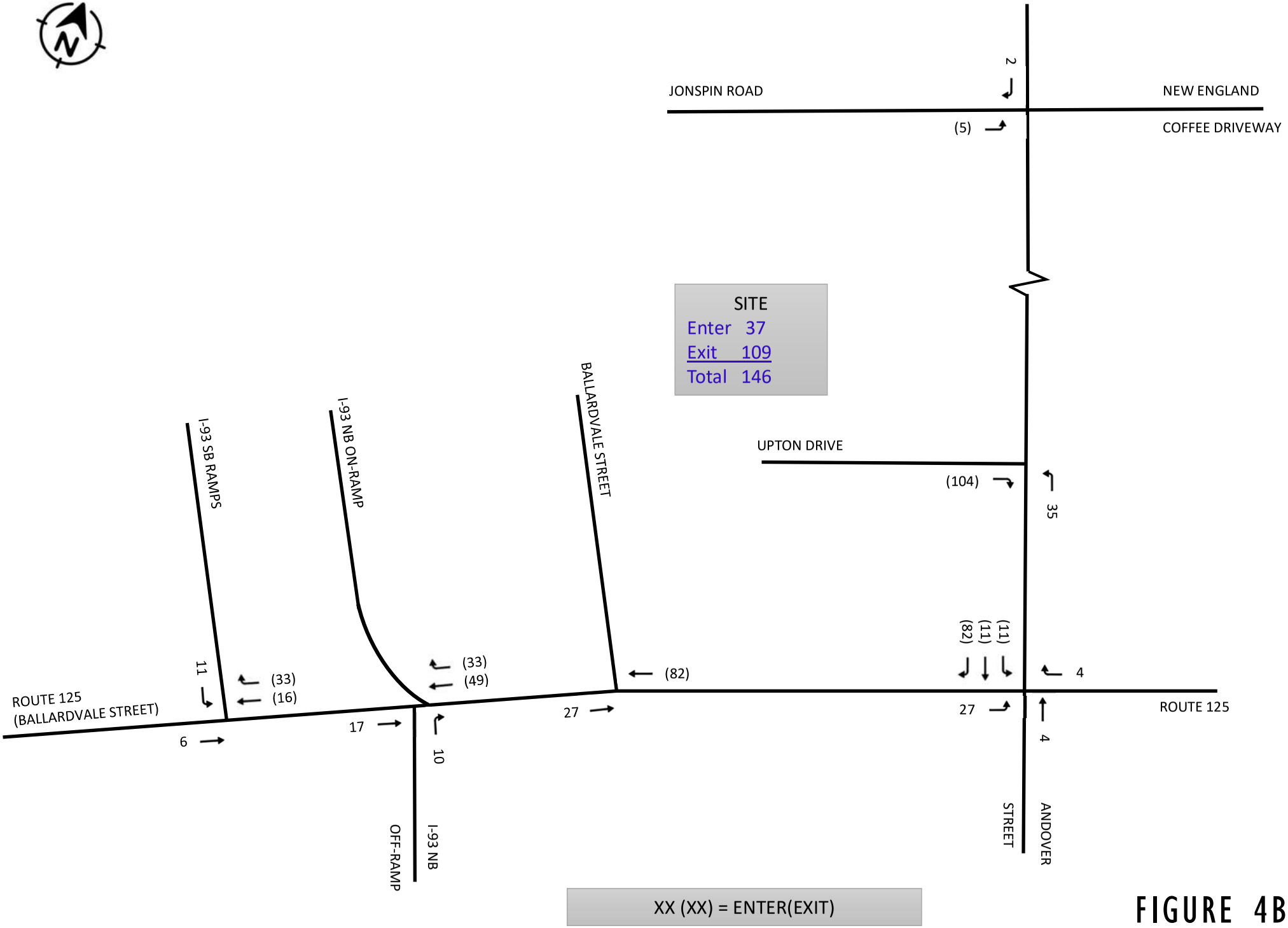
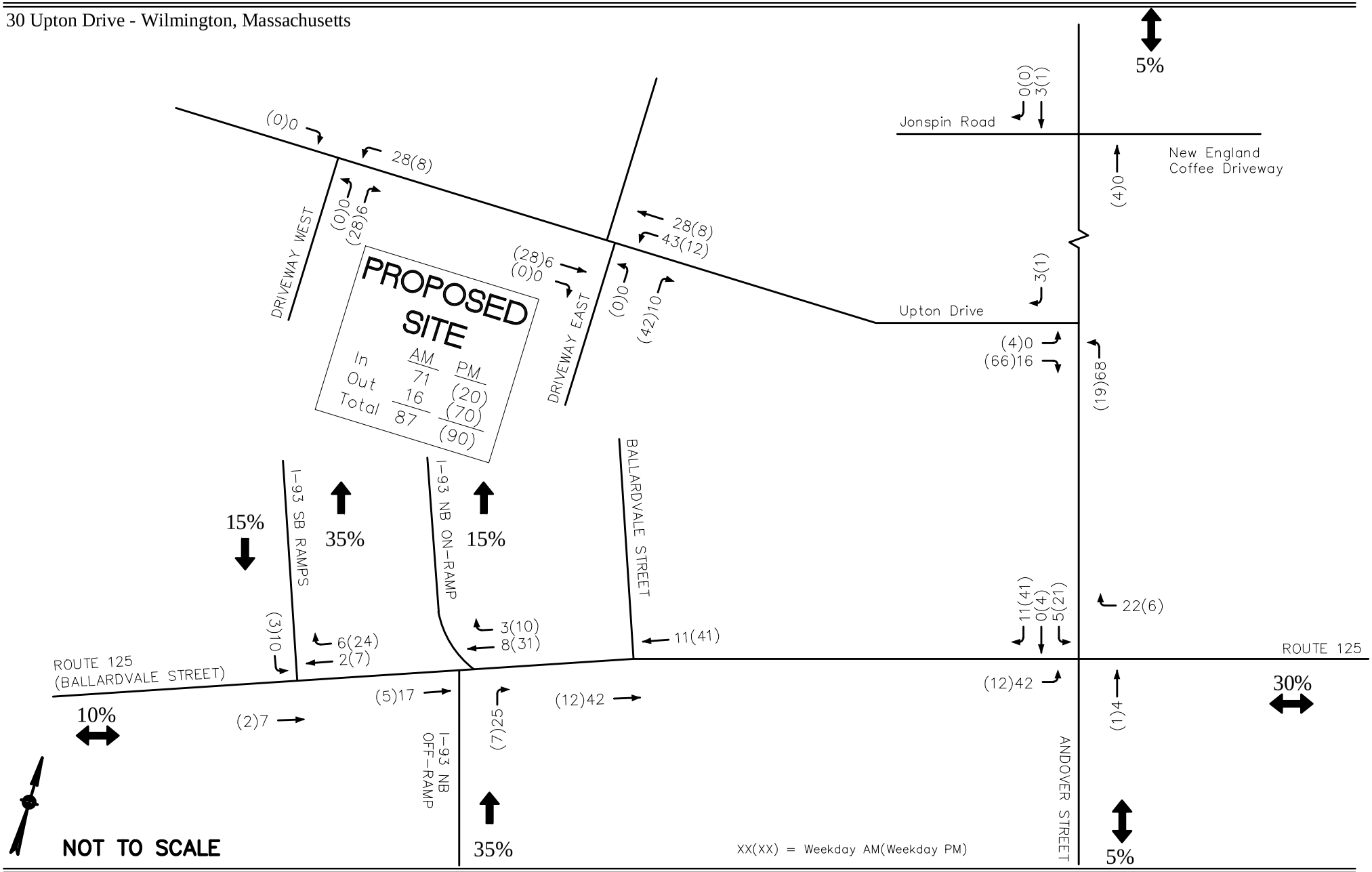


FIGURE 4B

PM SITE-GENERATED WEEKDAY PEAK HOUR TRAFFIC VOLUMES



GPI Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 5

Site Generated Trips
Peak Hour Traffic Volumes

ITE TRIP GENERATION WORKSHEET

(10th Edition, Updated 2017)

LANDUSE: Specialty Trade Contractor
LANDUSE CODE: 180 Independent Variable --- 1,000 Sq. Feet Gross Floor Area
LOCATION: General Urban / Suburban
JOB NAME: **FLOOR AREA (KSF):** 20.0
JOB NUMBER:

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	19	--	10.22	3.00	43.33	6	2	13	50%	50%
AM PEAK OF GENERATOR	19	--	2.01	0.47	11.25	6	2	13	76%	24%
PM PEAK OF GENERATOR	19	--	2.23	0.85	10.83	6	2	13	38%	62%
AM PEAK (ADJACENT ST)	19	--	1.66	0.12	9.17	6	2	13	73%	27%
PM PEAK (ADJACENT ST)	18	--	1.97	0.38	10.83	6	2	13	32%	68%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	204	102	102	--	--	--
AM PEAK OF GENERATOR	41	31	10	--	--	--
PM PEAK OF GENERATOR	45	17	28	--	--	--
AM PEAK (ADJACENT ST)	33	24	9	--	--	--
PM PEAK (ADJACENT ST)	40	13	27	--	--	--

SATURDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
PEAK OF GENERATOR	--	--	--	--	--	--

SUNDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
PEAK OF GENERATOR	--	--	--	--	--	--

- Trip Generation

Institute of Transportation Engineers (ITE) 11th Edition
Land Use Code (LUC) 140 - Manufacturing

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 42.8

AVERAGE WEEKDAY DAILY

T = 4.75 * (X)
T = 4.75 * 42.8
T = 203.30
T = 204 vehicle trips
with 50% (102 vpd) entering and 50% (102 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.68 * (X)
T = 0.68 * 42.8
T = 29.10
T = 29 vehicle trips
with 76% (22 vph) entering and 24% (7 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.74 * (X)
T = 0.74 * 42.8
T = 31.67
T = 32 vehicle trips
with 31% (10 vph) entering and 69% (22 vph) exiting.

Institute of Transportation Engineers (ITE) 11th Edition
Land Use Code (LUC) 710 - General Office Building

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 28.5

AVERAGE WEEKDAY DAILY

T = 10.84 * (X)
T = 10.84 * 28.5
T = 308.94
T = 308 vehicle trips
with 50% (**154** vpd) entering and 50% (**154** vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 1.52 * (X)
T = 1.52 * 28.5
T = 43.32
T = 43 vehicle trips
with 88% (**38** vph) entering and 12% (**5** vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 1.44 * (X)
T = 1.44 * 28.5
T = 41.04
T = 41 vehicle trips
with 17% (**7** vph) entering and 83% (**34** vph) exiting.

SATURDAY DAILY

T = 2.21 * (x)
T = 2.21 * 28.5
T = 62.99
T = 62 vehicle trips
with 50% (**31** vpd) entering and 50% (**31** vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 0.53 * (X)
T = 0.53 * 28.5
T = 15.11
T = 15 vehicle trips
with 54% (**8** vph) entering and 46% (**7** vph) exiting.

□ Trip Distribution Calculations

1325 Wilmington
Trip Distribution Calculations
Existing Travel Patterns

	Weekday Morning			Weekday Evening				
Ballardvale Street	Entering	Exiting		Entering	Exiting			**Say**
To/From the West	8	0	10%	2	3	7%	8%	**10%**
To/From the East	69	4	90%	9	60	93%	92%	90%
Total	77	4	100%	11	63	100%	100%	

Route 125	IN	OUT		IN	OUT			**Say**
To/From the North	161	64	16%	92	239	19%	17%	**15%**
To/From the South	897	161	74%	288	955	71%	73%	**75%**
Total	1058	225	90%	380	1194	90%	90%	

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

M E M O R A N D U M

DATE: April 23, 2024

TO: Valerie Gingrich
Director of Planning and Conservation
121 Glen Road
Wilmington, MA 01887

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Response to Comments – Wilmington Engineering/ Planning & Conservation**
Proposed Life Science/Biomanufacturing Facility
181-187 Ballardvale Street – Wilmington, MA

MDM Transportation Consultants, Inc. (MDM) has prepared the following responses to transportation-related comments as issued in a letter by the Town of Wilmington Engineering Division dated February 6, 2024, a letter by the Town of Wilmington Department of Planning and Conservation dated January 29, 2024, and a letter by The Engineering Corporation (TEC) dated March 7, 2024. The. To facilitate review, specific transportation related comments are paraphrased with corresponding responses.

Town of Wilmington Engineering Division Letter

Traffic and Site Layout Comments

Comment 3: *"The Engineering Division recommends that the Traffic Memorandum provided be peer reviewed by a third-party traffic engineer. The study area should also be expanded to include the junction of Route 93 and Route 125. Further, at Community Development Technical Review (CDTR), Town staff discussed with the Applicant the Town's desire to improve pedestrian mobility and connectivity along this section of Ballardvale Street. The Town engaged VHB, Inc. in c.2021 to study pedestrian mobility in this location and develop concept level plans to improve pedestrian safety and connectivity in the area. This study is furnishable to the Applicant and Planning Board upon request. The project may present an opportunity to advance (in part) the goal of pedestrian improvements along the corridor with such improvements being mutually beneficial to both the Town and Applicant."*

Response: The Traffic Memorandum (TM) by MDM dated November 8, 2023, has been sent out for peer review by TEC with comments received on March 7, 2024. MDM's responses are provided in a subsequent section of this memo.

As shown in the TM, the project will result in a nominal increase in traffic activity at the Ballardvale Street (Route 125) signalized intersection with I-93. Specifically, the increase in trips due to the project is not expected to alter operating conditions compared to No-Build conditions with less than 1 vehicle trip or less per minute. A review of crash history indicates that neither of the Ballardvale Street intersections with I-93 are listed as high crash locations (HSIP) by MassDOT. MDM finds the relative traffic increases for the proposed project represent an inconsequential change in area roadway volumes - a level of change that falls well within normal day-to-day fluctuations in traffic entering and exiting the study area. Therefore, there is no material benefit to studying the Route 125 and 93 interchange ramps as part of this project.

The Proponent will work with the Town to provide an easement along the site frontage to accommodate the planned multi-modal improvements along this section of Ballardvale Street. For reference, the concept level plans to improve pedestrian safety and connectivity in the area prepared by the Town by VHB, Inc. in c.2021 are provided in the **Attachments**.

Comment 4: "*A truck turning maneuverability plan shall be provided for review. Turning exhibits shall be provided for the largest truck size expected to use the site, as well as trash pickup, and the Wilmington Ladder Truck.*"

Response: Truck turning maneuverability plans which include a WB-50, refuse vehicle, and Wilmington Ladder truck as prepared by Highpoint Engineering, Inc. are provided in the **Attachments** for reference. As shown the site has been designed to accommodate the largest design vehicle, refuse vehicle, and Wilmington Ladder truck.

Comment 5: "*The proposed layout does not appear to comply with the Town's Zoning Bylaw Section 6.4 Parking and Site Design Standards. Specifically, offset/setback of paved surfaces to property lines. The Applicant's cover letter indicates that the Applicant is seeking a waiver request from this zoning bylaw section, however, there appears to be an opportunity to increase the offset of the proposed parking bay to the northerly adjoining property boundary without sacrificing parking or impeding circulation. The Board may wish to discuss this with the Applicant.*"

Response: The site plan set has been updated by Highpoint Engineering, Inc. to remove the need for the requested waiver for offset/setback (see **Attachments** for reference).

Comment 6: "*The parking chart shown on the plans provides a split of 40% office and 60% Industrial/Manufacturing for the two existing buildings and the proposed building. The Applicant should provide additional information on existing uses, including floor plans, to demonstrate that the 40/60 split is appropriate."*

Response: The existing tenant list indicates a split of 38% office space and 62% R&D space. A breakdown of existing tenants is provided in the **Attachments**. The Proponent will continue to convert office to R&D space as opportunity presents. Furthermore, as shown in **Table 6** of the TA the existing uses of the site are generating trips at approximately half the industry standard ITE rate. Therefore, based on the existing tenant mix a 40/60 split is appropriate and results in a conservative parking estimate.

Comment 7: "*The Applicant's Engineer shall evaluate reducing the entrance radii proposed at the existing site driveway intersection at Ballardvale Street. Further, the Department of Public Works requests vertical granite curbing for each radii (proposed within the Public Right of Way) with details and plan callouts for appropriate transition curbing accordingly.*"

Response: Highpoint considered reducing the entrance radius from 35 ft to 30 ft as suggested by the Town. However, it was found that the 30 ft radii would not allow a WB-50 trailer to make a right turn into the property from Ballardvale Street without the rear tired riding up on the curb. Therefore, the entrance radii were kept at 35 feet. The site layout has been revised to include vertical granite curb within the right-of-way as requested by the Department of Public Works.

Town of Wilmington Department of Planning and Conservation Letter

Comment 8: "*As discussed at the January 22, 2024, Community Development Technical Review (CDTR) team meeting, a peer review of the traffic memorandum will be recommended to the Planning Board. As requested by the applicant, the review can be initiated prior to the Planning Board meeting.*"

Response: The Traffic Memorandum (TM) by MDM dated November 8, 2023, has been sent out for peer review by TEC with comments received on March 7, 2024. MDM's responses are provided in a subsequent section of this memo.

Comment 9: "*A truck turning exhibit shall be included with the revisions. This should show the turn radius of the Wilmington Fire Truck apparatus as well as any other large trucks that will access loading docks and dumpsters.*"

Response: Truck turning maneuverability plans which include a WB-50, refuse vehicle, and Wilmington Ladder truck as prepared by Highpoint Engineering, Inc. are provided in the **Attachments** for reference. As shown the site has been designed to accommodate the largest design vehicle, refuse vehicle, and Wilmington Ladder truck.

The Engineering Corp (TEC) Letter

Traffic Impact Assessment Comments

TEC Comment 5: *"To assess sight distance, the Applicant utilized the posted speed limit of 40 MPH along Ballardvale Street northwest bound rather than using 85th percentile travel speeds in each direction. Since the access drive to the Ballardvale Technology Center is located roughly 450 feet northwest of Route 125, TEC believes the posted speed limit is a conservative estimate of travel speed. Vehicles turning from Route 125 onto Ballardvale Street will likely not attain a speed of 40 MPH prior to the access drive. In addition, the posted speed along Ballardvale Street southeast bound prior to the access drive is 25 MPH, so TEC believes using a 40 MPH speed in this direction is also a conservative approach. The sight distances reported in Tables 3 and 4 of the TIA are in accordance with the American Association of State Highway and Transportation Officials (AASHTO) requirements. In a field review conducted on February 15, 2024, TEC confirmed the measured Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) provided in the TIA. The Applicant has recommended that any new plantings or physical landscape features within the proposed Project driveway should be maintained at a height of 2 feet or less to ensure unobstructed lines of sight. The site plans should show the sight line triangles based on the AASHTO criteria provided in MDM's report. The Applicant should also commit to maintain vegetation along the site frontage consistently to ensure that sight lines remain unobstructed at the site driveway intersection with Ballardvale Street."*

Response: MDM concurs, the sight line triangles will be provided on the final site plan set by Highpoint Engineering. The Site Layout Plan will also include a note citing that "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."

TEC Comment 6: "*The TIA presents motor vehicle crash data for the study intersections between 2018 and 2022, the most recent five-year period available from MassDOT. During this period, there were 25 crashes at the Route 125/Ballardvale Street intersection, 4 of which resulted in personal injury, and 9 crashes at the Ballardvale Street/181-187 and 200 Ballardvale Street driveways, 2 of which resulted in personal injury. Neither of the intersections had fatalities or crashes involving bicycles or pedestrians. The crash rates at each of the intersections were determined to be 0.40 for the former and 0.28 for the latter. Both are below MassDOT District 4 averages for signalized and unsignalized intersections, 0.73 and 0.57, respectively. Neither of the intersections contains a Highway Safety Improvement Plan (HSIP) cluster, so MDM has not recommended any immediate term safety countermeasures. TEC generally agrees with this assessment. However, on Ballardvale Street northwest bound, there is a transition from two lanes to one at the 181-187 and 200 Ballardvale Street driveways, which may have contributed to some of the crashes. TEC also observed queues that extend back from the Route 125 traffic signal that can frequently block the site driveway during the late afternoon and evening peak period. TEC recommends that the Applicant explore options to revise the pavement markings and signs along Ballardvale Street northwest bound to improve safety, including a striped 'Do Not Block' box."*

Response: The Proponent will work with the Town and if approved by the DPW the pavement markings will be updated to revise the northwest bound lane drop markings an signage as appropriate and to install a striped "Do Not Block box" markings and signage at the 181/187 driveway.

TEC Comment 10: "*There was no capacity or queue analysis conducted as part of the TIA. Rather, MDM provided a qualitative assessment of operations, essentially comparing 2030 No-Build volumes with 2030 Build volumes. On page 14, they have shown in Table 7 and have stated that the increase in traffic at each of the study locations will be less than 5%, and therefore, will have minimal impact on operations. While TEC generally concurs with the qualitative results, MDM should also provide 2023 Existing, 2030 No-Build and 2030 Build capacity and queue analyses as part of the TIA utilizing Highway Capacity Manual (HCM) methodologies if the Board desires additional quantitative analysis to assess the incremental increase in vehicle delays.*"

Response: As previously indicated, the project will result in a nominal increase in traffic activity at the study intersections. Specifically, the increase in trips due to the project is not expected to alter operating conditions compared to No-Build conditions with approximately 1 directional vehicle trip or less per minute. MDM finds the relative traffic increases for the proposed project represent an inconsequential change in area roadway volumes - a level of change that falls well within normal day-to-day fluctuations in traffic entering and exiting the study area. Therefore, there is no material benefit to providing capacity and queue analysis.

TEC Comment 11: "*MDM has recommended several mitigation measures for the Project: a) Access/ Egress Improvements, b) Pedestrian and Bicycle Accommodations, and c) Transportation Demand Management (TDM). These are described on page 15 of the TIA. TEC generally concurs with the identified measures. However, TEC understands that the Town is considering multi-mode improvements to Ballardvale Street between the Target Plaza and the 181-187 and 200 Ballardvale Street driveways. These improvements include a Shared Use Path (SUP) and/or sidewalk along both sides of Ballardvale Street and a crosswalk with a Pedestrian Hybrid Beacon (PHB) between 193 and 206 Ballardvale Street. In lieu of other data collection, analysis, or physical mitigation to address their increase in vehicular traffic, TEC recommends that the Applicant provide sidewalks along the site access to Ballardvale Street and provide fair-share mitigation funding to be utilized by the Town for the planning and design phase of the Ballardvale Street multi-modal improvements.*"

Response: The Proponent is not providing a walkway from the development to Ballardvale Street but will work with the Town to provide an easement along the site frontage to accommodate the planned multi-modal improvements along this section of Ballardvale Street and will work with the Town to provide appropriate fair share mitigation funding for the planning and design of the multi-modal improvements by the Town.

Site Plan Comments

TEC Comment 14: "*The Applicant should provide an Autoturn truck sweep analysis to demonstrate the ability of the expected delivery vehicles, service vehicles, or emergency vehicles to circulate around the site without leaving the paved surface and access the loading docks for each building. The Applicant should review any potential need for cross-access easements for employee and/or truck access.*"

Response: Truck turning maneuverability plans which include a WB-50, refuse vehicle, and Wilmington Ladder truck as prepared by Highpoint Engineering, Inc. are provided in the **Attachments** for reference. As shown the site has been designed to accommodate the largest design vehicle, refuse vehicle, and Wilmington Ladder truck. No cross-access easements for employee and/or truck access is required.

TEC Comment 15: "*The Applicant should coordinate with the Town of Wilmington Fire Department for preferred locations of fire lanes (if needed), confirmation of on-site hydrant locations (if needed), and sign requirements for fire lanes within the site.*"

Response: Based on discussions with the Town of Wilmington Fire Department no fire lanes or further requirements are needed. Highpoint Engineering, Inc. will continue to coordinate with WFD as needed.

TEC Comment 16: "*The plans should depict a 12" stop line and stop sign at the access drive as described in the*
TIA."

Response: A 12" STOP line and STOP sign (R1-1) will be included on the final site plan set prepared by Highpoint Engineering.

TEC Comment 17: "*The bottom of all traffic signs on-site should be a minimum of 7 feet above the ground surface per the Manual on Uniform Traffic Control Devices (MUTCD) when directly impeding sidewalks or travel paths. Detail C1 on Sheet C600 and Detail C4 on Sheet C601 show the height to be 6 feet above the ground surface.*"

Response: The updated bottom of all traffic signs on-site will be updated to a minimum of 7 feet above the ground surface per MUTCD guidance. This will be included on the final site plan set prepared by Highpoint Engineering.

TEC Comment 18: "*Details should be provided showing the layout and dimensions of compact vehicle parking spaces. Alternatively, a note could be added to Detail C1 on Sheet C601 denoting the size as 8' x 16'.*"

Response: The site proposes two different sized compact spaces; (7.5' x 16') and (8′ x 16′). The site layout has been revised to include where the compact spaces are proposed, and site details have been revised to include both on the site plan sets prepared by Highpoint Engineering.

TEC Comment 19: "*The Applicant has proposed to provide sidewalks connecting building entrances with the parking areas. As noted in Comment 11 above, TEC recommends that the Applicant also provide sidewalks along the reconstructed access drive to its intersection with Ballardvale Street. This will provide a continuous connection from the proposed building to the future Ballardvale Street improvements. There are several informal footpaths that lead from the northerly edge of the parking lot toward the north in the direction of the powerline easement and Upton Drive. A sidewalk along the driveway will potentially provide a connection for other walkers in the area.*"

Response: See Response to TEC Comment 11.

TEC Comment 20: "*The site plans should include a plan sheet depicting the sight triangles to and from the site driveway and identify areas to restrict vegetation, signage, and off-street parking to maintain AASHTO minimum recommendations. Notes should indicate: "Signs, landscaping and other features located within sight triangle areas shall be designed, installed, and maintained so as not to exceed 2.0 feet in height. Snow windrows located within sight triangle areas that exceed 3.5 feet in height or that would otherwise inhibit sight lines shall be promptly removed." All permanent and temporary signs should be located outside the sight line triangles.*"

Response: See Response to TEC Comment 5.

TEC Comment 21: "*The Applicant should denote the designated locations of secure and weather protected bicycle racks as described in the TIA.*"

Response: The site plan has been updated by Highpoint Engineering to include the location of the bicycle racks. The design of the shelter will be coordinated with the architect to fit into the overall design.

TEC Comment 22: "*Since the property abuts Route 125, a MassDOT-owned roadway, it is likely that an Indirect Access Permit will be required. The Applicant should be prepared to submit the appropriate Permit Application and supporting documents to the District 4 Office in Arlington.*"

Response: After the site plan review process, if required a Highway Access Permit will be submitted to MassDOT for the driveway.

TEC Comment 23: "*Although snow storage areas are shown on the plan, the Applicant should provide a snow removal and parking management plan for Town staff review.*"

Response: Given the adequate snow storage areas on the Site, the Proponent doesn't anticipate a snow storage problem. If snow was overly restricting parking the excess snow from any parking areas blocked will be removed from the Site at the expense of the Proponent.

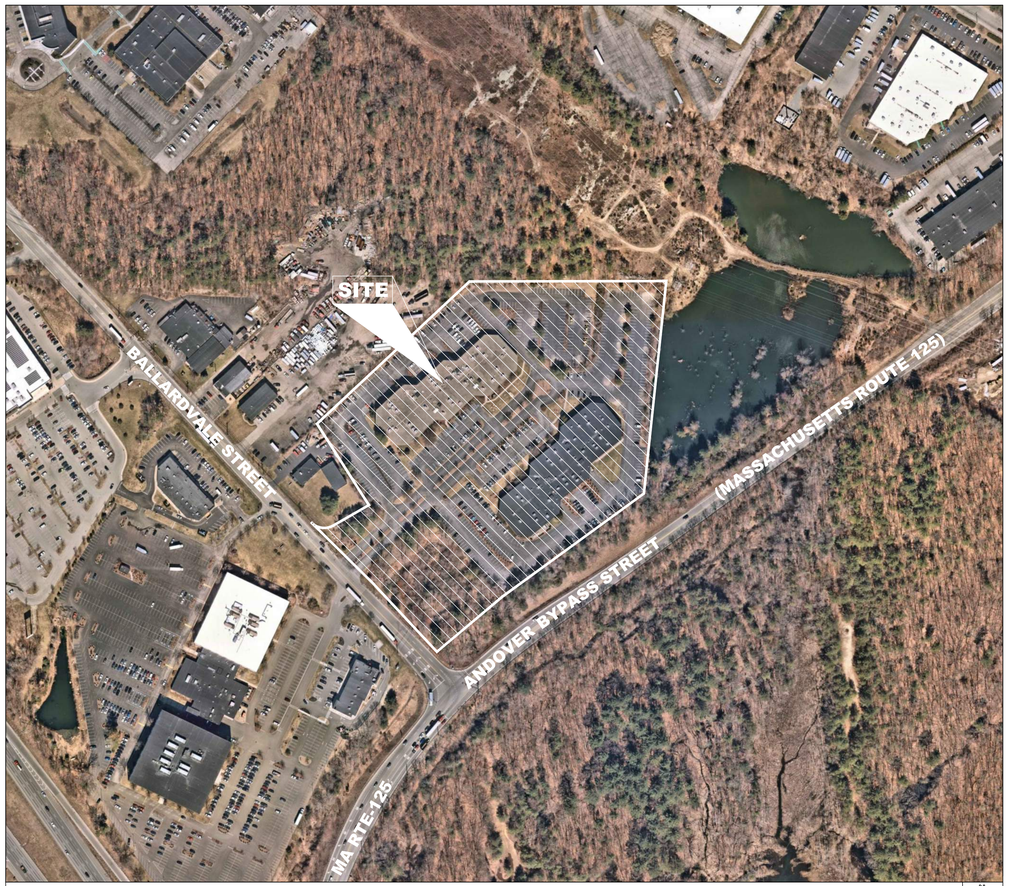
ATTACHMENTS

- □ Updated Site Plan
- □ Improvement Plan
- □ Existing Tenant Split

- □ Updated Site Plan

PROPOSED OFFICE CAMPUS RE-USE
LIFE SCIENCE / BIOMANUFACTURING CONVERSION
181-187 BALLARDVALE STREET
WILMINGTON, MASSACHUSETTS 01887

PERMIT SUBMISSION: JANUARY 10, 2024
REVISED: APRIL 22, 2024



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SCALE: N.T.S.

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INDEX OF DRAWINGS

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CIVIL							
T100	TITLE SHEET	●	●				
G001	GENERAL NOTES SHEET	●	●				
G002	GENERAL LEGEND SHEET	●	●				
C100	SITE PREPARATION & EROSION CONTROL PLAN	●	●				
C200	LAYOUT AND MATERIALS PLAN	●	●				
C300	OVERALL GRADING & DRAINAGE PLAN	●	●				
C301	GRADING AND DRAINAGE PLAN	●	●				
C302	GRADING AND DRAINAGE PLAN	●	●				
C303	GRADING AND DRAINAGE PLAN	●	●				
C400	UTILITY PLAN	●	●				
C500	SITE LIGHTING AND PHOTOMETRICS PLAN	●	●				
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A501	EXTERIOR ELEVATIONS	●	●				
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EX-1	EXISTING CONDITIONS PLAN DATED MARCH 27, 2023 (1 OF 4)	●	●				
EX-2	EXISTING CONDITIONS PLAN DATED MARCH 27, 2023 (2 OF 4)	●	●				
EX-3	EXISTING CONDITIONS PLAN DATED MARCH 27, 2023 (3 OF 4)	●	●				
EX-4	EXISTING CONDITIONS PLAN DATED MARCH 27, 2023 (4 OF 4)	●	●				

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CONSULTANT:

SEAL
COMMONWEALTH OF MASSACHUSETTS
DOUGLAS J. HARTNETT
CIVIL
No. 37796
REGISTERED PROFESSIONAL ENGINEER
04-22-2024

DATE APPROVED:

WILMINGTON PLANNING BOARD

OFFICE CAMPUS REUSE
LIFE SCIENCE/BIOMANUFACTURING CONVERSION
181-187 BALLARDVALE STREET
WILMINGTON, MA
OWNER/APPLICANT: BALLARDVALE OWNER, LLC

REV	DATE	DESCRIPTION
1	04.22.2024	RESPONSE TO COMMENTS #1

ISSUE TYPE:
DESIGN DEVELOPMENT
ISSUE DATE:
01/10/2024
PROJECT NUMBER:
22047

DRAWN BY: JMP
CHECKED BY: HK/NCL

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SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T100

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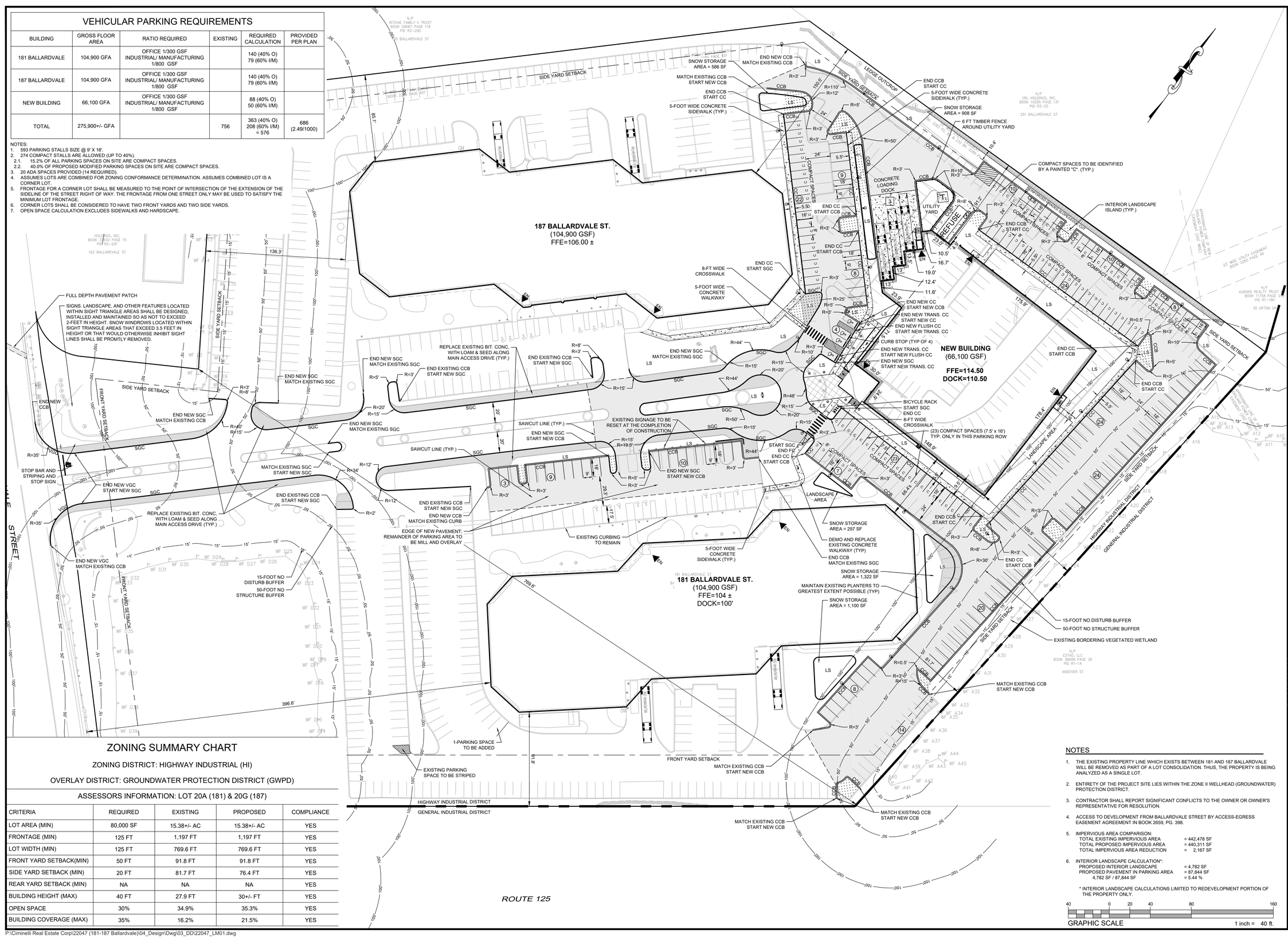
ISSUED FOR : **PERMIT SET**

VEHICULAR PARKING REQUIREMENTS

BUILDING	GROSS FLOOR AREA	RATIO REQUIRED	EXISTING	REQUIRED CALCULATION	PROVIDED PER PLAN
181 BALLARDVALE	104,900 GFA	OFFICE 1/300 GSF INDUSTRIAL/ MANUFACTURING 1/800 GSF		140 (40% O) 79 (60% I/M)	
187 BALLARDVALE	104,900 GFA	OFFICE 1/300 GSF INDUSTRIAL/ MANUFACTURING 1/800 GSF		140 (40% O) 79 (60% I/M)	
NEW BUILDING	66,100 GFA	OFFICE 1/300 GSF INDUSTRIAL/ MANUFACTURING 1/800 GSF		88 (40% O) 50 (60% I/M)	
TOTAL	275,900+/- GFA		756	363 (40% O) 208 (60% I/M) = 576	686 (2.49/1000)

NOTES:
1. 593 PARKING STALLS SIZE @ 9' X 18'.
2. 274 COMPACT STALLS ARE ALLOWED (UP TO 40%).
   2.1. 15.2% OF ALL PARKING SPACES ON SITE ARE COMPACT SPACES.
   2.2. 40.0% OF PROPOSED MODIFIED PARKING SPACES ON SITE ARE COMPACT SPACES.
3. 20 ADA SPACES PROVIDED (14 REQUIRED).
4. ASSUMES LOTS ARE COMBINED FOR ZONING CONFORMANCE DETERMINATION. ASSUMES COMBINED LOT IS A CORNER LOT.
5. FRONTAGE FOR A CORNER LOT SHALL BE MEASURED TO THE POINT OF INTERSECTION OF THE EXTENSION OF THE SIDELINE OF THE STREET RIGHT OF WAY. THE FRONTAGE FROM ONE STREET ONLY MAY BE USED TO SATISFY THE MINIMUM LOT FRONTAGE.
6. CORNER LOTS SHALL BE CONSIDERED TO HAVE TWO FRONT YARDS AND TWO SIDE YARDS.
7. OPEN SPACE CALCULATION EXCLUDES SIDEWALKS AND HARDSCAPE.



ZONING SUMMARY CHART

ZONING DISTRICT: HIGHWAY INDUSTRIAL (HI)

OVERLAY DISTRICT: GROUNDWATER PROTECTION DISTRICT (GWPD)

ASSESSORS INFORMATION: LOT 20A (181) & 20G (187)

CRITERIA	REQUIRED	EXISTING	PROPOSED	COMPLIANCE
LOT AREA (MIN)	80,000 SF	15.38+/- AC	15.38+/- AC	YES
FRONTAGE (MIN)	125 FT	1,197 FT	1,197 FT	YES
LOT WIDTH (MIN)	125 FT	769.6 FT	769.6 FT	YES
FRONT YARD SETBACK(MIN)	50 FT	91.8 FT	91.8 FT	YES
SIDE YARD SETBACK (MIN)	20 FT	81.7 FT	76.4 FT	YES
REAR YARD SETBACK (MIN)	NA	NA	NA	YES
BUILDING HEIGHT (MAX)	40 FT	27.9 FT	30+/- FT	YES
OPEN SPACE	30%	34.9%	35.3%	YES
BUILDING COVERAGE (MAX)	35%	16.2%	21.5%	YES

NOTES

1. THE EXISTING PROPERTY LINE WHICH EXISTS BETWEEN 181 AND 187 BALLARDVALE WILL BE REMOVED AS PART OF A LOT CONSOLIDATION. THUS, THE PROPERTY IS BEING ANALYZED AS A SINGLE LOT.
2. ENTIRETY OF THE PROJECT SITE LIES WITHIN THE ZONE II WELLHEAD (GROUNDWATER) PROTECTION DISTRICT.
3. CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS TO THE OWNER OR OWNER'S REPRESENTATIVE FOR RESOLUTION.
4. ACCESS TO DEVELOPMENT FROM BALLARDVALE STREET BY ACCESS-EGRESS EASEMENT AGREEMENT IN BOOK 2659, PG. 398.
5. IMPERVIOUS AREA COMPARISON:
   TOTAL EXISTING IMPERVIOUS AREA = 442,478 SF
   TOTAL PROPOSED IMPERVIOUS AREA = 440,311 SF
   TOTAL IMPERVIOUS AREA REDUCTION = 2,167 SF
6. INTERIOR LANDSCAPE CALCULATION*:
   PROPOSED INTERIOR LANDSCAPE = 4,782 SF
   PROPOSED PAVEMENT IN PARKING AREA = 87,844 SF
   4,782 SF / 87,844 SF = 5.44 %

   * INTERIOR LANDSCAPE CALCULATIONS LIMITED TO REDEVELOPMENT PORTION OF THE PROPERTY ONLY.

40 0 20 40 80 160
GRAPHIC SCALE 1 inch = 40 ft.

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COMMONWEALTH OF MASSACHUSETTS
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REGISTERED PROFESSIONAL ENGINEER
04-22-2024

DATE APPROVED:

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LIFE SCIENCE/BIOMANUFACTURING CONVERSION

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DRAWN BY: JMP
CHECKED BY: HK/NCL

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SHEET TITLE:
LAYOUT & MATERIALS PLAN

SHEET NUMBER:
C200

ISSUED FOR : PERMIT SET

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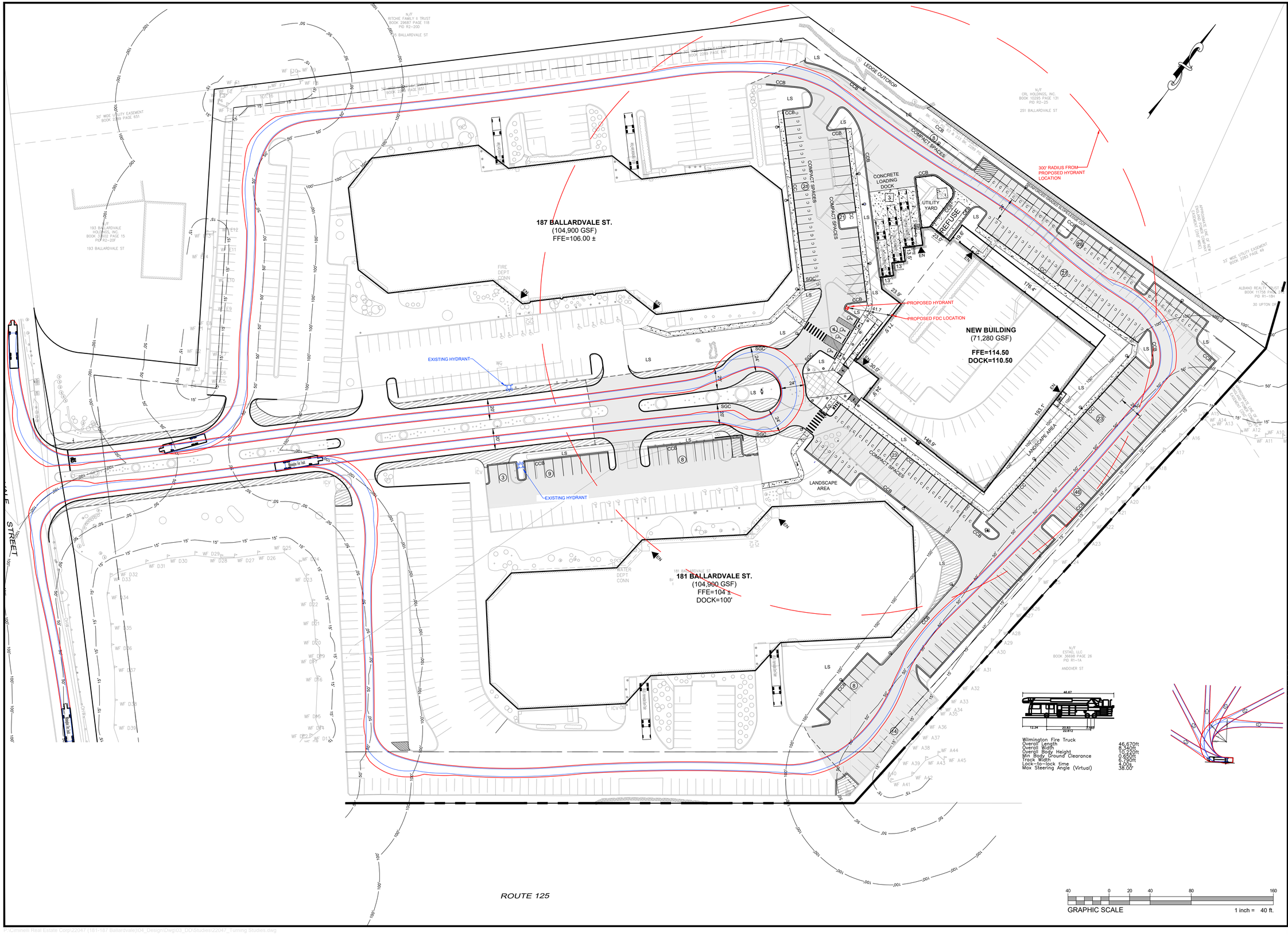

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ISSUE DATE:
03/01/2024

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CHECKED BY: HK/NCL

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SHEET TITLE:

FIRE TRUCK TURN PLAN #1

SHEET NUMBER:

C700

ISSUED FOR : **PERMIT SET**

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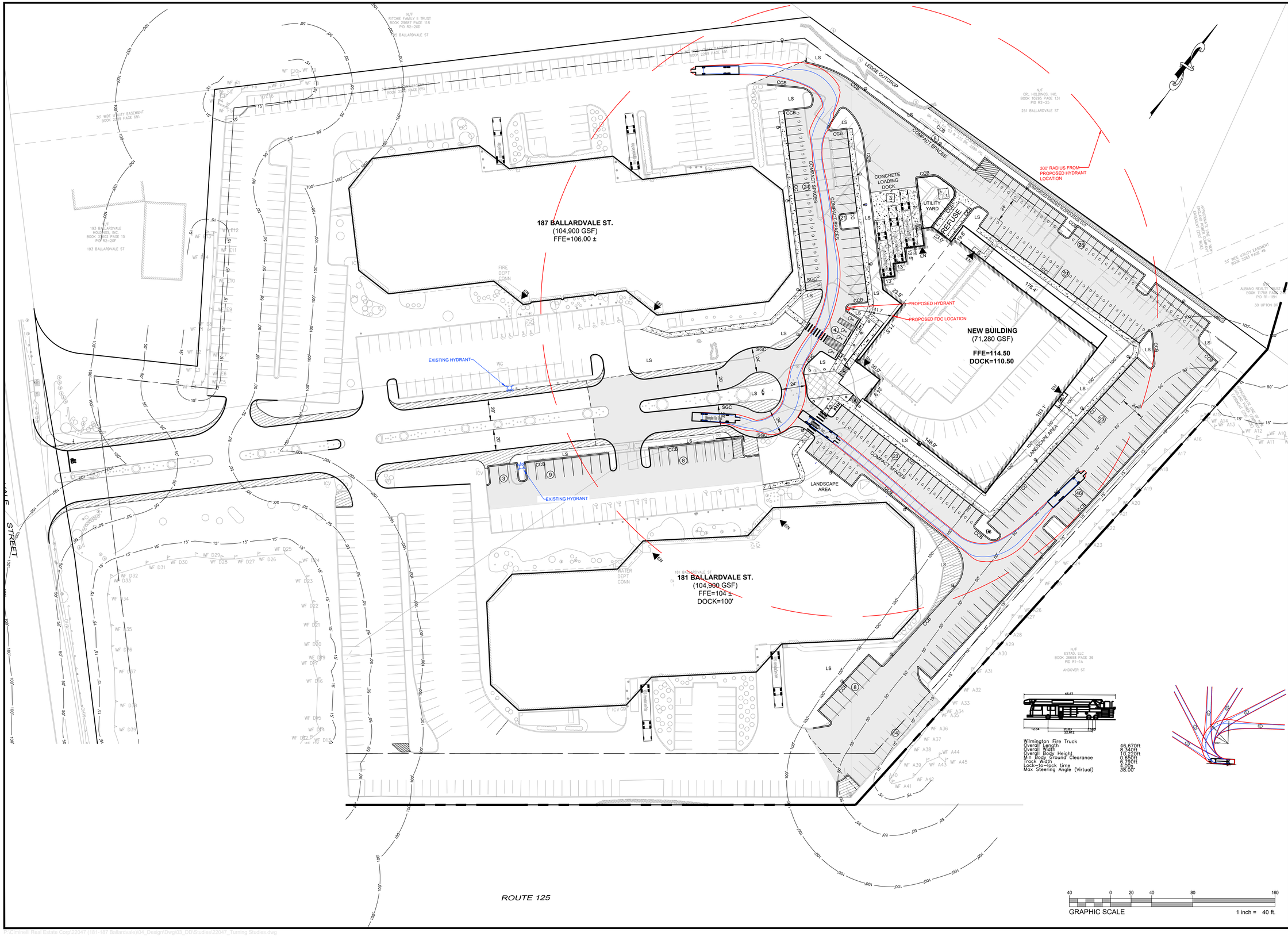

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SEAL

COMMONWEALTH OF MASSACHUSETTS
DOUGLAS J. HARTNETT
CIVIL
No. 37796
REGISTERED PROFESSIONAL ENGINEER

04-22-2024

DATE APPROVED:

WILMINGTON PLANNING BOARD

OFFICE CAMPUS REUSE
LIFE SCIENCE/BIOMANUFACTURING CONVERSION

181-187 BALLARDVALE STREET
WILMINGTON, MA

OWNER/APPLICANT: BALLARDVALE OWNER, LLC

REV	DATE	DESCRIPTION
1	04.22.2024	RESPONSE TO COMMENTS #1

ISSUE TYPE:
DESIGN DEVELOPMENT

ISSUE DATE:
02/28/2024

PROJECT NUMBER:
22047

DRAWN BY: JMP

CHECKED BY: HK/NCL

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SHEET TITLE:

FIRE TRUCK TURN PLAN #2

SHEET NUMBER:

C701

ISSUED FOR : **PERMIT SET**

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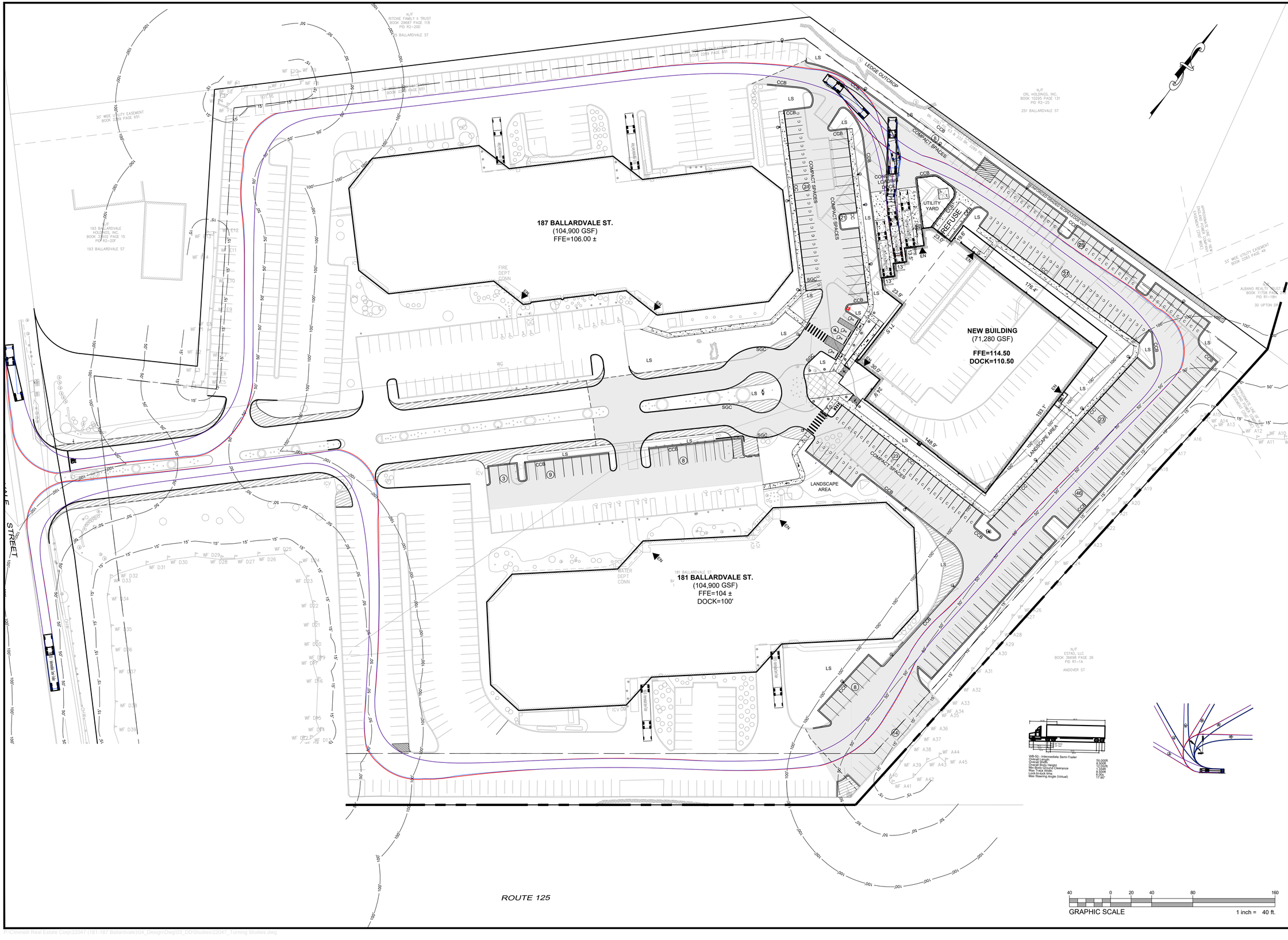
187 BALLARDVALE ST.
(104,900 GSF)
FFE=106.00 ±
181 BALLARDVALE ST.
(104,900 GSF)
FFE=104 ±
DOCK=100'
NEW BUILDING
(71,280 GSF)
FFE=114.50
DOCK=110.50
UTILITY YARD
REFUSE
CONCRETE LOADING DOCK
COMPACT SPACES
LANDSCAPE AREA
LEDGE OUTCROP
FIRE DEPT CONN
WATER DEPT CONN
ICV
WG
SGC
CCB
LS
N/F RITCHIE FAMILY 6 TRUST BOOK 29687 PAGE 118 PID R2-200 185 BALLARDVALE ST
N/F CRL HOLDINGS, INC. BOOK 10255 PAGE 131 PID R2-25 251 BALLARDVALE ST
N/F 193 BALLARDVALE HOLDINGS, INC. BOOK 37602 PAGE 15 PID R2-20F 193 BALLARDVALE ST
N/F ESTAD, LLC BOOK 36698 PAGE 26 PID R1-1A ANDOVER ST
30' WIDE UTILITY EASEMENT BOOK 2269 PAGE 651
33' WIDE UTILITY EASEMENT BOOK 2263 PAGE 49
ROUTE 125
ROUTE 38
ROUTE 62
ROUTE 93
ROUTE 129
ROUTE 28
ROUTE 3
ROUTE 495
ROUTE 1
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ROUTE 24
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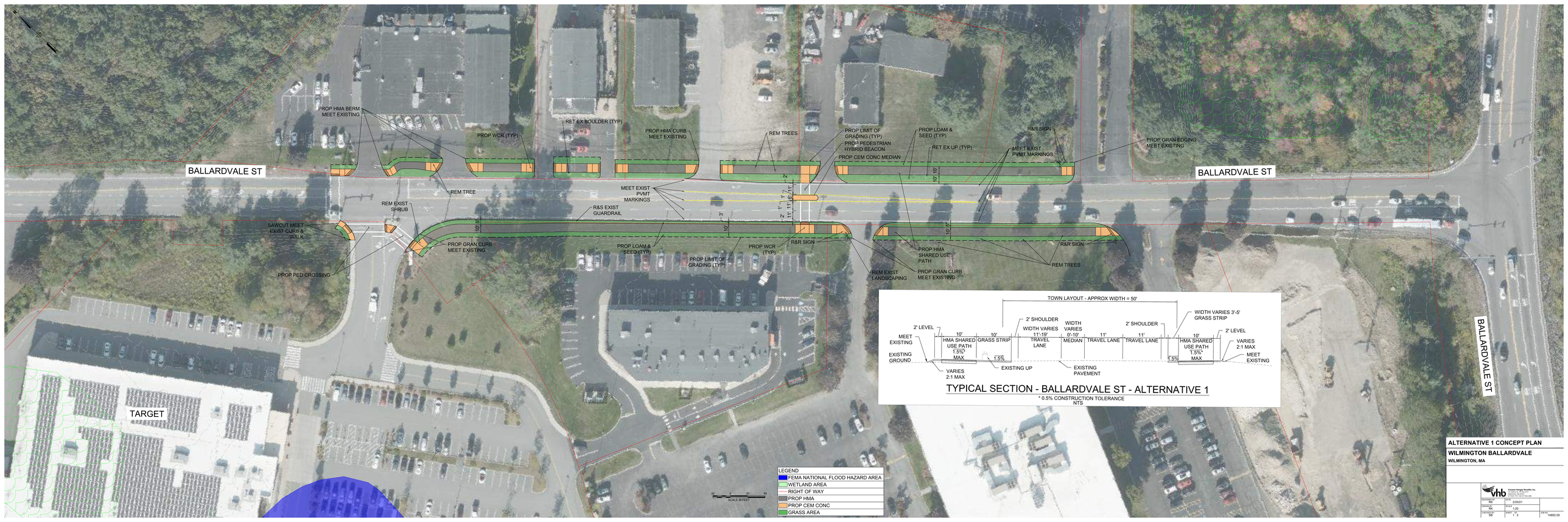
□ Improvement Plan



TYPICAL SECTION - BALLARDVALE ST - ALTERNATIVE 1

* 0.5% CONSTRUCTION TOLERANCE
NTS

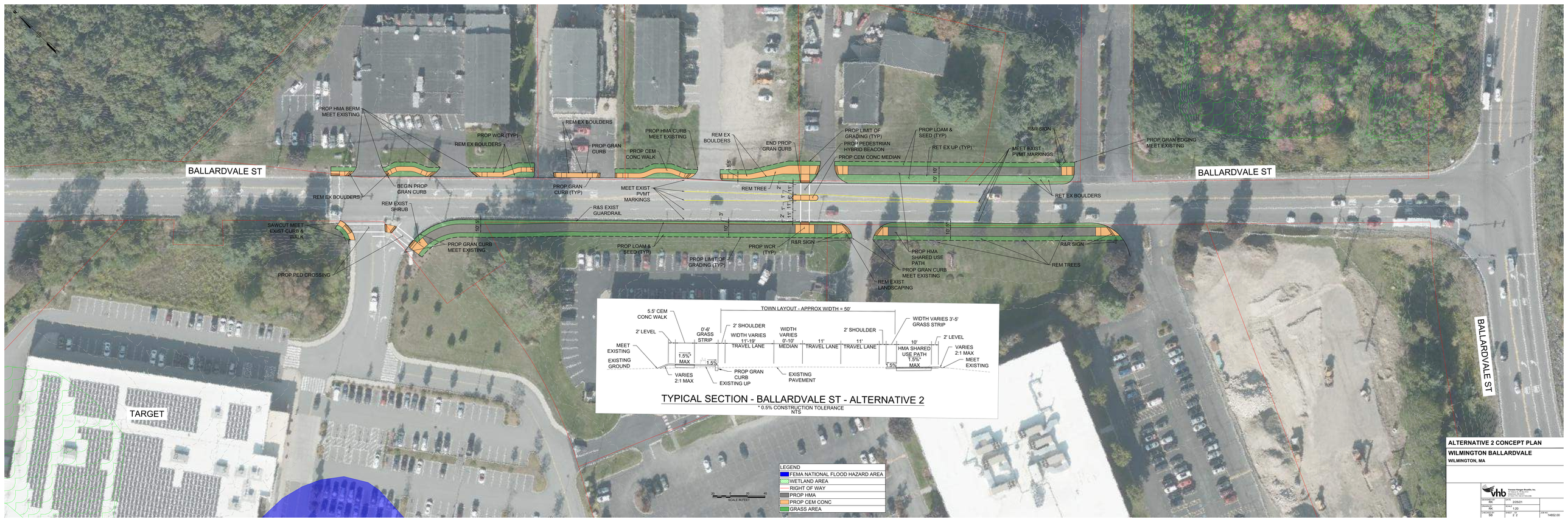
ALTERNATIVE 1 CONCEPT PLAN

WILMINGTON BALLARDVALE

WILMINGTON, MA

Vanasse Hangen Brustlin, Inc.
101 Walnut St, PO Box 9151
Watertown, MA 02471-9151
617 924 1770 FAX 617 924 7688

DESIGNED	RK	DATE	2/25/21
DRAWN	BK	SCALE	1:20
CHECKED	SB	SHEET	1 OF 2
		PROJECT NO.	14852.00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TARGET
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REM EX BOULDERS
PROP WCR (TYP)
REM EX BOULDERS
PROP GRAN CURB
PROP HMA CURB MEET EXISTING
PROP CEM CONC WALK
REM EX BOULDERS
END PROP GRAN CURB
PROP LIMIT OF GRADING (TYP)
PROP PEDESTRIAN HYBRID BEACON
PROP CEM CONC MEDIAN
PROP LOAM & SEED (TYP)
RET EX UP (TYP)
R&R SIGN
MEET EXIST PVMT MARKINGS
PROP GRAN EDGING MEET EXISTING
BEGIN PROP GRAN CURB
REM EX BOULDERS
REM EXIST SHRUB
PROP GRAN CURB (TYP)
MEET EXIST PVMT MARKINGS
REM TREE
RET EX BOULDERS
SAWCUT MEET EXIST CURB & WALK
R&S EXIST GUARDRAIL
PROP GRAN CURB MEET EXISTING
PROP LOAM & SEED (TYP)
PROP WCR (TYP)
R&R SIGN
PROP LIMIT OF GRADING (TYP)
PROP HMA SHARED USE PATH
PROP GRAN CURB MEET EXISTING
REM EXIST LANDSCAPING
R&R SIGN
REM TREES
PROP PED CROSSING
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10'
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5.5'
3'
2'
1'
11'
11'
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2'
1'
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10'
10'
10'
TOWN LAYOUT - APPROX WIDTH = 50'
5.5' CEM CONC WALK
2' LEVEL
MEET EXISTING
EXISTING GROUND
0'-6' GRASS STRIP
1.5%* MAX
1.5%
VARIES 2:1 MAX
2' SHOULDER
WIDTH VARIES 11'-10' TRAVEL LANE
PROP GRAN CURB
EXISTING UP
WIDTH VARIES 0'-10' MEDIAN
11' TRAVEL LANE
2' SHOULDER
11' TRAVEL LANE
EXISTING PAVEMENT
WIDTH VARIES 3'-5' GRASS STRIP
10' HMA SHARED USE PATH 1.5%* MAX
1.5%
2' LEVEL
VARIES 2:1 MAX
MEET EXISTING
TYPICAL SECTION - BALLARDVALE ST - ALTERNATIVE 2
* 0.5% CONSTRUCTION TOLERANCE
NTS
LEGEND
FEMA NATIONAL FLOOD HAZARD AREA
WETLAND AREA
RIGHT OF WAY
PROP HMA
PROP CEM CONC
GRASS AREA
20 0 20 40
SCALE IN FEET
ALTERNATIVE 2 CONCEPT PLAN
WILMINGTON BALLARDVALE
WILMINGTON, MA
vhb
Vanasse Hangen Brustlin, Inc.
DESIGNED RK
DRAWN BY RK
CHECKED SB
2025/1
SCALE 1:20
SHEET 2 2
PROJECT NO. 14852.00

□ Existing Tenant Split

181/187 Ballardvale

Tenant Name	R&D Square Feet	Office Square Feet
Viant	19,253	
Gener8	20,401	
Ledvance	20,134	
Re:Build Fikst	35,789	
Liberty Defense	9,920	
Universal Services of America	14,406	
IDEX	8,216	
XOS Technologies		6,810
Greenman Pedersen		12,110
Caretenders		5,113
Trane		22,189
Unifirst		8,275
Righter Group		3,580
Security Innovation		6,042
WB Engineering		5,465
Parker Ibrahim & Berg		2,364
Transperfect		5,058
Kuberre Systems		2,294
Total	128,119	79,300
	62%	38%

Transportation Impact Assessment

Proposed Warehouse Building
800 Salem Street
Wilmington, Massachusetts

Prepared for:

Camber Development
Boston, Massachusetts

September 2022

Prepared by:

Vanasse & Associates inc
Transportation Engineers & Planners

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

Vanasse & Associates inc
Transportation Engineers & Planners

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

Dear Reviewer:

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

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey S. Dirk

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

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EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a warehouse building to be located at 800 Salem Street (Route 62) in Wilmington, Massachusetts (hereafter referred to as the Project). This assessment was prepared in consultation with the Town of Wilmington and the Massachusetts Department of Transportation (MassDOT), and was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports.

An end user for the proposed warehouse building has not been determined and, as such, the trip estimates for the Project have been evaluated using a warehouse type that results in the highest overall trip estimates for the Project in order to provide conservative (high) traffic volumes from which to assess the potential impact of the Project on the transportation infrastructure.

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

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)[1] for a trip intensive warehouse use (general warehousing in this case), the Project is expected to generate approximately 414 vehicle trips on an average weekday (two-way, volume over the operational day of the Project), consisting of 270 passenger car trips and 144 truck trips. During the weekday morning peak-hour, the Project is expected to generate 52 vehicle trips, consisting of 47 passenger car trips and 5 truck trips. During the weekday evening peak-hour, the Project is expected to generate 55 vehicle trips, consisting of 48 passenger car trips and 7 truck trips;

2. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over anticipated future conditions without the Project (No-Build condition), acknowledging that one or more movements at the study area intersections are currently operating or are predicted to operate at or over capacity (i.e., level-of-service (LOS) "E" or "F", respectively) independent of the Project;

[1] *Trip Generation*, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

3. Independent of the Project, left-turn movements from the I-93 north and southbound off-ramps to Route 62 were identified to be operating over capacity (i.e., LOS "F") during both peak hours under 2022 Existing conditions, with Project-related impacts on these movements generally defined as an increase in average motorist delay that resulted in an increase in vehicle queuing of up to one (1) vehicle;

4. All movements exiting the Project site driveways are predicted to operate at LOS D or better during the peak hours with negligible vehicle queuing;

5. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and

6. Lines of sight at the Project site driveway intersections with Route 62 were found to meet or exceed, or could be made to meet or exceed the recommended minimum sight distance to function in a safe manner based on the appropriate approach speed.

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

RECOMMENDATIONS

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

Project Access

Access to the Project site will be provided by way of two driveways configured as follows: a full-access driveway that will intersect the north side of Route 62 approximately 90 feet east of the existing westerly driveway that serves the Project site and a full-access driveway that will intersect the north side of Route 62 approximately 80 feet west of the easterly property line. The existing driveways (three (3)) that serve the Project site will be closed in conjunction with the Project and will result in a net reduction of one (1) driveway along the Route 62 corridor and the elimination of the associated conflicts with vehicles, pedestrians and bicyclists. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation:

- The Project site driveways and internal circulating aisles should be 24 feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle and a large tractor semi-trailer combination (WB-67 design vehicle).

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

- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided. STOP-signs and marked STOP-lines should also be provided at intersections located within the Project site.

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[2]

- Americans with Disabilities Act (ADA)-compliant wheelchair ramps should be provided at pedestrian crossings that are to be constructed or modified in conjunction with the Project.

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

- Trees and vegetation located along the north side of Route 62 within the sight triangle areas of the Project site driveways should be trimmed or removed and maintained in order to provide the necessary sight lines for safe operation. In addition, the large stone located within the sight triangle area of the east Project site driveway should also be removed.

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

Off-Site

Route 62 at Woburn Street

Independent of the Project, the Woburn Street approaches to Route 62 are predicted to operate over capacity (i.e., LOS "F") during the weekday morning peak-hour under 2029 No-Build conditions. In an effort to off-set the predicted impact of the Project and to reduce motorist delays and vehicle queueing, the Project proponent will design and implement an optimal traffic signal timing and phasing plan for the intersection. With the implementation of an optimal traffic signal and phasing plan, intersection overall intersection operations will improve from LOS F to LOS D during the weekday morning peak-hour and no movement or approach will operate below LOS E, an improvement over No-Build conditions. All movements at the intersection will continue to operate at LOS D or better during the weekday evening peak-hour. These improvements will be completed prior to the issuance of a Certification of Occupancy for the Project, subject to the receipt of all necessary rights, permit and approvals.

Route 62 at the I-93 Ramps

Independent of the Project, left-turn movements from the I-93 off-ramps (north and southbound) to Route 62 are currently operating over capacity with extended vehicle queueing (up to 28 vehicles), with conditions expected to worsen in the future. The addition of Project-related traffic to the intersections was shown to result in a predicted increase in average motorist delay during the peak hours that resulted in a corresponding increase in vehicle queueing of up to two (2) vehicles. In order to assist the Town and MassDOT to advance improvements along Route 62 within the I-93 interchange area that are desirable independent of the Project, the Project proponent will prepare a Functional Design Report (FDR) and accompanying concept plans to identify potential improvement strategies for the ramp intersections. The FDR and concept plans will be provided to the Town prior to the issuance of a Certificate of Occupancy for the Project.

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

Transportation Demand Management

Regularly scheduled public transportation services are not currently provided within the study area or to the Project site. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures are under consideration as a part of the Project:

- A transportation coordinator will be assigned for the Project to coordinate the TDM program;
- The transportation coordinator will facilitate a rideshare matching program for employees to encourage carpooling;
- A "welcome packet" will be provided to employees detailing the contact information for the transportation coordinator and information to enroll in the employee rideshare program;
- Specific amenities will be provided to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; allowing telecommuting or flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak-traffic-volume periods;
- Prioritization will be given to local hirings and an effort to reduce traffic volume increases outside of the local area;
- Pedestrian accommodations will be incorporated within the Project site to link the employee parking areas to the warehouse building; and
- Secure bicycle parking will be provided at an appropriate location within the Project site.

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

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a warehouse building to be located at 800 Salem Street (Route 62) in Wilmington, Massachusetts (hereafter referred to as the Project). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project, along Route 62 and at major intersections located along this roadway through which Project-related traffic will travel.

PROJECT DESCRIPTION

The Project will entail the construction of a 237,880± square foot (sf) warehouse building to be located at 800 Salem Street in Wilmington, Massachusetts. The Project site encompasses approximately 28± acres of land that is generally bounded by a materials processing yard, wetlands, and areas of open and wooded space to the north; Route 62 to the south; Route 62 and a materials processing yard to the east; and wetlands and areas of open and wooded space to the west. The Project site currently contains a materials processing yard and associated appurtenances that will be removed to accommodate the Project. Figure 1 depicts the Project site location in relation to the existing roadway network.

Access to the Project site will be provided by way of two driveways configured as follows: a full-access driveway that will intersect the north side of Route 62 approximately 90 feet east of the existing westerly driveway that serves the Project site and a full-access driveway that will intersect the north side of Route 62 approximately 80 feet west of the easterly property line. The existing driveways (three (3)) that serve the Project site will be closed in conjunction with the Project and will result in a net reduction of one (1) driveway along the Route 62 corridor and the elimination of the associated conflicts with vehicles, pedestrians and bicyclists.

The Project will include the construction of 322 parking spaces for employees and visitors, 45 loading bays that can accommodate a similar number of tractor semi-trailer combinations or trailers without tractors, and 29 trailer storage spaces (396 spaces total). The employee/visitor

Figure 1

Site Location Map

Vanasse & Associates inc

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parking (322 parking spaces) meets the requirements of Section 6.4.1.1, *Schedule of Uses*, of the Wilmington Zoning Bylaw[3].

STUDY METHODOLOGY

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

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

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

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

[3]The Zoning Bylaw requires a minimum of 1.0 parking spaces for each 300 sf of floor area devoted to office use (11,894 sf is proposed) and a minimum of 1.0 parking spaces for each 800 sf of floor area devoted to industrial use (225,986 sf is proposed), which would require a total of 322 parking spaces.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in March, April and May 2022. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area that was assessed for the Project consisted of Salem Street (Route 62), and the following specific intersections through which Project-related traffic will travel: Route 62 at the Interstate 93 (I-93) southbound ramps; Route 62 at the I-93 northbound ramps; and Route 62 at Woburn Street.

The following describes the study area roadways and intersections.

ROADWAY

Salem Street/Lowell Road (Route 62)

- Two-lane urban minor arterial roadway under Town jurisdiction with the exception of the segment of Salem Street between Middlesex Avenue and Woburn Street where the roadway is under MassDOT jurisdiction;
- Traverses the study area in a general east-west direction, becoming Lowell Road at the North Reading town line;
- Provides two 11 to 13-foot wide travel lanes that are separated by a double-yellow centerline with 1 to 2-foot wide marked shoulders in the vicinity of the Project site and additional travel lanes are provided at major intersections;
- The posted speed limit is 35 miles per hour (mph) eastbound and 40 mph westbound in the vicinity of the Project site;
- A sidewalk is provided along the north side of Salem Street easterly to a point approximately 600 feet east of Woburn Street and along south side between the driveway to 471 Salem Street westerly to Woburn Street;
- Illumination is provided by way of streetlights mounted on wood poles; and
- Land use within the study area consists of the Project site, residential and commercial properties, and areas of open and wooded space.

INTERSECTIONS

Table 1 and Figure 2 summarize lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in April and May 2022.

Table 1
STUDY AREA INTERSECTION DESCRIPTION

Intersection	Traffic Control Type[a]	No. of Travel Lanes Provided	Shoulder Provided? (Yes/No/Width)	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/Description)
Route 62/ I-93 SB Ramps	S	1 general-purpose travel lane on all approaches with northbound and eastbound right-turns exiting prior to the intersection by way of channelized right-turn lanes	Yes; 3 to 10 feet on Route 62 and 2 to 3 feet on the I-93 ramps	Yes; sidewalk along the north side of Route 62	Yes; Shared-traveled-way on Route 62[b]
Route 62/ I-93 NB Ramps	S	1 general-purpose travel lane on all approaches with northbound and eastbound right-turns exiting prior to the intersection by way of channelized right-turn lanes	Yes; 3 to 8 feet on Route 62 and 2 feet on the I-93 ramps	Yes; sidewalk along the north side of Route 62	Yes; Shared-traveled-way on Route 62
Route 62/ Woburn St.	TS	1 general-purpose travel lane on Woburn St. approaches; 1 left-turn lane and 1 through/ right-turn lane on Route 62 eastbound approach; 1 left-turn/ through lane and 1 right-turn lane on Route 62 westbound approach	Yes; 2 to 6 feet on all approaches	Yes; sidewalks provided along the north side of Route 62 east and west of the intersection and along the south side to the east; crosswalks are provided for crossing all legs; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes; Shared-traveled-way on all approaches

[a]S = STOP-sign control; TS = Traffic Signal control.
[b]Combined shoulder and travel lane width equal to or exceed 14 feet.

TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, turning movement counts (TMCs), and vehicle classification counts were completed in March 2022. The ATR counts were conducted on March 23rd through 24th, 2022 (Wednesday through Thursday, inclusive) on Route 62 in the vicinity of the Project site in order to record weekday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak-period TMCs performed at the study area intersections on March 23, 2022 (Wednesday), and on March 29, 2022 (Tuesday). These time periods were selected for analysis purposes as they are representative of the peak-traffic-volume hours for both the Project and the adjacent roadway network.

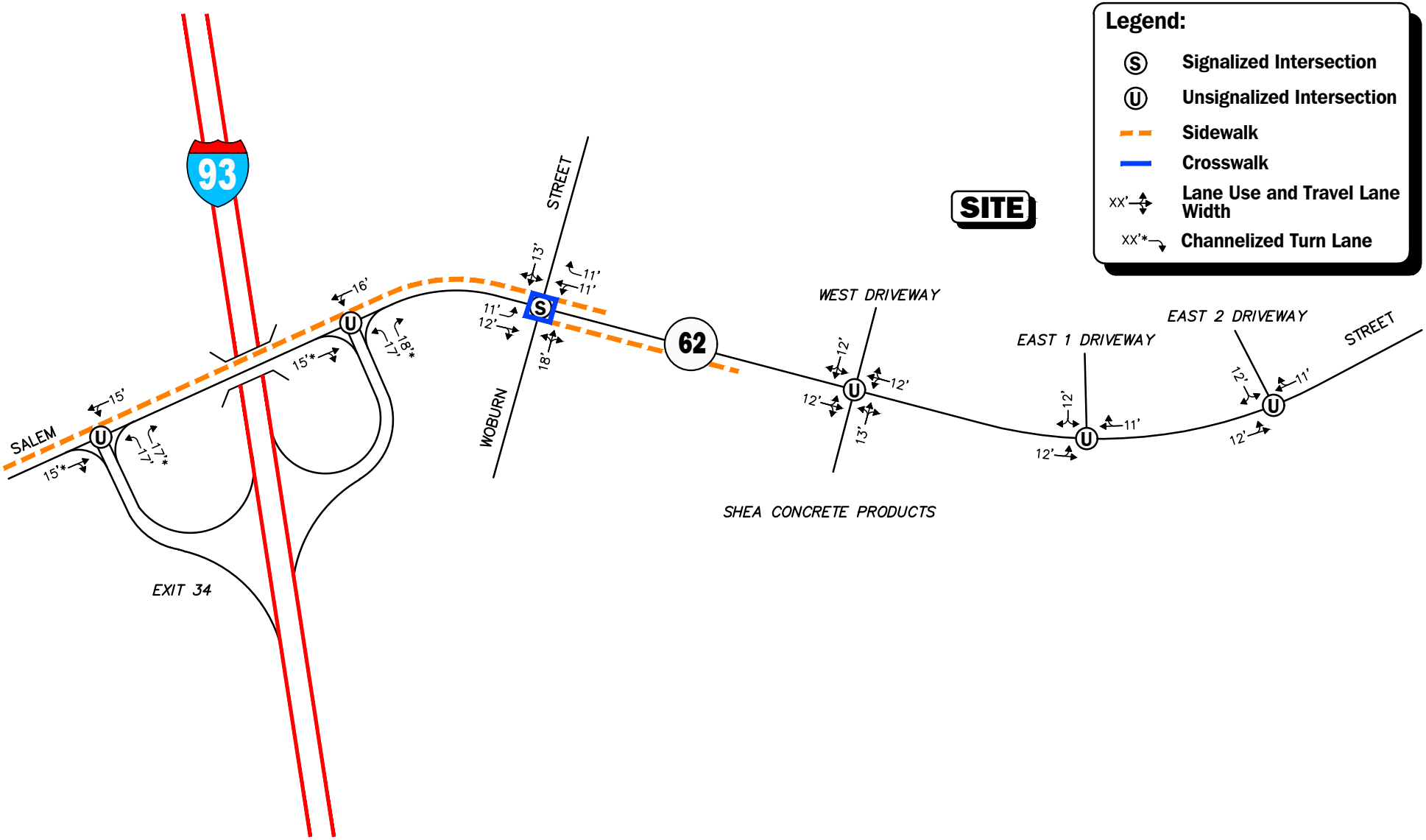

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Figure 2

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

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Traffic-Volume Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic-volume data from MassDOT Continuous Count Station No. 5127 located on the Andover Bypass in Andover was reviewed.[4] Based on a review of this data, it was determined that traffic volumes during the month of March are approximately 5.4 percent *below* average-month conditions. As such, the March traffic volumes were adjusted upward by 5.4 percent in order to be representative of average-month conditions.

In order to account for the impact on traffic volumes and trip patterns resulting from the COVID-19 pandemic, traffic-volume data collected at MassDOT Continuous Count Station No. 4096, located on I-93 north of Route 129 in Wilmington, in March 2022 was compared to data collected at the same count station in March 2017. The 2017 traffic volumes were expanded to 2019 by applying the traffic growth procedure detailed in the April 2020 "Guidance on Traffic Counting Data" published by MassDOT[5] in order to allow for a comparison of the data. Based on this pre- and post-COVID-19 traffic-volume comparison, the March traffic-volume data that was collected as part of this assessment was found to be approximately 1.9 percent *below* the conditions that existed prior to the COVID-19 pandemic. As such, the seasonally adjusted March traffic volumes were adjusted upward by an additional 1.9 percent.

The 2022 Existing traffic volumes are summarized in Table 2, with the weekday morning and evening peak-hour traffic volumes graphically depicted on Figures 3 and 4, respectively. Note that the peak-hour traffic volumes presented in Table 2 were obtained from aforementioned figures.

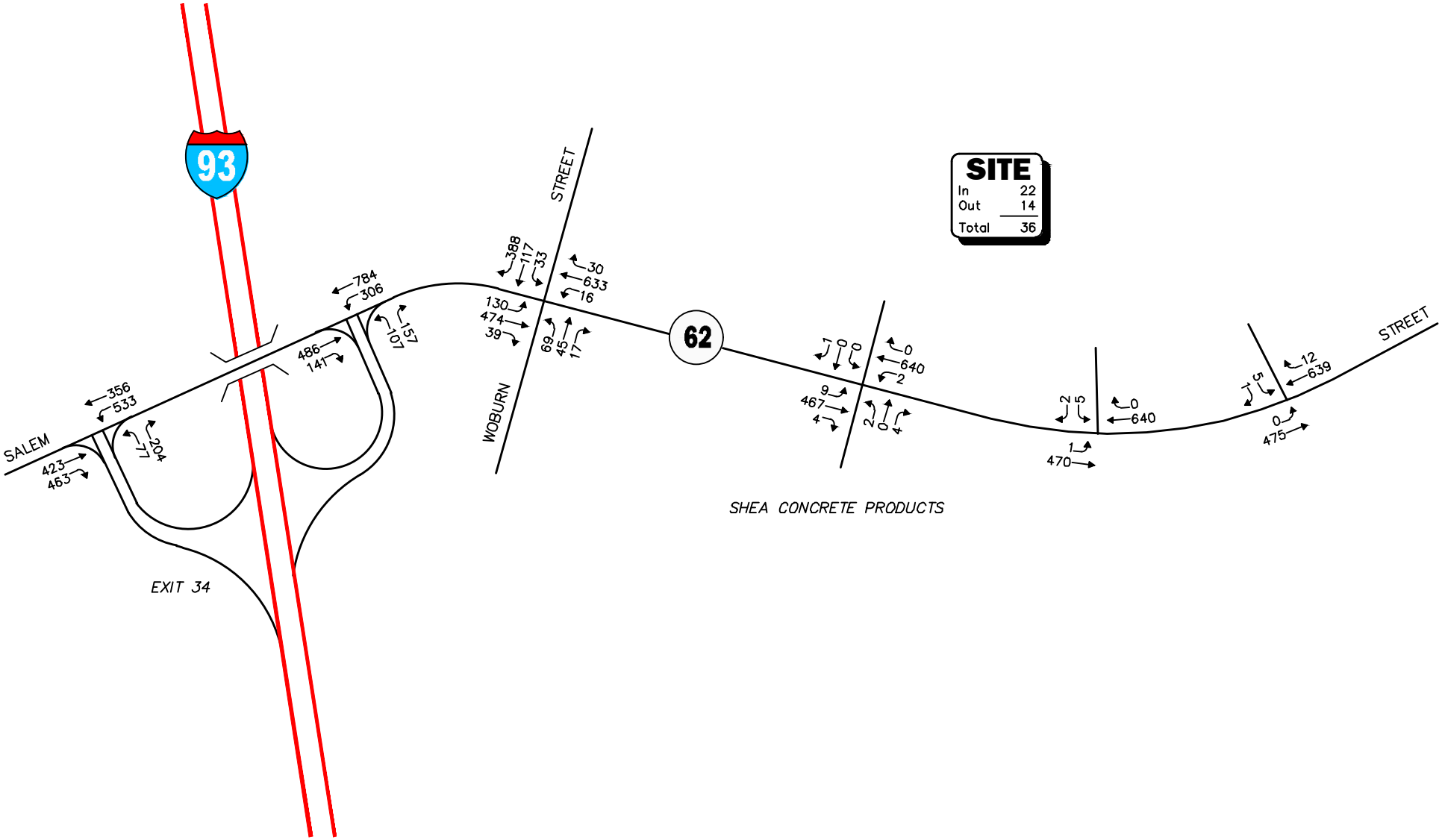
Table 2
2022 EXISTING TRAFFIC VOLUMES

Location/Peak Hour	AWT[a]	VPH[b]	K Factor[c]	Directional Distribution[d]
Route 62, west of the Shea Concrete Driveway:	14,130	--	--	--
Weekday Morning (7:00 – 8:00 AM)	--	1,123	7.9	57.3% WB
Weekday Evening (4:30 – 5:30 PM)	--	1,260	8.9	57.6% EB

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

As can be seen in Table 2, Route 62 in the vicinity of the Project site was found to accommodate approximately 14,130 vehicles on an average weekday (two-way, 24-hour volume), with approximately 1,123 vehicles per hour (vph) during the weekday morning peak-hour and 1,260 vph during the weekday evening peak-hour.

[4]MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2022.
[5]*Guidance on Traffic Counting Data*; MassDOT; revised April 2020.



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

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Figure 3

2022 Existing
Weekday Morning
Peak-Hour Traffic Volumes

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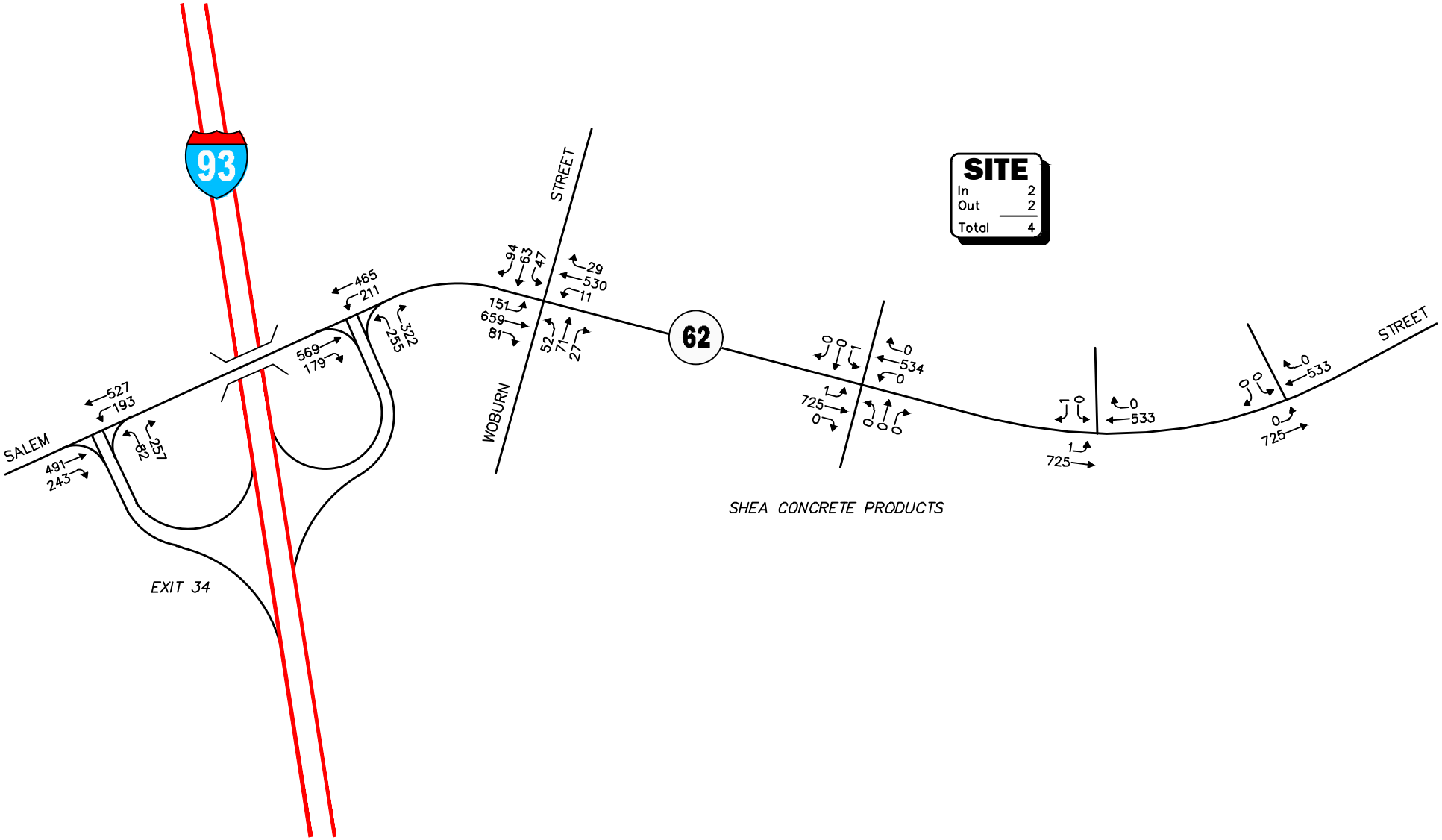

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 4

2022 Existing
Weekday Evening
Peak-Hour Traffic Volumes

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PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in April and May 2022. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadway and at the study intersections, as well as the location of existing and planned future bicycle facilities. As detailed on Figure 2, a sidewalk is provided along the north side of Salem Street easterly to a point approximately 600 feet east of Woburn Street and along south side between the driveway to 471 Salem Street westerly to Woburn Street. Marked crosswalks are provided for crossing all legs of the Route 62/ Woburn Street intersection, with pedestrian traffic signal equipment and phasing (exclusive) provided.

Formal bicycle facilities are not currently provided along the study area roadways; however, Route 62 and Woburn Street provide sufficient width (combined travel lane and shoulder) on a continuous basis to support bicycle travel in a shared traveled-way configuration.[6]

PUBLIC TRANSPORTATION

Regularly scheduled public transportation services are provided to the Town of Wilmington, but are not currently available at the Project site. The closest public transportation services to the Project site are provided by the Massachusetts Bay Transportation Authority (MBTA), which provides Commuter Rail service to North Station in Boston on the Haverhill Line from North Wilmington Station, which is located at 370 Middlesex Avenue (Route 62), approximately 1.6 miles southwest of the Project site. In addition, paratransit services are provided for eligible persons who cannot use fixed-route bus services all or some of the time due to a physical, cognitive, or mental disability in compliance with the Americans with Disabilities Act (ADA) by the MBTA (the RIDE) and the Lowell Regional Transit Authority (LRTA) (Road Runner).

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Route 62 in the vicinity of the Project site in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Route 62	
	Eastbound	Westbound
Mean Travel Speed (mph)	39	40
85th Percentile Speed (mph)	43	45
Posted Speed Limit (mph)	35	40

mph = miles per hour.

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

As can be seen in Table 3, the mean vehicle travel speed along Route 62 in the vicinity of the Project site was found to be 39 mph in eastbound direction and 40 mph westbound. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be 43 mph in the eastbound direction and 45 mph westbound, which is 5 to 8 mph above the posted speed limit (35/40 mph) at the Project site. The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances and is often used in establishing posted speed limits.

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2015 through 2019, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and presented in Table 4.

Based on a review of this data, no (0) motor vehicle crashes were reported to have occurred along Route 62 at the two (2) east driveways that serve the Project site over the five-year review period. The remaining study area intersections were found to have experienced an average of 4.0 or fewer reported motor vehicle crashes per year over the five-year review period and were found to have motor vehicle crash rates *below* the MassDOT statewide and District average crash rates for similar intersections for the MassDOT Highway Division District in which the intersections are located (District 4). The majority of the reported crashes occurred on a weekday; under clear weather conditions; during daylight; and involved angle-type collisions that resulted in property damage only.

A review of the MassDOT statewide High Crash Location List indicated that there are no locations within the study area or along Route 62 in the Town of Wilmington that are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as high crash locations. In addition, no fatal motor vehicle crashes were reported to have occurred at the study area intersections over the five-year review period.

The detailed MassDOT Crash Rate Worksheets are provided in the Appendix.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY[a]

	Route 62/ I-93 Southbound Ramps	Route 62/ I-93 Northbound Ramps	Route 62/ Woburn Street	Route 62/ West Project Site Driveway/ Shea Concrete Driveway
Traffic Control Type[b]	U	U	S	U
Year:				
2015	1	4	3	1
2016	4	4	5	2
2017	3	5	5	0
2018	2	4	2	2
2019	4	3	3	0
Total	14	20	18	5
Average	2.80	4.00	3.60	1.00
Rate[c]	0.35	0.49	0.49	0.20
MassDOT Crash Rate:[d]	0.57/0.57	0.57/0.57	0.73/0.78	0.57/0.57
Significant?[e]	No	No	No	No
Type:				
Angle	8	12	7	0
Rear-End	4	5	7	2
Head-On	1	1	0	0
Sideswipe	1	0	2	1
Fixed Object	0	2	2	0
Pedestrian/Bicycle	0	0	0	0
Unknown/Other	0	0	0	2
Total	14	20	18	5
Conditions:				
Clear	11	15	7	4
Cloudy	3	4	3	0
Rain	0	1	7	0
Fog/Smog/Smoke	0	0	0	0
Snow/Ice	0	0	1	1
Total	14	20	18	5
Lighting:				
Daylight	12	18	12	3
Dawn/Dusk	0	0	1	0
Dark (Road Lit)	2	0	5	2
Dark (Road Unlit)	0	2	0	0
Total	14	20	18	5
Day of Week:				
Monday through Friday	10	18	12	4
Saturday	2	1	3	1
Sunday	2	1	3	0
Total	14	20	18	5
Severity:				
Property Damage Only	8	13	13	4
Personal Injury	6	7	4	1
Fatality	0	0	0	0
Unknown	0	0	1	0
Total	14	20	18	5

[a]Source: MassDOT Safety Management/Traffic Operations Unit records, 2015 through 2019.
[b]Traffic Control Type: S = Signalized; U = unsignalized.
[c]Crash rate per million vehicles entering the intersection.
[d]Districtwide/Statewide crash rate.
[e]The intersection crash rate is significant if it is found to exceed the MassDOT crash rate for the MassDOT Highway Division District in which the Project is located (District 4).

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2029, which reflects a seven-year planning horizon consistent with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. Independent of the Project, traffic volumes on the roadway network in the year 2029 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2029 No-Build traffic volumes to reflect 2029 Build traffic-volume conditions with the Project.

FUTURE TRAFFIC GROWTH

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

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

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

Specific Development by Others

The Planning Departments of the Towns of Wilmington and North Reading were contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on this consultation, the following projects were identified for review in conjunction with this assessment:

- ***Proposed Multifamily Residential Development, Middlesex Avenue/Jefferson Road, Wilmington, Massachusetts.*** This project entails the construction of approximately 108± multifamily residential units to be generally situated in the northeast corner of the Middlesex Avenue/Jefferson Road intersection to the southwest of the Project site. Traffic

volumes associated with this project within the study area were obtained from the traffic study prepared for the project and were incorporated into the future conditions traffic volumes.[7]

- ***Proposed Age-Restricted (55+) Condominiums, 104 Lowell Road (Route 62), North Reading, Massachusetts.*** This project entails the construction of approximately 450± age-restricted (55+) condominiums to be located at 104 Lowell Road to the east of the Project site. Traffic volumes associated with this project within the study area were obtained from the traffic study prepared for the project and were incorporated into the future conditions traffic volumes.[8]

No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate (discussion follows).

General Background Traffic Growth

Traffic-volume data compiled by MassDOT from permanent count stations located in Wilmington, Andover, Tewksbury, and Woburn were reviewed in order to determine general traffic growth trends in the area. This data indicates that traffic volumes have fluctuated over the past several years (2015 to 2019), with the average growth rate found to be approximately 0.70 percent. In order to provide a prudent planning condition for the Project, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Roadway Improvement Projects

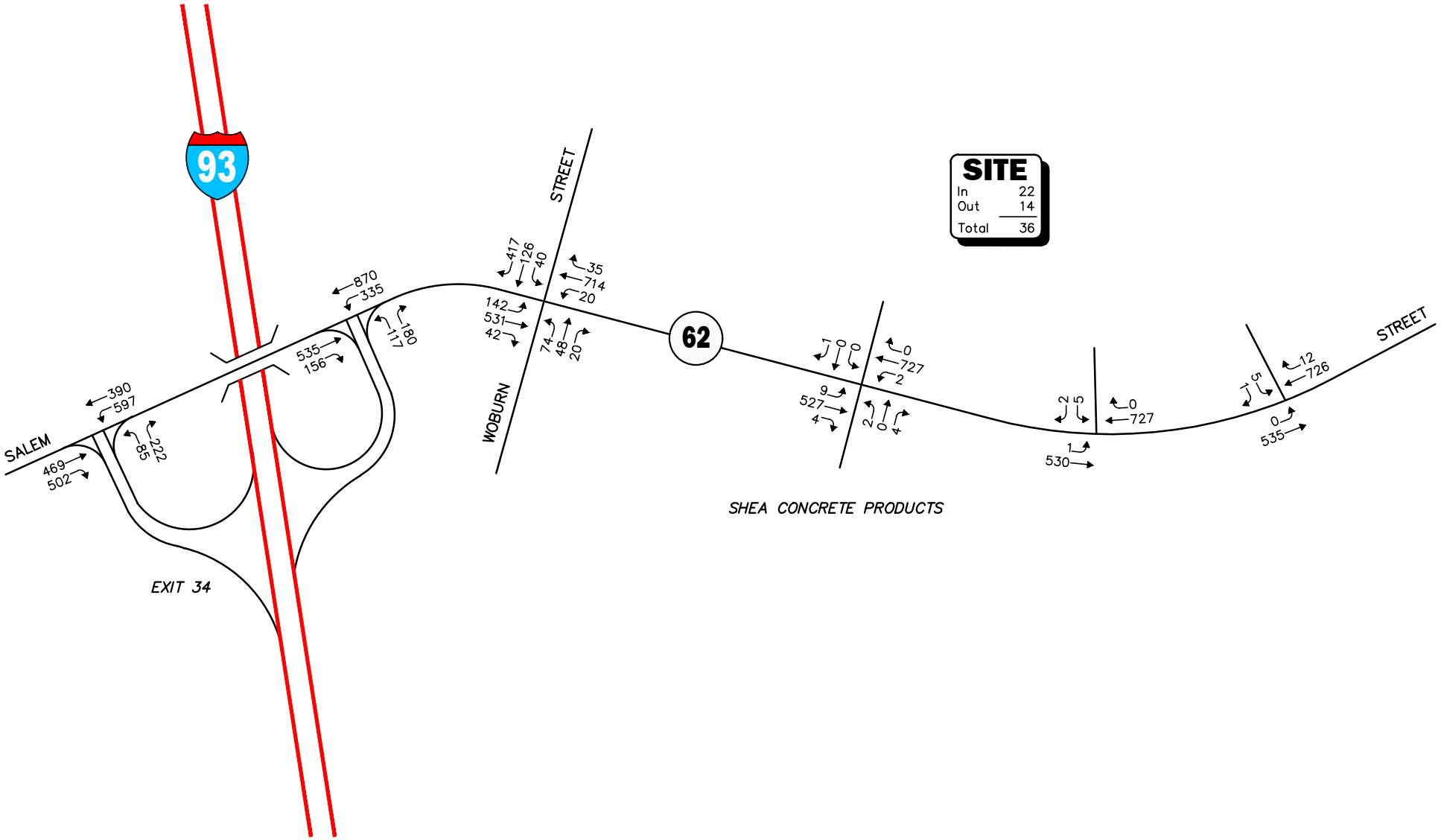
MassDOT and the Town of Wilmington were consulted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2029 within the study area. Based on these discussions, no future roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

No-Build Traffic Volumes

The 2029 No-Build condition peak-hour traffic volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2022 Existing peak-hour traffic volumes and then adding the peak-hour traffic volumes associated with the identified specific development projects by others (Jefferson Road Residential development and 104 Lowell Road Condominiums). The resulting 2029 No-Build weekday morning and evening peak-hour traffic volumes are shown on Figures 5 and 6, respectively.

[7] *Transportation Impact Assessment*, Proposed Multifamily Residential Development, Wilmington, Massachusetts; VAI; May 4, 2020.

[8] *Traffic Impact Assessment*, Proposed Age-Restricted (55+) Condominiums, North Reading, Massachusetts; MDM; December 21, 2020.



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

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Figure 5

2029 No-Build
Weekday Morning
Peak-Hour Traffic Volumes

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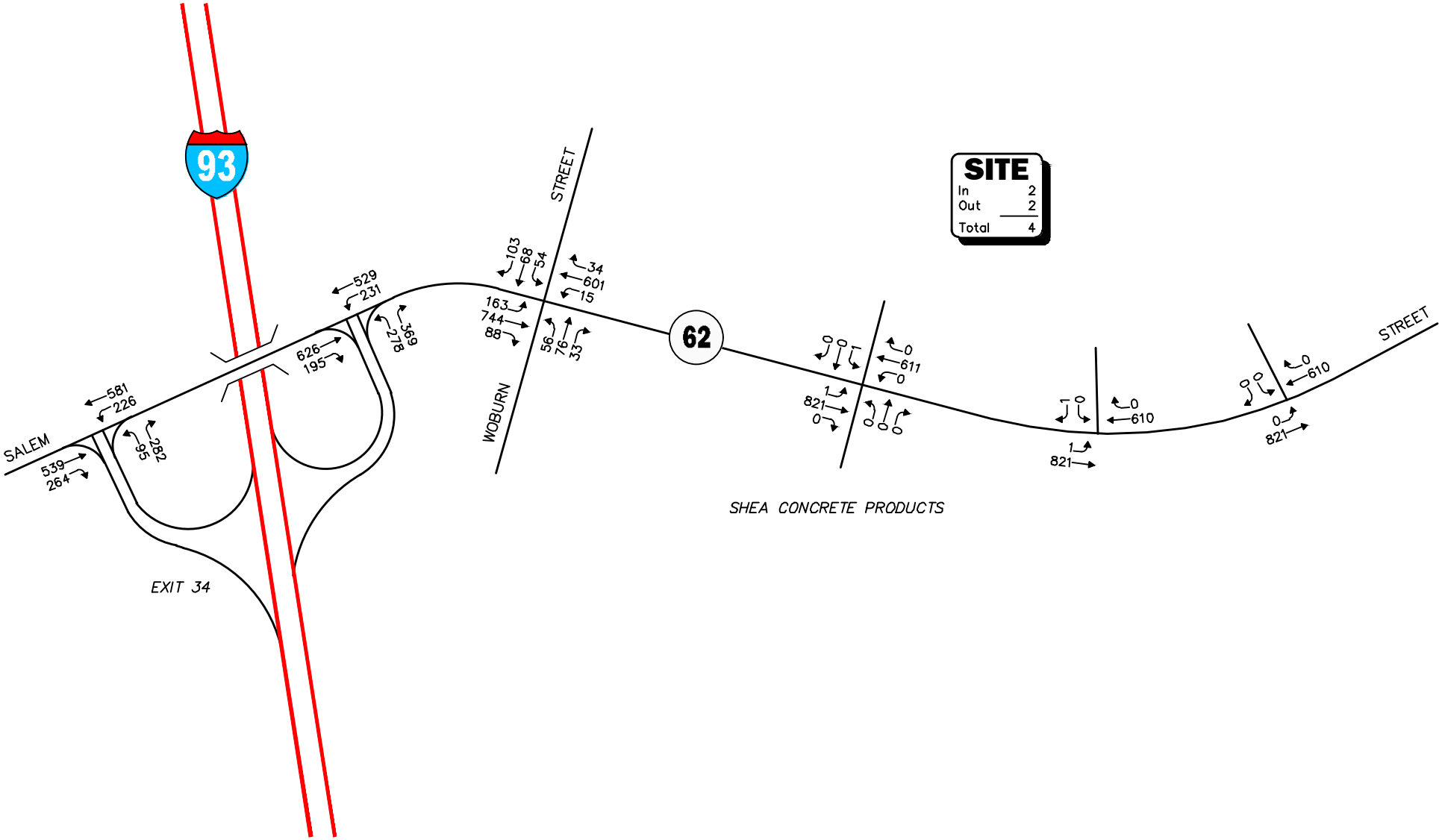

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 6

2029 No-Build
Weekday Evening
Peak-Hour Traffic Volumes

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PROJECT-GENERATED TRAFFIC

Design year (2029 Build) traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

As proposed, the Project will entail the construction of a 237,880± sf warehouse building. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE[9] for various warehouse uses were reviewed, including those for a general warehouse and both sortation and non-sortation type warehouses. Based on this review and the relative size of the warehouse building, ITE Land Use Code (LUC) 150, *Warehousing*, was used to develop the traffic characteristics of the Project as this use produced higher overall traffic volumes for the Project vs. the use of trip-generation data for a non-sortation warehouse given that an end user of the warehouse buildings has not been identified; the sortation-type warehouse produced a disproportionate volume of traffic in relation to the overall size of the buildings that are proposed. The resulting traffic volumes are summarized in Table 5 and have been disseminated into passenger car trips and truck trips.

Table 5
TRIP-GENERATION SUMMARY[a]

Time Period/Direction	(A) Passenger Car Trips	(B) Truck Trips	(C = A+B) Vehicle Trips
Average Weekday Daily:			
Entering	135	72	207
Exiting	135	72	207
Total	270	144	414
Weekday Morning Peak Hour:			
Entering	38	2	40
Exiting	9	3	12
Total	47	5	52
Weekday Evening Peak Hour:			
Entering	11	4	15
Exiting	37	3	40
Total	48	7	55

[a]Based on ITE LUC 150, *Warehousing; 237,880 sf.*

Project-Generated Traffic Volume Summary

As can be seen in Table 5, using the higher trip rates associated with a general warehouse, the Project is expected to generate 414 vehicle trips on an average weekday (two-way volume over the operational day of the Project, or 207 vehicles entering and 207 exiting), consisting of 270 passenger car (employee) trips and 144 truck trips. During the weekday morning peak hour,

[9]Ibid 1.

the Project is expected to generate 52 vehicle trips (40 vehicles entering and 12 exiting), consisting of 47 passenger car trips and 5 truck trips. During the weekday evening peak hour, the Project is expected to generate 55 vehicle trips (15 vehicles entering and 40 exiting), consisting of 48 passenger car trips and 7 truck trips.

TRIP DISTRIBUTION AND ASSIGNMENT

Given the differing nature of the trips associated with the Project, separate trip-distribution patterns were created for employee trips and truck trips. The employee trip-distribution pattern was developed based on a review of Journey-to-Work data for persons employed in the Town of Wilmington obtained from the U.S. Census and then refined based on the location of major population centers in the area and existing traffic patterns. The truck trip-distribution pattern was determined based on the location of connections of the Interstate Highway System (IHS). Figures 7 and 8 depict the resulting trip-distribution pattern for employees and trucks, respectively. The additional passenger vehicle traffic expected to be generated by the Project was assigned on to the study area roadway network as shown on Figures 9 and 10 for the weekday morning and evening peak hours, respectively, and the additional truck traffic expected to be generated by the Project was assigned onto the study area roadway network as shown on Figures 11 and 12 for the weekday morning and evening peak hours, respectively.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

The 2029 Build condition traffic volumes were developed by: i) removing the traffic volumes associated with the existing use that occupies the Project site and that will be removed to accommodate the Project from the 2029 No-Build peak-hour traffic volumes; and ii) adding the peak-hour traffic volumes that are expected to be generated by the Project. The 2029 Build weekday morning and evening peak-hour traffic volumes are graphically depicted on Figures 13 and 14, respectively.

A summary of peak-hour projected traffic-volume changes outside of the study area that is the subject of this assessment is shown in Table 6. These changes are a result of the construction of the Project.

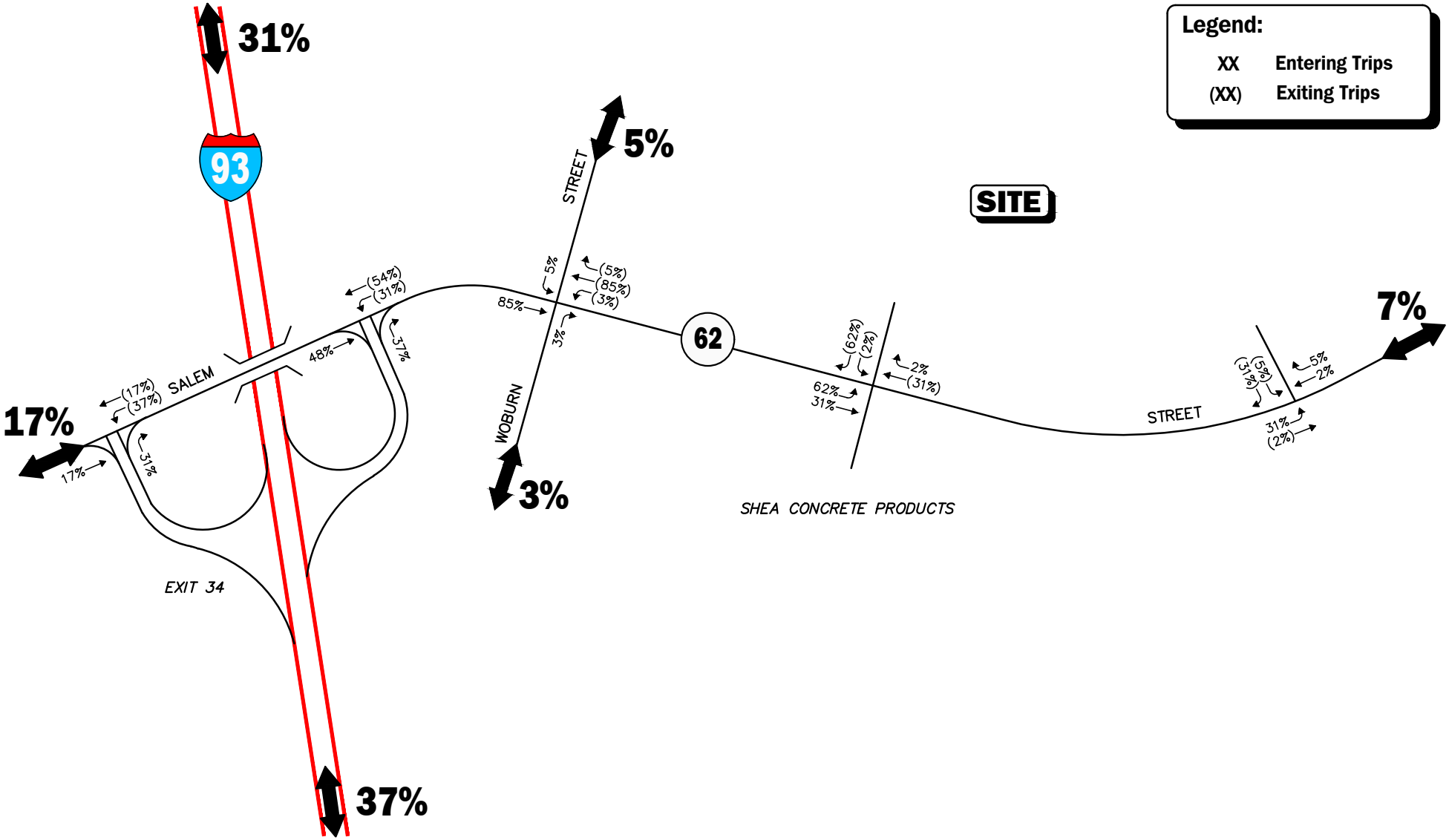

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Figure 7

Passenger Car
Trip Distribution Map

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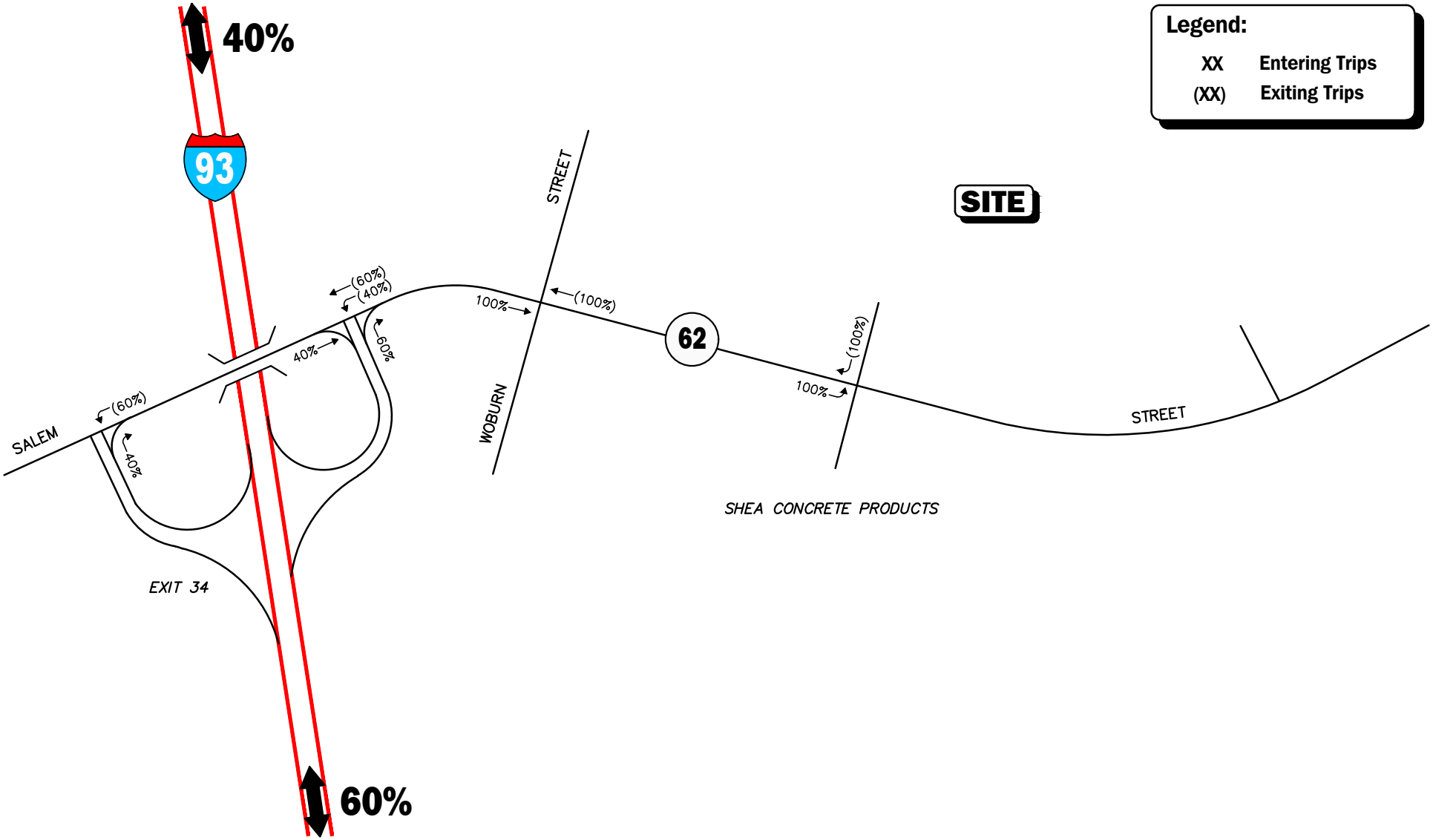

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Figure 8

Truck
Trip Distribution Map

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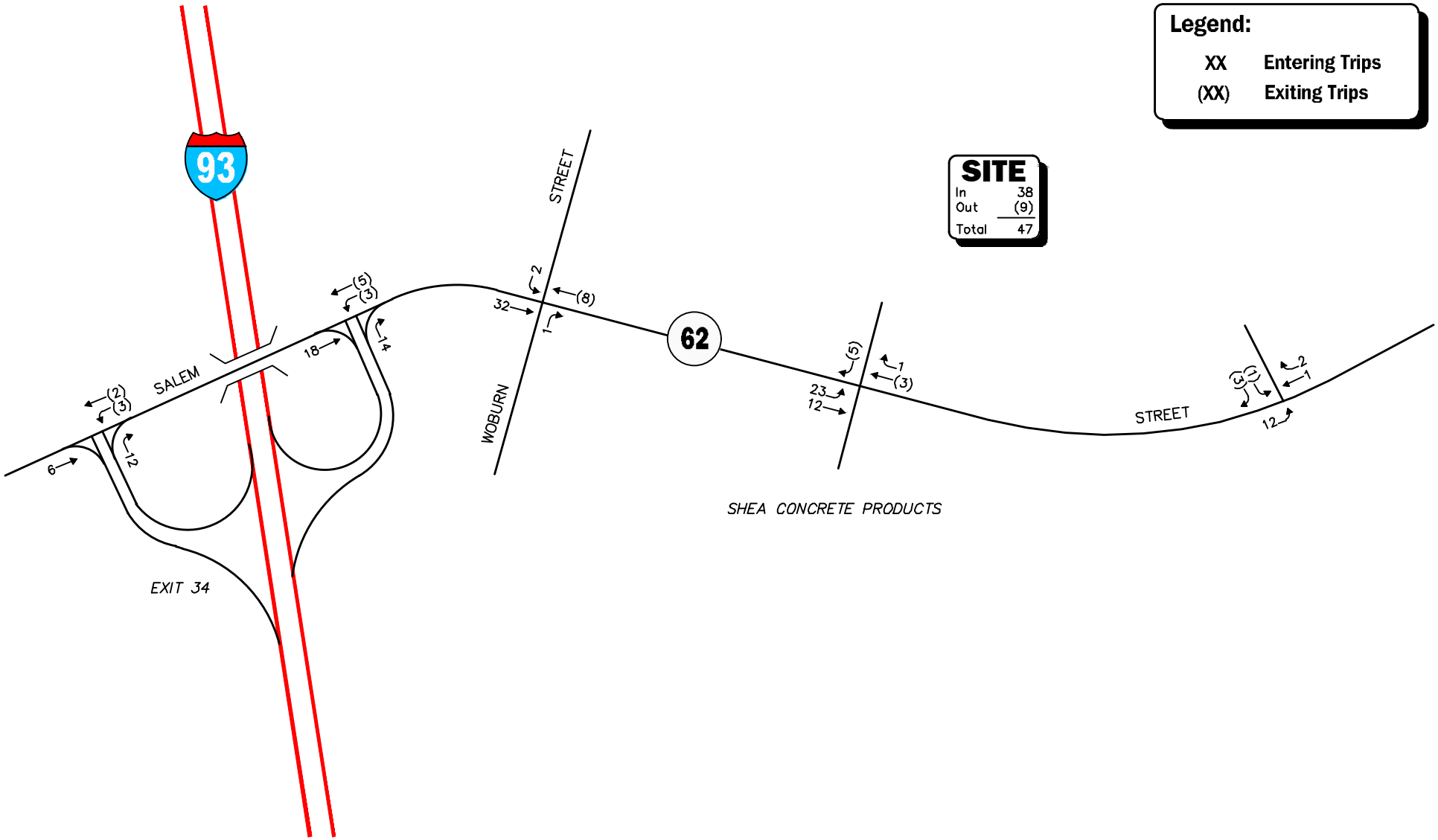

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Figure 9

Project-Generated Passenger Car Trips Weekday Morning Peak Hour Traffic Volumes

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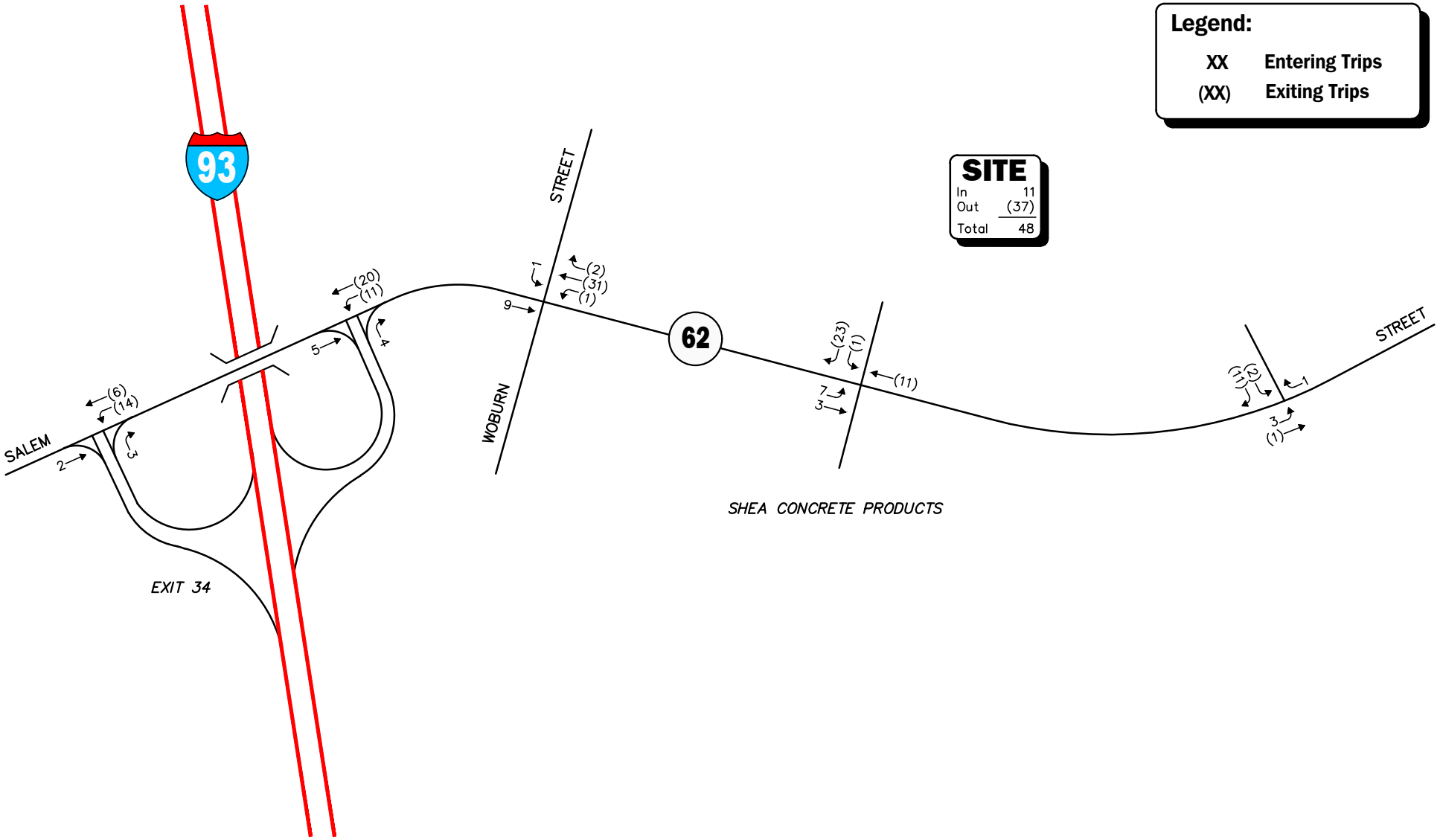

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Figure 10

Project-Generated Passenger Car Trips Weekday Evening Peak Hour Traffic Volumes

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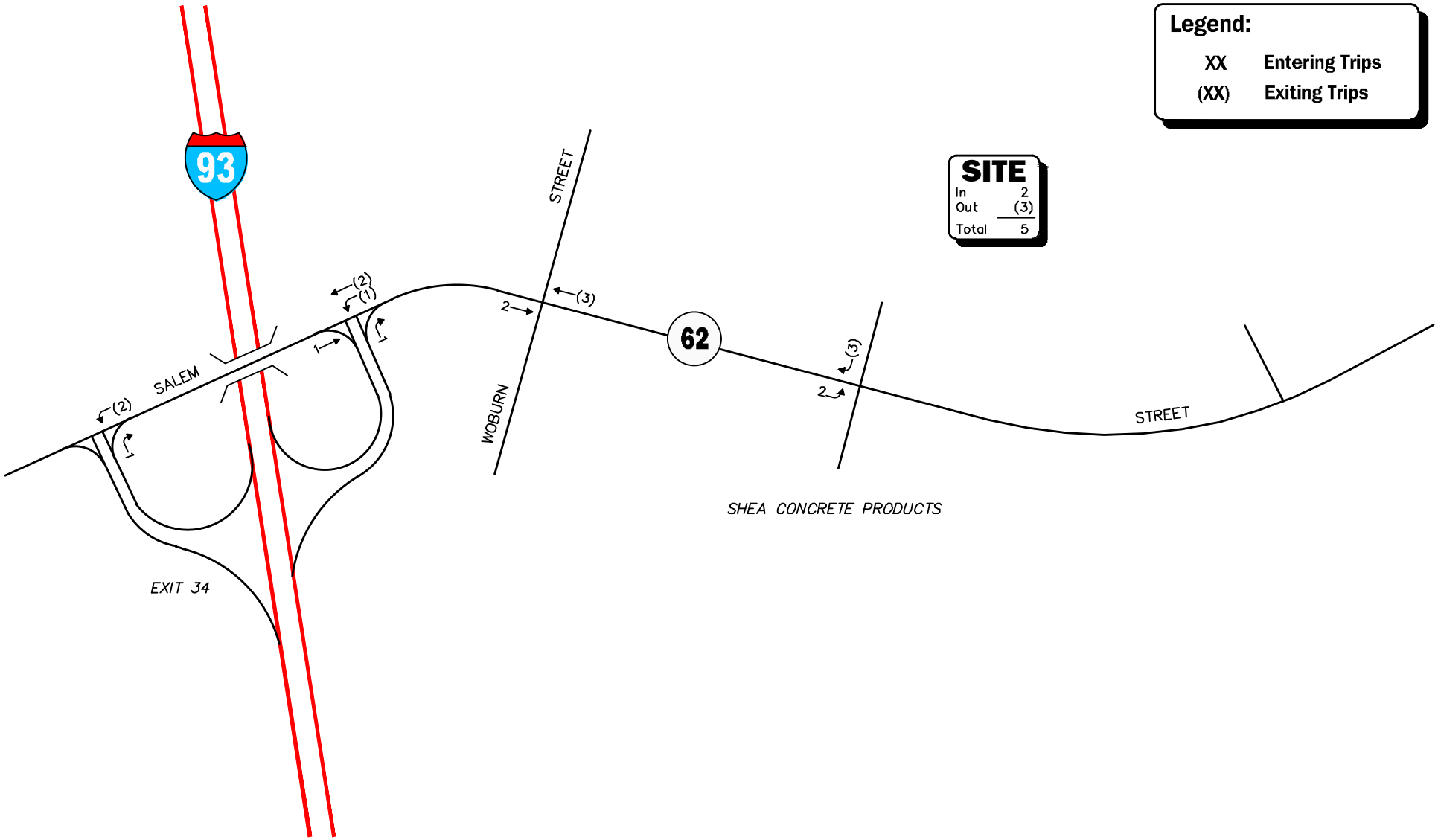

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Figure 11

Project-Generated Truck Trips Weekday Morning Peak Hour Traffic Volumes

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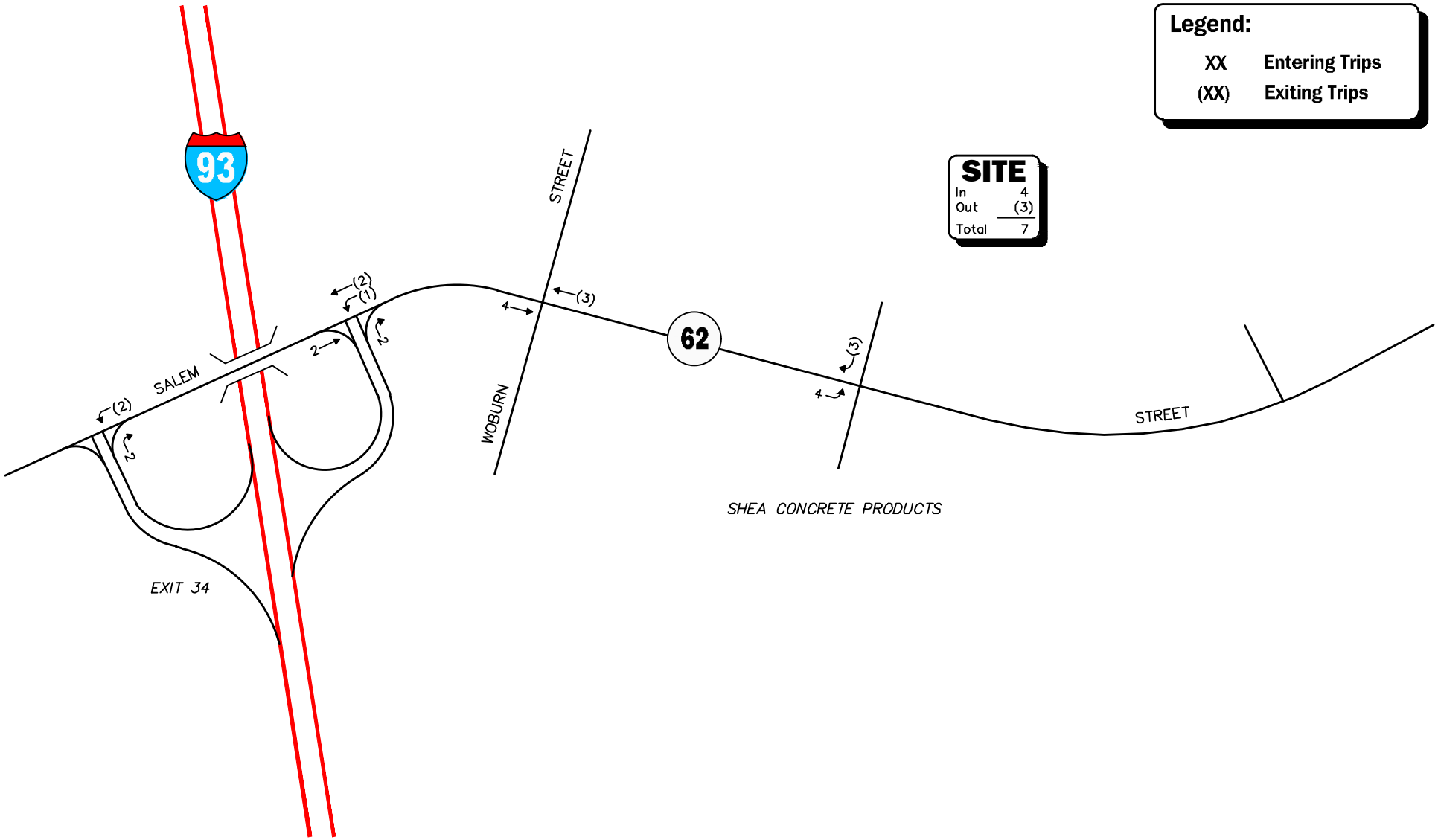

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Figure 12

Project-Generated Truck Trips Weekday Evening Peak Hour Traffic Volumes

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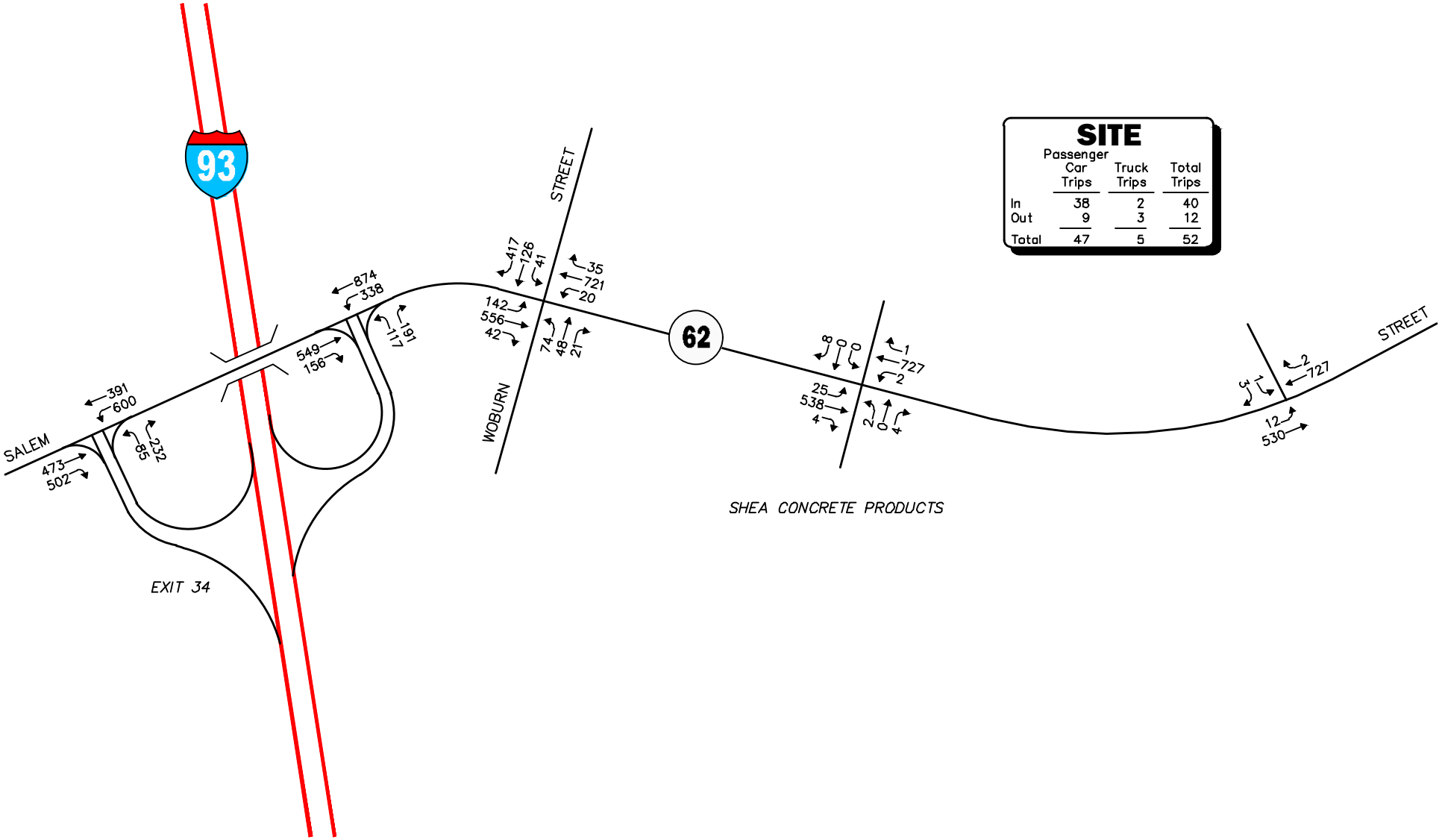

SITE

	Passenger Car Trips	Truck Trips	Total Trips
In	38	2	40
Out	9	3	12
Total	47	5	52

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

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Figure 13

2029 Build
Weekday Morning
Peak-Hour Traffic Volumes

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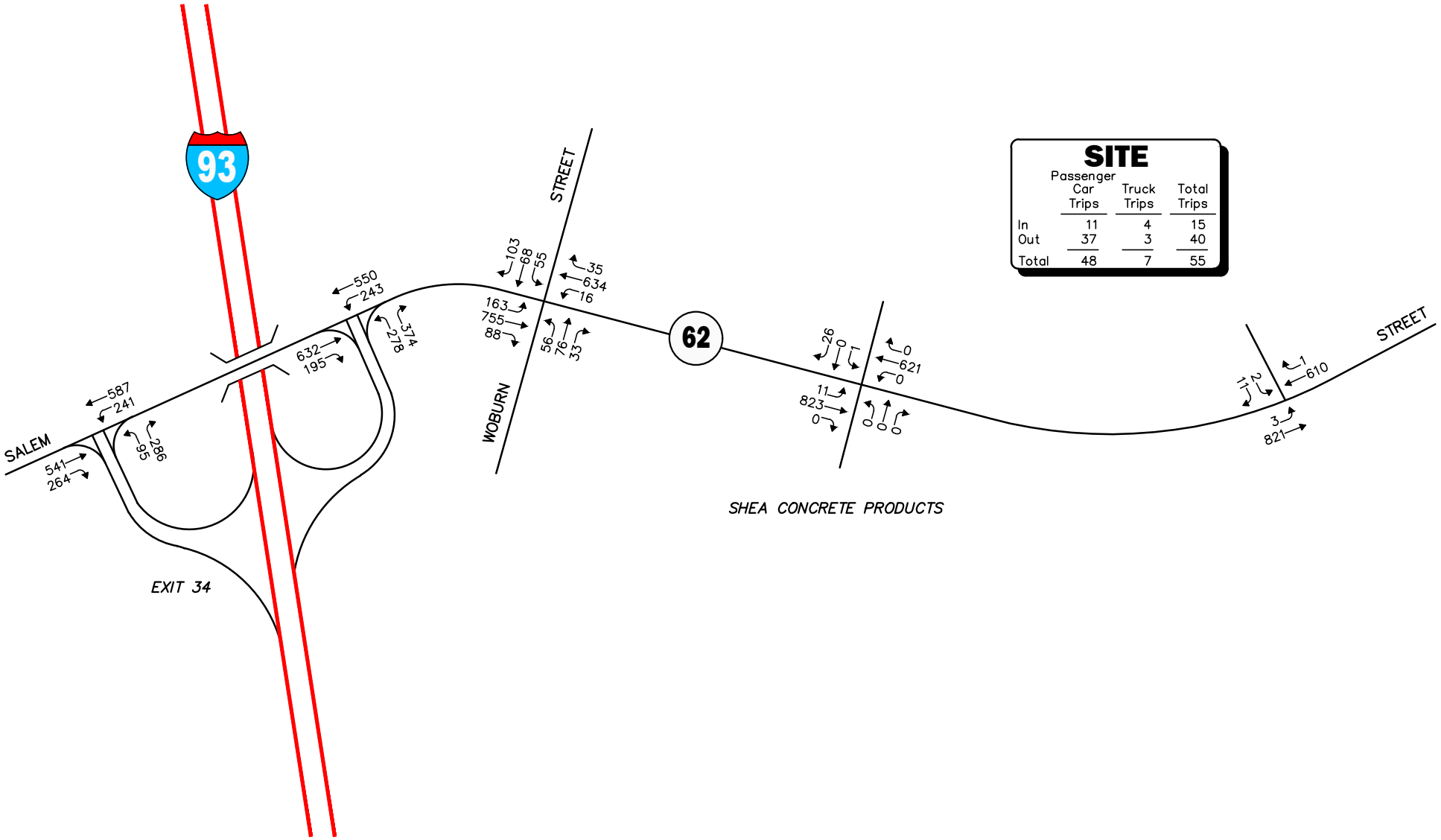

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 14

2029 Build
Weekday Evening
Peak-Hour Traffic Volumes

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Table 6
PEAK-HOUR TRAFFIC-VOLUME INCREASES

Location/Peak Hour	2022 Existing	2029 No-Build	2029 Build	Traffic-Volume Increase Over No-Build	Percent Increase Over No-Build
Route 62, west of I-93:					
Weekday Morning	1,319	1,446	1,451	5	0.3
Weekday Evening	1,343	1,479	1,487	8	0.5
Woburn Street, north of Route 62:					
Weekday Morning	745	808	809	1	0.1
Weekday Evening	455	498	501	3	0.6
Woburn Street, south of Route 62:					
Weekday Morning	303	330	331	1	0.3
Weekday Evening	305	336	337	1	0.3
Route 62, east of the Project Site:					
Weekday Morning	1,131	1,278	1,260	-18	-1.4
Weekday Evening	1,258	1,431	1,434	3	0.2

As shown in Table 6, Project-related traffic-volume changes outside of the study area relative to 2029 No-Build conditions are anticipated to range from a reduction of 1.4 percent to an increase of 0.6 percent during the peak periods, with corresponding vehicle volume changes shown to range from a reduction of 18 vehicle to an increase of eight (8) vehicles. The identified traffic volume reductions are a result of the removal of trips associated with the existing use that occupies the Project site (materials processing yard). ***When distributed over the peak hour, the predicted traffic-volume increases would not result in a significant impact (increase) on motorist delays or vehicle queuing outside of the immediate study area that is the subject of this assessment.***

TRAFFIC OPERATIONS ANALYSIS

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

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.[10] The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

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

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

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

Signalized Intersections

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

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

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 *Highway Capacity Manual.*[11] and implemented as a part of the Synchro® 11 software as recommended by MassDOT. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. Level-of-service designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. Table 7 summarizes the relationship between level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 7
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS[a]

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

[a]Source: *Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2000; page 16-2.

[11]*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000.

Unsignalized Intersections

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

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

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual.*[12] Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the 2010 *Highway Capacity Manual*. Table 8 summarizes the relationship between level of service and average control delay for two-way STOP-controlled and all-way STOP-controlled intersections.

Table 8
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[a]

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

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

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

Vehicle Queue Analysis

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

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2022 Existing, 2029 No-Build, and 2029 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized on Tables 9 and 10, with the detailed analysis results presented in the Appendix.

The following is a summary of the level-of-service and vehicle queue analyses for the intersections within the study area. For context, we note that an LOS of "D" or better is generally defined as "acceptable" operating conditions. Project-related impacts at the study area intersections are shown in Tables 9 and 10 and are defined as follows:

Signalized Intersection

Route 62 at Woburn Street

No change in overall level-of-service is predicted to occur over No-Build conditions, with Project-related impacts generally defined as a predicted increase in overall average motorist delay that resulted in an increase in vehicle queuing of up to two (2) vehicles. Independent of the Project, the overall intersection and the Woburn Street approaches are predicted to operate over capacity (i.e., LOS "F") under 2029 No-Build conditions during the weekday morning peak-hour.

Unsignalized Intersections

Route 62 at the I-93 Southbound Ramps

No change in level-of-service is predicted to occur for any movement over No-Build conditions, with Project-related impacts generally defined as a predicted increase in average motorist delay that resulted in an increase in vehicle queuing of up to one (1) vehicle. Independent of the Project, the left-turn movements from the I-93 southbound off-ramp are currently operating over capacity under 2022 Existing conditions during the peak hours and right-turn movements from the off-ramp are predicted to operate at capacity (i.e., LOS "E") under 2029 No-Build (without the Project) conditions during the weekday evening peak-hour.

Route 62 at the I-93 Northbound Ramps

No change in level-of-service is predicted to occur for any movement over No-Build conditions, with Project-related impacts generally defined as a predicted increase in average motorist delay that resulted in an increase in vehicle queuing of up to one (1) vehicle. Independent of the Project, left-turn movements from the I-93 northbound off-ramp are currently operating over capacity under 2022 Existing conditions during the peak hours and right-turn movements from the off-ramp are predicted to operate over capacity under 2029 No-Build (without the Project) conditions during the weekday evening peak-hour.

Route 62 at Shea Concrete Driveway and the West Project Site Driveway

All movements at the west Project site driveway intersection with Route 62 are predicted to operate at LOS D or better with negligible vehicle queuing. All movements along Route 62 approaching the Project site driveway were shown to operate at LOS A during both peak hours also with negligible vehicle queuing.

Route 62 at the East 1 Project Site Driveway

This driveway will be closed under 2029 Build conditions with the construction of the Project.

Route 62 at the East 2 Project Site Driveway

All movements at the east Project site driveway intersection with Route 62 are predicted to operate at LOS C or better with negligible vehicle queuing. All movements along Route 62 approaching the Project site driveway were shown to operate at LOS A during both peak hours also with negligible vehicle queuing.

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

	2022 Existing				2029 No-Build				2029 Build			
Signalized Intersection/Peak-hour/Movement	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue 50th/95th	V/C	Delay	LOS	Queue 50th/95th
Route 62 at Woburn Street												
Weekday Morning:												
Route 62 EB LT	0.60	42.0	D	4/6	0.66	46.9	D	4/7	0.66	46.9	D	4/7
Route 62 EB TH/RT	0.48	7.0	A	6/8	0.52	7.1	A	7/9	0.54	7.4	A	7/10
Route 62 WB LT/TH	0.80	24.8	C	14/20	0.88	30.6	C	17/27	0.89	31.6	C	17/28
Route 62 WB RT	0.02	11.7	B	0/0	0.02	11.3	B	0/0	0.02	11.3	B	0/0
Woburn Street NB LT/TH/RT	1.56	>80.0	F	6/10	1.77	>80.0	F	7/11	1.74	>80.0	F	7/11
Woburn Street SB LT/TH/RT	0.76	43.3	D	6/14	1.61	>80.0	F	22/31	1.63	>80.0	F	22/31
Overall	--	**49.0**	**D**	--	--	**>80.0**	**F**	--	--	**>80.0**	**F**	--
Weekday Evening:												
Route 62 EB LT	0.54	33.1	C	3/9	0.64	42.6	D	4/10	0.70	51.4	D	4/10
Route 62 EB TH/RT	0.69	12.5	B	9/24	0.74	14.2	B	11/30	0.72	13.1	B	11/31
Route 62 WB LT/TH	0.79	28.2	C	10/21	0.81	29.4	C	12/27	0.78	26.4	C	13/29
Route 62 WB RT	0.02	15.3	B	0/0	0.02	14.9	B	0/0	0.02	13.8	B	0/0
Woburn Street NB LT/TH/RT	0.48	28.2	C	3/8	0.59	35.5	D	4/9	0.68	44.4	D	5/10
Woburn Street SB LT/TH/RT	0.53	29.1	C	3/11	0.66	37.9	D	5/13	0.74	47.8	D	6/13
Overall	--	**22.2**	**C**	--	--	**25.6**	**C**	--	--	**26.8**	**C**	--

[a]Volume-to-capacity ratio.
[b]Percentile delay per vehicle in seconds.
[c]Level-of-Service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

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

Unsignalized Intersection/Peak Hour/Movement	2022 Existing				2029 No-Build				2029 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Route 62 at the I-93 SB Ramps												
Weekday Morning:												
Route 62 EB TH/RT	886	0.0	A	0	971	0.0	A	0	975	0.0	A	0
Route 62 WB LT/TH	891	7.4	A	4	987	8.8	A	5	991	8.9	A	5
I-93 SB Ramps NB LT	77	>50.0	F	12	85	>50.0	F	14	85	>50.0	F	14
I-93 SB Ramps NB RT	201	21.7	C	3	222	27.3	D	4	232	29.1	D	4
Weekday Evening:												
Route 62 EB TH/RT	734	0.0	A	0	803	0.0	A	0	805	0.0	A	0
Route 62 WB LT/TH	720	2.5	A	1	807	2.8	A	1	828	2.9	A	1
I-93 SB Ramps NB LT	82	>50.0	F	7	95	>50.0	F	11	95	>50.0	F	12
I-93 SB Ramps NB RT	257	25.9	D	5	282	36.4	E	7	286	37.7	E	7
Route 62 at the I-93 NB Ramps												
Weekday Morning:												
Route 62 EB TH/RT	627	0.0	A	0	691	0.0	A	0	705	0.0	A	0
Route 62 WB LT/TH	1,090	2.9	A	2	1,205	3.1	A	2	1,212	3.2	A	2
I-93 NB Ramps NB LT	107	>50.0	F	16	117	>50.0	F	18	117	>50.0	F	18
I-93 NB Ramps NB RT	157	17.0	C	2	180	20.2	C	3	191	21.5	C	3
Weekday Evening:												
Route 62 EB TH/RT	748	0.0	A	0	821	0.0	A	0	827	0.0	A	0
Route 62 WB LT/TH	676	3.1	A	1	760	3.2	A	1	793	3.2	A	1
I-93 NB Ramps NB LT	255	>50.0	F	28	278	>50.0	F	34	278	>50.0	F	35
I-93 NB Ramps NB RT	322	34.8	D	7	369	>50.0	F	11	374	>50.0	F	12
Route 62 at Shea Concrete Driveway and West Project Site Driveway												
Weekday Morning:												
Route 62 EB LT/TH/RT	480	0.2	A	0	540	0.2	A	0	567	0.4	A	0
Route 62 WB LT/TH/RT	642	0.0	A	0	729	0.0	A	0	730	0.0	A	0
Shea Concrete Driveway NB LT/TH/RT	6	20.1	C	0	6	24.0	C	0	6	25.9	D	0
West Project Site Driveway SB LT/TH/RT	1	16.5	C	0	1	18.2	C	0	8	14.2	B	0
Weekday Evening:												
Route 62 EB LT/TH/RT	726	0.0	A	0	822	0.0	A	0	834	0.1	A	0
Route 62 WB LT/TH/RT	534	0.0	A	0	611	0.0	A	0	621	0.0	A	0
Shea Concrete Driveway NB LT/TH/RT	0	0.0	A	0	0	0.0	A	0	0	0.0	A	0
West Project Site Driveway SB LT/TH/RT	1	34.3	D	0	1	45.0	E	0	27	15.1	C	0

See notes at end of table.

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

Unsignalized Intersection/Peak Hour/Movement	2022 Existing				2029 No-Build				2029 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Route 62 at the East 1 Project Site Driveway												
Weekday Morning:												
Route 62 EB LT/TH	471	0.0	A	0	531	0.0	A	0				
Route 62 WB TH/RT	640	0.0	A	0	727	0.0	A	0	Driveway to be Closed in Conjunction			
East 1 Project Site Driveway SB LT/RT	7	20.2	C	0	7	23.8	C	0	with the Project			
Weekday Evening:												
Route 62 EB LT/TH	726	0.0	A	0	822	0.0	A	0				
Route 62 WB TH/RT	533	0.0	A	0	610	0.0	A	0				
East 1 Project Site Driveway SB LT/RT	1	11.8	B	0	1	12.6	B	0				
Route 62 at the East 2 Project Site Driveway												
Weekday Morning:												
Route 62 EB LT/TH	475	0.0	A	0	535	0.0	A	0	542	0.2	A	0
Route 62 WB TH/RT	651	0.0	A	0	738	0.0	A	0	729	0.0	A	0
East 2 Project Site Driveway SB LT/RT	6	26.9	D	1	6	33.1	D	1	4	17.4	C	0
Weekday Evening:												
Route 62 EB LT/TH	725	0.0	A	0	821	0.0	A	0	824	0.0	A	0
Route 62 WB TH/RT	533	0.0	A	0	610	0.0	A	0	611	0.0	A	0
East 2 Project Site Driveway SB LT/RT	0	0.0	A	0	0	0.0	A	0	13	16.5	C	0

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

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the Project site driveway intersections with Route 62 (two (2) locations) in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[13] requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with oncoming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 11 presents the measured SSD and ISD at the subject intersections.

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

Table 11
SIGHT DISTANCE MEASUREMENTS[a]

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD)[b]	Measured
Route 62 at the West Project Site Driveway			
Stopping Sight Distance:			
Route 62 approaching from the east	360	--	426
Route 62 approaching from the west	360	--	489
Intersection Sight Distance:			
Looking to the east from the West Project Driveway	360	695	455[c]
Looking to the west from the West Project Driveway	360	765	413
Route 62 at the East Project Site Driveway			
Stopping Sight Distance:			
Route 62 approaching from the east	360	--	500+
Route 62 approaching from the west	360	--	491
Intersection Sight Distance:			
Looking to the east from the East Project Driveway	360	695	500+
Looking to the west from the East Project Driveway	360	765	277/479[d]

[a]Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 45 mph approach speed on Route 62.

[b]Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed. The critical gap for the intersection sight distance values were increased to 11.5 seconds for left-turn movements and to 10.5 seconds for right-turn movements to reflect the longer gaps that are required for combination trucks (i.e., tractor semi-trailer combinations).

[c]Available sight distance with the trimming/removal of trees and vegetation located within the sight triangle area to the east of the west Project site driveway along the north side of Route 62.

[d]Available sight distance with the removal of a large stone located within the sight triangle area to the west of the east Project site driveway along the north side of Route 62.

As can be seen in Table 11, with the trimming or removal of trees and vegetation located within the sight triangle area of the west Project site driveway and the removal of a large stone located within the sight triangle area of the east Project site driveway, the available lines of sight to and from the Project site driveway intersections were found to exceed the recommended minimum sight distance to function in a safe (SSD) manner based on a 45 mph appropriate approach speed, which is above both the measured 85th percentile vehicle travel speed (43/45 mph) and the posted speed limits (35/40) at the Project site driveways.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of a warehouse building to be located at 800 Salem Street (Route 62) in Wilmington, Massachusetts. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment and using conservative (high) trip estimates for the Project, we have concluded the following:

1. Using trip-generation statistics published by the ITE[14] for a trip intensive warehouse use (general warehousing in this case), the Project is expected to generate approximately 414 vehicle trips on an average weekday (two-way, volume over the operational day of the Project), consisting of 270 passenger car trips and 144 truck trips. During the weekday morning peak-hour, the Project is expected to generate 52 vehicle trips, consisting of 47 passenger car trips and 5 truck trips. During the weekday evening peak-hour, the Project is expected to generate 55 vehicle trips, consisting of 48 passenger car trips and 7 truck trips;

2. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over anticipated future conditions without the Project (No-Build condition), acknowledging that one or more movements at the study area intersections are currently operating or are predicted to operate at or over capacity (i.e., LOS "E" or "F", respectively) independent of the Project;

3. Independent of the Project, left-turn movements from the I-93 north and southbound off-ramps to Route 62 were identified to be operating over capacity (i.e., LOS "F") during both peak hours under 2022 Existing conditions, with Project-related impacts on these movements generally defined as an increase in average motorist delay that resulted in an increase in vehicle queuing of up to one (1) vehicle;

4. All movements exiting the Project site driveways are predicted to operate at LOS D or better during the peak hours with negligible vehicle queuing;

[14] Ibid 1.

5. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and

6. Lines of sight at the Project site driveway intersections with Route 62 were found to meet or exceed, or could be made to meet or exceed the recommended minimum sight distance to function in a safe manner based on the appropriate approach speed.

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

RECOMMENDATIONS

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

Project Access

Access to the Project site will be provided by way of two driveways configured as follows: a full-access driveway that will intersect the north side of Route 62 approximately 90 feet east of the existing westerly driveway that serves the Project site and a full-access driveway that will intersect the north side of Route 62 approximately 80 feet west of the easterly property line. The existing driveways (three (3)) that serve the Project site will be closed in conjunction with the Project and will result in a net reduction of one (1) driveway along the Route 62 corridor and the elimination of the associated conflicts with vehicles, pedestrians and bicyclists. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation:

- The Project site driveways and internal circulating aisles should be 24 feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle and a large tractor semi-trailer combination (WB-67 design vehicle).

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

- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided. STOP-signs and marked STOP-lines should also be provided at intersections located within the Project site.

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[15]

[15] Ibid 2.

- Americans with Disabilities Act (ADA)-compliant wheelchair ramps should be provided at pedestrian crossings that are to be constructed or modified in conjunction with the Project.

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

- Trees and vegetation located along the north side of Route 62 within the sight triangle areas of the Project site driveways should be trimmed or removed and maintained in order to provide the necessary sight lines for safe operation. In addition, the large stone located within the sight triangle area of the east Project site driveway should also be removed.

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

Off-Site

Route 62 at Woburn Street

Independent of the Project, the Woburn Street approaches to Route 62 are predicted to operate over capacity (i.e., LOS "F") during the weekday morning peak-hour under 2029 No-Build conditions. In an effort to off-set the predicted impact of the Project and to reduce motorist delays and vehicle queueing, the Project proponent will design and implement an optimal traffic signal timing and phasing plan for the intersection. With the implementation of an optimal traffic signal and phasing plan, intersection overall intersection operations will improve from LOS F to LOS D during the weekday morning peak-hour and no movement or approach will operate below LOS E, an improvement over No-Build conditions. As can be seen in Table 12, all movements at the intersection will continue to operate at LOS D or better during the weekday evening peak-hour. These improvements will be completed prior to the issuance of a Certification of Occupancy for the Project, subject to the receipt of all necessary rights, permit and approvals.

Route 62 at the I-93 Ramps

Independent of the Project, left-turn movements from the I-93 off-ramps (north and southbound) to Route 62 are currently operating over capacity with extended vehicle queueing (up to 28 vehicles), with conditions expected to worsen in the future. The addition of Project-related traffic to the intersections was shown to result in a predicted increase in average motorist delay during the peak hours that resulted in a corresponding increase in vehicle queueing of up to two (2) vehicles. In order to assist the Town and MassDOT to advance improvements along Route 62 within the I-93 interchange area that are desirable independent of the Project, the Project proponent will prepare a Functional Design Report (FDR) and accompanying concept plans to identify potential improvement strategies for the ramp intersections. The FDR and concept plans will be provided to the Town prior to the issuance of a Certificate of Occupancy for the Project.

Transportation Demand Management

Regularly scheduled public transportation services are not currently provided within the study area or to the Project site. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures are under consideration as a part of the Project:

- A transportation coordinator will be assigned for the Project to coordinate the TDM program;
- The transportation coordinator will facilitate a rideshare matching program for employees to encourage carpooling;
- A "welcome packet" will be provided to employees detailing the contact information for the transportation coordinator and information to enroll in the employee rideshare program;
- Specific amenities will be provided to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; allowing telecommuting or flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak-traffic-volume periods;
- Prioritization will be given to local hirings in an effort to reduce traffic volume increases outside of the local area;
- Pedestrian accommodations will be incorporated within the Project site to link the employee parking areas to the warehouse building; and
- Secure bicycle parking will be provided at an appropriate location within the Project site.

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

Table 12
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

	2029 No-Build				2029 Build				2029 Build with Mitigation			
Signalized Intersection/Peak-hour/Movement	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue 50th/95th	V/C	Delay	LOS	Queue 50th/95th
Route 62 at Woburn Street												
Weekday Morning:												
Route 62 EB LT	0.66	46.9	D	4/7	0.66	46.9	D	4/7	0.86	49.5	D	2/6
Route 62 EB TH/RT	0.52	7.1	A	7/9	0.54	7.4	A	7/10	0.66	15.2	B	11/15
Route 62 WB LT/TH	0.88	30.6	C	17/27	0.89	31.6	C	17/28	0.97	49.1	D	18/29
Route 62 WB RT	0.02	11.3	B	0/0	0.02	11.3	B	0/0	0.02	13.2	B	0/0
Woburn Street NB LT/TH/RT	1.77	>80.0	F	7/11	1.74	>80.0	F	7/11	0.69	35.8	D	4/6
Woburn Street SB LT/TH/RT	1.61	>80.0	F	22/31	1.63	>80.0	F	22/31	1.03	77.8	E	15/24
Overall	--	**>80.0**	**F**	--	--	**>80.0**	**F**	--	--	**45.9**	**D**	--
Weekday Evening:												
Route 62 EB LT	0.64	42.6	D	4/10	0.70	51.4	D	4/10	0.68	46.1	D	4/10
Route 62 EB TH/RT	0.74	14.2	B	11/30	0.72	13.1	B	11/31	0.72	12.9	B	10/31
Route 62 WB LT/TH	0.81	29.4	C	12/27	0.78	26.4	C	13/29	0.80	27.1	C	12/29
Route 62 WB RT	0.02	14.9	B	0/0	0.02	13.8	B	0/0	0.02	13.6	B	0/0
Woburn Street NB LT/TH/RT	0.59	35.5	D	4/9	0.68	44.4	D	5/10	0.69	43.1	D	4/10
Woburn Street SB LT/TH/RT	0.66	37.9	D	5/13	0.74	47.8	D	6/13	0.75	46.0	D	5/13
Overall	--	**25.6**	**C**	--	--	**26.8**	**C**	--	--	**26.2**	**C**	--

[a]Volume-to-capacity ratio.
[b]Control (signal) delay per vehicle in seconds.
[c]Level-of-Service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements

APPENDIX

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
COVID ADJUSTMENT DATA
PUBLIC TRANSPORTATION SCHEDULES
VEHICLE TRAVEL SPEED DATA
MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING
GENERAL BACKGROUND TRAFFIC GROWTH
BACKGROUND DEVELOPMENT TRAFFIC VOLUME NETWORKS
TRIP-GENERATION CALCULATIONS
JOURNEY-TO-WORK TRIP DISTRIBUTIONS
PRELIMINARY TRAFFIC SIGNAL WARRANTS ANALYSIS
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN

Plotted by Matthew Costa on August 11, 2022

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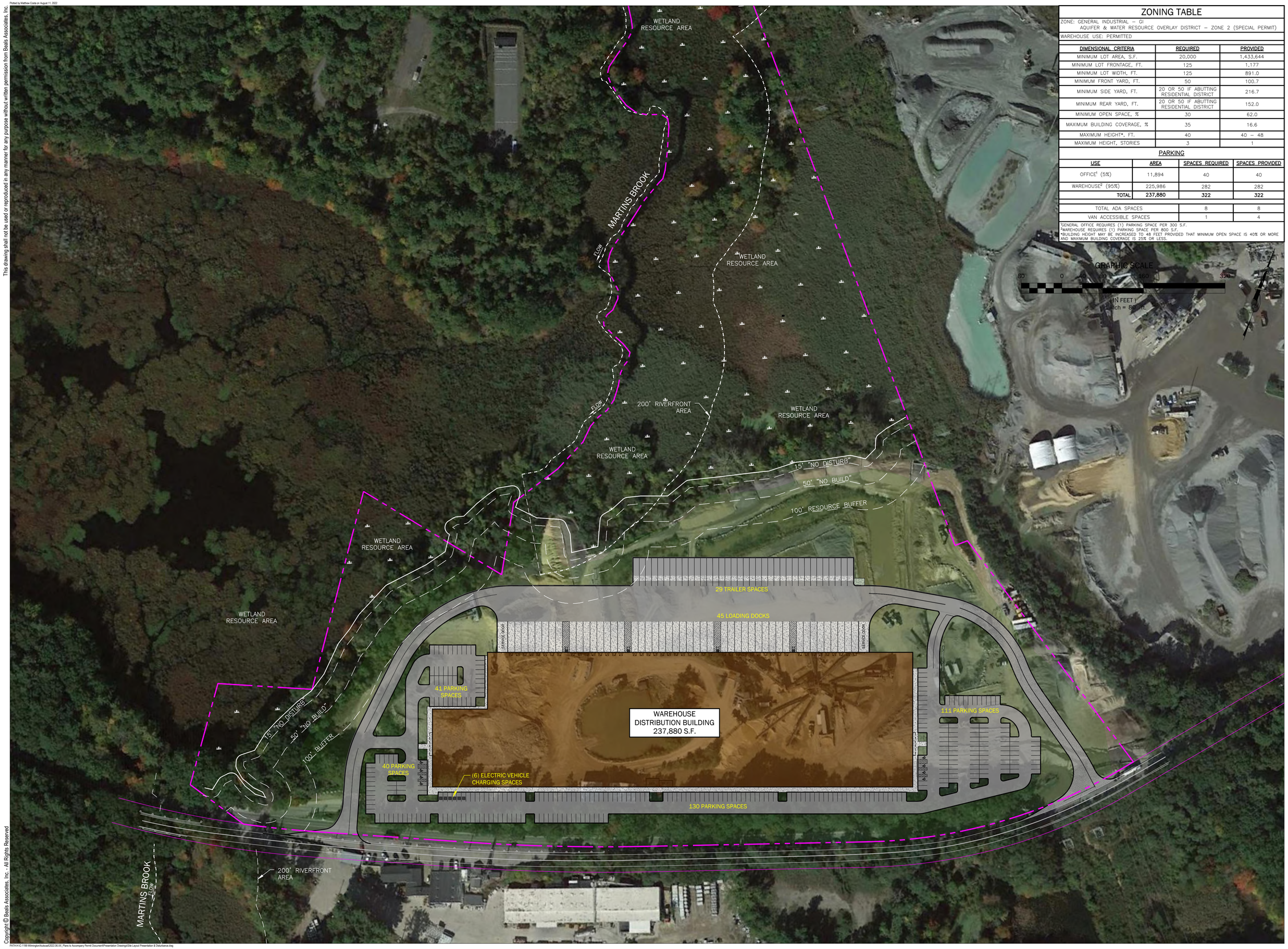

ZONING TABLE

ZONE: GENERAL INDUSTRIAL – GI
AQUIFER & WATER RESOURCE OVERLAY DISTRICT – ZONE 2 (SPECIAL PERMIT)

WAREHOUSE USE: PERMITTED

DIMENSIONAL CRITERIA	REQUIRED	PROVIDED
MINIMUM LOT AREA, S.F.	20,000	1,433,644
MINIMUM LOT FRONTAGE, FT.	125	1,177
MINIMUM LOT WIDTH, FT.	125	891.0
MINIMUM FRONT YARD, FT.	50	100.7
MINIMUM SIDE YARD, FT.	20 OR 50 IF ABUTTING RESIDENTIAL DISTRICT	216.7
MINIMUM REAR YARD, FT.	20 OR 50 IF ABUTTING RESIDENTIAL DISTRICT	152.0
MINIMUM OPEN SPACE, %	30	62.0
MAXIMUM BUILDING COVERAGE, %	35	16.6
MAXIMUM HEIGHT*, FT.	40	40 – 48
MAXIMUM HEIGHT, STORIES	3	1

PARKING

USE	AREA	SPACES REQUIRED	SPACES PROVIDED
OFFICE[1] (5%)	11,894	40	40
WAREHOUSE[2] (95%)	225,986	282	282
TOTAL	237,880	322	322
TOTAL ADA SPACES		8	8
VAN ACCESSIBLE SPACES		1	4

[1]GENERAL OFFICE REQUIRES (1) PARKING SPACE PER 300 S.F.
[2]WAREHOUSE REQUIRES (1) PARKING SPACE PER 800 S.F.
*BUILDING HEIGHT MAY BE INCREASED TO 48 FEET PROVIDED THAT MINIMUM OPEN SPACE IS 40% OR MORE AND MAXIMUM BUILDING COVERAGE IS 25% OR LESS.

BEALS • ASSOCIATES INC.
2 PARK PLAZA SUITE 300 BOSTON, MA 02116
PHONE 617-242-1120
•PLANNING •ENGINEERING •PERMITTING •MANAGEMENT
Design • Architecture | Construction
Dacon Corporation
16 Huron Drive, Natick, MA 01760
Camber
125 High Street Suite 2000 Boston, MA 02110

WILMINGTON
PLANNING BOARD

DATE:

CHAIR:

THIS SITE PLAN APPROVAL DOES NOT NECESSARILY INDICATE COMPLIANCE WITH THE WILMINGTON ZONING BYLAWS.

Applicant
Camber Development
125 High Street, Suite 2000
Boston, MA 02110

Owner
WQV - 800 Salem, LLC.
c/o Camber Development, LLC.
125 High Street, Suite 2000
Boston, MA 02110

Distribution Center

800 Salem Street
Wilmington, MA

No.	Revision	Date

Not for Construction
Permit Documents

Designed by: MEC	Checked by: TPM
Proj. No.: C-1199	Issue Date: 08.11.22
Drawing Scale: 1"=80'	

Sheet Title
MARKETING SITE PLAN OVERALL

Sheet Number
P120

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AUTOMATIC TRAFFIC RECORDER COUNT DATA

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA

3/23/2022	EB,		Hour Totals		WB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	5	112			4	116				
12:15	4	109			5	124				
12:30	5	106			5	102				
12:45	2	118	16	445	7	98	21	440	37	885
1:00	4	114			2	110				
1:15	3	109			2	121				
1:30	1	97			1	101				
1:45	4	122	12	442	7	104	12	436	24	878
2:00	1	108			3	102				
2:15	2	111			2	114				
2:30	4	117			6	125				
2:45	4	128	11	464	9	108	20	449	31	913
3:00	2	147			3	111				
3:15	3	154			2	123				
3:30	3	115			6	147				
3:45	3	152	11	568	8	139	19	520	30	1088
4:00	5	165			2	141				
4:15	3	146			7	143				
4:30	9	155			14	127				
4:45	14	151	31	617	19	134	42	545	73	1162
5:00	11	154			28	113				
5:15	18	181			28	117				
5:30	24	167			31	128				
5:45	43	160	96	662	51	105	138	463	234	1125
6:00	44	137			55	100				
6:15	35	108			69	99				
6:30	53	112			87	90				
6:45	75	107	207	464	103	66	314	355	521	819
7:00	70	89			110	61				
7:15	89	80			143	71				
7:30	107	81			172	73				
7:45	105	69	371	319	161	57	586	262	957	581
8:00	107	58			139	39				
8:15	93	45			156	39				
8:30	130	38			137	46				
8:45	98	42	428	183	141	38	573	162	1001	345
9:00	105	49			122	33				
9:15	90	37			119	25				
9:30	93	40			105	29				
9:45	96	34	384	160	93	21	439	108	823	268
10:00	79	35			95	12				
10:15	79	16			103	30				
10:30	96	28			94	25				
10:45	91	13	345	92	100	33	392	100	737	192
11:00	118	18			101	11				
11:15	103	16			111	10				
11:30	115	19			97	10				
11:45	116	14	452	67	80	10	389	41	841	108
Total	2364	4483			2945	3881			5309	8364
Percent	34.5%	65.5%			43.1%	56.9%			38.8%	61.2%

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA

3/24/2022	EB,		Hour Totals		WB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	5	106			4	101				
12:15	5	86			9	111				
12:30	8	105			2	93				
12:45	1	111	19	408	5	92	20	397	39	805
1:00	2	94			3	96				
1:15	9	87			2	83				
1:30	2	102			4	110				
1:45	1	105	14	388	2	96	11	385	25	773
2:00	2	94			2	96				
2:15	2	99			3	98				
2:30	3	113			7	100				
2:45	3	128	10	434	6	109	18	403	28	837
3:00	2	121			3	101				
3:15	3	119			6	97				
3:30	2	135			5	127				
3:45	4	129	11	504	10	110	24	435	35	939
4:00	4	147			6	125				
4:15	3	131			4	127				
4:30	12	147			11	97				
4:45	8	155	27	580	15	91	36	440	63	1020
5:00	13	137			26	103				
5:15	13	168			29	113				
5:30	24	161			27	98				
5:45	29	134	79	600	46	102	128	416	207	1016
6:00	46	153			60	95				
6:15	35	110			61	93				
6:30	62	107			80	76				
6:45	74	87	217	457	98	62	299	326	516	783
7:00	77	96			88	70				
7:15	84	59			111	61				
7:30	94	63			162	53				
7:45	107	64	362	282	128	44	489	228	851	510
8:00	103	67			139	47				
8:15	107	67			149	54				
8:30	121	57			147	65				
8:45	81	38	412	229	148	38	583	204	995	433
9:00	75	36			112	29				
9:15	74	35			101	22				
9:30	92	39			98	36				
9:45	85	38	326	148	80	21	391	108	717	256
10:00	79	32			91	23				
10:15	77	27			72	33				
10:30	71	23			90	23				
10:45	95	23	322	105	86	35	339	114	661	219
11:00	92	14			99	16				
11:15	112	11			87	18				
11:30	87	17			107	11				
11:45	112	11	403	53	105	5	398	50	801	103
Total	2202	4188			2736	3506			4938	7694
Percent	34.5%	65.5%			43.8%	56.2%			39.1%	60.9%
Grand Total	4566	8671			5681	7387			10247	16058
Percent	34.5%	65.5%			43.5%	56.5%			39.0%	61.0%
ADT		ADT: 13,152		AADT: 13,152						

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA

3/21/2022	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,
12:00 AM	*	*	*	*	16	21	19	20	*	*	*	*	*	*	18	20
1:00	*	*	*	*	12	12	14	11	*	*	*	*	*	*	13	12
2:00	*	*	*	*	11	20	10	18	*	*	*	*	*	*	10	19
3:00	*	*	*	*	11	19	11	24	*	*	*	*	*	*	11	22
4:00	*	*	*	*	31	42	27	36	*	*	*	*	*	*	29	39
5:00	*	*	*	*	96	138	79	128	*	*	*	*	*	*	88	133
6:00	*	*	*	*	207	314	217	299	*	*	*	*	*	*	212	306
7:00	*	*	*	*	371	586	362	489	*	*	*	*	*	*	366	538
8:00	*	*	*	*	428	573	412	583	*	*	*	*	*	*	420	578
9:00	*	*	*	*	384	439	326	391	*	*	*	*	*	*	355	415
10:00	*	*	*	*	345	392	322	339	*	*	*	*	*	*	334	366
11:00	*	*	*	*	452	389	403	398	*	*	*	*	*	*	428	394
12:00 PM	*	*	*	*	445	440	408	397	*	*	*	*	*	*	426	418
1:00	*	*	*	*	442	436	388	385	*	*	*	*	*	*	415	410
2:00	*	*	*	*	464	449	434	403	*	*	*	*	*	*	449	426
3:00	*	*	*	*	568	520	504	435	*	*	*	*	*	*	536	478
4:00	*	*	*	*	617	545	580	440	*	*	*	*	*	*	598	492
5:00	*	*	*	*	662	463	600	416	*	*	*	*	*	*	631	440
6:00	*	*	*	*	464	355	457	326	*	*	*	*	*	*	460	340
7:00	*	*	*	*	319	262	282	228	*	*	*	*	*	*	300	245
8:00	*	*	*	*	183	162	229	204	*	*	*	*	*	*	206	183
9:00	*	*	*	*	160	108	148	108	*	*	*	*	*	*	154	108
10:00	*	*	*	*	92	100	105	114	*	*	*	*	*	*	98	107
11:00	*	*	*	*	67	41	53	50	*	*	*	*	*	*	60	46
Total	0	0	0	0	6847	6826	6390	6242	0	0	0	0	0	0	6617	6535
Day	0		0		13673		12632		0		0		0		13152	
AM Peak					11:00	7:00	8:00	8:00							11:00	8:00
Volume					452	586	412	583							428	578
PM Peak					5:00	4:00	5:00	4:00							5:00	4:00
Volume					662	545	600	440							631	492
Comb Total	0		0		13673		12632		0		0		0		13152	
ADT	ADT: 13,152		AADT: 13,152													

TURNING MOVEMENT COUNT DATA

Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 1

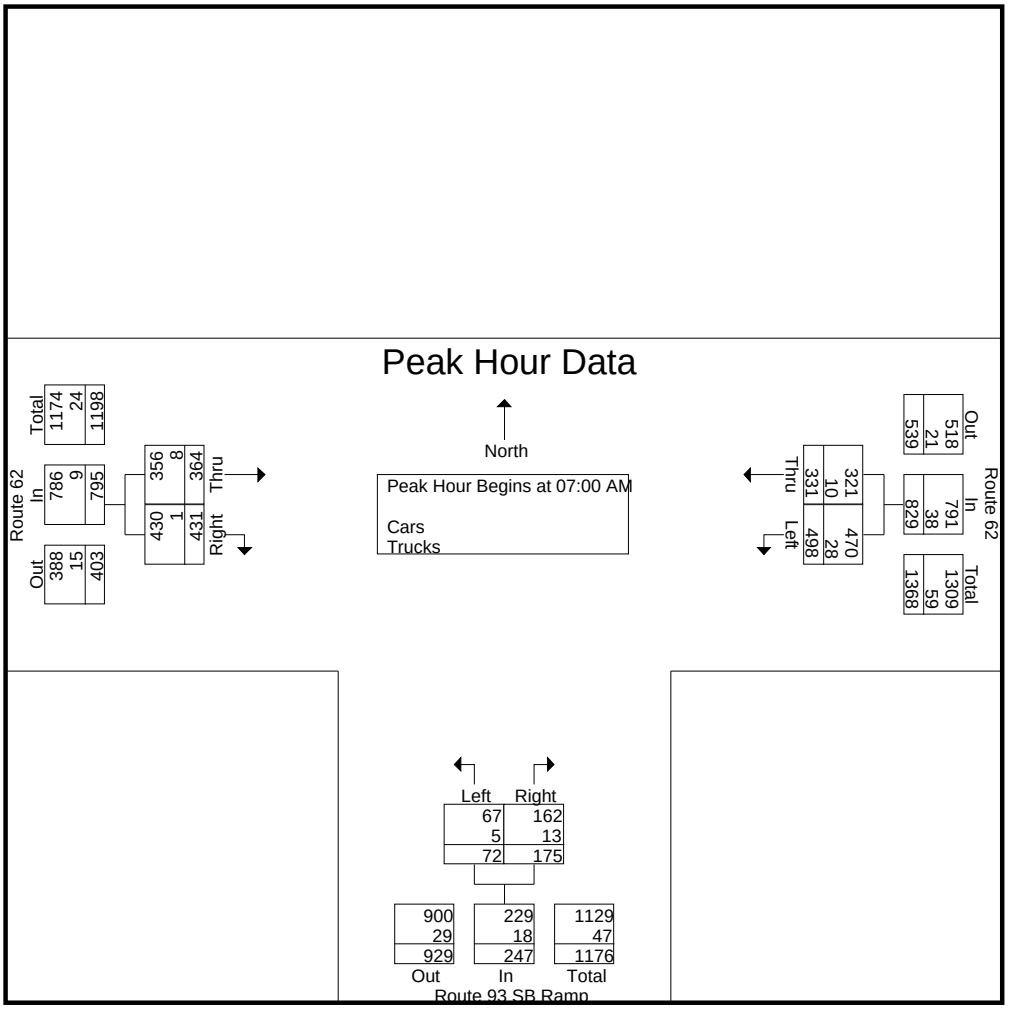
Groups Printed- Cars - Trucks

	Route 62 From East		Route 93 SB Ramp From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	95	76	12	42	71	142	438
07:15 AM	145	87	24	38	94	92	480
07:30 AM	139	81	22	43	96	114	495
07:45 AM	119	87	14	52	103	83	458
Total	498	331	72	175	364	431	1871
08:00 AM	109	85	25	38	91	68	416
08:15 AM	98	83	31	65	117	63	457
08:30 AM	70	93	24	46	99	72	404
08:45 AM	57	93	38	45	87	55	375
Total	334	354	118	194	394	258	1652
Grand Total	832	685	190	369	758	689	3523
Apprch %	54.8	45.2	34	66	52.4	47.6	
Total %	23.6	19.4	5.4	10.5	21.5	19.6	
Cars	793	663	175	335	741	686	3393
% Cars	95.3	96.8	92.1	90.8	97.8	99.6	96.3
Trucks	39	22	15	34	17	3	130
% Trucks	4.7	3.2	7.9	9.2	2.2	0.4	3.7

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	95	76	171	12	42	54	71	**142**	**213**	438
07:15 AM	**145**	**87**	**232**	**24**	38	62	94	92	186	480
07:30 AM	139	81	220	22	43	65	96	114	210	**495**
07:45 AM	119	87	206	14	**52**	**66**	**103**	83	186	458
Total Volume	498	331	829	72	175	247	364	431	795	1871
% App. Total	60.1	39.9		29.1	70.9		45.8	54.2		
PHF	.859	.951	.893	.750	.841	.936	.883	.759	.933	.945
Cars	470	321	791	67	162	229	356	430	786	1806
% Cars	94.4	97.0	95.4	93.1	92.6	92.7	97.8	99.8	98.9	96.5
Trucks	28	10	38	5	13	18	8	1	9	65
% Trucks	5.6	3.0	4.6	6.9	7.4	7.3	2.2	0.2	1.1	3.5

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 2



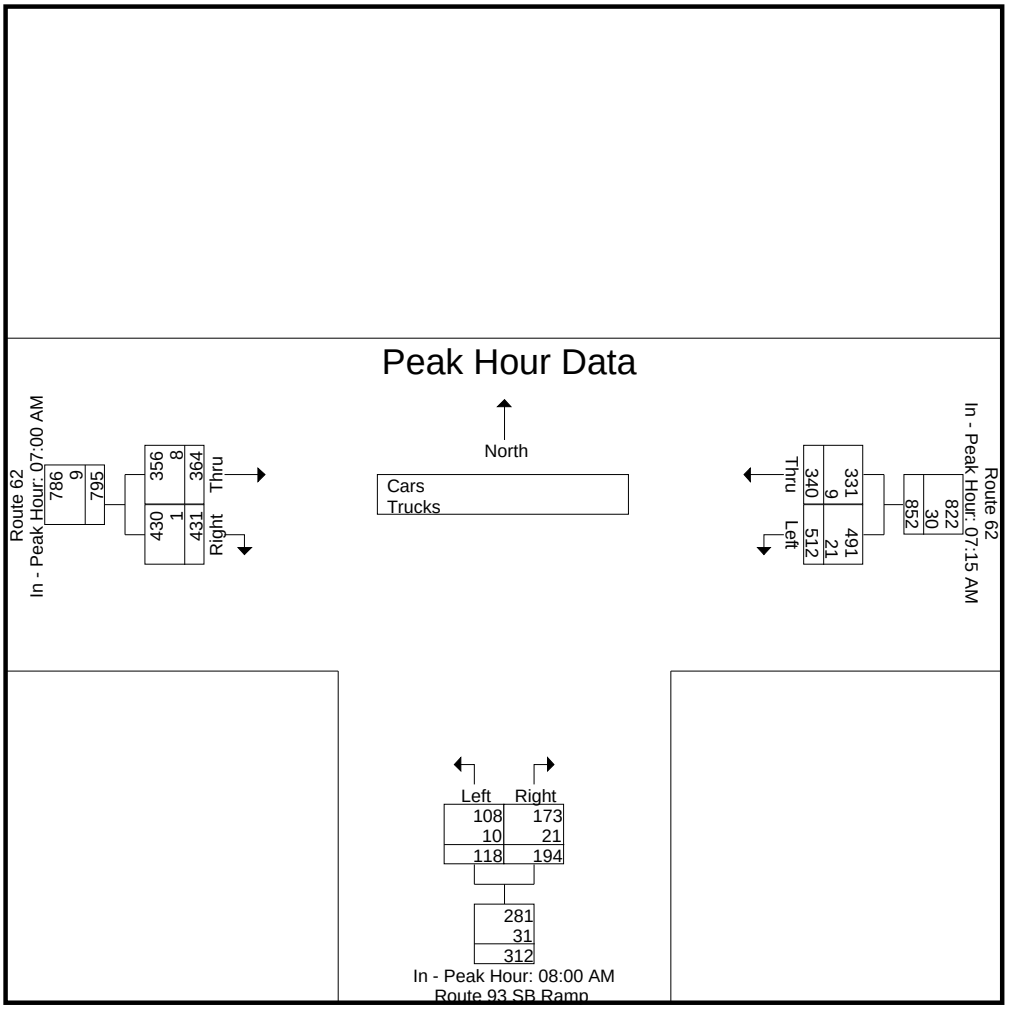
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	**145**	**87**	**232**	25	38	63	71	**142**	**213**
+15 mins.	139	81	220	31	**65**	**96**	94	92	186
+30 mins.	119	87	206	24	46	70	96	114	210
+45 mins.	109	85	194	**38**	45	83	**103**	83	186
Total Volume	512	340	852	118	194	312	364	431	795
% App. Total	60.1	39.9		37.8	62.2		45.8	54.2	
PHF	.883	.977	.918	.776	.746	.813	.883	.759	.933
Cars	491	331	822	108	173	281	356	430	786
% Cars	95.9	97.4	96.5	91.5	89.2	90.1	97.8	99.8	98.9
Trucks	21	9	30	10	21	31	8	1	9
% Trucks	4.1	2.6	3.5	8.5	10.8	9.9	2.2	0.2	1.1

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	Route 62 From East		Route 93 SB Ramp From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	88	73	11	36	70	142	420
07:15 AM	140	86	23	33	92	92	466
07:30 AM	132	78	20	43	92	113	478
07:45 AM	110	84	13	50	102	83	442
Total	470	321	67	162	356	430	1806
08:00 AM	109	83	23	35	87	68	405
08:15 AM	93	77	26	56	117	63	432
08:30 AM	68	89	24	40	99	71	391
08:45 AM	53	93	35	42	82	54	359
Total	323	342	108	173	385	256	1587
Grand Total	793	663	175	335	741	686	3393
Apprch %	54.5	45.5	34.3	65.7	51.9	48.1	
Total %	23.4	19.5	5.2	9.9	21.8	20.2	

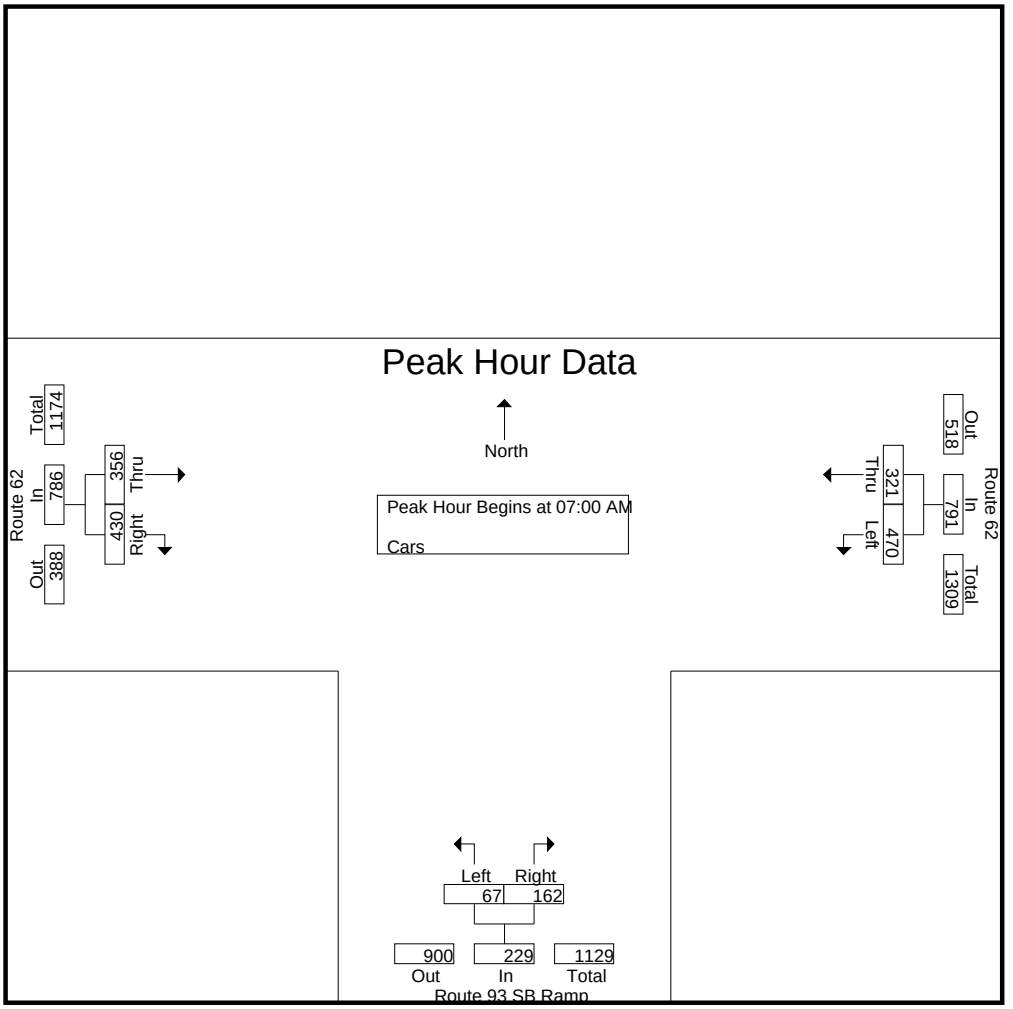
	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	88	73	161	11	36	47	70	**142**	**212**	420
07:15 AM	**140**	**86**	**226**	**23**	33	56	92	92	184	466
07:30 AM	132	78	210	20	43	**63**	92	113	205	**478**
07:45 AM	110	84	194	13	**50**	63	**102**	83	185	442
Total Volume	470	321	791	67	162	229	356	430	786	1806
% App. Total	59.4	40.6		29.3	70.7		45.3	54.7		
PHF	.839	.933	.875	.728	.810	.909	.873	.757	.927	.945

Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 5



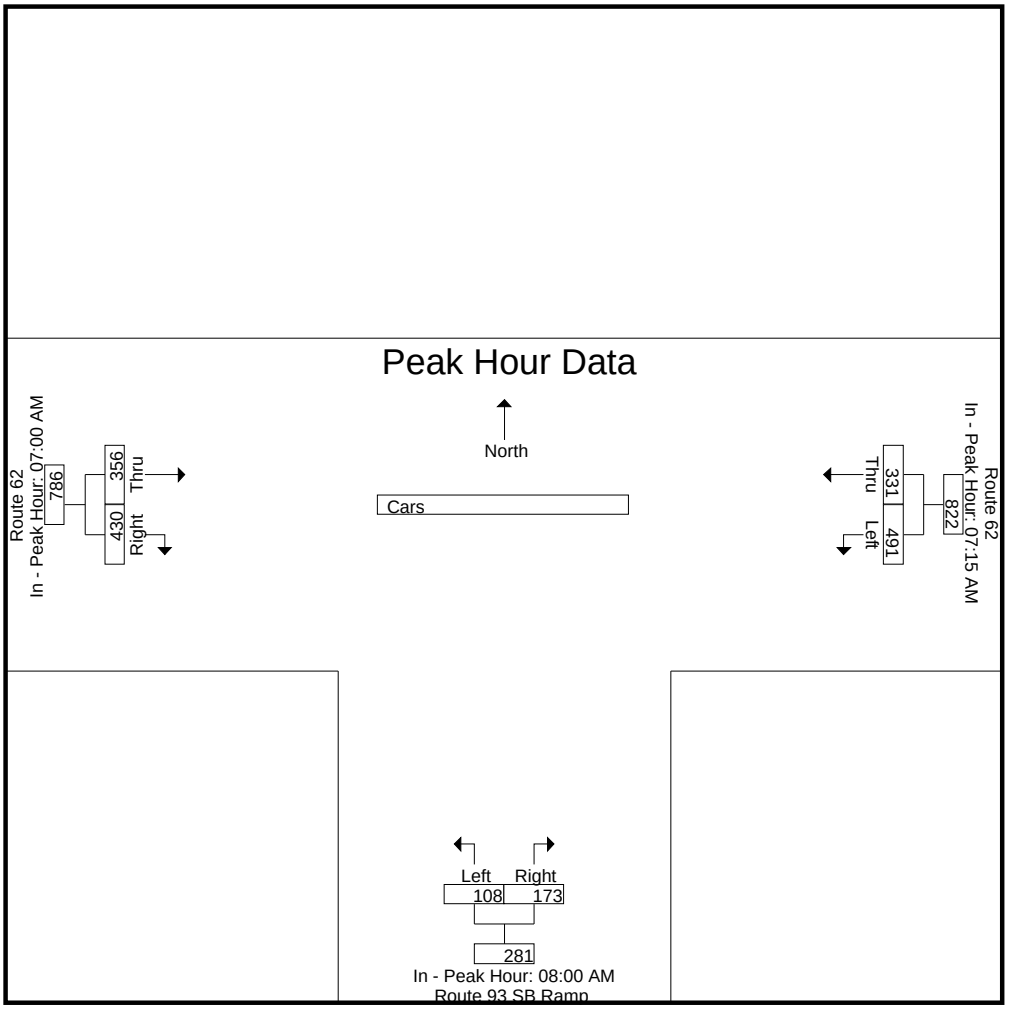
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	**140**	**86**	**226**	23	35	58	70	**142**	**212**
+15 mins.	132	78	210	26	**56**	**82**	92	92	184
+30 mins.	110	84	194	24	40	64	92	113	205
+45 mins.	109	83	192	**35**	42	77	**102**	83	185
Total Volume	491	331	822	108	173	281	356	430	786
% App. Total	59.7	40.3		38.4	61.6		45.3	54.7	
PHF	.877	.962	.909	.771	.772	.857	.873	.757	.927

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022

Groups Printed- Trucks

	Route 62 From East		Route 93 SB Ramp From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	7	3	1	6	1	0	18
07:15 AM	5	1	1	5	2	0	14
07:30 AM	7	3	2	0	4	1	17
07:45 AM	9	3	1	2	1	0	16
Total	28	10	5	13	8	1	65
08:00 AM	0	2	2	3	4	0	11
08:15 AM	5	6	5	9	0	0	25
08:30 AM	2	4	0	6	0	1	13
08:45 AM	4	0	3	3	5	1	16
Total	11	12	10	21	9	2	65
Grand Total	39	22	15	34	17	3	130
Apprch %	63.9	36.1	30.6	69.4	85	15	
Total %	30	16.9	11.5	26.2	13.1	2.3	

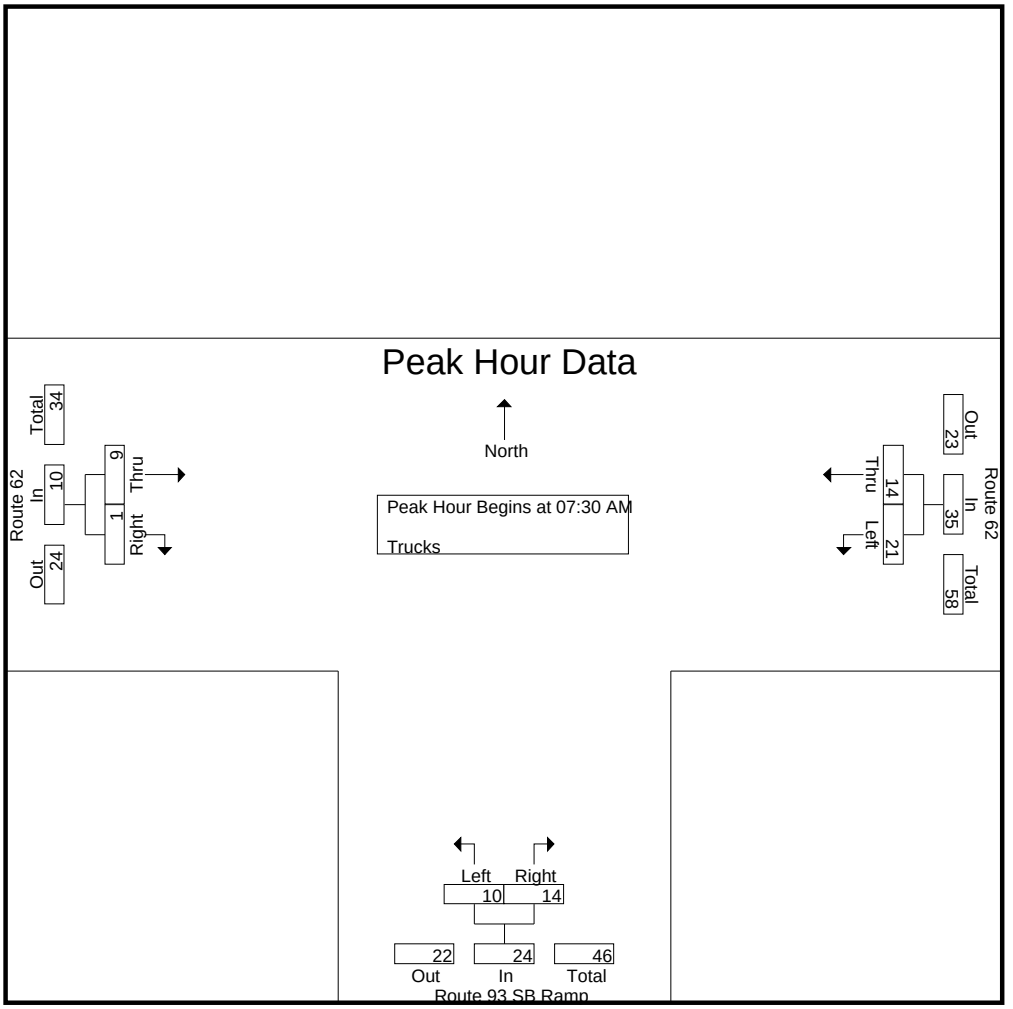
	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	7	3	10	2	0	2	**4**	**1**	**5**	17
07:45 AM	**9**	3	**12**	1	2	3	1	0	1	16
08:00 AM	0	2	2	2	3	5	4	0	4	11
08:15 AM	5	**6**	11	**5**	**9**	**14**	0	0	0	**25**
Total Volume	21	14	35	10	14	24	9	1	10	69
% App. Total	60	40		41.7	58.3		90	10		
PHF	.583	.583	.729	.500	.389	.429	.563	.250	.500	.690

Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 8



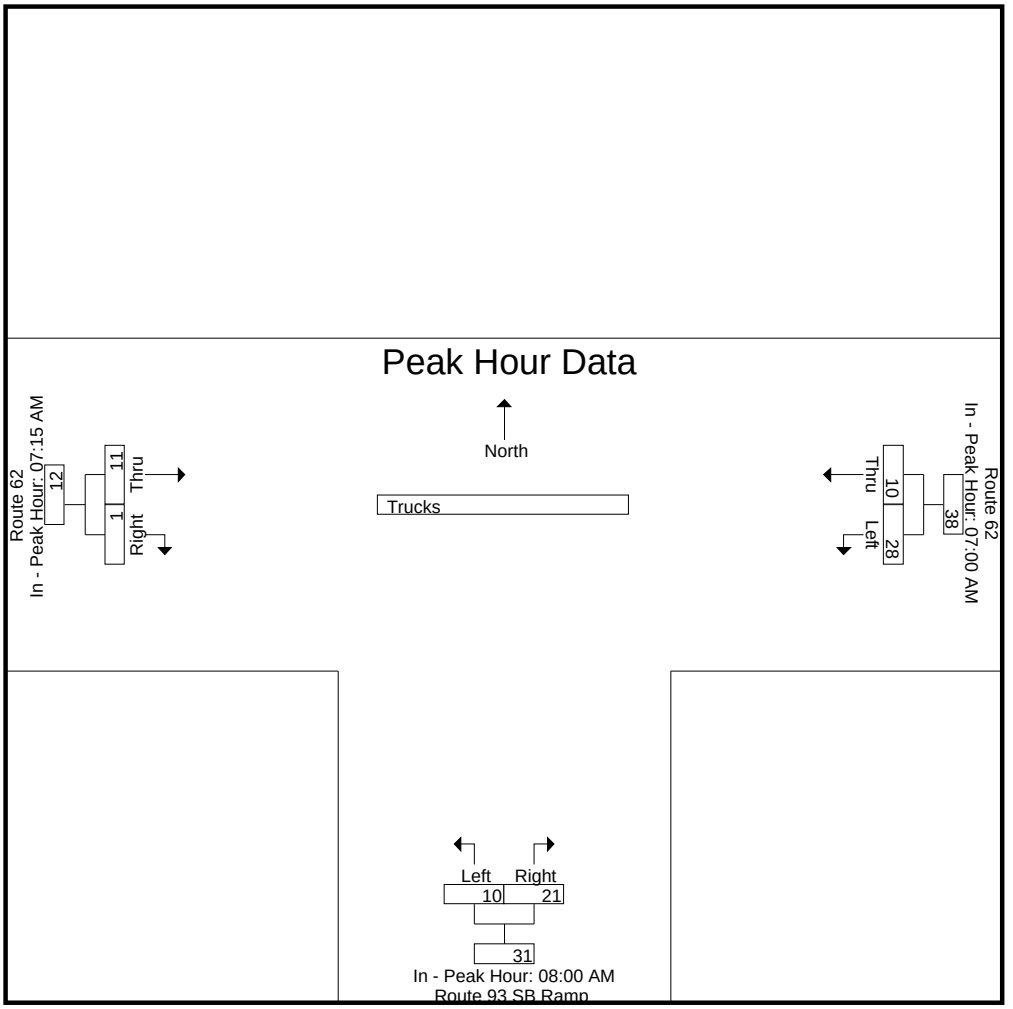
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			08:00 AM			07:15 AM		
+0 mins.	7	**3**	10	2	3	5	2	0	2
+15 mins.	5	1	6	**5**	**9**	**14**	**4**	**1**	**5**
+30 mins.	7	3	10	0	6	6	1	0	1
+45 mins.	**9**	3	**12**	3	3	6	4	0	4
Total Volume	28	10	38	10	21	31	11	1	12
% App. Total	73.7	26.3		32.3	67.7		91.7	8.3	
PHF	.778	.833	.792	.500	.583	.554	.688	.250	.600

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022

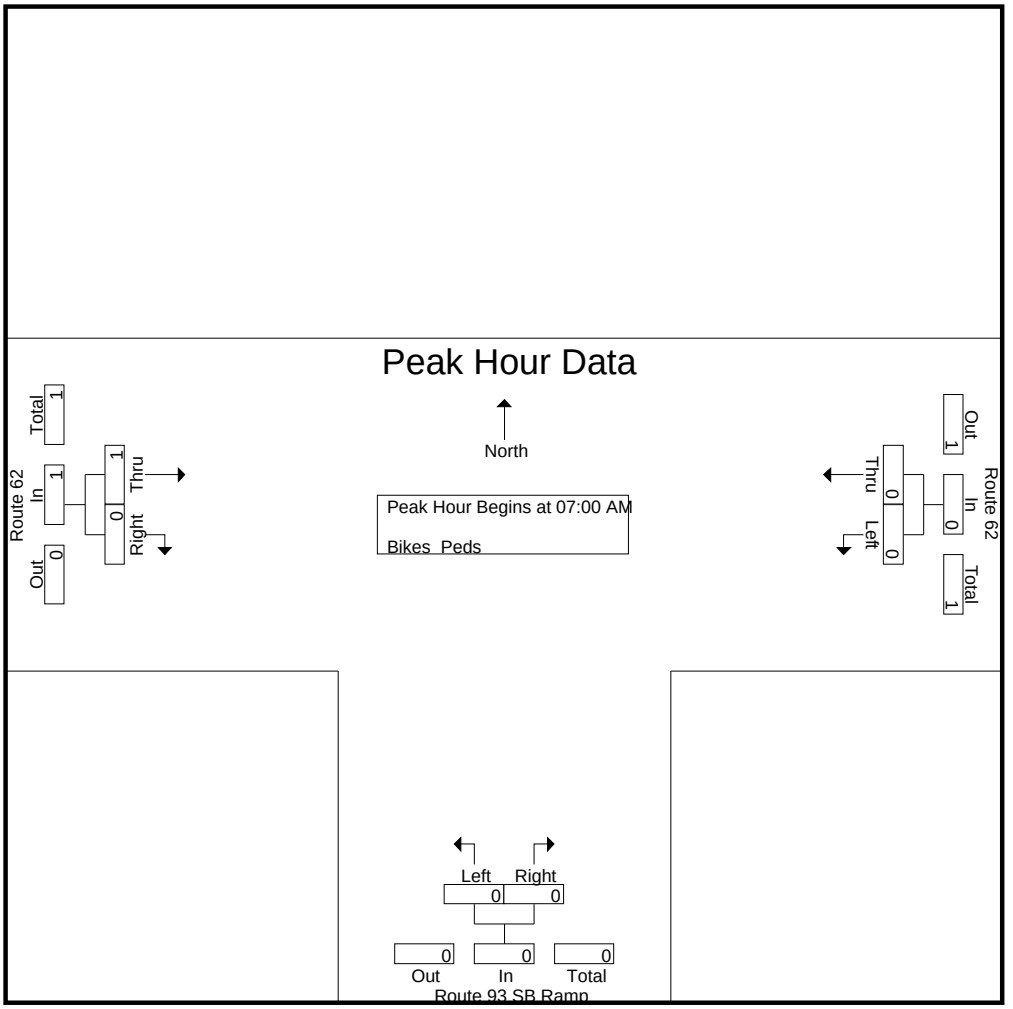
Groups Printed- Bikes Peds

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	0	1	0	0	0	1	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	1	0	0	0	1	1
Apprch %	0	0		0	0		100	0				
Total %	0	0		0	0		100	0		0	100	

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	**1**	0	**1**	**1**
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 11



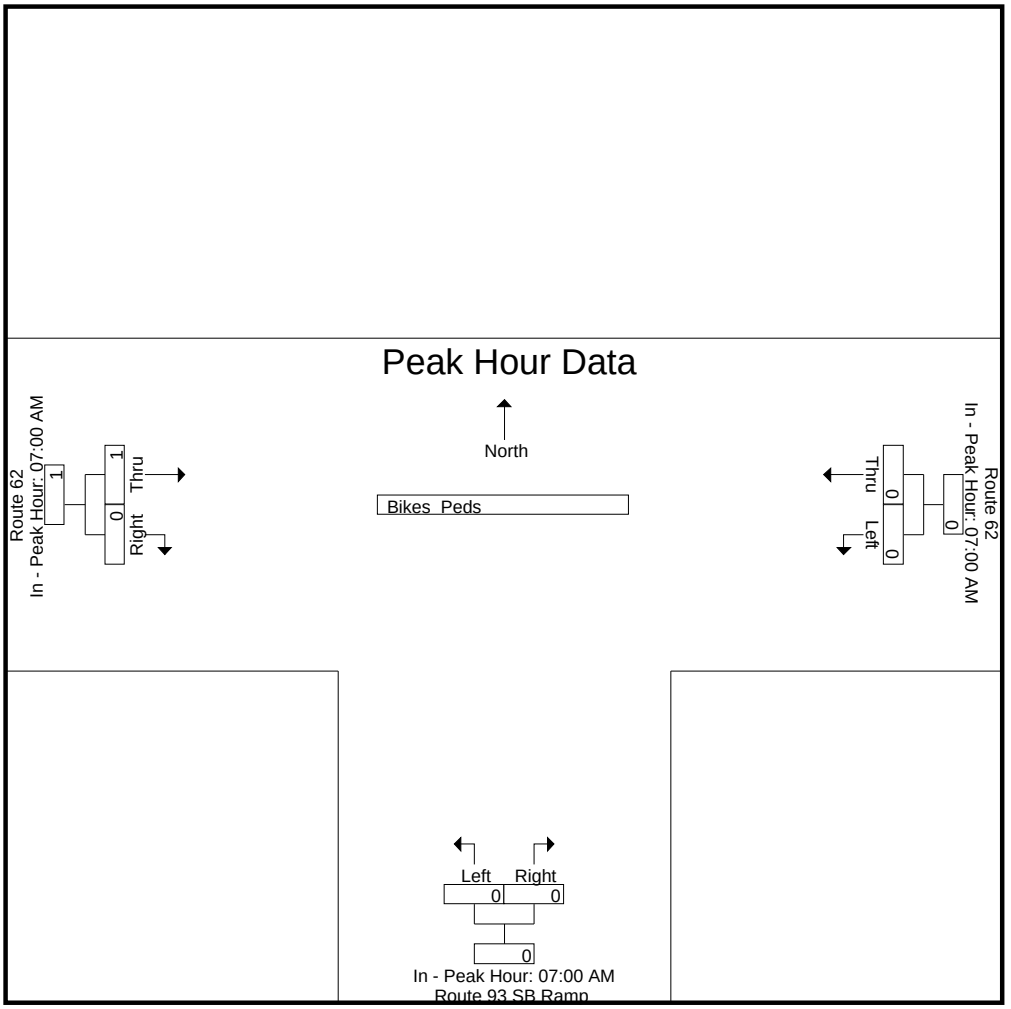
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 1

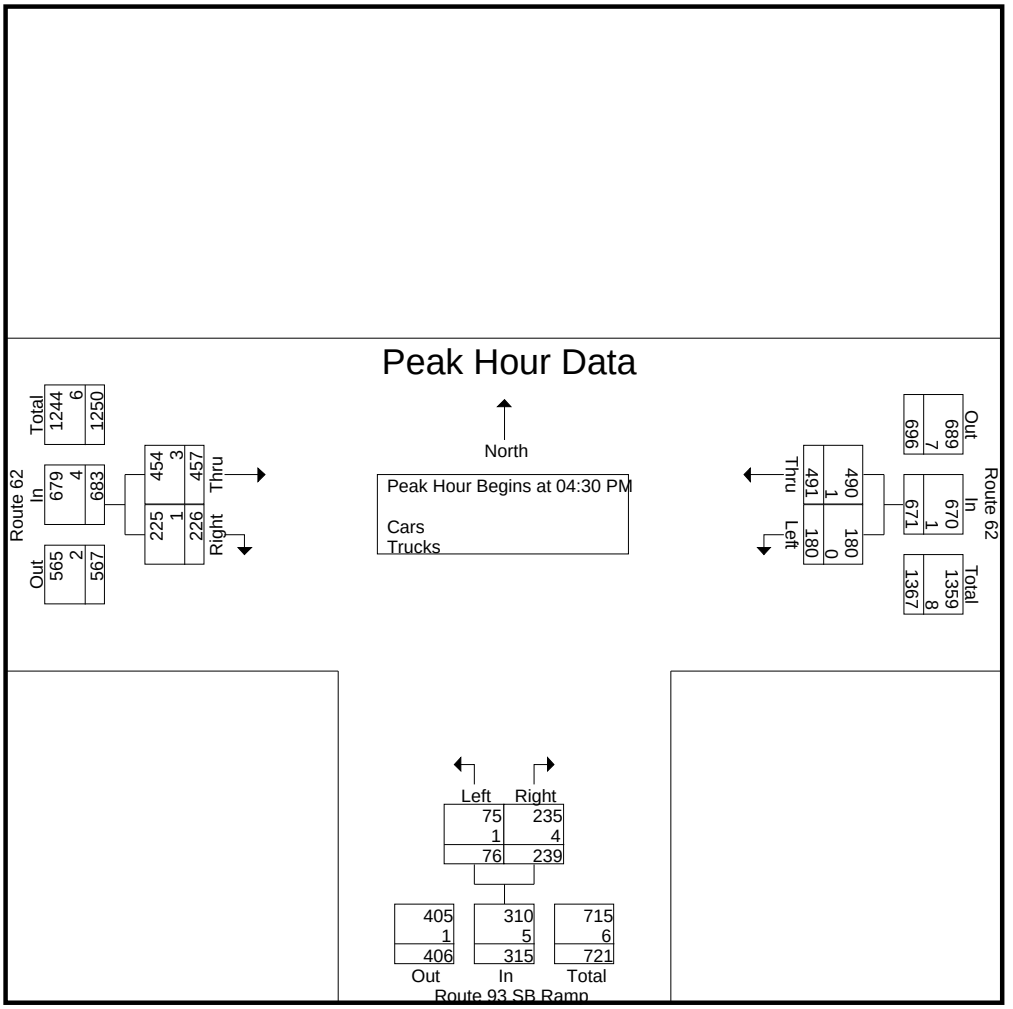
Groups Printed- Cars - Trucks

	Route 62 From East		Route 93 SB Ramp From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	38	140	23	44	101	41	387
04:15 PM	41	132	27	58	99	53	410
04:30 PM	47	123	19	47	109	55	400
04:45 PM	40	126	20	61	105	51	403
Total	166	521	89	210	414	200	1600
05:00 PM	41	108	16	64	118	56	403
05:15 PM	52	134	21	67	125	64	463
05:30 PM	35	115	19	63	107	48	387
05:45 PM	38	106	13	68	92	51	368
Total	166	463	69	262	442	219	1621
Grand Total	332	984	158	472	856	419	3221
Apprch %	25.2	74.8	25.1	74.9	67.1	32.9	
Total %	10.3	30.5	4.9	14.7	26.6	13	
Cars	331	981	156	460	851	418	3197
% Cars	99.7	99.7	98.7	97.5	99.4	99.8	99.3
Trucks	1	3	2	12	5	1	24
% Trucks	0.3	0.3	1.3	2.5	0.6	0.2	0.7

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	47	123	170	19	47	66	109	55	164	400
04:45 PM	40	126	166	20	61	81	105	51	156	403
05:00 PM	41	108	149	16	64	80	118	56	174	403
05:15 PM	**52**	**134**	**186**	**21**	**67**	**88**	**125**	**64**	**189**	**463**
Total Volume	180	491	671	76	239	315	457	226	683	1669
% App. Total	26.8	73.2		24.1	75.9		66.9	33.1		
PHF	.865	.916	.902	.905	.892	.895	.914	.883	.903	.901
Cars	180	490	670	75	235	310	454	225	679	1659
% Cars	100	99.8	99.9	98.7	98.3	98.4	99.3	99.6	99.4	99.4
Trucks	0	1	1	1	4	5	3	1	4	10
% Trucks	0	0.2	0.1	1.3	1.7	1.6	0.7	0.4	0.6	0.6

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 2



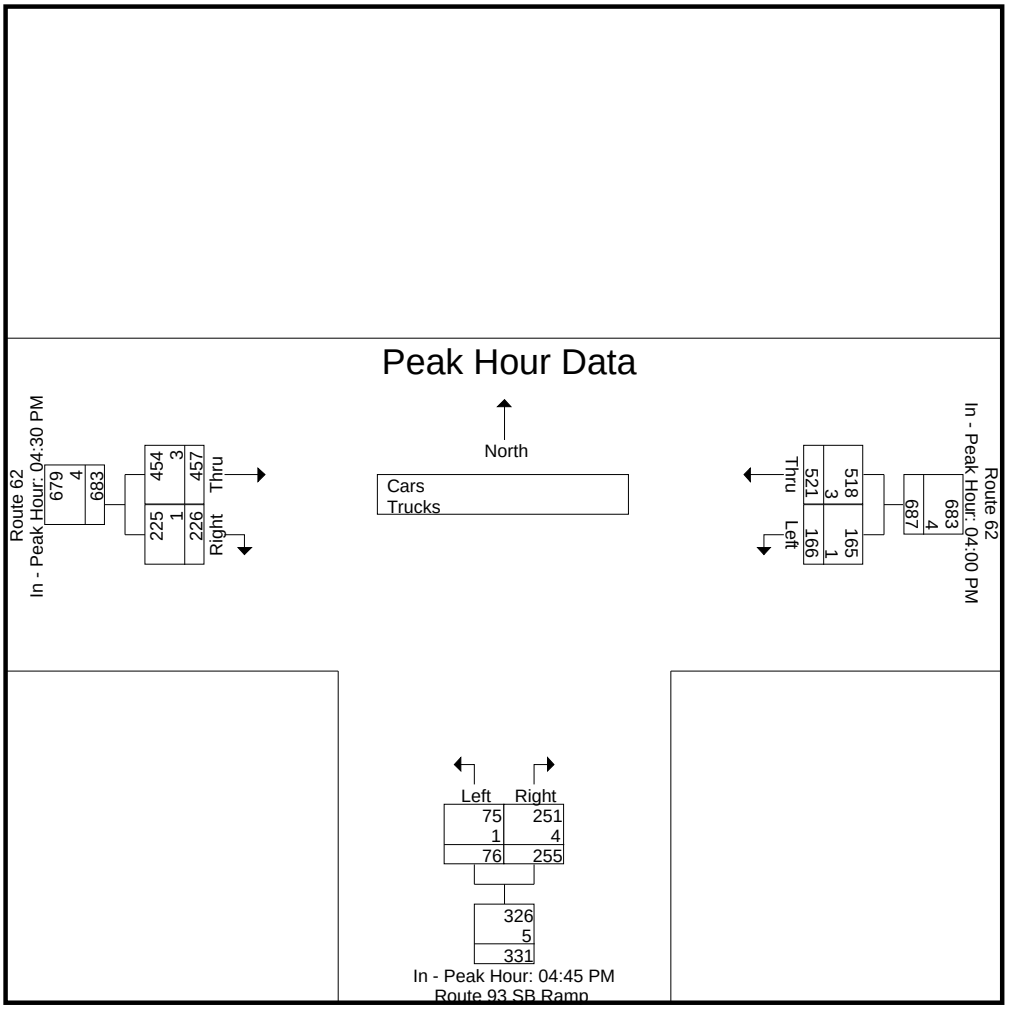
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:45 PM			04:30 PM		
+0 mins.	38	**140**	**178**	20	61	81	109	55	164
+15 mins.	41	132	173	16	64	80	105	51	156
+30 mins.	**47**	123	170	**21**	**67**	**88**	118	56	174
+45 mins.	40	126	166	19	63	82	**125**	**64**	**189**
Total Volume	166	521	687	76	255	331	457	226	683
% App. Total	24.2	75.8		23	77		66.9	33.1	
PHF	.883	.930	.965	.905	.951	.940	.914	.883	.903
Cars	165	518	683	75	251	326	454	225	679
% Cars	99.4	99.4	99.4	98.7	98.4	98.5	99.3	99.6	99.4
Trucks	1	3	4	1	4	5	3	1	4
% Trucks	0.6	0.6	0.6	1.3	1.6	1.5	0.7	0.4	0.6

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022

Groups Printed- Cars

	Route 62 From East		Route 93 SB Ramp From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	37	138	23	43	101	41	383
04:15 PM	41	132	26	55	98	53	405
04:30 PM	47	122	19	46	107	55	396
04:45 PM	40	126	20	59	105	50	400
Total	165	518	88	203	411	199	1584
05:00 PM	41	108	16	63	117	56	401
05:15 PM	52	134	20	67	125	64	462
05:30 PM	35	115	19	62	106	48	385
05:45 PM	38	106	13	65	92	51	365
Total	166	463	68	257	440	219	1613
Grand Total	331	981	156	460	851	418	3197
Apprch %	25.2	74.8	25.3	74.7	67.1	32.9	
Total %	10.4	30.7	4.9	14.4	26.6	13.1	

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	47	122	169	19	46	65	107	55	162	396
04:45 PM	40	126	166	**20**	59	79	105	50	155	400
05:00 PM	41	108	149	16	63	79	117	56	173	401
05:15 PM	**52**	**134**	**186**	20	**67**	**87**	**125**	**64**	**189**	**462**
Total Volume	180	490	670	75	235	310	454	225	679	1659
% App. Total	26.9	73.1		24.2	75.8		66.9	33.1		
PHF	.865	.914	.901	.938	.877	.891	.908	.879	.898	.898

Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
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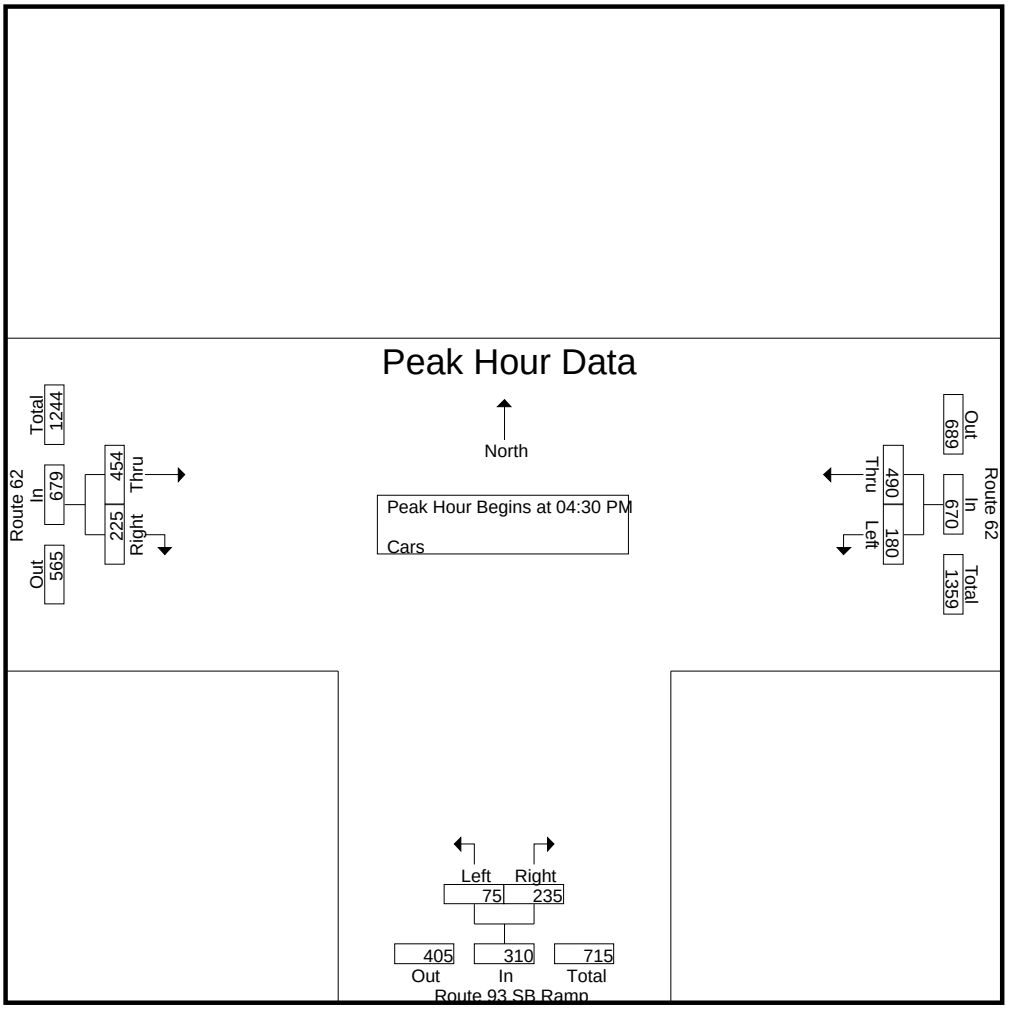


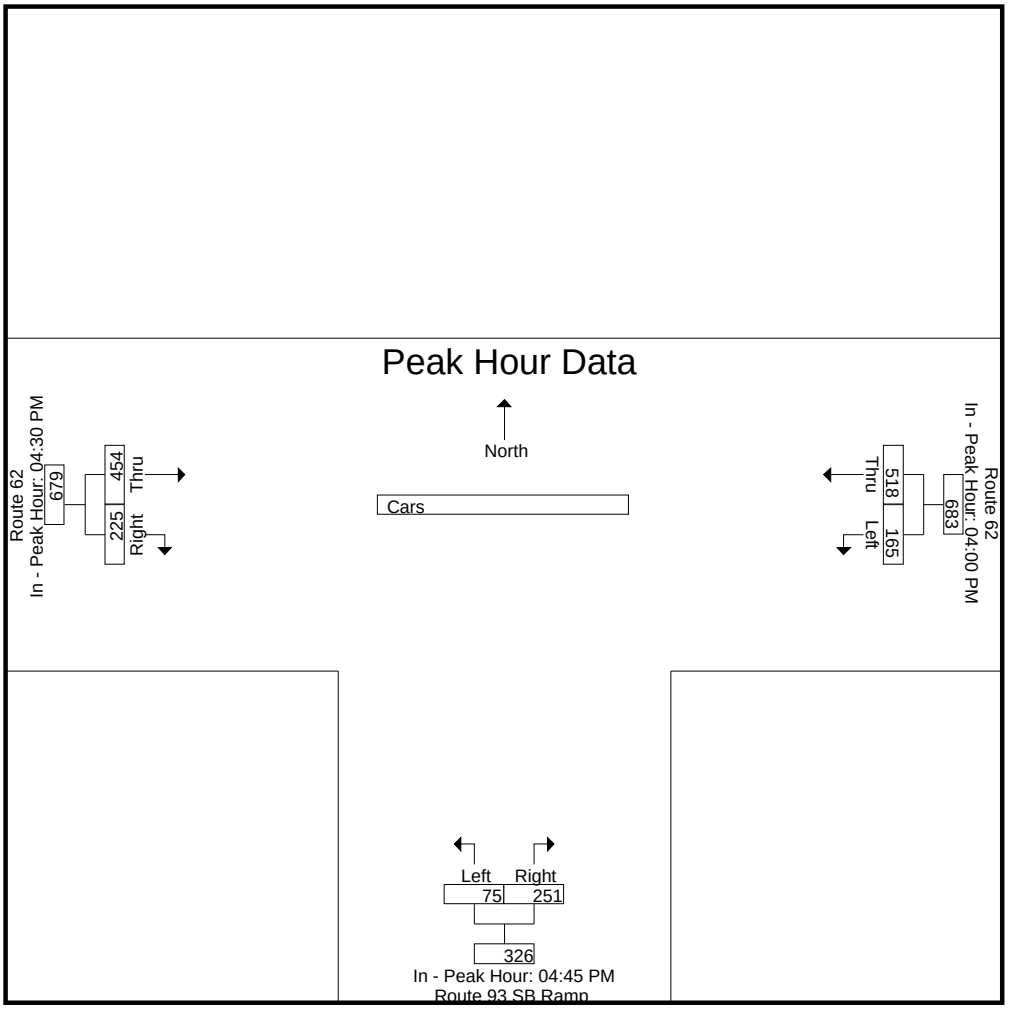
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:45 PM			04:30 PM		
+0 mins.	37	**138**	**175**	**20**	59	79	107	55	162
+15 mins.	41	132	173	16	63	79	105	50	155
+30 mins.	**47**	122	169	20	**67**	**87**	117	56	173
+45 mins.	40	126	166	19	62	81	**125**	**64**	**189**
Total Volume	165	518	683	75	251	326	454	225	679
% App. Total	24.2	75.8		23	77		66.9	33.1	
PHF	.878	.938	.976	.938	.937	.937	.908	.879	.898

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022

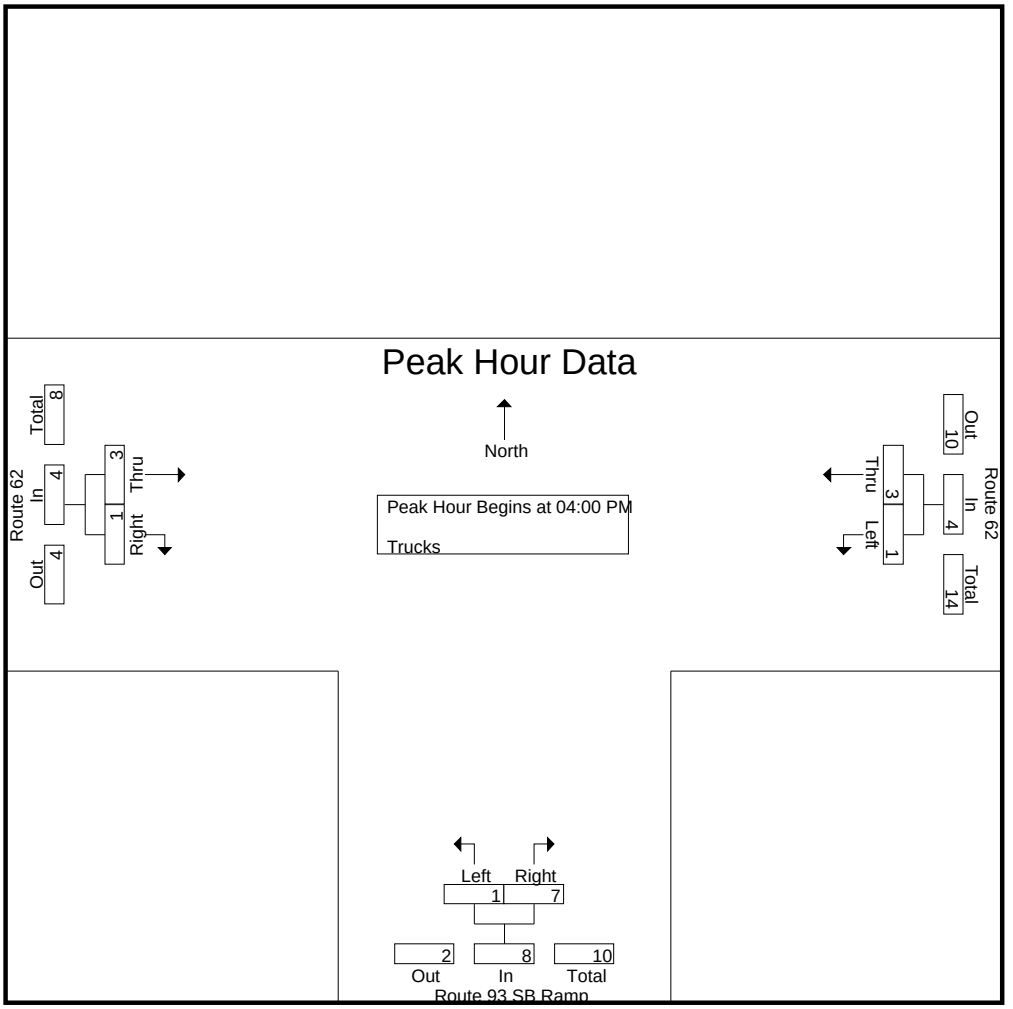
Groups Printed- Trucks

	Route 62 From East		Route 93 SB Ramp From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	1	2	0	1	0	0	4
04:15 PM	0	0	1	3	1	0	5
04:30 PM	0	1	0	1	2	0	4
04:45 PM	0	0	0	2	0	1	3
Total	1	3	1	7	3	1	16
05:00 PM	0	0	0	1	1	0	2
05:15 PM	0	0	1	0	0	0	1
05:30 PM	0	0	0	1	1	0	2
05:45 PM	0	0	0	3	0	0	3
Total	0	0	1	5	2	0	8
Grand Total	1	3	2	12	5	1	24
Apprch %	25	75	14.3	85.7	83.3	16.7	
Total %	4.2	12.5	8.3	50	20.8	4.2	

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**1**	**2**	**3**	0	1	1	0	0	0	4
04:15 PM	0	0	0	**1**	**3**	**4**	1	0	1	**5**
04:30 PM	0	1	1	0	1	1	**2**	0	**2**	4
04:45 PM	0	0	0	0	2	2	0	**1**	1	3
Total Volume	1	3	4	1	7	8	3	1	4	16
% App. Total	25	75		12.5	87.5		75	25		
PHF	.250	.375	.333	.250	.583	.500	.375	.250	.500	.800

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 8



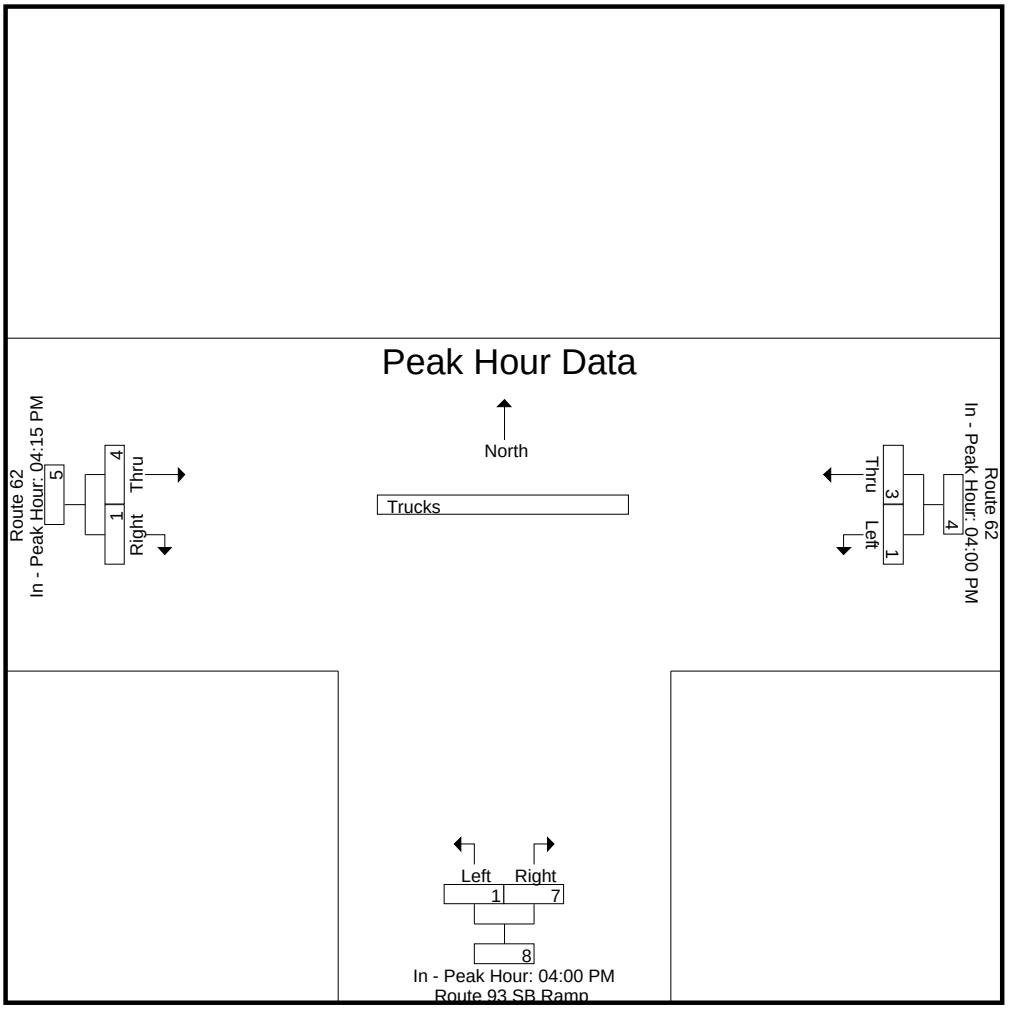
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	**1**	**2**	**3**	0	1	1	1	0	1
+15 mins.	0	0	0	**1**	**3**	**4**	**2**	0	**2**
+30 mins.	0	1	1	0	1	1	0	**1**	1
+45 mins.	0	0	0	0	2	2	1	0	1
Total Volume	1	3	4	1	7	8	4	1	5
% App. Total	25	75		12.5	87.5		80	20	
PHF	.250	.375	.333	.250	.583	.500	.500	.250	.625

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022

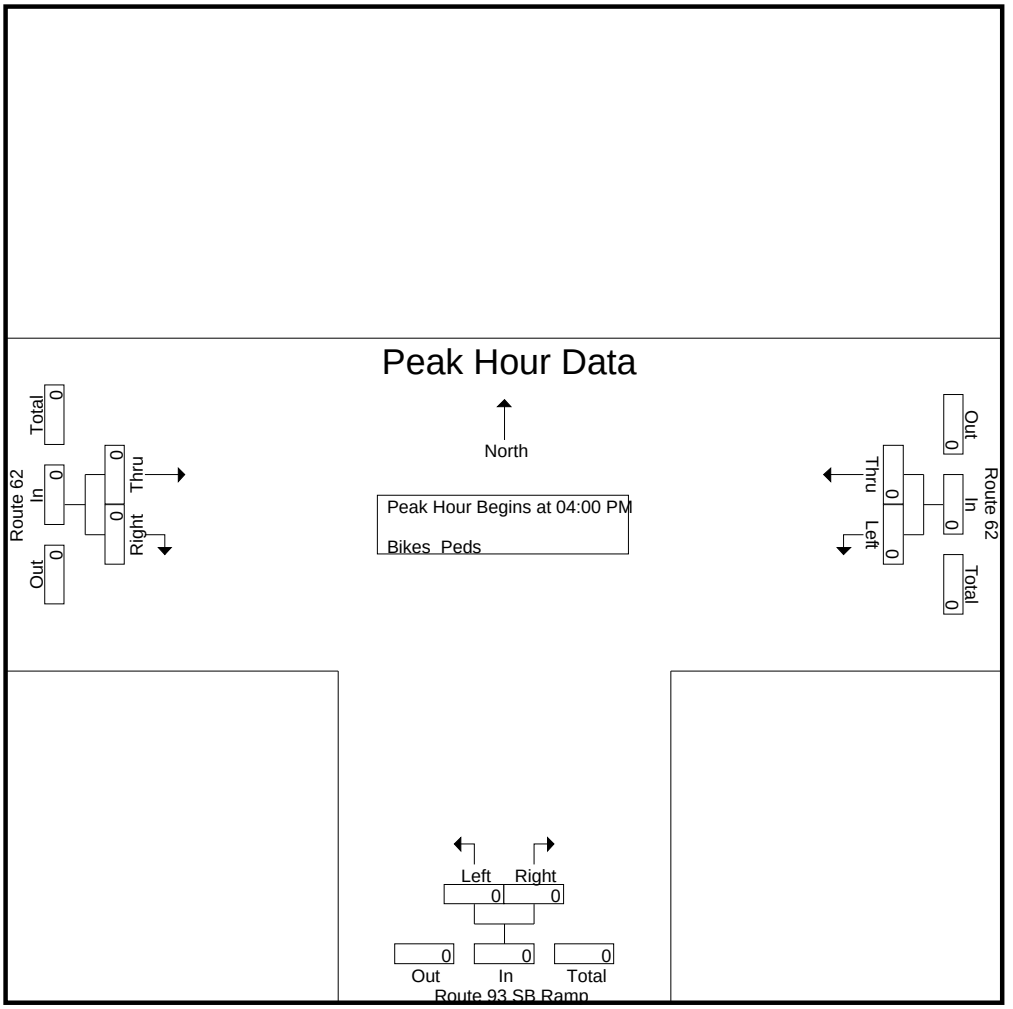
Groups Printed- Bikes Peds

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

	Route 62 From East			Route 93 SB Ramp From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 11



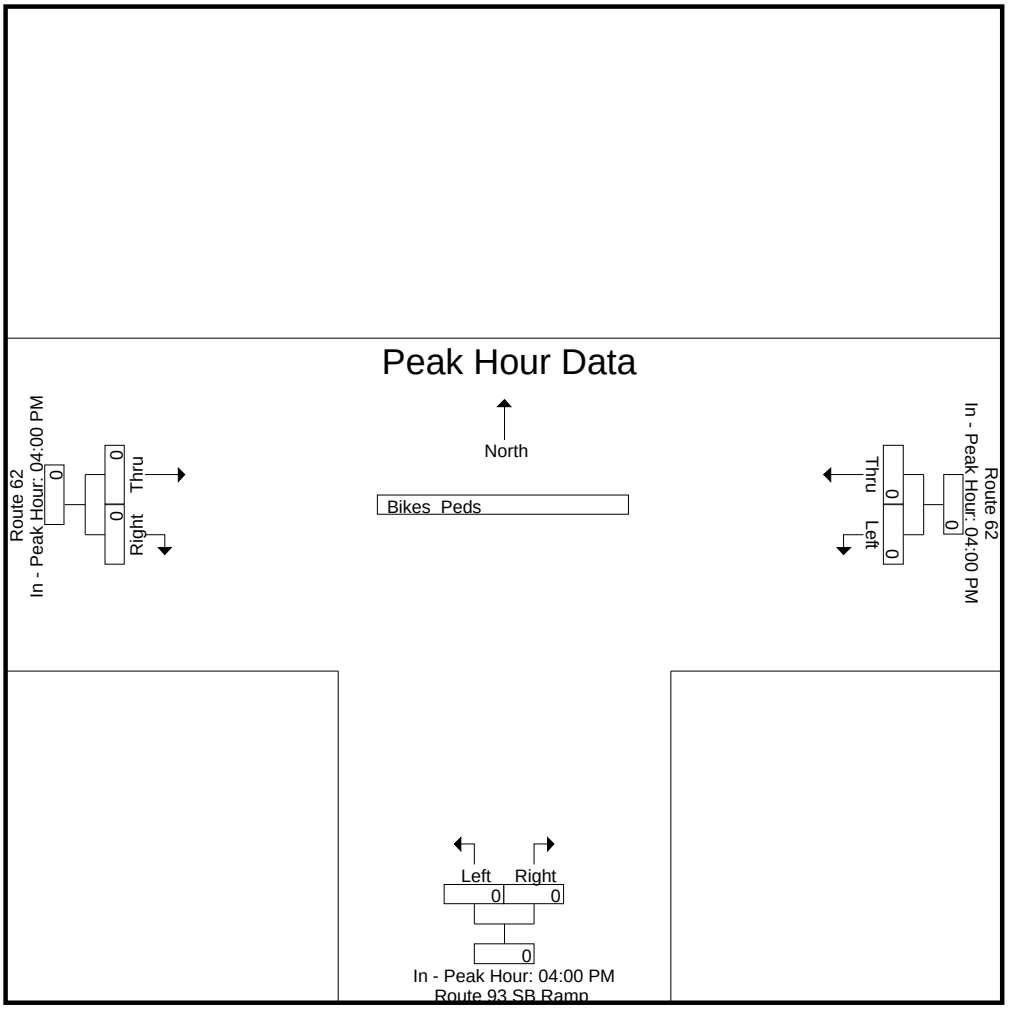
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : Route 93 SB Ramp
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110001
Site Code : 93110001
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 1

Groups Printed- Cars - Trucks

	Route 62 From East		Route 93 NB Ramps From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	45	153	18	36	115	35	402
07:15 AM	56	151	15	40	108	42	412
07:30 AM	75	152	31	31	98	27	414
07:45 AM	60	113	28	28	98	27	354
Total	236	569	92	135	419	131	1582
08:00 AM	53	92	26	32	85	27	315
08:15 AM	37	100	36	30	91	22	316
08:30 AM	36	101	27	28	87	24	303
08:45 AM	32	101	33	34	74	23	297
Total	158	394	122	124	337	96	1231
Grand Total	394	963	214	259	756	227	2813
Apprch %	29	71	45.2	54.8	76.9	23.1	
Total %	14	34.2	7.6	9.2	26.9	8.1	
Cars	357	887	208	206	711	212	2581
% Cars	90.6	92.1	97.2	79.5	94	93.4	91.8
Trucks	37	76	6	53	45	15	232
% Trucks	9.4	7.9	2.8	20.5	6	6.6	8.2

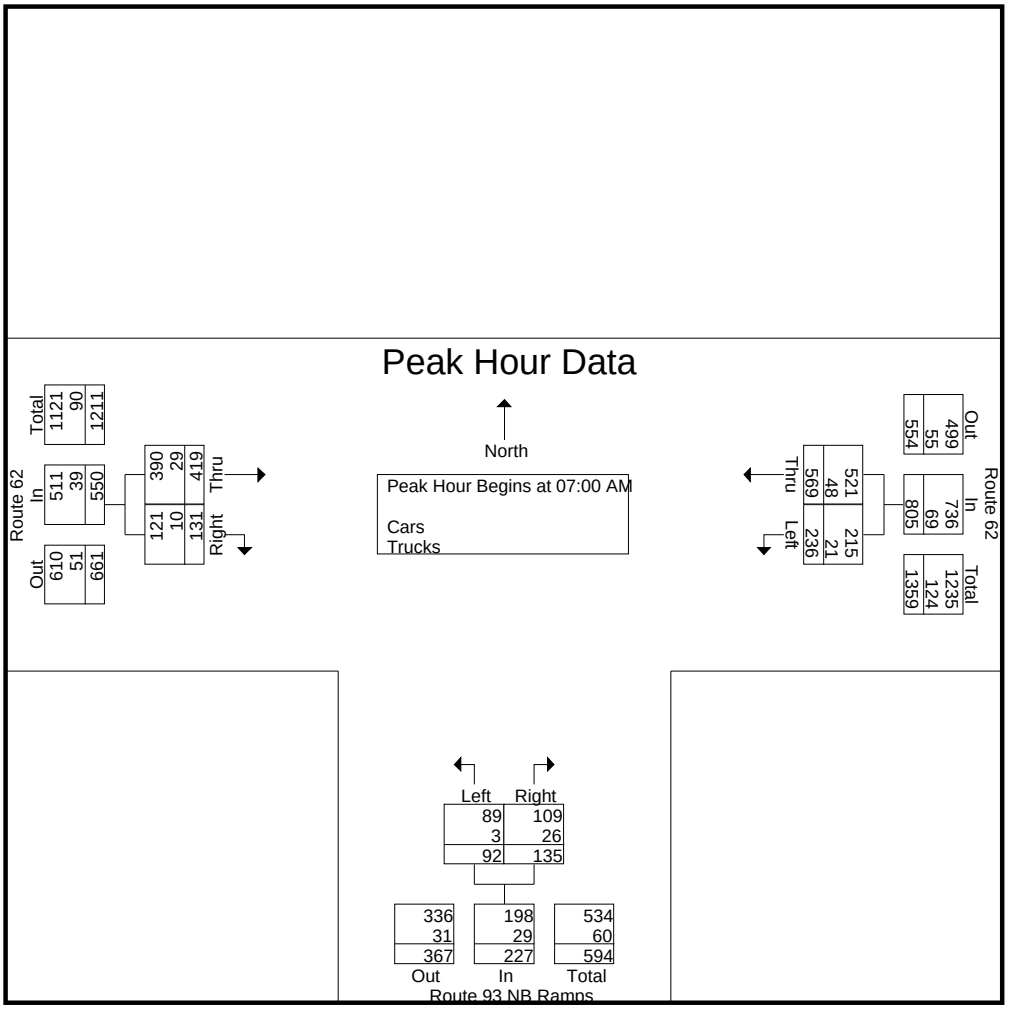
	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	45	**153**	198	18	36	54	**115**	35	**150**	402
07:15 AM	56	151	207	15	**40**	55	108	**42**	150	412
07:30 AM	**75**	152	**227**	**31**	31	**62**	98	27	125	**414**
07:45 AM	60	113	173	28	28	56	98	27	125	354
Total Volume	236	569	805	92	135	227	419	131	550	1582
% App. Total	29.3	70.7		40.5	59.5		76.2	23.8		
PHF	.787	.930	.887	.742	.844	.915	.911	.780	.917	.955
Cars	215	521	736	89	109	198	390	121	511	1445
% Cars	91.1	91.6	91.4	96.7	80.7	87.2	93.1	92.4	92.9	91.3
Trucks	21	48	69	3	26	29	29	10	39	137
% Trucks	8.9	8.4	8.6	3.3	19.3	12.8	6.9	7.6	7.1	8.7

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 2



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

Peak Hour for Each Approach Begins at:

	07:00 AM			08:00 AM			07:00 AM		
+0 mins.	45	**153**	198	26	32	58	**115**	35	**150**
+15 mins.	56	151	207	**36**	30	66	108	**42**	150
+30 mins.	**75**	152	**227**	27	28	55	98	27	125
+45 mins.	60	113	173	33	**34**	**67**	98	27	125
Total Volume	236	569	805	122	124	246	419	131	550
% App. Total	29.3	70.7		49.6	50.4		76.2	23.8	
PHF	.787	.930	.887	.847	.912	.918	.911	.780	.917
Cars	215	521	736	119	97	216	390	121	511
% Cars	91.1	91.6	91.4	97.5	78.2	87.8	93.1	92.4	92.9
Trucks	21	48	69	3	27	30	29	10	39
% Trucks	8.9	8.4	8.6	2.5	21.8	12.2	6.9	7.6	7.1

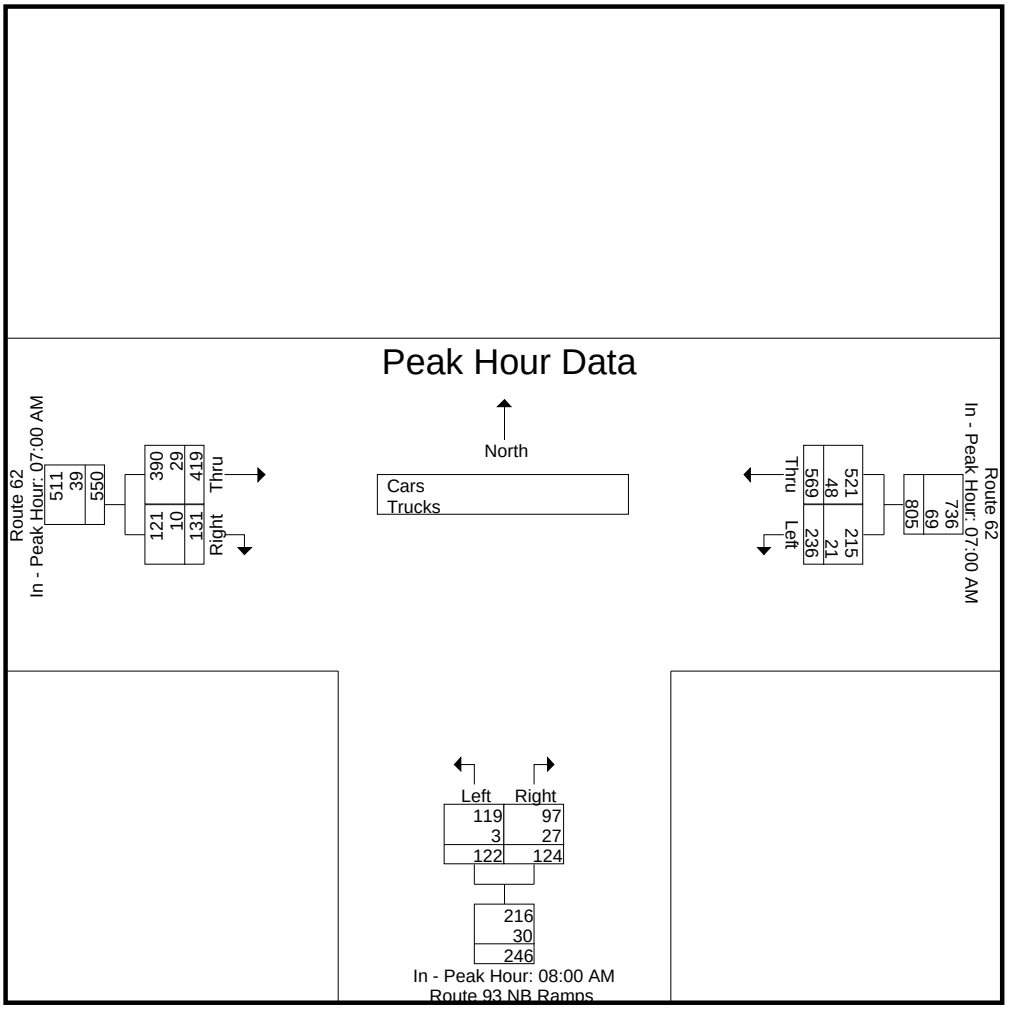
Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 3

Peak Hour Data



Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 4

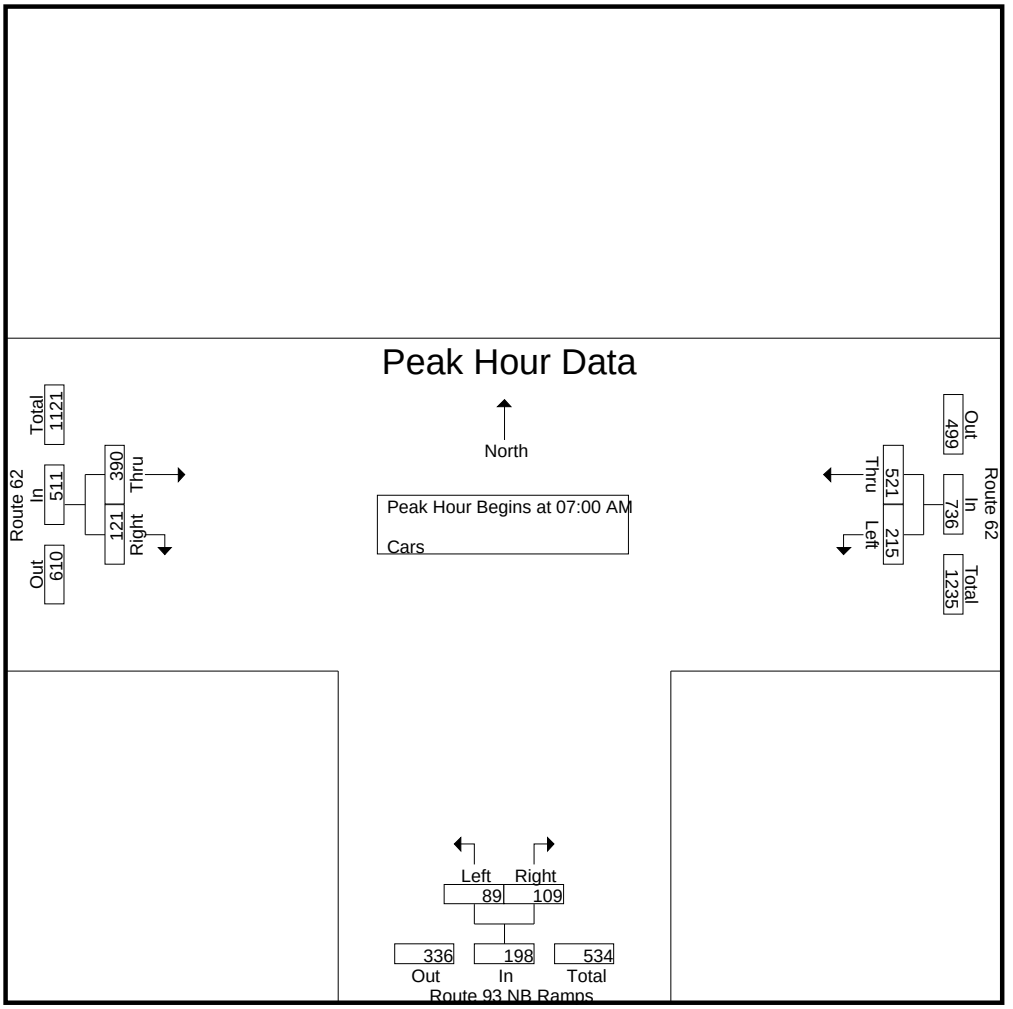
Groups Printed- Cars

	Route 62 From East		Route 93 NB Ramps From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	41	140	18	25	107	30	361
07:15 AM	48	139	15	34	100	39	375
07:30 AM	68	139	30	29	94	25	385
07:45 AM	58	103	26	21	89	27	324
Total	215	521	89	109	390	121	1445
08:00 AM	47	85	26	28	82	25	293
08:15 AM	33	94	35	23	86	22	293
08:30 AM	33	91	25	18	83	24	274
08:45 AM	29	96	33	28	70	20	276
Total	142	366	119	97	321	91	1136
Grand Total	357	887	208	206	711	212	2581
Apprch %	28.7	71.3	50.2	49.8	77	23	
Total %	13.8	34.4	8.1	8	27.5	8.2	

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	41	**140**	181	18	25	43	**107**	30	137	361
07:15 AM	48	139	187	15	**34**	49	100	**39**	**139**	375
07:30 AM	**68**	139	**207**	**30**	29	**59**	94	25	119	**385**
07:45 AM	58	103	161	26	21	47	89	27	116	324
Total Volume	215	521	736	89	109	198	390	121	511	1445
% App. Total	29.2	70.8		44.9	55.1		76.3	23.7		
PHF	.790	.930	.889	.742	.801	.839	.911	.776	.919	.938

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 5



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

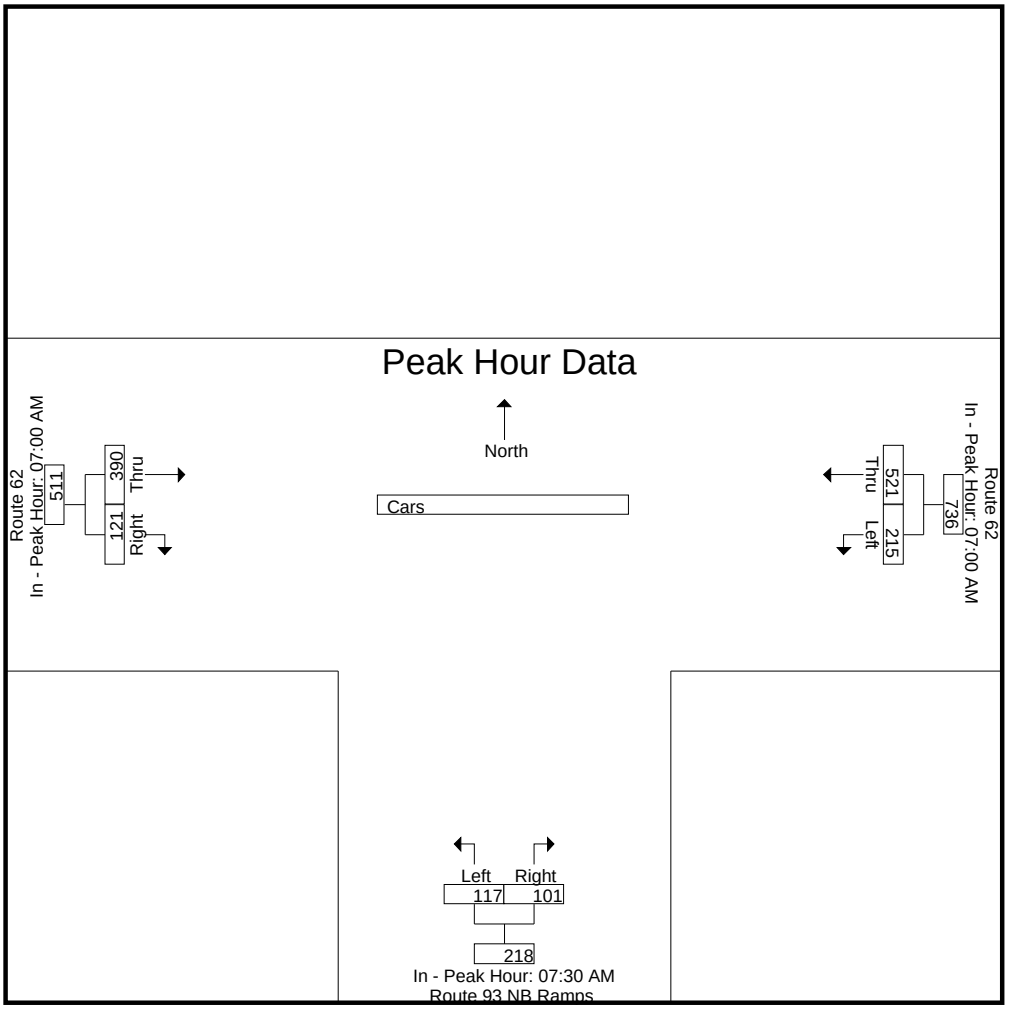
	07:00 AM			07:30 AM			07:00 AM		
+0 mins.	41	**140**	181	30	**29**	**59**	**107**	30	137
+15 mins.	48	139	187	26	21	47	100	**39**	**139**
+30 mins.	**68**	139	**207**	26	28	54	94	25	119
+45 mins.	58	103	161	**35**	23	58	89	27	116
Total Volume	215	521	736	117	101	218	390	121	511
% App. Total	29.2	70.8		53.7	46.3		76.3	23.7	
PHF	.790	.930	.889	.836	.871	.924	.911	.776	.919

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022

Groups Printed- Trucks

	Route 62 From East		Route 93 NB Ramps From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	4	13	0	11	8	5	41
07:15 AM	8	12	0	6	8	3	37
07:30 AM	7	13	1	2	4	2	29
07:45 AM	2	10	2	7	9	0	30
Total	21	48	3	26	29	10	137
08:00 AM	6	7	0	4	3	2	22
08:15 AM	4	6	1	7	5	0	23
08:30 AM	3	10	2	10	4	0	29
08:45 AM	3	5	0	6	4	3	21
Total	16	28	3	27	16	5	95
Grand Total	37	76	6	53	45	15	232
Apprch %	32.7	67.3	10.2	89.8	75	25	
Total %	15.9	32.8	2.6	22.8	19.4	6.5	

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	4	**13**	17	0	**11**	**11**	8	**5**	**13**	**41**
07:15 AM	**8**	12	**20**	0	6	6	8	3	11	37
07:30 AM	7	13	20	1	2	3	4	2	6	29
07:45 AM	2	10	12	**2**	7	9	**9**	0	9	30
Total Volume	21	48	69	3	26	29	29	10	39	137
% App. Total	30.4	69.6		10.3	89.7		74.4	25.6		
PHF	.656	.923	.863	.375	.591	.659	.806	.500	.750	.835

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
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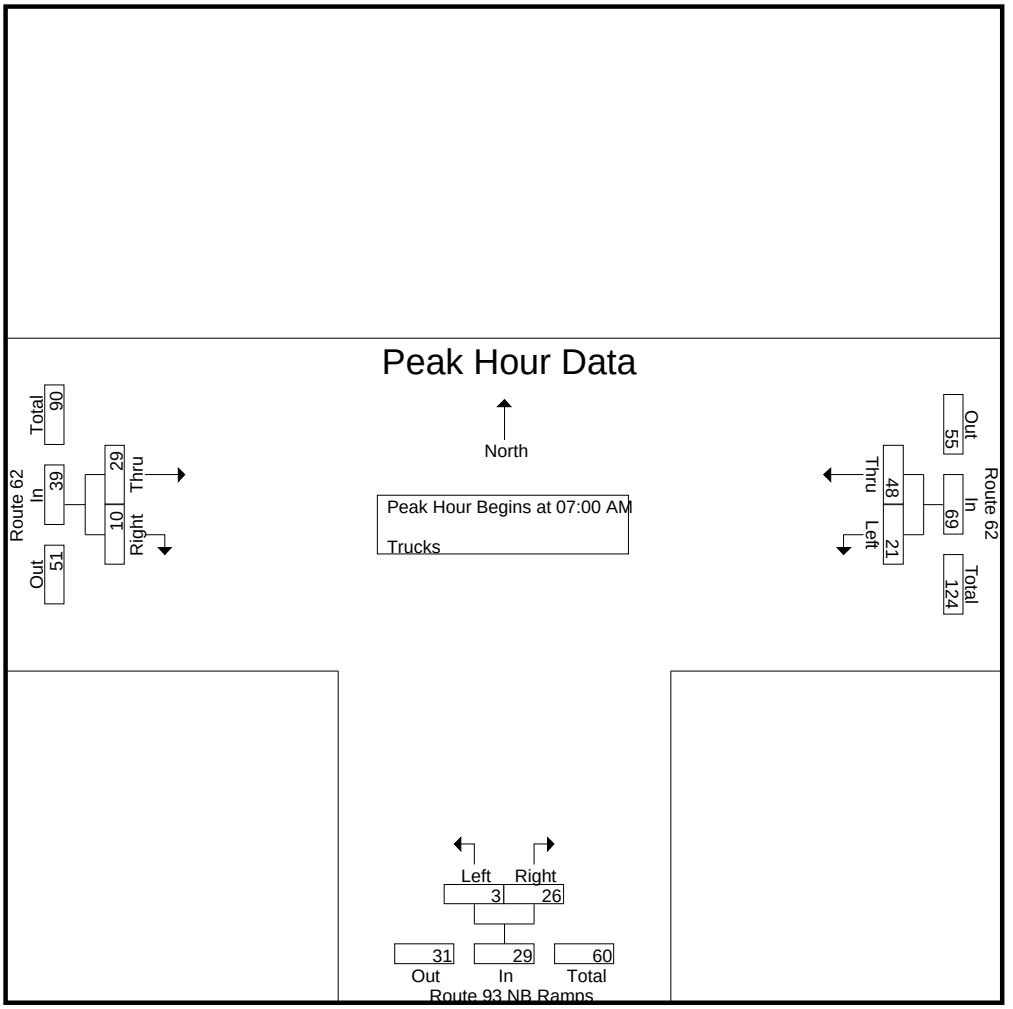

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:00 AM		
+0 mins.	4	**13**	17	**2**	7	9	8	**5**	**13**
+15 mins.	**8**	12	**20**	0	4	4	8	3	11
+30 mins.	7	13	20	1	7	8	4	2	6
+45 mins.	2	10	12	2	**10**	**12**	**9**	0	9
Total Volume	21	48	69	5	28	33	29	10	39
% App. Total	30.4	69.6		15.2	84.8		74.4	25.6	
PHF	.656	.923	.863	.625	.700	.688	.806	.500	.750

Accurate Counts
978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
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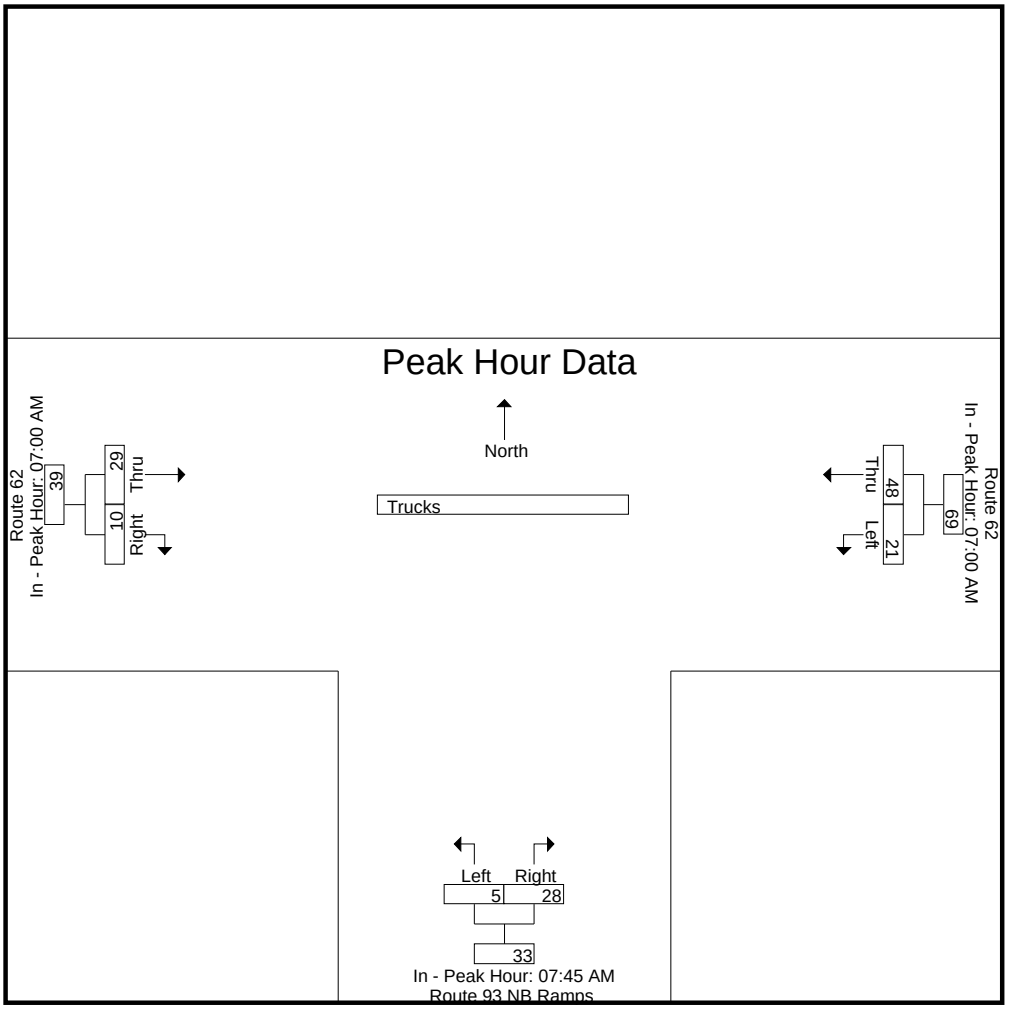

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022

Groups Printed- Bikes Peds

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
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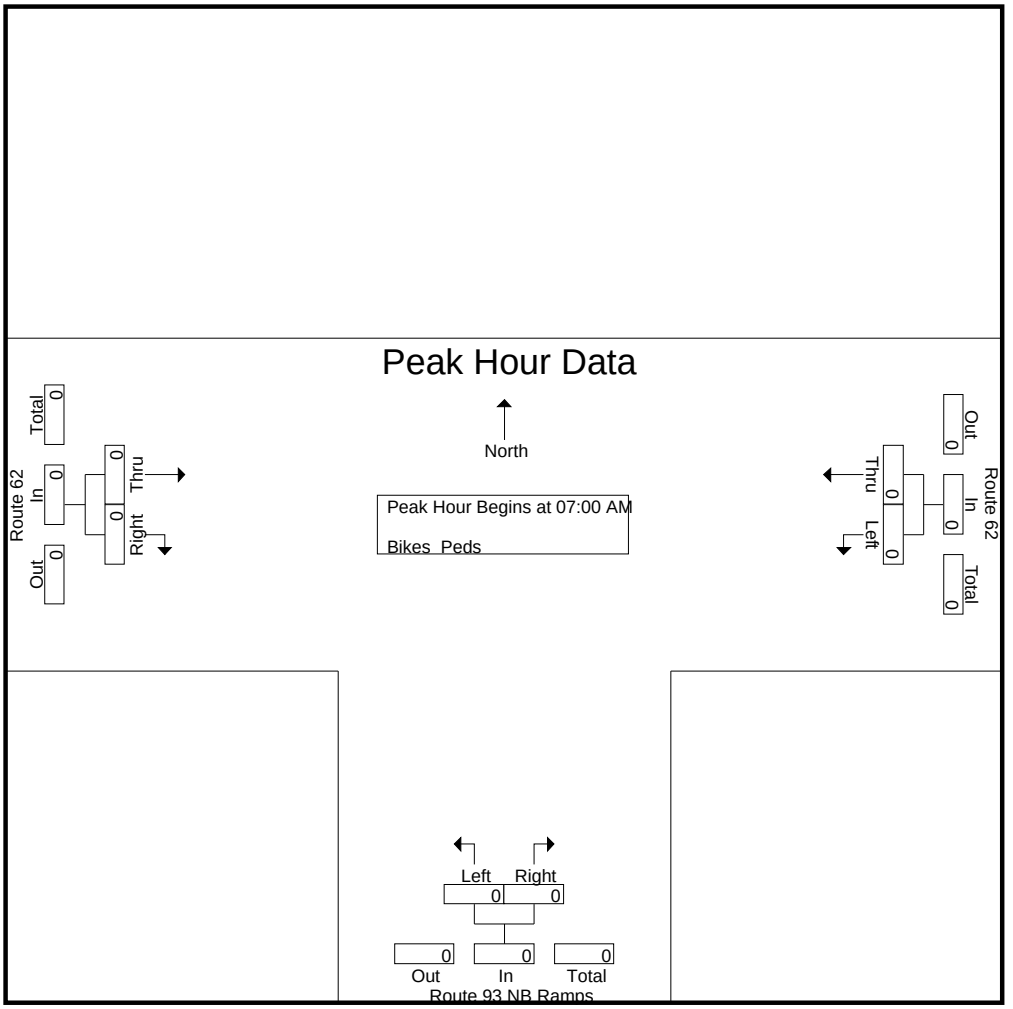

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
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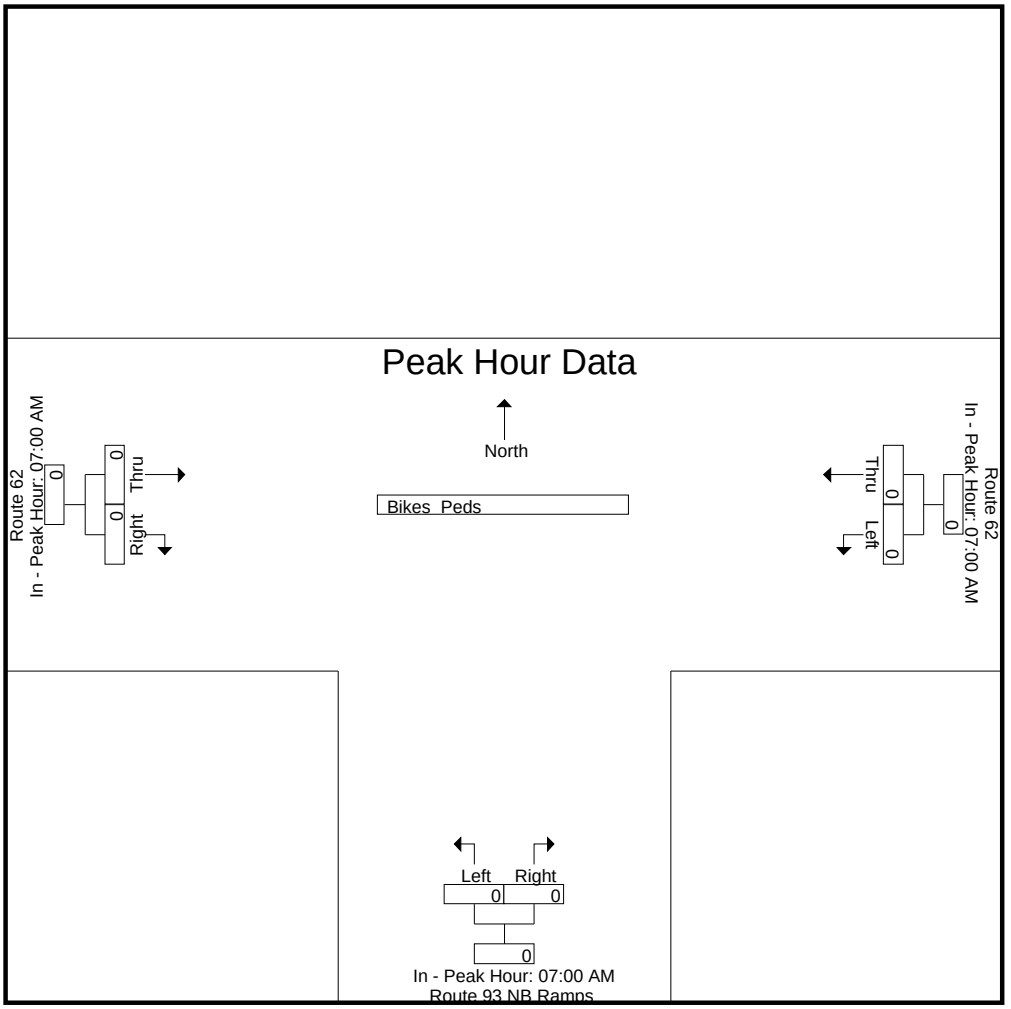


Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 1

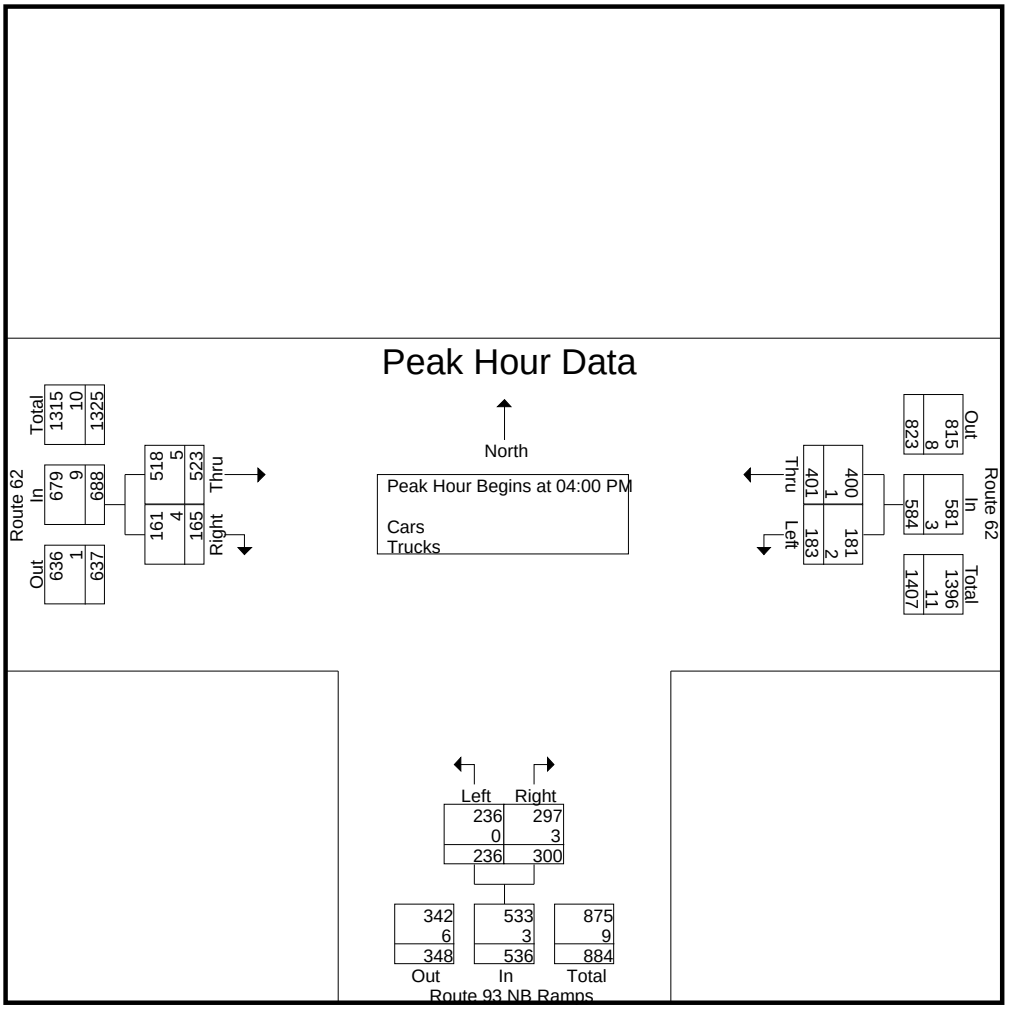
Groups Printed- Cars - Trucks

	Route 62 From East		Route 93 NB Ramps From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	51	114	51	71	104	45	436
04:15 PM	43	116	57	79	135	49	479
04:30 PM	46	94	61	77	143	33	454
04:45 PM	43	77	67	73	141	38	439
Total	183	401	236	300	523	165	1808
05:00 PM	38	74	51	60	91	34	348
05:15 PM	33	69	50	69	83	31	335
05:30 PM	25	67	47	60	88	29	316
05:45 PM	22	61	36	43	70	20	252
Total	118	271	184	232	332	114	1251
Grand Total	301	672	420	532	855	279	3059
Apprch %	30.9	69.1	44.1	55.9	75.4	24.6	
Total %	9.8	22	13.7	17.4	28	9.1	
Cars	294	669	420	529	839	273	3024
% Cars	97.7	99.6	100	99.4	98.1	97.8	98.9
Trucks	7	3	0	3	16	6	35
% Trucks	2.3	0.4	0	0.6	1.9	2.2	1.1

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**51**	114	**165**	51	71	122	104	45	149	436
04:15 PM	43	**116**	159	57	**79**	136	135	**49**	**184**	**479**
04:30 PM	46	94	140	61	77	138	**143**	33	176	454
04:45 PM	43	77	120	**67**	73	**140**	141	38	179	439
Total Volume	183	401	584	236	300	536	523	165	688	1808
% App. Total	31.3	68.7		44	56		76	24		
PHF	.897	.864	.885	.881	.949	.957	.914	.842	.935	.944
Cars	181	400	581	236	297	533	518	161	679	1793
% Cars	98.9	99.8	99.5	100	99.0	99.4	99.0	97.6	98.7	99.2
Trucks	2	1	3	0	3	3	5	4	9	15
% Trucks	1.1	0.2	0.5	0	1.0	0.6	1.0	2.4	1.3	0.8

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 2



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

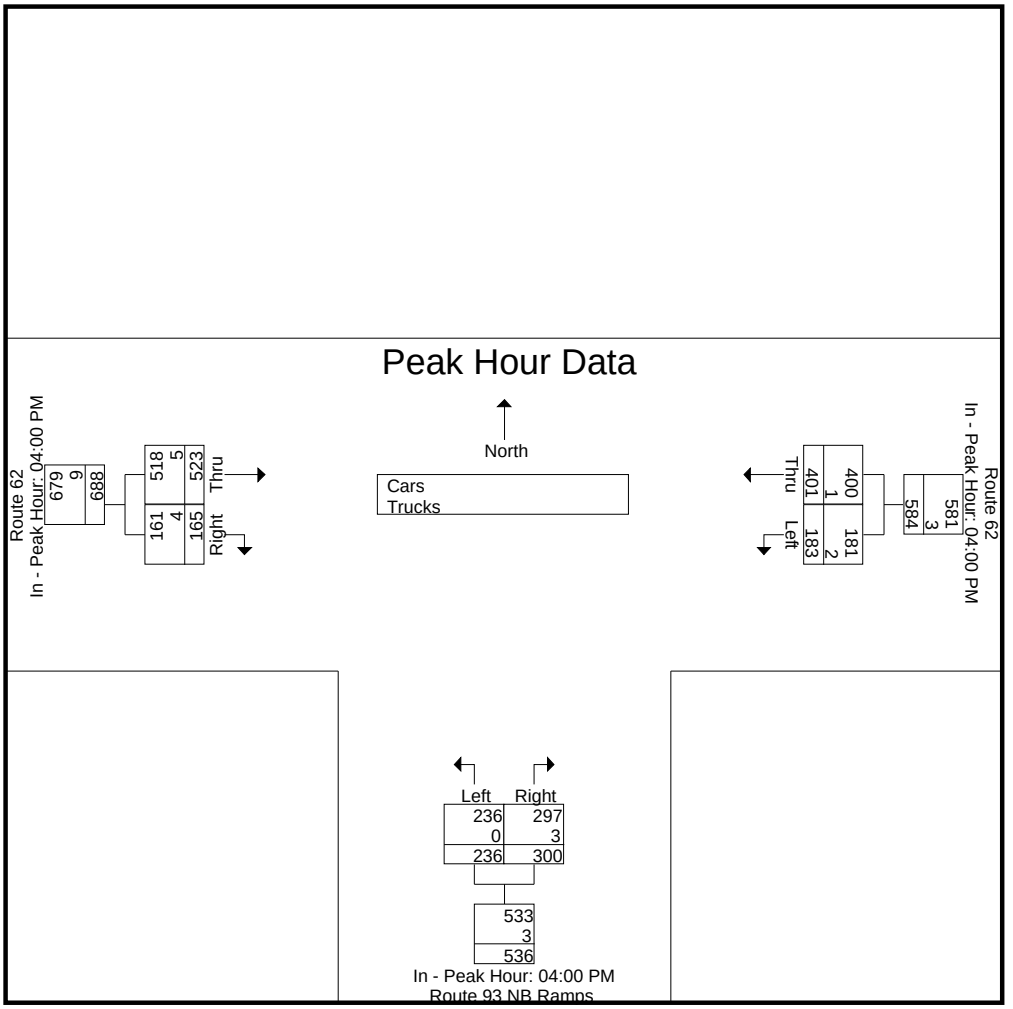
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	**51**	114	**165**	51	71	122	104	45	149
+15 mins.	43	**116**	159	57	**79**	136	135	**49**	**184**
+30 mins.	46	94	140	61	77	138	**143**	33	176
+45 mins.	43	77	120	**67**	73	**140**	141	38	179
Total Volume	183	401	584	236	300	536	523	165	688
% App. Total	31.3	68.7		44	56		76	24	
PHF	.897	.864	.885	.881	.949	.957	.914	.842	.935
Cars	181	400	581	236	297	533	518	161	679
% Cars	98.9	99.8	99.5	100	99	99.4	99	97.6	98.7
Trucks	2	1	3	0	3	3	5	4	9
% Trucks	1.1	0.2	0.5	0	1	0.6	1	2.4	1.3

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 4

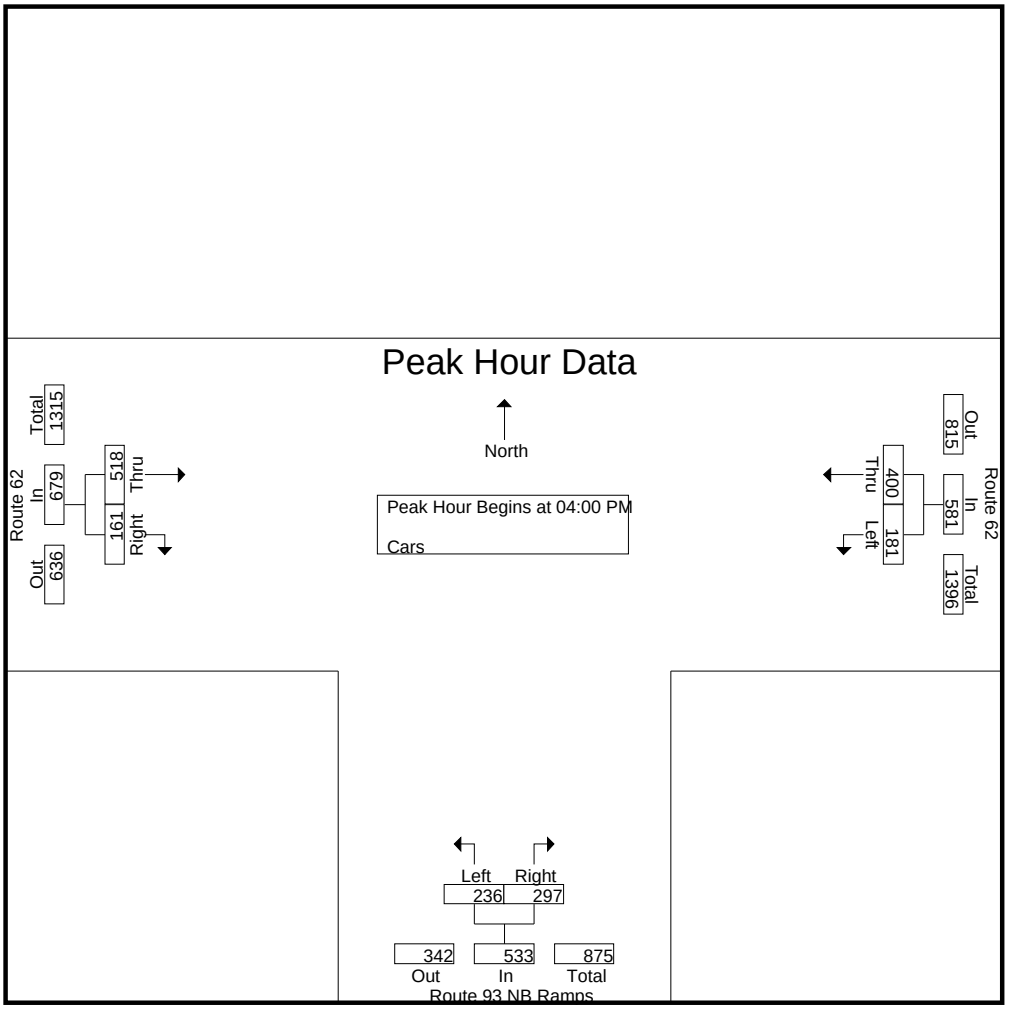
Groups Printed- Cars

	Route 62 From East		Route 93 NB Ramps From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	51	113	51	70	103	44	432
04:15 PM	42	116	57	79	135	46	475
04:30 PM	45	94	61	76	142	33	451
04:45 PM	43	77	67	72	138	38	435
Total	181	400	236	297	518	161	1793
05:00 PM	37	72	51	60	87	34	341
05:15 PM	32	69	50	69	79	30	329
05:30 PM	25	67	47	60	86	28	313
05:45 PM	19	61	36	43	69	20	248
Total	113	269	184	232	321	112	1231
Grand Total	294	669	420	529	839	273	3024
Apprch %	30.5	69.5	44.3	55.7	75.4	24.6	
Total %	9.7	22.1	13.9	17.5	27.7	9	

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**51**	113	**164**	51	70	121	103	44	147	432
04:15 PM	42	**116**	158	57	**79**	136	135	**46**	**181**	**475**
04:30 PM	45	94	139	61	76	137	**142**	33	175	451
04:45 PM	43	77	120	**67**	72	**139**	138	38	176	435
Total Volume	181	400	581	236	297	533	518	161	679	1793
% App. Total	31.2	68.8		44.3	55.7		76.3	23.7		
PHF	.887	.862	.886	.881	.940	.959	.912	.875	.938	.944

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 5



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

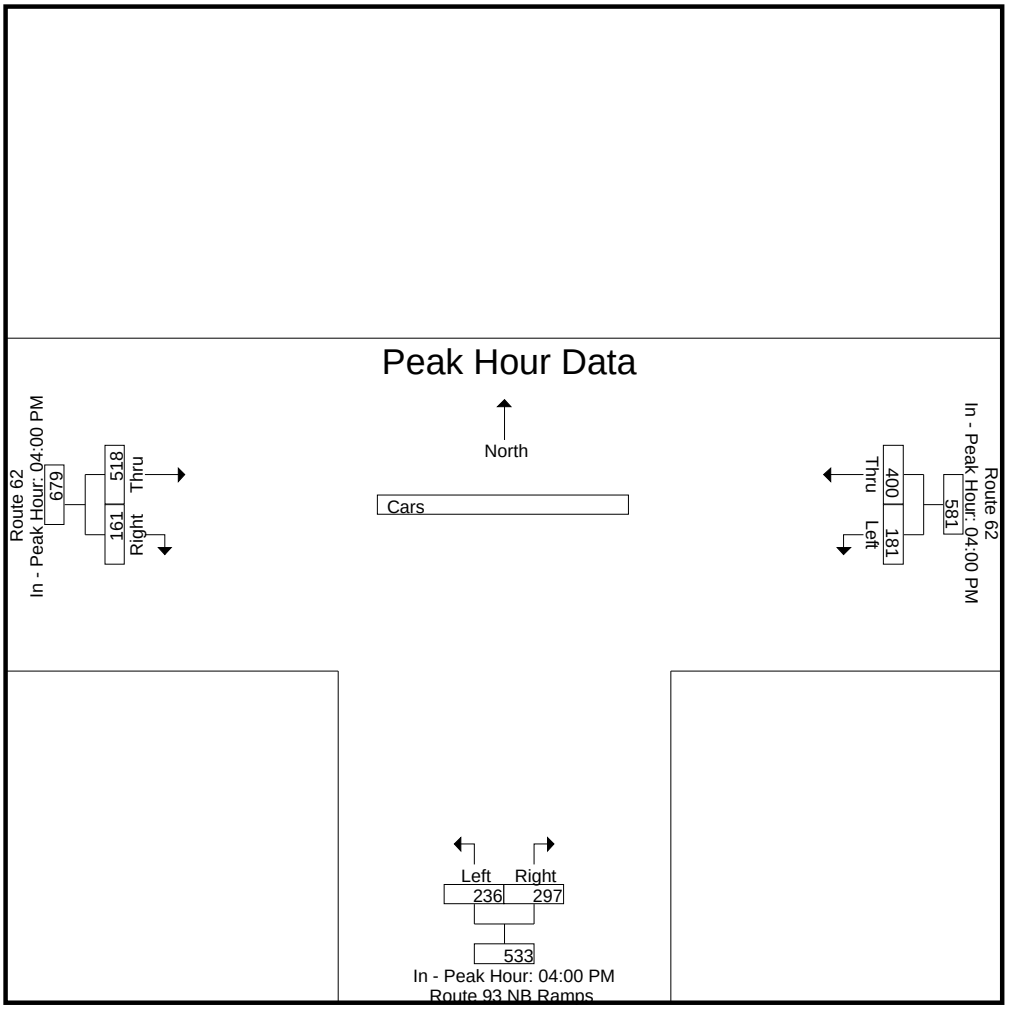
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	**51**	113	**164**	51	70	121	103	44	147
+15 mins.	42	**116**	158	57	**79**	136	135	**46**	**181**
+30 mins.	45	94	139	61	76	137	**142**	33	175
+45 mins.	43	77	120	**67**	72	**139**	138	38	176
Total Volume	181	400	581	236	297	533	518	161	679
% App. Total	31.2	68.8		44.3	55.7		76.3	23.7	
PHF	.887	.862	.886	.881	.940	.959	.912	.875	.938

Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 7

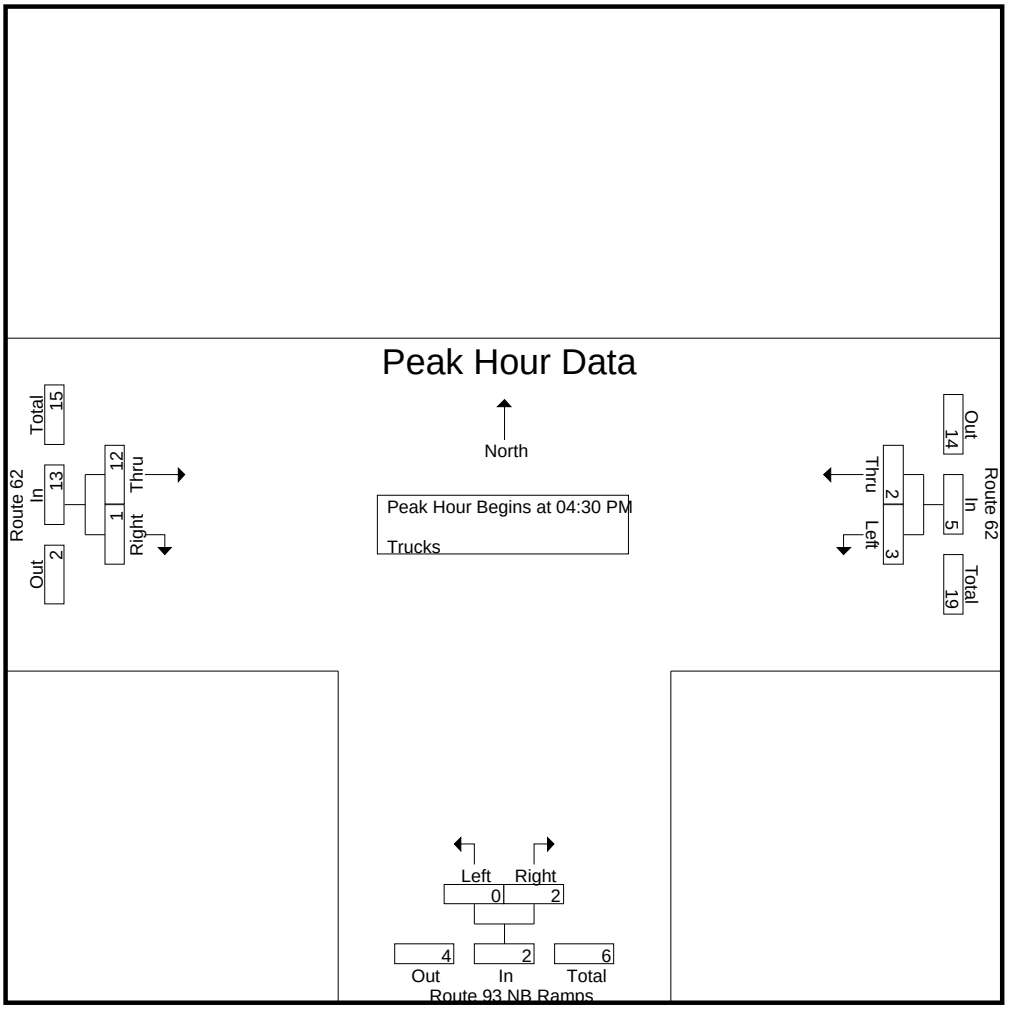
Groups Printed- Trucks

	Route 62 From East		Route 93 NB Ramps From South		Route 62 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	1	0	1	1	1	4
04:15 PM	1	0	0	0	0	3	4
04:30 PM	1	0	0	1	1	0	3
04:45 PM	0	0	0	1	3	0	4
Total	2	1	0	3	5	4	15
05:00 PM	1	2	0	0	4	0	7
05:15 PM	1	0	0	0	4	1	6
05:30 PM	0	0	0	0	2	1	3
05:45 PM	3	0	0	0	1	0	4
Total	5	2	0	0	11	2	20
Grand Total	7	3	0	3	16	6	35
Apprch %	70	30	0	100	72.7	27.3	
Total %	20	8.6	0	8.6	45.7	17.1	

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	**1**	0	1	0	**1**	**1**	1	0	1	3
04:45 PM	0	0	0	0	1	1	3	0	3	4
05:00 PM	1	**2**	**3**	0	0	0	**4**	0	4	**7**
05:15 PM	1	0	1	0	0	0	4	**1**	**5**	6
Total Volume	3	2	5	0	2	2	12	1	13	20
% App. Total	60	40		0	100		92.3	7.7		
PHF	.750	.250	.417	.000	.500	.500	.750	.250	.650	.714

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 8



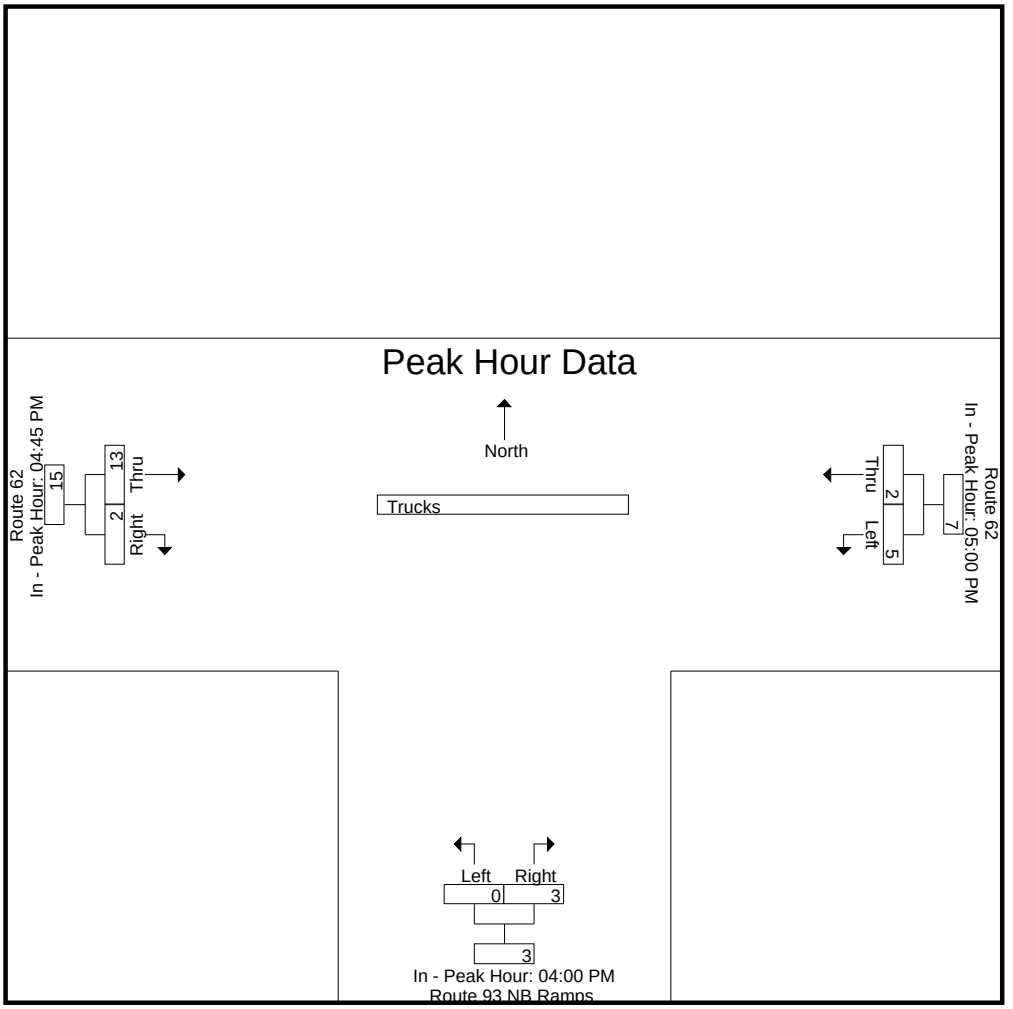
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:00 PM			04:45 PM		
+0 mins.	1	**2**	**3**	0	**1**	**1**	3	0	3
+15 mins.	1	0	1	0	0	0	**4**	0	4
+30 mins.	0	0	0	0	1	1	4	**1**	**5**
+45 mins.	**3**	0	3	0	1	1	2	1	3
Total Volume	5	2	7	0	3	3	13	2	15
% App. Total	71.4	28.6		0	100		86.7	13.3	
PHF	.417	.250	.583	.000	.750	.750	.813	.500	.750

Accurate Counts
978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022

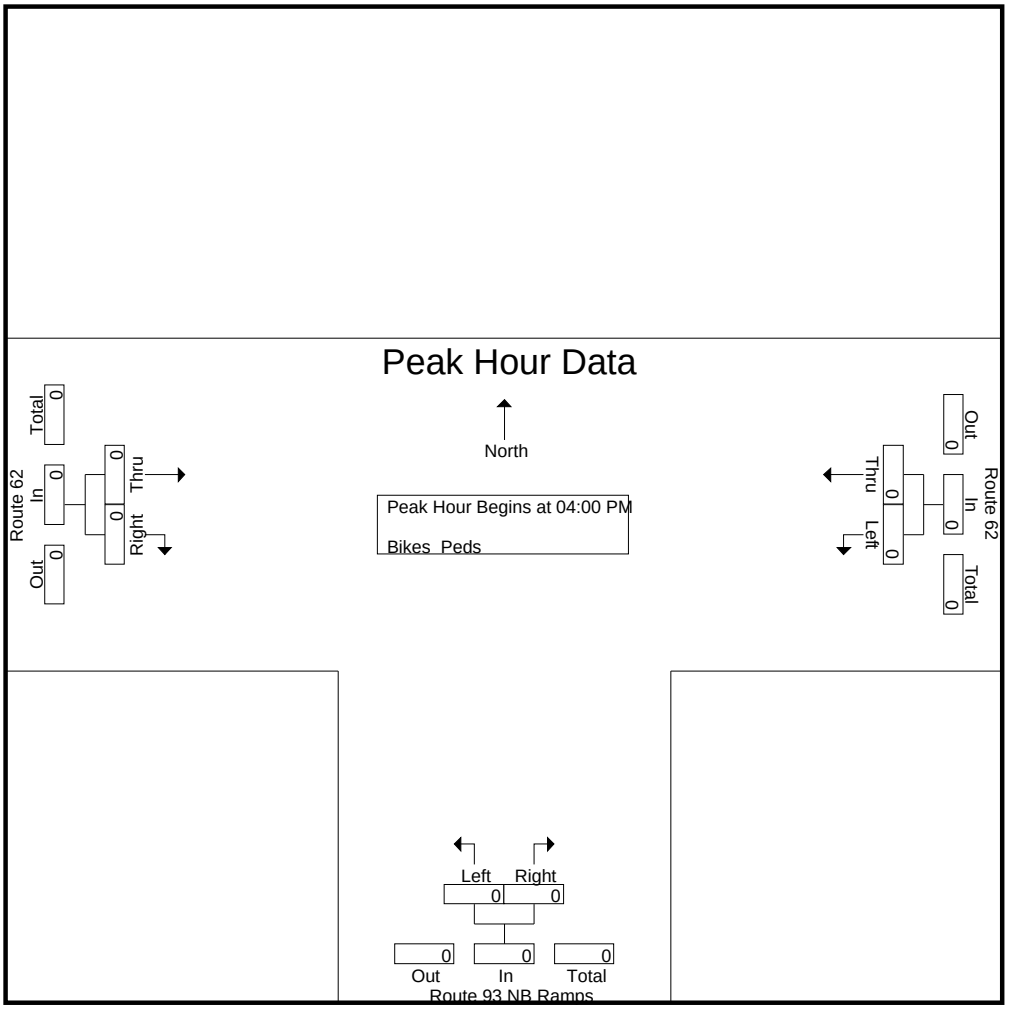
Groups Printed- Bikes Peds

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

	Route 62 From East			Route 93 NB Ramps From South			Route 62 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 11



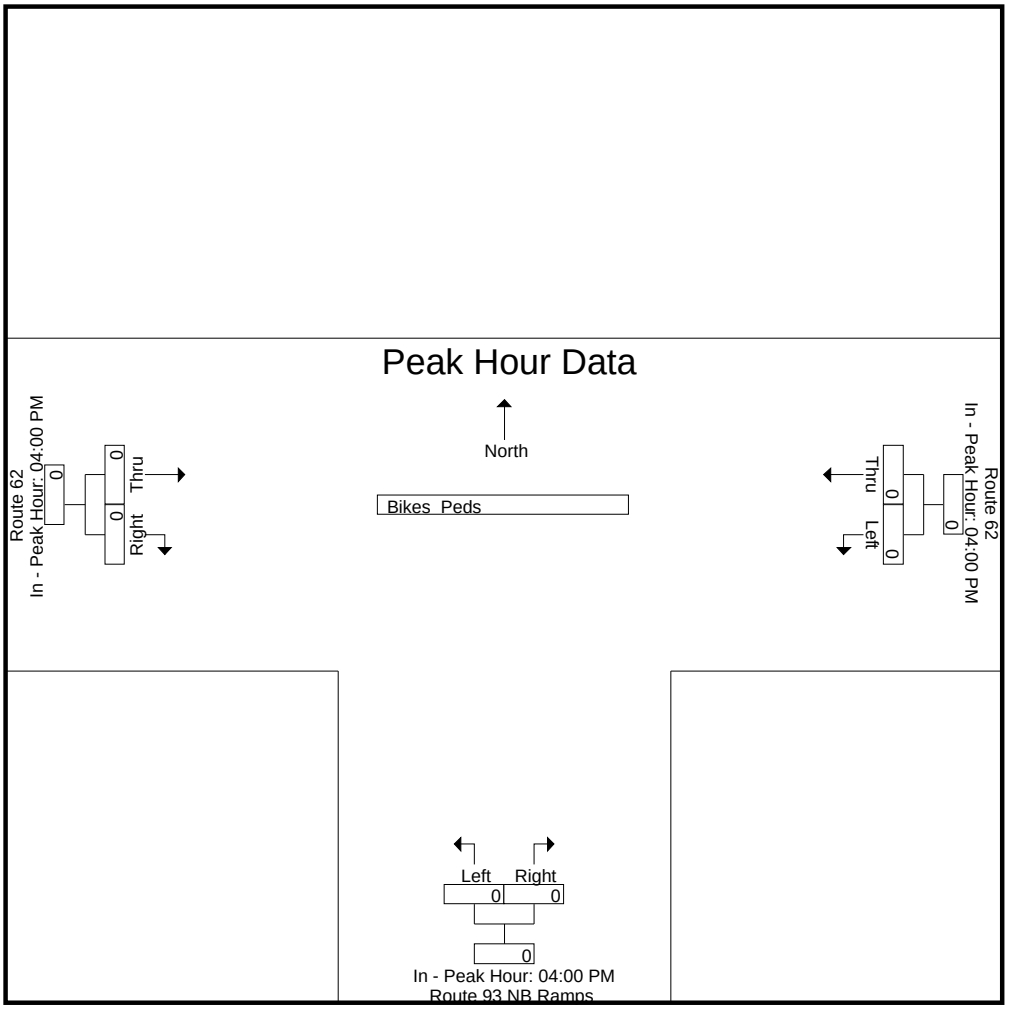
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : Route 93 NB Ramps
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110002
Site Code : 93110002
Start Date : 3/29/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 1

Groups Printed- Cars - Trucks

	Woburn St From North			Route 62 From East			Woburn St From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	18	73	7	118	2	20	1	2	23	88	7	362
07:15 AM	13	22	101	2	138	5	18	5	3	28	105	8	448
07:30 AM	7	26	103	4	148	7	12	5	7	26	109	6	460
07:45 AM	6	31	79	5	137	9	17	16	4	39	122	9	474
Total	29	97	356	18	541	23	67	27	16	116	424	30	1744
08:00 AM	7	30	63	4	141	7	14	16	2	28	105	13	430
08:15 AM	5	17	74	6	110	9	16	17	5	35	126	10	430
08:30 AM	8	21	43	4	140	8	9	10	3	34	112	8	400
08:45 AM	7	20	36	5	121	9	11	8	5	22	111	6	361
Total	27	88	216	19	512	33	50	51	15	119	454	37	1621
Grand Total	56	185	572	37	1053	56	117	78	31	235	878	67	3365
Apprch %	6.9	22.8	70.4	3.2	91.9	4.9	51.8	34.5	13.7	19.9	74.4	5.7	
Total %	1.7	5.5	17	1.1	31.3	1.7	3.5	2.3	0.9	7	26.1	2	
Cars	54	184	568	37	973	56	114	77	31	233	817	66	3210
% Cars	96.4	99.5	99.3	100	92.4	100	97.4	98.7	100	99.1	93.1	98.5	95.4
Trucks	2	1	4	0	80	0	3	1	0	2	61	1	155
% Trucks	3.6	0.5	0.7	0	7.6	0	2.6	1.3	0	0.9	6.9	1.5	4.6

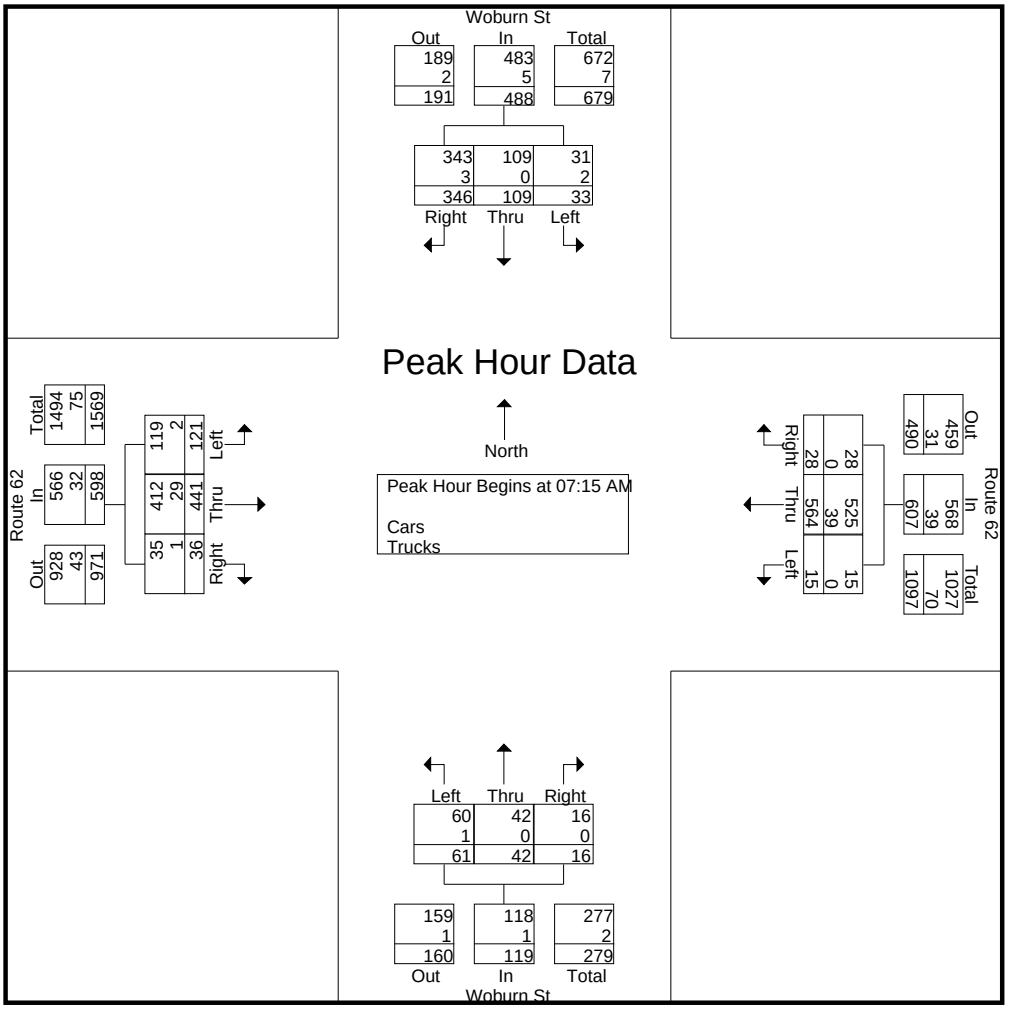
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**13**	22	101	**136**	2	138	5	145	**18**	5	3	26	28	105	8	141	448
07:30 AM	7	26	**103**	136	4	**148**	7	**159**	12	5	**7**	24	26	109	6	141	460
07:45 AM	6	**31**	79	116	**5**	137	**9**	151	17	**16**	4	**37**	**39**	**122**	9	**170**	**474**
08:00 AM	7	30	63	100	4	141	7	152	14	16	2	32	28	105	**13**	146	430
Total Volume	33	109	346	488	15	564	28	607	61	42	16	119	121	441	36	598	1812
% App. Total	6.8	22.3	70.9		2.5	92.9	4.6		51.3	35.3	13.4		20.2	73.7	6		
PHF	.635	.879	.840	.897	.750	.953	.778	.954	.847	.656	.571	.804	.776	.904	.692	.879	.956
Cars	31	109	343	483	15	525	28	568	60	42	16	118	119	412	35	566	1735
% Cars	93.9	100	99.1	99.0	100	93.1	100	93.6	98.4	100	100	99.2	98.3	93.4	97.2	94.6	95.8
Trucks	2	0	3	5	0	39	0	39	1	0	0	1	2	29	1	32	77
% Trucks	6.1	0	0.9	1.0	0	6.9	0	6.4	1.6	0	0	0.8	1.7	6.6	2.8	5.4	4.2

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 2



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

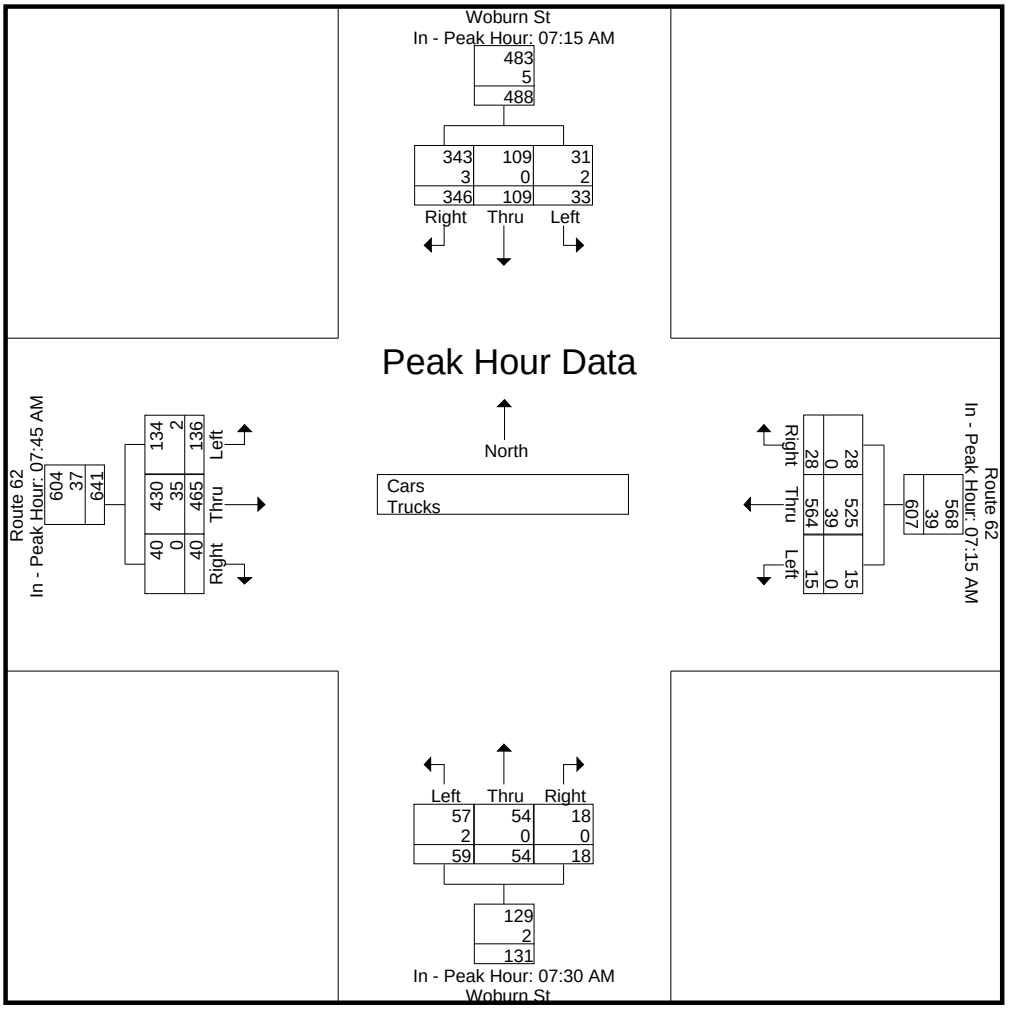
	07:15 AM				07:15 AM				07:30 AM				07:45 AM			
+0 mins.	**13**	22	101	**136**	2	138	5	145	12	5	**7**	24	**39**	122	9	170
+15 mins.	7	26	**103**	136	4	**148**	7	**159**	**17**	16	4	37	28	105	**13**	146
+30 mins.	6	**31**	79	116	**5**	137	**9**	151	14	16	2	32	35	**126**	10	**171**
+45 mins.	7	30	63	100	4	141	7	152	16	**17**	5	**38**	34	112	8	154
Total Volume	33	109	346	488	15	564	28	607	59	54	18	131	136	465	40	641
% App. Total	6.8	22.3	70.9		2.5	92.9	4.6		45	41.2	13.7		21.2	72.5	6.2	
PHF	.635	.879	.840	.897	.750	.953	.778	.954	.868	.794	.643	.862	.872	.923	.769	.937
Cars	31	109	343	483	15	525	28	568	57	54	18	129	134	430	40	604
% Cars	93.9	100	99.1	99	100	93.1	100	93.6	96.6	100	100	98.5	98.5	92.5	100	94.2
Trucks	2	0	3	5	0	39	0	39	2	0	0	2	2	35	0	37
% Trucks	6.1	0	0.9	1	0	6.9	0	6.4	3.4	0	0	1.5	1.5	7.5	0	5.8

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	Woburn St From North			Route 62 From East			Woburn St From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	18	73	7	106	2	19	0	2	23	80	7	340
07:15 AM	12	22	101	2	127	5	18	5	3	28	96	8	427
07:30 AM	7	26	101	4	139	7	11	5	7	26	103	5	441
07:45 AM	5	31	78	5	122	9	17	16	4	38	116	9	450
Total	27	97	353	18	494	23	65	26	16	115	395	29	1658
08:00 AM	7	30	63	4	137	7	14	16	2	27	97	13	417
08:15 AM	5	16	74	6	99	9	15	17	5	35	117	10	408
08:30 AM	8	21	42	4	130	8	9	10	3	34	100	8	377
08:45 AM	7	20	36	5	113	9	11	8	5	22	108	6	350
Total	27	87	215	19	479	33	49	51	15	118	422	37	1552
Grand Total	54	184	568	37	973	56	114	77	31	233	817	66	3210
Apprch %	6.7	22.8	70.5	3.5	91.3	5.3	51.4	34.7	14	20.9	73.2	5.9	
Total %	1.7	5.7	17.7	1.2	30.3	1.7	3.6	2.4	1	7.3	25.5	2.1	

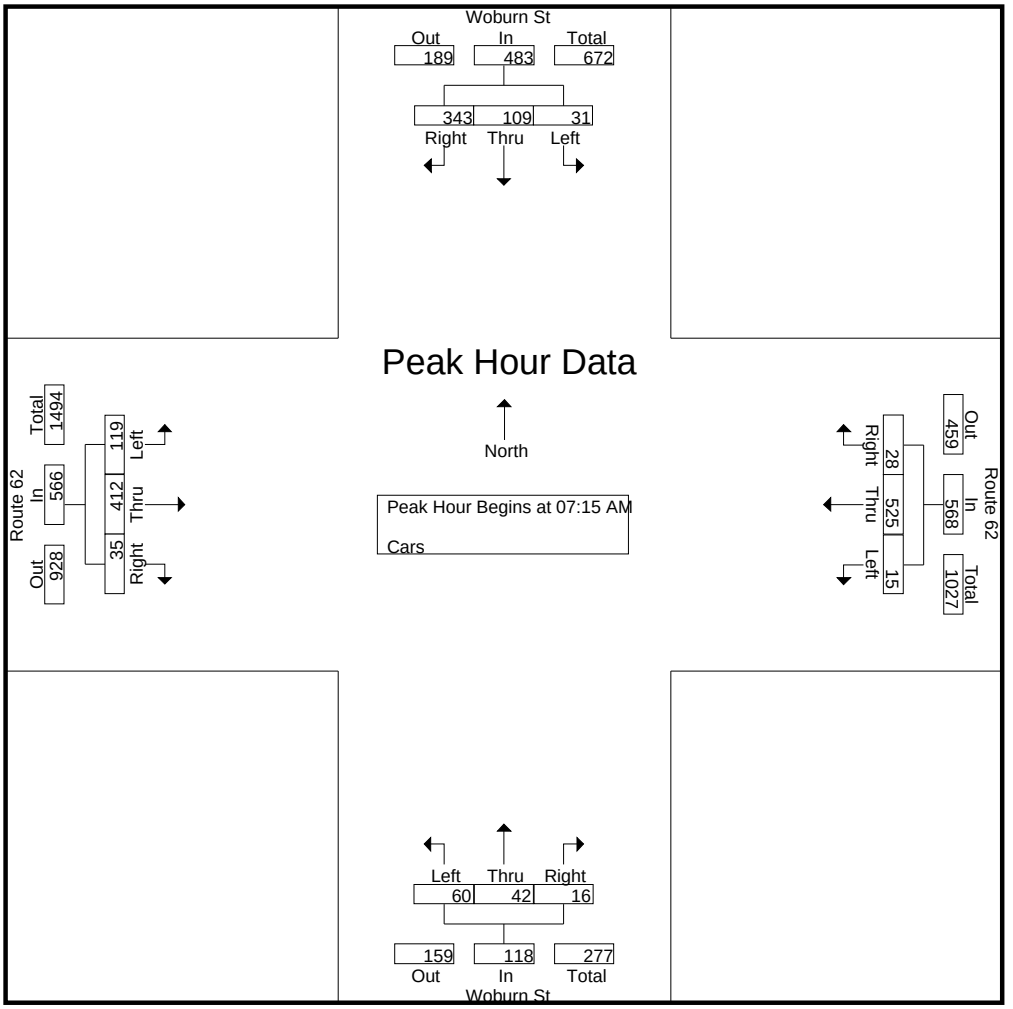
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**12**	22	**101**	**135**	2	127	5	134	**18**	5	3	26	28	96	8	132	427
07:30 AM	7	26	101	134	4	**139**	7	**150**	11	5	**7**	23	26	103	5	134	441
07:45 AM	5	**31**	78	114	**5**	122	**9**	136	17	**16**	4	**37**	**38**	**116**	9	**163**	**450**
08:00 AM	7	30	63	100	4	137	7	148	14	16	2	32	27	97	**13**	137	417
Total Volume	31	109	343	483	15	525	28	568	60	42	16	118	119	412	35	566	1735
% App. Total	6.4	22.6	71		2.6	92.4	4.9		50.8	35.6	13.6		21	72.8	6.2		
PHF	.646	.879	.849	.894	.750	.944	.778	.947	.833	.656	.571	.797	.783	.888	.673	.868	.964

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 5



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

Peak Hour for Each Approach Begins at:

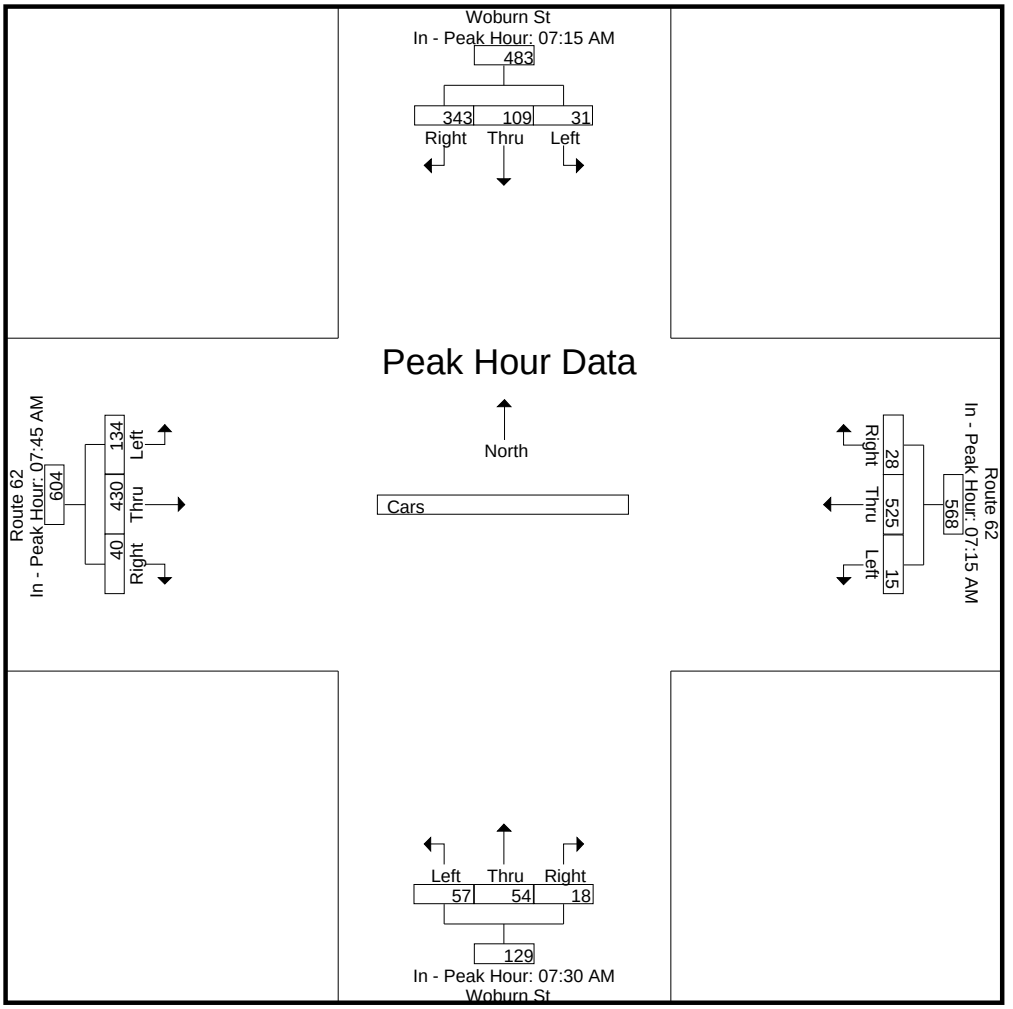
	07:15 AM				07:15 AM				07:30 AM				07:45 AM			
+0 mins.	**12**	22	**101**	**135**	2	127	5	134	11	5	**7**	23	**38**	116	9	**163**
+15 mins.	7	26	101	134	4	**139**	7	**150**	**17**	16	4	**37**	27	97	**13**	137
+30 mins.	5	**31**	78	114	**5**	122	**9**	136	14	16	2	32	35	**117**	10	162
+45 mins.	7	30	63	100	4	137	7	148	15	**17**	5	37	34	100	8	142
Total Volume	31	109	343	483	15	525	28	568	57	54	18	129	134	430	40	604
% App. Total	6.4	22.6	71		2.6	92.4	4.9		44.2	41.9	14		22.2	71.2	6.6	
PHF	.646	.879	.849	.894	.750	.944	.778	.947	.838	.794	.643	.872	.882	.919	.769	.926

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	Woburn St From North			Route 62 From East			Woburn St From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	12	0	1	1	0	0	8	0	22
07:15 AM	1	0	0	0	11	0	0	0	0	0	9	0	21
07:30 AM	0	0	2	0	9	0	1	0	0	0	6	1	19
07:45 AM	1	0	1	0	15	0	0	0	0	1	6	0	24
Total	2	0	3	0	47	0	2	1	0	1	29	1	86
08:00 AM	0	0	0	0	4	0	0	0	0	1	8	0	13
08:15 AM	0	1	0	0	11	0	1	0	0	0	9	0	22
08:30 AM	0	0	1	0	10	0	0	0	0	0	12	0	23
08:45 AM	0	0	0	0	8	0	0	0	0	0	3	0	11
Total	0	1	1	0	33	0	1	0	0	1	32	0	69
Grand Total	2	1	4	0	80	0	3	1	0	2	61	1	155
Apprch %	28.6	14.3	57.1	0	100	0	75	25	0	3.1	95.3	1.6	
Total %	1.3	0.6	2.6	0	51.6	0	1.9	0.6	0	1.3	39.4	0.6	

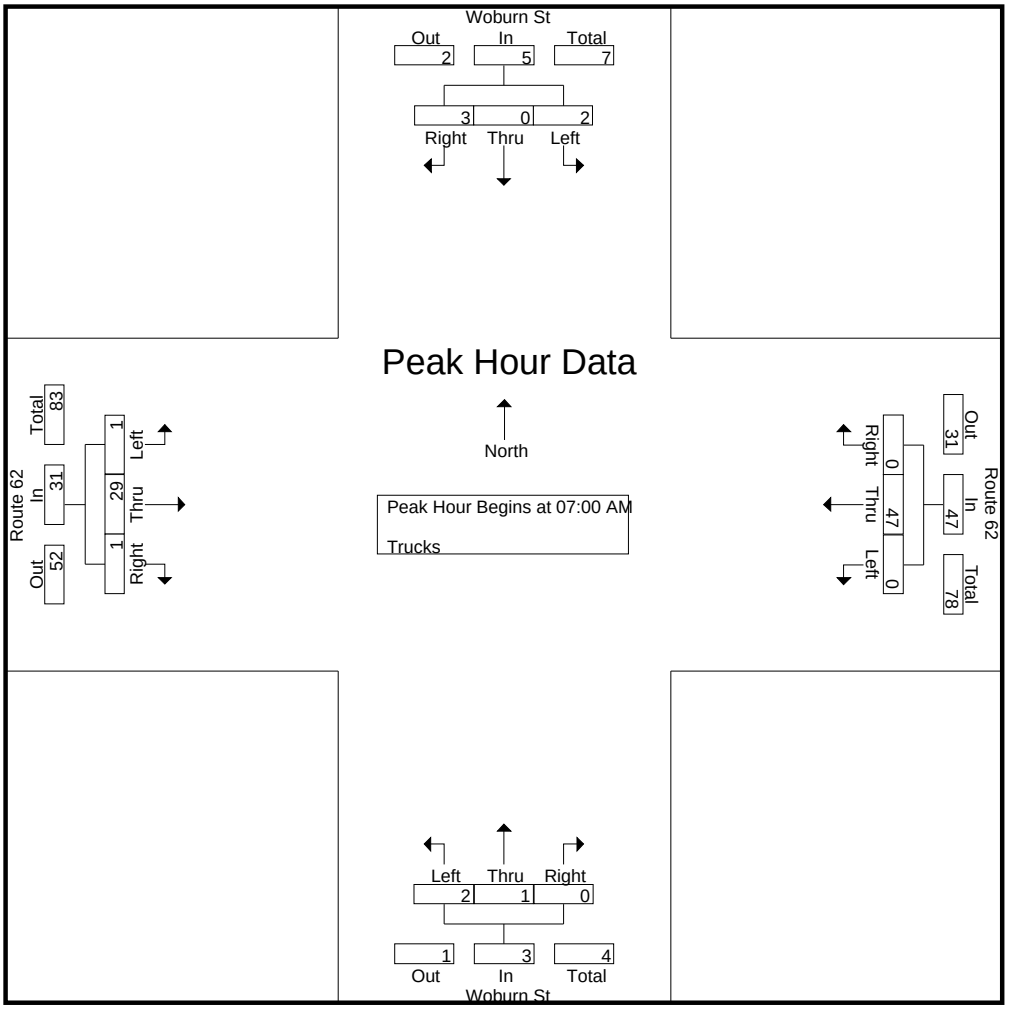
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	12	0	12	**1**	**1**	0	**2**	0	8	0	8	22
07:15 AM	**1**	0	0	1	0	11	0	11	0	0	0	0	0	**9**	0	**9**	21
07:30 AM	0	0	**2**	**2**	0	9	0	9	1	0	0	1	0	6	**1**	7	19
07:45 AM	1	0	1	2	0	**15**	0	**15**	0	0	0	0	**1**	6	0	7	**24**
Total Volume	2	0	3	5	0	47	0	47	2	1	0	3	1	29	1	31	86
% App. Total	40	0	60		0	100	0		66.7	33.3	0		3.2	93.5	3.2		
PHF	.500	.000	.375	.625	.000	.783	.000	.783	.500	.250	.000	.375	.250	.806	.250	.861	.896

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 8



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

Peak Hour for Each Approach Begins at:

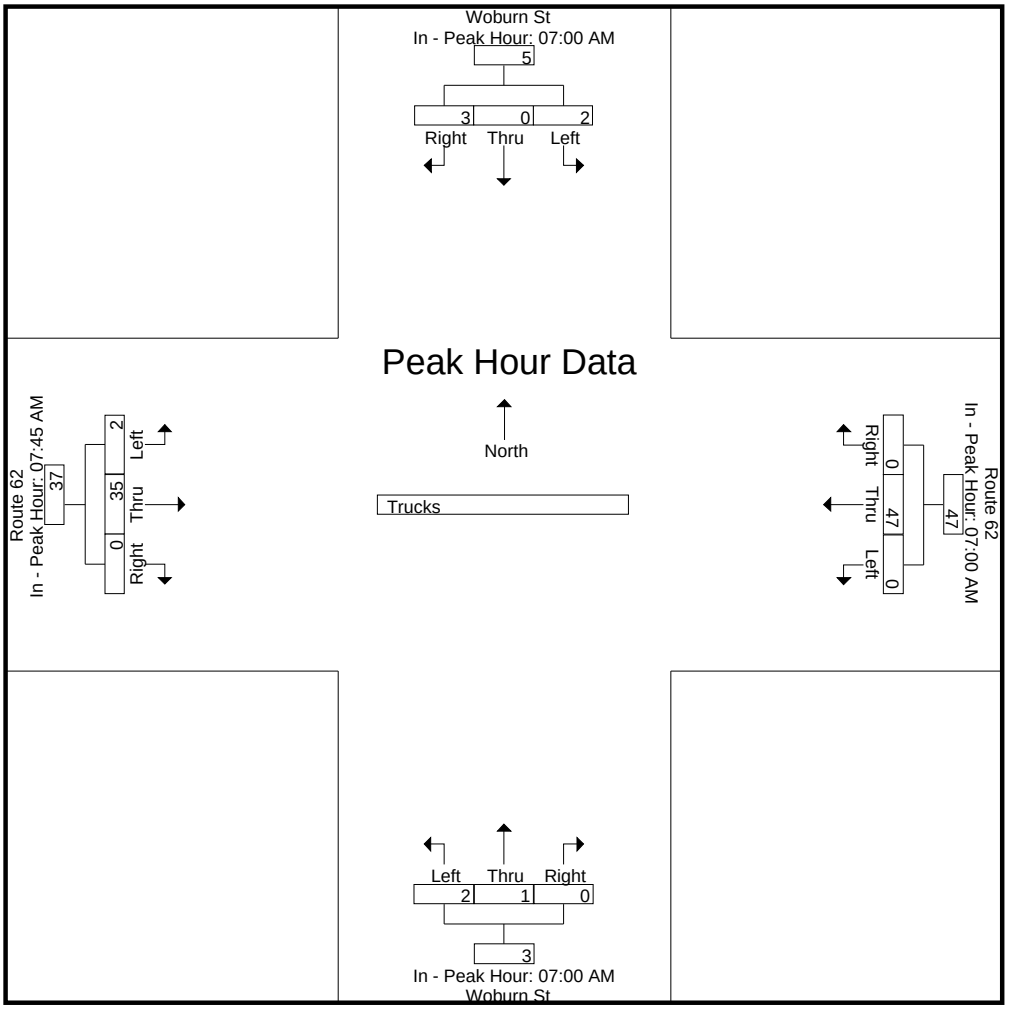
	07:00 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	12	0	12	**1**	**1**	0	**2**	**1**	6	0	7
+15 mins.	**1**	0	0	1	0	11	0	11	0	0	0	0	1	8	0	9
+30 mins.	0	0	**2**	**2**	0	9	0	9	1	0	0	1	0	9	0	9
+45 mins.	1	0	1	2	0	**15**	0	**15**	0	0	0	0	0	**12**	0	**12**
Total Volume	2	0	3	5	0	47	0	47	2	1	0	3	2	35	0	37
% App. Total	40	0	60		0	100	0		66.7	33.3	0		5.4	94.6	0	
PHF	.500	.000	.375	.625	.000	.783	.000	.783	.500	.250	.000	.375	.500	.729	.000	.771

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 10

Groups Printed- Bikes Peds

	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

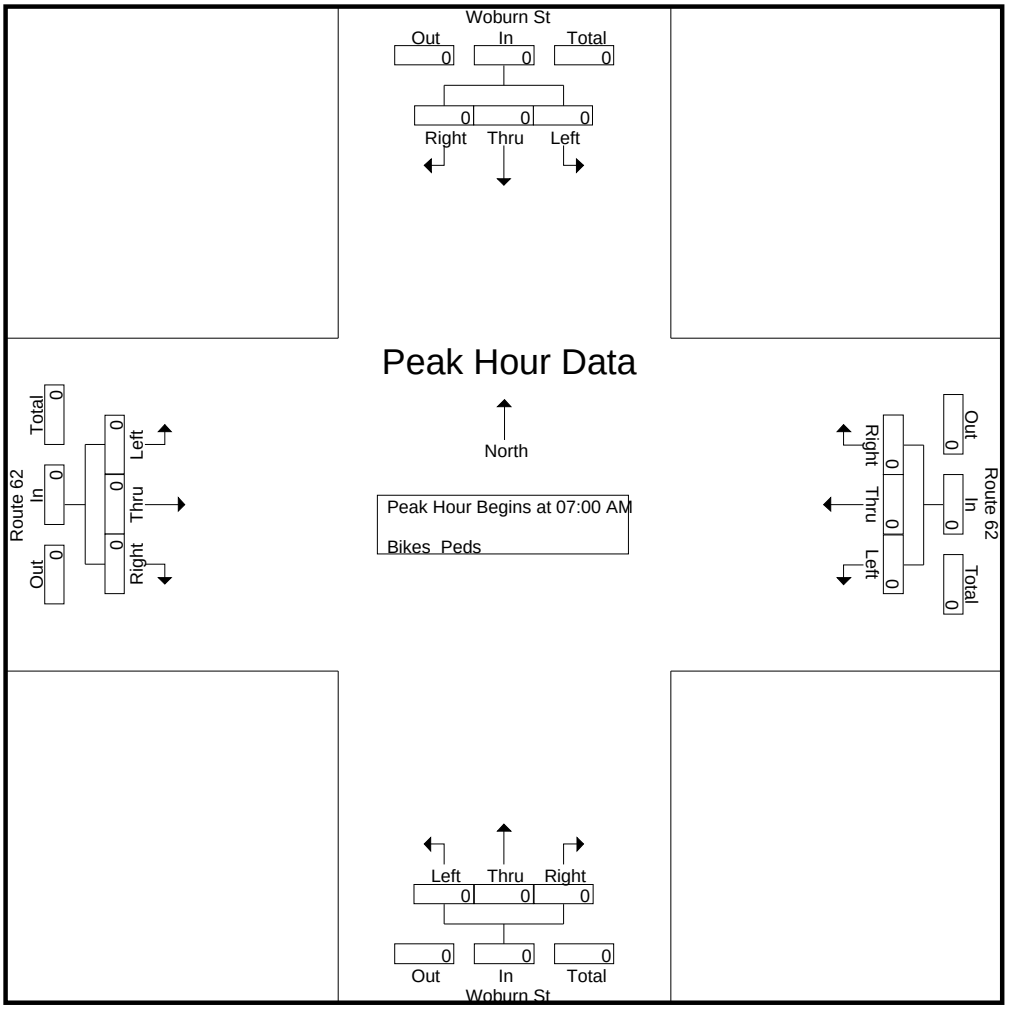
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 11



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

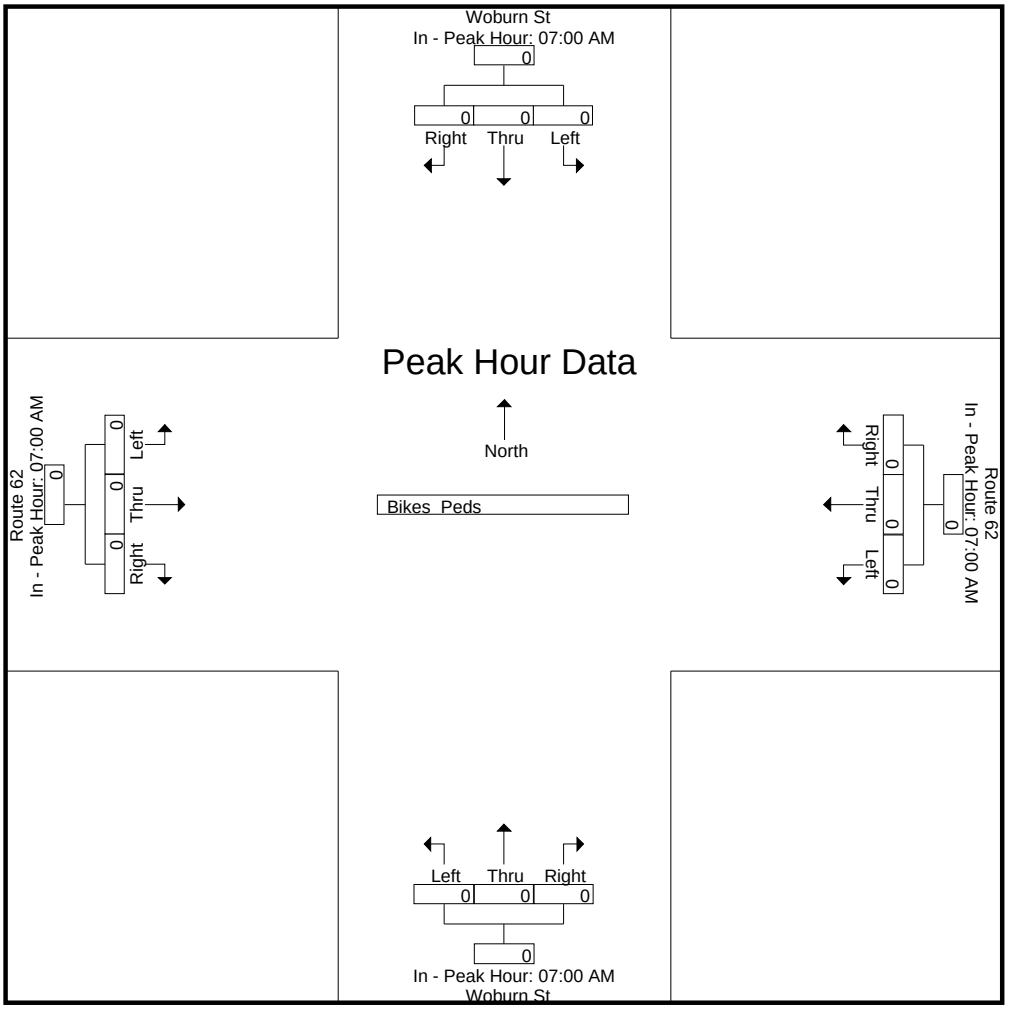
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 1

Groups Printed- Cars - Trucks

	Woburn St From North			Route 62 From East			Woburn St From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	18	11	17	2	162	8	10	15	5	39	135	14	436
04:15 PM	10	6	26	5	123	3	14	15	8	38	131	9	388
04:30 PM	13	18	21	2	124	9	11	13	3	43	128	24	409
04:45 PM	15	15	20	0	130	7	10	17	9	28	147	16	414
Total	56	50	84	9	539	27	45	60	25	148	541	63	1647
05:00 PM	9	11	23	2	112	7	9	20	5	36	155	15	404
05:15 PM	7	15	23	6	126	4	18	16	8	30	164	18	435
05:30 PM	8	8	13	0	113	5	13	15	7	36	149	18	385
05:45 PM	4	8	19	5	77	8	10	12	8	40	134	18	343
Total	28	42	78	13	428	24	50	63	28	142	602	69	1567
Grand Total	84	92	162	22	967	51	95	123	53	290	1143	132	3214
Apprch %	24.9	27.2	47.9	2.1	93	4.9	35.1	45.4	19.6	18.5	73	8.4	
Total %	2.6	2.9	5	0.7	30.1	1.6	3	3.8	1.6	9	35.6	4.1	
Cars	84	92	162	22	958	51	95	122	53	290	1124	132	3185
% Cars	100	100	100	100	99.1	100	100	99.2	100	100	98.3	100	99.1
Trucks	0	0	0	0	9	0	0	1	0	0	19	0	29
% Trucks	0	0	0	0	0.9	0	0	0.8	0	0	1.7	0	0.9

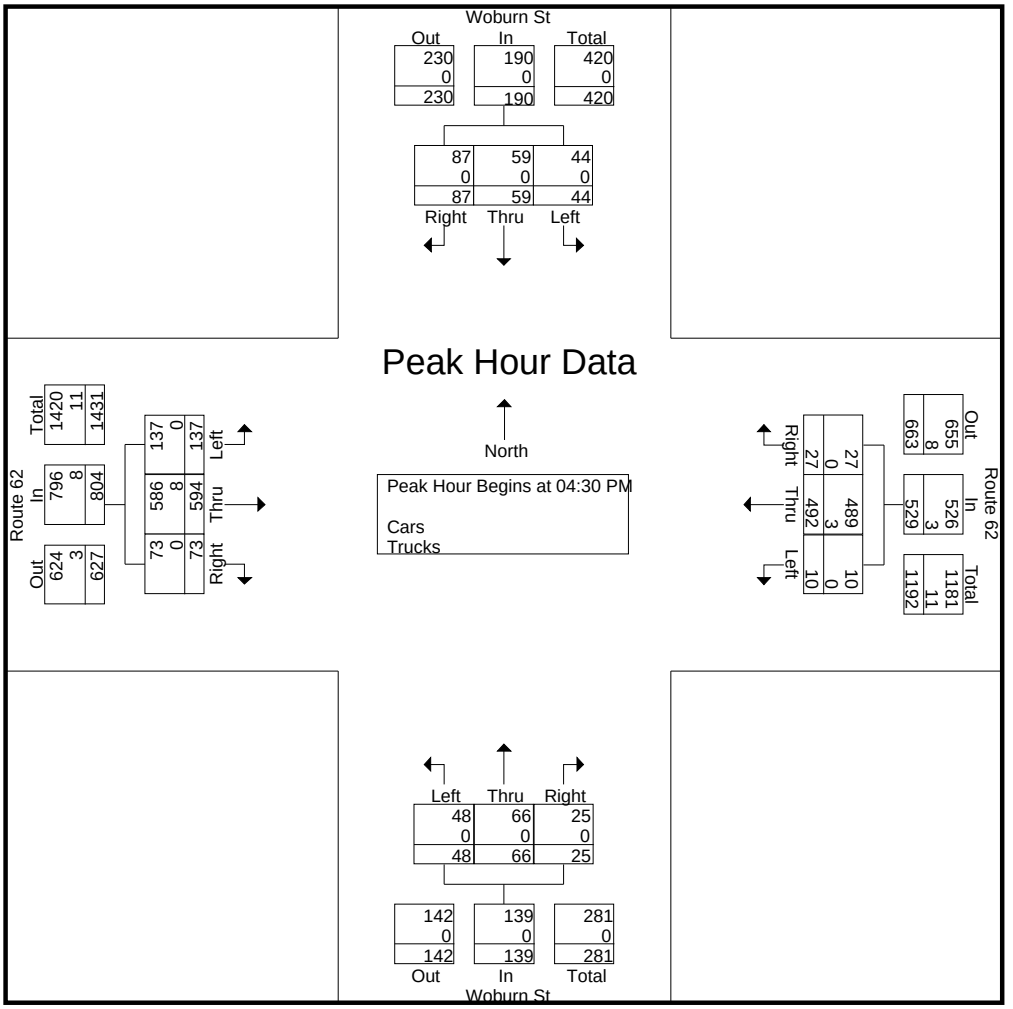
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	13	**18**	21	**52**	2	124	**9**	135	11	13	3	27	**43**	128	**24**	195	409
04:45 PM	**15**	15	20	50	0	**130**	7	**137**	10	17	**9**	36	28	147	16	191	414
05:00 PM	9	11	**23**	43	2	112	7	121	9	**20**	5	34	36	155	15	206	404
05:15 PM	7	15	23	45	**6**	126	4	136	**18**	16	8	**42**	30	**164**	18	**212**	**435**
Total Volume	44	59	87	190	10	492	27	529	48	66	25	139	137	594	73	804	1662
% App. Total	23.2	31.1	45.8		1.9	93	5.1		34.5	47.5	18		17	73.9	9.1		
PHF	.733	.819	.946	.913	.417	.946	.750	.965	.667	.825	.694	.827	.797	.905	.760	.948	.955
Cars	44	59	87	190	10	489	27	526	48	66	25	139	137	586	73	796	1651
% Cars	100	100	100	100	100	99.4	100	99.4	100	100	100	100	100	98.7	100	99.0	99.3
Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	8	0	8	11
% Trucks	0	0	0	0	0	0.6	0	0.6	0	0	0	0	0	1.3	0	1.0	0.7

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 2



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

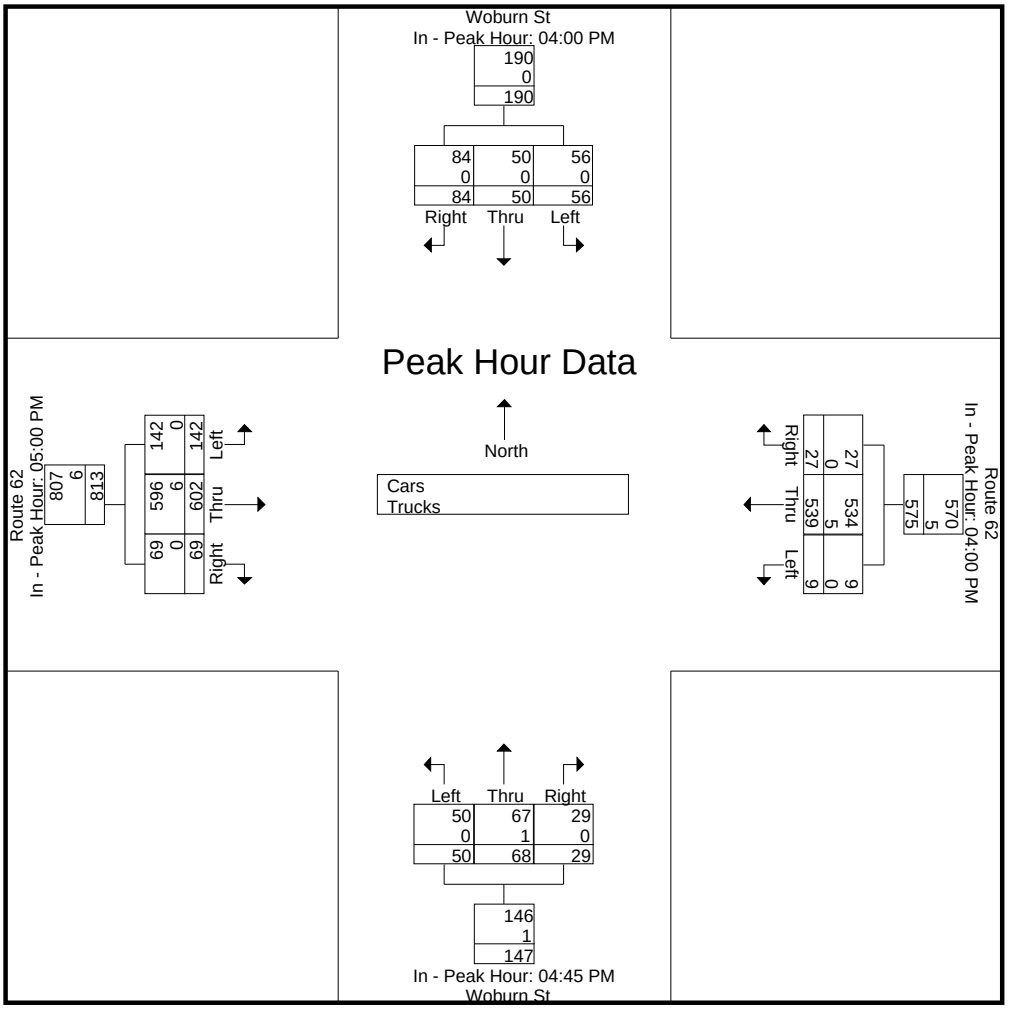
	04:00 PM				04:00 PM				04:45 PM				05:00 PM			
+0 mins.	**18**	11	17	46	2	**162**	8	**172**	10	17	**9**	36	36	155	15	206
+15 mins.	10	6	**26**	42	**5**	123	3	131	9	**20**	5	34	30	**164**	**18**	**212**
+30 mins.	13	**18**	21	**52**	2	124	**9**	135	**18**	16	8	**42**	36	149	18	203
+45 mins.	15	15	20	50	0	130	7	137	13	15	7	35	**40**	134	18	192
Total Volume	56	50	84	190	9	539	27	575	50	68	29	147	142	602	69	813
% App. Total	29.5	26.3	44.2		1.6	93.7	4.7		34	46.3	19.7		17.5	74	8.5	
PHF	.778	.694	.808	.913	.450	.832	.750	.836	.694	.850	.806	.875	.888	.918	.958	.959
Cars	56	50	84	190	9	534	27	570	50	67	29	146	142	596	69	807
% Cars	100	100	100	100	100	99.1	100	99.1	100	98.5	100	99.3	100	99	100	99.3
Trucks	0	0	0	0	0	5	0	5	0	1	0	1	0	6	0	6
% Trucks	0	0	0	0	0	0.9	0	0.9	0	1.5	0	0.7	0	1	0	0.7

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	Woburn St From North			Route 62 From East			Woburn St From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	18	11	17	2	159	8	10	15	5	39	132	14	430
04:15 PM	10	6	26	5	123	3	14	15	8	38	128	9	385
04:30 PM	13	18	21	2	122	9	11	13	3	43	125	24	404
04:45 PM	15	15	20	0	130	7	10	17	9	28	143	16	410
Total	56	50	84	9	534	27	45	60	25	148	528	63	1629
05:00 PM	9	11	23	2	111	7	9	20	5	36	154	15	402
05:15 PM	7	15	23	6	126	4	18	16	8	30	164	18	435
05:30 PM	8	8	13	0	110	5	13	14	7	36	148	18	380
05:45 PM	4	8	19	5	77	8	10	12	8	40	130	18	339
Total	28	42	78	13	424	24	50	62	28	142	596	69	1556
Grand Total	84	92	162	22	958	51	95	122	53	290	1124	132	3185
Apprch %	24.9	27.2	47.9	2.1	92.9	4.9	35.2	45.2	19.6	18.8	72.7	8.5	
Total %	2.6	2.9	5.1	0.7	30.1	1.6	3	3.8	1.7	9.1	35.3	4.1	

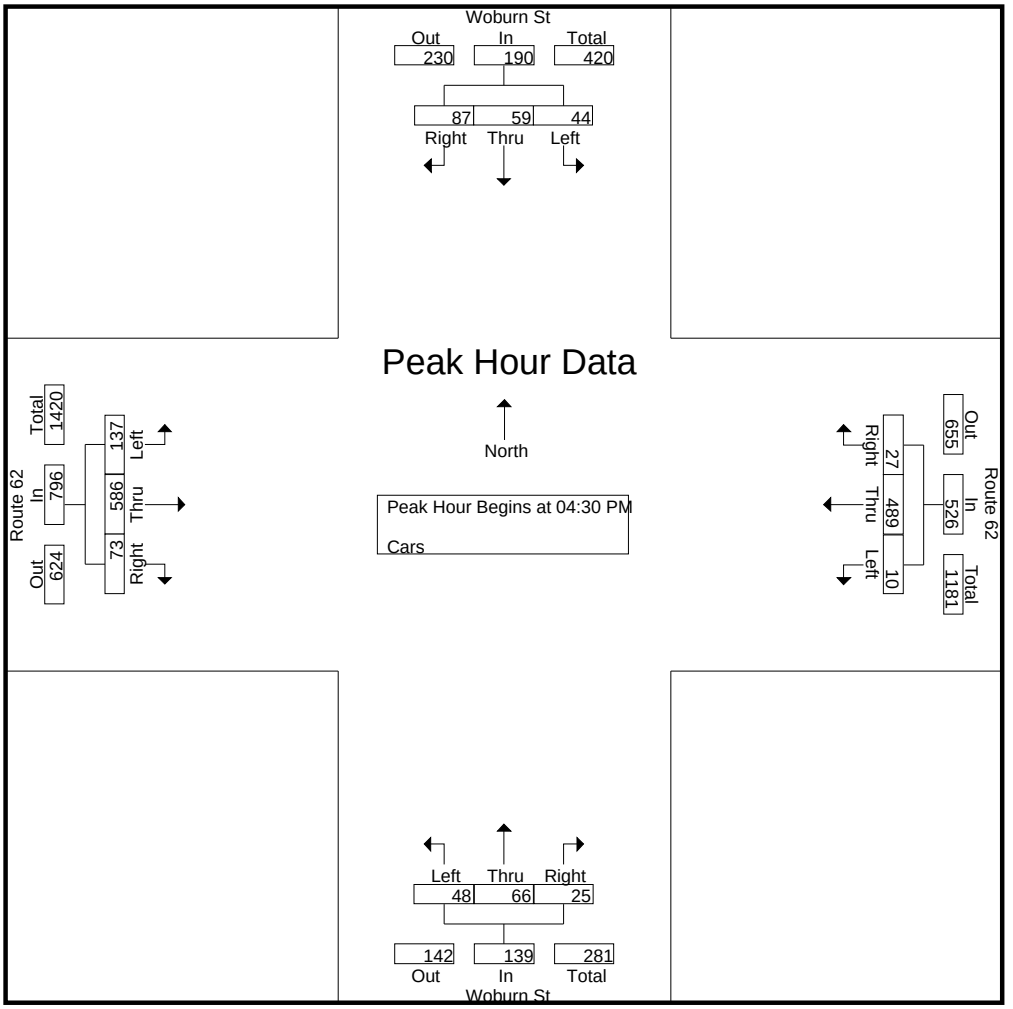
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	13	**18**	21	**52**	2	122	**9**	133	11	13	3	27	**43**	125	**24**	192	404
04:45 PM	**15**	15	20	50	0	**130**	7	**137**	10	17	**9**	36	28	143	16	187	410
05:00 PM	9	11	**23**	43	2	111	7	120	9	**20**	5	34	36	154	15	205	402
05:15 PM	7	15	23	45	**6**	126	4	136	**18**	16	8	**42**	30	**164**	18	**212**	**435**
Total Volume	44	59	87	190	10	489	27	526	48	66	25	139	137	586	73	796	1651
% App. Total	23.2	31.1	45.8		1.9	93	5.1		34.5	47.5	18		17.2	73.6	9.2		
PHF	.733	.819	.946	.913	.417	.940	.750	.960	.667	.825	.694	.827	.797	.893	.760	.939	.949

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 5



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

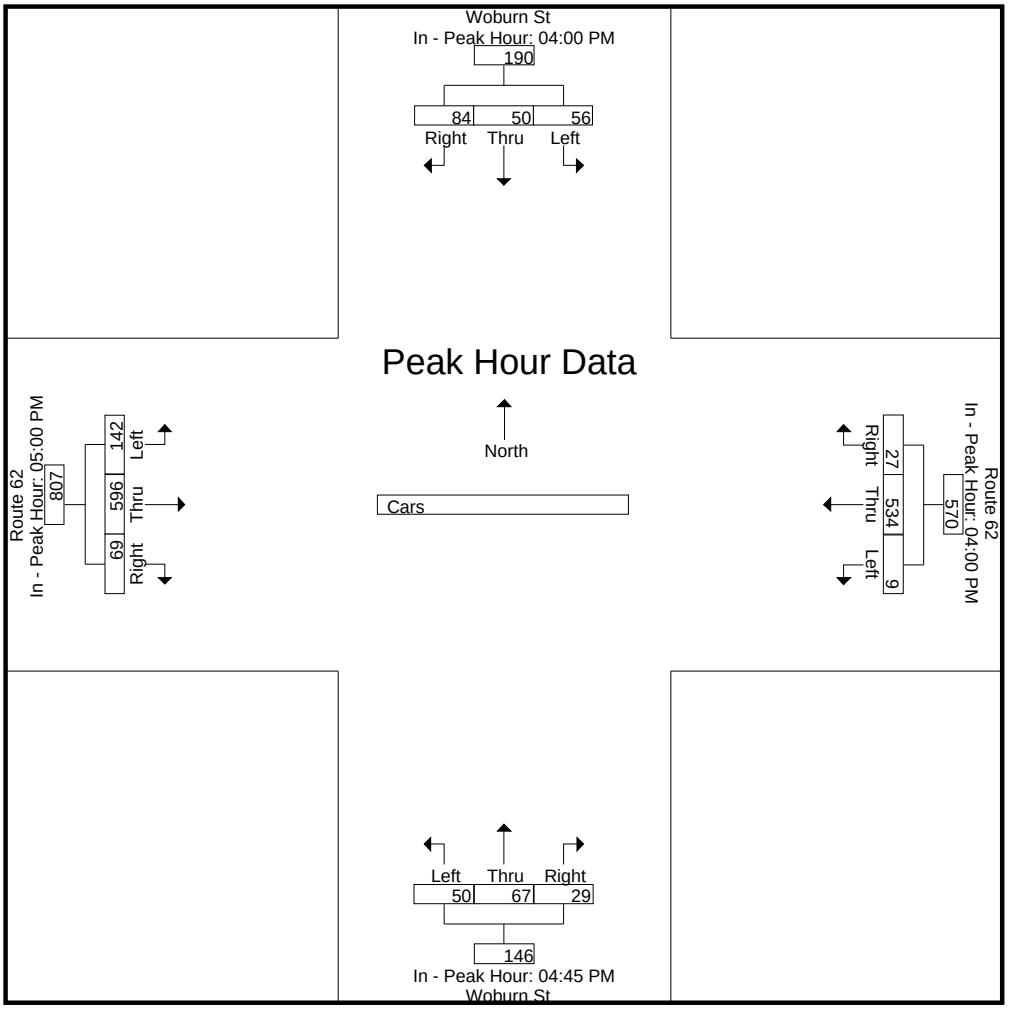
	04:00 PM				04:00 PM				04:45 PM				05:00 PM			
+0 mins.	**18**	11	17	46	2	**159**	8	**169**	10	17	**9**	36	36	154	15	205
+15 mins.	10	6	**26**	42	**5**	123	3	131	9	**20**	5	34	30	**164**	**18**	**212**
+30 mins.	13	**18**	21	**52**	2	122	**9**	133	**18**	16	8	**42**	36	148	18	202
+45 mins.	15	15	20	50	0	130	7	137	13	14	7	34	**40**	130	18	188
Total Volume	56	50	84	190	9	534	27	570	50	67	29	146	142	596	69	807
% App. Total	29.5	26.3	44.2		1.6	93.7	4.7		34.2	45.9	19.9		17.6	73.9	8.6	
PHF	.778	.694	.808	.913	.450	.840	.750	.843	.694	.838	.806	.869	.888	.909	.958	.952

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	Woburn St From North			Route 62 From East			Woburn St From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	3	0	0	0	0	0	3	0	6
04:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	3
04:30 PM	0	0	0	0	2	0	0	0	0	0	3	0	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	5	0	0	0	0	0	13	0	18
05:00 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	3	0	0	1	0	0	1	0	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	4	0	0	1	0	0	6	0	11
Grand Total	0	0	0	0	9	0	0	1	0	0	19	0	29
Apprch %	0	0	0	0	100	0	0	100	0	0	100	0	
Total %	0	0	0	0	31	0	0	3.4	0	0	65.5	0	

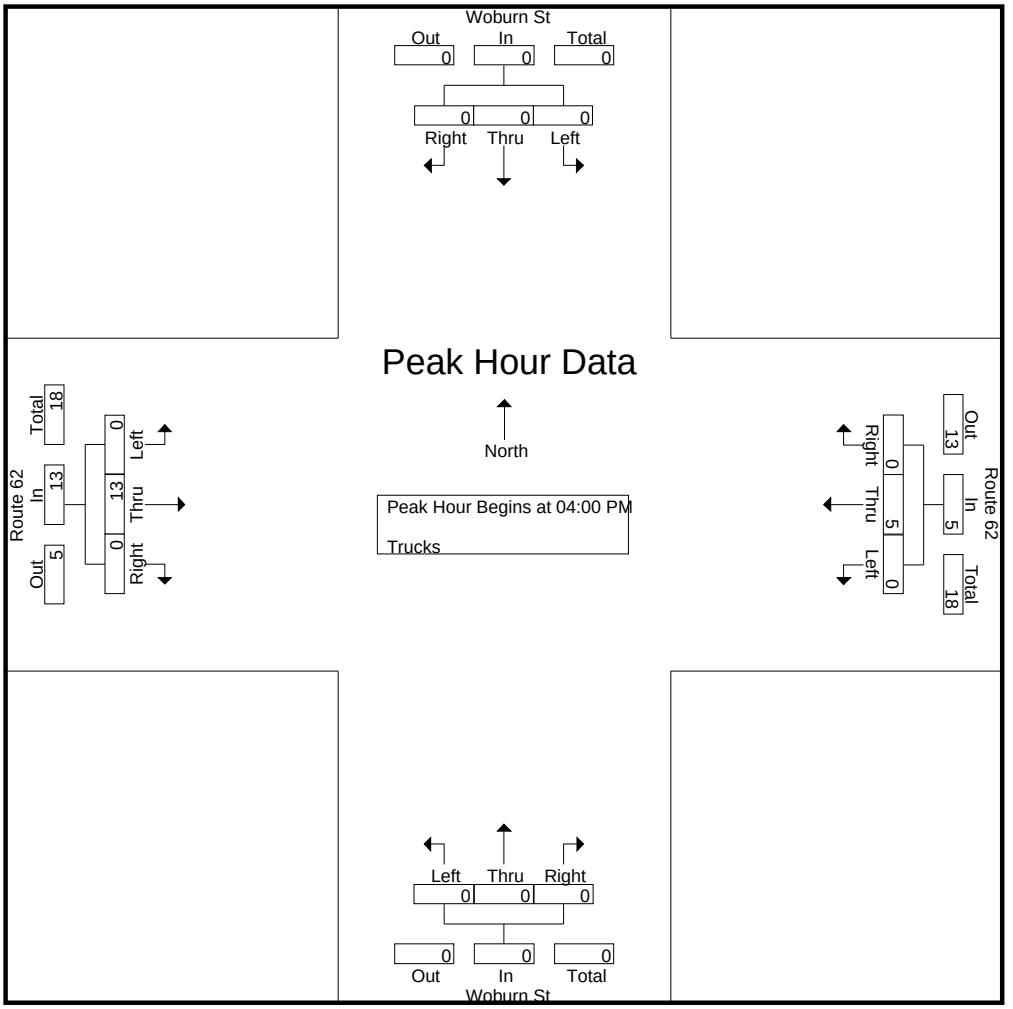
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	3	0	3	**6**
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**	4
Total Volume	0	0	0	0	0	5	0	5	0	0	0	0	0	13	0	13	18
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.417	.000	.417	.000	.000	.000	.000	.000	.813	.000	.813	.750

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 8



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

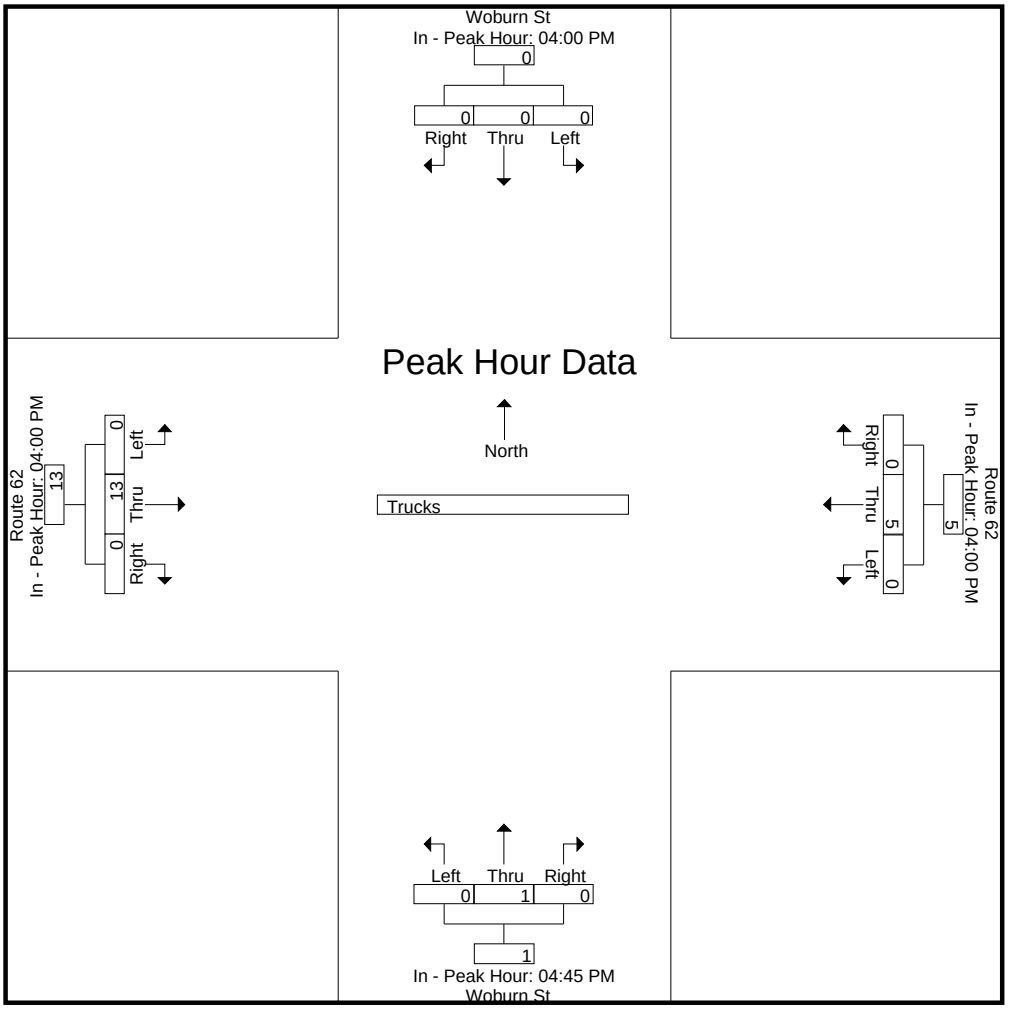
	04:00 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	3	0	3
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+45 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	**4**	0	**4**
Total Volume	0	0	0	0	0	5	0	5	0	1	0	1	0	13	0	13
% App. Total	0	0	0		0	100	0		0	100	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.417	.000	.417	.000	.250	.000	.250	.000	.813	.000	.813

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 10

Groups Printed- Bikes Peds

	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	2
Grand Total	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	1	2	3
Apprch %	0	0	0		0	0	0		0	100	0		0	100	0				
Total %	0	0	0		0	0	0		0	50	0		0	50	0		33.3	66.7	

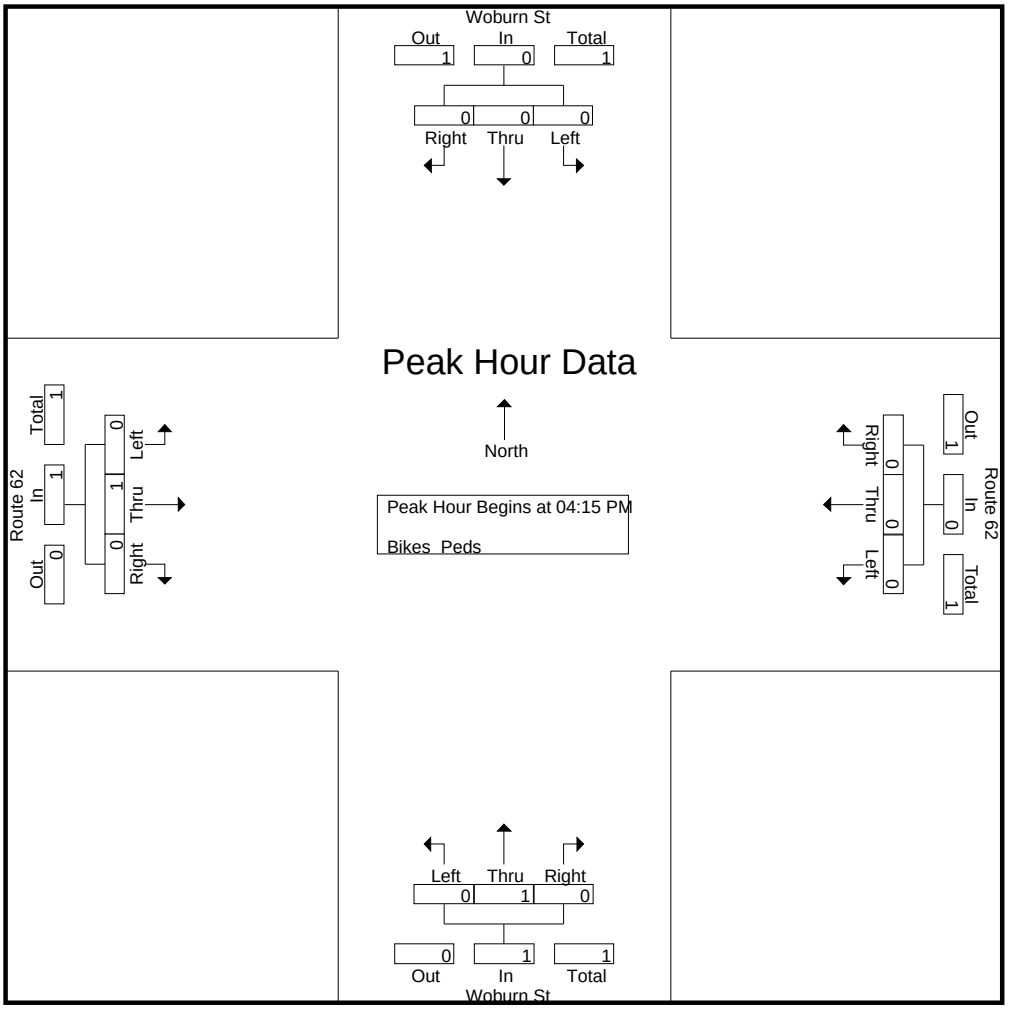
	Woburn St From North				Route 62 From East				Woburn St From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	**1**	0	**1**	**2**
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
% App. Total	0	0	0		0	0	0		0	100	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.250	.000	.250	.250

Accurate Counts

978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 11



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

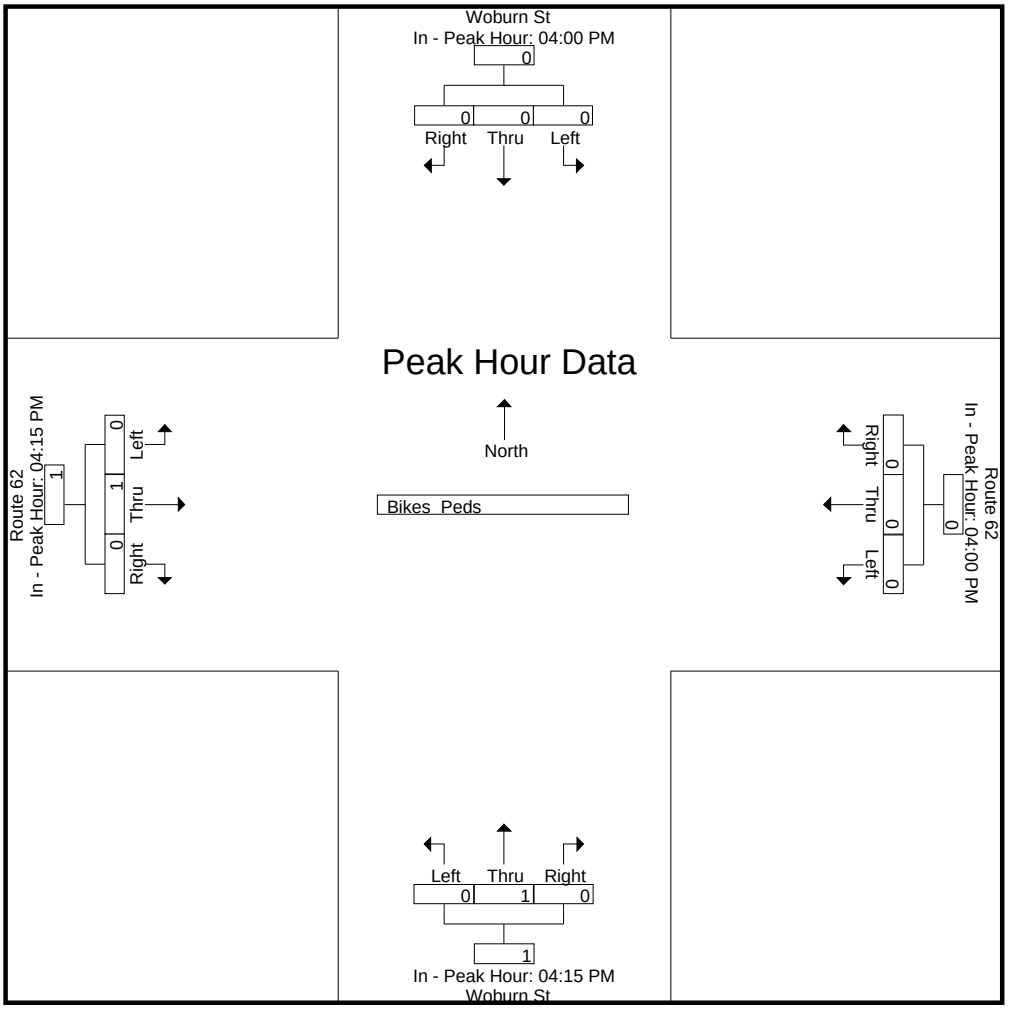
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : Woburn Street
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110003
Site Code : 93110003
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 1

Groups Printed- Cars - Trucks

	West Driveway From North			Route 62 From East			773 Shea Concrete From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	134	0	0	0	0	1	81	1	217
07:15 AM	0	0	0	0	152	0	0	0	1	2	98	1	254
07:30 AM	0	0	0	0	157	0	2	0	1	3	101	1	265
07:45 AM	0	0	1	1	147	0	0	0	0	2	115	3	269
Total	0	0	1	1	590	0	2	0	2	8	395	6	1005
08:00 AM	0	0	0	0	143	0	0	0	3	0	97	0	243
08:15 AM	0	0	0	1	142	0	0	0	0	3	122	0	268
08:30 AM	0	0	2	1	130	0	0	0	1	2	105	0	241
08:45 AM	0	0	0	0	130	0	2	0	0	0	109	0	241
Total	0	0	2	2	545	0	2	0	4	5	433	0	993
Grand Total	0	0	3	3	1135	0	4	0	6	13	828	6	1998
Apprch %	0	0	100	0.3	99.7	0	40	0	60	1.5	97.8	0.7	
Total %	0	0	0.2	0.2	56.8	0	0.2	0	0.3	0.7	41.4	0.3	
Cars	0	0	0	2	1053	0	3	0	4	8	765	5	1840
% Cars	0	0	0	66.7	92.8	0	75	0	66.7	61.5	92.4	83.3	92.1
Trucks	0	0	3	1	82	0	1	0	2	5	63	1	158
% Trucks	0	0	100	33.3	7.2	0	25	0	33.3	38.5	7.6	16.7	7.9

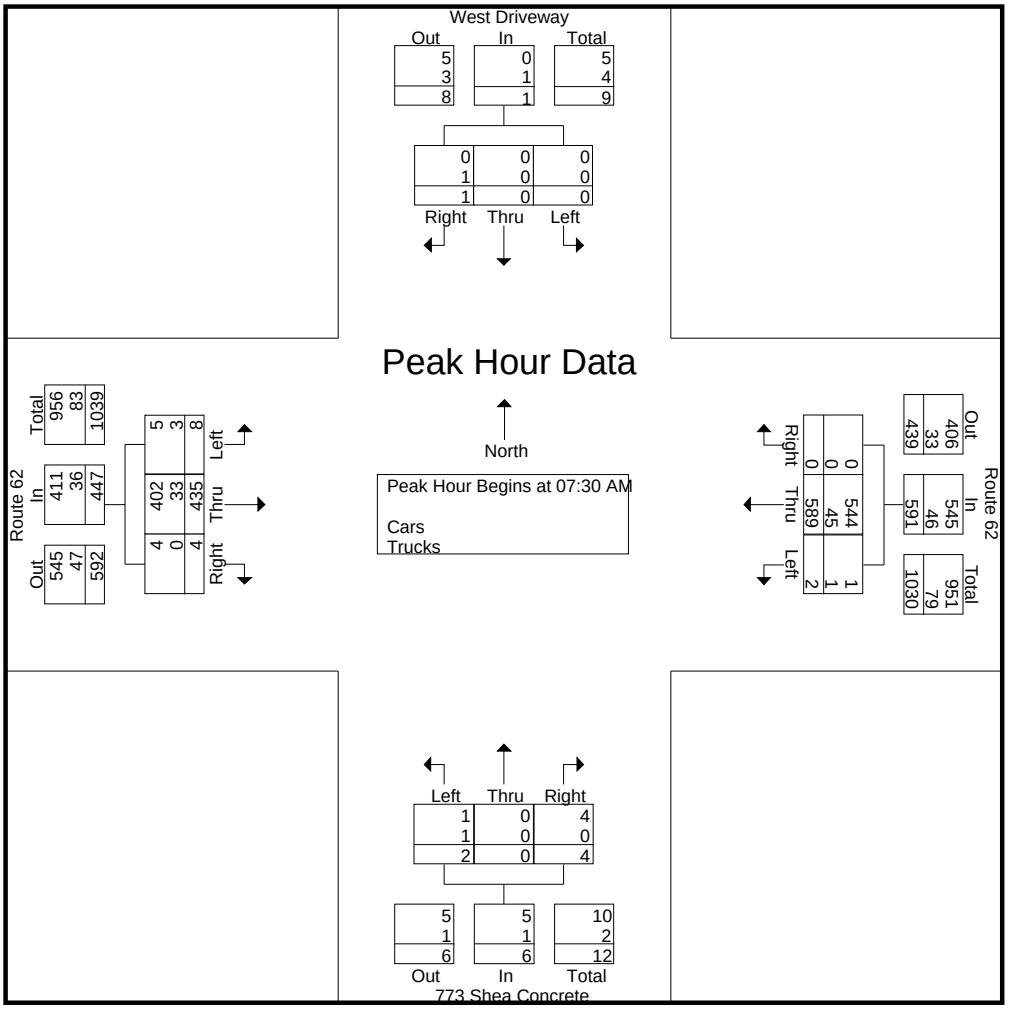
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	**157**	0	**157**	**2**	0	1	**3**	**3**	101	1	105	265
07:45 AM	0	0	**1**	**1**	**1**	147	0	148	0	0	0	0	2	115	**3**	120	**269**
08:00 AM	0	0	0	0	0	143	0	143	0	0	**3**	3	0	97	0	97	243
08:15 AM	0	0	0	0	1	142	0	143	0	0	0	0	3	**122**	0	**125**	268
Total Volume	0	0	1	1	2	589	0	591	2	0	4	6	8	435	4	447	1045
% App. Total	0	0	100		0.3	99.7	0		33.3	0	66.7		1.8	97.3	0.9		
PHF	.000	.000	.250	.250	.500	.938	.000	.941	.250	.000	.333	.500	.667	.891	.333	.894	.971
Cars	0	0	0	0	1	544	0	545	1	0	4	5	5	402	4	411	961
% Cars	0	0	0	0	50.0	92.4	0	92.2	50.0	0	100	83.3	62.5	92.4	100	91.9	92.0
Trucks	0	0	1	1	1	45	0	46	1	0	0	1	3	33	0	36	84
% Trucks	0	0	100	100	50.0	7.6	0	7.8	50.0	0	0	16.7	37.5	7.6	0	8.1	8.0

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 2



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

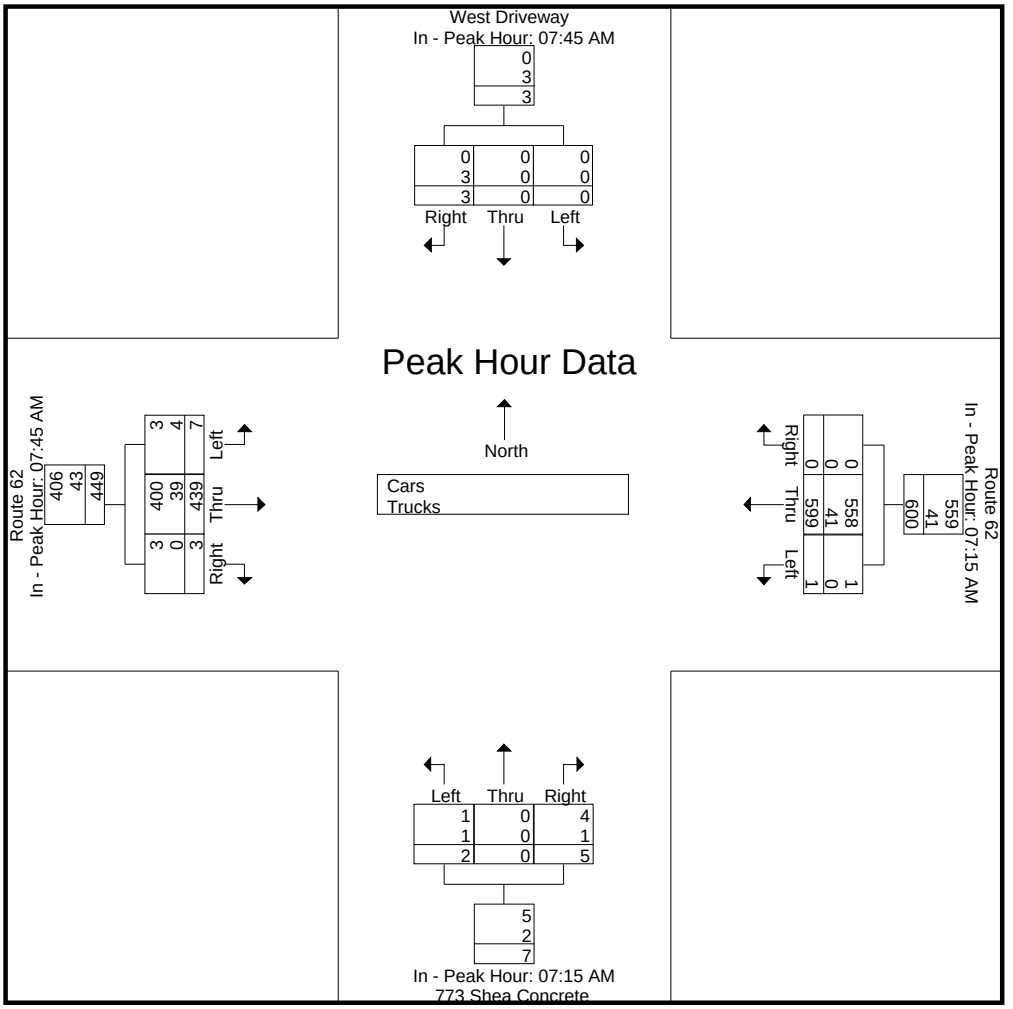
	07:45 AM				07:15 AM				07:15 AM				07:45 AM			
+0 mins.	0	0	1	1	0	152	0	152	0	0	1	1	2	115	**3**	120
+15 mins.	0	0	0	0	0	**157**	0	**157**	**2**	0	1	**3**	0	97	0	97
+30 mins.	0	0	0	0	**1**	147	0	148	0	0	0	0	**3**	**122**	0	**125**
+45 mins.	0	0	**2**	**2**	0	143	0	143	0	0	**3**	3	2	105	0	107
Total Volume	0	0	3	3	1	599	0	600	2	0	5	7	7	439	3	449
% App. Total	0	0	100		0.2	99.8	0		28.6	0	71.4		1.6	97.8	0.7	
PHF	.000	.000	.375	.375	.250	.954	.000	.955	.250	.000	.417	.583	.583	.900	.250	.898
Cars	0	0	0	0	1	558	0	559	1	0	4	5	3	400	3	406
% Cars	0	0	0	0	100	93.2	0	93.2	50	0	80	71.4	42.9	91.1	100	90.4
Trucks	0	0	3	3	0	41	0	41	1	0	1	2	4	39	0	43
% Trucks	0	0	100	100	0	6.8	0	6.8	50	0	20	28.6	57.1	8.9	0	9.6

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	West Driveway From North			Route 62 From East			773 Shea Concrete From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	122	0	0	0	0	1	75	0	198
07:15 AM	0	0	0	0	141	0	0	0	0	2	88	1	232
07:30 AM	0	0	0	0	147	0	1	0	1	2	96	1	248
07:45 AM	0	0	0	1	133	0	0	0	0	1	107	3	245
Total	0	0	0	1	543	0	1	0	1	6	366	5	923
08:00 AM	0	0	0	0	137	0	0	0	3	0	87	0	227
08:15 AM	0	0	0	0	127	0	0	0	0	2	112	0	241
08:30 AM	0	0	0	1	123	0	0	0	0	0	94	0	218
08:45 AM	0	0	0	0	123	0	2	0	0	0	106	0	231
Total	0	0	0	1	510	0	2	0	3	2	399	0	917
Grand Total	0	0	0	2	1053	0	3	0	4	8	765	5	1840
Apprch %	0	0	0	0.2	99.8	0	42.9	0	57.1	1	98.3	0.6	
Total %	0	0	0	0.1	57.2	0	0.2	0	0.2	0.4	41.6	0.3	

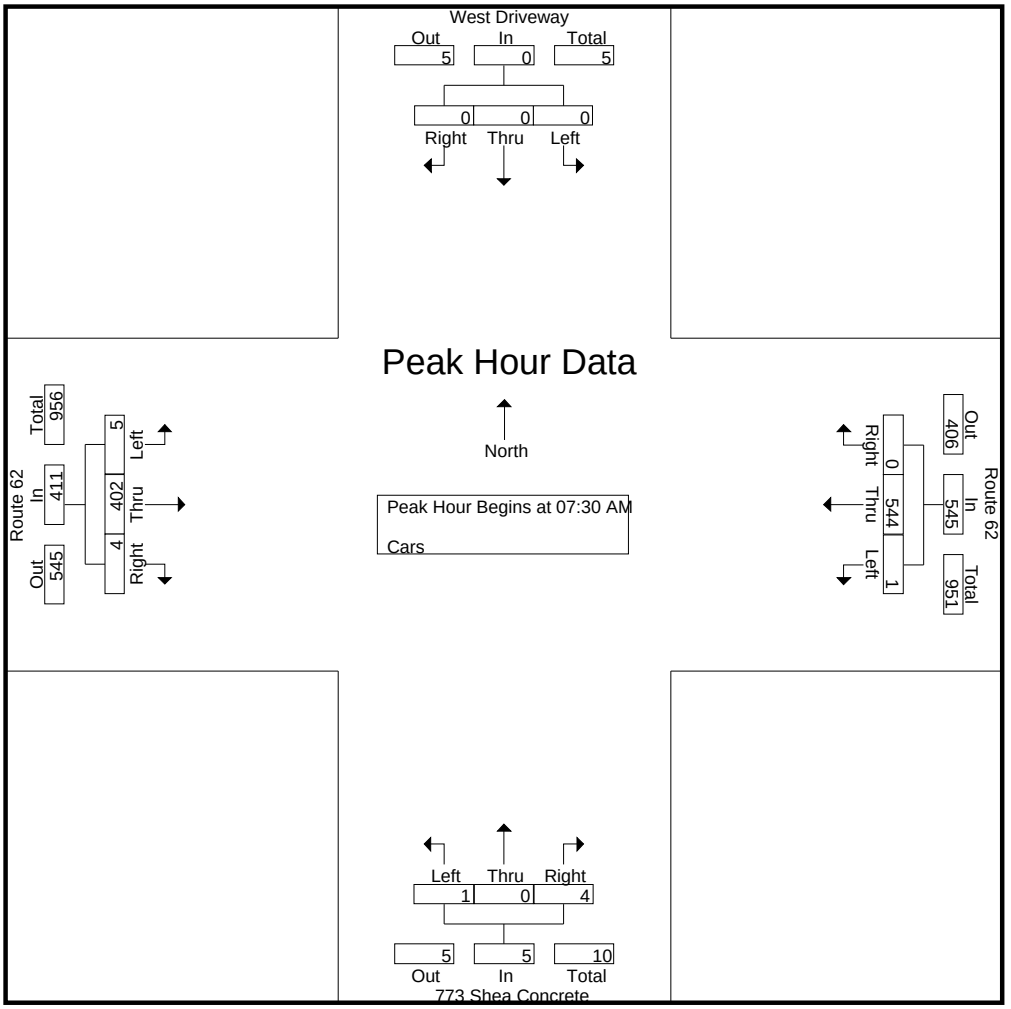
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	**147**	0	**147**	**1**	0	1	2	**2**	96	1	99	**248**
07:45 AM	0	0	0	0	**1**	133	0	134	0	0	0	0	1	107	**3**	111	245
08:00 AM	0	0	0	0	0	137	0	137	0	0	**3**	**3**	0	87	0	87	227
08:15 AM	0	0	0	0	0	127	0	127	0	0	0	0	2	**112**	0	**114**	241
Total Volume	0	0	0	0	1	544	0	545	1	0	4	5	5	402	4	411	961
% App. Total	0	0	0		0.2	99.8	0		20	0	80		1.2	97.8	1		
PHF	.000	.000	.000	.000	.250	.925	.000	.927	.250	.000	.333	.417	.625	.897	.333	.901	.969

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 5



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

Peak Hour for Each Approach Begins at:

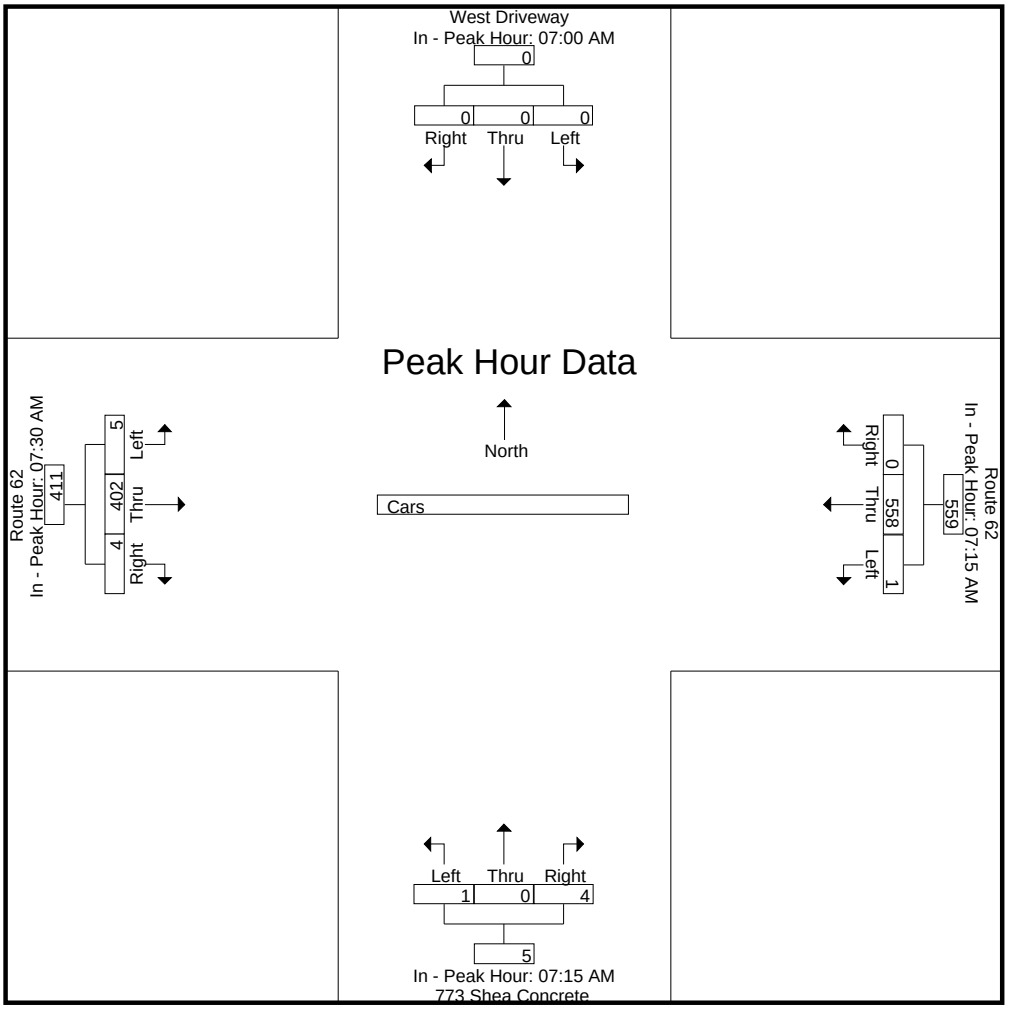
	07:00 AM				07:15 AM				07:15 AM				07:30 AM			
+0 mins.	0	0	0	0	0	141	0	141	0	0	0	0	**2**	96	1	99
+15 mins.	0	0	0	0	0	**147**	0	**147**	**1**	0	1	2	1	107	**3**	111
+30 mins.	0	0	0	0	**1**	133	0	134	0	0	0	0	0	87	0	87
+45 mins.	0	0	0	0	0	137	0	137	0	0	**3**	**3**	2	**112**	0	**114**
Total Volume	0	0	0	0	1	558	0	559	1	0	4	5	5	402	4	411
% App. Total	0	0	0		0.2	99.8	0		20	0	80		1.2	97.8	1	
PHF	.000	.000	.000	.000	.250	.949	.000	.951	.250	.000	.333	.417	.625	.897	.333	.901

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	West Driveway From North			Route 62 From East			773 Shea Concrete From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	12	0	0	0	0	0	6	1	19
07:15 AM	0	0	0	0	11	0	0	0	1	0	10	0	22
07:30 AM	0	0	0	0	10	0	1	0	0	1	5	0	17
07:45 AM	0	0	1	0	14	0	0	0	0	1	8	0	24
Total	0	0	1	0	47	0	1	0	1	2	29	1	82
08:00 AM	0	0	0	0	6	0	0	0	0	0	10	0	16
08:15 AM	0	0	0	1	15	0	0	0	0	1	10	0	27
08:30 AM	0	0	2	0	7	0	0	0	1	2	11	0	23
08:45 AM	0	0	0	0	7	0	0	0	0	0	3	0	10
Total	0	0	2	1	35	0	0	0	1	3	34	0	76
Grand Total	0	0	3	1	82	0	1	0	2	5	63	1	158
Apprch %	0	0	100	1.2	98.8	0	33.3	0	66.7	7.2	91.3	1.4	
Total %	0	0	1.9	0.6	51.9	0	0.6	0	1.3	3.2	39.9	0.6	

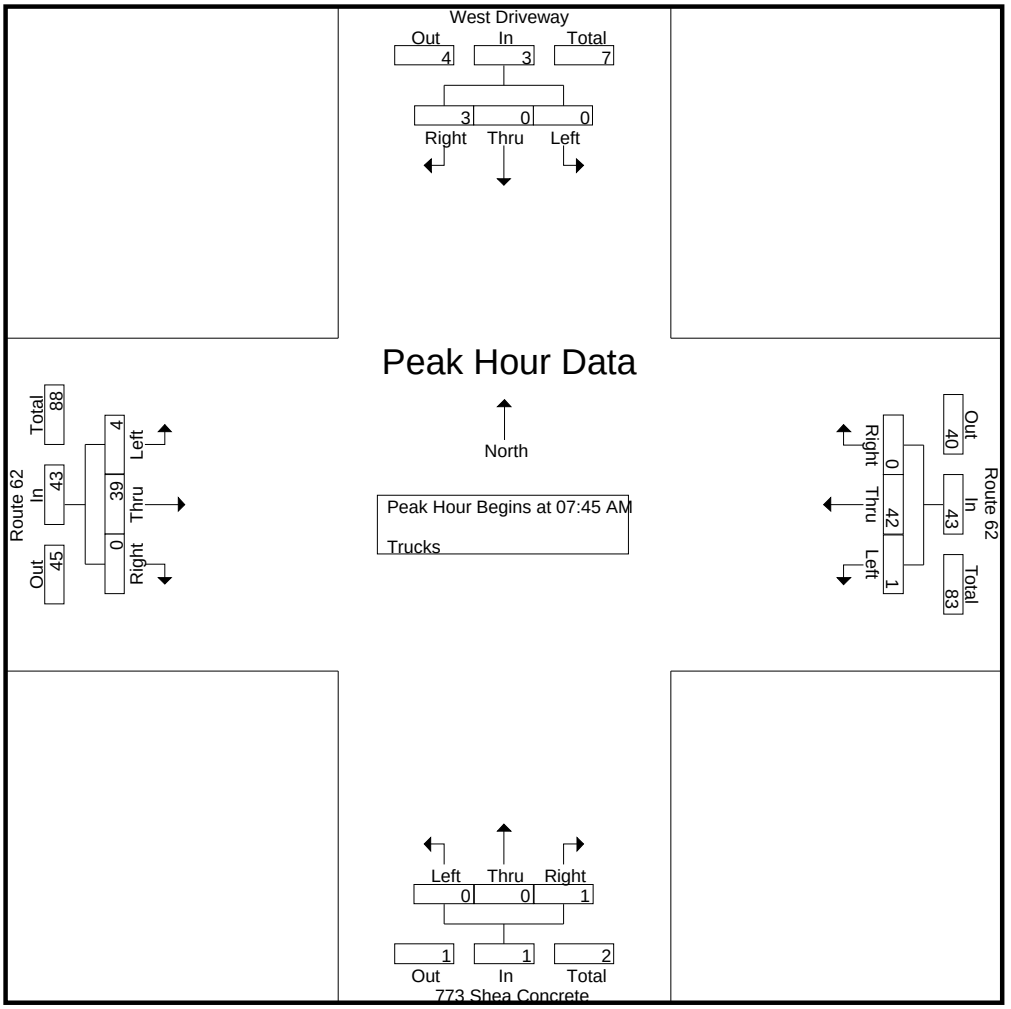
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	1	1	0	14	0	14	0	0	0	0	1	8	0	9	24
08:00 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	10	0	10	16
08:15 AM	0	0	0	0	**1**	**15**	0	**16**	0	0	0	0	1	10	0	11	**27**
08:30 AM	0	0	**2**	**2**	0	7	0	7	0	0	**1**	**1**	**2**	**11**	0	**13**	23
Total Volume	0	0	3	3	1	42	0	43	0	0	1	1	4	39	0	43	90
% App. Total	0	0	100		2.3	97.7	0		0	0	100		9.3	90.7	0		
PHF	.000	.000	.375	.375	.250	.700	.000	.672	.000	.000	.250	.250	.500	.886	.000	.827	.833

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 8



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

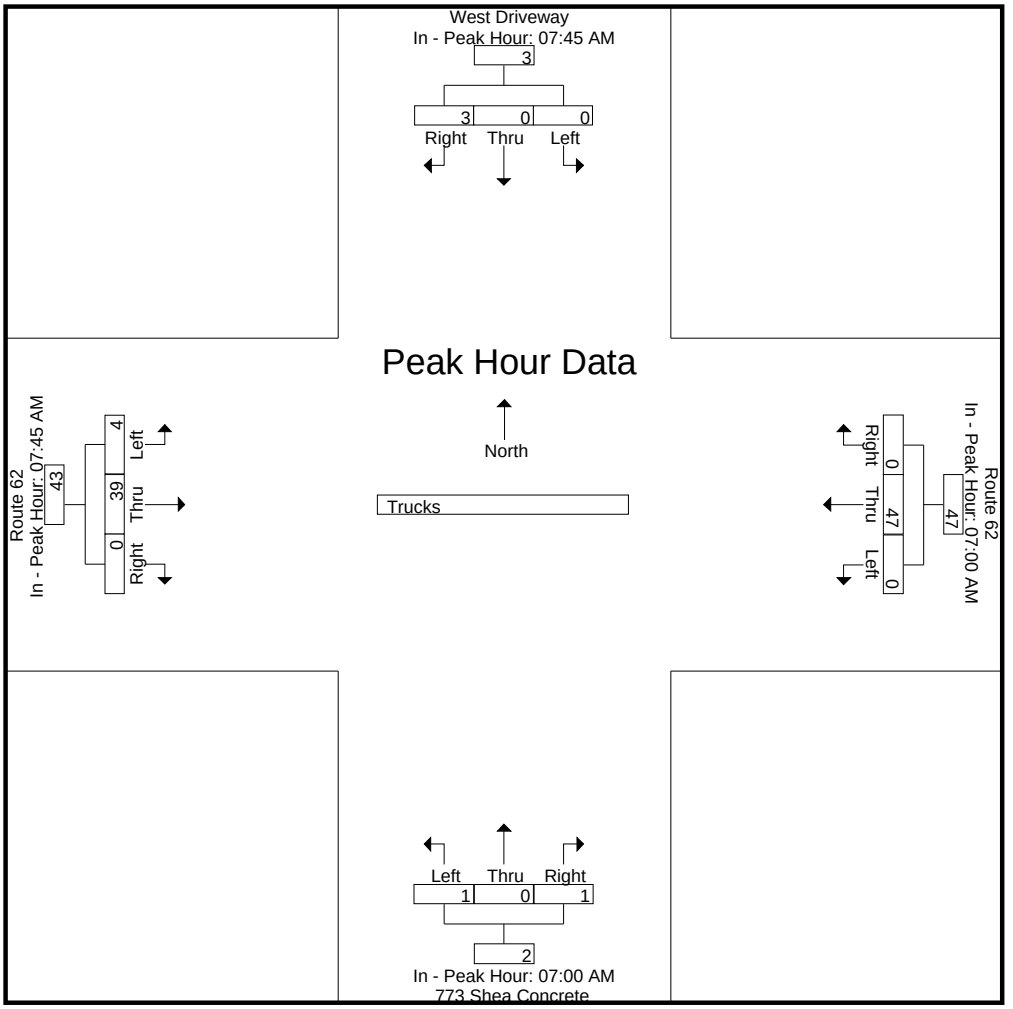
	07:45 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	1	1	0	12	0	12	0	0	0	0	1	8	0	9
+15 mins.	0	0	0	0	0	11	0	11	0	0	**1**	**1**	0	10	0	10
+30 mins.	0	0	0	0	0	10	0	10	**1**	0	0	1	1	10	0	11
+45 mins.	0	0	**2**	**2**	0	**14**	0	**14**	0	0	0	0	**2**	**11**	0	**13**
Total Volume	0	0	3	3	0	47	0	47	1	0	1	2	4	39	0	43
% App. Total	0	0	100		0	100	0		50	0	50		9.3	90.7	0	
PHF	.000	.000	.375	.375	.000	.839	.000	.839	.250	.000	.250	.500	.500	.886	.000	.827

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 10

Groups Printed- Bikes Peds

	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

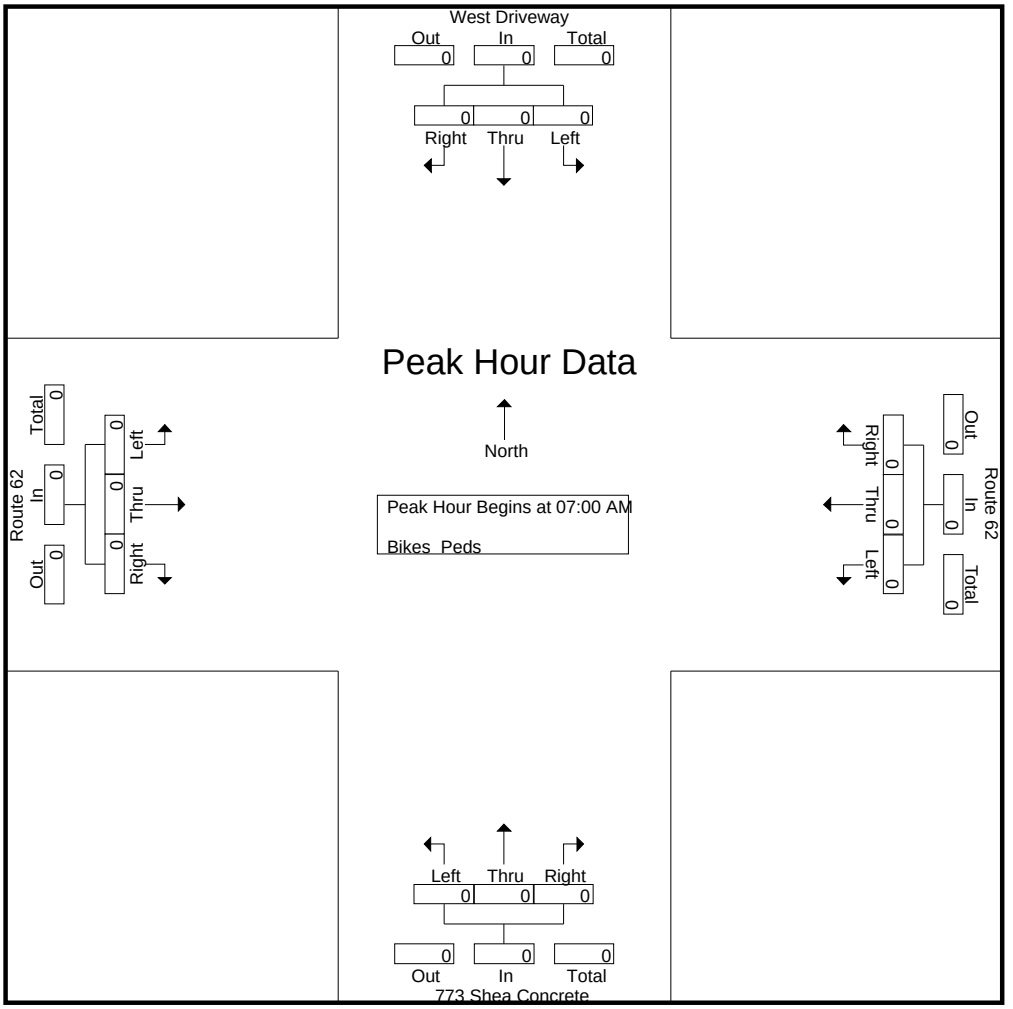
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 11



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

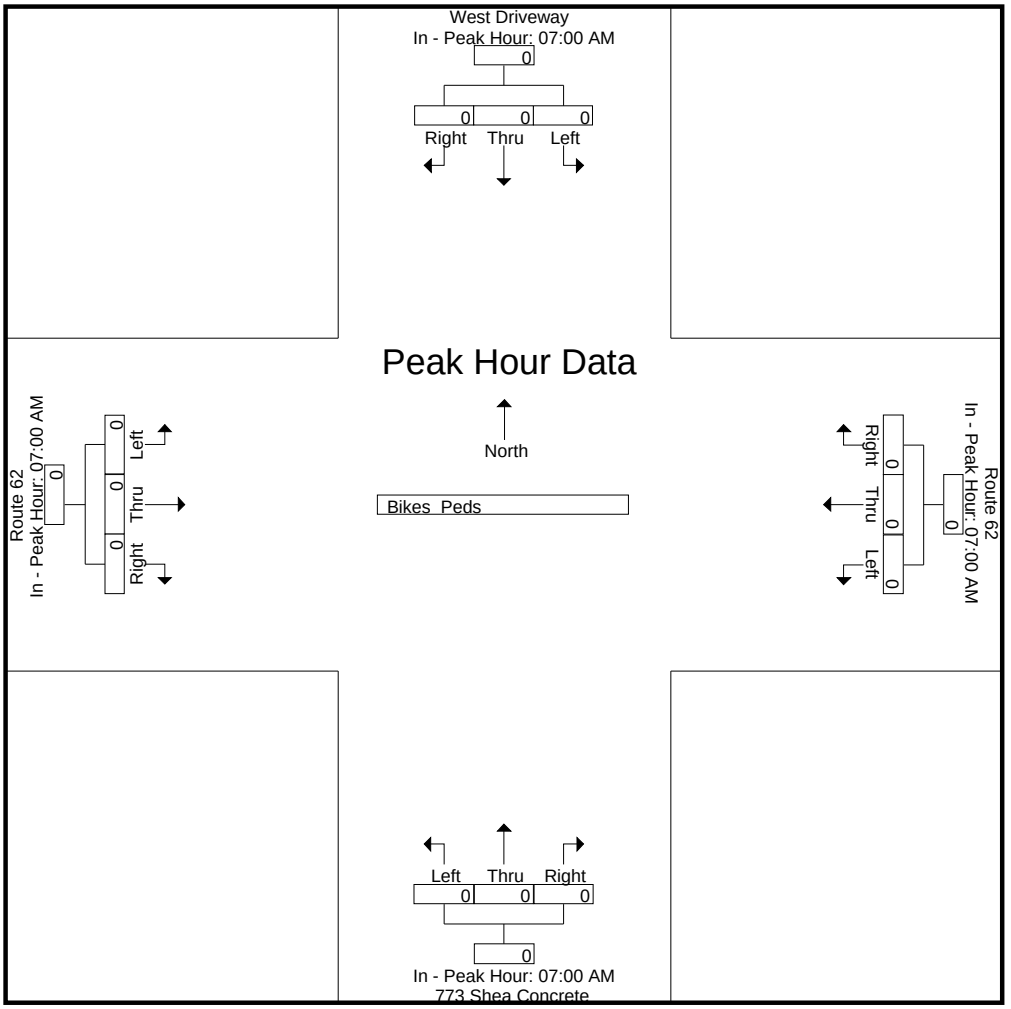
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	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

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 1

Groups Printed- Cars - Trucks

	West Driveway From North			Route 62 From East			773 Shea Concrete From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	157	0	0	0	0	0	146	0	303
04:15 PM	0	0	0	0	126	0	0	0	1	0	153	1	281
04:30 PM	0	0	0	1	128	0	0	0	1	0	136	0	266
04:45 PM	0	0	0	0	123	0	0	0	0	1	168	0	292
Total	0	0	0	1	534	0	0	0	2	1	603	1	1142
05:00 PM	1	0	0	0	117	0	0	0	0	0	162	0	280
05:15 PM	0	0	0	0	132	0	0	0	0	0	178	0	310
05:30 PM	0	0	0	0	102	0	0	0	0	0	167	0	269
05:45 PM	0	0	0	0	94	0	0	0	0	0	139	0	233
Total	1	0	0	0	445	0	0	0	0	0	646	0	1092
Grand Total	1	0	0	1	979	0	0	0	2	1	1249	1	2234
Apprch %	100	0	0	0.1	99.9	0	0	0	100	0.1	99.8	0.1	
Total %	0	0	0	0	43.8	0	0	0	0.1	0	55.9	0	
Cars	1	0	0	1	970	0	0	0	2	1	1229	1	2205
% Cars	100	0	0	100	99.1	0	0	0	100	100	98.4	100	98.7
Trucks	0	0	0	0	9	0	0	0	0	0	20	0	29
% Trucks	0	0	0	0	0.9	0	0	0	0	0	1.6	0	1.3

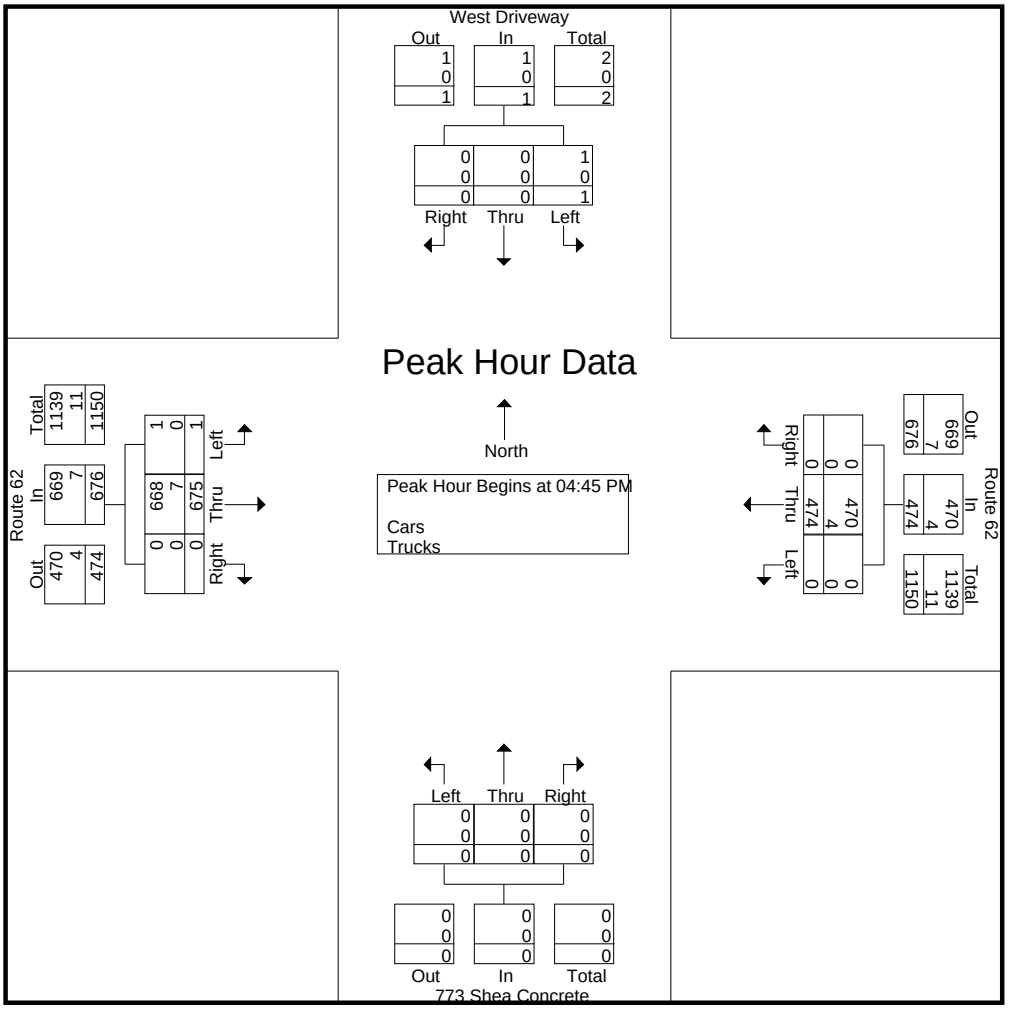
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	123	0	123	0	0	0	0	**1**	168	0	169	292
05:00 PM	**1**	0	0	**1**	0	117	0	117	0	0	0	0	0	162	0	162	280
05:15 PM	0	0	0	0	0	**132**	0	**132**	0	0	0	0	0	**178**	0	**178**	**310**
05:30 PM	0	0	0	0	0	102	0	102	0	0	0	0	0	167	0	167	269
Total Volume	1	0	0	1	0	474	0	474	0	0	0	0	1	675	0	676	1151
% App. Total	100	0	0		0	100	0		0	0	0		0.1	99.9	0		
PHF	.250	.000	.000	.250	.000	.898	.000	.898	.000	.000	.000	.000	.250	.948	.000	.949	.928
Cars	1	0	0	1	0	470	0	470	0	0	0	0	1	668	0	669	1140
% Cars	100	0	0	100	0	99.2	0	99.2	0	0	0	0	100	99.0	0	99.0	99.0
Trucks	0	0	0	0	0	4	0	4	0	0	0	0	0	7	0	7	11
% Trucks	0	0	0	0	0	0.8	0	0.8	0	0	0	0	0	1.0	0	1.0	1.0

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 2



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

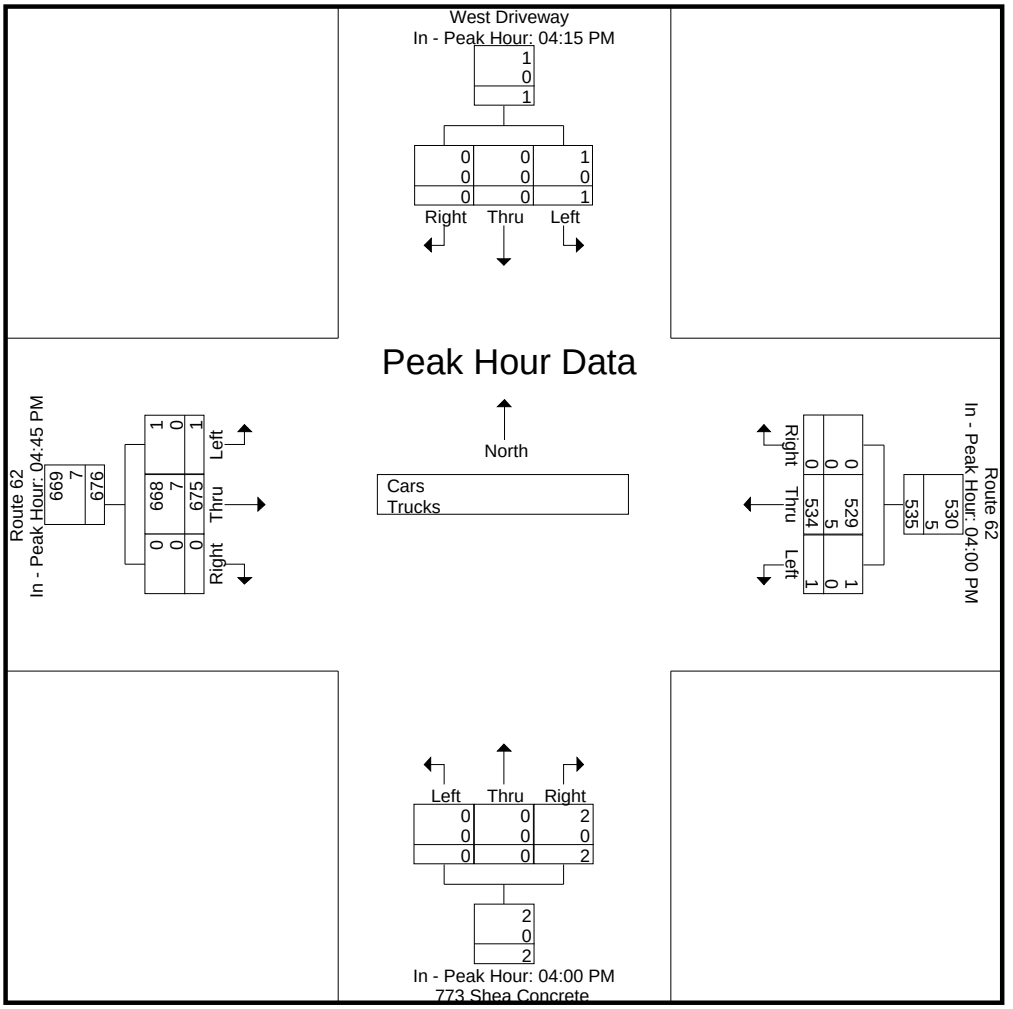
	04:15 PM				04:00 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	0	0	0	**157**	0	**157**	0	0	0	0	**1**	168	0	169
+15 mins.	0	0	0	0	0	126	0	126	0	0	**1**	**1**	0	162	0	162
+30 mins.	0	0	0	0	**1**	128	0	129	0	0	1	1	0	**178**	0	**178**
+45 mins.	**1**	0	0	**1**	0	123	0	123	0	0	0	0	0	167	0	167
Total Volume	1	0	0	1	1	534	0	535	0	0	2	2	1	675	0	676
% App. Total	100	0	0		0.2	99.8	0		0	0	100		0.1	99.9	0	
PHF	.250	.000	.000	.250	.250	.850	.000	.852	.000	.000	.500	.500	.250	.948	.000	.949
Cars	1	0	0	1	1	529	0	530	0	0	2	2	1	668	0	669
% Cars	100	0	0	100	100	99.1	0	99.1	0	0	100	100	100	99	0	99
Trucks	0	0	0	0	0	5	0	5	0	0	0	0	0	7	0	7
% Trucks	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0	1	0	1

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	West Driveway From North			Route 62 From East			773 Shea Concrete From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	154	0	0	0	0	0	144	0	298
04:15 PM	0	0	0	0	126	0	0	0	1	0	149	1	277
04:30 PM	0	0	0	1	126	0	0	0	1	0	133	0	261
04:45 PM	0	0	0	0	123	0	0	0	0	1	164	0	288
Total	0	0	0	1	529	0	0	0	2	1	590	1	1124
05:00 PM	1	0	0	0	116	0	0	0	0	0	160	0	277
05:15 PM	0	0	0	0	132	0	0	0	0	0	178	0	310
05:30 PM	0	0	0	0	99	0	0	0	0	0	166	0	265
05:45 PM	0	0	0	0	94	0	0	0	0	0	135	0	229
Total	1	0	0	0	441	0	0	0	0	0	639	0	1081
Grand Total	1	0	0	1	970	0	0	0	2	1	1229	1	2205
Apprch %	100	0	0	0.1	99.9	0	0	0	100	0.1	99.8	0.1	
Total %	0	0	0	0	44	0	0	0	0.1	0	55.7	0	

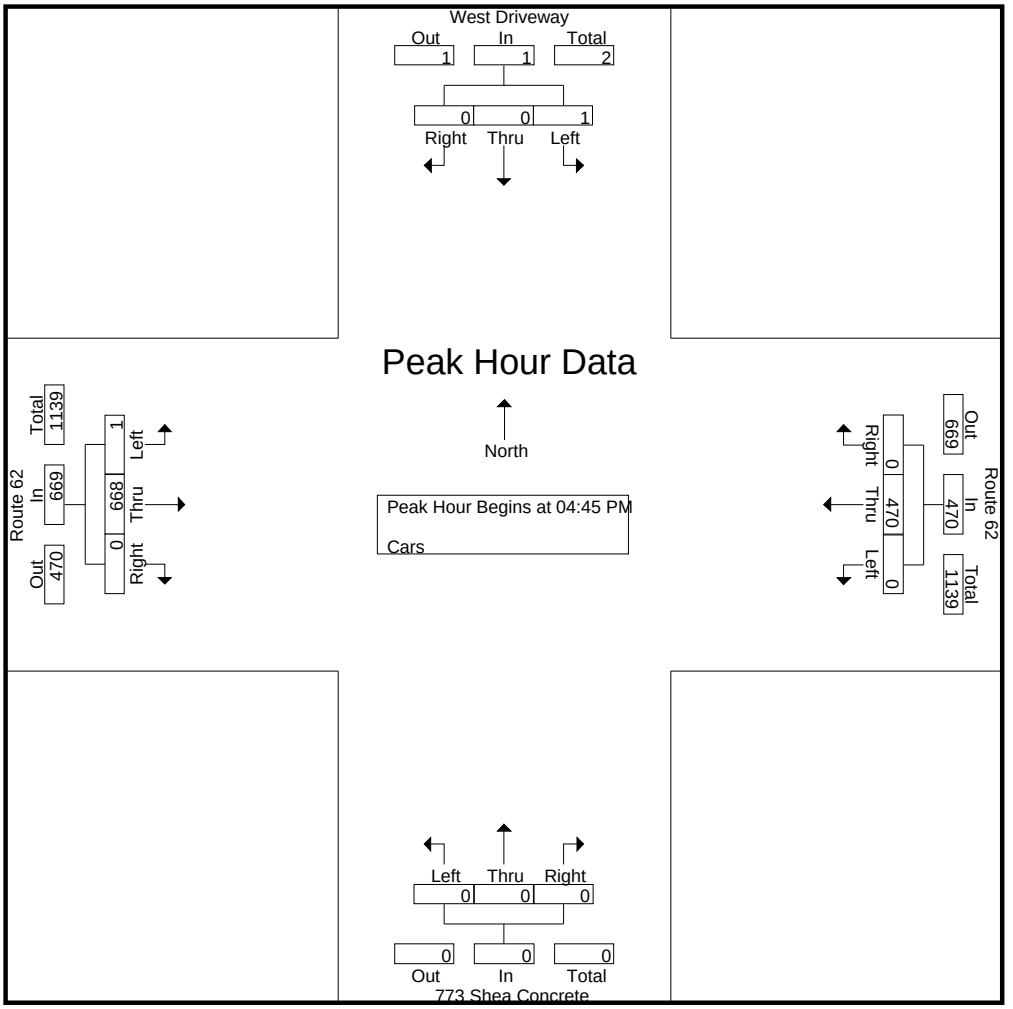
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	123	0	123	0	0	0	0	**1**	164	0	165	288
05:00 PM	**1**	0	0	**1**	0	116	0	116	0	0	0	0	0	160	0	160	277
05:15 PM	0	0	0	0	0	**132**	0	**132**	0	0	0	0	0	**178**	0	**178**	**310**
05:30 PM	0	0	0	0	0	99	0	99	0	0	0	0	0	166	0	166	265
Total Volume	1	0	0	1	0	470	0	470	0	0	0	0	1	668	0	669	1140
% App. Total	100	0	0		0	100	0		0	0	0		0.1	99.9	0		
PHF	.250	.000	.000	.250	.000	.890	.000	.890	.000	.000	.000	.000	.250	.938	.000	.940	.919

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 5



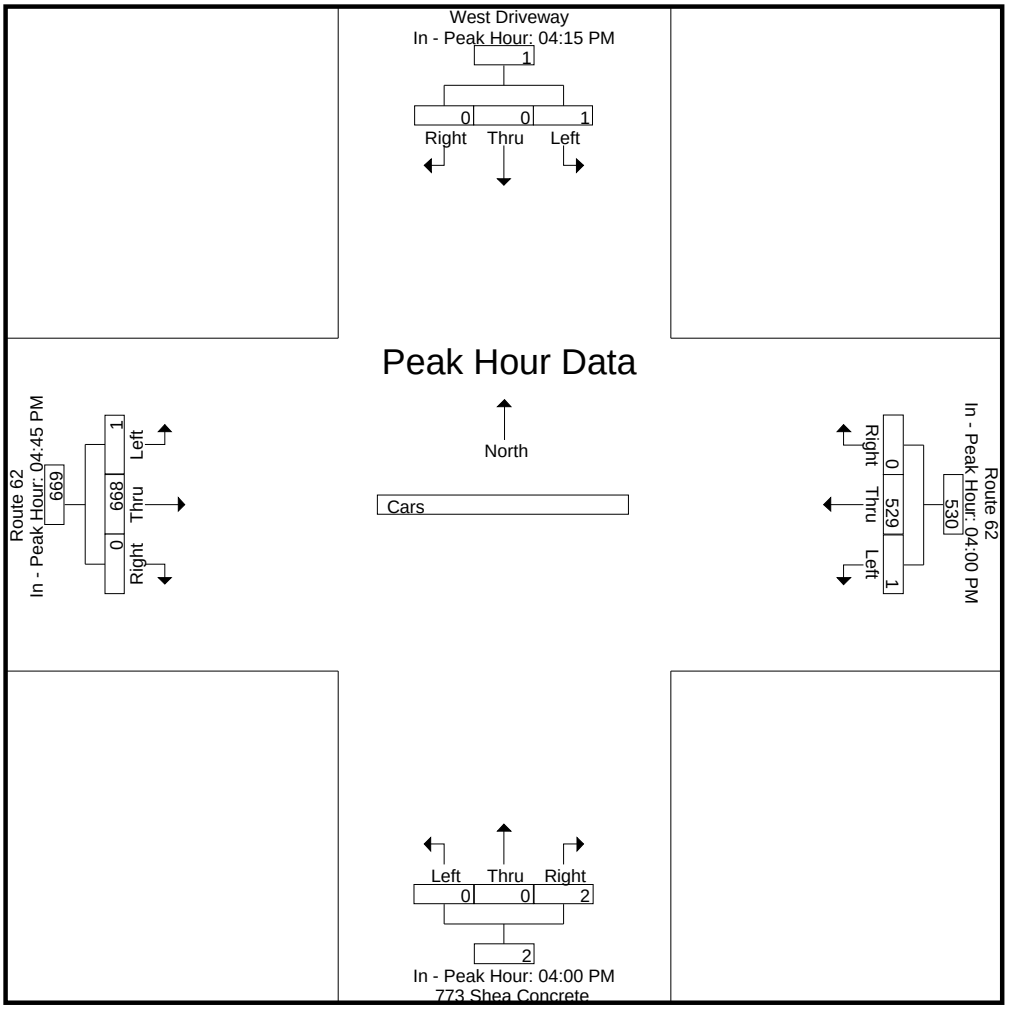
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	0	0	0	**154**	0	**154**	0	0	0	0	**1**	164	0	165
+15 mins.	0	0	0	0	0	126	0	126	0	0	**1**	**1**	0	160	0	160
+30 mins.	0	0	0	0	**1**	126	0	127	0	0	1	1	0	**178**	0	**178**
+45 mins.	**1**	0	0	**1**	0	123	0	123	0	0	0	0	0	166	0	166
Total Volume	1	0	0	1	1	529	0	530	0	0	2	2	1	668	0	669
% App. Total	100	0	0		0.2	99.8	0		0	0	100		0.1	99.9	0	
PHF	.250	.000	.000	.250	.250	.859	.000	.860	.000	.000	.500	.500	.250	.938	.000	.940

Accurate Counts
978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	West Driveway From North			Route 62 From East			773 Shea Concrete From South			Route 62 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	3	0	0	0	0	0	2	0	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	4	0	4
04:30 PM	0	0	0	0	2	0	0	0	0	0	3	0	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	5	0	0	0	0	0	13	0	18
05:00 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	3	0	0	0	0	0	1	0	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	4	0	0	0	0	0	7	0	11
Grand Total	0	0	0	0	9	0	0	0	0	0	20	0	29
Apprch %	0	0	0	0	100	0	0	0	0	0	100	0	
Total %	0	0	0	0	31	0	0	0	0	0	69	0	

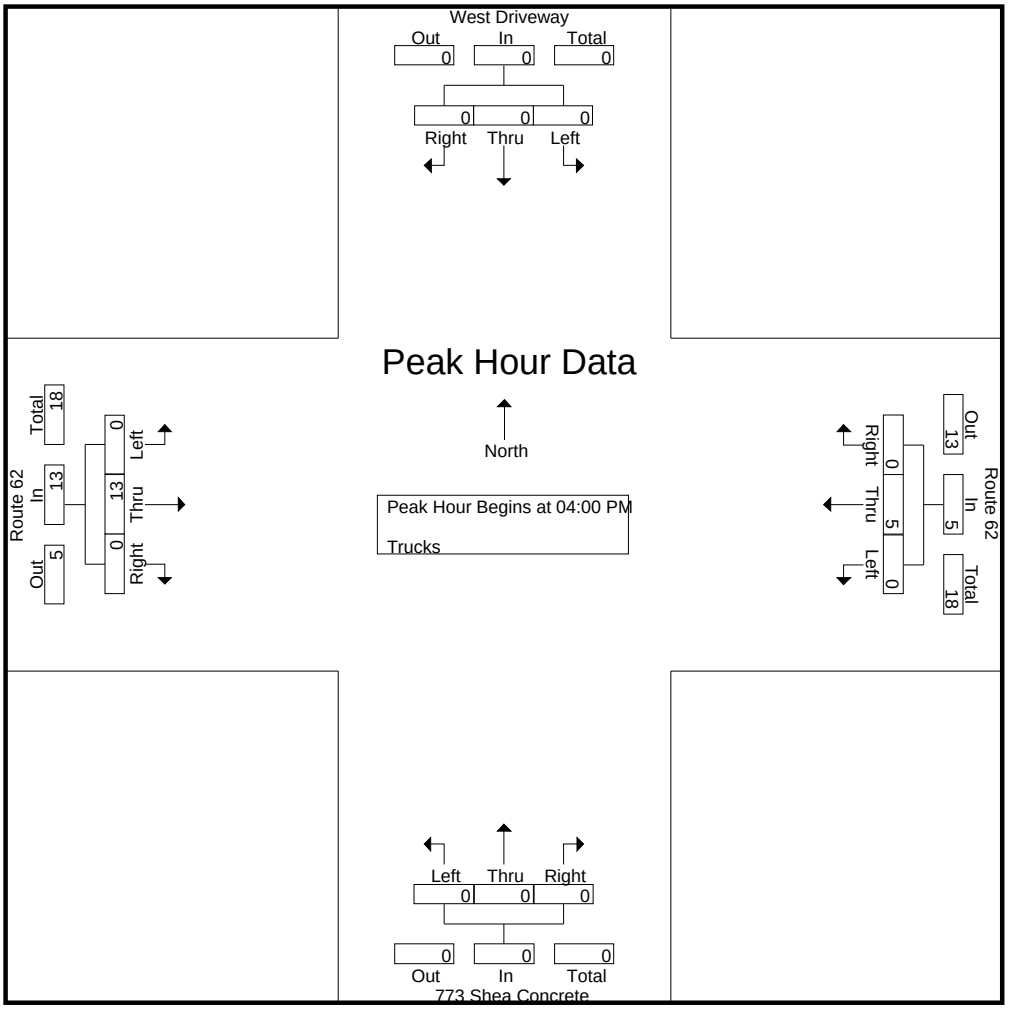
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	2	0	2	**5**
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**	4
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total Volume	0	0	0	0	0	5	0	5	0	0	0	0	0	13	0	13	18
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.417	.000	.417	.000	.000	.000	.000	.000	.813	.000	.813	.900

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 8



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

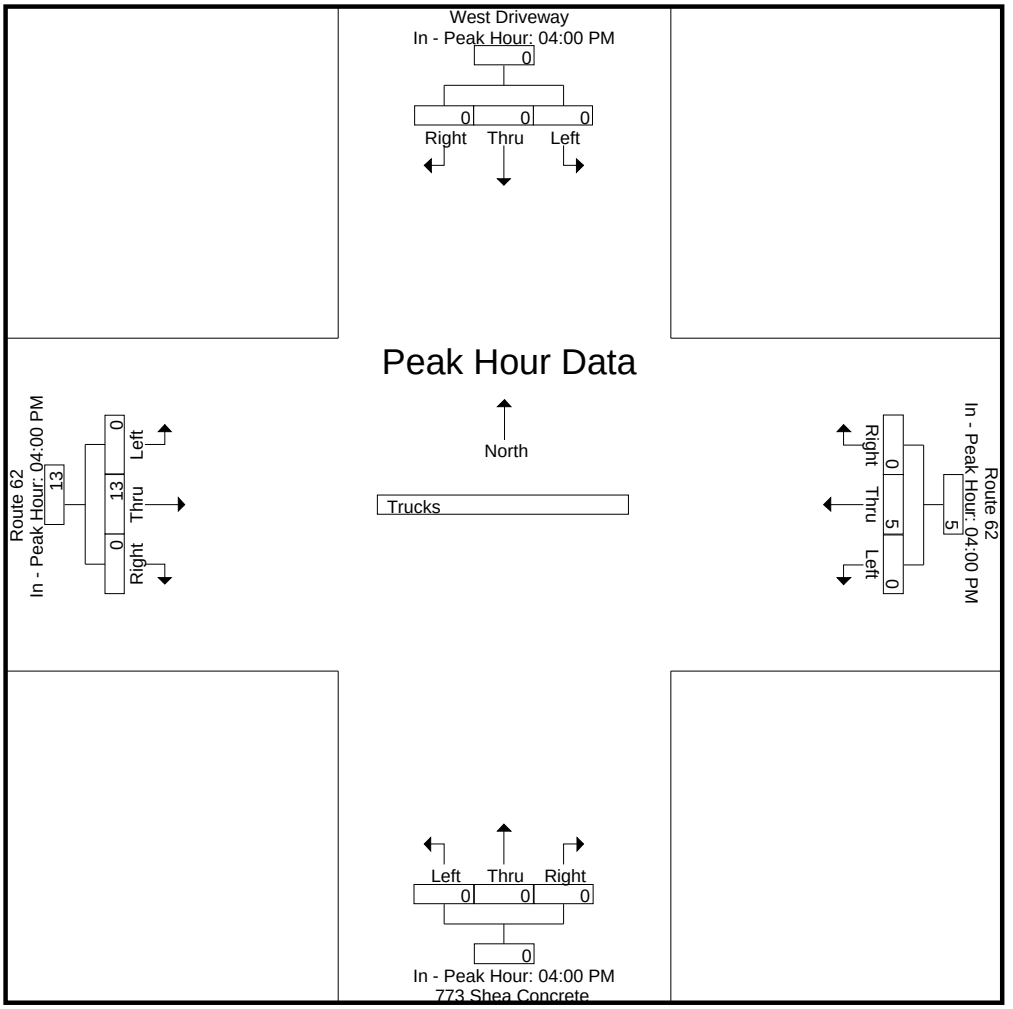
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	2	0	2
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Total Volume	0	0	0	0	0	5	0	5	0	0	0	0	0	13	0	13
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.417	.000	.417	.000	.000	.000	.000	.000	.813	.000	.813

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 10

Groups Printed- Bikes Peds

	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	2
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0				
Total %	0	0	0		0	0	0		0	0	0		0	100	0		50	50	

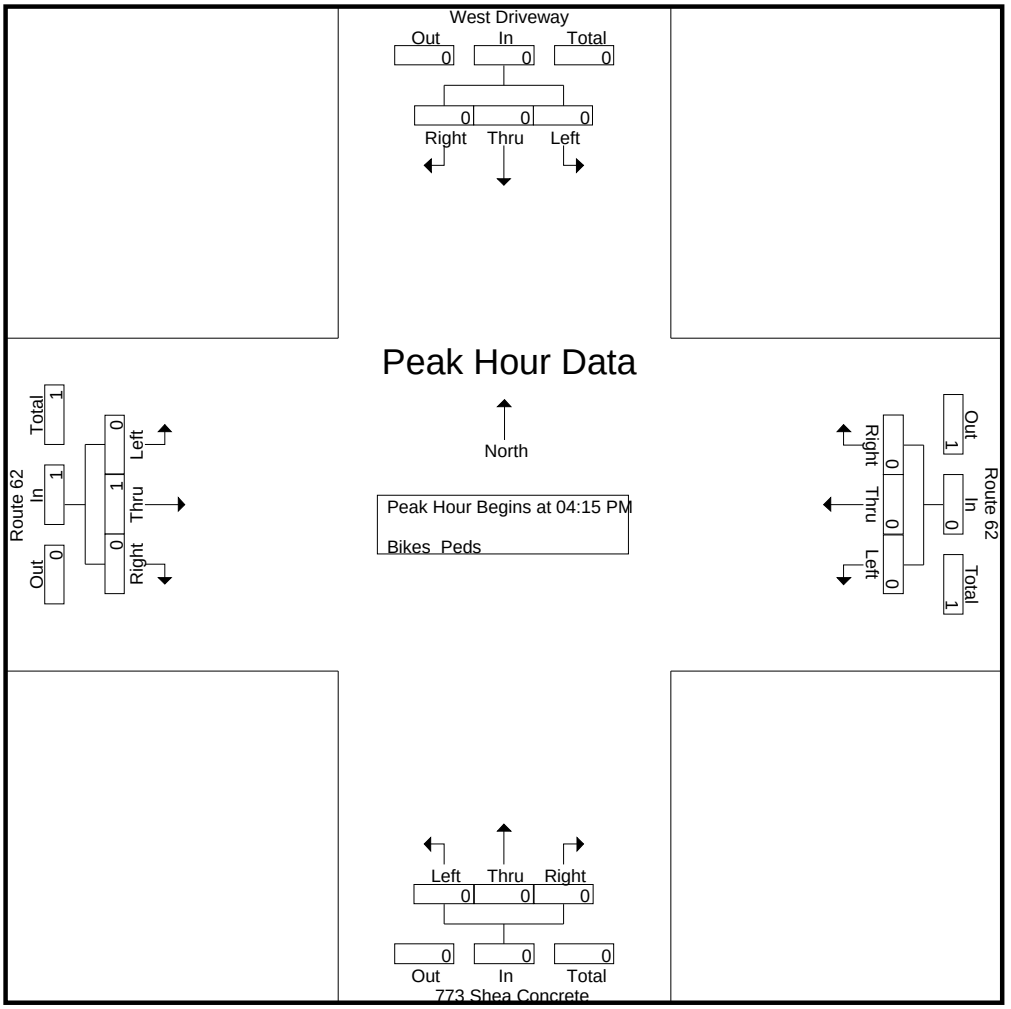
	West Driveway From North				Route 62 From East				773 Shea Concrete From South				Route 62 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 11



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

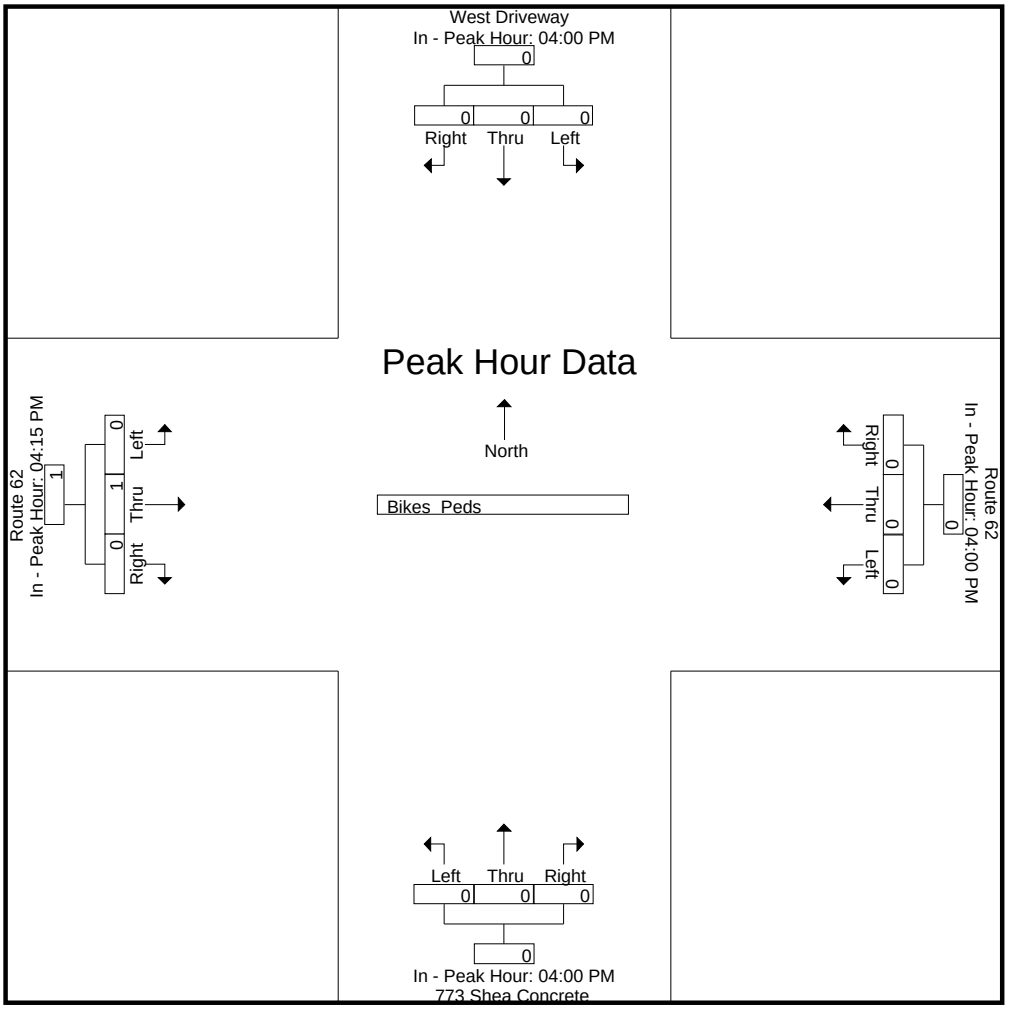
	04:00 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	0	0		0	0	0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

Accurate Counts

978-664-2565

N/S Street : West Driveway/773 Shea Conrcete
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110004
Site Code : 93110004
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 1

Groups Printed- Cars - Trucks

	Center Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	2	132	1	0	82	217
07:15 AM	0	1	152	0	0	101	254
07:30 AM	0	0	153	0	1	100	254
07:45 AM	2	0	144	0	0	114	260
Total	2	3	581	1	1	397	985
08:00 AM	3	1	147	0	0	98	249
08:15 AM	1	2	131	0	1	118	253
08:30 AM	0	2	131	0	1	107	241
08:45 AM	0	2	124	0	0	112	238
Total	4	7	533	0	2	435	981
Grand Total	6	10	1114	1	3	832	1966
Apprch %	37.5	62.5	99.9	0.1	0.4	99.6	
Total %	0.3	0.5	56.7	0.1	0.2	42.3	
Cars	6	4	1038	1	2	768	1819
% Cars	100	40	93.2	100	66.7	92.3	92.5
Trucks	0	6	76	0	1	64	147
% Trucks	0	60	6.8	0	33.3	7.7	7.5

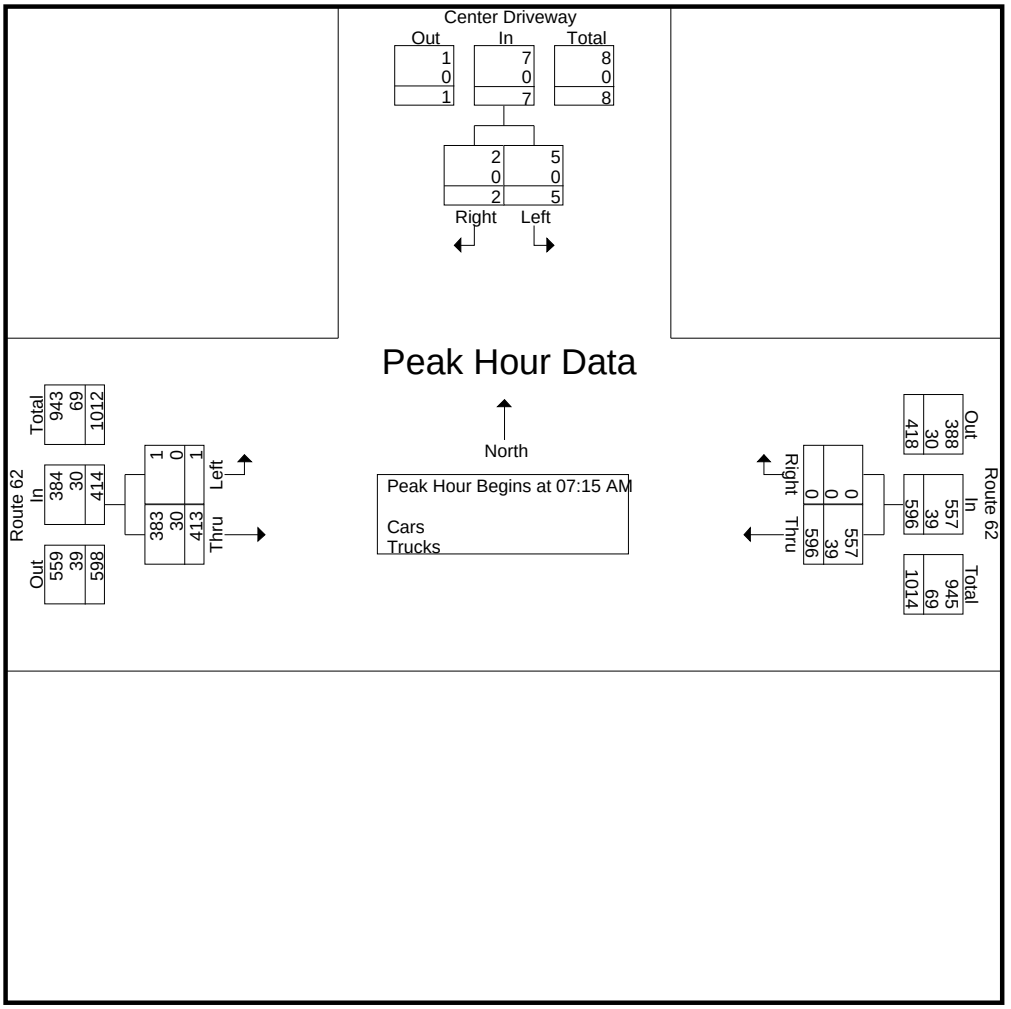
	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**1**	1	152	0	152	0	101	101	254
07:30 AM	0	0	0	**153**	0	**153**	**1**	100	101	254
07:45 AM	2	0	2	144	0	144	0	**114**	**114**	**260**
08:00 AM	**3**	1	**4**	147	0	147	0	98	98	249
Total Volume	5	2	7	596	0	596	1	413	414	1017
% App. Total	71.4	28.6		100	0		0.2	99.8		
PHF	.417	.500	.438	.974	.000	.974	.250	.906	.908	.978
Cars	5	2	7	557	0	557	1	383	384	948
% Cars	100	100	100	93.5	0	93.5	100	92.7	92.8	93.2
Trucks	0	0	0	39	0	39	0	30	30	69
% Trucks	0	0	0	6.5	0	6.5	0	7.3	7.2	6.8

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 2



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

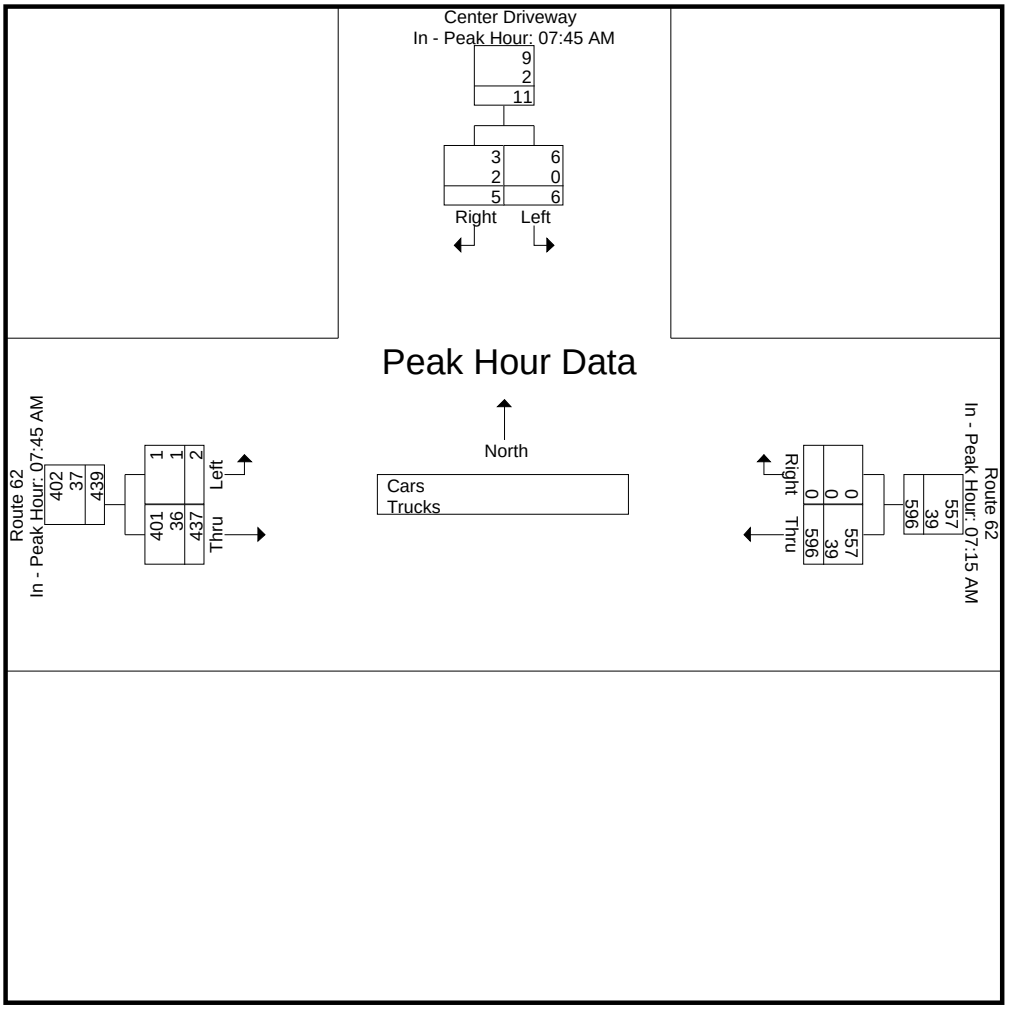
Peak Hour for Each Approach Begins at:

	07:45 AM			07:15 AM			07:45 AM		
+0 mins.	2	0	2	152	0	152	0	114	114
+15 mins.	**3**	1	**4**	**153**	0	**153**	0	98	98
+30 mins.	1	**2**	3	144	0	144	**1**	**118**	**119**
+45 mins.	0	2	2	147	0	147	1	107	108
Total Volume	6	5	11	596	0	596	2	437	439
% App. Total	54.5	45.5		100	0		0.5	99.5	
PHF	.500	.625	.688	.974	.000	.974	.500	.926	.922
Cars	6	3	9	557	0	557	1	401	402
% Cars	100	60	81.8	93.5	0	93.5	50	91.8	91.6
Trucks	0	2	2	39	0	39	1	36	37
% Trucks	0	40	18.2	6.5	0	6.5	50	8.2	8.4

Accurate Counts
978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	Center Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	119	1	0	73	193
07:15 AM	0	1	142	0	0	90	233
07:30 AM	0	0	144	0	1	95	240
07:45 AM	2	0	130	0	0	107	239
Total	2	1	535	1	1	365	905
08:00 AM	3	1	141	0	0	91	236
08:15 AM	1	1	119	0	1	107	229
08:30 AM	0	1	125	0	0	96	222
08:45 AM	0	0	118	0	0	109	227
Total	4	3	503	0	1	403	914
Grand Total	6	4	1038	1	2	768	1819
Apprch %	60	40	99.9	0.1	0.3	99.7	
Total %	0.3	0.2	57.1	0.1	0.1	42.2	

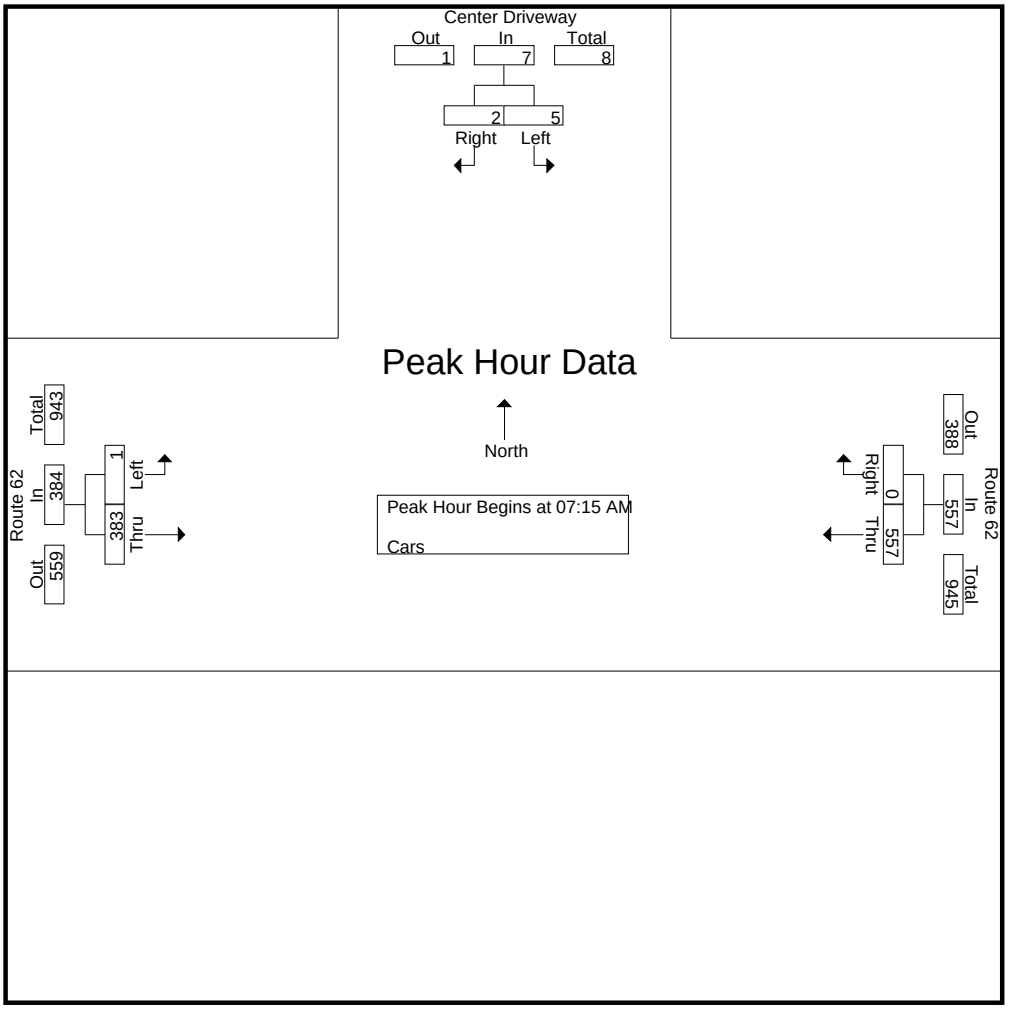
	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**1**	1	142	0	142	0	90	90	233
07:30 AM	0	0	0	**144**	0	**144**	**1**	95	96	**240**
07:45 AM	2	0	2	130	0	130	0	**107**	**107**	239
08:00 AM	**3**	1	**4**	141	0	141	0	91	91	236
Total Volume	5	2	7	557	0	557	1	383	384	948
% App. Total	71.4	28.6		100	0		0.3	99.7		
PHF	.417	.500	.438	.967	.000	.967	.250	.895	.897	.988

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 5



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

Peak Hour for Each Approach Begins at:

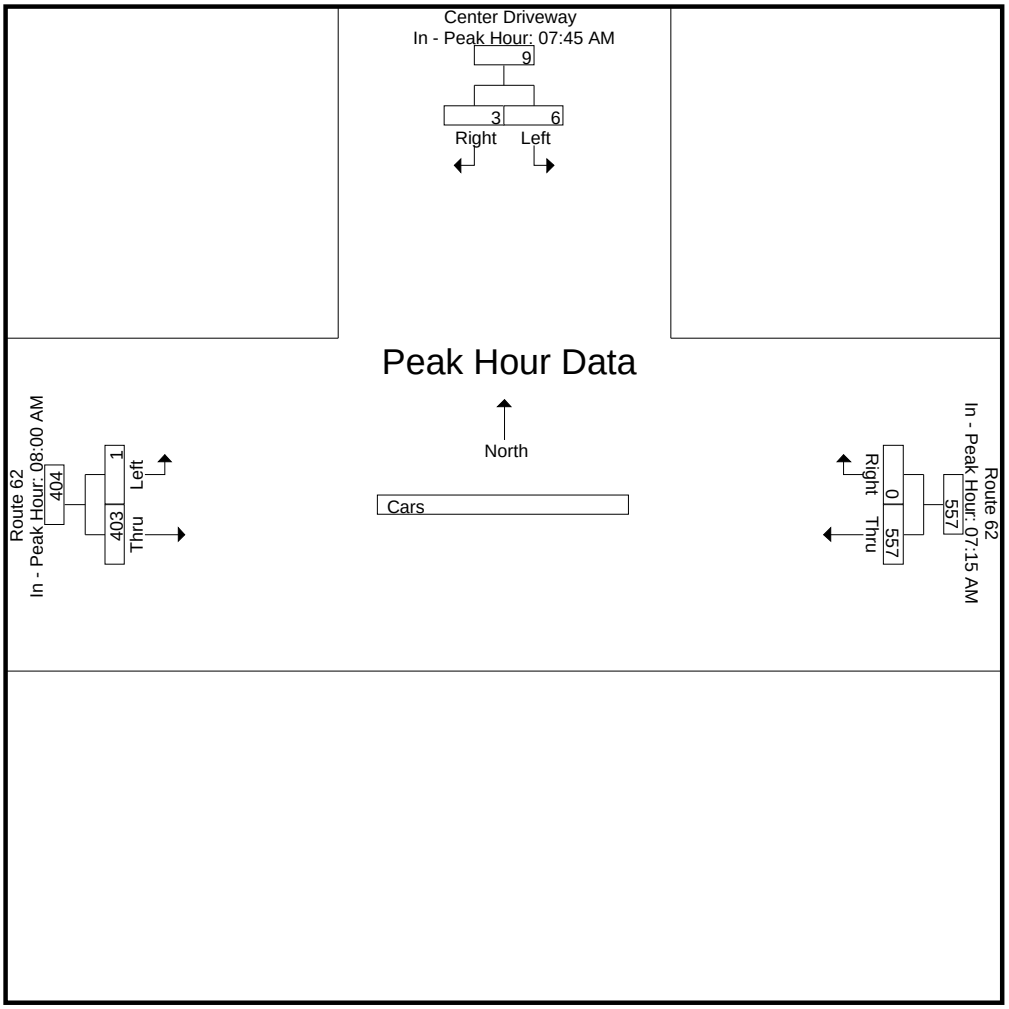
	07:45 AM			07:15 AM			08:00 AM		
+0 mins.	2	0	2	142	0	142	0	91	91
+15 mins.	**3**	**1**	**4**	**144**	0	**144**	**1**	107	108
+30 mins.	1	1	2	130	0	130	0	96	96
+45 mins.	0	1	1	141	0	141	0	**109**	**109**
Total Volume	6	3	9	557	0	557	1	403	404
% App. Total	66.7	33.3		100	0		0.2	99.8	
PHF	.500	.750	.563	.967	.000	.967	.250	.924	.927

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 7

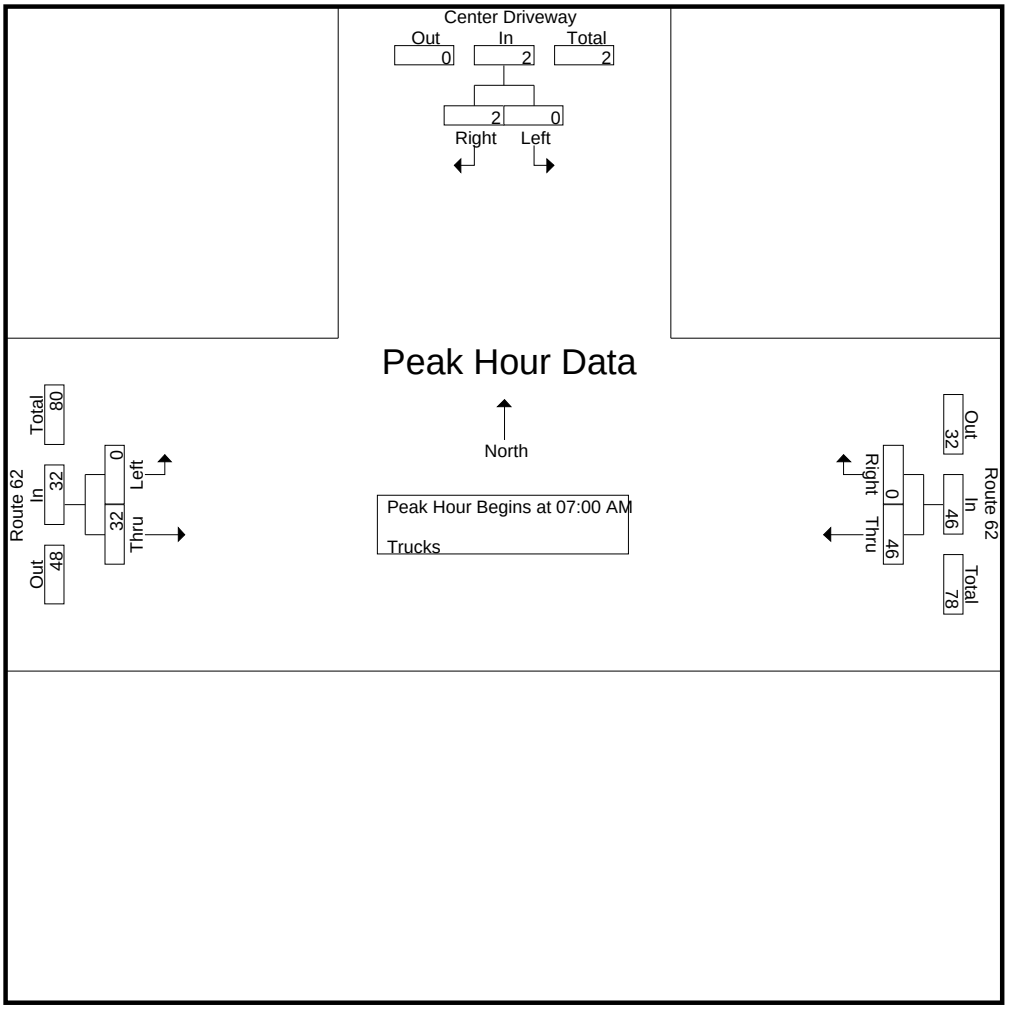
Groups Printed- Trucks

	Center Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	2	13	0	0	9	24
07:15 AM	0	0	10	0	0	11	21
07:30 AM	0	0	9	0	0	5	14
07:45 AM	0	0	14	0	0	7	21
Total	0	2	46	0	0	32	80
08:00 AM	0	0	6	0	0	7	13
08:15 AM	0	1	12	0	0	11	24
08:30 AM	0	1	6	0	1	11	19
08:45 AM	0	2	6	0	0	3	11
Total	0	4	30	0	1	32	67
Grand Total	0	6	76	0	1	64	147
Apprch %	0	100	100	0	1.5	98.5	
Total %	0	4.1	51.7	0	0.7	43.5	

	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**2**	**2**	13	0	13	0	9	9	**24**
07:15 AM	0	0	0	10	0	10	0	**11**	**11**	21
07:30 AM	0	0	0	9	0	9	0	5	5	14
07:45 AM	0	0	0	**14**	0	**14**	0	7	7	21
Total Volume	0	2	2	46	0	46	0	32	32	80
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.821	.000	.821	.000	.727	.727	.833

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 8

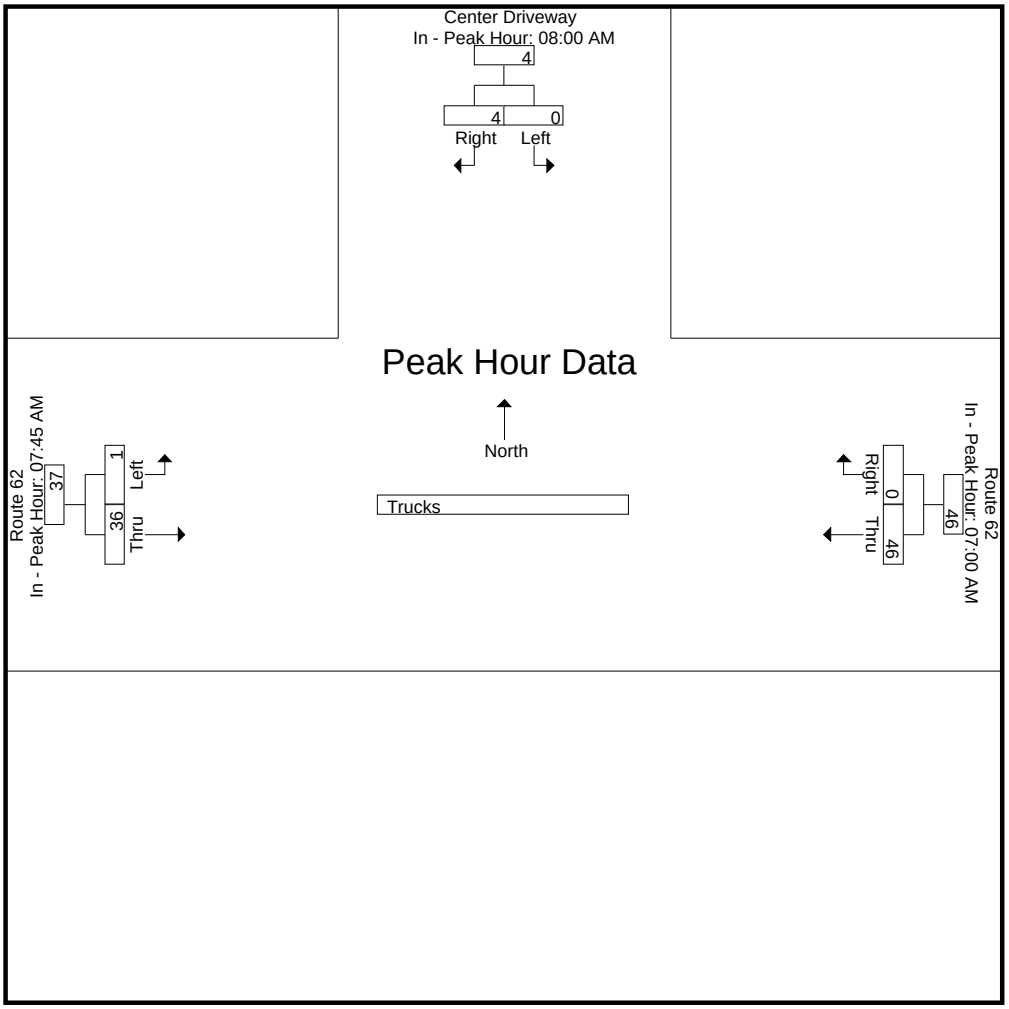


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:45 AM		
+0 mins.	0	0	0	13	0	13	0	7	7
+15 mins.	0	1	1	10	0	10	0	7	7
+30 mins.	0	1	1	9	0	9	0	**11**	11
+45 mins.	0	**2**	**2**	**14**	0	**14**	**1**	11	**12**
Total Volume	0	4	4	46	0	46	1	36	37
% App. Total	0	100		100	0		2.7	97.3	
PHF	.000	.500	.500	.821	.000	.821	.250	.818	.771

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 10

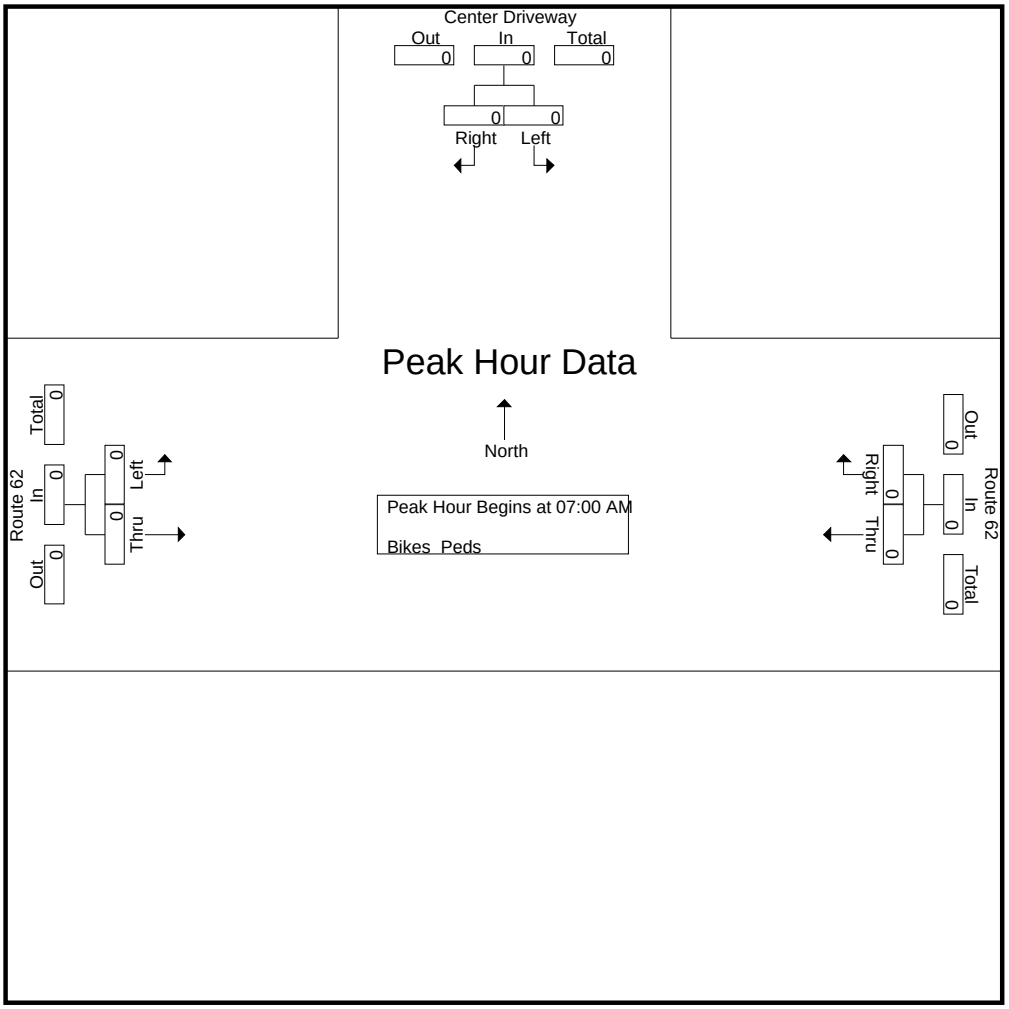
Groups Printed- Bikes Peds

	Center Driveway From North			Route 62 From East			Route 62 From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 11

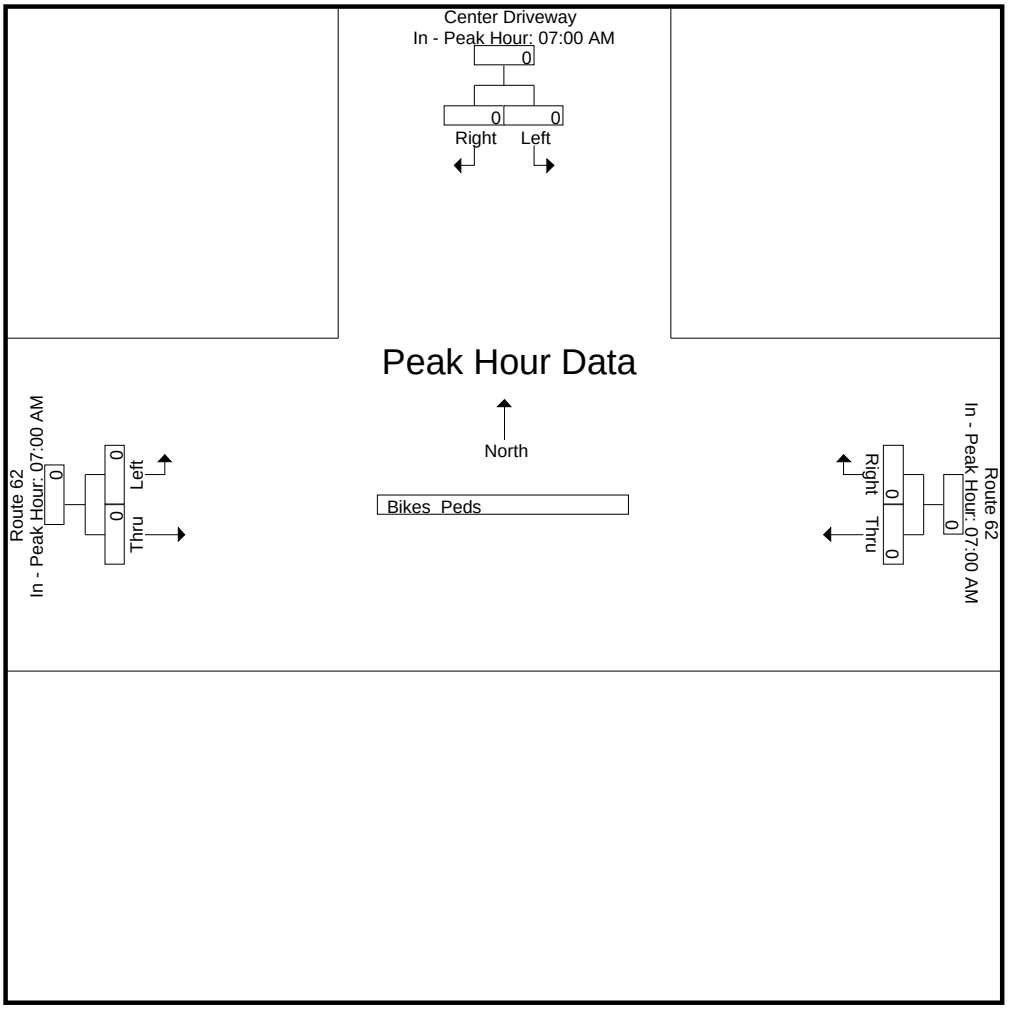


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 1

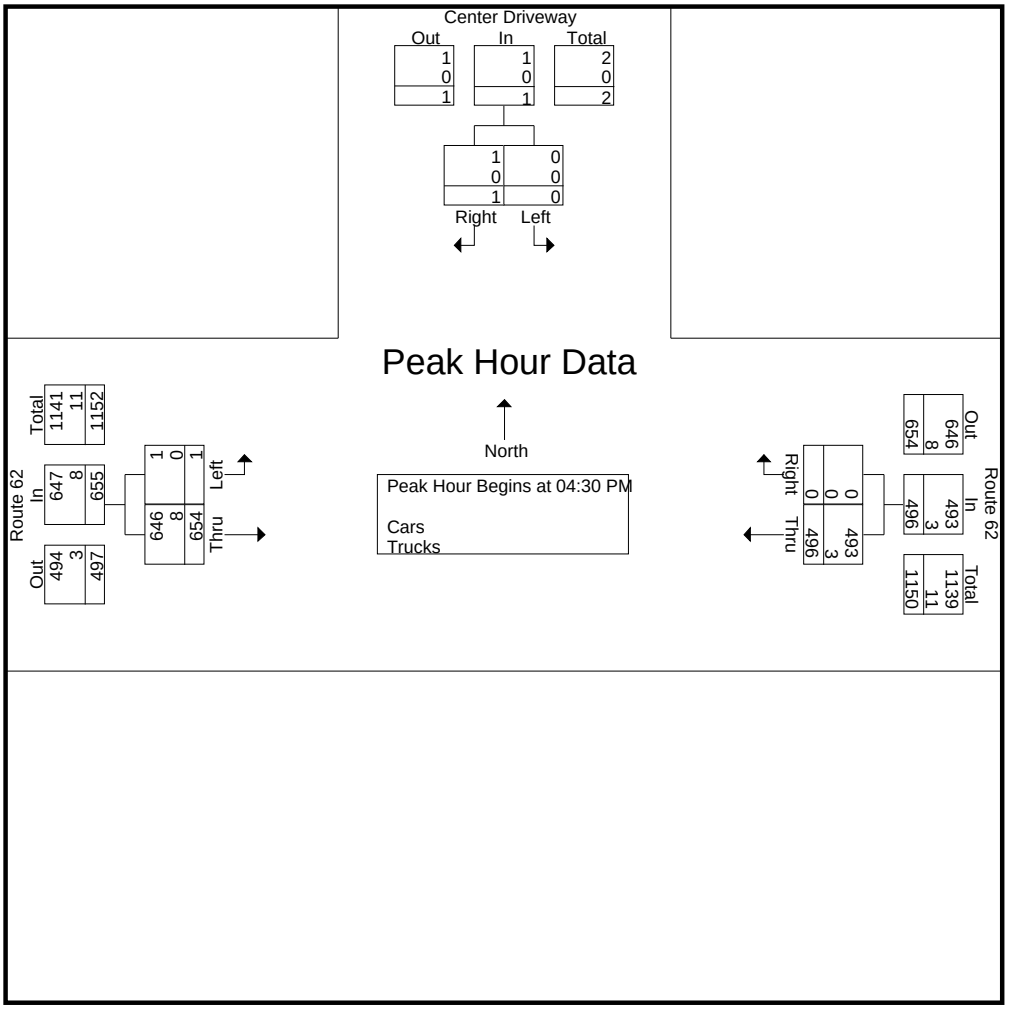
Groups Printed- Cars - Trucks

	Center Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	152	0	0	151	303
04:15 PM	0	0	124	0	0	146	270
04:30 PM	0	0	129	0	0	144	273
04:45 PM	0	1	121	0	1	163	286
Total	0	1	526	0	1	604	1132
05:00 PM	0	0	115	0	0	162	277
05:15 PM	0	0	131	0	0	185	316
05:30 PM	0	0	103	0	0	161	264
05:45 PM	0	0	94	0	0	146	240
Total	0	0	443	0	0	654	1097
Grand Total	0	1	969	0	1	1258	2229
Apprch %	0	100	100	0	0.1	99.9	
Total %	0	0	43.5	0	0	56.4	
Cars	0	1	959	0	1	1239	2200
% Cars	0	100	99	0	100	98.5	98.7
Trucks	0	0	10	0	0	19	29
% Trucks	0	0	1	0	0	1.5	1.3

	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	129	0	129	0	144	144	273
04:45 PM	0	**1**	**1**	121	0	121	**1**	163	164	286
05:00 PM	0	0	0	115	0	115	0	162	162	277
05:15 PM	0	0	0	**131**	0	**131**	0	**185**	**185**	**316**
Total Volume	0	1	1	496	0	496	1	654	655	1152
% App. Total	0	100		100	0		0.2	99.8		
PHF	.000	.250	.250	.947	.000	.947	.250	.884	.885	.911
Cars	0	1	1	493	0	493	1	646	647	1141
% Cars	0	100	100	99.4	0	99.4	100	98.8	98.8	99.0
Trucks	0	0	0	3	0	3	0	8	8	11
% Trucks	0	0	0	0.6	0	0.6	0	1.2	1.2	1.0

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 2



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

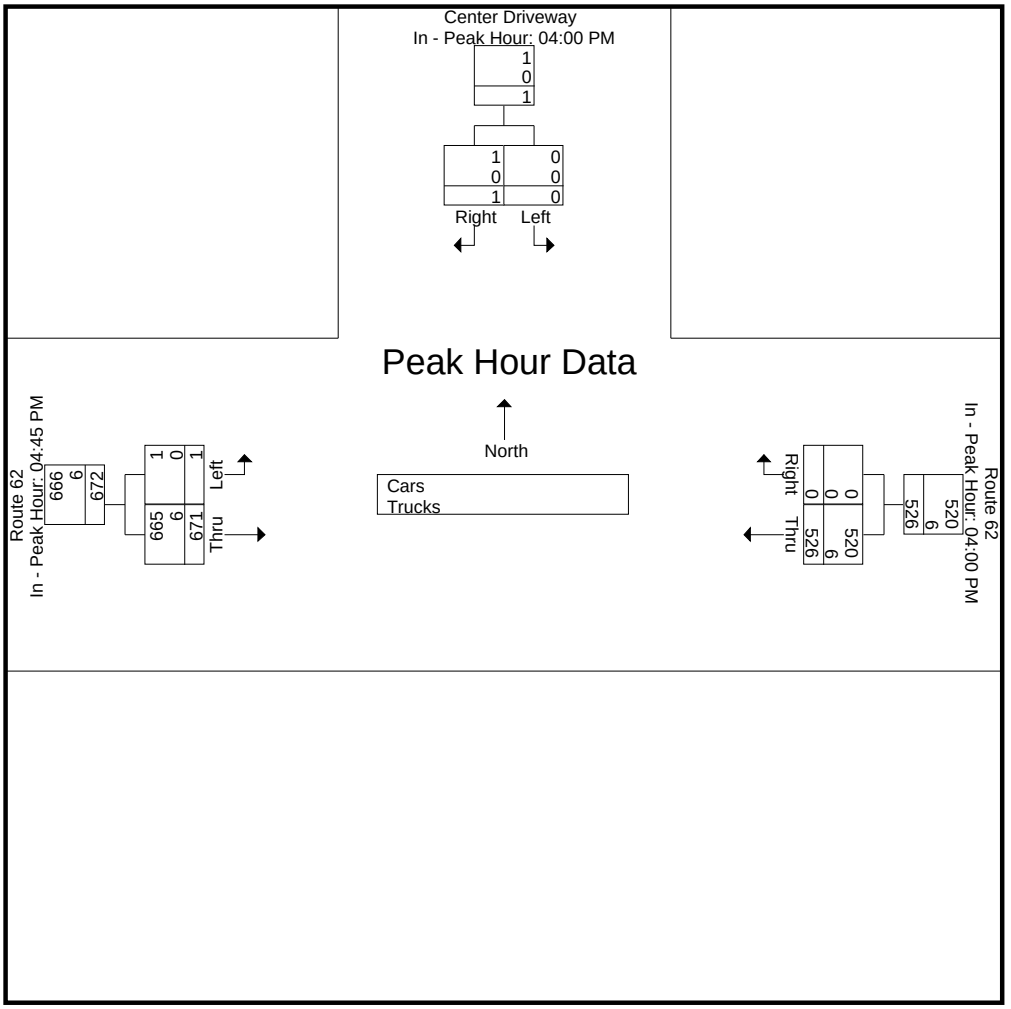
	04:00 PM			04:00 PM			04:45 PM		
+0 mins.	0	0	0	**152**	0	**152**	**1**	163	164
+15 mins.	0	0	0	124	0	124	0	162	162
+30 mins.	0	0	0	129	0	129	0	**185**	**185**
+45 mins.	0	**1**	**1**	121	0	121	0	161	161
Total Volume	0	1	1	526	0	526	1	671	672
% App. Total	0	100		100	0		0.1	99.9	
PHF	.000	.250	.250	.865	.000	.865	.250	.907	.908
Cars	0	1	1	520	0	520	1	665	666
% Cars	0	100	100	98.9	0	98.9	100	99.1	99.1
Trucks	0	0	0	6	0	6	0	6	6
% Trucks	0	0	0	1.1	0	1.1	0	0.9	0.9

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	Center Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	148	0	0	148	296
04:15 PM	0	0	124	0	0	143	267
04:30 PM	0	0	127	0	0	142	269
04:45 PM	0	1	121	0	1	159	282
Total	0	1	520	0	1	592	1114
05:00 PM	0	0	114	0	0	160	274
05:15 PM	0	0	131	0	0	185	316
05:30 PM	0	0	100	0	0	161	261
05:45 PM	0	0	94	0	0	141	235
Total	0	0	439	0	0	647	1086
Grand Total	0	1	959	0	1	1239	2200
Apprch %	0	100	100	0	0.1	99.9	
Total %	0	0	43.6	0	0	56.3	

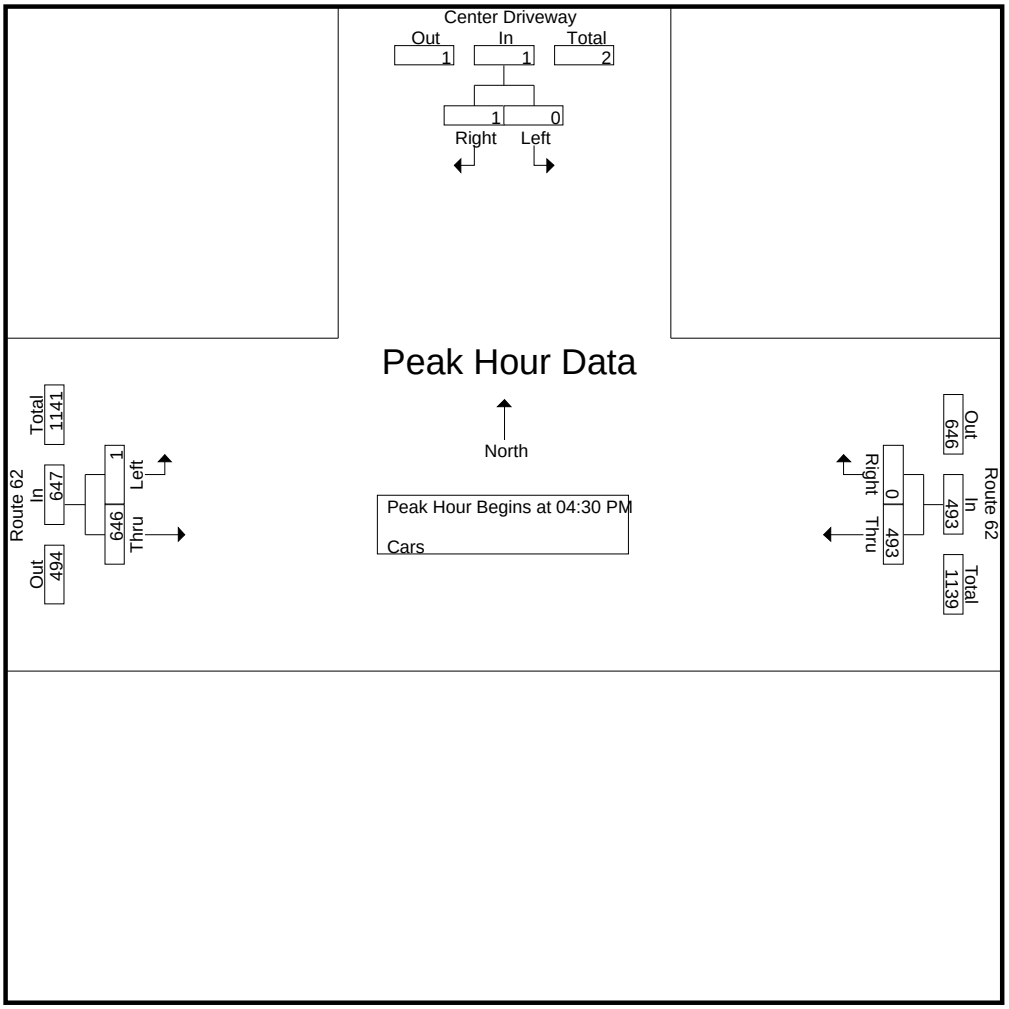
	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	127	0	127	0	142	142	269
04:45 PM	0	**1**	**1**	121	0	121	**1**	159	160	282
05:00 PM	0	0	0	114	0	114	0	160	160	274
05:15 PM	0	0	0	**131**	0	**131**	0	**185**	**185**	**316**
Total Volume	0	1	1	493	0	493	1	646	647	1141
% App. Total	0	100		100	0		0.2	99.8		
PHF	.000	.250	.250	.941	.000	.941	.250	.873	.874	.903

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 5



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

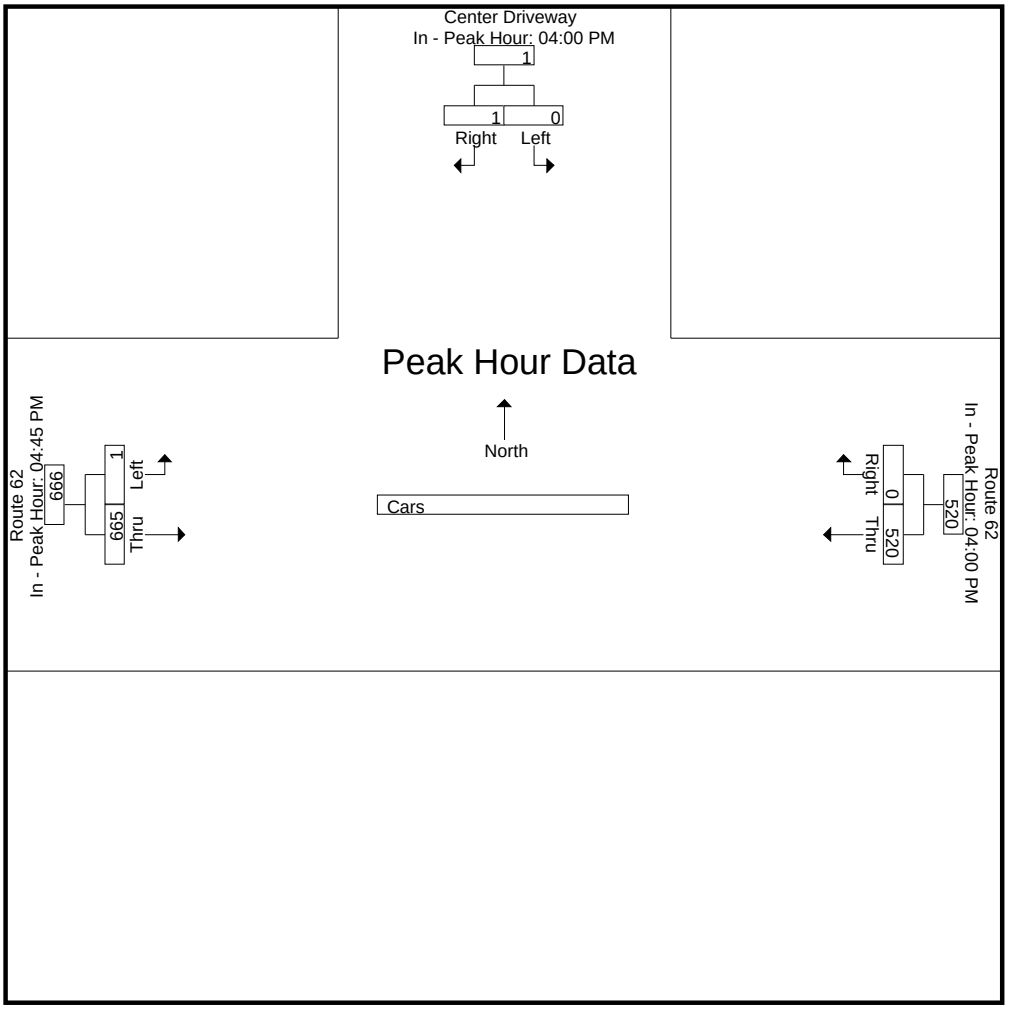
	04:00 PM			04:00 PM			04:45 PM		
+0 mins.	0	0	0	**148**	0	**148**	**1**	159	160
+15 mins.	0	0	0	124	0	124	0	160	160
+30 mins.	0	0	0	127	0	127	0	**185**	**185**
+45 mins.	0	**1**	**1**	121	0	121	0	161	161
Total Volume	0	1	1	520	0	520	1	665	666
% App. Total	0	100		100	0		0.2	99.8	
PHF	.000	.250	.250	.878	.000	.878	.250	.899	.900

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	Center Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	4	0	0	3	7
04:15 PM	0	0	0	0	0	3	3
04:30 PM	0	0	2	0	0	2	4
04:45 PM	0	0	0	0	0	4	4
Total	0	0	6	0	0	12	18
05:00 PM	0	0	1	0	0	2	3
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	3	0	0	0	3
05:45 PM	0	0	0	0	0	5	5
Total	0	0	4	0	0	7	11
Grand Total	0	0	10	0	0	19	29
Apprch %	0	0	100	0	0	100	
Total %	0	0	34.5	0	0	65.5	

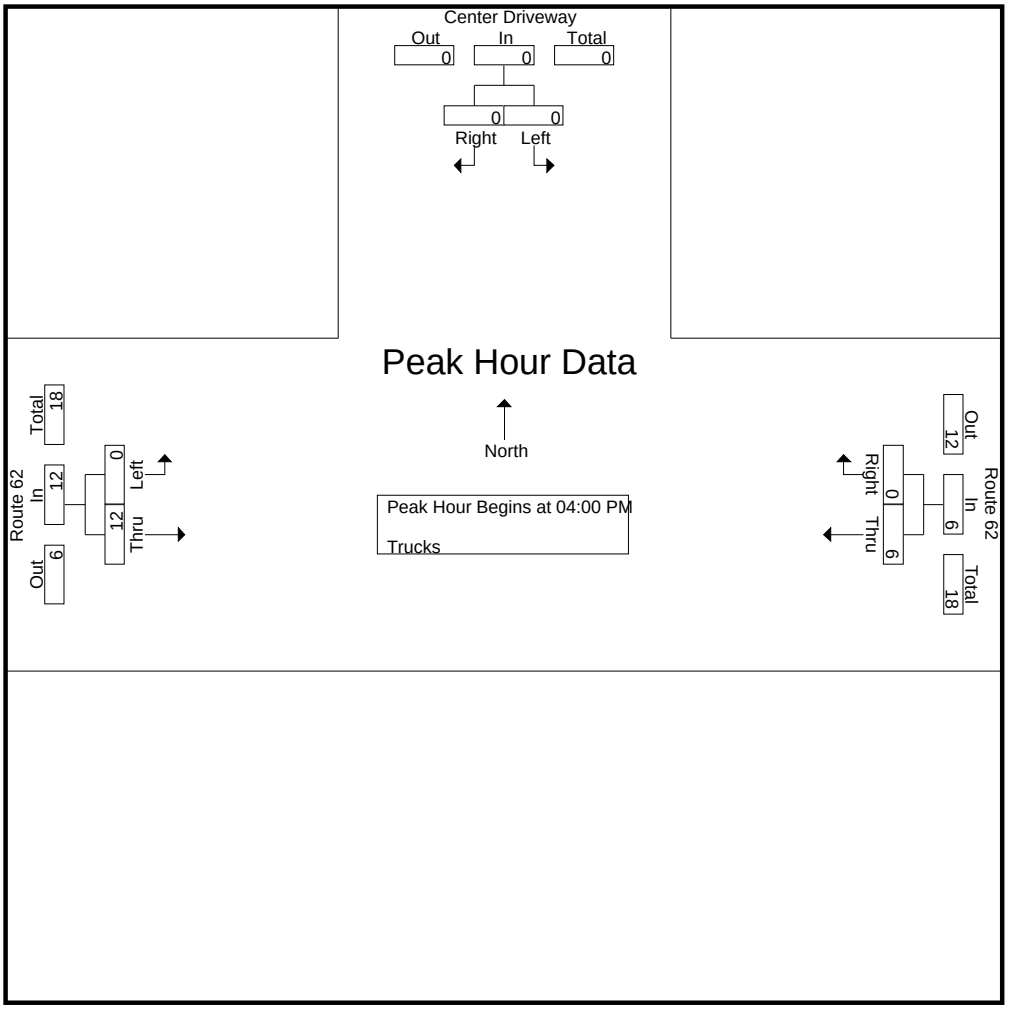
	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	**4**	0	**4**	0	3	3	**7**
04:15 PM	0	0	0	0	0	0	0	3	3	3
04:30 PM	0	0	0	2	0	2	0	2	2	4
04:45 PM	0	0	0	0	0	0	0	**4**	**4**	4
Total Volume	0	0	0	6	0	6	0	12	12	18
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.375	.000	.375	.000	.750	.750	.643

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 8



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

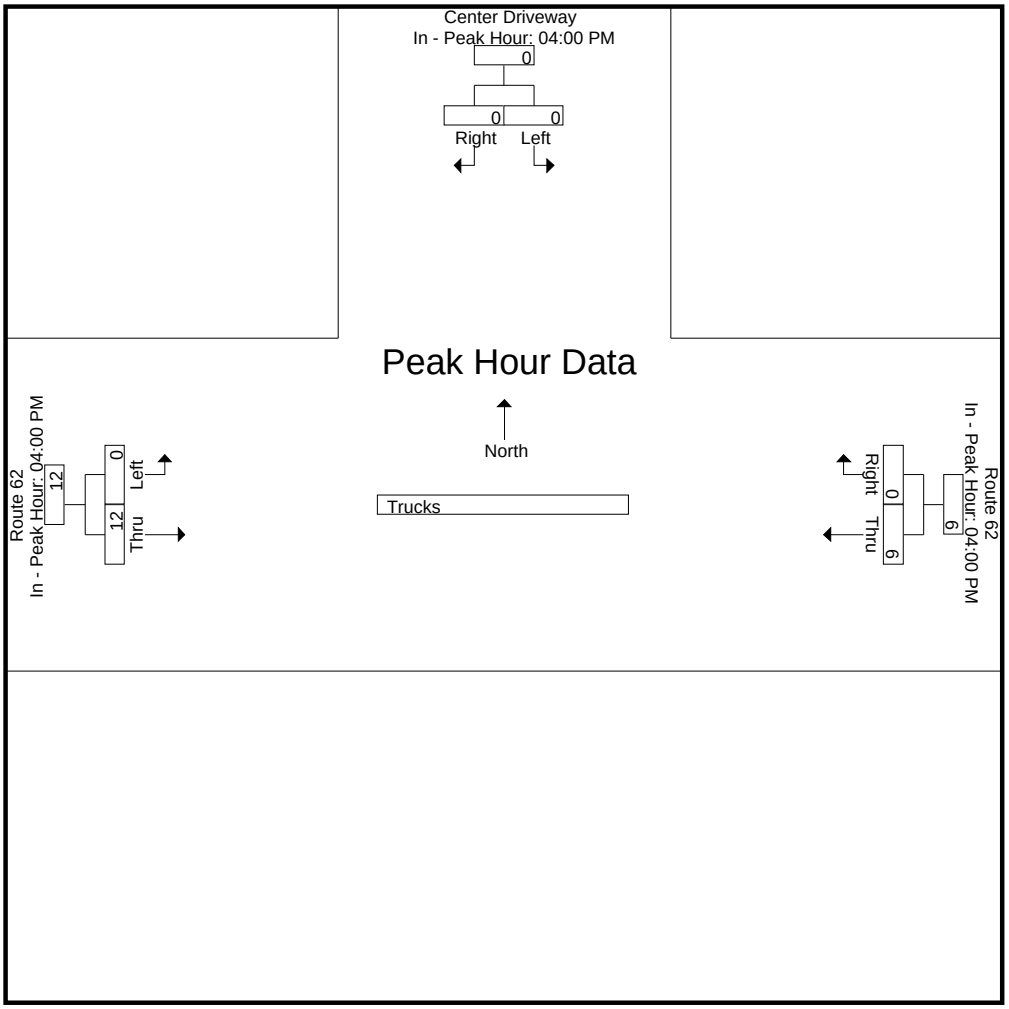
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	**4**	0	**4**	0	3	3
+15 mins.	0	0	0	0	0	0	0	3	3
+30 mins.	0	0	0	2	0	2	0	2	2
+45 mins.	0	0	0	0	0	0	0	**4**	**4**
Total Volume	0	0	0	6	0	6	0	12	12
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.375	.000	.375	.000	.750	.750

Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 10

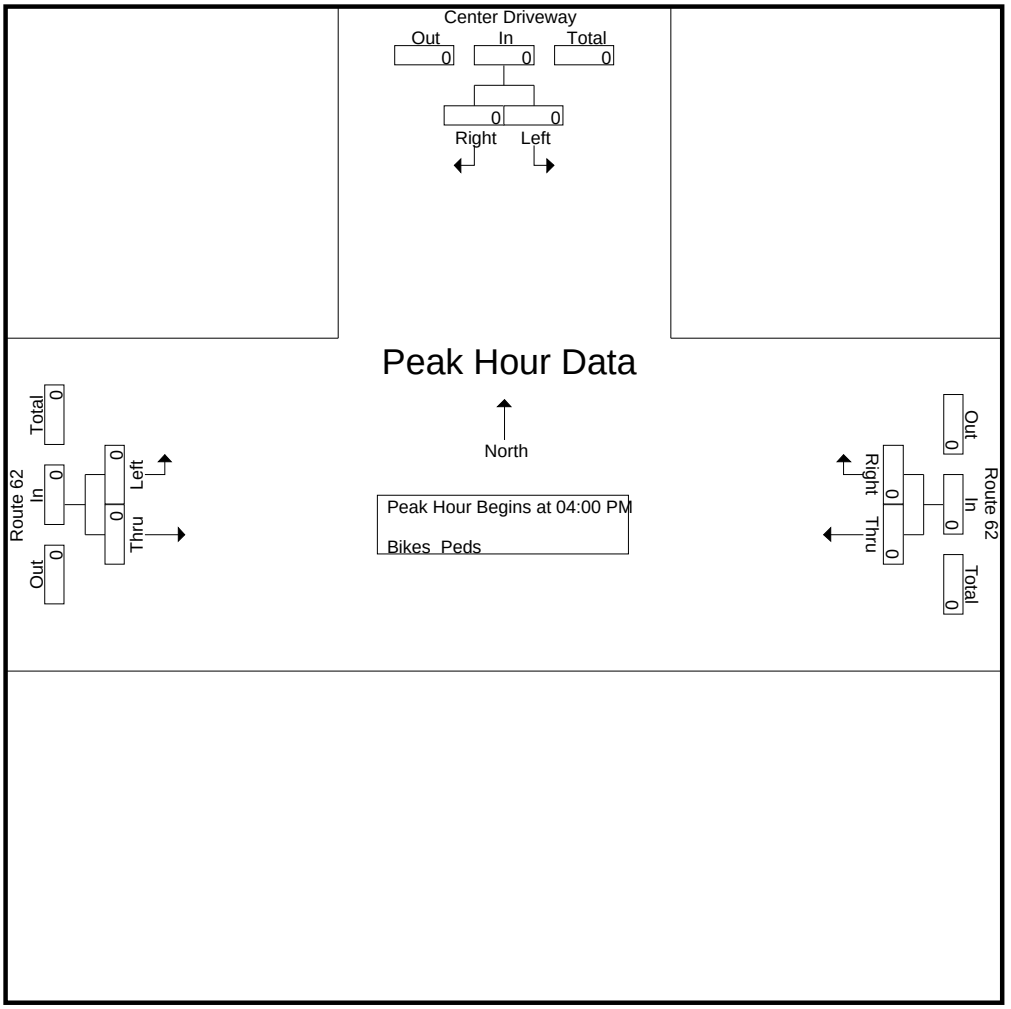
Groups Printed- Bikes Peds

	Center Driveway From North			Route 62 From East			Route 62 From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	1	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	1	0	0	0	0	0	0	1	0	1
Apprch %	0	0		0	0		0	0				
Total %										100	0	

	Center Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 11

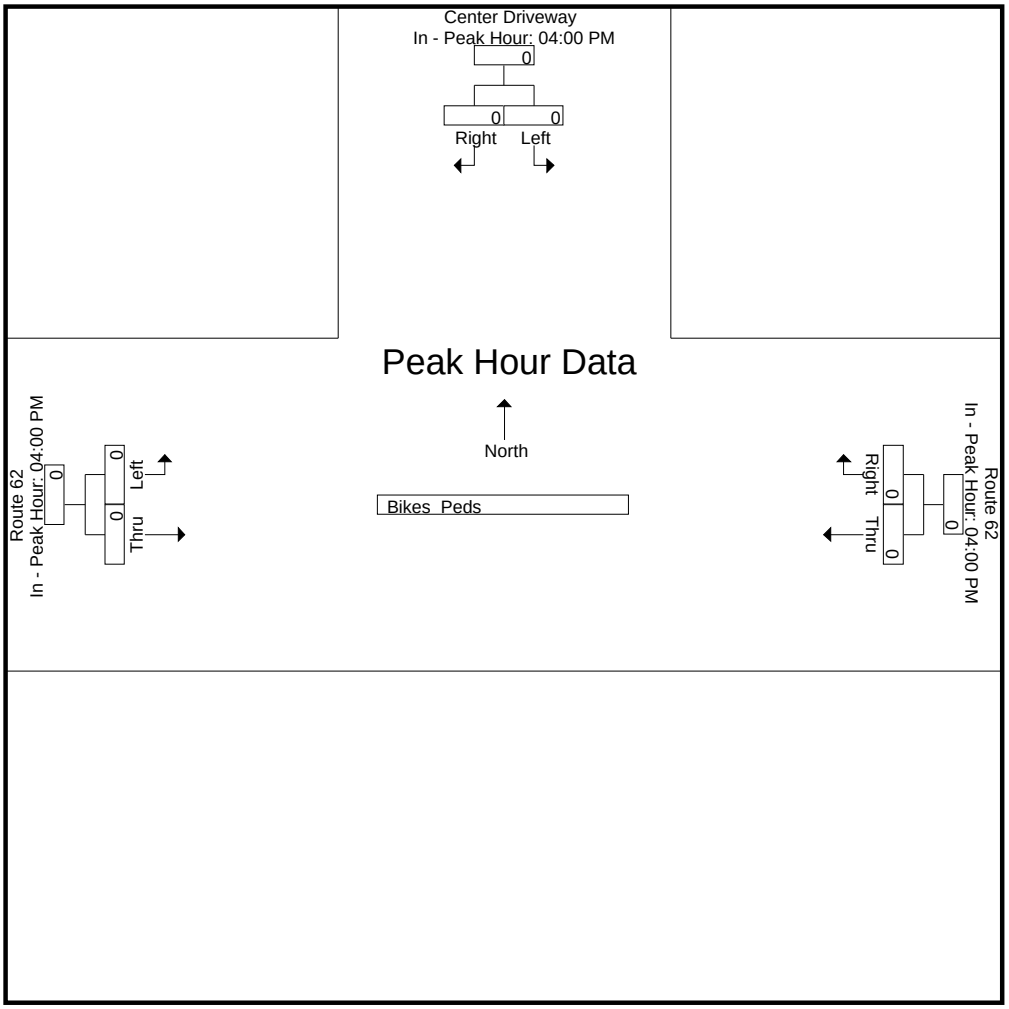


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Center Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110005
Site Code : 93110005
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 1

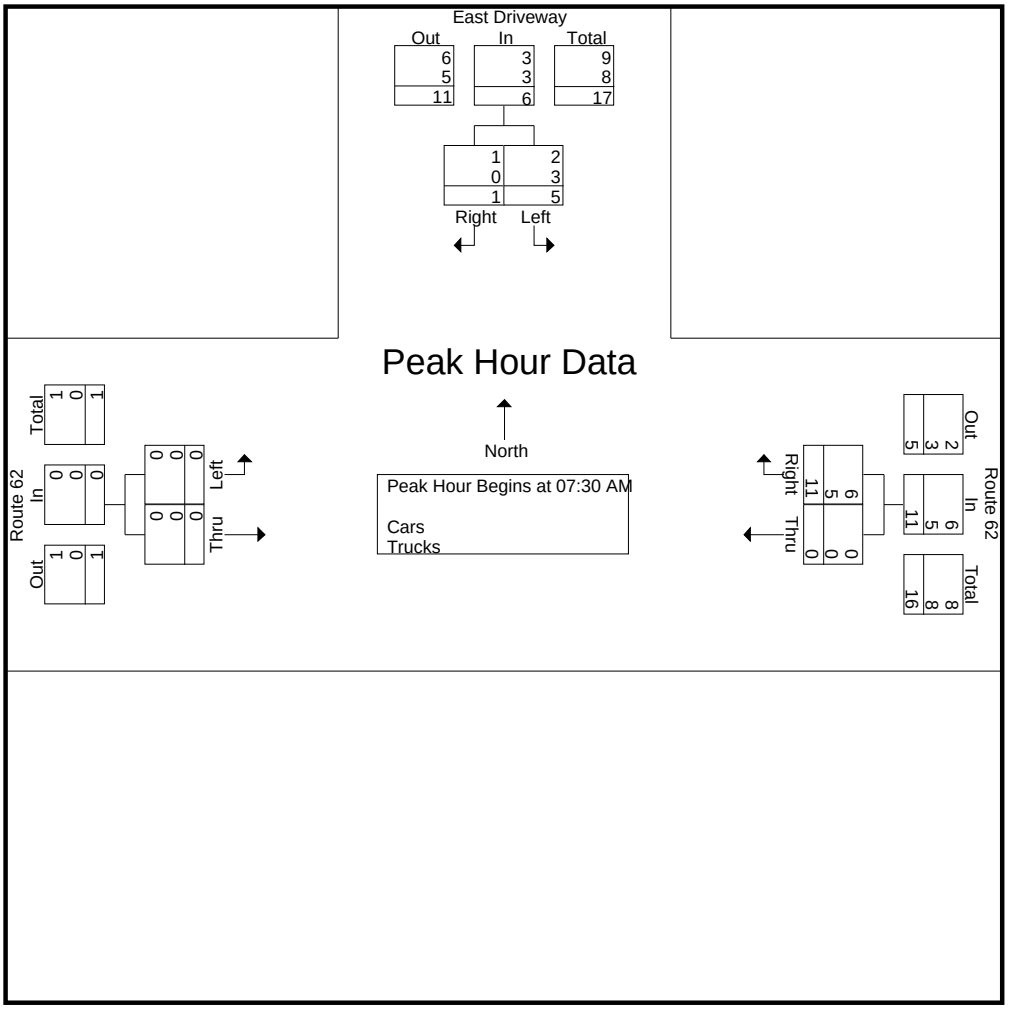
Groups Printed- Cars - Trucks

	East Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	0	3	0	0	3
07:15 AM	1	0	0	1	0	0	2
07:30 AM	0	0	0	4	0	0	4
07:45 AM	3	1	0	3	0	0	7
Total	4	1	0	11	0	0	16
08:00 AM	1	0	0	1	0	0	2
08:15 AM	1	0	0	3	0	0	4
08:30 AM	0	0	0	1	0	0	1
08:45 AM	0	0	0	4	0	0	4
Total	2	0	0	9	0	0	11
Grand Total	6	1	0	20	0	0	27
Apprch %	85.7	14.3	0	100	0	0	
Total %	22.2	3.7	0	74.1	0	0	
Cars	2	1	0	12	0	0	15
% Cars	33.3	100	0	60	0	0	55.6
Trucks	4	0	0	8	0	0	12
% Trucks	66.7	0	0	40	0	0	44.4

	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	0	**4**	**4**	0	0	0	4
07:45 AM	**3**	**1**	**4**	0	3	3	0	0	0	**7**
08:00 AM	1	0	1	0	1	1	0	0	0	2
08:15 AM	1	0	1	0	3	3	0	0	0	4
Total Volume	5	1	6	0	11	11	0	0	0	17
% App. Total	83.3	16.7		0	100		0	0		
PHF	.417	.250	.375	.000	.688	.688	.000	.000	.000	.607
Cars	2	1	3	0	6	6	0	0	0	9
% Cars	40.0	100	50.0	0	54.5	54.5	0	0	0	52.9
Trucks	3	0	3	0	5	5	0	0	0	8
% Trucks	60.0	0	50.0	0	45.5	45.5	0	0	0	47.1

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 2



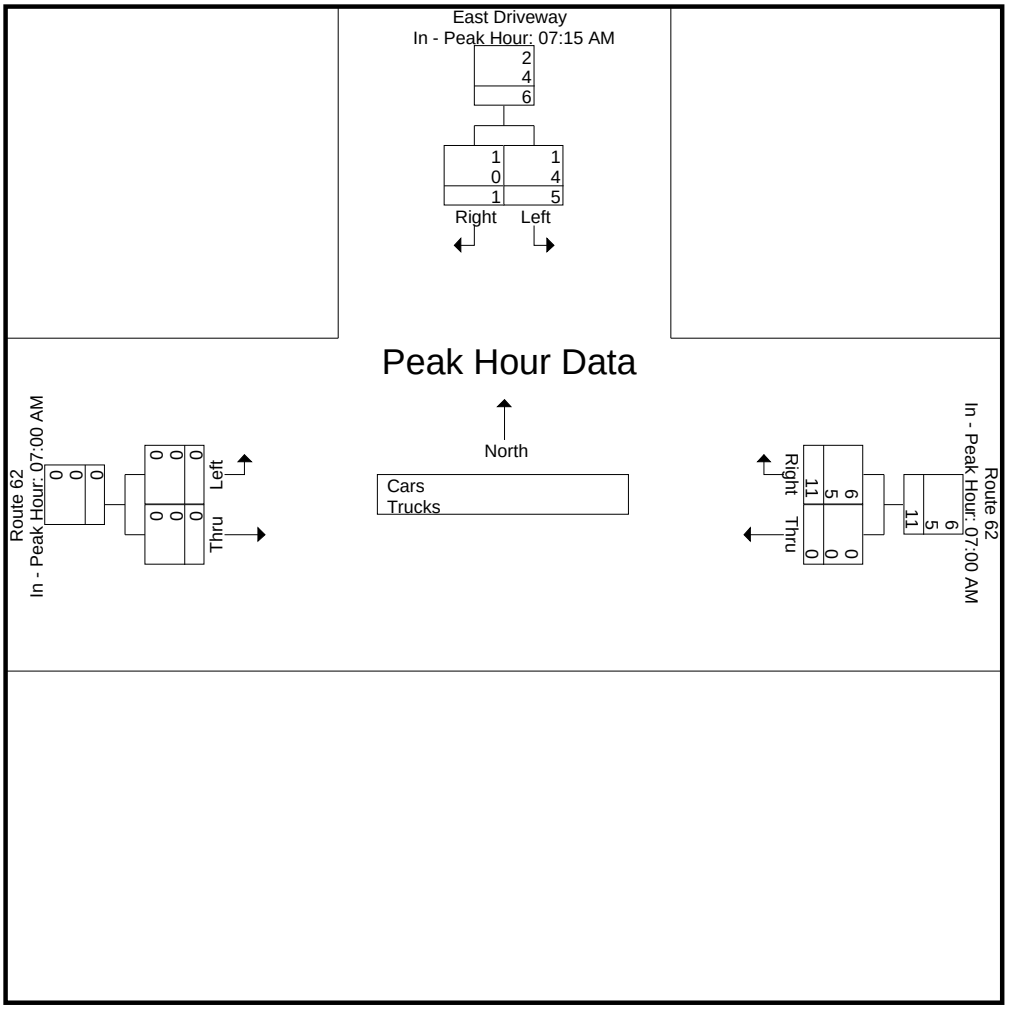
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:00 AM		
+0 mins.	1	0	1	0	3	3	0	0	0
+15 mins.	0	0	0	0	1	1	0	0	0
+30 mins.	**3**	**1**	**4**	0	**4**	**4**	0	0	0
+45 mins.	1	0	1	0	3	3	0	0	0
Total Volume	5	1	6	0	11	11	0	0	0
% App. Total	83.3	16.7		0	100		0	0	
PHF	.417	.250	.375	.000	.688	.688	.000	.000	.000
Cars	1	1	2	0	6	6	0	0	0
% Cars	20	100	33.3	0	54.5	54.5	0	0	0
Trucks	4	0	4	0	5	5	0	0	0
% Trucks	80	0	66.7	0	45.5	45.5	0	0	0

Accurate Counts
978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	East Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	0	1	0	0	1
07:15 AM	0	0	0	1	0	0	1
07:30 AM	0	0	0	1	0	0	1
07:45 AM	1	1	0	3	0	0	5
Total	1	1	0	6	0	0	8
08:00 AM	0	0	0	1	0	0	1
08:15 AM	1	0	0	1	0	0	2
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	4	0	0	4
Total	1	0	0	6	0	0	7
Grand Total	2	1	0	12	0	0	15
Apprch %	66.7	33.3	0	100	0	0	
Total %	13.3	6.7	0	80	0	0	

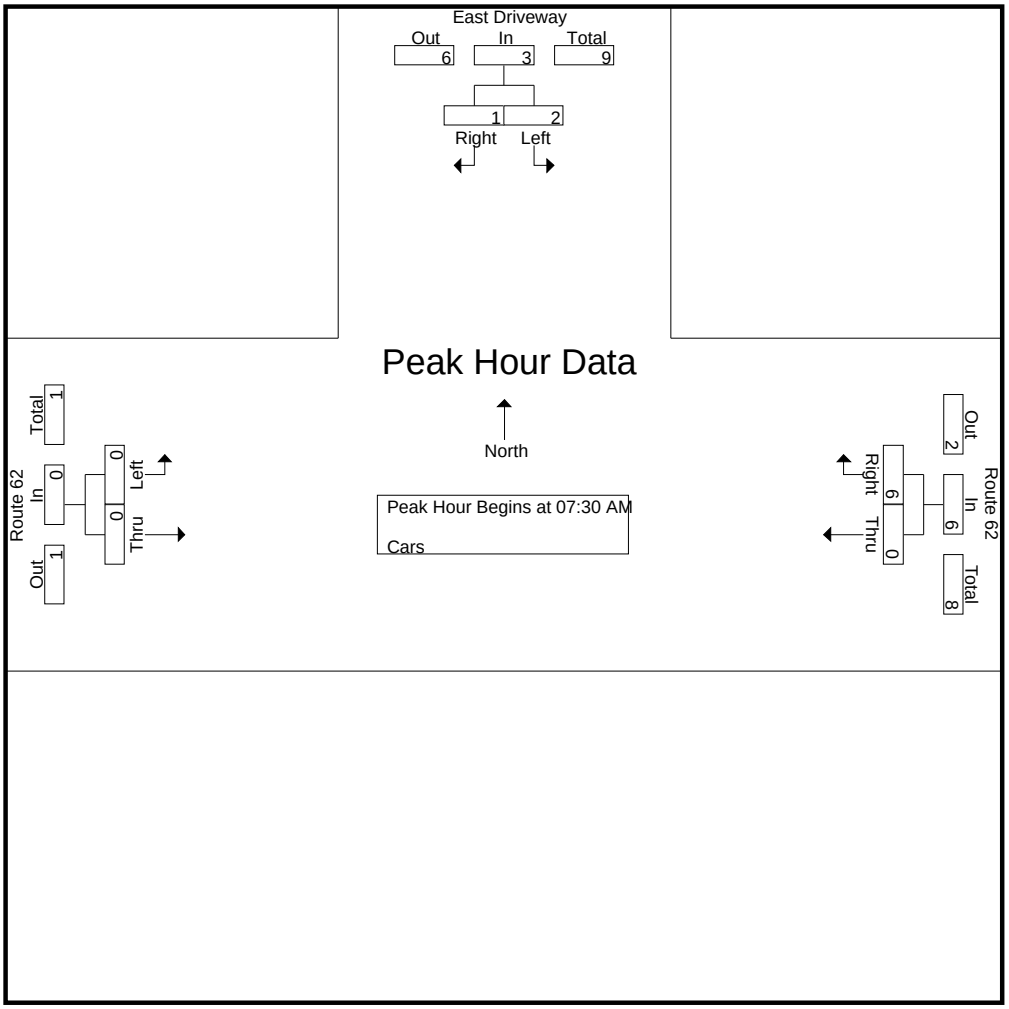
	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	0	1	1	0	0	0	1
07:45 AM	**1**	**1**	**2**	0	**3**	**3**	0	0	0	**5**
08:00 AM	0	0	0	0	1	1	0	0	0	1
08:15 AM	1	0	1	0	1	1	0	0	0	2
Total Volume	2	1	3	0	6	6	0	0	0	9
% App. Total	66.7	33.3		0	100		0	0		
PHF	.500	.250	.375	.000	.500	.500	.000	.000	.000	.450

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 5



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

Peak Hour for Each Approach Begins at:

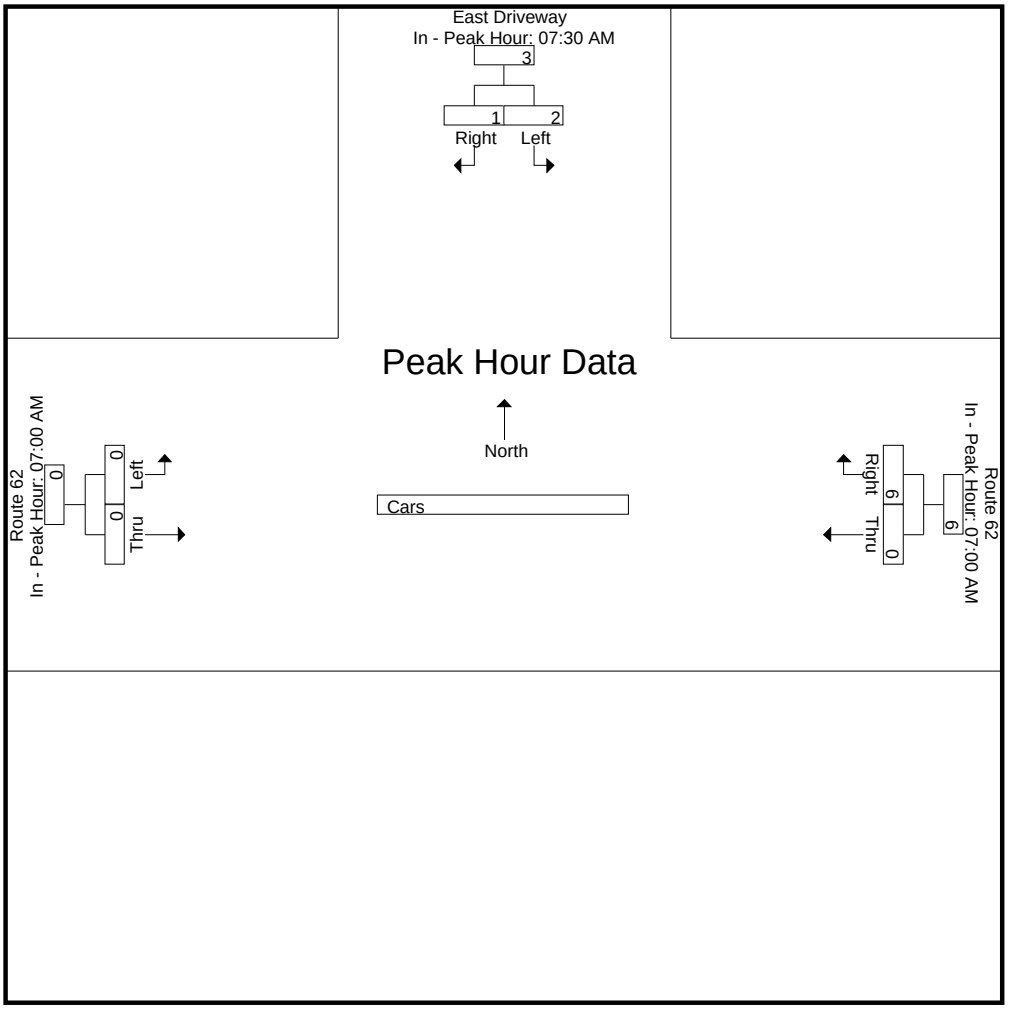
	07:30 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	1	1	0	0	0
+15 mins.	**1**	**1**	**2**	0	1	1	0	0	0
+30 mins.	0	0	0	0	1	1	0	0	0
+45 mins.	1	0	1	0	**3**	**3**	0	0	0
Total Volume	2	1	3	0	6	6	0	0	0
% App. Total	66.7	33.3		0	100		0	0	
PHF	.500	.250	.375	.000	.500	.500	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	East Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	0	2	0	0	2
07:15 AM	1	0	0	0	0	0	1
07:30 AM	0	0	0	3	0	0	3
07:45 AM	2	0	0	0	0	0	2
Total	3	0	0	5	0	0	8
08:00 AM	1	0	0	0	0	0	1
08:15 AM	0	0	0	2	0	0	2
08:30 AM	0	0	0	1	0	0	1
08:45 AM	0	0	0	0	0	0	0
Total	1	0	0	3	0	0	4
Grand Total	4	0	0	8	0	0	12
Apprch %	100	0	0	100	0	0	
Total %	33.3	0	0	66.7	0	0	

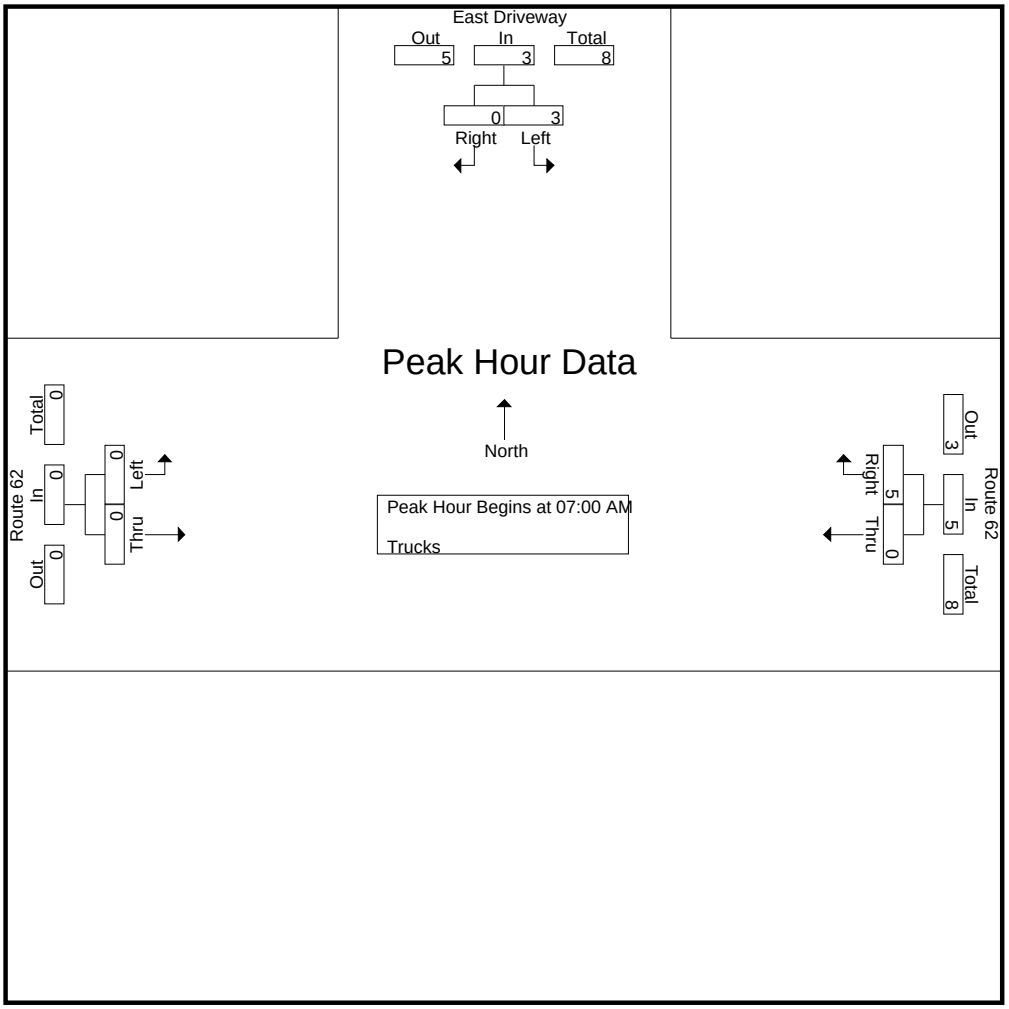
	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	2	2	0	0	0	2
07:15 AM	1	0	1	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	**3**	**3**	0	0	0	**3**
07:45 AM	**2**	0	**2**	0	0	0	0	0	0	2
Total Volume	3	0	3	0	5	5	0	0	0	8
% App. Total	100	0		0	100		0	0		
PHF	.375	.000	.375	.000	.417	.417	.000	.000	.000	.667

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 8



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

Peak Hour for Each Approach Begins at:

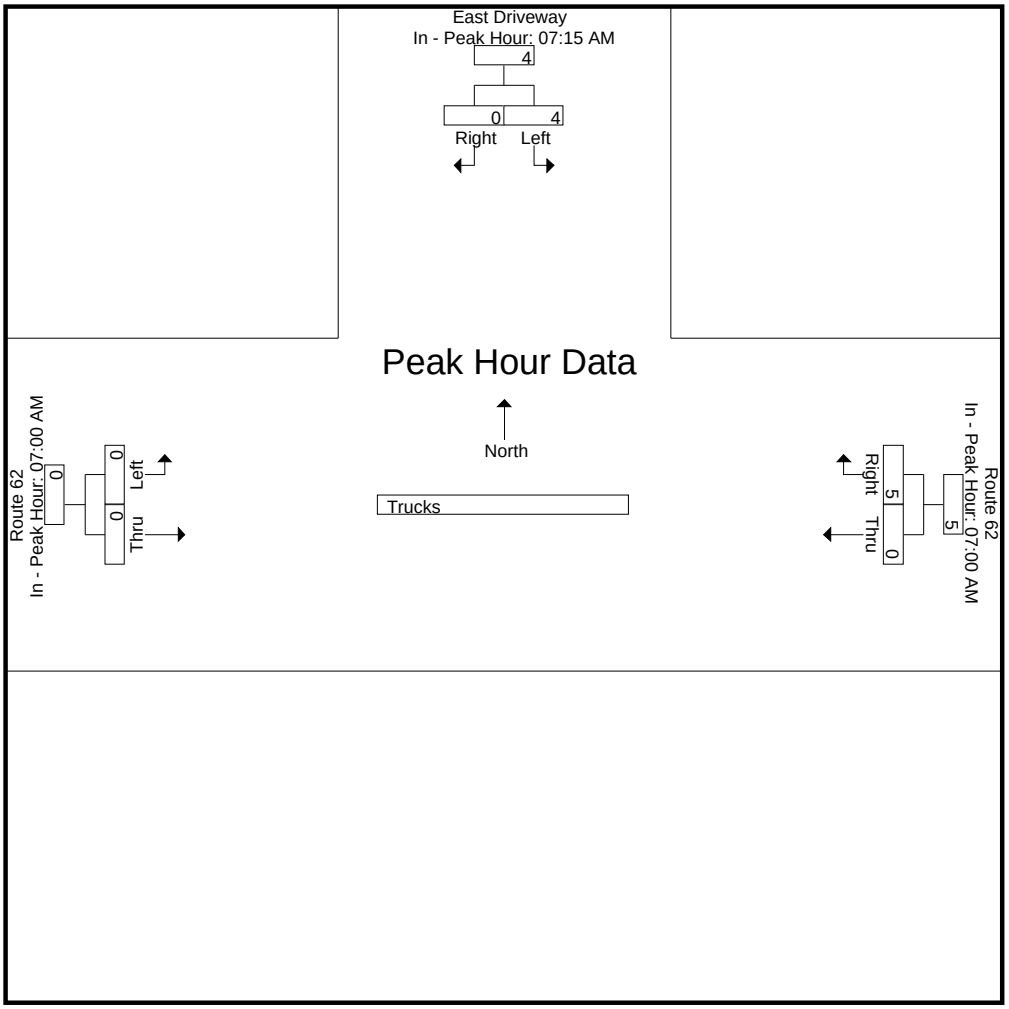
	07:15 AM			07:00 AM			07:00 AM		
+0 mins.	1	0	1	0	2	2	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	**2**	0	**2**	0	**3**	**3**	0	0	0
+45 mins.	1	0	1	0	0	0	0	0	0
Total Volume	4	0	4	0	5	5	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.500	.000	.500	.000	.417	.417	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 10

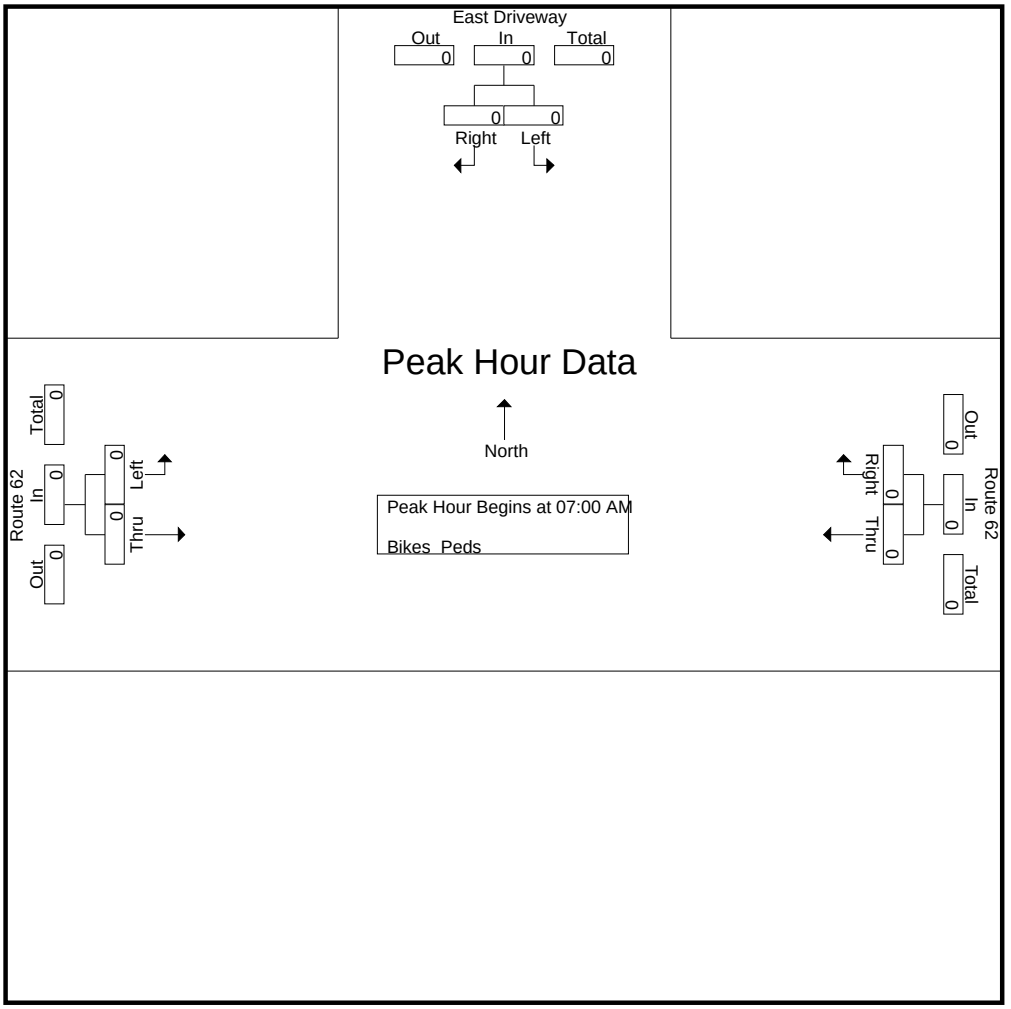
Groups Printed- Bikes Peds

	East Driveway From North			Route 62 From East			Route 62 From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 11

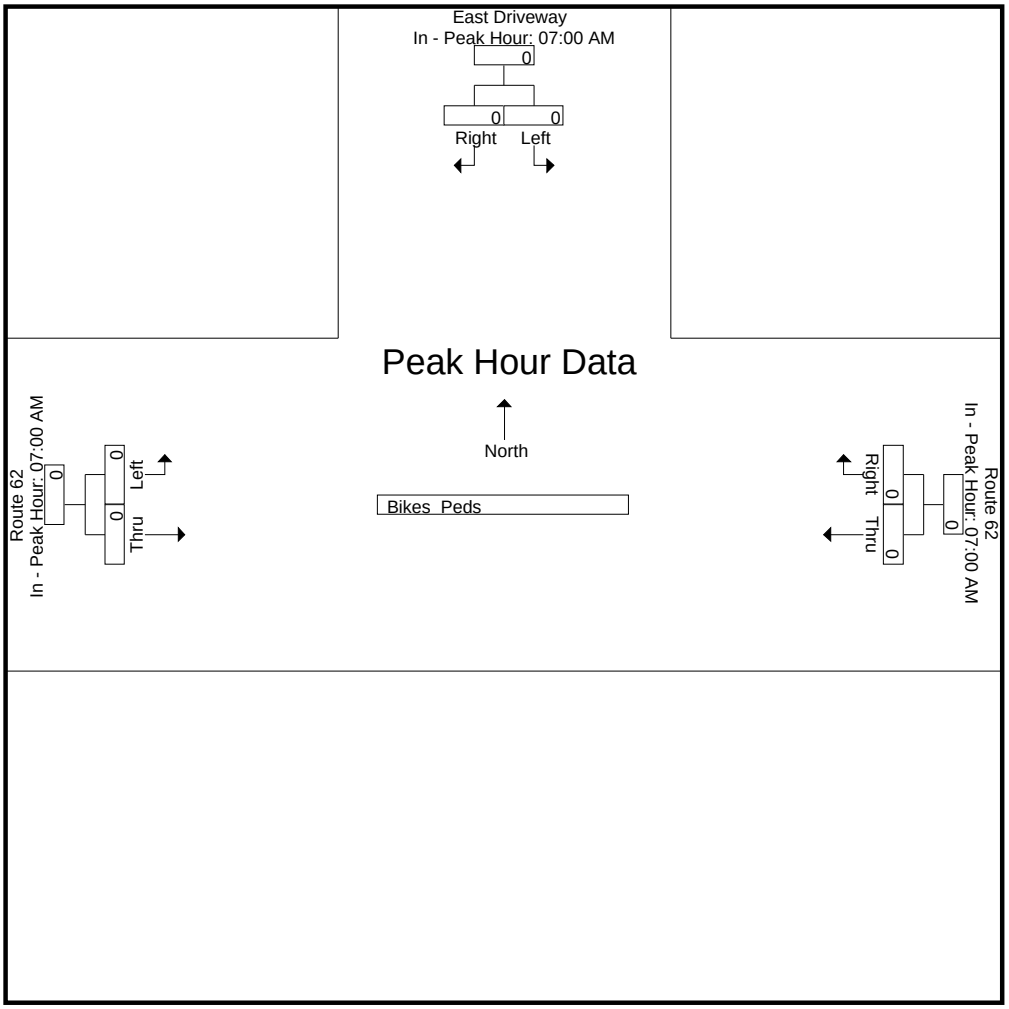


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 12



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 1

Groups Printed- Cars - Trucks

	East Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	
Total %							
Cars							0
% Cars	0	0	0	0	0	0	0
Trucks							0
% Trucks	0	0	0	0	0	0	0

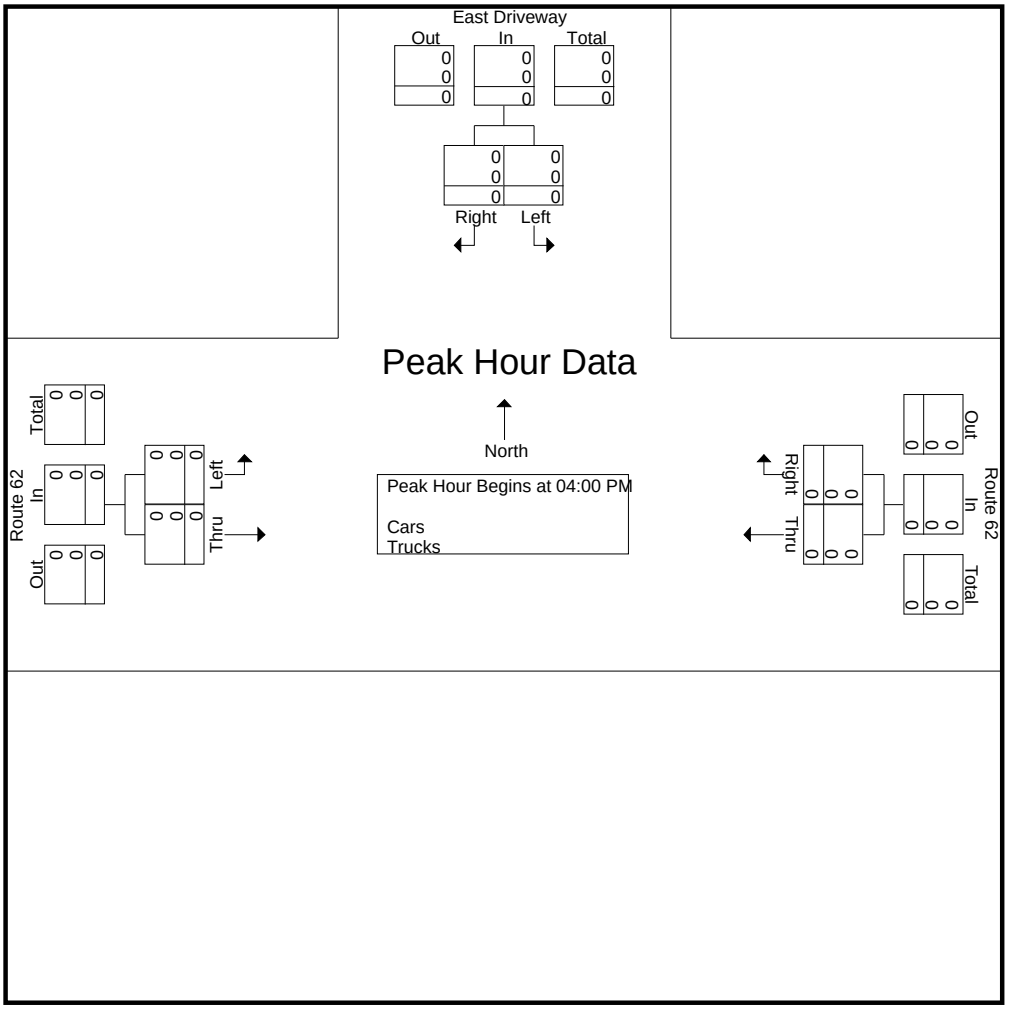
	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Cars	0	0	0	0	0	0	0	0	0	0
% Cars	0	0	0	0	0	0	0	0	0	0
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 2



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

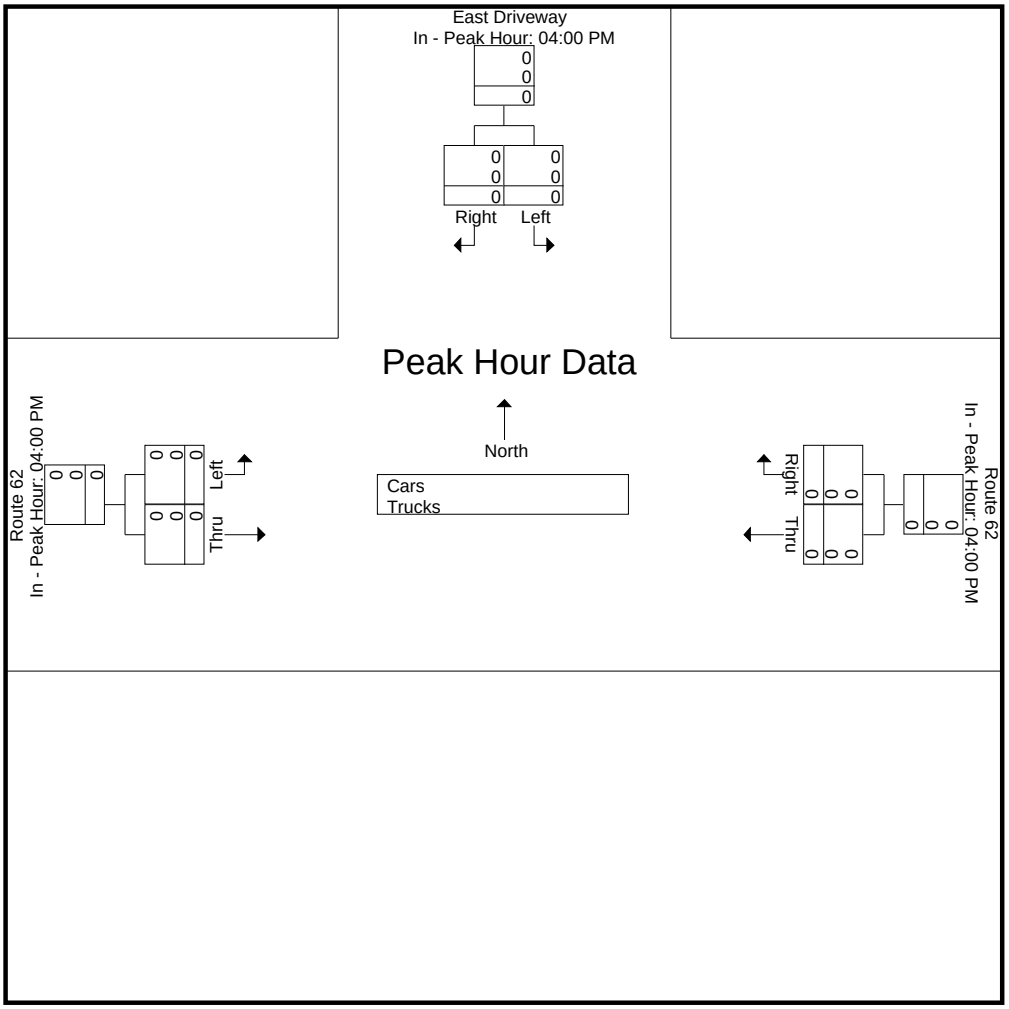
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 4

Groups Printed- Cars

	East Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	
Total %							

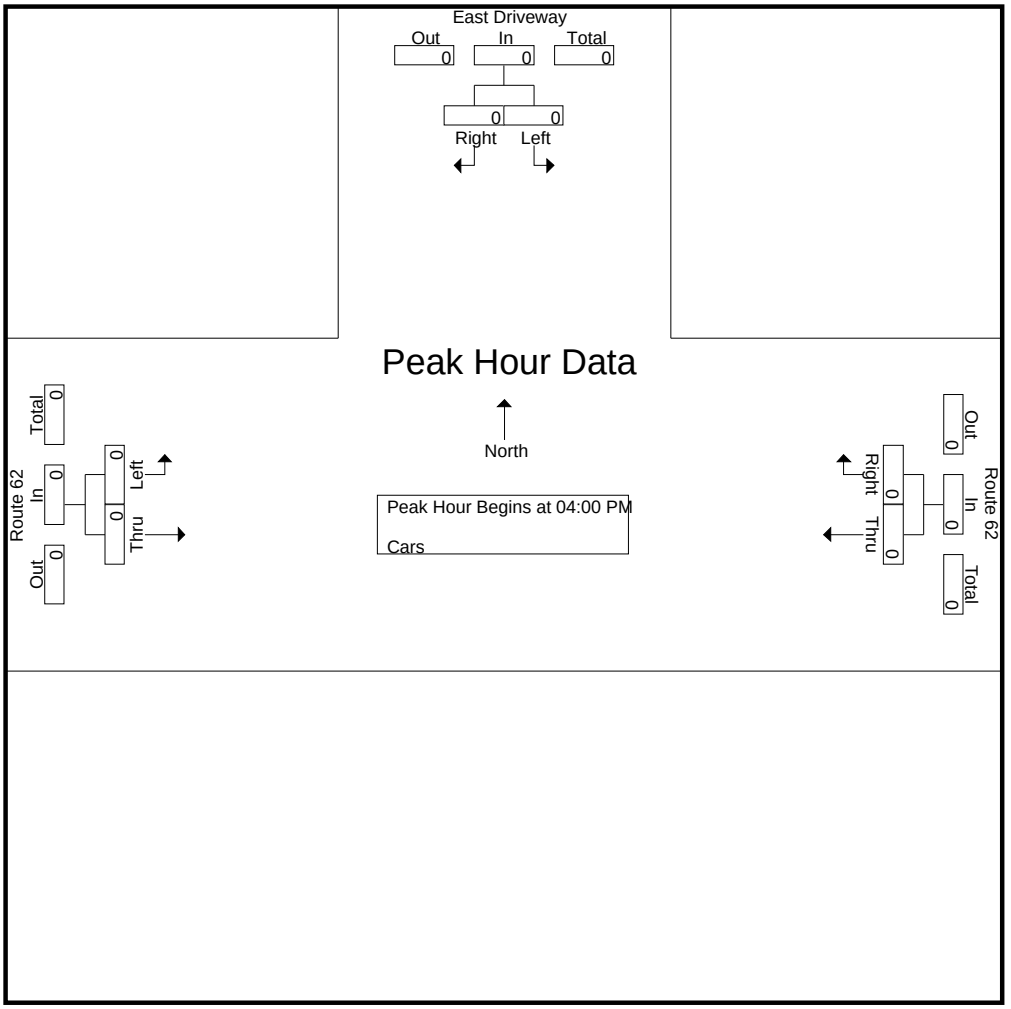
	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 5



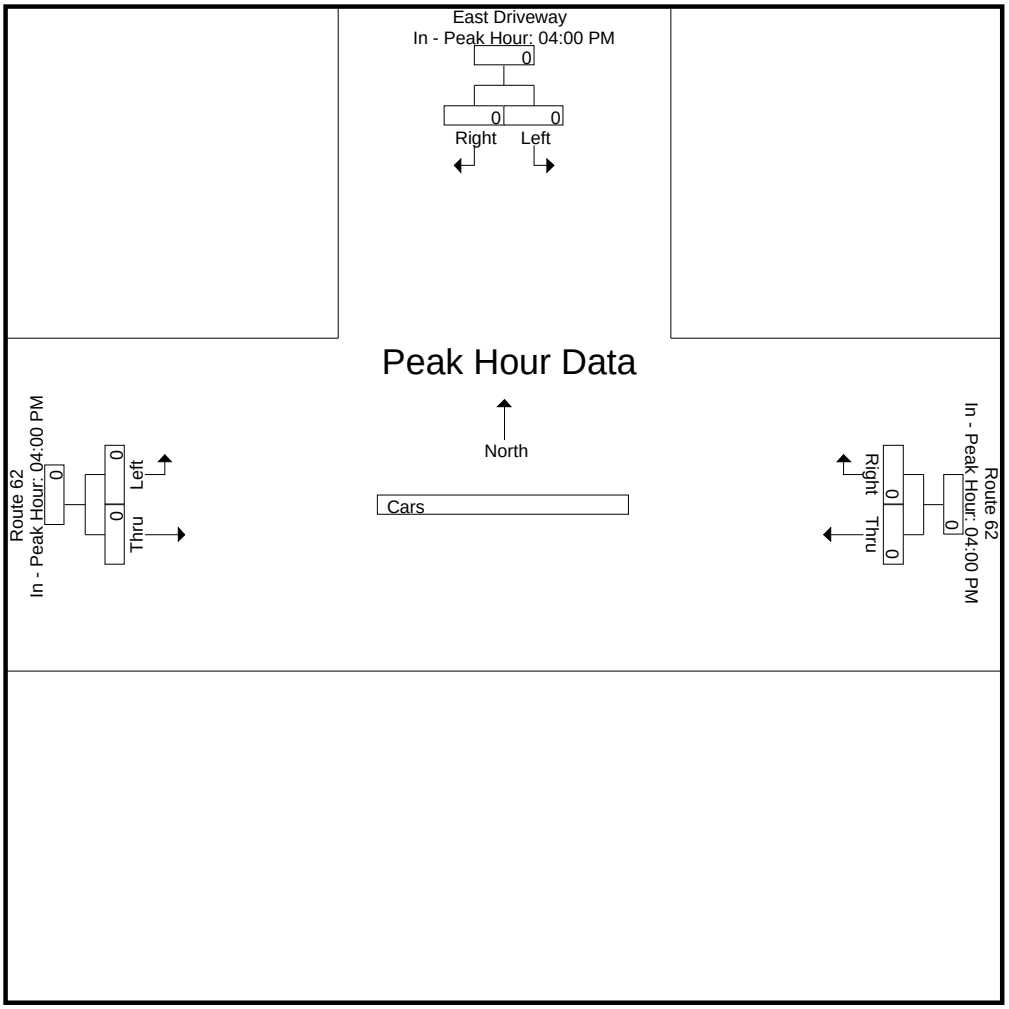
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 7

Groups Printed- Trucks

	East Driveway From North		Route 62 From East		Route 62 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	
Total %							

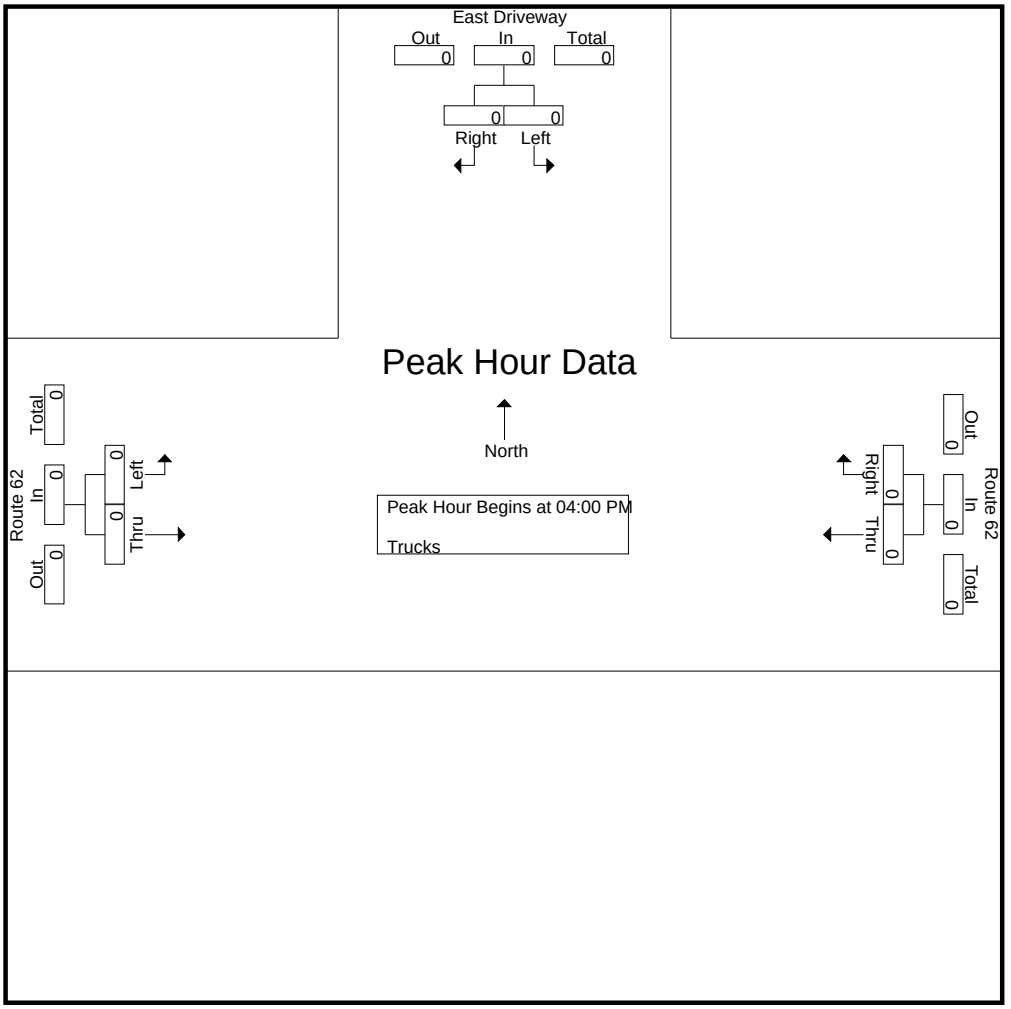
	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 8



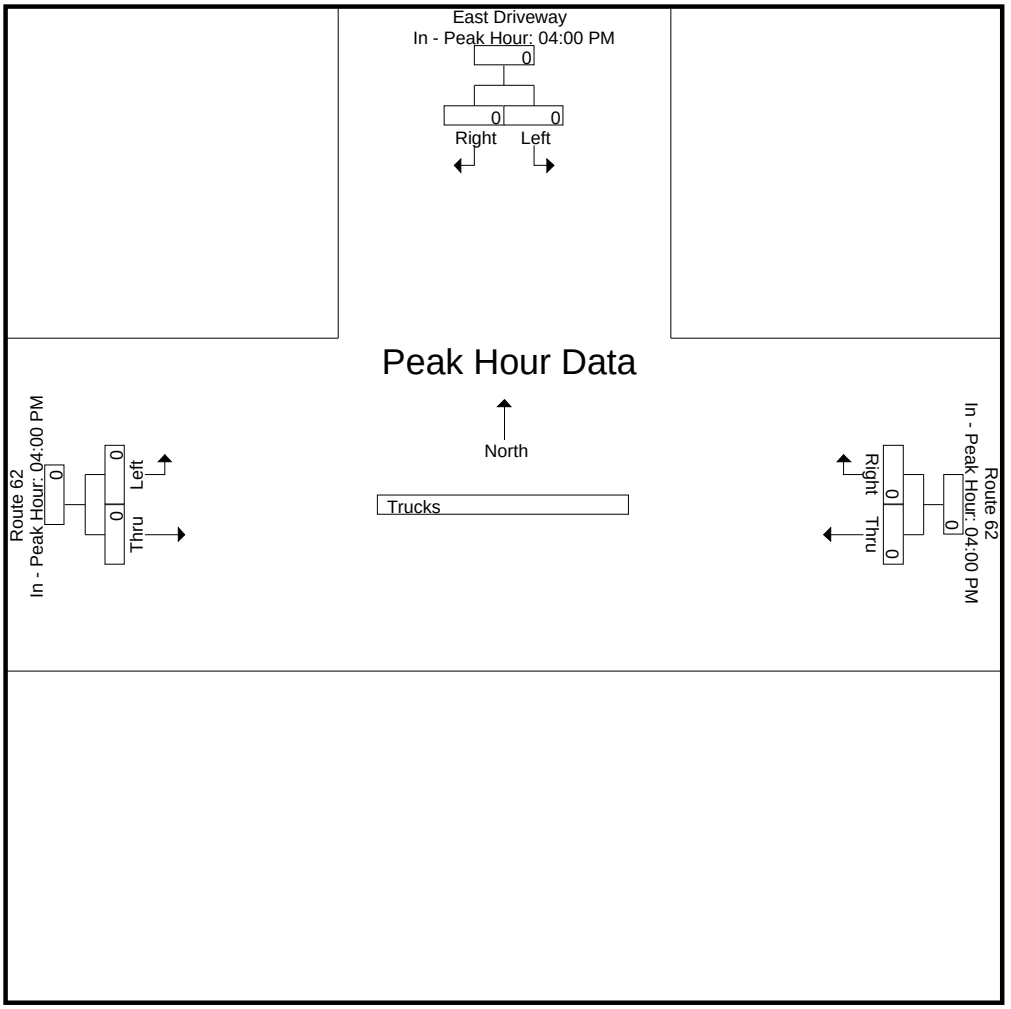
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 10

Groups Printed- Bikes Peds

	East Driveway From North			Route 62 From East			Route 62 From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

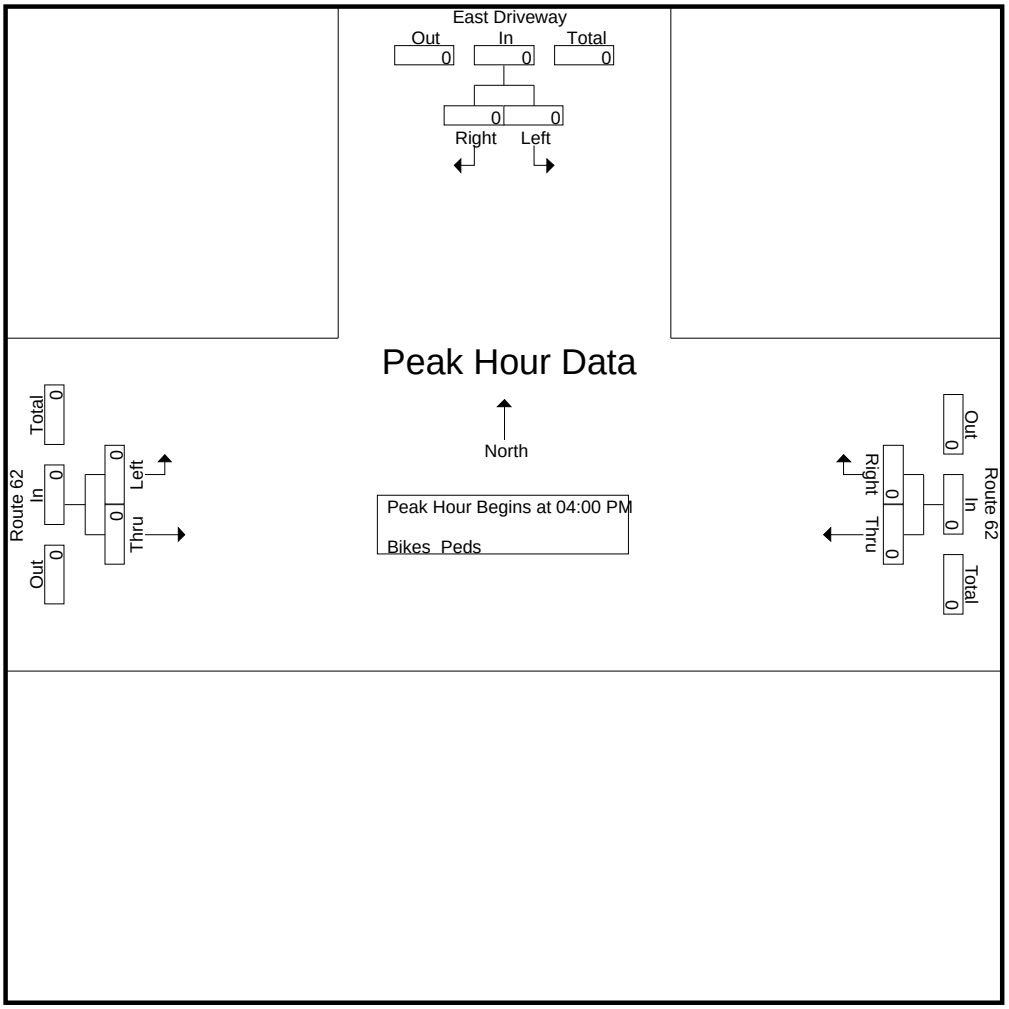
	East Driveway From North			Route 62 From East			Route 62 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 11

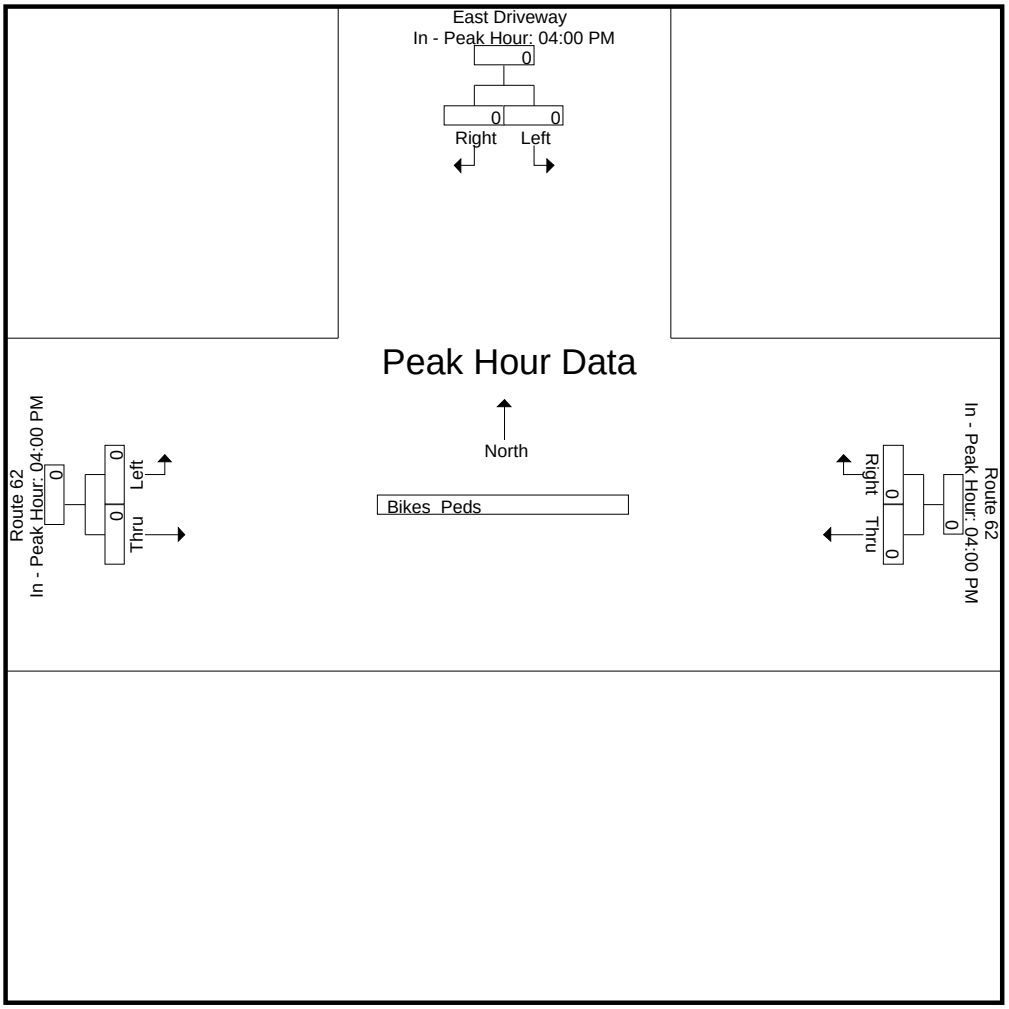


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : East Driveway
E/W Street : Route 62
City/State : Wilmington, MA
Weather : Clear

File Name : 93110006
Site Code : 93110006
Start Date : 3/23/2022
Page No : 12



SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department

5127: Monthly Hourly Volume for March 2019

Location ID:	**5127**	**Seasonal Factor Group:**	**U3**
County:	**Essex**	**Daily Factor Group:**	
Functional Class	**3**	**Axle Factor Group:**	**U3**
Location:	**ANDOVER BY PASS**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	66	44	37	48	165	606	1003	1589	1416	875	804	908	1051	990	1225	1491	1698	1719	1156	725	598	423	341	233	19211	Accepted
2	106	73	52	37	71	119	211	324	420	554	539	627	659	651	688	745	738	698	537	414	327	352	312	190	9444	Accepted
3	106	53	48	36	28	84	153	229	397	526	677	831	863	887	835	840	815	791	597	485	340	228	131	91	10071	Accepted
4	52	54	43	59	126	298	392	523	621	728	681	565	632	566	635	752	981	1106	716	428	364	230	149	85	10786	Accepted
5	54	54	38	56	190	683	1183	1921	1712	1022	734	795	837	847	1032	1369	1481	1001	744	359	611	478	367	193	17761	Accepted
6	87	47	28	56	184	689	987	1405	1385	858	820	1001	977	995	1167	1294	1529	1873	1492	947	630	510	246	180	19387	Accepted
7	87	56	41	77	254	760	1280	2003	1704	1079	906	1028	1122	1038	1265	1612	1863	2195	1704	1164	777	609	400	193	23217	Accepted
8	110	66	63	90	253	690	1250	1902	1542	1059	915	1029	1308	1192	1451	1505	1549	1837	1337	977	735	500	336	144	21840	Accepted
9	56	33	20	26	56	138	300	515	716	665	849	895	955	892	883	916	831	1134	708	377	275	368	360	291	12259	Accepted
10	161	69	58	72	100	175	263	363	524	622	623	728	680	697	806	835	681	566	538	394	271	200	110	70	9606	Accepted
11	43	43	49	203	759	1303	1747	1107	599	1108	750	822	773	1081	1293	1709	1791	1123	812	484	266	230	125	72	18292	Accepted
12	48	42	83	237	716	1336	1287	1276	847	724	737	807	817	1131	1428	1727	1838	1258	712	469	330	239	116	62	18267	Accepted
13																										
14	59	43	29	51	192	631	616	738	1490	867	704	702	870	791	1172	1225	1699	1821	1127	740	513	423	270	167	16940	Accepted
15	68	50	29	52	168	584	962	1409	1357	890	802	856	981	911	1178	1345	1690	1707	1023	654	444	448	325	246	18179	Accepted
16	136	59	50	36	65	124	224	396	498	682	835	909	940	919	927	895	883	814	751	549	412	406	392	239	12141	Accepted
17	141	91	42	37	48	86	140	240	379	522	664	857	934	868	812	837	829	774	689	622	518	323	189	106	10748	Accepted
18	63	43	24	46	174	655	1113	1746	1594	978	806	770	854	850	1076	1260	1642	1834	1205	751	458	346	238	109	18635	Accepted
19	50	38	25	40	177	663	1105	1780	1600	973	757	835	913	873	1063	1275	1585	1881	1325	765	506	389	193	132	18943	Accepted
20	48	29	23	47	187	663	1101	1812	1636	923	774	808	906	937	1108	1307	1688	1926	1230	791	609	395	230	147	19325	Accepted
21	64	39	26	51	174	668	1121	1799	1487	888	733	871	957	850	1240	1436	1683	1812	1187	783	566	455	236	164	19290	Accepted
22	77	53	37	50	165	574	948	1591	1398	920	811	814	949	1020	1145	1402	1725	1737	955	662	427	383	320	224	18387	Accepted
23	123	70	30	37	44	126	224	347	530	710	838	906	932	926	986	947	861	828	694	464	399	413	350	235	12020	Accepted
24	129	68	58	34	50	89	152	215	413	580	768	826	1072	1017	931	937	900	760	683	536	408	298	204	112	11240	Accepted
25	50	34	23	50	180	668	1049	1719	1568	941	749	780	895	816	1048	1270	1398	1697	1146	621	493	297	183	106	17781	Accepted
26	53	31	21	52	185	676	1262	1893	1695	954	745	841	898	873	1161	1312	1767	2035	1288	736	549	385	209	132	19753	Accepted
27	57	24	25	49	168	670	1128	1754	1618	961	801	777	935	905	1097	1375	1685	1874	1240	777	579	474	255	158	19386	Accepted
28	79	33	25	67	243	712	1168	1868	1618	992	747	846	871	940	1156	1430	1663	1877	1316	631	560	423	292	150	19707	Accepted
29	69	37	21	49	162	619	1026	1577	1390	980	763	862	1010	974	1200	1422	1868	1943	1101	671	458	396	337	228	19163	Accepted
30	127	59	48	36	63	137	261	383	598	719	887	954	982	898	953	1036	941	855	739	577	469	367	372	232	12693	Accepted
31	146	67	38	39	34	87	138	221	450	570	742	953	1017	964	997	995	818	735	556	466	384	278	164	130	10989	Accepted
																									16182.03	March 2019 ADT
																									17055	2019 AADT
																									-0.05395	**5.4% below**

COVID ADJUSTMENT DATA

Massachusetts Highway Department

4096: Monthly Hourly Volume for March 2017

Location ID:	**4096**	**Seasonal Factor Group:**	**U1-Boston**
County:	**Middlesex**	**Daily Factor Group:**	
Functional Class	**1**	**Axle Factor Group:**	**U1-Boston**
Location:	**INTERSTATE 93**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	1147	630	564	876	2307	7635	10334	13214	12906	10103	8746	8670	9010	9508	11659	12678	13824	14739	11550	7916	5742	4337	3126	2837	184058	Accepted
2	1251	701	650	929	2321	8249	10587	13567	13081	10146	8903	8497	9303	9710	11725	12598	12815	14360	11975	8203	6077	4761	4118	2604	187131	Accepted
3	1511	795	728	954	2198	7637	9742	12406	12124	9823	9169	9591	10199	10868	12316	12725	13617	13788	11587	8555	6234	5008	4122	3413	189110	Accepted
4	2264	1158	960	888	1033	2495	3802	5435	6723	8050	9299	9944	10796	10509	10393	10549	9928	9614	8376	6320	5087	4791	4736	3311	146461	Accepted
5	2042	1526	1193	1072	895	1257	2341	3227	4267	5824	7732	9148	10267	10209	10146	9377	10218	9288	8100	6539	4911	3604	2370	1776	127329	Accepted
6	877	597	588	861	2379	6030	8031	12610	11811	9455	8339	7904	8442	8994	11292	12286	13601	14566	11493	7081	5008	3907	2826	2293	171271	Accepted
7	1033	624	607	901	2375	8163	10418	12902	12639	10037	8312	8125	8693	9126	11397	12367	13267	13688	11848	7901	5563	4298	3108	2240	179632	Accepted
8	1114	645	524	866	2180	7934	9096	13253	12220	10546	8547	8604	9128	9534	11796	12705	12823	14474	12554	8086	5950	4487	3418	3071	183555	Accepted
9	1290	693	637	937	2469	8183	9772	12054	13163	10415	8933	8863	9172	9736	11685	12561	13702	14755	11794	8530	6326	4746	3750	2551	186717	Accepted
10	1349	824	752	954	2349	7477	10198	12807	11761	9685	8342	8669	9684	10105	11391	10965	10212	11992	11101	7813	5643	4551	3883	3382	175889	Accepted
11	1968	1117	1062	925	1095	2377	3664	5272	6612	7928	8965	9045	10587	10040	10168	9936	8601	9467	8489	6420	5317	4535	4457	3277	141324	Accepted
12	2040	1503	1103	905	1181	1930	2988	3773	5220	6789	8278	9835	10154	10128	9956	9932	9293	8612	6926	5545	3937	2711	1791	999	125529	Accepted
13	709	621	900	2337	7730	10177	9648	10119	10142	8725	8592	9045	9554	11493	12259	12779	14483	12417	8679	6217	4961	3338	2466	1370	178761	Accepted
14	814	726	857	1457	3149	3298	2786	2171	1969	1883	1587	1890	1243	1014	769	819	788	805	968	978	820	824	697	501	32813	Accepted
15	345	341	525	1371	5137	7141	9382	10246	8770	7538	6892	6976	7507	9893	10844	11933	13357	10372	7002	5249	4202	3564	2319	1276	152182	Accepted
16	810	711	924	2270	7660	10147	12605	12089	11255	8722	8567	8868	9595	11184	12589	13258	14037	12234	8905	6540	5095	3584	2732	1481	185862	Accepted
17	887	831	939	2171	7385	9783	12422	12101	9856	8739	9421	9639	10295	11801	11694	12911	13638	11387	8847	6309	4985	4220	3568	2050	185879	Accepted
18	1260	1204	890	1176	2612	3889	5423	6694	7717	8796	9791	10648	10352	10513	10348	10456	10042	8598	6802	5720	5071	4845	3441	2148	148436	Accepted
19	1393	960	699	710	1172	2247	2869	3953	5393	7070	8432	9576	9572	9326	9645	9659	9084	8521	7153	5459	4009	3127	1826	1058	122913	Accepted
20	679	644	877	2338	7852	10128	12910	12745	10027	8621	8138	8753	9013	11131	12450	13571	14492	11733	7540	5390	3957	3301	2186	1083	179559	Accepted
21	693	651	886	2341	7949	9977	13679	13159	10301	8356	8638	8786	9363	11458	12428	12471	14278	12416	7764	5874	4533	3910	2346	1139	183396	Accepted
22																										
23																										
24	1404	811	740	963	2162	7511	9968	12789	12493	9800	8861	9201	9916	10359	11333	11849	13060	14022	11757	7988	5893	4671	4463	3536	185550	Accepted
25	1857	1178	1033	845	986	2600	3951	5395	7040	8063	9120	10048	10512	10433	10190	10380	10223	9774	8262	6507	5518	4924	4437	3346	146622	Accepted
26	2085	1434	929	654	578	1072	2198	3133	4180	5969	7910	9098	10339	10424	10392	10262	10037	9353	8030	6608	5067	4197	2711	1727	128387	Accepted
27	931	643	580	834	2342	7664	9728	12084	12098	10422	7865	7706	8260	8682	10915	11859	12868	13249	11280	6998	5168	3835	2838	2133	170982	Accepted
28	1102	667	661	884	2366	8046	10542	12624	13515	10200	8694	8440	8543	9414	11570	12279	12773	13098	11779	7781	5731	4534	3706	2335	181284	Accepted
29	1205	653	612	865	2162	7719	9270	12686	12384	11201	8903	8501	9075	9547	11771	10893	13950	15250	12058	7875	6076	4619	3672	2567	183514	Accepted
30	1239	742	703	932	2379	8149	10767	13619	12764	10501	8895	8609	9260	9935	11972	12769	14212	14715	12105	8795	6582	5262	4069	2920	191895	Accepted
31	1429	921	770	985	2331	7637	9971	12946	11846	9631	8907	9024	9390	9863	10569	10735	12052	11888	8578	5507	4051	3479	2913	2593	168016	Accepted
																									162898.5	March 2017 ADT

Massachusetts Highway Department

4096: Monthly Hourly Volume for March 2022

Location ID:	**4096**	**Seasonal Factor Group:**	**U1-Boston**
County:	**Middlesex**	**Daily Factor Group:**	
Functional Class	**1**	**Axle Factor Group:**	**U1-Boston**
Location:	**INTERSTATE 93**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	1267	726	722	875	2473	7189	10312	11647	10814	9194	7993	8122	8505	9200	10904	11302	11266	9867	7702	5903	4324	3324	2919	2164	158714	Accepted
2	1117	743	682	828	2302	6973	10383	11833	11078	8640	8093	8354	8381	8487	9641	9722	9601	10495	8427	5656	4558	3986	2846	2169	154995	Accepted
3																										
4	1354	925	747	964	2487	6819	8642	9511	10527	8466	8863	9027	9659	10597	11510	12088	12339	11925	10213	8251	6193	4713	4025	3033	172878	Accepted
5	1981	1256	1009	865	1342	2848	4508	5952	7029	8447	9704	10868	11290	11456	11229	10715	11247	10420	9124	7042	5661	4878	4417	3121	156409	Accepted
6	1906	1559	1014	810	757	1306	2216	3110	4197	5882	8240	9593	10451	10672	9815	10553	10562	8953	8040	6452	4773	3484	2477	1855	128677	Accepted
7	1035	739	660	889	2455	7186	10303	12271	11078	8639	8042	7863	8251	9097	10862	11526	11817	12134	8452	5736	4319	3450	2906	1970	161680	Accepted
8	1040	722	687	855	2497	7493	10597	12280	11703	9348	8320	7943	8435	9299	11206	11835	12021	12238	9703	6438	5070	3693	2690	2032	168145	Accepted
9	1117	692	666	826	2389	7536	10728	12729	11140	8878	7988	8099	8576	9602	10694	10479	10972	10469	8497	5547	4346	3477	2527	2036	160010	Accepted
10	1143	768	731	901	2454	6864	9879	10457	11436	9729	8335	8598	9001	9622	11474	12292	12279	13413	9819	7068	5504	4204	3819	2535	172325	Accepted
11	1343	884	849	1033	2481	6748	10067	11656	10364	9037	9011	9283	9691	10496	11306	12190	12678	12335	10679	7804	6135	4707	4336	3167	178280	Accepted
12	1963	1278	1014	832	1345	2490	3571	4734	5935	6893	8130	8592	9031	8964	8877	8600	8244	7878	6439	5136	4406	3997	4141	2700	125190	Accepted
13	1735	1312	0	1108	1102	1371	2397	3062	3855	5245	6922	9067	8466	10323	10223	10092	9818	9311	8624	7391	6233	4164	2756	1754	126331	Accepted
14	1137	759	669	934	2441	7202	10069	11797	11326	8695	7828	7949	8361	9314	11010	11330	12545	11667	9409	6337	4866	3695	2704	2013	164057	Accepted
15	1131	742	722	889	2441	7453	9879	10981	11742	9420	8159	8166	8704	9417	11306	12517	13044	12990	9626	6723	5211	3816	2971	2213	170263	Accepted
16	1171	771	725	897	2429	7015	10479	12291	11547	9374	8183	8500	9003	9804	11306	12421	12314	12481	9801	7234	5538	4272	3001	2330	172887	Accepted
17	1397	846	698	933	2441	7207	10223	11795	11289	9329	8383	8521	8920	9839	11344	11508	12795	11753	9965	6828	5313	4125	3315	2396	171163	Accepted
18	1438	1002	883	1029	2423	6813	9544	11333	10631	9122	9030	9303	10378	10573	12219	12379	12663	12063	9887	7566	6193	5171	4498	3439	179580	Accepted
19	2035	1377	1206	925	1230	2481	3485	4673	6120	7323	8677	9572	10230	10294	10340	10157	9507	9216	7844	6226	5316	4803	4535	3189	140761	Accepted
20	2119	1415	1036	770	807	1233	2330	3245	4387	6253	8267	9754	10790	10738	10436	10242	9905	9275	8457	6882	5689	3915	2732	1835	132512	Accepted
21	1027	714	658	885	2527	7248	10137	12147	11194	9139	8140	8157	8497	9527	11186	12179	12461	12025	8650	6086	4596	3485	2586	1877	165128	Accepted
22	1058	654	699	875	2548	7364	10778	12318	11452	9524	8274	8536	8660	9510	11241	11850	12558	12650	9861	6549	5032	3926	2878	2140	170935	Accepted
23																										
24																										
25	1323	983	793	1048	2523	7094	6530	10989	11259	9367	9048	9446	10037	10785	11792	12033	12552	12696	9829	7671	5906	4668	4125	3059	175556	Accepted
26	2078	1220	1032	911	1350	2712	4012	5441	6849	8597	9960	10840	11046	11346	11075	10641	10639	9838	8261	6216	5710	4884	4320	3188	152166	Accepted
27	1993	1485	1082	783	830	1292	2367	3296	4304	6174	8531	9771	10613	10757	10562	10293	9918	9135	7765	6502	5527	4164	2567	2105	131816	Accepted
28	1118	826	694	993	2549	5818	6038	8025	10794	9269	8171	8229	8586	9316	11103	11880	11561	11811	8579	5874	4603	3433	2615	1881	153766	Accepted
29	1062	808	786	915	2547	7537	10812	12518	11236	9310	8523	8424	8892	9563	11333	12073	12613	13413	9859	6731	5144	3893	3451	2225	173668	Accepted
30	1111	764	682	937	2548	7615	10791	12628	11887	9617	8553	8534	9059	9944	11347	12398	12916	13558	9968	6931	5393	4126	3487	2624	177418	Accepted
31	1311	827	776	1008	2649	7566	10852	12808	11624	9629	8660	8750	9269	9972	11307	12718	13601	13450	9913	7045	5571	4265	3726	2396	179693	Accepted
																									159821.5	March 2022 ADT

MassDOT Yearly Growth Rates

for data from 2014 to 2018

Growth Group	Grow 2014 to 2015	Grow 2015 to 2016	Grow 2016 to 2017	Grow 2017 to 2018	Grow 2018 to 2019
R1	0	0.023	0.004	0.018	0.016
R2	0.05	0.068	0.004	0.014	0.014
R3	-0.038	0.002	0.008	0.011	0.06
R4-7	-0.01	0.003	0.001	0.011	0.012
Rec - East		0.032	0.02	0.041	0.025
Rec - West		0.051	-0.008	0.029	0
U1-Boston	0.061	0.07	-0.003	0.012	0.006
U1-Essex	0.024	0.025	0.007	0.014	0.011
U1-Southeast	0.05	0.062	0.021	0.014	0
U1-West	0.03	-0.027	0.02	0.028	0.013
U1-Worcester	0.042	0.005	0.018	0.01	0.01
U2	0.04	0.048	0.008	0.01	0.02
U3	0.011	0.013	0.011	0.014	0.004
U4-7	0.023	0.062	0.017	0.003	-0.004

updated 5/1/2020

2017 Average Count Data – Sta. 4096

March ADT: 162,899

Growth Rate (2017-2018): 0.3% [MassDOT Yearly Growth Rates (U4-7)]
Growth Rate (2018-2019): -0.4% [MassDOT Yearly Growth Rates (U4-7)]

$$162{,}899 \times (1.003) \times (0.996) = 162{,}734$$

2022 Average Count Data – Sta. 4096

March ADT: 159,822

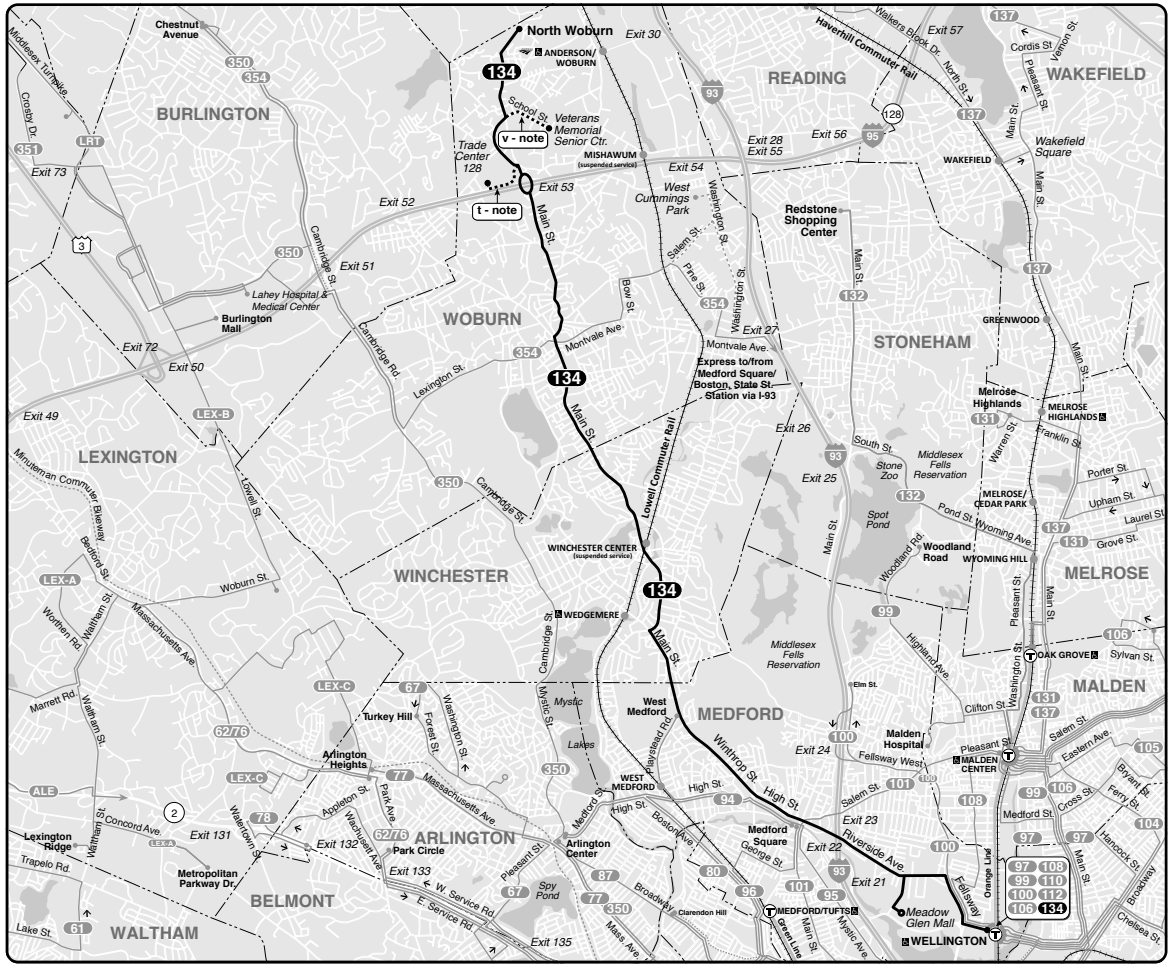
COVID Adjustment

$$1 - \frac{162{,}899}{159{,}822} = -0.019$$

PUBLIC TRANSPORTATION SCHEDULES

Effective **March 13, 2022**

134 North Woburn – Wellington Sta



Connections

- ORANGE LINE
- LOWELL LINE

- Transfer to bus/subway available on CharlieCard—good for 2 hours, pay fare difference.
- Children 11 & under ride free with a paying customer.

All MBTA buses are accessible to people with disabilities.

	CharlieCard	Cash on board	Reduced fare
Bus	**$1.70**	**$1.70**	**$0.85**
Bus + Subway	**$2.40**	**$4.10**	**$1.10**

Complete fare/pass rules and free/reduced fare eligibility:
mbta.com/fares or call **617-222-3200**

Information **617-222-3200**
Lost and Found **617-222-2229**
TTY **617-222-5146**

Realtime arrival information, maps, and more
mbta.com

A126-3-22.0

Weekday 134

Inbound

North Woburn	Woburn Square	Winthrop St & Playstead Rd	Wellington Station
-	-	5:40	5:54
6:00	6:10	6:19	6:33
6:50	7:00	7:11	7:31
T 7:10	7:20	7:31	7:51
T 7:50	8:00	8:11	8:31
T 8:35	8:46	8:57	9:17
T 9:10	9:21	9:32	9:52
V 10:00	10:17	10:28	10:55
T 11:00	11:12	11:24	11:47
T 12:00	**12:12**	**12:24**	**12:47**
T 1:00	**1:13**	**1:25**	**1:47**
T 2:00	**2:13**	**2:25**	**2:47**
S 2:25	**-**	**-**	**-**
S 2:30	**-**	**-**	**-**
S 2:45	**-**	**-**	**-**
T 3:00	**3:13**	**3:28**	**3:53**
T 4:00	**4:13**	**4:28**	**4:53**
T 5:00	**5:13**	**5:28**	**5:53**
T 6:00	**6:13**	**6:28**	**6:52**
7:00	**7:13**	**7:25**	**7:43**
-	**-**	**8:00**	**8:18**
8:00	**8:13**	**8:25**	**8:43**
-	**-**	**8:55**	**9:13**
-	**-**	**9:50**	**10:08**
-	**-**	**10:45**	**11:03**
-	**-**	**11:45**	12:03
-	-	12:45	1:03

Outbound

Wellington Station	Winthrop St & Playstead Rd	Woburn Square	North Woburn
5:15	5:29	5:39	5:56
6:00	6:16	6:27	6:44
T 6:45	7:02	7:16	7:37
S 6:55	-	-	-
S 7:10	-	-	-
T 7:35	7:55	8:09	8:30
T 8:00	8:20	8:34	8:55
T 9:00	9:20	9:34	9:55
V 10:00	10:20	10:34	10:52
T 11:00	11:20	11:34	11:55
T 12:00	**12:21**	**12:37**	**12:55**
T 1:00	**1:21**	**1:37**	**1:55**
V 2:00	**2:21**	**2:37**	**2:55**
T 3:00	**3:23**	**3:38**	**3:55**
T 4:00	**4:23**	**4:38**	**4:55**
T 5:00	**5:23**	**5:38**	**5:55**
6:00	**6:23**	**6:38**	**6:55**
7:00	**7:17**	**7:32**	**7:49**
7:30	**7:47**	**-**	**-**
8:25	**8:42**	**-**	**-**
9:20	**9:37**	**-**	**-**
10:15	**10:32**	**-**	**-**
11:10	**11:24**	**-**	**-**
12:10	12:24	-	-
W 1:20	1:34	-	-

Saturday 134

Inbound

North Woburn	Woburn Square	Winthrop St & Playstead Rd	Wellington Station
-	-	5:55	6:13
-	-	6:25	6:43
-	-	6:55	7:13
7:00	7:10	7:21	7:39
-	-	7:55	8:13
8:00	8:10	8:21	8:39
-	-	8:55	9:13
9:00	9:10	9:21	9:39
-	-	9:55	10:14
10:00	10:11	10:26	10:46
-	-	10:55	11:19
11:00	11:12	11:28	11:52
-	-	11:55	**12:19**
12:00	**12:11**	**12:24**	**12:48**
-	**-**	**12:55**	**1:19**
1:00	**1:11**	**1:24**	**1:48**
-	**-**	**1:55**	**2:16**
2:00	**2:11**	**2:24**	**2:44**
-	**-**	**2:55**	**3:15**
3:00	**3:11**	**3:24**	**3:44**
-	**-**	**3:55**	**4:15**
4:00	**4:11**	**4:24**	**4:44**
-	**-**	**4:55**	**5:15**
5:00	**5:13**	**5:26**	**5:46**
-	**-**	**5:55**	**6:15**
6:00	**6:10**	**6:23**	**6:43**
-	**-**	**6:55**	**7:15**
7:00	**7:09**	**7:22**	**7:42**
-	**-**	**7:55**	**8:15**
8:00	**8:09**	**8:22**	**8:42**
-	**-**	**8:25**	**8:45**
-	**-**	**8:55**	**9:15**
-	**-**	**9:25**	**9:45**
-	**-**	**9:55**	**10:15**
-	**-**	**10:25**	**10:45**
-	**-**	**10:55**	**11:15**
-	**-**	**11:25**	**11:45**
M 12:15	-	-	12:31
M 1:00	-	-	1:16

Outbound

Wellington Station	Winthrop St & Playstead Rd	Woburn Square	North Woburn
6:00	6:15	6:25	6:36
6:30	6:45	-	-
7:00	7:15	7:25	7:36
7:30	7:45	-	-
8:00	8:15	8:25	8:36
8:30	8:45	-	-
9:00	9:17	9:30	9:41
9:30	9:47	-	-
10:00	10:18	10:33	10:45
10:30	10:48	-	-
11:00	11:18	11:36	11:48
11:30	11:48	-	-
12:00	**12:17**	**12:34**	**12:45**
12:30	**12:47**	**-**	**-**
1:00	**1:17**	**1:34**	**1:45**
1:30	**1:47**	**-**	**-**
2:00	**2:19**	**2:33**	**2:46**
2:30	**2:49**	**-**	**-**
3:00	**3:18**	**3:32**	**3:45**
3:30	**3:48**	**-**	**-**
4:00	**4:20**	**4:32**	**4:47**
4:30	**4:50**	**-**	**-**
5:00	**5:18**	**5:30**	**5:42**
5:30	**5:48**	**-**	**-**
6:00	**6:18**	**6:30**	**6:42**
6:30	**6:48**	**-**	**-**
7:00	**7:18**	**7:30**	**7:42**
7:30	**7:48**	**-**	**-**
8:00	**8:15**	**-**	**-**
8:30	**8:45**	**-**	**-**
9:00	**9:15**	**-**	**-**
9:30	**9:45**	**-**	**-**
10:00	**10:15**	**-**	**-**
10:30	**10:45**	**-**	**-**
11:00	**11:15**	**-**	**-**
11:30	**11:45**	**-**	**-**
M 12:00	-	-	-
M 12:45	-	-	-
W 1:30	-	-	-

Sunday 134

Inbound

Woburn Square	Winthrop St & Playstead Rd	Medford Square	Wellington Station
-	-	6:20	6:34
-	-	7:00	7:14
-	-	7:40	7:54
-	-	8:20	8:34
-	-	9:00	9:14
-	-	9:40	9:54
-	-	10:20	10:35
10:40	10:55	-	11:19
11:55	**12:09**	**-**	**12:33**
1:10	**1:23**	**-**	**1:47**
2:25	**2:38**	**-**	**2:58**
3:40	**3:53**	**-**	**4:13**
4:55	**5:08**	**-**	**5:28**
6:10	**6:23**	**-**	**6:43**
7:25	**7:38**	**-**	**7:58**
-	**-**	**8:20**	**8:36**
-	**-**	**9:00**	**9:16**
-	**-**	**9:40**	**9:56**
-	**-**	**10:20**	**10:36**
-	**-**	**11:00**	**11:16**
-	**-**	**11:40**	**11:56**

Outbound

Wellington Station	Medford Square	Winthrop St & Playstead Rd	North Woburn
6:00	6:10	-	-
6:40	6:50	-	-
7:20	7:30	-	-
8:00	8:10	-	-
8:40	8:50	-	-
9:20	9:32	-	-
10:00	-	10:18	10:33
11:15	-	11:33	11:51
12:30	**-**	**12:47**	**1:04**
1:45	**-**	**2:02**	**2:16**
3:00	**-**	**3:18**	**3:32**
4:15	**-**	**4:35**	**4:47**
5:30	**-**	**5:48**	**6:00**
6:45	**-**	**7:03**	**7:15**
7:20	**7:32**	**-**	**-**
8:00	**8:10**	**-**	**-**
8:40	**8:50**	**-**	**-**
9:20	**9:30**	**-**	**-**
10:00	**10:10**	**-**	**-**
10:40	**10:50**	**-**	**-**
11:20	**11:30**	**-**	**-**
12:00	12:10	-	-

T serves TradeCenter 128 & Middlesex Superior Court

V serves Veterans Memorial Senior Center

S to/from Winthrop St & Brooks St only on school days

M to/from Medford Square

W waits for last train to arrive station

PM times are **bold**

Information in this timetable is subject to change without notice. Traffic and weather may affect running times.

Always check bus destination signs before boarding. Some buses may only serve a part, or skip portions of this route.

2022 Holidays

- SUN Memorial Day
- SUN Independence Day
- SUN Labor Day
- SUN Thanksgiving Day
- SUN Christmas Day
- SUN Christmas Day Observed
- SAT New Year's Eve
- SUN New Year's Day

LOWELL LINE 2022 SPRING/SUMMER SCHEDULE

Effective May 23, 2022

Monday to Friday

Inbound to Boston

ZONE	STATION	TRAIN #	AM									PM												
	Bikes Allowed																							
6	Lowell		5:05	5:50	6:35	7:20	8:05	8:50	9:30	10:12	11:12	12:12	1:12	2:12	3:12	4:12	5:05	5:50	6:35	7:20	8:05	8:50	9:50	10:50
5	North Billerica		5:13	5:58	6:43	7:28	8:13	8:58	9:38	10:20	11:20	12:20	1:20	2:20	3:20	4:20	5:13	5:58	6:43	7:28	8:13	8:58	9:58	10:58
3	Wilmington		5:20	6:05	6:51	7:36	8:21	9:05	9:45	10:27	11:27	12:27	1:27	2:27	3:27	4:27	5:20	6:05	6:50	7:35	8:20	9:05	10:05	11:05
2	Anderson/Woburn		5:24	6:09	6:55	7:40	8:25	9:09	9:49	10:31	11:31	12:31	1:31	2:31	3:31	4:31	5:24	6:09	6:54	7:39	8:24	9:09	10:09	11:09
1	Wedgemere		5:31	6:16	7:02	7:47	8:32	9:16	f 9:56	f 10:38	f 11:38	f 12:38	f 1:38	f 2:38	f 3:38	f 4:38	f 5:31	f 6:16	f 7:01	f 7:46	f 8:31	f 9:16	f 10:16	f 11:16
1A	West Medford		5:34	6:20	7:06	7:51	8:36	9:20	f 9:59	f 10:41	f 11:41	f 12:41	f 1:41	f 2:41	f 3:41	f 4:41	f 5:34	f 6:19	f 7:04	f 7:49	f 8:34	f 9:19	f 10:19	f 11:19
1A	North Station		5:48	6:34	7:20	8:05	8:50	9:34	10:13	10:55	11:55	12:55	1:55	2:55	3:55	4:55	5:48	6:33	7:18	8:03	8:48	9:33	10:33	11:33

Monday to Friday

Outbound from Boston

ZONE	STATION	TRAIN #	AM								PM													
	Bikes Allowed																							
1A	North Station		5:25	6:10	6:55	7:40	8:25	9:10	10:10	11:10	12:10	1:10	2:10	3:10	3:55	4:40	5:25	6:10	6:55	7:45	8:45	9:45	11:00	
1A	West Medford		f 5:36	f 6:21	f 7:06	f 7:51	f 8:36	f 9:21	f 10:21	f 11:21	f 12:21	f 1:21	f 2:21	f 3:21	4:06	4:51	5:36	6:21	7:06	f 7:56	f 8:56	f 9:56	f 11:11	
1	Wedgemere		f 5:39	f 6:24	f 7:09	f 7:54	f 8:39	f 9:24	f 10:24	f 11:24	f 12:24	f 1:24	f 2:24	f 3:24	4:09	4:54	5:39	6:24	7:09	f 7:59	f 8:59	f 9:59	f 11:14	
2	Anderson/Woburn		5:46	6:31	7:16	8:01	8:46	9:31	10:31	11:31	12:31	1:31	2:31	3:31	4:16	5:01	5:46	6:31	7:16	8:06	9:06	10:06	11:21	
3	Wilmington		5:49	6:34	7:19	8:04	8:49	9:34	10:34	11:34	12:34	1:34	2:34	3:34	4:19	5:05	5:50	6:34	7:19	8:09	9:09	10:09	11:24	
5	North Billerica		5:58	6:43	7:28	8:13	8:58	9:43	10:43	11:43	12:43	1:43	2:43	3:43	4:29	5:15	6:00	6:44	7:29	8:18	9:18	10:18	11:33	
6	Lowell		6:10	6:55	7:40	8:25	9:10	9:55	10:55	11:55	12:55	1:55	2:55	3:55	4:41	5:27	6:12	6:56	7:41	8:30	9:30	10:30	11:45	

Weekend

Inbound to Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	AM				PM				
			1300 2300	1302 2302	1304 2304	1306 2306	1308 2308	1310 2310	1312 2312	1314 2314	1316 2316
	Bikes Allowed										
6	Lowell		5:30	7:30	9:30	11:30	1:30	3:30	5:30	7:30	9:30
5	North Billerica		5:38	7:38	9:38	11:38	1:38	3:38	5:38	7:38	9:38
3	Wilmington		5:45	7:45	9:45	11:45	1:45	3:45	5:45	7:45	9:45
2	Anderson/Woburn		5:49	7:49	9:49	11:49	1:49	3:49	5:49	7:49	9:49
1	Wedgemere		f 5:56	f 7:56	f 9:56	f 11:56	f 1:56	f 3:56	f 5:56	f 7:56	f 9:56
1A	West Medford		f 5:59	f 7:59	f 9:59	f 11:59	f 1:59	f 3:59	f 5:59	f 7:59	f 9:59
1A	North Station		6:13	8:13	10:13	12:13	2:13	4:13	6:13	8:13	10:13

Weekend

Outbound from Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	AM			PM					
			1301 2301	1303 2303	1305 2305	1307 2307	1309 2309	1311 2311	1313 2313	1315 2315	1317 2317
	Bikes Allowed										
1A	North Station		6:30	8:30	10:30	12:30	2:30	4:30	6:30	8:30	11:00
1A	West Medford		f 6:41	f 8:41	f 10:41	f 12:41	f 2:41	f 4:41	f 6:41	f 8:41	f 11:11
1	Wedgemere		f 6:44	f 8:44	f 10:44	f 12:44	f 2:44	f 4:44	f 6:44	f 8:44	f 11:14
2	Anderson/Woburn		6:51	8:51	10:51	12:51	2:51	4:51	6:51	8:51	11:21
3	Wilmington		6:54	8:54	10:54	12:54	2:54	4:54	6:54	8:54	11:24
5	North Billerica		7:03	9:03	11:03	1:03	3:03	5:03	7:03	9:03	11:33
6	Lowell		7:15	9:15	11:15	1:15	3:15	5:15	7:15	9:15	11:45

Keep in Mind:

This schedule will be effective from May 23, 2022 and will replace the schedule of October 11, 2021.

Holiday Service
Memorial Day (May 30th), July 4th and Labor Day (September 5th) operate on a weekend schedule.
Columbus Day (October 10th) and Juneteenth (observed on June 20th) operate on a regular weekday schedule.

For all holiday schedules, please check MBTA.com/holidays 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.

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.

LRTA MONDAY THROUGH FRIDAY SCHEDULE

★ ROUTES 1 & 8 COMBINED INTO ONE ROUTE
★★ ROUTES 3 & 4 COMBINED INTO ONE ROUTE
★★★ ROUTES 6 & 9 COMBINED INTO ONE ROUTE

	01 CHRISTIAN HILL	02 BELVIDERE	03 SOUTH LOWELL	04 HIGHLANDS VIA STEVENS	05 WESTFORD STREET/ DRUM HILL	06 BROADWAY/ UMASS SOUTH	07 PAWTUCKETVILLE/ UMASS NORTH	08 CENTRALVILLE	09 LOWELL CIRCULATOR	10 DRACUT/ TYNGSBORO	11 IRS/ RAYTHEON VIA RTE. 133	12 TEWKSBURY VIA RTE. 38	13 BILLERICA VIA EDSON	14 BURLINGTON MALL/ LAHEY CLINIC	15 CHELMSFORD/ WESTFORD VIA RTES. 129/110	16 CHELMSFORD VIA CHELMSFORD STREET	17 NORTH CHELMSFORD VIA MIDDLESEX	18 DOWNTOWN SHUTTLE	20 DOWNTOWN/ UMASS NORTH
OUTBOUND LEAVING KENNEDY CENTER	★ AM 6:00 7:00 8:00 9:00 10:00 11:00	AM 6:15 7:45 8:45 9:45 10:45 11:45	★★ AM 6:00 7:00 8:00 9:00 10:00 11:00	★★ SEE ROUTE 3 FOR TIMES	AM 6:00 7:00 7:45 8:45 9:45 10:45 11:45	★★★ AM 7:00 8:00 9:00 10:00 11:00	AM 6:00 6:45 7:45 8:45 9:45 10:45 11:45	★ SEE ROUTE 1 FOR TIMES	★★★ SEE ROUTE 6 FOR TIMES	AM 6:35 7:35 8:30 9:30 10:30 11:30	AM 6:00 7:00	AM 7:00 8:00 9:00 10:00 11:00	AM 6:30 7:30 8:30 9:30 10:30 11:30	AM 6:00 7:00 8:00 9:00 10:00 11:00	AM 6:45 8:00 9:30 11:00	AM 6:15 C 6:40 C 7:10 8:00 9:00 10:00 11:00	AM 6:20 7:00 8:00 9:00 10:00 11:00	AM 5:45 SERVICE RUNS EVERY 30 MINUTES	AM 7:30 UM SERVICE RUNS EVERY 20 MINUTES
	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:45 1:45 2:40 S,P,1 2:40 S,P,2 2:45 3:45 4:45 5:45 6:45	PM 12:00 1:00 2:00 2:40 S,P,E 3:00 4:00 5:00 6:00	BOARD BUS AT BAY A2 2:40 S,P 2:40 S,P	PM 12:45 1:45 2:40 S,P,3 2:40 S,P,4 2:45 3:45 4:45 5:45 R 6:55 R	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:45 1:45 2:40 S,P,5 2:40 S,P,6 2:45 3:45 4:50 5:50 6:50	BOARD BUS AT BAY A1	BOARD BUS AT BAY B1	PM 12:30 1:30 2:30 3:30 4:30 5:30	PM 3:00 4:00	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:30 1:30 2:30 2:40 S,P,E 3:30 4:30 5:30	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:30 2:00 3:30 5:00 6:30	PM 12:00 1:00 2:00 2:40 S,P,E 3:00 4:00 5:00 6:00	PM 12:00 1:00 2:00 2:40 S,P,E 3:00 4:00 5:00 6:00	PM LAST SHUTTLE FROM KENNEDY CENTER DEPARTS 6:45 PM	PM NO SERVICE
INBOUND TO KENNEDY CENTER	AM 6:20 7:20 8:15 9:15 10:15 11:15	AM 6:50 7:05 S 8:20 9:20 10:20 11:20	AM 6:25 7:20 D 7:25 8:25 9:25 10:25 11:25	SEE ROUTE 3 FOR TIMES 7:15 S	AM 6:20 7:05 S,B,E 7:20 S,B,E 7:20 8:05 9:05 10:05 11:05	AM 7:20 8:20 9:20 10:20 11:20	AM 6:30 7:00 S 7:05 S 7:20 8:20 9:20 10:20 11:20	SEE ROUTE 1 FOR TIMES	SEE ROUTE 6 FOR TIMES	AM 7:20 8:20 9:15 10:15 11:15	AM 6:30 7:30	AM 7:45 8:45 9:45 10:45 11:45	AM 7:10 7:10 S,E 8:10 9:10 10:10 11:10	AM 7:00 8:00 8:55 9:55 10:55 11:55	AM 7:30 8:45 10:15 11:45	AM 6:25 C 6:50 C 7:05 S,E 7:45 8:45 9:45 10:45 11:45	AM 7:00 7:40 I 8:40 9:40 10:40 11:40	AM 6:00 SERVICE RUNS EVERY 30 MINUTES	AM 7:50 UM SERVICE RUNS EVERY 20 MINUTES
	PM 12:15 1:15 2:15 3:15 4:15 5:15 6:15	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:20 7:20	PM 12:25 1:25 2:25 3:25 4:25 5:25 6:25	BOARD BUS AT BAY A2	PM 12:05 1:05 2:05 3:05 4:05 5:05 6:15 7:15	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:20	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:25 7:25	BOARD BUS AT BAY A1	BOARD BUS AT BAY B1	PM 12:15 1:15 2:15 3:15 4:15 5:15 6:15	PM 3:30 4:30	PM 12:45 1:45 2:45 3:45 4:45 5:45 6:45	PM 12:10 1:10 2:10 3:10 4:10 5:10 6:10	PM 12:55 1:55 2:55 3:55 4:55 5:55 6:55	PM 1:15 2:45 4:15 5:45 7:15	PM 12:45 1:45 2:45 3:45 4:45 5:45 6:45	PM 12:40 I,W 1:40 2:40 I 3:40 I 4:40 5:40 6:40	PM LAST SHUTTLE FROM DOWNTOWN DEPARTS 7:00 PM	PM NO SERVICE

1 Starts at Andover St./Ends at River Rd.
2 Starts at High St./Ends at Wentworth Ave.
3 Starts at Stevens St./Ends at Technology Drive Lowell
4 Starts at Chelmsford St. & Westford St./Ends at Stevens St.
5 Starts at Woodward Ave./Ends at 6 Lowell Values
6 Starts at University Ave./Ends at McAvenue School
B Starts at Princeton Blvd. & Baldwin St.
C Starts/Terminates at the Radisson (Does Not Service Meadow Brook Center)
D Drop Students at Washington Savings Bank
E Starts/Terminates at Lowell Line
I Service on Innovation Academy School Days Only
P On School Days Leaves from Paige & Kirk
R No Service to Research Place
S Supplemental Service on School Days Only (Does Not Service Kennedy Center)
W Service Wednesday School Days Only
UM Service on UMass Lowell School Days Only

★ ROUTES 1 & 8 COMBINED
CHRISTIAN HILL & CENTRALVILLE

OUTBOUND
DEPARTS FROM LRTA KENNEDY CENTER

1. LRTA Kennedy Center
2. French & John Streets
3. Bridge & West 6th Streets
4. Lowell Provision (Aiken Ave)
5. Sladen & Pleasant Streets
6. Shop & Save

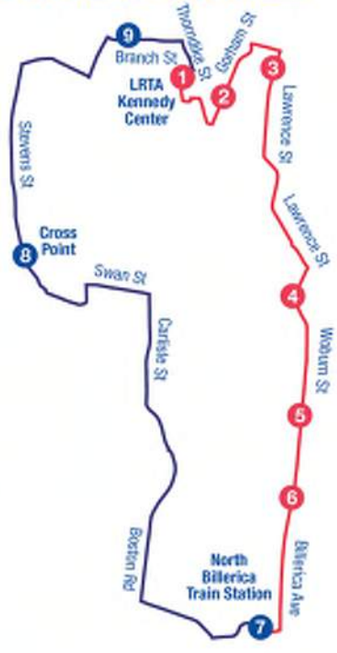
INBOUND
RETURNS TO LRTA KENNEDY CENTER

7. Hildreth Street & Lily Ave
8. Hildreth & Bridge Streets
9. Sunrise Plaza
10. Beacon & Methuen Streets
11. Merrimack & John Streets

★★ ROUTES 3 & 4 COMBINED
SOUTH LOWELL & HIGHLANDS VIA STEVENS

OUTBOUND
DEPARTS FROM LRTA KENNEDY CENTER

1. LRTA Kennedy Center
2. Lowell Superior Court
3. Church & Lawrence Streets
4. Riverside School
5. Riverview Commerce Center
6. Billerica Business Center



INBOUND
RETURNS TO LRTA KENNEDY CENTER

7. North Billerica Train Station
8. Cross Point
9. The Boy's Club

★★★ ROUTES 6 & 9 COMBINED
BROADWAY/UMASS SOUTH & LOWELL CIRCULATOR

OUTBOUND
DEPARTS FROM LRTA KENNEDY CENTER

1. LRTA Kennedy Center
2. Towers Motor Parts Central Plaza
3. John & Merrimack Streets
4. Tsongas Arena
5. UMass Lowell Fox Hall
6. University Crossing Transit Hub
7. Mt. Vernon & Bowers Streets

INBOUND
RETURNS TO LRTA KENNEDY CENTER

8. UMass Lowell South Campus
9. Francis Gate
10. Market Basket & Senior Center

WHERE TO GET YOUR RELOADABLE CHARLIECARD AND RENEW YOUR LRTA MONTHLY PASSES

You must be issued a Reloadable CharlieCard before you can purchase any LRTA Monthly Passes at these locations:

LRTA GALLAGHER TERMINAL (115 Thorndike Street, Lowell)
All LRTA Monthly Passes can be purchased on the last 5 days of each month until the 18th day of the following month at the following locations:

TICKET VENDING MACHINE (INSIDE LOBBY)
Also Issues Adult CharlieCards.

RIDER INFORMATION BOOTH (KENNEDY CENTER)
Regular Hours: Monday - Friday: 8 AM to 4 PM
Extended Hours last 2 and first 2 business days of each month: Monday - Friday: 6 AM to 6 PM
Also Issues Adult & Student CharlieCards.
To Get Your Student CharlieCard bring a valid Student ID or Class Schedule from your school.

LRTA DISPATCH OFFICE (100 Hale Street, Lowell)
Monday - Friday: 7 AM to 7 PM
Issues Adult & Student CharlieCards.

LOWELL HIGH SCHOOL CAFETERIA
LHS Students can go to the LHS Cafeteria the last and first school day of each month from 10:40 AM to 1:40 PM during the school year. **(YOUR CHARLIECARD IS RELOADABLE)**
Issues Student CharlieCards and Purchase Student Passes

LRTA ROAD RUNNER OFFICE (978-459-0152) (APPOINTMENTS REQUIRED)
113 Thorndike Street, Lowell (Located next to the Kennedy Center)
Monday - Friday: 9 AM to 4 PM
Only Issues Senior CharlieCards & CharlieCards for Persons with Disabilities/TAP.

Monthly Passes cannot be purchased at this location.

To Get Your Senior CharlieCard:
- Bring Photo ID that includes Date of Birth (Must be 60+ years)
- Must Fill Out an Application.
- Senior CharlieCard Registration Fee: $5

To Get Your CharlieCard for Persons with Disabilites/TAP:
- First time applicants for the TAP ID, or applicants with expired TAP ID Cards need to fill out an application.
- The LRTA will process your application within 14 days of receipt.
- Once approved, you will need to bring a photo ID.
- CharlieCard Registration Fee: $5

TO CATCH A BUS...

1 USE AN LRTA DESIGNATED BUS STOP
The bus will pick you up and take you to your destination. Please raise your hand to alert driver.

2 WAVE YOUR HAND ALONG ANY LRTA BUS ROUTE
Simply wave your hand in order to alert the driver to stop. You need to be at a safe location on the same side of the street as the bus. We encourage you to be at a bus stop.

LRTA FARE RATES

BUS FARES

City/Local/Shuttle	Full Fare	$1.25
	Reduced Fare	$ .60
Suburban	Full Fare	$1.85
	Reduced Fare	$ .90

TRANSFERS
REQUEST TRANSFER BEFORE PAYING

- **Issued on Inbound Routes Only**
- **Accepted on Outbound Routes Only**
- **FREE to the Downtown Shuttle Outbound**
- **FREE from the Downtown Shuttle Inbound to Local Routes**

In-Town	Full Fare	$ .25
	Reduced Fare	$ .10
Suburban	Full Fare	$ .50
	Reduced Fare	$ .25

LRTA MONTHLY PASSES
STORED ON YOUR CHARLIECARD
RIDE SYSTEMWIDE UNLIMITED

ADULT PASS for Adult CharlieCard ..... $ 44
STUDENT PASS for Student CharlieCard ..... $ 25
SENIOR PASS for Senior CharlieCard ..... $ 25
PERSONS WITH DISABILITIES PASS
for Persons with Disabilities/TAP CharlieCard ..... $ 25

CHARLIECARD INFORMATION
Stored Value Minimum First Time Purchase: ..... $ 5

Registration Fee for Senior CharlieCards & CharlieCards for Persons with Disabilities: ..... $ 5

LRTA FARE CATEGORIES

FULL FARE **Persons from 13 to 59 Years of Age**
Students: Elementary, Middle and High School students up to and including Grade 12 can purchase an LRTA Monthly Pass at a discounted rate.
Students without the LRTA Monthly Pass pay Full Fare

REDUCED FARE

Senior Citizens	Persons with Disabilities	Children
60 Years of Age or Older with I.D.	With Statewide Transportation Access Pass (TAP) or Medicare Card.	6 to 12 Years of Age

Children 5 and Under Ride Free
Must be accompanied by an adult.

2 WAYS TO GET REAL-TIME BUS INFORMATION

VIEW INTERACTIVE GPS BUS ROUTE MAPS ON YOUR COMPUTER

GET REAL-TIME LRTA BUS STOP ARRIVAL & DEPARTURE TIMES ON YOUR SMART PHONE

FOR MORE DETAILS ABOUT LRTA BUS TRACKER VISIT LRTA.com

Lowell Regional Transit Authority

DAILY BUS SCHEDULES
MONDAY - FRIDAY

EFFECTIVE JUNE 20, 2022

BUS INFORMATION: 978-452-6161
Service updates and changes will be posted on LRTA.com

LRTA
DOWNTOWN SHUTTLE

The LRTA offers a Shuttle between
DOWNTOWN LOWELL (JOHN & MERRIMACK STREETS)
&
ROBERT B. KENNEDY BUS TRANSFER CENTER

Monday - Friday:
5:45 am - 7:00 pm Every 30 minutes
First Shuttle departs Downtown Lowell at 6:00 AM
Last Shuttle departs Downtown Lowell at 7:00 PM

Saturday: 7:15 am - 7:00 pm Every 30 minutes
First Shuttle departs Downtown Lowell at 7:30 AM
Last Shuttle departs Downtown Lowell at 7:00 PM

VEHICLE TRAVEL SPEED DATA

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA
Direction: EB,

3/23/2022 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	1	4	7	2	2	0	0	0	0	16
1:00	0	0	0	3	0	3	3	2	0	1	0	0	0	12
2:00	0	0	0	0	1	5	4	1	0	0	0	0	0	11
3:00	0	0	0	0	4	1	2	4	0	0	0	0	0	11
4:00	0	0	0	0	2	8	14	6	0	1	0	0	0	31
5:00	0	0	0	0	7	28	46	14	1	0	0	0	0	96
6:00	0	0	0	4	14	87	74	22	5	1	0	0	0	207
7:00	2	0	1	9	62	126	138	28	1	3	1	0	0	371
8:00	1	3	3	12	38	164	178	28	1	0	0	0	0	428
9:00	0	2	0	12	75	168	111	14	2	0	0	0	0	384
10:00	0	0	1	18	63	135	103	25	0	0	0	0	0	345
11:00	0	1	4	11	72	223	119	22	0	0	0	0	0	452
12:00 PM	1	3	13	12	67	187	146	16	0	0	0	0	0	445
1:00	0	2	8	21	70	183	137	20	1	0	0	0	0	442
2:00	0	0	2	6	43	215	164	28	4	2	0	0	0	464
3:00	0	0	3	1	46	228	239	50	1	0	0	0	0	568
4:00	0	0	1	2	22	185	332	67	5	2	0	1	0	617
5:00	0	0	1	3	34	223	327	68	6	0	0	0	0	662
6:00	0	0	0	3	14	145	238	58	6	0	0	0	0	464
7:00	0	0	0	4	27	125	121	39	3	0	0	0	0	319
8:00	0	0	0	0	15	51	89	23	4	1	0	0	0	183
9:00	0	0	0	0	14	57	66	21	2	0	0	0	0	160
10:00	0	0	2	0	2	25	41	16	6	0	0	0	0	92
11:00	0	0	0	0	4	15	28	15	4	1	0	0	0	67
Total	4	11	39	121	697	2591	2727	589	54	12	1	1	0	6847

Percentile	15th	50th	85th	95th
Speed	35	40	44	47

Mean Speed (Average)	39.7
10 MPH Pace Speed	35-44
Number in Pace	5277
Percent in Pace	77.1%
Number > 40 MPH	3384
Percent > 40 MPH	49.4%

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA
Direction: EB,

3/24/2022 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	0	8	5	2	3	1	0	0	0	19
1:00	0	0	0	0	3	8	2	1	0	0	0	0	0	14
2:00	0	0	0	0	2	4	2	2	0	0	0	0	0	10
3:00	0	0	0	0	0	3	6	0	2	0	0	0	0	11
4:00	0	0	0	0	3	10	11	2	1	0	0	0	0	27
5:00	0	0	0	0	7	27	30	12	3	0	0	0	0	79
6:00	0	0	0	6	38	92	67	14	0	0	0	0	0	217
7:00	0	0	1	10	43	183	107	17	1	0	0	0	0	362
8:00	0	0	4	29	66	191	105	16	0	1	0	0	0	412
9:00	0	3	1	8	48	139	111	15	1	0	0	0	0	326
10:00	1	1	3	18	67	138	82	12	0	0	0	0	0	322
11:00	0	1	6	12	104	179	93	6	2	0	0	0	0	403
12:00 PM	0	1	8	18	72	198	93	17	1	0	0	0	0	408
1:00	1	1	14	37	56	135	126	18	0	0	0	0	0	388
2:00	0	3	3	10	75	212	118	13	0	0	0	0	0	434
3:00	0	0	0	2	43	216	209	32	2	0	0	0	0	504
4:00	0	1	1	4	58	294	188	33	1	0	0	0	0	580
5:00	0	0	0	0	24	271	255	46	4	0	0	0	0	600
6:00	0	0	0	4	50	210	153	38	2	0	0	0	0	457
7:00	0	0	0	5	24	121	108	23	1	0	0	0	0	282
8:00	0	0	0	6	27	83	85	27	1	0	0	0	0	229
9:00	0	0	1	2	5	49	67	22	2	0	0	0	0	148
10:00	0	0	0	2	6	28	46	16	7	0	0	0	0	105
11:00	0	0	1	0	2	16	20	12	1	1	0	0	0	53
Total	2	11	43	173	823	2815	2089	396	35	3	0	0	0	6390
			Percentile	15th	50th	85th	95th							
			Speed	35	39	43	45							
		Mean Speed (Average)		38.8										
		10 MPH Pace Speed		35-44										
		Number in Pace		4879										
		Percent in Pace		76.4%										
		Number > 40 MPH		2523										
		Percent > 40 MPH		39.5%										
Grand Total	6	22	82	294	1520	5406	4816	985	89	15	1	1	0	13237
Stats			Percentile	15th	50th	85th	95th							
			Speed	35	40	43	46							
		Mean Speed (Average)		39.3										
		10 MPH Pace Speed		35-44										
		Number in Pace		10156										
		Percent in Pace		76.7%										
		Number > 40 MPH		5907										
		Percent > 40 MPH		44.6%										

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA
Direction: WB,

3/23/2022 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	4	5	5	4	2	0	1	0	0	21
1:00	0	0	0	0	0	2	4	3	1	0	1	1	0	12
2:00	0	0	0	0	1	3	10	4	2	0	0	0	0	20
3:00	0	0	0	1	1	5	1	4	5	2	0	0	0	19
4:00	0	0	0	0	0	6	17	14	5	0	0	0	0	42
5:00	0	0	0	0	1	34	58	37	5	2	1	0	0	138
6:00	0	2	1	0	16	80	153	56	6	0	0	0	0	314
7:00	0	0	2	6	67	206	230	66	7	1	0	0	1	586
8:00	2	2	5	3	59	154	256	84	6	2	0	0	0	573
9:00	8	0	4	6	48	166	161	41	5	0	0	0	0	439
10:00	0	0	5	11	39	125	167	38	6	0	0	0	1	392
11:00	5	6	3	7	44	157	150	11	0	1	0	2	3	389
12:00 PM	2	5	14	7	57	180	150	24	0	0	0	1	0	440
1:00	3	6	3	6	50	144	174	46	2	0	1	0	1	436
2:00	4	6	3	16	60	177	155	25	2	0	0	1	0	449
3:00	1	0	4	5	36	155	255	59	5	0	0	0	0	520
4:00	0	0	3	3	31	157	269	77	5	0	0	0	0	545
5:00	1	0	0	1	7	114	240	87	12	1	0	0	0	463
6:00	0	0	0	6	5	67	191	80	6	0	0	0	0	355
7:00	0	0	0	1	8	88	136	25	3	1	0	0	0	262
8:00	0	0	0	0	3	55	64	31	7	0	1	0	1	162
9:00	0	0	0	0	8	30	44	18	7	1	0	0	0	108
10:00	0	0	0	0	3	23	49	23	1	1	0	0	0	100
11:00	0	0	0	0	1	13	14	8	4	0	0	0	1	41
Total	26	27	47	79	549	2146	2953	865	104	12	5	5	8	6826

Percentile	15th	50th	85th	95th
Speed	36	41	45	48

Mean Speed (Average)	40.6
10 MPH Pace Speed	35-44
Number in Pace	5051
Percent in Pace	74.0%
Number > 40 MPH	3952
Percent > 40 MPH	57.9%

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA
Direction: WB,

3/24/2022 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	0	5	6	4	3	1	1	0	0	20
1:00	0	0	0	0	0	1	7	3	0	0	0	0	0	11
2:00	0	0	0	1	0	5	5	5	1	1	0	0	0	18
3:00	0	0	0	0	2	1	14	3	4	0	0	0	0	24
4:00	0	0	0	1	1	5	23	5	1	0	0	0	0	36
5:00	1	0	0	0	12	39	53	17	5	1	0	0	0	128
6:00	0	1	1	2	28	102	123	37	5	0	0	0	0	299
7:00	1	4	3	8	58	159	194	57	4	1	0	0	0	489
8:00	0	1	3	6	105	216	221	28	2	1	0	0	0	583
9:00	2	1	0	5	34	172	145	25	7	0	0	0	0	391
10:00	0	1	2	6	50	115	138	22	5	0	0	0	0	339
11:00	5	7	1	3	58	140	166	16	2	0	0	0	0	398
12:00 PM	7	2	5	19	44	174	121	22	3	0	0	0	0	397
1:00	4	2	6	14	46	159	117	30	6	0	0	0	1	385
2:00	3	4	8	14	55	125	151	42	1	0	0	0	0	403
3:00	0	0	0	11	27	125	231	38	2	1	0	0	0	435
4:00	0	0	2	1	16	154	199	61	7	0	0	0	0	440
5:00	0	0	0	0	20	125	209	60	2	0	0	0	0	416
6:00	0	0	0	0	5	83	173	58	7	0	0	0	0	326
7:00	0	0	0	1	18	79	100	26	3	1	0	0	0	228
8:00	0	0	0	2	10	82	86	18	5	1	0	0	0	204
9:00	0	0	0	1	11	37	43	14	2	0	0	0	0	108
10:00	0	0	0	1	13	34	39	20	7	0	0	0	0	114
11:00	0	0	1	0	2	21	22	3	1	0	0	0	0	50
Total	23	23	32	96	615	2158	2586	614	85	8	1	0	1	6242
			Percentile	15th	50th	85th	95th							
			Speed	35	40	44	47							
			Mean Speed (Average)	40.0										
			10 MPH Pace Speed	35-44										
			Number in Pace	4705										
			Percent in Pace	75.4%										
			Number > 40 MPH	3295										
			Percent > 40 MPH	52.8%										
Grand Total	49	50	79	175	1164	4304	5539	1479	189	20	6	5	9	13068
Stats			Percentile	15th	50th	85th	95th							
			Speed	36	40	45	47							
			Mean Speed (Average)	40.3										
			10 MPH Pace Speed	35-44										
			Number in Pace	9756										
			Percent in Pace	74.7%										
			Number > 40 MPH	7247										
			Percent > 40 MPH	55.5%										

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA
Direction: Combined

3/23/2022 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	5	9	12	6	4	0	1	0	0	37
1:00	0	0	0	3	0	5	7	5	1	1	1	1	0	24
2:00	0	0	0	0	2	8	14	5	2	0	0	0	0	31
3:00	0	0	0	1	5	6	3	8	5	2	0	0	0	30
4:00	0	0	0	0	2	14	31	20	5	1	0	0	0	73
5:00	0	0	0	0	8	62	104	51	6	2	1	0	0	234
6:00	0	2	1	4	30	167	227	78	11	1	0	0	0	521
7:00	2	0	3	15	129	332	368	94	8	4	1	0	1	957
8:00	3	5	8	15	97	318	434	112	7	2	0	0	0	1001
9:00	8	2	4	18	123	334	272	55	7	0	0	0	0	823
10:00	0	0	6	29	102	260	270	63	6	0	0	0	1	737
11:00	5	7	7	18	116	380	269	33	0	1	0	2	3	841
12:00 PM	3	8	27	19	124	367	296	40	0	0	0	1	0	885
1:00	3	8	11	27	120	327	311	66	3	0	1	0	1	878
2:00	4	6	5	22	103	392	319	53	6	2	0	1	0	913
3:00	1	0	7	6	82	383	494	109	6	0	0	0	0	1088
4:00	0	0	4	5	53	342	601	144	10	2	0	1	0	1162
5:00	1	0	1	4	41	337	567	155	18	1	0	0	0	1125
6:00	0	0	0	9	19	212	429	138	12	0	0	0	0	819
7:00	0	0	0	5	35	213	257	64	6	1	0	0	0	581
8:00	0	0	0	0	18	106	153	54	11	1	1	0	1	345
9:00	0	0	0	0	22	87	110	39	9	1	0	0	0	268
10:00	0	0	2	0	5	48	90	39	7	1	0	0	0	192
11:00	0	0	0	0	5	28	42	23	8	1	0	0	1	108
Total	30	38	86	200	1246	4737	5680	1454	158	24	6	6	8	13673
			Percentile	15th	50th	85th	95th							
			Speed	36	40	45	47							

Mean Speed (Average)	40.2
10 MPH Pace Speed	35-44
Number in Pace	10328
Percent in Pace	75.5%
Number > 40 MPH	7336
Percent > 40 MPH	53.7%

Location : Salem Street 93110001
Location : in front of Shea Concrete
City/State: Wilmington, MA
Direction: Combined

3/24/2022 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	0	13	11	6	6	2	1	0	0	39
1:00	0	0	0	0	3	9	9	4	0	0	0	0	0	25
2:00	0	0	0	1	2	9	7	7	1	1	0	0	0	28
3:00	0	0	0	0	2	4	20	3	6	0	0	0	0	35
4:00	0	0	0	1	4	15	34	7	2	0	0	0	0	63
5:00	1	0	0	0	19	66	83	29	8	1	0	0	0	207
6:00	0	1	1	8	66	194	190	51	5	0	0	0	0	516
7:00	1	4	4	18	101	342	301	74	5	1	0	0	0	851
8:00	0	1	7	35	171	407	326	44	2	2	0	0	0	995
9:00	2	4	1	13	82	311	256	40	8	0	0	0	0	717
10:00	1	2	5	24	117	253	220	34	5	0	0	0	0	661
11:00	5	8	7	15	162	319	259	22	4	0	0	0	0	801
12:00 PM	7	3	13	37	116	372	214	39	4	0	0	0	0	805
1:00	5	3	20	51	102	294	243	48	6	0	0	0	1	773
2:00	3	7	11	24	130	337	269	55	1	0	0	0	0	837
3:00	0	0	0	13	70	341	440	70	4	1	0	0	0	939
4:00	0	1	3	5	74	448	387	94	8	0	0	0	0	1020
5:00	0	0	0	0	44	396	464	106	6	0	0	0	0	1016
6:00	0	0	0	4	55	293	326	96	9	0	0	0	0	783
7:00	0	0	0	6	42	200	208	49	4	1	0	0	0	510
8:00	0	0	0	8	37	165	171	45	6	1	0	0	0	433
9:00	0	0	1	3	16	86	110	36	4	0	0	0	0	256
10:00	0	0	0	3	19	62	85	36	14	0	0	0	0	219
11:00	0	0	2	0	4	37	42	15	2	1	0	0	0	103
Total	25	34	75	269	1438	4973	4675	1010	120	11	1	0	1	12632
			Percentile	15th	50th	85th	95th							
			Speed	35	40	43	47							
		Mean Speed (Average)		39.4										
		10 MPH Pace Speed		35-44										
		Number in Pace		9583										
		Percent in Pace		75.9%										
		Number > 40 MPH		5818										
		Percent > 40 MPH		46.1%										
Grand Total	55	72	161	469	2684	9710	10355	2464	278	35	7	6	9	26305
Stats			Percentile	15th	50th	85th	95th							
			Speed	35	40	44	47							
		Mean Speed (Average)		39.8										
		10 MPH Pace Speed		35-44										
		Number in Pace		19912										
		Percent in Pace		75.7%										
		Number > 40 MPH		13154										
		Percent > 40 MPH		50.0%										

MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington | COUNT DATE : 3/23/2022

DISTRICT : 4 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 62

MINOR STREET(S) : I-93 SB Ramps

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	339	0	734	891		**1,964**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **21,822**

TOTAL # OF CRASHES : 14

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **2.80**

CRASH RATE CALCULATION : **0.35**

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

Comments : Below MassDOT District/Statewide Crash Rates

Project Title & Date: 9311 - Wilmington: Proposed Warehouse Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington | COUNT DATE : 3/23/2022

DISTRICT : 4 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 62

MINOR STREET(S) : I-93 NB Ramps

INTERSECTION DIAGRAM (Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	577	0	748	676		**2,001**

" K " FACTOR : **0.090** | INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **22,233**

TOTAL # OF CRASHES : 20 | # OF YEARS : 5 | AVERAGE # OF CRASHES PER YEAR (**A**) : **4.00**

CRASH RATE CALCULATION : **0.49**

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

Comments : Below MassDOT District/Statewide Crash Rates

Project Title & Date: 9311 - Wilmington: Proposed Warehouse Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington | COUNT DATE : 3/23/2022

DISTRICT : 4 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Route 62

MINOR STREET(S) : Woburn Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	150	204	891	570		**1,815**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **20,167**

TOTAL # OF CRASHES : 18

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **3.60**

CRASH RATE CALCULATION : **0.49**

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

Comments : Below MassDOT District/Statewide Crash Rates

Project Title & Date: 9311 - Wilmington: Proposed Warehouse Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wilmington | COUNT DATE : 3/23/2022

DISTRICT : 4 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 62

MINOR STREET(S) : West Project Site Driveway

Shea Concrete Driveway

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	0	1	726	534		**1,261**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,011**

TOTAL # OF CRASHES : 5

OF YEARS : 5

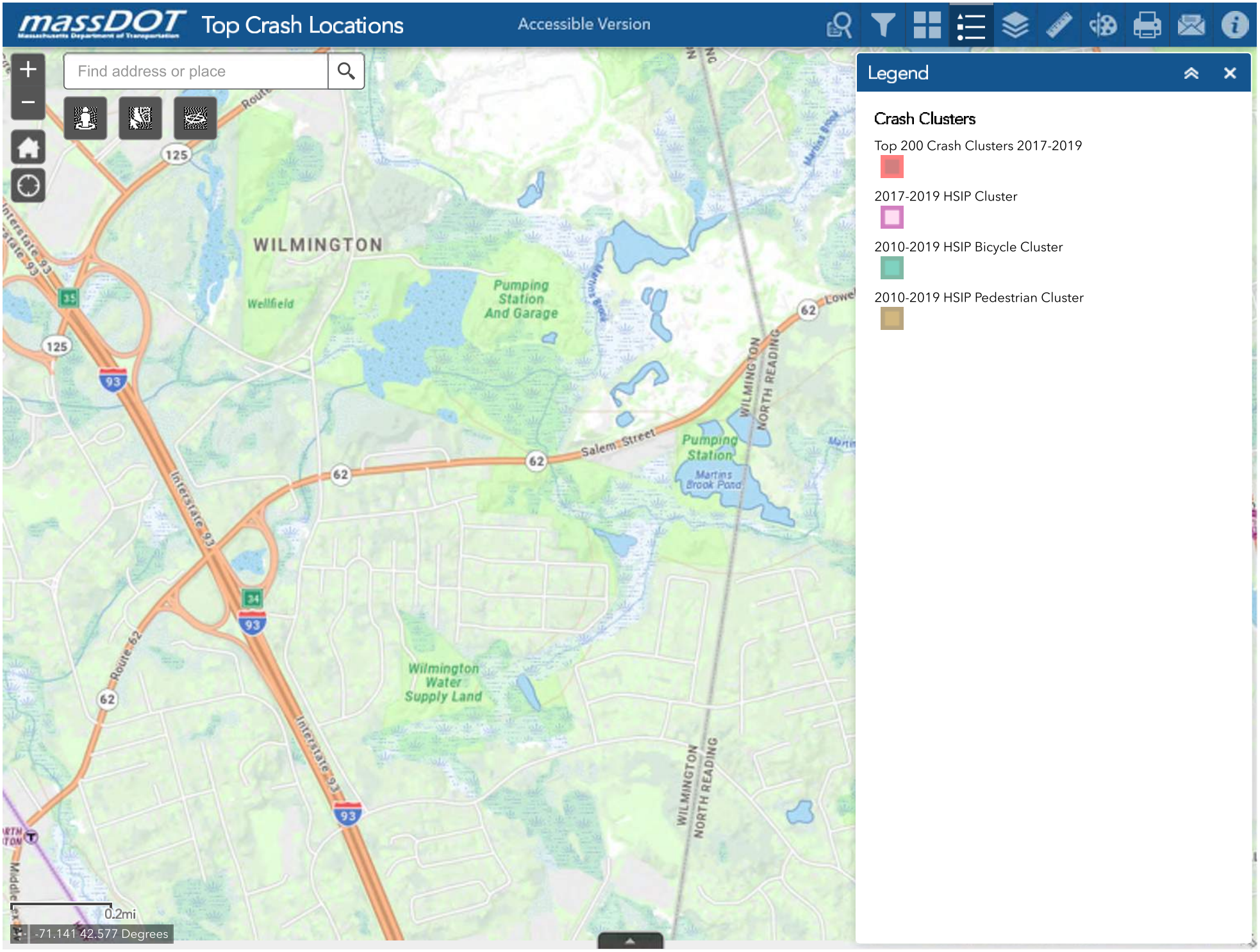
AVERAGE # OF CRASHES PER YEAR (**A**) : **1.00**

CRASH RATE CALCULATION : **0.20**

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

Comments : Below MassDOT District/Statewide Crash Rates

Project Title & Date: 9311 - Wilmington: Proposed Warehouse Development

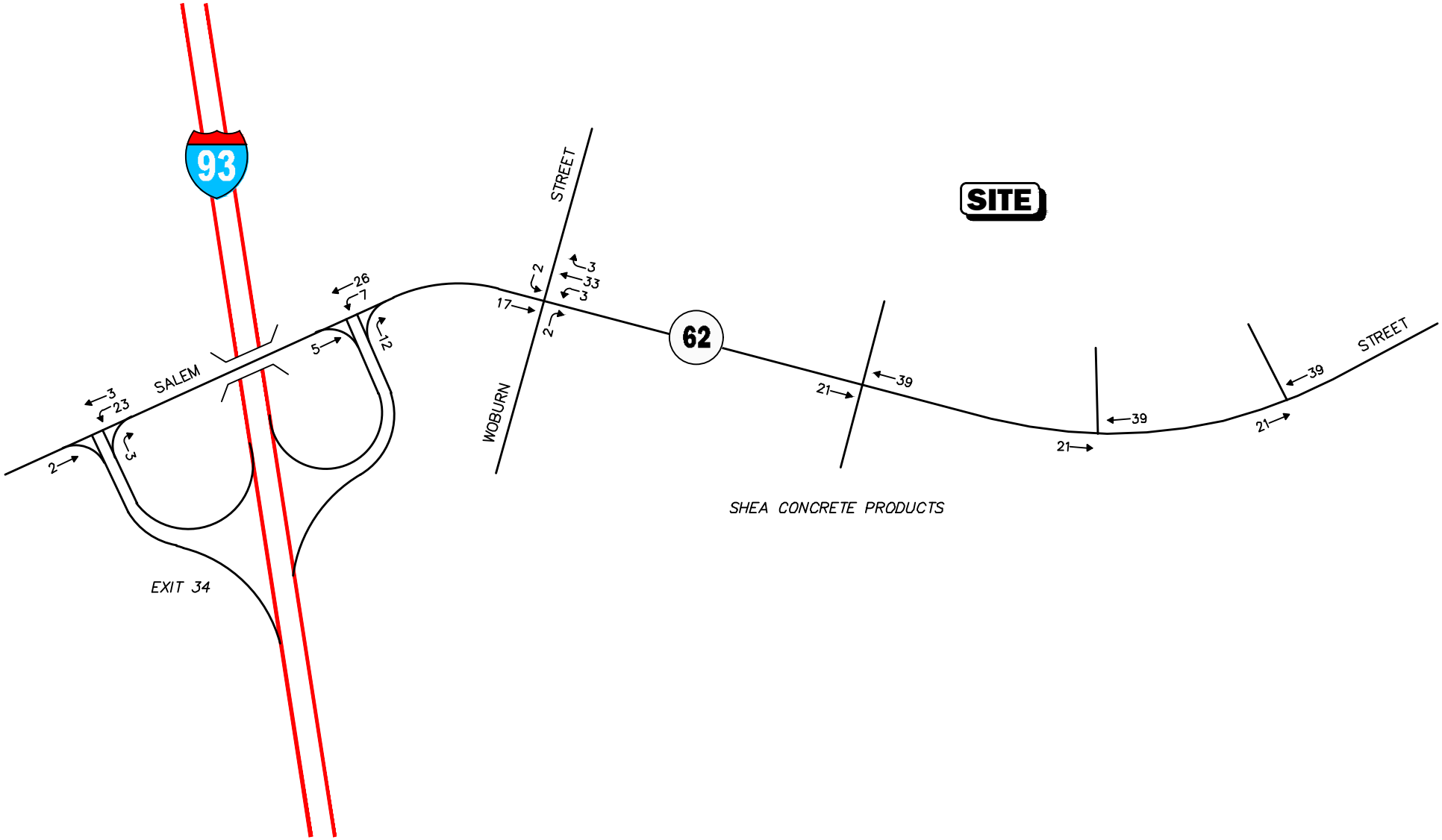

massDOT
Top Crash Locations
Accessible Version
Find address or place
Legend
Crash Clusters
Top 200 Crash Clusters 2017-2019
2017-2019 HSIP Cluster
2010-2019 HSIP Bicycle Cluster
2010-2019 HSIP Pedestrian Cluster
WILMINGTON
Wellfield
Pumping Station And Garage
Salem Street
Pumping Station
Martins Brook Pond
Wilmington Water Supply Land
WILMINGTON NORTH READING
Interstate 93
Route 62
125
93
62
34
35
0.2mi
-71.141 42.577 Degrees

GENERAL BACKGROUND TRAFFIC GROWTH

General Background Traffic Growth - Daily Traffic Volumes

CITY/TOWN	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth Rate
Wilmington	I-93	North of RTE. 129		131,000						169,706	169,385	171,418	173,765	**0.79%**
Wilmington	I-93	North of Concord St.	147,345	151,486	148,887	149,934	150,904	131,707	157,568	155,837	155,369	159,483	171,302	**1.80%**
Andover	I-93	North of RTE. 125	134,844	137,116		135,921	136,213	136,495	142,104	145,189	151,255	148,240	151,424	**1.59%**
Andover	ANDOVER BY PASS	South of Route 28	14,051	15,210	15,173	15,312	15008	15,292	15,659	17587	17357	16,906	17,055	**2.05%**
Woburn	Yankee Div. Highway (I-95)	South of I-93		167,000	113,231		168,006	148,731	160,441	175,105	178,801	169,687	175,038	**-3.78%**
Wilmington	Main Street	Wilmington						12,251	12,386	12,547	12,685	12,863	12,914	**1.06%**
Tewksbury	Main Street	South of South Street							12,033	12,189	12,323	12,496	12,546	**1.05%**
Andover	I-93	North of RTE. 133	130,287	126,391			131,816	133,482	119,415	137,886	142,206	135,114	139,986	**0.71%**
Andover	I-495	RTE. I-93	114,291	108,190			113,110	114,378	129,383	120,002	120,842	122,810	124,161	**0.73%**
Andover	I-495	North of I-93	108,363	101,236	104,915	106,340	105,045	101,368	115,962	113,807	114,604	116,470	117,751	**0.97%**
														0.70%

BACKGROUND DEVELOPMENT TRAFFIC VOLUMES NETWORKS



Not To Scale

Figure A-1

104 Lowell Road Condominiums
Weekday Morning
Peak Hour Traffic Volumes

Vanasse & Associates inc

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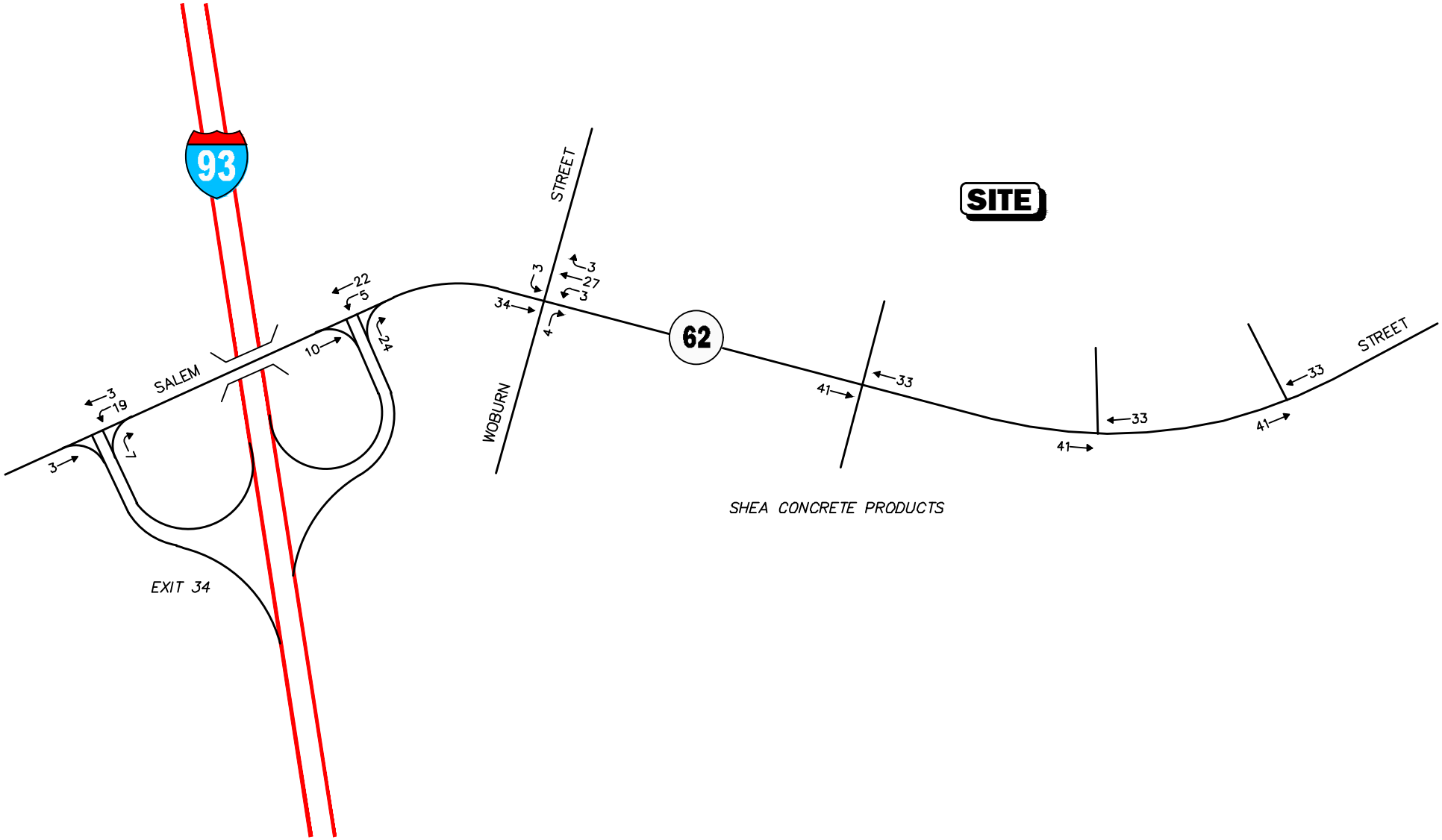

Not To Scale

Figure A-2

104 Lowell Road Condominiums
Weekday Evening Peak Hour
Traffic Volumes

Vanasse & Associates inc

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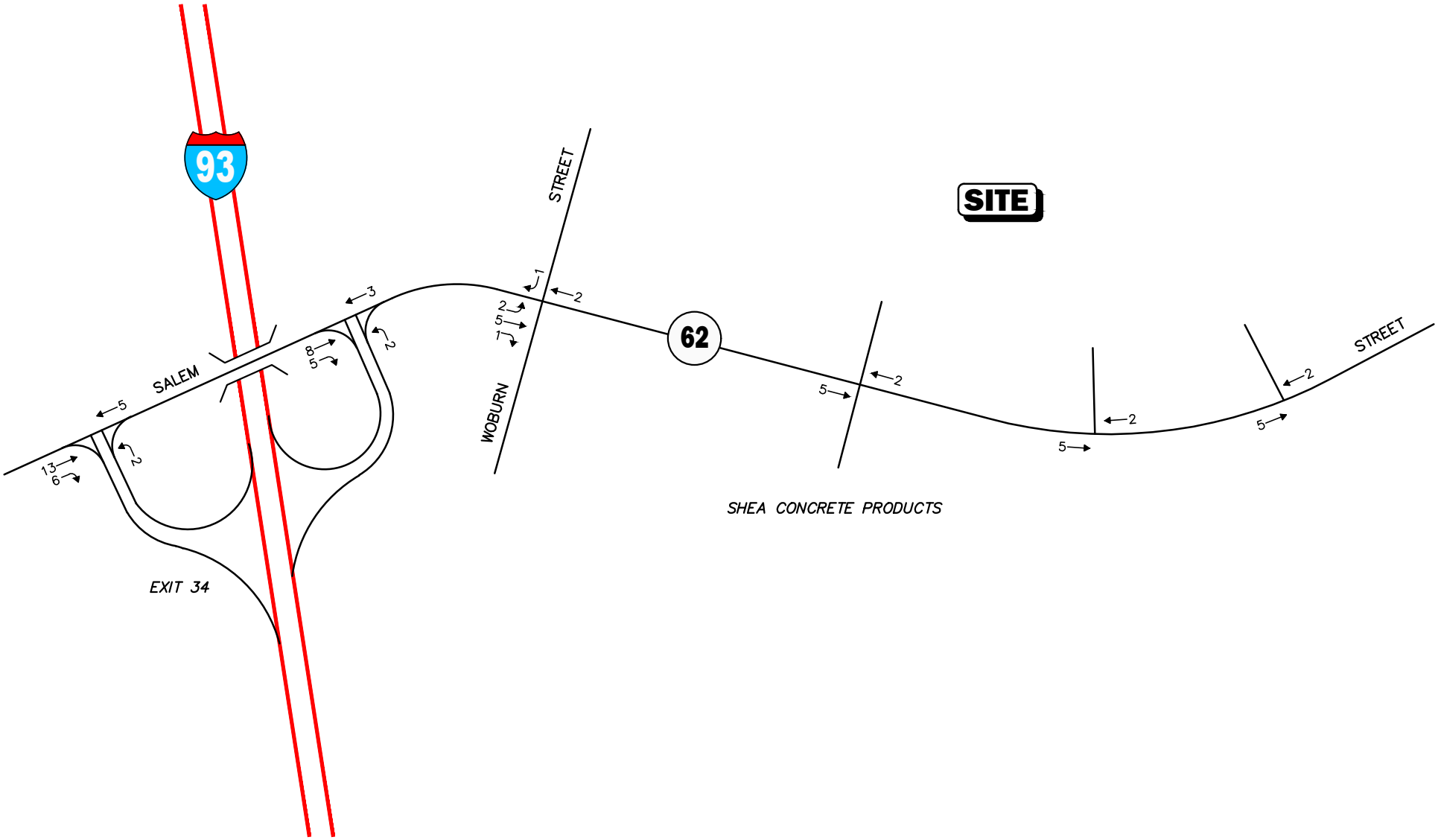

Not To Scale

Figure A-3

Jefferson Road Residential Development
Weekday Morning Peak Hour Traffic Volumes

Vanasse & Associates inc

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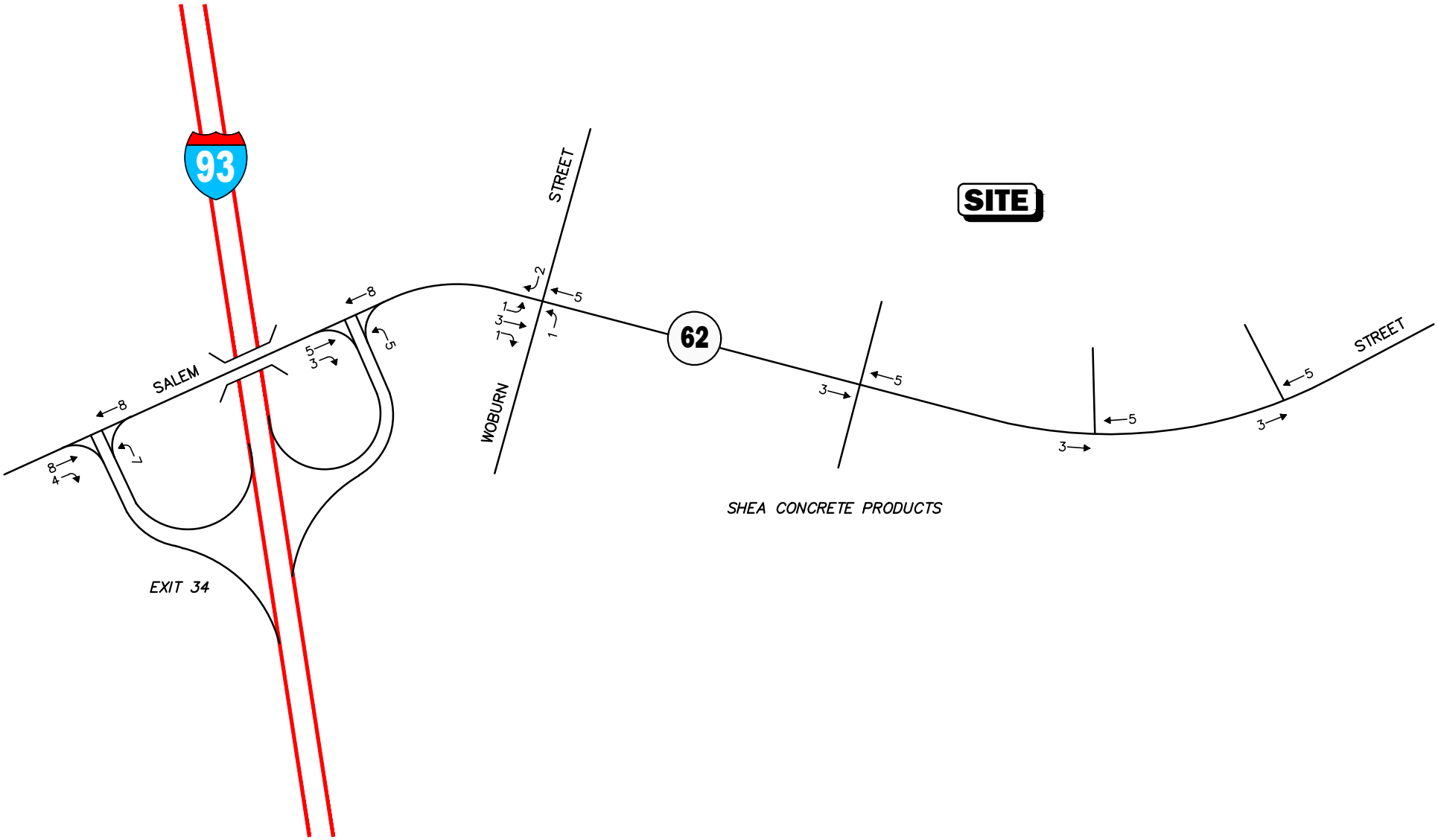
R:\9311\9311NT1.dwg, 7/28/2022 9:05:15 AM



Not To Scale

Figure A-4

Jefferson Road Residential Development
Weekday Evening Peak Hour Traffic Volumes

Vanasse & Associates inc

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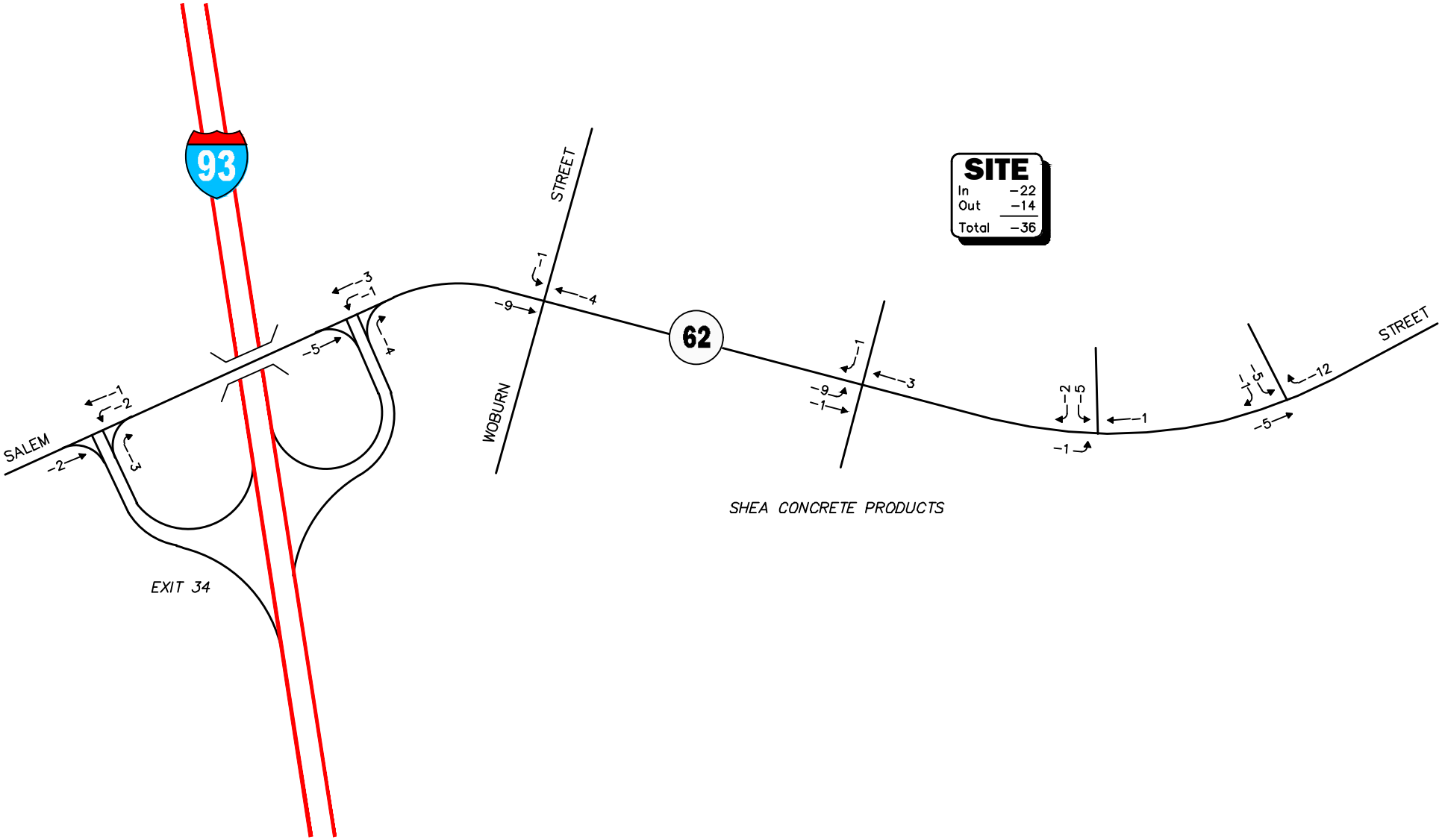

Not To Scale

Figure A-5

Existing Site Trips Removed
Weekday Morning
Peak-Hour Traffic Volumes

Vanasse & Associates inc

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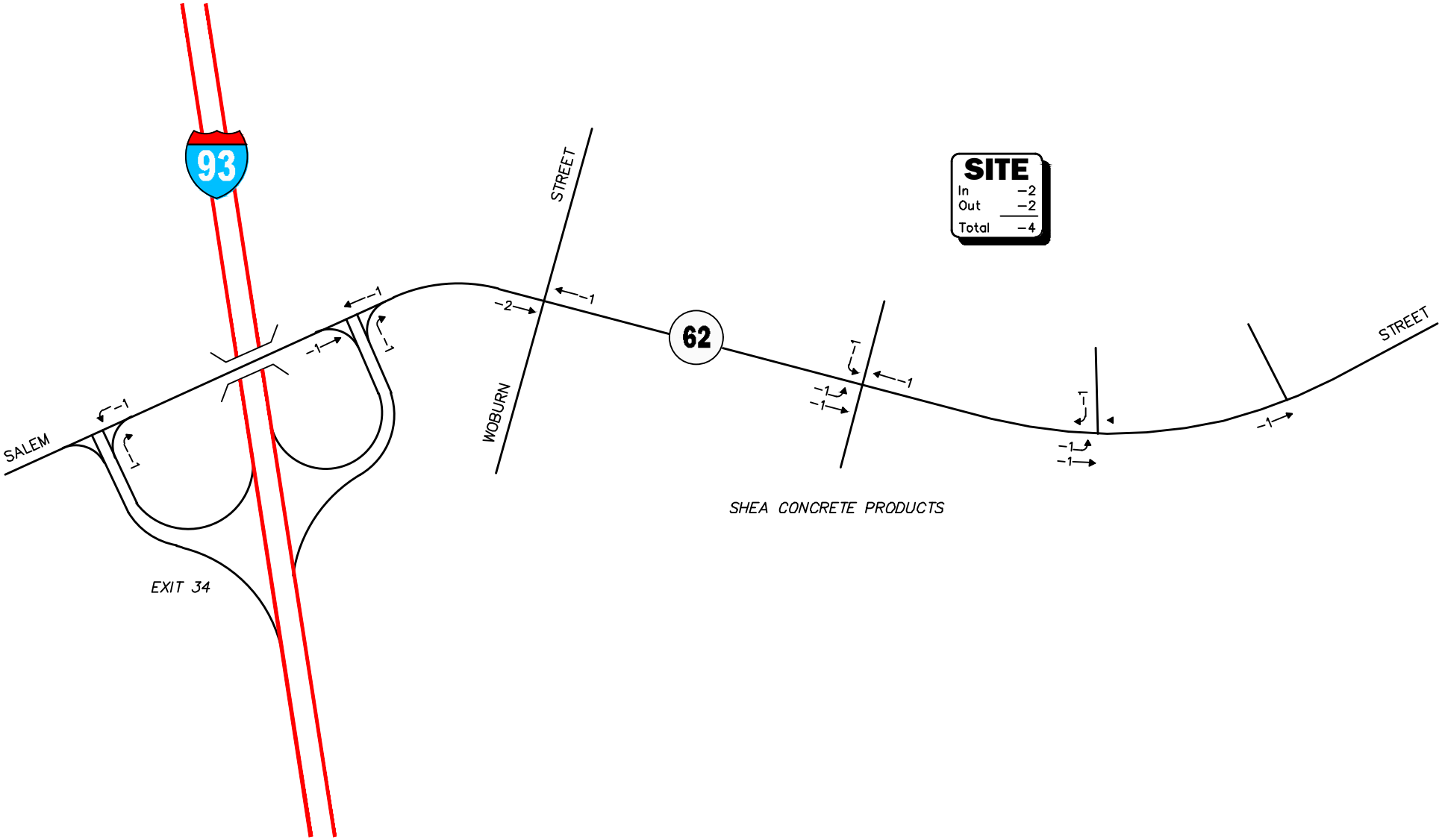

Not To Scale

Figure A-6

Existing Site Trips Removed
Weekday Evening
Peak-Hour Traffic Volumes

Vanasse & Associates inc

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TRIP-GENERATION CALCULATIONS

Graph Look Up

Graph Look Up
How to Use ITETripGen
TGM Desk Reference
TGM Appendices
Support Documents
Add Users
Comments

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

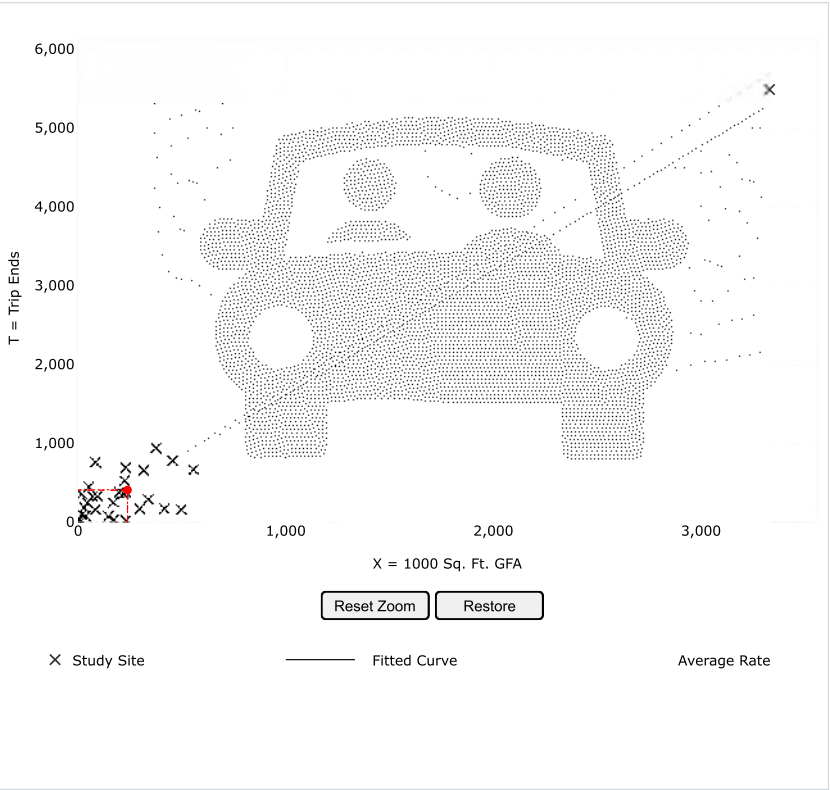
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
237.88 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
31

Avg. 1000 Sq. Ft. GFA:
292

Average Rate:
1.71

Range of Rates:
0.15 - 16.93

Standard Deviation:
1.48

Fitted Curve Equation:
T = 1.58(X) + 38.29

R^2:
0.92

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 407 (Total), 203 (Entry), 204 (Exit)
Fitted Curve: 414 (Total), 207 (Entry), 207 (Exit)

Add-ons to do more
Try OTISS Pro

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Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

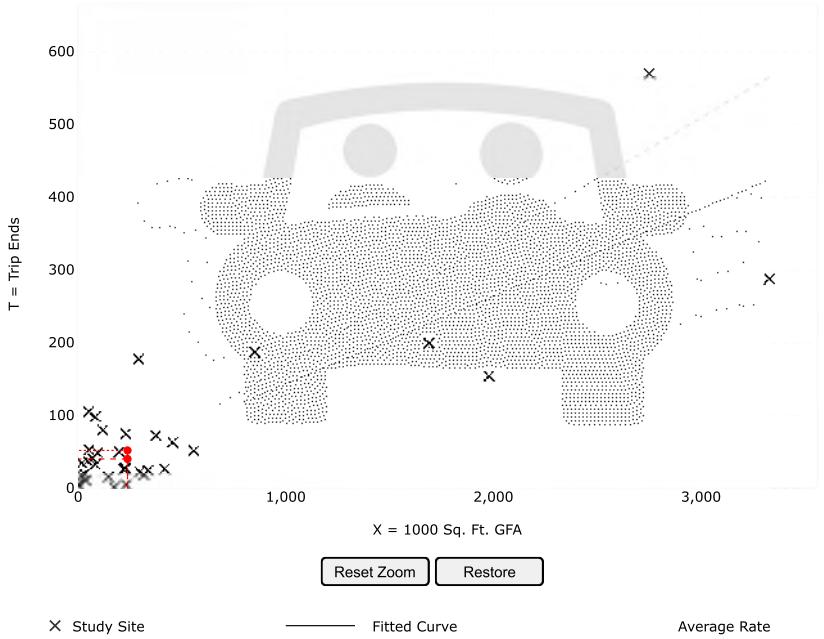
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
237.88
Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
36

Avg. 1000 Sq. Ft. GFA:
448

Average Rate:
0.17

Range of Rates:
0.02 - 1.93

Standard Deviation:
0.19

Fitted Curve Equation:
T = 0.12(X) + 23.62

R^2:
0.69

Directional Distribution:
77% entering, 23% exiting

Calculated Trip Ends:
Average Rate: 40 (Total), 31 (Entry), 9 (Exit)
Fitted Curve: 52 (Total), 40 (Entry), 12 (Exit)

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Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

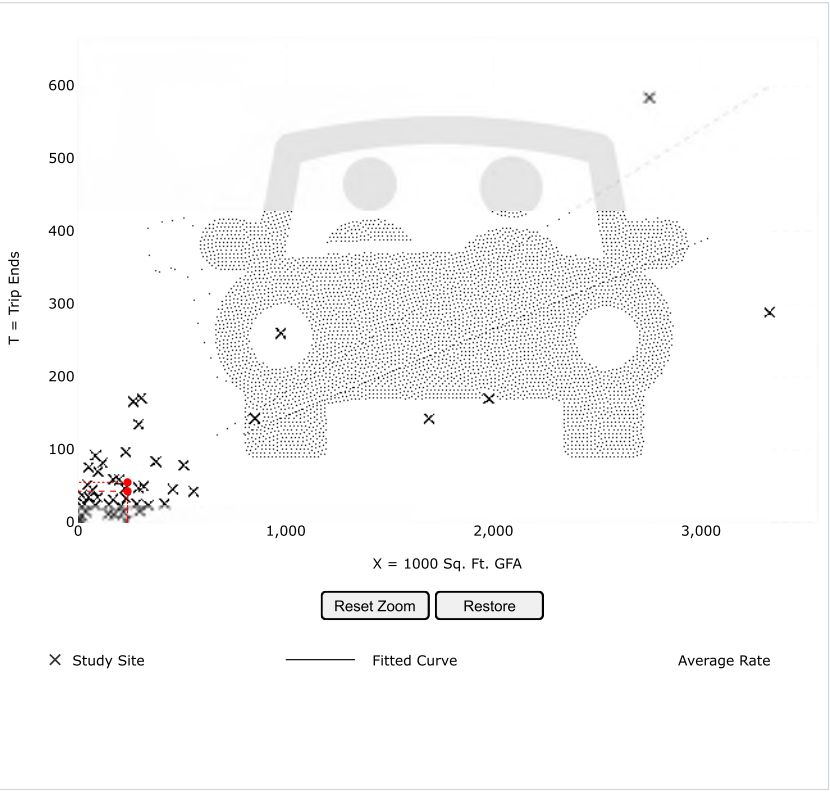
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
237.88
Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
49

Avg. 1000 Sq. Ft. GFA:
400

Average Rate:
0.18

Range of Rates:
0.01 - 1.80

Standard Deviation:
0.18

Fitted Curve Equation:
T = 0.12(X) + 26.48

R^2:
0.65

Directional Distribution:
28% entering, 72% exiting

Calculated Trip Ends:
Average Rate: 43 (Total), 12 (Entry), 31 (Exit)
Fitted Curve: 55 (Total), 15 (Entry), 40 (Exit)

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Graph Look Up

Query | Filter

DATA SOURCE: Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

SETTING/LOCATION: General Urban/Suburban

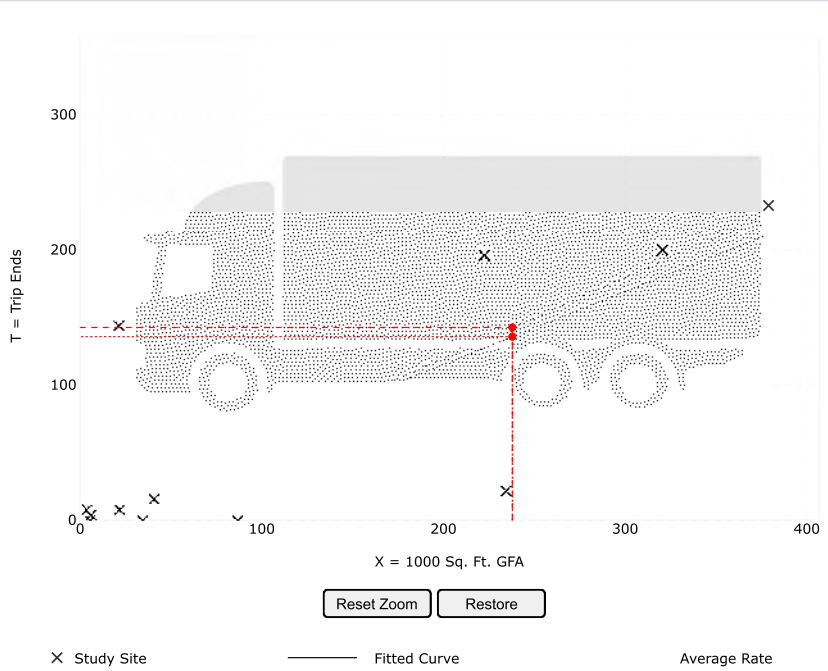
INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

TIME PERIOD: Weekday

TRIP TYPE: Truck

ENTER IV VALUE TO CALCULATE TRIPS: 237.88 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
12

Avg. 1000 Sq. Ft. GFA:
115

Average Rate:
0.60

Range of Rates:
0.00 - 6.66

Standard Deviation:
0.86

Fitted Curve Equation:
T = 0.54(X) + 7.47

R^2:
0.61

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 143 (Total), 71 (Entry), 72 (Exit)
Fitted Curve: 136 (Total), 68 (Entry), 68 (Exit)

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Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

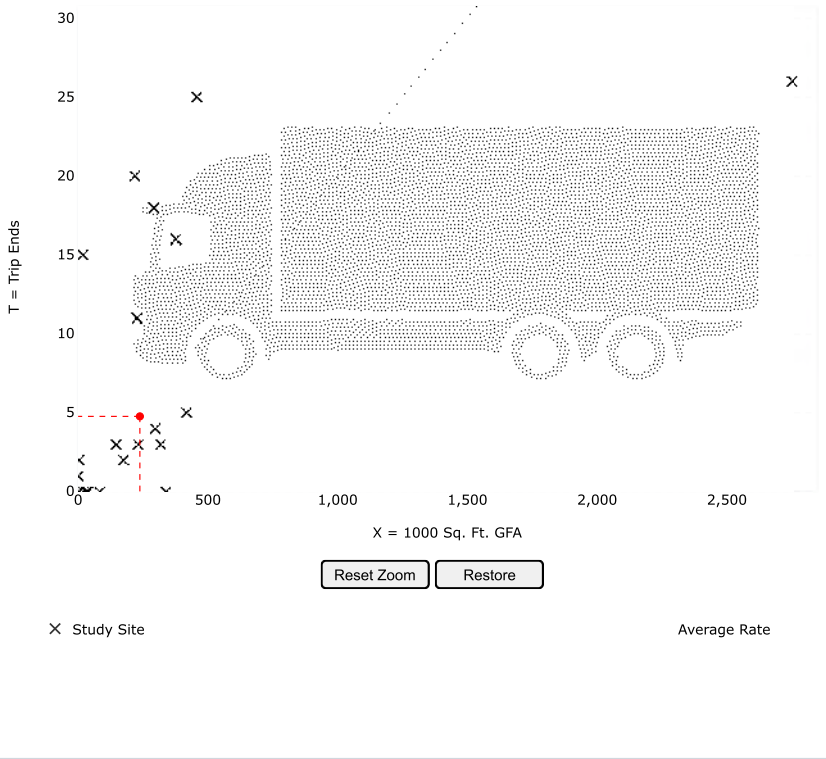
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Truck

ENTER IV VALUE TO CALCULATE TRIPS:
237.88
Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
21

Avg. 1000 Sq. Ft. GFA:
309

Average Rate:
0.02

Range of Rates:
0.00 - 0.69

Standard Deviation:
0.05

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 5 (Total), 2 (Entry), 3 (Exit)

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Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

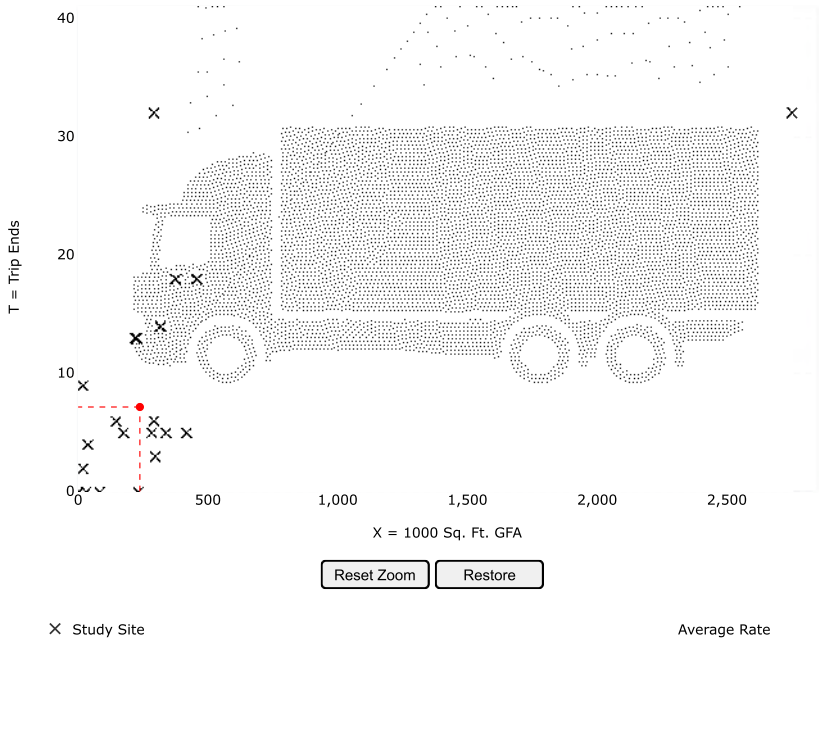
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Truck

ENTER IV VALUE TO CALCULATE TRIPS:
237.88
Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
23

Avg. 1000 Sq. Ft. GFA:
308

Average Rate:
0.03

Range of Rates:
0.00 - 0.42

Standard Deviation:
0.03

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 7 (Total), 4 (Entry), 3 (Exit)

Add-ons to do more
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JOURNEY-TO-WORK TRIP DISTRIBUTIONS

Proposed Warehouse
Wilmington, Massachusetts

Residence	Workplace	Number	Route 62 (West)		I-93 (South)		I-93 (North)		Woburn Street (South)		Woburn Street (North)		Route 62 (East)	
Wilmington town	Wilmington town	2,302	50%	1151	10%	230	10%	230	20%	460	10%	230		0
Lowell city	Wilmington town	1,286	25%	322		0	75%	965		0		0		0
Lawrence city	Wilmington town	835		0		0	100%	835		0		0		0
Haverhill city	Wilmington town	728		0		0	75%	546		0	25%	182		0
Tewksbury town	Wilmington town	716	50%	358		0	50%	358		0		0		0
Methuen Town city	Wilmington town	688		0		0	100%	688		0		0		0
Boston city	Wilmington town	616		0	100%	616		0		0		0		0
Woburn city	Wilmington town	591		0	100%	591		0		0		0		0
Billerica town	Wilmington town	534	100%	534		0		0		0		0		0
Andover town	Wilmington town	432		0		0		0		0	50%	216	50%	216
Reading town	Wilmington town	340		0	50%	170		0		0		0	50%	170
Somerville city	Wilmington town	309		0	100%	309		0		0		0		0
Waltham city	Wilmington town	292		0	100%	292		0		0		0		0
North Andover town	Wilmington town	270		0		0	75%	203		0	25%	68		0
Malden city	Wilmington town	266		0	100%	266		0		0		0		0
Lynn city	Wilmington town	257		0	50%	129		0		0		0	50%	129
Chelmsford town	Wilmington town	257		0		0	100%	257		0		0		0
Salem town	Wilmington town	254		0		0	100%	254		0		0		0
Dracut town	Wilmington town	248		0		0	100%	248		0		0		0
Framingham town	Wilmington town	245		0	100%	245		0		0		0		0
Wakefield town	Wilmington town	244		0	50%	122		0		0		0	50%	122
Medford city	Wilmington town	235		0	100%	235		0		0		0		0
Peabody city	Wilmington town	219		0	50%	110		0		0		0	50%	110
Nashua city	Wilmington town	218		0		0	100%	218		0		0		0
Salem city	Wilmington town	205		0	50%	103		0		0		0	50%	103
North Reading town	Wilmington town	202		0		0		0		0		0	100%	202
Melrose city	Wilmington town	194		0	100%	194		0		0		0		0
Marlborough city	Wilmington town	156		0	50%	78	50%	78		0		0		0
Westford town	Wilmington town	154		0		0	100%	154		0		0		0
Revere city	Wilmington town	153		0	100%	153		0		0		0		0
Newton city	Wilmington town	149		0	100%	149		0		0		0		0
Stoneham town	Wilmington town	143		0	100%	143		0		0		0		0
Derry town	Wilmington town	140		0		0	100%	140		0		0		0
Cambridge city	Wilmington town	133		0	100%	133		0		0		0		0
Burlington town	Wilmington town	129	100%	129		0		0		0		0		0
Maynard town	Wilmington town	125		0	75%	94	25%	31		0		0		0
Quincy city	Wilmington town	122		0	100%	122		0		0		0		0
Hampstead town	Wilmington town	122		0		0	100%	122		0		0		0
Lexington town	Wilmington town	121		0	75%	91		0	25%	30		0		0
		14,630		2,494		4,573		5,326		491		696		1,051
				17.0%		31.3%		36.4%		3.4%		4.8%		7.2%
		SAY		**17%**		**31%**		**37%**		**3%**		**5%**		**7%**

PRELIMINARY TRAFFIC SIGNAL WARRANTS ANALYSIS

Vehicle Volumes

		Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
No.	Period	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h
1	07 - 08	0	500	0	309	788	0	107	0	0	0	0	0
2	08 - 09	0	500	0	309	788	0	107	0	0	0	0	0
3	09 - 10	0	0	0	0	0	0	0	0	0	0	0	0
4	10 - 11	0	0	0	0	0	0	0	0	0	0	0	0
5	11 - 12	0	0	0	0	0	0	0	0	0	0	0	0
6	12 - 13	0	0	0	0	0	0	0	0	0	0	0	0
7	13 - 14	0	0	0	0	0	0	0	0	0	0	0	0
8	14 - 15	0	0	0	0	0	0	0	0	0	0	0	0
9	15 - 16	0	0	0	0	0	0	0	0	0	0	0	0
10	16 - 17	0	575	0	223	486	0	255	0	0	0	0	0
11	17 - 18	0	575	0	223	486	0	255	0	0	0	0	0
12	18 - 19	0	0	0	0	0	0	0	0	0	0	0	0

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10:26 AM
7/28/2022

HCS7 Warrants Report

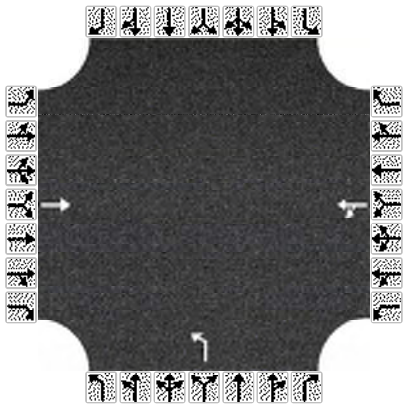
Project Information

Analyst	DCL	Date	7/21/2022
Agency	Vanasse & Associates	Analysis Year	2022
Jurisdiction		Time Period Analyzed	7-9 AM, 4-6 PM
Project Description	Warehouse Development		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	0
Major Street Speed (mi/h)	45	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	1	0	0	0	0	0
Lane Usage		T			LT		L					
Vehicle Volumes Averages (veh/h)	0	179	0	88	212	0	60	0	0	0	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	4
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	10

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HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	1597	107	1704	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1597	107	1704	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	0	0	0	0	0	No	No	No	No	No	No	No	No	No
10 - 11	0	0	0	0	0	No	No	No	No	No	No	No	No	No
11 - 12	0	0	0	0	0	No	No	No	No	No	No	No	No	No
12 - 13	0	0	0	0	0	No	No	No	No	No	No	No	No	No
13 - 14	0	0	0	0	0	No	No	No	No	No	No	No	No	No
14 - 15	0	0	0	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	1284	255	1539	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1284	255	1539	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	5762	724	6486	0	0	4	4	4	4	4	0	4	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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Vehicle Volumes

		Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
No.	Period	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h	veh/h
1	07 - 08	0	427	0	538	357	0	77	0	0	0	0	0
2	08 - 09	0	427	0	538	357	0	77	0	0	0	0	0
3	09 - 10	0	0	0	0	0	0	0	0	0	0	0	0
4	10 - 11	0	0	0	0	0	0	0	0	0	0	0	0
5	11 - 12	0	0	0	0	0	0	0	0	0	0	0	0
6	12 - 13	0	0	0	0	0	0	0	0	0	0	0	0
7	13 - 14	0	0	0	0	0	0	0	0	0	0	0	0
8	14 - 15	0	0	0	0	0	0	0	0	0	0	0	0
9	15 - 16	0	0	0	0	0	0	0	0	0	0	0	0
10	16 - 17	0	493	0	208	533	0	82	0	0	0	0	0
11	17 - 18	0	493	0	208	533	0	82	0	0	0	0	0
12	18 - 19	0	0	0	0	0	0	0	0	0	0	0	0

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HCS7 Warrants Report

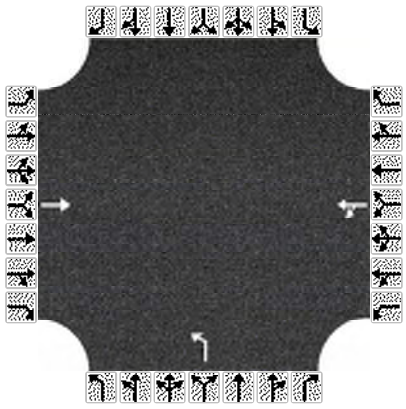
Project Information

Analyst	DCL	Date	7/21/2022
Agency	Vanasse & Associates	Analysis Year	2022
Jurisdiction		Time Period Analyzed	7-9 AM, 4-6 PM
Project Description	Warehouse Development		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	0
Major Street Speed (mi/h)	45	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	1	0	0	0	0	0
Lane Usage		T			LT		L					
Vehicle Volumes Averages (veh/h)	0	153	0	124	148	0	26	0	0	0	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	4
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	10

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HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	1322	77	1399	0	0	No	No	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1322	77	1399	0	0	No	No	Yes	Yes	Yes	No	Yes	No	No
09 - 10	0	0	0	0	0	No	No	No	No	No	No	No	No	No
10 - 11	0	0	0	0	0	No	No	No	No	No	No	No	No	No
11 - 12	0	0	0	0	0	No	No	No	No	No	No	No	No	No
12 - 13	0	0	0	0	0	No	No	No	No	No	No	No	No	No
13 - 14	0	0	0	0	0	No	No	No	No	No	No	No	No	No
14 - 15	0	0	0	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	1234	82	1316	0	0	No	No	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1234	82	1316	0	0	No	No	Yes	Yes	Yes	No	Yes	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	5112	318	5430	0	0	0	0	4	4	4	0	4	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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CAPACITY ANALYSIS WORKSHEETS

Route 62 at the I-93 Southbound Ramps
Route 62 at the I-93 Northbound Ramps
Route 62 at Woburn Street
Route 62 at the West Project Driveway and Shea Concrete Driveway
Route 62 at the Center Project Driveway
Route 62 at the East Project Driveway

Route 62 at the I-93 Southbound Ramps

Intersection	
Int Delay, s/veh	123.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	423	463	535	356	77	204
Future Vol, veh/h	423	463	535	356	77	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	89	89	94	94
Heavy Vehicles, %	2	0	6	3	7	7
Mvmt Flow	455	498	601	400	82	217

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	455	0	2306	704
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	1602	-
Critical Hdwy	-	-	4.16	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.254	-	3.563	3.363
Pot Cap-1 Maneuver	-	-	1085	-	~ 41	429
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	177	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1085	-	~ 12	429
Mov Cap-2 Maneuver	-	-	-	-	~ 12	-
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	~ 51	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	$ 903.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	12	429	-	-	1085	-
HCM Lane V/C Ratio	6.826	0.506	-	-	0.554	-
HCM Control Delay (s)	$ 3240.7	21.7	-	-	12.4	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	11.4	2.8	-	-	3.5	-

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

Intersection	
Int Delay, s/veh	18.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	491	243	193	527	82	257
Future Vol, veh/h	491	243	193	527	82	257
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	0	1	2
Mvmt Flow	546	270	214	586	91	286

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	546	0	1695	681
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	1014	-
Critical Hdwy	-	-	4.1	-	6.41	6.22
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.318
Pot Cap-1 Maneuver	-	-	1033	-	103	450
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1033	-	~ 71	450
Mov Cap-2 Maneuver	-	-	-	-	~ 71	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	244	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	92.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	450	-	-	1033	-
HCM Lane V/C Ratio	1.283	0.635	-	-	0.208	-
HCM Control Delay (s)	$ 302	25.9	-	-	9.4	0
HCM Lane LOS	F	D	-	-	A	A
HCM 95th %tile Q(veh)	7.2	4.3	-	-	0.8	-

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

Intersection	
Int Delay, s/veh	425.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	469	502	597	390	85	222
Future Vol, veh/h	469	502	597	390	85	222
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	89	89	94	94
Heavy Vehicles, %	2	0	6	3	7	7
Mvmt Flow	504	540	671	438	90	236

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	504	0	2554	774
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	1780	-
Critical Hdwy	-	-	4.16	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.254	-	3.563	3.363
Pot Cap-1 Maneuver	-	-	1040	-	~ 28	391
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	144	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1040	-	~ 4	391
Mov Cap-2 Maneuver	-	-	-	-	~ 4	-
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	~ 21	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.8	$ 3201.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	4	391	-	-	1040	-
HCM Lane V/C Ratio	22.606	0.604	-	-	0.645	-
HCM Control Delay (s)	$ 11492.6	27.3	-	-	14.5	0
HCM Lane LOS	F	D	-	-	B	A
HCM 95th %tile Q(veh)	13.3	3.8	-	-	4.9	-

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

Intersection	
Int Delay, s/veh	42.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	539	264	226	581	95	282
Future Vol, veh/h	539	264	226	581	95	282
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	0	1	2
Mvmt Flow	599	293	251	646	106	313

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	599	0	1894	746
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	1148	-
Critical Hdwy	-	-	4.1	-	6.41	6.22
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.318
Pot Cap-1 Maneuver	-	-	988	-	~ 77	413
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	304	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	988	-	~ 47	413
Mov Cap-2 Maneuver	-	-	-	-	~ 47	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	184	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	218
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	47	413	-	-	988	-
HCM Lane V/C Ratio	2.246	0.759	-	-	0.254	-
HCM Control Delay (s)	$ 756.9	36.4	-	-	9.9	0
HCM Lane LOS	F	E	-	-	A	A
HCM 95th %tile Q(veh)	10.9	6.3	-	-	1	-

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

Intersection	
Int Delay, s/veh	422.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	473	502	600	391	85	232
Future Vol, veh/h	473	502	600	391	85	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	89	89	94	94
Heavy Vehicles, %	2	0	6	3	7	7
Mvmt Flow	509	540	674	439	90	247

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	509	0	2566	779
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	1787	-
Critical Hdwy	-	-	4.16	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.254	-	3.563	3.363
Pot Cap-1 Maneuver	-	-	1036	-	~ 28	388
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	143	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1036	-	~ 4	388
Mov Cap-2 Maneuver	-	-	-	-	~ 4	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	~ 20	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.9	$ 3102.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	4	388	-	-	1036	-
HCM Lane V/C Ratio	22.606	0.636	-	-	0.651	-
HCM Control Delay (s)	$ 11492.6	29.1	-	-	14.7	0
HCM Lane LOS	F	D	-	-	B	A
HCM 95th %tile Q(veh)	13.3	4.2	-	-	5	-

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

Intersection	
Int Delay, s/veh	48.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	541	264	241	587	95	286
Future Vol, veh/h	541	264	241	587	95	286
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	0	1	2
Mvmt Flow	601	293	268	652	106	318

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	601	0	1936	748
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	1188	-
Critical Hdwy	-	-	4.1	-	6.41	6.22
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.318
Pot Cap-1 Maneuver	-	-	986	-	~ 73	412
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	291	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	986	-	~ 42	412
Mov Cap-2 Maneuver	-	-	-	-	~ 42	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	167	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	250.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	42	412	-	-	986	-
HCM Lane V/C Ratio	2.513	0.771	-	-	0.272	-
HCM Control Delay (s)	$ 892.6	37.7	-	-	10	0
HCM Lane LOS	F	E	-	-	B	A
HCM 95th %tile Q(veh)	11.4	6.5	-	-	1.1	-

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

Route 62 at the I-93 Northbound Ramps

Intersection	
Int Delay, s/veh	165.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	486	141	306	784	107	157
Future Vol, veh/h	486	141	306	784	107	157
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	89	89	92	92
Heavy Vehicles, %	5	8	9	8	3	19
Mvmt Flow	528	153	344	881	116	171

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	2174	605
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	1569	-
Critical Hdwy	-	-	4.19	-	6.43	6.39
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.281	-	3.527	3.471
Pot Cap-1 Maneuver	-	-	1004	-	~ 51	468
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	187	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1004	-	~ 17	468
Mov Cap-2 Maneuver	-	-	-	-	~ 17	-
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	~ 62	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	$ 1255.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	17	468	-	-	1004	-
HCM Lane V/C Ratio	6.841	0.365	-	-	0.342	-
HCM Control Delay (s)	$ 3073.6	17	-	-	10.4	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	15.3	1.6	-	-	1.5	-

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

Intersection	
Int Delay, s/veh	183.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	569	179	211	465	255	322
Future Vol, veh/h	569	179	211	465	255	322
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	89	89	96	96
Heavy Vehicles, %	1	2	1	0	0	1
Mvmt Flow	605	190	237	522	266	335

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	1696	700
Stage 1	-	-	-	-	700	-
Stage 2	-	-	-	-	996	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	978	-	~ 103	441
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	360	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	978	-	~ 68	441
Mov Cap-2 Maneuver	-	-	-	-	~ 68	-
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	~ 237	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	$ 652.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	68	441	-	-	978	-
HCM Lane V/C Ratio	3.906	0.761	-	-	0.242	-
HCM Control Delay (s)	$ 1433.4	34.8	-	-	9.9	0
HCM Lane LOS	F	D	-	-	A	A
HCM 95th %tile Q(veh)	28.2	6.4	-	-	0.9	-

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

Intersection	
Int Delay, s/veh	654.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	535	156	335	870	117	180
Future Vol, veh/h	535	156	335	870	117	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	89	89	92	92
Heavy Vehicles, %	5	8	9	8	3	19
Mvmt Flow	582	170	376	978	127	196

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	582	0	2397	667
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	1730	-
Critical Hdwy	-	-	4.19	-	6.43	6.39
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.281	-	3.527	3.471
Pot Cap-1 Maneuver	-	-	959	-	~ 37	430
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	156	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	959	-	~ 5	430
Mov Cap-2 Maneuver	-	-	-	-	~ 5	-
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	~ 22	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	$ 4906.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	5	430	-	-	959	-
HCM Lane V/C Ratio	25.435	0.455	-	-	0.392	-
HCM Control Delay (s)	$ 12425	20.2	-	-	11.2	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	17.9	2.3	-	-	1.9	-

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

Intersection	
Int Delay, s/veh	320.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	626	195	231	529	278	369
Future Vol, veh/h	626	195	231	529	278	369
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	89	89	96	96
Heavy Vehicles, %	1	2	1	0	0	1
Mvmt Flow	666	207	260	594	290	384

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	666	0	1884	770
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	1114	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	928	-	~ 79	402
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	317	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	928	-	~ 46	402
Mov Cap-2 Maneuver	-	-	-	-	~ 46	-
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	~ 184	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	$ 1136.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	46	402	-	-	928	-
HCM Lane V/C Ratio	6.295	0.956	-	-	0.28	-
HCM Control Delay (s)	$ 2555.8	66.9	-	-	10.4	0
HCM Lane LOS	F	F	-	-	B	A
HCM 95th %tile Q(veh)	33.7	11	-	-	1.1	-

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

Intersection	
Int Delay, s/veh	811

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	549	156	338	874	117	191
Future Vol, veh/h	549	156	338	874	117	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	89	89	92	92
Heavy Vehicles, %	5	8	9	8	3	19
Mvmt Flow	597	170	380	982	127	208

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	597	0	2424	682
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	1742	-
Critical Hdwy	-	-	4.19	-	6.43	6.39
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.281	-	3.527	3.471
Pot Cap-1 Maneuver	-	-	946	-	~ 35	422
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	154	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	946	-	~ 4	422
Mov Cap-2 Maneuver	-	-	-	-	~ 4	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	~ 18	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	$ 5953.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	4	422	-	-	946	-
HCM Lane V/C Ratio	31.793	0.492	-	-	0.401	-
HCM Control Delay (s)	$ 15636.2	21.5	-	-	11.3	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	18	2.6	-	-	2	-

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

Intersection	
Int Delay, s/veh	367.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	632	195	243	550	278	374
Future Vol, veh/h	632	195	243	550	278	374
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	89	89	96	96
Heavy Vehicles, %	1	2	1	0	0	1
Mvmt Flow	672	207	273	618	290	390

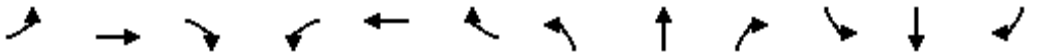
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	672	0	1940	776
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	1164	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	923	-	~ 73	399
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	300	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	923	-	~ 40	399
Mov Cap-2 Maneuver	-	-	-	-	~ 40	-
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	~ 165	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	$ 1321.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	40	399	-	-	923	-
HCM Lane V/C Ratio	7.24	0.976	-	-	0.296	-
HCM Control Delay (s)	$ 3003.6	71.9	-	-	10.5	0
HCM Lane LOS	F	F	-	-	B	A
HCM 95th %tile Q(veh)	34.4	11.5	-	-	1.2	-

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

Route 62 at Woburn Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	474	39	16	633	30	69	45	17	17	35	388
Future Volume (vph)	130	474	39	16	633	30	69	45	17	17	35	388
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
Frt		0.989				0.850		0.983			0.881	
Flt Protected	0.950				0.999			0.974			0.998	
Satd. Flow (prot)	1711	1761	0	0	1718	1561	0	2040	0	0	1707	0
Flt Permitted	0.950				0.982			0.220			0.985	
Satd. Flow (perm)	1711	1761	0	0	1688	1561	0	461	0	0	1685	0
Satd. Flow (RTOR)		6				88		5			260	
Adj. Flow (vph)	148	539	44	17	666	32	86	56	21	19	39	431
Lane Group Flow (vph)	148	583	0	0	683	32	0	163	0	0	489	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		56.0	56.0	56.0	22.5	22.5		22.5	22.5	
Total Split (s)	19.0	75.0		56.0	56.0	56.0	25.0	25.0		25.0	25.0	
Total Split (%)	15.3%	60.5%		45.2%	45.2%	45.2%	20.2%	20.2%		20.2%	20.2%	
Maximum Green (s)	14.0	70.0		51.0	51.0	51.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.60	0.48			0.80	0.04		1.54			0.85	
Control Delay	50.2	8.0			28.2	0.1		310.7			32.3	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	50.2	8.0			28.2	0.1		310.7			32.3	
Queue Length 50th (ft)	89	138			335	0		~149			149	
Queue Length 95th (ft)	150	194			496	0		#242			#335	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	273	1332			934	903		106			578	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.54	0.44			0.73	0.04		1.54			0.85	

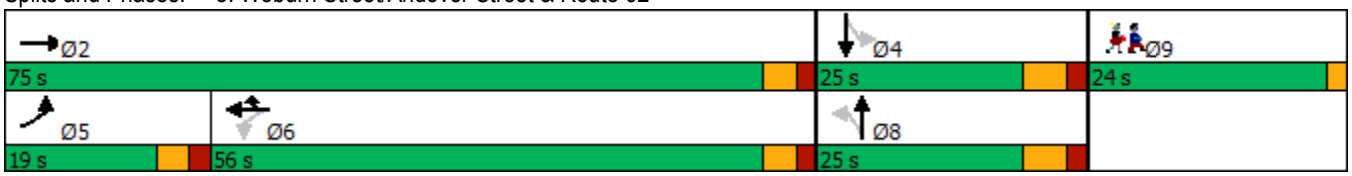
Intersection Summary
Cycle Length: 124

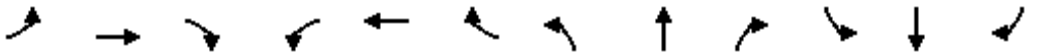
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	19%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 94.7
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

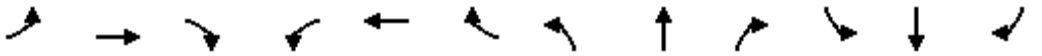




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	474	39	16	633	30	69	45	17	17	35	388
Future Volume (vph)	130	474	39	16	633	30	69	45	17	17	35	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.88	
Flt Protected	0.95	1.00			1.00	1.00		0.97			1.00	
Satd. Flow (prot)	1711	1761			1717	1561		2040			1707	
Flt Permitted	0.95	1.00			0.98	1.00		0.22			0.99	
Satd. Flow (perm)	1711	1761			1688	1561		461			1685	
Peak-hour factor, PHF	0.88	0.88	0.88	0.95	0.95	0.95	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	148	539	44	17	666	32	86	56	21	19	39	431
RTOR Reduction (vph)	0	2	0	0	0	16	0	4	0	0	202	0
Lane Group Flow (vph)	148	581	0	0	683	16	0	159	0	0	287	0
Heavy Vehicles (%)	2%	7%	3%	0%	7%	0%	2%	0%	0%	6%	0%	1%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	12.6	64.4			46.8	46.8		19.1			19.1	
Effective Green, g (s)	13.6	65.4			47.8	47.8		21.1			21.1	
Actuated g/C Ratio	0.14	0.69			0.51	0.51		0.22			0.22	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	246	1218			853	789		102			376	
v/s Ratio Prot	c0.09	0.33				0.01						
v/s Ratio Perm					c0.40			c0.35			0.17	
v/c Ratio	0.60	0.48			0.80	0.02		1.56			0.76	
Uniform Delay, d1	37.9	6.7			19.4	11.7		36.7			34.4	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	4.1	0.3			5.4	0.0		294.1			8.9	
Delay (s)	42.0	7.0			24.8	11.7		330.8			43.3	
Level of Service	D	A			C	B		F			D	
Approach Delay (s)		14.1			24.2			330.8			43.3	
Approach LOS		B			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	108.8%	ICU Level of Service	G
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)	151	659	81	11	530	29	52	71	27	47	63	94
Future Volume (vph)	151	659	81	11	530	29	52	71	27	47	63	94
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
Frt		0.984				0.850		0.976			0.938	
Flt Protected	0.950				0.999			0.983			0.989	
Satd. Flow (prot)	1745	1853	0	0	1817	1561	0	2066	0	0	1821	0
Flt Permitted	0.950				0.983			0.756			0.879	
Satd. Flow (perm)	1745	1853	0	0	1788	1561	0	1589	0	0	1619	0
Satd. Flow (RTOR)		8				88		8			30	
Adj. Flow (vph)	159	694	85	11	546	30	63	86	33	52	69	103
Lane Group Flow (vph)	159	779	0	0	557	30	0	182	0	0	224	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		56.0	56.0	56.0	22.5	22.5		22.5	22.5	
Total Split (s)	19.0	75.0		56.0	56.0	56.0	25.0	25.0		25.0	25.0	
Total Split (%)	15.3%	60.5%		45.2%	45.2%	45.2%	20.2%	20.2%		20.2%	20.2%	
Maximum Green (s)	14.0	70.0		51.0	51.0	51.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.53	0.68			0.79	0.04		0.48			0.55	
Control Delay	43.7	15.3			32.3	0.1		35.5			33.9	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	43.7	15.3			32.3	0.1		35.5			33.9	
Queue Length 50th (ft)	70	211			235	0		70			80	
Queue Length 95th (ft)	#231	595			514	0		194			#265	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	347	1605			1232	1103		448			472	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.46	0.49			0.45	0.03		0.41			0.47	

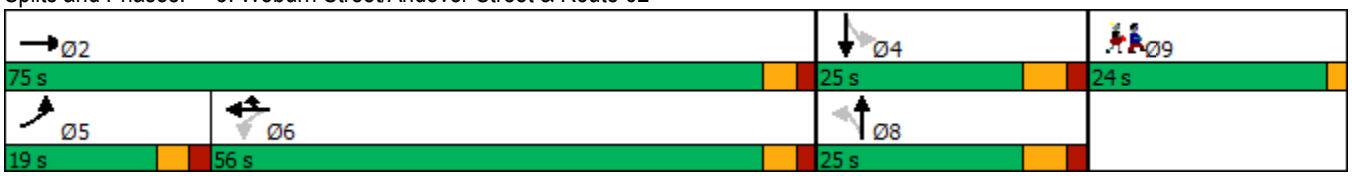
Intersection Summary
Cycle Length: 124

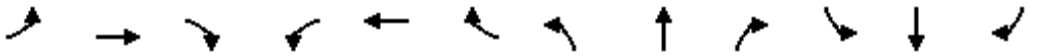
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	19%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 81.4
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

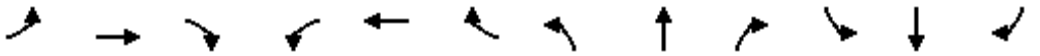




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	659	81	11	530	29	52	71	27	47	63	94
Future Volume (vph)	151	659	81	11	530	29	52	71	27	47	63	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.98			1.00	0.85		0.98			0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.99	
Satd. Flow (prot)	1745	1852			1817	1561		2065			1820	
Flt Permitted	0.95	1.00			0.98	1.00		0.76			0.88	
Satd. Flow (perm)	1745	1852			1788	1561		1589			1620	
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	159	694	85	11	546	30	63	86	33	52	69	103
RTOR Reduction (vph)	0	3	0	0	0	18	0	6	0	0	23	0
Lane Group Flow (vph)	159	776	0	0	557	12	0	176	0	0	201	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	12.9	49.2			31.3	31.3		17.1			17.1	
Effective Green, g (s)	13.9	50.2			32.3	32.3		19.1			19.1	
Actuated g/C Ratio	0.17	0.61			0.39	0.39		0.23			0.23	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	295	1131			702	613		369			376	
v/s Ratio Prot	0.09	c0.42				0.01						
v/s Ratio Perm					c0.31			0.11			c0.12	
v/c Ratio	0.54	0.69			0.79	0.02		0.48			0.53	
Uniform Delay, d1	31.2	10.7			22.0	15.3		27.2			27.7	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	1.9	1.7			6.2	0.0		1.0			1.5	
Delay (s)	33.1	12.5			28.2	15.3		28.2			29.1	
Level of Service	C	B			C	B		C			C	
Approach Delay (s)		16.0			27.5			28.2			29.1	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
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)	142	531	42	20	714	35	74	48	20	40	126	417
Future Volume (vph)	142	531	42	20	714	35	74	48	20	40	126	417
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
Frt		0.989				0.850		0.981			0.903	
Flt Protected	0.950				0.999			0.975			0.997	
Satd. Flow (prot)	1711	1761	0	0	1718	1561	0	2038	0	0	1748	0
Flt Permitted	0.950				0.976			0.223			0.963	
Satd. Flow (perm)	1711	1761	0	0	1678	1561	0	466	0	0	1688	0
Satd. Flow (RTOR)		5				88		6			88	
Adj. Flow (vph)	161	603	48	21	752	37	93	60	25	44	140	463
Lane Group Flow (vph)	161	651	0	0	773	37	0	178	0	0	647	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		56.0	56.0	56.0	22.5	22.5		22.5	22.5	
Total Split (s)	19.0	75.0		56.0	56.0	56.0	25.0	25.0		25.0	25.0	
Total Split (%)	15.3%	60.5%		45.2%	45.2%	45.2%	20.2%	20.2%		20.2%	20.2%	
Maximum Green (s)	14.0	70.0		51.0	51.0	51.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.66	0.52			0.88	0.04		1.73			1.52	
Control Delay	54.2	8.5			34.4	0.1		392.2			270.9	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	54.2	8.5			34.4	0.1		392.2			270.9	
Queue Length 50th (ft)	98	163			418	0		~168			~538	
Queue Length 95th (ft)	162	230			#675	0		#263			#757	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	258	1262			880	860		103			427	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.62	0.52			0.88	0.04		1.73			1.52	

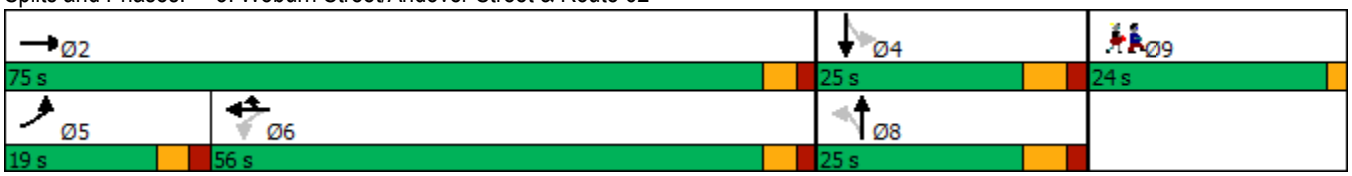
Intersection Summary
Cycle Length: 124

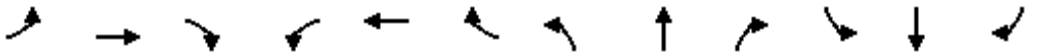
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	19%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 99.1
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

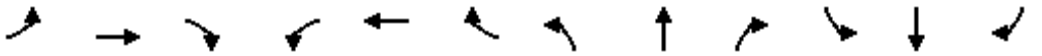




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	531	42	20	714	35	74	48	20	40	126	417
Future Volume (vph)	142	531	42	20	714	35	74	48	20	40	126	417
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.90	
Flt Protected	0.95	1.00			1.00	1.00		0.97			1.00	
Satd. Flow (prot)	1711	1761			1717	1561		2037			1748	
Flt Permitted	0.95	1.00			0.98	1.00		0.22			0.96	
Satd. Flow (perm)	1711	1761			1679	1561		467			1690	
Peak-hour factor, PHF	0.88	0.88	0.88	0.95	0.95	0.95	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	161	603	48	21	752	37	92	60	25	44	140	463
RTOR Reduction (vph)	0	1	0	0	0	18	0	5	0	0	69	0
Lane Group Flow (vph)	161	650	0	0	773	19	0	173	0	0	578	0
Heavy Vehicles (%)	2%	7%	3%	0%	7%	0%	2%	0%	0%	6%	0%	1%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	13.1	69.1			51.0	51.0		19.0			19.0	
Effective Green, g (s)	14.1	70.1			52.0	52.0		21.0			21.0	
Actuated g/C Ratio	0.14	0.71			0.52	0.52		0.21			0.21	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	243	1245			881	819		98			358	
v/s Ratio Prot	c0.09	0.37				0.01						
v/s Ratio Perm					c0.46			c0.37			0.34	
v/c Ratio	0.66	0.52			0.88	0.02		1.77			1.61	
Uniform Delay, d1	40.2	6.7			20.7	11.3		39.0			39.0	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	6.6	0.4			9.8	0.0		383.7			288.7	
Delay (s)	46.9	7.1			30.6	11.3		422.8			327.8	
Level of Service	D	A			C	B		F			F	
Approach Delay (s)		15.0			29.7			422.8			327.8	
Approach LOS		B			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	132.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	113.7%	ICU Level of Service	H
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)	163	755	88	16	634	35	56	76	33	55	68	103
Future Volume (vph)	163	755	88	16	634	35	56	76	33	55	68	103
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
Frt		0.984				0.850		0.973			0.938	
Flt Protected	0.950				0.999			0.983			0.988	
Satd. Flow (prot)	1745	1853	0	0	1817	1561	0	2060	0	0	1820	0
Flt Permitted	0.950				0.973			0.667			0.814	
Satd. Flow (perm)	1745	1853	0	0	1770	1561	0	1397	0	0	1499	0
Satd. Flow (RTOR)		8				88		9			29	
Adj. Flow (vph)	172	795	93	16	654	36	67	92	40	60	75	113
Lane Group Flow (vph)	172	888	0	0	670	36	0	199	0	0	248	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		56.0	56.0	56.0	22.5	22.5		22.5	22.5	
Total Split (s)	19.0	75.0		56.0	56.0	56.0	25.0	25.0		25.0	25.0	
Total Split (%)	15.3%	60.5%		45.2%	45.2%	45.2%	20.2%	20.2%		20.2%	20.2%	
Maximum Green (s)	14.0	70.0		51.0	51.0	51.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.70	0.71			0.77	0.04		0.68			0.75	
Control Delay	59.4	16.0			29.8	0.1		50.7			50.6	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	59.4	16.0			29.8	0.1		50.7			50.6	
Queue Length 50th (ft)	105	270			315	0		112			132	
Queue Length 95th (ft)	#256	762			#730	0		#239			#331	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	259	1308			914	848		298			335	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.66	0.68			0.73	0.04		0.67			0.74	

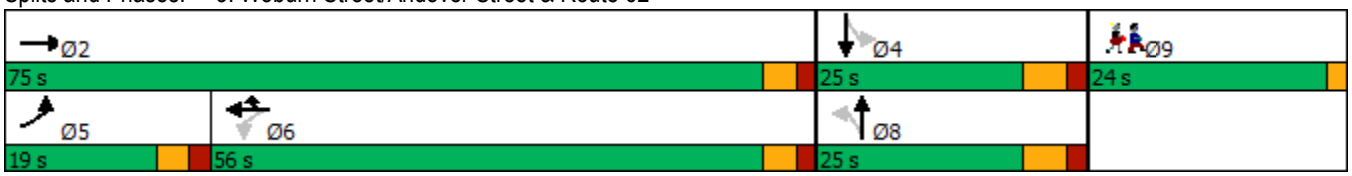
Intersection Summary
Cycle Length: 124

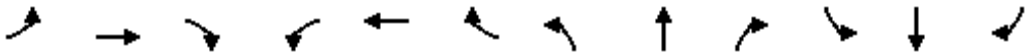
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	19%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 102
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

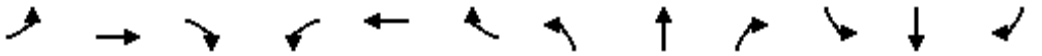




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	755	88	16	634	35	56	76	33	55	68	103
Future Volume (vph)	163	755	88	16	634	35	56	76	33	55	68	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.98			1.00	0.85		0.97			0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.99	
Satd. Flow (prot)	1745	1854			1817	1561		2060			1821	
Flt Permitted	0.95	1.00			0.97	1.00		0.67			0.81	
Satd. Flow (perm)	1745	1854			1770	1561		1397			1501	
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	172	795	93	16	654	36	67	92	40	60	75	113
RTOR Reduction (vph)	0	3	0	0	0	18	0	7	0	0	23	0
Lane Group Flow (vph)	172	885	0	0	670	18	0	192	0	0	225	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	13.5	67.9			49.4	49.4		19.0			19.0	
Effective Green, g (s)	14.5	68.9			50.4	50.4		21.0			21.0	
Actuated g/C Ratio	0.14	0.67			0.49	0.49		0.20			0.20	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	244	1234			861	760		283			304	
v/s Ratio Prot	0.10	c0.48				0.01						
v/s Ratio Perm					c0.38			0.14			c0.15	
v/c Ratio	0.70	0.72			0.78	0.02		0.68			0.74	
Uniform Delay, d1	42.5	11.1			21.9	13.8		38.1			38.7	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	8.9	2.0			4.5	0.0		6.3			9.1	
Delay (s)	51.4	13.1			26.4	13.8		44.4			47.8	
Level of Service	D	B			C	B		D			D	
Approach Delay (s)		19.3			25.8			44.4			47.8	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
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)	142	556	42	20	721	35	74	48	21	41	126	417
Future Volume (vph)	142	556	42	20	721	35	74	48	21	41	126	417
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
Frt		0.989				0.850		0.980			0.904	
Flt Protected	0.950				0.999			0.975			0.996	
Satd. Flow (prot)	1711	1761	0	0	1718	1561	0	2036	0	0	1748	0
Flt Permitted	0.950				0.976			0.227			0.961	
Satd. Flow (perm)	1711	1761	0	0	1678	1561	0	474	0	0	1686	0
Satd. Flow (RTOR)		5				88		6			87	
Adj. Flow (vph)	161	632	48	21	759	37	93	60	26	46	140	463
Lane Group Flow (vph)	161	680	0	0	780	37	0	179	0	0	649	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		56.0	56.0	56.0	22.5	22.5		22.5	22.5	
Total Split (s)	19.0	75.0		56.0	56.0	56.0	25.0	25.0		25.0	25.0	
Total Split (%)	15.3%	60.5%		45.2%	45.2%	45.2%	20.2%	20.2%		20.2%	20.2%	
Maximum Green (s)	14.0	70.0		51.0	51.0	51.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.66	0.55			0.89	0.04		1.70			1.53	
Control Delay	54.2	8.8			35.3	0.1		383.2			275.4	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	54.2	8.8			35.3	0.1		383.2			275.4	
Queue Length 50th (ft)	98	176			426	0		~168			~542	
Queue Length 95th (ft)	162	247			#685	0		#263			#762	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	258	1262			880	860		105			425	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.62	0.54			0.89	0.04		1.70			1.53	

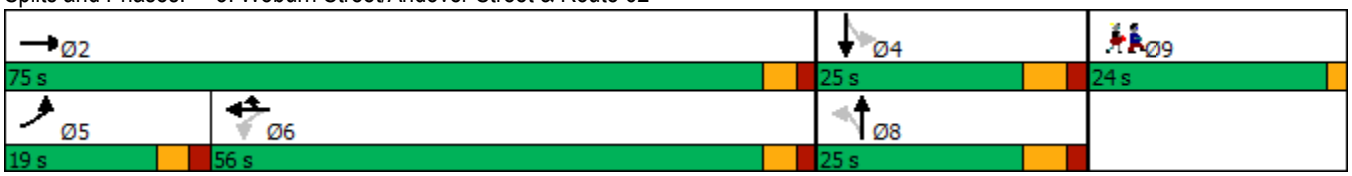
Intersection Summary
Cycle Length: 124

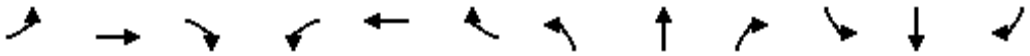
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	19%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 99.1
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

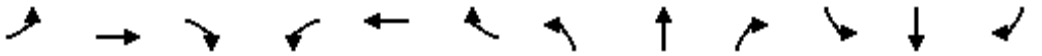




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	556	42	20	721	35	74	48	21	41	126	417
Future Volume (vph)	142	556	42	20	721	35	74	48	21	41	126	417
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.90	
Flt Protected	0.95	1.00			1.00	1.00		0.97			1.00	
Satd. Flow (prot)	1711	1762			1717	1561		2036			1748	
Flt Permitted	0.95	1.00			0.98	1.00		0.23			0.96	
Satd. Flow (perm)	1711	1762			1678	1561		474			1686	
Peak-hour factor, PHF	0.88	0.88	0.88	0.95	0.95	0.95	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	161	632	48	21	759	37	92	60	26	46	140	463
RTOR Reduction (vph)	0	1	0	0	0	18	0	5	0	0	69	0
Lane Group Flow (vph)	161	679	0	0	780	19	0	174	0	0	580	0
Heavy Vehicles (%)	2%	7%	3%	0%	7%	0%	2%	0%	0%	6%	0%	1%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	13.1	69.1			51.0	51.0		19.0			19.0	
Effective Green, g (s)	14.1	70.1			52.0	52.0		21.0			21.0	
Actuated g/C Ratio	0.14	0.71			0.52	0.52		0.21			0.21	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	243	1246			880	819		100			357	
v/s Ratio Prot	c0.09	0.39				0.01						
v/s Ratio Perm					c0.46			c0.37			0.34	
v/c Ratio	0.66	0.54			0.89	0.02		1.74			1.63	
Uniform Delay, d1	40.2	6.9			20.9	11.3		39.0			39.0	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	6.6	0.5			10.7	0.0		372.2			294.2	
Delay (s)	46.9	7.4			31.6	11.3		411.2			333.2	
Level of Service	D	A			C	B		F			F	
Approach Delay (s)		15.0			30.7			411.2			333.2	
Approach LOS		B			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	131.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	115.4%	ICU Level of Service	H
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)	163	755	88	16	634	36	56	76	33	55	68	103
Future Volume (vph)	163	755	88	16	634	36	56	76	33	55	68	103
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
Frt		0.984				0.850		0.973			0.938	
Flt Protected	0.950				0.999			0.983			0.988	
Satd. Flow (prot)	1745	1853	0	0	1817	1561	0	2060	0	0	1820	0
Flt Permitted	0.950				0.973			0.667			0.814	
Satd. Flow (perm)	1745	1853	0	0	1770	1561	0	1397	0	0	1499	0
Satd. Flow (RTOR)		8				88		9			29	
Adj. Flow (vph)	172	795	93	16	654	37	67	92	40	60	75	113
Lane Group Flow (vph)	172	888	0	0	670	37	0	199	0	0	248	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		56.0	56.0	56.0	22.5	22.5		22.5	22.5	
Total Split (s)	19.0	75.0		56.0	56.0	56.0	25.0	25.0		25.0	25.0	
Total Split (%)	15.3%	60.5%		45.2%	45.2%	45.2%	20.2%	20.2%		20.2%	20.2%	
Maximum Green (s)	14.0	70.0		51.0	51.0	51.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.70	0.71			0.77	0.05		0.68			0.75	
Control Delay	59.4	16.0			29.8	0.1		50.7			50.6	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	59.4	16.0			29.8	0.1		50.7			50.6	
Queue Length 50th (ft)	105	270			315	0		112			132	
Queue Length 95th (ft)	#256	762			#730	0		#239			#331	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	259	1308			914	848		298			335	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.66	0.68			0.73	0.04		0.67			0.74	

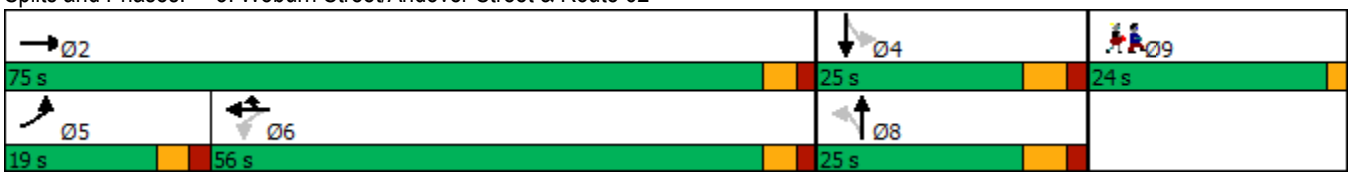
Intersection Summary
Cycle Length: 124

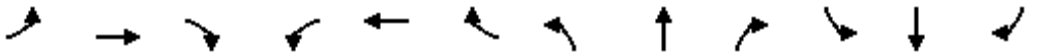
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	19%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 102
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

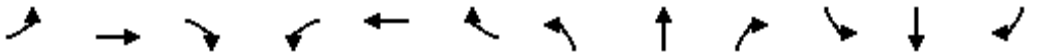




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	755	88	16	634	36	56	76	33	55	68	103
Future Volume (vph)	163	755	88	16	634	36	56	76	33	55	68	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.98			1.00	0.85		0.97			0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.99	
Satd. Flow (prot)	1745	1854			1817	1561		2060			1821	
Flt Permitted	0.95	1.00			0.97	1.00		0.67			0.81	
Satd. Flow (perm)	1745	1854			1770	1561		1397			1501	
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	172	795	93	16	654	37	67	92	40	60	75	113
RTOR Reduction (vph)	0	3	0	0	0	19	0	7	0	0	23	0
Lane Group Flow (vph)	172	885	0	0	670	18	0	192	0	0	225	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	13.5	67.9			49.4	49.4		19.0			19.0	
Effective Green, g (s)	14.5	68.9			50.4	50.4		21.0			21.0	
Actuated g/C Ratio	0.14	0.67			0.49	0.49		0.20			0.20	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	244	1234			861	760		283			304	
v/s Ratio Prot	0.10	c0.48				0.01						
v/s Ratio Perm					c0.38			0.14			c0.15	
v/c Ratio	0.70	0.72			0.78	0.02		0.68			0.74	
Uniform Delay, d1	42.5	11.1			21.9	13.8		38.1			38.7	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	8.9	2.0			4.5	0.0		6.3			9.1	
Delay (s)	51.4	13.1			26.4	13.8		44.4			47.8	
Level of Service	D	B			C	B		D			D	
Approach Delay (s)		19.3			25.7			44.4			47.8	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
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)	142	556	42	20	721	35	74	48	21	41	126	417
Future Volume (vph)	142	556	42	20	721	35	74	48	21	41	126	417
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
Frt		0.989				0.850		0.980			0.904	
Flt Protected	0.950				0.999			0.975			0.996	
Satd. Flow (prot)	1711	1761	0	0	1718	1561	0	2036	0	0	1748	0
Flt Permitted	0.087				0.975			0.360			0.965	
Satd. Flow (perm)	157	1761	0	0	1677	1561	0	752	0	0	1693	0
Satd. Flow (RTOR)		4				91		7			102	
Adj. Flow (vph)	161	632	48	21	759	37	93	60	26	46	140	463
Lane Group Flow (vph)	161	680	0	0	780	37	0	179	0	0	649	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	11.0	11.0		11.0	11.0	
Total Split (s)	10.0	60.0		50.0	50.0	50.0	36.0	36.0		36.0	36.0	
Total Split (%)	8.3%	50.0%		41.7%	41.7%	41.7%	30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	5.0	55.0		45.0	45.0	45.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.86	0.66			0.97	0.05		0.70			1.03	
Control Delay	54.2	17.4			51.4	0.1		43.8			71.1	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	54.2	17.4			51.4	0.1		43.8			71.1	
Queue Length 50th (ft)	44	260			446	0		91			~381	
Queue Length 95th (ft)	#151	369			#707	0		147			#597	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	188	1028			803	795		255			632	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.86	0.66			0.97	0.05		0.70			1.03	

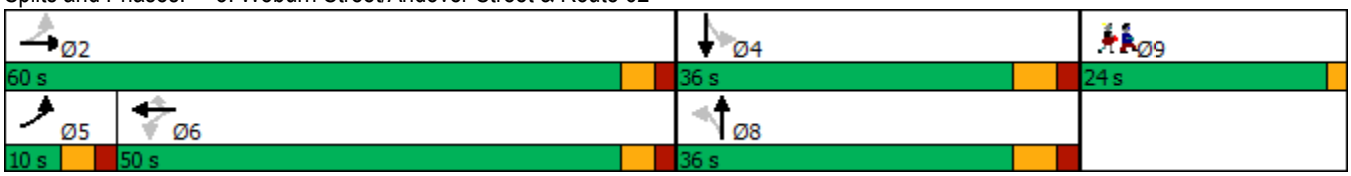
Intersection Summary
Cycle Length: 120

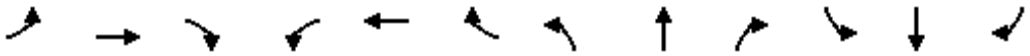
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	20%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 96
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62

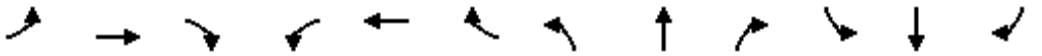




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	556	42	20	721	35	74	48	21	41	126	417
Future Volume (vph)	142	556	42	20	721	35	74	48	21	41	126	417
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.90	
Flt Protected	0.95	1.00			1.00	1.00		0.97			1.00	
Satd. Flow (prot)	1711	1762			1717	1561		2036			1748	
Flt Permitted	0.09	1.00			0.98	1.00		0.36			0.97	
Satd. Flow (perm)	157	1762			1677	1561		753			1694	
Peak-hour factor, PHF	0.88	0.88	0.88	0.95	0.95	0.95	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	161	632	48	21	759	37	92	60	26	46	140	463
RTOR Reduction (vph)	0	2	0	0	0	19	0	5	0	0	68	0
Lane Group Flow (vph)	161	678	0	0	780	18	0	174	0	0	581	0
Heavy Vehicles (%)	2%	7%	3%	0%	7%	0%	2%	0%	0%	6%	0%	1%
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	55.0	55.0			45.0	45.0		30.0			30.0	
Effective Green, g (s)	56.0	56.0			46.0	46.0		32.0			32.0	
Actuated g/C Ratio	0.58	0.58			0.48	0.48		0.33			0.33	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	188	1027			803	747		251			564	
v/s Ratio Prot	c0.05	0.39										
v/s Ratio Perm	0.44				c0.47	0.01		0.23			c0.34	
v/c Ratio	0.86	0.66			0.97	0.02		0.69			1.03	
Uniform Delay, d1	19.8	13.6			24.4	13.2		27.8			32.0	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	29.7	1.6			24.8	0.0		8.1			45.8	
Delay (s)	49.5	15.2			49.1	13.2		35.8			77.8	
Level of Service	D	B			D	B		D			E	
Approach Delay (s)		21.7			47.5			35.8			77.8	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	115.4%	ICU Level of Service	H
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)	163	755	88	16	634	35	56	76	33	55	68	103
Future Volume (vph)	163	755	88	16	634	35	56	76	33	55	68	103
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
Frt		0.984				0.850		0.973			0.938	
Flt Protected	0.950				0.999			0.983			0.988	
Satd. Flow (prot)	1745	1853	0	0	1817	1561	0	2060	0	0	1820	0
Flt Permitted	0.950				0.974			0.665			0.814	
Satd. Flow (perm)	1745	1853	0	0	1772	1561	0	1393	0	0	1499	0
Satd. Flow (RTOR)		8				95		9			31	
Adj. Flow (vph)	172	795	93	16	654	36	67	92	40	60	75	113
Lane Group Flow (vph)	172	888	0	0	670	36	0	199	0	0	248	0
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5		10.0	10.0	10.0	11.0	11.0		11.0	11.0	
Total Split (s)	19.0	68.0		49.0	49.0	49.0	23.0	23.0		23.0	23.0	
Total Split (%)	16.5%	59.1%		42.6%	42.6%	42.6%	20.0%	20.0%		20.0%	20.0%	
Maximum Green (s)	14.0	63.0		44.0	44.0	44.0	17.0	17.0		17.0	17.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.67	0.71			0.79	0.05		0.69			0.76	
Control Delay	53.5	16.0			30.7	0.1		49.0			48.6	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	53.5	16.0			30.7	0.1		49.0			48.6	
Queue Length 50th (ft)	93	247			299	0		101			118	
Queue Length 95th (ft)	#232	#766			#725	0		#233			#317	
Internal Link Dist (ft)		487			500			289			273	
Turn Bay Length (ft)	350					85						
Base Capacity (vph)	279	1267			850	798		289			328	
Starvation Cap Reductn	0	0			0	0		0			0	
Spillback Cap Reductn	0	0			0	0		0			0	
Storage Cap Reductn	0	0			0	0		0			0	
Reduced v/c Ratio	0.62	0.70			0.79	0.05		0.69			0.76	

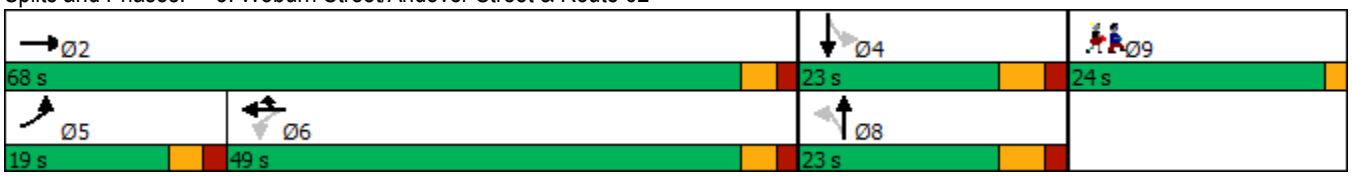
Intersection Summary
Cycle Length: 115

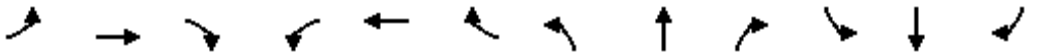
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	21%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
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)	15.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 94.7
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Woburn Street/Andover Street & Route 62





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	755	88	16	634	35	56	76	33	55	68	103
Future Volume (vph)	163	755	88	16	634	35	56	76	33	55	68	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	11	16	16	16	13	13	13
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Frt	1.00	0.98			1.00	0.85		0.97			0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.99	
Satd. Flow (prot)	1745	1854			1817	1561		2060			1821	
Flt Permitted	0.95	1.00			0.97	1.00		0.67			0.81	
Satd. Flow (perm)	1745	1854			1771	1561		1393			1501	
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	172	795	93	16	654	36	67	92	40	60	75	113
RTOR Reduction (vph)	0	3	0	0	0	19	0	7	0	0	25	0
Lane Group Flow (vph)	172	885	0	0	670	17	0	192	0	0	223	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Perm	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2			6	6		8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	13.0	62.5			44.5	44.5		17.2			17.2	
Effective Green, g (s)	14.0	63.5			45.5	45.5		19.2			19.2	
Actuated g/C Ratio	0.15	0.66			0.47	0.47		0.20			0.20	
Clearance Time (s)	5.0	5.0			5.0	5.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	253	1222			836	737		277			299	
v/s Ratio Prot	0.10	c0.48				0.01						
v/s Ratio Perm					c0.38			0.14			c0.15	
v/c Ratio	0.68	0.72			0.80	0.02		0.69			0.75	
Uniform Delay, d1	39.0	10.7			21.6	13.5		35.8			36.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	7.1	2.2			5.6	0.0		7.3			9.7	
Delay (s)	46.1	12.9			27.1	13.6		43.1			46.0	
Level of Service	D	B			C	B		D			D	
Approach Delay (s)		18.3			26.4			43.1			46.0	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Route 62 at the West Project Driveway and Shea Concrete Driveway

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	9	467	4	2	640	0	2	0	4	0	0	1
Future Vol, veh/h	9	467	4	2	640	0	2	0	4	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	94	94	94	50	50	50	25	25	25
Heavy Vehicles, %	38	8	0	50	7	0	50	0	0	0	0	100
Mvmt Flow	10	525	4	2	681	0	4	0	8	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	681	0	0	529	0	0	1234	1232	527	1236	1234	681
Stage 1	-	-	-	-	-	-	547	547	-	685	685	-
Stage 2	-	-	-	-	-	-	687	685	-	551	549	-
Critical Hdwy	4.48	-	-	4.6	-	-	7.6	6.5	6.2	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.542	-	-	2.65	-	-	3.95	4	3.3	3.5	4	4.2
Pot Cap-1 Maneuver	764	-	-	834	-	-	123	179	555	154	178	318
Stage 1	-	-	-	-	-	-	445	521	-	441	451	-
Stage 2	-	-	-	-	-	-	368	451	-	522	520	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	764	-	-	834	-	-	119	175	555	149	174	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	175	-	149	174	-
Stage 1	-	-	-	-	-	-	437	511	-	433	449	-
Stage 2	-	-	-	-	-	-	362	449	-	505	510	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	20.1	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	250	764	-	-	834	-	-	318
HCM Lane V/C Ratio	0.048	0.013	-	-	0.003	-	-	0.013
HCM Control Delay (s)	20.1	9.8	0	-	9.3	0	-	16.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	725	0	0	534	0	0	0	0	1	0	0
Future Vol, veh/h	1	725	0	0	534	0	0	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	25	25	25	25	25	25
Heavy Vehicles, %	38	8	0	50	7	0	50	0	0	0	0	100
Mvmt Flow	1	763	0	0	593	0	0	0	0	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	593	0	0	763	0	0	1358	1358	763	1358	1358	593
Stage 1	-	-	-	-	-	-	765	765	-	593	593	-
Stage 2	-	-	-	-	-	-	593	593	-	765	765	-
Critical Hdwy	4.48	-	-	4.6	-	-	7.6	6.5	6.2	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.542	-	-	2.65	-	-	3.95	4	3.3	3.5	4	4.2
Pot Cap-1 Maneuver	829	-	-	670	-	-	100	150	408	127	150	363
Stage 1	-	-	-	-	-	-	331	415	-	496	497	-
Stage 2	-	-	-	-	-	-	418	497	-	399	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	829	-	-	670	-	-	100	150	408	127	150	363
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	150	-	127	150	-
Stage 1	-	-	-	-	-	-	330	414	-	495	497	-
Stage 2	-	-	-	-	-	-	418	497	-	398	414	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	34.3
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	829	-	-	670	-	-	127
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.031
HCM Control Delay (s)	0	9.3	0	-	0	-	-	34.3
HCM Lane LOS	A	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	9	527	4	2	727	0	2	0	4	0	0	1
Future Vol, veh/h	9	527	4	2	727	0	2	0	4	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	94	94	94	50	50	50	25	25	25
Heavy Vehicles, %	38	8	0	50	7	0	50	0	0	0	0	100
Mvmt Flow	10	592	4	2	773	0	4	0	8	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	773	0	0	596	0	0	1393	1391	594	1395	1393	773
Stage 1	-	-	-	-	-	-	614	614	-	777	777	-
Stage 2	-	-	-	-	-	-	779	777	-	618	616	-
Critical Hdwy	4.48	-	-	4.6	-	-	7.6	6.5	6.2	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.542	-	-	2.65	-	-	3.95	4	3.3	3.5	4	4.2
Pot Cap-1 Maneuver	702	-	-	784	-	-	94	143	509	120	143	277
Stage 1	-	-	-	-	-	-	406	486	-	393	410	-
Stage 2	-	-	-	-	-	-	325	410	-	480	485	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	702	-	-	784	-	-	91	139	509	116	139	277
Mov Cap-2 Maneuver	-	-	-	-	-	-	91	139	-	116	139	-
Stage 1	-	-	-	-	-	-	397	476	-	385	408	-
Stage 2	-	-	-	-	-	-	319	408	-	463	475	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	24	18.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	201	702	-	-	784	-	-	277
HCM Lane V/C Ratio	0.06	0.014	-	-	0.003	-	-	0.014
HCM Control Delay (s)	24	10.2	0	-	9.6	0	-	18.2
HCM Lane LOS	C	B	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	821	0	0	611	0	0	0	0	1	0	0
Future Vol, veh/h	1	821	0	0	611	0	0	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	25	25	25	25	25	25
Heavy Vehicles, %	38	8	0	50	7	0	50	0	0	0	0	100
Mvmt Flow	1	864	0	0	679	0	0	0	0	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	679	0	0	864	0	0	1545	1545	864	1545	1545	679
Stage 1	-	-	-	-	-	-	866	866	-	679	679	-
Stage 2	-	-	-	-	-	-	679	679	-	866	866	-
Critical Hdwy	4.48	-	-	4.6	-	-	7.6	6.5	6.2	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.542	-	-	2.65	-	-	3.95	4	3.3	3.5	4	4.2
Pot Cap-1 Maneuver	766	-	-	609	-	-	73	116	357	94	116	319
Stage 1	-	-	-	-	-	-	289	373	-	445	454	-
Stage 2	-	-	-	-	-	-	372	454	-	351	373	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	766	-	-	609	-	-	73	116	357	94	116	319
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	116	-	94	116	-
Stage 1	-	-	-	-	-	-	288	372	-	444	454	-
Stage 2	-	-	-	-	-	-	372	454	-	350	372	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	45
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	766	-	-	609	-	-	94
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.043
HCM Control Delay (s)	0	9.7	0	-	0	-	-	45
HCM Lane LOS	A	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	538	4	2	727	1	2	0	4	0	0	8
Future Vol, veh/h	25	538	4	2	727	1	2	0	4	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	89	89	94	94	92	50	92	50	92	92	92
Heavy Vehicles, %	2	8	0	50	7	2	50	2	0	2	2	2
Mvmt Flow	27	604	4	2	773	1	4	0	8	0	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	774	0	0	608	0	0	1442	1438	606	1442	1440	774
Stage 1	-	-	-	-	-	-	660	660	-	778	778	-
Stage 2	-	-	-	-	-	-	782	778	-	664	662	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.6	6.52	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	3.95	4.018	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	842	-	-	775	-	-	86	133	501	110	133	398
Stage 1	-	-	-	-	-	-	382	460	-	389	407	-
Stage 2	-	-	-	-	-	-	324	407	-	450	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	842	-	-	775	-	-	81	126	501	104	126	398
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	126	-	104	126	-
Stage 1	-	-	-	-	-	-	364	438	-	370	405	-
Stage 2	-	-	-	-	-	-	315	405	-	422	437	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	25.9	14.2
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	184	842	-	-	775	-	-	398
HCM Lane V/C Ratio	0.065	0.032	-	-	0.003	-	-	0.022
HCM Control Delay (s)	25.9	9.4	0	-	9.7	0	-	14.2
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	823	0	0	621	0	0	0	0	1	0	26
Future Vol, veh/h	11	823	0	0	621	0	0	0	0	1	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	90	90	92	25	92	25	92	92	92
Heavy Vehicles, %	2	8	0	50	7	2	50	2	0	0	0	2
Mvmt Flow	12	866	0	0	690	0	0	0	0	1	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	690	0	0	866	0	0	1594	1580	866	1580	1580	690
Stage 1	-	-	-	-	-	-	890	890	-	690	690	-
Stage 2	-	-	-	-	-	-	704	690	-	890	890	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.6	6.52	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	3.95	4.018	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	905	-	-	608	-	-	67	109	356	89	110	445
Stage 1	-	-	-	-	-	-	279	361	-	439	449	-
Stage 2	-	-	-	-	-	-	360	446	-	340	364	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	905	-	-	608	-	-	62	106	356	87	107	445
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	106	-	87	107	-
Stage 1	-	-	-	-	-	-	272	352	-	428	449	-
Stage 2	-	-	-	-	-	-	337	446	-	331	355	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	15.1
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	905	-	-	608	-	-	386
HCM Lane V/C Ratio	-	0.013	-	-	-	-	-	0.076
HCM Control Delay (s)	0	9	0	-	0	-	-	15.1
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Route 62 at the Center Project Driveway

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	470	640	0	5	2
Future Vol, veh/h	1	470	640	0	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	97	97	44	44
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	1	516	660	0	11	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	660	0	-	0	1178	660
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	938	-	-	-	213	467
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	938	-	-	-	213	467
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	602	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	938	-	-	-	252
HCM Lane V/C Ratio	0.001	-	-	-	0.063
HCM Control Delay (s)	8.8	0	-	-	20.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	725	533	0	0	1
Future Vol, veh/h	1	725	533	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	95	95	25	25
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	1	815	561	0	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	561	0	-	0	1378	561
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	817	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1020	-	-	-	161	531
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1020	-	-	-	161	531
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	438	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1020	-	-	-	531
HCM Lane V/C Ratio	0.001	-	-	-	0.008
HCM Control Delay (s)	8.5	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	530	727	0	5	2
Future Vol, veh/h	1	530	727	0	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	97	97	44	44
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	1	582	749	0	11	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	749	0	-	0	1333	749
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	584	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	869	-	-	-	172	415
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	869	-	-	-	172	415
Mov Cap-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	23.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	869	-	-	-	207
HCM Lane V/C Ratio	0.001	-	-	-	0.077
HCM Control Delay (s)	9.1	0	-	-	23.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	821	610	0	0	1
Future Vol, veh/h	1	821	610	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	95	95	25	25
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	1	922	642	0	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	642	0	-	0	1566	642
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	924	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	952	-	-	-	124	478
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	952	-	-	-	124	478
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	390	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	952	-	-	-	478
HCM Lane V/C Ratio	0.001	-	-	-	0.008
HCM Control Delay (s)	8.8	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Route 62 at the East Project Driveway

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	475	639	12	5	1
Future Vol, veh/h	0	475	639	12	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	97	97	38	38
Heavy Vehicles, %	0	7	7	45	60	0
Mvmt Flow	0	522	659	12	13	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	671	0	-	0	1187	665
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	4.1	-	-	-	7	6.2
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	4.04	3.3
Pot Cap-1 Maneuver	929	-	-	-	160	464
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	929	-	-	-	160	464
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	493	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	26.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	929	-	-	-	180
HCM Lane V/C Ratio	-	-	-	-	0.088
HCM Control Delay (s)	0	-	-	-	26.9
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	725	533	0	0	0
Future Vol, veh/h	0	725	533	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	95	95	25	25
Heavy Vehicles, %	0	7	7	45	60	0
Mvmt Flow	0	815	561	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	561	0	-	0	1376	561
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	815	-
Critical Hdwy	4.1	-	-	-	7	6.2
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	4.04	3.3
Pot Cap-1 Maneuver	1020	-	-	-	120	531
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	350	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1020	-	-	-	120	531
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	350	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1020	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	535	726	12	5	1
Future Vol, veh/h	0	535	726	12	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	97	97	38	38
Heavy Vehicles, %	0	7	7	45	60	0
Mvmt Flow	0	588	748	12	13	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	760	0	-	0	1342	754
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	588	-
Critical Hdwy	4.1	-	-	-	7	6.2
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	4.04	3.3
Pot Cap-1 Maneuver	861	-	-	-	127	412
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	861	-	-	-	127	412
Mov Cap-2 Maneuver	-	-	-	-	127	-
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	861	-	-	-	144
HCM Lane V/C Ratio	-	-	-	-	0.11
HCM Control Delay (s)	0	-	-	-	33.1
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	821	610	0	0	0
Future Vol, veh/h	0	821	610	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	95	95	25	25
Heavy Vehicles, %	0	7	7	45	60	0
Mvmt Flow	0	922	642	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	642	0	-	0	1564	642
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	922	-
Critical Hdwy	4.1	-	-	-	7	6.2
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	4.04	3.3
Pot Cap-1 Maneuver	952	-	-	-	90	478
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	308	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	952	-	-	-	90	478
Mov Cap-2 Maneuver	-	-	-	-	90	-
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	308	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	952	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	530	727	2	1	3
Future Vol, veh/h	12	530	727	2	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	91	97	92	92	92
Heavy Vehicles, %	2	7	7	2	2	2
Mvmt Flow	13	582	749	2	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	751	0	-	0	1358	750
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	608	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	858	-	-	-	164	411
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	858	-	-	-	160	411
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	858	-	-	-	295
HCM Lane V/C Ratio	0.015	-	-	-	0.015
HCM Control Delay (s)	9.3	0	-	-	17.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	821	610	1	2	11
Future Vol, veh/h	3	821	610	1	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	89	95	92	92	92
Heavy Vehicles, %	2	7	7	2	2	2
Mvmt Flow	3	922	642	1	2	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	643	0	-	0	1571	643
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	928	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	942	-	-	-	122	473
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	942	-	-	-	121	473
Mov Cap-2 Maneuver	-	-	-	-	121	-
Stage 1	-	-	-	-	519	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	942	-	-	-	327
HCM Lane V/C Ratio	0.003	-	-	-	0.043
HCM Control Delay (s)	8.8	0	-	-	16.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

MEMORANDUM

TO: Ms. Andrea Lathrop
Acquisition & Property
Administrator
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FROM: Mr. Jeffrey S. Dirk, P.E., PTOE, FITE
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DATE: May 4, 2020

RE: 8520

SUBJECT: Transportation Impact Assessment
Proposed Multifamily Residential Development – Jefferson Road
Wilmington, Massachusetts

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a multifamily residential development that is to be located off Middlesex Avenue (Route 62) and Jefferson Road in Wilmington, Massachusetts (hereafter referred to as the "Project"). This assessment provides an existing conditions context for the Project in relation to the transportation infrastructure and evaluates the following specific areas: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and qualitatively evaluates the potential impact of the Project along Middlesex Avenue and at major intersections located along this roadway through which Project-related traffic will travel.

This assessment was prepared in consultation with the Town of Wilmington and was performed in general accordance with the MassDOT *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Professions. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)[1] and after applying appropriate adjustments to account for resident use of alternative modes of transportation, including commuter rail services available from North Wilmington Station which is immediately adjacent to the Project site, the Project is expected to generate approximately 490 vehicle trips on an average weekday (two-way, 24-hour volume), with 33 vehicle trips expected during the weekday morning peak-hour and 43 vehicle trips expected during the weekday evening peak-hour;

2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with traffic volume increases outside of the immediate proximity of the Project site predicted to be less than one (1) added vehicle every 3-4 minutes during the peak hours. In fact, the Project represents an

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

increase in traffic of less than 5 percent along Middlesex Avenue, which is well within the normal fluctuation in traffic volumes that occurs between Monday and Friday over the course of a typical week;

3. No apparent safety deficiencies were noted with respect to the motor vehicle crash history along Middlesex Avenue in the vicinity of the Project site; and

4. Lines of sight at the Project site driveway intersections with Middlesex Avenue and Jefferson Road and at the Middlesex Avenue/Jefferson Road intersection were found to meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation based on the appropriate approach speeds.

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

PROJECT DESCRIPTION

The Project will entail the construction of multifamily residential development that will be located off Jefferson Road and Middlesex Avenue in Wilmington, Massachusetts. As proposed, the Project will consist of the construction of 108 multifamily residential units to be located in two (2) buildings, with "Building A" to encompass 58 residential units and generally situated in the northeast corner of the Middlesex Avenue/Jefferson Road intersection and "Building B" to encompass 50 residential units and located at the north end of Jefferson Road. The Project site encompasses 25.29± acres of land that is generally bounded by areas of open and wooded space and low-lying wetland areas to the north; Middlesex Avenue, a commercial building (200 Jefferson Road), a gravel lot and a surface parking lot for North Wilmington Station on the Massachusetts Bay Transportation Authority (MBTA) Haverhill Line Commuter Rail system to the south; Lubbers Brook to the east; and Jefferson Road and the MBTA Commuter Rail tracks to the west. At present, the Project site is occupied by several commercial buildings with associated parking lots and appurtenances, Jefferson Road (a private way), and areas of open and wooded space. The existing commercial buildings and associated appurtenances located at 378-380 and 382 Middlesex Avenue will be removed to accommodate the Project; the commercial building located at 200 Jefferson Road will be retained.

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Access to the Project site will be provided as follows: *Building A* – access to "Building A" will be provided by way of the existing driveway that serves 382 Middlesex Avenue and intersects the north side of Middlesex Avenue approximately 185 feet east of Jefferson Road and two (2) driveways that will intersect the east side of Jefferson Road approximately 40 feet and 325 feet north of Middlesex Avenue, respectively; *Building B* – access to "Building B" will be provided by way of a driveway that will intersect the north end of Jefferson Road.

On-site parking will be provided for each building consisting of both surface parking and garage parking configured as follows: *Building A* (58 units) – on-site parking will be provided for 96 vehicles, or a parking ratio of approximately 1.66 spaces per unit, including 55 surface parking spaces and 41 covered spaces beneath the residential building; *Building B* (50 units) - on-site parking will be provided for 80 vehicles, or a parking ratio of approximately 1.60 spaces per unit, including 56 surface parking spaces and 24 garage spaces. The proposed parking ratios (1.66/1.60 spaces per unit) are below the parking requirements for a residential use specified in Section 6.4, *Parking and Site Design Standards*, of the Wilmington Zoning Bylaw (2.0 spaces for each dwelling unit are required), but exceed the range of values documented by the Institute of Transportation Engineers (ITE) for comparable multifamily residential communities.[2]

EXISTING CONDITIONS CONTEXT

In order to establish the existing conditions context of the Project with respect to the transportation infrastructure, a review of existing conditions was completed in May 2020. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; traffic volumes (December 2018); and operating characteristics; as well as posted speed limits and land use information within the study area. The study area that was assessed for the Project consisted of Middlesex Avenue and Jefferson Road in the vicinity of the Project site. The following summarizes existing conditions within the study area.

Roadways

Middlesex Avenue (Route 62)

Middlesex Avenue (Route 62) is a two-lane urban minor arterial that is under local jurisdiction in the vicinity of the Project site; north of High Street, Route 62 is under MassDOT jurisdiction between High Street and Woburn Street, and provides a full access interchange with I-93 (Exit 40). In the vicinity of the Project site, Middlesex Avenue provides two 13 to 14-foot wide travel lanes separated by a double-yellow centerline with 3 to 6-foot wide marked shoulders. A railroad crossing with gates and flashing signals is located approximately 200 feet south west of Jefferson Road. The posted speed limit along Middlesex Avenue in the vicinity of the Project site is 25 miles per hour (mph), with prevailing travel speeds measured in December 2018 found to be between 35 and 37 mph.[3] Land use in the vicinity of the Project site consists of commercial properties, North Wilmington Station on the Haverhill Line of the MBTA Commuter Rail system, and areas of open and wooded space.

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[2] *Parking Generation Manual*, 5th Edition; Institute of Transportation Engineers; Washington, D.C.; 2019. Observed parking demand ratios for an affordable housing community were found to range from 0.32 to 1.66 spaces per dwelling unit, with an average parking demand of 0.99 spaces per dwelling unit and an 85th percentile peak parking demand of 1.33 spaces per dwelling unit. For a traditional multifamily residential community located within ½ mile of a rail transit station, the average parking demand was reported to be 1.12 spaces per dwelling unit and the 85th percentile peak parking demand was identified to be 1.27 spaces per dwelling unit.

[3] The prevailing travel speed is also known as the 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below during the observation period.

Traffic volume data collected as a part of this assessment in December 2018 indicates that Middlesex Avenue in the vicinity of the Project site accommodates approximately 14,105 vehicles per day on an average weekday and 12,090 vehicles on a Saturday, with approximately 1,105 vehicles per hour (vph) during the weekday morning peak-hour (7:15 to 8:15 AM), 1,125 vph during the weekday evening peak-hour (5:00 to 6:00 PM) and 1,010 vph during the Saturday peak-hour (11:45 AM to 12:45 PM).

Jefferson Road

Jefferson Road is a private way that traverses a general north-south alignment and terminates in a parking lot approximately 720 feet north of Middlesex Avenue. Jefferson Road consists of a 40 foot layout within which a 20± foot wide paved roadway is provided that accommodates two-way travel with no pavement markings. A sidewalk is provided along the west side of the roadway between Middlesex Avenue and the entrance to the commuter rail parking lot (a distance of approximately 250 linear feet). Land use consists of the Project site, the parking lot for the North Wilmington Commuter Rail Station, commercial properties and areas of open and wooded space.

Jefferson Road intersects Middlesex Avenue from the north to from a four-legged intersection with the exit driveway to Elia's Country Store slightly off-set to the west and both the Jefferson Road and the Elia's Country Store driveway approaches under STOP-sign control. Marked crosswalks are provided for crossing Jefferson Road and the Middlesex Avenue northeast leg of the intersection.

Pedestrian and Bicycle Accommodations

Sidewalks are currently provided along both sides of Middlesex Avenue within the study area and along the west side of Jefferson Road between Middlesex Avenue and the entrance to the commuter rail parking lot (a distance of approximately 250 linear feet), with marked crosswalks provided for crossing Jefferson Avenue and Middlesex Avenue at both Jefferson Avenue (northeast leg) and at the commuter rail crossing (northeast of crossing). Formal bicycle facilities were not identified within the immediate study area; however, Middlesex Avenue generally provides sufficient width (combined travel lane and shoulder) to support bicycle travel in a shared travel-way configuration (i.e., motor vehicles and bicyclists sharing the roadway).[4]

Public Transportation

Regularly scheduled public transportation services are provided immediately adjacent to the Project site by way of North Wilmington Station on the Haverhill Line of the MBTA Commuter Rail system. Daily commuter rail service is provided between North Wilmington Station and North Station in Boston, with four (4) in-bound and four (4) out-bound trains provided during the weekday morning and evening peak commuter periods; flag stop service[5] is provided outside of the peak period service on a weekday and on Saturday and Sunday, with six (6) trains provided on Saturday and Sunday. In addition, the MBTA provides The RIDE paratransit services to eligible people who cannot use fixed-route transit all or some of the time due to a physical, cognitive or mental disability in compliance with the Americans with Disabilities Act (ADA), and the Wilmington Department of Elderly Services provides transportation services for Wilmington residents that are over age 60 for medical appointments and shopping within a 13-mile radius of the Town.

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

[5]Commuter rail trains will stop to pick-up a passenger that is visible on the platform to an approaching train; passengers that wish to disembark must inform the conductor prior to arrival at the station.

Motor Vehicle Crash Data

Motor vehicle crash information for Middlesex Avenue in the vicinity of the Project site and for the intersections of Middlesex Avenue at High Street, Middlesex Avenue at Jefferson Road and Middlesex Avenue at Federal Street was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2013 through 2017, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and presented in Table 1.

As can be seen in Table 1, the study intersections experienced an average of approximately five (5) or fewer reported motor vehicle crashes per year over the five-year review period, the majority of which were reported to have occurred on a weekday; during daylight; under clear weather conditions; and involved angle or rear-end type collisions that resulted in property damage only. The Middlesex Avenue/High Street intersection was reported to have experienced the largest number of reported crashes, with 24 crashes reported over the five-year review period. No fatal motor vehicle crashes were reported to have occurred at the study area intersections over the five-year review period.

A review of the MassDOT statewide High Crash Location List indicated that there are no locations along Middlesex Avenue in the vicinity of the Project site that are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as high crash locations.

Table 1
MOTOR VEHICLE CRASH DATA SUMMARY[a]

	Middlesex Ave./ High St.	Middlesex Ave./ Jefferson Rd.	Middlesex Ave./ Federal St.
Traffic Control Type:[b]	TS	U	TS
Year:			
2013	6	2	2
2014	4	0	2
2015	3	0	2
2016	5	2	6
2017	6	0	2
Total	24	4	14
Average:	4.8	0.8	2.8
Type:			
Angle	7	0	7
Rear-End	17	4	3
Head-On	0	0	0
Sideswipe	0	0	2
Fixed Object	0	0	2
Pedestrian/Bicycle	0	0	0
Unknown/Other	0	0	0
Total	24	4	14
Conditions:			
Clear	15	1	9
Cloudy	6	2	3
Rain	3	1	1
Snow/Ice	0	0	1
Total	24	4	14
Lighting:			
Daylight	20	4	10
Dawn/Dusk	0	0	0
Dark (Road Lit)	4	0	4
Dark (Road Unlit)	0	0	0
Total	24	4	14
Day of Week:			
Monday through Friday	22	4	11
Saturday	2	0	1
Sunday	0	0	2
Total	24	4	14
Severity:			
Property Damage Only	18	4	11
Personal Injury	6	0	3
Fatality	0	0	0
Total	24	4	14

[a]Source: MassDOT Safety Management/Traffic Operations Unit records, 2013 through 2017.
[b]Traffic Control Type: U = unsignalized; TS = traffic signal.

PROJECT-GENERATED TRAFFIC

In order to determine the traffic characteristics of the Project, trip-generation methodologies established by the Institute of Transportation Engineers (ITE)[6] were used. The ITE provides trip-generation information for various types of land uses developed as a result of scientific studies that have been conducted over the past 50 plus years, the most recent update of which was published in 2012. This data includes trip estimates for a similar land use as that proposed (multifamily housing). ITE Land Use Code (LUC) 221, *Multifamily Housing (Mid-Rise)*, was used to establish the base traffic characteristics of the Project.

Transit Use

Given the availability of public transportation services to the Project site (MBTA Commuter Rail service), it is expected that a portion of the residents of the Project will use public transportation services, thereby reducing the volume of traffic that may be associated with the Project. In order to determine the proportion of residents of the Project that may use public transportation, walk or bicycle as their primary mode of transportation, travel mode data obtained from the 2013-2017 American Community Survey (ACS) for the Town of Wilmington and a survey of commuting modes for residents of a similar suburban multifamily residential community located within walking distance of a commuter rail station were reviewed. Based on the ACS data, the following commuting modes were identified for workers age 16 or older that reside within the Town:

- *Single-Occupant Vehicle:* 83.7%
- *Car/Vanpool:* 6.7%
- *Taxi/Motorcycle/Other:* 1.0%
- *Public Transportation:* 4.3%
- *Walk:* 0.7%
- *Bicycle:* 0.1%
- *Worked at Home:* 3.5%

According to the ACS, approximately 16 percent of workers that reside in the Town reported that they used an alternative mode of transportation to single-occupancy vehicles, with approximately 7 percent participating in a car or vanpool, 4 percent using public transportation, 1 percent walking/bicycling and 4 percent reporting that they work from home.

A commuting survey of 253 respondents residing in The Mastlight, a multifamily residential community located at 10-50 Patriot Parkway in Weymouth at Union Point that is within an approximate 8-minute walking distance of the South Weymouth Commuter Rail Station, indicates that approximately 18.6 percent of residents use public transportation (MBTA Commuter Rail), with approximately 4 percent working from home and 1 percent participating in a car/vanpool.

In order to account for the use of alternative modes of transportation to single-occupancy vehicles, the base ITE trip-generation calculations were first converted to person trips using a vehicle occupancy ratio of 1.04 persons per vehicle, which was obtained from the 2013-2017 ACS, and were then disseminated to the modes of transportation that are accessible to the residents of the Project: public transportation (transit), pedestrian/bicycle and automobile.

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

In order to provide conservative (high) traffic volume projections from which to assess the potential impact of the Project on the transportation infrastructure, it was assumed that 90 percent of the trips generated by the Project would consist of automobile trips, with 10 percent of trips assumed to be made using public transportation or other alternative to SOV travel, including working from home. The public transportation rate is higher than the 4 percent utilization documented in the ACS and reflects the proximity of the Project site to the North Wilmington Commuter Rail station. The public transportation utilization data from The Mastlight is direct evidence of the increased inducement of transit usage that can occur when multifamily residential developments are located proximate to transit stations.

Table 2 summarizes the anticipated trip characteristics of the Project using the aforementioned methodology.

Table 2
TRIP GENERATION SUMMARY

Time Period/Direction	Proposed Residential Community (ITE Vehicle Trips)[a]	Person Trips			
		Person Trips[b]	Automobile Trips (90%)	Transit Trips (10%)	Vehicle Trips[c]
Average Weekday Daily					
Entering	294	293	255	28	245
Exiting	294	283	255	28	245
Total	588	566	510	56	490
Weekday Morning Peak Hour					
Entering	10	10	9	1	9
Exiting	27	28	25	3	24
Total	37	38	34	4	33
Weekday Evening Peak Hour					
Entering	29	30	27	3	26
Exiting	19	20	18	2	17
Total	48	50	45	5	43

[a]Based on ITE LUC 221, *Multifamily Housing (Mid-Rise)*; 108 dwelling units.
[b]ITE vehicle trips x vehicle occupancy ratio (VOR) of 1.04.
[c]Automobile person trips divided by 1.04.

As can be seen in Table 2, after accounting for the use of alternative modes of transportation to SOVs, the Project is expected to generate approximately 490 vehicle trips on an average weekday (two-way, 24-hour volume, or 245 vehicles entering and 245 exiting), with 33 vehicle trips (9 vehicles entering and 24 exiting) expected during the weekday morning peak-hour and 43 vehicle trips (26 vehicles entering and 17 exiting) expected during the weekday evening peak-hour.

When dispersed to Middlesex Avenue and over the respective peak-hour, and with consideration of trips generated by the existing active uses that occupy the Project site and that will be removed, the traffic volume increases that are expected from the Project are anticipated to be less than one (1) additional vehicle every 3-4 minutes during the peak hours outside of the immediate proximity of the Project site,

an increase that would not result in an appreciable increase in motorist delays or vehicle queuing over existing conditions. In fact, the Project represents an increase in traffic of less than 5 percent along Middlesex Avenue, which is well within the normal fluctuation in traffic volumes that occurs between Monday and Friday over the course of a typical week.

SIGHT DISTANCE ASSESSMENT

Sight distance measurements were performed at the Project site driveway intersections with Middlesex Avenue and Jefferson Road, and for the Middlesex Avenue/Jefferson Road intersection, in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[7] requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 3 presents the measured sight lines to and from the subject intersections.

Note that the driveway to "Building B" is located at the end of Jefferson Road, essentially forming an extension thereof, and, as such, clear line of sight is provided along the roadway to/from the driveway. As such, sight distance measurements for the access to "Building B" are not provided in Table 3.

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

Table 3
SIGHT DISTANCE MEASUREMENTS[a]

Intersection/Sight Distance Measurement	Feet		
	Recommended Minimum (SSD)	Desirable (ISD)[b]	Measured
Middlesex Avenue at the "Building A" Driveway			
Stopping Sight Distance:			
Middlesex Avenue approaching from the northeast	305	--	325
Middlesex Avenue approaching from the southwest	305	--	450
Intersection Sight Distance:			
Looking to the northeast from the "Building A" Driveway	305	385	305
Looking to the southwest from the "Building A" Driveway	305	445	450
Jefferson Road at the "Building A" North Driveway			
Stopping Sight Distance:			
Jefferson Road approaching from the north	155	--	250
Jefferson Road approaching from the south	155	--	350+[c]
Intersection Sight Distance:			
Looking to the north from the "Building A" Driveway	155	280	350+[d]
Looking to the south from the "Building A" Driveway	155	240	350+[c,d]
Jefferson Road at the "Building A" South Driveway			
Stopping Sight Distance:			
Jefferson Road approaching from the north	80	--	500+
Jefferson Road approaching from the south	80	--	60+[c]
Intersection Sight Distance:			
Looking to the north from the "Building A" Driveway	80	170	500+
Looking to the south from the "Building A" Driveway	80	145	60+[c]
Middlesex Avenue at Jefferson Road			
Stopping Sight Distance:			
Middlesex Avenue approaching from the northeast	305	--	500+
Middlesex Avenue approaching from the southwest	305	--	305
Intersection Sight Distance:			
Looking to the northeast from Jefferson Road	305	385	500+
Looking to the southwest from Jefferson Road	305	445	375

[a]Recommended minimum values obtained from: *A Policy on Geometric Design of Highways and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on an approach speed of 40 mph along Middlesex Avenue and a 25 mph approach speed along Jefferson Road approaching the north driveway to "Building A" and a 15 mph speed approaching the south driveway.

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

[c]Clear line of sight is provided to/from Middlesex Avenue.

[d]With selective trimming/removal of trees and vegetation located within the sight triangle areas of the Project site driveway.

As can be seen in Table 3, lines of sight at the Project site driveway intersections and at the Middlesex Avenue/Jefferson Road intersection meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation based on the appropriate approach speeds. That being said, it is recommended that the south driveway to "Building A" be configured as a one-way, entrance only driveway given the proximity of the driveway to Middlesex Avenue (approximately 40 feet).

SUMMARY

VAI has conducted a TIA in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a multifamily residential development that is to be located off Middlesex Avenue (Route 62) and Jefferson Road in Wilmington, Massachusetts. This assessment has defined the existing conditions context of the Project in relation to the transportation infrastructure and has evaluated the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE[8] and after applying appropriate adjustments to account for resident use of alternative modes of transportation, including commuter rail services available from North Wilmington Station which is immediately adjacent to the Project site, the Project is expected to generate approximately 490 vehicle trips on an average weekday (two-way, 24-hour volume), with 33 vehicle trips expected during the weekday morning peak-hour and 43 vehicle trips expected during the weekday evening peak-hour;

2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with traffic volume increases outside of the immediate proximity of the Project site predicted to be less than one (1) added vehicle every 3-4 minutes during the peak hours. In fact, the Project represents an increase in traffic of less than 5 percent along Middlesex Avenue, which is well within the normal fluctuation in traffic volumes that occurs between Monday and Friday over the course of a typical week;

3. No apparent safety deficiencies were noted with respect to the motor vehicle crash history along Middlesex Avenue in the vicinity of the Project site; and

4. Lines of sight at the Project site driveway intersections with Middlesex Avenue and Jefferson Road and at the Middlesex Avenue/Jefferson Road intersection were found to meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation based on the appropriate approach speeds.

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

RECOMMENDATIONS

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

[8]Ibid 1.

Project Access

Access to the Project site will be provided as follows: *Building A* – access to "Building A" will be provided by way of the existing driveway that serves 382 Middlesex Avenue and intersects the north side of Middlesex Avenue approximately 185 feet east of Jefferson Road and two (2) driveways that will intersect the east side of Jefferson Road approximately 40 feet and 325 feet north of Middlesex Avenue, respectively; *Building B* – access to "Building B" will be provided by way of a driveway that will intersect the north end of Jefferson Road. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation, many of which are reflected on the Site Plans:

- The Project site driveways should be a minimum of 20 feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle.

- Given the proximity of the south driveway to "Building A" to Middlesex Avenue (within 40 feet), this driveway should be configured to function as a one-way entrance drive with the requisite signs ("One Way" and "Do Not Enter") and pavement markings installed at Jefferson Road to regulate use of the driveway.

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

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

- "No Parking" signs should be installed along both sides of Jefferson Road.

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[9]

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

- Existing trees and vegetation located along the east side of Jefferson Road within the sight triangle areas of the "Building A" north driveway should be selectively trimmed or removed as may be necessary to afford the recommended sight distance from the driveway.

- Surface parking for "Building A" should not be located within the sight triangle area of the Middlesex Avenue/Jefferson Road intersection.

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

- A sidewalk should be installed along at least one side of Jefferson Road between Middlesex Avenue and "Building B" and include Americans with Disabilities Act (ADA) compliant wheelchair ramps where pedestrian crossings will be provided.

- A school bus waiting area should be provided at an appropriate location defined in consultation with Wilmington School Department.

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

Transportation Demand Management

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

- Information regarding public transportation services, maps, schedules and fare information should be posted in a central location and/or otherwise made available to residents;
- A "welcome packet" should be provided to residents detailing available public transportation services, bicycle and walking alternatives, and commuter options available;
- Work-at-home workspaces should be provided to support telecommuting by residents of the Project;
- Pedestrian accommodations should be provided and consist of sidewalks and ADA compliant wheelchair ramps at all pedestrian crossings internal to the Project site that will link building entrances to the sidewalk infrastructure along Jefferson Road and Middlesex Avenue;
- Bicycle parking should be provided consisting of both exterior bicycle racks located proximate to building entrances and weather protected bicycle parking;
- A centralized mail kiosk should be provided to limit off-site trips; and
- Transit screens/displays should be provided in the building lobby to display real-time transportation information (similar to https://transitscreen.com/).

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

cc: File

ATTACHMENTS

AUTOMATIC TRAFFIC RECORDER COUNTS
PUBLIC TRANSPORTATION SCHEDULES
MASSDOT HIGH CRASH LOCATION MAPPING
TRIP-GENERATION CALCULATIONS

AUTOMATIC TRAFFIC RECORDER COUNTS

Accurate Counts
978-664-2565

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074VOL1

Start Time	12/13/201 Thu	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		6	137			4	147				
12:15		8	140			3	105				
12:30		12	134			4	93				
12:45		4	123	30	534	4	107	15	452	45	986
01:00		4	135			2	91				
01:15		0	106			2	112				
01:30		6	104			4	99				
01:45		3	115	13	460	1	92	9	394	22	854
02:00		4	131			4	123				
02:15		3	119			5	94				
02:30		3	149			1	124				
02:45		0	99	10	498	2	112	12	453	22	951
03:00		3	138			5	111				
03:15		5	136			2	104				
03:30		2	148			3	111				
03:45		2	128	12	550	3	108	13	434	25	984
04:00		9	137			6	141				
04:15		9	142			8	91				
04:30		15	153			11	118				
04:45		8	183	41	615	20	103	45	453	86	1068
05:00		14	155			25	130				
05:15		15	154			25	105				
05:30		28	142			46	138				
05:45		43	166	100	617	54	133	150	506	250	1123
06:00		53	154			96	124				
06:15		43	135			117	90				
06:30		59	111			97	104				
06:45		79	96	234	496	169	94	479	412	713	908
07:00		104	97			132	65				
07:15		127	69			161	68				
07:30		138	72			123	65				
07:45		123	65	492	303	140	56	556	254	1048	557
08:00		157	93			134	52				
08:15		104	78			155	42				
08:30		91	65			157	41				
08:45		82	46	434	282	135	41	581	176	1015	458
09:00		103	52			97	29				
09:15		122	38			115	15				
09:30		121	43			86	30				
09:45		88	32	434	165	110	26	408	100	842	265
10:00		94	24			97	16				
10:15		110	13			95	20				
10:30		95	15			97	13				
10:45		90	14	389	66	107	16	396	65	785	131
11:00		108	18			93	17				
11:15		100	8			115	12				
11:30		130	12			101	12				
11:45		101	4	439	42	128	8	437	49	876	91
Total		2628	4628			3101	3748			5729	8376
Percent		36.2%	63.8%			45.3%	54.7%			40.6%	59.4%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA
8074VOL1

Start Time	12/14/201 Fri	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		8	132			7	146				
12:15		6	132			2	120				
12:30		3	135			2	126				
12:45		3	120	20	519	1	128	12	520	32	1039
01:00		8	123			3	123				
01:15		5	128			2	106				
01:30		2	128			4	121				
01:45		5	117	20	496	5	132	14	482	34	978
02:00		3	132			0	110				
02:15		1	136			8	91				
02:30		6	154			1	139				
02:45		1	130	11	552	1	118	10	458	21	1010
03:00		5	130			3	93				
03:15		3	162			1	112				
03:30		2	165			2	134				
03:45		3	143	13	600	4	131	10	470	23	1070
04:00		2	159			6	115				
04:15		8	158			10	113				
04:30		14	169			13	111				
04:45		11	148	35	634	16	133	45	472	80	1106
05:00		10	169			21	107				
05:15		13	169			35	128				
05:30		32	142			41	102				
05:45		42	131	97	611	46	95	143	432	240	1043
06:00		59	122			61	110				
06:15		48	136			91	91				
06:30		55	127			107	91				
06:45		76	123	238	508	126	79	385	371	623	879
07:00		92	99			110	80				
07:15		83	91			134	72				
07:30		120	76			109	59				
07:45		122	66	417	332	102	56	455	267	872	599
08:00		138	47			101	56				
08:15		109	69			132	42				
08:30		100	60			131	34				
08:45		116	56	463	232	174	52	538	184	1001	416
09:00		136	63			115	44				
09:15		120	50			117	33				
09:30		119	35			95	40				
09:45		105	24	480	172	122	44	449	161	929	333
10:00		103	49			132	23				
10:15		106	36			135	27				
10:30		115	22			117	22				
10:45		119	18	443	125	121	26	505	98	948	223
11:00		119	23			88	24				
11:15		127	18			94	20				
11:30		128	17			113	19				
11:45		112	18	486	76	115	22	410	85	896	161
Total		2723	4857			2976	4000			5699	8857
Percent		35.9%	64.1%			42.7%	57.3%			39.2%	60.8%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074VOL1

Start	12/15/201	EB		Hour Totals		WB		Hour Totals		Combined Totals	
Time	Sat	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		20	115			18	145				
12:15		7	132			7	107				
12:30		11	156			14	124				
12:45		9	89	47	492	11	116	50	492	97	984
01:00		8	149			7	129				
01:15		5	112			4	118				
01:30		4	113			3	112				
01:45		5	108	22	482	7	95	21	454	43	936
02:00		3	133			4	102				
02:15		9	121			2	94				
02:30		3	124			2	94				
02:45		1	103	16	481	2	96	10	386	26	867
03:00		6	103			1	114				
03:15		5	115			2	108				
03:30		3	113			1	124				
03:45		2	98	16	429	3	103	7	449	23	878
04:00		8	113			4	98				
04:15		0	98			5	112				
04:30		6	112			3	110				
04:45		5	107	19	430	3	92	15	412	34	842
05:00		8	123			12	98				
05:15		7	119			10	84				
05:30		17	103			16	79				
05:45		16	78	48	423	18	84	56	345	104	768
06:00		15	93			21	81				
06:15		26	106			24	95				
06:30		21	116			30	75				
06:45		29	89	91	404	36	87	111	338	202	742
07:00		27	94			34	75				
07:15		42	62			39	65				
07:30		54	51			58	67				
07:45		51	71	174	278	63	68	194	275	368	553
08:00		60	56			56	59				
08:15		71	53			77	64				
08:30		69	64			77	42				
08:45		90	56	290	229	113	52	323	217	613	446
09:00		86	40			103	41				
09:15		94	63			90	38				
09:30		95	54			91	46				
09:45		101	41	376	198	130	41	414	166	790	364
10:00		108	42			141	36				
10:15		136	45			89	31				
10:30		121	30			134	43				
10:45		102	32	467	149	117	31	481	141	948	290
11:00		136	26			128	22				
11:15		125	25			121	24				
11:30		137	27			111	17				
11:45		124	20	522	98	108	19	468	82	990	180
Total		2088	4093			2150	3757			4238	7850
Percent		33.8%	66.2%			36.4%	63.6%			35.1%	64.9%
Grand Total		7439	13578			8227	11505			15666	25083
Percent		35.4%	64.6%			41.7%	58.3%			38.4%	61.6%

ADT ADT 13,583 AADT 13,583

Accurate Counts
978-664-2565

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074VOL1

Start	12/10/2018		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	30	15	20	12	47	50	*	*	32	26
01:00	*	*	*	*	*	*	13	9	20	14	22	21	*	*	18	15
02:00	*	*	*	*	*	*	10	12	11	10	16	10	*	*	12	11
03:00	*	*	*	*	*	*	12	13	13	10	16	7	*	*	14	10
04:00	*	*	*	*	*	*	41	45	35	45	19	15	*	*	32	35
05:00	*	*	*	*	*	*	100	150	97	143	48	56	*	*	82	116
06:00	*	*	*	*	*	*	234	479	238	385	91	111	*	*	188	325
07:00	*	*	*	*	*	*	**492**	556	417	455	174	194	*	*	361	402
08:00	*	*	*	*	*	*	434	**581**	463	**538**	290	323	*	*	396	**481**
09:00	*	*	*	*	*	*	434	408	480	449	376	414	*	*	430	424
10:00	*	*	*	*	*	*	389	396	443	505	467	**481**	*	*	433	461
11:00	*	*	*	*	*	*	439	437	**486**	410	**522**	468	*	*	**482**	438
12:00 PM	*	*	*	*	*	*	534	452	519	**520**	**492**	**492**	*	*	515	**488**
01:00	*	*	*	*	*	*	460	394	496	482	482	454	*	*	479	443
02:00	*	*	*	*	*	*	498	453	552	458	481	386	*	*	510	432
03:00	*	*	*	*	*	*	550	434	600	470	429	449	*	*	526	451
04:00	*	*	*	*	*	*	615	453	**634**	472	430	412	*	*	**560**	446
05:00	*	*	*	*	*	*	**617**	**506**	611	432	423	345	*	*	550	428
06:00	*	*	*	*	*	*	496	412	508	371	404	338	*	*	469	374
07:00	*	*	*	*	*	*	303	254	332	267	278	275	*	*	304	265
08:00	*	*	*	*	*	*	282	176	232	184	229	217	*	*	248	192
09:00	*	*	*	*	*	*	165	100	172	161	198	166	*	*	178	142
10:00	*	*	*	*	*	*	66	65	125	98	149	141	*	*	113	101
11:00	*	*	*	*	*	*	42	49	76	85	98	82	*	*	72	72
Lane	0	0	0	0	0	0	7256	6849	7580	6976	6181	5907	0	0	7004	6578
Day	0		0		0		14105		14556		12088		0		13582	
AM Peak	-	-	-	-	-	-	07:00	08:00	11:00	08:00	11:00	10:00	-	-	11:00	08:00
Vol.	-	-	-	-	-	-	492	581	486	538	522	481	-	-	482	481
PM Peak	-	-	-	-	-	-	17:00	17:00	16:00	12:00	12:00	12:00	-	-	16:00	12:00
Vol.	-	-	-	-	-	-	617	506	634	520	492	492	-	-	560	488

Comb. Total	0	0	0	14105	14556	12088	0	13582

ADT ADT 13,583 AADT 13,583

Accurate Counts
978-664-2565

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/13/18	0	0	0	4	11	11	3	1	0	0	0	0	0	0	30
01:00	0	0	0	3	5	3	1	1	0	0	0	0	0	0	13
02:00	0	0	1	5	2	2	0	0	0	0	0	0	0	0	10
03:00	0	0	0	1	6	5	0	0	0	0	0	0	0	0	12
04:00	2	2	1	9	17	7	3	0	0	0	0	0	0	0	41
05:00	3	0	0	12	52	26	7	0	0	0	0	0	0	0	100
06:00	11	1	10	49	109	49	5	0	0	0	0	0	0	0	234
07:00	36	3	16	98	239	90	10	0	0	0	0	0	0	0	492
08:00	26	7	16	72	224	76	10	2	1	0	0	0	0	0	434
09:00	34	5	22	126	168	77	2	0	0	0	0	0	0	0	434
10:00	21	4	24	101	171	66	2	0	0	0	0	0	0	0	389
11:00	24	4	21	153	179	53	5	0	0	0	0	0	0	0	439
12 PM	37	1	25	157	233	68	12	0	1	0	0	0	0	0	534
13:00	21	5	18	140	208	60	6	2	0	0	0	0	0	0	460
14:00	47	4	52	158	189	44	3	1	0	0	0	0	0	0	498
15:00	45	3	27	181	215	72	7	0	0	0	0	0	0	0	550
16:00	39	9	39	195	246	85	2	0	0	0	0	0	0	0	615
17:00	46	7	49	197	252	64	1	0	1	0	0	0	0	0	617
18:00	19	2	15	153	243	60	3	1	0	0	0	0	0	0	496
19:00	20	0	16	76	135	52	4	0	0	0	0	0	0	0	303
20:00	7	1	9	71	131	58	4	1	0	0	0	0	0	0	282
21:00	6	1	5	34	76	40	3	0	0	0	0	0	0	0	165
22:00	0	2	2	13	28	19	2	0	0	0	0	0	0	0	66
23:00	0	0	0	3	19	16	4	0	0	0	0	0	0	0	42
Total	444	61	368	2011	3158	1103	99	9	3	0	0	0	0	0	7256

Daily

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	35 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	5169
Percent in Pace :	71.2%
Number of Vehicles > 30 MPH :	4372
Percent of Vehicles > 30 MPH :	60.3%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/14/18	0	0	1	2	7	8	2	0	0	0	0	0	0	0	20
01:00	0	0	0	5	6	8	1	0	0	0	0	0	0	0	20
02:00	0	0	0	3	6	1	1	0	0	0	0	0	0	0	11
03:00	0	0	0	5	3	5	0	0	0	0	0	0	0	0	13
04:00	3	0	1	5	9	15	2	0	0	0	0	0	0	0	35
05:00	2	0	0	14	54	24	3	0	0	0	0	0	0	0	97
06:00	19	1	2	55	111	40	10	0	0	0	0	0	0	0	238
07:00	32	1	8	76	197	90	11	2	0	0	0	0	0	0	417
08:00	34	4	27	115	202	77	4	0	0	0	0	0	0	0	463
09:00	29	3	14	122	241	69	2	0	0	0	0	0	0	0	480
10:00	23	2	20	138	193	61	6	0	0	0	0	0	0	0	443
11:00	36	7	27	161	192	57	6	0	0	0	0	0	0	0	486
12 PM	29	5	10	170	230	72	3	0	0	0	0	0	0	0	519
13:00	30	2	18	108	245	85	7	1	0	0	0	0	0	0	496
14:00	45	6	32	181	216	68	4	0	0	0	0	0	0	0	552
15:00	64	6	43	175	234	74	4	0	0	0	0	0	0	0	600
16:00	32	13	48	197	254	83	6	1	0	0	0	0	0	0	634
17:00	45	13	35	188	259	65	5	0	0	0	0	0	0	1	611
18:00	15	3	44	144	239	61	1	1	0	0	0	0	0	0	508
19:00	9	4	12	91	163	44	8	1	0	0	0	0	0	0	332
20:00	5	0	5	50	121	44	6	1	0	0	0	0	0	0	232
21:00	1	0	6	30	93	37	5	0	0	0	0	0	0	0	172
22:00	0	0	4	25	59	31	6	0	0	0	0	0	0	0	125
23:00	1	0	3	15	32	23	2	0	0	0	0	0	0	0	76
Total	454	70	360	2075	3366	1142	105	7	0	0	0	0	0	1	7580

Daily

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	35 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	5441
Percent in Pace :	71.8%
Number of Vehicles > 30 MPH :	4621
Percent of Vehicles > 30 MPH :	61.0%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/15/18	1	0	0	5	26	12	3	0	0	0	0	0	0	0	47
01:00	0	0	0	2	9	10	1	0	0	0	0	0	0	0	22
02:00	0	0	1	1	10	4	0	0	0	0	0	0	0	0	16
03:00	0	0	0	8	4	2	2	0	0	0	0	0	0	0	16
04:00	0	0	0	4	7	5	3	0	0	0	0	0	0	0	19
05:00	1	0	0	7	17	20	3	0	0	0	0	0	0	0	48
06:00	3	0	5	18	32	30	3	0	0	0	0	0	0	0	91
07:00	5	2	9	27	81	43	7	0	0	0	0	0	0	0	174
08:00	14	2	14	70	132	51	7	0	0	0	0	0	0	0	290
09:00	18	6	19	81	160	85	7	0	0	0	0	0	0	0	376
10:00	33	5	29	137	183	71	9	0	0	0	0	0	0	0	467
11:00	26	5	26	130	247	80	6	1	0	0	0	0	0	1	522
12 PM	40	3	14	136	238	57	4	0	0	0	0	0	0	0	492
13:00	34	1	19	146	210	69	3	0	0	0	0	0	0	0	482
14:00	25	1	7	127	217	101	3	0	0	0	0	0	0	0	481
15:00	26	1	14	145	178	60	5	0	0	0	0	0	0	0	429
16:00	25	0	17	123	214	47	4	0	0	0	0	0	0	0	430
17:00	8	0	15	131	211	50	8	0	0	0	0	0	0	0	423
18:00	19	2	14	114	203	49	3	0	0	0	0	0	0	0	404
19:00	12	2	11	79	130	42	2	0	0	0	0	0	0	0	278
20:00	1	0	14	41	117	54	2	0	0	0	0	0	0	0	229
21:00	5	0	1	39	97	51	5	0	0	0	0	0	0	0	198
22:00	1	0	3	25	80	33	5	2	0	0	0	0	0	0	149
23:00	2	0	1	12	50	32	1	0	0	0	0	0	0	0	98
Total	299	30	233	1608	2853	1058	96	3	0	0	0	0	0	1	6181

Daily

15th Percentile :	26 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	4461
Percent in Pace :	72.2%
Number of Vehicles > 30 MPH :	4011
Percent of Vehicles > 30 MPH :	64.9%

Grand Total	1197	161	961	5694	9377	3303	300	19	3	0	0	0	0	2	21017

Overall

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	35 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	15071
Percent in Pace :	71.7%
Number of Vehicles > 30 MPH :	13004
Percent of Vehicles > 30 MPH :	61.9%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/13/18	0	0	0	1	6	1	6	0	1	0	0	0	0	0	15
01:00	0	0	2	1	2	4	0	0	0	0	0	0	0	0	9
02:00	0	0	2	3	1	4	1	1	0	0	0	0	0	0	12
03:00	0	0	0	2	6	3	2	0	0	0	0	0	0	0	13
04:00	0	0	1	6	17	16	5	0	0	0	0	0	0	0	45
05:00	6	1	2	27	65	41	8	0	0	0	0	0	0	0	150
06:00	42	23	29	120	182	73	6	4	0	0	0	0	0	0	479
07:00	39	13	28	135	205	119	16	1	0	0	0	0	0	0	556
08:00	46	20	45	139	219	93	18	1	0	0	0	0	0	0	581
09:00	62	18	38	78	135	66	10	1	0	0	0	0	0	0	408
10:00	20	6	35	117	134	74	9	1	0	0	0	0	0	0	396
11:00	43	18	34	119	144	65	14	0	0	0	0	0	0	0	437
12 PM	63	15	32	93	144	97	8	0	0	0	0	0	0	0	452
13:00	27	7	27	109	150	63	11	0	0	0	0	0	0	0	394
14:00	76	21	26	119	145	59	6	1	0	0	0	0	0	0	453
15:00	68	18	36	85	136	79	11	1	0	0	0	0	0	0	434
16:00	50	34	47	98	127	77	19	1	0	0	0	0	0	0	453
17:00	65	8	51	151	167	60	4	0	0	0	0	0	0	0	506
18:00	31	2	18	96	162	90	12	1	0	0	0	0	0	0	412
19:00	16	1	11	53	105	55	13	0	0	0	0	0	0	0	254
20:00	5	2	1	22	80	55	10	0	1	0	0	0	0	0	176
21:00	1	0	1	21	43	30	4	0	0	0	0	0	0	0	100
22:00	1	0	1	13	19	25	5	1	0	0	0	0	0	0	65
23:00	0	1	2	6	17	14	7	2	0	0	0	0	0	0	49
Total	661	208	469	1614	2411	1263	205	16	2	0	0	0	0	0	6849

Daily

15th Percentile :	21 MPH
50th Percentile :	30 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	4025
Percent in Pace :	58.8%
Number of Vehicles > 30 MPH :	3897
Percent of Vehicles > 30 MPH :	56.9%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/14/18	0	0	0	0	6	5	1	0	0	0	0	0	0	0	12
01:00	0	0	0	3	5	5	1	0	0	0	0	0	0	0	14
02:00	0	0	0	2	5	3	0	0	0	0	0	0	0	0	10
03:00	0	0	1	1	3	3	2	0	0	0	0	0	0	0	10
04:00	1	0	0	7	25	7	5	0	0	0	0	0	0	0	45
05:00	2	1	6	23	53	48	7	2	0	1	0	0	0	0	143
06:00	21	8	15	91	159	77	14	0	0	0	0	0	0	0	385
07:00	34	6	24	118	162	95	16	0	0	0	0	0	0	0	455
08:00	48	16	36	114	210	94	18	1	1	0	0	0	0	0	538
09:00	39	14	43	93	153	81	24	2	0	0	0	0	0	0	449
10:00	37	13	35	139	154	100	25	2	0	0	0	0	0	0	505
11:00	40	20	21	97	127	91	12	2	0	0	0	0	0	0	410
12 PM	63	34	35	87	183	103	14	1	0	0	0	0	0	0	520
13:00	36	5	33	95	182	107	22	2	0	0	0	0	0	0	482
14:00	90	30	50	98	125	55	10	0	0	0	0	0	0	0	458
15:00	74	20	54	108	143	58	11	2	0	0	0	0	0	0	470
16:00	55	16	37	97	180	78	7	2	0	0	0	0	0	0	472
17:00	60	17	35	80	168	62	9	1	0	0	0	0	0	0	432
18:00	20	8	15	106	145	73	4	0	0	0	0	0	0	0	371
19:00	12	2	14	64	116	52	7	0	0	0	0	0	0	0	267
20:00	7	0	2	24	91	51	8	1	0	0	0	0	0	0	184
21:00	1	5	3	30	70	41	10	1	0	0	0	0	0	0	161
22:00	1	0	3	11	47	30	5	1	0	0	0	0	0	0	98
23:00	1	0	0	18	33	26	6	1	0	0	0	0	0	0	85
Total	642	215	462	1506	2545	1345	238	21	1	1	0	0	0	0	6976

Daily

15th Percentile :	22 MPH
50th Percentile :	31 MPH
85th Percentile :	37 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	4051
Percent in Pace :	58.1%
Number of Vehicles > 30 MPH :	4151
Percent of Vehicles > 30 MPH :	59.5%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/15/18	1	0	0	5	18	18	8	0	0	0	0	0	0	0	50
01:00	0	0	0	4	11	6	0	0	0	0	0	0	0	0	21
02:00	0	0	1	2	2	4	0	0	0	1	0	0	0	0	10
03:00	0	0	1	2	2	2	0	0	0	0	0	0	0	0	7
04:00	0	0	0	3	5	3	3	1	0	0	0	0	0	0	15
05:00	0	0	0	9	18	22	7	0	0	0	0	0	0	0	56
06:00	2	1	3	22	45	31	6	1	0	0	0	0	0	0	111
07:00	7	1	8	38	88	38	14	0	0	0	0	0	0	0	194
08:00	16	3	25	79	116	70	13	1	0	0	0	0	0	0	323
09:00	19	14	38	97	139	87	17	3	0	0	0	0	0	0	414
10:00	46	11	25	135	151	96	16	1	0	0	0	0	0	0	481
11:00	38	6	29	98	169	106	19	2	1	0	0	0	0	0	468
12 PM	74	12	32	89	168	95	20	2	0	0	0	0	0	0	492
13:00	45	15	28	81	166	102	15	2	0	0	0	0	0	0	454
14:00	21	4	21	92	152	80	13	3	0	0	0	0	0	0	386
15:00	26	5	21	121	166	94	14	1	1	0	0	0	0	0	449
16:00	36	4	26	108	149	71	18	0	0	0	0	0	0	0	412
17:00	15	1	20	63	158	77	10	1	0	0	0	0	0	0	345
18:00	21	8	9	99	114	75	9	3	0	0	0	0	0	0	338
19:00	18	2	8	57	128	53	9	0	0	0	0	0	0	0	275
20:00	4	5	5	34	95	59	13	1	0	1	0	0	0	0	217
21:00	5	1	7	25	72	40	14	2	0	0	0	0	0	0	166
22:00	3	1	1	30	52	45	6	2	1	0	0	0	0	0	141
23:00	2	0	0	7	23	42	7	1	0	0	0	0	0	0	82
Total	399	94	308	1300	2207	1316	251	27	3	2	0	0	0	0	5907

Daily

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	37 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	31-40 MPH
Number in Pace :	3523
Percent in Pace :	59.6%
Number of Vehicles > 30 MPH :	3806
Percent of Vehicles > 30 MPH :	64.4%

Grand Total	1702	517	1239	4420	7163	3924	694	64	6	3	0	0	0	0	19732

Overall

15th Percentile :	22 MPH
50th Percentile :	31 MPH
85th Percentile :	37 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	11583
Percent in Pace :	58.7%
Number of Vehicles > 30 MPH :	11854
Percent of Vehicles > 30 MPH :	60.1%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

EB, WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/13/18	0	0	0	5	17	12	9	1	1	0	0	0	0	0	45
01:00	0	0	2	4	7	7	1	1	0	0	0	0	0	0	22
02:00	0	0	3	8	3	6	1	1	0	0	0	0	0	0	22
03:00	0	0	0	3	12	8	2	0	0	0	0	0	0	0	25
04:00	2	2	2	15	34	23	8	0	0	0	0	0	0	0	86
05:00	9	1	2	39	117	67	15	0	0	0	0	0	0	0	250
06:00	53	24	39	169	291	122	11	4	0	0	0	0	0	0	713
07:00	75	16	44	233	444	209	26	1	0	0	0	0	0	0	1048
08:00	72	27	61	211	443	169	28	3	1	0	0	0	0	0	1015
09:00	96	23	60	204	303	143	12	1	0	0	0	0	0	0	842
10:00	41	10	59	218	305	140	11	1	0	0	0	0	0	0	785
11:00	67	22	55	272	323	118	19	0	0	0	0	0	0	0	876
12 PM	100	16	57	250	377	165	20	0	1	0	0	0	0	0	986
13:00	48	12	45	249	358	123	17	2	0	0	0	0	0	0	854
14:00	123	25	78	277	334	103	9	2	0	0	0	0	0	0	951
15:00	113	21	63	266	351	151	18	1	0	0	0	0	0	0	984
16:00	89	43	86	293	373	162	21	1	0	0	0	0	0	0	1068
17:00	111	15	100	348	419	124	5	0	1	0	0	0	0	0	1123
18:00	50	4	33	249	405	150	15	2	0	0	0	0	0	0	908
19:00	36	1	27	129	240	107	17	0	0	0	0	0	0	0	557
20:00	12	3	10	93	211	113	14	1	1	0	0	0	0	0	458
21:00	7	1	6	55	119	70	7	0	0	0	0	0	0	0	265
22:00	1	2	3	26	47	44	7	1	0	0	0	0	0	0	131
23:00	0	1	2	9	36	30	11	2	0	0	0	0	0	0	91
Total	1105	269	837	3625	5569	2366	304	25	5	0	0	0	0	0	14105

Daily

15th Percentile :	24 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	9194
Percent in Pace :	65.2%
Number of Vehicles > 30 MPH :	8269
Percent of Vehicles > 30 MPH :	58.6%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

EB, WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/14/18	0	0	1	2	13	13	3	0	0	0	0	0	0	0	32
01:00	0	0	0	8	11	13	2	0	0	0	0	0	0	0	34
02:00	0	0	0	5	11	4	1	0	0	0	0	0	0	0	21
03:00	0	0	1	6	6	8	2	0	0	0	0	0	0	0	23
04:00	4	0	1	12	34	22	7	0	0	0	0	0	0	0	80
05:00	4	1	6	37	107	72	10	2	0	1	0	0	0	0	240
06:00	40	9	17	146	270	117	24	0	0	0	0	0	0	0	623
07:00	66	7	32	194	359	185	27	2	0	0	0	0	0	0	872
08:00	82	20	63	229	412	171	22	1	1	0	0	0	0	0	1001
09:00	68	17	57	215	394	150	26	2	0	0	0	0	0	0	929
10:00	60	15	55	277	347	161	31	2	0	0	0	0	0	0	948
11:00	76	27	48	258	319	148	18	2	0	0	0	0	0	0	896
12 PM	92	39	45	257	413	175	17	1	0	0	0	0	0	0	1039
13:00	66	7	51	203	427	192	29	3	0	0	0	0	0	0	978
14:00	135	36	82	279	341	123	14	0	0	0	0	0	0	0	1010
15:00	138	26	97	283	377	132	15	2	0	0	0	0	0	0	1070
16:00	87	29	85	294	434	161	13	3	0	0	0	0	0	0	1106
17:00	105	30	70	268	427	127	14	1	0	0	0	0	0	1	1043
18:00	35	11	59	250	384	134	5	1	0	0	0	0	0	0	879
19:00	21	6	26	155	279	96	15	1	0	0	0	0	0	0	599
20:00	12	0	7	74	212	95	14	2	0	0	0	0	0	0	416
21:00	2	5	9	60	163	78	15	1	0	0	0	0	0	0	333
22:00	1	0	7	36	106	61	11	1	0	0	0	0	0	0	223
23:00	2	0	3	33	65	49	8	1	0	0	0	0	0	0	161
Total	1096	285	822	3581	5911	2487	343	28	1	1	0	0	0	1	14556

Daily

15th Percentile :	24 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	9492
Percent in Pace :	65.2%
Number of Vehicles > 30 MPH :	8772
Percent of Vehicles > 30 MPH :	60.3%

Location : Middlesex Avenue (Route 62)
Location : East of Jefferson Avenue
City/State: Wilmington, MA

8074SPD1

EB, WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12/15/18	2	0	0	10	44	30	11	0	0	0	0	0	0	0	97
01:00	0	0	0	6	20	16	1	0	0	0	0	0	0	0	43
02:00	0	0	2	3	12	8	0	0	0	1	0	0	0	0	26
03:00	0	0	1	10	6	4	2	0	0	0	0	0	0	0	23
04:00	0	0	0	7	12	8	6	1	0	0	0	0	0	0	34
05:00	1	0	0	16	35	42	10	0	0	0	0	0	0	0	104
06:00	5	1	8	40	77	61	9	1	0	0	0	0	0	0	202
07:00	12	3	17	65	169	81	21	0	0	0	0	0	0	0	368
08:00	30	5	39	149	248	121	20	1	0	0	0	0	0	0	613
09:00	37	20	57	178	299	172	24	3	0	0	0	0	0	0	790
10:00	79	16	54	272	334	167	25	1	0	0	0	0	0	0	948
11:00	64	11	55	228	416	186	25	3	1	0	0	0	0	1	990
12 PM	114	15	46	225	406	152	24	2	0	0	0	0	0	0	984
13:00	79	16	47	227	376	171	18	2	0	0	0	0	0	0	936
14:00	46	5	28	219	369	181	16	3	0	0	0	0	0	0	867
15:00	52	6	35	266	344	154	19	1	1	0	0	0	0	0	878
16:00	61	4	43	231	363	118	22	0	0	0	0	0	0	0	842
17:00	23	1	35	194	369	127	18	1	0	0	0	0	0	0	768
18:00	40	10	23	213	317	124	12	3	0	0	0	0	0	0	742
19:00	30	4	19	136	258	95	11	0	0	0	0	0	0	0	553
20:00	5	5	19	75	212	113	15	1	0	1	0	0	0	0	446
21:00	10	1	8	64	169	91	19	2	0	0	0	0	0	0	364
22:00	4	1	4	55	132	78	11	4	1	0	0	0	0	0	290
23:00	4	0	1	19	73	74	8	1	0	0	0	0	0	0	180
Total	698	124	541	2908	5060	2374	347	30	3	2	0	0	0	1	12088

Daily

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	7968
Percent in Pace :	65.9%
Number of Vehicles > 30 MPH :	7817
Percent of Vehicles > 30 MPH :	64.7%

Grand Total	2899	678	2200	10114	16540	7227	994	83	9	3	0	0	0	2	40749

Overall

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	26654
Percent in Pace :	65.4%
Number of Vehicles > 30 MPH :	24858
Percent of Vehicles > 30 MPH :	61.0%

PUBLIC TRANSPORTATION SCHEDULES

HAVERHILL LINE

Effective October 21, 2019

Monday to Friday

Inbound to Boston

ZONE	STATION	TRAIN #	AM								PM												
	Bikes Allowed																						
7	Haverhill	♿	5:05	5:40	6:10	6:38	-	-	7:35	-	9:05	10:49	12:05	2:00	3:25	-	4:47	-	-	6:25	7:45	9:10	10:50
7	Bradford	♿	5:07	5:42	6:12	6:40	-	-	7:37	-	f 9:07	f 10:52	f 12:07	f 2:02	f 3:27	-	f 4:49	-	-	f 6:28	f 7:47	f 9:12	f 10:52
6	Lawrence	♿	5:16	5:51	6:21	6:50	-	-	7:46	-	9:15	10:59	12:15	2:10	3:35	-	4:57	-	-	6:39	7:55	9:20	11:00
5	Andover	♿	5:23	5:58	6:28	6:57	-	-	7:53	-	f 9:22	f 11:06	f 12:22	f 2:17	f 3:42	-	f 5:04	-	-	f 6:46	f 8:02	f 9:27	f 11:07
4	Ballardvale	♿	5:29	6:04	6:34	7:02	-	-	7:59	-	f 9:27	f 11:11	f 12:27	f 2:22	f 3:47	-	f 5:09	-	-	f 6:51	f 8:07	f 9:32	f 11:12
3	North Wilmington		5:36	6:11	6:41	-	-	-	-	-	f 9:34	f 11:18	f 12:34	f 2:29	-	-	-	-	-	-	-	f 9:39	f 11:19
2	Reading	♿	5:43	6:18	6:48	-	7:30	8:00	-	8:30	9:41	11:25	12:41	2:36	-	4:50	-	5:37	6:55	-	8:21	9:46	11:26
2	Wakefield		5:49	6:24	6:54	-	7:36	8:06	VIA	8:36	f 9:46	f 11:30	f 12:46	f 2:41	-	f 4:55	-	f 5:42	f 7:00	-	f 8:27	f 9:51	f 11:31
2	Greenwood		5:52	6:27	6:57	-	7:39	8:09	LOWELL	8:39	f 9:49	f 11:33	f 12:49	f 2:44	-	f 4:58	-	f 5:45	f 7:03	-	f 8:30	f 9:54	f 11:34
1	Melrose Highlands	♿	5:54	6:29	6:59	-	7:41	8:11	LINE	8:41	f 9:51	f 11:35	f 12:51	f 2:46	-	f 5:00	-	f 5:47	f 7:05	-	f 8:32	f 9:56	f 11:36
1	Melrose/Cedar Park		5:56	6:31	7:01	-	7:43	8:13	-	8:43	f 9:53	f 11:37	f 12:53	f 2:48	-	f 5:01	-	f 5:48	f 7:06	-	f 8:34	f 9:58	f 11:38
1	Wyoming Hill		5:58	6:33	7:03	-	7:45	8:15	-	8:45	f 9:55	f 11:39	f 12:55	f 2:50	-	f 5:03	-	f 5:51	f 7:08	-	f 8:36	f 10:00	f 11:40
1A	Malden Center	♿	L 6:03	L 6:38	L 7:08	-	L 7:51	L 8:19	-	L 8:49	L 9:58	L 11:43	L 12:58	L 2:54	-	L 5:06	-	L 5:54	L 7:11	-	L 8:39	L 10:03	L 11:43
1A	North Station	♿	6:16	6:51	7:21	7:36	8:02	8:30	8:38	9:00	10:10	11:55	1:10	3:06	4:23	5:17	5:45	6:05	7:22	7:25	8:50	10:15	11:55

Trains in purple box indicate peak period trains.

Monday to Friday

Outbound from Boston

ZONE	STATION	TRAIN #	AM									PM								AM			
	Bikes Allowed																						
1A	North Station	♿	6:43	7:10	7:35	7:55	9:20	10:30	12:20	1:44	3:15	3:50	4:30	4:48	5:15	5:35	6:05	6:25	6:55	7:30	9:20	11:00	12:10
1A	Malden Center	♿	f 6:54	f 7:21	f 7:45	-	f 9:31	f 10:41	f 12:31	f 1:55	3:26	4:01	4:41	4:59	5:26	5:46	6:16	6:36	-	f 7:41	f 9:31	f 11:11	f 12:21
1	Wyoming Hill		f 6:57	f 7:24	f 7:48	-	f 9:34	f 10:44	f 12:34	f 1:58	3:30	4:05	4:45	5:03	-	5:50	6:20	6:40	-	f 7:44	f 9:34	f 11:14	f 12:24
1	Melrose/Cedar Park		f 6:59	f 7:26	f 7:50	-	f 9:36	f 10:46	f 12:36	f 2:00	3:32	4:07	4:47	5:05	-	5:52	6:22	6:42	-	f 7:46	f 9:36	f 11:16	f 12:26
1	Melrose Highlands	♿	f 7:02	f 7:29	f 7:53	-	f 9:39	f 10:49	f 12:39	f 2:03	3:36	4:11	4:51	5:09	-	5:56	6:26	6:46	VIA	f 7:49	f 9:39	f 11:19	f 12:29
2	Greenwood		f 7:05	f 7:32	f 7:56	-	f 9:42	f 10:52	f 12:42	f 2:06	3:39	4:14	4:54	5:12	-	5:59	6:29	6:49	LOWELL	f 7:52	f 9:42	f 11:22	f 12:32
2	Wakefield		f 7:09	f 7:36	f 8:00	-	f 9:46	f 10:56	f 12:46	f 2:10	3:43	4:18	4:58	5:16	5:36	6:03	6:33	6:53	LINE	f 7:56	f 9:46	f 11:26	f 12:36
2	Reading	♿	7:15	7:42	8:06	8:17	9:52	11:02	12:52	2:16	3:49	4:24	5:04	5:22	5:42	6:09	6:39	6:59	-	8:02	9:52	11:32	12:42
3	North Wilmington		-	-	8:12	-	f 9:58	f 11:08	f 12:58	f 2:22	3:56	-	5:11	-	5:49	6:16	-	7:06	-	f 8:08	f 9:58	f 11:38	f 12:48
4	Ballardvale	♿	-	-	8:19	-	f 10:05	f 11:16	f 1:05	f 2:30	4:03	-	5:18	-	5:56	6:23	-	7:13	7:35	f 8:15	f 10:05	f 11:45	f 12:55
5	Andover	♿	-	-	8:24	-	f 10:10	f 11:21	f 1:10	f 2:35	4:09	-	5:24	-	6:02	6:29	-	7:19	7:41	f 8:20	f 10:10	f 11:50	f 1:00
6	Lawrence	♿	-	-	8:31	-	10:17	11:28	1:17	2:42	4:16	-	5:31	-	6:09	6:36	-	7:26	7:48	8:28	10:17	11:57	1:07
7	Bradford	♿	-	-	L 8:40	-	L 10:26	L 11:38	L 1:27	L 2:54	L 4:26	-	L 5:42	-	L 6:20	L 6:47	-	L 7:37	L 7:59	L 8:39	L 10:26	L 12:06	L 1:16
7	Haverhill	♿	-	-	8:43	-	10:29	11:41	1:30	2:57	4:29	-	5:45	-	6:23	6:50	-	7:40	8:02	8:42	10:29	12:09	1:19

Trains in purple box indicate peak period trains.

Saturday & Sunday

Inbound to Boston

ZONE	STATION		AM		PM			
		SATURDAY TRAIN #	1200	1202	1204	1206	1208	1210
		SUNDAY TRAIN #	2200	2202	2204	2206	2208	2210
	Bikes Allowed							
7	Haverhill	♿	7:15	10:20	1:15	4:20	7:15	10:00
7	Bradford	♿	7:18	10:23	1:18	4:23	7:18	10:03
6	Lawrence	♿	7:27	10:32	1:27	4:32	7:27	10:12
5	Andover	♿	7:32	10:37	1:33	4:37	7:33	10:18
4	Ballardvale	♿	f 7:37	f 10:42	f 1:37	f 4:42	f 7:37	f 10:22
3	North Wilmington		f 7:44	f 10:49	f 1:44	f 4:49	f 7:44	f 10:29
2	Reading	♿	7:50	10:56	1:50	4:55	7:50	10:35
2	Wakefield		7:55	11:01	1:55	5:00	7:55	10:40
2	Greenwood		f 7:59	f 11:05	f 1:59	f 5:04	f 7:59	f 10:44
1	Melrose Highlands	♿	8:02	11:08	2:02	5:07	8:02	10:47
1	Melrose/Cedar Park		f 8:04	f 11:10	f 2:04	f 5:09	f 8:04	f 10:49
1	Wyoming Hill		f 8:06	f 11:12	f 2:06	f 5:11	f 8:06	f 10:51
1A	Malden Center	♿	L 8:10	L 11:16	L 2:10	L 5:15	L 8:10	L 10:55
1A	North Station	♿	8:21	11:27	2:21	5:26	8:21	11:06

Saturday & Sunday

Outbound from Boston

ZONE	STATION		AM		PM			
		SATURDAY TRAIN #	1201	1203	1205	1207	1209	1211
		SUNDAY TRAIN #	2201	2203	2205	2207	2209	2211
	Bikes Allowed							
1A	North Station	♿	8:40	11:40	2:50	5:20	8:20	11:30
1A	Malden Center	♿	8:50	11:50	3:00	5:30	8:30	11:40
1	Wyoming Hill		f 8:54	f 11:54	f 3:04	f 5:34	f 8:34	f 11:44
1	Melrose/Cedar Park		f 8:56	f 11:56	f 3:06	f 5:36	f 8:36	f 11:46
1	Melrose Highlands	♿	8:59	11:59	3:09	5:39	8:39	11:49
2	Greenwood		f 9:02	f 12:02	f 3:12	f 5:42	f 8:42	f 11:52
2	Wakefield		9:05	12:05	3:15	5:45	8:45	11:55
2	Reading	♿	9:11	12:11	3:21	5:51	8:51	12:01
3	North Wilmington		f 9:17	f 12:17	f 3:27	f 5:57	f 8:57	f 12:07
4	Ballardvale	♿	f 9:23	f 12:23	f 3:33	f 6:03	f 9:03	f 12:13
5	Andover	♿	9:28	12:28	3:38	6:08	9:08	12:18
6	Lawrence	♿	9:35	12:35	3:45	6:15	9:15	12:25
7	Bradford	♿	L 9:45	L 12:45	L 3:55	L 6:25	L 9:25	L 12:35
7	Haverhill	♿	9:48	12:48	3:58	6:28	9:28	12:38

Keep in Mind:

This schedule will be effective from October 21, 2019 and will replace the schedule of May 20, 2019

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.

Via Lowell Line: Operates via the Lowell Line between Wilmington and North Station. See the Lowell Line schedule for all stops.

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 indicate an early departure (L stop): 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.

Schedules may change in the event of severe weather

The MBTA and Keolis closely monitor weather forecasts to determine if conditions necessitate changes to the Commuter Rail schedule.

During weather events, the symbols below will communicate service level and impact on passengers. Service level for the following day will be announced mid-afternoon on the prior day.

REGULAR SCHEDULE
Trains will operate on a normal schedule.

STORM SCHEDULE
Major changes to the regular schedule. Schedules will be available on mbta.com, and in Boston stations.

NO SERVICE
No passenger service on Commuter Rail.

2020 REDUCED SERVICE SCHEDULE

Reduced service schedule in effect when declared in advance by the MBTA. In most cases, announcement made late in the afternoon on the prior day. Should an event occur requiring a more immediate service change, please check departure times prior to travel, and stay connected to MBTA.com for up-to-the minute information.

HAVERHILL LINE

Monday to Friday

Inbound to Boston

ZONE	STATION	TRAIN #	7280	1200	1202	1204	1206	1208	1210
			AM	AM	AM	PM	PM	PM	PM
7	Haverhill	♿	-	7:15	10:20	1:15	4:20	7:15	10:00
7	Bradford	♿	-	7:18	10:23	1:18	4:23	7:18	10:03
6	Lawrence	♿	-	7:27	10:32	1:27	4:32	7:27	10:12
5	Andover	♿	-	7:32	10:37	1:33	4:37	7:33	10:18
4	Ballardvale	♿	-	7:37	10:42	1:37	4:42	7:37	10:22
3	North Wilmington		-	7:44	10:49	1:44	4:49	7:44	10:29
2	Reading	♿	5:50	7:50	10:56	1:50	4:55	7:50	10:35
2	Wakefield		5:56	7:55	11:01	1:55	5:00	7:55	10:40
2	Greenwood		5:59	7:59	11:05	1:59	5:04	7:59	10:44
1	Melrose Highlands	♿	6:01	8:02	11:08	2:02	5:07	8:02	10:47
1	Melrose/Cedar Park		6:03	8:04	11:10	2:04	5:09	8:04	10:49
1	Wyoming Hill		6:05	8:06	11:12	2:06	5:11	8:06	10:51
1A	Malden Center	♿	6:10	8:10	11:16	2:10	5:15	8:10	10:55
1A	NORTH STATION	♿	6:23	8:21	11:27	2:21	5:26	8:21	11:06

Monday to Friday

Outbound from Boston

ZONE	STATION	TRAIN #	1201	1203	1205	1207	1209	1211
			AM	AM	PM	PM	PM	PM
1A	NORTH STATION	♿	8:40	11:40	2:50	5:20	8:20	11:30
1A	Malden Center	♿	8:50	11:50	3:00	5:30	8:30	11:40
1	Wyoming Hill		8:54	11:54	3:04	5:34	8:34	11:44
1	Melrose/Cedar Park		8:56	11:56	3:06	5:36	8:36	11:46
1	Melrose Highlands	♿	8:59	11:59	3:09	5:39	8:39	11:49
2	Greenwood		9:02	12:02	3:12	5:42	8:42	11:52
2	Wakefield		9:05	12:05	3:15	5:45	8:45	11:55
2	Reading	♿	9:11	12:11	3:21	5:51	8:51	12:01
3	North Wilmington		9:17	12:17	3:27	5:57	8:57	12:07
4	Ballardvale	♿	9:23	12:23	3:33	6:03	9:03	12:13
5	Andover	♿	9:28	12:28	3:38	6:08	9:08	12:18
6	Lawrence	♿	9:35	12:35	3:45	6:15	9:15	12:25
7	Bradford	♿	9:45	12:45	3:55	6:25	9:25	12:35
7	Haverhill	♿	9:48	12:48	3:58	6:28	9:28	12:38

Reduced schedule advisory system

The MBTA and Keolis closely monitor events to determine if changes to the Commuter Rail schedule are needed. During these times, the symbols to the right will communicate service level and impact on passengers.

REGULAR SCHEDULE
Trains will operate on a normal schedule.

REDUCED SCHEDULE
Major changes to the regular schedule. Schedules also available on MBTA.com and in Boston stations.

NO SERVICE
No passenger service on Commuter Rail.

Service Change ONGOING

All MBTA services are running on a reduced schedule until further notice in the interest of the health and safety of our riders and employees. Effective May 6, all riders must use a face covering when on the MBTA. Full details: MBTA.com/coronavirus

Commuter Rail Fares

One-Way Fares

Each Commuter Rail station is located in a fare zone, from 1A – 10. Your Commuter Rail fare depends on which zones your boarding and exiting stations are located in.

Commuter Rail One-Way

$2.40 – $13.25

with CharlieTicket or mTicket App

Price based on distance traveled

Learn about Commuter Rail zones

Commuter Rail Weekend Pass

$10.00

with CharlieTicket, Cash, or mTicket App

Learn about $10 weekends

Commuter Rail Fare Zones

Download our map to see which zone your station is in.

Find my fare zone

Find the cost of your trip with our fare finder.

Find your fare

Passes

The price of your monthly Commuter Rail pass depends on which zones your boarding and exiting stations are located in.

Tip! Reduced monthly Commuter Rail passes are not available, but reduced 10-ride passes are available at fare vending machines, at ticket windows, and from mTicket.

Monthly Commuter Rail Pass CharlieTicket

$90.00 – $426.00

Unlimited travel for 1 calendar month

Valid on:

- Commuter Rail, up to designated pass zone
- Subway
- Bus
- Charlestown Ferry
- Hingham/Hull Ferry with Zone 6 passes and up

Please note:

- Zone 1A passes not valid on Express Bus
- Interzone passes not valid on subway, Express Bus, and ferry

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Monthly Commuter Rail Pass mTicket

$80.00 – $416.00

Unlimited travel for 1 calendar month

Valid on:

- Commuter Rail, up to designated pass zone

No transfers to other modes

Weekend Pass

$10.00

- Unlimited travel to all zones on all lines
- Valid Saturdays and Sundays
- Available onboard trains, at ticket windows, and from mTicket

Valid only on:
Commuter Rail

$10 Commuter Rail Weekends

Take unlimited Commuter Rail trips on Saturdays and Sundays for just $10.

Learn more about weekend passes

Auto-pay

Get a monthly Commuter Rail pass that renews automatically.

Sign up for Auto-pay

Perq

Get monthly passes—at pre-tax rates—through your employer.

Learn more about Perq

How to Pay Your Commuter Rail Fare

First, choose how you'll pay your fare

Conductors will check your ticket or pass after you board the train.

Tip! During Fare Is Fair events, your ticket may be checked at any point during your trip, including before you board or after you get off the train.

CharlieTicket

★ Best for frequent Commuter Rail riders who also take the subway or bus
✔ Monthly passes available
⊘ No online card management
⊘ No discounts

One-way and round trip tickets valid on:
Commuter Rail, up to designated zone

Monthly passes valid on:
Commuter Rail, up to designated zone
Subway
Bus
Charlestown Ferry
Hingham/Hull Ferry with Zone 6 passes and up

Note: Interzone passes not valid on subway, Express Bus, and ferry

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mTicket

★ Best for infrequent Commuter Rail riders or pass holders who don't often take subway or bus
✔ $10 discount on monthly passes
✔ Convenient smartphone app for ticket purchase and validation
✔ 10-ride passes available
⊘ No transfers

	Valid on: Commuter Rail, up to designated zone
Cash Onboard	★ Best for infrequent Commuter Rail riders at stations where tickets can't be purchased at fare vending machines or ticket windows ✔ May include a $3 fee if you board at a station where tickets can be purchased ✔ Only available for one-way and round trip tickets ⊘ Not available during Fare is Fair events

Then, choose where to buy your ticket or pass

- mTicket app
- Ticket booths
- Fare vending machines
- Online
- Retail stores

When you're ready to board the train

The conductor will verify your fare payment after you board the train. The conductor may tuck a small piece of paper on the seat back in front of you to indicate that you paid your fare.

The only exception to this is during Fare Is Fair events, when your ticket may be checked at any point during your trip, including before you board or after you get off the train.

- Pay with a prepaid ticket or pass
- Pay with mTicket

Pay with cash or credit on board

Reduced Fares

Some customers are eligible for reduced fares or can ride the T for free.

Learn more about reduced fares

Have a Question?

Fares FAQ

Visit our fares FAQ for detailed answers about the MBTA's ticketing system

Other MBTA Fares

Subway Fares

See all MBTA subway fares

Bus Fares

See all MBTA bus fares

Ferry Fares

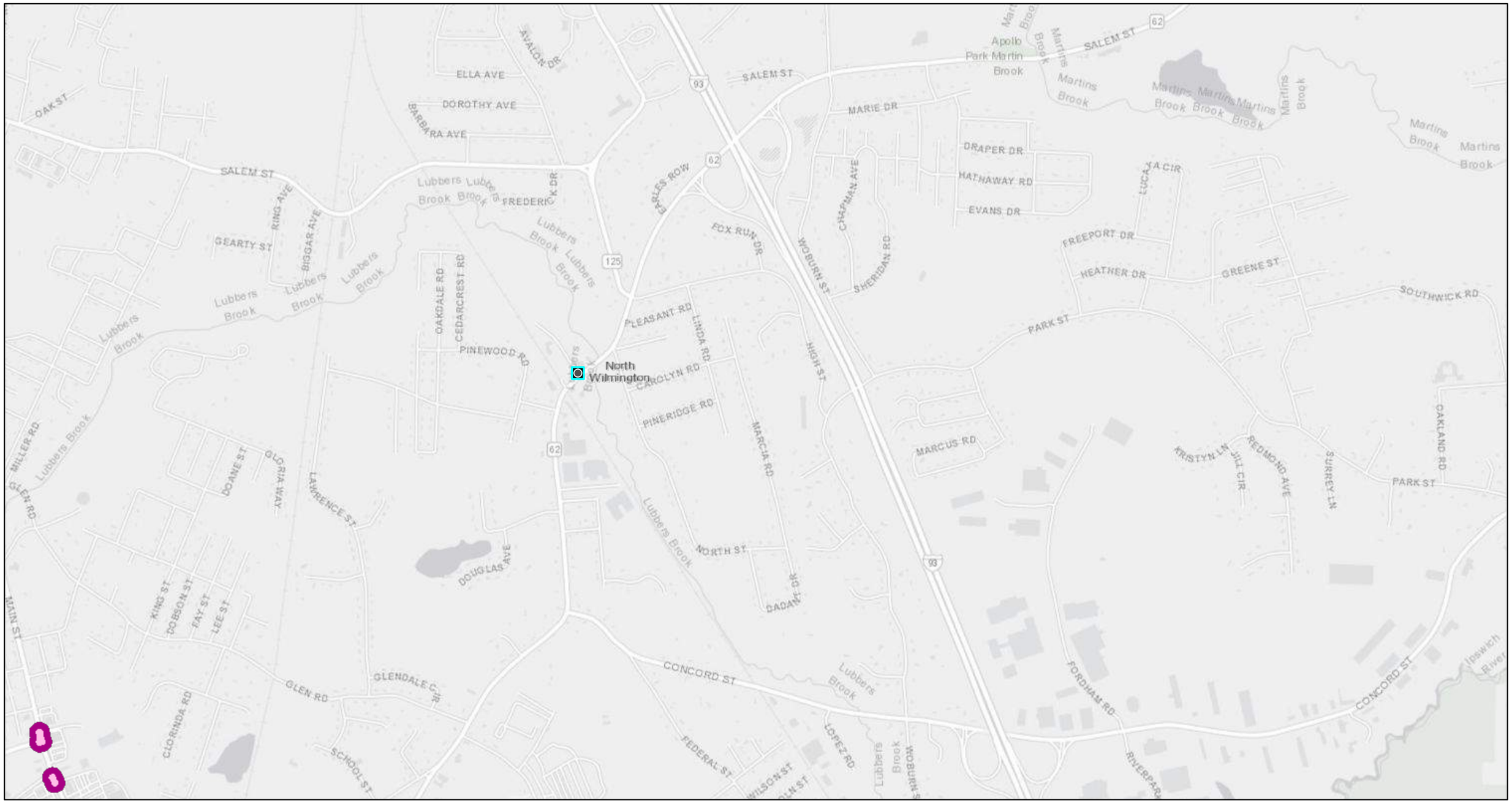
See all MBTA ferry fares

Common Fares

See common fares across all MBTA modes

MASSDOT HIGH CRASH LOCATION MAPPING

HAZUS



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TRIP-GENERATION CALCULATIONS

Land Use: 221
Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (Land Use 225), and mid-rise residential with 1st-floor commercial (Land Use 231) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.46 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 95.7 percent of the total dwelling units were occupied.

Time-of-day distribution data for this land use are presented in Appendix A. For the eight general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 4:45 and 5:45 p.m., respectively.

For the four dense multi-use urban sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:15 and 5:15 p.m., respectively. For the three center city core sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 6:45 and 7:45 a.m. and 5:00 and 6:00 p.m., respectively.

For the six sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.46 residents per occupied dwelling unit.

For the five sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 95.7 percent of the units were occupied.

The average numbers of person trips per vehicle trip at the five center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 1.84 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.94 during Weekday, AM Peak Hour of Generator
- 2.07 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.59 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 32 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.90 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.90 during Weekday, AM Peak Hour of Generator
- 2.00 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.08 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 13 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.56 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.88 during Weekday, AM Peak Hour of Generator
- 1.70 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.07 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wisconsin.

Source Numbers

168, 188, 204, 305, 306, 321, 357, 390, 436, 525, 530, 579, 638, 818, 857, 866, 901, 904, 910, 912, 918, 934, 936, 939, 944, 947, 948, 949, 959, 963, 964, 966, 967, 969, 970

Graph Look Up

ITETripGen Web-based App

- Graph Look Up
- Technical Support
- Add Users
- Comments

ADD-ONS

Try OTISS Pro

Query | Filter

DATA SOURCE:
Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE:
221

LAND USE GROUP:
(200-299) Residential

LAND USE :
221 - Multifamily Housing (Mid-Rise)

LAND USE SUBCATEGORY:
All Sites

INDEPENDENT VARIABLE (IV):
Dwelling Units

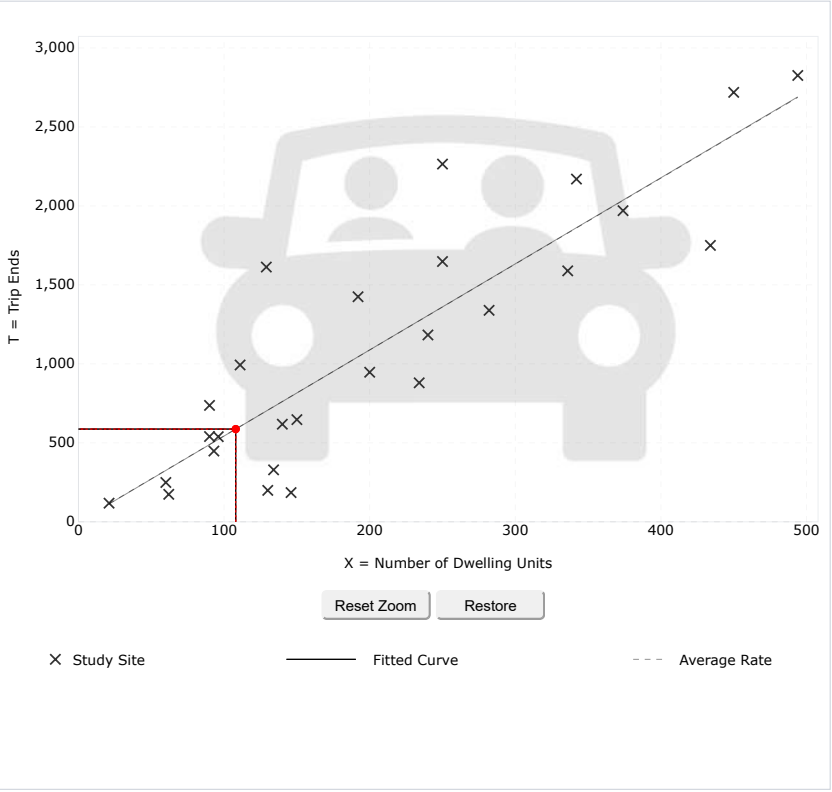
TIME PERIOD:
Weekday

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
108 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Multifamily Housing (Mid-Rise) (221) Click for more details

Independent Variable:
Dwelling Units

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
27

Avg. Num. of Dwelling Units:
205

Average Rate:
5.44

Range of Rates:
1.27 - 12.50

Standard Deviation:
2.03

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

R^2:
0.77

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 588 (Total), 294 (Entry), 294 (Exit)
Fitted Curve: 587 (Total), 293 (Entry), 294 (Exit)

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Graph Look Up

ITETripGen Web-based App

- Graph Look Up
- Technical Support
- Add Users
- Comments

ADD-ONS

Try OTISS Pro

Query | Filter

DATA SOURCE:
Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE:
221

LAND USE GROUP:
(200-299) Residential

LAND USE :
221 - Multifamily Housing (Mid-Rise)

LAND USE SUBCATEGORY:
All Sites

INDEPENDENT VARIABLE (IV):
Dwelling Units

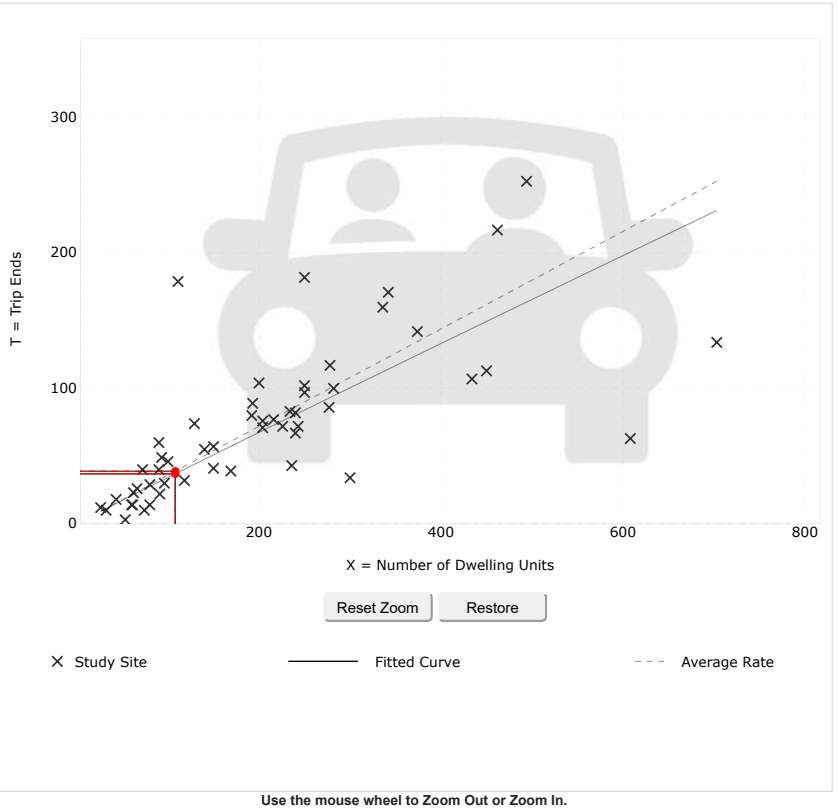
TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
108 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Multifamily Housing (Mid-Rise) (221) Click for more details

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
53

Avg. Num. of Dwelling Units:
207

Average Rate:
0.36

Range of Rates:
0.06 - 1.61

Standard Deviation:
0.19

Fitted Curve Equation:
Ln(T) = 0.98 Ln(X) - 0.98

R^2:
0.67

Directional Distribution:
26% entering, 74% exiting

Calculated Trip Ends:
Average Rate: 39 (Total), 10 (Entry), 29 (Exit)
Fitted Curve: 37 (Total), 10 (Entry), 27 (Exit)

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Graph Look Up

ITETripGen Web-based App

- Graph Look Up
- Technical Support
- Add Users
- Comments

ADD-ONS

Try OTISS Pro

Query | Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 221

LAND USE GROUP: (200-299) Residential

LAND USE : 221 - Multifamily Housing (Mid-Rise)

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Dwelling Units

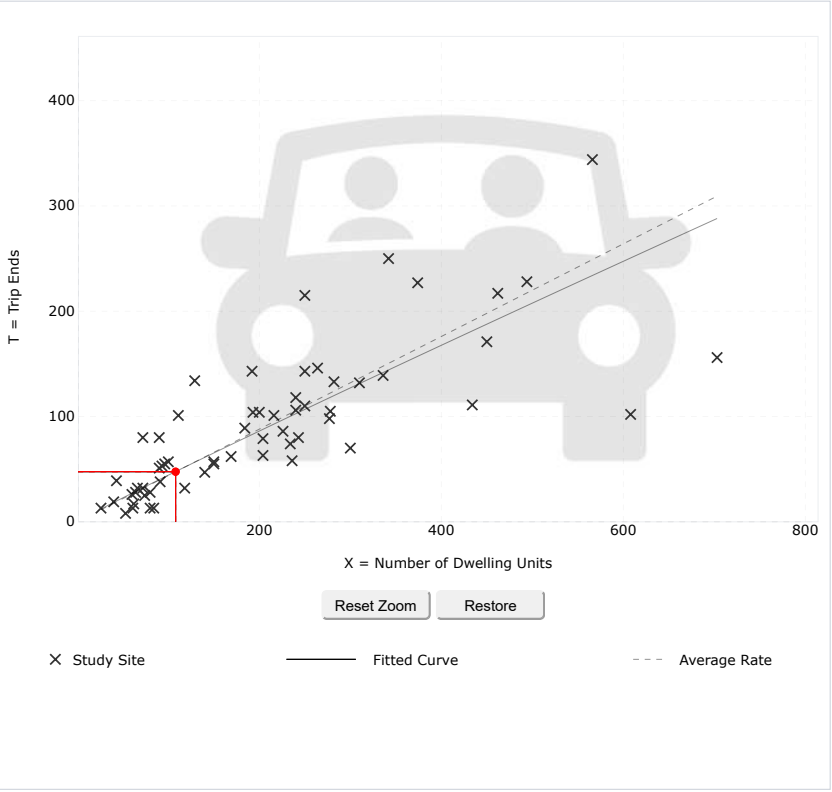
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 108 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Multifamily Housing (Mid-Rise) (221) Click for more details

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
60

Avg. Num. of Dwelling Units:
208

Average Rate:
0.44

Range of Rates:
0.15 - 1.11

Standard Deviation:
0.19

Fitted Curve Equation:
Ln(T) = 0.96 Ln(X) - 0.63

R^2:
0.72

Directional Distribution:
61% entering, 39% exiting

Calculated Trip Ends:
Average Rate: 48 (Total), 29 (Entry), 19 (Exit)
Fitted Curve: 48 (Total), 29 (Entry), 19 (Exit)

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TECHNICAL MEMORANDUM

REF: MAX-2018119.02

DATE: September 14, 2022

TO: Mr. Matthew Costa, P.E.
Beals Associates, Inc.
22 Park Plaza, Suite 200
Boston, MA 02116

FROM: Ms. Rebecca L. Brown, P.E., Senior Project Manager
Ms. Susannah E. Theriault, P.E., Project Engineer

RE: Updated Traffic Impact Assessment
Upton Park Mixed Commercial Development
36 & 38 Upton Drive, Massachusetts

EXECUTIVE SUMMARY

Greenman-Pedersen, Inc. (GPI) previously prepared a *Traffic Impact and Access Study*[1] (TIAS) for a proposed warehouse/office development referred to as Upton Park to be located at #36 & #38 Upton Drive in Wilmington, Massachusetts. The site is currently a vacant vegetated lot with a gravel driveway which spurs off the southwesterly corner of Upton Drive. The site was recently approved for the construction of an approximately ±263,900 square feet (SF) warehouse distribution development within three buildings with access/egress proposed via five driveways along Upton Drive. To attract a wider range of potential tenants to the site, the developer is seeking approval for a mixed commercial development that would allow a potential light industrial, manufacturing, or research and development (R&D) use to occupy a portion of the previously permitted buildings. Access and egress will continue to be provided via the five previously proposed site driveways.

To allow flexibility in the marketing of the overall development, the various uses may be separated between each building and could include up to 19,800 SF of R&D space, up to 39,000 SF of light industrial space, and up to 78,500 SF of manufacturing space with the remainder of the buildings being occupied by warehousing space. This *Updated Traffic Impact Assessment* (Updated TIA) is intended to evaluate the traffic impacts associated with the proposed change in use in comparison to the originally approved development and assess the need for any additional mitigation measures to offset the project's impacts on the study area roadways. The Applicant acknowledges that if the overall development's traffic generation exceeds the amount depicted in this report, than additional studies will be provided to the approving authority.

The study area for this Updated TIA is consistent with the study area contained in the original TIAS and is graphically depicted in Figure 1. The Updated TIA utilizes the traffic volumes and analysis contained in the original 2018 TIAS to evaluate 2022 Existing and 2029 No-Build traffic operations at the study area intersections. The potential traffic to be generated by the proposed mix of light industrial, manufacturing, warehousing, and R&D space has been estimated based on Institute of Transportation Engineers (ITE) trip

[1] *Traffic Impact and Access Study, Upton Park, Wilmington, Massachusetts*; Greenman-Pedersen, Inc.; September 14, 2018.

generation rates and distributed to the roadway network to estimate 2029 Build conditions. The currently proposed development is anticipated to generate an additional 84 vehicle trips (68 entering and 16 exiting) during the weekday AM peak hour and an additional 85 vehicle trips (21 entering and 64 exiting) during the weekday PM peak hour as compared to the previously approved warehouse distribution center.

Capacity and queue analyses were completed at all of the study area intersections for the 2029 Build condition with the currently proposed development and compared to the 2029 No-Build condition and 2029 Build condition with the previously proposed development. The results of the analysis indicate that all movements at the signalized intersections of Route 125 (Ballardvale Street) with the I-93 Northbound (NB) and Southbound (SB) ramps are anticipated to operate at LOS D or better under all analysis conditions. The additional traffic generated by the proposed mixed commercial development is not expected to increase delay on any movement through these intersections by more than four seconds per vehicle or increase queues by more than two vehicles.

Although some movements at the Route 125 / Ballardvale Street intersection will operate at LOS F under 2029 No-Build and Build conditions, the additional traffic generated by the proposed warehouse / office development is not anticipated to increase delay on any movement through the intersection by more than seven seconds per vehicle or increase queues by more than two vehicles.

Similarly, although some side street movements at the unsignalized intersections of Andover Street with Upon Drive and Jonspin Road are expected to operate at LOS F under 2029 No-Build and/or Build conditions, 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. Improvements are also proposed by the Applicant at the intersection of Andover Street / Upton Drive, which include installation of DO NOT BLOCK INTERSECTION signage and pavement markings, and reconstruction of the median island on Upton Drive to better accommodate truck turns. These improvements will help to facilitate turning movements into and exiting Upton Drive.

Several movements at the intersection of Route 125 / Andover Street are anticipated to operate at LOS E or F during the weekday AM and PM peak hours under 2029 No-Build and Build conditions. However, the additional traffic generated by the proposed mixed commercial development is not expected to increase overall delay through the intersection by more than 13 seconds per vehicle or increase queues by more than five vehicles. Although MassDOT recently installed a new traffic signal controller at this intersection, it operates with a single timing plan 24 hours per day that is designed to accommodate traffic volumes during the weekday AM peak hour. By implementing a separate timing plan for the weekday PM peak hour, all movements through the intersection can operate under capacity (V/C <1.0) and at LOS D or better during the weekday PM peak hour. The Applicant for the development at #30 Upton Drive has committed to contacting MassDOT to implement the recommended signal timing modifications as mitigation for the proposed development.

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

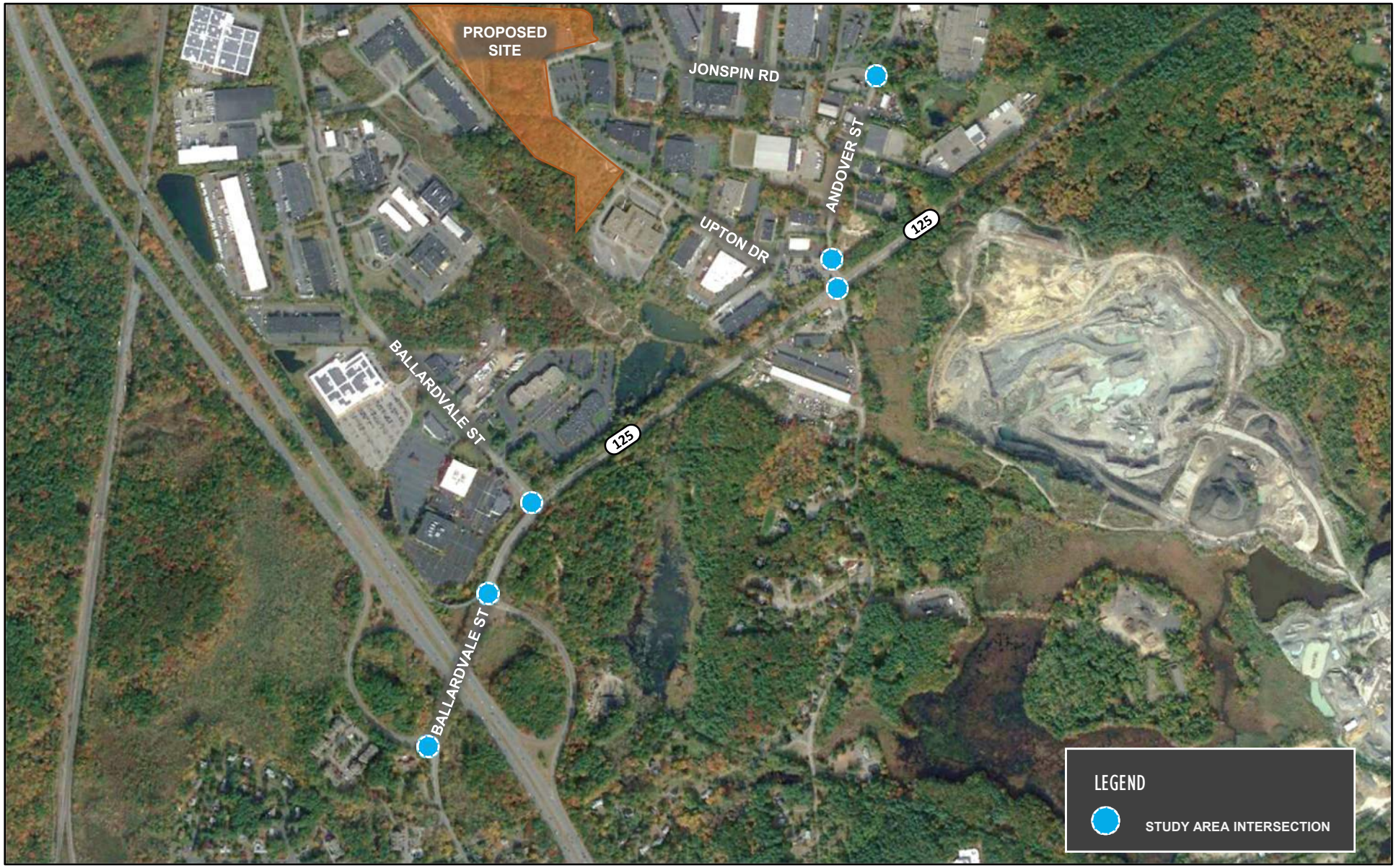


FIGURE 1 – SITE LOCATION MAP

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. To be consistent with the original *Traffic Impact and Access Study*[2] (TIAS) prepared as part of the permitting for the Upton Park development, the following key intersections have been evaluated in the completion of this study:

- Route 125 (Ballardvale Street) / Route 93 SB Ramps (Signalized)
- Route 125 (Ballardvale Street) / Route 93 NB Ramps (Signalized)
- Route 125 (Ballardvale Street) / Ballardvale Street (Signalized)
- Route 125 / Andover Street (Signalized)
- Andover Street / Upton Drive (Unsignalized)
- Andover Street / Jonspin Road (Unsignalized)

Traffic Volumes

Existing conditions traffic volumes during the weekday AM (7:30 AM – 8:30 AM) and weekday PM (4:30 PM – 5:30 PM) peak hours at the study area intersections were obtained from the original 2018 TIAS[3] prepared for the Upton Park development. Manual turning movement counts (TMCs) and vehicle classification counts were collected in June and August 2018 as part of the Upton Park 2018 TIAS. The TMCs were collected during the weekday AM (7:00 AM – 9:00 AM) and weekday PM (4:00 PM – 6:00 PM) peak periods on Thursday, August 16, 2018 at each of the following intersections:

- Route 125 / Andover Street
- Andover Street / Upton Drive
- Andover Street / Jonspin Road

In addition, GPI previously collected manual turning movement counts along Route 125 and Ballardvale Street in June 2018, while school was in session, as part of a signal timing modification project with the Massachusetts Department of Transportation (MassDOT) during the same weekday AM and PM peak periods at the following intersections:

- Route 125 / Ballardvale Street
- Ballardvale Street / Route 93 NB Ramps
- Ballardvale Street / Route 93 SB Ramps

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 June and August traffic-volume data needed to be adjusted to account for this

[2] *Traffic Impact and Access Study, Upton Park, Wilmington, MA;* Prepared by Greenman-Pedersen, Inc.; September 14, 2018.

[3] *Traffic Impact and Access Study, Upton Park, Wilmington, MA;* Prepared by Greenman-Pedersen, Inc.; September 14, 2018.

fluctuation, traffic-volume data from Massachusetts Department of Transportation (MassDOT) Permanent Count Stations in the area were researched[4]. Based on the MassDOT traffic-volume data, traffic during the months of June and August is 5.3 and 3.1 percent higher than average-month conditions, respectively. Therefore, the June traffic volumes were unadjusted to represent a conservative (worse case) scenario of average-month conditions. The MassDOT seasonal adjustment data are provided in the Appendix.

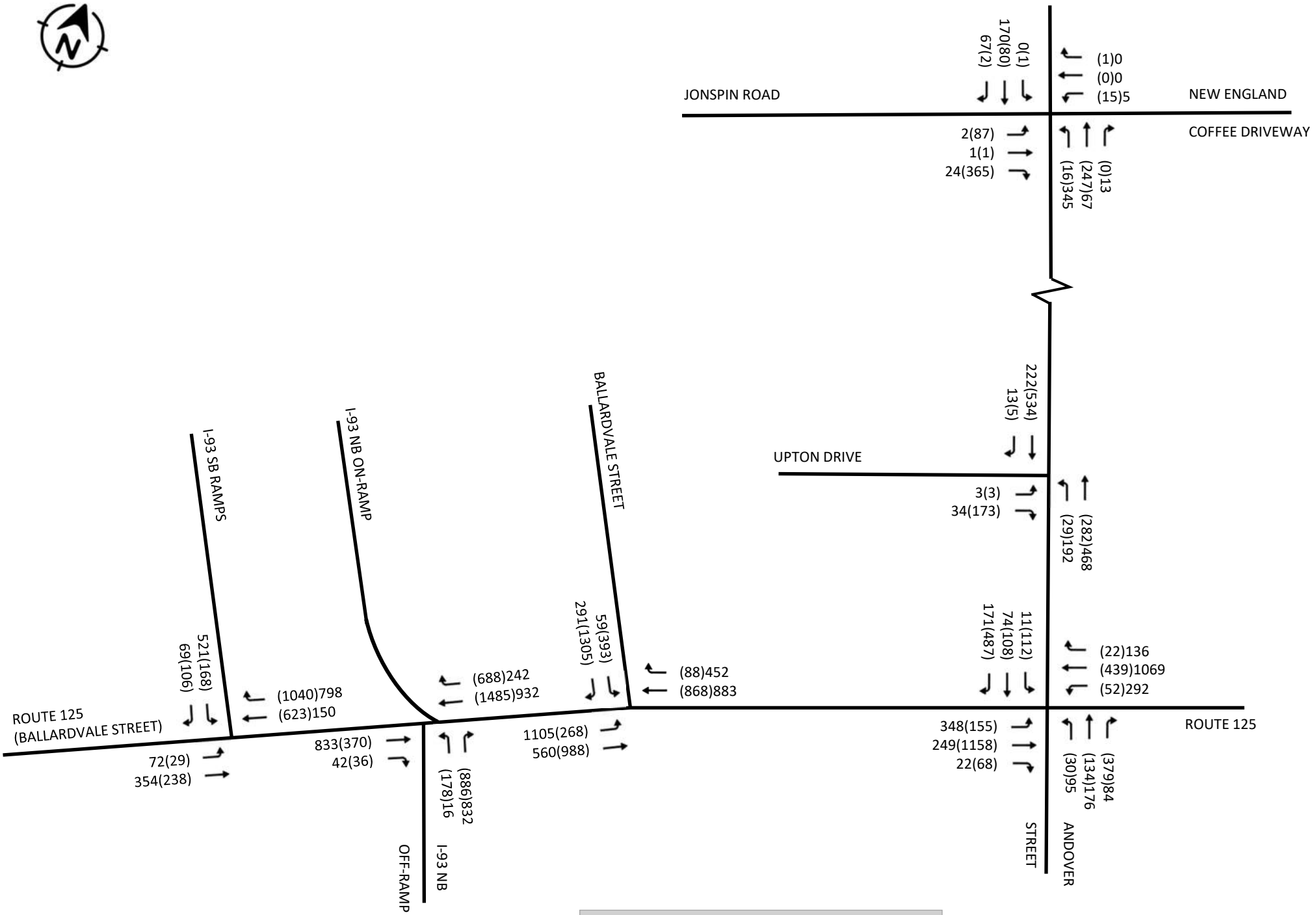
While the historic traffic count data indicates that traffic volumes in August are typically higher than average month conditions, GPI compared the volumes collected in August to those collected in June for the section of Route 125 between Ballardvale Street and Andover Street, and discovered that the traffic volumes collected in August were 10.5 and 5.2 percent lower than traffic volumes collected in June during the weekday AM and PM peak hours, respectively, in the westbound direction. This difference is likely due to school traffic and summer vacations. To account for this difference, the August traffic volumes were increased accordingly to balance with the June traffic volumes in the westbound direction. In the eastbound direction, however, the August traffic volumes were 17.9 to 2.3 percent higher than the June traffic volumes during the AM and PM peak hours, respectively. Therefore, the June traffic volumes were increased accordingly to balance with the August traffic volumes in the eastbound direction. Overall, two-way traffic volumes along Route 125 between Ballardvale Street and Andover Street were 0.7 to 0.8 percent higher in June than in August. Therefore, all other volumes collected in August were increased by 0.7 to 0.8 percent to account for this seasonal variation in traffic.

Annual Adjustment

The MassDOT directive, "Guidance of Traffic Count Data" dated April 2020 provides growth rates to be applied to traffic volumes on various roadway types to adjust traffic volumes collected prior to March 2020 to 2021 Existing conditions. According to MassDOT's Yearly Growth Rates for data from 2014 to 2018, an adjustment of -0.004 should be applied to traffic volumes collected on Group U4-7 (urban arterials and collectors) to grow volumes from 2018 to 2019 conditions. However, to provide a conservative (worse case) analysis condition, no adjustment was applied to the 2018 traffic volumes to adjust to 2019 conditions. MassDOT's directive also notes the significant decrease in traffic volumes that occurred on nearly all roadways across the Commonwealth due to the COVID-19 pandemic in 2020 and 2021. Therefore, MassDOT recommends that no annual growth adjustment be applied to 2019 traffic volumes to grow them to 2022 conditions. As a result, the 2018 seasonally adjusted traffic volumes were assumed to represent a 2022 Existing condition.

The resulting 2022 Existing traffic-flow networks for the weekday AM and weekday PM peak hours are shown graphically on Figure 2.

[4] *MassDOT Traffic Volumes*; Permanent Count Stations 5022 – Route I-93 north of Ramp Route 62 to I-93 (Wilmington), 5127 – Route 125 south of Route 28 (Wilmington).



XX (XX) = AM(PM) PEAK HOUR

FIGURE 2

2022 EXISTING CONDITIONS WEEKDAY PEAK HOUR TRAFFIC VOLUMES

FUTURE CONDITIONS

To estimate the impact of site-generated traffic within the study area, existing traffic volumes were projected to the year 2029. This represents a seven-year design horizon in accordance with the EOEEA/EOT traffic impact assessment guidelines. The proposed development is expected to be occupied within this time period. Traffic volumes on the roadway network at that time will include existing traffic, new traffic due to normal traffic growth, and traffic related to any significant development by others expected to be completed within the area by 2029. Consideration of these factors resulted in the development of 2029 No-Build traffic volumes, which assume that the proposed project 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 2029 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 and recent traffic studies completed for other projects in the area, traffic volumes in the area had been increasing at a rate of approximately 1.1 percent per year prior to COVID-19.[5] Therefore a 1.1 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. At the time that the project was originally permitted, the following additional projects were identified:

- *58 Jonspin Road (Heilind Electronics Inc.)* – Commercial Development proposes a 60,000 square feet (SF) office building addition and the re-purposing of the existing 41,131 SF manufacturing building located at 58 Jonspin Road. As a result of the project, approximately 50 employees from 30 Upton Drive will be relocated to the new office building. Access is proposed via two full access/egress driveways with one east and one west of the project site. A Traffic Impact and Access Study (TIAS) prepared by Vanasse & Associates Inc. (VAI) dated May 2018 identifies the impacts on surrounding roads resulting from the proposed site-generated traffic.

- *401 Andover Street (Spruce Farm)* – The project consists of 27 age-restricted (age 55+) residential units located at 401 Andover Street. Access is proposed via a full access/egress driveway onto Andover Street. A Traffic Impact Assessment (TIA) prepared by GPI dated April 2017 identifies the impacts on surrounding roads resulting from the proposed site-generated traffic.

- *228 Andover Street (Arrow Paper Corporation)* – The project consists of 34,450 SF building addition located at 228 Andover Street. A Traffic Impact Assessment (TIA) prepared by Dana D. Perkins Inc. dated February 2020 identifies the impacts on surrounding roads resulting from the proposed site-generated traffic. The impact of site-generated traffic volumes on the roadway network is considered minimal, therefore, the trips are accounted for in the conservative background growth rate.

- *225 Andover Street (Self-Storage Facility)* – The project consists of 30,500 SF building addition located at 225 Andover Street. A Traffic Impact Assessment has not yet been received but it is assumed that the vehicle trips resulting from this proposal will be very minimal. Therefore, the impact

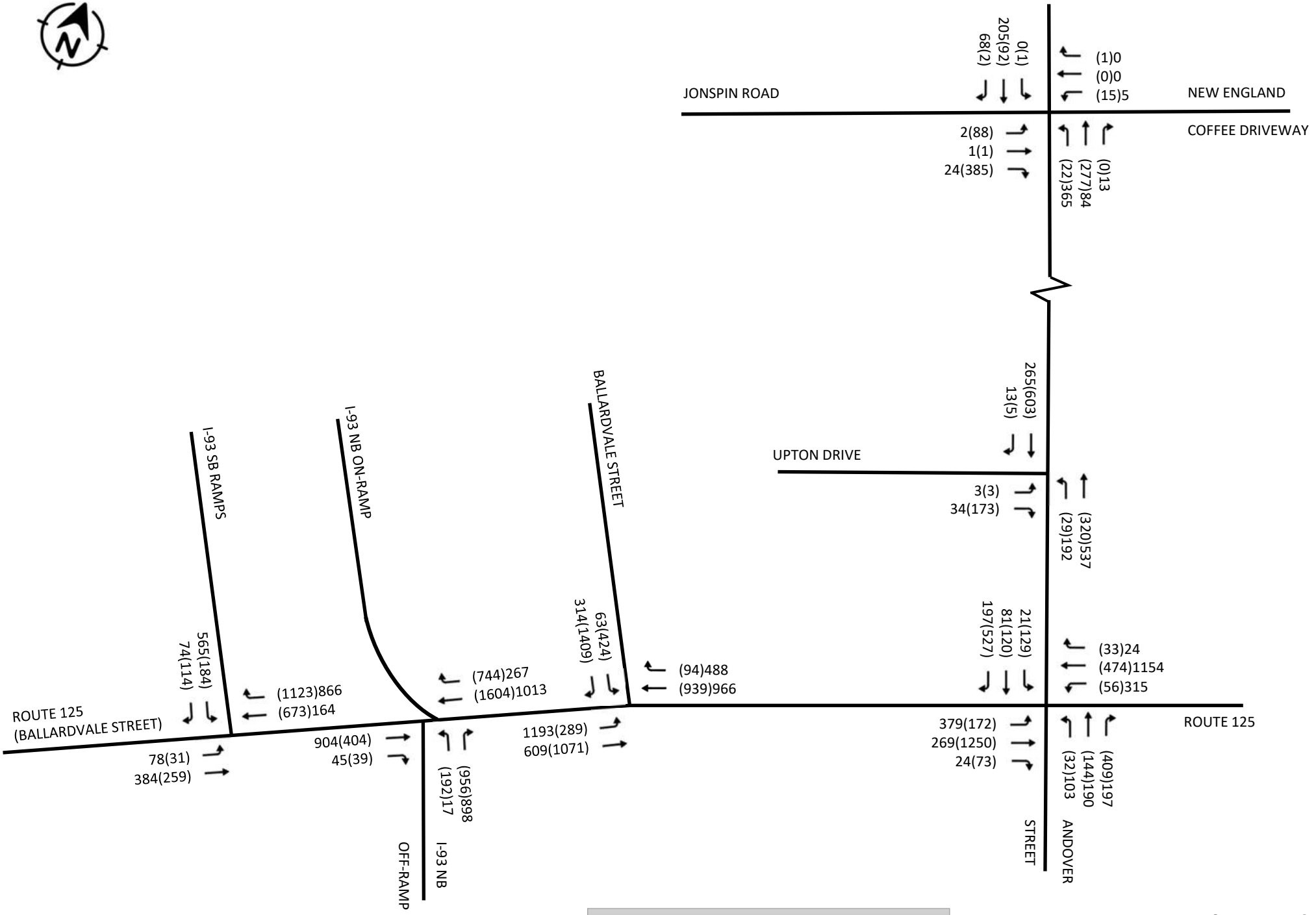
[5] *MassDOT Transportation Data Management System;* Tewksbury and Wilmington, MA.

of site-generated traffic volumes on the roadway network are accounted for in the conservative background growth rate.

Although additional development projects have recently been approved or proposed in the surrounding area, those developments entered the permitting process after the approved development at Upton Park and were required to include the traffic generated by Upton Park within their No-Build traffic-volume projections. Therefore, the traffic generated by these additional projects was not included in the 2029 No-Build projections to assess the impacts of the proposed change in use of Upton Park.

No-Build Conditions

The 2029 No-Build networks were accordingly developed by applying a compounded 1.1 percent annual traffic growth rate (8.0 percent over seven years) to the 2022 Existing traffic volumes and adding the traffic to be generated by the four (4) other planned development. The 2029 No-Build peak-hour traffic-flow networks are shown graphically on Figure 3 for the weekday AM and weekday PM peak hours.



XX (XX) = AM(PM) PEAK HOUR

FIGURE 3

2029 NO-BUILD CONDITIONS
WEEKDAY PEAK HOUR TRAFFIC VOLUMES

Trip Generation

The project consists of constructing three buildings to contain a total of up to ±125,300 SF of warehouse space, ±39,000 SF of light industrial space, ±78,500 SF of manufacturing space, and ±19,800 SF of research and development 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*[6] were used for Land Use Code (LUC) 150 (Warehouse), LUC 110 (Light Industrial), LUC 140 (Manufacturing), and LUC 760 (Research & Development Center), respectively. Table 1 summarizes the result of trip generation estimates. All trip-generation calculations are provided in the Appendix.

It should be noted that the site was previously approved for the development of three warehouse buildings totaling ±293,600 SF. Table 1 also provides a comparison of the trips generated by the currently proposed development in comparison to the previously approved development on the site.

As shown in Table 1, the currently proposed development is anticipated to generate an additional 84 vehicle trips (68 entering and 16 exiting) during the weekday AM peak hour and an additional 85 vehicle trips (21 entering and 64 exiting) during the weekday PM peak hour.

6 *Trip Generation Manual, 11th Edition*; Institute of Transportation Engineers; Washington, DC; 2021.

TABLE 1
PROPOSED TRIP-GENERATION SUMMARY

Time Period / Direction	Previously Approved Development [a]	Currently Proposed Development					Net Change in Trips [g]
		Warehouse (LUC 150) [b]	Manufacturing (LUC 140) [c]	Light Industrial (LUC 110) [d]	R&D (LUC 760) [e]	Total Trips [f]	
Weekday Daily	**462**	236	372	190	220	**1,018**	**556**
Weekday AM Peak Hour							
Enter	**44**	30	40	26	16	**112**	**68**
Exit	**13**	9	13	3	4	**29**	**16**
Total	**57**	39	53	29	20	**141**	**84**
Weekday PM Peak Hour							
Enter	**16**	12	18	4	3	**37**	**21**
Exit	**43**	30	40	21	16	**107**	**64**
Total	**59**	42	58	25	19	**144**	**85**

[a] Obtained from Table 1 of *Upton Parking, Wilmington, Massachusetts – Trip Generation Comparison*; prepared by Greenman-Pedersen, Inc.; dated October 1, 2021.
[b] Based on ITE trip rates for LUC 150 for ±125,300 SF.
[c] Based on ITE trip rates for LUC 140 for ±78,500 SF.
[d] Based on ITE trip rates for LUC 110 for ±39,000 SF.
[e] Based on ITE trip rates for LUC 760 for ±19,800 SF.
[f] Sum of Proposed Warehouse, Manufacturing, Light Industrial, and R&D Trips.
[g] Currently Proposed Development Trips minus Previously Approved Development Trips.

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 traffic was based on the trip distribution patterns contained in the *Response to Comments on the TIAS*[7] prepared for the previously permitted Upton Park development, which was reviewed and approved by the Town's peer review consultant. Table 2 summarizes the results of the trip distribution estimates. All trip distribution data are provided in the Appendix.

TABLE 2
Trip Distribution Summary

Roadway	Direction To/From	Percentage Trips to/from
Route 125	West	15%
Route 125	East	10%
I-93	North	30%
I-93	South	30%
Andover Street	North	5%
Andover Street	South	10%
TOTAL	**--**	**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 Figures 4A and 4B for the weekday AM and weekday PM peak hours, respectively. The site-generated traffic volumes were then combined with the 2029 No-Build traffic volumes to develop the 2029 Build peak-hour traffic-volume networks. The 2029 Build weekday AM and weekday PM peak hour traffic volumes are illustrated on Figure 5.

[7] *Response to Comments from TEC, Inc., 36 and 38 Upton Drive, Wilmington, MA;* Prepared by Greenman-Pedersen, Inc.; July 22, 2019.

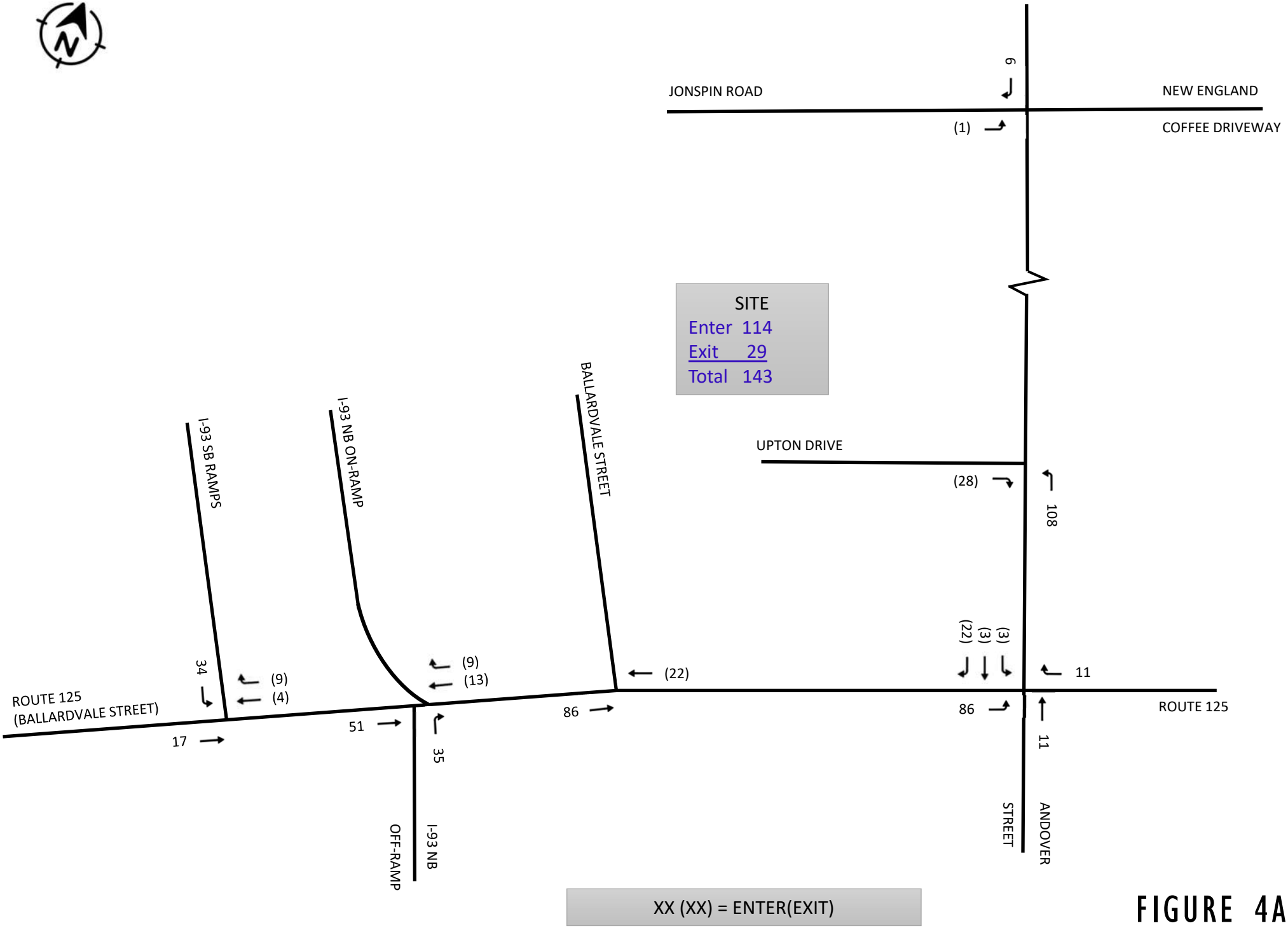


FIGURE 4A

AM SITE-GENERATED WEEKDAY PEAK HOUR TRAFFIC VOLUMES

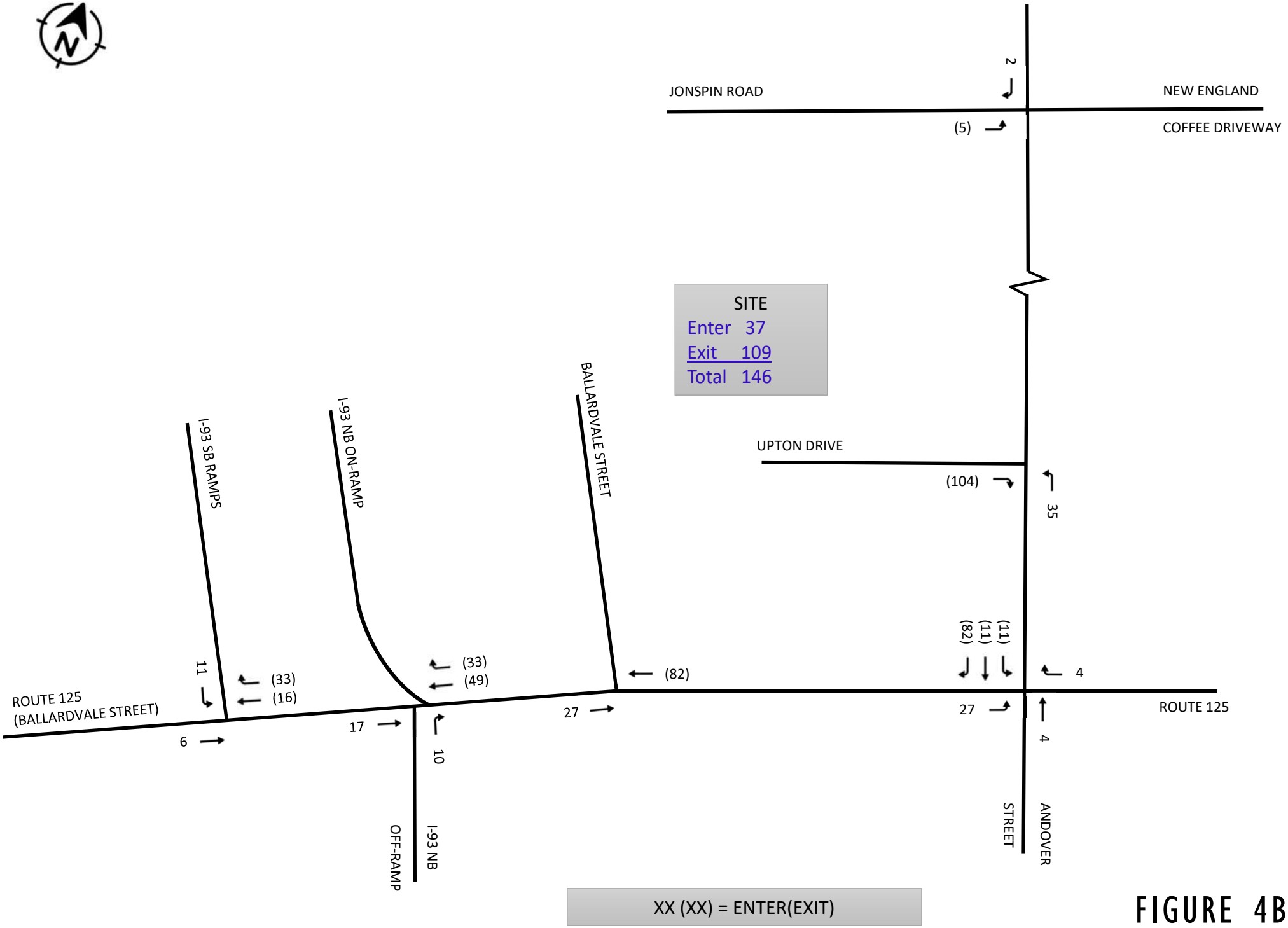
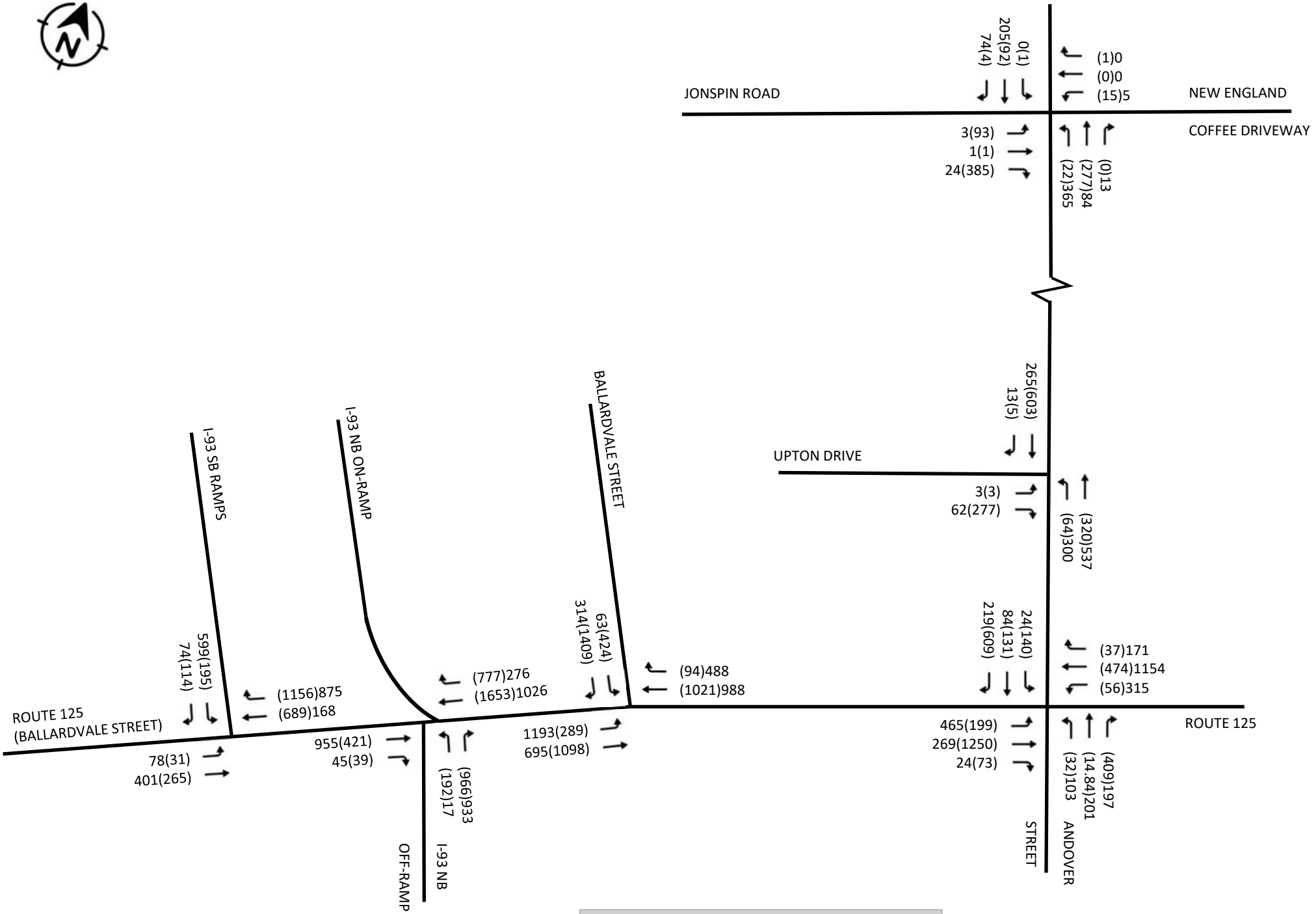


FIGURE 4B

PM SITE-GENERATED WEEKDAY PEAK HOUR TRAFFIC VOLUMES



XX (XX) = AM(PM) PEAK HOUR

FIGURE 5

2029 BUILD CONDITIONS
WEEKDAY PEAK HOUR TRAFFIC VOLUMES

CAPACITY AND QUEUE ANALYSIS

Capacity and queue analyses were conducted at all study area locations under 2022 Existing, 2029 No-Build, and 2029 Build traffic-volume conditions. The impact of site-generated traffic can be measured by comparing 2029 No-Build conditions to 2029 Build conditions.

Methodology

The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM)[8] and is described in the Appendix. The TIAS utilizes the HCM 2000 methodology at the signalized intersection due to the fact that *HCM* methodology does not support non-NEMA signal phasing provided at the signalized study rea intersections. MassDOT has recognized such inefficiencies in the HCM 6 method and still accepts the HCM 2000 results as the most recently previously approved method for this scenario. However, the HCM 6 methodology was used for all unsignalized intersections within the study area to utilize the most recent analysis methodology.

For signalized intersections, the maximum back of queue during a typical (average) signal cycle and a 95th percentile signal cycle were 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 3 and are discussed below. Capacity and queue analyses were conducted at the study area intersections utilizing *Synchro* software.[9] The capacity and queue analysis worksheets for all conditions are provided in the Appendix.

Route 125 (Ballardvale Street) at Route 93 SB Ramps

All movements at this intersection are anticipated to operate at acceptable levels of service (LOS D or better) under 2029 No-Build and Build conditions during the weekday AM and PM peak hours. The additional traffic generated by the proposed mixed commercial development is not anticipated to increase delay on any given movement by more than one second per vehicle and not increase queues on any approach by more than one vehicle as compared to the 2029 No-Build condition.

Route 125 (Ballardvale Street) at Route 93 NB Ramps

All 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 mixed commercial development is not anticipated to increase delay on any given movement by more than four seconds per

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

[9] *Synchro plus SimTraffic 10*; Trafficware LLC.; Sugar Land, TX; 2017.

vehicle or increase queues on any approach by more than two vehicles as compared to the 2029 No-Build condition.

Route 125 (Ballardvale Street) at Ballardvale Street

The Route 125 southbound through / right-turn movement currently operates at level-of-service (LOS) E during the weekday AM peak hour and is anticipated to operate at LOS F under 2029 No-Build conditions. However, the additional traffic generated by the proposed mixed commercial development is not anticipated to increase delay on this movement by more than eight (8) seconds per vehicle or increase queues by more than one vehicle. All other movements through the intersection are anticipated to operate at LOS E or better during all analysis time periods. The additional traffic generated by the proposed mixed commercial development will not increase delays on any other movements by more than seven (7) seconds per vehicle or increase queues by more than two vehicles as compared to the 2029 No-Build condition.

Route 125 at Andover Street

Several movements at this intersection are anticipated to operate at LOS E or F during the weekday AM and PM peak hours under 2029 No-Build and Build conditions, particularly the Andover Street northbound and southbound left-turn/through movements and Route 125 eastbound left and westbound right-turn/through movements. However, the additional traffic generated by the proposed warehouse / office development is not expected to increase overall intersection delay by more 13 seconds per vehicle during the weekday AM peak hour or by more than four (4) seconds per vehicle during the weekday PM peak hour. Queues on all approaches are not anticipated to increase by more than five vehicles.

Although MassDOT recently installed a new traffic signal controller at this intersection, it is currently running the same timing plan all day long, resulting in inefficient traffic operations during the weekday PM peak hour. By implementing separate time-of-day plans at the intersection, green time can be better allocated to each phase throughout the day and the signal timings can be optimized for the traffic volumes in each peak time period. As shown in Table 3, with implementation of the separate time-of-day plans, all movements through the intersection are anticipated to operate under capacity (V/C <1.0) and at LOS D or better during the weekday PM peak hour. Therefore, independent of the proposed development, GPI recommends that MassDOT implement time-of-day plans within the new traffic signal controller to optimize operations at this intersection. The developer for the proposed commercial development at 30 Upton Drive has committed to contacting MassDOT to implement the recommended signal timing modifications as a condition of approval.

Andover Street at Upton Drive

Although traffic exiting left from Upton Drive onto Andover Street is expected to experience LOS F during the weekday AM peak hour under 2029 Build conditions, the volume-to-capacity (V/C) ratio will be well below 1.00, indicating there will be more than adequate capacity to accommodate the anticipated traffic volumes. In addition, queues are not expected to exceed seven vehicles exiting Upton Drive

The intersection of Andover Street / Upton Drive is located in close proximity to the signalized intersection of Route 125 / Andover Street. During the weekday AM and PM peak hours, queues from the signal extend along Andover Street beyond Upton Drive. As part of the approval of the previously permitted warehouse / office development at #36 & #38 Upton Drive, the Applicant was required to install DO NOT BLOCK INTERSECTION pavement markings and signage on Andover Street southbound at the intersection with Upton Drive to ensure vehicles stopped at the signal do not block vehicles from exiting or entering Upton Drive. In addition, large trucks occasionally drive over the center median island or curb when turning on and off Upton Drive. To improve turning maneuverability for large trucks, the Applicant was required to remove a portion of the raised landscaped island at the intersection with Andover Street and replace this with a striped or scored concrete island that is mountable by trucks. The Applicant continues to be committed to implementing these modifications at this intersection as mitigation for the proposed mixed

commercial development. A conceptual improvement plan depicting these modifications is provided within the Appendix

Andover Street at Jonspin Road

Although traffic exiting the New England Coffee Driveway onto Andover Street is expected to experience LOS F during the weekday AM peak hour under 2029 No-Build and Build conditions, the proposed mixed commercial development is not anticipated to increase traffic volumes on the New England Coffee Driveway. In addition, the volume-to-capacity (V/C) ratio will be well below 1.00, indicating there will be more than adequate capacity to accommodate the anticipated traffic volumes. Queues on this approach are not expected to exceed one vehicle. All other movements at this intersection are anticipated to operate at acceptable levels of service (LOS D or better) under all analysis conditions.

TABLE 3
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2022 Existing				2029 No-Build				2029 Build – Previously Approved Development				2029 Build – Currently Proposed Development			
	V/C [a]	Del. [b]	LOS [c]	V/C	V/C	V/C	V/C	Queue	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Route 125 (Ballardvale Street) / Route 93 SB Ramps																
Weekday AM:																
Route 93 SB Ramps EBL	0.79	53.4	D	210/256	0.79	52.5	D	227/273	0.80	52.2	D	232/278	0.80	51.9	D	240/286
Route 93 SB Ramps EBR	0.04	0.0	A	<25/<25	0.04	0.0	A	<25/<25	0.04	0.0	A	<25/<25	0.04	0.0	A	<25/<25
Route 125 NBL	0.09	5.7	A	<25/36	0.10	6.2	A	<25/40	0.10	6.4	A	<25/41	0.10	6.7	A	<25/42
Route 125 NBT	0.28	7.1	A	94/163	0.31	8.1	A	110/189	0.31	8.3	A	115/195	0.33	8.7	B	121/206
Route 125 SBT	0.14	10.0	B	49/94	0.16	11.0	B	56/107	0.16	11.2	B	58/109	0.17	11.6	B	60/113
Route 125 SBR	0.54	1.4	A	<25/<25	0.59	1.7	A	<25/<25	0.59	1.8	A	<25/<25	0.60	1.8	A	<25/<25
Overall Intersection	**0.65**	**17.0**	**B**	**--/--**	**0.70**	**17.1**	**B**	**--/--**	**0.70**	**17.3**	**B**	**--/--**	**0.71**	**17.6**	**B**	**--/--**
Weekday PM:																
Route 93 SB Ramps EBL	0.50	33.3	C	73/673	0.53	33.5	C	49/78	0.53	33.4	C	50/79	0.55	33.5	C	52/81
Route 93 SB Ramps EBR	0.06	0.1	A	<25/<25	0.07	0.1	A	<25/<25	0.07	0.1	A	<25/<25	0.07	0.1	A	<25/<25
Route 125 NBL	0.08	4.9	A	<25/<25	0.09	5.9	A	<25/<25	0.10	6.0	A	<25/<25	0.10	6.3	A	<25/<25
Route 125 NBT	0.19	3.7	A	32/64	0.21	3.9	A	36/72	0.21	4.0	A	37/73	0.22	4.1	A	38/75
Route 125 SBT	0.57	10.3	B	122/225	0.64	11.8	B	188/226	0.65	12.0	B	192/225	0.66	12.1	B	199/225
Route 125 SBR	0.71	1.6	A	35//518	0.77	1.8	A	433/518	0.78	1.8	A	462/519	0.79	1.8	A	478/519
Overall Intersection	**0.91**	**6.7**	**A**	**--/--**	**0.98**	**7.3**	**A**	**--/--**	**0.99**	**7.3**	**A**	**--/--**	**1.01**	**7.5**	**A**	**--/--**
Route 125 (Ballardvale Street) / Route 93 NB Ramps																
Weekday AM:																
Route 93 NB Ramps WBL	0.03	23.4	C	<25/28	0.04	27.1	C	<25/36	0.04	28.1	C	<25/37	0.04	29.6	C	<25/37
Route 93 NB Ramps WBR	0.63	15.3	B	172/343	0.69	19.0	B	239/422	0.70	19.9	B	253/439	0.73	21.7	C	274/469
Route 125 NBT	0.79	30.0	C	221/351	0.79	32.1	C	253/442	0.80	33.2	C	267/468	0.81	33.5	C	292/488
Route 125 NBR	0.02	0.0	A	<25/<25	0.03	0.0	A	<25/<25	0.03	0.0	A	<25/<25	0.03	0.0	A	<25/<25
Route 125 SBT	0.48	10.2	B	160/201	0.50	10.5	B	182/220	0.50	10.6	B	183/221	0.49	10.4	B	185/222
Route 125 SBR	0.19	0.3	A	<25/<25	0.21	0.4	A	<25/<25	0.21	0.4	A	<25/<25	0.22	0.4	A	<25/<25
Overall Intersection	**0.75**	**16.4**	**B**	**--/--**	**0.79**	**18.3**	**B**	**--/--**	**0.80**	**18.9**	**B**	**--/--**	**0.81**	**19.5**	**B**	**--/--**
Weekday PM:																
Route 93 NB Ramps WBL	0.32	20.2	C	72/125	0.36	20.9	C	79/136	0.36	20.9	C	79/136	0.36	20.9	C	79/136
Route 93 NB Ramps WBR	0.66	13.4	B	201/201	0.70	13.6	B	218/218	0.70	13.7	B	219/219	0.70	13.6	B	220/220
Route 125 NBT	0.39	22.6	C	95/151	0.45	24.4	C	106/166	0.46	24.5	C	109/168	0.48	25.0	C	112/173
Route 125 NBR	0.02	0.0	A	<25/<25	0.02	0.0	A	<25/<25	0.02	0.0	A	<25/<25	0.02	0.0	A	<25/<25
Route 125 SBT	0.87	23.2	C	344/449	0.93	27.6	C	398/581	0.94	29.1	C	407/593	0.96	31.5	C	422/611
Route 125 SBR	0.48	1.1	A	<25/<25	0.52	1.3	A	<25/<25	0.53	1.3	A	<25/<25	0.55	1.4	A	<25/<25
Overall Intersection	**0.88**	**16.2**	**B**	**--/--**	**0.94**	**18.3**	**B**	**--/--**	**0.95**	**18.9**	**B**	**--/--**	**0.96**	**20.0**	**B**	**--/--**

[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 3 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2022 Existing				2029 No-Build				2029 Build – Previously Approved Development				2029 Build – Currently Proposed Development				2029 Build with Improvements Currently Proposed Development			
	V/C [a]	Del. [b]	LOS [c]	V/C	V/C	V/C	V/C	Queue	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Route 125 (Ballardvale Street) / Route 125 / Ballardvale Street																				
Weekday AM:																				
Ballardvale Street EBL	0.43	50.1	D	44/94	0.46	52.1	D	51/100	0.46	52.1	D	51/100	0.46	52.1	D	51/100				
Ballardvale Street EBR	0.23	15.2	B	53/81	0.25	14.8	B	63/93	0.25	14.8	B	64/94	0.25	14.8	B	64/94				
Route 125 NBL	0.91	43.6	D	412/510	0.94	46.4	D	471/573	0.94	46.4	D	471/573	0.94	46.4	D	471/573	N/A – Same as Build			
Route 125 NBT	0.41	3.1	A	98/142	0.44	3.3	A	117/162	0.47	3.4	A	128/177	0.50	3.6	A	145/200				
Route 125 SB T/R	1.06	76.5	E	594/816	1.20	137.2	F	783/927	1.21	141.3	F	794/939	1.22	145.5	F	805/951				
Overall Intersection	**0.93**	**47.6**	**D**	**--/--**	**1.00**	**72.9**	**E**	**--/--**	**1.00**	**74.0**	**E**	**--/--**	**1.01**	**75.0**	**E**	**--/--**				
Weekday PM:																				
Ballardvale Street EBL	0.84	41.5	D	232/398	0.94	57.8	E	256/442	0.94	57.8	E	256/442	0.94	57.8	E	256/442				
Ballardvale Street EBR	0.96	35.7	D	419/611	1.08	71.7	E	549/697	1.08	72.6	E	552/700	1.08	73.7	E	555/703				
Route 125 NBL	0.59	34.9	C	80/122	066	38.1	C	87/131	0.66	38.1	D	87/131	0.66	38.1	D	87/131	N/A – Same as Build			
Route 125 NBT	0.96	35.9	D	515/842	1.02	51.1	D	668/955	1.03	53.9	D	725/968	1.05	58.9	E	747/991				
Route 125 SB T/R	0.80	28.6	C	262/339	0.82	29.0	C	293/378	0.84	30.3	C	306/395	0.88	33.0	C	328/457				
Overall Intersection	**1.06**	**34.5**	**C**	**--/--**	**1.16**	**52.3**	**D**	**--/--**	**1.17**	**53.5**	**D**	**--/--**	**1.18**	**55.6**	**E**	**--/--**				
Route 125 / Andover Street																				
Weekday AM:																				
Route 125 EBL	0.89	59.0	E	234/390	0.94	66.6	E	261/442	1.00	83.4	F	294/498	1.12	120.8	F	379/580				
Route 125 EB T/R	0.20	19.1	B	60/96	0.22	19.9	B	67/103	0.22	19.8	B	67/103	0.22	19.8	B	67/103				
Route 125 WBL	0.80	49.5	D	195/280	0.83	51.8	D	211/306	0.83	52.3	D	211/306	0.83	52.3	D	211/306				
Route 125 WB T/R	0.94	43.0	D	431/582	1.04	67.8	E	533/669	1.05	72.0	E	537/673	1.06	74.1	E	542/679				
Andover Street NB L/T	0.94	76.0	E	191/355	1.05	107.6	F	227/397	1.08	117.0	F	234/405	1.11	130.1	F	247/420	N/A – Same as Build			
Andover Street NBR	0.12	16.3	B	32/57	0.13	16.1	B	35/61	0.13	16.4	B	35/61	0.13	16.4	B	35/61				
Andover Street SB L/T	0.32	36.4	D	53/101	0.54	40.7	D	65/124	0.58	42.9	D	67/128	0.65	47.4	D	71/150				
Andover Street SBR	0.26	15.9	B	86/111	0.30	16.0	B	78/128	0.31	16.1	B	82/135	0.33	16.3	B	88/143				
Overall Intersection	**0.93**	**43.9**	**D**	**--/--**	**1.01**	**59.3**	**E**	**--/--**	**1.04**	**64.4**	**E**	**--/--**	**1.09**	**72.5**	**E**	**--/--**				
Weekday PM:																				
Route 125 EBL	0.58	36.3	D	85/140	0.62	37.7	D	92/156	0.63	37.7	D	99/166	0.62	36.1	D	108/179	0.69	40.8	D	111/179
Route 125 EB T/R	0.83	25.3	C	302/489	0.87	28.2	C	335/599	0.87	28.2	C	335/599	0.87	28.1	C	335/599	0.91	32.1	C	375/523
Route 125 WBL	0.25	35.4	D	28/62	0.27	36.0	D	31/66	0.27	36.0	D	31/66	0.27	36.1	D	31/66	0.37	39.8	D	32/71
Route 125 WB T/R	0.36	18.9	B	94/165	0.39	19.6	B	108/185	0.40	20.1	C	109/185	0.42	21.3	C	110/186	0.46	23.7	C	126/183
Andover Street NB L/T	0.45	29.7	C	82/162	0.56	32.9	C	89/182	0.58	33.6	C	90/184	0.62	34.9	C	92/203	0.42	27.0	C	88/151
Andover Street NBR	0.61	21.8	C	170/260	0.66	24.2	C	188/286	0.66	24.2	C	188/286	0.67	24.2	C	188/286	0.64	22.4	C	185/286
Andover Street SB L/T	0.83	49.9	D	121/286	1.02	95.9	F	142/347	1.06	107.2	F	154/363	1.12	128.0	F	175/385	0.86	49.5	D	153/296
Andover Street SBR	0.71	22.0	C	218/309	0.76	24.9	C	232/354	0.80	26.1	C	254/388	0.83	27.7	C	288/445	0.78	22.3	C	264/383
Overall Intersection	**0.87**	**26.1**	**C**	**--/--**	**0.96**	**31.7**	**C**	**--/--**	**0.98**	**33.0**	**C**	**--/--**	**1.01**	**35.1**	**D**	**--/--**	**0.94**	**29.8**	**C**	**--**

[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 3 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2022 Existing				2029 No-Build				2029 Build – Previously Approved Development				2029 Build – Currently Proposed Development			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Andover Street / Upton Drive																
Weekday AM:																
Andover Street NB Approach	0.19	8.5	A	<25	0.20	8.7	A	<25	0.24	8.9	A	<25	0.30	9.2	A	33
Upton Drive EBL	0.03	34.9	D	<25	0.04	43.6	E	<25	0.05	54.8	F	<25	0.07	81.0	F	<25
Upton Drive EBR	0.06	10.2	B	<25	0.06	10.6	B	<25	0.08	10.7	B	<25	0.11	10.9	B	<25
Weekday PM:																
Andover Street NB Approach	0.04	9.1	A	<25	0.04	9.5	A	<25	0.06	9.6	A	<25	0.09	9.7	A	<25
Upton Drive EBL	0.02	20.5	C	<25	0.02	23.7	C	<25	0.02	25.4	D	<25	0.02	27.7	D	<25
Upton Drive EBR	0.45	18.9	C	58	0.50	21.9	C	68	0.62	26.6	D	103	0.80	39.9	E	178
Andover Street / Jonspin Road / New England Coffee Driveway																
Weekday AM:																
Andover Street NB Approach	0.36	9.5	A	40	0.39	9.9	A	48	0.39	9.9	A	48	0.40	10.0	A	48
Jonspin Road EB Approach	0.09	14.8	B	<25	0.11	16.1	C	<25	0.13	17.6	C	<25	0.13	17.6	C	<25
N.E. Coffee Driveway WB Approach	0.07	49.1	E	<25	0.10	64.4	F	<25	0.10	64.4	F	<25	0.10	64.4	F	<25
Andover Street SB Approach	0.00	0.0	A	<25	0.00	0.0	A	<25	0.00	0.0	A	<25	0.00	0.0	A	<25
Weekday PM:																
Andover Street NB Approach	0.01	7.6	A	<25	0.02	7.7	A	<25	0.02	7.7	A	<25	0.02	7.7	A	<25
Jonspin Road EB Approach	0.64	16.7	A	120	0.70	19.1	C	128	0.71	19.5	C	148	0.71	19.9	C	153
N.E. Coffee Driveway WB Approach	0.09	23.1	C	<25	0.10	27.0	D	<25	0.10	27.2	D	<25	0.10	27.2	D	<25
Andover Street SB Approach	0.00	7.8	A	<25	0.00	7.9	A	<25	0.00	7.9	A	<25	0.00	7.9	A	<25

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

CONCLUSIONS

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 redevelopment. Conclusions of this effort are presented below.

- The site is currently a vacant vegetated lot with a gravel driveway which spurs off the southwesterly corner of Upton Drive. The site was recently approved for the construction of an approximately ±263,900 square feet (SF) warehouse distribution development within three buildings with access/egress proposed via five driveways along Upton Drive. To attract a wider range of potential tenants to the site, the developer is seeking approval for a mixed commercial development that would allow up to 19,800 SF of research and development space, 39,000 SF of light industrial space, 78,500 SF of manufacturing space, and 125,300 SF of warehousing space. Access and egress will continue to be provided via the five previously proposed site driveways.

- The currently proposed development is anticipated to generate an additional 84 vehicle trips (68 entering and 16 exiting) during the weekday AM peak hour and an additional 85 vehicle trips (21 entering and 64 exiting) during the weekday PM peak hour as compared to the previously approved warehouse distribution center.

- All movements at the signalized intersections of Route 125 (Ballardvale Street) with the I-93 Northbound (NB) and Southbound (SB) ramps are anticipated to operate at LOS D or better under all analysis conditions. The additional traffic generated by the proposed mixed commercial development is not expected to increase delay on any movement through these intersections by more than four seconds per vehicle or increase queues by more than two vehicles.

- Although some movements at the Route 125 / Ballardvale Street intersection will operate at LOS F under 2029 No-Build and Build conditions, the additional traffic generated by the proposed warehouse / office development is not anticipated to increase delay on any movement through the intersection by more than seven seconds per vehicle or increase queues by more than two vehicles.

- Similarly, although some side street movements at the unsignalized intersections of Andover Street with Upon Drive and Jonspin Road are expected to operate at LOS F under 2029 No-Build and/or Build conditions, 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. Improvements are also proposed by the Applicant at the intersection of Andover Street / Upton Drive, which include installation of DO NOT BLOCK INTERSECTION signage and pavement markings, and reconstruction of the median island on Upton Drive to better accommodate truck turns. These improvements will help to facilitate turning movements into and exiting Upton Drive.

- Several movements at the intersection of Route 125 / Andover Street are anticipated to operate at LOS E or F during the weekday AM and PM peak hours under 2029 No-Build and Build conditions. However, the additional traffic generated by the proposed mixed commercial development is not expected to increase overall delay through the intersection by more than 13 seconds per vehicle or increase queues by more than five vehicles. Although MassDOT recently installed a new traffic signal controller at this intersection, it operates with a single timing plan 24 hours per day that is designed to accommodate traffic volumes during the weekday AM peak hour. By implementing a separate timing plan for the weekday PM peak hour, all movements through the intersection can operate under capacity (V/C <1.0) and at LOS D or better during the weekday PM peak hour. The Applicant for the development at #30 Upton Drive has committed to contacting MassDOT to

implement the recommended signal timing modifications as mitigation for the proposed development.

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

- APPENDIX

- ***Conceptual Improvement Plan***
- ***Traffic Volume Adjustment Data***
- ***Trip Generation Calculations***
- ***Capacity Analysis Methodology***
- ***Capacity and Queue Analysis Worksheets***

CONCEPTUAL IMPROVEMENT PLAN

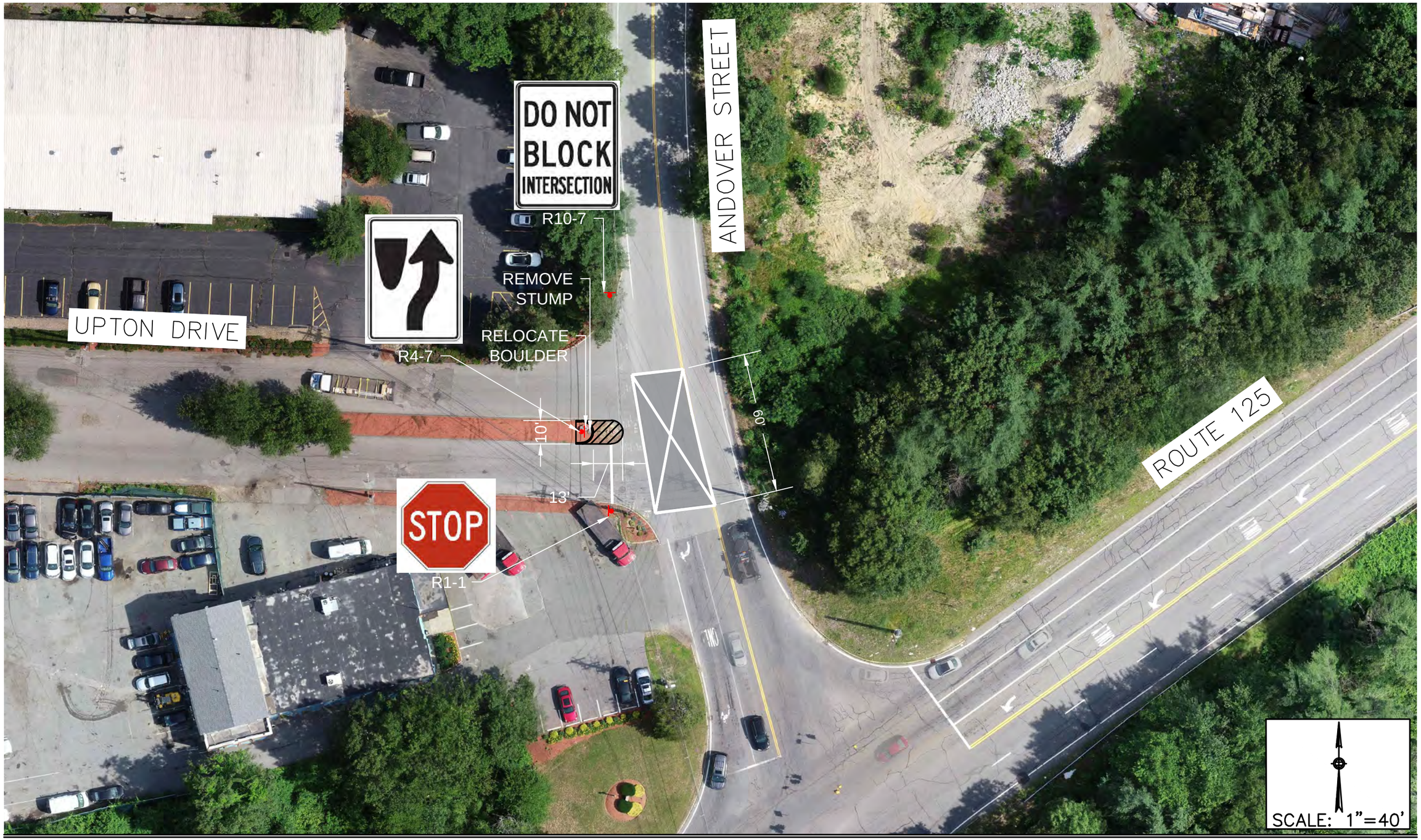
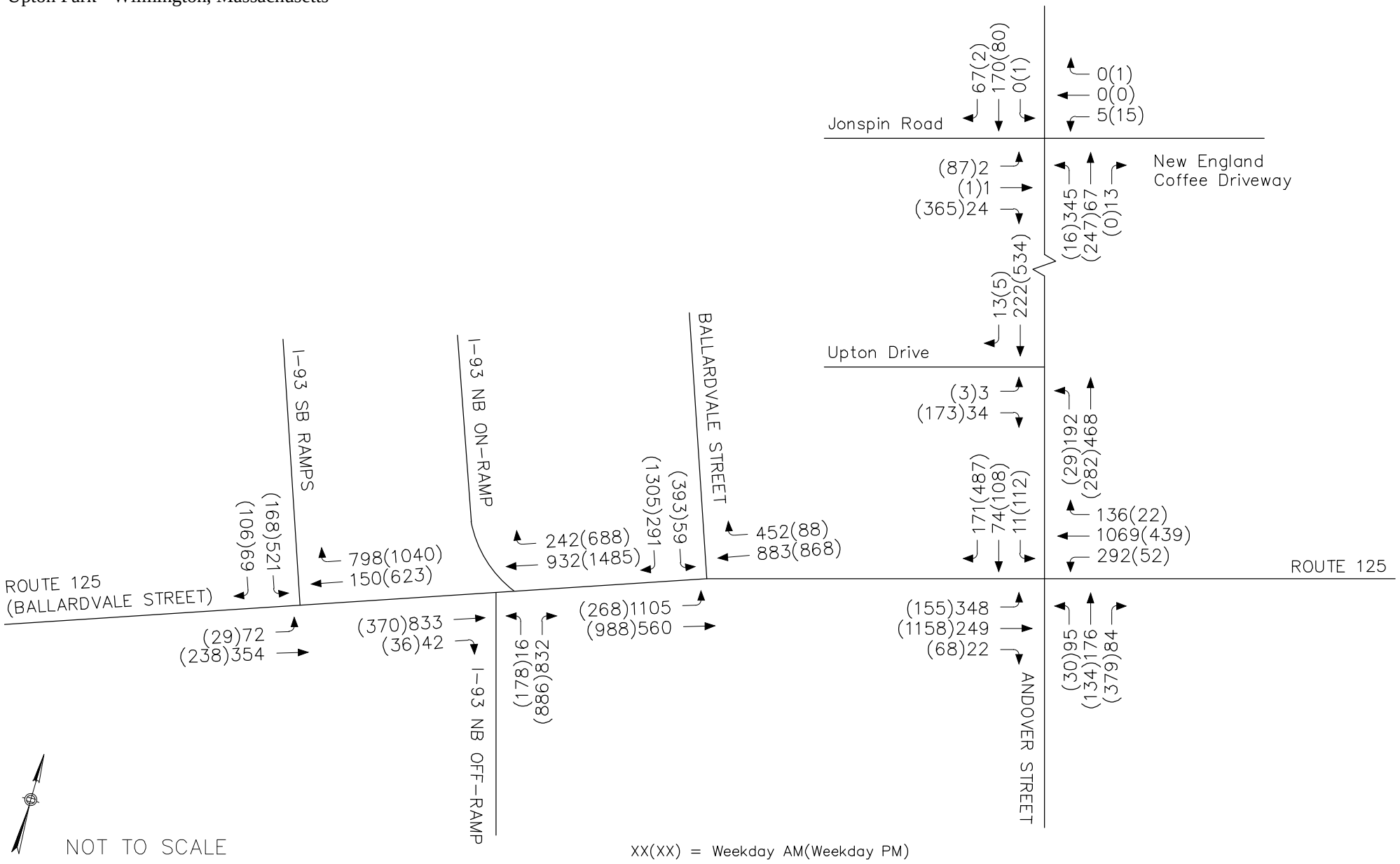


Figure 7
Conceptual Improvements

Figure 8
Entering Upton Drive

Figure 9
Exiting Upton Drive

TRAFFIC VOLUME ADJUSTMENT DATA

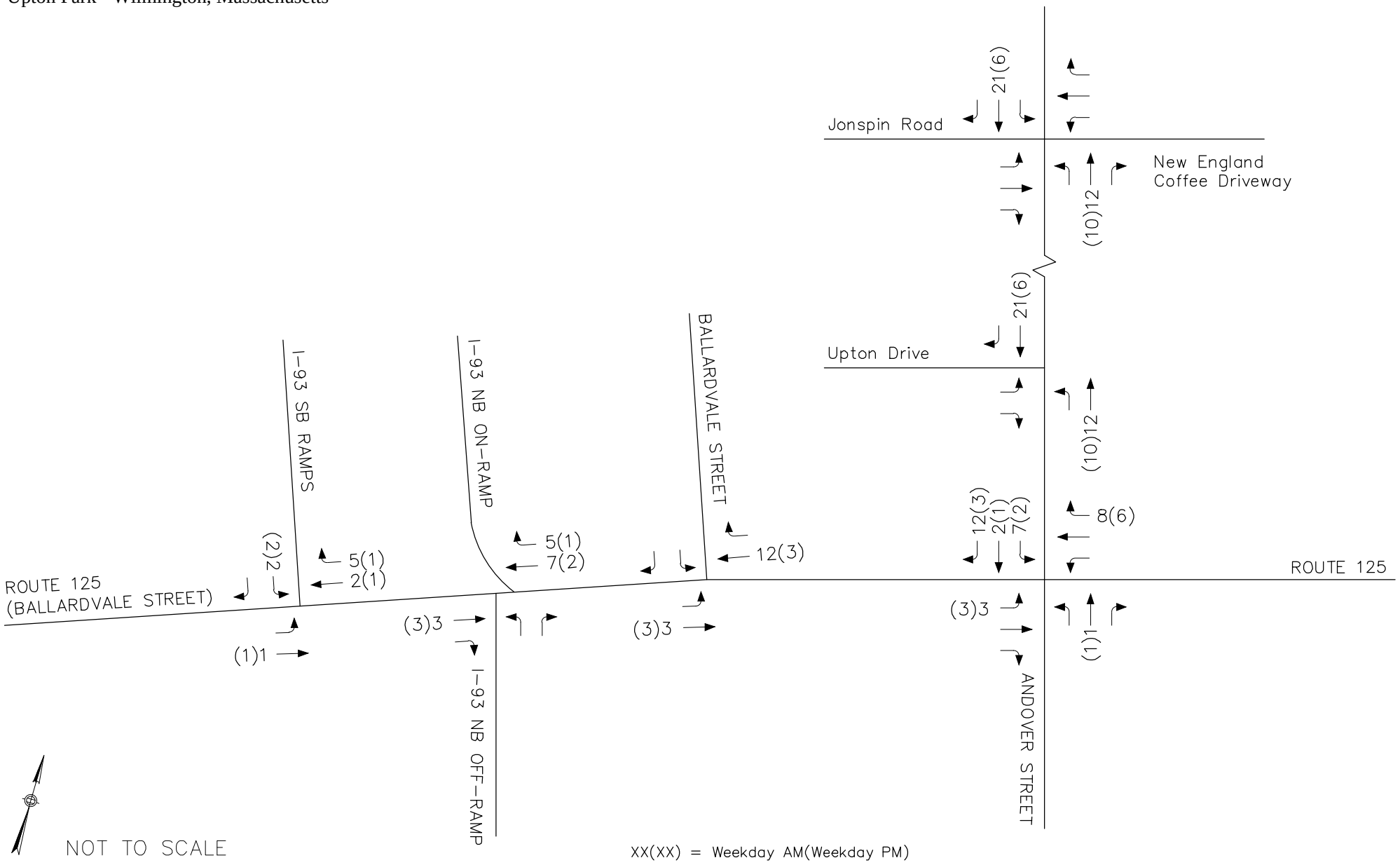


GPI Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 2

2018 Existing
Peak Hour Traffic Volumes

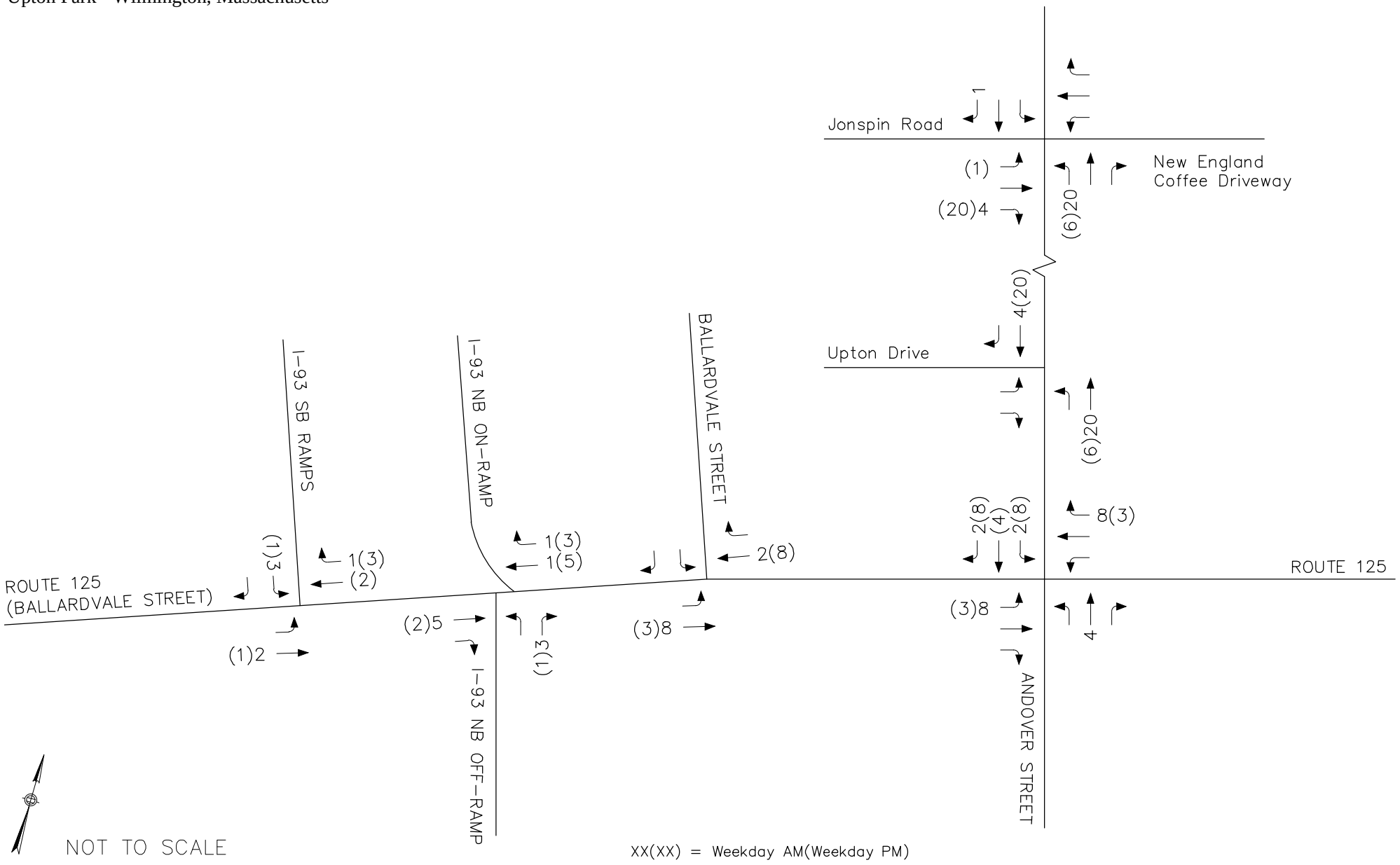


Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 3A

401 Andover Street
Peak Hour Traffic Volumes

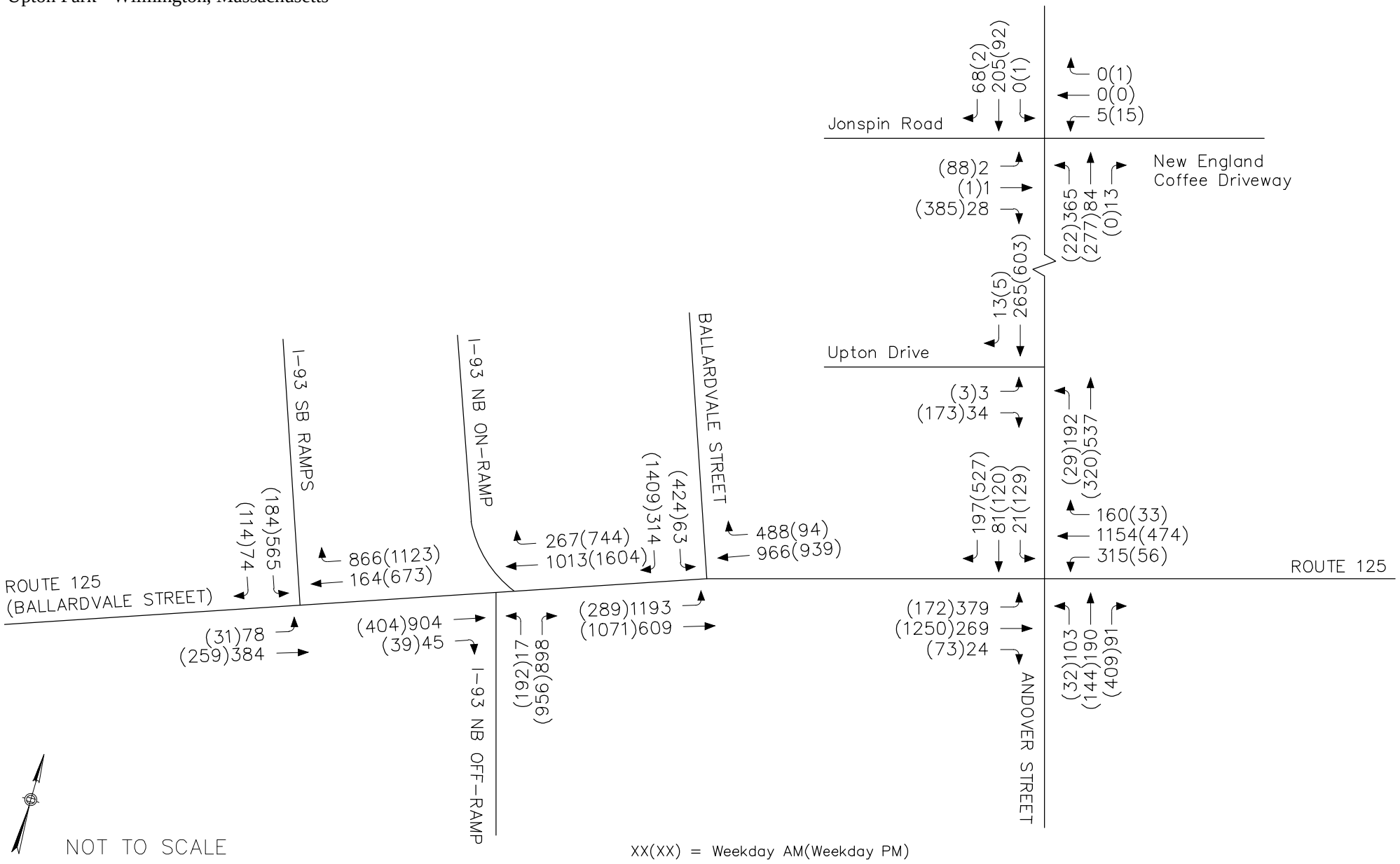


GPI Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 3B

58 Jonspin Road
Peak Hour Traffic Volumes



GPI Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 4

2025 No-Build
Peak Hour Traffic Volumes

MassDOT Traffic Volumes

Permanent Count Station 5022 [a]
Wilmington - Route I-93 - North of Ramp Route 62 to I-93 NB

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AADT[b]
2015	125,444	126,309	140,654	143,059	144,180	150,259	146,755	150,695	145,957	148,892	141,259	138,759	141,852
Seasonal Adj. [c]	**13.1%**	**12.3%**	**0.9%**	**-0.8%**	**-1.6%**	**-5.6%**	**-3.3%**	**-5.9%**	**-2.8%**	**-4.7%**	**0.4%**	**2.2%**	**0.0%**

Permanent Count Station 5127 [a]
Andover - Route 125 - South of Route 28

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AADT[b]
2014	13,612	13,831	14,899	15,465	15,677	16,135	14,733	15,427	16,369	16,918	14,392	N/A	15,089
2017	N/A	15,720	16,229	17,373	17,358	17,833	16,908	16,949	17,918	18,264	17,151	17,471	17,198
Seasonal Adj. [c]		**9.3%**	**3.7%**	**-1.7%**	**-2.3%**	**-4.9%**	**2.0%**	**-0.3%**	**-5.8%**	**-8.2%**	**2.4%**	**-1.6%**	**0.0%**
Seasonal Adj. Avg		**10.8%**	**2.3%**	**-1.3%**	**-1.9%**	**-5.3%**	**-0.6%**	**-3.1%**	**-4.3%**	**-6.5%**	**1.4%**	**0.3%**	**0.0%**

[a] Based upon historical data. Source: MassDOT Traffic Volumes.

[b] Average Annual Daily Traffic.

[c] Seasonal adjustment to yearly average.

Traffic Growth Factor Worksheet

Count Stations

(Source: MassDOT Transportation Data Management System)

STA.	CITY/TOWN	ROUTE/STREET	LOCATION	2010	2011	2012	2013	2014	2015	2016	2017	Average % Growth
H8460	WILMINGTON	I-93	NORTH OF ROUTE 62	130,262	126,719	128,434	128,582	131,929	129,528	145,814	144,492	1.6%
5127	WILMINGTON	ANDOVER BYPASS	RAMP - RTE 28 SB TO TRE 125	15,210	15,173	15,312	15,008	15,292	15,659			0.6%
4105	TEWKSBURY	SALEM RD	EAST OF MAIN ST	5,375	5,965	5,884	5,938	5,679				1.5%
4112	TEWKSBURY	CHANDLER STREET	NORTH OF WHIPPLE ROAD	2,091	1,820	1,827	1,846	2,172			2,069	0.2%
5022	WILMINGTON	I-93	NORTH OF ROUTE 125	137,116		135,921	136,213	136,495	142,104	145,189	151,255	1.4%

Average Growth: 1.1%

Say **1.1%**

TRIP-GENERATION CALCULATIONS

Size	Units	Land Use
19.8	SF	LUC 760
39.0	SF	LUC 110
78.5	SF	LUC 140
125.3	SF	LUC 150

		Total Trips					Previously Approved Trips	Net Change in Trips
		LUC 760	LUC 110	LUC 140	LUC 150	TOTAL		
Weekday Daily	Entering	110	95	186	118	509	231	278
	Exiting	110	95	186	118	509	231	278
	Total	220	190	372	236	1,018	462	556
Weekday AM Peak Hour	Entering	16	26	40	30	112	44	68
	Exiting	4	3	13	9	29	13	16
	Total	20	29	53	39	141	57	84
Weekday PM Peak Hour	Entering	3	4	18	12	37	16	21
	Exiting	16	21	40	30	107	43	64
	Total	19	25	58	42	144	59	85
Saturday Daily	Entering	19	13	58	9	99	--	--
	Exiting	19	13	58	9	99	--	--
	Total	38	26	116	18	198	--	--
Saturday Midday Peak Hour	Entering	3	2	7	4	16	--	--
	Exiting	2	2	7	2	13	--	--
	Total	5	4	14	6	29	--	--

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 760 - Research and Development Center

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 19.800

AVERAGE WEEKDAY DAILY

T = 11.08 * (X)
T = 11.08 * 19.800
T = 219.38
T = 220 vehicle trips
with 50% (110 vpd) entering and 50% (110 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 1.03 * (X)
T = 1.03 * 19.800
T = 20.39
T = 20 vehicle trips
with 82% (16 vph) entering and 18% (4 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.98 * (X)
T = 0.98 * 19.800
T = 19.40
T = 19 vehicle trips
with 16% (3 vph) entering and 84% (16 vph) exiting.

SATURDAY DAILY

T = 1.91 * (X)
T = 1.91 * 19.800
T = 37.82
T = 38 vehicle trips
with 50% (19 vpd) entering and 50% (19 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

T = 0.24 * (X)
T = 0.24 * 19.800
T = 4.75
T = 5 vehicle trips
with 54% (3 vph) entering and 46% (2 vph) exiting.

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 110 - General Light Industrial

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 39.000

AVERAGE WEEKDAY DAILY

T = 4.87 * (X)
T = 4.87 * 39
T = 189.93
T = 190 vehicle trips
with 50% (95 vpd) entering and 50% (95 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.74 * (X)
T = 0.74 * 39.000
T = 28.86
T = 29 vehicle trips
with 88% (26 vph) entering and 12% (3 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.65 * (X)
T = 0.65 * 39.000
T = 25.35
T = 25 vehicle trips
with 14% (4 vph) entering and 86% (21 vph) exiting.

SATURDAY DAILY

T = 0.69 * (X)
T = 0.69 * 39.000
T = 26.91
T = 26 vehicle trips
with 50% (13 vpd) entering and 50% (13 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

$$\frac{\text{ITE LUC 110 Sunday Midday Trip Rate}}{\text{ITE LUC 110 Sunday Daily Trip Rate}} = \frac{\text{ITE LUC 110 Saturday Midday Trip Rate}}{\text{ITE LUC 110 Saturday Daily Trip Rate}}$$

$$\frac{0.69}{5.00} = \frac{(Y)}{0.69} \qquad Y = 0.10$$

T = Y * 39.000
T = 3.71
T = 4 vehicle trips
with 48% (2 vpd) entering and 52% (2 vpd) exiting.

(same distribution split as ITE LUC 110 during the Sunday midday traffic)

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 140 - Manufacturing

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 78.500

AVERAGE WEEKDAY DAILY

T = 4.75 * (X)
T = 4.75 * 79
T = 372.88
T = 372 vehicle trips
with 50% (186 vpd) entering and 50% (186 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.68 * (X)
T = 0.68 * 78.500
T = 53.38
T = 53 vehicle trips
with 76% (40 vph) entering and 24% (13 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.74 * (X)
T = 0.74 * 78.500
T = 58.09
T = 58 vehicle trips
with 31% (18 vph) entering and 69% (40 vph) exiting.

SATURDAY DAILY

T = 1.49 * (X)
T = 1.49 * 78.500
T = 116.97
T = 116 vehicle trips
with 50% (58 vpd) entering and 50% (58 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

T = 0.18 * (X)
T = 0.18 * 78.500
T = 14.13
T = 14 vehicle trips
with 52% (7 vph) entering and 48% (7 vph) exiting.

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 150 - Warehousing

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 125.300

AVERAGE WEEKDAY DAILY

T = 1.58 * (X) + 38.29
T = 1.58 * 125.300 + 38.29
T = 236.26
T = 236 vehicle trips
with 50% (118 vpd) entering and 50% (118 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.12* (X) + 23.62
T = 0.12 * 125.300 + 23.62
T = 38.66
T = 39 vehicle trips
with 77% (30 vph) entering and 23% (9 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.12* (X) + 26.48
T = 0.12 * 125.300 + 26.48
T = 41.52
T = 42 vehicle trips
with 28% (12 vph) entering and 72% (30 vph) exiting.

SATURDAY DAILY

T = 0.15 * (X)
T = 0.150 * 125.300
T = 18.80
T = 18 vehicle trips
with 50% (9 vpd) entering and 50% (9 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

T = 0.05 * (X)
T = 0.05 * 125.300
T = 6.27
T = 6 vehicle trips
with 64% (4 vph) entering and 36% (2 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 (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized intersections is a function of average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

Signalized Intersections

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Table A-1 summarizes the relationship between level of service and average control delay.

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

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.

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.

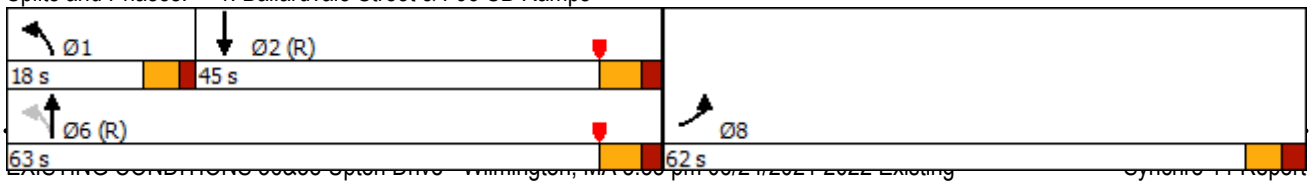
CAPACITY AND QUEUE ANALYSIS WORKSHEETS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	521	69	72	354	150	798
Future Volume (vph)	521	69	72	354	150	798
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.950		0.621			
Satd. Flow (perm)	3433	1760	1141	1818	1727	1482
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		45				806
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Adj. Flow (vph)	526	70	73	358	152	806
Shared Lane Traffic (%)						
Lane Group Flow (vph)	526	70	73	358	152	806
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	62.0		18.0	63.0	45.0	
Total Split (%)	49.6%		14.4%	50.4%	36.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 12 (10%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	526	70	73	358	152	806
v/c Ratio	0.79	0.04	0.09	0.28	0.14	0.54
Control Delay	56.3	0.0	6.3	7.8	11.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	0.0	6.3	7.8	11.4	1.4
Queue Length 50th (ft)	210	0	16	94	49	0
Queue Length 95th (ft)	256	0	36	163	94	0
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1537	1760	880	1288	1088	1482
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.04	0.08	0.28	0.14	0.54

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	521	69	72	354	150	798
Future Volume (vph)	521	69	72	354	150	798
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.95	1.00	0.62	1.00	1.00	1.00
Satd. Flow (perm)	3433	1760	1140	1818	1727	1482
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	526	70	73	358	152	806
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	526	70	73	358	152	806
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	24.4	125.0	88.6	88.6	77.8	125.0
Effective Green, g (s)	24.4	125.0	88.6	88.6	77.8	125.0
Actuated g/C Ratio	0.20	1.00	0.71	0.71	0.62	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	670	1760	836	1288	1074	1482
v/s Ratio Prot	c0.15		0.00	0.20	0.09	
v/s Ratio Perm		0.04	0.06			c0.54
v/c Ratio	0.79	0.04	0.09	0.28	0.14	0.54
Uniform Delay, d1	47.8	0.0	5.6	6.6	9.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.0	0.0	0.5	0.3	1.4
Delay (s)	53.4	0.0	5.7	7.1	10.0	1.4
Level of Service	D	A	A	A	B	A
Approach Delay (s)	47.1			6.9	2.8	
Approach LOS	D			A	A	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

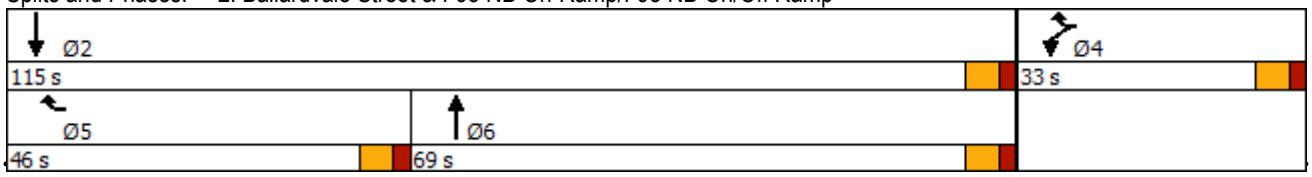
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	16	0	832	0	833	42	0	932	242
Future Volume (vph)	0	0	0	16	0	832	0	833	42	0	932	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									111			213
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Adj. Flow (vph)	0	0	0	16	0	858	0	859	43	0	961	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	16	0	858	0	859	43	0	961	249
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				33.0				69.0			115.0	
Total Split (%)				22.3%				46.6%			77.7%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				Min			Min	

Intersection Summary

Area Type: Other
Cycle Length: 148
Actuated Cycle Length: 87.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	14.0
Total Split (s)	46.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	16	858	859	43	961	249
v/c Ratio	0.03	0.63	0.80	0.02	0.48	0.19
Control Delay	29.7	18.6	33.3	0.0	11.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	18.6	33.3	0.0	11.2	0.3
Queue Length 50th (ft)	6	172	221	0	160	0
Queue Length 95th (ft)	28	343	351	0	201	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	549	2048	2499	1830	3355	1301
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.42	0.34	0.02	0.29	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	16	0	832	0	833	42	0	932	242
Future Volume (vph)	0	0	0	16	0	832	0	833	42	0	932	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		2544		3323	1830		3406	1301
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		2544		3323	1830		3406	1301
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	16	0	858	0	859	43	0	961	249
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	16	0	858	0	859	43	0	961	249
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				23.6		46.4		28.6	87.0		51.4	87.0
Effective Green, g (s)				23.6		46.4		28.6	87.0		51.4	87.0
Actuated g/C Ratio				0.27		0.53		0.33	1.00		0.59	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				461		1356		1092	1830		2012	1301
v/s Ratio Prot				0.01		c0.34		c0.26			0.28	
v/s Ratio Perm									0.02			0.19
v/c Ratio				0.03		0.63		0.79	0.02		0.48	0.19
Uniform Delay, d1				23.3		14.3		26.4	0.0		10.1	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.0		1.0		3.5	0.0		0.1	0.3
Delay (s)				23.4		15.3		30.0	0.0		10.2	0.3
Level of Service				C		B		C	A		B	A
Approach Delay (s)		0.0			15.4			28.5			8.2	
Approach LOS		A			B			C			A	

Intersection Summary

HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

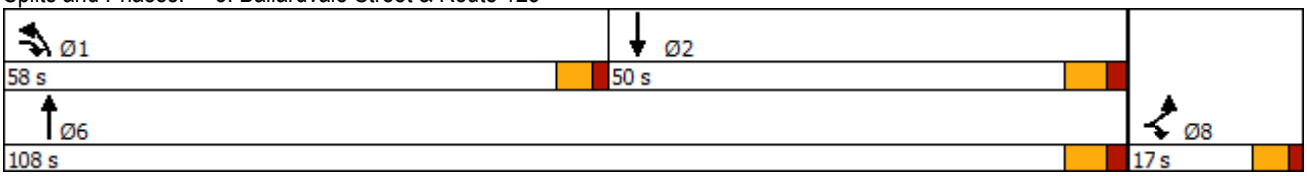
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	291	1105	560	883	452
Future Volume (vph)	59	291	1105	560	883	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.949	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1543	2311	3303	1759	3284	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1543	2311	3303	1759	3284	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		56			80	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Adj. Flow (vph)	61	303	1151	583	920	471
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	303	1151	583	1391	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	17.0		58.0	108.0	50.0	
Total Split (%)	13.6%		46.4%	86.4%	40.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 114.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	61	303	1151	583	1391
v/c Ratio	0.44	0.25	0.91	0.41	1.06
Control Delay	61.9	12.4	45.0	4.0	74.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	12.4	45.0	4.0	74.5
Queue Length 50th (ft)	44	53	412	98	~594
Queue Length 95th (ft)	94	81	510	142	#816
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	162	1379	1536	1567	1317
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	0.38	0.22	0.75	0.37	1.06

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	291	1105	560	883	452
Future Volume (vph)	59	291	1105	560	883	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1543	2311	3303	1759	3285	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1543	2311	3303	1759	3285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	61	303	1151	583	920	471
RTOR Reduction (vph)	0	27	0	0	49	0
Lane Group Flow (vph)	61	276	1151	583	1342	0
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Actuated Green, G (s)	10.5	59.3	43.8	93.2	44.4	
Effective Green, g (s)	10.5	59.3	43.8	93.2	44.4	
Actuated g/C Ratio	0.09	0.52	0.38	0.81	0.39	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	141	1194	1261	1429	1271	
v/s Ratio Prot	c0.04	0.12	c0.35	0.33	c0.41	
v/s Ratio Perm						
v/c Ratio	0.43	0.23	0.91	0.41	1.06	
Uniform Delay, d1	49.3	15.2	33.6	3.0	35.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.0	10.0	0.1	41.4	
Delay (s)	50.1	15.2	43.6	3.1	76.5	
Level of Service	D	B	D	A	E	
Approach Delay (s)	21.1			30.0	76.5	
Approach LOS	C			C	E	

Intersection Summary

HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	114.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

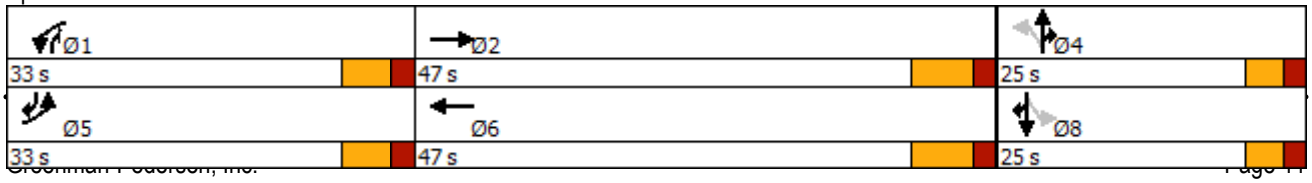
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	348	249	22	292	1069	136	95	176	84	11	74	171
Future Volume (vph)	348	249	22	292	1069	136	95	176	84	11	74	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt		0.988			0.983				0.850			0.850
Flt Protected	0.950			0.950				0.983			0.993	
Satd. Flow (prot)	1687	3334	0	1805	3474	0	0	1824	1583	0	1757	1404
Flt Permitted	0.950			0.950				0.847			0.813	
Satd. Flow (perm)	1687	3334	0	1805	3474	0	0	1572	1583	0	1439	1404
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		10										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			229	
Travel Time (s)		18.9			8.3			12.1			5.2	
Confl. Bikes (#/hr)						4						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Adj. Flow (vph)	366	262	23	307	1125	143	100	185	88	12	78	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	366	285	0	307	1268	0	0	285	88	0	90	180
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	22.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 103
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	366	285	307	1268	285	88	90	180
v/c Ratio	0.89	0.20	0.80	0.94	0.94	0.12	0.32	0.26
Control Delay	63.1	19.7	54.2	45.1	80.9	15.4	40.3	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.1	19.7	54.2	45.1	80.9	15.4	40.3	16.2
Queue Length 50th (ft)	234	60	195	431	191	32	53	66
Queue Length 95th (ft)	#390	96	280	#582	#355	57	101	111
Internal Link Dist (ft)		890		526	540		149	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	442	1401	473	1350	305	799	280	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.20	0.65	0.94	0.93	0.11	0.32	0.25

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)	348	249	22	292	1069	136	95	176	84	11	74	171
Future Volume (vph)	348	249	22	292	1069	136	95	176	84	11	74	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1687	3334		1805	3474			1823	1583		1758	1404
Flt Permitted	0.95	1.00		0.95	1.00			0.85	1.00		0.81	1.00
Satd. Flow (perm)	1687	3334		1805	3474			1572	1583		1438	1404
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	366	262	23	307	1125	143	100	185	88	12	78	180
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	366	279	0	307	1268	0	0	285	88	0	90	180
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	25.0	43.1		21.9	40.0			19.9	46.8		19.9	49.9
Effective Green, g (s)	25.0	43.1		21.9	40.0			19.9	46.8		19.9	49.9
Actuated g/C Ratio	0.24	0.42		0.21	0.39			0.19	0.45		0.19	0.48
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	409	1396		384	1350			304	719		278	680
v/s Ratio Prot	c0.22	c0.08		0.17	c0.37				0.06			0.13
v/s Ratio Perm								c0.18			0.06	
v/c Ratio	0.89	0.20		0.80	0.94			0.94	0.12		0.32	0.26
Uniform Delay, d1	37.7	19.0		38.4	30.3			40.9	16.2		35.7	15.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	21.3	0.1		11.1	12.7			35.1	0.1		0.7	0.2
Delay (s)	59.0	19.1		49.5	43.0			76.0	16.3		36.4	15.9
Level of Service	E	B		D	D			E	B		D	B
Approach Delay (s)		41.5			44.3			61.9			22.7	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	43.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	102.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	34	192	468	222	13
Future Volume (vph)	3	34	192	468	222	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.993	
Flt Protected	0.950			0.986		
Satd. Flow (prot)	1925	1538	0	2039	1929	0
Flt Permitted	0.950			0.986		
Satd. Flow (perm)	1925	1538	0	2039	1929	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1258			229	1411	
Travel Time (s)	34.3			4.5	32.1	
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	12%	2%	5%	11%	8%
Adj. Flow (vph)	4	42	237	578	274	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	42	0	815	290	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	34	192	468	222	13
Future Vol, veh/h	3	34	192	468	222	13
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	12	2	5	11	8
Mvmt Flow	4	42	237	578	274	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1334	282	290	0	-	0
Stage 1	282	-	-	-	-	-
Stage 2	1052	-	-	-	-	-
Critical Hdwy	6.4	6.32	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.408	2.218	-	-	-
Pot Cap-1 Maneuver	171	734	1272	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	124	734	1272	-	-	-
Mov Cap-2 Maneuver	124	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	339	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1272	-	124	734	-	-
HCM Lane V/C Ratio	0.186	-	0.03	0.057	-	-
HCM Control Delay (s)	8.5	0	34.9	10.2	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1	24	5	0	0	345	67	13	0	170	67
Future Volume (vph)	2	1	24	5	0	0	345	67	13	0	170	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.880						0.996			0.962	
Flt Protected		0.996			0.950			0.961				
Satd. Flow (prot)	0	1468	0	0	1705	0	0	1994	0	0	2057	0
Flt Permitted		0.996			0.950			0.961				
Satd. Flow (perm)	0	1468	0	0	1705	0	0	1994	0	0	2057	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		518			544			1411			503	
Travel Time (s)		14.1			14.8			27.5			11.4	
Confl. Bikes (#/hr)						2						1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	100%	29%	20%	0%	0%	2%	8%	15%	0%	1%	0%
Adj. Flow (vph)	3	1	31	6	0	0	448	87	17	0	221	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	6	0	0	552	0	0	308	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	24	5	0	0	345	67	13	0	170	67
Future Vol, veh/h	2	1	24	5	0	0	345	67	13	0	170	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	100	29	20	0	0	2	8	15	0	1	0
Mvmt Flow	3	1	31	6	0	0	448	87	17	0	221	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1257	1265	265	1273	1300	96	308	0	0	104	0	0
Stage 1	265	265	-	992	992	-	-	-	-	-	-	-
Stage 2	992	1000	-	281	308	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.49	7.3	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.561	3.68	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	149	110	713	132	163	966	1253	-	-	1500	-	-
Stage 1	745	542	-	274	326	-	-	-	-	-	-	-
Stage 2	299	221	-	688	664	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	68	713	88	101	966	1253	-	-	1500	-	-
Mov Cap-2 Maneuver	105	68	-	88	101	-	-	-	-	-	-	-
Stage 1	462	542	-	170	202	-	-	-	-	-	-	-
Stage 2	185	137	-	656	664	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.8	49.1	7.7	0
HCM LOS	B	E		

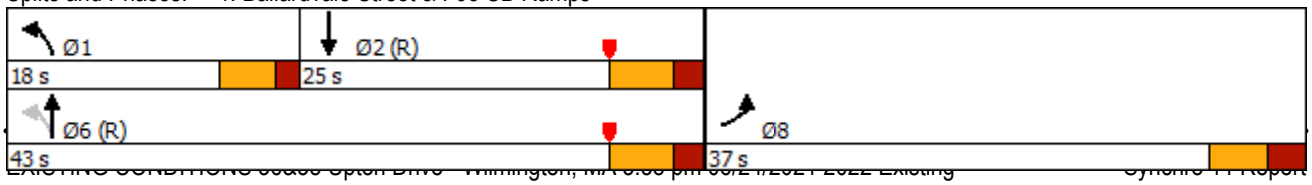
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	401	88	1500	-	-
HCM Lane V/C Ratio	0.358	-	-	0.087	0.074	-	-	-
HCM Control Delay (s)	9.5	0	-	14.8	49.1	0	-	-
HCM Lane LOS	A	A	-	B	E	A	-	-
HCM 95th %tile Q(veh)	1.6	-	-	0.3	0.2	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	168	106	29	238	623	1040
Future Volume (vph)	168	106	29	238	623	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.950		0.284			
Satd. Flow (perm)	3019	1830	487	1837	1881	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		115				826
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Adj. Flow (vph)	183	115	32	259	677	1130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	183	115	32	259	677	1130
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	37.0		18.0	43.0	25.0	
Total Split (%)	46.3%		22.5%	53.8%	31.3%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	183	115	32	259	677	1130
v/c Ratio	0.50	0.06	0.07	0.19	0.54	0.71
Control Delay	37.5	0.1	3.4	4.1	10.7	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	0.1	3.4	4.1	10.7	8.9
Queue Length 50th (ft)	45	0	3	32	122	358
Queue Length 95th (ft)	73	0	11	64	m225	m518
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1169	1830	547	1339	1258	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.06	0.06	0.19	0.54	0.71

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	168	106	29	238	623	1040
Future Volume (vph)	168	106	29	238	623	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.95	1.00	0.28	1.00	1.00	1.00
Satd. Flow (perm)	3019	1830	488	1837	1881	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	115	32	259	677	1130
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	183	115	32	259	677	1130
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	9.7	80.0	58.3	58.3	50.5	80.0
Effective Green, g (s)	9.7	80.0	58.3	58.3	50.5	80.0
Actuated g/C Ratio	0.12	1.00	0.73	0.73	0.63	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	366	1830	395	1338	1187	1583
v/s Ratio Prot	0.06		0.00	0.14	0.36	
v/s Ratio Perm		0.06	0.06			c0.71
v/c Ratio	0.50	0.06	0.08	0.19	0.57	0.71
Uniform Delay, d1	32.9	0.0	4.8	3.4	8.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.07	1.00
Incremental Delay, d2	0.4	0.1	0.0	0.3	1.2	1.6
Delay (s)	33.3	0.1	4.9	3.7	10.3	1.6
Level of Service	C	A	A	A	B	A
Approach Delay (s)	20.5			3.9	4.9	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

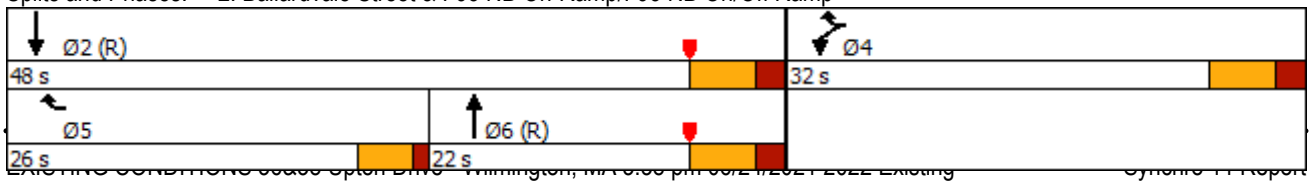
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	178	0	886	0	370	36	0	1485	688
Future Volume (vph)	0	0	0	178	0	886	0	370	36	0	1485	688
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1787	0	2617	0	3292	1830	0	3574	1546
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1787	0	2617	0	3292	1830	0	3574	1546
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									184			706
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	6%	0%	0%	1%	1%
Adj. Flow (vph)	0	0	0	193	0	963	0	402	39	0	1614	748
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	193	0	963	0	402	39	0	1614	748
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				32.0				22.0			48.0	
Total Split (%)				40.0%				27.5%			60.0%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				C-Min			C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	9.5
Total Split (s)	26.0
Total Split (%)	33%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	193	963	402	39	1614	748
v/c Ratio	0.32	0.68	0.39	0.02	0.87	0.48
Control Delay	21.9	15.9	24.0	0.0	23.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	15.9	24.0	0.0	23.9	1.1
Queue Length 50th (ft)	72	201	95	0	344	0
Queue Length 95th (ft)	125	195	151	0	449	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	601	1692	1022	1830	1886	1546
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.57	0.39	0.02	0.86	0.48

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	178	0	886	0	370	36	0	1485	688
Future Volume (vph)	0	0	0	178	0	886	0	370	36	0	1485	688
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1787		2617		3292	1830		3574	1546
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1787		2617		3292	1830		3574	1546
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	193	0	963	0	402	39	0	1614	748
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	193	0	963	0	402	39	0	1614	748
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	6%	0%	0%	1%	1%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				26.7		44.7		24.8	80.0		41.3	80.0
Effective Green, g (s)				26.7		44.7		24.8	80.0		41.3	80.0
Actuated g/C Ratio				0.33		0.56		0.31	1.00		0.52	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				596		1462		1020	1830		1845	1546
v/s Ratio Prot				0.11		c0.37		0.12			c0.45	
v/s Ratio Perm									0.02			0.48
v/c Ratio				0.32		0.66		0.39	0.02		0.87	0.48
Uniform Delay, d1				19.9		12.3		21.7	0.0		17.1	0.0
Progression Factor				1.00		1.00		0.99	1.00		1.00	1.00
Incremental Delay, d2				0.3		1.1		1.1	0.0		6.1	1.1
Delay (s)				20.2		13.4		22.6	0.0		23.2	1.1
Level of Service				C		B		C	A		C	A
Approach Delay (s)		0.0			14.5			20.6			16.2	
Approach LOS		A			B			C			B	

Intersection Summary

HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

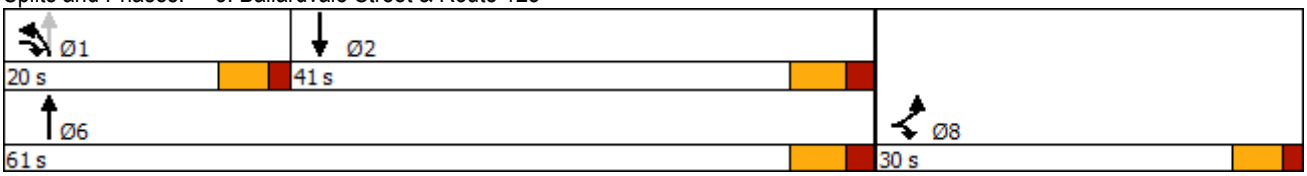
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	393	1305	268	988	868	88
Future Volume (vph)	393	1305	268	988	868	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.986	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	2787	2870	1863	3502	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	2787	2870	1863	3502	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		73			14	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Adj. Flow (vph)	423	1403	288	1062	933	95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	1403	288	1062	1028	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	30.0		20.0	61.0	41.0	
Total Split (%)	33.0%		22.0%	67.0%	45.1%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 91
Actuated Cycle Length: 88.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	423	1403	288	1062	1028
v/c Ratio	0.84	0.96	0.59	0.96	0.80
Control Delay	47.8	37.8	40.2	38.3	30.2
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	47.8	37.8	40.2	38.6	30.2
Queue Length 50th (ft)	232	419	80	515	262
Queue Length 95th (ft)	#398	#611	122	#842	339
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	502	1459	489	1162	1399
Starvation Cap Reductn	0	0	0	7	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.96	0.59	0.92	0.73

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	393	1305	268	988	868	88
Future Volume (vph)	393	1305	268	988	868	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	2787	2870	1863	3502	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	2787	2870	1863	3502	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	423	1403	288	1062	933	95
RTOR Reduction (vph)	0	36	0	0	9	0
Lane Group Flow (vph)	423	1367	288	1062	1019	0
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Actuated Green, G (s)	25.1	45.2	15.1	52.3	32.2	
Effective Green, g (s)	25.1	45.2	15.1	52.3	32.2	
Actuated g/C Ratio	0.28	0.51	0.17	0.59	0.36	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	502	1425	490	1102	1275	
v/s Ratio Prot	0.24	c0.49	0.10	c0.57	0.29	
v/s Ratio Perm						
v/c Ratio	0.84	0.96	0.59	0.96	0.80	
Uniform Delay, d1	29.8	20.7	33.8	17.1	25.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.7	15.0	1.2	18.7	3.4	
Delay (s)	41.5	35.7	34.9	35.9	28.6	
Level of Service	D	D	C	D	C	
Approach Delay (s)	37.0			35.7	28.6	
Approach LOS	D			D	C	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

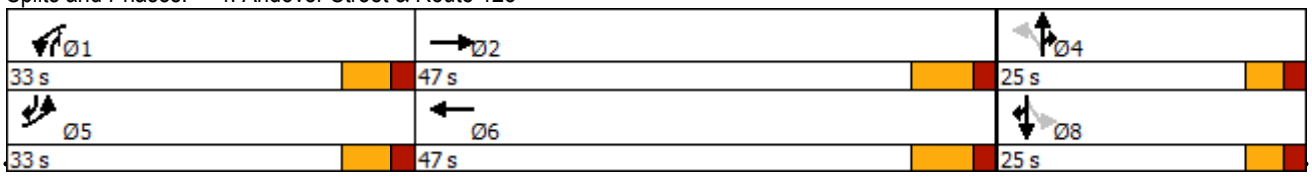
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	1158	68	52	439	22	30	134	379	112	108	487
Future Volume (vph)	155	1158	68	52	439	22	30	134	379	112	108	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.993				0.850			0.850
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1641	3544	0	1770	3477	0	0	1857	1599	0	1773	1583
Flt Permitted	0.950			0.950				0.893			0.671	
Satd. Flow (perm)	1641	3544	0	1770	3477	0	0	1674	1599	0	1220	1583
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		7										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			192	
Travel Time (s)		18.9			8.3			12.1			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Adj. Flow (vph)	163	1219	72	55	462	23	32	141	399	118	114	513
Shared Lane Traffic (%)												
Lane Group Flow (vph)	163	1291	0	55	485	0	0	173	399	0	232	513
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	25.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 87.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	163	1291	55	485	173	399	232	513
v/c Ratio	0.58	0.83	0.25	0.36	0.45	0.59	0.83	0.69
Control Delay	41.1	27.7	37.6	20.8	34.9	23.9	59.1	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	27.7	37.6	20.8	34.9	23.9	59.1	23.4
Queue Length 50th (ft)	85	302	28	94	82	170	121	218
Queue Length 95th (ft)	140	#489	62	165	162	260	#286	309
Internal Link Dist (ft)		890		526	540		112	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	509	1634	549	1599	384	974	280	965
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.79	0.10	0.30	0.45	0.41	0.83	0.53

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)	155	1158	68	52	439	22	30	134	379	112	108	487
Future Volume (vph)	155	1158	68	52	439	22	30	134	379	112	108	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1641	3542		1770	3477			1857	1599		1773	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.89	1.00		0.67	1.00
Satd. Flow (perm)	1641	3542		1770	3477			1674	1599		1220	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	163	1219	72	55	462	23	32	141	399	118	114	513
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	163	1287	0	55	485	0	0	173	399	0	232	513
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	15.0	38.4		10.8	34.2			20.1	35.9		20.1	40.1
Effective Green, g (s)	15.0	38.4		10.8	34.2			20.1	35.9		20.1	40.1
Actuated g/C Ratio	0.17	0.44		0.12	0.39			0.23	0.41		0.23	0.46
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		4.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	281	1557		218	1362			385	657		280	727
v/s Ratio Prot	0.10	c0.36		0.03	0.14				0.25			c0.32
v/s Ratio Perm								0.10			c0.19	
v/c Ratio	0.58	0.83		0.25	0.36			0.45	0.61		0.83	0.71
Uniform Delay, d1	33.3	21.5		34.6	18.8			28.8	20.2		32.0	18.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.0	3.7		0.8	0.2			0.8	1.6		17.9	3.1
Delay (s)	36.3	25.3		35.4	18.9			29.7	21.8		49.9	22.0
Level of Service	D	C		D	B			C	C		D	C
Approach Delay (s)		26.5			20.6			24.2			30.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	87.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	173	29	282	534	5
Future Volume (vph)	3	173	29	282	534	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.999	
Flt Protected	0.950			0.995		
Satd. Flow (prot)	1925	1706	0	2037	2122	0
Flt Permitted	0.950			0.995		
Satd. Flow (perm)	1925	1706	0	2037	2122	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1277			192	1421	
Travel Time (s)	34.8			3.7	32.3	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	1%	7%	5%	1%	40%
Adj. Flow (vph)	4	211	35	344	651	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	211	0	379	657	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	173	29	282	534	5
Future Vol, veh/h	3	173	29	282	534	5
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	1	7	5	1	40
Mvmt Flow	4	211	35	344	651	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1068	654	657	0	-	0
Stage 1	654	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.263	-	-	-
Pot Cap-1 Maneuver	248	468	907	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	236	468	907	-	-	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	907	-	236	468	-	-
HCM Lane V/C Ratio	0.039	-	0.016	0.451	-	-
HCM Control Delay (s)	9.1	0	20.5	18.9	-	-
HCM Lane LOS	A	A	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0	2.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	1	365	15	0	1	16	247	0	1	80	2
Future Volume (vph)	87	1	365	15	0	1	16	247	0	1	80	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.891			0.993						0.997	
Flt Protected		0.991			0.955			0.997			0.999	
Satd. Flow (prot)	0	1871	0	0	1915	0	0	2122	0	0	2063	0
Flt Permitted		0.991			0.955			0.997			0.999	
Satd. Flow (perm)	0	1871	0	0	1915	0	0	2122	0	0	2063	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		511			525			1421			503	
Travel Time (s)		13.9			14.3			27.7			11.4	
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	2%	7%	0%	0%	19%	0%	0%	0%	3%	50%
Adj. Flow (vph)	102	1	429	18	0	1	19	291	0	1	94	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	532	0	0	19	0	0	310	0	0	97	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	87	1	365	15	0	1	16	247	0	1	80	2
Future Vol, veh/h	87	1	365	15	0	1	16	247	0	1	80	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	2	2	7	0	0	19	0	0	0	3	50
Mvmt Flow	102	1	429	18	0	1	19	291	0	1	94	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	427	426	95	641	427	291	96	0	0	291	0	0
Stage 1	97	97	-	329	329	-	-	-	-	-	-	-
Stage 2	330	329	-	312	98	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.22	7.17	6.5	6.2	4.29	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.318	3.563	4	3.3	2.371	-	-	2.2	-	-
Pot Cap-1 Maneuver	541	520	962	381	523	753	1397	-	-	1282	-	-
Stage 1	914	815	-	674	650	-	-	-	-	-	-	-
Stage 2	687	646	-	688	818	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	533	511	962	208	514	753	1397	-	-	1282	-	-
Mov Cap-2 Maneuver	533	511	-	208	514	-	-	-	-	-	-	-
Stage 1	899	814	-	663	640	-	-	-	-	-	-	-
Stage 2	675	636	-	380	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	23.1	0.5	0.1
HCM LOS	C	C		

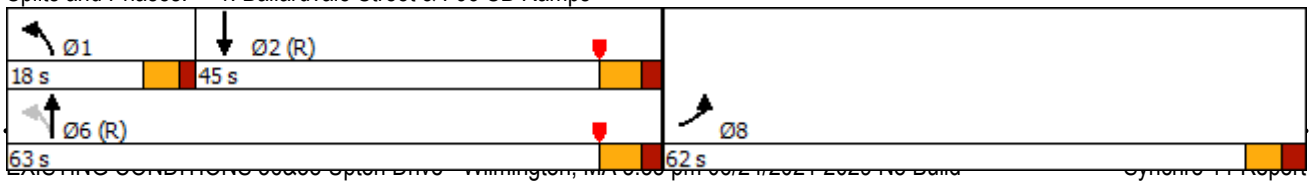
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1397	-	-	832	218	1282	-	-
HCM Lane V/C Ratio	0.013	-	-	0.641	0.086	0.001	-	-
HCM Control Delay (s)	7.6	0	-	16.7	23.1	7.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	4.7	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	565	74	78	384	164	866
Future Volume (vph)	565	74	78	384	164	866
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.950		0.612			
Satd. Flow (perm)	3433	1760	1124	1818	1727	1482
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		44				875
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Adj. Flow (vph)	571	75	79	388	166	875
Shared Lane Traffic (%)						
Lane Group Flow (vph)	571	75	79	388	166	875
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	62.0		18.0	63.0	45.0	
Total Split (%)	49.6%		14.4%	50.4%	36.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 12 (10%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	571	75	79	388	166	875
v/c Ratio	0.79	0.04	0.10	0.31	0.16	0.59
Control Delay	55.2	0.0	6.9	8.8	12.4	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	0.0	6.9	8.8	12.4	1.7
Queue Length 50th (ft)	227	0	18	110	56	0
Queue Length 95th (ft)	273	0	40	189	107	0
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1537	1760	854	1262	1063	1482
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.04	0.09	0.31	0.16	0.59

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	565	74	78	384	164	866
Future Volume (vph)	565	74	78	384	164	866
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.95	1.00	0.61	1.00	1.00	1.00
Satd. Flow (perm)	3433	1760	1124	1818	1727	1482
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	571	75	79	388	166	875
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	571	75	79	388	166	875
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	26.2	125.0	86.8	86.8	75.9	125.0
Effective Green, g (s)	26.2	125.0	86.8	86.8	75.9	125.0
Actuated g/C Ratio	0.21	1.00	0.69	0.69	0.61	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	719	1760	809	1262	1048	1482
v/s Ratio Prot	c0.17		0.00	0.21	0.10	
v/s Ratio Perm		0.04	0.06			c0.59
v/c Ratio	0.79	0.04	0.10	0.31	0.16	0.59
Uniform Delay, d1	46.8	0.0	6.2	7.4	10.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.0	0.0	0.6	0.3	1.7
Delay (s)	52.5	0.0	6.2	8.1	11.0	1.7
Level of Service	D	A	A	A	B	A
Approach Delay (s)	46.4			7.7	3.2	
Approach LOS	D			A	A	

Intersection Summary

HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

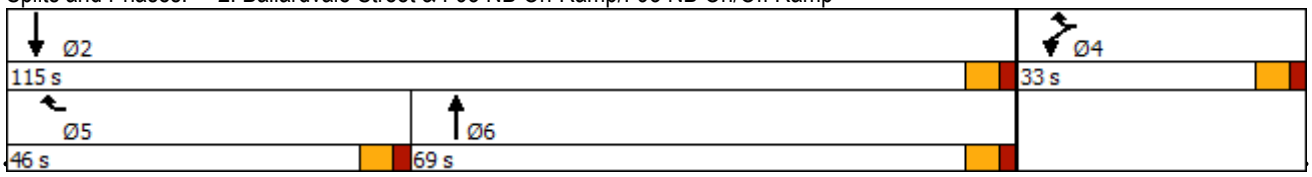
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	898	0	904	45	0	1013	267
Future Volume (vph)	0	0	0	17	0	898	0	904	45	0	1013	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									111			217
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Adj. Flow (vph)	0	0	0	18	0	926	0	932	46	0	1044	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	18	0	926	0	932	46	0	1044	275
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				33.0				69.0			115.0	
Total Split (%)				22.3%				46.6%			77.7%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				Min			Min	

Intersection Summary

Area Type: Other
Cycle Length: 148
Actuated Cycle Length: 98.9
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	14.0
Total Split (s)	46.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	18	926	932	46	1044	275
v/c Ratio	0.04	0.69	0.81	0.03	0.50	0.21
Control Delay	36.2	22.3	35.7	0.0	11.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	22.3	35.7	0.0	11.1	0.4
Queue Length 50th (ft)	8	239	253	0	182	0
Queue Length 95th (ft)	36	422	442	0	220	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	488	1878	2224	1830	3267	1301
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.49	0.42	0.03	0.32	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	898	0	904	45	0	1013	267
Future Volume (vph)	0	0	0	17	0	898	0	904	45	0	1013	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		2544		3323	1830		3406	1301
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		2544		3323	1830		3406	1301
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	18	0	926	0	932	46	0	1044	275
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	18	0	926	0	932	46	0	1044	275
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				25.8		51.6		34.7	98.3		60.5	98.3
Effective Green, g (s)				25.8		51.6		34.7	98.3		60.5	98.3
Actuated g/C Ratio				0.26		0.52		0.35	1.00		0.62	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				446		1335		1173	1830		2096	1301
v/s Ratio Prot				0.01		c0.36		c0.28			0.31	
v/s Ratio Perm									0.03			0.21
v/c Ratio				0.04		0.69		0.79	0.03		0.50	0.21
Uniform Delay, d1				27.0		17.4		28.6	0.0		10.5	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.0		1.6		3.5	0.0		0.1	0.4
Delay (s)				27.1		19.0		32.1	0.0		10.5	0.4
Level of Service				C		B		C	A		B	A
Approach Delay (s)		0.0			19.2			30.6			8.4	
Approach LOS		A			B			C			A	

Intersection Summary

HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

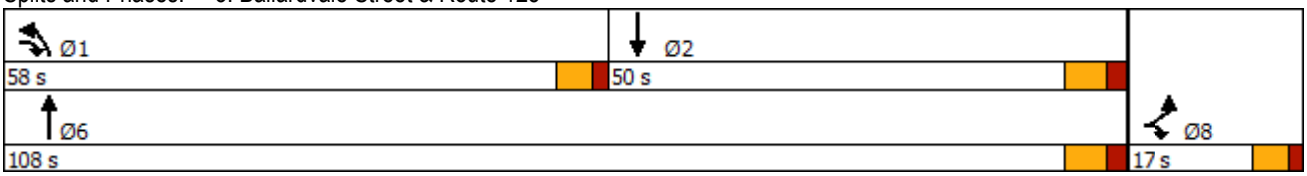
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	314	1193	609	966	488
Future Volume (vph)	63	314	1193	609	966	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.950	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1543	2311	3303	1759	3287	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1543	2311	3303	1759	3287	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		40			78	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Adj. Flow (vph)	66	327	1243	634	1006	508
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	327	1243	634	1514	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	17.0		58.0	108.0	50.0	
Total Split (%)	13.6%		46.4%	86.4%	40.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 119.3
Natural Cycle: 120
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	66	327	1243	634	1514
v/c Ratio	0.46	0.26	0.94	0.44	1.20
Control Delay	64.1	13.2	47.9	4.3	128.9
Queue Delay	0.0	0.0	0.0	0.4	0.0
Total Delay	64.1	13.2	47.9	4.7	128.9
Queue Length 50th (ft)	51	63	471	117	~783
Queue Length 95th (ft)	100	93	573	162	#927
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	156	1337	1473	1510	1266
Starvation Cap Reductn	0	0	0	381	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.24	0.84	0.56	1.20

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	314	1193	609	966	488
Future Volume (vph)	63	314	1193	609	966	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1543	2311	3303	1759	3286	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1543	2311	3303	1759	3286	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	327	1243	634	1006	508
RTOR Reduction (vph)	0	19	0	0	49	0
Lane Group Flow (vph)	66	308	1243	634	1465	0
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.1	64.1	48.0	97.2	44.2	
Effective Green, g (s)	11.1	64.1	48.0	97.2	44.2	
Actuated g/C Ratio	0.09	0.54	0.40	0.81	0.37	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	143	1241	1328	1433	1217	
v/s Ratio Prot	c0.04	0.13	c0.38	0.36	c0.45	
v/s Ratio Perm						
v/c Ratio	0.46	0.25	0.94	0.44	1.20	
Uniform Delay, d1	51.3	14.7	34.2	3.2	37.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.0	12.2	0.1	99.7	
Delay (s)	52.1	14.8	46.4	3.3	137.2	
Level of Service	D	B	D	A	F	
Approach Delay (s)	21.1			31.8	137.2	
Approach LOS	C			C	F	

Intersection Summary

HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	119.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

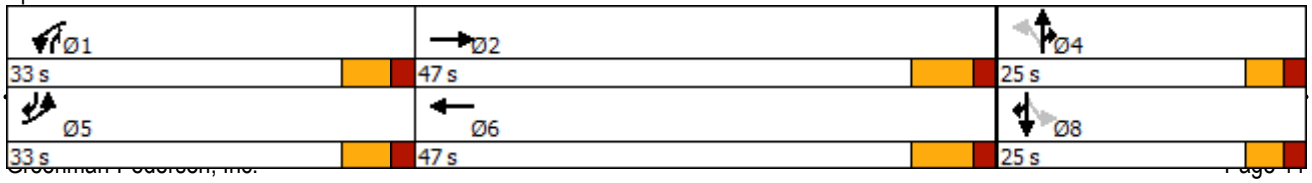
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	269	24	315	1154	160	103	190	91	21	81	197
Future Volume (vph)	379	269	24	315	1154	160	103	190	91	21	81	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt		0.988			0.982				0.850			0.850
Flt Protected	0.950			0.950				0.983			0.990	
Satd. Flow (prot)	1687	3334	0	1805	3470	0	0	1824	1583	0	1744	1404
Flt Permitted	0.950			0.950				0.827			0.594	
Satd. Flow (perm)	1687	3334	0	1805	3470	0	0	1534	1583	0	1047	1404
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		10										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			229	
Travel Time (s)		18.9			8.3			12.1			5.2	
Confl. Bikes (#/hr)						4						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Adj. Flow (vph)	399	283	25	332	1215	168	108	200	96	22	85	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	399	308	0	332	1383	0	0	308	96	0	107	207
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	22.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 104.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	399	308	332	1383	308	96	107	207
v/c Ratio	0.94	0.22	0.83	1.04	1.05	0.13	0.54	0.29
Control Delay	70.4	20.4	56.2	68.1	107.8	15.2	49.3	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	20.4	56.2	68.1	107.8	15.2	49.3	16.6
Queue Length 50th (ft)	261	67	211	~533	~227	35	65	78
Queue Length 95th (ft)	#442	103	306	#669	#397	61	124	128
Internal Link Dist (ft)		890		526	540		149	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	436	1384	467	1330	294	805	200	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.22	0.71	1.04	1.05	0.12	0.54	0.29

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)	379	269	24	315	1154	160	103	190	91	21	81	197
Future Volume (vph)	379	269	24	315	1154	160	103	190	91	21	81	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1687	3334		1805	3469			1823	1583		1744	1404
Flt Permitted	0.95	1.00		0.95	1.00			0.83	1.00		0.59	1.00
Satd. Flow (perm)	1687	3334		1805	3469			1534	1583		1046	1404
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	399	283	25	332	1215	168	108	200	96	22	85	207
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	399	302	0	332	1383	0	0	308	96	0	107	207
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	26.3	43.1		23.2	40.0			20.0	48.2		20.0	51.3
Effective Green, g (s)	26.3	43.1		23.2	40.0			20.0	48.2		20.0	51.3
Actuated g/C Ratio	0.25	0.41		0.22	0.38			0.19	0.46		0.19	0.49
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	425	1377		401	1330			294	731		200	690
v/s Ratio Prot	c0.24	c0.09		0.18	c0.40				0.06			0.15
v/s Ratio Perm								c0.20			0.10	
v/c Ratio	0.94	0.22		0.83	1.04			1.05	0.13		0.54	0.30
Uniform Delay, d1	38.2	19.7		38.6	32.1			42.1	16.1		38.0	15.8
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	28.4	0.1		13.1	35.7			65.5	0.1		2.7	0.2
Delay (s)	66.6	19.9		51.8	67.8			107.6	16.1		40.7	16.0
Level of Service	E	B		D	E			F	B		D	B
Approach Delay (s)		46.2			64.7			85.9			24.4	
Approach LOS		D			E			F			C	

Intersection Summary

HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	34	192	537	265	13
Future Volume (vph)	3	34	192	537	265	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.994	
Flt Protected	0.950			0.987		
Satd. Flow (prot)	1925	1538	0	2039	1931	0
Flt Permitted	0.950			0.987		
Satd. Flow (perm)	1925	1538	0	2039	1931	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1258			229	1411	
Travel Time (s)	34.3			4.5	32.1	
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	12%	2%	5%	11%	8%
Adj. Flow (vph)	4	42	237	663	327	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	42	0	900	343	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	34	192	537	265	13
Future Vol, veh/h	3	34	192	537	265	13
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	12	2	5	11	8
Mvmt Flow	4	42	237	663	327	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1472	335	343	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	1137	-	-	-	-	-
Critical Hdwy	6.4	6.32	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.408	2.218	-	-	-
Pot Cap-1 Maneuver	141	685	1216	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	685	1216	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	309	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1216	-	97	685	-	-
HCM Lane V/C Ratio	0.195	-	0.038	0.061	-	-
HCM Control Delay (s)	8.7	0	43.6	10.6	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1	28	5	0	0	365	84	13	0	205	68
Future Volume (vph)	2	1	28	5	0	0	365	84	13	0	205	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.878						0.996			0.966	
Flt Protected		0.996			0.950			0.962				
Satd. Flow (prot)	0	1464	0	0	1705	0	0	1994	0	0	2065	0
Flt Permitted		0.996			0.950			0.962				
Satd. Flow (perm)	0	1464	0	0	1705	0	0	1994	0	0	2065	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		518			544			1411			503	
Travel Time (s)		14.1			14.8			27.5			11.4	
Confl. Bikes (#/hr)						2						1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	100%	29%	20%	0%	0%	2%	8%	15%	0%	1%	0%
Adj. Flow (vph)	3	1	36	6	0	0	474	109	17	0	266	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	6	0	0	600	0	0	354	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	28	5	0	0	365	84	13	0	205	68
Future Vol, veh/h	2	1	28	5	0	0	365	84	13	0	205	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	100	29	20	0	0	2	8	15	0	1	0
Mvmt Flow	3	1	36	6	0	0	474	109	17	0	266	88

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1376	1384	310	1395	1420	118	354	0	0	126	0	0
Stage 1	310	310	-	1066	1066	-	-	-	-	-	-	-
Stage 2	1066	1074	-	329	354	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.49	7.3	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.561	3.68	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	124	91	671	108	138	939	1205	-	-	1473	-	-
Stage 1	705	515	-	249	301	-	-	-	-	-	-	-
Stage 2	271	201	-	648	634	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	83	52	671	67	79	939	1205	-	-	1473	-	-
Mov Cap-2 Maneuver	83	52	-	67	79	-	-	-	-	-	-	-
Stage 1	406	515	-	143	173	-	-	-	-	-	-	-
Stage 2	156	116	-	611	634	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	64.4	7.8	0
HCM LOS	C	F		

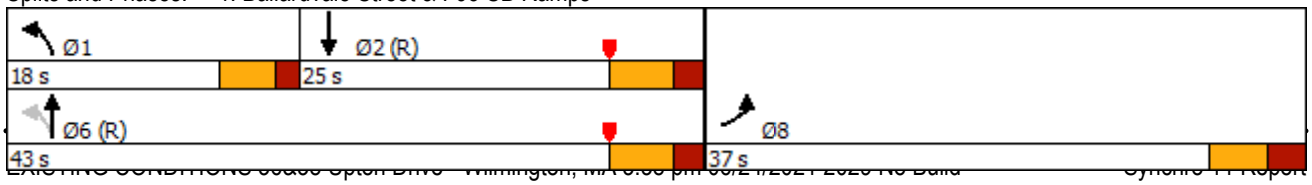
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1205	-	-	364	67	1473	-	-
HCM Lane V/C Ratio	0.393	-	-	0.111	0.097	-	-	-
HCM Control Delay (s)	9.9	0	-	16.1	64.4	0	-	-
HCM Lane LOS	A	A	-	C	F	A	-	-
HCM 95th %tile Q(veh)	1.9	-	-	0.4	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	184	114	31	259	673	1123
Future Volume (vph)	184	114	31	259	673	1123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.950		0.241			
Satd. Flow (perm)	3019	1830	414	1837	1881	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		124				826
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Adj. Flow (vph)	200	124	34	282	732	1221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	200	124	34	282	732	1221
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	37.0		18.0	43.0	25.0	
Total Split (%)	46.3%		22.5%	53.8%	31.3%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	200	124	34	282	732	1221
v/c Ratio	0.53	0.07	0.08	0.21	0.61	0.77
Control Delay	37.7	0.1	3.7	4.3	12.9	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	0.1	3.7	4.3	12.9	10.4
Queue Length 50th (ft)	49	0	4	36	188	433
Queue Length 95th (ft)	78	0	12	72	m226	m518
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1169	1830	502	1331	1193	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.07	0.07	0.21	0.61	0.77

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	184	114	31	259	673	1123
Future Volume (vph)	184	114	31	259	673	1123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.95	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	3019	1830	413	1837	1881	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	124	34	282	732	1221
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	200	124	34	282	732	1221
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	10.0	80.0	58.0	58.0	48.8	80.0
Effective Green, g (s)	10.0	80.0	58.0	58.0	48.8	80.0
Actuated g/C Ratio	0.12	1.00	0.72	0.72	0.61	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	377	1830	363	1331	1147	1583
v/s Ratio Prot	0.07		0.00	0.15	0.39	
v/s Ratio Perm		0.07	0.06			c0.77
v/c Ratio	0.53	0.07	0.09	0.21	0.64	0.77
Uniform Delay, d1	32.8	0.0	5.8	3.6	10.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.05	1.00
Incremental Delay, d2	0.7	0.1	0.0	0.4	1.3	1.8
Delay (s)	33.5	0.1	5.9	3.9	11.8	1.8
Level of Service	C	A	A	A	B	A
Approach Delay (s)	20.7			4.1	5.5	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

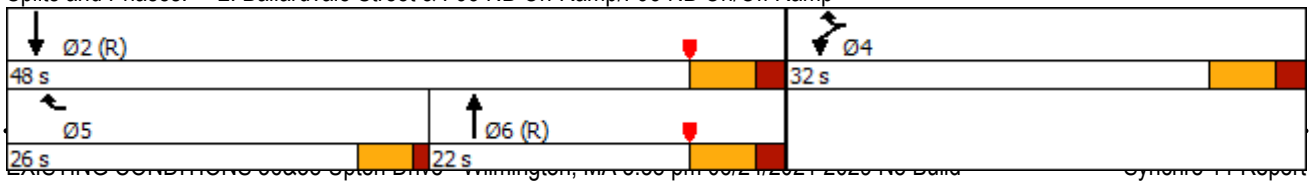
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	192	0	956	0	404	39	0	1604	744
Future Volume (vph)	0	0	0	192	0	956	0	404	39	0	1604	744
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1787	0	2617	0	3261	1830	0	3574	1546
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1787	0	2617	0	3261	1830	0	3574	1546
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									184			707
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	7%	0%	0%	1%	1%
Adj. Flow (vph)	0	0	0	209	0	1039	0	439	42	0	1743	809
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	209	0	1039	0	439	42	0	1743	809
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				32.0				22.0			48.0	
Total Split (%)				40.0%				27.5%			60.0%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				C-Min			C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	9.5
Total Split (s)	26.0
Total Split (%)	33%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	209	1039	439	42	1743	809
v/c Ratio	0.36	0.72	0.45	0.02	0.93	0.52
Control Delay	22.8	16.1	26.0	0.0	28.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	16.1	26.0	0.0	28.7	1.3
Queue Length 50th (ft)	79	218	106	0	398	0
Queue Length 95th (ft)	136	209	166	0	#581	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	583	1705	971	1830	1876	1546
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.61	0.45	0.02	0.93	0.52

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)	0	0	0	192	0	956	0	404	39	0	1604	744
Future Volume (vph)	0	0	0	192	0	956	0	404	39	0	1604	744
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1787		2617		3261	1830		3574	1546
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1787		2617		3261	1830		3574	1546
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	209	0	1039	0	439	42	0	1743	809
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	209	0	1039	0	439	42	0	1743	809
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	7%	0%	0%	1%	1%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				26.1		45.7		23.8	80.0		41.9	80.0
Effective Green, g (s)				26.1		45.7		23.8	80.0		41.9	80.0
Actuated g/C Ratio				0.33		0.57		0.30	1.00		0.52	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				583		1494		970	1830		1871	1546
v/s Ratio Prot				0.12		c0.40		0.13			c0.49	
v/s Ratio Perm									0.02			0.52
v/c Ratio				0.36		0.70		0.45	0.02		0.93	0.52
Uniform Delay, d1				20.6		12.2		22.8	0.0		17.7	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.4		1.4		1.5	0.0		9.9	1.3
Delay (s)				20.9		13.6		24.4	0.0		27.6	1.3
Level of Service				C		B		C	A		C	A
Approach Delay (s)		0.0			14.9			22.3			19.3	
Approach LOS		A			B			C			B	

Intersection Summary

HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

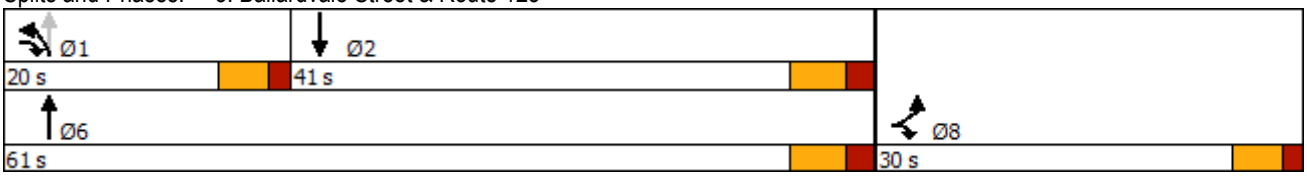
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	424	1409	289	1071	939	94
Future Volume (vph)	424	1409	289	1071	939	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.986	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	2787	2870	1863	3502	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	2787	2870	1863	3502	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		55			13	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Adj. Flow (vph)	456	1515	311	1152	1010	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	456	1515	311	1152	1111	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	30.0		20.0	61.0	41.0	
Total Split (%)	33.0%		22.0%	67.0%	45.1%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 91
Actuated Cycle Length: 91
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	456	1515	311	1152	1111
v/c Ratio	0.94	1.08	0.66	1.02	0.82
Control Delay	62.1	71.7	43.0	53.0	31.1
Queue Delay	0.0	0.0	0.0	1.8	0.0
Total Delay	62.1	71.7	43.0	54.7	31.1
Queue Length 50th (ft)	256	~549	87	~668	293
Queue Length 95th (ft)	#442	#697	131	#955	378
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	486	1405	473	1125	1354
Starvation Cap Reductn	0	0	0	6	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	1.08	0.66	1.03	0.82

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	424	1409	289	1071	939	94
Future Volume (vph)	424	1409	289	1071	939	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	2787	2870	1863	3503	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	2787	2870	1863	3503	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	456	1515	311	1152	1010	101
RTOR Reduction (vph)	0	28	0	0	8	0
Lane Group Flow (vph)	456	1487	311	1152	1103	0
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Actuated Green, G (s)	25.0	45.0	15.0	55.0	35.0	
Effective Green, g (s)	25.0	45.0	15.0	55.0	35.0	
Actuated g/C Ratio	0.27	0.49	0.16	0.60	0.38	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	486	1378	473	1125	1347	
v/s Ratio Prot	0.26	c0.53	0.11	c0.62	0.31	
v/s Ratio Perm						
v/c Ratio	0.94	1.08	0.66	1.02	0.82	
Uniform Delay, d1	32.2	23.0	35.6	18.0	25.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.6	48.7	2.5	33.1	3.8	
Delay (s)	57.8	71.7	38.1	51.1	29.0	
Level of Service	E	E	D	D	C	
Approach Delay (s)	68.5			48.3	29.0	
Approach LOS	E			D	C	

Intersection Summary

HCM 2000 Control Delay	52.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

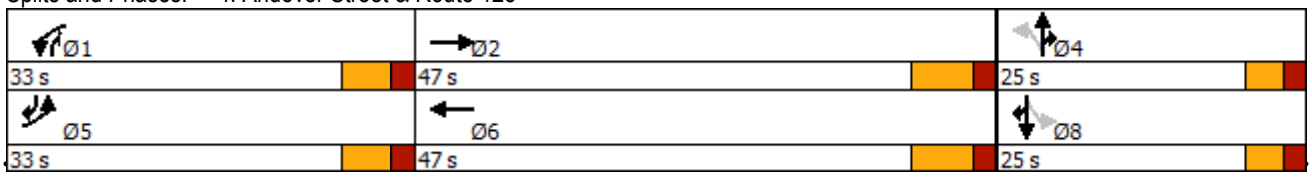
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	1250	73	56	474	33	32	144	409	129	120	527
Future Volume (vph)	172	1250	73	56	474	33	32	144	409	129	120	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1641	3544	0	1770	3465	0	0	1858	1599	0	1772	1583
Flt Permitted	0.950			0.950				0.789			0.631	
Satd. Flow (perm)	1641	3544	0	1770	3465	0	0	1479	1599	0	1147	1583
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		7										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			192	
Travel Time (s)		18.9			8.3			12.1			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Adj. Flow (vph)	181	1316	77	59	499	35	34	152	431	136	126	555
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	1393	0	59	534	0	0	186	431	0	262	555
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	25.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 89.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	181	1393	59	534	186	431	262	555
v/c Ratio	0.62	0.87	0.27	0.39	0.56	0.65	1.02	0.75
Control Delay	42.5	30.7	37.6	21.5	39.5	25.9	99.2	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	30.7	37.6	21.5	39.5	25.9	99.2	26.0
Queue Length 50th (ft)	92	335	31	108	89	188	142	232
Queue Length 95th (ft)	156	#599	66	185	182	286	#347	354
Internal Link Dist (ft)		890		526	540		112	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	496	1593	535	1553	331	950	257	940
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.87	0.11	0.34	0.56	0.45	1.02	0.59

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)	172	1250	73	56	474	33	32	144	409	129	120	527
Future Volume (vph)	172	1250	73	56	474	33	32	144	409	129	120	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.97	1.00
Satd. Flow (prot)	1641	3543		1770	3466			1857	1599		1772	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.79	1.00		0.63	1.00
Satd. Flow (perm)	1641	3543		1770	3466			1479	1599		1147	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	1316	77	59	499	35	34	152	431	136	126	555
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	181	1389	0	59	534	0	0	186	431	0	262	555
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	16.0	40.1		11.2	35.3			20.1	36.3		20.1	41.1
Effective Green, g (s)	16.0	40.1		11.2	35.3			20.1	36.3		20.1	41.1
Actuated g/C Ratio	0.18	0.45		0.13	0.39			0.22	0.41		0.22	0.46
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	293	1589		221	1368			332	649		257	727
v/s Ratio Prot	0.11	c0.39		0.03	0.15				0.27			c0.35
v/s Ratio Perm								0.13			c0.23	
v/c Ratio	0.62	0.87		0.27	0.39			0.56	0.66		1.02	0.76
Uniform Delay, d1	33.9	22.4		35.4	19.4			30.7	21.6		34.7	20.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.8	5.8		0.7	0.3			2.2	2.6		61.2	4.8
Delay (s)	37.7	28.2		36.0	19.6			32.9	24.2		95.9	24.9
Level of Service	D	C		D	B			C	C		F	C
Approach Delay (s)		29.3			21.2			26.8			47.6	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	173	29	320	603	5
Future Volume (vph)	3	173	29	320	603	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.999	
Flt Protected	0.950			0.996		
Satd. Flow (prot)	1925	1706	0	2039	2123	0
Flt Permitted	0.950			0.996		
Satd. Flow (perm)	1925	1706	0	2039	2123	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1277			192	1421	
Travel Time (s)	34.8			3.7	32.3	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	1%	7%	5%	1%	40%
Adj. Flow (vph)	4	211	35	390	735	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	211	0	425	741	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	173	29	320	603	5
Future Vol, veh/h	3	173	29	320	603	5
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	1	7	5	1	40
Mvmt Flow	4	211	35	390	735	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1198	738	741	0	-	0
Stage 1	738	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.263	-	-	-
Pot Cap-1 Maneuver	207	420	843	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	196	420	843	-	-	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	640	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.9	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	843	-	196	420	-	-
HCM Lane V/C Ratio	0.042	-	0.019	0.502	-	-
HCM Control Delay (s)	9.5	0	23.7	21.9	-	-
HCM Lane LOS	A	A	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	2.7	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1	385	15	0	1	22	277	0	1	92	2
Future Volume (vph)	88	1	385	15	0	1	22	277	0	1	92	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.890			0.993						0.998	
Flt Protected		0.991			0.955			0.996				
Satd. Flow (prot)	0	1869	0	0	1915	0	0	2115	0	0	2070	0
Flt Permitted		0.991			0.955			0.996				
Satd. Flow (perm)	0	1869	0	0	1915	0	0	2115	0	0	2070	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		511			525			1421			503	
Travel Time (s)		13.9			14.3			27.7			11.4	
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	2%	7%	0%	0%	19%	0%	0%	0%	3%	50%
Adj. Flow (vph)	104	1	453	18	0	1	26	326	0	1	108	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	558	0	0	19	0	0	352	0	0	111	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	10.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	88	1	385	15	0	1	22	277	0	1	92	2
Future Vol, veh/h	88	1	385	15	0	1	22	277	0	1	92	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	2	2	7	0	0	19	0	0	0	3	50
Mvmt Flow	104	1	453	18	0	1	26	326	0	1	108	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	490	489	109	716	490	326	110	0	0	326	0	0
Stage 1	111	111	-	378	378	-	-	-	-	-	-	-
Stage 2	379	378	-	338	112	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.22	7.17	6.5	6.2	4.29	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.318	3.563	4	3.3	2.371	-	-	2.2	-	-
Pot Cap-1 Maneuver	492	480	945	339	482	720	1381	-	-	1245	-	-
Stage 1	899	804	-	634	619	-	-	-	-	-	-	-
Stage 2	647	615	-	666	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	482	468	945	173	470	720	1381	-	-	1245	-	-
Mov Cap-2 Maneuver	482	468	-	173	470	-	-	-	-	-	-	-
Stage 1	878	803	-	619	605	-	-	-	-	-	-	-
Stage 2	631	601	-	346	806	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.1	27	0.6	0.1
HCM LOS	C	D		

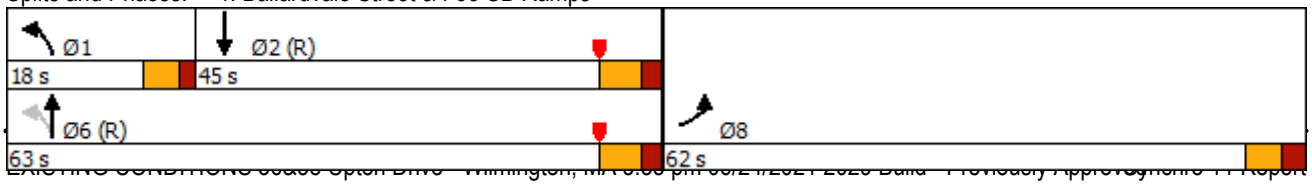
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1381	-	-	801	182	1245	-	-
HCM Lane V/C Ratio	0.019	-	-	0.696	0.103	0.001	-	-
HCM Control Delay (s)	7.7	0	-	19.1	27	7.9	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	5.8	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	578	74	78	391	166	870
Future Volume (vph)	578	74	78	391	166	870
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.950		0.610			
Satd. Flow (perm)	3433	1760	1120	1818	1727	1482
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		43				879
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Adj. Flow (vph)	584	75	79	395	168	879
Shared Lane Traffic (%)						
Lane Group Flow (vph)	584	75	79	395	168	879
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	62.0		18.0	63.0	45.0	
Total Split (%)	49.6%		14.4%	50.4%	36.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 12 (10%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	584	75	79	395	168	879
v/c Ratio	0.80	0.04	0.10	0.31	0.16	0.59
Control Delay	54.9	0.0	7.1	9.1	12.6	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	0.0	7.1	9.1	12.6	1.8
Queue Length 50th (ft)	232	0	18	115	58	0
Queue Length 95th (ft)	278	0	41	195	109	0
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1537	1760	847	1255	1056	1482
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.04	0.09	0.31	0.16	0.59

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	578	74	78	391	166	870
Future Volume (vph)	578	74	78	391	166	870
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.95	1.00	0.61	1.00	1.00	1.00
Satd. Flow (perm)	3433	1760	1121	1818	1727	1482
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	584	75	79	395	168	879
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	584	75	79	395	168	879
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	26.7	125.0	86.3	86.3	75.4	125.0
Effective Green, g (s)	26.7	125.0	86.3	86.3	75.4	125.0
Actuated g/C Ratio	0.21	1.00	0.69	0.69	0.60	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	733	1760	803	1255	1041	1482
v/s Ratio Prot	c0.17		0.00	0.22	0.10	
v/s Ratio Perm		0.04	0.06			c0.59
v/c Ratio	0.80	0.04	0.10	0.31	0.16	0.59
Uniform Delay, d1	46.6	0.0	6.4	7.7	10.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.0	0.0	0.7	0.3	1.8
Delay (s)	52.2	0.0	6.4	8.3	11.2	1.8
Level of Service	D	A	A	A	B	A
Approach Delay (s)	46.3			8.0	3.3	
Approach LOS	D			A	A	

Intersection Summary

HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

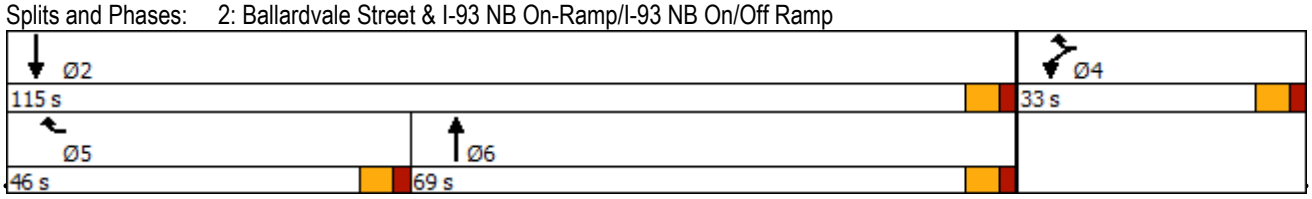
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	912	0	924	45	0	1019	271
Future Volume (vph)	0	0	0	17	0	912	0	924	45	0	1019	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									111			218
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Adj. Flow (vph)	0	0	0	18	0	940	0	953	46	0	1051	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	18	0	940	0	953	46	0	1051	279
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				33.0				69.0			115.0	
Total Split (%)				22.3%				46.6%			77.7%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				Min			Min	

Intersection Summary

Area Type: Other
Cycle Length: 148
Actuated Cycle Length: 101.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	14.0
Total Split (s)	46.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	18	940	953	46	1051	279
v/c Ratio	0.04	0.70	0.82	0.03	0.50	0.21
Control Delay	37.8	23.2	36.8	0.0	11.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	23.2	36.8	0.0	11.0	0.4
Queue Length 50th (ft)	8	253	267	0	183	0
Queue Length 95th (ft)	37	439	468	0	221	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	475	1866	2163	1830	3230	1301
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.50	0.44	0.03	0.33	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	912	0	924	45	0	1019	271
Future Volume (vph)	0	0	0	17	0	912	0	924	45	0	1019	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		2544		3323	1830		3406	1301
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		2544		3323	1830		3406	1301
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	18	0	940	0	953	46	0	1051	279
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	18	0	940	0	953	46	0	1051	279
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				26.3		53.1		36.1	101.2		62.9	101.2
Effective Green, g (s)				26.3		53.1		36.1	101.2		62.9	101.2
Actuated g/C Ratio				0.26		0.52		0.36	1.00		0.62	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				442		1334		1185	1830		2116	1301
v/s Ratio Prot				0.01		c0.37		c0.29			0.31	
v/s Ratio Perm									0.03			0.21
v/c Ratio				0.04		0.70		0.80	0.03		0.50	0.21
Uniform Delay, d1				28.0		18.1		29.4	0.0		10.5	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.0		1.7		3.8	0.0		0.1	0.4
Delay (s)				28.1		19.9		33.2	0.0		10.6	0.4
Level of Service				C		B		C	A		B	A
Approach Delay (s)		0.0			20.0			31.7			8.4	
Approach LOS		A			C			C			A	

Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

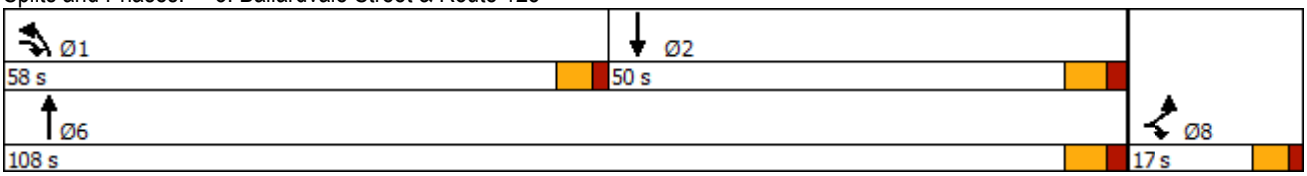
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	314	1193	643	976	488
Future Volume (vph)	63	314	1193	643	976	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.950	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1543	2311	3303	1759	3287	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1543	2311	3303	1759	3287	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		38			77	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Adj. Flow (vph)	66	327	1243	670	1017	508
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	327	1243	670	1525	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	17.0		58.0	108.0	50.0	
Total Split (%)	13.6%		46.4%	86.4%	40.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 119.3
Natural Cycle: 120
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	66	327	1243	670	1525
v/c Ratio	0.46	0.26	0.94	0.47	1.21
Control Delay	64.0	13.3	47.9	4.6	133.1
Queue Delay	0.0	0.0	0.0	0.4	0.0
Total Delay	64.0	13.3	47.9	4.9	133.1
Queue Length 50th (ft)	51	64	471	128	~794
Queue Length 95th (ft)	100	94	573	177	#939
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	155	1335	1473	1509	1265
Starvation Cap Reductn	0	0	0	367	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.24	0.84	0.59	1.21

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	314	1193	643	976	488
Future Volume (vph)	63	314	1193	643	976	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1543	2311	3303	1759	3287	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1543	2311	3303	1759	3287	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	327	1243	670	1017	508
RTOR Reduction (vph)	0	18	0	0	48	0
Lane Group Flow (vph)	66	309	1243	670	1477	0
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.1	64.1	48.0	97.2	44.2	
Effective Green, g (s)	11.1	64.1	48.0	97.2	44.2	
Actuated g/C Ratio	0.09	0.54	0.40	0.81	0.37	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	143	1241	1328	1433	1217	
v/s Ratio Prot	c0.04	0.13	c0.38	0.38	c0.45	
v/s Ratio Perm						
v/c Ratio	0.46	0.25	0.94	0.47	1.21	
Uniform Delay, d1	51.3	14.7	34.2	3.3	37.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.0	12.2	0.1	103.7	
Delay (s)	52.1	14.8	46.4	3.4	141.3	
Level of Service	D	B	D	A	F	
Approach Delay (s)	21.1			31.3	141.3	
Approach LOS	C			C	F	

Intersection Summary

HCM 2000 Control Delay	74.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	119.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

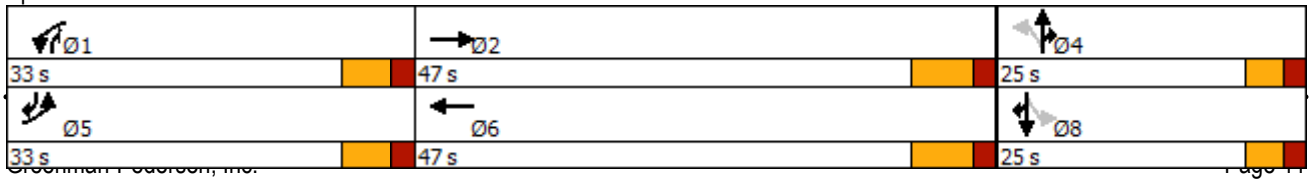
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	413	269	24	315	1154	164	103	194	91	22	82	207
Future Volume (vph)	413	269	24	315	1154	164	103	194	91	22	82	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt		0.988			0.981				0.850			0.850
Flt Protected	0.950			0.950				0.983			0.990	
Satd. Flow (prot)	1687	3334	0	1805	3466	0	0	1824	1583	0	1744	1404
Flt Permitted	0.950			0.950				0.821			0.564	
Satd. Flow (perm)	1687	3334	0	1805	3466	0	0	1524	1583	0	993	1404
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		10										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			229	
Travel Time (s)		18.9			8.3			12.1			5.2	
Confl. Bikes (#/hr)						4						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Adj. Flow (vph)	435	283	25	332	1215	173	108	204	96	23	86	218
Shared Lane Traffic (%)												
Lane Group Flow (vph)	435	308	0	332	1388	0	0	312	96	0	109	218
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	22.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	435	308	332	1388	312	96	109	218
v/c Ratio	1.00	0.22	0.83	1.05	1.08	0.13	0.58	0.31
Control Delay	84.5	20.4	56.5	72.1	116.1	15.3	52.1	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	20.4	56.5	72.1	116.1	15.3	52.1	16.8
Queue Length 50th (ft)	~294	67	211	~537	~234	35	67	82
Queue Length 95th (ft)	#498	103	306	#673	#405	61	128	135
Internal Link Dist (ft)		890		526	540		149	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	433	1394	464	1320	290	799	189	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.22	0.72	1.05	1.08	0.12	0.58	0.31

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)	413	269	24	315	1154	164	103	194	91	22	82	207
Future Volume (vph)	413	269	24	315	1154	164	103	194	91	22	82	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1687	3334		1805	3467			1824	1583		1743	1404
Flt Permitted	0.95	1.00		0.95	1.00			0.82	1.00		0.56	1.00
Satd. Flow (perm)	1687	3334		1805	3467			1524	1583		993	1404
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	435	283	25	332	1215	173	108	204	96	23	86	218
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	435	302	0	332	1388	0	0	312	96	0	109	218
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	27.0	43.7		23.3	40.0			20.0	48.3		20.0	52.0
Effective Green, g (s)	27.0	43.7		23.3	40.0			20.0	48.3		20.0	52.0
Actuated g/C Ratio	0.26	0.42		0.22	0.38			0.19	0.46		0.19	0.50
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	433	1387		400	1320			290	728		189	695
v/s Ratio Prot	c0.26	c0.09		0.18	c0.40				0.06			0.16
v/s Ratio Perm								c0.20			0.11	
v/c Ratio	1.00	0.22		0.83	1.05			1.08	0.13		0.58	0.31
Uniform Delay, d1	39.0	19.7		39.0	32.5			42.5	16.3		38.7	15.8
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	44.4	0.1		13.3	39.5			74.5	0.1		4.2	0.3
Delay (s)	83.4	19.8		52.3	72.0			117.0	16.4		42.9	16.1
Level of Service	F	B		D	E			F	B		D	B
Approach Delay (s)		57.0			68.2			93.3			25.0	
Approach LOS		E			E			F			C	

Intersection Summary

HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	46	234	537	265	13
Future Volume (vph)	3	46	234	537	265	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.994	
Flt Protected	0.950			0.985		
Satd. Flow (prot)	1925	1538	0	2038	1931	0
Flt Permitted	0.950			0.985		
Satd. Flow (perm)	1925	1538	0	2038	1931	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1258			229	1411	
Travel Time (s)	34.3			4.5	32.1	
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	12%	2%	5%	11%	8%
Adj. Flow (vph)	4	57	289	663	327	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	57	0	952	343	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	46	234	537	265	13
Future Vol, veh/h	3	46	234	537	265	13
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	12	2	5	11	8
Mvmt Flow	4	57	289	663	327	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1576	335	343	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	1241	-	-	-	-	-
Critical Hdwy	6.4	6.32	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.408	2.218	-	-	-
Pot Cap-1 Maneuver	122	685	1216	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	685	1216	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	275	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	2.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1216	-	76	685	-	-
HCM Lane V/C Ratio	0.238	-	0.049	0.083	-	-
HCM Control Delay (s)	8.9	0	54.8	10.7	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0.9	-	0.2	0.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1	28	5	0	0	365	84	13	0	205	70
Future Volume (vph)	3	1	28	5	0	0	365	84	13	0	205	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.881						0.996			0.966	
Flt Protected		0.995			0.950			0.962				
Satd. Flow (prot)	0	1476	0	0	1705	0	0	1994	0	0	2065	0
Flt Permitted		0.995			0.950			0.962				
Satd. Flow (perm)	0	1476	0	0	1705	0	0	1994	0	0	2065	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		518			544			1411			503	
Travel Time (s)		14.1			14.8			27.5			11.4	
Confl. Bikes (#/hr)						2						1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	100%	29%	20%	0%	0%	2%	8%	15%	0%	1%	0%
Adj. Flow (vph)	4	1	36	6	0	0	474	109	17	0	266	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	0	0	6	0	0	600	0	0	357	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	28	5	0	0	365	84	13	0	205	70
Future Vol, veh/h	3	1	28	5	0	0	365	84	13	0	205	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	100	29	20	0	0	2	8	15	0	1	0
Mvmt Flow	4	1	36	6	0	0	474	109	17	0	266	91

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1378	1386	312	1396	1423	118	357	0	0	126	0	0
Stage 1	312	312	-	1066	1066	-	-	-	-	-	-	-
Stage 2	1066	1074	-	330	357	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.49	7.3	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.561	3.68	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	91	669	108	137	939	1202	-	-	1473	-	-
Stage 1	703	513	-	249	301	-	-	-	-	-	-	-
Stage 2	271	201	-	647	632	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	82	52	669	67	79	939	1202	-	-	1473	-	-
Mov Cap-2 Maneuver	82	52	-	67	79	-	-	-	-	-	-	-
Stage 1	404	513	-	143	173	-	-	-	-	-	-	-
Stage 2	156	116	-	610	632	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.6	64.4	7.8	0
HCM LOS	C	F		

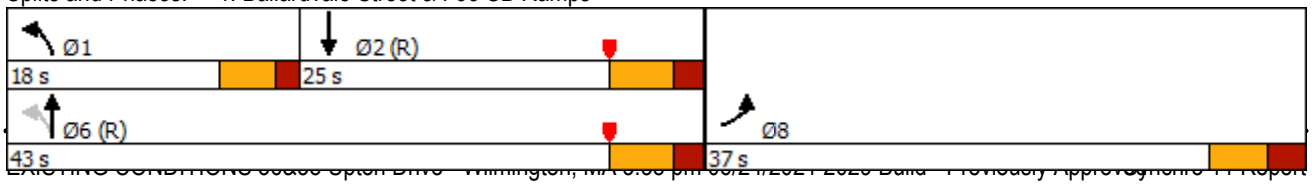
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	328	67	1473	-	-
HCM Lane V/C Ratio	0.394	-	-	0.127	0.097	-	-	-
HCM Control Delay (s)	9.9	0	-	17.6	64.4	0	-	-
HCM Lane LOS	A	A	-	C	F	A	-	-
HCM 95th %tile Q(veh)	1.9	-	-	0.4	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	189	114	31	261	679	1137
Future Volume (vph)	189	114	31	261	679	1137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.950		0.235			
Satd. Flow (perm)	3019	1830	403	1837	1881	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		124				829
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Adj. Flow (vph)	205	124	34	284	738	1236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	205	124	34	284	738	1236
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	37.0		18.0	43.0	25.0	
Total Split (%)	46.3%		22.5%	53.8%	31.3%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	205	124	34	284	738	1236
v/c Ratio	0.54	0.07	0.08	0.21	0.62	0.78
Control Delay	37.7	0.1	3.8	4.4	13.1	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	0.1	3.8	4.4	13.1	10.7
Queue Length 50th (ft)	50	0	4	37	192	462
Queue Length 95th (ft)	79	0	12	73	m225	m519
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1169	1830	495	1328	1190	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.07	0.21	0.62	0.78

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	189	114	31	261	679	1137
Future Volume (vph)	189	114	31	261	679	1137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.95	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	3019	1830	404	1837	1881	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	205	124	34	284	738	1236
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	205	124	34	284	738	1236
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	10.2	80.0	57.8	57.8	48.6	80.0
Effective Green, g (s)	10.2	80.0	57.8	57.8	48.6	80.0
Actuated g/C Ratio	0.13	1.00	0.72	0.72	0.61	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	384	1830	356	1327	1142	1583
v/s Ratio Prot	0.07		0.01	0.15	0.39	
v/s Ratio Perm		0.07	0.06			c0.78
v/c Ratio	0.53	0.07	0.10	0.21	0.65	0.78
Uniform Delay, d1	32.7	0.0	6.0	3.6	10.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.05	1.00
Incremental Delay, d2	0.7	0.1	0.0	0.4	1.3	1.8
Delay (s)	33.4	0.1	6.0	4.0	12.0	1.8
Level of Service	C	A	A	A	B	A
Approach Delay (s)	20.8			4.2	5.6	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

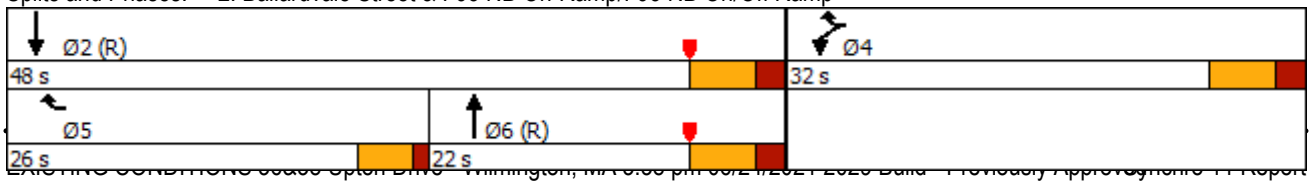
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	192	0	960	0	411	39	0	1624	757
Future Volume (vph)	0	0	0	192	0	960	0	411	39	0	1624	757
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1787	0	2617	0	3261	1830	0	3574	1546
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1787	0	2617	0	3261	1830	0	3574	1546
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									184			710
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	7%	0%	0%	1%	1%
Adj. Flow (vph)	0	0	0	209	0	1043	0	447	42	0	1765	823
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	209	0	1043	0	447	42	0	1765	823
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				32.0				22.0			48.0	
Total Split (%)				40.0%				27.5%			60.0%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				C-Min			C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	9.5
Total Split (s)	26.0
Total Split (%)	33%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	209	1043	447	42	1765	823
v/c Ratio	0.36	0.72	0.46	0.02	0.94	0.53
Control Delay	22.8	16.1	26.2	0.0	30.1	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	16.1	26.2	0.0	30.1	1.3
Queue Length 50th (ft)	79	219	109	0	407	0
Queue Length 95th (ft)	136	210	168	0	#593	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	582	1704	968	1830	1876	1546
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.61	0.46	0.02	0.94	0.53

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)	0	0	0	192	0	960	0	411	39	0	1624	757
Future Volume (vph)	0	0	0	192	0	960	0	411	39	0	1624	757
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1787		2617		3261	1830		3574	1546
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1787		2617		3261	1830		3574	1546
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	209	0	1043	0	447	42	0	1765	823
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	209	0	1043	0	447	42	0	1765	823
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	7%	0%	0%	1%	1%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				26.1		45.7		23.8	80.0		41.9	80.0
Effective Green, g (s)				26.1		45.7		23.8	80.0		41.9	80.0
Actuated g/C Ratio				0.33		0.57		0.30	1.00		0.52	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				583		1494		970	1830		1871	1546
v/s Ratio Prot				0.12		c0.40		0.14			c0.49	
v/s Ratio Perm									0.02			0.53
v/c Ratio				0.36		0.70		0.46	0.02		0.94	0.53
Uniform Delay, d1				20.6		12.2		22.9	0.0		17.9	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.4		1.4		1.6	0.0		11.1	1.3
Delay (s)				20.9		13.7		24.5	0.0		29.1	1.3
Level of Service				C		B		C	A		C	A
Approach Delay (s)		0.0			14.9			22.4			20.3	
Approach LOS		A			B			C			C	

Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

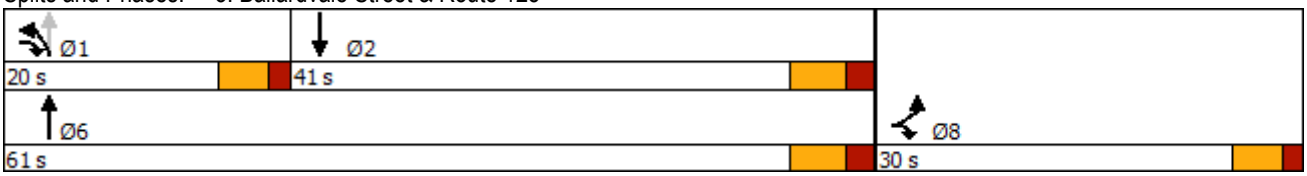
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	424	1409	289	1082	972	94
Future Volume (vph)	424	1409	289	1082	972	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	2787	2870	1863	3506	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	2787	2870	1863	3506	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		48			13	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Adj. Flow (vph)	456	1515	311	1163	1045	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	456	1515	311	1163	1146	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	30.0		20.0	61.0	41.0	
Total Split (%)	33.0%		22.0%	67.0%	45.1%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 91
Actuated Cycle Length: 91
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	456	1515	311	1163	1146
v/c Ratio	0.94	1.08	0.66	1.03	0.85
Control Delay	62.1	72.7	43.0	55.9	32.4
Queue Delay	0.0	0.0	0.0	1.9	0.0
Total Delay	62.1	72.7	43.0	57.8	32.4
Queue Length 50th (ft)	256	~552	87	~725	306
Queue Length 95th (ft)	#442	#700	131	#968	395
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	486	1402	473	1125	1356
Starvation Cap Reductn	0	0	0	6	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	1.08	0.66	1.04	0.85

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	424	1409	289	1082	972	94
Future Volume (vph)	424	1409	289	1082	972	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	2787	2870	1863	3506	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	2787	2870	1863	3506	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	456	1515	311	1163	1045	101
RTOR Reduction (vph)	0	24	0	0	8	0
Lane Group Flow (vph)	456	1491	311	1163	1138	0
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Actuated Green, G (s)	25.0	45.0	15.0	55.0	35.0	
Effective Green, g (s)	25.0	45.0	15.0	55.0	35.0	
Actuated g/C Ratio	0.27	0.49	0.16	0.60	0.38	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	486	1378	473	1125	1348	
v/s Ratio Prot	0.26	c0.53	0.11	c0.62	0.32	
v/s Ratio Perm						
v/c Ratio	0.94	1.08	0.66	1.03	0.84	
Uniform Delay, d1	32.2	23.0	35.6	18.0	25.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.6	49.6	2.5	35.9	4.8	
Delay (s)	57.8	72.6	38.1	53.9	30.3	
Level of Service	E	E	D	D	C	
Approach Delay (s)	69.2			50.6	30.3	
Approach LOS	E			D	C	

Intersection Summary

HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

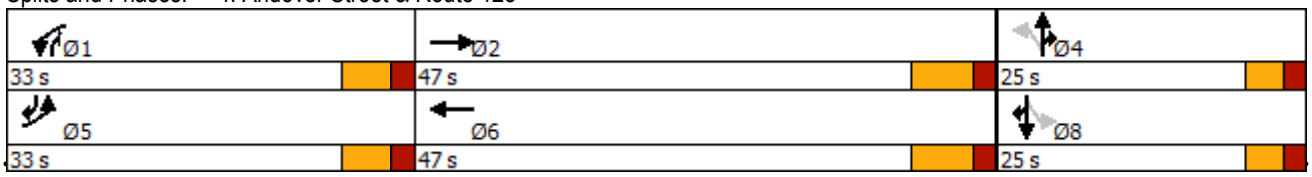
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	1250	73	56	474	35	32	146	409	133	124	560
Future Volume (vph)	183	1250	73	56	474	35	32	146	409	133	124	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1641	3544	0	1770	3465	0	0	1858	1599	0	1772	1583
Flt Permitted	0.950			0.950				0.768			0.627	
Satd. Flow (perm)	1641	3544	0	1770	3465	0	0	1440	1599	0	1140	1583
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		7										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			192	
Travel Time (s)		18.9			8.3			12.1			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Adj. Flow (vph)	193	1316	77	59	499	37	34	154	431	140	131	589
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	1393	0	59	536	0	0	188	431	0	271	589
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	25.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 89.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	193	1393	59	536	188	431	271	589
v/c Ratio	0.63	0.87	0.27	0.40	0.58	0.65	1.06	0.78
Control Delay	42.3	30.7	37.6	22.1	40.5	25.9	110.2	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	30.7	37.6	22.1	40.5	25.9	110.2	27.2
Queue Length 50th (ft)	99	335	31	109	90	188	~154	254
Queue Length 95th (ft)	166	#599	66	185	184	286	#363	388
Internal Link Dist (ft)		890		526	540		112	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	496	1593	535	1553	322	950	255	940
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.87	0.11	0.35	0.58	0.45	1.06	0.63

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)	183	1250	73	56	474	35	32	146	409	133	124	560
Future Volume (vph)	183	1250	73	56	474	35	32	146	409	133	124	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.97	1.00
Satd. Flow (prot)	1641	3543		1770	3464			1858	1599		1772	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.77	1.00		0.63	1.00
Satd. Flow (perm)	1641	3543		1770	3464			1439	1599		1140	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	193	1316	77	59	499	37	34	154	431	140	131	589
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	193	1389	0	59	536	0	0	188	431	0	271	589
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	16.7	40.1		11.2	34.6			20.1	36.3		20.1	41.8
Effective Green, g (s)	16.7	40.1		11.2	34.6			20.1	36.3		20.1	41.8
Actuated g/C Ratio	0.19	0.45		0.13	0.39			0.22	0.41		0.22	0.47
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	306	1589		221	1340			323	649		256	740
v/s Ratio Prot	0.12	c0.39		0.03	0.15				0.27			c0.37
v/s Ratio Perm								0.13			c0.24	
v/c Ratio	0.63	0.87		0.27	0.40			0.58	0.66		1.06	0.80
Uniform Delay, d1	33.5	22.4		35.4	19.9			30.9	21.6		34.7	20.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	4.2	5.8		0.7	0.3			2.7	2.6		72.5	5.9
Delay (s)	37.7	28.2		36.0	20.1			33.6	24.2		107.2	26.1
Level of Service	D	C		D	C			C	C		F	C
Approach Delay (s)		29.4			21.7			27.0			51.7	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	214	44	320	603	5
Future Volume (vph)	3	214	44	320	603	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.999	
Flt Protected	0.950			0.994		
Satd. Flow (prot)	1925	1706	0	2034	2123	0
Flt Permitted	0.950			0.994		
Satd. Flow (perm)	1925	1706	0	2034	2123	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1277			192	1421	
Travel Time (s)	34.8			3.7	32.3	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	1%	7%	5%	1%	40%
Adj. Flow (vph)	4	261	54	390	735	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	261	0	444	741	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	214	44	320	603	5
Future Vol, veh/h	3	214	44	320	603	5
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	1	7	5	1	40
Mvmt Flow	4	261	54	390	735	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1236	738	741	0	-	0
Stage 1	738	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.263	-	-	-
Pot Cap-1 Maneuver	196	420	843	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	180	420	843	-	-	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	437	-	-	-	-	-
Stage 2	615	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.6	1.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	843	-	180	420	-	-
HCM Lane V/C Ratio	0.064	-	0.02	0.621	-	-
HCM Control Delay (s)	9.6	0	25.4	26.6	-	-
HCM Lane LOS	A	A	D	D	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	4.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1	385	15	0	1	22	277	0	1	92	3
Future Volume (vph)	90	1	385	15	0	1	22	277	0	1	92	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.891			0.993						0.995	
Flt Protected		0.991			0.955			0.996				
Satd. Flow (prot)	0	1871	0	0	1915	0	0	2115	0	0	2048	0
Flt Permitted		0.991			0.955			0.996				
Satd. Flow (perm)	0	1871	0	0	1915	0	0	2115	0	0	2048	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		511			525			1421			503	
Travel Time (s)		13.9			14.3			27.7			11.4	
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	2%	7%	0%	0%	19%	0%	0%	0%	3%	50%
Adj. Flow (vph)	106	1	453	18	0	1	26	326	0	1	108	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	560	0	0	19	0	0	352	0	0	113	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	90	1	385	15	0	1	22	277	0	1	92	3
Future Vol, veh/h	90	1	385	15	0	1	22	277	0	1	92	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	2	2	7	0	0	19	0	0	0	3	50
Mvmt Flow	106	1	453	18	0	1	26	326	0	1	108	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	491	490	110	717	492	326	112	0	0	326	0	0
Stage 1	112	112	-	378	378	-	-	-	-	-	-	-
Stage 2	379	378	-	339	114	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.22	7.17	6.5	6.2	4.29	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.318	3.563	4	3.3	2.371	-	-	2.2	-	-
Pot Cap-1 Maneuver	491	479	943	338	481	720	1378	-	-	1245	-	-
Stage 1	898	803	-	634	619	-	-	-	-	-	-	-
Stage 2	647	615	-	665	805	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	481	468	943	172	469	720	1378	-	-	1245	-	-
Mov Cap-2 Maneuver	481	468	-	172	469	-	-	-	-	-	-	-
Stage 1	877	802	-	619	605	-	-	-	-	-	-	-
Stage 2	631	601	-	345	804	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.5	27.2	0.6	0.1
HCM LOS	C	D		

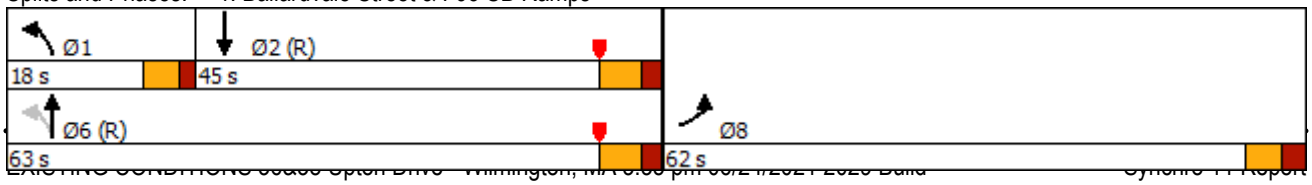
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1378	-	-	797	181	1245	-	-
HCM Lane V/C Ratio	0.019	-	-	0.703	0.104	0.001	-	-
HCM Control Delay (s)	7.7	0	-	19.5	27.2	7.9	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	5.9	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	599	74	78	401	168	875
Future Volume (vph)	599	74	78	401	168	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.950		0.609			
Satd. Flow (perm)	3433	1760	1119	1818	1727	1482
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		42				884
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Adj. Flow (vph)	605	75	79	405	170	884
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	75	79	405	170	884
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	62.0		18.0	63.0	45.0	
Total Split (%)	49.6%		14.4%	50.4%	36.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 12 (10%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	605	75	79	405	170	884
v/c Ratio	0.80	0.04	0.10	0.33	0.16	0.60
Control Delay	54.4	0.0	7.4	9.6	13.1	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	0.0	7.4	9.6	13.1	1.8
Queue Length 50th (ft)	240	0	19	121	60	0
Queue Length 95th (ft)	286	0	42	206	113	0
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1537	1760	839	1243	1044	1482
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.04	0.09	0.33	0.16	0.60

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	599	74	78	401	168	875
Future Volume (vph)	599	74	78	401	168	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1760	1745	1818	1727	1482
Flt Permitted	0.95	1.00	0.61	1.00	1.00	1.00
Satd. Flow (perm)	3433	1760	1118	1818	1727	1482
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	605	75	79	405	170	884
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	605	75	79	405	170	884
Heavy Vehicles (%)	2%	4%	0%	1%	10%	9%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	27.5	125.0	85.5	85.5	74.6	125.0
Effective Green, g (s)	27.5	125.0	85.5	85.5	74.6	125.0
Actuated g/C Ratio	0.22	1.00	0.68	0.68	0.60	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	755	1760	794	1243	1030	1482
v/s Ratio Prot	c0.18		0.00	0.22	0.10	
v/s Ratio Perm		0.04	0.06			c0.60
v/c Ratio	0.80	0.04	0.10	0.33	0.17	0.60
Uniform Delay, d1	46.2	0.0	6.6	8.0	11.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.0	0.0	0.7	0.3	1.8
Delay (s)	51.9	0.0	6.7	8.7	11.6	1.8
Level of Service	D	A	A	A	B	A
Approach Delay (s)	46.2			8.4	3.4	
Approach LOS	D			A	A	

Intersection Summary

HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

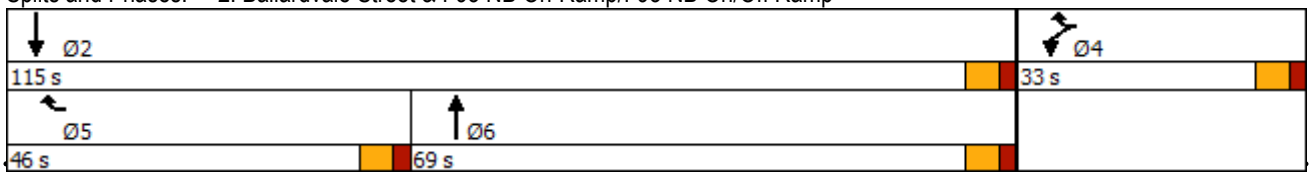
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	931	0	955	45	0	1026	276
Future Volume (vph)	0	0	0	17	0	931	0	955	45	0	1026	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1703	0	2544	0	3323	1830	0	3406	1301
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									111			222
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Adj. Flow (vph)	0	0	0	18	0	960	0	985	46	0	1058	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	18	0	960	0	985	46	0	1058	285
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				33.0				69.0			115.0	
Total Split (%)				22.3%				46.6%			77.7%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				Min			Min	

Intersection Summary

Area Type: Other
Cycle Length: 148
Actuated Cycle Length: 105.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	14.0
Total Split (s)	46.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	18	960	985	46	1058	285
v/c Ratio	0.04	0.73	0.82	0.03	0.49	0.22
Control Delay	39.6	25.1	37.1	0.0	10.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	25.1	37.1	0.0	10.7	0.4
Queue Length 50th (ft)	9	274	292	0	185	0
Queue Length 95th (ft)	37	469	488	0	222	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	457	1806	2085	1830	3192	1301
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.53	0.47	0.03	0.33	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	931	0	955	45	0	1026	276
Future Volume (vph)	0	0	0	17	0	931	0	955	45	0	1026	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		2544		3323	1830		3406	1301
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		2544		3323	1830		3406	1301
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	18	0	960	0	985	46	0	1058	285
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	18	0	960	0	985	46	0	1058	285
Heavy Vehicles (%)	0%	0%	0%	6%	0%	8%	0%	5%	0%	0%	6%	20%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				26.6		54.3		38.6	104.9		66.3	104.9
Effective Green, g (s)				26.6		54.3		38.6	104.9		66.3	104.9
Actuated g/C Ratio				0.25		0.52		0.37	1.00		0.63	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				431		1316		1222	1830		2152	1301
v/s Ratio Prot				0.01		c0.38		c0.30			0.31	
v/s Ratio Perm									0.03			0.22
v/c Ratio				0.04		0.73		0.81	0.03		0.49	0.22
Uniform Delay, d1				29.5		19.6		29.8	0.0		10.3	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.0		2.1		3.8	0.0		0.1	0.4
Delay (s)				29.6		21.7		33.5	0.0		10.4	0.4
Level of Service				C		C		C	A		B	A
Approach Delay (s)		0.0			21.8			32.0			8.3	
Approach LOS		A			C			C			A	

Intersection Summary

HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

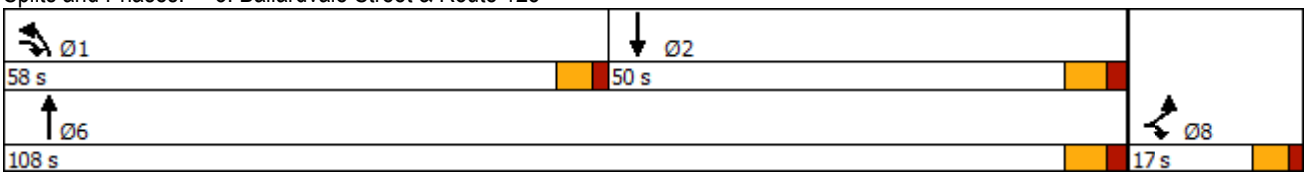
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	314	1193	693	988	488
Future Volume (vph)	63	314	1193	693	988	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.950	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1543	2311	3303	1759	3287	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1543	2311	3303	1759	3287	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		36			75	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Adj. Flow (vph)	66	327	1243	722	1029	508
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	327	1243	722	1537	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	17.0		58.0	108.0	50.0	
Total Split (%)	13.6%		46.4%	86.4%	40.0%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 119.3
Natural Cycle: 120
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	66	327	1243	722	1537
v/c Ratio	0.46	0.26	0.94	0.50	1.22
Control Delay	64.0	13.4	47.9	4.9	137.4
Queue Delay	0.0	0.0	0.0	0.4	0.0
Total Delay	64.0	13.4	47.9	5.3	137.4
Queue Length 50th (ft)	51	64	471	145	~805
Queue Length 95th (ft)	100	94	573	200	#951
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	155	1335	1473	1509	1264
Starvation Cap Reductn	0	0	0	347	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.24	0.84	0.62	1.22

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	314	1193	693	988	488
Future Volume (vph)	63	314	1193	693	988	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1543	2311	3303	1759	3288	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1543	2311	3303	1759	3288	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	327	1243	722	1029	508
RTOR Reduction (vph)	0	17	0	0	47	0
Lane Group Flow (vph)	66	310	1243	722	1490	0
Heavy Vehicles (%)	17%	23%	6%	8%	5%	3%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.1	64.1	48.0	97.2	44.2	
Effective Green, g (s)	11.1	64.1	48.0	97.2	44.2	
Actuated g/C Ratio	0.09	0.54	0.40	0.81	0.37	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	143	1241	1328	1433	1218	
v/s Ratio Prot	c0.04	0.13	c0.38	0.41	c0.45	
v/s Ratio Perm						
v/c Ratio	0.46	0.25	0.94	0.50	1.22	
Uniform Delay, d1	51.3	14.8	34.2	3.5	37.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.0	12.2	0.1	107.9	
Delay (s)	52.1	14.8	46.4	3.6	145.5	
Level of Service	D	B	D	A	F	
Approach Delay (s)	21.1			30.6	145.5	
Approach LOS	C			C	F	

Intersection Summary

HCM 2000 Control Delay	75.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	119.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

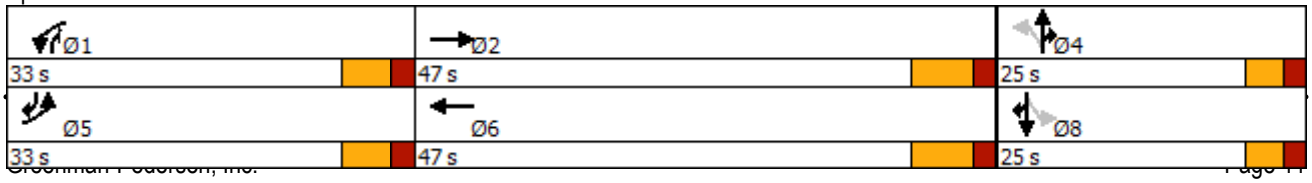
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	463	269	24	315	1154	171	103	201	91	24	84	219
Future Volume (vph)	463	269	24	315	1154	171	103	201	91	24	84	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt		0.988			0.981				0.850			0.850
Flt Protected	0.950			0.950				0.983			0.989	
Satd. Flow (prot)	1687	3334	0	1805	3466	0	0	1825	1583	0	1741	1404
Flt Permitted	0.950			0.950				0.814			0.519	
Satd. Flow (perm)	1687	3334	0	1805	3466	0	0	1511	1583	0	914	1404
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		10										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			229	
Travel Time (s)		18.9			8.3			12.1			5.2	
Confl. Bikes (#/hr)						4						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Adj. Flow (vph)	487	283	25	332	1215	180	108	212	96	25	88	231
Shared Lane Traffic (%)												
Lane Group Flow (vph)	487	308	0	332	1395	0	0	320	96	0	113	231
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	22.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Natural Cycle: 120
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	487	308	332	1395	320	96	113	231
v/c Ratio	1.12	0.22	0.83	1.06	1.11	0.13	0.65	0.33
Control Delay	119.1	20.4	56.5	73.8	128.1	15.3	58.2	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.1	20.4	56.5	73.8	128.1	15.3	58.2	17.0
Queue Length 50th (ft)	~379	67	211	~542	~247	35	71	88
Queue Length 95th (ft)	#580	103	306	#679	#420	61	#150	143
Internal Link Dist (ft)		890		526	540		149	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	433	1394	464	1320	287	799	174	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.22	0.72	1.06	1.11	0.12	0.65	0.33

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)	463	269	24	315	1154	171	103	201	91	24	84	219
Future Volume (vph)	463	269	24	315	1154	171	103	201	91	24	84	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1687	3334		1805	3464			1826	1583		1741	1404
Flt Permitted	0.95	1.00		0.95	1.00			0.81	1.00		0.52	1.00
Satd. Flow (perm)	1687	3334		1805	3464			1511	1583		914	1404
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	487	283	25	332	1215	180	108	212	96	25	88	231
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	487	302	0	332	1395	0	0	320	96	0	113	231
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	7%	6%	18%	0%	2%	1%	5%	1%	2%	9%	3%	15%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	27.0	43.7		23.3	40.0			20.0	48.3		20.0	52.0
Effective Green, g (s)	27.0	43.7		23.3	40.0			20.0	48.3		20.0	52.0
Actuated g/C Ratio	0.26	0.42		0.22	0.38			0.19	0.46		0.19	0.50
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	433	1387		400	1319			287	728		174	695
v/s Ratio Prot	c0.29	c0.09		0.18	c0.40				0.06			0.16
v/s Ratio Perm								c0.21			0.12	
v/c Ratio	1.12	0.22		0.83	1.06			1.11	0.13		0.65	0.33
Uniform Delay, d1	39.0	19.7		39.0	32.5			42.5	16.3		39.3	16.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	81.8	0.1		13.3	41.6			87.6	0.1		8.1	0.3
Delay (s)	120.8	19.8		52.3	74.1			130.1	16.4		47.4	16.3
Level of Service	F	B		D	E			F	B		D	B
Approach Delay (s)		81.7			69.9			103.9			26.5	
Approach LOS		F			E			F			C	

Intersection Summary

HCM 2000 Control Delay	72.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	62	298	537	265	13
Future Volume (vph)	3	62	298	537	265	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.994	
Flt Protected	0.950			0.982		
Satd. Flow (prot)	1925	1538	0	2035	1931	0
Flt Permitted	0.950			0.982		
Satd. Flow (perm)	1925	1538	0	2035	1931	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1258			229	1411	
Travel Time (s)	34.3			4.5	32.1	
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	12%	2%	5%	11%	8%
Adj. Flow (vph)	4	77	368	663	327	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	77	0	1031	343	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	62	298	537	265	13
Future Vol, veh/h	3	62	298	537	265	13
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	12	2	5	11	8
Mvmt Flow	4	77	368	663	327	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1734	335	343	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	1399	-	-	-	-	-
Critical Hdwy	6.4	6.32	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.408	2.218	-	-	-
Pot Cap-1 Maneuver	98	685	1216	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	51	685	1216	-	-	-
Mov Cap-2 Maneuver	51	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	231	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.1	3.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1216	-	51	685	-	-
HCM Lane V/C Ratio	0.303	-	0.073	0.112	-	-
HCM Control Delay (s)	9.2	0	81	10.9	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	1.3	-	0.2	0.4	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1	28	5	0	0	365	84	13	0	205	74
Future Volume (vph)	3	1	28	5	0	0	365	84	13	0	205	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.881						0.996			0.964	
Flt Protected		0.995			0.950			0.962				
Satd. Flow (prot)	0	1476	0	0	1705	0	0	1994	0	0	2061	0
Flt Permitted		0.995			0.950			0.962				
Satd. Flow (perm)	0	1476	0	0	1705	0	0	1994	0	0	2061	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		518			544			1411			503	
Travel Time (s)		14.1			14.8			27.5			11.4	
Confl. Bikes (#/hr)						2						1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	100%	29%	20%	0%	0%	2%	8%	15%	0%	1%	0%
Adj. Flow (vph)	4	1	36	6	0	0	474	109	17	0	266	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	0	0	6	0	0	600	0	0	362	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	28	5	0	0	365	84	13	0	205	74
Future Vol, veh/h	3	1	28	5	0	0	365	84	13	0	205	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	100	29	20	0	0	2	8	15	0	1	0
Mvmt Flow	4	1	36	6	0	0	474	109	17	0	266	96

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1380	1388	314	1399	1428	118	362	0	0	126	0	0
Stage 1	314	314	-	1066	1066	-	-	-	-	-	-	-
Stage 2	1066	1074	-	333	362	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.49	7.3	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.561	3.68	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	91	668	108	136	939	1197	-	-	1473	-	-
Stage 1	701	512	-	249	301	-	-	-	-	-	-	-
Stage 2	271	201	-	644	629	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	82	52	668	67	78	939	1197	-	-	1473	-	-
Mov Cap-2 Maneuver	82	52	-	67	78	-	-	-	-	-	-	-
Stage 1	402	512	-	143	172	-	-	-	-	-	-	-
Stage 2	155	115	-	607	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.6	64.4	7.9	0
HCM LOS	C	F		

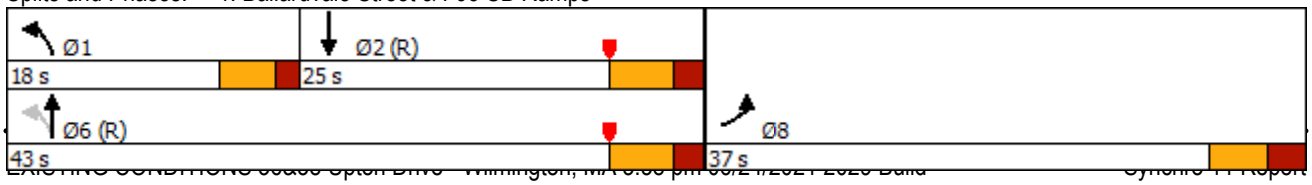
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1197	-	-	327	67	1473	-	-
HCM Lane V/C Ratio	0.396	-	-	0.127	0.097	-	-	-
HCM Control Delay (s)	10	0	-	17.6	64.4	0	-	-
HCM Lane LOS	A	A	-	C	F	A	-	-
HCM 95th %tile Q(veh)	1.9	-	-	0.4	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	195	114	31	265	689	1155
Future Volume (vph)	195	114	31	265	689	1155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	11	11	12	12
Storage Length (ft)	0	125	170			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		75			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.950		0.228			
Satd. Flow (perm)	3019	1830	391	1837	1881	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		124				829
Link Speed (mph)	30			35	35	
Link Distance (ft)	753			772	351	
Travel Time (s)	17.1			15.0	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Adj. Flow (vph)	212	124	34	288	749	1255
Shared Lane Traffic (%)						
Lane Group Flow (vph)	212	124	34	288	749	1255
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	8.0		7.0	10.0	10.0	
Minimum Split (s)	15.0		12.0	16.0	16.0	
Total Split (s)	37.0		18.0	43.0	25.0	
Total Split (%)	46.3%		22.5%	53.8%	31.3%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Min	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 2 (3%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Ballardvale Street & I-93 SB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	212	124	34	288	749	1255
v/c Ratio	0.55	0.07	0.09	0.22	0.63	0.79
Control Delay	37.7	0.1	3.8	4.5	13.3	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	0.1	3.8	4.5	13.3	11.1
Queue Length 50th (ft)	52	0	4	38	199	478
Queue Length 95th (ft)	81	0	12	75	m225	m519
Internal Link Dist (ft)	673			692	271	
Turn Bay Length (ft)		125	170			
Base Capacity (vph)	1169	1830	488	1324	1187	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.07	0.22	0.63	0.79

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	195	114	31	265	689	1155
Future Volume (vph)	195	114	31	265	689	1155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	11	11	12	12
Total Lost time (s)	6.0	4.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3019	1830	1631	1837	1881	1583
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	3019	1830	392	1837	1881	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	212	124	34	288	749	1255
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	212	124	34	288	749	1255
Heavy Vehicles (%)	16%	0%	7%	0%	1%	2%
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free	6			Free
Actuated Green, G (s)	10.3	80.0	57.7	57.7	48.5	80.0
Effective Green, g (s)	10.3	80.0	57.7	57.7	48.5	80.0
Actuated g/C Ratio	0.13	1.00	0.72	0.72	0.61	1.00
Clearance Time (s)	6.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	388	1830	347	1324	1140	1583
v/s Ratio Prot	0.07		0.01	0.16	0.40	
v/s Ratio Perm		0.07	0.07			c0.79
v/c Ratio	0.55	0.07	0.10	0.22	0.66	0.79
Uniform Delay, d1	32.7	0.0	6.2	3.7	10.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.05	1.00
Incremental Delay, d2	0.8	0.1	0.0	0.4	1.3	1.8
Delay (s)	33.5	0.1	6.3	4.1	12.1	1.8
Level of Service	C	A	A	A	B	A
Approach Delay (s)	21.2			4.3	5.7	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

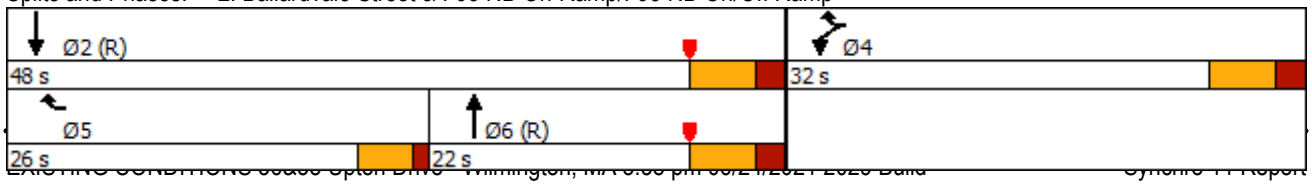
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	192	0	966	0	421	39	0	1652	776
Future Volume (vph)	0	0	0	192	0	966	0	421	39	0	1652	776
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	11	11	16	12	12	11
Storage Length (ft)	0		0	150		0	0		0	0		420
Storage Lanes	0		0	1		2	0		1	0		1
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850			0.850			0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1787	0	2617	0	3261	1830	0	3574	1546
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1787	0	2617	0	3261	1830	0	3574	1546
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)									184			715
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		499			1438			373			803	
Travel Time (s)		11.3			32.7			7.3			15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	7%	0%	0%	1%	1%
Adj. Flow (vph)	0	0	0	209	0	1050	0	458	42	0	1796	843
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	209	0	1050	0	458	42	0	1796	843
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Detector Phase				4		4 5		6			2	
Switch Phase												
Minimum Initial (s)				6.0				8.0			15.0	
Minimum Split (s)				12.0				14.0			21.0	
Total Split (s)				32.0				22.0			48.0	
Total Split (%)				40.0%				27.5%			60.0%	
Yellow Time (s)				4.0				4.0			4.0	
All-Red Time (s)				2.0				2.0			2.0	
Lost Time Adjust (s)				0.0				0.0			0.0	
Total Lost Time (s)				6.0				6.0			6.0	
Lead/Lag								Lag				
Lead-Lag Optimize?								Yes				
Recall Mode				None				C-Min			C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 2: Ballardvale Street & I-93 NB On-Ramp/I-93 NB On/Off Ramp



Lane Group	Ø5
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	
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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	9.5
Total Split (s)	26.0
Total Split (%)	33%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	209	1050	458	42	1796	843
v/c Ratio	0.36	0.72	0.47	0.02	0.96	0.55
Control Delay	22.8	16.2	26.6	0.0	32.5	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	16.2	26.6	0.0	32.5	1.4
Queue Length 50th (ft)	79	220	112	0	422	0
Queue Length 95th (ft)	136	213	173	0	#611	0
Internal Link Dist (ft)			293		723	
Turn Bay Length (ft)	150					420
Base Capacity (vph)	581	1703	965	1830	1876	1546
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.62	0.47	0.02	0.96	0.55

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)	0	0	0	192	0	966	0	421	39	0	1652	776
Future Volume (vph)	0	0	0	192	0	966	0	421	39	0	1652	776
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	11	11	16	12	12	11
Total Lost time (s)				6.0		6.0		6.0	4.0		6.0	4.0
Lane Util. Factor				1.00		0.88		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1787		2617		3261	1830		3574	1546
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1787		2617		3261	1830		3574	1546
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	209	0	1050	0	458	42	0	1796	843
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	209	0	1050	0	458	42	0	1796	843
Heavy Vehicles (%)	0%	0%	0%	1%	0%	5%	0%	7%	0%	0%	1%	1%
Turn Type				Prot		custom		NA	Free		NA	Free
Protected Phases				4		4 5		6			2	
Permitted Phases									Free			Free
Actuated Green, G (s)				26.1		45.9		23.6	80.0		41.9	80.0
Effective Green, g (s)				26.1		45.9		23.6	80.0		41.9	80.0
Actuated g/C Ratio				0.33		0.57		0.30	1.00		0.52	1.00
Clearance Time (s)				6.0				6.0			6.0	
Vehicle Extension (s)				3.0				2.0			2.0	
Lane Grp Cap (vph)				583		1501		961	1830		1871	1546
v/s Ratio Prot				0.12		c0.40		0.14			c0.50	
v/s Ratio Perm									0.02			0.55
v/c Ratio				0.36		0.70		0.48	0.02		0.96	0.55
Uniform Delay, d1				20.6		12.1		23.1	0.0		18.2	0.0
Progression Factor				1.00		1.00		1.01	1.00		1.00	1.00
Incremental Delay, d2				0.4		1.4		1.7	0.0		13.3	1.4
Delay (s)				20.9		13.6		25.0	0.0		31.5	1.4
Level of Service				C		B		C	A		C	A
Approach Delay (s)		0.0			14.8			22.9			21.9	
Approach LOS		A			B			C			C	

Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

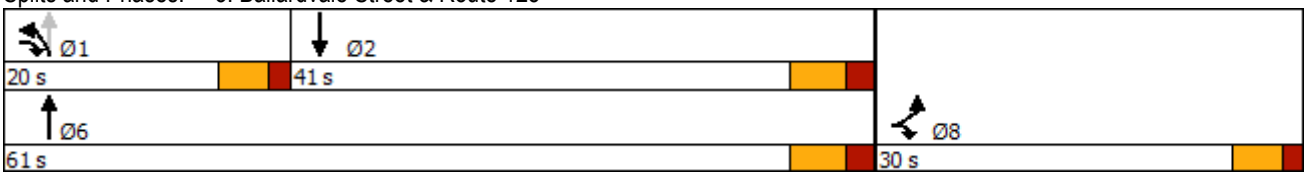
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	424	1409	289	1098	1019	94
Future Volume (vph)	424	1409	289	1098	1019	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	300			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	0.95
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	2787	2870	1863	3507	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	2787	2870	1863	3507	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		40			12	
Link Speed (mph)	25			35	35	
Link Distance (ft)	1279			803	920	
Travel Time (s)	34.9			15.6	17.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Adj. Flow (vph)	456	1515	311	1181	1096	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	456	1515	311	1181	1197	0
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Detector Phase	8	8 1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0		8.0	10.0	10.0	
Minimum Split (s)	12.0		13.0	16.0	16.0	
Total Split (s)	30.0		20.0	61.0	41.0	
Total Split (%)	33.0%		22.0%	67.0%	45.1%	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	1.5		1.5	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 91
Actuated Cycle Length: 91
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Ballardvale Street & Route 125



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	456	1515	311	1181	1197
v/c Ratio	0.94	1.08	0.66	1.05	0.88
Control Delay	62.1	74.0	43.0	61.0	35.1
Queue Delay	0.0	0.0	0.0	2.1	0.0
Total Delay	62.1	74.0	43.0	63.1	35.1
Queue Length 50th (ft)	256	~555	87	~747	328
Queue Length 95th (ft)	#442	#703	131	#991	#457
Internal Link Dist (ft)	1199			723	840
Turn Bay Length (ft)		150	300		
Base Capacity (vph)	486	1398	473	1125	1356
Starvation Cap Reductn	0	0	0	6	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	1.08	0.66	1.06	0.88

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	424	1409	289	1098	1019	94
Future Volume (vph)	424	1409	289	1098	1019	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.88	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	2787	2870	1863	3509	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	2787	2870	1863	3509	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	456	1515	311	1181	1096	101
RTOR Reduction (vph)	0	20	0	0	7	0
Lane Group Flow (vph)	456	1495	311	1181	1190	0
Heavy Vehicles (%)	2%	2%	22%	2%	1%	8%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases				1		
Actuated Green, G (s)	25.0	45.0	15.0	55.0	35.0	
Effective Green, g (s)	25.0	45.0	15.0	55.0	35.0	
Actuated g/C Ratio	0.27	0.49	0.16	0.60	0.38	
Clearance Time (s)	5.0		5.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	486	1378	473	1125	1349	
v/s Ratio Prot	0.26	c0.54	0.11	c0.63	0.34	
v/s Ratio Perm						
v/c Ratio	0.94	1.08	0.66	1.05	0.88	
Uniform Delay, d1	32.2	23.0	35.6	18.0	26.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.6	50.7	2.5	40.9	6.9	
Delay (s)	57.8	73.7	38.1	58.9	33.0	
Level of Service	E	E	D	E	C	
Approach Delay (s)	70.0			54.6	33.0	
Approach LOS	E			D	C	

Intersection Summary

HCM 2000 Control Delay	55.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

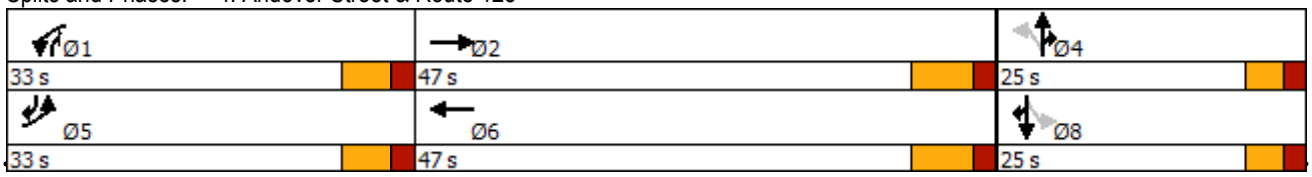
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1250	73	56	474	37	32	148	409	140	131	607
Future Volume (vph)	199	1250	73	56	474	37	32	148	409	140	131	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.989				0.850			0.850
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1641	3544	0	1770	3461	0	0	1858	1599	0	1772	1583
Flt Permitted	0.950			0.950				0.732			0.623	
Satd. Flow (perm)	1641	3544	0	1770	3461	0	0	1372	1599	0	1133	1583
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		7										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			192	
Travel Time (s)		18.9			8.3			12.1			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Adj. Flow (vph)	209	1316	77	59	499	39	34	156	431	147	138	639
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1393	0	59	538	0	0	190	431	0	285	639
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	25.0		13.0	13.0		13.0	13.0	
Total Split (s)	33.0	47.0		33.0	47.0		25.0	25.0		25.0	25.0	
Total Split (%)	31.4%	44.8%		31.4%	44.8%		23.8%	23.8%		23.8%	23.8%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 89.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	209	1393	59	538	190	431	285	639
v/c Ratio	0.62	0.87	0.27	0.42	0.62	0.65	1.12	0.82
Control Delay	40.2	30.7	37.6	23.5	42.5	25.9	129.1	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	30.7	37.6	23.5	42.5	25.9	129.1	28.3
Queue Length 50th (ft)	108	335	31	110	92	188	~175	288
Queue Length 95th (ft)	179	#599	66	186	#203	286	#385	445
Internal Link Dist (ft)		890		526	540		112	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	496	1593	535	1551	307	950	254	940
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.87	0.11	0.35	0.62	0.45	1.12	0.68

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)	199	1250	73	56	474	37	32	148	409	140	131	607
Future Volume (vph)	199	1250	73	56	474	37	32	148	409	140	131	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.97	1.00
Satd. Flow (prot)	1641	3543		1770	3462			1858	1599		1772	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.62	1.00
Satd. Flow (perm)	1641	3543		1770	3462			1373	1599		1132	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	209	1316	77	59	499	39	34	156	431	147	138	639
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	209	1389	0	59	538	0	0	190	431	0	285	639
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	18.3	40.2		11.2	33.1			20.1	36.3		20.1	43.4
Effective Green, g (s)	18.3	40.2		11.2	33.1			20.1	36.3		20.1	43.4
Actuated g/C Ratio	0.20	0.45		0.13	0.37			0.22	0.41		0.22	0.48
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	335	1591		221	1280			308	648		254	767
v/s Ratio Prot	0.13	c0.39		0.03	0.16				0.27			c0.40
v/s Ratio Perm								0.14			c0.25	
v/c Ratio	0.62	0.87		0.27	0.42			0.62	0.67		1.12	0.83
Uniform Delay, d1	32.5	22.3		35.4	21.0			31.2	21.7		34.7	19.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.6	5.8		0.7	0.3			3.6	2.6		93.3	7.7
Delay (s)	36.1	28.1		36.1	21.3			34.9	24.2		128.0	27.7
Level of Service	D	C		D	C			C	C		F	C
Approach Delay (s)		29.2			22.8			27.5			58.6	
Approach LOS		C			C			C			E	

Intersection Summary

HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	275	64	320	603	5
Future Volume (vph)	3	275	64	320	603	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	16	16	16	16
Storage Length (ft)	0	300	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.999	
Flt Protected	0.950			0.992		
Satd. Flow (prot)	1925	1706	0	2028	2123	0
Flt Permitted	0.950			0.992		
Satd. Flow (perm)	1925	1706	0	2028	2123	0
Link Speed (mph)	25			35	30	
Link Distance (ft)	1277			192	1421	
Travel Time (s)	34.8			3.7	32.3	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	1%	7%	5%	1%	40%
Adj. Flow (vph)	4	335	78	390	735	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	335	0	468	741	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	275	64	320	603	5
Future Vol, veh/h	3	275	64	320	603	5
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	300	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	1	7	5	1	40
Mvmt Flow	4	335	78	390	735	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1284	738	741	0	-	0
Stage 1	738	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.263	-	-	-
Pot Cap-1 Maneuver	184	420	843	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	162	420	843	-	-	-
Mov Cap-2 Maneuver	162	-	-	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	584	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	39.8	1.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	843	-	162	420	-	-
HCM Lane V/C Ratio	0.093	-	0.023	0.798	-	-
HCM Control Delay (s)	9.7	0	27.7	39.9	-	-
HCM Lane LOS	A	A	D	E	-	-
HCM 95th %tile Q(veh)	0.3	-	0.1	7.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1	385	15	0	1	22	277	0	1	92	4
Future Volume (vph)	93	1	385	15	0	1	22	277	0	1	92	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
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		0.891			0.993						0.994	
Flt Protected		0.990			0.955			0.996				
Satd. Flow (prot)	0	1869	0	0	1915	0	0	2115	0	0	2038	0
Flt Permitted		0.990			0.955			0.996				
Satd. Flow (perm)	0	1869	0	0	1915	0	0	2115	0	0	2038	0
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		511			525			1421			503	
Travel Time (s)		13.9			14.3			27.7			11.4	
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	2%	7%	0%	0%	19%	0%	0%	0%	3%	50%
Adj. Flow (vph)	109	1	453	18	0	1	26	326	0	1	108	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	563	0	0	19	0	0	352	0	0	114	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	93	1	385	15	0	1	22	277	0	1	92	4
Future Vol, veh/h	93	1	385	15	0	1	22	277	0	1	92	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	2	2	7	0	0	19	0	0	0	3	50
Mvmt Flow	109	1	453	18	0	1	26	326	0	1	108	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	492	491	111	718	493	326	113	0	0	326	0	0
Stage 1	113	113	-	378	378	-	-	-	-	-	-	-
Stage 2	379	378	-	340	115	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.22	7.17	6.5	6.2	4.29	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.318	3.563	4	3.3	2.371	-	-	2.2	-	-
Pot Cap-1 Maneuver	490	478	942	338	480	720	1377	-	-	1245	-	-
Stage 1	897	802	-	634	619	-	-	-	-	-	-	-
Stage 2	647	615	-	664	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	480	467	942	172	468	720	1377	-	-	1245	-	-
Mov Cap-2 Maneuver	480	467	-	172	468	-	-	-	-	-	-	-
Stage 1	876	801	-	619	605	-	-	-	-	-	-	-
Stage 2	631	601	-	344	803	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.9	27.2	0.6	0.1
HCM LOS	C	D		

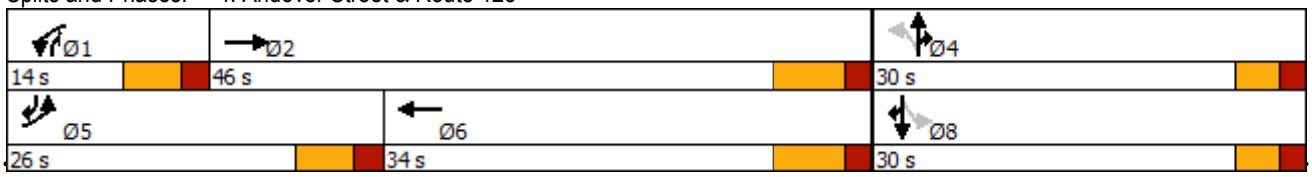
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1377	-	-	792	181	1245	-	-
HCM Lane V/C Ratio	0.019	-	-	0.712	0.104	0.001	-	-
HCM Control Delay (s)	7.7	0	-	19.9	27.2	7.9	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	6.1	0.3	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1250	73	56	474	37	32	148	409	140	131	607
Future Volume (vph)	199	1250	73	56	474	37	32	148	409	140	131	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	11	12
Storage Length (ft)	500		0	365		600	0		140	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.989				0.850			0.850
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1641	3544	0	1770	3461	0	0	1858	1599	0	1772	1583
Flt Permitted	0.950			0.950				0.877			0.662	
Satd. Flow (perm)	1641	3544	0	1770	3461	0	0	1644	1599	0	1203	1583
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)		8										
Link Speed (mph)		35			50			35			30	
Link Distance (ft)		970			606			620			192	
Travel Time (s)		18.9			8.3			12.1			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Adj. Flow (vph)	209	1316	77	59	499	39	34	156	431	147	138	639
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1393	0	59	538	0	0	190	431	0	285	639
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	8 5
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	22.0		14.0	25.0		13.0	13.0		13.0	13.0	
Total Split (s)	26.0	46.0		14.0	34.0		30.0	30.0		30.0	30.0	
Total Split (%)	28.9%	51.1%		15.6%	37.8%		33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	4.0	5.0		4.0	5.0		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	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Andover Street & Route 125



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	209	1393	59	538	190	431	285	639
v/c Ratio	0.69	0.91	0.37	0.46	0.42	0.62	0.85	0.76
Control Delay	46.0	33.9	46.0	25.8	29.9	24.6	56.0	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	33.9	46.0	25.8	29.9	24.6	56.0	23.2
Queue Length 50th (ft)	111	375	32	126	88	185	153	264
Queue Length 95th (ft)	179	#523	71	183	151	286	#296	383
Internal Link Dist (ft)		890		526	540		112	
Turn Bay Length (ft)	500		365			140		
Base Capacity (vph)	367	1551	158	1165	459	678	336	885
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.90	0.37	0.46	0.41	0.64	0.85	0.72

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)	199	1250	73	56	474	37	32	148	409	140	131	607
Future Volume (vph)	199	1250	73	56	474	37	32	148	409	140	131	607
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	11	12
Total Lost time (s)	6.0	7.0		6.0	7.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.97	1.00
Satd. Flow (prot)	1641	3543		1770	3462			1858	1599		1772	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.88	1.00		0.66	1.00
Satd. Flow (perm)	1641	3543		1770	3462			1645	1599		1203	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	209	1316	77	59	499	39	34	156	431	147	138	639
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	209	1388	0	59	538	0	0	190	431	0	285	639
Heavy Vehicles (%)	10%	1%	2%	2%	3%	5%	3%	1%	1%	2%	0%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	5	2		1	6			4	4 1		8	8 5
Permitted Phases							4			8		
Actuated Green, G (s)	16.5	38.6		8.0	30.1			24.8	37.8		24.8	46.3
Effective Green, g (s)	16.5	38.6		8.0	30.1			24.8	37.8		24.8	46.3
Actuated g/C Ratio	0.18	0.43		0.09	0.34			0.28	0.42		0.28	0.52
Clearance Time (s)	6.0	7.0		6.0	7.0			5.0			5.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0			3.0			3.0	
Lane Grp Cap (vph)	302	1529		158	1165			456	676		333	819
v/s Ratio Prot	0.13	c0.39		0.03	0.16				0.27			c0.40
v/s Ratio Perm								0.12			0.24	
v/c Ratio	0.69	0.91		0.37	0.46			0.42	0.64		0.86	0.78
Uniform Delay, d1	34.1	23.7		38.3	23.3			26.4	20.4		30.6	17.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.7	8.3		1.5	0.4			0.6	2.0		18.9	4.8
Delay (s)	40.8	32.1		39.8	23.7			27.0	22.4		49.5	22.3
Level of Service	D	C		D	C			C	C		D	C
Approach Delay (s)		33.2			25.3			23.8			30.7	
Approach LOS		C			C			C			C	

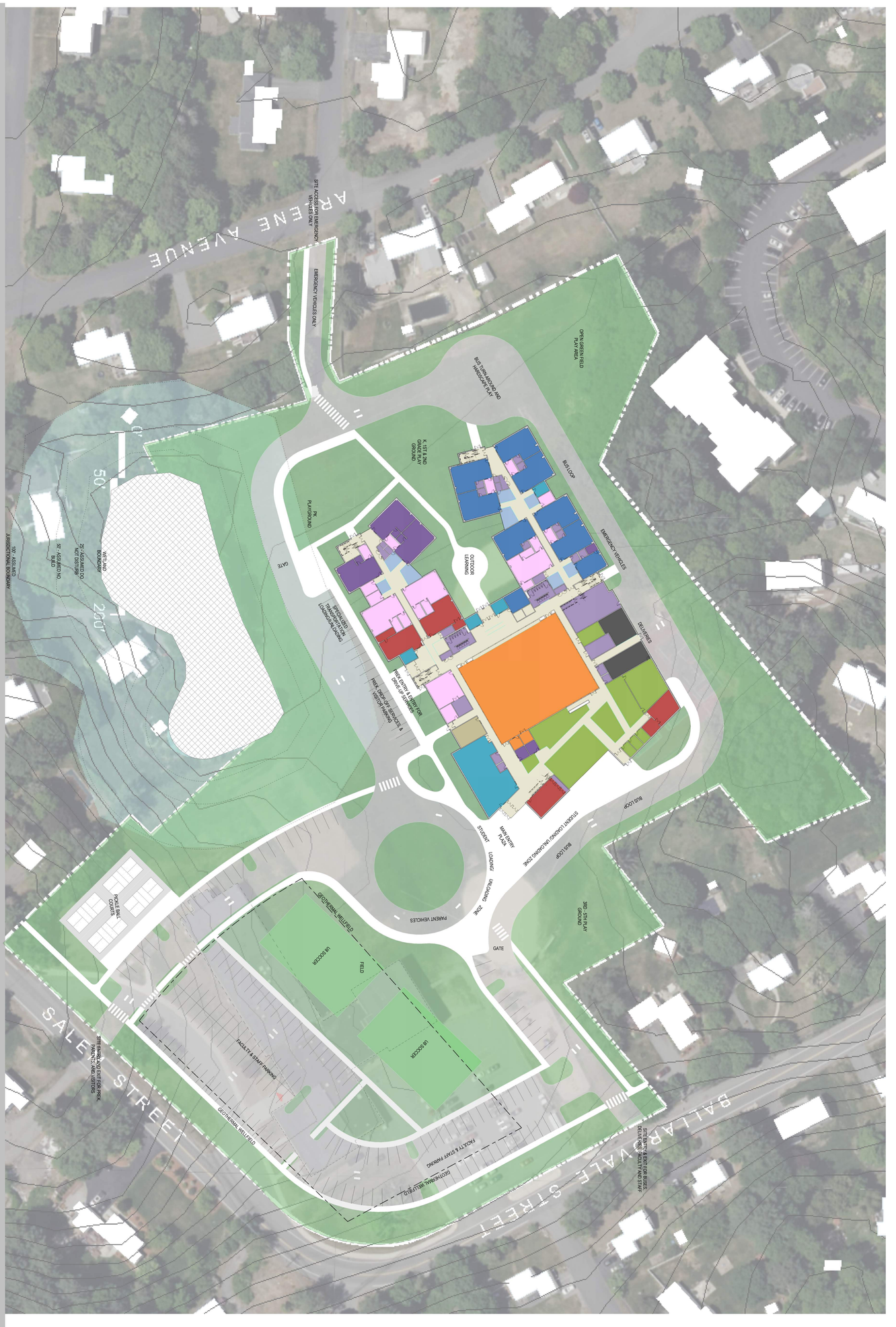
Intersection Summary

HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Appendix E: Site Plan Alternatives

SITE BASE CONDITIONS



3

DORE + WHITTIER

DATE

SCALE

SCALE: 1"=40'-0" GRAPHIC SCALE 0 20' 40' 80'

WILMINGTON SCHOOLS

NORTH INTERMEDIATE - WILMINGTON MA

TRUE NORTH

LEGEND

- : PASSENGER CARS
- : MINIBUS
- : BUS
- : BUS CIRCULATION
- : CAR CIRCULATION

terraink
landscape architecture

WILMINGTON ELEMENTARY SCHOOL | VEHICULAR CIRCULATION - OPTION B

N.T.S. CONCEPT DESIGN PREPARED FOR TEAM COORDINATION . NOT FOR CONSTRUCTION

NORTH

Wilmington . Massachusetts
Schematic Design Phase
February 2025

Appendix F: Trip and Parking Generation Worksheets

Elementary School
(520)

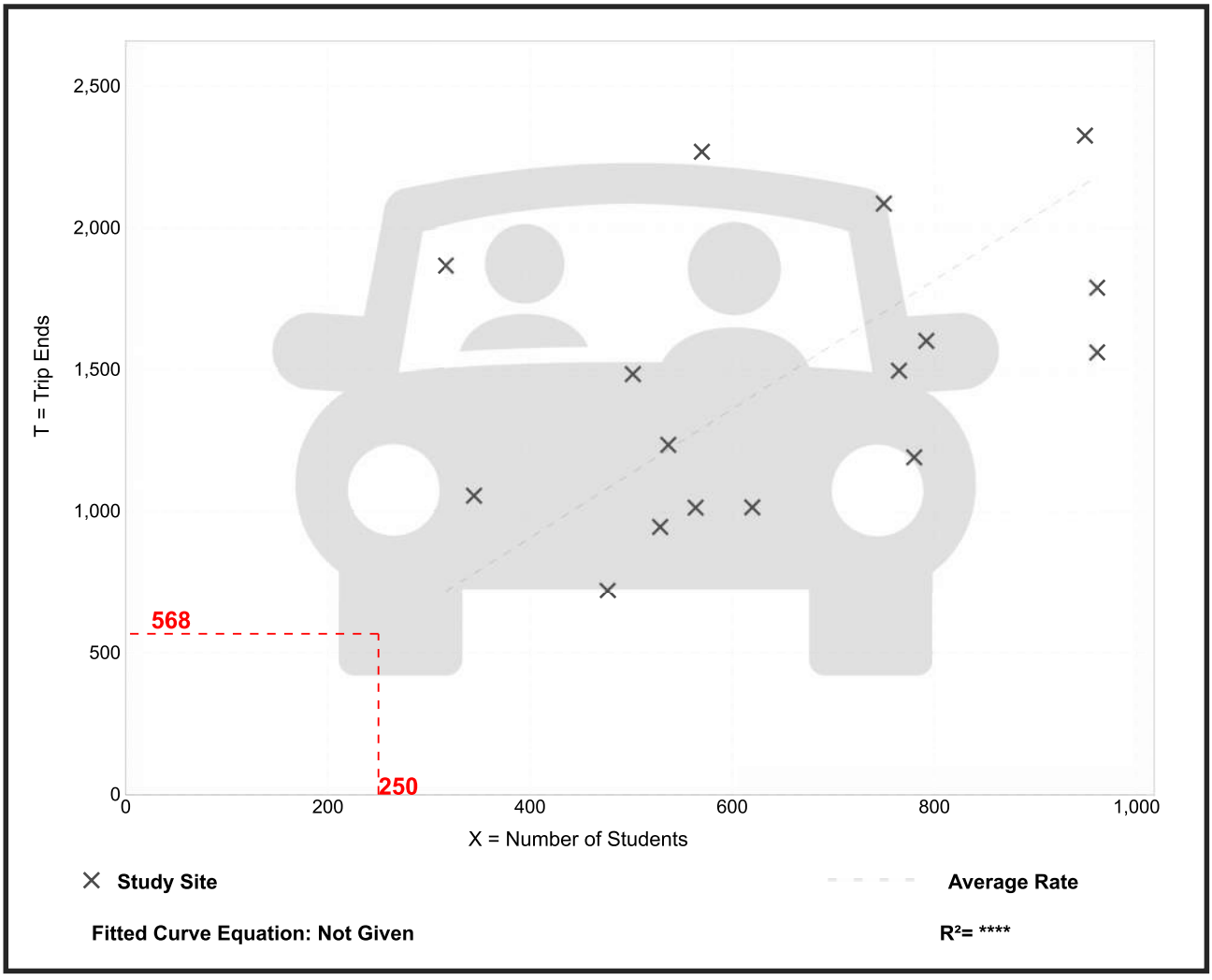
Vehicle Trip Ends vs: **Students**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 16
Avg. Num. of Students: 651
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
2.27	1.51 - 5.89	0.93

Data Plot and Equation



Elementary School
(520)

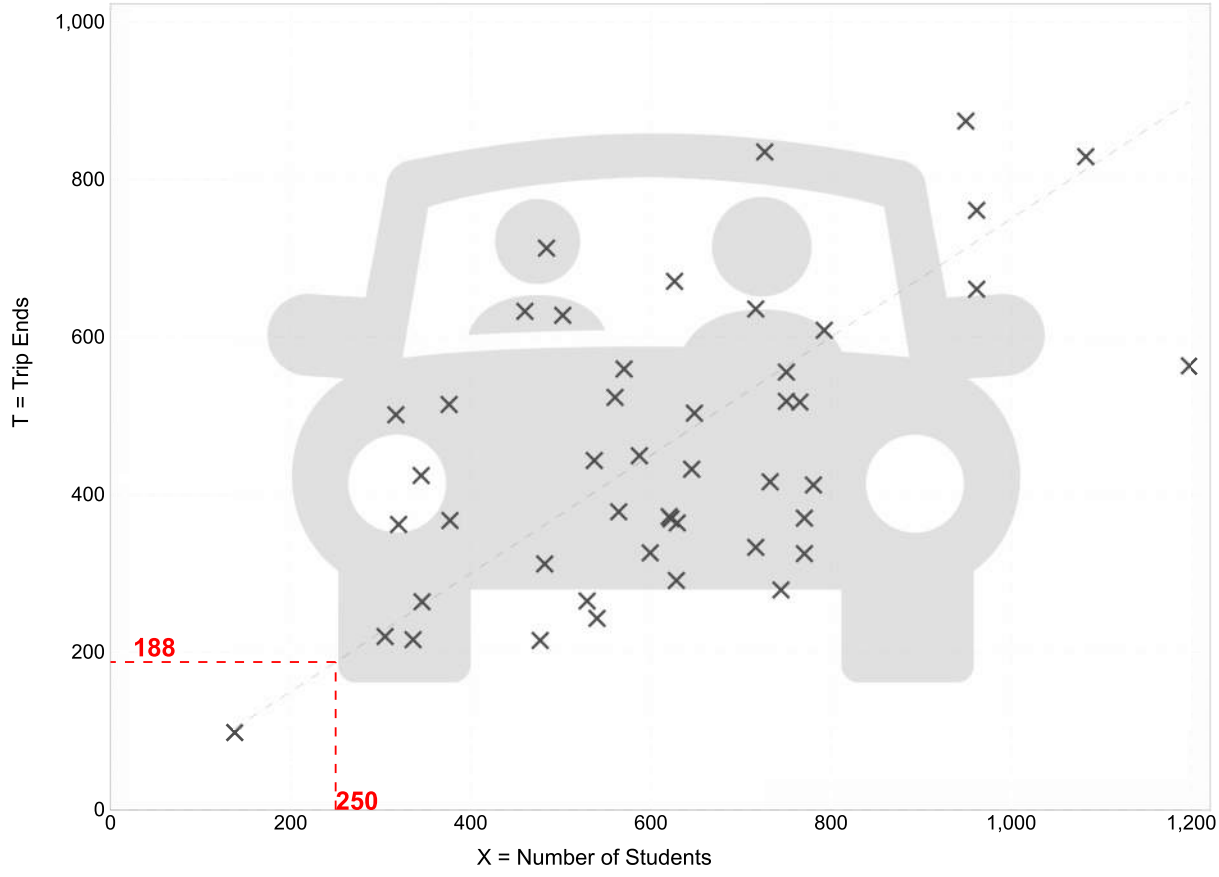
Vehicle Trip Ends vs: **Students**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Students: 616
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.75	0.38 - 1.58	0.27

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ****

Elementary School
(520)

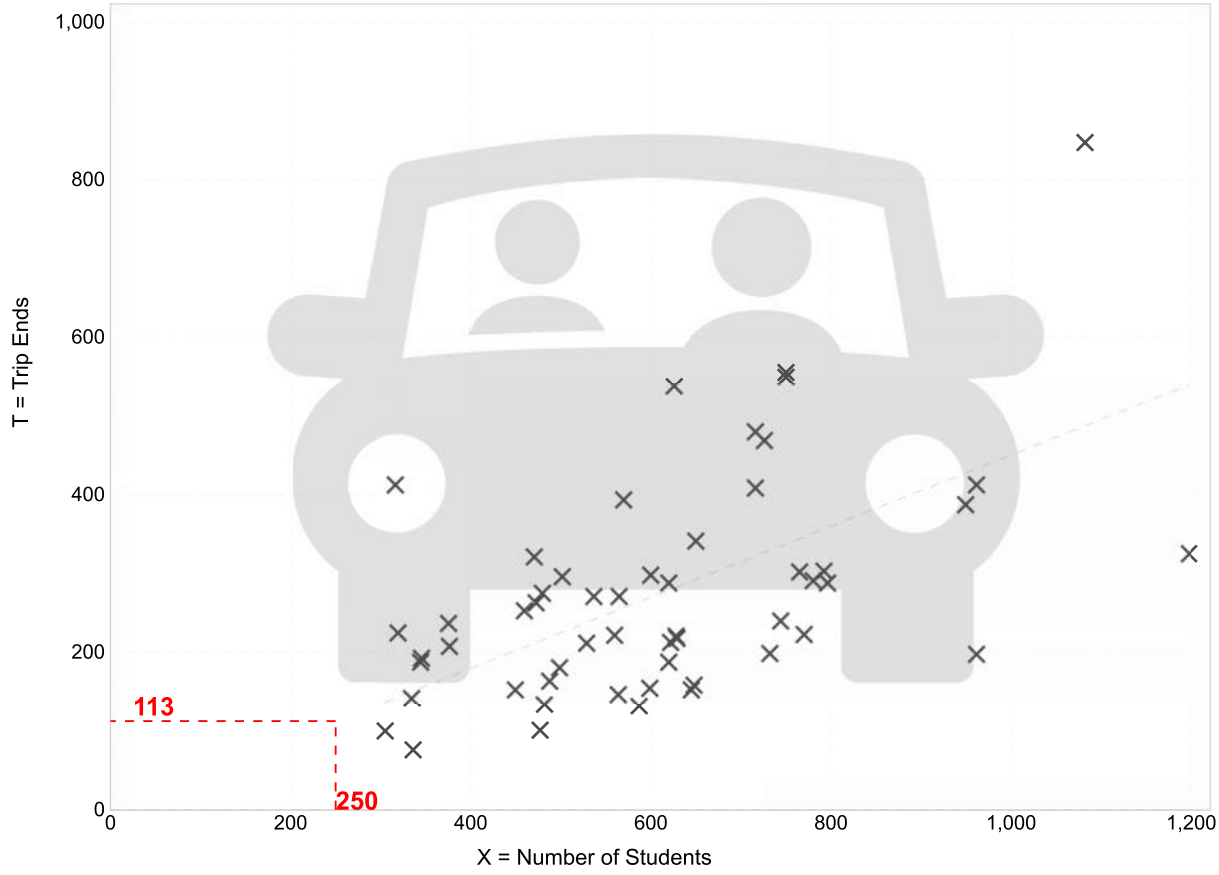
Vehicle Trip Ends vs: **Students**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 54
Avg. Num. of Students: 608
Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.45	0.21 - 1.30	0.19

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

Elementary School
(520)

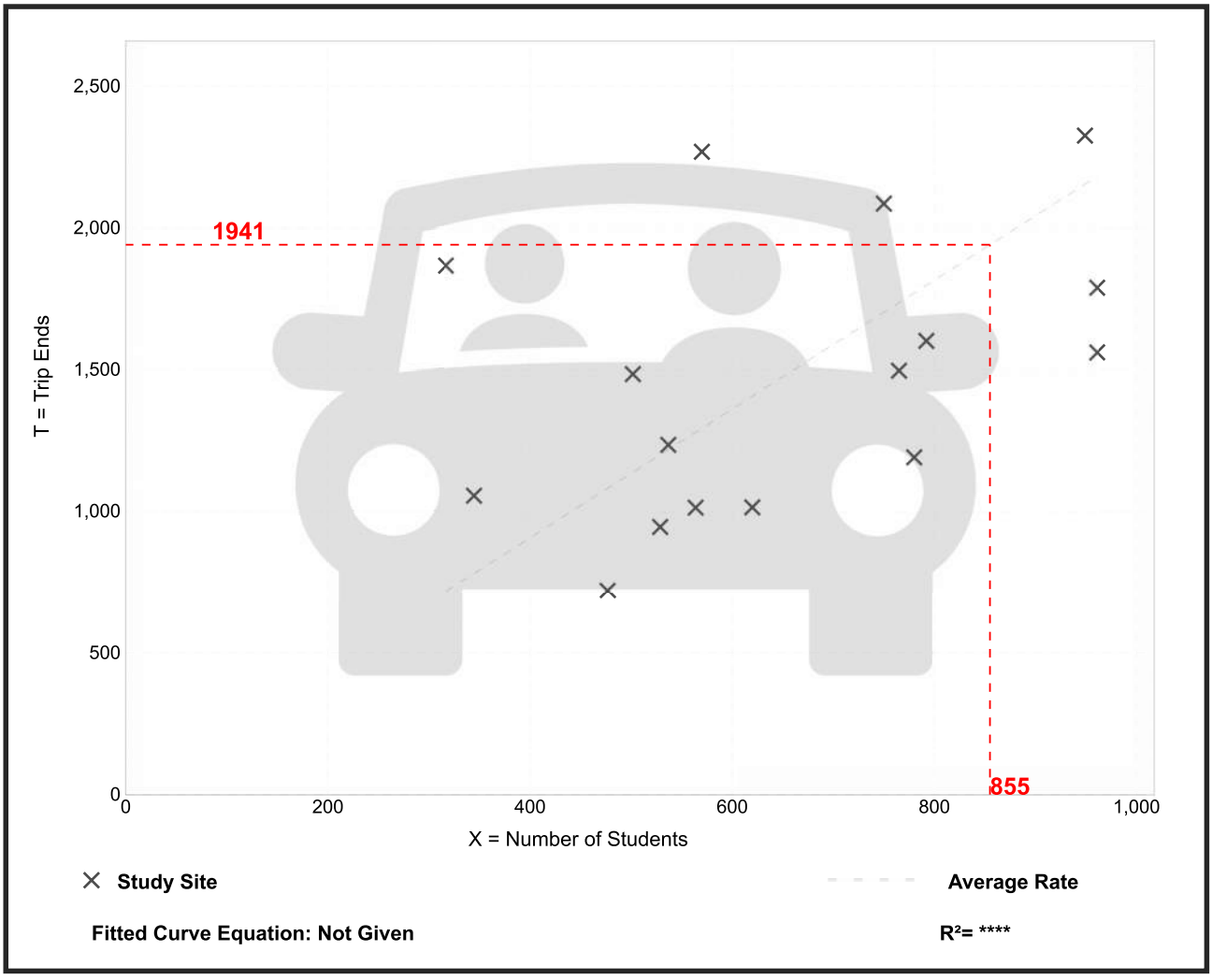
Vehicle Trip Ends vs: **Students**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 16
Avg. Num. of Students: 651
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
2.27	1.51 - 5.89	0.93

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ****

Elementary School
(520)

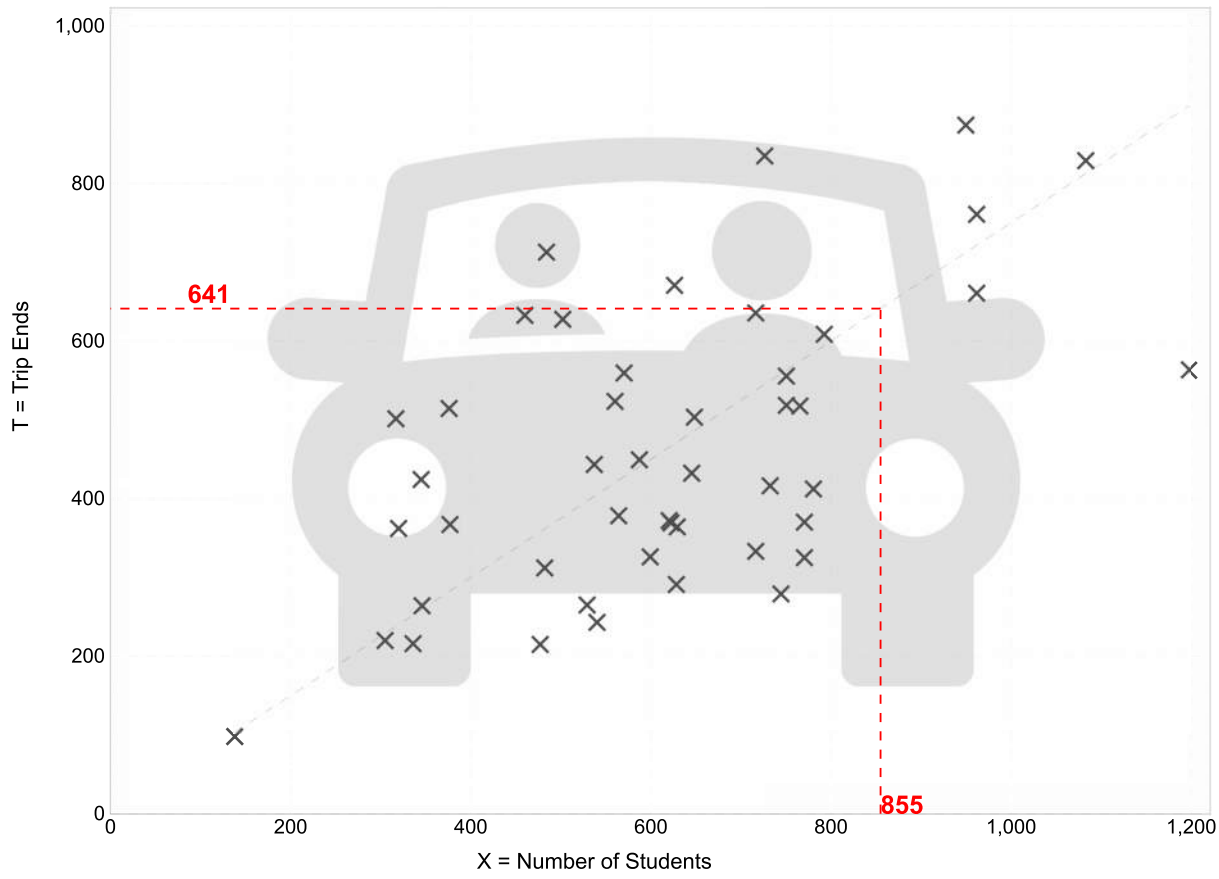
Vehicle Trip Ends vs: **Students**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Students: 616
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.75	0.38 - 1.58	0.27

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

Elementary School
(520)

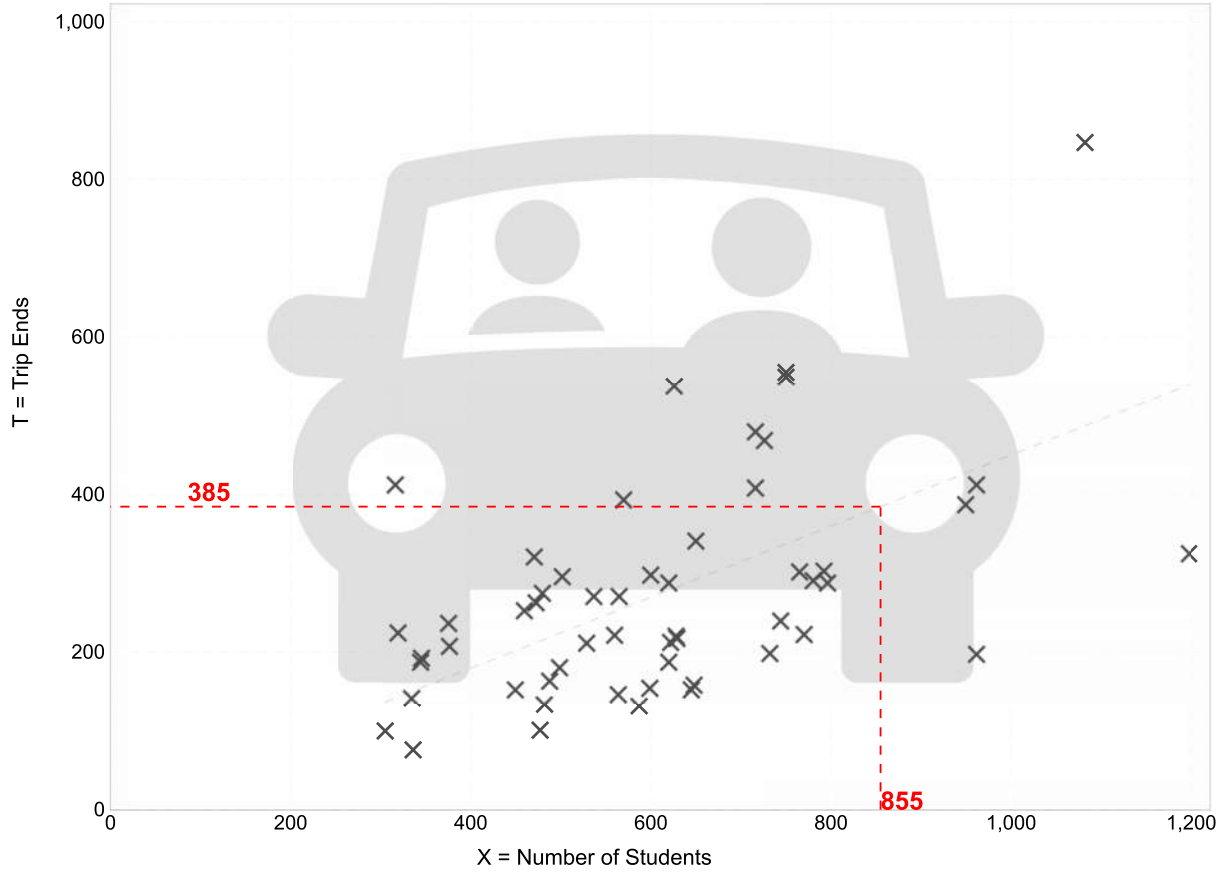
Vehicle Trip Ends vs: **Students**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 54
Avg. Num. of Students: 608
Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.45	0.21 - 1.30	0.19

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

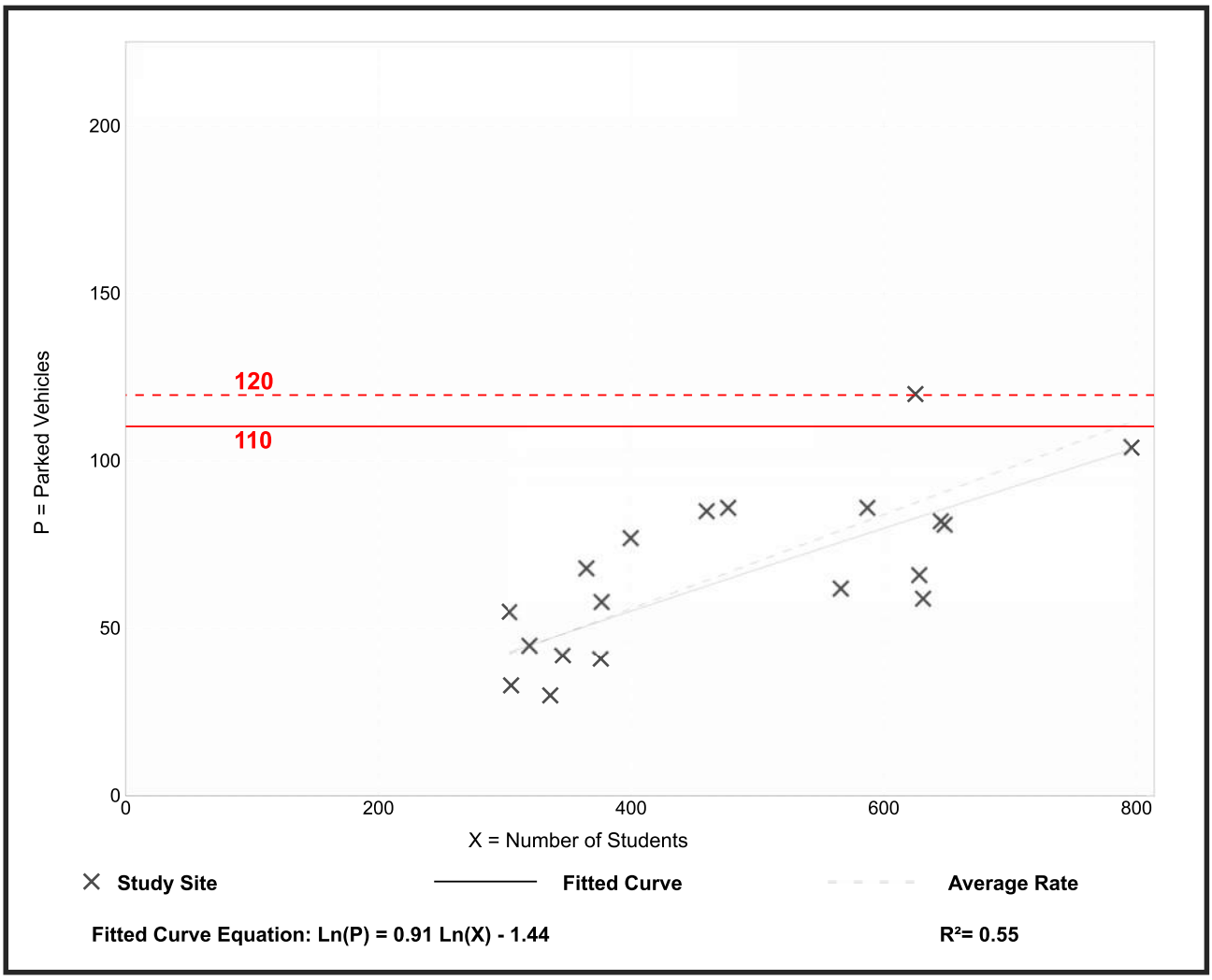
Elementary School
(520)

Peak Period Parking Demand vs: **Students**
On a: **Weekday (Monday - Friday)**
Setting/Location: **General Urban/Suburban**
Number of Studies: 19
Avg. Num. of Students: 484

Peak Period Parking Demand per Student

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.14	0.09 - 0.19	0.12 / 0.19	***	0.03 (21%)

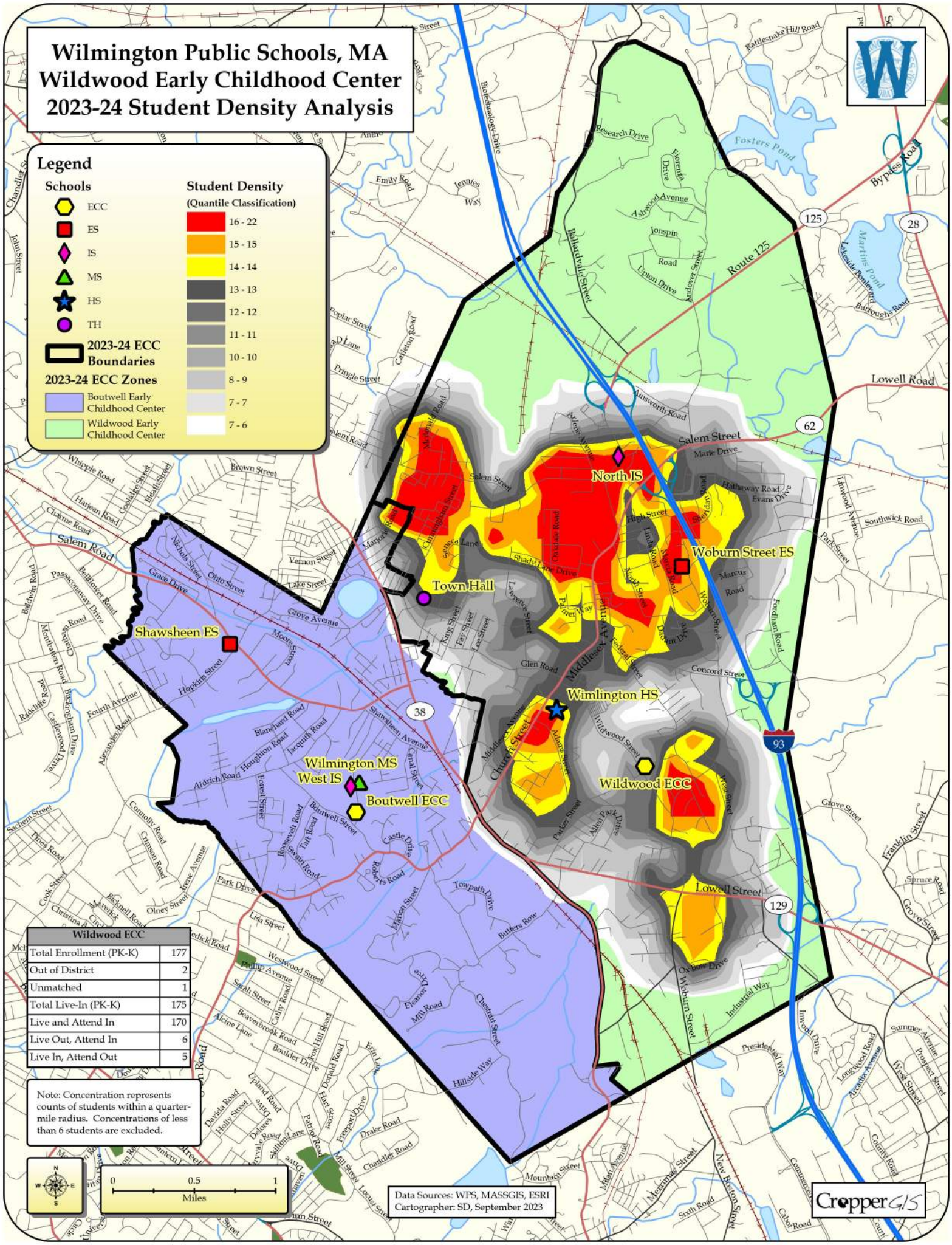
Data Plot and Equation

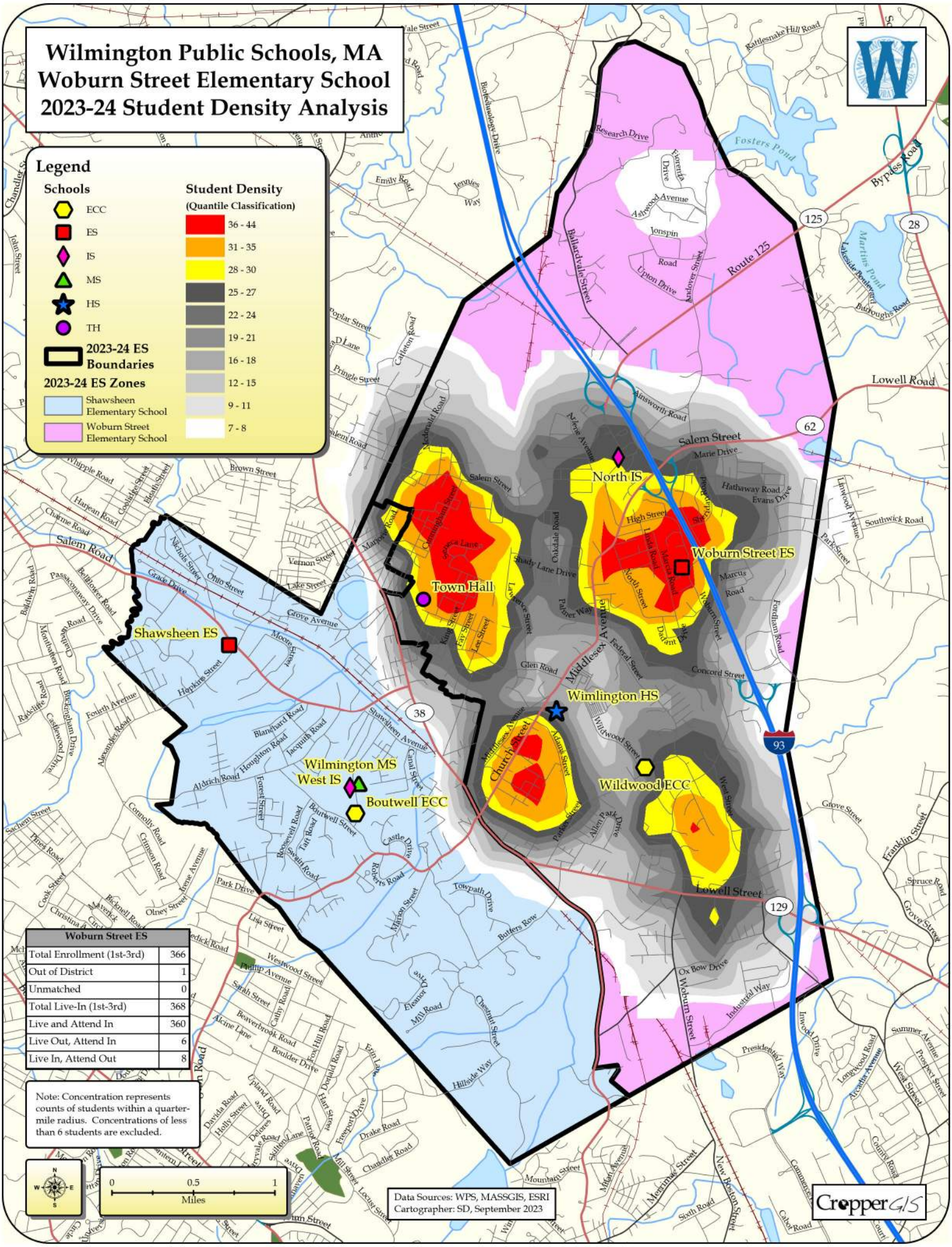


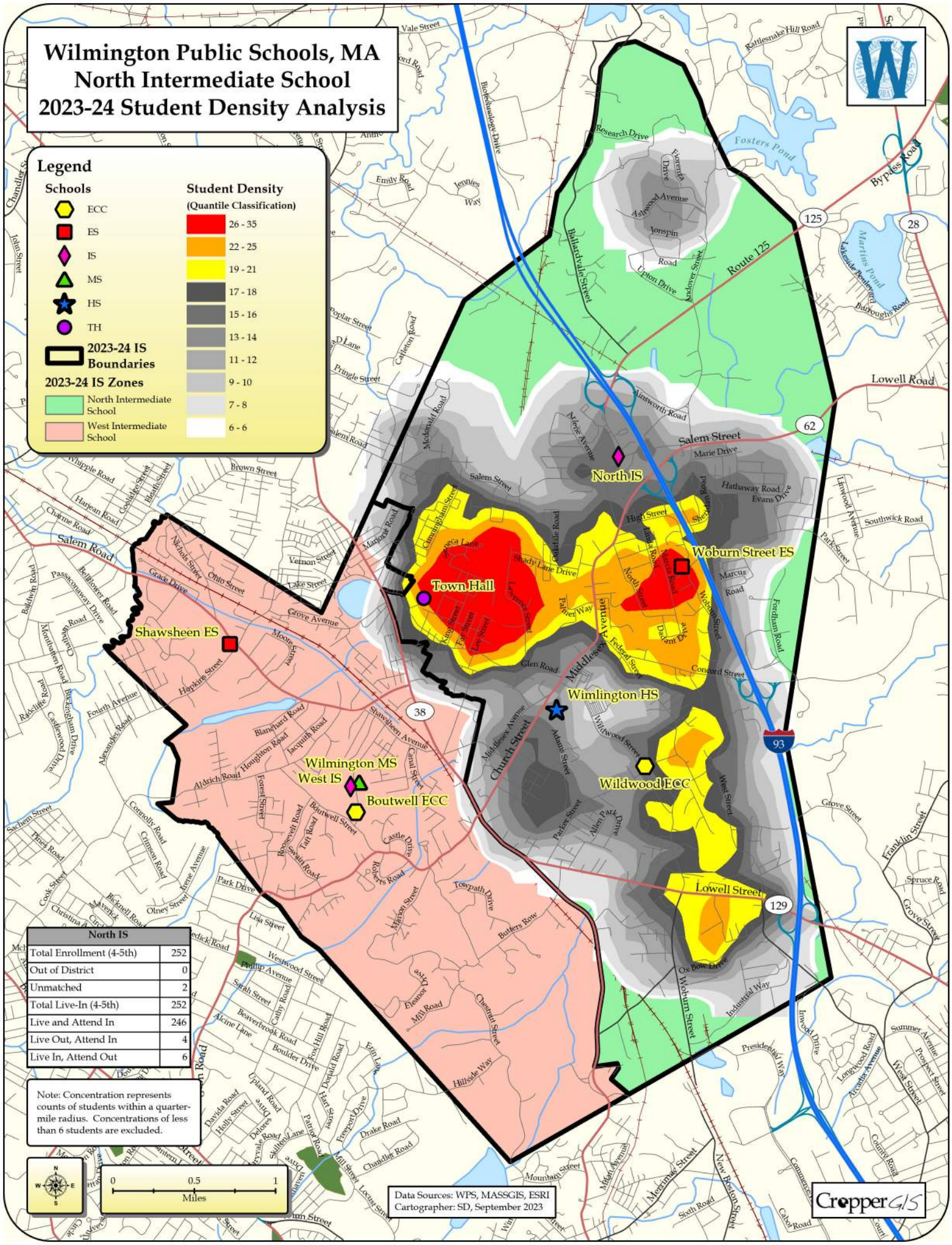
Fitted Curve Equation: Ln(P) = 0.91 Ln(X) - 1.44

R^2= 0.55

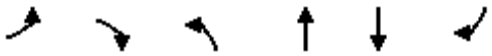
Appendix G: School Catchment Map


Wilmington Public Schools, MA
Wildwood Early Childhood Center
2023-24 Student Density Analysis
Legend
Schools
ECC
ES
IS
MS
HS
TH
2023-24 ECC Boundaries
2023-24 ECC Zones
Boutwell Early Childhood Center
Wildwood Early Childhood Center
Student Density
(Quantile Classification)
16 - 22
15 - 15
14 - 14
13 - 13
12 - 12
11 - 11
10 - 10
8 - 9
7 - 7
7 - 6
North IS
Woburn Street ES
Town Hall
Shawsheen ES
Wimlington HS
Wilmington MS
West IS
Boutwell ECC
Wildwood ECC
Wildwood ECC
Total Enrollment (PK-K) 177
Out of District 2
Unmatched 1
Total Live-In (PK-K) 175
Live and Attend In 170
Live Out, Attend In 6
Live In, Attend Out 5
Note: Concentration represents counts of students within a quarter-mile radius. Concentrations of less than 6 students are excluded.
0 0.5 1
Miles
Data Sources: WPS, MASSGIS, ESRI
Cartographer: SD, September 2023
CropperGIS
Route 125
Salem Street
Lowell Street
Middlesex Avenue
Church Street
Woburn Street
Shawsheen Avenue
Salem Road
Lowell Road
Bypass Road
Fosters Pond
Martins Pond
Research Drive
Ballardvale Street
Andover Street
Upton Drive
Ashwood Avenue
Florentia Drive
Ionspin Road
Ainsworth Road
Marie Drive
Hathaway Road
Evans Drive
Linwood Avenue
Southwick Road
Park Street
Fordham Road
Concord Street
Glen Road
Wildwood Street
Adams Street
Parkers Street
Allen Park Drive
West Street
Grove Street
Franklin Street
Spruce Road
Ox Bow Drive
Industrial Way
Presidential Way
Irwood Drive
Summer Avenue
Prospect Street
West Street
Longwood Road
Arcadia Avenue
Colonial Road
Commerce Way
Sixth Road
Caliban Road
New Boston Street
Merrimac Street
Mountain Street
Main Avenue
Locust Street
Mill Street
Chandler Road
Drake Road
Freeport Drive
Patriot Road
Skillen Lane
Delores Drive
Upland Road
Davida Road
Holly Street
Hart Street
Dorfald Road
Fox Hill Road
Boulder Drive
Erin Lane
Alcine Lane
Beaverbrook Road
Cathy Road
Sarah Street
Phillip Avenue
Westwood Street
Eleanor Drive
Mill Road
Chestnut Street
Hillside Way
Towpath Drive
Butters Row
Maron Street
Roberts Road
Castle Drive
Swan Road
Tait Road
Roosevelt Road
Boutwell Street
Forest Street
Canal Street
Aldrich Road
Houghton Road
Jacquith Road
Blanchard Road
Hopkins Street
Moore Street
Grove Avenue
Ohio Street
Nichols Street
Grace Drive
Lake Street
Vernon Street
Marjorie Road
Cunningham Street
Cardarelle Road
Shady Lane Drive
Vega Lane
Linda Road
Morris Road
Marcus Road
Palmer Way
Lawrence Street
King Street
Fair Street
Lee Street
Federal Street
Dorset Drive
Woburn Street
Ridge Road
High Street
Poplar Street
Sheridan Road
Alene Avenue
McDonald Road
Salem Street
Pringle Street
Carleton Road
Poplar Street
Brown Street
Whipple Road
Harjean Road
Charme Road
Coolidge Street
Heath Street
Baldwin Road
Passaconaway Drive
Bellflower Road
Cambria Road
Montheathen Road
Buckingham Drive
Ridcliffe Road
Castlewood Drive
Alexander Road
Fourth Avenue
Sachem Street
Pines Road
Cook Street
Connolly Road
Crimson Road
Irene Avenue
Olney Street
Bicknell Road
Maverick Circle
Christina Avenue
Park Drive
Lisa Street
Dedrick Road
Davis Road
Biotechnology Drive
Kattlesnake Hill Road
Burroughs Road
Lakeside Boulevard
Jenness Way
Emily Road
John Street
Chandler Street
Route 125
28
62
38
93
129


Wilmington Public Schools, MA
Woburn Street Elementary School
2023-24 Student Density Analysis
Legend
Schools
ECC
ES
IS
MS
HS
TH
2023-24 ES Boundaries
2023-24 ES Zones
Shawsheen Elementary School
Woburn Street Elementary School
Student Density
(Quantile Classification)
36 - 44
31 - 35
28 - 30
25 - 27
22 - 24
19 - 21
16 - 18
12 - 15
9 - 11
7 - 8
Shawsheen ES
Woburn Street ES
North IS
Town Hall
Wilmington MS
West IS
Boutwell ECC
Wimlington HS
Wildwood ECC
Route 125
Salem Road
Salem Street
Lowell Road
Lowell Street
Middlesex Avenue
Woburn Street
Church Street
Fosters Pond
Martins Pond
Bypass Road
Research Drive
Ballardvale Street
Andover Street
Upton Drive
Ashwood Avenue
Ainsworth Road
Hathaway Road
Evans Drive
Marie Drive
High Street
Shady Lane Drive
Oakdale Road
Cunningham Street
Grace Lane
Lawrence Street
Kaye Street
Fair Street
Lee Street
Palmer Way
North Street
Lucia Road
Marcus Road
Marcus
Woburn Street
Federal Street
Glen Road
Concord Street
Fordham Road
Park Street
Southwick Road
Linwood Avenue
Marjorie Road
Vernon Street
Lake Street
Grove Avenue
Moore Street
Hopkins Street
Nichols Street
Ohio Street
Grace Drive
Shawsheen Avenue
Canal Street
Blanchard Road
Houghton Road
Jacquith Road
Aldrich Road
Forest Street
Boutwell Street
Roosevelt Road
Taft Road
Swain Road
Roberts Road
Castle Drive
Towpath Drive
Butters Row
Marion Street
Eleanor Drive
Mill Road
Chestnut Street
Hillside Way
Woburn Street
Ox Bow Drive
Industrial Way
Presidential Way
Irwood Drive
Longwood Road
Arcadia Avenue
Summer Avenue
Prospect Street
West Street
Colonial Road
Commerce Way
Sixth Road
Cabot Road
New Boston Street
Merrimac Street
Mountain Street
Main Avenue
Locust Street
Mill Street
Chandler Road
Drake Road
Freeport Drive
Hart Street
Dorfald Road
Fox Hill Road
Boulder Drive
Alcine Lane
Beaverbrook Road
Cathy Road
Sarah Street
Phillip Avenue
Westwood Street
Upland Road
Davida Road
Holly Street
Delores Drive
Skillen Lane
Patriot Road
Eton Lane
Wildwood Street
West Street
Allen Park Drive
Parker Street
Atlantic Street
Highlesex Avenue
Wilmington Street
Franklin Street
Grove Street
Spruce Road
Olney Street
Irene Avenue
Park Drive
Lisa Street
Cook Street
Christina Circle
Bicknell Road
Maverick Street
Connolly Road
Crimson Road
Pines Road
Sachem Street
Fourth Avenue
Alexander Road
Buckingham Drive
Castlewood Drive
Radcliffe Road
Montheathen Road
Passaconaway Drive
Bellflower Road
Baldwin Road
Chalme Road
Harjean Road
Coolidge Street
Heath Street
Whipple Road
Brown Street
Poplar Street
Carleton Road
Pringle Street
Emily Road
Jeanne Way
Biotechnology Drive
Kattlesnake Hill Road
Lakeside Boulevard
Burroughs Road
John Street
Chandler Street
Woburn Street ES
Total Enrollment (1st-3rd) 366
Out of District 1
Unmatched 0
Total Live-In (1st-3rd) 368
Live and Attend In 360
Live Out, Attend In 6
Live In, Attend Out 8
Note: Concentration represents counts of students within a quarter-mile radius. Concentrations of less than 6 students are excluded.
0
0.5
1
Miles
Data Sources: WPS, MASSGIS, ESRI
Cartographer: SD, September 2023
CropperGIS


Wilmington Public Schools, MA
North Intermediate School
2023-24 Student Density Analysis
Legend
Schools
ECC
ES
IS
MS
HS
TH
2023-24 IS Boundaries
2023-24 IS Zones
North Intermediate School
West Intermediate School
Student Density
(Quantile Classification)
26 - 35
22 - 25
19 - 21
17 - 18
15 - 16
13 - 14
11 - 12
9 - 10
7 - 8
6 - 6
North IS
Woburn Street ES
Town Hall
Shawsheen ES
Wimlington HS
Wilmington MS
West IS
Boutwell ECC
Wildwood ECC
Lowell Street
Route 125
Salem Street
Lowell Road
Middlesex Avenue
Church Street
Woburn Street
Salem Road
Shawsheen Avenue
Fosters Pond
Martins Pond
Bypass Road
Ballardvale Street
Andover Street
Glen Road
Concord Street
Grove Avenue
Federal Street
Lake Street
Vernon Street
Ohio Street
Nichols Street
Grace Drive
Moore Street
Hopkins Street
Blanchard Road
Houghton Road
Jacquith Road
Aldrich Road
Forest Street
Canal Street
Boutwell Street
Roosevelt Road
Taft Road
Swain Road
Roberts Road
Castle Drive
Towpath Drive
Butters Row
Maroon Street
Eleanor Drive
Mill Road
Chestnut Street
Hillside Way
Adams Street
Parker Street
Allen Park Drive
West Street
Industrial Way
Ox Bow Drive
Presidential Way
Irwood Drive
Longwood Road
Arcadia Avenue
Summer Avenue
Prospect Street
Grove Street
Franklin Street
Spruce Road
Fordham Road
Southwick Road
Park Street
Lynwood Avenue
Hathaway Road
Evans Drive
Marie Drive
Ainsworth Road
Adene Avenue
Higgins Road
Cummingham Street
Cedardale Road
Shady Lane Drive
Lawrence Street
Palmer Way
King Street
Fay Street
Lee Street
Marcia Road
North Street
Woburn Street
Marcus Road
Distant Drive
Wildwood Street
Middlesex Avenue
Adams Street
Church Street
Mcdonald Road
Marjorie Road
Cambridge Road
Ringle Street
Poplar Street
Carleton Road
Emily Road
Jeanues Way
Research Drive
Florenta Drive
Ashwood Avenue
Jonspin Road
Upton Drive
Lakeside Boulevard
Burroughs Road
Biotechnology Drive
Vale Street
Kattlesnake Hill Road
Whipple Road
Harlean Road
Goodridge Street
Heath Street
Brown Street
Charme Road
Passaconaway Drive
Bellflower Road
Baldwin Road
Cambridge Road
Montheathen Road
Radcliffe Road
Buckingham Drive
Castlewood Drive
Alexander Road
Fourth Avenue
Sachem Street
Pines Road
Connolly Road
Crimson Road
Irene Avenue
Olney Street
Cook Street
Bicknell Road
Maverick Circle
Christina Avenue
Park Drive
Lisa Street
Westwood Street
Philip Avenue
Sarah Street
Cathy Road
Beaverbrook Road
Alcine Lane
Fox Hill Road
Boulder Drive
Dorfald Road
Hart Street
Upland Road
Davida Road
Holly Street
Delores Drive
Skillen Lane
Patricia Road
Freeport Drive
Drake Road
Chandler Road
Mill Street
Locust Street
Main Street
Mountain Street
Milan Avenue
Merrimack Street
New Boston Street
Sixth Road
Cabot Road
Colonial Road
Commercial Street
Inwood Drive
Woburn Street
Route 125
28
62
129
93
38
North IS
Total Enrollment (4-5th) 252
Out of District 0
Unmatched 2
Total Live-In (4-5th) 252
Live and Attend In 246
Live Out, Attend In 4
Live In, Attend Out 6
Note: Concentration represents counts of students within a quarter-mile radius. Concentrations of less than 6 students are excluded.
N
W
E
S
0
0.5
1
Miles
Data Sources: WPS, MASSGIS, ESRI
Cartographer: SD, September 2023
CropperGIS

Appendix H: Capacity Analysis



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	199	382	217	104	160	134
Future Volume (Veh/h)	199	382	217	104	160	134
Sign Control	Yield			Free	Free	
Grade	-3%			3%	-2%	
Peak Hour Factor	0.92	0.92	0.89	0.89	0.94	0.94
Hourly flow rate (vph)	216	415	244	117	170	143
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	846	242	313			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	846	242	313			
tC, single (s)	*2.1	*2.1	*7.3			
tC, 2 stage (s)						
tF (s)	*1.0	*1.0	*2.2			
p0 queue free %	88	87	74			
cM capacity (veh/h)	1834	3233	953			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	631	361	313
Volume Left	216	244	0
Volume Right	415	0	143
cSH	4916	953	1700
Volume to Capacity	0.13	0.26	0.18
Queue Length 95th (ft)	11	26	0
Control Delay (s)	6.6	7.7	0.0
Lane LOS	A	A	
Approach Delay (s)	6.6	7.7	0.0
Approach LOS	A		

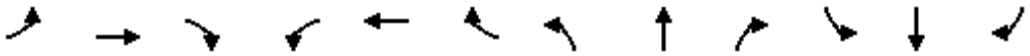
Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	1	284	0	3	276
Future Volume (Veh/h)	3	1	284	0	3	276
Sign Control	Stop		Free			Free
Grade	0%		-6%			-1%
Peak Hour Factor	0.50	0.50	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	6	2	369	0	3	300
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	675	369			369	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	675	369			369	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	421	681			1201	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	369	303
Volume Left	6	0	3
Volume Right	2	0	0
cSH	466	1700	1201
Volume to Capacity	0.02	0.22	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	12.9	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	12.9	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		26.9%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	17	0	0	1	38	244	1	0	259	11
Future Volume (Veh/h)	5	0	17	0	0	1	38	244	1	0	259	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			2%			0%	
Peak Hour Factor	0.28	0.28	0.28	0.25	0.25	0.25	0.79	0.79	0.79	0.90	0.90	0.90
Hourly flow rate (vph)	18	0	61	0	0	4	48	309	1	0	288	12
Pedestrians		3										
Lane Width (ft)		16.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	706	703	297	760	708	310	303			310		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	706	703	297	760	708	310	303			310		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	92	100	100	99	96			100		
cM capacity (veh/h)	339	349	744	289	347	735	1265			1262		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	79	4	358	300
Volume Left	18	0	48	0
Volume Right	61	4	1	12
cSH	585	735	1265	1262
Volume to Capacity	0.14	0.01	0.04	0.00
Queue Length 95th (ft)	12	0	3	0
Control Delay (s)	12.1	9.9	1.4	0.0
Lane LOS	B	A	A	
Approach Delay (s)	12.1	9.9	1.4	0.0
Approach LOS	B	A		

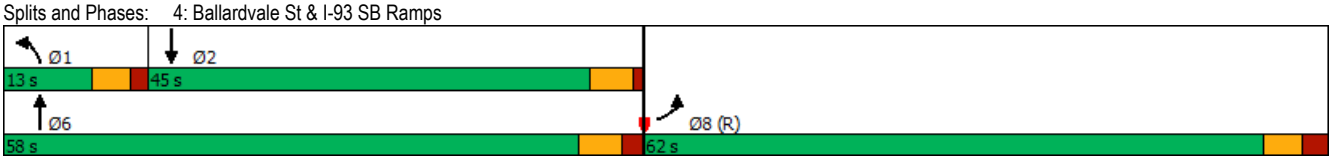
Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	45.2%	ICU Level of Service	A	
Analysis Period (min)	15			

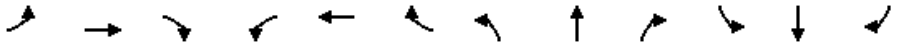
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	484	100	27	239	163	605
Future Volume (vph)	484	100	27	239	163	605
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	16	11	11	12	15
Grade (%)	-1%			3%	-3%	
Storage Length (ft)	75	0	175			0
Storage Lanes	2	1	1			1
Taper Length (ft)	200		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3093	1839	1653	1756	1819	1670
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3093	1839	1653	1756	1819	1670
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		108				617
Link Speed (mph)	45			35	35	
Link Distance (ft)	338			607	429	
Travel Time (s)	5.1			11.8	8.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.85	0.85	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	0%	4%	3%	6%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	520	108	32	281	166	617
Shared Lane Traffic (%)						
Lane Group Flow (vph)	520	108	32	281	166	617
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free				Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	9.0		7.0	10.0	10.0	
Minimum Split (s)	24.0		12.0	24.0	23.0	
Total Split (s)	62.0		13.0	58.0	45.0	
Total Split (%)	51.7%		10.8%	48.3%	37.5%	
Maximum Green (s)	56.0		8.0	52.0	40.0	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	C-Max		None	Min	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	82.7	120.0	7.4	25.3	18.8	120.0
Actuated g/C Ratio	0.69	1.00	0.06	0.21	0.16	1.00
v/c Ratio	0.24	0.06	0.32	0.76	0.58	0.37
Control Delay	8.1	0.1	62.3	57.1	55.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	0.1	62.3	57.1	55.9	0.6
LOS	A	A	E	E	E	A
Approach Delay	6.7			57.6	12.4	
Approach LOS	A			E	B	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	72	0	24	203	125	0
Queue Length 95th (ft)	117	0	55	259	189	0
Internal Link Dist (ft)	258			527	349	
Turn Bay Length (ft)	75		175			
Base Capacity (vph)	2130	1839	110	760	606	1670
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.06	0.29	0.37	0.27	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 113 (94%), Referenced to phase 8:EBL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Ballardvale St & I-93 SB Ramps



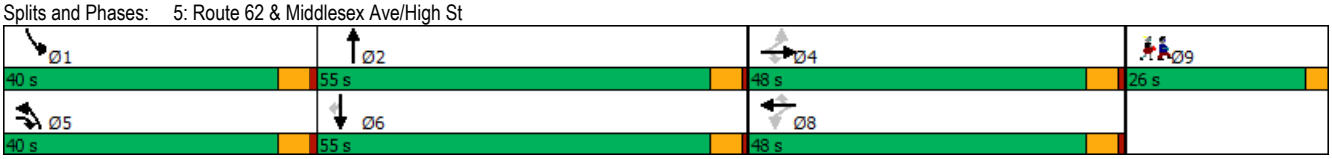


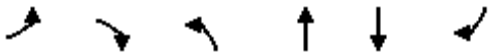
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	290	87	143	17	56	29	96	356	33	10	334	168	
Future Volume (vph)	290	87	143	17	56	29	96	356	33	10	334	168	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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			0.850			0.850		0.987				0.850	
Flt Protected		0.963			0.988		0.950			0.950			
Satd. Flow (prot)	0	1734	1522	0	1742	1584	1693	1747	0	1745	1749	1531	
Flt Permitted		0.698			0.863		0.950			0.950			
Satd. Flow (perm)	0	1257	1522	0	1521	1584	1693	1747	0	1745	1749	1531	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			45			65		3				122	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.88	0.88	0.88	0.61	0.61	0.61	0.87	0.87	0.87	0.85	0.85	0.85	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	8%	4%	6%	5%	3%	5%	6%	3%	0%	5%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	330	99	163	28	92	48	110	409	38	12	393	198	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	429	163	0	120	48	110	447	0	12	393	198	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	48.0	48.0	40.0	48.0	48.0	48.0	40.0	55.0		40.0	55.0	55.0	26.0
Total Split (%)	28.4%	28.4%	23.7%	28.4%	28.4%	28.4%	23.7%	32.5%		23.7%	32.5%	32.5%	15%
Maximum Green (s)	43.0	43.0	35.0	43.0	43.0	43.0	35.0	50.0		35.0	50.0	50.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		45.0	60.9		45.0	45.0	11.4	41.9		4.7	26.8	26.8	
Actuated g/C Ratio		0.44	0.59		0.44	0.44	0.11	0.41		0.05	0.26	0.26	
v/c Ratio		0.78	0.18		0.18	0.07	0.59	0.62		0.15	0.86	0.40	
Control Delay		39.7	7.9		24.9	5.0	60.3	29.5		61.2	55.8	15.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		39.7	7.9		24.9	5.0	60.3	29.5		61.2	55.8	15.6	
LOS		D	A		C	A	E	C		E	E	B	
Approach Delay		30.9			19.2			35.6			42.7		
Approach LOS		C			B			D			D		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		199	26		40	0	63	195		7	219	35	
Queue Length 95th (ft)		#695	77		97	0	164	452		33	433	110	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		552	1285		668	732	605	916		623	893	841	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		0.78	0.13		0.18	0.07	0.18	0.49		0.02	0.44	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 169			
Actuated Cycle Length: 102.4			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 35.0		Intersection LOS: C	
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Route 62 & Middlesex Ave/High St





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	186	323	460	105	178	416
Future Volume (Veh/h)	186	323	460	105	178	416
Sign Control	Yield			Free	Free	
Grade	-3%			3%	-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.94	0.94
Hourly flow rate (vph)	200	347	495	113	189	443
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1514	410	632			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1514	410	632			
tC, single (s)	*2.1	*2.1	*7.3			
tC, 2 stage (s)						
tF (s)	*1.0	*1.0	*2.2			
p0 queue free %	0	88	10			
cM capacity (veh/h)	175	2998	548			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	547	608	632
Volume Left	200	495	0
Volume Right	347	0	443
cSH	453	548	1700
Volume to Capacity	1.21	0.90	0.37
Queue Length 95th (ft)	534	268	0
Control Delay (s)	140.5	45.7	0.0
Lane LOS	F	E	
Approach Delay (s)	140.5	45.7	0.0
Approach LOS	F		

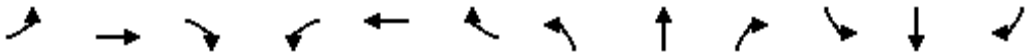
Intersection Summary			
Average Delay	58.6		
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

* User Entered Value

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	2	271	3	2	562
Future Volume (Veh/h)	2	2	271	3	2	562
Sign Control	Stop		Free			Free
Grade	0%		-6%			-1%
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	4	4	327	4	2	624
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	957	329			331	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	957	329			331	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	288	717			1240	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	331	626
Volume Left	4	0	2
Volume Right	4	4	0
cSH	411	1700	1240
Volume to Capacity	0.02	0.19	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.9	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	13.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	55	4	0	1	31	239	2	0	514	8
Future Volume (Veh/h)	24	0	55	4	0	1	31	239	2	0	514	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			2%			0%	
Peak Hour Factor	0.53	0.53	0.53	0.63	0.63	0.63	0.80	0.80	0.80	0.86	0.86	0.86
Hourly flow rate (vph)	45	0	104	6	0	2	39	299	2	0	598	9
Pedestrians		8										
Lane Width (ft)		16.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		1										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	990	990	610	1084	993	300	615			301		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	990	990	610	1084	993	300	615			301		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	100	79	96	100	100	96			100		
cM capacity (veh/h)	216	236	489	148	235	744	950			1272		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	149	8	340	607
Volume Left	45	6	39	0
Volume Right	104	2	2	9
cSH	354	185	950	1272
Volume to Capacity	0.42	0.04	0.04	0.00
Queue Length 95th (ft)	51	3	3	0
Control Delay (s)	22.4	25.3	1.4	0.0
Lane LOS	C	D	A	
Approach Delay (s)	22.4	25.3	1.4	0.0
Approach LOS	C	D		

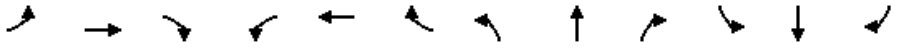
Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	174	119	40	227	459	759
Future Volume (vph)	174	119	40	227	459	759
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	16	11	11	12	15
Grade (%)	-1%			3%	-3%	
Storage Length (ft)	75	0	175			0
Storage Lanes	2	1	1			1
Taper Length (ft)	200		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2984	1821	1637	1774	1891	1734
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	2984	1821	1637	1774	1891	1734
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		129				761
Link Speed (mph)	45			35	35	
Link Distance (ft)	338			607	429	
Travel Time (s)	5.1			11.8	8.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.85	0.85	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	1%	5%	2%	2%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	189	129	47	267	516	853
Shared Lane Traffic (%)						
Lane Group Flow (vph)	189	129	47	267	516	853
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free				Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	9.0		7.0	10.0	10.0	
Minimum Split (s)	24.0		12.0	24.0	23.0	
Total Split (s)	31.0		20.0	55.0	35.0	
Total Split (%)	36.0%		23.3%	64.0%	40.7%	
Maximum Green (s)	25.0		15.0	49.0	30.0	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	9.9	46.9	7.7	24.2	21.2	46.9
Actuated g/C Ratio	0.21	1.00	0.16	0.52	0.45	1.00
v/c Ratio	0.30	0.07	0.18	0.29	0.60	0.49
Control Delay	19.6	0.1	22.8	6.7	14.5	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	0.1	22.8	6.7	14.5	1.0
LOS	B	A	C	A	B	A
Approach Delay	11.7			9.1	6.1	
Approach LOS	B			A	A	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	16	0	8	33	69	0
Queue Length 95th (ft)	61	0	41	61	232	0
Internal Link Dist (ft)	258			527	349	
Turn Bay Length (ft)	75		175			
Base Capacity (vph)	1691	1821	556	1655	1285	1734
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.07	0.08	0.16	0.40	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 86			
Actuated Cycle Length: 46.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 50.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Ballardvale St & I-93 SB Ramps

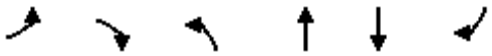


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	244	76	187	44	110	31	126	451	28	15	327	303	
Future Volume (vph)	244	76	187	44	110	31	126	451	28	15	327	303	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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												0.98	
Frt			0.850			0.850		0.991				0.850	
Flt Protected		0.963			0.986		0.950			0.950			
Satd. Flow (prot)	0	1734	1522	0	1806	1631	1743	1816	0	1631	1766	1561	
Flt Permitted		0.607			0.734		0.950			0.950			
Satd. Flow (perm)	0	1093	1522	0	1344	1631	1743	1816	0	1631	1766	1526	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			66			66		2				240	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.75	0.75	0.75	0.94	0.94	0.94	0.97	0.97	0.97	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	11%	4%	2%	1%	0%	2%	2%	4%	7%	4%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	294	92	225	59	147	41	134	480	30	15	337	312	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	386	225	0	206	41	134	510	0	15	337	312	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	60.0		40.0	60.0	60.0	26.0
Total Split (%)	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	36.1%		24.1%	36.1%	36.1%	16%
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0	35.0	35.0	55.0		35.0	55.0	55.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		36.8	53.0		36.8	36.8	11.6	34.3		4.9	21.0	21.0	
Actuated g/C Ratio		0.41	0.60		0.41	0.41	0.13	0.39		0.06	0.24	0.24	
v/c Ratio		0.85	0.24		0.37	0.06	0.59	0.73		0.17	0.81	0.57	
Control Delay		46.8	7.0		26.5	3.3	50.7	32.0		53.1	48.6	12.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		46.8	7.0		26.5	3.3	50.7	32.0		53.1	48.6	12.9	
LOS		D	A		C	A	D	C		D	D	B	
Approach Delay		32.1			22.6			35.9			32.0		
Approach LOS		C			C			D			C		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		160	29		65	0	64	192		7	157	28	
Queue Length 95th (ft)		#566	78		193	4	178	516		37	369	138	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		453	1330		557	715	723	1185		676	1151	1078	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		0.85	0.17		0.37	0.06	0.19	0.43		0.02	0.29	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 88.7			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Route 62 & Middlesex Ave/High St



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	219	389	221	114	166	138
Future Volume (Veh/h)	219	389	221	114	166	138
Sign Control	Yield			Free	Free	
Grade	-3%			3%	-2%	
Peak Hour Factor	0.92	0.92	0.89	0.89	0.94	0.94
Hourly flow rate (vph)	238	423	248	128	177	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	874	250	324			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	874	250	324			
tC, single (s)	*2.1	*2.1	*7.3			
tC, 2 stage (s)						
tF (s)	*1.0	*1.0	*2.2			
p0 queue free %	87	87	73			
cM capacity (veh/h)	1789	3220	935			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	661	376	324
Volume Left	238	248	0
Volume Right	423	0	147
cSH	4968	935	1700
Volume to Capacity	0.13	0.27	0.19
Queue Length 95th (ft)	11	27	0
Control Delay (s)	6.7	7.7	0.0
Lane LOS	A	A	
Approach Delay (s)	6.7	7.7	0.0
Approach LOS	A		

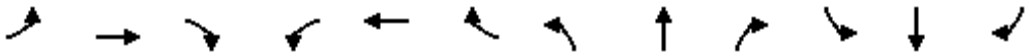
Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	1	313	0	3	286
Future Volume (Veh/h)	3	1	313	0	3	286
Sign Control	Stop		Free			Free
Grade	0%		-6%			-1%
Peak Hour Factor	0.50	0.50	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	6	2	406	0	3	311
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	723	406			406	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	723	406			406	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	395	649			1164	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	406	314
Volume Left	6	0	3
Volume Right	2	0	0
cSH	438	1700	1164
Volume to Capacity	0.02	0.24	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.4	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	13.4	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		27.4%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	17	0	0	1	38	272	1	0	269	11
Future Volume (Veh/h)	5	0	17	0	0	1	38	272	1	0	269	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			2%			0%	
Peak Hour Factor	0.28	0.28	0.28	0.25	0.25	0.25	0.79	0.79	0.79	0.90	0.90	0.90
Hourly flow rate (vph)	18	0	61	0	0	4	48	344	1	0	299	12
Pedestrians		3										
Lane Width (ft)		16.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	752	749	308	806	754	344	314			345		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	749	308	806	754	344	314			345		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	92	100	100	99	96			100		
cM capacity (veh/h)	315	329	734	268	326	703	1253			1225		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	79	4	393	311
Volume Left	18	0	48	0
Volume Right	61	4	1	12
cSH	563	703	1253	1225
Volume to Capacity	0.14	0.01	0.04	0.00
Queue Length 95th (ft)	12	0	3	0
Control Delay (s)	12.4	10.2	1.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.4	10.2	1.3	0.0
Approach LOS	B	B		

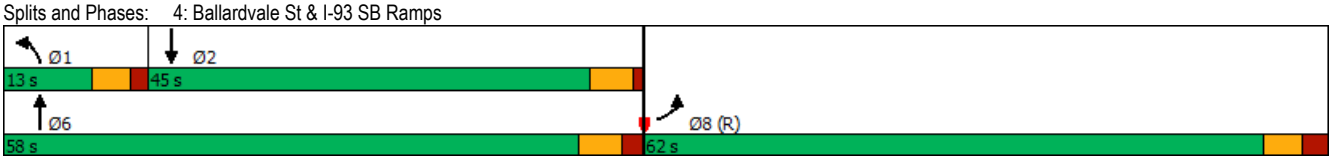
Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

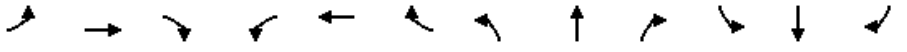
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	565	102	27	267	171	633
Future Volume (vph)	565	102	27	267	171	633
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	16	11	11	12	15
Grade (%)	-1%			3%	-3%	
Storage Length (ft)	75	0	175			0
Storage Lanes	2	1	1			1
Taper Length (ft)	200		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3093	1839	1653	1756	1819	1670
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3093	1839	1653	1756	1819	1670
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		110				646
Link Speed (mph)	45			35	35	
Link Distance (ft)	338			607	429	
Travel Time (s)	5.1			11.8	8.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.85	0.85	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	0%	4%	3%	6%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	608	110	32	314	174	646
Shared Lane Traffic (%)						
Lane Group Flow (vph)	608	110	32	314	174	646
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free				Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	9.0		7.0	10.0	10.0	
Minimum Split (s)	24.0		12.0	24.0	23.0	
Total Split (s)	62.0		13.0	58.0	45.0	
Total Split (%)	51.7%		10.8%	48.3%	37.5%	
Maximum Green (s)	56.0		8.0	52.0	40.0	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	C-Max		None	Min	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	81.3	120.0	7.4	26.7	20.1	120.0
Actuated g/C Ratio	0.68	1.00	0.06	0.22	0.17	1.00
v/c Ratio	0.29	0.06	0.32	0.81	0.57	0.39
Control Delay	8.9	0.1	62.3	59.5	54.1	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	0.1	62.3	59.5	54.1	0.7
LOS	A	A	E	E	D	A
Approach Delay	7.6			59.7	12.0	
Approach LOS	A			E	B	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	89	0	24	231	131	0
Queue Length 95th (ft)	144	0	55	287	195	0
Internal Link Dist (ft)	258			527	349	
Turn Bay Length (ft)	75		175			
Base Capacity (vph)	2096	1839	110	760	606	1670
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.06	0.29	0.41	0.29	0.39

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 113 (94%), Referenced to phase 8:EBL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Ballardvale St & I-93 SB Ramps



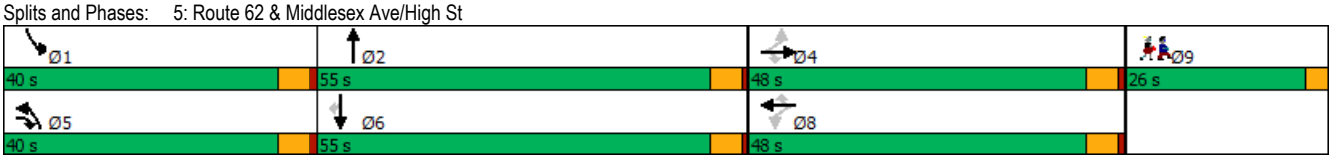


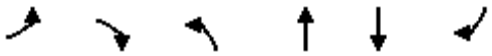
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	295	89	149	17	57	30	106	380	34	10	347	171	
Future Volume (vph)	295	89	149	17	57	30	106	380	34	10	347	171	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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			0.850			0.850		0.988				0.850	
Flt Protected		0.963			0.989		0.950			0.950			
Satd. Flow (prot)	0	1734	1522	0	1743	1584	1693	1748	0	1745	1749	1531	
Flt Permitted		0.698			0.848		0.950			0.950			
Satd. Flow (perm)	0	1257	1522	0	1495	1584	1693	1748	0	1745	1749	1531	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			46			65		3				119	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.88	0.88	0.88	0.61	0.61	0.61	0.87	0.87	0.87	0.85	0.85	0.85	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	8%	4%	6%	5%	3%	5%	6%	3%	0%	5%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	335	101	169	28	93	49	122	437	39	12	408	201	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	436	169	0	121	49	122	476	0	12	408	201	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	48.0	48.0	40.0	48.0	48.0	48.0	40.0	55.0		40.0	55.0	55.0	26.0
Total Split (%)	28.4%	28.4%	23.7%	28.4%	28.4%	28.4%	23.7%	32.5%		23.7%	32.5%	32.5%	15%
Maximum Green (s)	43.0	43.0	35.0	43.0	43.0	43.0	35.0	50.0		35.0	50.0	50.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		45.0	61.8		45.0	45.0	12.2	44.5		4.7	28.6	28.6	
Actuated g/C Ratio		0.43	0.59		0.43	0.43	0.12	0.42		0.04	0.27	0.27	
v/c Ratio		0.81	0.18		0.19	0.07	0.62	0.64		0.15	0.86	0.40	
Control Delay		43.5	8.4		26.5	5.3	62.2	29.5		63.0	55.4	16.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		43.5	8.4		26.5	5.3	62.2	29.5		63.0	55.4	16.1	
LOS		D	A		C	A	E	C		E	E	B	
Approach Delay		33.7			20.4			36.2			42.8		
Approach LOS		C			C			D			D		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		217	28		43	0	72	212		7	234	38	
Queue Length 95th (ft)		#740	83		101	0	182	486		34	457	117	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		538	1257		640	715	590	903		608	871	822	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		0.81	0.13		0.19	0.07	0.21	0.53		0.02	0.47	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 169			
Actuated Cycle Length: 105.1			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Route 62 & Middlesex Ave/High St





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	194	329	468	110	188	438
Future Volume (Veh/h)	194	329	468	110	188	438
Sign Control	Yield			Free	Free	
Grade	-3%			3%	-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.94	0.94
Hourly flow rate (vph)	209	354	503	118	200	466
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1557	433	666			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1557	433	666			
tC, single (s)	*2.1	*2.1	*7.3			
tC, 2 stage (s)						
tF (s)	*1.0	*1.0	*2.2			
p0 queue free %	0	88	3			
cM capacity (veh/h)	45	2968	516			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	563	621	666
Volume Left	209	503	0
Volume Right	354	0	466
cSH	119	516	1700
Volume to Capacity	4.71	0.97	0.39
Queue Length 95th (ft)	Err	323	0
Control Delay (s)	Err	61.9	0.0
Lane LOS	F	F	
Approach Delay (s)	Err	61.9	0.0
Approach LOS	F		

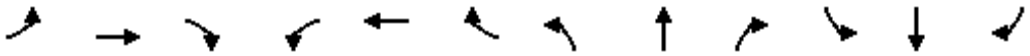
Intersection Summary			
Average Delay	3063.7		
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

* User Entered Value

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	2	284	3	2	594
Future Volume (Veh/h)	2	2	284	3	2	594
Sign Control	Stop		Free			Free
Grade	0%		-6%			-1%
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	4	4	342	4	2	660
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1008	344			346	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1008	344			346	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	268	703			1224	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	346	662
Volume Left	4	0	2
Volume Right	4	4	0
cSH	389	1700	1224
Volume to Capacity	0.02	0.20	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	14.5	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	14.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		42.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	55	4	0	1	31	251	2	0	545	8
Future Volume (Veh/h)	24	0	55	4	0	1	31	251	2	0	545	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			2%			0%	
Peak Hour Factor	0.53	0.53	0.53	0.63	0.63	0.63	0.80	0.80	0.80	0.86	0.86	0.86
Hourly flow rate (vph)	45	0	104	6	0	2	39	314	2	0	634	9
Pedestrians		8										
Lane Width (ft)		16.0										
Walking Speed (ft/s)		3.5										
Percent Blockage		1										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1042	1040	646	1136	1044	315	651			316		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1042	1040	646	1136	1044	315	651			316		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	100	78	96	100	100	96			100		
cM capacity (veh/h)	199	220	467	135	219	730	921			1256		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	149	8	355	643
Volume Left	45	6	39	0
Volume Right	104	2	2	9
cSH	332	170	921	1256
Volume to Capacity	0.45	0.05	0.04	0.00
Queue Length 95th (ft)	56	4	3	0
Control Delay (s)	24.4	27.3	1.4	0.0
Lane LOS	C	D	A	
Approach Delay (s)	24.4	27.3	1.4	0.0
Approach LOS	C	D		

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	50.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	198	121	41	239	489	841
Future Volume (vph)	198	121	41	239	489	841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	16	11	11	12	15
Grade (%)	-1%			3%	-3%	
Storage Length (ft)	75	0	175			0
Storage Lanes	2	1	1			1
Taper Length (ft)	200		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2984	1821	1637	1774	1891	1734
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	2984	1821	1637	1774	1891	1734
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		132				793
Link Speed (mph)	45			35	35	
Link Distance (ft)	338			607	429	
Travel Time (s)	5.1			11.8	8.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.85	0.85	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	1%	5%	2%	2%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	215	132	48	281	549	945
Shared Lane Traffic (%)						
Lane Group Flow (vph)	215	132	48	281	549	945
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free				Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	9.0		7.0	10.0	10.0	
Minimum Split (s)	24.0		12.0	24.0	23.0	
Total Split (s)	31.0		20.0	55.0	35.0	
Total Split (%)	36.0%		23.3%	64.0%	40.7%	
Maximum Green (s)	25.0		15.0	49.0	30.0	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.1	50.1	7.7	27.2	21.8	50.1
Actuated g/C Ratio	0.20	1.00	0.15	0.54	0.44	1.00
v/c Ratio	0.36	0.07	0.19	0.29	0.67	0.54
Control Delay	22.0	0.1	25.3	6.4	17.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	0.1	25.3	6.4	17.3	1.2
LOS	C	A	C	A	B	A
Approach Delay	13.7			9.2	7.2	
Approach LOS	B			A	A	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	30	0	13	35	140	0
Queue Length 95th (ft)	70	0	43	66	258	0
Internal Link Dist (ft)	258			527	349	
Turn Bay Length (ft)	75		175			
Base Capacity (vph)	1581	1821	520	1608	1203	1734
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.07	0.09	0.17	0.46	0.54

Intersection Summary			
Area Type:	Other		
Cycle Length: 86			
Actuated Cycle Length: 50.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

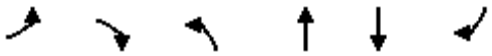
Splits and Phases: 4: Ballardvale St & I-93 SB Ramps

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	248	77	197	45	112	32	131	474	28	15	348	308	
Future Volume (vph)	248	77	197	45	112	32	131	474	28	15	348	308	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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												0.98	
Frt			0.850			0.850		0.992				0.850	
Flt Protected		0.963			0.986		0.950			0.950			
Satd. Flow (prot)	0	1735	1522	0	1806	1631	1743	1818	0	1631	1766	1561	
Flt Permitted		0.598			0.705		0.950			0.950			
Satd. Flow (perm)	0	1077	1522	0	1291	1631	1743	1818	0	1631	1766	1526	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			68			66		2				230	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.75	0.75	0.75	0.94	0.94	0.94	0.97	0.97	0.97	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	11%	4%	2%	1%	0%	2%	2%	4%	7%	4%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	299	93	237	60	149	43	139	504	30	15	359	318	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	392	237	0	209	43	139	534	0	15	359	318	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	60.0		40.0	60.0	60.0	26.0
Total Split (%)	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	36.1%		24.1%	36.1%	36.1%	16%
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0	35.0	35.0	55.0		35.0	55.0	55.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		36.9	53.5		36.9	36.9	12.1	36.3		4.9	22.6	22.6	
Actuated g/C Ratio		0.41	0.59		0.41	0.41	0.13	0.40		0.05	0.25	0.25	
v/c Ratio		0.90	0.26		0.40	0.06	0.60	0.73		0.17	0.82	0.58	
Control Delay		54.2	7.5		28.4	3.8	52.0	31.8		54.8	48.9	13.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		54.2	7.5		28.4	3.8	52.0	31.8		54.8	48.9	13.9	
LOS		D	A		C	A	D	C		D	D	B	
Approach Delay		36.6			24.2			36.0			33.0		
Approach LOS		D			C			D			C		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		174	33		70	0	68	204		7	172	36	
Queue Length 95th (ft)		#599	87		203	5	187	546		38	398	153	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		437	1307		523	701	707	1160		662	1126	1056	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		0.90	0.18		0.40	0.06	0.20	0.46		0.02	0.32	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 90.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Route 62 & Middlesex Ave/High St



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	239	389	221	227	221	148
Future Volume (Veh/h)	239	389	221	227	221	148
Sign Control	Yield			Free	Free	
Grade	-3%			3%	-2%	
Peak Hour Factor	0.92	0.92	0.89	0.89	0.94	0.94
Hourly flow rate (vph)	260	423	248	255	235	157
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1064	314	392			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1064	314	392			
tC, single (s)	*2.1	*2.1	*7.3			
tC, 2 stage (s)						
tF (s)	*1.0	*1.0	2.2			
p0 queue free %	83	86	70			
cM capacity (veh/h)	1566	3131	828			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	683	503	392
Volume Left	260	248	0
Volume Right	423	0	157
cSH	4113	828	1700
Volume to Capacity	0.17	0.30	0.23
Queue Length 95th (ft)	15	32	0
Control Delay (s)	6.9	7.5	0.0
Lane LOS	A	A	
Approach Delay (s)	6.9	7.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

* User Entered Value

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	1	290	0	3	288
Future Volume (Veh/h)	3	1	290	0	3	288
Sign Control	Stop		Free			Free
Grade	0%		-6%			-1%
Peak Hour Factor	0.50	0.50	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	6	2	377	0	3	313
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	696	377			377	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696	377			377	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	410	674			1193	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	377	316
Volume Left	6	0	3
Volume Right	2	0	0
cSH	454	1700	1193
Volume to Capacity	0.02	0.22	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.1	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	13.1	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		27.5%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	276	1	0	288
Future Volume (Veh/h)	0	1	276	1	0	288
Sign Control	Stop		Free			Free
Grade	0%		2%			0%
Peak Hour Factor	0.25	0.25	0.79	0.79	0.90	0.90
Hourly flow rate (vph)	0	4	349	1	0	320
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	670	350			350	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670	350			350	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	426	698			1220	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	350	320
Volume Left	0	0	0
Volume Right	4	1	0
cSH	698	1700	1220
Volume to Capacity	0.01	0.21	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.2	0.0	0.0
Approach LOS	B		

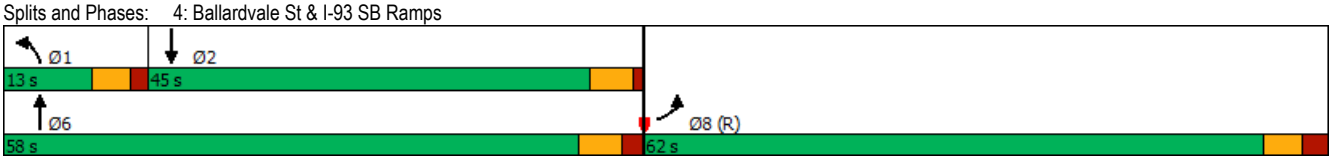
Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		25.2%	ICU Level of Service A
Analysis Period (min)		15	

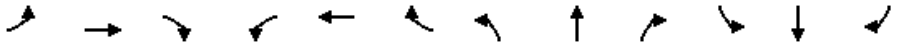
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	565	102	27	267	169	633
Future Volume (vph)	565	102	27	267	169	633
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	16	11	11	12	15
Grade (%)	-1%			3%	-3%	
Storage Length (ft)	75	0	175			0
Storage Lanes	2	1	1			1
Taper Length (ft)	200		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3093	1839	1653	1756	1819	1670
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3093	1839	1653	1756	1819	1670
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		110				646
Link Speed (mph)	45			35	35	
Link Distance (ft)	338			607	429	
Travel Time (s)	5.1			11.8	8.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.85	0.85	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	0%	4%	3%	6%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	608	110	32	314	172	646
Shared Lane Traffic (%)						
Lane Group Flow (vph)	608	110	32	314	172	646
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free				Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	9.0		7.0	10.0	10.0	
Minimum Split (s)	24.0		12.0	24.0	23.0	
Total Split (s)	62.0		13.0	58.0	45.0	
Total Split (%)	51.7%		10.8%	48.3%	37.5%	
Maximum Green (s)	56.0		8.0	52.0	40.0	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	C-Max		None	Min	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	81.4	120.0	7.4	26.6	20.0	120.0
Actuated g/C Ratio	0.68	1.00	0.06	0.22	0.17	1.00
v/c Ratio	0.29	0.06	0.32	0.81	0.57	0.39
Control Delay	8.9	0.1	62.3	59.7	54.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	0.1	62.3	59.7	54.0	0.7
LOS	A	A	E	E	D	A
Approach Delay	7.6			59.9	11.9	
Approach LOS	A			E	B	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	89	0	24	231	129	0
Queue Length 95th (ft)	144	0	55	287	193	0
Internal Link Dist (ft)	258			527	349	
Turn Bay Length (ft)	75		175			
Base Capacity (vph)	2097	1839	110	760	606	1670
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.06	0.29	0.41	0.28	0.39

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 113 (94%), Referenced to phase 8:EBL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Ballardvale St & I-93 SB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	295	109	184	17	98	30	178	380	34	10	347	171	
Future Volume (vph)	295	109	184	17	98	30	178	380	34	10	347	171	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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			0.850			0.850		0.988				0.850	
Flt Protected		0.965			0.993		0.950			0.950			
Satd. Flow (prot)	0	1734	1522	0	1752	1584	1693	1748	0	1745	1749	1531	
Flt Permitted		0.615			0.801		0.950			0.950			
Satd. Flow (perm)	0	1105	1522	0	1413	1584	1693	1748	0	1745	1749	1531	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			54			65		3				119	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.88	0.88	0.88	0.61	0.61	0.61	0.87	0.87	0.87	0.85	0.85	0.85	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	8%	4%	6%	5%	3%	5%	6%	3%	0%	5%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	335	124	209	28	161	49	205	437	39	12	408	201	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	459	209	0	189	49	205	476	0	12	408	201	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	48.0	48.0	40.0	48.0	48.0	48.0	40.0	55.0		40.0	55.0	55.0	26.0
Total Split (%)	28.4%	28.4%	23.7%	28.4%	28.4%	28.4%	23.7%	32.5%		23.7%	32.5%	32.5%	15%
Maximum Green (s)	43.0	43.0	35.0	43.0	43.0	43.0	35.0	50.0		35.0	50.0	50.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		45.2	68.1		45.2	45.2	18.3	50.5		4.8	30.5	30.5	
Actuated g/C Ratio		0.40	0.60		0.40	0.40	0.16	0.45		0.04	0.27	0.27	
v/c Ratio		1.04	0.22		0.34	0.07	0.75	0.61		0.16	0.87	0.40	
Control Delay		90.5	8.6		32.9	5.7	65.3	28.6		68.8	60.1	17.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		90.5	8.6		32.9	5.7	65.3	28.6		68.8	60.1	17.7	
LOS		F	A		C	A	E	C		E	E	B	
Approach Delay		64.8			27.3			39.7			46.5		
Approach LOS		E			C			D			D		

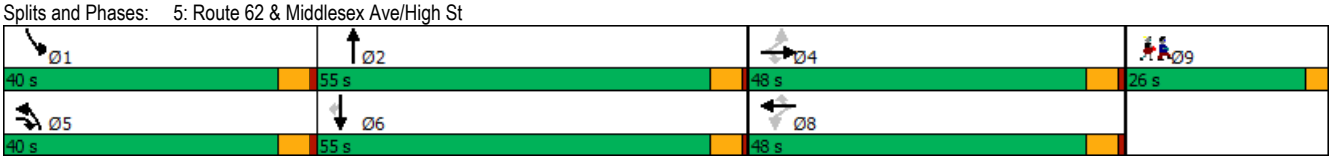
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		~307	40		84	0	131	212		8	257	42	
Queue Length 95th (ft)		#909	102		166	0	291	480		36	502	128	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		440	1174		562	670	549	871		566	810	773	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		1.04	0.18		0.34	0.07	0.37	0.55		0.02	0.50	0.26	

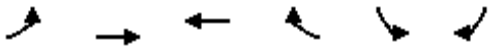
Intersection Summary			
Area Type:	Other		
Cycle Length: 169			
Actuated Cycle Length: 113.3			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 47.9		Intersection LOS: D	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

~ 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.

Splits and Phases: 5: Route 62 & Middlesex Ave/High St

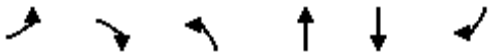




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	160	324	300	8	4	71
Future Volume (Veh/h)	160	324	300	8	4	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.77	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	208	421	326	9	4	77
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	335				1168	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	335				1168	330
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				98	89
cM capacity (veh/h)	1236				180	716

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	629	335	81
Volume Left	208	0	4
Volume Right	0	9	77
cSH	1236	1700	624
Volume to Capacity	0.17	0.20	0.13
Queue Length 95th (ft)	15	0	11
Control Delay (s)	4.1	0.0	11.6
Lane LOS	A		B
Approach Delay (s)	4.1	0.0	11.6
Approach LOS			B

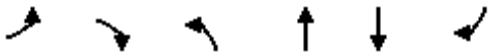
Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		56.8%	ICU Level of Service B
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	11	11	266	277	1
Future Volume (Veh/h)	1	11	11	266	277	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.79	0.79	0.90	0.90
Hourly flow rate (vph)	1	12	14	337	308	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	674	308	309			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	674	308	309			
tC, single (s)	7.4	7.2	5.1			
tC, 2 stage (s)						
tF (s)	4.4	4.2	3.1			
p0 queue free %	100	98	98			
cM capacity (veh/h)	296	551	854			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	351	309
Volume Left	1	14	0
Volume Right	12	0	1
cSH	516	854	1700
Volume to Capacity	0.03	0.02	0.18
Queue Length 95th (ft)	2	1	0
Control Delay (s)	12.2	0.6	0.0
Lane LOS	B	A	
Approach Delay (s)	12.2	0.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	210	329	468	198	367	469
Future Volume (Veh/h)	210	329	468	198	367	469
Sign Control	Yield			Free	Free	
Grade	-3%			3%	-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.94	0.94
Hourly flow rate (vph)	226	354	503	213	390	499
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1858	640	889			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1858	640	889			
tC, single (s)	*2.1	*2.1	*7.3			
tC, 2 stage (s)						
tF (s)	*1.0	*1.0	2.2			
p0 queue free %	0	87	0			
cM capacity (veh/h)	0	2706	350			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	580	716	889
Volume Left	226	503	0
Volume Right	354	0	499
cSH	0	350	1700
Volume to Capacity	Err	1.44	0.52
Queue Length 95th (ft)	Err	658	0
Control Delay (s)	Err	242.1	0.0
Lane LOS	F	F	
Approach Delay (s)	Err	242.1	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	15		

* User Entered Value

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	2	276	3	2	555
Future Volume (Veh/h)	2	2	276	3	2	555
Sign Control	Stop		Free			Free
Grade	0%		-6%			-1%
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	4	4	333	4	2	617
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	956	335			337	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	956	335			337	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	288	712			1234	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	337	619
Volume Left	4	0	2
Volume Right	4	4	0
cSH	410	1700	1234
Volume to Capacity	0.02	0.20	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.9	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	13.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	1	274	2	0	561
Future Volume (Veh/h)	4	1	274	2	0	561
Sign Control	Stop		Free			Free
Grade	0%		2%			0%
Peak Hour Factor	0.63	0.63	0.80	0.80	0.86	0.86
Hourly flow rate (vph)	6	2	342	2	0	652
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	995	343			344	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	995	343			344	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	274	704			1226	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	344	652
Volume Left	6	0	0
Volume Right	2	2	0
cSH	323	1700	1226
Volume to Capacity	0.02	0.20	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	16.4	0.0	0.0
Lane LOS	C		
Approach Delay (s)	16.4	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	198	121	41	230	489	841
Future Volume (vph)	198	121	41	230	489	841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	16	11	11	12	15
Grade (%)	-1%			3%	-3%	
Storage Length (ft)	75	0	175			0
Storage Lanes	2	1	1			1
Taper Length (ft)	200		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2984	1821	1637	1774	1891	1734
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	2984	1821	1637	1774	1891	1734
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		132				793
Link Speed (mph)	45			35	35	
Link Distance (ft)	338			607	429	
Travel Time (s)	5.1			11.8	8.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.85	0.85	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	1%	5%	2%	2%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	215	132	48	271	549	945
Shared Lane Traffic (%)						
Lane Group Flow (vph)	215	132	48	271	549	945
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	8		1	6	2	
Permitted Phases		Free				Free
Detector Phase	8		1	6	2	
Switch Phase						
Minimum Initial (s)	9.0		7.0	10.0	10.0	
Minimum Split (s)	24.0		12.0	24.0	23.0	
Total Split (s)	31.0		20.0	55.0	35.0	
Total Split (%)	36.0%		23.3%	64.0%	40.7%	
Maximum Green (s)	25.0		15.0	49.0	30.0	
Yellow Time (s)	3.5		3.5	4.0	4.0	
All-Red Time (s)	2.5		1.5	2.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		5.0	6.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	10.1	50.1	7.7	27.2	21.8	50.1
Actuated g/C Ratio	0.20	1.00	0.15	0.54	0.44	1.00
v/c Ratio	0.36	0.07	0.19	0.28	0.67	0.54
Control Delay	22.0	0.1	25.3	6.4	17.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	0.1	25.3	6.4	17.3	1.2
LOS	C	A	C	A	B	A
Approach Delay	13.7			9.2	7.2	
Approach LOS	B			A	A	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	30	0	13	33	140	0
Queue Length 95th (ft)	70	0	43	64	258	0
Internal Link Dist (ft)	258			527	349	
Turn Bay Length (ft)	75		175			
Base Capacity (vph)	1581	1821	520	1608	1203	1734
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.07	0.09	0.17	0.46	0.54

Intersection Summary			
Area Type:	Other		
Cycle Length: 86			
Actuated Cycle Length: 50.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Ballardvale St & I-93 SB Ramps

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	248	142	311	45	144	32	187	474	28	15	348	308	
Future Volume (vph)	248	142	311	45	144	32	187	474	28	15	348	308	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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												0.98	
Frt			0.850			0.850		0.992				0.850	
Flt Protected		0.969			0.988		0.950			0.950			
Satd. Flow (prot)	0	1724	1522	0	1810	1631	1743	1818	0	1631	1766	1561	
Flt Permitted		0.568			0.573		0.950			0.950			
Satd. Flow (perm)	0	1011	1522	0	1050	1631	1743	1818	0	1631	1766	1526	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			90			66		2				230	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.75	0.75	0.75	0.94	0.94	0.94	0.97	0.97	0.97	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	11%	4%	2%	1%	0%	2%	2%	4%	7%	4%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	299	171	375	60	192	43	199	504	30	15	359	318	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	470	375	0	252	43	199	534	0	15	359	318	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	60.0		40.0	60.0	60.0	26.0
Total Split (%)	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	36.1%		24.1%	36.1%	36.1%	16%
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0	35.0	35.0	55.0		35.0	55.0	55.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		37.1	57.2		37.1	37.1	15.5	41.1		4.9	24.0	24.0	
Actuated g/C Ratio		0.39	0.60		0.39	0.39	0.16	0.43		0.05	0.25	0.25	
v/c Ratio		1.20	0.40		0.62	0.06	0.71	0.68		0.18	0.81	0.57	
Control Delay		142.9	9.2		37.7	4.0	55.2	28.7		58.7	50.5	14.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		142.9	9.2		37.7	4.0	55.2	28.7		58.7	50.5	14.4	
LOS		F	A		D	A	E	C		E	D	B	
Approach Delay		83.6			32.8			35.9			34.1		
Approach LOS		F			C			D			C		

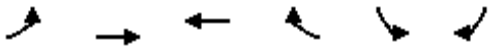
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		~304	64		105	0	103	204		8	183	38	
Queue Length 95th (ft)		#822	156		#319	5	265	540		40	425	162	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		391	1258		406	671	674	1127		631	1074	1018	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		1.20	0.30		0.62	0.06	0.30	0.47		0.02	0.33	0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 95.9			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 50.7		Intersection LOS: D	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

~ 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.

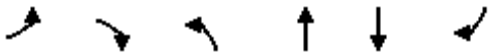
Splits and Phases: 5: Route 62 & Middlesex Ave/High St



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	126	296	605	7	14	256
Future Volume (Veh/h)	126	296	605	7	14	256
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	152	357	672	8	15	278
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	680				1337	676
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680				1337	676
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				89	39
cM capacity (veh/h)	922				143	457

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	509	680	293
Volume Left	152	0	15
Volume Right	0	8	278
cSH	922	1700	411
Volume to Capacity	0.16	0.40	0.71
Queue Length 95th (ft)	15	0	136
Control Delay (s)	4.3	0.0	32.8
Lane LOS	A		D
Approach Delay (s)	4.3	0.0	32.8
Approach LOS			D

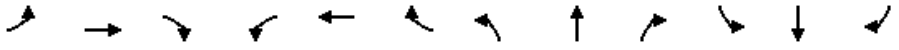
Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		81.4%	ICU Level of Service D
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	9	9	266	552	1
Future Volume (Veh/h)	1	9	9	266	552	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.80	0.80	0.86	0.86
Hourly flow rate (vph)	1	10	11	332	642	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	996	642	643			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	996	642	643			
tC, single (s)	7.4	7.2	5.1			
tC, 2 stage (s)						
tF (s)	4.4	4.2	3.1			
p0 queue free %	99	97	98			
cM capacity (veh/h)	179	337	608			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	343	643
Volume Left	1	11	0
Volume Right	10	0	1
cSH	312	608	1700
Volume to Capacity	0.04	0.02	0.38
Queue Length 95th (ft)	3	1	0
Control Delay (s)	17.0	0.6	0.0
Lane LOS	C	A	
Approach Delay (s)	17.0	0.6	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

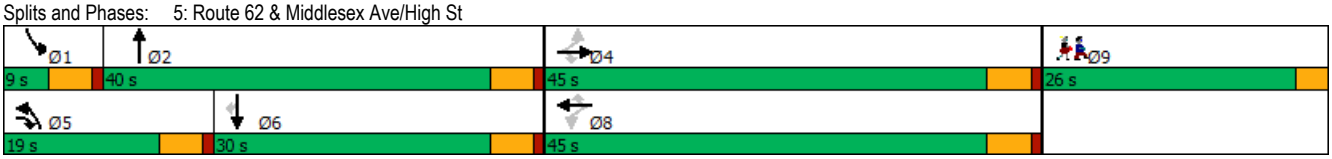


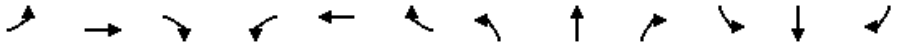
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	295	109	184	17	98	30	178	380	34	10	347	171	
Future Volume (vph)	295	109	184	17	98	30	178	380	34	10	347	171	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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			0.850			0.850		0.988				0.850	
Flt Protected		0.965			0.993		0.950			0.950			
Satd. Flow (prot)	0	1734	1522	0	1752	1584	1693	1748	0	1745	1749	1531	
Flt Permitted		0.624			0.827		0.950			0.950			
Satd. Flow (perm)	0	1121	1522	0	1459	1584	1693	1748	0	1745	1749	1531	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			75			136		4				149	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.88	0.88	0.88	0.61	0.61	0.61	0.87	0.87	0.87	0.85	0.85	0.85	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	8%	4%	6%	5%	3%	5%	6%	3%	0%	5%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	335	124	209	28	161	49	205	437	39	12	408	201	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	459	209	0	189	49	205	476	0	12	408	201	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	45.0	45.0	19.0	45.0	45.0	45.0	19.0	40.0		9.0	30.0	30.0	26.0
Total Split (%)	37.5%	37.5%	15.8%	37.5%	37.5%	37.5%	15.8%	33.3%		7.5%	25.0%	25.0%	22%
Maximum Green (s)	40.0	40.0	14.0	40.0	40.0	40.0	14.0	35.0		4.0	25.0	25.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		40.4	58.7		40.4	40.4	14.1	42.9		4.0	25.2	25.2	
Actuated g/C Ratio		0.41	0.59		0.41	0.41	0.14	0.43		0.04	0.25	0.25	
v/c Ratio		1.01	0.22		0.32	0.07	0.85	0.63		0.17	0.92	0.40	
Control Delay		75.3	6.0		23.9	0.2	73.2	29.1		55.5	64.1	13.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		75.3	6.0		23.9	0.2	73.2	29.1		55.5	64.1	13.1	
LOS		E	A		C	A	E	C		E	E	B	
Approach Delay		53.6			19.0			42.4			47.5		
Approach LOS		D			B			D			D		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		259	30		72	0	120	198		7	233	24	
Queue Length 95th (ft)		#624	53		113	0	#310	#531		29	#516	92	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		456	932		593	725	241	758		71	445	500	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		1.01	0.22		0.32	0.07	0.85	0.63		0.17	0.92	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 44.7		Intersection LOS: D	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Route 62 & Middlesex Ave/High St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	248	142	311	45	144	32	187	474	28	15	348	308	
Future Volume (vph)	248	142	311	45	144	32	187	474	28	15	348	308	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	11	12	12	12	12	11	11	11	
Grade (%)		4%			-2%			3%			0%		
Storage Length (ft)	0		50	0		25	115		0	115		175	
Storage Lanes	0		1	0		1	1		0	1		1	
Taper Length (ft)	25			25			25			80			
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												0.98	
Frt			0.850			0.850		0.992				0.850	
Flt Protected		0.969			0.988		0.950			0.950			
Satd. Flow (prot)	0	1724	1522	0	1810	1631	1743	1818	0	1631	1766	1561	
Flt Permitted		0.590			0.662		0.950			0.950			
Satd. Flow (perm)	0	1050	1522	0	1213	1631	1743	1818	0	1631	1766	1524	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			137			136		2				260	
Link Speed (mph)		30			30			45			45		
Link Distance (ft)		592			864			557			722		
Travel Time (s)		13.5			19.6			8.4			10.9		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.75	0.75	0.75	0.94	0.94	0.94	0.97	0.97	0.97	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	11%	4%	2%	1%	0%	2%	2%	4%	7%	4%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Adj. Flow (vph)	299	171	375	60	192	43	199	504	30	15	359	318	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	470	375	0	252	43	199	534	0	15	359	318	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		9
Permitted Phases	4		4	8		8						6	
Detector Phase	4	4	5	8	8	8	5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		4.0	8.0	8.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		9.0	13.0	13.0	26.0
Total Split (s)	49.0	49.0	18.0	49.0	49.0	49.0	18.0	36.0		9.0	27.0	27.0	26.0
Total Split (%)	40.8%	40.8%	15.0%	40.8%	40.8%	40.8%	15.0%	30.0%		7.5%	22.5%	22.5%	22%
Maximum Green (s)	44.0	44.0	13.0	44.0	44.0	44.0	13.0	31.0		4.0	22.0	22.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?													
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None		None	None	None	None
Walk Time (s)													7.0
Flash Dont Walk (s)													16.0
Pedestrian Calls (#/hr)													5
Act Effct Green (s)		44.4	61.8		44.4	44.4	13.1	38.9		4.0	22.2	22.2	
Actuated g/C Ratio		0.45	0.62		0.45	0.45	0.13	0.39		0.04	0.22	0.22	
v/c Ratio		1.00	0.38		0.46	0.05	0.87	0.75		0.23	0.91	0.59	
Control Delay		71.4	6.2		24.6	0.1	76.7	35.9		58.2	66.7	13.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay		71.4	6.2		24.6	0.1	76.7	35.9		58.2	66.7	13.3	
LOS		E	A		C	A	E	D		E	E	B	
Approach Delay		42.5			21.1			47.0			42.0		
Approach LOS		D			C			D			D		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Queue Length 50th (ft)		260	51		97	0	117	251		9	207	28	
Queue Length 95th (ft)		#579	74		190	0	#320	#701		35	#508	138	
Internal Link Dist (ft)		512			784			477			642		
Turn Bay Length (ft)			50			25	115			115		175	
Base Capacity (vph)		470	999		542	805	230	713		66	395	542	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio		1.00	0.38		0.46	0.05	0.87	0.75		0.23	0.91	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 41.2		Intersection LOS: D	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Route 62 & Middlesex Ave/High St