

TRANSPORTATION IMPACT ASSESSMENT

WATERFRONT WEST REDEVELOPMENT PROJECT
MERRIMAC STREET
NEWBURYPORT, MASSACHUSETTS

Prepared for:

NEWBURYPORT MANAGER LLC
Newburyport, Massachusetts

c/o:

NEW ENGLAND
DEVELOPMENT

Boston, Massachusetts

November 2016

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Dear Reviewer:

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

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey S. Dirk, P.E., PTOE, FITE
Principal

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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 Waterfront West mixed-use development to be located off Merrimac Street and accessed by way of Tournament Wharf, McKay's Wharf and Brown's Wharf along the southern bank of the Merrimack River in Newburyport, Massachusetts (hereafter referred to as the "Project"). At present, the Project site encompasses a mix of uses that include a marina, boat storage and associated commercial, industrial and non-water and water dependent uses.

The Project will require the issuance of a State Highway Access Permit from the Massachusetts Department of Transportation (MassDOT) for access to Newburyport Turnpike (Route 1/1A), a State Highway under the jurisdiction of MassDOT.

This assessment was prepared in consultation with the City of Newburyport and MassDOT; was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*; and was conducted pursuant to the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. 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 without consideration of transit use, the Project is predicted to generate approximately 3,038 primary vehicle trips on an average weekday and 3,844 primary vehicle trips on a Saturday (both two-way, 24-hour volumes), with 159 primary vehicle trips expected during the weekday morning peak-hour, 266 primary vehicle trips expected during the weekday evening peak-hour and 349 primary vehicle trips expected during the Saturday midday peak-hour;
2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with the majority of the movements at the study intersections shown to continue to operate at a level-of-service (LOS) that represents "acceptable" traffic operations;

¹*Trip Generation*, 9th Edition; Institute of Transportation Engineers; Washington, DC; 2012.

3. In comparison to the existing uses that occupy the Project site, the Project is expected to result in 2,744 additional total (two-way and inclusive of pass-by trips) vehicle trips on an average weekday and 3,908 additional vehicle trips on a Saturday, with 97 additional total vehicle trips expected during the weekday morning peak-hour, 253 additional vehicle trips expected during the weekday evening peak-hour and 367 additional vehicle trips expected during the Saturday midday peak-hour;
4. Increased delays were noted for vehicles exiting the Project site with the completion of the redevelopment project; however, the potential vehicle queues can be contained within the Project site without impeding access or on-site circulation;
5. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and
6. Lines of sight to and from the ways that provide access to the Project site from Merrimac Street were found to meet or could be made to meet or exceed the required minimum distance for the intersections to function in a safe manner based on the appropriate approach speed along Merrimac Street and with consideration of the urban environment in which the Project site is located.

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 improvements that have been recommended as a part of this evaluation, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals. To the extent that the Project is constructed in phases, the identified improvement measures may also be phased in a manner that will be consistent with the build-out of the Project and the associated impacts on the transportation infrastructure.

Project Access

Access to the Project site is and will continue to be provided by way of Tournament Wharf, McKay's Wharf and Brown's Wharf, all which intersect the north side of Merrimac Street east of Newburyport Turnpike. The following recommendations are offered with respect to the design and operation of the ways that serve the Project site:

- The access ways to the Project site should be a minimum of 24-feet in width for two-way travel and a minimum of 20-feet in width for one-way operation, or as required to accommodate fire truck turning maneuvers pursuant to the requirements of NFPA® 1.²

²National Fire Protection Association (NFPA)® 1, *Fire Code*, Seventh Edition; NFPA; Quincy, Massachusetts; 2015; as amended per 527 CMR.

- Fire lanes should be a minimum of 20-feet in width and constructed of bituminous asphalt concrete or other stabilized surface material that can support travel by the largest anticipated responding emergency vehicle pursuant to the requirements of NFPA® 1.
- Vehicles exiting the Project should be placed under STOP-sign control with marked STOP-lines provided.
- All signs and pavement markings to be installed within the Project shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).³
- Sidewalks should be provided within the Project site linking the proposed buildings and other amenities to the sidewalk infrastructure along Merrimac Street.
- The ways serving the Project site should be constructed as “pan-type” driveways so that the sidewalk is flush across traveled-way or, where this design cannot be accommodated, Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided.
- Signs and landscaping to be within intersection sight triangle areas of the ways serving the Project site should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within the sight triangle areas of the ways serving the Project site should be promptly removed where such accumulations would exceed 2.5 feet in height.
- The City should consider restricting on-street parking for a minimum distance of 20-feet on either side of the ways serving the Project site in order to provide and maintain the required lines of sight for the ways to operate in a safe manner.
- A school bus waiting area should be provided at an appropriate location defined in consultation with the City.

Transportation Demand Management

The Project site is ideally situated to take advantage of available public transportation opportunities, including the existing bus service operated by the Merrimack Valley Regional Transit Authority (MVRTA) along Merrimac Street to the east of the Project site, the future MVRTA bus terminal that is to be located opposite the Project site off Titcomb Street, and the Massachusetts Bay Transportation Authority (MBTA) Commuter Rail service at Newburyport Station to the south. In addition, the Project site is directly accessible from the Clipper City Rail Trail which provides access to the Newburyport Commuter Rail Station and the trail system along the Merrimack River. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location within each building and/or otherwise made available to hotel guests, residents and employees;
- A “welcome packet” will be provided to new residents and employees detailing available public transportation services, bicycle and walking alternatives, and commuter options available through MassRIDES’ and their NuRide program which rewards individuals that

³*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

choose to walk, bicycle, carpool, vanpool or that use public transportation to travel to and from work;

- Residents and employees will be made aware of the Emergency Ride Home (ERH) program available through MassRIDES, which reimburses employees of a participating MassRIDES employer partner worksite that is registered for ERH and that carpool, take transit, bicycle, walk or vanpool to work;
- Pedestrian accommodations will be incorporated within the Project site consisting of sidewalks linking buildings and parking to on-site amenities and sidewalks along Merrimac Street;
- A connection to the Clipper City Rail Trail will be incorporated into the Project and include an extension of the Harborwalk along the Project site frontage on the Merrimack River;
- A mail drop will be provided in a central location within each building; and
- Bicycle parking will be provided, including both exterior bicycle racks and interior bicycle parking.

Off-Site

Merrimac Street at Summer Street, Winter Street and the Route 1 Ramps

Operating conditions for left-turn movements exiting from Route 1 southbound to Merrimac Street and for left-turn and through movements from Summer Street at its intersection with Merrimac Street and the Route 1 northbound on-ramp were found to be constrained under existing conditions and independent of the Project. As a result of these existing conditions, MassDOT is in the process of developing preliminary design plans for the installation of traffic control signals at both intersections; however, a construction date and funding source have not yet been identified. In order to advance these improvements, the Project proponent will prepare design plans, up to and including the MassDOT 100 Percent Design/Project Specifications & Estimate (PS&E) submission, and will assist the City in preparing the necessary grant applications to obtain funding for the construction of the improvements. With the installation of traffic control signals at the Route 1 ramp intersections with Merrimac Street, Summer Street and Winter Street, operating conditions were shown to improve to acceptable conditions.

Merrimac Street at Green Street and Waterfront Park

Left-turn movements exiting Green Street onto Merrimac Street and all movements from the driveway to Waterfront Park were found to be operating at or over capacity during weekday evening and Saturday midday peak hours under existing conditions and independent of the Project. A traffic control signal has been installed at this intersection that is currently operating in flashing mode (flashing “yellow” for Merrimac Street and flashing “red” for Green Street and Waterfront Park). In order to improve traffic operations at this intersection and to reduce both motorist delays and vehicle queuing on the Green Street approach, the Project proponent will restore the traffic signal to full operation, including replacing the traffic signal controller and associated appurtenances to the extent necessary to reactivate the traffic signal. With reactivation of the traffic control signal at the Merrimac Street/Green Street intersection, overall operating conditions were shown to improve to acceptable conditions.

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 Waterfront West mixed-use development to be located off Merrimac Street and accessed by way of Tournament Wharf, McKay's Wharf and Brown's Wharf along the southern bank of the Merrimack River in Newburyport, 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 Merrimac Street and at the intersections of Merrimac Street with the Newburyport Turnpike (Route 1) on and off-ramps, and at major intersections along Merrimac Street between Route 1 and Market Square (Merrimac Street/State Street/Water Street)

PROJECT DESCRIPTION

The Project will entail the redevelopment of the west end waterfront area located along the south bank of the Merrimack River and east of the Route 1 drawbridge in Newburyport, Massachusetts. As proposed, the redevelopment will entail the removal or rehabilitation of the existing structures that occupy the Project site to include up to 200 residential condominium/townhouse units, 100 hotel rooms and approximately 20,000 square feet (sf) of retail and restaurant uses. The existing marina, boat slips and moorings that are accessed through the Project site will be retained.

The Project site encompasses approximately 5.6± acres bounded by the Merrimack River to the north; Merrimac Street and commercial properties to the south; commercial properties and a parking lot to the east; and commercial properties and Route 1 to the west. Figure 1 depicts the Project site location in relation to the existing roadway network.

Access to the Project site is and will continue to be provided by way of Tournament Wharf, McKay's Wharf and Brown's Wharf, all which intersect the north side of Merrimac Street east of Newburyport Turnpike. On-site parking will be provided for up to 300 vehicles with additional public parking located within a short walking distance of the Project site, including the future parking garage that is being advanced by the City and the Merrimack Valley Regional Transit Authority (MVRTA) that is to be located opposite the Project site off Titcomb Street.



Figure 1

Site Location Map

The Project will require the issuance of a State Highway Access Permit from the Massachusetts Department of Transportation (MassDOT) for access to Newburyport Turnpike (Route 1/1A), a State Highway under the jurisdiction of MassDOT.

STUDY METHODOLOGY

This study was prepared in consultation with the City of Newburyport and MassDOT; 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.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in June, August and September 2016. 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 the Merrimack Street corridor between Route 1 and Market Square, and the following specific intersections which are listed below and depicted on Figure 2, with Figure 3 indicating roadway jurisdiction and functional classification:

1. Merrimack Street at Winter Street and the Route 1 Southbound Off-Ramp
2. Merrimack Street at Summer Street and the Route 1 Northbound On-Ramp
3. Merrimack Street at Market Street and Tournament Wharf
4. Merrimack Street at McKay's Wharf
5. Merrimack Street at Titcomb Street
6. Merrimack Street at Brown's Wharf
7. Merrimack Street at Green Street and Waterfront Park
8. Merrimack Street at State Street and Water Street (Market Square)
9. State Street at Liberty Street
10. Winter Street at the Route 1 Southbound On-Ramp
11. Summer Street at Pleasant Street and the Route 1 Northbound Off-Ramp

The following describes Merrimack Street within the study area and the study area intersections.

Roadway

Merrimack Street

- Two-lane urban minor arterial roadway under City jurisdiction
- Traverses study area in a general northwest-southeast direction between Spofford Street and Market Square (Merrimack Street/State Street/Water Street)
- Provides two 11 to 25-foot wide travel lanes separated by a double-yellow centerline with no marked shoulders and on-street parking permitted excepted where signed otherwise
- A sidewalk is provided along both sides of the roadway
- Illumination is provided by way of street lights mounted on wood poles

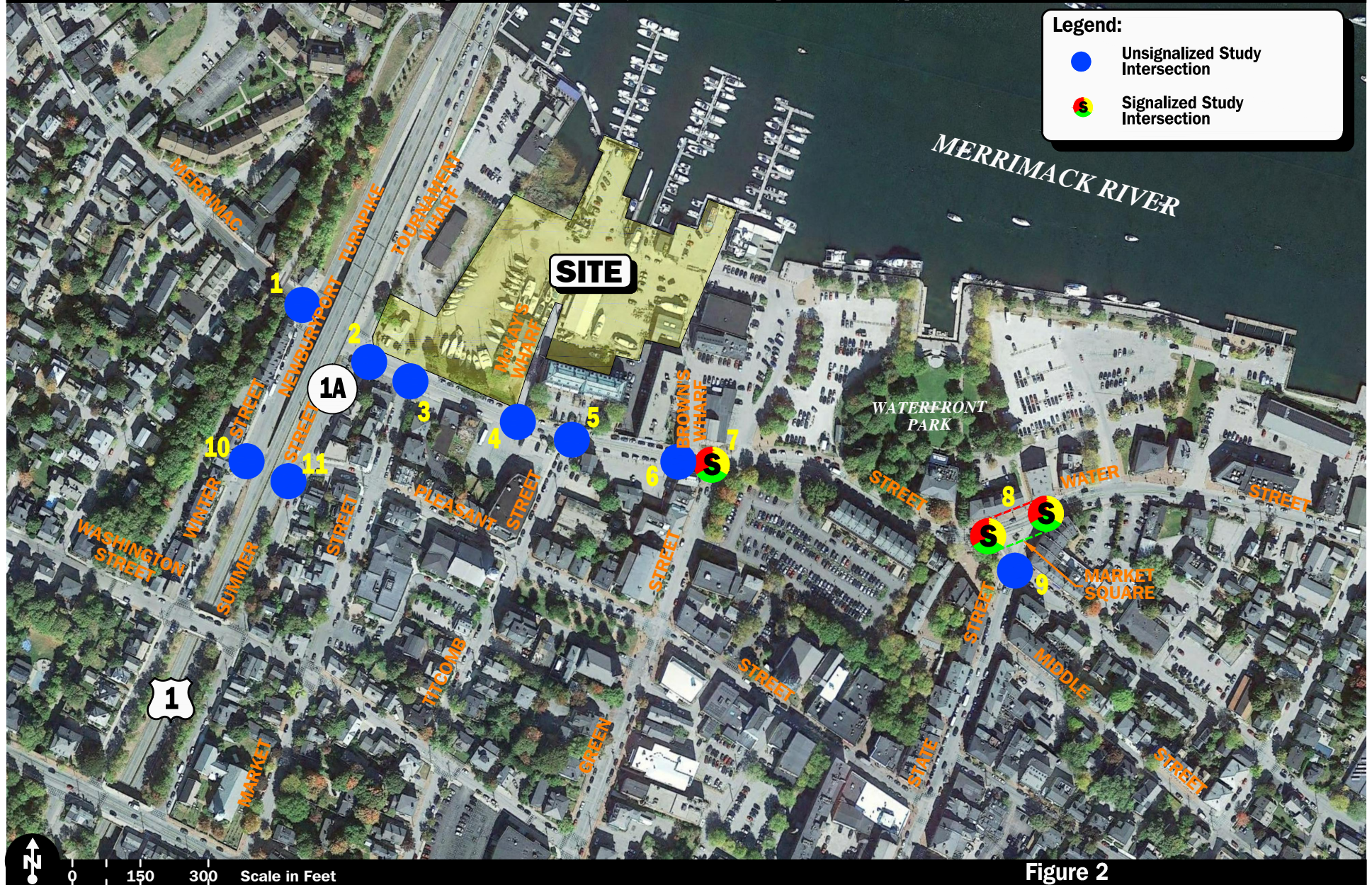
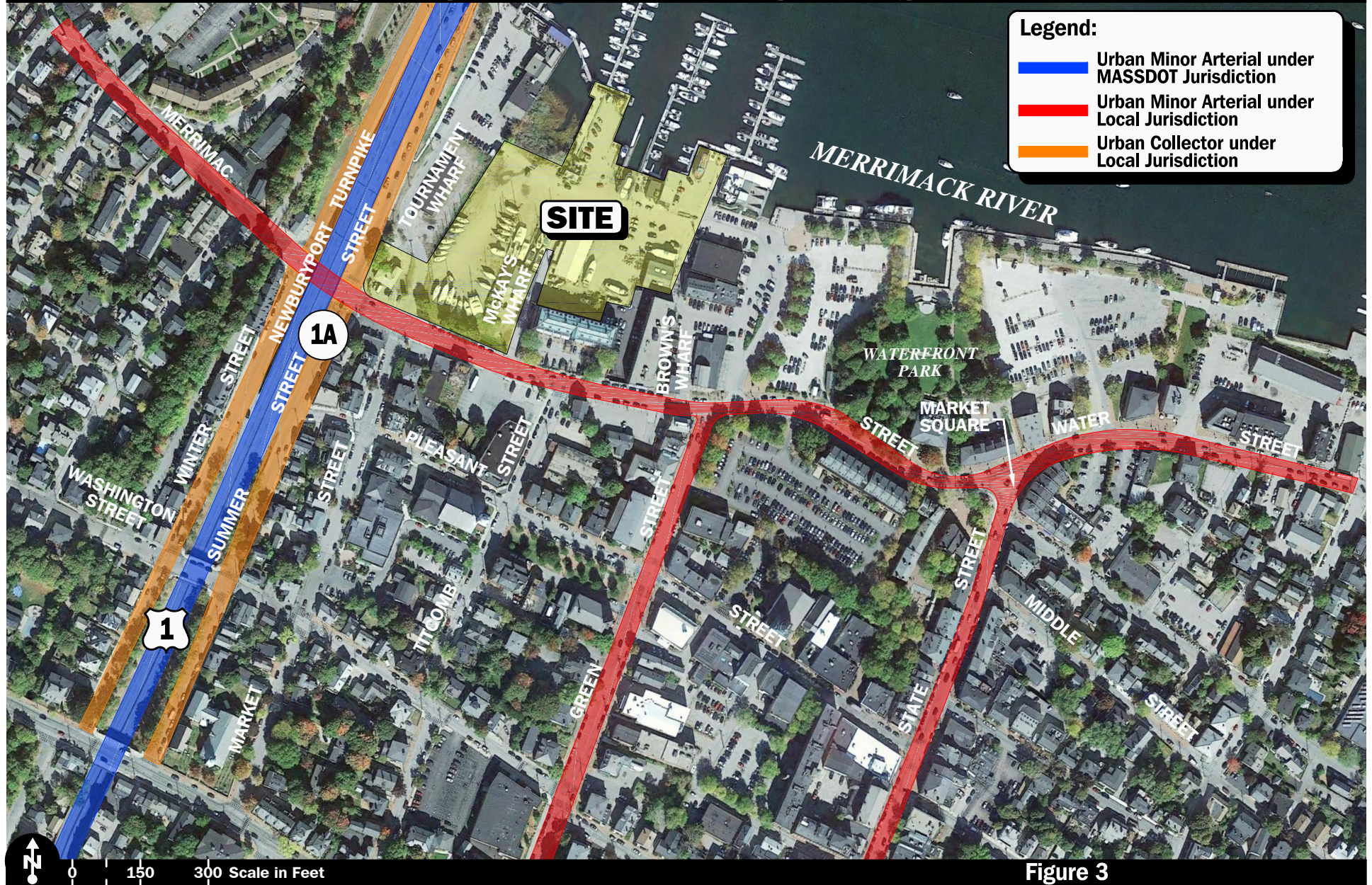


Figure 2
Study Area Map



- Posted speed limit is 30 miles per hour (mph)
- Land use consists of the Project site, residential and commercial properties, cultural uses, and public open space.

Intersections

Table 1 and Figure 4 summarize existing lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in June 2016.

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)
Merrimac St./Winter St./Rte. 1 Southbound Off-Ramp	S	1 lane on all approaches; Rte. 1 off-ramp and Winter St. are one-way southbound	Yes; 1 feet on Rte. 1 southbound off-ramp and 2 feet on Winter St. east side; on-street parking is permitted along the south side of Merrimac St. west of intersection and along the west side of Winter St.	Yes – both sides of Merrimac St. and west side of Winter St.; marked crosswalks for crossing Rte. 1 ramp and Winter St.	Yes - Shared traveled-way along the intersecting roadways; ^b Clipper City Rail-Trail is located west of intersection
Merrimac St./Summer St./Rte. 1 Northbound On-Ramp	S	1 lane on Merrimac St. and Rte. 1 ramp and 2 lanes on Summer St. (left and right-turn lanes); Rte. 1 on-ramp and Summer St. are one-way northbound	Yes; 1 feet on Rte. 1 ramp and along west side of Summer St.; on-street parking is permitted along the east side of Summer St.	Yes – both sides of Merrimac St. and east side of Summer St. and Rte. 1 ramp; crosswalks provided for crossing Rte. 1 ramp, Summer St. and Merrimac St. east leg	Yes - Shared traveled-way; access to the Clipper City Rail-Trail is located north of the intersection
Merrimac St./Market St./Tournament Wharf	S	1 lane on all approaches	Yes – 6-feet along east side of Tournament Wharf; on-street parking is permitted along both sides of Market St. and Merrimac St. east of intersection	Yes – both sides of Merrimac St. and Market St.; crosswalk provided for crossing Market St.	Yes - Shared traveled-way
Merrimac St./McKay's Wharf	S	1 lane on all approaches; Pvt. dwy is located opposite McKay's Wharf	No; on-street parking is permitted along both sides of Merrimac St. except where posted	Yes – both sides of Merrimac St.	Yes - Shared traveled-way
Merrimac St./Titcomb St.	S	1 lane on all approaches	No; on-street parking is permitted along both sides of Merrimac St. except where posted	Yes; both sides of Merrimac St. and Titcomb St.	Yes - Shared traveled-way
Merrimac St./Brown's Wharf	S	1 lane on all approaches	No; on-street parking is permitted along both sides of Merrimac St. except where posted	Yes; both sides of Merrimac St.	Yes - Shared traveled-way

See notes at end of table.

Table 1 (Continued)
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)
Merrimac St./ Green St./ Waterfront Park Dwy.	S	1 lane on Merrimac St. and Waterfront Park Dwy, 2-lanes (right and left-turn lane) on Green St.; Green St. is one-way northbound; traffic signal operates in flashing mode (flashing red for Green St. and flashing yellow for Merrimac St.	No; on-street parking (2-hr) is permitted along both sides of Green St. and along both sides of Merrimac St. except where posted	Yes; both sides of Merrimac St. and Green St.; crosswalks provided across Green St. and Merrimac St. east leg; ped. signal equipment and excl. ped. phase provided	Yes - Shared traveled-way
Merrimac St./ State St./Water St. (Market Square)	TS	1 through lane and 1 right-turn lane on Merrimac St., 1 left-turn lane and 1 through lane on Water St., 2 lanes on State St.; State St. is one-way southbound; directions of travel are separated by raised or flush islands; traffic signal rests in green until push button actuation	No; on-street parking is prohibited on all legs	Yes; sidewalks along both sides of the intersecting roadways; crosswalks provided across Merrimac St.; ped. signal equipment and excl. ped. phase provided	Yes - Shared traveled-way with bicycles using full lane
State St./Liberty St.	S	2 lanes on State St. and 1 lane on Liberty St.; State St. is one-way southbound, Liberty St. is one-way westbound	No; on-street parking is permitted along both sides of Liberty St. and State St. south of intersection except where posted	Yes; sidewalks along both side of the intersecting roadways; crosswalks provided across Liberty St. and State St. south leg	Yes - Shared traveled-way with bicycles using full lane
Winter St./Rte. 1 Southbound On-Ramp	S	1 wide lane on all approaches; Winter St. is one-way southbound	No; on-street parking is permitted along the west side of Winter St.	Yes; sidewalk along west side of Winter St.	Yes - Shared traveled-way
Summer St./Pleasant St./ Rte. 1 Northbound Off-Ramp	S	1 wide lane on all approaches; Summer St. is one-way northbound, Pleasant St. is one-way westbound	No; on-street parking is permitted along both sides of Pleasant St.	Yes; sidewalks along both sides of Pleasant St. and along east side of Summer St.	Yes - Shared traveled-way

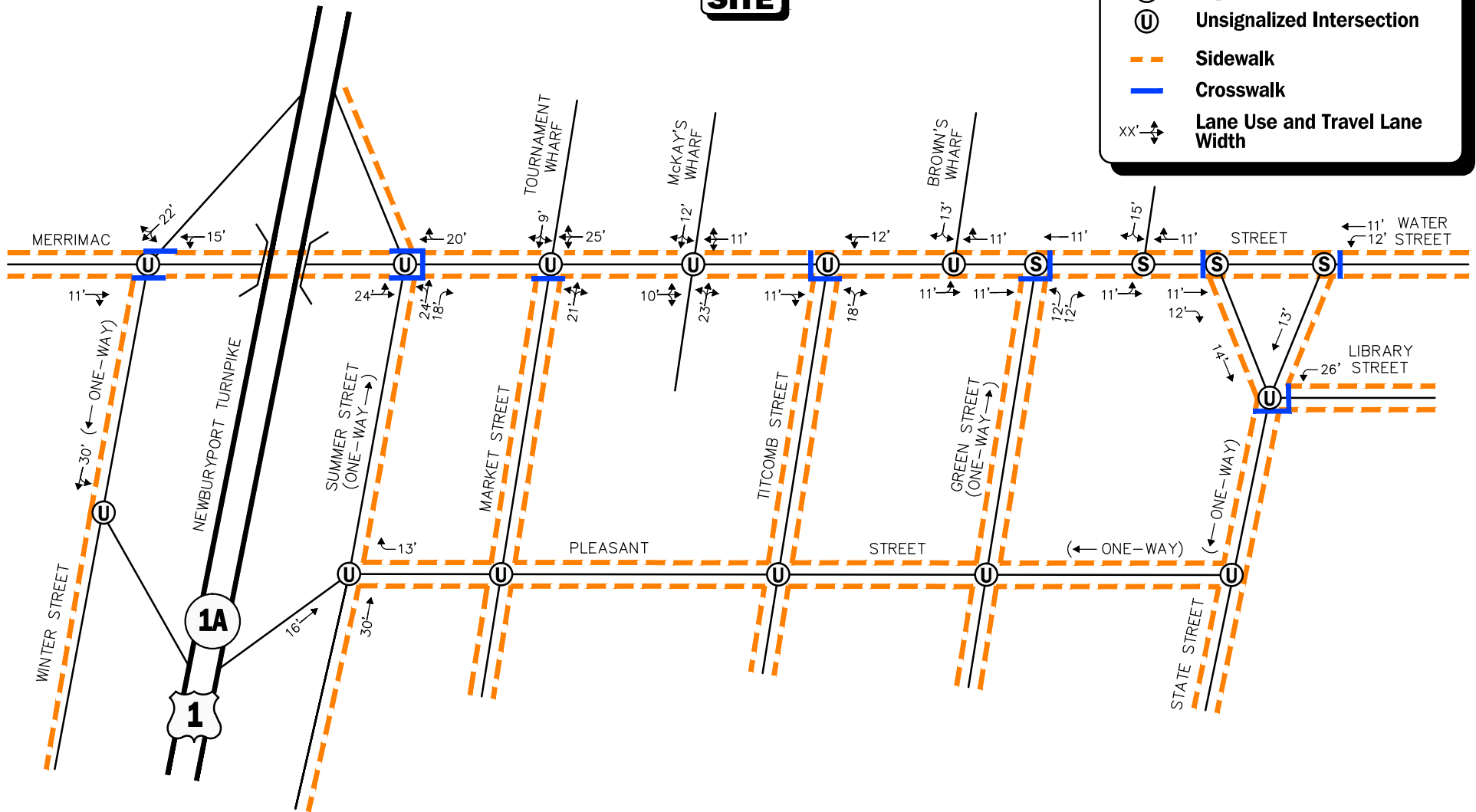
^aTS = traffic signal control; S = STOP-sign control; Y = YIELD-sign control; R = rotary/roundabout control; NC = no control present.

^bCombined shoulder and travel lane width equal to or exceed 14 feet.

SITE

Legend:

- Ⓢ Signalized Intersection
- Ⓤ Unsignalized Intersection
- Sidewalk
- Crosswalk
- xx' Lane Use and Travel Lane Width



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

Not To Scale

Figure 4

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

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in June, August and September 2016. The ATR counts were conducted over a 72-hour period on Merrimac Street in the vicinity of the Project site in order to record weekday daily and Saturday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak period manual TMCs performed at the study intersections. 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.

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. 5258 located on I-95 north of Scotland Road in West Newbury were reviewed.⁴ Based on a review of this data, it was determined that traffic volumes for the month of June are approximately 5.0 percent above average month conditions, with traffic volumes for the months of August and September approximately 11 percent above average-month conditions. As such, the raw traffic count data that forms the basis of the assessment was not adjusted downward to average-month conditions in order to provide a conservative (above average) analysis condition. The 2016 Existing traffic volumes are summarized in Table 2, with the weekday morning, weekday evening and Saturday midday peak-hour traffic volumes graphically depicted on Figures 5, 6 and 7, respectively. Note that the peak-hour traffic volumes presented in Table 2 were obtained from the aforementioned figures.

Table 2
2016 EXISTING TRAFFIC VOLUMES

Location/Peak Hour	AWT ^a	Saturday ^b	VPH ^c	K Factor ^d	Directional Distribution ^e
<i>Merrimac Street east of Market Street:</i>	17,265	17,710	--	--	--
Weekday Morning (8:00 – 9:00 AM)	--	--	1,078	6.2	62.6% EB
Weekday Evening (5:00 – 6:00 PM)	--	--	1,398	8.1	50.4% WB
Saturday Midday (1:00 – 2:00 PM)	--	--	1,294	7.3	52.6% EB

^aAverage weekday traffic in vehicles per day.

^bVehicles.

^cVehicles per hour.

^dPercent of daily traffic occurring during the peak hour.

^ePercent traveling in peak direction.

EB = eastbound; WB = westbound.

As can be seen in Table 2, Merrimac Street in the vicinity of the Project site was found to accommodate approximately 17,265 vehicles on an average weekday and 17,710 vehicles on a Saturday (both two-way, 24-hour volumes), with approximately 1,078 vehicles per hour (vph) during the weekday morning peak-hour, 1,398 vph during the weekday evening peak-hour and 1,294 vph during the Saturday midday peak-hour.

⁴MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2015; Continuous Count Station 5258 – I-95, north of Scotland Road, West Newbury, MA.

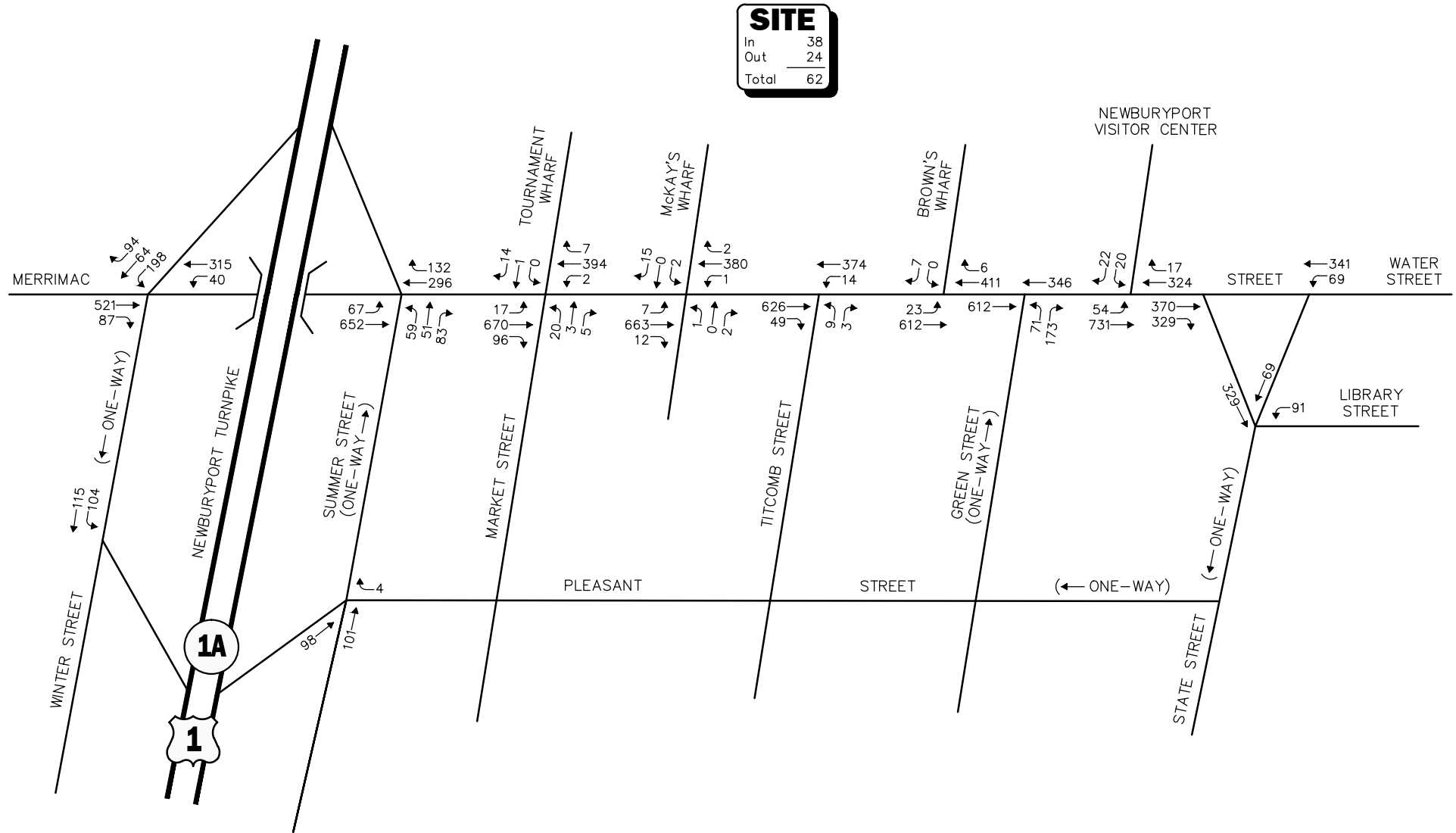


Figure 5

2016 Existing
Weekday Morning
Peak Hour Traffic Volumes

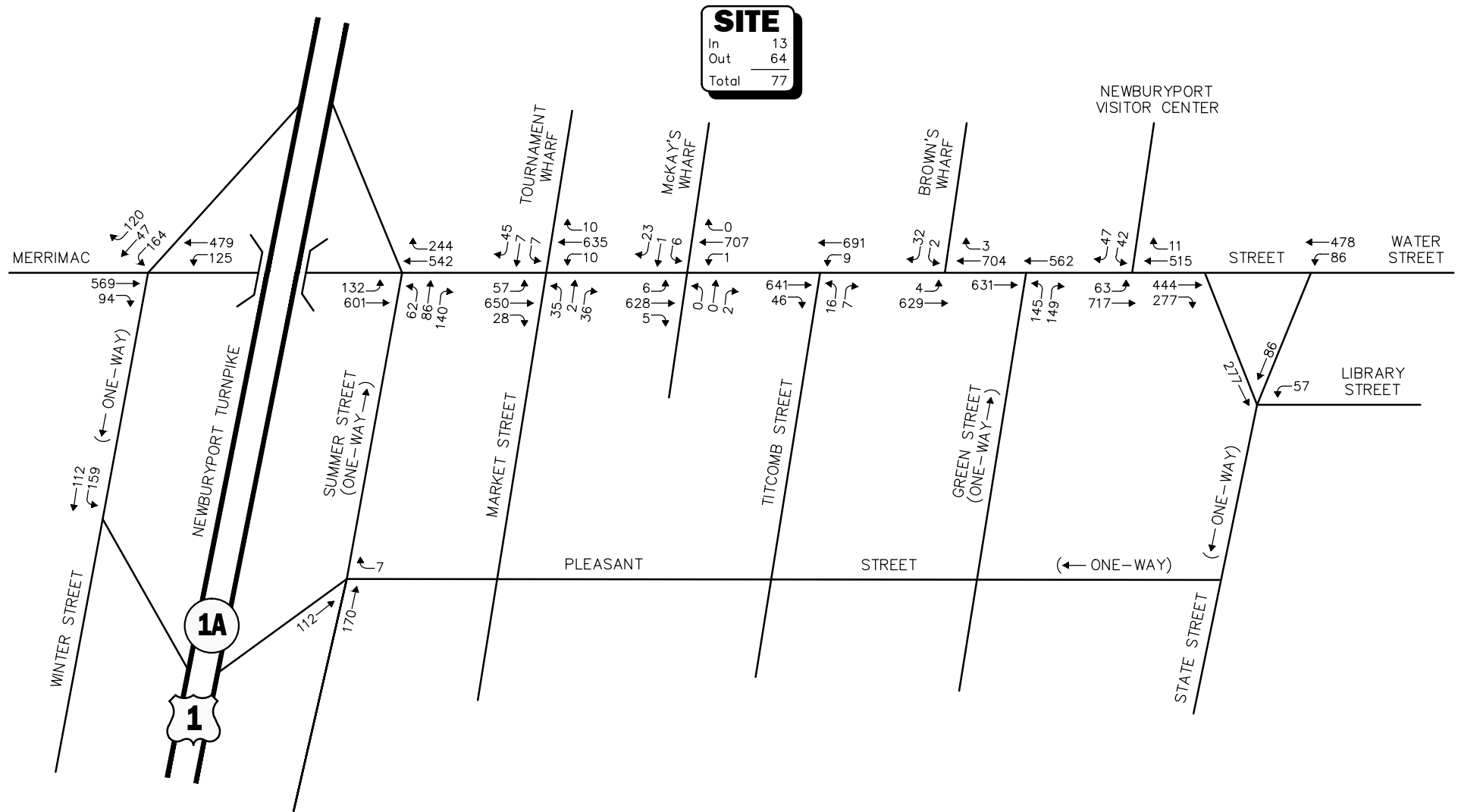


Figure 6

2016 Existing
Weekday Evening
Peak Hour Traffic Volumes

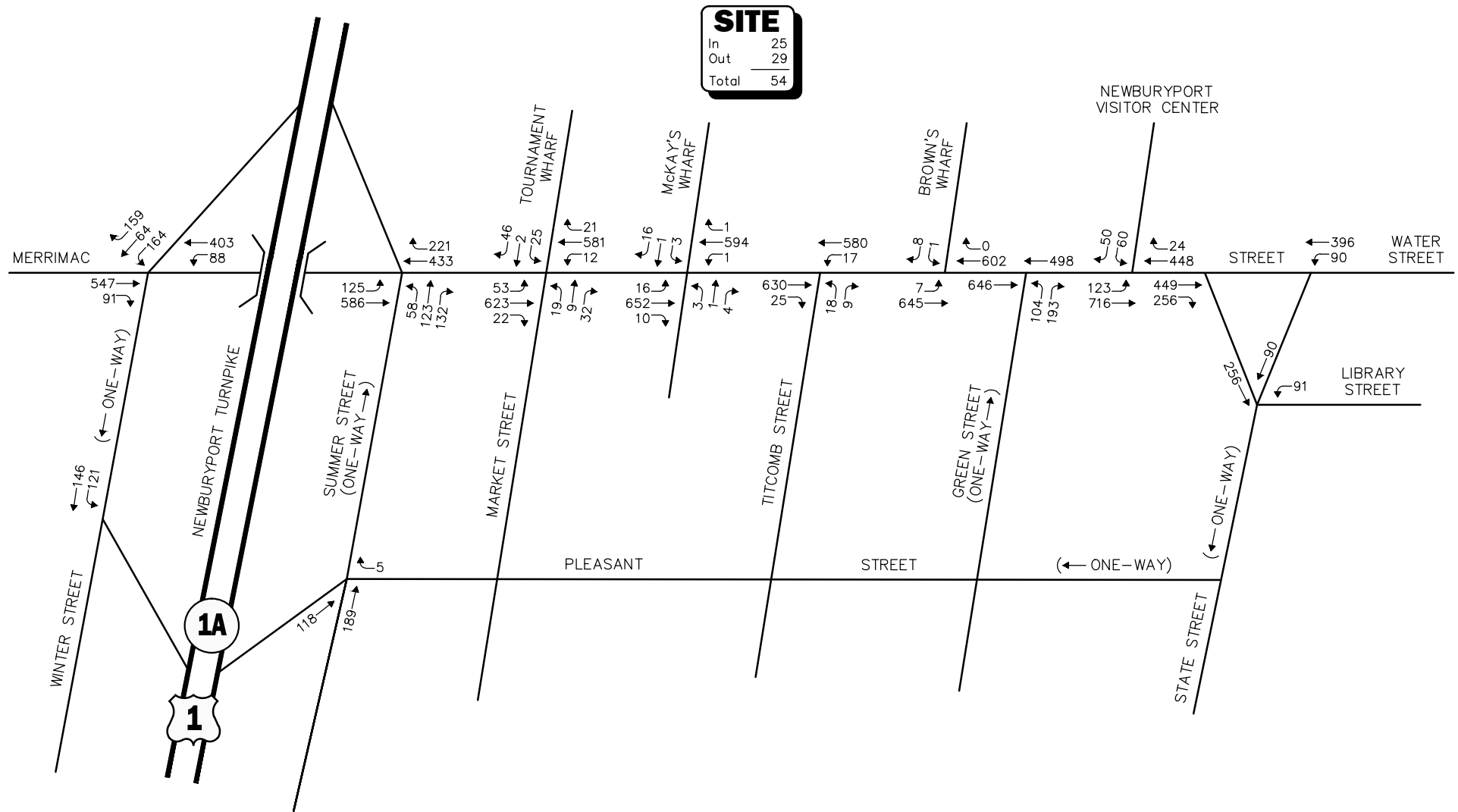


Figure 7

2016 Existing
Saturday Midday
Peak Hour Traffic Volumes

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in June 2016. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities. As detailed on Figure 4, sidewalks are generally provided along one or both sides of the study area roadways, with marked crosswalks provided at the study intersections and pedestrian phasing and signal equipment provided at the signalized study intersections.

In general, the study area roadways provide sufficient width (combined travel lane and shoulder) to support bicycle travel in a shared traveled-way configuration.⁵ In addition, the Clipper City Rail Trail is located immediately adjacent to (west of) the Project site and provides access to the Massachusetts Bay Transportation Authority (MBTA) Newburyport Commuter Rail Station to the south and the trail system along the Merrimack River.

PUBLIC TRANSPORTATION

At present, public transportation services are not directly accessible at the Project site but are provided within the study area by the Merrimack Valley Regional Transit Authority (MVRTA). The MVRTA operates fixed-route bus service along High Street and State Street by way of Route 54, *Amesbury-Newburyport-Salisbury*, which provides service from the Costello Transportation Center in Amesbury and travels along Storey Avenue (Route 113), High Street, Low Street, Graf Road, Broomfield Street, Water Street and State Street, with service to the MBTA Newburyport Commuter Rail Station, Salisbury Center and Salisbury Beach. The closest stop to the Project site for the Route 54 bus is located at the Newburyport Public Library at 94 State Street and within an approximate 8-minute walking distance of the Project site. In addition, Route 53, *Newburyport Summer Shuttle*, operates from May through September and provides service between the Newburyport Commuter Rail Station and Plum Island by way of Graf Road, Low Street, Pond Street, Green Street, Merrimac Street, State Street, High Street, Federal Street and Water Street. The closest stop to the Project site for the Route 53 bus is located at the Merrimac Street/Green Street intersection, an approximate 1-minute walking distance. The public transportation schedules and fare information is provided in the Appendix.

As detailed in the preceding section, the Project site is linked to the Route 54 bus stop by way of the sidewalks along Merrimac Street and intersecting roadways, with marked crosswalks provided for crossing Merrimac Street at both Titcomb Street and Green Street (traffic signal control).

In addition, the City and the MVRTA are developing a bus terminal and public parking garage that are to be located opposite the Project site off Titcomb Street. Once constructed, MVRTA bus services will be conveniently located proximate to the Project site, offering additional opportunities to reduce single-occupant vehicle travel associated with the Project.

⁵ A minimum combined travel lane and paved shoulder width of 14-feet is required to support bicycle travel in a shared traveled-way condition.

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Merrimac Street in the vicinity of the Project site over a continuous 72-hour period (Thursday through Saturday, inclusive) in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Merrimac Street	
	Eastbound	Westbound
Mean Travel Speed (mph)	17	19
85 th Percentile Speed (mph)	23	24
Posted Speed Limit (mph)	30	30

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Merrimac Street in the vicinity of the Project site was found to be approximately 18 mph. The average 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 approximately 24 mph, which is slightly below the posted speed limit (30 mph). The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances, and is often used in establishing posted speed limits.

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 (2010 through 2014, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, and day of occurrence, and presented in Table 4.

As can be seen in Table 4, the study area intersections were found to have experienced an average of two (2) or fewer reported motor vehicle crash per year over the five-year review period, and all were found to have a motor vehicle crash rate below both the MassDOT statewide and District averages for a signalized or an unsignalized intersection, as appropriate, for the MassDOT Highway Division District in which the intersections are located (District 4). A review of the MassDOT statewide High Crash Location List also indicated that none of the study area intersections are included on MassDOT's Highway Safety Improvement Program (HSIP) listing. In addition, no fatal motor vehicle crashes were reported to have occurred at the study area intersections over the five-year review period. ***Based on a review of the MassDOT motor vehicle crash data, no discernible safety deficiencies were apparent at the study intersections.*** The detailed MassDOT Crash Rate Worksheets are provided in the Appendix.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY^a

	Merrimac St./ Winter St./ Rte.1 Off-Ramp	Merrimac St./ Summer St./ Rte. 1 On-Ramp	Merrimac St./ Market St./ Tournament Wharf	Merrimac St./ McKay's Wharf	Merrimac St./ Titcomb St.	Merrimac St./ Brown's Wharf	Merrimac St./ Green St./ Waterfront Park	Merrimac St./ Water St./State St.	State St./Liberty St.	Winter St./ Rte. 1 On-Ramp	Summer St./ Pleasant St/ Rte. 1 Off-Ramp
Traffic Control Type: ^b	U	U	U	U	U	U	U	TS	U	U	U
Year:											
2010	3	1	0	0	1	0	3	0	2	0	0
2011	2	4	2	0	0	0	1	1	0	1	0
2012	2	1	1	1	0	0	0	0	0	0	0
2013	3	4	1	0	2	0	1	0	0	0	0
2014	2	1	2	1	1	0	0	2	0	0	0
Total	12	11	6	2	4	0	5	3	2	1	0
Average	2.40	2.20	1.20	0.40	0.80	0.00	1.00	0.60	0.40	0.20	0.00
Rate ^c	0.37	0.30	0.19	0.07	0.14	0.00	0.17	0.12	0.23	0.18	0.00
MassDOT Crash Rate: ^d	0.58/0.56	0.58/0.56	0.58/0.56	0.58/0.56	0.58/0.56	0.58/0.56	0.58/0.56	0.77/0.73	0.58/0.56	0.58/0.56	0.58/0.56
Significant? ^e	No	No	No	No	No	No	No	No	No	No	No
Type:											
Angle	6	6	5	1	1	0	2	0	0	0	0
Rear-End	4	2	1	0	1	0	1	2	0	0	0
Head-On	0	0	0	0	0	0	1	0	0	0	0
Sideswipe	0	2	0	0	1	0	1	0	0	1	0
Fixed Object	0	0	0	0	0	0	0	0	2	0	0
Pedestrian/Bicycle	1	0	0	1	0	0	0	1	0	0	0
Unknown/Other	1	1	0	0	1	0	0	0	0	0	0
Total	12	11	6	2	4	0	5	3	2	1	0
Day of Week:											
Monday through Friday	9	9	4	2	4	0	3	2	2	1	0
Saturday	2	0	0	0	0	0	2	0	0	0	0
Sunday	1	2	2	0	0	0	0	1	0	0	0
Total	12	11	6	2	4	0	5	3	2	1	0
Severity:											
Property Damage Only	11	9	5	0	3	0	5	2	2	1	0
Personal Injury	1	2	1	2	1	0	0	1	0	0	0
Fatality	0	0	0	0	0	0	0	0	0	0	0
Total	12	11	6	2	4	0	5	3	2	1	0

^aSource: MassDOT Safety Management/Traffic Operations Unit records, 2010 through 2014.
^bTraffic Control Type: U = unsignalized; TS = traffic signal.
^cCrash rate per million vehicles entering the intersection.
^dStatewide/District crash rate.
^eThe intersection crash rate is significant if it is found to exceed the MassDOT 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 2023, 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 2023 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2023 No-Build traffic volumes reflect 2023 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 City of Newburyport Office of Planning and Development was 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 discussion, the following projects were identified for inclusion in this assessment:

- ***Merrimac Ale House, 40 Merrimac Street, Newburyport, Massachusetts.*** This project is currently under construction and entails the redevelopment of the former Davis Auto-Parts building located at 40 Merrimac Street in Newburyport, Massachusetts, to encompass a 13,812 sf restaurant with 442 seats.
- ***MVRTA Intermodal Parking Facility, 90 Pleasant Street and 81-81 Merrimac Street, Newburyport, Massachusetts.*** This proposed project will entail the removal of the existing 27,400± sf commercial building and associated appurtenances located at 90 Pleasant Street and 81-81 Merrimac Street in Newburyport, Massachusetts, to accommodate the construction of a 212± space public parking garage and an MVRTA bus terminal. Access to the site will be provided by way of full access driveways that will intersect the south side of Merrimac Street opposite McKay's Wharf and the west side of Titcomb Street.

Traffic volumes associated with the aforementioned specific development projects by others were obtained from the respective traffic studies or using trip-generation information available from the Institute of Transportation Engineers (ITE)⁶ for the appropriate land use, and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

General Background Traffic Growth

Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on a review of this data and discussions with the City of Newburyport Office of Planning and Development, a 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 City of Newburyport were consulted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2023 within the study area. Based on these discussions, the following roadway improvement project was identified within the study area:

- ***Intersection Improvements – Route 1 at Merrimac Street, Newburyport (MassDOT Project Number 608029).*** This project is being undertaken by MassDOT and entails the installation of traffic control signals at the Route 1 north and southbound on and off-ramp intersections with Merrimac Street (two (2) locations), along with associated roadway rehabilitation, drainage improvements, sign and pavement marking installation, and sidewalk and bicycle accommodation improvements. These improvements are currently at the preliminary design stage; a construction date and funding source have not yet been established.

⁶Ibid 1

- ***MVRTA Intermodal Facility Pedestrian Access Improvements, Newburyport.*** In conjunction with the construction of the MVRTA Intermodal Parking Facility, pedestrian access improvements are proposed along the Project frontage and at the Merrimac Street/Titcomb Street and Titcomb Street/Pleasant Street intersections that include sidewalk reconstruction, curb extensions, wheelchair ramp installation/reconstruction and the installation of crosswalks. In addition, a 100-foot long bus turn-out is proposed along the south side of Merrimac Street adjacent to the intermodal facility and on-street parking along both Merrimac Street and Titcomb Street will be reconfigured to accommodate the improvements and the driveways that will serve the intermodal facility. These improvements will improve pedestrian accommodations and accessibility in the area and are expected to be complete within the future conditions horizon year of this assessment (2023).

No other 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 2023 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 2016 Existing peak-hour traffic volumes and then adding the peak-hour traffic volumes associated with the identified specific development projects by others. The resulting 2023 No-Build weekday morning, weekday evening and Saturday midday peak-hour traffic volumes are shown on Figures 8, 9 and 10, respectively.

PROJECT-GENERATED TRAFFIC

Design year (2023) 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 mixed-use development that will include up to 200 residential condominium/townhouse units, 100 hotel rooms and approximately 20,000 sf of retail/restaurant space. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE⁷ for similar land uses as those proposed were used. ITE Land Use Codes (LUCs) 230, *Residential Condominium/Townhouse*, 310, *Hotel*, and 820, *Shopping Center*, were used to establish the base traffic characteristics of the Project.

Internal Trips

A portion of the trips expected to be generated by the Project will consist of dual-purpose or internal trips. An internal trip consists of a resident, customer and/or employee that patronizes more than one of the uses planned within a development and is common in mixed-use projects with appropriate accommodations to facilitate trips between uses. By way of example, a resident of the Project or a hotel guest may also patronize one of the retail or restaurant uses located within the Project site. Performing the trip-generation calculations for the Project on an individual land use basis does not account for the interaction between the components of a mixed-

⁷Ibid 1.

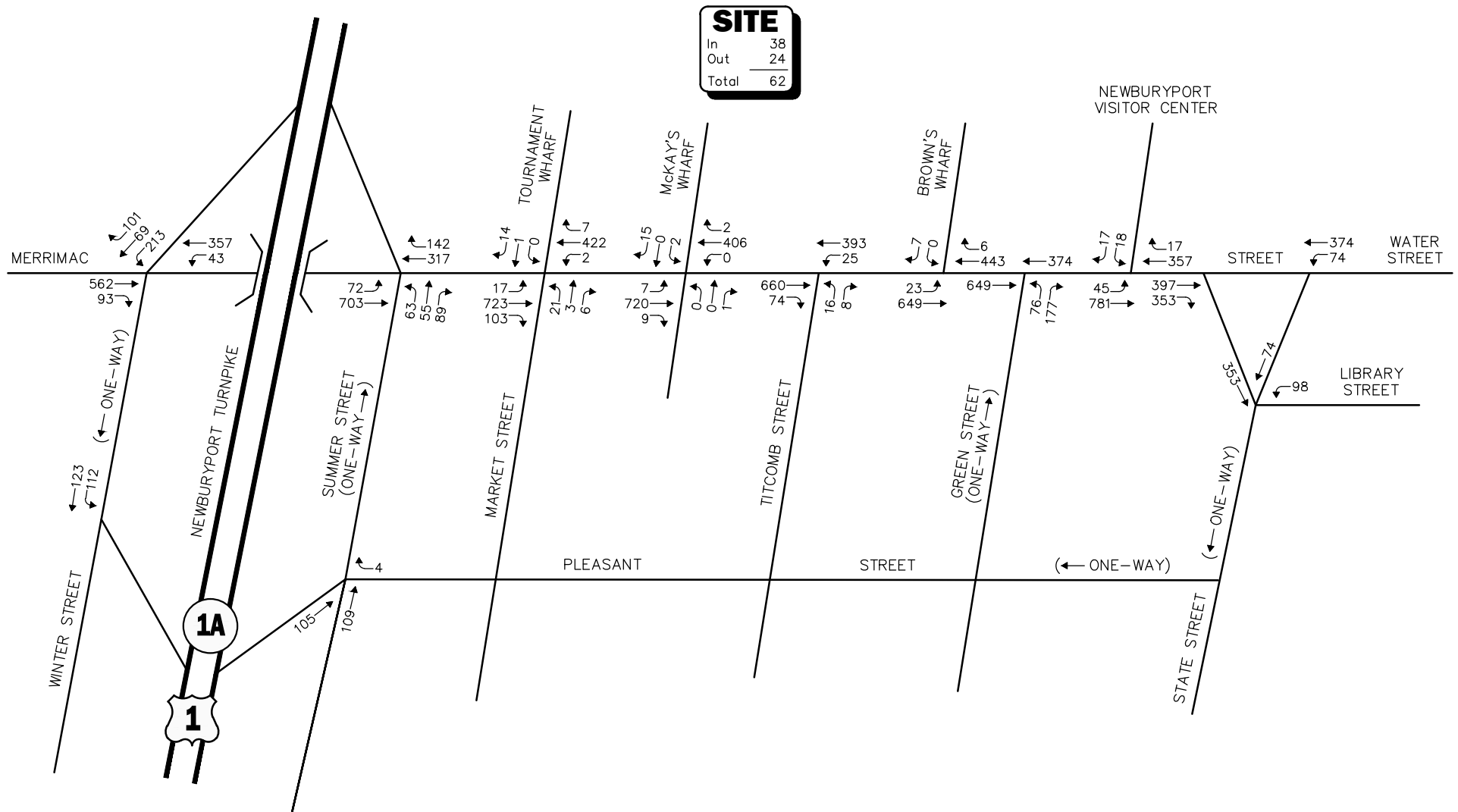
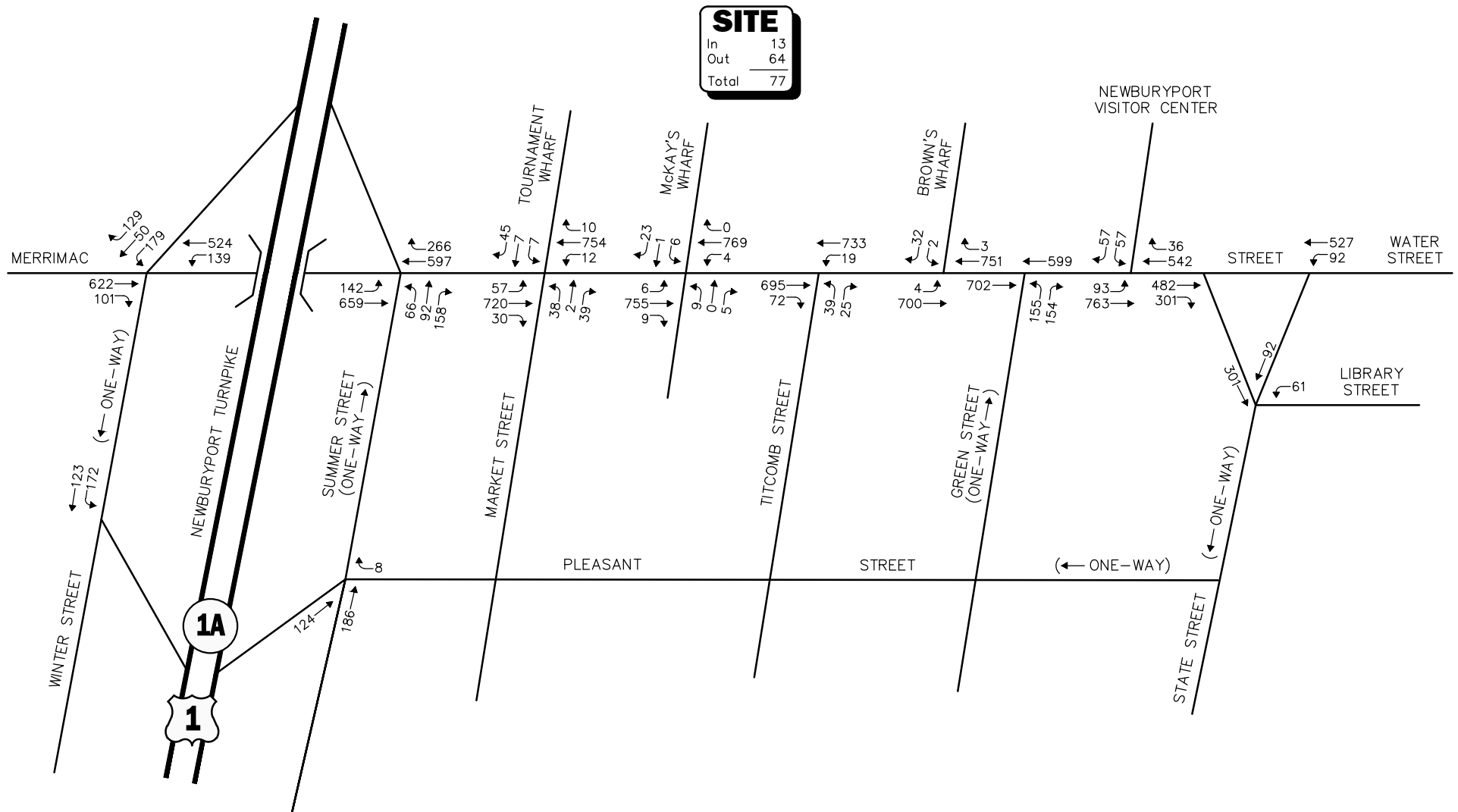


Figure 8

2023 No-Build
Weekday Morning
Peak Hour Traffic Volumes

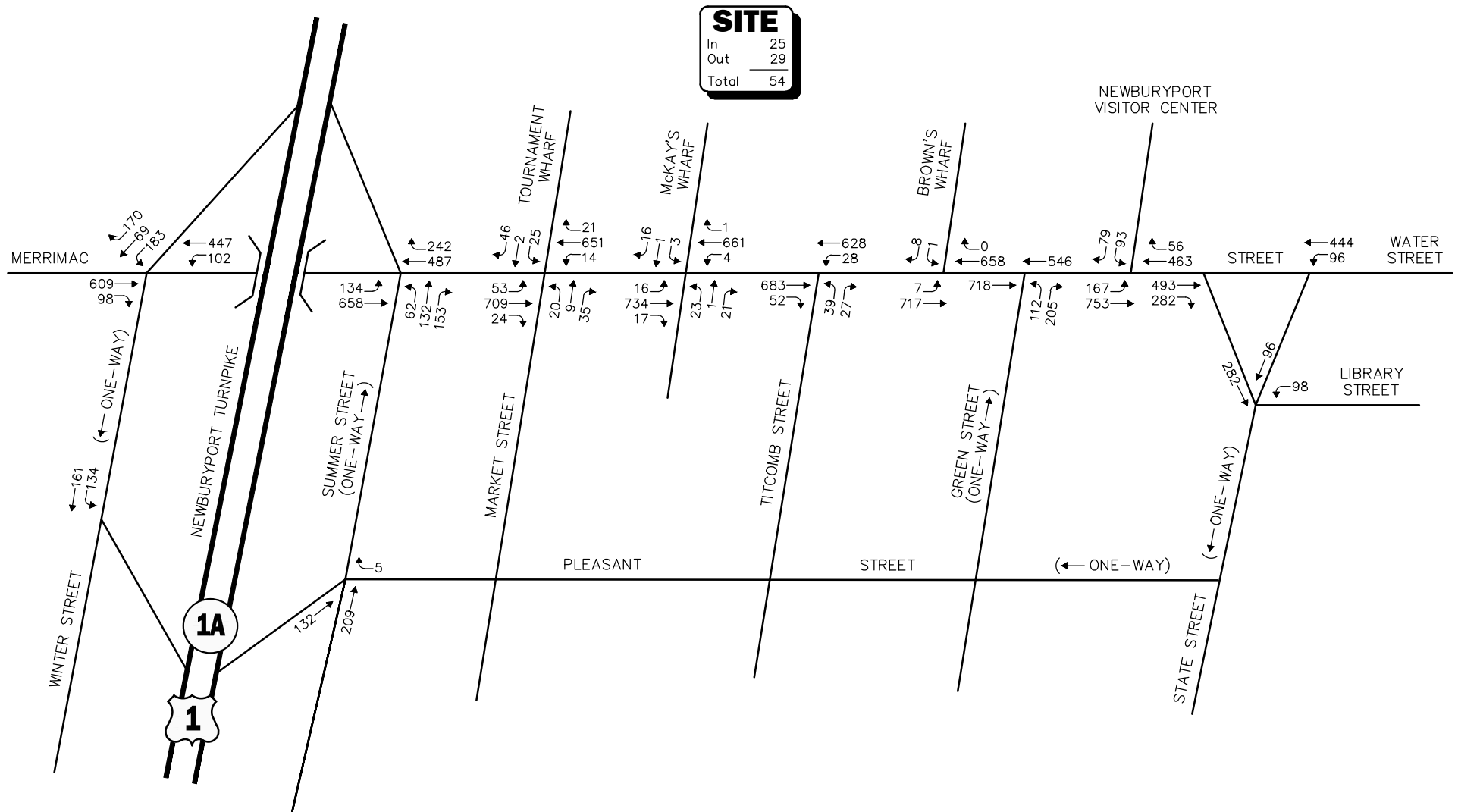


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 9

2016 Existing
Weekday Evening
Peak Hour Traffic Volumes



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

Not To Scale

Figure 10

2023 No-Build
Saturday MIDDAY
Peak Hour Traffic Volumes

use development. In order to account for this interaction, the multi-use trip-generation calculation methodology promulgated by the ITE⁸ was applied to the base ITE trip-generation calculations.

Pass-By Trips

Not all of the trips expected to be generated by the retail/restaurant component of the Project will be new trips on the roadway network. A significant portion of these trips will consist of pass-by trips or vehicles already traveling along Merrimac Street for other purposes that will patronize the Project in conjunction with their trip and then continue on to their original destination. These trips are not new trips on the roadway network as a result of the Project. Statistics published by the ITE⁹ indicate that on average, approximately 34 percent of the trips generated by a composite retail/restaurant use (shopping center) may consist of pass-by trips. In accordance with MassDOT guidelines which limits pass-by trips to the lesser of 15 percent of the adjacent roadway traffic volume or the ITE pass-by trip rate for the specific use, the ITE published pass-by trips rates were applied to the base trip-generation calculations for the retail/restaurant component of the Project, excepting for the weekday morning peak-hour where a pass-by trip rate was not applied due to the relatively low volume of traffic associated with this use.

Primary Trips

A primary trip is a new trip on the roadway network that is generated as a direct result of a project and represents the project-related trips after consideration of internal trips and pass-by trips.

Transit Use

While public transportation services are provided within the study area and are accessible by walking or by bicycle, they are not currently provided in the immediate proximity of the Project site. With the completion of the future MVRTA Intermodal Parking Facility, an MVRTA bus stop will be located directly opposite the Project site, providing a convenient alternative to the use of single-occupant vehicles to access the Project. In order to provide conservative (high) traffic volume projections from which to assess the impact of the Project on the transportation infrastructure, a reduction in the base ITE trip-projections in order to account for transit use was not applied.

Table 5 summarizes the anticipated trip characteristics of the Project using the aforementioned methodology.

⁸*Trip Generation Handbook*, Institute of Transportation engineers; Washington, D.C.; 2014

⁹*Ibid.*

Table 5
WATERFRONT WEST REDEVELOPMENT PROJECT
TRIP GENERATION SUMMARY

Time Period/Direction	Residential Component			Hotel Component			Retail/Restaurant Component					
	(A) Residential Housing (200 Units) ^a	(B) Internal/Dual Purpose Trips	(C = A -B) Total Primary Trips	(D) Hotel (100 Rooms) ^b	(E) Internal/Dual Purpose Trips	(F = D-E) Total Primary Trips	(G) Retail/ Restaurant (20,000 sf) ^c	(H) Internal/ Dual Purpose Trips	(I = G –H) Net Trips	(J) Pass-By Trips ^d	(K = I - J) Total Primary Trips	(L = C+F+K) Total Primary Project Trips
<i>Average Weekday Daily</i>												
Entering	588	54	534	261	43	218	1,193	97	1,096	329	767	1,519
Exiting	<u>588</u>	<u>54</u>	<u>534</u>	<u>261</u>	<u>43</u>	<u>218</u>	<u>1,193</u>	<u>97</u>	<u>1,096</u>	<u>329</u>	<u>767</u>	<u>1,519</u>
Total	1,176	108	1,068	522	86	436	2,386	194	2,192	658	1,534	3,038
<i>Weekday Morning Peak Hour</i>												
Entering	15	1	14	32	1	31	12	1	11	0	11	56
Exiting	<u>75</u>	<u>1</u>	<u>74</u>	<u>22</u>	<u>1</u>	<u>21</u>	<u>9</u>	<u>1</u>	<u>8</u>	<u>0</u>	<u>8</u>	<u>103</u>
Total	90	2	88	54	2	52	21	2	19	0	19	159
<i>Weekday Evening Peak Hour</i>												
Entering	71	5	66	31	5	26	98	10	88	32	56	148
Exiting	<u>35</u>	<u>5</u>	<u>30</u>	<u>29</u>	<u>5</u>	<u>24</u>	<u>106</u>	<u>10</u>	<u>96</u>	<u>32</u>	<u>64</u>	<u>118</u>
Total	106	10	96	60	10	50	204	20	184	64	120	266
<i>Saturday</i>												
Entering	576	76	500	334	55	279	1,676	131	1,545	402	1,143	1,922
Exiting	<u>576</u>	<u>76</u>	<u>500</u>	<u>334</u>	<u>55</u>	<u>279</u>	<u>1,676</u>	<u>131</u>	<u>1,545</u>	<u>402</u>	<u>1,143</u>	<u>1,922</u>
Total	1,152	152	1,000	668	110	558	3,352	262	3,090	804	2,286	3,844
<i>Saturday Midday Peak Hour</i>												
Entering	55	8	47	41	7	34	160	15	145	36	109	190
Exiting	<u>46</u>	<u>8</u>	<u>38</u>	<u>32</u>	<u>7</u>	<u>25</u>	<u>147</u>	<u>15</u>	<u>132</u>	<u>36</u>	<u>96</u>	<u>159</u>
Total	101	16	85	73	14	59	307	30	277	72	205	349

^aBased on ITE LUC 230, *Residential Condominium/Townhouse*.

^bBased on ITE LUC 310, *Hotel*.

^cBased on ITE LUC 820, *Shopping Center*.

^dA Pass-by trip rate was applied to the traffic volumes associated with the retail use as follows: average weekday daily - 30 percent; weekday morning peak-hour – 0 percent; weekday evening peak-hour - 34 percent; Saturday and Saturday midday peak-hour – 26 percent.

Project-Generated Trip Summary

As can be seen in Table 5, using the aforementioned methodology and without consideration of transit use, the Project is expected to generate approximately 3,038 primary vehicle trips on an average weekday (1,519 vehicles entering and 1,519 exiting over a 24-hour period) and approximately 3,844 primary vehicle trips on a Saturday (1,922 vehicles entering and 1,922 vehicles exiting over a 24-hour period), with approximately 159 primary vehicle trips (56 vehicles entering and 103 exiting) expected during the weekday morning peak-hour, 266 primary vehicle trips (148 vehicles entering and 118 exiting) expected during the weekday evening peak-hour and 349 primary vehicle trips (190 vehicles entering and 159 exiting) expected during the Saturday midday peak-hour.

Table 6 compares the traffic volumes associated with the Project to those of the existing uses that occupy the Project site. Note that pass-by trips are included in the subject traffic volumes, which represent the total volume of traffic entering and exiting the Project site.

Table 6
TRAFFIC VOLUME COMPARISON

Time Period/Direction	Vehicle Trips		
	(A) Waterfront West Development ^a	(B) Existing Uses ^b	(A-B) Difference
<i>Average Weekday Daily:</i>	3,696	952	2,744
<i>Weekday Morning Peak Hour:</i>	159	62	97
<i>Weekday Evening Peak Hour:</i>	330	77	253
<i>Saturday:</i>	4,648	740	3,908
<i>Saturday Midday peak Hour:</i>	421	54	367

^aBased on ITE LUC 230, *Residential Condominium/Townhouse*, LUC 310, *Hotel* and LUC 820, *Shopping Center*.

^bAs counted on Thursday, June 16, 2016; Saturday, June 18, 2016; Tuesday, August, 30, 2016; Saturday, August 27, 2016; Thursday through Saturday, September 8-10, 2016.

Traffic Volume Comparison

As can be seen in Table 6, in comparison to the existing uses that occupy the Project site, the Project is expected to result in 2,744 additional total (two-way) vehicle trips on an average weekday and 3,908 additional vehicle trips on a Saturday, with 97 additional total vehicle trips expected during the weekday morning peak-hour, 253 additional vehicle trips expected during the weekday evening peak-hour and 367 additional vehicle trips expected during the Saturday midday peak-hour.

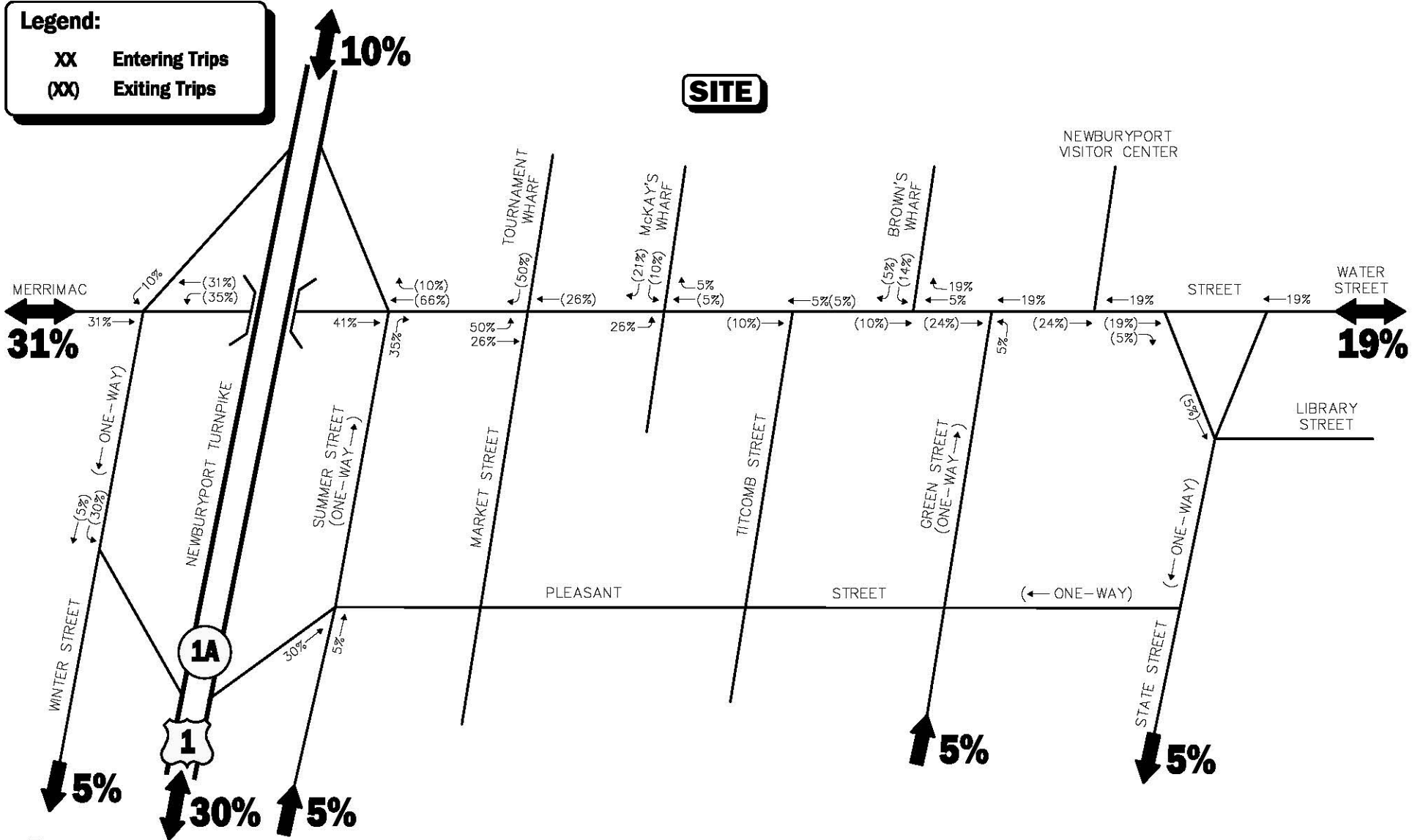
Trip Distribution and Assignment

Separate trip-distribution patterns were developed for the residential and commercial components of the Project given the differing nature and purpose of the trips associated with these uses. For the residential component of the Project, the directional distribution was determined based on a review of Journey-to-Work data obtained from the U.S. Census for persons residing in the City of Newburyport and then refined based on a review of existing traffic patterns within the study area during the peak periods. For the commercial component of the Project, the directional distribution was determined based on a review of existing traffic patterns within the study area. The general trip distribution for the residential and commercial components for the Project are graphically depicted on Figures 11 and 12, respectively. Traffic volumes expected to be generated by the Project were assigned onto the study area roadway network as shown on Figures 13, 14 and 15 for the respective peak hours.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

The 2023 Build condition traffic volumes consist of the 2023 No-Build traffic volumes with: i) the removal of the traffic associated with the existing uses that occupy the Project site; and ii) the addition of the traffic expected to be generated by the Project. The 2023 Build weekday morning, weekday evening and Saturday midday peak-hour traffic-volumes are graphically depicted on Figures 16, 17 and 18, respectively.

A summary of peak-hour projected traffic-volume increases outside of the study area that is the subject of this assessment is shown in Table 7. These volumes are based on the expected increases from the Project.

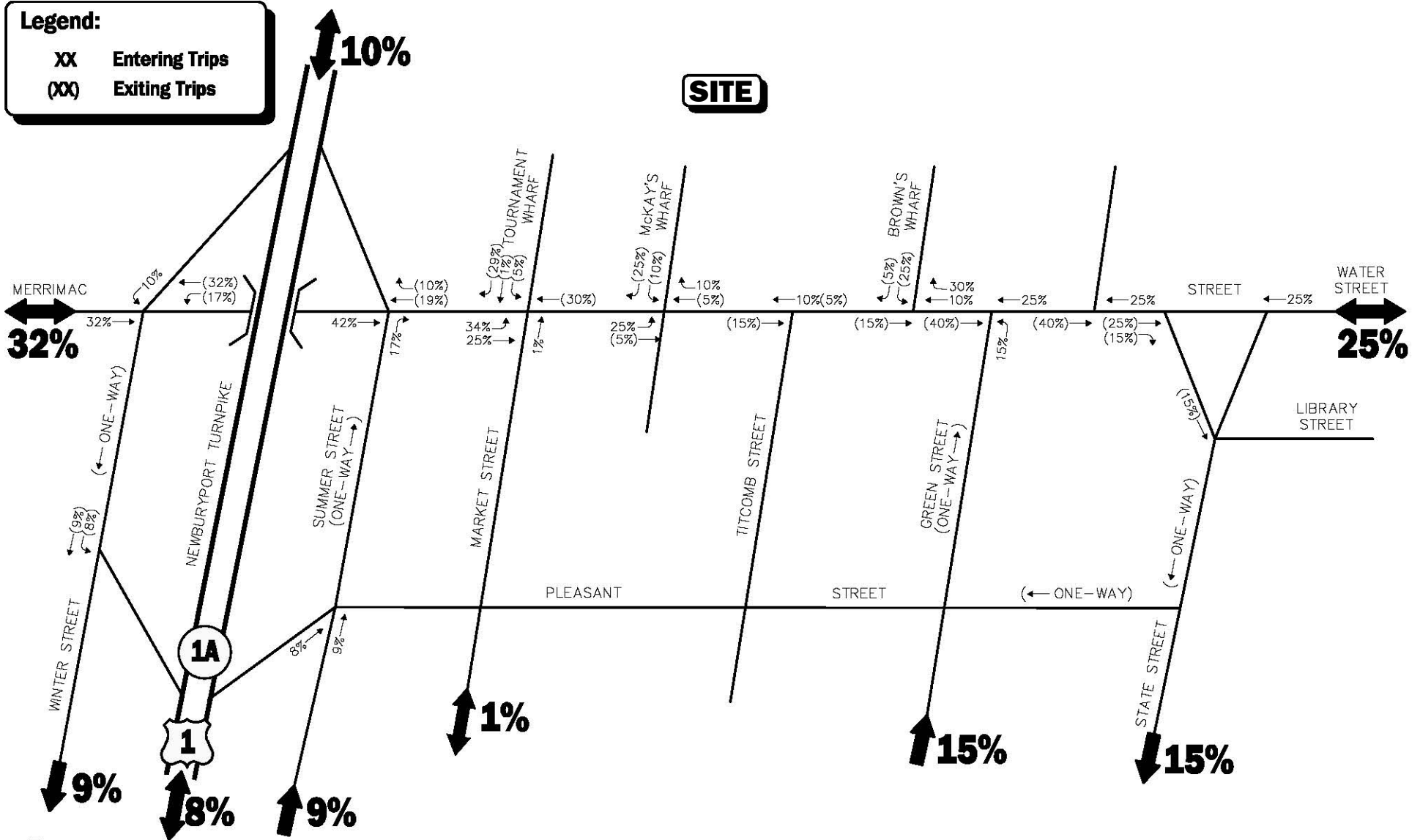


Not To Scale

Vai Vanasse & Associates, Inc.
 Transportation Engineers & Planners

Figure 11

**Trip Distribution Map
 Residential Component**



Not To Scale

Figure 12

Legend:

XX Entering Trips
(XX) Exiting Trips

SITE

In	56
Out	103
Total	159

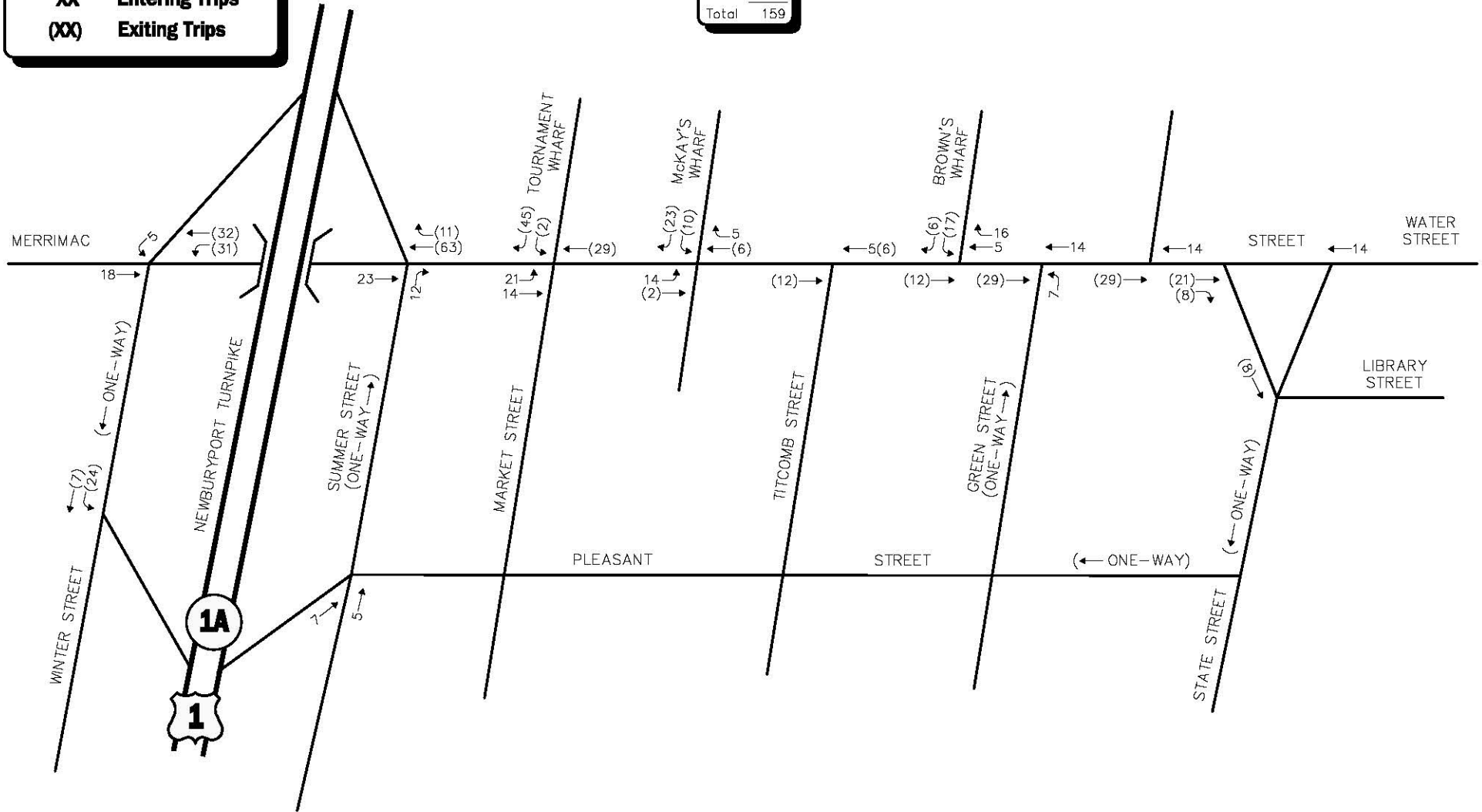


Figure 13

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

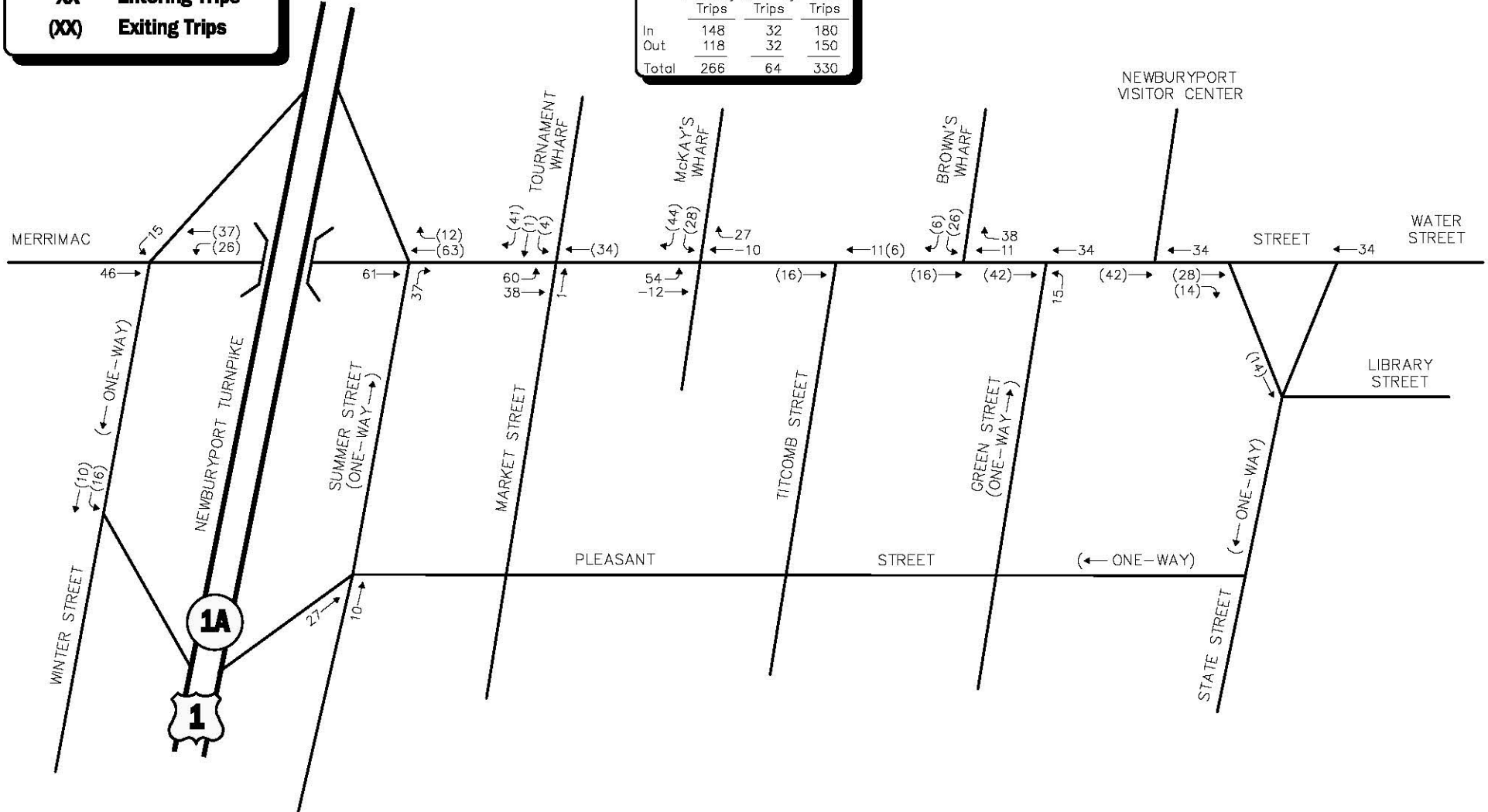


Legend:

XX Entering Trips
(XX) Exiting Trips

SITE

	Primary Trips	Pass-by Trips	Total Trips
In	148	32	180
Out	118	32	150
Total	266	64	330



Not To Scale

Figure 14

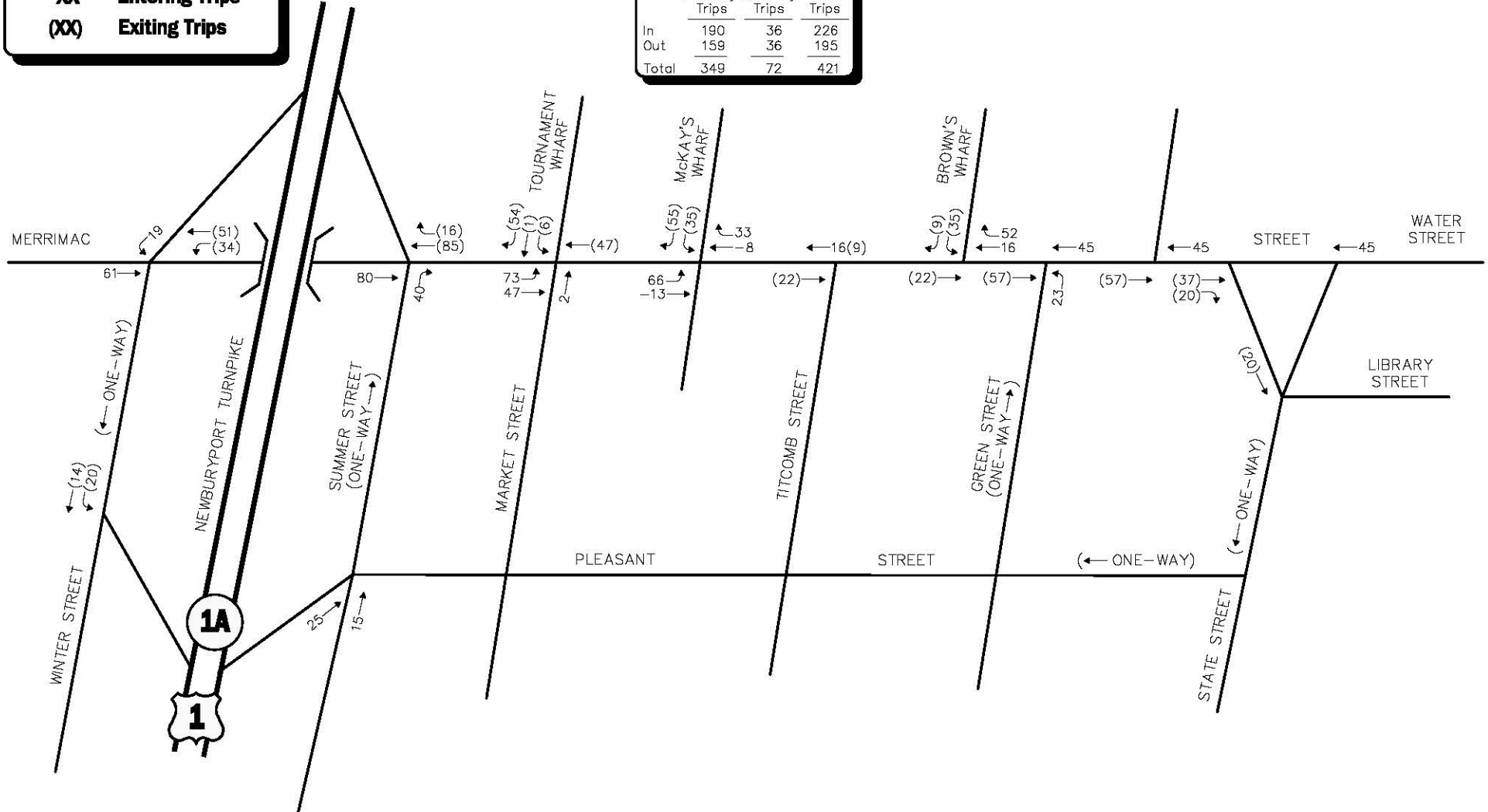
**Project - Generated
 Weekday Evening
 Peak Hour Traffic Volumes**

Legend:

XX Entering Trips
(XX) Exiting Trips

SITE

	Primary Trips	Pass-by Trips	Total Trips
In	190	36	226
Out	159	36	195
Total	349	72	421



Not To Scale

Figure 15

**Project - Generated
 Saturday Midday
 Peak Hour Traffic Volumes**

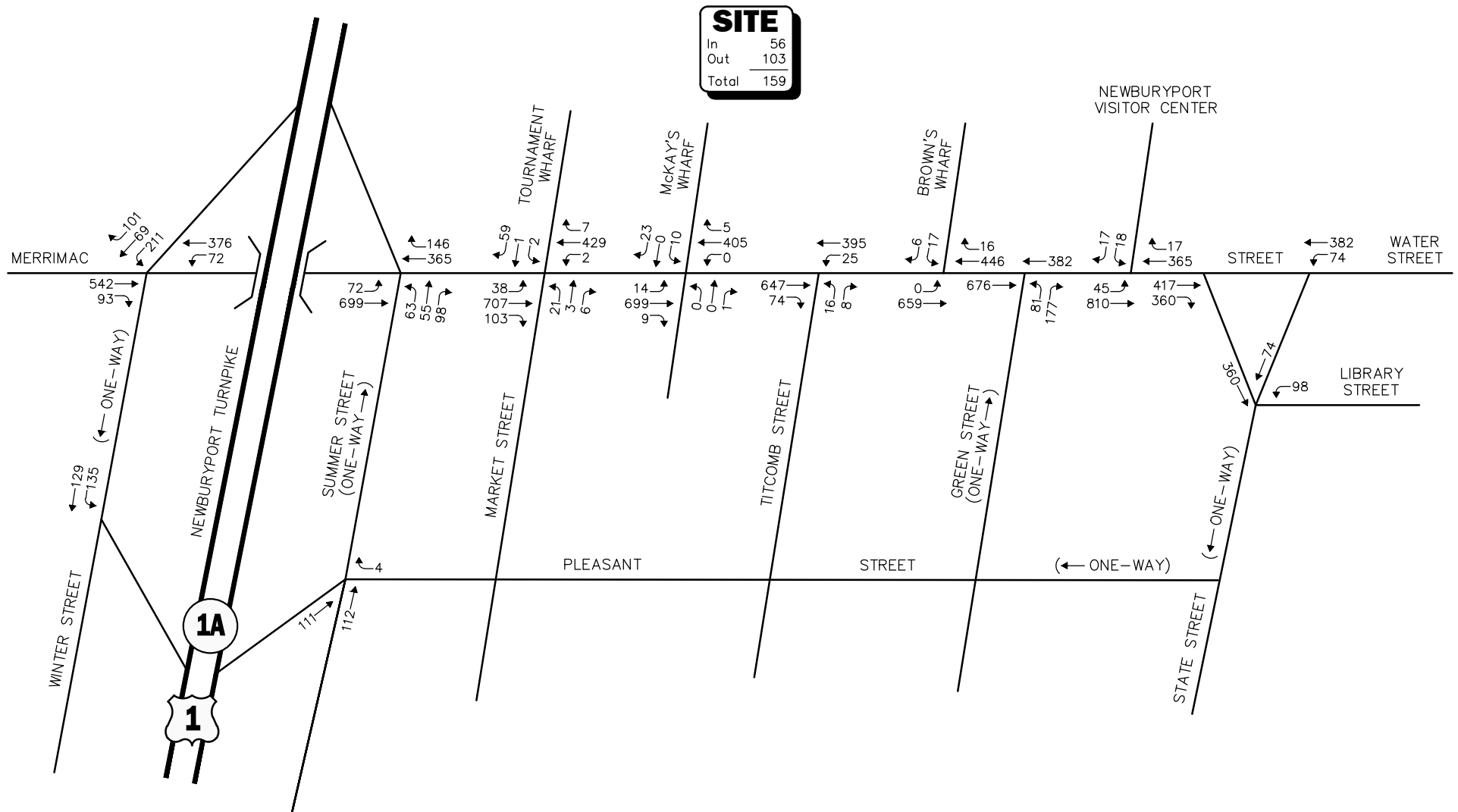


Figure 16

2023 Build
Weekday Morning
Peak Hour Traffic Volumes

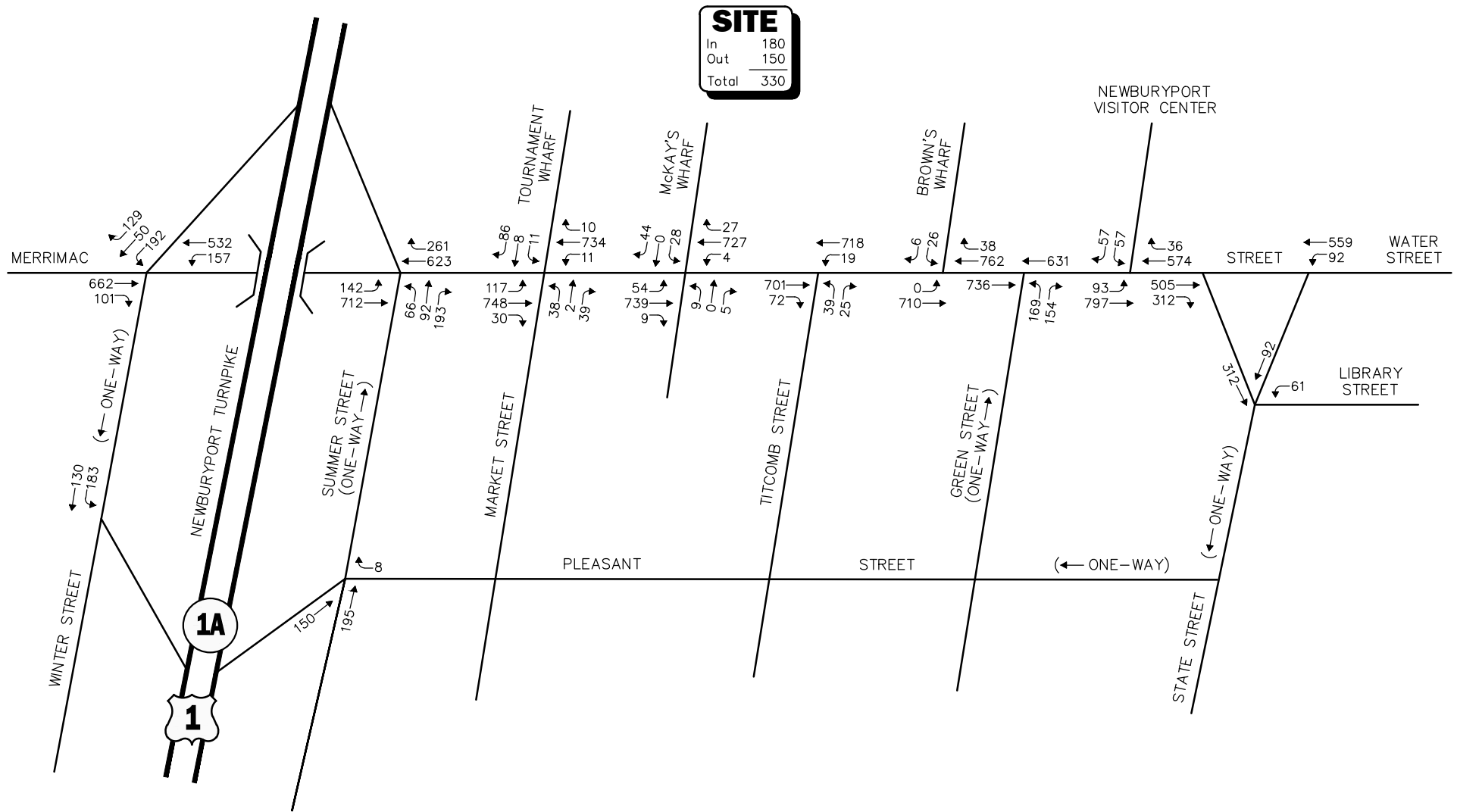


Figure 17

2023 Build
Weekday Evening
Peak Hour Traffic Volumes

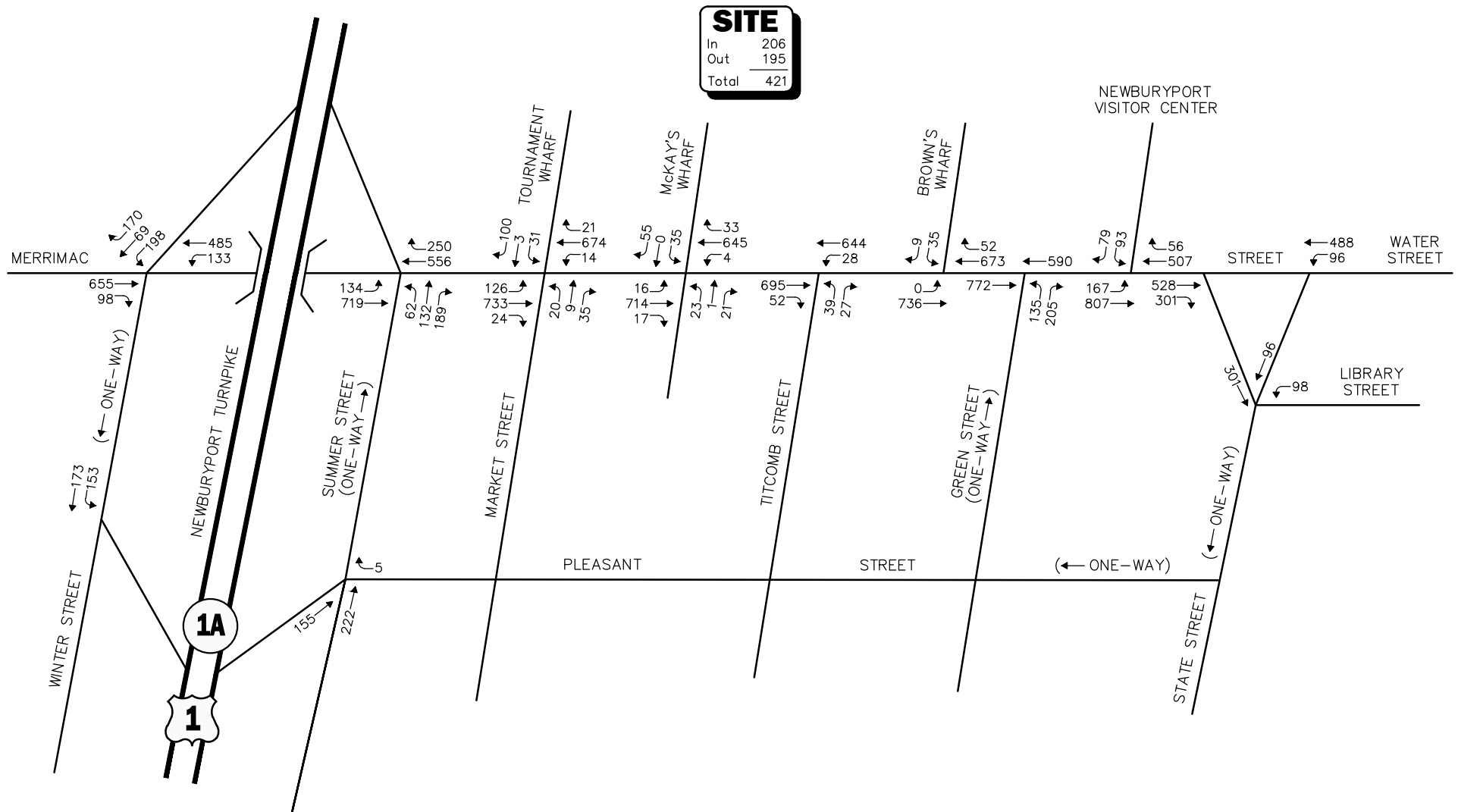


Figure 18

2023 Build
Saturday Midday
Peak Hour Traffic Volumes

Table 7
PEAK-HOUR TRAFFIC-VOLUME INCREASES

Location/Peak Hour	2016 Existing	2023 No-Build	2023 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Merrimac Street, West of Winter Street:</i>					
Weekday Morning	1,017	1,113	1,113	0	0.0
Weekday Evening	1,262	1,376	1,424	48	3.5
Saturday MIDDAY	1,200	1,324	1,408	84	6.3
<i>Water Street, east of State Street:</i>					
Weekday Morning	780	845	873	28	3.3
Weekday Evening	1,008	1,101	1,156	55	5.0
Saturday MIDDAY	935	1,033	1,112	79	7.6
<i>State Street, south of Liberty Street:</i>					
Weekday Morning	489	525	532	7	1.3
Weekday Evening	420	454	465	11	2.4
Saturday MIDDAY	437	476	495	19	4.0
<i>Winter Street, south of Route 1 Southbound On-Ramp:</i>					
Weekday Morning	115	123	129	6	4.9
Weekday Evening	112	123	130	7	5.7
Saturday MIDDAY	146	161	173	12	7.5
<i>Summer Street, south of Pleasant Street:</i>					
Weekday Morning	101	109	112	3	2.8
Weekday Evening	170	186	195	9	4.8
Saturday MIDDAY	189	209	222	13	6.2
<i>Market Street, south of Merrimac Street:</i>					
Weekday Morning	127	136	136	0	0.0
Weekday Evening	118	128	128	0	0.0
Saturday MIDDAY	96	104	105	1	1.0
<i>Titcomb Street, south of Merrimac Street:</i>					
Weekday Morning	75	123	123	0	0.0
Weekday Evening	78	155	155	0	0.0
Saturday MIDDAY	69	146	146	0	0.0
<i>Green Street, south of Merrimac Street:</i>					
Weekday Morning	244	253	258	5	2.0
Weekday Evening	294	309	323	14	4.5
Saturday MIDDAY	297	317	340	23	7.3

As shown in Table 7, Project-related traffic-volume increases outside of the study area relative to 2023 No-Build conditions are anticipated to range from 0.0 to 7.6 percent during the peak periods, with vehicle increases shown to range from 0 to 84 vehicles.

TRAFFIC OPERATIONS ANALYSIS

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

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.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.

¹⁰The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

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*.¹¹ 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)
$v/c \leq 1.0$	$v/c > 1.0$	
A	F	≤ 10.0
B	F	10.1 to 15.0
C	F	15.1 to 25.0
D	F	25.1 to 35.0
E	F	35.1 to 50.0
F	F	> 50.0

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

¹¹*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 over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections were calculated using the Percentile Delay Method implemented as a part of the Synchro™ 8 software as suggested by MassDOT in order to compensate for errors found when employing the 2010 *Highway Capacity Manual* methodology as a part of the software. The Percentile Delay Method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on “percentile” delay. Level-of-service designations are based on the criterion of percentile delay per vehicle and is a measure of: i) driver discomfort; ii) motorist frustration; and iii) fuel consumption; and includes a uniform delay based on percentile volumes using a Poisson arrival pattern, an initial queue move-up time, and a queue interaction delay that accounts for delays resulting from queues extending from adjacent intersections. Table 9 summarizes the relationship between level-of-service and percentile delay, and uses the same numerical delay thresholds as the HCM method. The tabulated percentile delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 9
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

Level of Service	Percentile 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

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 six 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 three minutes out of sixty minutes during the peak one hour of the day (during the remaining fifty-seven 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 2016 Existing, 2023 No-Build and 2023 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 10 and 11. The detailed analysis results are presented in the Appendix.

The following is a summary of the level-of-service and vehicle queue analyses for the intersections within the study area.

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

Signalized Intersection/Peak-hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
<i>Merrimac Street and Water Street at State Street</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB TH	0.59	12.6	B	3/5	0.61	12.7	B	3/5	0.61	12.7	B	4/6
Merrimac Street EB RT	0.45	2.9	A	0/1	0.47	2.9	A	0/1	0.47	2.9	A	0/1
Water Street WB LT	0.28	10.3	B	1/1	0.32	10.7	B	1/2	0.32	10.7	B	1/2
Water Street WB TH	0.55	12.0	B	3/5	0.58	12.2	B	3/5	0.57	11.8	B	3/5
Overall	--	9.4	A	--	--	9.5	A	--	--	9.5	A	--
<i>Weekday Evening:</i>												
Merrimac Street EB TH	0.60	12.4	B	3/6	0.61	12.4	B	4/6	0.63	12.4	B	4/7
Merrimac Street EB RT	0.35	2.3	A	0/1	0.36	2.3	A	0/1	0.37	2.3	A	0/1
Water Street WB LT	0.34	11.1	B	1/2	0.37	11.2	B	1/2	0.37	11.3	B	1/2
Water Street WB TH	0.69	14.2	B	4/7	0.72	15.0	B	5/8	0.74	15.4	B	5/8
Overall	--	11.1	B	--	--	11.2	B	--	--	11.3	B	--
<i>Saturday Midday:</i>												
Merrimac Street EB TH	0.03	13.5	B	3/6	0.65	13.5	B	4/6	0.67	13.5	B	4/7
Merrimac Street EB RT	0.34	2.5	A	0/1	0.35	2.5	A	0/1	0.36	2.5	A	0/1
Water Street WB LT	0.39	12.7	B	1/2	0.43	13.5	B	1/2	0.44	13.9	B	1/2
Water Street WB TH	0.60	12.9	B	3/5	0.63	13.0	B	4/6	0.67	13.6	B	4/7
Overall	--	10.9	B	--	--	11.0	B	--	--	11.2	B	--

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle in seconds.

^cLevel-of-Service.

^dQueue length in vehicles.

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

Table 11
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Merrimac Street at the Route 1 Southbound Off-Ramp and Winter Street</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB TH/RT	608	0.0	A	0	655	0.0	A	0	635	0.0	A	0
Merrimac Street WB LT/TH	355	1.0	A	0	380	1.0	A	1	448	1.5	A	1
Route 1 Southbound Off-Ramp SB LT	198	>50.0	F	9	213	>50.0	F	12	211	>50.0	F	15
Route 1 Southbound Off-Ramp SB TH/RT	158	12.2	B	1	170	12.7	B	2	170	13.4	B	2
<i>Weekday Evening:</i>												
Merrimac Street EB TH/RT	663	0.0	A	0	723	0.0	A	0	763	0.0	A	0
Merrimac Street WB LT/TH	604	2.0	A	1	663	3.2	A	1	689	2.5	A	1
Route 1 Southbound Off-Ramp SB LT	164	>50.0	F	13	179	>50.0	F	17	192	>50.0	F	20
Route 1 Southbound Off-Ramp SB TH/RT	167	14.4	B	2	179	15.7	C	2	179	15.8	C	2
<i>Saturday Midday:</i>												
Merrimac Street EB TH/RT	638	0.0	A	0	707	0.0	A	0	753	0.0	A	0
Merrimac Street WB LT/TH	491	1.7	A	1	549	1.9	A	1	618	2.3	A	1
Route 1 Southbound Off-Ramp SB LT	164	>50.0	F	11	183	>50.0	F	16	198	>50.0	F	21
Route 1 Southbound Off-Ramp SB TH/RT	223	14.4	B	2	239	16.3	C	3	239	17.5	C	3
<i>Merrimac Street at Summer Street and the Route 1 Northbound On-Ramp</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB LT	67	8.6	A	0	72	8.7	A	0	72	9.0	A	1
Merrimac Street EB TH	652	0.0	A	0	703	0.0	A	0	699	0.0	A	0
Merrimac Street WB TH/RT	428	0.0	A	0	459	0.0	A	0	511	0.0	A	0
Summer Street NB LT	59	38.2	E	1	63	48.9	E	3	63	>50.0	F	3
Summer Street NB TH	51	38.2	E	1	55	48.9	E	3	55	>50.0	F	3
Summer Street NB RT	83	15.5	C	0	89	16.8	C	1	98	17.1	C	1
<i>Weekday Evening:</i>												
Merrimac Street EB LT	132	10.6	B	1	142	11.3	B	1	142	11.4	B	1
Merrimac Street EB TH	601	0.0	A	0	659	0.0	A	0	712	0.0	A	0
Merrimac Street WB TH/RT	786	0.0	A	0	863	0.0	A	0	884	0.0	A	0
Summer Street NB LT	62	>50.0	F	4	66	>50.0	F	6	66	>50.0	F	6
Summer Street NB TH	86	>50.0	F	4	92	>50.0	F	6	92	>50.0	F	6
Summer Street NB RT	140	16.5	B	2	158	18.9	C	2	193	23.6	C	3
<i>Saturday Midday:</i>												
Merrimac Street EB LT	125	9.8	A	1	134	10.3	B	1	134	10.8	B	1
Merrimac Street EB TH	586	0.0	A	0	658	0.0	A	0	719	0.0	A	0
Merrimac Street WB TH/RT	654	0.0	A	0	729	0.0	A	0	806	0.0	A	0
Summer Street NB LT	58	>50.0	F	3	62	>50.0	F	5	62	>50.0	F	6
Summer Street NB TH	123	>50.0	F	3	132	>50.0	F	5	132	>50.0	F	6
Summer Street NB RT	132	16.8	C	2	153	20.2	C	2	189	27.3	D	4

See notes at end of table.

Table 11 (Continued)

UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Merrimac Street at the Market Street and Tournament Wharf</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB LT/TH/RT	783	0.2	A	0	843	0.2	A	0	848	0.4	A	0
Merrimac Street WB LT/TH/RT	403	0.0	A	0	431	0.0	A	0	438	0.0	A	0
Market Street NB LT/TH/RT	28	33.8	D	1	30	40.0	E	1	30	48.3	E	1
Tournament Wharf SB LT/TH/RT	15	12.6	B	0	15	13.1	B	0	42	14.5	B	1
<i>Weekday Evening:</i>												
Merrimac Street EB LT/TH/RT	735	0.7	A	0	807	0.7	A	0	895	1.3	A	0
Merrimac Street WB LT/TH/RT	705	0.1	A	0	776	0.1	A	0	756	0.1	A	0
Market Street NB LT/TH/RT	73	>50.0	F	6	79	>50.0	F	8	79	>50.0	F	10
Tournament Wharf SB LT/TH/RT	59	33.3	D	2	59	45.3	E	2	105	>50.0	F	5
<i>Saturday Midday:</i>												
Merrimac Street EB LT/TH/RT	698	0.7	A	0	786	0.7	A	0	883	1.4	A	0
Merrimac Street WB LT/TH/RT	614	0.2	A	0	686	0.2	A	0	709	0.2	A	0
Market Street NB LT/TH/RT	60	46.1	E	3	64	>50.0	F	4	64	>50.0	F	6
Tournament Wharf SB LT/TH/RT	73	47.7	E	2	73	>50.0	F	4	134	>50.0	F	11
<i>Merrimac Street at McKay's Wharf</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB LT/TH/RT	682	0.1	A	0	736	0.1	A	0	722	0.2	A	0
Merrimac Street WB LT/TH/RT	383	0.0	A	0	408	0.0	A	0	410	0.0	A	0
Driveway NB LT/TH/RT	3	17.5	C	0	1	13.7	B	0	1	13.7	B	0
McKay's Wharf SB LT/TH/RT	17	12.6	B	0	17	13.2	B	0	33	17.1	C	1
<i>Weekday Evening:</i>												
Merrimac Street EB LT/TH/RT	689	0.1	A	0	770	0.1	A	0	802	0.6	A	0
Merrimac Street WB LT/TH/RT	708	0.0	A	0	773	0.0	A	0	758	0.0	A	0
Driveway NB LT/TH/RT	2	13.2	B	0	14	>50.0	F	2	14	>50.0	F	2
McKay's Wharf SB LT/TH/RT	30	23.2	C	1	30	28.2	D	1	72	>50.0	F	3
<i>Saturday Midday:</i>												
Merrimac Street EB LT/TH/RT	678	0.2	A	0	767	0.2	A	0	797	0.8	A	0
Merrimac Street WB LT/TH/RT	596	0.0	A	0	666	0.1	A	0	682	0.1	A	0
Driveway NB LT/TH/RT	8	26.0	D	0	45	>50.0	F	3	45	>50.0	F	4
McKay's Wharf SB LT/TH/RT	20	18.2	C	1	20	22.1	C	1	90	>50.0	F	5

See notes at end of table.

Table 11 (Continued)

UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Merrimac Street at Titcomb Street</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB TH/RT	675	0.0	A	0	734	0.0	A	0	721	0.0	A	0
Merrimac Street WB LT/TH	398	0.3	A	0	418	0.6	A	0	420	0.6	A	0
Titcomb Street NB LT/ RT	12	21.1	C	1	24	24.5	C	1	24	24.1	C	1
<i>Weekday Evening:</i>												
Merrimac Street EB TH/RT	687	0.0	A	0	767	0.0	A	0	773	0.0	A	0
Merrimac Street WB LT/TH	700	0.1	A	0	752	0.2	A	0	737	0.2	A	0
Titcomb Street NB LT/ RT	23	31.8	D	1	64	>50.0	F	3	64	>50.0	F	3
<i>Saturday Midday:</i>												
Merrimac Street EB TH/RT	655	0.0	A	0	735	0.0	A	0	747	0.0	A	0
Merrimac Street WB LT/TH	597	0.3	A	0	656	0.4	A	0	672	0.4	A	0
Titcomb Street NB LT/RT	27	28.6	D	1	64	>50.0	F	4	64	>50.0	F	4
<i>Merrimac Street at Brown's Wharf</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB LT/TH	635	0.3	A	0	672	0.3	A	0	659	0.0	A	0
Merrimac Street WB TH/RT	417	0.0	A	0	449	0.0	A	0	462	0.0	A	0
Brown's Wharf SB LT/RT	7	10.7	B	0	7	11.0	B	0	23	20.2	C	1
<i>Weekday Evening:</i>												
Merrimac Street EB LT/TH	633	0.1	A	0	704	0.1	A	0	710	0.0	A	0
Merrimac Street WB TH/RT	707	0.0	A	0	754	0.0	A	0	800	0.0	A	0
Brown's Wharf SB LT/RT	34	17.4	C	0	34	18.8	C	1	32	45.9	E	1
<i>Saturday Midday:</i>												
Merrimac Street EB LT/TH	652	0.1	A	0	724	0.1	A	0	736	0.0	A	0
Merrimac Street WB TH/RT	602	0.0	A	0	658	0.0	A	0	725	0.0	A	0
Brown's Wharf SB LT/RT	9	15.0	C	0	9	16.2	C	0	44	41.2	E	2

See notes at end of table

Table 11 (Continued)

UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Merrimac Street at Green Street</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB TH	612	0.0	A	0	649	0.0	A	0	676	0.0	A	0
Merrimac Street WB TH	346	0.0	A	0	374	0.0	A	0	382	0.0	A	0
Green Street NB LT	71	27.0	D	2	76	31.9	D	2	81	35.9	E	3
Green Street NB RT	173	20.0	C	3	177	22.0	C	3	177	23.4	C	3
<i>Weekday Evening:</i>												
Merrimac Street EB TH	631	0.0	A	0	702	0.0	A	0	736	0.0	A	0
Merrimac Street WB TH	562	0.0	A	0	599	0.0	A	0	631	0.0	A	0
Green Street NB LT	145	>50.0	F	7	155	>50.0	F	10	169	>50.0	F	12
Green Street NB RT	149	17.0	C	2	154	19.3	C	2	154	20.5	C	2
<i>Saturday Midday:</i>												
Merrimac Street EB TH	646	0.0	A	0	718	0.0	A	0	772	0.0	A	0
Merrimac Street WB TH	498	0.0	A	0	546	0.0	A	0	590	0.0	A	0
Green Street NB LT	104	48.0	E	4	112	>50.0	F	5	135	>50.0	F	8
Green Street NB RT	193	20.7	C	3	205	25.6	D	4	205	29.5	D	4
<i>Merrimac Street at a Private Driveway</i>												
<i>Weekday Morning:</i>												
Merrimac Street EB LT/TH	785	0.6	A	0	826	0.4	A	0	855	0.4	A	0
Merrimac Street WB TH/RT	341	0.0	A	0	374	0.0	A	0	382	0.0	A	0
Private Driveway SB LT/RT	42	21.0	C	1	35	23.1	C	1	35	24.3	C	1
<i>Weekday Evening:</i>												
Merrimac Street EB LT/TH	780	0.7	A	0	856	1.0	A	0	890	1.0	A	1
Merrimac Street WB TH/RT	526	0.0	A	0	578	0.0	A	0	610	0.0	A	0
Private Driveway SB LT/RT	89	38.6	E	3	114	>50.0	F	6	114	>50.0	F	7
<i>Saturday Midday:</i>												
Merrimac Street EB LT/TH	839	1.3	A	1	920	1.7	A	1	974	1.7	A	1
Merrimac Street WB TH/RT	472	0.0	A	0	519	0.0	A	0	563	>50.0	A	0
Private Driveway SB LT/RT	110	>50.0	F	6	172	>50.0	F	17	172	>50.0	F	18

See notes at end of table.

Table 11 (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Winter Street at the Route 1 Southbound On-Ramp</i>												
<i>Weekday Morning:</i>												
Winter Street SB LT/TH	219	0.0	A	0	235	0.0	A	0	264	0.0	A	0
<i>Weekday Evening:</i>												
Winter Street SB LT/TH	271	0.0	A	0	295	0.0	A	0	313	0.0	A	0
<i>Saturday Middy:</i>												
Winter Street SB LT/TH	267	0.0	A	0	295	0.0	A	0	326	0.0	A	0
<i>Summer Street at Pleasant Street and the Route 1 Northbound Off-Ramp</i>												
<i>Weekday Morning:</i>												
Route 1 Northbound Off-Ramp EB LT	98	9.8	A	1	105	9.9	A	1	111	10.0	B	1
Pleasant Street WB RT	4	8.8	A	0	4	8.9	A	0	4	8.9	A	0
Summer Street NB TH	101	0.0	A	0	109	0.0	A	0	112	0.0	A	0
<i>Weekday Evening:</i>												
Route 1 Northbound Off-Ramp EB LT	112	10.3	B	1	124	10.6	B	1	150	10.9	B	1
Pleasant Street WB RT	7	9.3	A	0	8	9.4	A	0	8	9.4	A	0
Summer Street NB TH	170	0.0	A	0	186	0.0	A	0	195	0.0	A	0
<i>Saturday Middy:</i>												
Route 1 Northbound Off-Ramp EB LT	118	10.7	B	1	132	11.0	B	1	155	11.5	B	1
Pleasant Street WB RT	5	9.5	A	0	5	9.6	A	0	5	9.7	A	0
Summer Street NB TH	189	0.0	A	0	209	0.0	A	0	222	0.0	A	0
<i>State Street at Liberty Street</i>												
<i>Weekday Morning:</i>												
State Street SB TH	398	0.0	A	0	427	0.0	A	0	434	0.0	A	0
Liberty Street WB LT	91	10.5	B	1	98	10.8	B	1	98	10.8	B	1
<i>Weekday Evening:</i>												
State Street SB TH	363	0.0	A	0	393	0.0	A	0	404	0.0	A	0
Liberty Street WB LT	57	10.2	B	1	61	10.4	B	1	61	10.5	B	1
<i>Saturday Middy:</i>												
State Street SB TH	346	0.0	A	0	378	0.0	A	0	397	0.0	A	0
Liberty Street WB LT	91	10.3	B	1	98	10.5	B	1	98	10.6	B	1

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel-of-Service.

^dQueue length in vehicles.

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

Signalized Intersections

As can be seen in Table 10, the signalized intersection of Merrimac Street and Water Street at State Street was shown to operate at an overall LOS B or better during the weekday morning, weekday evening and Saturday midday peak hours under all analysis conditions. Project-related impacts at the intersection were identified as an increase in average motorist delay of less than 1.0 seconds over No-Build conditions with no reported change in LOS and vehicle queues predicted to increase by no more than one (1) vehicle during the peak hours.

Unsignalized Intersections

As can be seen in Table 11, the majority of the movements at the unsignalized study area intersections were shown to operate at LOS D or better during the peak hours under all analysis conditions; however, individual movements at specific intersections were identified to be operating at or over capacity independent of the Project. Project-related impacts at the unsignalized study area intersections were identified as follows:

Merrimac Street/Winter Street/Route 1 Southbound Off-Ramp – No change in LOS with a predicted increase in vehicle queuing of up to 5 vehicles. Left-turn movements from the Route 1 off-ramp were identified to be operating at LOS F during the peak hours independent of the Project. With the installation of a traffic control signal at the intersection in conjunction with the planned MassDOT improvement project, overall operating conditions could be improved to LOS C or better during the peak hours.

Merrimac Street/Summer Street/Route 1 Northbound On-Ramp – The LOS for left-turn and through movements from Summer Street were predicted to degrade from LOS E to F during the weekday morning peak-hour with the addition of Project-related traffic, with the LOS for the right-turn movement from Summer Street predicted to degrade from LOS C to LOS D during the Saturday midday peak-hour. Vehicle queues at the intersection were predicted to increase by up to 2 vehicles with the addition of Project-related traffic. Left-turn and through movements from the Summer Street approach were identified to be operating at LOS F during the weekday evening peak-hour independent of the Project. With the installation of a traffic control signal at the intersection in conjunction with the planned MassDOT improvement project, overall operating conditions could be improved to LOS C or better during the peak hours.

Merrimac Street/Market Street/Tournament Wharf – The LOS for all movements exiting Tournament Wharf was shown to degrade from LOS E to LOS F during the weekday evening peak-hour as a result of the addition of Project-related traffic, with increases in vehicle queuing of up to 7 vehicles predicted as a result of the Project. Independent of the Project, it was noted that both the Market Street and Tournament Wharf approaches operate at or over capacity (LOS E or F) during the peak hours as a result of the relatively large volume of conflicting traffic on Merrimac Street during these periods. The installation of traffic control signals at the Route 1/Merrimac Street intersections would provide gaps in the follow of traffic along Merrimac Street that would allow vehicles to exit Market Street and Tournament Wharf with reduced delays thereby improving traffic operations at this intersection.

Merrimac Street/McKay's Wharf – The LOS for the McKay's Wharf approach was shown to degrade from LOS B to LOS C during the weekday morning peak-hour, from LOS D to LOS F during the weekday evening peak-hour and from LOS C to LOS F during the Saturday midday peak-hour as a result of the addition of Project-related traffic. Vehicle queues at the intersection were predicted to increase by up to 4 vehicles with the addition of Project-related traffic. All

movements exiting the private driveway located opposite McKay's Wharf were shown to operate at LOS F during the weekday evening and Saturday midday peak hours independent of the Project. The installation of traffic control signals at the Route 1/Merrimac Street intersections would provide gaps in the follow of traffic along Merrimac Street that would allow vehicles to exit McKay's Wharf with reduced delays thereby improving traffic operations at this intersection.

Merrimac Street/Titcomb Street – No changes in LOS or vehicle queuing are predicted to occur as a result of the Project. All movements exiting Titcomb Street were identified to be operating at LOS F during the weekday evening and Saturday midday peak hours independent of the Project as a result of the relatively large volume of conflicting traffic on Merrimac Street during these periods. The installation of traffic control signals at the Route 1/Merrimac Street intersections would provide gaps in the follow of traffic along Merrimac Street that would allow vehicles to exit Titcomb Street with reduced delays thereby improving traffic operations at this intersection.

Merrimac Street/Brown's Wharf - The LOS for the Brown's Wharf approach was shown to degrade from LOS B to LOS C during the weekday morning peak-hour and from LOS C to LOS E during the weekday evening and Saturday midday peak hours as a result of the addition of Project-related traffic. Vehicle queues at the intersection were predicted to increase by up to 2 vehicles with the addition of Project-related traffic. Reactivation of the traffic control signal at the Merrimac Street/Green Street intersection would serve to reduce delays for motorists exiting Brown's Wharf as a result of the creation of gaps in the flow of traffic along Merrimac Street through normal operation of the traffic signal system.

Merrimac Street/Green Street/Waterfront Park - The LOS for left-turn movements exiting Green Street was shown to degrade from LOS D to LOS E during the weekday morning peak-hour as a result of the addition of Project-related traffic, with increases in vehicle queuing of up to 3 vehicles predicted as a result of the Project. Independent of the Project, it was noted that the left-turn movement from the Green Street approach and all movements from the driveway serving Waterfront Park operate over capacity (LOS F) during the weekday evening and Saturday midday peak hours as a result of the relatively large volume of conflicting traffic on Merrimac Street during these periods. With the reactivation of the traffic control signal at the intersection, overall operating conditions at the intersection could be improved to LOS D or better during the peak hours.

Winter Street/Route 1 Southbound On-Ramp - All movements were shown to operate at LOS A under all analysis conditions with negligible vehicle queuing predicted.

Summer Street/Pleasant Street/Route 1 Northbound Off-Ramp - The LOS for the left-turn movement exiting the Route 1 off-ramp was shown to degrade slightly from LOS A to LOS B during the weekday morning peak-hour as a result of the addition of Project-related traffic, with no material change in vehicle queuing predicted as a result of the Project. All movements at this intersection were shown to operate at LOS A or B under all analysis conditions.

State Street/Liberty Street – All movements were shown to operate at LOS A or B under all analysis conditions with vehicle queues of up to 1 vehicle.

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the intersections of Merrimac Street with Tournament Wharf, McKay's Wharf and Brown's Wharf, the ways that will provide access to the Project site, in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)¹² 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 12 presents the measured SSD and ISD at the subject intersections.

¹²*A Policy on Geometric Design of Highway and Streets*, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.

Table 12
SIGHT DISTANCE MEASUREMENTS^a

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) ^b	Measured
<i>Merrimac Street at Tournament Way</i>			
<i>Stopping Sight Distance:</i>			
Merrimac Street approaching from the east	200	--	158/221 ^c /300 ^d
Merrimac Street approaching from the west	200	--	500+
<i>Intersection Sight Distance:</i>			
Looking to the east from Tournament Wharf	200	290/335	99/112 ^c /300 ^d
Looking to the west from Tournament Wharf	200	290/335	500+
<i>Merrimac Street at McKay's Wharf</i>			
<i>Stopping Sight Distance:</i>			
Merrimac Street approaching from the east	200	--	92/174 ^c /260 ^d
Merrimac Street approaching from the west	200	--	167/342 ^c /300 ^d
<i>Intersection Sight Distance:</i>			
Looking to the east from McKay's Wharf	200	335/390	75/161 ^c /200 ^d
Looking to the west from McKay's Wharf	200	335/390	103/129 ^c /300 ^d
<i>Merrimac Street at Brown's Wharf</i>			
<i>Stopping Sight Distance:</i>			
Merrimac Street approaching from the east	200	--	500+
Merrimac Street approaching from the west	200	--	296
<i>Intersection Sight Distance:</i>			
Looking to the east from Brown's Wharf	200	335/390	500+
Looking to the west from Brown's Wharf	200	335/390	289

^aRecommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2011; and based on a 30 mph approach speed on Merrimac Street.

^bValues shown are the intersection sight distance for a vehicle turning right/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.

^cSight line that is available with driver positioned 7-10 feet from the edge of roadway (from within the sidewalk area).

^dWith the removal of on-street parking adjacent to the way.

As can be seen in Table 12, the available sight lines at the intersections of Merrimac Street with the ways that provide access to the Project site currently meet, exceed or could be made to meet or exceed the recommended minimum sight distance requirements for safe operation (SSD) based on a 30 mph approach speed along Merrimac Street, which is consistent with the posted speed limit in the vicinity of the Project site and is 6 mph above the average measured 85th percentile vehicle travel speed (24 mph).

As noted in Table 12, lines of sight exiting the ways that serve the Project site were found to be partially obscured by on-street parking adjacent to the driveways; however, sight lines improved when the vehicle was positioned within the sidewalk area, typical of driveway exit maneuvers in an urban setting with on-street parking. That being said, independent of the Project, the City should consider restricting parking adjacent to subject intersections in order to provide the requisite sight lines and to facilitate emergency vehicle access.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed Waterfront West mixed-use development to be located off Merrimac Street and accessed by way of Tournament Wharf, McKay's Wharf and Brown's Wharf along the southern bank of the Merrimack River in Newburyport, 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, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE¹³ and without consideration of transit use, the Project is predicted to generate approximately 3,038 primary vehicle trips on an average weekday and 3,844 primary vehicle trips on a Saturday (both two-way, 24-hour volumes), with 159 primary vehicle trips expected during the weekday morning peak-hour, 266 primary vehicle trips expected during the weekday evening peak-hour and 349 primary vehicle trips expected during the Saturday midday peak-hour;
2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with the majority of the movements at the study intersections shown to continue to operate at a LOS that represents "acceptable" traffic operations;
3. In comparison to the existing uses that occupy the Project site, the Project is expected to result in 2,744 additional total (two-way and inclusive of pass-by trips) vehicle trips on an average weekday and 3,908 additional vehicle trips on a Saturday, with 97 additional total vehicle trips expected during the weekday morning peak-hour, 253 additional vehicle trips expected during the weekday evening peak-hour and 367 additional vehicle trips expected during the Saturday midday peak-hour;
4. Increased delays were noted for vehicles exiting the Project site with the completion of the redevelopment project; however, the potential vehicle queues can be contained within the Project site without impeding access or on-site circulation;

¹³Ibid 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 to and from the ways that provide access to the Project site from Merrimac Street were found to meet or could be made to meet or exceed the required minimum distance for the intersections to function in a safe manner based on the appropriate approach speed along Merrimac Street and with consideration of the urban environment in which the Project site is located.

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 improvements that have been recommended as a part of this evaluation, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals. To the extent that the Project is constructed in phases, the identified improvement measures may also be phased in a manner that will be consistent with the build-out of the Project and the associated impacts on the transportation infrastructure.

Project Access

Access to the Project site is and will continue to be provided by way of Tournament Wharf, McKay's Wharf and Brown's Wharf, all which intersect the north side of Merrimac Street east of Newburyport Turnpike. The following recommendations are offered with respect to the design and operation of the ways that serve the Project site:

- The access ways to the Project site should be a minimum of 24-feet in width for two-way travel and a minimum of 20-feet in width for one-way operation, or as required to accommodate fire truck turning maneuvers pursuant to the requirements of NFPA® 1.¹⁴
- Fire lanes should be a minimum of 20-feet in width and constructed of bituminous asphalt concrete or other stabilized surface material that can support travel by the largest anticipated responding emergency vehicle pursuant to the requirements of NFPA® 1.
- Vehicles exiting the Project should be placed under STOP-sign control with marked STOP-lines provided.
- All signs and pavement markings to be installed within the Project shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).¹⁵
- Sidewalks should be provided within the Project site linking the proposed buildings and other amenities to the sidewalk infrastructure along Merrimac Street.

¹⁴Ibid 3.

¹⁵Ibid 4.

- The ways serving the Project site should be constructed as “pan-type” driveways so that the sidewalk is flush across traveled-way or, where this design cannot be accommodated, Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided.
- Signs and landscaping to be within intersection sight triangle areas of the ways serving the Project site should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within the sight triangle areas of the ways serving the Project site should be promptly removed where such accumulations would exceed 2.5 feet in height.
- The City should consider restricting on-street parking for a minimum distance of 20-feet on either side of the ways serving the Project site in order to provide and maintain the required lines of sight for the ways to operate in a safe manner.
- A school bus waiting area should be provided at an appropriate location defined in consultation with the City.

Transportation Demand Management

The Project site is ideally situated to take advantage of available public transportation opportunities, including the existing bus service operated by the MVRTA along Merrimac Street to the east of the Project site, the future MVRTA bus terminal that is to be located opposite the Project site off Titcomb Street, and the MBTA Commuter Rail service at Newburyport Station to the south. In addition, the Project site is directly accessible from the Clipper City Rail Trail which provides access to the Newburyport Commuter Rail Station and the trail system along the Merrimack River. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location within each building and/or otherwise made available to hotel guests, residents and employees;
- A “welcome packet” will be provided to new residents and employees detailing available public transportation services, bicycle and walking alternatives, and commuter options available through MassRIDES’ and their NuRide program which rewards individuals that choose to walk, bicycle, carpool, vanpool or that use public transportation to travel to and from work;
- Residents and employees will be made aware of the Emergency Ride Home (ERH) program available through MassRIDES, which reimburses employees of a participating MassRIDES employer partner worksite that is registered for ERH and that carpool, take transit, bicycle, walk or vanpool to work;
- Pedestrian accommodations will be incorporated within the Project site consisting of sidewalks linking buildings and parking to on-site amenities and sidewalks along Merrimac Street;
- A connection to the Clipper City Rail Trail will be incorporated into the Project and include an extension of the Harborwalk along the Project site frontage on the Merrimack River;

- A mail drop will be provided in a central location within each building; and
- Secure bicycle parking will be provided, including both exterior bicycle racks and interior bicycle parking.

Off-Site

Merrimac Street at Summer Street, Winter Street and the Route 1 Ramps

Operating conditions for left-turn movements exiting from Route 1 southbound to Merrimac Street and for left-turn and through movements from Summer Street at its intersection with Merrimac Street and the Route 1 northbound on-ramp were found to be constrained under existing conditions and independent of the Project. As a result of these existing conditions, MassDOT is in the process of developing preliminary design plans for the installation of traffic control signals at both intersections; however, a construction date and funding source have not yet been identified. In order to advance these improvements, the Project proponent will prepare design plans, up to and including the MassDOT 100 Percent Design/Project Specifications & Estimate (PS&E) submission, and will assist the City in preparing the necessary grant applications to obtain funding for the construction of the improvements. With the installation of traffic control signals at the Route 1 ramp intersections with Merrimac Street, Summer Street and Winter Street, operating conditions were shown to improve to acceptable conditions.

Merrimac Street at Green Street and Waterfront Park

Left-turn movements exiting Green Street onto Merrimac Street and all movements from the driveway to Waterfront Park were found to be operating at or over capacity during weekday evening and Saturday midday peak hours under existing conditions and independent of the Project. A traffic control signal has been installed at this intersection that is currently operating in flashing mode (flashing “yellow” for Merrimac Street and flashing “red” for Green Street and Waterfront Park). In order to improve traffic operations at this intersection and to reduce both motorist delays and vehicle queuing on the Green Street approach, the Project proponent will restore the traffic signal to full operation, including replacing the traffic signal controller and associated appurtenances to the extent necessary to reactivate the traffic signal. As can be seen in Table 13, with reactivation of the traffic control signal at the Merrimac Street/Green Street intersection, overall operating conditions were shown to improve to LOS D or better.

With implementation of the above 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 13
MITIGATED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-hour/Movement	2023 No-Build				2023 Build				2023 Build with Mitigation			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th
Merrimac Street at Green Street and a Private Driveway												
<i>Weekday Morning:</i>												
Merrimac Street EB LT/TH									0.77	23.4	C	9/26
Merrimac Street WB TH/RT									0.42	14.3	B	4/11
Green Street NB LT									0.35	37.4	D	2/4
Green Street NB RT									0.49	10.1	B	0/2
Driveway SB LT/RT									0.14	1.0	A	0/0
Overall									--	19.3	B	--
<i>Weekday Evening:</i>												
Merrimac Street EB LT/TH									0.91	36.3	D	15/38
Merrimac Street WB TH/RT									0.61	17.6	B	9/22
Green Street NB LT									0.67	54.3	D	5/9
Green Street NB RT									0.43	9.9	A	0/3
Driveway SB LT/RT									0.65	32.7	C	1/3
Overall									--	28.9	C	--
<i>Saturday Midday:</i>												
Merrimac Street EB LT/TH									0.99	52.6	D	19/42
Merrimac Street WB TH/RT									0.54	16.8	B	8/18
Green Street NB LT									0.67	64.1	E	4/8
Green Street NB RT									0.57	12.7	B	0/3
Driveway SB LT/RT									0.83	54.7	D	3/8
Overall									--	38.5	D	--

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle in seconds.

^cLevel-of-Service.

^dQueue length in vehicles.

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

APPENDIX

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
MANUAL TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
PUBLIC TRANSPORTATION SCHEDULES
VEHICLE TRAVEL SPEED DATA
MASSDOT CRASH RATE WORKSHEETS
GENERAL BACKGROUND TRAFFIC GROWTH
BACKGROUND DEVELOPMENT NETWORKS
REMOVAL OF EXISTING SITE GENERATED TRAFFIC NETWORKS
TRIP-GENERATION CALCULATIONS
JOURNEY TO WORK TRIP DISTRIBUTION
PROJECT-GENERATED RESIDENTIAL AND COMMERCIAL TRAFFIC NETWORKS
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN



NOTES:

- 1 USE TYPES ARE AS DEFINED IN SECTION XXXXX OF THE CITY OF NEWBURYPORT ZONING ORDINANCE
- 2 MODIFICATIONS TO THIS PLAN ARE SUBJECT TO THE PROVISIONS OF SECTION XXXXX OF THE ZONING ORDINANCE
- 3 SUPPLEMENTARY PLANS AND MATERIALS ARE ON FILE WITH THE CITY CLERK
- 4 SUBDIVISION OR DIVISION OF LOTS SHALL BE EFFECTED PURSUANT TO SECTION XXXXX OF THE ZONING ORDINANCE
- 5 BUILDING AND LAYOUT MODIFICATIONS AND SUBSTITUTIONS ARE PERMITTED PURSUANT TO THE PROVISIONS OF SECTION XXXXX OF THE ZONING ORDINANCE
- 6 BUILDING LOCATION, PARKING, LAYOUT AND SITE DETAILS ARE APPROXIMATE IN THE DEVELOPMENT AREA, SUBJECT TO FINAL DESIGN AND THE PROVISIONS OF SECTION XXXXX OF THE ZONING ORDINANCE
- 7 INFRASTRUCTURE AND UTILITIES WILL BE INSTALLED TO SUPPORT THE DEVELOPMENT AND MAY BE INCLUDED IN ANY PORTION OF THE DEVELOPMENT AREA
- 8 TO THE EXTENT THE PROVISIONS OF SECTION XXXXX OF THE BYLAW CONFLICT WITH THIS PLAN, THE PLAN GOVERNS
- 9 PARKING MAY BE SHARED WITHIN MASTER DEVELOPMENT PLAN AREA WITH MULTIPLE USERS, OR AS OTHERWISE PERMITTED IN SECTION XXXXX OF THE ZONING ORDINANCE
- 10 HEIGHT, SETBACKS, FLOOR AREA, AND OPEN SPACE WILL BE PURSUANT TO SECTION XXXXX OF THE ZONING ORDINANCE
- 11 BUILDINGS MAY BE CONSTRUCTED IN MULTIPLE PHASES AND IN ANY OR NO ORDER
- 12 PUBLIC AND / OR PRIVATE ACCESS WAYS UTILIZED TO SERVICE THE MASTER DEVELOPMENT PLAN AREA SHALL BE INCLUDED AS PART OF THE MASTER DEVELOPMENT PLAN AREA

OVERALL DEVELOPMENT CRITERIA:

DEVELOPMENT AREA: 5.60 ACRES

ANTICIPATED BUILDING PROGRAM:

- RETAIL / SERVICE: 20,000 S.F.
- RESIDENTIAL: 200 UNITS
- HOTEL: 100 UNITS

LIMITS OF MASTER DEVELOPMENT PLAN AREA

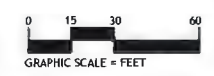
PERMITTED USES

- RESIDENTIAL
- INSTITUTIONAL / GOVERNMENT / MEDICAL
- BUSINESS
- FOOD SERVICE
- INDUSTRIAL / INFRASTRUCTURE
- MARINA
- OPEN SPACE / RECREATIONAL

NOTE: FOR COMPLETE LIST OF PERMITTED USES, SEE WATERFRONT WEST MASTER PLAN OVERLAY DISTRICT SECTION XXIV - D - USES

ALLOWABLE HEIGHT: UP TO 55'

REQUIRED PARKING RATIO	
RESIDENTIAL	1 SPACE PER UNIT
RETAIL / COMMERCIAL	4 SPACES / 1,000 GSF
HOTEL	1 SPACE PER UNIT



DUMONTJANKS
ARCHITECTS, INC.
1000 STATE STREET, SUITE 200
NEWBURYPORT, MA 01950
TEL: 978.251.1000 FAX: 978.251.1001

#	DESCRIPTION	DATE
DWG REVISION HISTORY		

#	DESCRIPTION	DATE
DWG ISSUE & REVISION HISTORY		

Stamp

NOT FOR CONSTRUCTION

Key Plan

Project Title:

WATERFRONT WEST

NEWBURYPORT, MA

Drawing Title:

MASTER DEVELOPMENT PLAN

Project No. 031502 Scale: 1:30
Drawn By: JP
Checked By: RD
Approved By: RD
Date: 10/07/2016

Drawing No. **L-100**

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts
978-664-2565

Page 1

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281VOL1

Start Time	16-Jun-16 Thu	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		16	127			8	168				
12:15		9	133			8	161				
12:30		9	137			2	154				
12:45		6	133	40	530	9	159	27	642	67	1172
01:00		4	121			4	167				
01:15		3	130			5	170				
01:30		5	133			6	146				
01:45		1	134	13	518	1	167	16	650	29	1168
02:00		0	150			3	117				
02:15		1	167			2	146				
02:30		0	129			3	162				
02:45		2	169	3	615	3	142	11	567	14	1182
03:00		1	152			0	161				
03:15		3	140			4	156				
03:30		3	146			4	169				
03:45		1	155	8	593	1	160	9	646	17	1239
04:00		3	149			1	155				
04:15		5	165			4	139				
04:30		1	149			4	152				
04:45		8	145	17	608	14	170	23	616	40	1224
05:00		7	191			23	141				
05:15		12	171			36	164				
05:30		30	152			40	157				
05:45		40	156	89	670	46	174	145	636	234	1306
06:00		37	149			25	167				
06:15		46	106			36	176				
06:30		63	116			57	165				
06:45		84	116	230	487	85	180	203	688	433	1175
07:00		71	132			83	152				
07:15		94	112			99	147				
07:30		96	117			123	103				
07:45		85	118	346	479	137	134	442	536	788	1015
08:00		106	108			163	115				
08:15		105	133			171	98				
08:30		94	113			177	90				
08:45		95	138	400	492	191	83	702	386	1102	878
09:00		103	99			161	83				
09:15		85	76			165	56				
09:30		88	102			161	48				
09:45		92	69	368	346	144	47	631	234	999	580
10:00		104	65			166	39				
10:15		94	58			147	25				
10:30		118	38			132	27				
10:45		104	36	420	197	162	22	607	113	1027	310
11:00		101	30			163	16				
11:15		115	53			150	14				
11:30		96	21			143	11				
11:45		113	19	425	123	202	15	658	56	1083	179
Total		2359	5658			3474	5770			5833	11428
Percent		29.4%	70.6%			37.6%	62.4%			33.8%	66.2%

Accurate Counts

978-664-2565

Page 2

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281VOL1

Start Time	17-Jun-16 Fri	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		22	140			15	193				
12:15		10	135			11	190				
12:30		14	117			10	195				
12:45		7	142	53	534	9	172	45	750	98	1284
01:00		4	126			5	182				
01:15		4	129			15	172				
01:30		2	143			4	160				
01:45		1	161	11	559	4	178	28	692	39	1251
02:00		3	152			2	169				
02:15		0	170			3	131				
02:30		1	155			3	162				
02:45		3	175	7	652	2	182	10	644	17	1296
03:00		2	154			0	167				
03:15		2	173			6	176				
03:30		0	173			2	167				
03:45		1	168	5	668	0	177	8	687	13	1355
04:00		1	135			6	175				
04:15		6	139			7	184				
04:30		4	172			5	144				
04:45		9	154	20	600	13	175	31	678	51	1278
05:00		17	153			13	173				
05:15		16	142			35	178				
05:30		31	143			35	186				
05:45		20	131	84	569	32	187	115	724	199	1293
06:00		34	133			31	189				
06:15		45	142			37	179				
06:30		65	101			51	171				
06:45		77	124	221	500	83	154	202	693	423	1193
07:00		73	135			90	165				
07:15		83	140			95	156				
07:30		90	133			122	139				
07:45		95	144	341	552	130	112	437	572	778	1124
08:00		106	142			167	117				
08:15		127	112			139	87				
08:30		98	124			173	94				
08:45		90	129	421	507	203	82	682	380	1103	887
09:00		99	111			199	81				
09:15		82	116			157	75				
09:30		110	67			156	65				
09:45		101	92	392	386	182	76	694	297	1086	683
10:00		119	112			151	54				
10:15		115	102			145	49				
10:30		111	78			178	45				
10:45		121	93	466	385	160	30	634	178	1100	563
11:00		123	65			146	31				
11:15		136	45			147	36				
11:30		108	27			199	37				
11:45		116	33	483	170	181	15	673	119	1156	289
Total		2504	6082			3559	6414			6063	12496
Percent		29.2%	70.8%			35.7%	64.3%			32.7%	67.3%

Accurate Counts
978-664-2565

Page 3

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281VOL1

Start Time	18-Jun-16 Sat	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		31	115			16	174				
12:15		19	138			6	155				
12:30		17	132			9	166				
12:45		15	105	82	490	16	151	47	646	129	1136
01:00		11	145			7	157				
01:15		16	143			12	166				
01:30		3	129			10	175				
01:45		5	145	35	562	8	170	37	668	72	1230
02:00		6	127			7	157				
02:15		8	143			0	157				
02:30		7	139			3	149				
02:45		4	124	25	533	6	157	16	620	41	1153
03:00		4	169			3	139				
03:15		1	143			6	158				
03:30		3	122			3	160				
03:45		6	145	14	579	0	152	12	609	26	1188
04:00		3	168			5	146				
04:15		3	140			5	153				
04:30		6	145			9	162				
04:45		8	150	20	603	13	169	32	630	52	1233
05:00		8	154			10	146				
05:15		11	151			16	153				
05:30		8	149			24	160				
05:45		14	141	41	595	23	147	73	606	114	1201
06:00		19	126			35	160				
06:15		26	113			49	167				
06:30		43	139			45	158				
06:45		39	120	127	498	75	151	204	636	331	1134
07:00		49	143			68	142				
07:15		55	152			92	126				
07:30		56	126			88	142				
07:45		72	116	232	537	118	121	366	531	598	1068
08:00		73	135			128	110				
08:15		67	130			145	95				
08:30		91	135			134	92				
08:45		95	134	326	534	172	94	579	391	905	925
09:00		110	130			140	78				
09:15		87	130			170	75				
09:30		122	99			170	82				
09:45		117	114	436	473	169	76	649	311	1085	784
10:00		114	100			191	64				
10:15		129	113			187	52				
10:30		118	103			169	39				
10:45		115	83	476	399	196	42	743	197	1219	596
11:00		126	71			122	48				
11:15		97	59			188	31				
11:30		146	48			150	29				
11:45		127	48	496	226	171	26	631	134	1127	360
Total		2310	6029			3389	5979			5699	12008
Percent		27.7%	72.3%			36.2%	63.8%			32.2%	67.8%
Grand Total		7173	17769			10422	18163			17595	35932
Percent		28.8%	71.2%			36.5%	63.5%			32.9%	67.1%
ADT		ADT 17,842	AADT 17,842								

Accurate Counts

978-664-2565

Page 1

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281VOL1

Start Time	13-Jun-16		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	*	*	*	*	40	27	53	45	82	47	*	*	58	40
01:00	*	*	*	*	*	*	13	16	11	28	35	37	*	*	20	27
02:00	*	*	*	*	*	*	3	11	7	10	25	16	*	*	12	12
03:00	*	*	*	*	*	*	8	9	5	8	14	12	*	*	9	10
04:00	*	*	*	*	*	*	17	23	20	31	20	32	*	*	19	29
05:00	*	*	*	*	*	*	89	145	84	115	41	73	*	*	71	111
06:00	*	*	*	*	*	*	230	203	221	202	127	204	*	*	193	203
07:00	*	*	*	*	*	*	346	442	341	437	232	366	*	*	306	415
08:00	*	*	*	*	*	*	400	702	421	682	326	579	*	*	382	654
09:00	*	*	*	*	*	*	368	631	392	694	436	649	*	*	399	658
10:00	*	*	*	*	*	*	420	607	466	634	476	743	*	*	454	661
11:00	*	*	*	*	*	*	425	658	483	673	496	631	*	*	468	654
12:00 PM	*	*	*	*	*	*	530	642	534	750	490	646	*	*	518	679
01:00	*	*	*	*	*	*	518	650	559	692	562	668	*	*	546	670
02:00	*	*	*	*	*	*	615	567	652	644	533	620	*	*	600	610
03:00	*	*	*	*	*	*	593	646	668	687	579	609	*	*	613	647
04:00	*	*	*	*	*	*	608	616	600	678	603	630	*	*	604	641
05:00	*	*	*	*	*	*	670	636	569	724	595	606	*	*	611	655
06:00	*	*	*	*	*	*	487	688	500	693	498	636	*	*	495	672
07:00	*	*	*	*	*	*	479	536	552	572	537	531	*	*	523	546
08:00	*	*	*	*	*	*	492	386	507	380	534	391	*	*	511	386
09:00	*	*	*	*	*	*	346	234	386	297	473	311	*	*	402	281
10:00	*	*	*	*	*	*	197	113	385	178	399	197	*	*	327	163
11:00	*	*	*	*	*	*	123	56	170	119	226	134	*	*	173	103
Lane	0	0	0	0	0	0	8017	9244	8586	9973	8339	9368	0	0	8314	9527
Day	0		0		0		17261		18559		17707		0		17841	
AM Peak	-	-	-	-	-	-	11:00	08:00	11:00	09:00	11:00	10:00	-	-	11:00	10:00
Vol.	-	-	-	-	-	-	425	702	483	694	496	743	-	-	468	661
PM Peak	-	-	-	-	-	-	17:00	18:00	15:00	12:00	16:00	13:00	-	-	15:00	12:00
Vol.	-	-	-	-	-	-	670	688	668	750	603	668	-	-	613	679

Comb. Total	0	0	0	17261	18559	17707	0	17841
ADT	ADT 17,842	AADT 17,842						

MANUAL TURNING MOVEMENT COUNT DATA

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks													
Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	28	5	7	7	54	21	14	4	7	9	56	19	231
07:15 AM	16	18	24	7	56	25	13	10	10	14	68	25	286
07:30 AM	48	15	23	10	81	22	10	13	17	12	66	18	335
07:45 AM	42	15	23	12	63	29	14	8	23	17	78	32	356
Total	134	53	77	36	254	97	51	35	57	52	268	94	1208
08:00 AM	51	16	19	6	57	33	15	10	11	13	118	30	379
08:15 AM	58	22	24	10	73	41	17	15	15	11	105	25	416
08:30 AM	46	18	19	13	59	25	11	14	32	20	116	12	385
08:45 AM	43	12	32	11	67	33	16	12	25	23	115	20	409
Total	198	68	94	40	256	132	59	51	83	67	454	87	1589
Grand Total	332	121	171	76	510	229	110	86	140	119	722	181	2797
Apprch %	53.2	19.4	27.4	9.3	62.6	28.1	32.7	25.6	41.7	11.6	70.6	17.7	
Total %	11.9	4.3	6.1	2.7	18.2	8.2	3.9	3.1	5	4.3	25.8	6.5	
Cars	332	112	169	71	509	226	106	84	133	118	717	177	2754
% Cars	100	92.6	98.8	93.4	99.8	98.7	96.4	97.7	95	99.2	99.3	97.8	98.5
Trucks	0	9	2	5	1	3	4	2	7	1	5	4	43
% Trucks	0	7.4	1.2	6.6	0.2	1.3	3.6	2.3	5	0.8	0.7	2.2	1.5

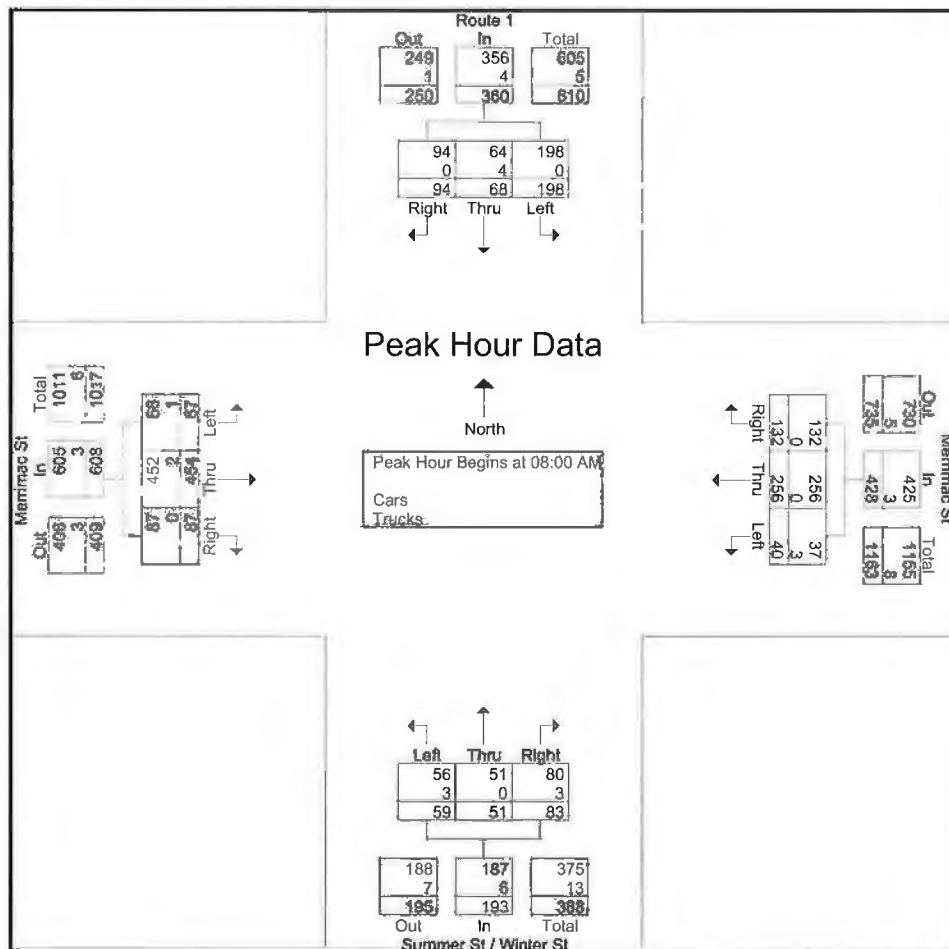
Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 2

	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St 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 08:00 AM																	
08:00 AM	51	16	19	86	6	57	33	96	15	10	11	36	13	118	30	161	379
08:15 AM	58	22	24	104	10	73	41	124	17	15	15	47	11	105	25	141	416
08:30 AM	46	18	19	83	13	59	25	97	11	14	32	57	20	116	12	148	385
08:45 AM	43	12	32	87	11	67	33	111	16	12	25	53	23	115	20	158	409
Total Volume	198	68	94	360	40	256	132	428	59	51	83	193	67	454	87	608	1589
% App. Total	55	18.9	26.1		9.3	59.8	30.8		30.6	26.4	43		11	74.7	14.3		
PHF	.853	.773	.734	.865	.769	.877	.805	.863	.868	.850	.648	.846	.728	.962	.725	.944	.955
Cars	198	64	94	356	37	256	132	425	56	51	80	187	66	452	87	605	1573
% Cars	100	94.1	100	98.9	92.5	100	100	99.3	94.9	100	96.4	96.9	98.5	99.6	100	99.5	99.0
Trucks	0	4	0	4	3	0	0	3	3	0	3	6	1	2	0	3	16
% Trucks	0	5.9	0	1.1	7.5	0	0	0.7	5.1	0	3.6	3.1	1.5	0.4	0	0.5	1.0



Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810001
 Site Code : 72810001
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	28	5	7	6	54	20	13	4	7	9	56	18	227
07:15 AM	16	15	22	7	56	25	13	9	10	14	68	25	280
07:30 AM	48	13	23	10	80	21	10	13	15	12	64	18	327
07:45 AM	42	15	23	11	63	28	14	7	21	17	77	29	347
Total	134	48	75	34	253	94	50	33	53	52	265	90	1181
08:00 AM	51	15	19	5	57	33	14	10	10	13	118	30	375
08:15 AM	58	21	24	9	73	41	15	15	14	11	104	25	410
08:30 AM	46	17	19	13	59	25	11	14	31	19	116	12	382
08:45 AM	43	11	32	10	67	33	16	12	25	23	114	20	406
Total	198	64	94	37	256	132	56	51	80	66	452	87	1573
Grand Total	332	112	169	71	509	226	106	84	133	118	717	177	2754
Apprch %	54.2	18.3	27.6	8.8	63.2	28	32.8	26	41.2	11.7	70.8	17.5	
Total %	12.1	4.1	6.1	2.6	18.5	8.2	3.8	3.1	4.8	4.3	26	6.4	

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 7

Groups Printed- Trucks

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	1	0	1	1	0	0	0	0	1	4
07:15 AM	0	3	2	0	0	0	0	1	0	0	0	0	6
07:30 AM	0	2	0	0	1	1	0	0	2	0	2	0	8
07:45 AM	0	0	0	1	0	1	0	1	2	0	1	3	9
Total	0	5	2	2	1	3	1	2	4	0	3	4	27
08:00 AM	0	1	0	1	0	0	1	0	1	0	0	0	4
08:15 AM	0	1	0	1	0	0	2	0	1	0	1	0	6
08:30 AM	0	1	0	0	0	0	0	0	1	1	0	0	3
08:45 AM	0	1	0	1	0	0	0	0	0	0	1	0	3
Total	0	4	0	3	0	0	3	0	3	1	2	0	16
Grand Total	0	9	2	5	1	3	4	2	7	1	5	4	43
Apprch %	0	81.8	18.2	55.6	11.1	33.3	30.8	15.4	53.8	10	50	40	
Total %	0	20.9	4.7	11.6	2.3	7	9.3	4.7	16.3	2.3	11.6	9.3	

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0	2	2	4
07:15 AM	1	0	1	0	0	1	0	0	0	0	0	1	0	2	1	0	1	6	7
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	3	0	0	0	0	4	1	5
07:45 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	3
Total	1	0	1	1	0	2	1	1	0	1	0	6	0	4	1	0	8	11	19
08:00 AM	0	0	0	0	0	0	0	0	0	1	0	3	0	1	0	0	3	2	5
08:15 AM	0	0	0	3	0	0	0	1	0	0	0	2	0	2	0	0	6	2	8
08:30 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	2
08:45 AM	0	1	0	1	0	0	0	0	0	0	0	2	0	2	0	0	3	3	6
Total	0	1	0	5	0	0	0	1	0	1	0	8	0	5	0	0	14	7	21
Grand Total	1	1	1	6	0	2	1	2	0	2	0	14	0	9	1	0	22	18	40
Apprch %	33.3	33.3	33.3		0	66.7	33.3		0	100	0		0	90	10				
Total %	5.6	5.6	5.6		0	11.1	5.6		0	11.1	0		0	50	5.6		55	45	

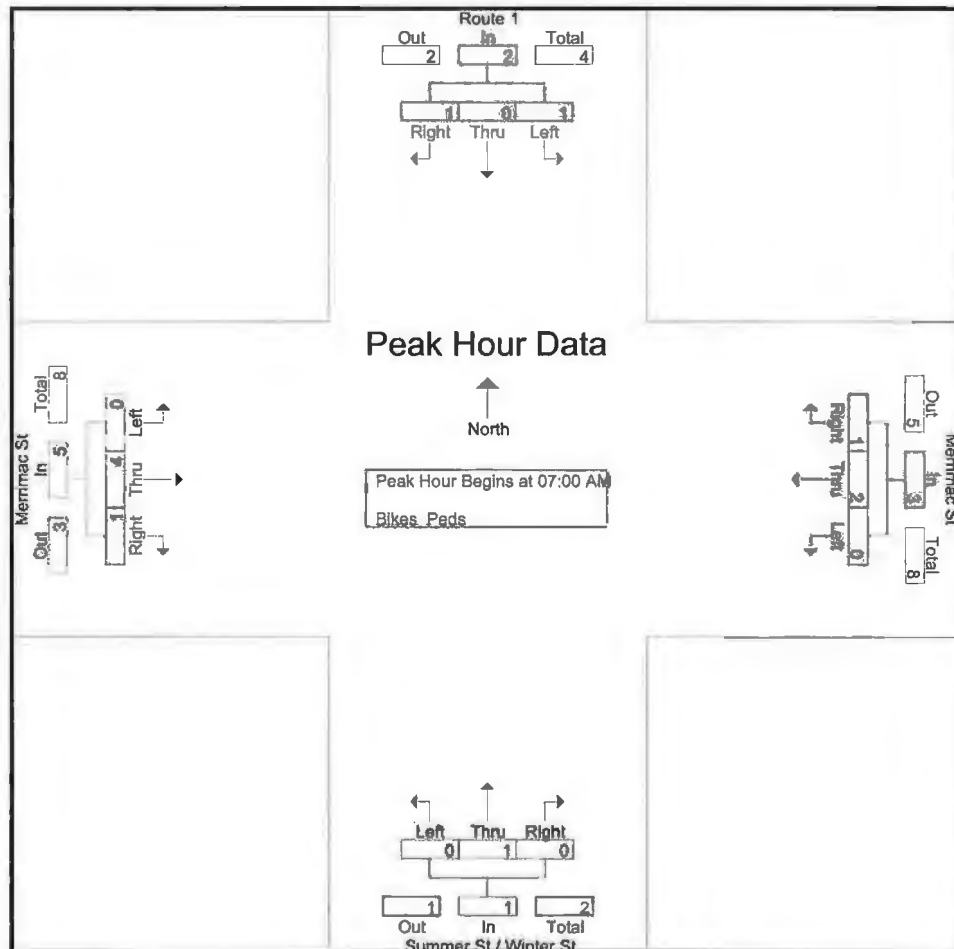
Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 11

	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St 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	1	0	1	0	1	0	1	2
07:15 AM	1	0	1	2	0	1	0	1	0	0	0	0	0	2	1	3	6
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
Total Volume	1	0	1	2	0	2	1	3	0	1	0	1	0	4	1	5	11
% App. Total	50	0	50		0	66.7	33.3		0	100	0		0	80	20		
PHF	.250	.000	.250	.250	.000	.500	.250	.750	.000	.250	.000	.250	.000	.500	.250	.417	.458



Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	37	13	29	18	94	63	20	27	26	38	117	13	495
04:15 PM	46	20	29	26	90	68	12	24	25	46	76	16	478
04:30 PM	24	8	34	18	84	63	18	19	29	38	97	20	452
04:45 PM	40	8	27	15	90	55	17	25	30	39	111	19	476
Total	147	49	119	77	358	249	67	95	110	161	401	68	1901
05:00 PM	39	13	29	37	106	73	17	21	32	41	107	38	553
05:15 PM	45	13	26	39	114	55	14	26	34	31	111	17	525
05:30 PM	42	7	36	24	94	58	16	18	36	30	105	19	485
05:45 PM	38	14	29	25	103	58	15	21	38	30	114	20	505
Total	164	47	120	125	417	244	62	86	140	132	437	94	2068
Grand Total	311	96	239	202	775	493	129	181	250	293	838	162	3969
Apprch %	48.1	14.9	37	13.7	52.7	33.5	23	32.3	44.6	22.7	64.8	12.5	
Total %	7.8	2.4	6	5.1	19.5	12.4	3.3	4.6	6.3	7.4	21.1	4.1	
Cars	310	95	239	201	774	491	129	180	250	293	838	162	3962
% Cars	99.7	99	100	99.5	99.9	99.6	100	99.4	100	100	100	100	99.8
Trucks	1	1	0	1	1	2	0	1	0	0	0	0	7
% Trucks	0.3	1	0	0.5	0.1	0.4	0	0.6	0	0	0	0	0.2

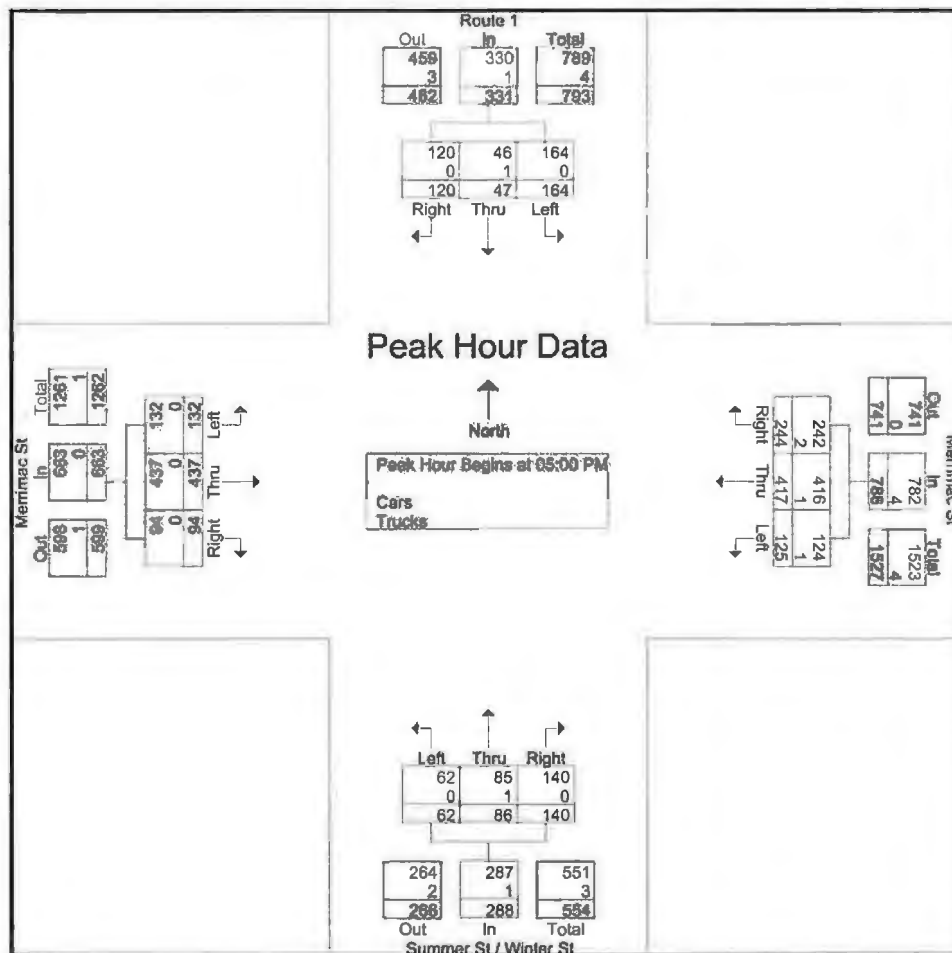
Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 2

	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St 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 05:00 PM																	
05:00 PM	39	13	29	81	37	106	73	216	17	21	32	70	41	107	38	186	553
05:15 PM	45	13	26	84	39	114	55	208	14	26	34	74	31	111	17	159	525
05:30 PM	42	7	36	85	24	94	58	176	16	18	36	70	30	105	19	154	485
05:45 PM	38	14	29	81	25	103	58	186	15	21	38	74	30	114	20	164	505
Total Volume	164	47	120	331	125	417	244	786	62	86	140	288	132	437	94	663	2068
% App. Total	49.5	14.2	36.3		15.9	53.1	31		21.5	29.9	48.6		19.9	65.9	14.2		
PHF	.911	.839	.833	.974	.801	.914	.836	.910	.912	.827	.921	.973	.805	.958	.618	.891	.935
Cars	164	46	120	330	124	416	242	782	62	85	140	287	132	437	94	663	2062
% Cars	100	97.9	100	99.7	99.2	99.8	99.2	99.5	100	98.8	100	99.7	100	100	100	100	99.7
Trucks	0	1	0	1	1	1	2	4	0	1	0	1	0	0	0	0	6
% Trucks	0	2.1	0	0.3	0.8	0.2	0.8	0.5	0	1.2	0	0.3	0	0	0	0	0.3



Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 4

Groups Printed- Cars

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	37	13	29	18	94	63	20	27	26	38	117	13	495
04:15 PM	46	20	29	26	90	68	12	24	25	46	76	16	478
04:30 PM	23	8	34	18	84	63	18	19	29	38	97	20	451
04:45 PM	40	8	27	15	90	55	17	25	30	39	111	19	476
Total	146	49	119	77	358	249	67	95	110	161	401	68	1900
05:00 PM	39	12	29	37	106	72	17	21	32	41	107	38	551
05:15 PM	45	13	26	38	113	54	14	26	34	31	111	17	522
05:30 PM	42	7	36	24	94	58	16	17	36	30	105	19	484
05:45 PM	38	14	29	25	103	58	15	21	38	30	114	20	505
Total	164	46	120	124	416	242	62	85	140	132	437	94	2062
Grand Total	310	95	239	201	774	491	129	180	250	293	838	162	3962
Apprch %	48.1	14.8	37.1	13.7	52.8	33.5	23.1	32.2	44.7	22.7	64.8	12.5	
Total %	7.8	2.4	6	5.1	19.5	12.4	3.3	4.5	6.3	7.4	21.2	4.1	

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 7

Groups Printed- Trucks

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	2
05:15 PM	0	0	0	1	1	1	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	2	0	1	0	0	0	0	6
Grand Total	1	1	0	1	1	2	0	1	0	0	0	0	7
Apprch %	50	50	0	25	25	50	0	100	0	0	0	0	
Total %	14.3	14.3	0	14.3	14.3	28.6	0	14.3	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St From West				Exclu Total	Inclu Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	3
04:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	4	4
04:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	5	5
Total	0	0	0	0	0	8	0	0	0	0	0	0	0	5	0	0	0	13	13
05:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	2
05:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	3	3
05:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	4	4
Total	0	0	0	0	0	4	0	0	0	0	0	0	1	5	0	0	0	10	10
Grand Total	0	0	0	0	0	12	0	0	0	0	0	0	1	10	0	0	0	23	23
Apprch %	0	0	0		0	100	0		0	0	0		9.1	90.9	0				
Total %	0	0	0		0	52.2	0		0	0	0		4.3	43.5	0		0	100	

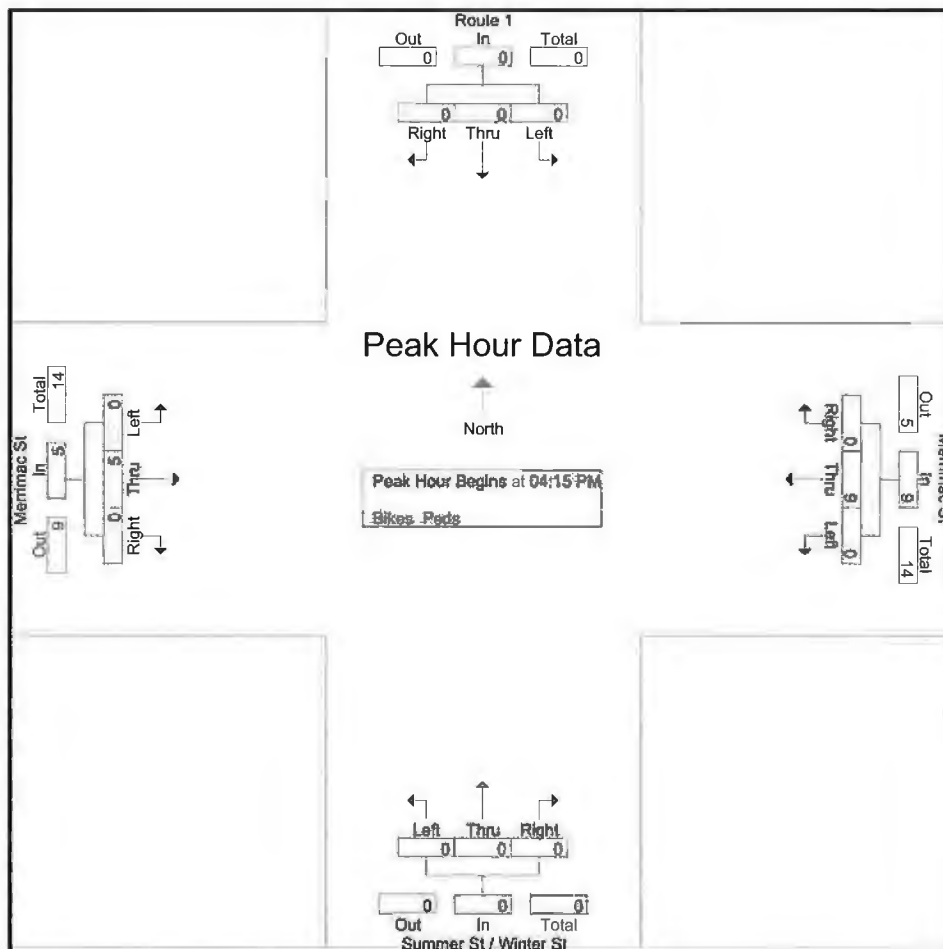
Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810001
Site Code : 72810001
Start Date : 6/16/2016
Page No : 11

	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St 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	1	0	1	0	0	0	0	0	2	0	2	3
04:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
04:45 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	1	5
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	9	0	9	0	0	0	0	0	5	0	5	14
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.563	.000	.563	.000	.000	.000	.000	.000	.625	.000	.625	.700



Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks													
Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	77	0	5	1	2	3	87	3	178
07:15 AM	1	1	2	1	81	1	3	0	3	0	86	5	184
07:30 AM	0	0	6	1	91	1	4	0	4	2	120	3	232
07:45 AM	0	0	1	0	102	2	6	0	3	2	124	8	248
Total	1	1	9	2	351	4	18	1	12	7	417	19	842
08:00 AM	0	0	5	0	88	1	1	1	4	4	151	13	268
08:15 AM	0	0	3	1	114	4	10	0	2	5	165	19	323
08:30 AM	0	0	4	0	87	2	3	1	5	4	180	4	290
08:45 AM	0	1	2	1	105	0	6	1	4	4	174	5	303
Total	0	1	14	2	394	7	20	3	15	17	670	41	1184
Grand Total	1	2	23	4	745	11	38	4	27	24	1087	60	2026
Apprch %	3.8	7.7	88.5	0.5	98	1.4	55.1	5.8	39.1	2	92.8	5.1	
Total %	0	0.1	1.1	0.2	36.8	0.5	1.9	0.2	1.3	1.2	53.7	3	
Cars	1	2	22	4	736	10	38	4	27	24	1076	59	2003
% Cars	100	100	95.7	100	98.8	90.9	100	100	100	100	99	98.3	98.9
Trucks	0	0	1	0	9	1	0	0	0	0	11	1	23
% Trucks	0	0	4.3	0	1.2	9.1	0	0	0	0	1	1.7	1.1

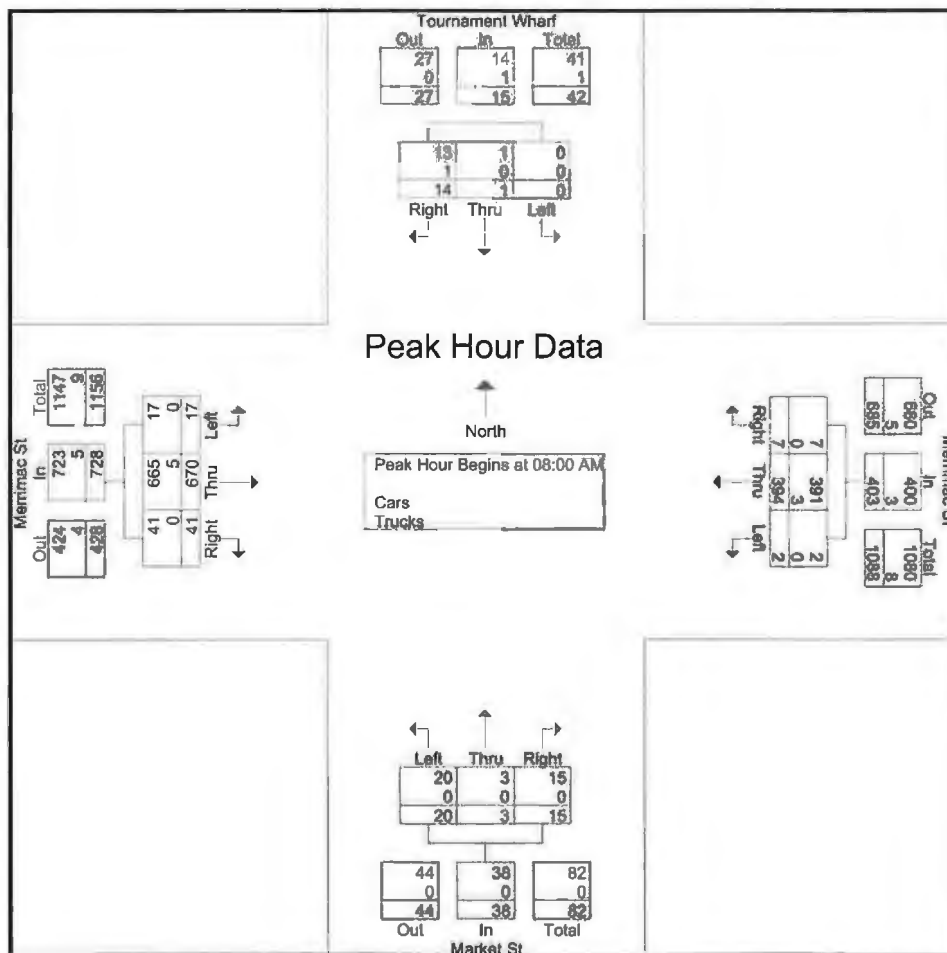
Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 2

	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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 08:00 AM																	
08:00 AM	0	0	5	5	0	88	1	89	1	1	4	6	4	151	13	168	268
08:15 AM	0	0	3	3	1	114	4	119	10	0	2	12	5	165	19	189	323
08:30 AM	0	0	4	4	0	87	2	89	3	1	5	9	4	180	4	188	290
08:45 AM	0	1	2	3	1	105	0	106	6	1	4	11	4	174	5	183	303
Total Volume	0	1	14	15	2	394	7	403	20	3	15	38	17	670	41	728	1184
% App. Total	0	6.7	93.3		0.5	97.8	1.7		52.6	7.9	39.5		2.3	92	5.6		
PHF	.000	.250	.700	.750	.500	.864	.438	.847	.500	.750	.750	.792	.850	.931	.539	.963	.916
Cars	0	1	13	14	2	391	7	400	20	3	15	38	17	665	41	723	1175
% Cars	0	100	92.9	93.3	100	99.2	100	99.3	100	100	100	100	100	99.3	100	99.3	99.2
Trucks	0	0	1	1	0	3	0	3	0	0	0	0	0	5	0	5	9
% Trucks	0	0	7.1	6.7	0	0.8	0	0.7	0	0	0	0	0	0.7	0	0.7	0.8



Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 4

Groups Printed- Cars

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	75	0	5	1	2	3	87	3	176
07:15 AM	1	1	2	1	81	1	3	0	3	0	86	5	184
07:30 AM	0	0	6	1	89	1	4	0	4	2	116	3	226
07:45 AM	0	0	1	0	100	1	6	0	3	2	122	7	242
Total	1	1	9	2	345	3	18	1	12	7	411	18	828
08:00 AM	0	0	4	0	87	1	1	1	4	4	150	13	265
08:15 AM	0	0	3	1	113	4	10	0	2	5	163	19	320
08:30 AM	0	0	4	0	87	2	3	1	5	4	179	4	289
08:45 AM	0	1	2	1	104	0	6	1	4	4	173	5	301
Total	0	1	13	2	391	7	20	3	15	17	665	41	1175
Grand Total	1	2	22	4	736	10	38	4	27	24	1076	59	2003
Apprch %	4	8	88	0.5	98.1	1.3	55.1	5.8	39.1	2.1	92.8	5.1	
Total %	0	0.1	1.1	0.2	36.7	0.5	1.9	0.2	1.3	1.2	53.7	2.9	

Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 7

Groups Printed- Trucks

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	2	0	0	0	0	0	4	0	6
07:45 AM	0	0	0	0	2	1	0	0	0	0	2	1	6
Total	0	0	0	0	6	1	0	0	0	0	6	1	14
08:00 AM	0	0	1	0	1	0	0	0	0	0	1	0	3
08:15 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
08:45 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
Total	0	0	1	0	3	0	0	0	0	0	5	0	9
Grand Total	0	0	1	0	9	1	0	0	0	0	11	1	23
Apprch %	0	0	100	0	90	10	0	0	0	0	91.7	8.3	
Total %	0	0	4.3	0	39.1	4.3	0	0	0	0	47.8	4.3	

Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 10

Groups Printed- Bikes Peds																			
Start Time	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St From West				Exclu. Total		
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Inclu. Total		
07:00 AM	0	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	3	2	5
07:15 AM	0	0	0	1	0	1	0	0	0	0	0	1	0	3	0	0	2	4	6
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	3	0	0	0	0	4	1	5
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
Total	0	0	0	2	0	2	0	1	0	0	0	6	0	9	0	0	9	11	20
08:00 AM	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	4	0	4
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
08:30 AM	0	0	0	3	0	0	0	0	0	0	0	4	0	0	0	1	8	0	8
08:45 AM	0	0	0	1	0	0	0	0	0	0	0	2	0	4	0	0	3	4	7
Total	0	0	0	4	0	0	0	1	0	0	0	9	0	6	0	1	15	6	21
Grand Total	0	0	0	6	0	2	0	2	0	0	0	15	0	15	0	1	24	17	41
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0				
Total %	0	0	0		0	11.8	0		0	0	0		0	88.2	0		58.5	41.5	

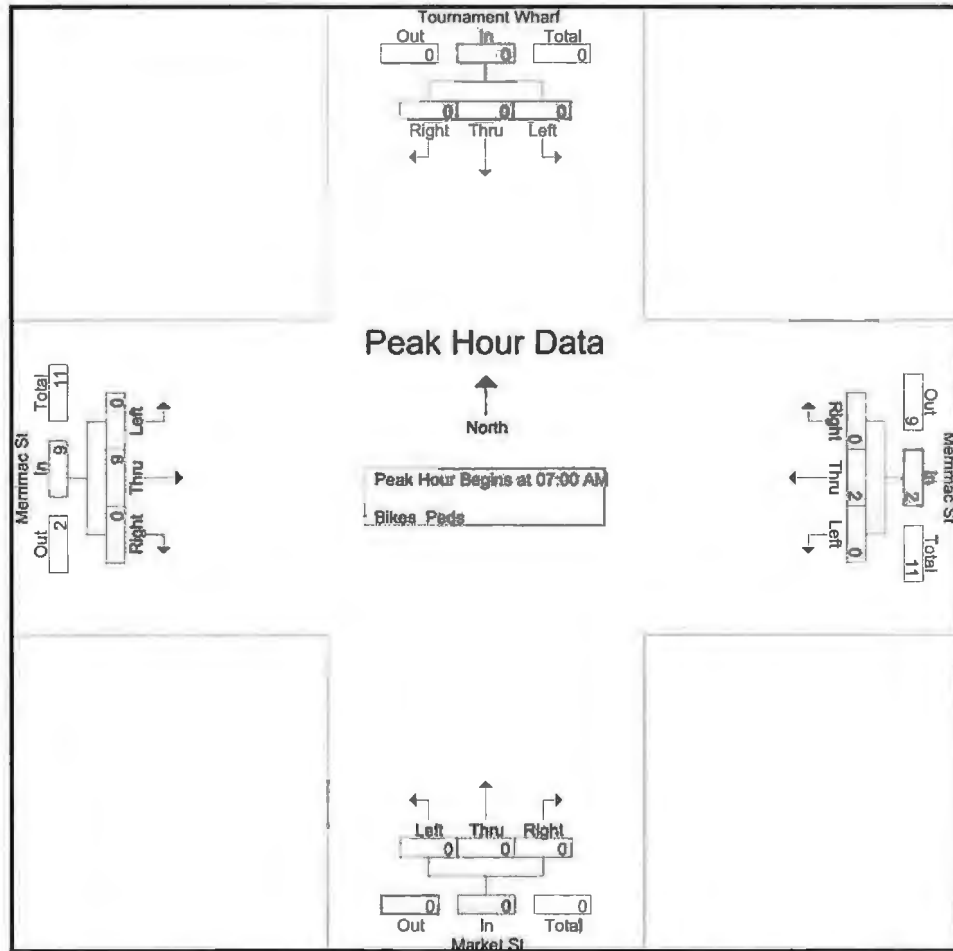
Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 11

	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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	2	0	2	2
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	9	0	9	11
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.563	.000	.563	.688



Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 1

Groups Printed: Cars - Trucks

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	1	0	7	0	162	1	4	1	1	20	159	2	358
04:15 PM	1	0	8	1	171	1	9	0	6	15	116	9	337
04:30 PM	0	0	8	0	152	2	8	3	4	8	141	5	331
04:45 PM	2	1	9	2	148	2	9	0	8	8	161	8	358
Total	4	1	32	3	633	6	30	4	19	51	577	24	1384
05:00 PM	1	1	13	3	191	2	12	0	11	14	168	5	421
05:15 PM	3	4	12	3	178	2	8	1	10	23	163	5	412
05:30 PM	1	1	11	2	168	4	6	1	7	12	158	10	381
05:45 PM	0	0	1	0	171	0	6	0	3	2	171	1	355
Total	5	6	37	8	708	8	32	2	31	51	660	21	1569
Grand Total	9	7	69	11	1341	14	62	6	50	102	1237	45	2953
Apprch %	10.6	8.2	81.2	0.8	98.2	1	52.5	5.1	42.4	7.4	89.4	3.3	
Total %	0.3	0.2	2.3	0.4	45.4	0.5	2.1	0.2	1.7	3.5	41.9	1.5	
Cars	9	7	69	11	1340	14	61	6	50	102	1234	45	2948
% Cars	100	100	100	100	99.9	100	98.4	100	100	100	99.8	100	99.8
Trucks	0	0	0	0	1	0	1	0	0	0	3	0	5
% Trucks	0	0	0	0	0.1	0	1.6	0	0	0	0.2	0	0.2

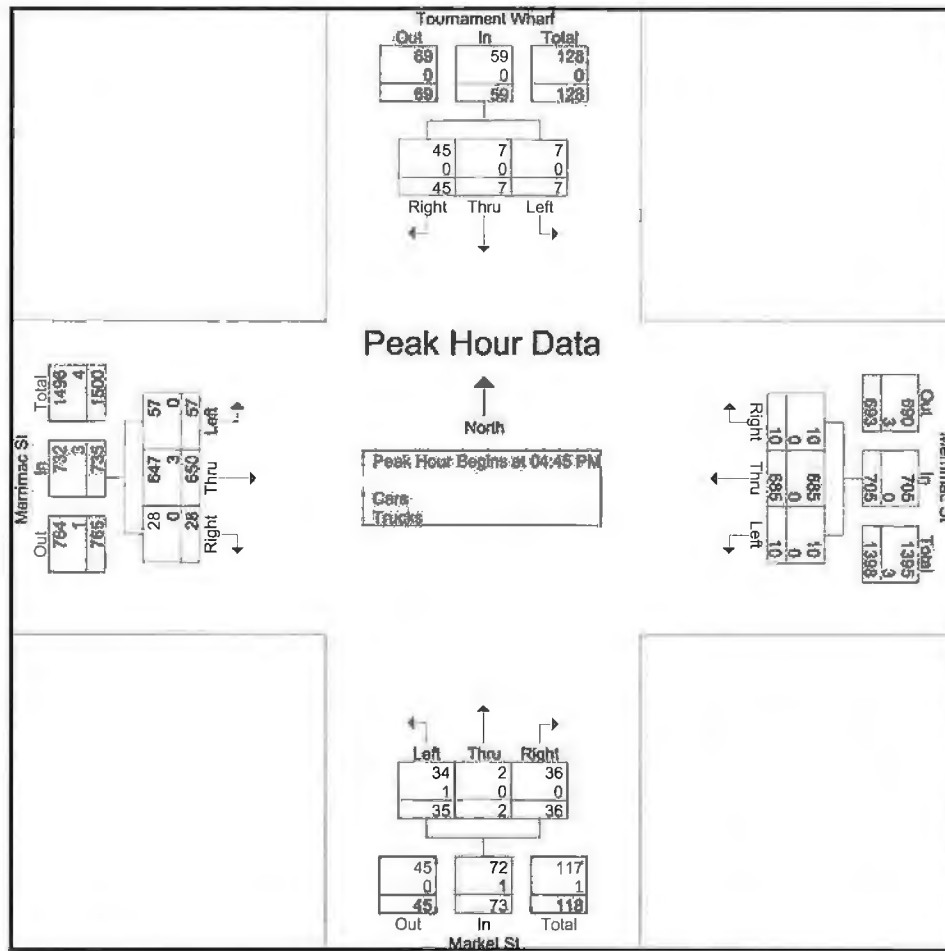
Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 2

	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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	2	1	9	12	2	148	2	152	9	0	8	17	8	161	8	177	358
05:00 PM	1	1	13	15	3	191	2	196	12	0	11	23	14	168	5	187	421
05:15 PM	3	4	12	19	3	178	2	183	8	1	10	19	23	163	5	191	412
05:30 PM	1	1	11	13	2	168	4	174	6	1	7	14	12	158	10	180	381
Total Volume	7	7	45	59	10	685	10	705	35	2	36	73	57	650	28	735	1572
% App. Total	11.9	11.9	76.3		1.4	97.2	1.4		47.9	2.7	49.3		7.8	88.4	3.8		
PHF	.583	.438	.865	.776	.833	.897	.625	.899	.729	.500	.818	.793	.620	.967	.700	.962	.933
Cars	7	7	45	59	10	685	10	705	34	2	36	72	57	647	28	732	1568
% Cars	100	100	100	100	100	100	100	100	97.1	100	100	98.6	100	99.5	100	99.6	99.7
Trucks	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
% Trucks	0	0	0	0	0	0	0	0	2.9	0	0	1.4	0	0.5	0	0.4	0.3



Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 4

Groups Printed- Cars

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	1	0	7	0	162	1	4	1	1	20	159	2	358
04:15 PM	1	0	8	1	171	1	9	0	6	15	116	9	337
04:30 PM	0	0	8	0	151	2	8	3	4	8	141	5	330
04:45 PM	2	1	9	2	148	2	9	0	8	8	161	8	358
Total	4	1	32	3	632	6	30	4	19	51	577	24	1383
05:00 PM	1	1	13	3	191	2	12	0	11	14	167	5	420
05:15 PM	3	4	12	3	178	2	7	1	10	23	162	5	410
05:30 PM	1	1	11	2	168	4	6	1	7	12	157	10	380
05:45 PM	0	0	1	0	171	0	6	0	3	2	171	1	355
Total	5	6	37	8	708	8	31	2	31	51	657	21	1565
Grand Total	9	7	69	11	1340	14	61	6	50	102	1234	45	2948
Apprch %	10.6	8.2	81.2	0.8	98.2	1	52.1	5.1	42.7	7.4	89.4	3.3	
Total %	0.3	0.2	2.3	0.4	45.5	0.5	2.1	0.2	1.7	3.5	41.9	1.5	

Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 7

Groups Printed- Trucks

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
05:15 PM	0	0	0	0	0	0	1	0	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	0	3	0	4
Grand Total	0	0	0	0	1	0	1	0	0	0	3	0	5
Apprch %	0	0	0	0	100	0	100	0	0	0	100	0	
Total %	0	0	0	0	20	0	20	0	0	0	60	0	

Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 10

Groups Printed- Bikes Peds																			
	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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	2	0	0	0	2	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
04:30 PM	0	0	0	0	0	4	0	0	0	0	0	1	0	1	0	0	1	5	6
04:45 PM	0	0	0	3	0	2	0	0	0	0	0	1	0	1	0	0	4	3	7
Total	0	0	0	3	0	6	0	0	0	0	0	2	0	5	0	0	5	11	16
05:00 PM	0	0	0	3	0	3	0	0	0	0	0	3	0	1	0	0	6	4	10
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	2
05:30 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	1	0	0	2	2	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	0	2	4	6
Total	0	0	0	3	0	5	0	1	0	0	0	7	0	6	0	0	11	11	22
Grand Total	0	0	0	6	0	11	0	1	0	0	0	9	0	11	0	0	16	22	38
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0				
Total %	0	0	0		0	50	0		0	0	0		0	50	0		42.1	57.9	

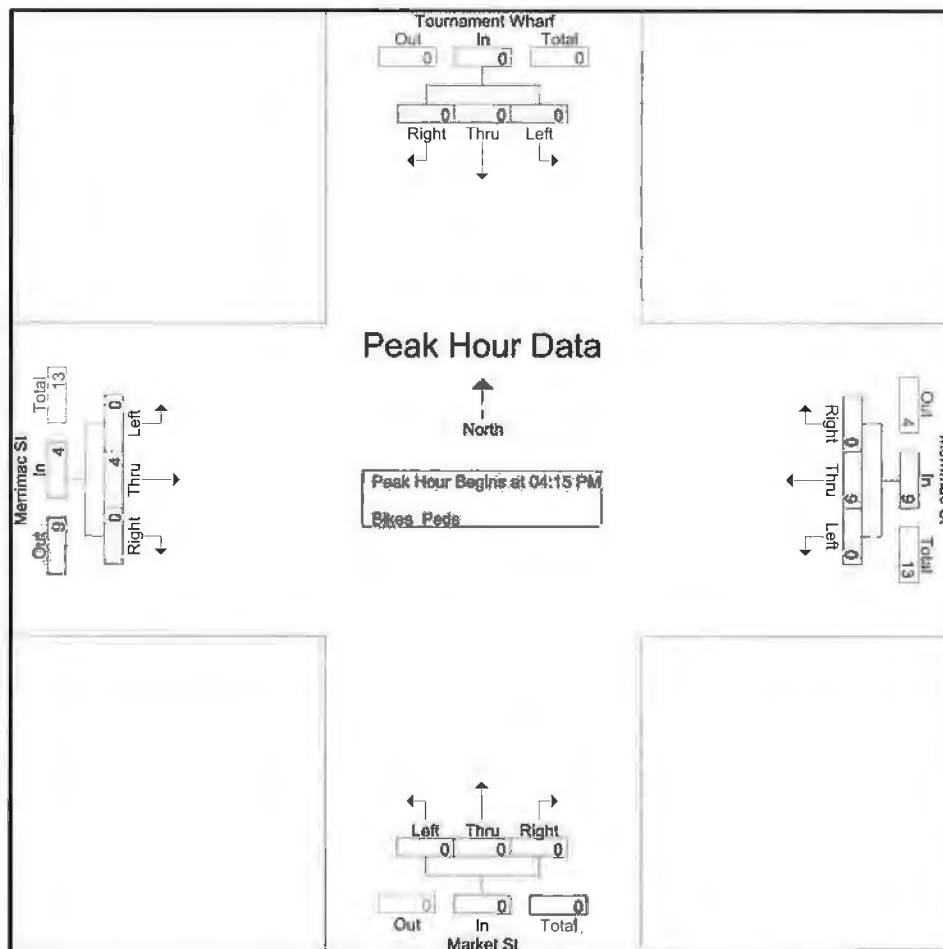
Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810002
Site Code : 72810002
Start Date : 6/16/2016
Page No : 11

	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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	1	0	1	1
04:30 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	1	5
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
05:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
Total Volume	0	0	0	0	0	9	0	9	0	0	0	0	0	4	0	4	13
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.563	.000	.563	.000	.000	.000	.000	.000	1.00	.000	1.00	.650



Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks													
Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	0	2	0	73	0	0	0	0	3	81	0	160
07:15 AM	0	0	4	0	80	0	0	0	0	3	90	0	177
07:30 AM	0	0	6	0	85	0	0	1	0	0	128	1	221
07:45 AM	1	0	2	0	90	1	0	0	0	3	121	0	218
Total	2	0	14	0	328	1	0	1	0	9	420	1	776
08:00 AM	0	0	2	0	95	1	1	0	1	3	163	2	268
08:15 AM	1	0	3	0	102	0	0	0	0	0	162	4	272
08:30 AM	0	0	4	1	90	1	0	0	1	2	168	2	269
08:45 AM	1	0	6	0	93	0	0	0	0	2	170	4	276
Total	2	0	15	1	380	2	1	0	2	7	663	12	1085
Grand Total	4	0	29	1	708	3	1	1	2	16	1083	13	1861
Apprch %	12.1	0	87.9	0.1	99.4	0.4	25	25	50	1.4	97.4	1.2	
Total %	0.2	0	1.6	0.1	38	0.2	0.1	0.1	0.1	0.9	58.2	0.7	
Cars	4	0	28	1	698	3	1	1	2	16	1069	13	1836
% Cars	100	0	96.6	100	98.6	100	100	100	100	100	98.7	100	98.7
Trucks	0	0	1	0	10	0	0	0	0	0	14	0	25
% Trucks	0	0	3.4	0	1.4	0	0	0	0	0	1.3	0	1.3

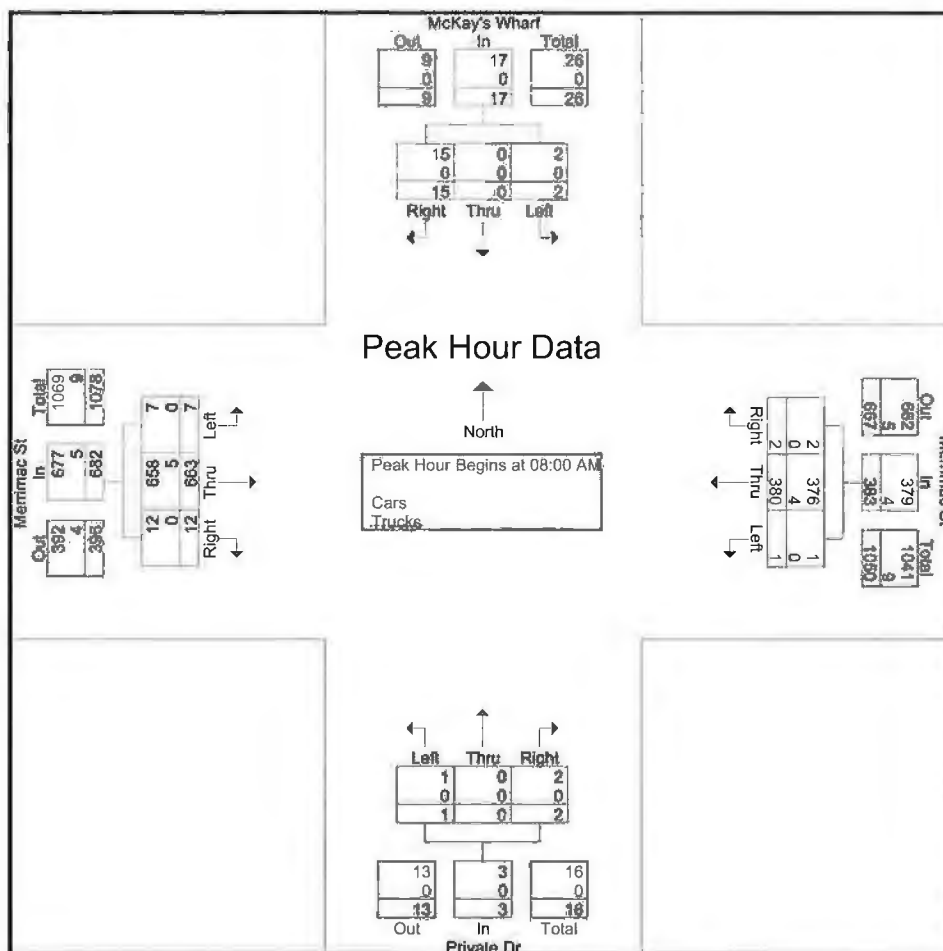
Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 2

	McKay's Wharf From North				Merrimac St From East				Private Dr From South				Merrimac St 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 08:00 AM																	
08:00 AM	0	0	2	2	0	95	1	96	1	0	1	2	3	163	2	168	268
08:15 AM	1	0	3	4	0	102	0	102	0	0	0	0	0	162	4	166	272
08:30 AM	0	0	4	4	1	90	1	92	0	0	1	1	2	168	2	172	269
08:45 AM	1	0	6	7	0	93	0	93	0	0	0	0	2	170	4	176	276
Total Volume	2	0	15	17	1	380	2	383	1	0	2	3	7	663	12	682	1085
% App. Total	11.8	0	88.2		0.3	99.2	0.5		33.3	0	66.7		1	97.2	1.8		
PHF	.500	.000	.625	.607	.250	.931	.500	.939	.250	.000	.500	.375	.583	.975	.750	.969	.983
Cars	2	0	15	17	1	376	2	379	1	0	2	3	7	658	12	677	1076
% Cars	100	0	100	100	100	98.9	100	99.0	100	0	100	100	100	99.2	100	99.3	99.2
Trucks	0	0	0	0	0	4	0	4	0	0	0	0	0	5	0	5	9
% Trucks	0	0	0	0	0	1.1	0	1.0	0	0	0	0	0	0.8	0	0.7	0.8



Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810003
 Site Code : 72810003
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	0	2	0	72	0	0	0	0	3	81	0	159
07:15 AM	0	0	4	0	80	0	0	0	0	3	89	0	176
07:30 AM	0	0	5	0	84	0	0	1	0	0	121	1	212
07:45 AM	1	0	2	0	86	1	0	0	0	3	120	0	213
Total	2	0	13	0	322	1	0	1	0	9	411	1	760
08:00 AM	0	0	2	0	95	1	1	0	1	3	162	2	267
08:15 AM	1	0	3	0	101	0	0	0	0	0	160	4	269
08:30 AM	0	0	4	1	90	1	0	0	1	2	167	2	268
08:45 AM	1	0	6	0	90	0	0	0	0	2	169	4	272
Total	2	0	15	1	376	2	1	0	2	7	658	12	1076
Grand Total	4	0	28	1	698	3	1	1	2	16	1069	13	1836
Apprch %	12.5	0	87.5	0.1	99.4	0.4	25	25	50	1.5	97.4	1.2	
Total %	0.2	0	1.5	0.1	38	0.2	0.1	0.1	0.1	0.9	58.2	0.7	

Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 7

Groups Printed- Trucks

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
07:30 AM	0	0	1	0	1	0	0	0	0	0	7	0	9
07:45 AM	0	0	0	0	4	0	0	0	0	0	1	0	5
Total	0	0	1	0	6	0	0	0	0	0	9	0	16
08:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
08:15 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
08:45 AM	0	0	0	0	3	0	0	0	0	0	1	0	4
Total	0	0	0	0	4	0	0	0	0	0	5	0	9
Grand Total	0	0	1	0	10	0	0	0	0	0	14	0	25
Apprch %	0	0	100	0	100	0	0	0	0	0	100	0	
Total %	0	0	4	0	40	0	0	0	0	0	56	0	

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 10

Groups Printed- Bikes Peds

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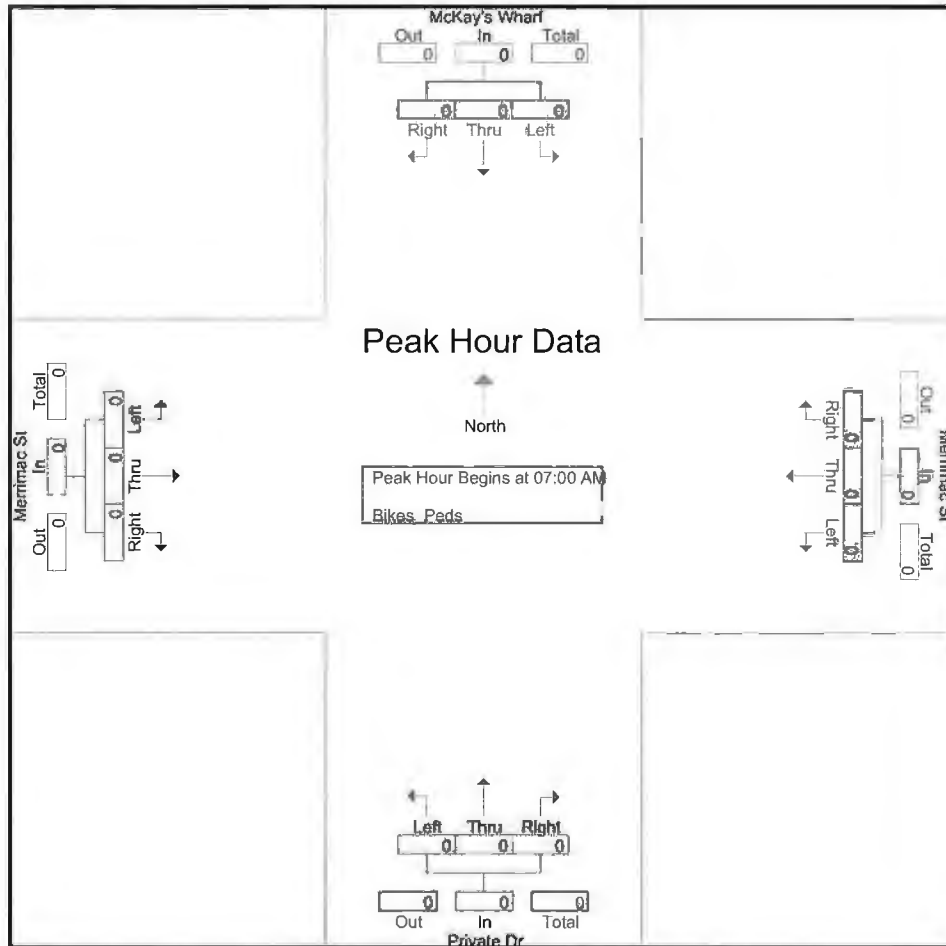
Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name 72810003
Site Code 72810003
Start Date 6/16/2016
Page No 11

	McKay's Wharf From North				Merrimac St From East				Private Dr From South				Merrimac St 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 : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks													
Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	2	1	9	0	152	0	2	0	0	2	150	1	319
04:15 PM	3	0	5	0	170	0	1	0	1	3	126	1	310
04:30 PM	1	0	5	0	147	0	0	0	0	0	150	1	304
04:45 PM	3	1	4	0	144	0	0	0	1	2	166	1	322
Total	9	2	23	0	613	0	3	0	2	7	592	4	1255
05:00 PM	0	0	3	0	196	0	0	0	0	0	179	1	379
05:15 PM	3	1	4	0	182	0	0	0	1	3	164	3	361
05:30 PM	0	0	8	0	166	0	0	0	0	1	162	0	337
05:45 PM	3	0	8	1	163	0	0	0	1	2	173	1	352
Total	6	1	23	1	707	0	0	0	2	6	678	5	1429
Grand Total	15	3	46	1	1320	0	3	0	4	13	1270	9	2684
Apprch %	23.4	4.7	71.9	0.1	99.9	0	42.9	0	57.1	1	98.3	0.7	
Total %	0.6	0.1	1.7	0	49.2	0	0.1	0	0.1	0.5	47.3	0.3	
Cars	15	3	46	1	1317	0	3	0	4	13	1270	9	2681
% Cars	100	100	100	100	99.8	0	100	0	100	100	100	100	99.9
Trucks	0	0	0	0	3	0	0	0	0	0	0	0	3
% Trucks	0	0	0	0	0.2	0	0	0	0	0	0	0	0.1

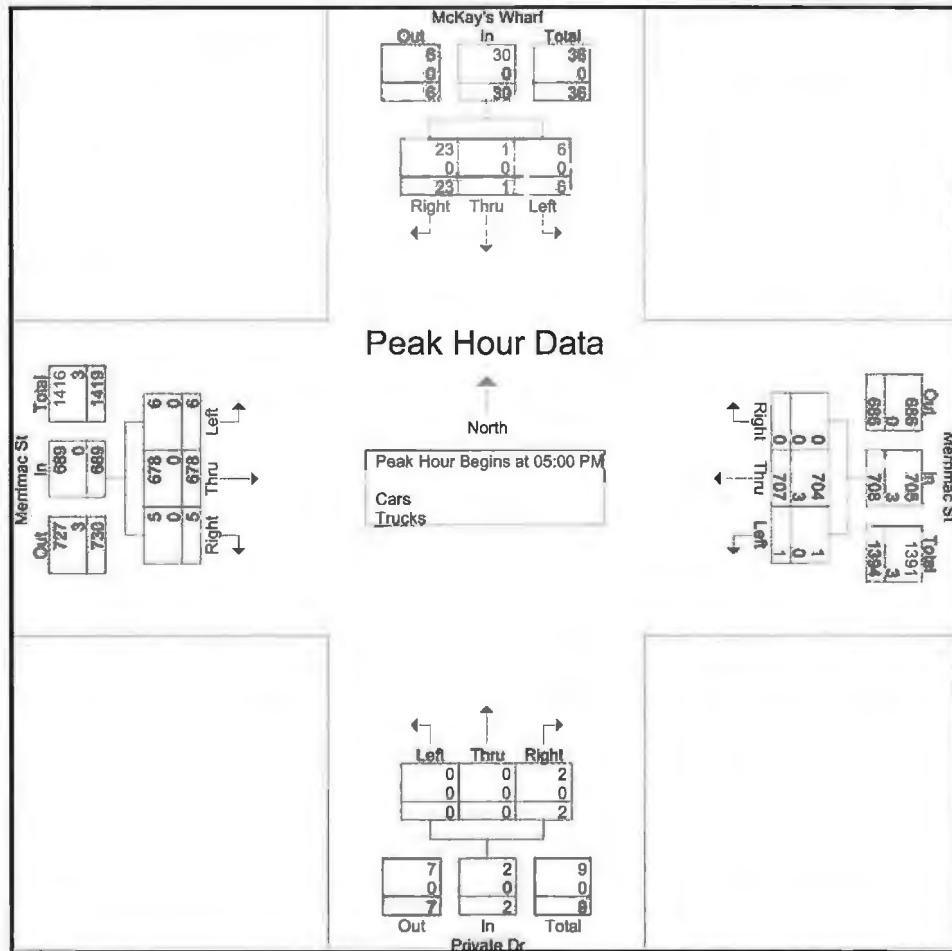
Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 2

	McKay's Wharf From North				Merrimac St From East				Private Dr From South				Merrimac St 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 05:00 PM																	
05:00 PM	0	0	3	3	0	196	0	196	0	0	0	0	0	179	1	180	379
05:15 PM	3	1	4	8	0	182	0	182	0	0	1	1	3	164	3	170	361
05:30 PM	0	0	8	8	0	166	0	166	0	0	0	0	1	162	0	163	337
05:45 PM	3	0	8	11	1	163	0	164	0	0	1	1	2	173	1	176	352
Total Volume	6	1	23	30	1	707	0	708	0	0	2	2	6	678	5	689	1429
% App. Total	20	3.3	76.7		0.1	99.9	0		0	0	100		0.9	98.4	0.7		
PHF	.500	.250	.719	.682	.250	.902	.000	.903	.000	.000	.500	.500	.500	.947	.417	.957	.943
Cars	6	1	23	30	1	704	0	705	0	0	2	2	6	678	5	689	1426
% Cars	100	100	100	100	100	99.6	0	99.6	0	0	100	100	100	100	100	100	99.8
Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
% Trucks	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0	0	0	0	0.2



Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 4

Groups Printed- Cars

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	2	1	9	0	152	0	2	0	0	2	150	1	319
04:15 PM	3	0	5	0	170	0	1	0	1	3	126	1	310
04:30 PM	1	0	5	0	147	0	0	0	0	0	150	1	304
04:45 PM	3	1	4	0	144	0	0	0	1	2	166	1	322
Total	9	2	23	0	613	0	3	0	2	7	592	4	1255
05:00 PM	0	0	3	0	195	0	0	0	0	0	179	1	378
05:15 PM	3	1	4	0	180	0	0	0	1	3	164	3	359
05:30 PM	0	0	8	0	166	0	0	0	0	1	162	0	337
05:45 PM	3	0	8	1	163	0	0	0	1	2	173	1	352
Total	6	1	23	1	704	0	0	0	2	6	678	5	1426
Grand Total	15	3	46	1	1317	0	3	0	4	13	1270	9	2681
Apprch %	23.4	4.7	71.9	0.1	99.9	0	42.9	0	57.1	1	98.3	0.7	
Total %	0.6	0.1	1.7	0	49.1	0	0.1	0	0.1	0.5	47.4	0.3	

Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 7

Groups Printed- Trucks

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	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
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
05:30 PM	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
Total	0	0	0	0	3	0	0	0	0	0	0	0	3
Grand Total	0	0	0	0	3	0	0	0	0	0	0	0	3
Apprch %	0	0	0	0	100	0	0	0	0	0	0	0	
Total %	0	0	0	0	100	0	0	0	0	0	0	0	

978-664-2565

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 10

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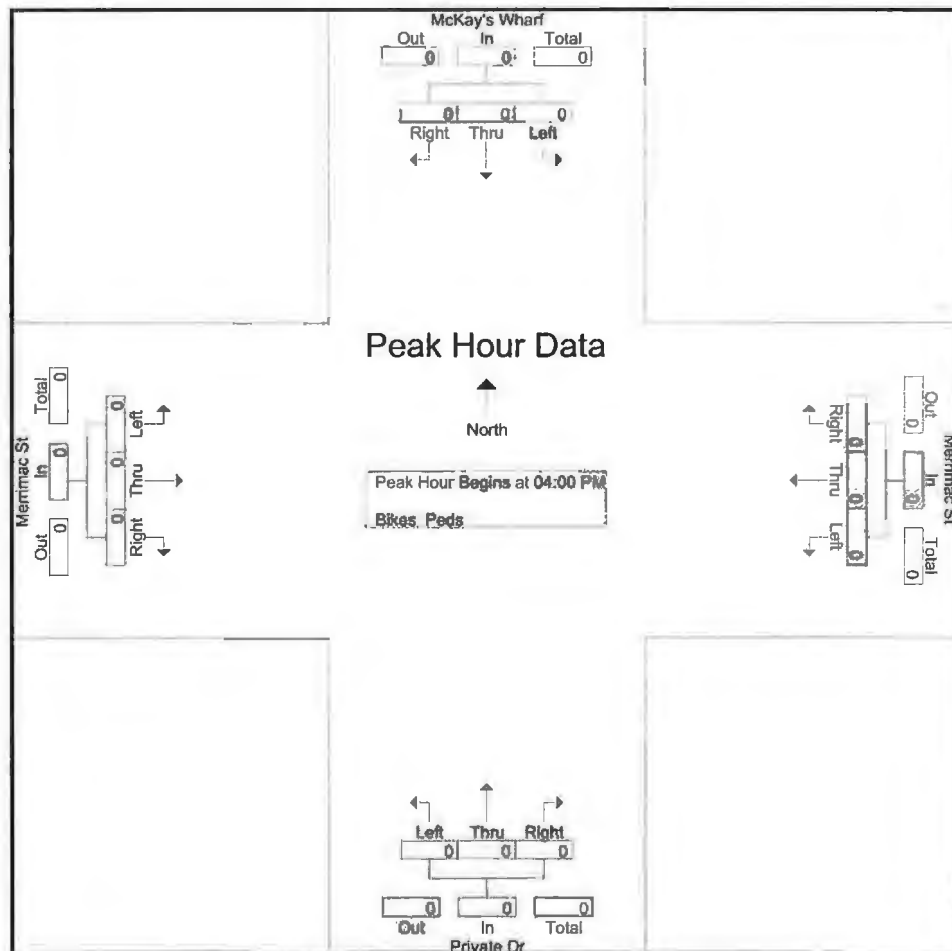
Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810003
Site Code : 72810003
Start Date : 6/16/2016
Page No : 11

	McKay's Wharf From North				Merrimac St From East				Private Dr From South				Merrimac St 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	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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 : Titcomb Street
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810004
Site Code : 72810004
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Merrimac St From East Left	Thru	Titcomb St From South Left	Right	Merrimac St From West Thru	Right	Int. Total
07:00 AM	2	70	1	2	74	6	155
07:15 AM	1	80	0	0	87	3	171
07:30 AM	5	88	0	0	122	8	223
07:45 AM	3	89	0	2	109	14	217
Total	11	327	1	4	392	31	766
08:00 AM	5	96	0	0	147	14	262
08:15 AM	7	98	2	2	156	11	276
08:30 AM	2	90	3	0	160	7	262
08:45 AM	0	90	4	1	163	17	275
Total	14	374	9	3	626	49	1075
Grand Total	25	701	10	7	1018	80	1841
Apprch %	3.4	96.6	58.8	41.2	92.7	7.3	
Total %	1.4	38.1	0.5	0.4	55.3	4.3	
Cars	25	692	9	7	1004	80	1817
% Cars	100	98.7	90	100	98.6	100	98.7
Trucks	0	9	1	0	14	0	24
% Trucks	0	1.3	10	0	1.4	0	1.3

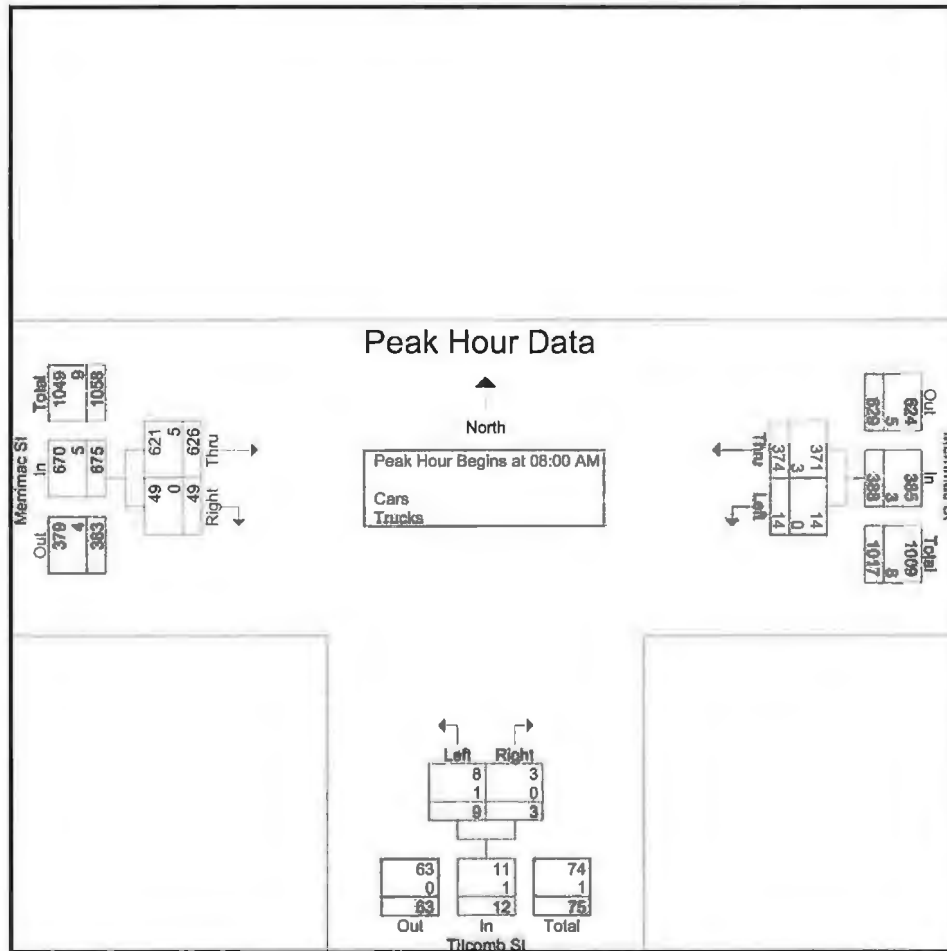
Accurate Counts

978-664-2565

N/S Street : Titcomb Street
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810004
Site Code : 72810004
Start Date : 6/16/2016
Page No : 2

	Merrimac St From East			Titcomb St From South			Merrimac St 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 08:00 AM										
08:00 AM	5	96	101	0	0	0	147	14	161	262
08:15 AM	7	98	105	2	2	4	156	11	167	276
08:30 AM	2	90	92	3	0	3	160	7	167	262
08:45 AM	0	90	90	4	1	5	163	17	180	275
Total Volume	14	374	388	9	3	12	626	49	675	1075
% App. Total	3.6	96.4		75	25		92.7	7.3		
PHF	.500	.954	.924	.563	.375	.600	.960	.721	.938	.974
Cars	14	371	385	8	3	11	621	49	670	1066
% Cars	100	99.2	99.2	88.9	100	91.7	99.2	100	99.3	99.2
Trucks	0	3	3	1	0	1	5	0	5	9
% Trucks	0	0.8	0.8	11.1	0	8.3	0.8	0	0.7	0.8



Accurate Counts

978-664-2565

N/S Street : Titcomb Street
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810004
Site Code : 72810004
Start Date : 6/16/2016
Page No : 4

Groups Printed- Cars							
Start Time	Merrimac St From East		Titcomb St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	2	69	1	2	74	6	154
07:15 AM	1	80	0	0	86	3	170
07:30 AM	5	87	0	0	115	8	215
07:45 AM	3	85	0	2	108	14	212
Total	11	321	1	4	383	31	751
08:00 AM	5	96	0	0	146	14	261
08:15 AM	7	97	2	2	154	11	273
08:30 AM	2	90	3	0	159	7	261
08:45 AM	0	88	3	1	162	17	271
Total	14	371	8	3	621	49	1066
Grand Total	25	692	9	7	1004	80	1817
Apprch %	3.5	96.5	56.2	43.8	92.6	7.4	
Total %	1.4	38.1	0.5	0.4	55.3	4.4	

Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Merrimac St From East		Titcomb St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	1	0	1
07:30 AM	0	1	0	0	7	0	8
07:45 AM	0	4	0	0	1	0	5
Total	0	6	0	0	9	0	15
08:00 AM	0	0	0	0	1	0	1
08:15 AM	0	1	0	0	2	0	3
08:30 AM	0	0	0	0	1	0	1
08:45 AM	0	2	1	0	1	0	4
Total	0	3	1	0	5	0	9
Grand Total	0	9	1	0	14	0	24
Apprch %	0	100	100	0	100	0	
Total %	0	37.5	4.2	0	58.3	0	

Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Merrimac St From East			Titcomb St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	1	0	0	0	2	3	0	0	2	4	6
07:15 AM	0	0	0	0	0	0	2	0	1	1	2	3
07:30 AM	0	1	0	0	0	4	2	0	1	5	3	8
07:45 AM	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	2	0	0	0	6	8	0	2	8	10	18
08:00 AM	0	0	0	0	0	4	0	0	1	5	0	5
08:15 AM	0	0	1	0	0	2	1	0	2	5	1	6
08:30 AM	0	0	0	0	0	3	0	0	0	3	0	3
08:45 AM	0	0	0	1	0	2	3	0	0	2	4	6
Total	0	0	1	1	0	11	4	0	3	15	5	20
Grand Total	0	2	1	1	0	17	12	0	5	23	15	38
Apprch %	0	100		100	0		100	0				
Total %	0	13.3		6.7	0		80	0		60.5	39.5	

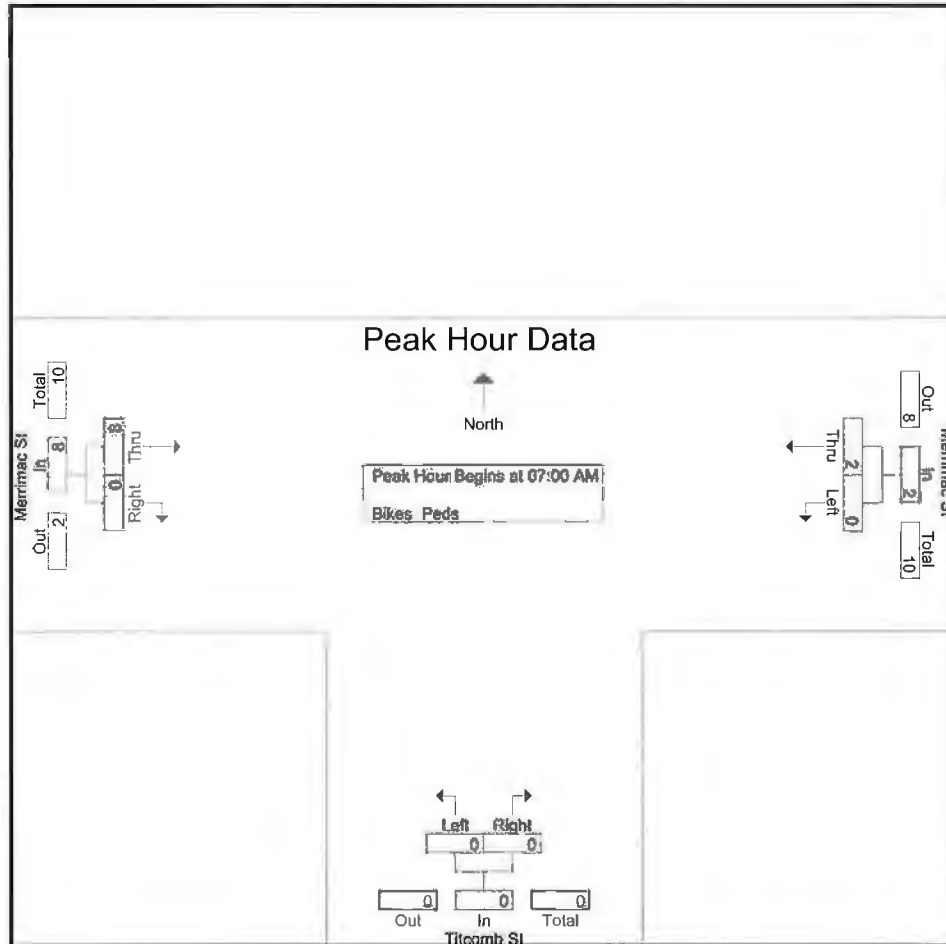
Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 11

	Merrimac St From East			Titcomb St From South			Merrimac St 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	1	1	0	0	0	3	0	3	4
07:15 AM	0	0	0	0	0	0	2	0	2	2
07:30 AM	0	1	1	0	0	0	2	0	2	3
07:45 AM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	2	2	0	0	0	8	0	8	10
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.667	.000	.667	.625



Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Merrimac St From East		Titcomb St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	5	150	3	2	137	7	304
04:15 PM	2	169	4	1	138	2	316
04:30 PM	4	141	3	2	148	6	304
04:45 PM	3	137	6	3	161	8	318
Total	14	597	16	8	584	23	1242
05:00 PM	5	193	5	2	166	11	382
05:15 PM	1	180	4	1	156	13	355
05:30 PM	1	162	1	2	153	11	330
05:45 PM	2	156	6	2	166	11	343
Total	9	691	16	7	641	46	1410
Grand Total	23	1288	32	15	1225	69	2652
Apprch %	1.8	98.2	68.1	31.9	94.7	5.3	
Total %	0.9	48.6	1.2	0.6	46.2	2.6	
Cars	22	1286	31	15	1225	69	2648
% Cars	95.7	99.8	96.9	100	100	100	99.8
Trucks	1	2	1	0	0	0	4
% Trucks	4.3	0.2	3.1	0	0	0	0.2

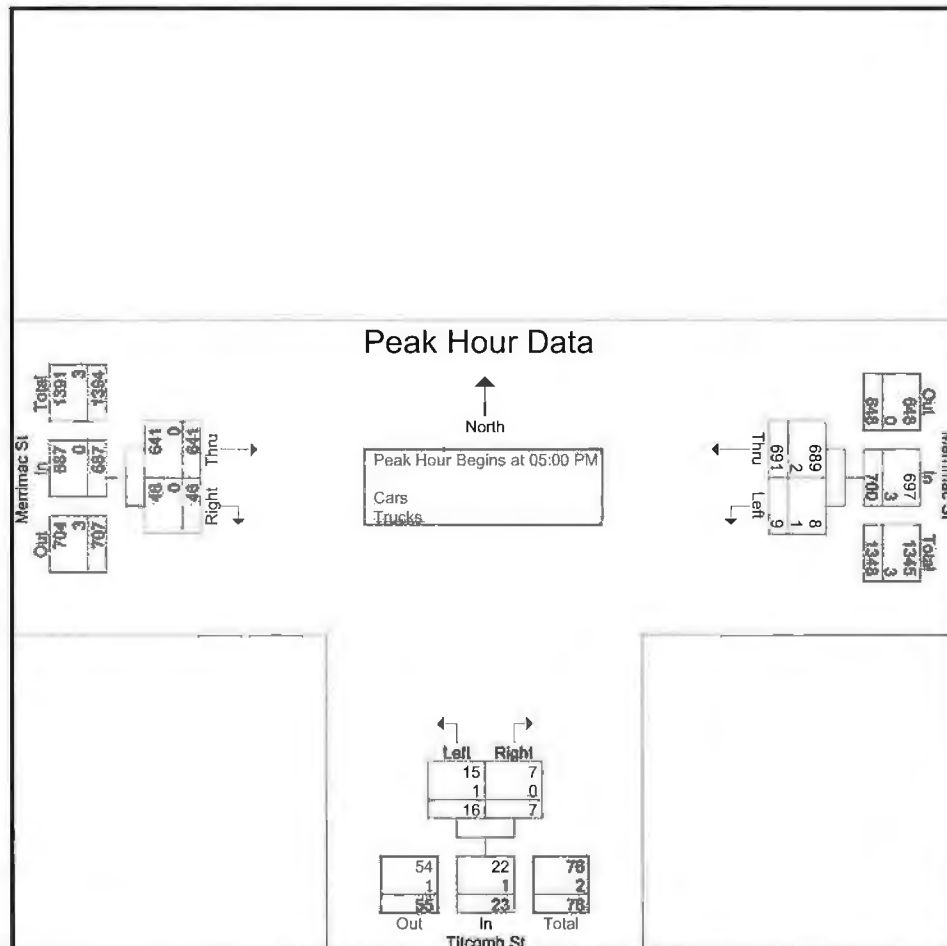
Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 2

	Merrimac St From East			Titcomb St From South			Merrimac St 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 05:00 PM										
05:00 PM	5	193	198	5	2	7	166	11	177	382
05:15 PM	1	180	181	4	1	5	156	13	169	355
05:30 PM	1	162	163	1	2	3	153	11	164	330
05:45 PM	2	156	158	6	2	8	166	11	177	343
Total Volume	9	691	700	16	7	23	641	46	687	1410
% App. Total	1.3	98.7		69.6	30.4		93.3	6.7		
PHF	.450	.895	.884	.667	.875	.719	.965	.885	.970	.923
Cars	8	689	697	15	7	22	641	46	687	1406
% Cars	88.9	99.7	99.6	93.8	100	95.7	100	100	100	99.7
Trucks	1	2	3	1	0	1	0	0	0	4
% Trucks	11.1	0.3	0.4	6.3	0	4.3	0	0	0	0.3



Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars							
Start Time	Merrimac St From East		Titcomb St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	5	150	3	2	137	7	304
04:15 PM	2	169	4	1	138	2	316
04:30 PM	4	141	3	2	148	6	304
04:45 PM	3	137	6	3	161	8	318
Total	14	597	16	8	584	23	1242
05:00 PM	5	193	4	2	166	11	381
05:15 PM	1	178	4	1	156	13	353
05:30 PM	1	162	1	2	153	11	330
05:45 PM	1	156	6	2	166	11	342
Total	8	689	15	7	641	46	1406
Grand Total	22	1286	31	15	1225	69	2648
Apprch %	1.7	98.3	67.4	32.6	94.7	5.3	
Total %	0.8	48.6	1.2	0.6	46.3	2.6	

Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 7

Start Time	Groups Printed- Trucks						Int. Total
	Merrimac St From East		Titcomb St From South		Merrimac St From West		
	Left	Thru	Left	Right	Thru	Right	
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	1	0	0	0	1
05:15 PM	0	2	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0
05:45 PM	1	0	0	0	0	0	1
Total	1	2	1	0	0	0	4
Grand Total	1	2	1	0	0	0	4
Apprch %	33.3	66.7	100	0	0	0	
Total %	25	50	25	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Merrimac St From East			Titcomb St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	1	0	0	3	4	0	4
04:15 PM	0	2	0	0	0	1	2	0	0	1	4	5
04:30 PM	0	4	0	0	0	0	1	0	0	0	5	5
04:45 PM	0	3	0	0	0	4	3	0	6	10	6	16
Total	0	9	0	0	0	6	6	0	9	15	15	30
05:00 PM	1	2	0	1	0	9	1	0	2	11	5	16
05:15 PM	0	2	0	0	0	0	0	0	0	0	2	2
05:30 PM	0	1	0	0	0	6	1	0	2	8	2	10
05:45 PM	1	1	0	0	0	0	8	0	0	0	10	10
Total	2	6	0	1	0	15	10	0	4	19	19	38
Grand Total	2	15	0	1	0	21	16	0	13	34	34	68
Apprch %	11.8	88.2		100	0		100	0				
Total %	5.9	44.1		2.9	0		47.1	0		50	50	

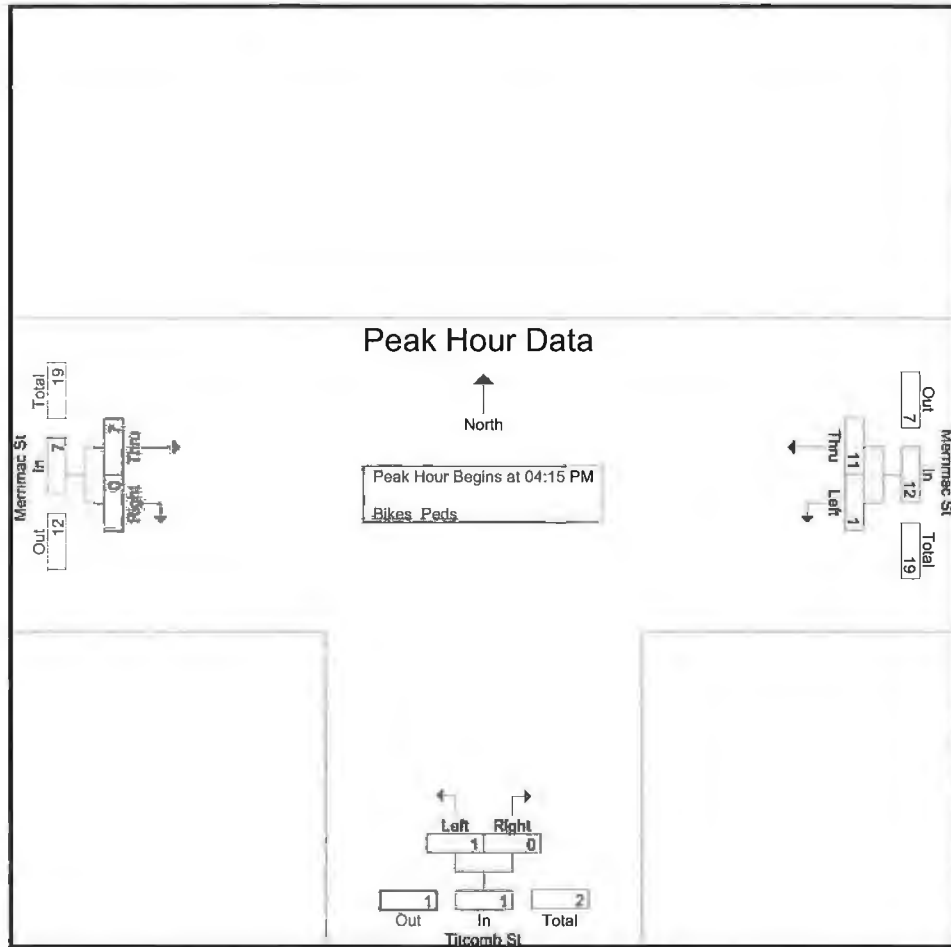
Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810004
 Site Code : 72810004
 Start Date : 6/16/2016
 Page No : 11

Start Time	Merrimac St From East			Titcomb St From South			Merrimac St From West			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	2	2	0	0	0	2	0	2	4
04:30 PM	0	4	4	0	0	0	1	0	1	5
04:45 PM	0	3	3	0	0	0	3	0	3	6
05:00 PM	1	2	3	1	0	1	1	0	1	5
Total Volume	1	11	12	1	0	1	7	0	7	20
% App. Total	8.3	91.7		100	0		100	0		
PHF	.250	.688	.750	.250	.000	.250	.583	.000	.583	.833



Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Site Dwy From North Left	Right	Merrimac St From East Thru	Right	Merrimac St From West Left	Thru	Int. Tot
07:00 AM	0	1	58	1	1	80	14
07:15 AM	0	1	69	1	2	79	14
07:30 AM	0	1	65	0	3	109	17
07:45 AM	0	4	88	0	4	112	20
Total	0	7	280	2	10	380	67
08:00 AM	0	3	65	2	7	88	16
08:15 AM	0	4	82	0	7	133	22
08:30 AM	0	0	90	1	4	108	20
08:45 AM	0	0	79	3	5	158	24
Total	0	7	316	6	23	487	88
Grand Total	0	14	596	8	33	867	155
Apprch %	0	100	98.7	1.3	3.7	96.3	
Total %	0	0.9	39.3	0.5	2.2	57.1	
Cars	0	13	588	8	33	853	149
% Cars	0	92.9	98.7	100	100	98.4	98
Trucks	0	1	8	0	0	14	4
% Trucks	0	7.1	1.3	0	0	1.6	1

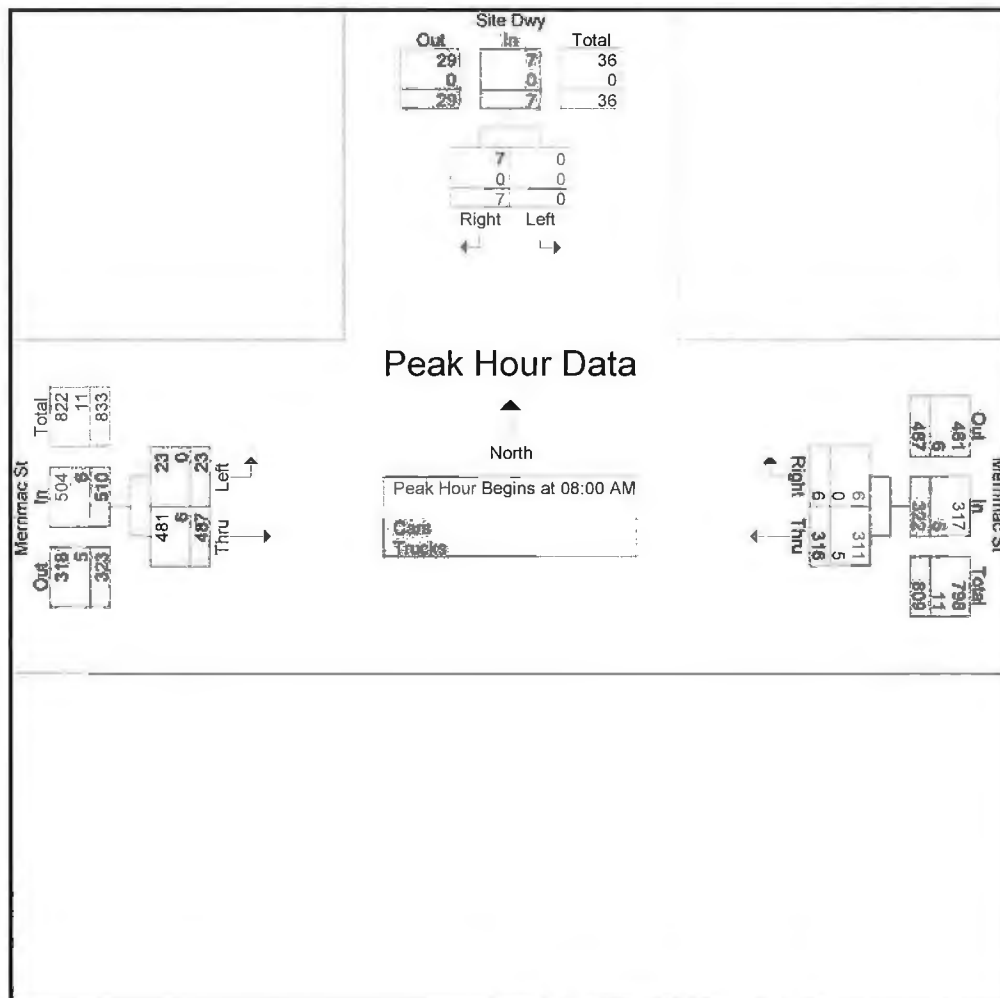
Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 2

	Site Dwy			Merrimac St			Merrimac St			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	3	3	65	2	67	7	88	95	16
08:15 AM	0	4	4	82	0	82	7	133	140	22
08:30 AM	0	0	0	90	1	91	4	108	112	20
08:45 AM	0	0	0	79	3	82	5	158	163	24
Total Volume	0	7	7	316	6	322	23	487	510	83
% App. Total	0	100		98.1	1.9		4.5	95.5		
PHF	.000	.438	.438	.878	.500	.885	.821	.771	.782	.85
Cars	0	7	7	311	6	317	23	481	504	82
% Cars	0	100	100	98.4	100	98.4	100	98.8	98.8	98
Trucks	0	0	0	5	0	5	0	6	6	1
% Trucks	0	0	0	1.6	0	1.6	0	1.2	1.2	1



Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 4

Groups Printed- Cars							
Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	0	0	57	1	1	77	13
07:15 AM	0	1	69	1	2	77	14
07:30 AM	0	1	65	0	3	106	17
07:45 AM	0	4	86	0	4	112	20
Total	0	6	277	2	10	372	60
08:00 AM	0	3	64	2	7	88	16
08:15 AM	0	4	80	0	7	131	22
08:30 AM	0	0	89	1	4	105	19
08:45 AM	0	0	78	3	5	157	26
Total	0	7	311	6	23	481	80
Grand Total	0	13	588	8	33	853	149
Apprch %	0	100	98.7	1.3	3.7	96.3	
Total %	0	0.9	39.3	0.5	2.2	57.1	

Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 7

Groups Printed- Trucks

Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	0	1	1	0	0	3	
07:15 AM	0	0	0	0	0	2	
07:30 AM	0	0	0	0	0	3	
07:45 AM	0	0	2	0	0	0	
Total	0	1	3	0	0	8	
08:00 AM	0	0	1	0	0	0	
08:15 AM	0	0	2	0	0	2	
08:30 AM	0	0	1	0	0	3	
08:45 AM	0	0	1	0	0	1	
Total	0	0	5	0	0	6	
Grand Total	0	1	8	0	0	14	
Apprch %	0	100	100	0	0	100	
Total %	0	4.3	34.8	0	0	60.9	

Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 10

Groups Printed- Bikes Peds

Start Time	Site Dwy From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Tot
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
07:00 AM	0	0	2	0	0	0	0	3	0	2	3	
07:15 AM	0	0	2	0	0	0	0	0	0	2	0	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	
07:45 AM	0	0	1	4	0	0	0	0	0	1	4	
Total	0	0	5	4	0	0	0	3	0	5	7	1
08:00 AM	0	0	3	0	0	0	0	0	1	4	0	
08:15 AM	0	0	1	1	0	1	0	0	0	2	1	
08:30 AM	0	0	6	0	0	0	0	1	1	7	1	
08:45 AM	0	0	5	0	0	0	0	1	0	5	1	
Total	0	0	15	1	0	1	0	2	2	18	3	2
Grand Total	0	0	20	5	0	1	0	5	2	23	10	3
Apprch %	0	0		100	0		0	100				
Total %	0	0		50	0		0	50		69.7	30.3	

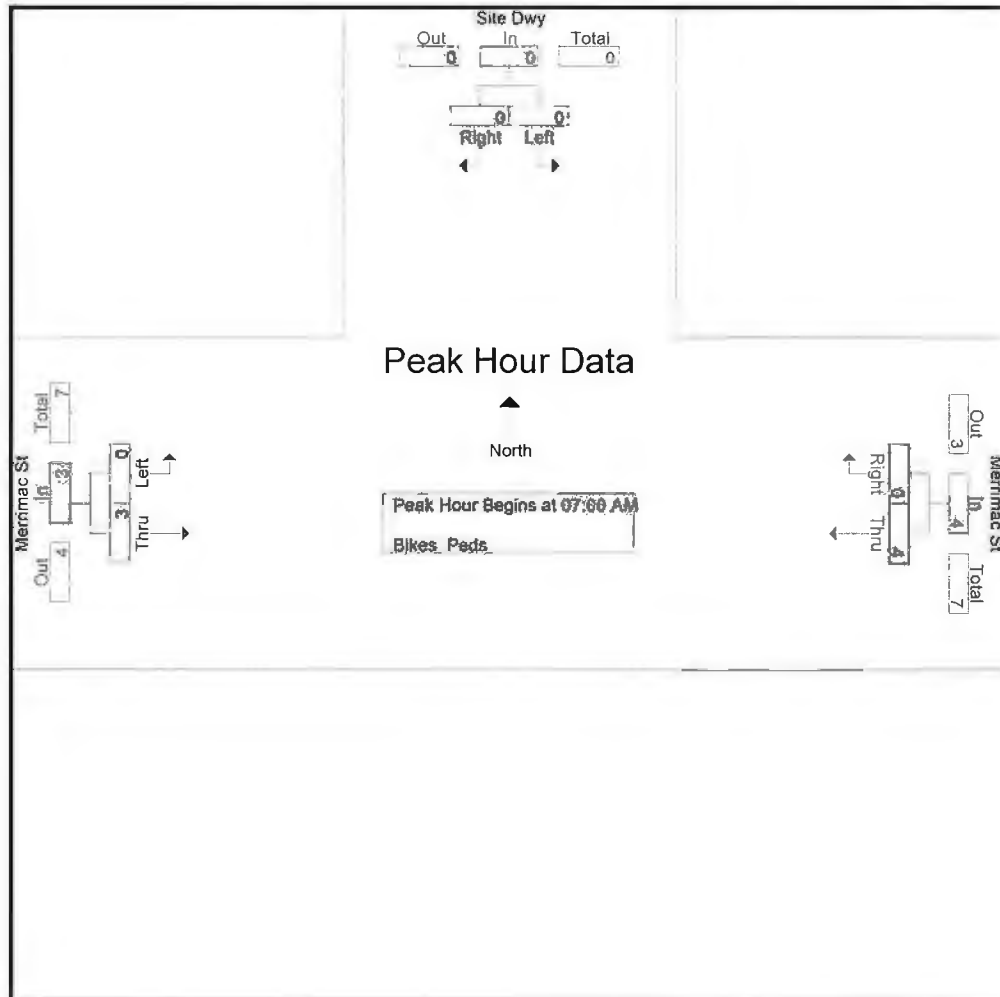
Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 11

Start Time	Site Dwy From North			Merrimac St From East			Merrimac St From West			Int. Tot
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	3	3	
07:15 AM	0	0	0	0	0	0	0	0	0	
07:30 AM	0	0	0	0	0	0	0	0	0	
07:45 AM	0	0	0	4	0	4	0	0	0	
Total Volume	0	0	0	4	0	4	0	3	3	
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.250	.000	.250	.000	.250	.250	.43



Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
ather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Site Dwy From North Left	Right	Merrimac St From East Thru	Right	Merrimac St From West Left	Thru	Int. Tot
04:00 PM	1	6	140	1	1	125	25
04:15 PM	0	2	125	0	2	126	25
04:30 PM	0	4	129	0	2	133	26
04:45 PM	0	9	145	0	0	126	28
Total	1	21	539	1	5	510	105
05:00 PM	1	16	151	1	1	160	33
05:15 PM	1	3	131	2	1	139	25
05:30 PM	1	6	121	0	4	131	26
05:45 PM	0	5	102	0	3	139	24
Total	3	30	505	3	9	569	115
Grand Total	4	51	1044	4	14	1079	219
Apprch %	7.3	92.7	99.6	0.4	1.3	98.7	
Total %	0.2	2.3	47.5	0.2	0.6	49.1	
Cars	4	50	1039	4	14	1076	218
% Cars	100	98	99.5	100	100	99.7	99
Trucks	0	1	5	0	0	3	
% Trucks	0	2	0.5	0	0	0.3	0

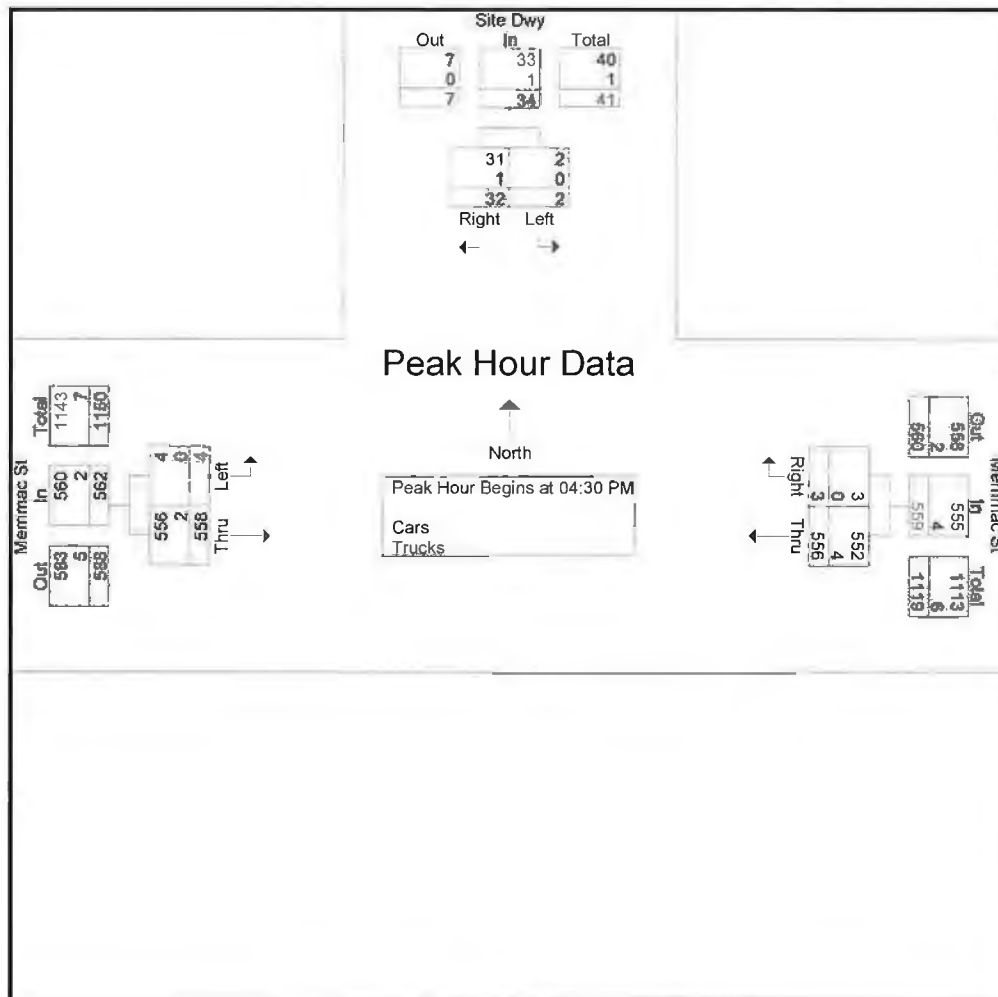
Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 2

	Site Dwy			Merrimac St			Merrimac St			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
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	4	4	129	0	129	2	133	135	26
04:45 PM	0	9	9	145	0	145	0	126	126	28
05:00 PM	1	16	17	151	1	152	1	160	161	33
05:15 PM	1	3	4	131	2	133	1	139	140	27
Total Volume	2	32	34	556	3	559	4	558	562	115
% App. Total	5.9	94.1		99.5	0.5		0.7	99.3		
PHF	.500	.500	.500	.921	.375	.919	.500	.872	.873	.87
Cars	2	31	33	552	3	555	4	556	560	114
% Cars	100	96.9	97.1	99.3	100	99.3	100	99.6	99.6	99
Trucks	0	1	1	4	0	4	0	2	2	
% Trucks	0	3.1	2.9	0.7	0	0.7	0	0.4	0.4	0



Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 4

Groups Printed- Cars								
Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tol	
	Left	Right	Thru	Right	Left	Thru		
04:00 PM	1	6	140	1	1	125	27	
04:15 PM	0	2	124	0	2	125	28	
04:30 PM	0	3	128	0	2	132	28	
04:45 PM	0	9	144	0	0	126	27	
Total	1	20	536	1	5	508	107	
05:00 PM	1	16	150	1	1	159	38	
05:15 PM	1	3	130	2	1	139	27	
05:30 PM	1	6	121	0	4	131	28	
05:45 PM	0	5	102	0	3	139	24	
Total	3	30	503	3	9	568	117	
Grand Total	4	50	1039	4	14	1076	211	
Apprch %	7.4	92.6	99.6	0.4	1.3	98.7		
Total %	0.2	2.3	47.5	0.2	0.6	49.2		

Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 7

Groups Printed- Trucks

Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tol
	Left	Right	Thru	Right	Left	Thru	
04:00 PM	0	0	0	0	0	0	
04:15 PM	0	0	1	0	0	1	
04:30 PM	0	1	1	0	0	1	
04:45 PM	0	0	1	0	0	0	
Total	0	1	3	0	0	2	
05:00 PM	0	0	1	0	0	1	
05:15 PM	0	0	1	0	0	0	
05:30 PM	0	0	0	0	0	0	
05:45 PM	0	0	0	0	0	0	
Total	0	0	2	0	0	1	
Grand Total	0	1	5	0	0	3	
Apprch %	0	100	100	0	0	100	
Total %	0	11.1	55.6	0	0	33.3	

Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 10

Groups Printed- Bikes Peds

Start Time	Site Dwy From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Tot
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
04:00 PM	0	0	8	0	0	0	0	2	1	9	2	1
04:15 PM	0	0	7	1	0	0	0	1	2	9	2	1
04:30 PM	0	0	7	1	0	0	0	1	0	7	2	
04:45 PM	0	0	4	0	0	0	0	1	2	6	1	
Total	0	0	26	2	0	0	0	5	5	31	7	3
05:00 PM	0	0	5	1	0	0	0	0	2	7	1	
05:15 PM	0	0	7	0	0	0	0	3	2	9	3	1
05:30 PM	0	0	6	0	0	0	0	2	1	7	2	
05:45 PM	0	0	9	1	0	0	0	1	0	9	2	1
Total	0	0	27	2	0	0	0	6	5	32	8	4
Grand Total	0	0	53	4	0	0	0	11	10	63	15	7
Apprch %	0	0		100	0		0	100				
Total %	0	0		26.7	0		0	73.3		80.8	19.2	

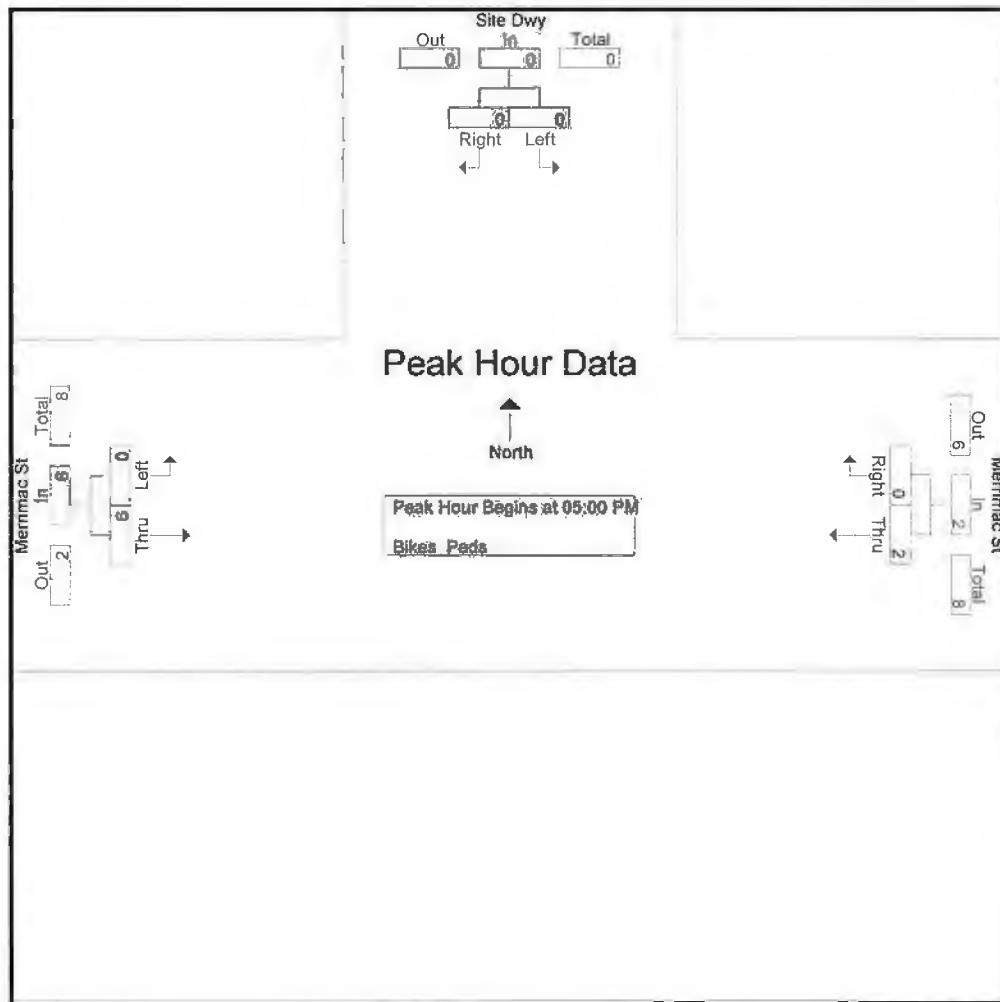
Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/30/2
Page No : 11

	Site Dwy			Merrimac St			Merrimac St			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	1	0	1	0	0	0	
05:15 PM	0	0	0	0	0	0	0	3	3	
05:30 PM	0	0	0	0	0	0	0	2	2	
05:45 PM	0	0	0	1	0	1	0	1	1	
Total Volume	0	0	0	2	0	2	0	6	6	
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.500	.000	.500	.000	.500	.500	.667



Accurate Counts
978-664-2565

N/S Street : Green Street
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810005
Site Code : 72810005
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Merrimac St From East Left	Thru	Green St From South Left	Right	Merrimac St From West Thru	Right	Int. Total
07:00 AM	0	60	10	16	75	0	161
07:15 AM	0	71	16	24	84	0	195
07:30 AM	0	82	9	27	114	0	232
07:45 AM	0	80	16	30	113	0	239
Total	0	293	51	97	386	0	827
08:00 AM	0	80	18	35	135	0	268
08:15 AM	0	89	23	55	149	0	316
08:30 AM	0	81	17	41	168	0	307
08:45 AM	0	74	13	42	160	0	289
Total	0	324	71	173	612	0	1180
Grand Total	0	617	122	270	998	0	2007
Apprch %	0	100	31.1	68.9	100	0	
Total %	0	30.7	6.1	13.5	49.7	0	
Cars	0	610	121	267	984	0	1982
% Cars	0	98.9	99.2	98.9	98.6	0	98.8
Trucks	0	7	1	3	14	0	25
% Trucks	0	1.1	0.8	1.1	1.4	0	1.2

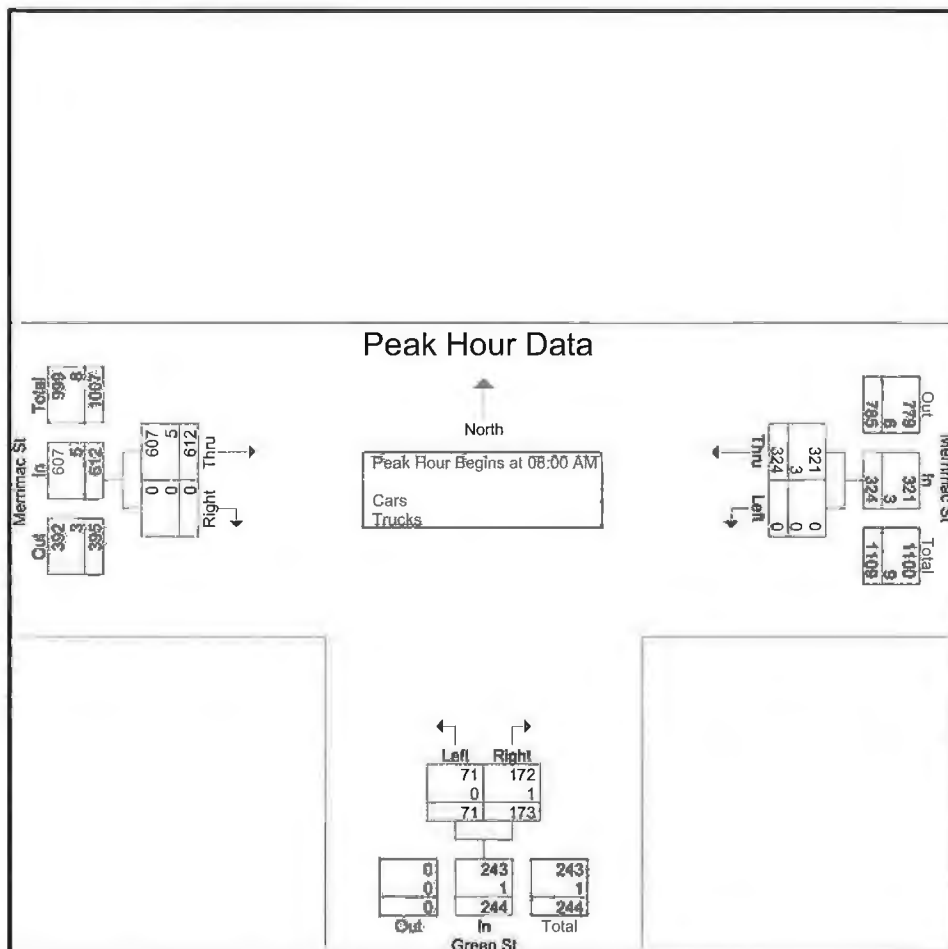
Accurate Counts

978-664-2565

N/S Street : Green Street
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810005
Site Code : 72810005
Start Date : 6/16/2016
Page No : 2

Merrimac St From East				Green St From South			Merrimac St From West			Int. Total
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	80	80	18	35	53	135	0	135	268
08:15 AM	0	89	89	23	55	78	149	0	149	316
08:30 AM	0	81	81	17	41	58	168	0	168	307
08:45 AM	0	74	74	13	42	55	160	0	160	289
Total Volume	0	324	324	71	173	244	612	0	612	1180
% App. Total	0	100		29.1	70.9		100	0		
PHF	.000	.910	.910	.772	.786	.782	.911	.000	.911	.934
Cars	0	321	321	71	172	243	607	0	607	1171
% Cars	0	99.1	99.1	100	99.4	99.6	99.2	0	99.2	99.2
Trucks	0	3	3	0	1	1	5	0	5	9
% Trucks	0	0.9	0.9	0	0.6	0.4	0.8	0	0.8	0.8



Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars							
Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	59	9	16	75	0	159
07:15 AM	0	71	16	22	83	0	192
07:30 AM	0	81	9	27	108	0	225
07:45 AM	0	78	16	30	111	0	235
Total	0	289	50	95	377	0	811
08:00 AM	0	79	18	35	134	0	266
08:15 AM	0	88	23	55	147	0	313
08:30 AM	0	81	17	41	167	0	306
08:45 AM	0	73	13	41	159	0	286
Total	0	321	71	172	607	0	1171
Grand Total	0	610	121	267	984	0	1982
Apprch %	0	100	31.2	68.8	100	0	
Total %	0	30.8	6.1	13.5	49.6	0	

Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	1	1	0	0	0	2
07:15 AM	0	0	0	2	1	0	3
07:30 AM	0	1	0	0	6	0	7
07:45 AM	0	2	0	0	2	0	4
Total	0	4	1	2	9	0	16
08:00 AM	0	1	0	0	1	0	2
08:15 AM	0	1	0	0	2	0	3
08:30 AM	0	0	0	0	1	0	1
08:45 AM	0	1	0	1	1	0	3
Total	0	3	0	1	5	0	9
Grand Total	0	7	1	3	14	0	25
Apprch %	0	100	25	75	100	0	
Total %	0	28	4	12	56	0	

Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Merrimac St From East			Green St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	2	0	0	0	1	0	0	2	1	3
07:15 AM	0	1	1	0	0	4	3	0	0	5	4	9
07:30 AM	0	2	2	0	0	1	0	0	0	3	2	5
07:45 AM	0	0	2	0	0	0	2	0	1	3	2	5
Total	0	3	7	0	0	5	6	0	1	13	9	22
08:00 AM	0	0	11	1	0	2	0	0	0	13	1	14
08:15 AM	0	0	4	0	0	0	1	0	0	4	1	5
08:30 AM	0	0	1	0	0	3	0	0	0	4	0	4
08:45 AM	0	0	2	0	0	0	3	0	0	2	3	5
Total	0	0	18	1	0	5	4	0	0	23	5	28
Grand Total	0	3	25	1	0	10	10	0	1	36	14	50
Apprch %	0	100		100	0		100	0				
Total %	0	21.4		7.1	0		71.4	0		72	28	

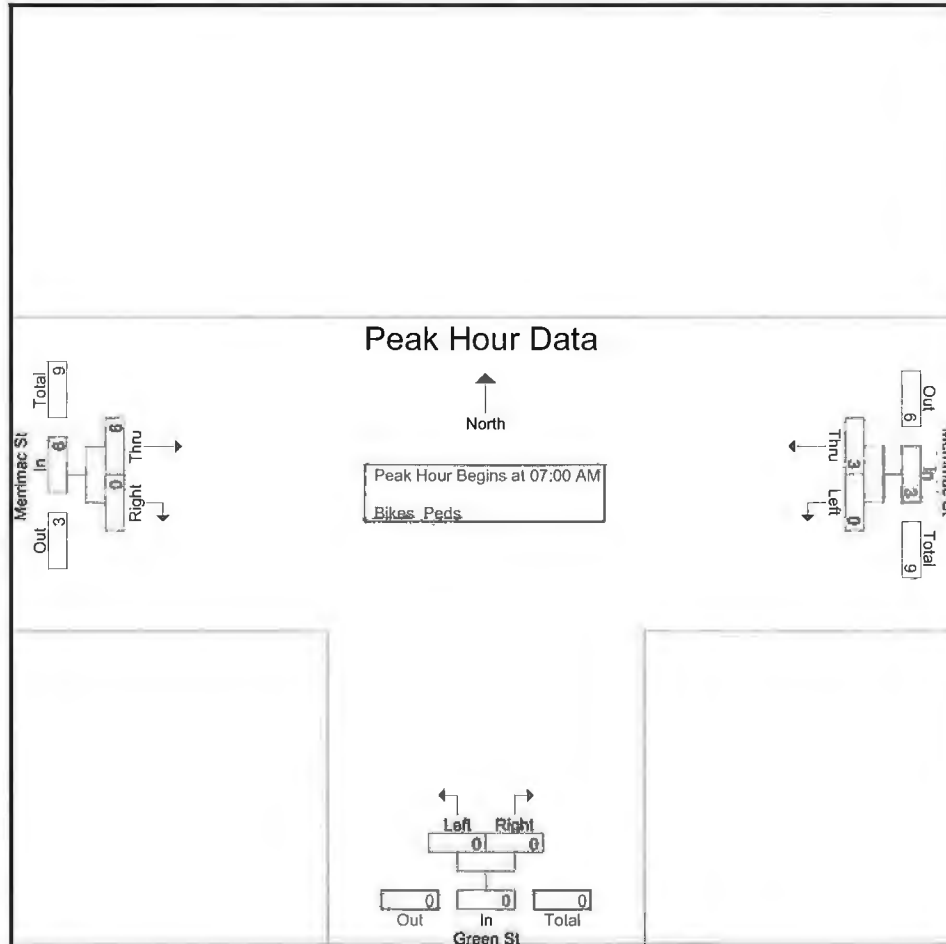
Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 11

	Merrimac St From East			Green St From South			Merrimac St 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	1	0	1	1
07:15 AM	0	1	1	0	0	0	3	0	3	4
07:30 AM	0	2	2	0	0	0	0	0	0	2
07:45 AM	0	0	0	0	0	0	2	0	2	2
Total Volume	0	3	3	0	0	0	6	0	6	9
% App. Total	0	100		0	0		100	0		
PHF	.000	.375	.375	.000	.000	.000	.500	.000	.500	.563



Accurate Counts
978-664-2565

N/S Street : Green Street
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810005
Site Code : 72810005
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	109	43	44	151	0	347
04:15 PM	0	124	38	40	129	0	331
04:30 PM	0	110	34	42	145	0	331
04:45 PM	0	103	45	37	166	0	351
Total	0	446	160	163	591	0	1360
05:00 PM	0	147	36	42	163	0	388
05:15 PM	0	143	35	30	151	0	359
05:30 PM	0	122	29	40	151	0	342
05:45 PM	0	123	30	42	155	0	350
Total	0	535	130	154	620	0	1439
Grand Total	0	981	290	317	1211	0	2799
Apprch %	0	100	47.8	52.2	100	0	
Total %	0	35	10.4	11.3	43.3	0	
Cars	0	979	289	317	1210	0	2795
% Cars	0	99.8	99.7	100	99.9	0	99.9
Trucks	0	2	1	0	1	0	4
% Trucks	0	0.2	0.3	0	0.1	0	0.1

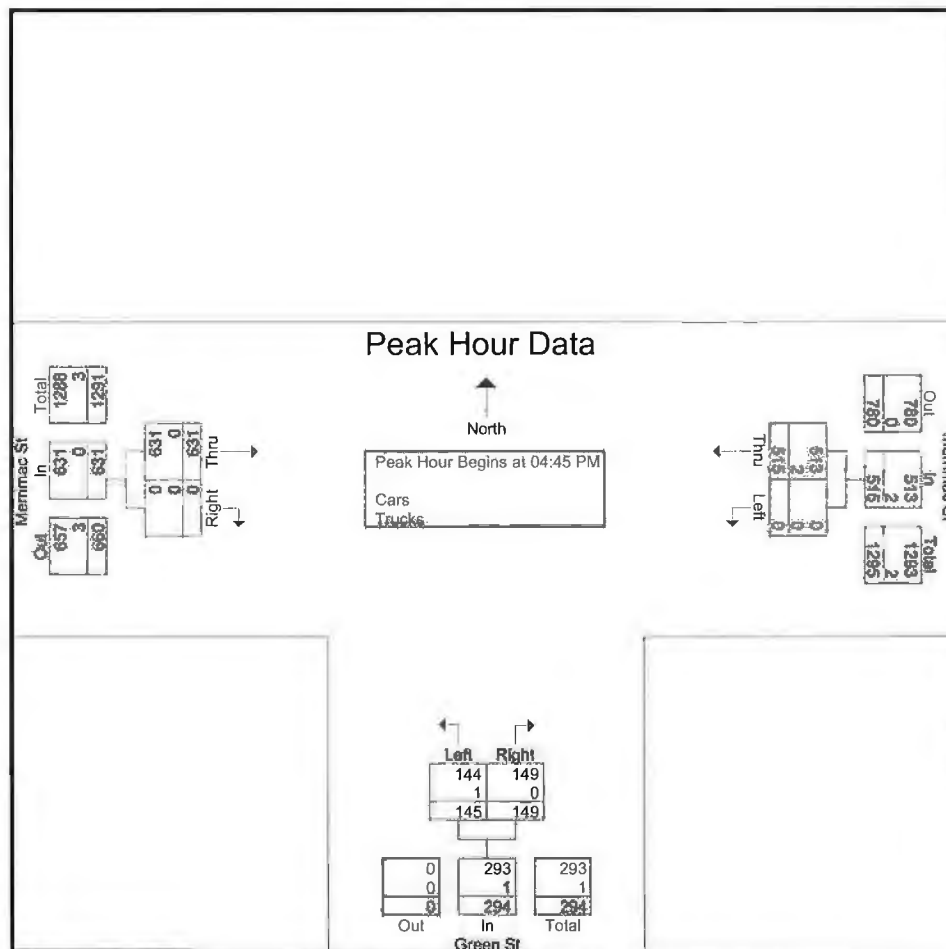
Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 2

	Merrimac St From East			Green St From South			Merrimac St 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 04:45 PM										
04:45 PM	0	103	103	45	37	82	166	0	166	351
05:00 PM	0	147	147	36	42	78	163	0	163	388
05:15 PM	0	143	143	35	30	65	151	0	151	359
05:30 PM	0	122	122	29	40	69	151	0	151	342
Total Volume	0	515	515	145	149	294	631	0	631	1440
% App. Total	0	100		49.3	50.7		100	0		
PHF	.000	.876	.876	.806	.887	.896	.950	.000	.950	.928
Cars	0	513	513	144	149	293	631	0	631	1437
% Cars	0	99.6	99.6	99.3	100	99.7	100	0	100	99.8
Trucks	0	2	2	1	0	1	0	0	0	3
% Trucks	0	0.4	0.4	0.7	0	0.3	0	0	0	0.2



Accurate Counts
978-664-2565

N/S Street : Green Street
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810005
Site Code : 72810005
Start Date : 6/16/2016
Page No : 4

Groups Printed- Cars

Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	109	43	44	151	0	347
04:15 PM	0	124	38	40	129	0	331
04:30 PM	0	110	34	42	144	0	330
04:45 PM	0	103	45	37	166	0	351
Total	0	446	160	163	590	0	1359
05:00 PM	0	146	36	42	163	0	387
05:15 PM	0	142	34	30	151	0	357
05:30 PM	0	122	29	40	151	0	342
05:45 PM	0	123	30	42	155	0	350
Total	0	533	129	154	620	0	1436
Grand Total	0	979	289	317	1210	0	2795
Apprch %	0	100	47.7	52.3	100	0	
Total %	0	35	10.3	11.3	43.3	0	

Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks								
Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
04:00 PM	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1	1
05:00 PM	0	1	0	0	0	0	1	1
05:15 PM	0	1	1	0	0	0	2	2
05:30 PM	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0
Total	0	2	1	0	0	0	3	3
Grand Total	0	2	1	0	1	0	4	4
Apprch %	0	100	100	0	100	0		
Total %	0	50	25	0	25	0		

Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 10

Start Time	Merrimac St From East			Green St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
04:00 PM	0	0	4	0	0	3	0	0	0	7	0	7
04:15 PM	0	1	4	0	0	1	2	0	0	5	3	8
04:30 PM	0	0	7	0	0	3	0	0	0	10	0	10
04:45 PM	0	1	5	0	0	0	1	0	0	5	2	7
Total	0	2	20	0	0	7	3	0	0	27	5	32
05:00 PM	0	4	1	0	1	6	1	0	0	7	6	13
05:15 PM	0	1	1	0	0	2	1	1	1	4	3	7
05:30 PM	0	2	3	0	0	2	0	0	0	5	2	7
05:45 PM	0	0	2	0	0	2	4	0	1	5	4	9
Total	0	7	7	0	1	12	6	1	2	21	15	36
Grand Total	0	9	27	0	1	19	9	1	2	48	20	68
Apprch %	0	100		0	100		90	10				
Total %	0	45		0	5		45	5		70.6	29.4	

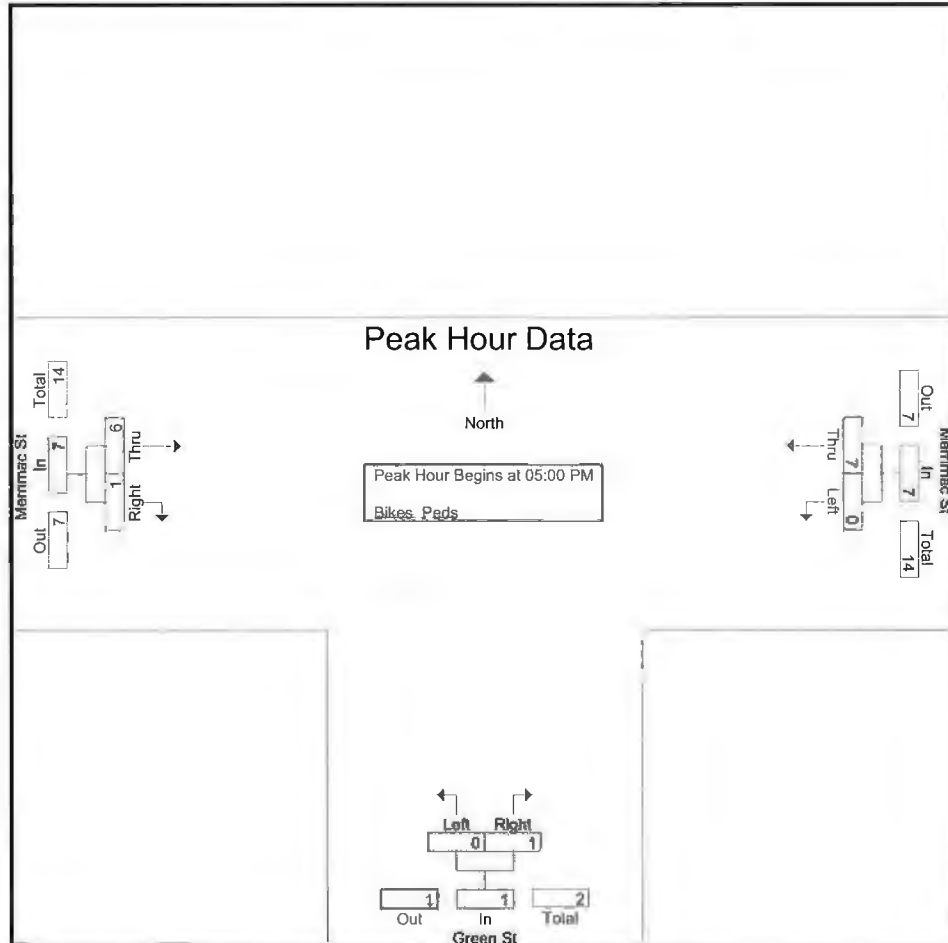
Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810005
 Site Code : 72810005
 Start Date : 6/16/2016
 Page No : 11

	Merrimac St From East			Green St From South			Merrimac St 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 05:00 PM										
05:00 PM	0	4	4	0	1	1	1	0	1	6
05:15 PM	0	1	1	0	0	0	1	1	2	3
05:30 PM	0	2	2	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	4	0	4	4
Total Volume	0	7	7	0	1	1	6	1	7	15
% App. Total	0	100		0	100		85.7	14.3		
PHF	.000	.438	.438	.000	.250	.250	.375	.250	.438	.625



Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 1

Groups Printed- Cars - Trucks							
	Browns Wharf From North		Merrimac St From East		Merrimac St From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Tot
07:00 AM	8	5	0	4	10	0	?
07:15 AM	3	4	0	1	9	0	.
07:30 AM	4	2	0	4	9	0	.
07:45 AM	5	9	0	0	11	0	?
Total	20	20	0	9	39	0	?
08:00 AM	5	3	0	5	11	0	?
08:15 AM	3	7	0	6	12	0	?
08:30 AM	6	7	0	3	16	0	?
08:45 AM	6	5	0	3	15	0	?
Total	20	22	0	17	54	0	1*
Grand Total	40	42	0	26	93	0	20
Apprch %	48.8	51.2	0	100	100	0	
Total %	19.9	20.9	0	12.9	46.3	0	
Cars	40	41	0	26	91	0	18
% Cars	100	97.6	0	100	97.8	0	98
Trucks	0	1	0	0	2	0	
% Trucks	0	2.4	0	0	2.2	0	1

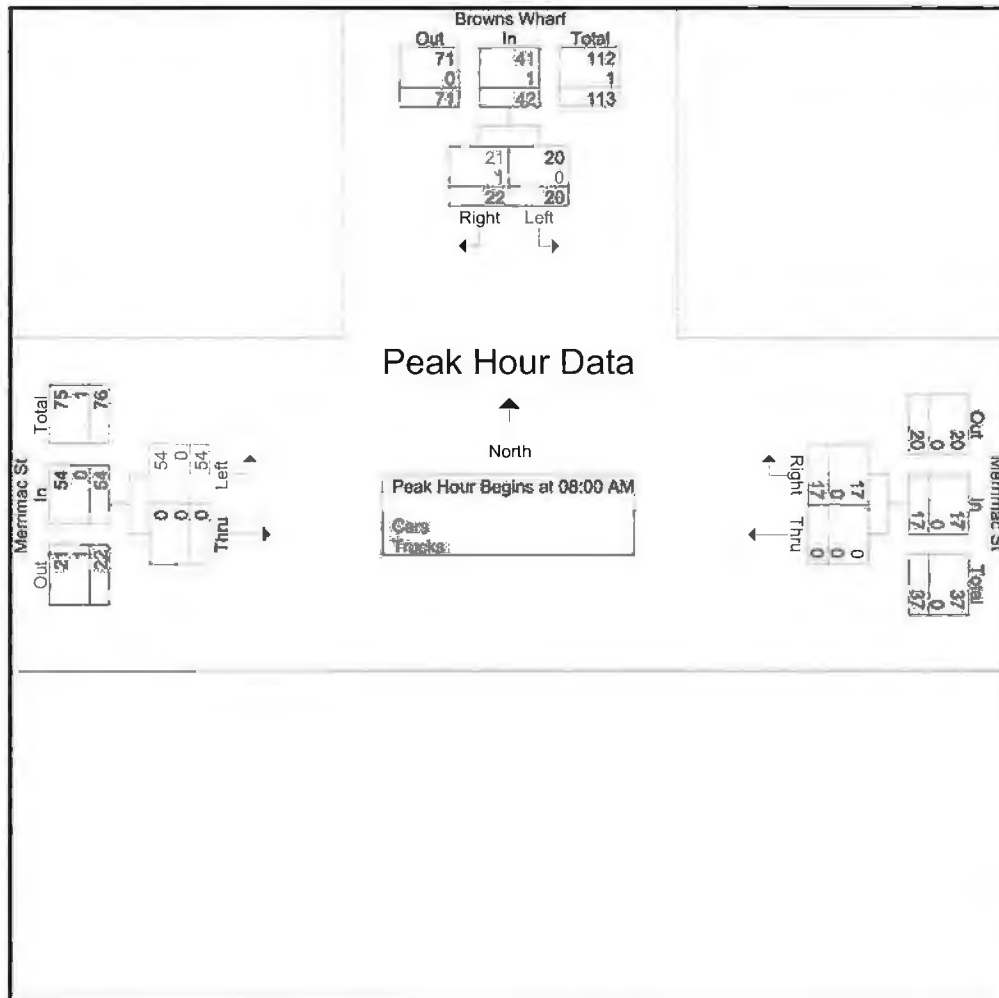
Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 2

	Browns Wharf			Merrimac St			Merrimac St			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	5	3	8	0	5	5	11	0	11	2
08:15 AM	3	7	10	0	6	6	12	0	12	2
08:30 AM	6	7	13	0	3	3	16	0	16	3
08:45 AM	6	5	11	0	3	3	15	0	15	2
Total Volume	20	22	42	0	17	17	54	0	54	11
% App. Total	47.6	52.4		0	100		100	0		
PHF	.833	.786	.808	.000	.708	.708	.844	.000	.844	.85
Cars	20	21	41	0	17	17	54	0	54	11
% Cars	100	95.5	97.6	0	100	100	100	0	100	99
Trucks	0	1	1	0	0	0	0	0	0	0
% Trucks	0	4.5	2.4	0	0	0	0	0	0	0



Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 4

Groups Printed: Cars

Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tol
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	8	5	0	4	10	0	27
07:15 AM	3	4	0	1	8	0	16
07:30 AM	4	2	0	4	9	0	15
07:45 AM	5	9	0	0	10	0	24
Total	20	20	0	9	37	0	86
08:00 AM	5	3	0	5	11	0	24
08:15 AM	3	6	0	6	12	0	27
08:30 AM	6	7	0	3	16	0	32
08:45 AM	6	5	0	3	15	0	29
Total	20	21	0	17	54	0	112
Grand Total	40	41	0	26	91	0	198
Apprch %	49.4	50.6	0	100	100	0	
Total %	20.2	20.7	0	13.1	46	0	

Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 7

Groups Printed- Trucks

Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	0	0	0	0	0	0	
07:15 AM	0	0	0	0	1	0	
07:30 AM	0	0	0	0	0	0	
07:45 AM	0	0	0	0	1	0	
Total	0	0	0	0	2	0	
08:00 AM	0	0	0	0	0	0	
08:15 AM	0	1	0	0	0	0	
08:30 AM	0	0	0	0	0	0	
08:45 AM	0	0	0	0	0	0	
Total	0	1	0	0	0	0	
Grand Total	0	1	0	0	2	0	
Apprch %	0	100	0	0	100	0	
Total %	0	33.3	0	0	66.7	0	

Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 10

Groups Printed- Bikes Peds												
Start Time	Browns Wharf From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Tot.
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
07:00 AM	0	0	0	0	1	0	0	0	0	0	1	
07:15 AM	0	0	0	0	1	1	0	0	0	1	1	
07:30 AM	0	0	1	0	0	0	0	0	0	1	0	
07:45 AM	0	0	0	0	1	0	0	0	0	0	1	
Total	0	0	1	0	3	1	0	0	0	2	3	
08:00 AM	0	0	1	0	0	1	0	0	0	2	0	
08:15 AM	0	0	0	0	0	1	0	0	0	1	0	
08:30 AM	0	0	1	0	0	0	0	0	0	1	0	
08:45 AM	0	0	2	0	1	0	0	0	0	2	1	
Total	0	0	4	0	1	2	0	0	0	6	1	
Grand Total	0	0	5	0	4	3	0	0	0	8	4	1
Apprch %	0	0		0	100		0	0				
Total %	0	0		0	100		0	0		66.7	33.3	

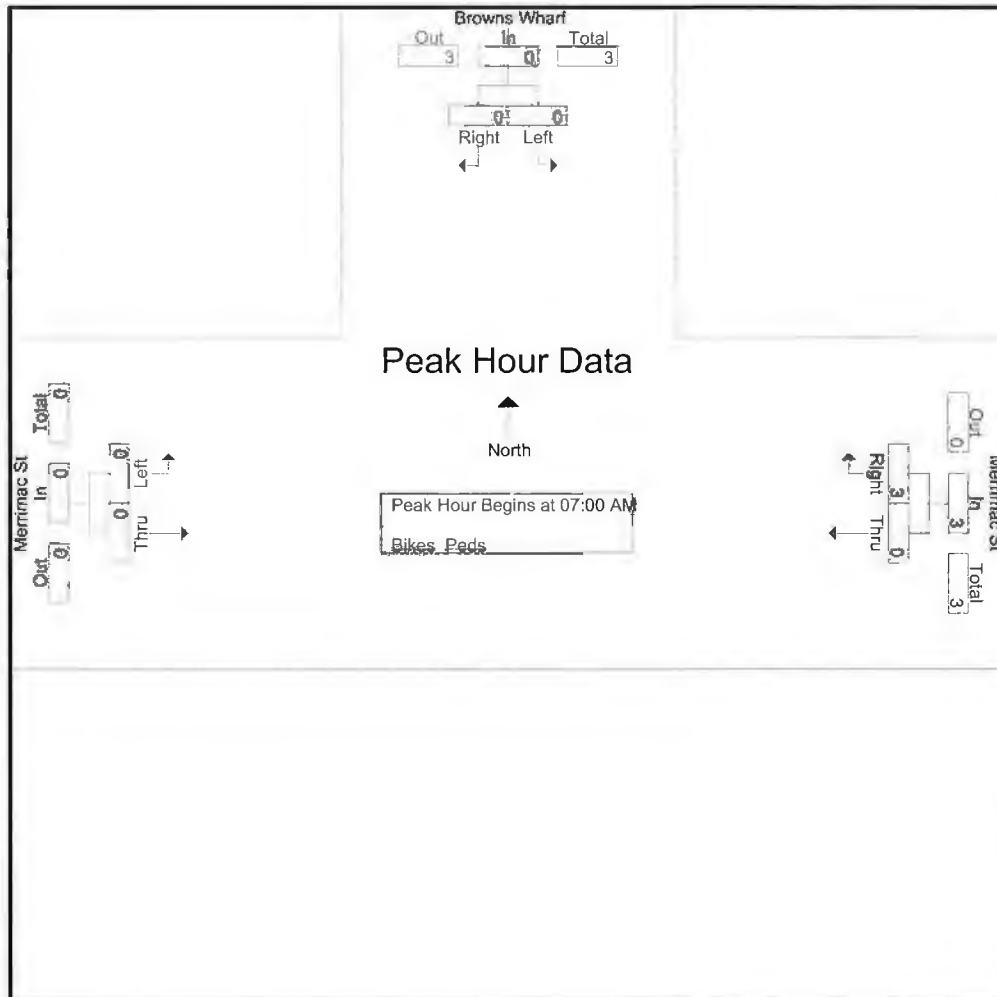
Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 11

	Browns Wharf From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
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	1	1	0	0	0	
07:15 AM	0	0	0	0	1	1	0	0	0	
07:30 AM	0	0	0	0	0	0	0	0	0	
07:45 AM	0	0	0	0	1	1	0	0	0	
Total Volume	0	0	0	0	3	3	0	0	0	
% App. Total	0	0		0	100		0	0		
PHF	.000	.000	.000	.000	.750	.750	.000	.000	.000	.75



Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Browns Wharf		Merrimac St		Merrimac St		Int. Tot
	From North	Right	From East	Right	From West	Thru	
04:00 PM	7	12	0	2	10	0	29
04:15 PM	6	17	0	1	9	0	23
04:30 PM	4	11	0	1	11	0	16
04:45 PM	5	15	0	1	15	0	31
Total	22	55	0	5	45	0	122
05:00 PM	10	13	0	4	20	0	47
05:15 PM	15	11	0	3	10	0	39
05:30 PM	12	8	0	3	18	0	33
05:45 PM	5	7	0	2	20	0	34
Total	42	39	0	12	68	0	161
Grand Total	64	94	0	17	113	0	278
Apprch %	40.5	59.5	0	100	100	0	
Total %	22.2	32.6	0	5.9	39.2	0	
Cars	64	94	0	17	113	0	284
% Cars	100	100	0	100	100	0	100
Trucks	0	0	0	0	0	0	
% Trucks	0	0	0	0	0	0	

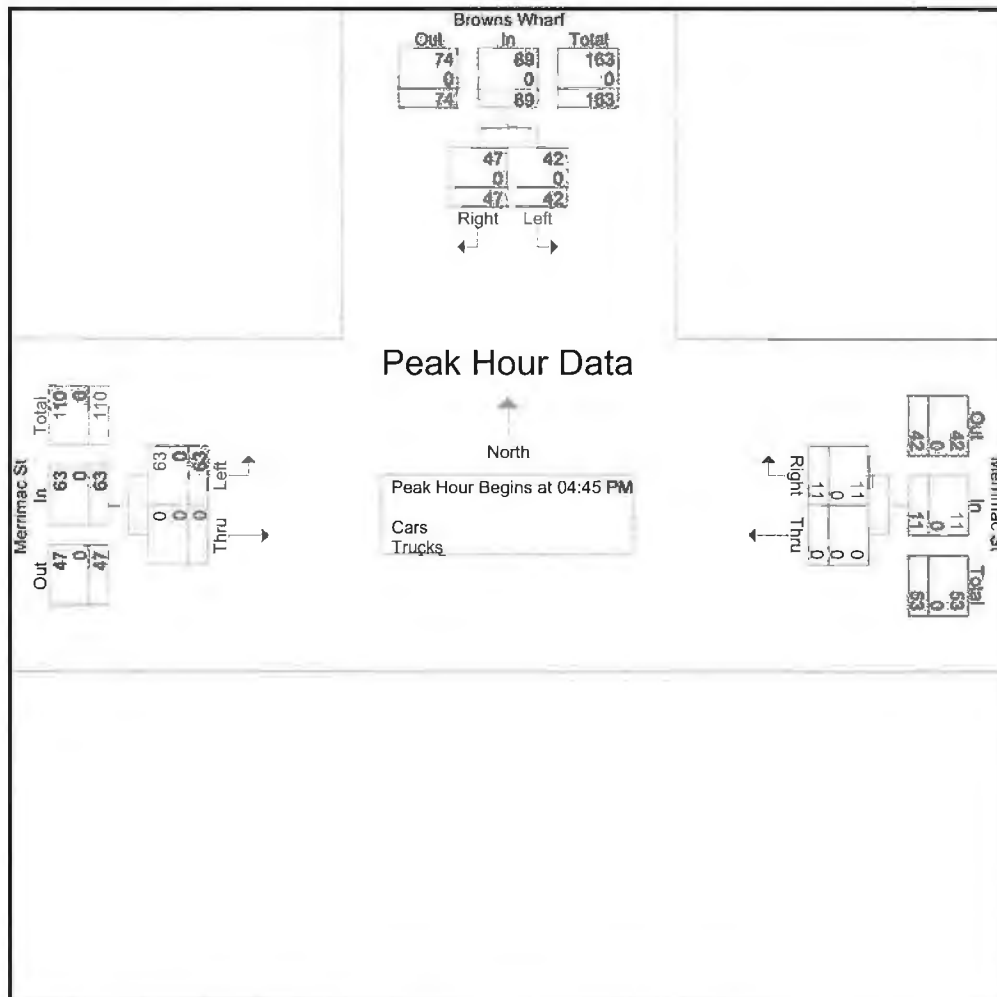
Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 2

	Browns Wharf From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
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	5	15	20	0	1	1	15	0	15	3
05:00 PM	10	13	23	0	4	4	20	0	20	4
05:15 PM	15	11	26	0	3	3	10	0	10	3
05:30 PM	12	8	20	0	3	3	18	0	18	4
Total Volume	42	47	89	0	11	11	63	0	63	16
% App. Total	47.2	52.8		0	100		100	0		
PHF	.700	.783	.856	.000	.688	.688	.788	.000	.788	.86
Cars	42	47	89	0	11	11	63	0	63	16
% Cars	100	100	100	0	100	100	100	0	100	100
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

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
ather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 4

Groups Printed- Cars

Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tol
	Left	Right	Thru	Right	Left	Thru	
04:00 PM	7	12	0	2	10	0	:
04:15 PM	6	17	0	1	9	0	:
04:30 PM	4	11	0	1	11	0	:
04:45 PM	5	15	0	1	15	0	:
Total	22	55	0	5	45	0	1:
05:00 PM	10	13	0	4	20	0	:
05:15 PM	15	11	0	3	10	0	:
05:30 PM	12	8	0	3	18	0	:
05:45 PM	5	7	0	2	20	0	:
Total	42	39	0	12	68	0	1:
Grand Total	64	94	0	17	113	0	2:
Apprch %	40.5	59.5	0	100	100	0	
Total %	22.2	32.6	0	5.9	39.2	0	

Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 7

Groups Printed- Trucks

Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tol
	Left	Right	Thru	Right	Left	Thru	
04:00 PM	0	0	0	0	0	0	
04:15 PM	0	0	0	0	0	0	
04:30 PM	0	0	0	0	0	0	
04:45 PM	0	0	0	0	0	0	
Total	0	0	0	0	0	0	
05:00 PM	0	0	0	0	0	0	
05:15 PM	0	0	0	0	0	0	
05:30 PM	0	0	0	0	0	0	
05:45 PM	0	0	0	0	0	0	
Total	0	0	0	0	0	0	
Grand Total	0	0	0	0	0	0	
Apprch %	0	0	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 10

Groups Printed- Bikes Peds												
Start Time	Browns Wharf From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Tot
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	1	1	0	0	0	0	0	0	0	0	2	
04:30 PM	0	0	0	0	0	0	1	0	0	0	1	
04:45 PM	0	0	0	0	0	0	1	0	0	0	1	
Total	1	1	0	0	0	0	2	0	0	0	4	
05:00 PM	0	0	1	0	0	4	1	0	0	5	1	
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	
05:30 PM	0	0	1	0	0	0	0	0	0	1	0	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	2	0	0	4	1	0	0	6	1	
Grand Total	1	1	2	0	0	4	3	0	0	6	5	1
Apprch %	50	50		0	0		100	0				
Total %	20	20		0	0		60	0		54.5	45.5	

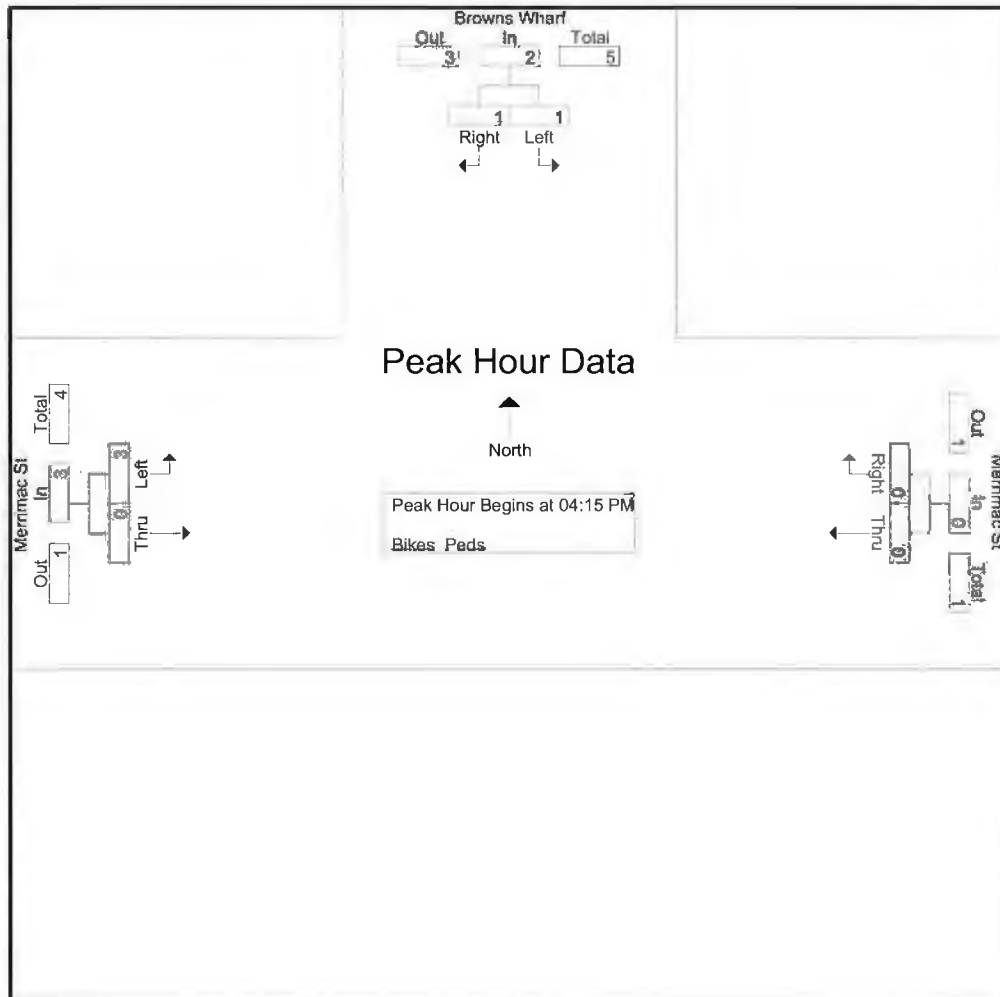
Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/16/2
Page No : 11

	Browns Wharf From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
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	1	1	2	0	0	0	0	0	0	
04:30 PM	0	0	0	0	0	0	1	0	1	
04:45 PM	0	0	0	0	0	0	1	0	1	
05:00 PM	0	0	0	0	0	0	1	0	1	
Total Volume	1	1	2	0	0	0	3	0	3	
% App. Total	50	50		0	0		100	0		
PHF	.250	.250	.250	.000	.000	.000	.750	.000	.750	.62



Accurate Counts
978-664-2565

N/S Street : State Street
E/W Street: Water St / Merrimac St
City/State : Newburyport, MA
Weather : Clear

File Name : 72810006
Site Code : 72810006
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks							
	Water St From East		State St From South		Merrimac St From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	15	65	0	0	48	44	172
07:15 AM	18	66	0	0	46	58	188
07:30 AM	11	74	0	0	74	65	224
07:45 AM	14	76	0	0	49	77	216
Total	58	281	0	0	217	244	800
08:00 AM	13	80	0	0	76	80	249
08:15 AM	16	103	0	0	90	88	297
08:30 AM	21	80	0	0	117	87	305
08:45 AM	19	78	1	0	87	74	259
Total	69	341	1	0	370	329	1110
Grand Total	127	622	1	0	587	573	1910
Apprch %	17	83	100	0	50.6	49.4	
Total %	6.6	32.6	0.1	0	30.7	30	
Cars	120	617	1	0	575	570	1883
% Cars	94.5	99.2	100	0	98	99.5	98.6
Trucks	7	5	0	0	12	3	27
% Trucks	5.5	0.8	0	0	2	0.5	1.4

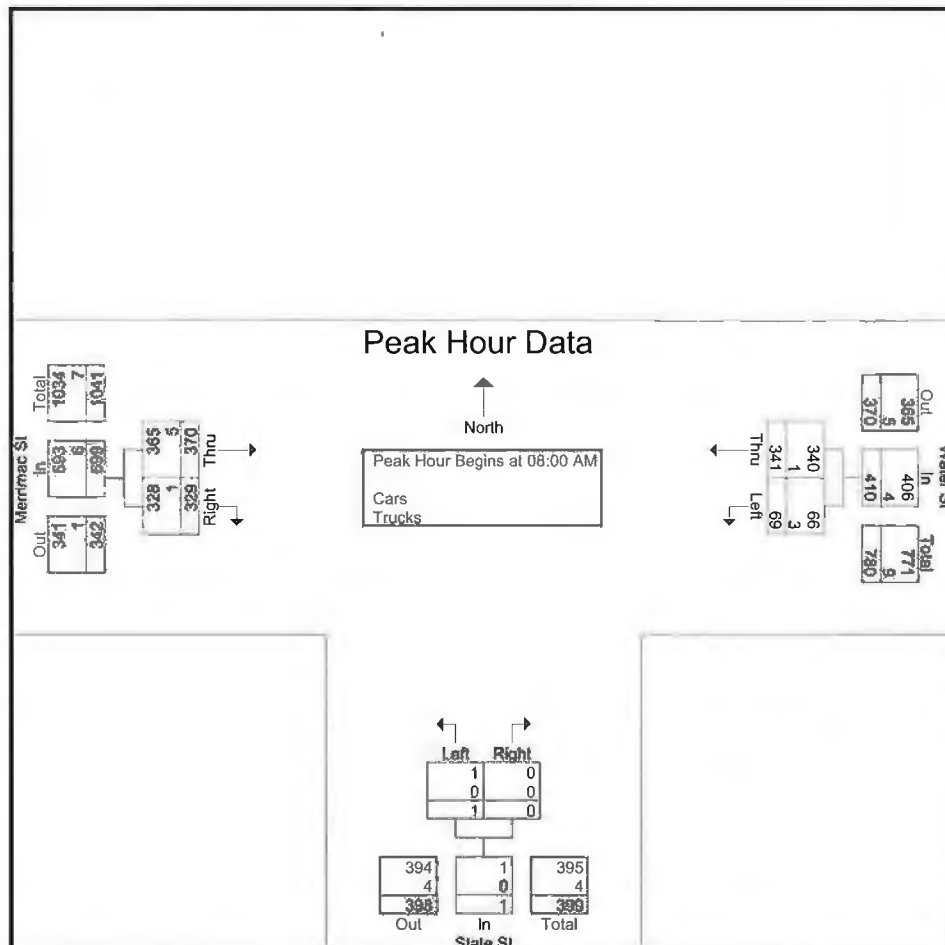
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 2

	Water St			State St			Merrimac St			
	From East			From South			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 08:00 AM										
08:00 AM	13	80	93	0	0	0	76	80	156	249
08:15 AM	16	103	119	0	0	0	90	88	178	297
08:30 AM	21	80	101	0	0	0	117	87	204	305
08:45 AM	19	78	97	1	0	1	87	74	161	259
Total Volume	69	341	410	1	0	1	370	329	699	1110
% App. Total	16.8	83.2		100	0		52.9	47.1		
PHF	.821	.828	.861	.250	.000	.250	.791	.935	.857	.910
Cars	66	340	406	1	0	1	365	328	693	1100
% Cars	95.7	99.7	99.0	100	0	100	98.6	99.7	99.1	99.1
Trucks	3	1	4	0	0	0	5	1	6	10
% Trucks	4.3	0.3	1.0	0	0	0	1.4	0.3	0.9	0.9



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars								
Start Time	Water St From East		State St From South		Merrimac St From West		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
07:00 AM	14	64	0	0	48	44	170	
07:15 AM	17	66	0	0	44	58	185	
07:30 AM	11	73	0	0	70	63	217	
07:45 AM	12	74	0	0	48	77	211	
Total	54	277	0	0	210	242	783	
08:00 AM	13	80	0	0	75	80	248	
08:15 AM	16	103	0	0	88	88	295	
08:30 AM	21	80	0	0	116	87	304	
08:45 AM	16	77	1	0	86	73	253	
Total	66	340	1	0	365	328	1100	
Grand Total	120	617	1	0	575	570	1883	
Apprch %	16.3	83.7	100	0	50.2	49.8		
Total %	6.4	32.8	0.1	0	30.5	30.3		

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Water St From East Left	Thru	State St From South Left	Right	Merrimac St From West Thru	Right	Int. Total
07:00 AM	1	1	0	0	0	0	2
07:15 AM	1	0	0	0	2	0	3
07:30 AM	0	1	0	0	4	2	7
07:45 AM	2	2	0	0	1	0	5
Total	4	4	0	0	7	2	17
08:00 AM	0	0	0	0	1	0	1
08:15 AM	0	0	0	0	2	0	2
08:30 AM	0	0	0	0	1	0	1
08:45 AM	3	1	0	0	1	1	6
Total	3	1	0	0	5	1	10
Grand Total	7	5	0	0	12	3	27
Apprch %	58.3	41.7	0	0	80	20	
Total %	25.9	18.5	0	0	44.4	11.1	

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Water St From East			State St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	1	0	0	2	1	2	0	3	3	6
07:15 AM	0	1	0	0	0	0	2	0	0	0	3	3
07:30 AM	0	1	1	0	0	0	0	0	0	1	1	2
07:45 AM	0	0	0	1	0	0	2	0	0	0	3	3
Total	0	2	2	1	0	2	5	2	0	4	10	14
08:00 AM	1	0	2	0	0	1	0	0	0	3	1	4
08:15 AM	0	0	0	0	0	1	0	0	0	1	0	1
08:30 AM	0	0	0	0	0	1	0	1	0	1	1	2
08:45 AM	0	0	0	0	0	0	2	2	0	0	4	4
Total	1	0	2	0	0	3	2	3	0	5	6	11
Grand Total	1	2	4	1	0	5	7	5	0	9	16	25
Apprch %	33.3	66.7		100	0		58.3	41.7				
Total %	6.2	12.5		6.2	0		43.8	31.2		36	64	

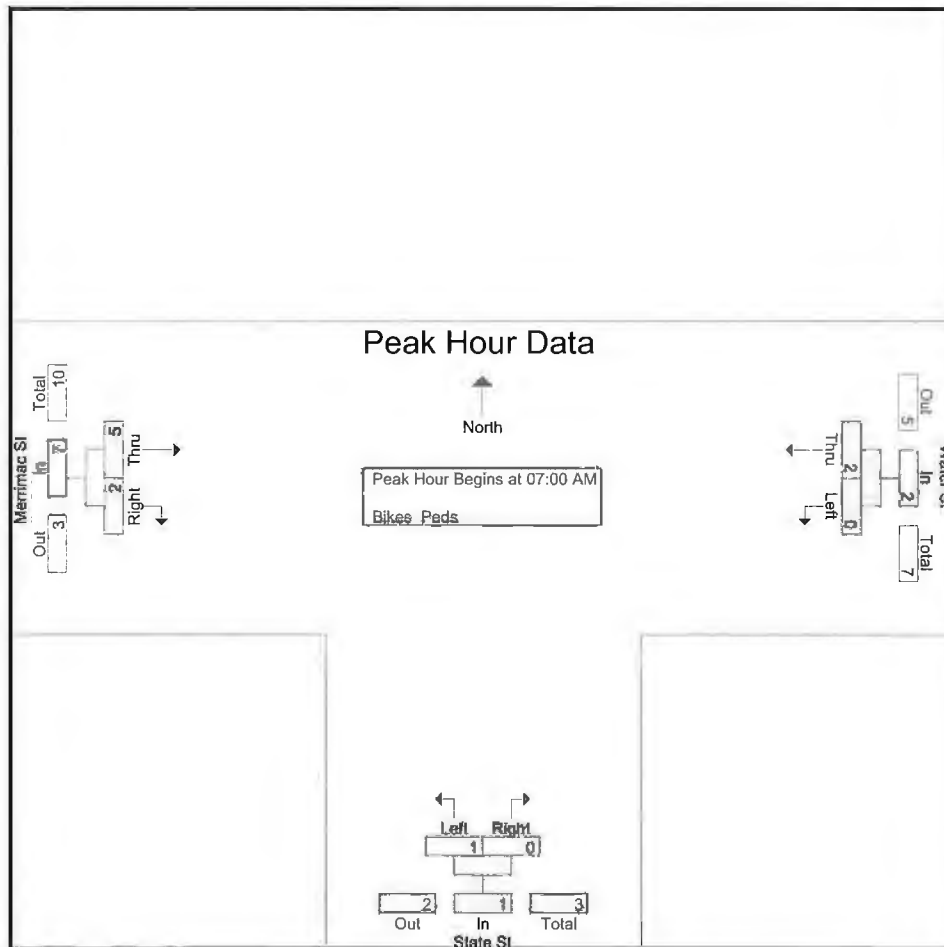
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 11

	Water St From East			State St From South			Merrimac St 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	1	2	3	3
07:15 AM	0	1	1	0	0	0	2	0	2	3
07:30 AM	0	1	1	0	0	0	0	0	0	1
07:45 AM	0	0	0	1	0	1	2	0	2	3
Total Volume	0	2	2	1	0	1	5	2	7	10
% App. Total	0	100		100	0		71.4	28.6		
PHF	.000	.500	.500	.250	.000	.250	.625	.250	.583	.833



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 1

Groups Printed- Cars - Trucks								
Start Time	Water St From East Left	Thru	State St From South Left	Right	Merrimac St From West Thru	Right	Int. Total	
04:00 PM	30	93	0	0	102	81	306	
04:15 PM	17	103	0	0	103	71	294	
04:30 PM	17	91	0	0	105	59	272	
04:45 PM	20	89	0	0	125	74	308	
Total	84	376	0	0	435	285	1180	
05:00 PM	25	128	0	0	103	87	343	
05:15 PM	21	137	0	0	129	48	335	
05:30 PM	20	108	0	0	102	66	296	
05:45 PM	20	105	0	0	110	76	311	
Total	86	478	0	0	444	277	1285	
Grand Total	170	854	0	0	879	562	2465	
Apprch %	16.6	83.4	0	0	61	39		
Total %	6.9	34.6	0	0	35.7	22.8		
Cars	166	852	0	0	879	562	2459	
% Cars	97.6	99.8	0	0	100	100	99.8	
Trucks	4	2	0	0	0	0	6	
% Trucks	2.4	0.2	0	0	0	0	0.2	

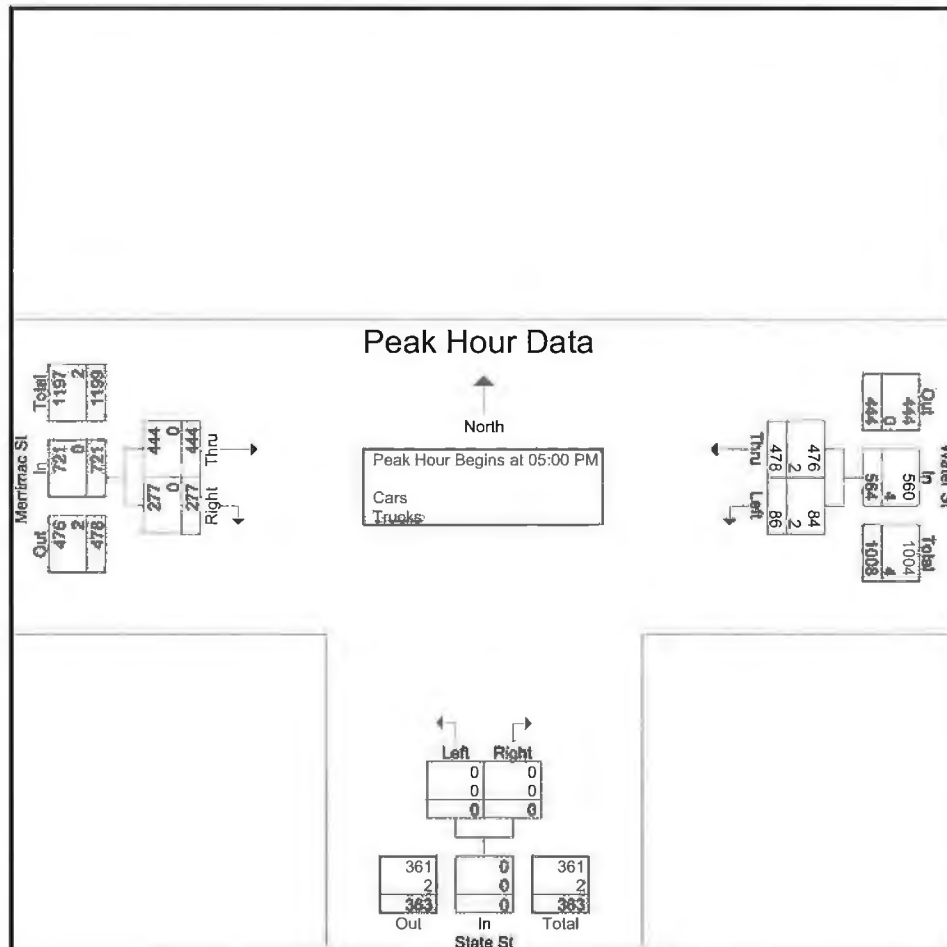
Accurate Counts

978-664-2565

N/S Street : State Street
E/W Street: Water St / Merrimac St
City/State : Newburyport, MA
Weather : Clear

File Name : 72810006
Site Code : 72810006
Start Date : 6/16/2016
Page No : 2

	Water St From East			State St From South			Merrimac St 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 05:00 PM										
05:00 PM	25	128	153	0	0	0	103	87	190	343
05:15 PM	21	137	158	0	0	0	129	48	177	335
05:30 PM	20	108	128	0	0	0	102	66	168	296
05:45 PM	20	105	125	0	0	0	110	76	186	311
Total Volume	86	478	564	0	0	0	444	277	721	1285
% App. Total	15.2	84.8		0	0		61.6	38.4		
PHF	.860	.872	.892	.000	.000	.000	.860	.796	.949	.937
Cars	84	476	560	0	0	0	444	277	721	1281
% Cars	97.7	99.6	99.3	0	0	0	100	100	100	99.7
Trucks	2	2	4	0	0	0	0	0	0	4
% Trucks	2.3	0.4	0.7	0	0	0	0	0	0	0.3



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 4

Groups: Printed- Cars								
Start Time	Water St From East		State St From South		Merrimac St From West		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
04:00 PM	29	93	0	0	102	81	305	
04:15 PM	17	103	0	0	103	71	294	
04:30 PM	16	91	0	0	105	59	271	
04:45 PM	20	89	0	0	125	74	308	
Total	82	376	0	0	435	285	1178	
05:00 PM	25	127	0	0	103	87	342	
05:15 PM	20	136	0	0	129	48	333	
05:30 PM	19	108	0	0	102	66	295	
05:45 PM	20	105	0	0	110	76	311	
Total	84	476	0	0	444	277	1281	
Grand Total	166	852	0	0	879	562	2459	
Apprch %	16.3	83.7	0	0	61	39		
Total %	6.8	34.6	0	0	35.7	22.9		

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Water St From East		State St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0
04:30 PM	1	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0
Total	2	0	0	0	0	0	2
05:00 PM	0	1	0	0	0	0	1
05:15 PM	1	1	0	0	0	0	2
05:30 PM	1	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0
Total	2	2	0	0	0	0	4
Grand Total	4	2	0	0	0	0	6
Apprch %	66.7	33.3	0	0	0	0	
Total %	66.7	33.3	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Water St From East			State St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
04:00 PM	1	0	0	0	0	0	1	0	0	0	2	2
04:15 PM	0	0	0	0	0	2	0	3	3	5	3	8
04:30 PM	0	2	0	1	0	3	0	0	0	3	3	6
04:45 PM	1	3	0	0	0	3	0	0	0	3	4	7
Total	2	5	0	1	0	8	1	3	3	11	12	23
05:00 PM	0	2	0	0	0	14	0	0	1	15	2	17
05:15 PM	0	2	0	0	0	2	0	2	0	2	4	6
05:30 PM	0	1	0	0	0	1	0	0	5	6	1	7
05:45 PM	0	1	0	0	0	0	1	0	2	2	2	4
Total	0	6	0	0	0	17	1	2	8	25	9	34
Grand Total	2	11	0	1	0	25	2	5	11	36	21	57
Apprch %	15.4	84.6		100	0		28.6	71.4				
Total %	9.5	52.4		4.8	0		9.5	23.8		63.2	36.8	

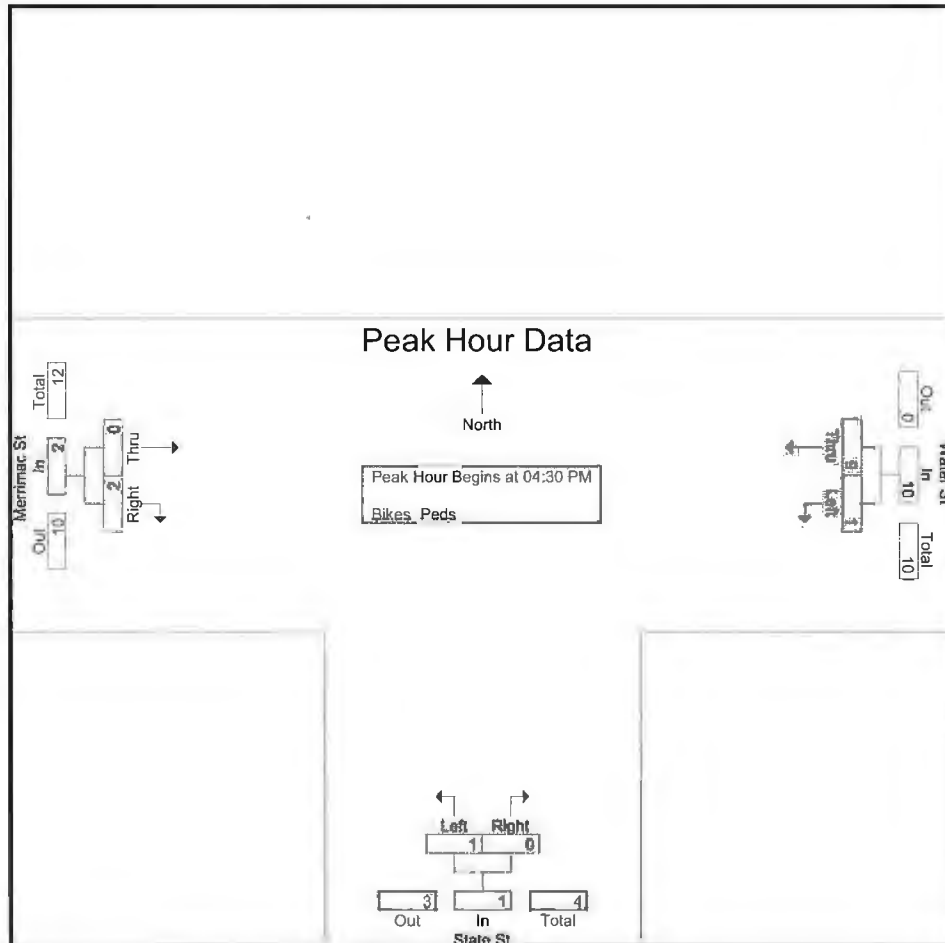
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810006
 Site Code : 72810006
 Start Date : 6/16/2016
 Page No : 11

	Water St From East			State St From South			Merrimac St 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	0	2	2	1	0	1	0	0	0	3
04:45 PM	1	3	4	0	0	0	0	0	0	4
05:00 PM	0	2	2	0	0	0	0	0	0	2
05:15 PM	0	2	2	0	0	0	0	2	2	4
Total Volume	1	9	10	1	0	1	0	2	2	13
% App. Total	10	90		100	0		0	100		
PHF	.250	.750	.625	.250	.000	.250	.000	.250	.250	.813



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 1

Groups Printed- Cars - Trucks							
Start Time	State St From North Left	Thru	Liberty St From East Left	Right	State St From South Thru	Right	Int. Total
07:00 AM	0	59	17	0	0	0	76
07:15 AM	0	76	22	0	0	0	98
07:30 AM	0	76	25	0	0	0	101
07:45 AM	0	91	12	0	0	0	103
Total	0	302	76	0	0	0	378
08:00 AM	0	93	22	0	0	0	115
08:15 AM	0	104	18	0	0	0	122
08:30 AM	0	108	27	0	0	0	135
08:45 AM	0	93	24	0	0	0	117
Total	0	398	91	0	0	0	489
Grand Total	0	700	167	0	0	0	867
Apprch %	0	100	100	0	0	0	
Total %	0	80.7	19.3	0	0	0	
Cars	0	690	167	0	0	0	857
% Cars	0	98.6	100	0	0	0	98.8
Trucks	0	10	0	0	0	0	10
% Trucks	0	1.4	0	0	0	0	1.2

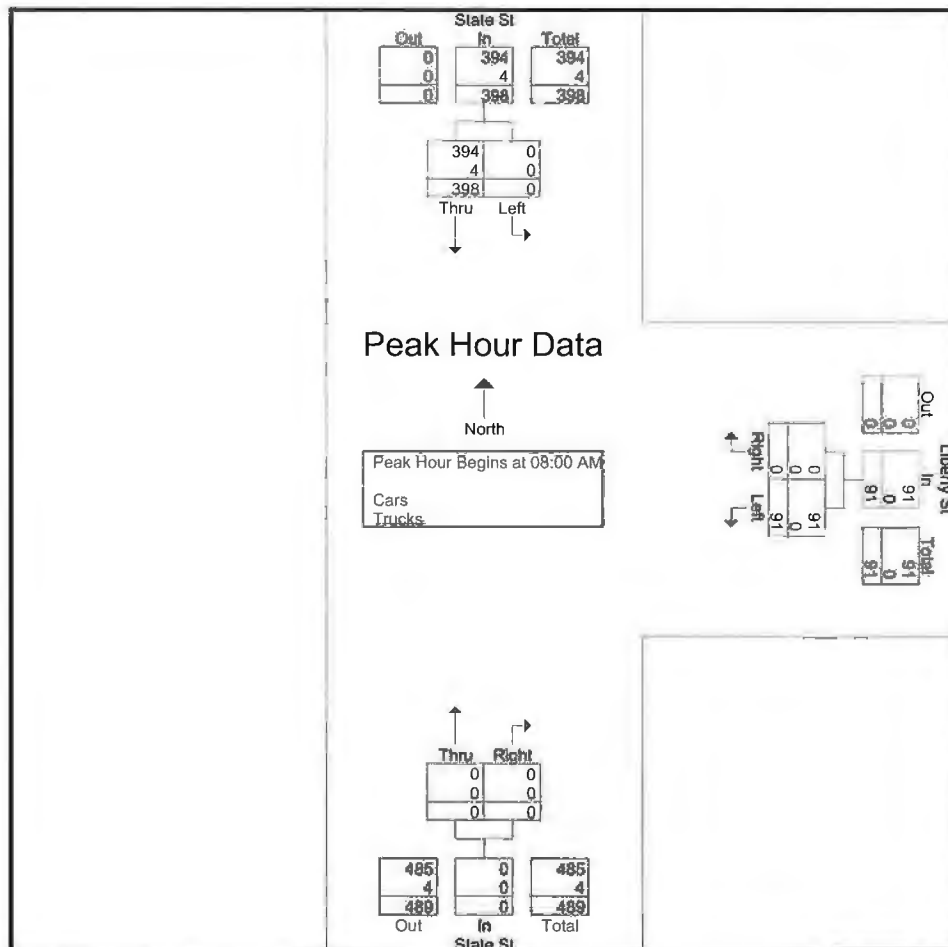
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No 2

	State St			Liberty St			State St			
	From North			From East			From South			
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 08:00 AM										
08:00 AM	0	93	93	22	0	22	0	0	0	115
08:15 AM	0	104	104	18	0	18	0	0	0	122
08:30 AM	0	108	108	27	0	27	0	0	0	135
08:45 AM	0	93	93	24	0	24	0	0	0	117
Total Volume	0	398	398	91	0	91	0	0	0	489
% App. Total	0	100		100	0		0	0		
PHF	.000	.921	.921	.843	.000	.843	.000	.000	.000	.906
Cars	0	394	394	91	0	91	0	0	0	485
% Cars	0	99.0	99.0	100	0	100	0	0	0	99.2
Trucks	0	4	4	0	0	0	0	0	0	4
% Trucks	0	1.0	1.0	0	0	0	0	0	0	0.8



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars								
Start Time	State St From North		Liberty St From East		State St From South		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
07:00 AM	0	58	17	0	0	0	75	
07:15 AM	0	75	22	0	0	0	97	
07:30 AM	0	74	25	0	0	0	99	
07:45 AM	0	89	12	0	0	0	101	
Total	0	296	76	0	0	0	372	
08:00 AM	0	93	22	0	0	0	115	
08:15 AM	0	104	18	0	0	0	122	
08:30 AM	0	108	27	0	0	0	135	
08:45 AM	0	89	24	0	0	0	113	
Total	0	394	91	0	0	0	485	
Grand Total	0	690	167	0	0	0	857	
Apprch %	0	100	100	0	0	0		
Total %	0	80.5	19.5	0	0	0		

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks								
Start Time	State St From North		Liberty St From East		State St From South		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
07:00 AM	0	1	0	0	0	0	1	
07:15 AM	0	1	0	0	0	0	1	
07:30 AM	0	2	0	0	0	0	2	
07:45 AM	0	2	0	0	0	0	2	
Total	0	6	0	0	0	0	6	
08:00 AM	0	0	0	0	0	0	0	
08:15 AM	0	0	0	0	0	0	0	
08:30 AM	0	0	0	0	0	0	0	
08:45 AM	0	4	0	0	0	0	4	
Total	0	4	0	0	0	0	4	
Grand Total	0	10	0	0	0	0	10	
Apprch %	0	100	0	0	0	0		
Total %	0	100	0	0	0	0		

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	State St From North			Liberty St From East			State St From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	1	0	0	8	0	0	0	9	0	9
07:15 AM	0	0	1	0	0	3	0	0	0	4	0	4
07:30 AM	0	0	3	0	0	10	0	0	0	13	0	13
07:45 AM	0	0	4	0	0	10	0	0	0	14	0	14
Total	0	0	9	0	0	31	0	0	0	40	0	40
08:00 AM	0	1	2	0	0	11	0	0	0	13	1	14
08:15 AM	0	0	0	0	0	10	0	0	0	10	0	10
08:30 AM	0	0	2	0	0	13	0	0	0	15	0	15
08:45 AM	1	0	1	1	0	19	1	0	0	20	3	23
Total	1	1	5	1	0	53	1	0	0	58	4	62
Grand Total	1	1	14	1	0	84	1	0	0	98	4	102
Apprch %	50	50		100	0		100	0				
Total %	25	25		25	0		25	0		96.1	3.9	

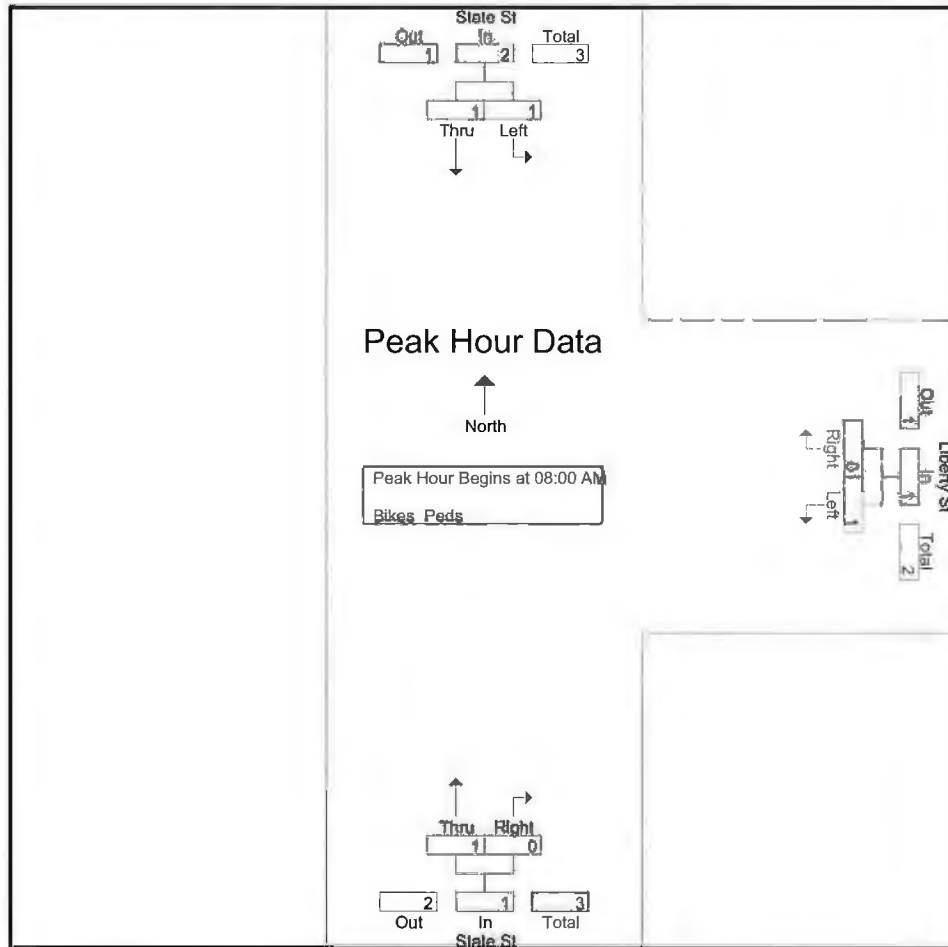
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 11

	State St From North			Liberty St From East			State St From South			
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 08:00 AM										
08:00 AM	0	1	1	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	1	0	1	1	0	1	1	0	1	3
Total Volume	1	1	2	1	0	1	1	0	1	4
% App. Total	50	50		100	0		100	0		
PHF	.250	.250	.500	.250	.000	.250	.250	.000	.250	.333



Accurate Counts
978-664-2565

N/S Street : State Street
E/W Street: Liberty Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810007
Site Code : 72810007
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	State St From North		Liberty St From East		State St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	111	17	0	0	0	128
04:15 PM	0	88	9	0	0	0	97
04:30 PM	0	76	14	0	0	0	90
04:45 PM	0	94	17	0	0	0	111
Total	0	369	57	0	0	0	426
05:00 PM	0	112	15	0	0	0	127
05:15 PM	0	69	10	0	0	0	79
05:30 PM	0	86	11	0	0	0	97
05:45 PM	0	96	5	0	0	0	101
Total	0	363	41	0	0	0	404
Grand Total	0	732	98	0	0	0	830
Apprch %	0	100	100	0	0	0	
Total %	0	88.2	11.8	0	0	0	
Cars	0	728	97	0	0	0	825
% Cars	0	99.5	99	0	0	0	99.4
Trucks	0	4	1	0	0	0	5
% Trucks	0	0.5	1	0	0	0	0.6

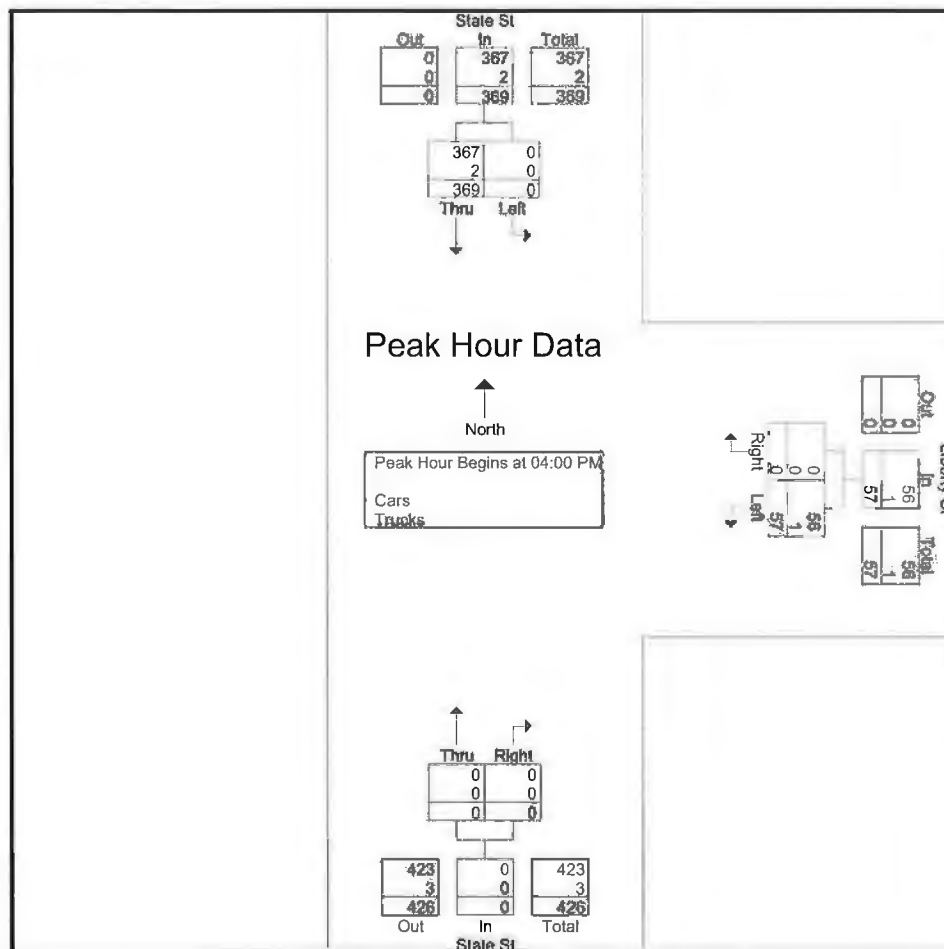
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 2

	State St From North			Liberty St From East			State St From South			
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	111	111	17	0	17	0	0	0	128
04:15 PM	0	88	88	9	0	9	0	0	0	97
04:30 PM	0	76	76	14	0	14	0	0	0	90
04:45 PM	0	94	94	17	0	17	0	0	0	111
Total Volume	0	369	369	57	0	57	0	0	0	426
% App. Total	0	100		100	0		0	0		
PHF	.000	.831	.831	.838	.000	.838	.000	.000	.000	.832
Cars	0	367	367	56	0	56	0	0	0	423
% Cars	0	99.5	99.5	98.2	0	98.2	0	0	0	99.3
Trucks	0	2	2	1	0	1	0	0	0	3
% Trucks	0	0.5	0.5	1.8	0	1.8	0	0	0	0.7



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars								
Start Time	State St From North		Liberty St From East		State St From South		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
04:00 PM	0	110	17	0	0	0	127	
04:15 PM	0	88	8	0	0	0	96	
04:30 PM	0	75	14	0	0	0	89	
04:45 PM	0	94	17	0	0	0	111	
Total	0	367	56	0	0	0	423	
05:00 PM	0	112	15	0	0	0	127	
05:15 PM	0	68	10	0	0	0	78	
05:30 PM	0	85	11	0	0	0	96	
05:45 PM	0	96	5	0	0	0	101	
Total	0	361	41	0	0	0	402	
Grand Total	0	728	97	0	0	0	825	
Apprch %	0	100	100	0	0	0		
Total %	0	88.2	11.8	0	0	0		

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	State St From North		Liberty St From East		State St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	1	0	0	0	0	1
04:15 PM	0	0	1	0	0	0	1
04:30 PM	0	1	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0
Total	0	2	1	0	0	0	3
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	1	0	0	0	0	1
05:30 PM	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	2
Grand Total	0	4	1	0	0	0	5
Apprch %	0	100	100	0	0	0	
Total %	0	80	20	0	0	0	

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 10

Start Time	State St From North			Liberty St From East			State St From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	50	0	0	0	50	0	50
04:15 PM	1	1	6	0	0	34	0	0	0	40	2	42
04:30 PM	0	2	4	0	0	17	0	0	0	21	2	23
04:45 PM	0	0	3	0	0	41	0	0	0	44	0	44
Total	1	3	13	0	0	142	0	0	0	155	4	159
05:00 PM	0	2	4	0	0	36	0	0	0	40	2	42
05:15 PM	2	0	4	0	0	36	0	0	0	40	2	42
05:30 PM	0	0	3	0	0	36	0	0	0	39	0	39
05:45 PM	2	0	1	0	0	21	0	0	0	22	2	24
Total	4	2	12	0	0	129	0	0	0	141	6	147
Grand Total	5	5	25	0	0	271	0	0	0	296	10	306
Apprch %	50	50		0	0		0	0				
Total %	50	50		0	0		0	0		96.7	3.3	

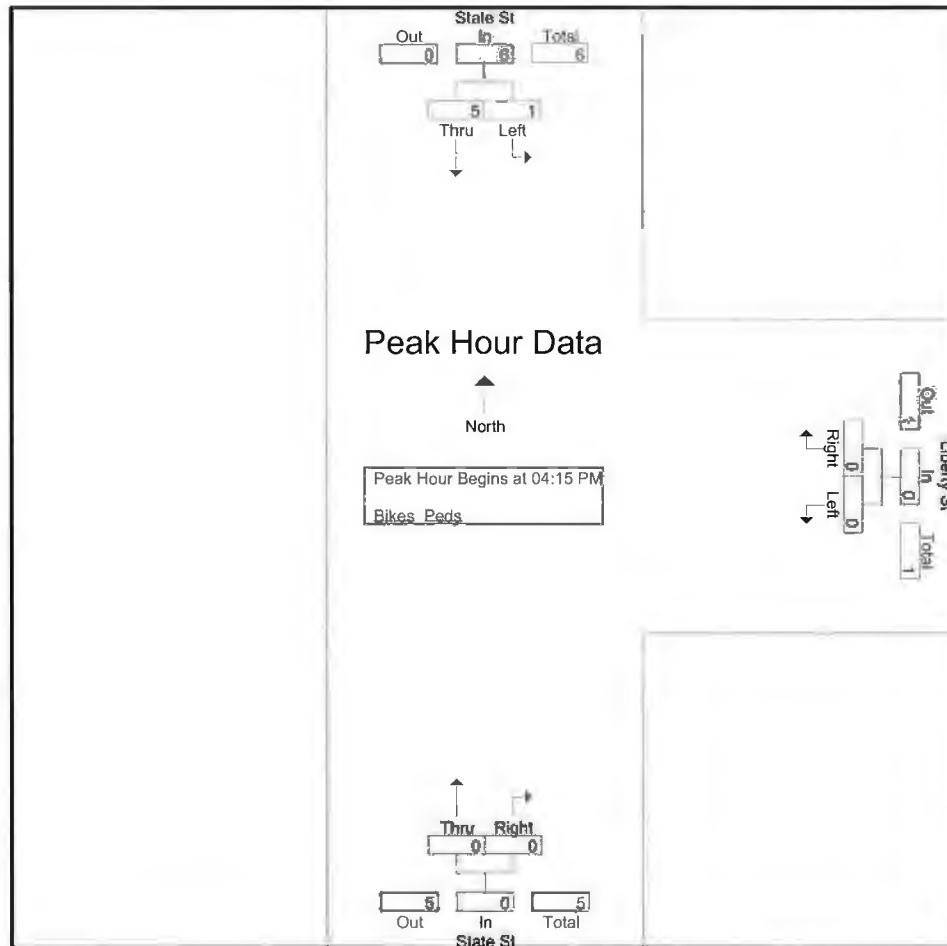
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Liberty Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810007
 Site Code : 72810007
 Start Date : 6/16/2016
 Page No : 11

	State St From North			Liberty St From East			State St From South			
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 04:15 PM										
04:15 PM	1	1	2	0	0	0	0	0	0	2
04:30 PM	0	2	2	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	2	2	0	0	0	0	0	0	2
Total Volume	1	5	6	0	0	0	0	0	0	6
% App. Total	16.7	83.3		0	0		0	0		
PHF	.250	.625	.750	.000	.000	.000	.000	.000	.000	.750



Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	17	22	0	0	0	0	39
07:15 AM	19	28	0	0	0	0	47
07:30 AM	21	22	0	0	0	0	43
07:45 AM	36	28	0	0	0	0	64
Total	93	100	0	0	0	0	193
08:00 AM	25	26	0	0	0	0	51
08:15 AM	22	39	0	0	0	0	61
08:30 AM	14	28	0	0	0	0	42
08:45 AM	14	29	0	0	0	0	43
Total	75	122	0	0	0	0	197
Grand Total	168	222	0	0	0	0	390
Apprch %	43.1	56.9	0	0	0	0	
Total %	43.1	56.9	0	0	0	0	
Cars	160	212	0	0	0	0	372
% Cars	95.2	95.5	0	0	0	0	95.4
Trucks	8	10	0	0	0	0	18
% Trucks	4.8	4.5	0	0	0	0	4.6

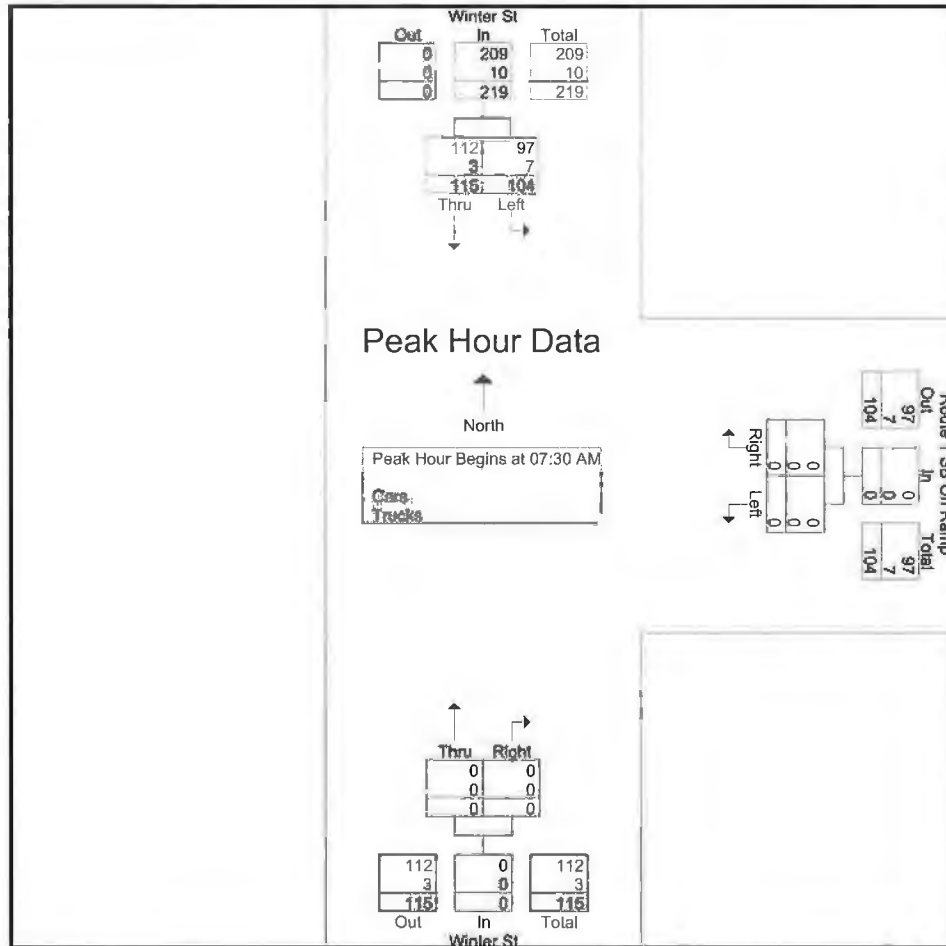
Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 2

	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			
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	21	22	43	0	0	0	0	0	0	43
07:45 AM	36	28	64	0	0	0	0	0	0	64
08:00 AM	25	26	51	0	0	0	0	0	0	51
08:15 AM	22	39	61	0	0	0	0	0	0	61
Total Volume	104	115	219	0	0	0	0	0	0	219
% App. Total	47.5	52.5		0	0		0	0		
PHF	.722	.737	.855	.000	.000	.000	.000	.000	.000	.855
Cars	97	112	209	0	0	0	0	0	0	209
% Cars	93.3	97.4	95.4	0	0	0	0	0	0	95.4
Trucks	7	3	10	0	0	0	0	0	0	10
% Trucks	6.7	2.6	4.6	0	0	0	0	0	0	4.6



Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 4

Groups Printed - Cars								
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total	
	Left	Thru	Left	Right	Thru	Right		
07:00 AM	16	21	0	0	0	0	37	
07:15 AM	19	25	0	0	0	0	44	
07:30 AM	20	21	0	0	0	0	41	
07:45 AM	33	27	0	0	0	0	60	
Total	88	94	0	0	0	0	182	
08:00 AM	24	25	0	0	0	0	49	
08:15 AM	20	39	0	0	0	0	59	
08:30 AM	14	27	0	0	0	0	41	
08:45 AM	14	27	0	0	0	0	41	
Total	72	118	0	0	0	0	190	
Grand Total	160	212	0	0	0	0	372	
Apprch %	43	57	0	0	0	0		
Total %	43	57	0	0	0	0		

Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	1	1	0	0	0	0	2
07:15 AM	0	3	0	0	0	0	3
07:30 AM	1	1	0	0	0	0	2
07:45 AM	3	1	0	0	0	0	4
Total	5	6	0	0	0	0	11
08:00 AM	1	1	0	0	0	0	2
08:15 AM	2	0	0	0	0	0	2
08:30 AM	0	1	0	0	0	0	1
08:45 AM	0	2	0	0	0	0	2
Total	3	4	0	0	0	0	7
Grand Total	8	10	0	0	0	0	18
Apprch %	44.4	55.6	0	0	0	0	
Total %	44.4	55.6	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	1	0	0	0	0	0	0	0	0	1	1
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	1	0	0	0	0	0	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	1	0	0	0	0	0	0	0	0	1	1
Apprch %	0	100		0	0		0	0				
Total %	0	100		0	0		0	0		0	100	

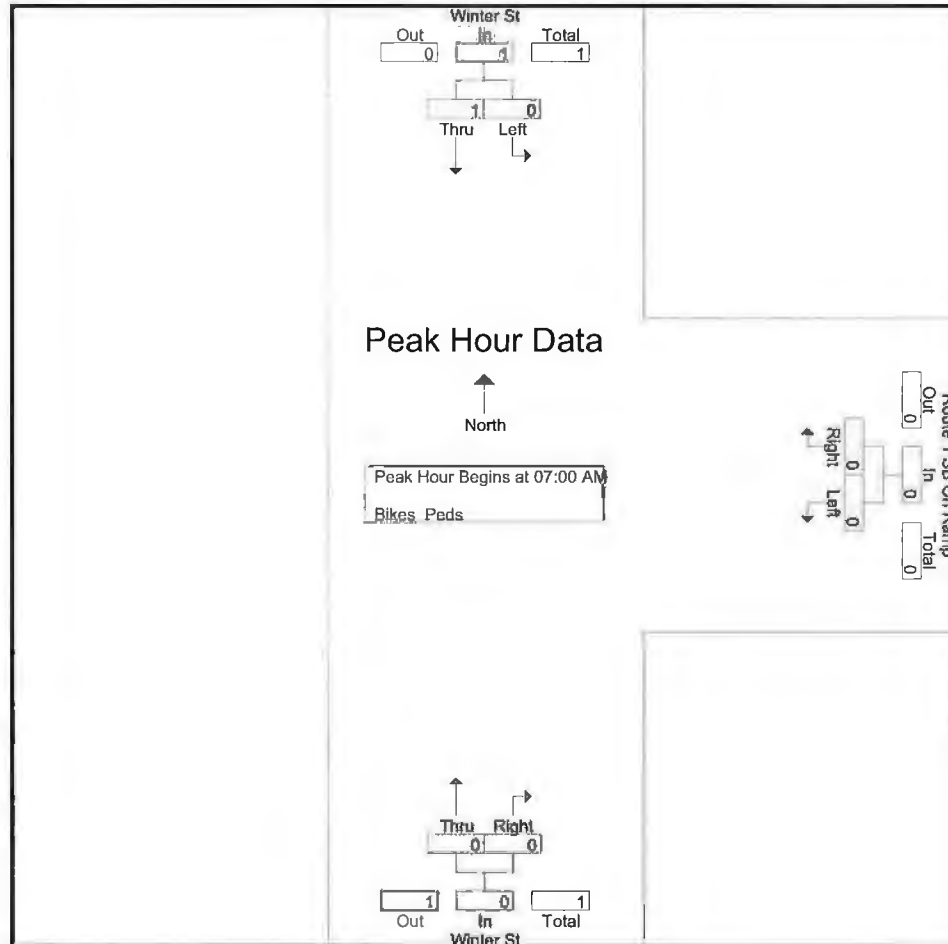
Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 11

	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			
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	1	1	0	0	0	0	0	0	1
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	1	1	0	0	0	0	0	0	1
% App. Total	0	100		0	0		0	0		
PHF	.000	.250	.250	.000	.000	.000	.000	.000	.000	.250



Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	20	28	0	0	0	0	48
04:15 PM	25	34	0	0	0	0	59
04:30 PM	24	22	0	0	0	0	46
04:45 PM	26	21	0	0	0	0	47
Total	95	105	0	0	0	0	200
05:00 PM	48	36	0	0	0	0	84
05:15 PM	44	25	0	0	0	0	69
05:30 PM	34	26	0	0	0	0	60
05:45 PM	33	25	0	0	0	0	58
Total	159	112	0	0	0	0	271
Grand Total	254	217	0	0	0	0	471
Apprch %	53.9	46.1	0	0	0	0	
Total %	53.9	46.1	0	0	0	0	
Cars	253	216	0	0	0	0	469
% Cars	99.6	99.5	0	0	0	0	99.6
Trucks	1	1	0	0	0	0	2
% Trucks	0.4	0.5	0	0	0	0	0.4

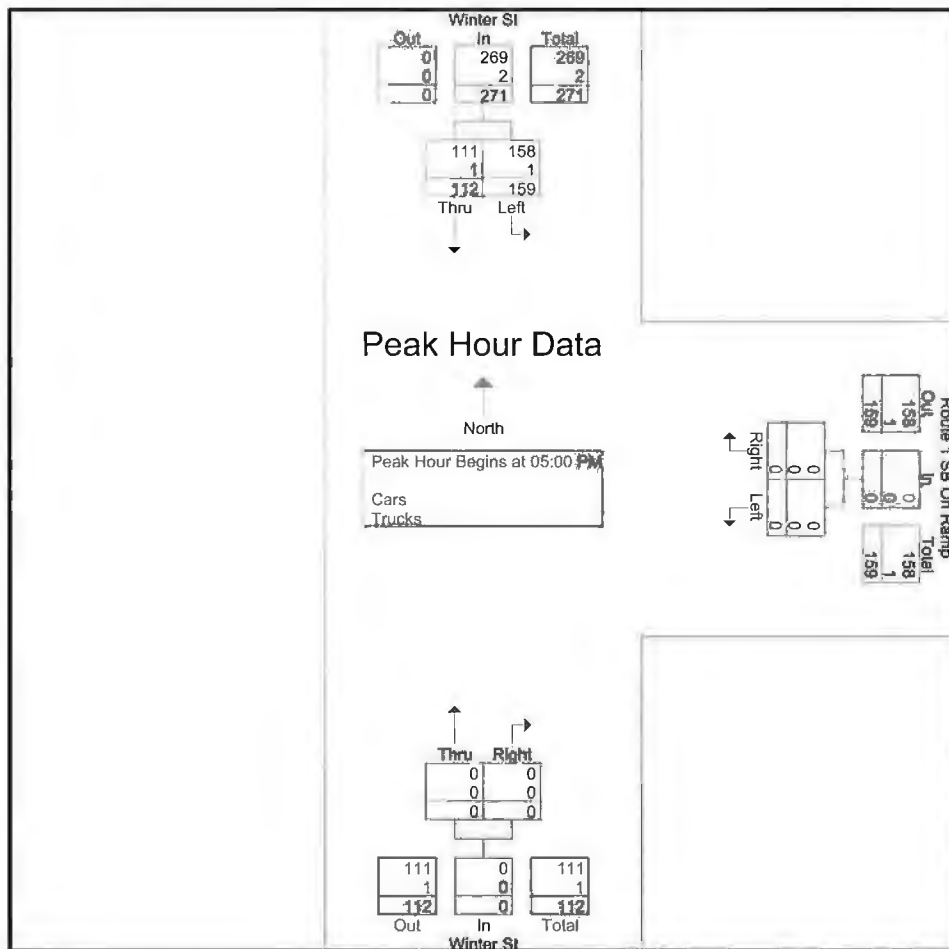
Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 2

	Winter St			Route 1 SB On Ramp			Winter St			
	From North			From East			From South			
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 05:00 PM										
05:00 PM	48	36	84	0	0	0	0	0	0	84
05:15 PM	44	25	69	0	0	0	0	0	0	69
05:30 PM	34	26	60	0	0	0	0	0	0	60
05:45 PM	33	25	58	0	0	0	0	0	0	58
Total Volume	159	112	271	0	0	0	0	0	0	271
% App. Total	58.7	41.3		0	0		0	0		
PHF	.828	.778	.807	.000	.000	.000	.000	.000	.000	.807
Cars	158	111	269	0	0	0	0	0	0	269
% Cars	99.4	99.1	99.3	0	0	0	0	0	0	99.3
Trucks	1	1	2	0	0	0	0	0	0	2
% Trucks	0.6	0.9	0.7	0	0	0	0	0	0	0.7



Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	20	28	0	0	0	0	48
04:15 PM	25	34	0	0	0	0	59
04:30 PM	24	22	0	0	0	0	46
04:45 PM	26	21	0	0	0	0	47
Total	95	105	0	0	0	0	200
05:00 PM	48	35	0	0	0	0	83
05:15 PM	43	25	0	0	0	0	68
05:30 PM	34	26	0	0	0	0	60
05:45 PM	33	25	0	0	0	0	58
Total	158	111	0	0	0	0	269
Grand Total	253	216	0	0	0	0	469
Apprch %	53.9	46.1	0	0	0	0	
Total %	53.9	46.1	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
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	1	0	0	0	0	1
05:15 PM	1	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	1	1	0	0	0	0	2
Grand Total	1	1	0	0	0	0	2
Apprch %	50	50	0	0	0	0	
Total %	50	50	0	0	0	0	

978-664-2565

N/S Street : Winter Street

E/W Street: Route 1 SB On Ramp

City/State : Newburyport, MA

Weather : Clear

File Name : 72810008

Site Code : 72810008

Page No : 10

Groups Printed- Bikes Peds												
	Winter St From North			Route 1 SB On Ramp From East			Winter St From South					
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	

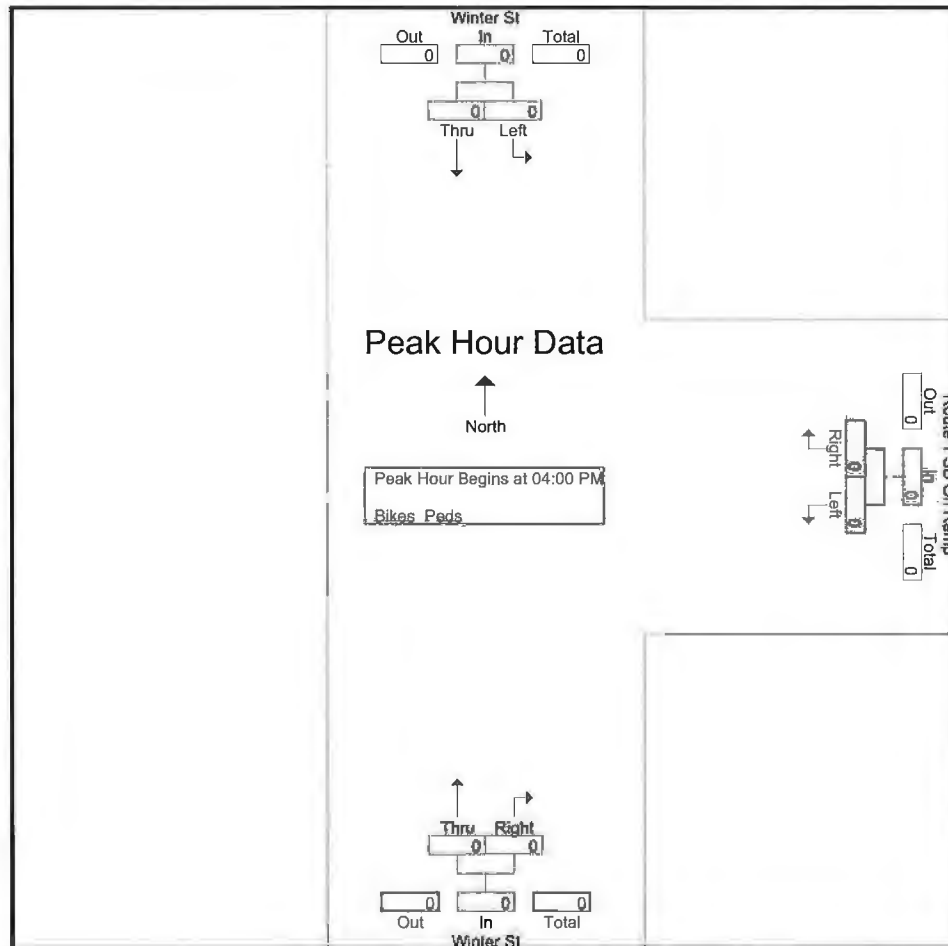
Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810008
 Site Code : 72810008
 Start Date : 6/16/2016
 Page No : 11

	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			
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



Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	0	1	0	16	0	11	0	0	28
07:15 AM	0	0	0	0	0	2	0	15	0	19	0	0	36
07:30 AM	0	0	0	0	0	1	0	18	0	20	0	0	39
07:45 AM	0	0	0	0	0	1	0	17	0	24	0	0	42
Total	0	0	0	0	0	5	0	66	0	74	0	0	145
08:00 AM	0	0	0	0	0	2	0	22	0	17	0	0	41
08:15 AM	0	0	0	0	0	1	0	25	0	20	0	0	46
08:30 AM	0	0	0	0	0	1	0	28	0	29	0	0	58
08:45 AM	0	0	0	0	0	0	0	26	0	32	0	0	58
Total	0	0	0	0	0	4	0	101	0	98	0	0	203
Grand Total	0	0	0	0	0	9	0	167	0	172	0	0	348
Apprch %	0	0	0	0	0	100	0	100	0	100	0	0	
Total %	0	0	0	0	0	2.6	0	48	0	49.4	0	0	
Cars	0	0	0	0	0	9	0	162	0	166	0	0	337
% Cars	0	0	0	0	0	100	0	97	0	96.5	0	0	96.8
Trucks	0	0	0	0	0	0	0	5	0	6	0	0	11
% Trucks	0	0	0	0	0	0	0	3	0	3.5	0	0	3.2

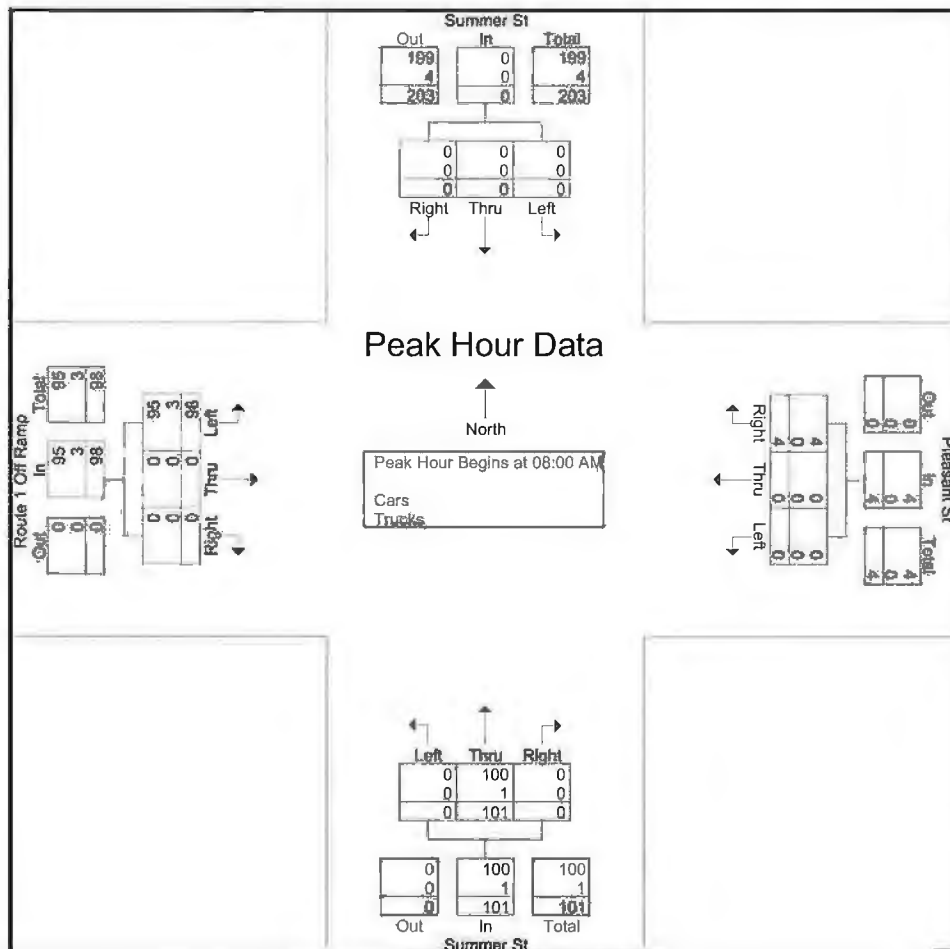
Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 2

	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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 08:00 AM																	
08:00 AM	0	0	0	0	0	0	2	2	0	22	0	22	17	0	0	17	41
08:15 AM	0	0	0	0	0	0	1	1	0	25	0	25	20	0	0	20	46
08:30 AM	0	0	0	0	0	0	1	1	0	28	0	28	29	0	0	29	58
08:45 AM	0	0	0	0	0	0	0	0	0	26	0	26	32	0	0	32	58
Total Volume	0	0	0	0	0	0	4	4	0	101	0	101	98	0	0	98	203
% App. Total	0	0	0		0	0	100		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.500	.500	.000	.902	.000	.902	.766	.000	.000	.766	.875
Cars	0	0	0	0	0	0	4	4	0	100	0	100	95	0	0	95	199
% Cars	0	0	0	0	0	0	100	100	0	99.0	0	99.0	96.9	0	0	96.9	98.0
Trucks	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	3	4
% Trucks	0	0	0	0	0	0	0	0	0	1.0	0	1.0	3.1	0	0	3.1	2.0



Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 4

Groups Printed - Cars

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	0	1	0	15	0	11	0	0	27
07:15 AM	0	0	0	0	0	2	0	14	0	18	0	0	34
07:30 AM	0	0	0	0	0	1	0	18	0	19	0	0	38
07:45 AM	0	0	0	0	0	1	0	15	0	23	0	0	39
Total	0	0	0	0	0	5	0	62	0	71	0	0	138
08:00 AM	0	0	0	0	0	2	0	21	0	15	0	0	38
08:15 AM	0	0	0	0	0	1	0	25	0	20	0	0	46
08:30 AM	0	0	0	0	0	1	0	28	0	28	0	0	57
08:45 AM	0	0	0	0	0	0	0	26	0	32	0	0	58
Total	0	0	0	0	0	4	0	100	0	95	0	0	199
Grand Total	0	0	0	0	0	9	0	162	0	166	0	0	337
Apprch %	0	0	0	0	0	100	0	100	0	100	0	0	
Total %	0	0	0	0	0	2.7	0	48.1	0	49.3	0	0	

Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
07:45 AM	0	0	0	0	0	0	0	2	0	1	0	0	3
Total	0	0	0	0	0	0	0	4	0	3	0	0	7
08:00 AM	0	0	0	0	0	0	0	1	0	2	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	3	0	0	4
Grand Total	0	0	0	0	0	0	0	5	0	6	0	0	11
Apprch %	0	0	0	0	0	0	0	100	0	100	0	0	
Total %	0	0	0	0	0	0	0	45.5	0	54.5	0	0	

Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds																				
Start Time	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp From West				Exclu. Total	Inclu. Total	Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds				
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
07:15 AM	0	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	1	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	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	1	0	1	0	0	0	0	0	0	0	1	1	2
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	2
08:15 AM	0	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	0
08:45 AM	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	1	0	1	0	0	0	0	0	0	0	1	1	2
Grand Total	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	2	2	4
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0					
Total %	0	0	0		0	0	0		0	100	0		0	0	0			50	50	

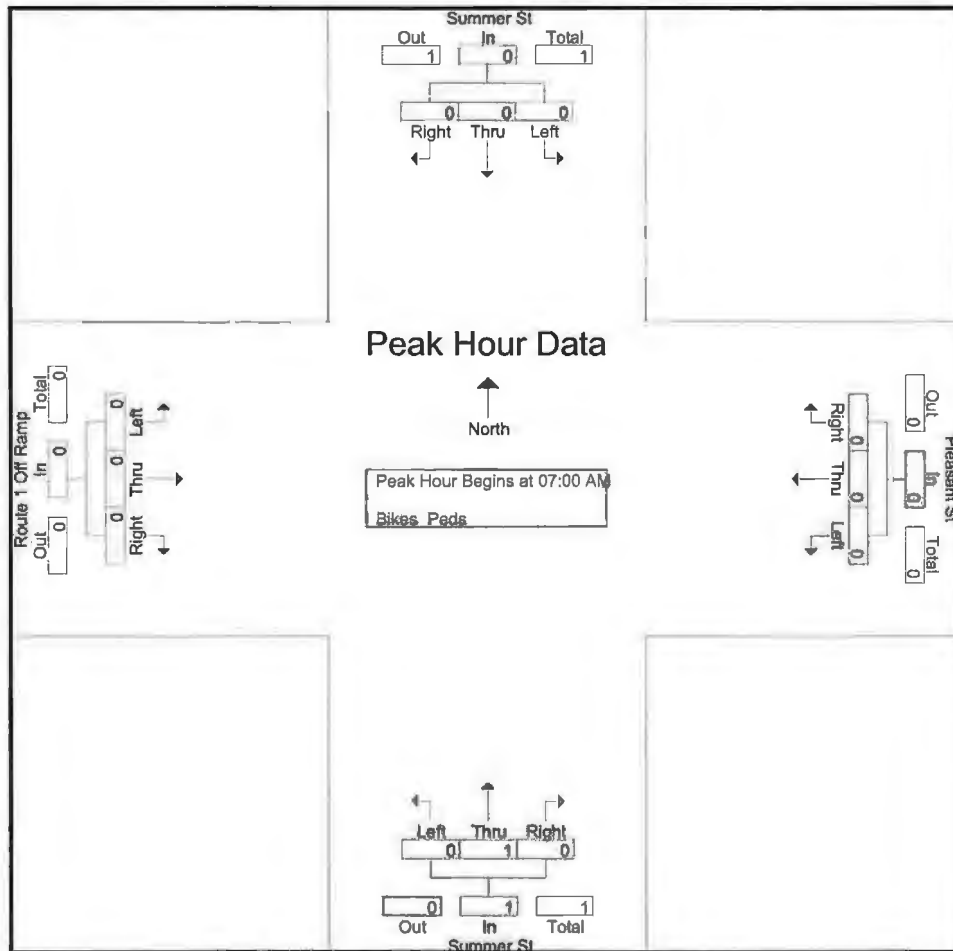
Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 11

	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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	1	0	1	0	0	0	0	1
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	1	0	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250



Accurate Counts
978-664-2565

N/S Street : Summer Street
E/W Street: Pleasant St / Route 1 Off
City/State : Newburyport, MA
Weather : Clear

File Name : 72810009
Site Code : 72810009
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars - Trucks

[illegible]

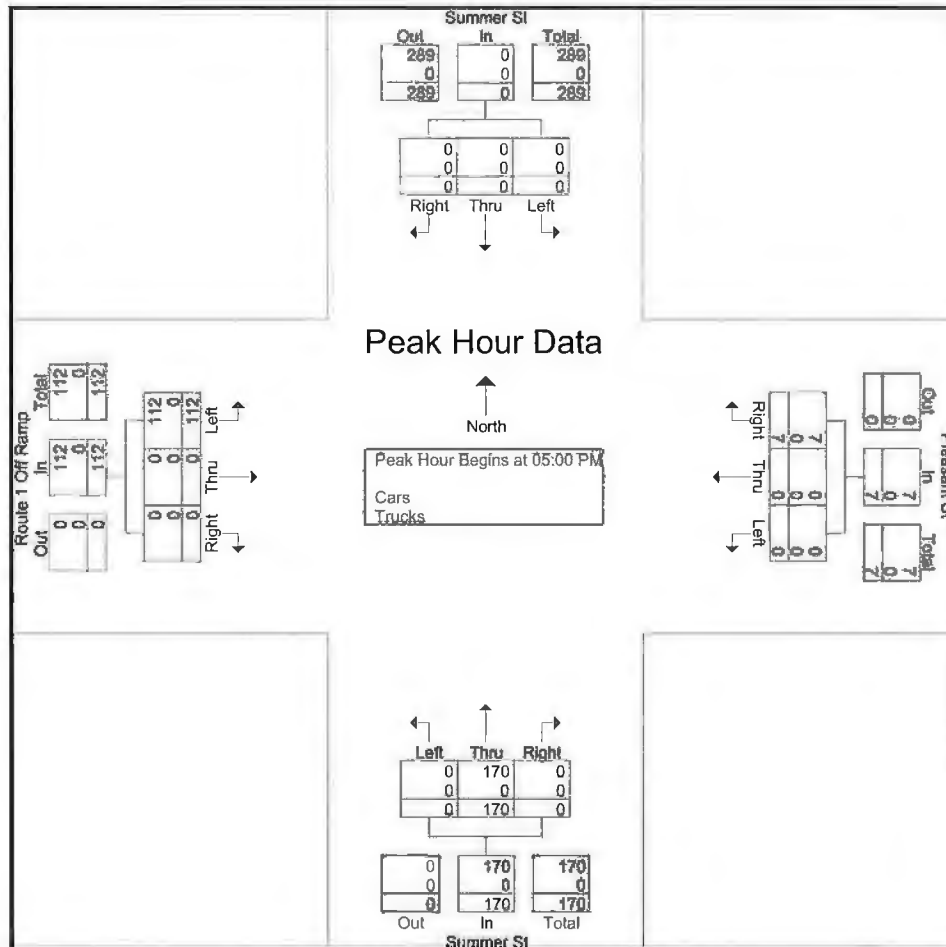
Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 2

	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	48	0	48	24	0	0	24	72
05:15 PM	0	0	0	0	0	0	3	3	0	42	0	42	27	0	0	27	72
05:30 PM	0	0	0	0	0	0	2	2	0	37	0	37	29	0	0	29	68
05:45 PM	0	0	0	0	0	0	2	2	0	43	0	43	32	0	0	32	77
Total Volume	0	0	0	0	0	0	7	7	0	170	0	170	112	0	0	112	289
% App. Total	0	0	0	0	0	0	100	100	0	100	0	100	100	0	0	100	100
PHF	.000	.000	.000	.000	.000	.000	.583	.583	.000	.885	.000	.885	.875	.000	.000	.875	.938
Cars	0	0	0	0	0	0	7	7	0	170	0	170	112	0	0	112	289
% Cars	0	0	0	0	0	0	100	100	0	100	0	100	100	0	0	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 4

Groups Printed- Cars

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	0	0	0	0	2	0	42	0	29	0	0	73
04:15 PM	0	0	0	0	0	1	0	42	0	19	0	0	62
04:30 PM	0	0	0	0	0	0	0	34	0	29	0	0	63
04:45 PM	0	0	0	0	0	2	0	40	0	31	0	0	73
Total	0	0	0	0	0	5	0	158	0	108	0	0	271
05:00 PM	0	0	0	0	0	0	0	48	0	24	0	0	72
05:15 PM	0	0	0	0	0	3	0	42	0	27	0	0	72
05:30 PM	0	0	0	0	0	2	0	37	0	29	0	0	68
05:45 PM	0	0	0	0	0	2	0	43	0	32	0	0	77
Total	0	0	0	0	0	7	0	170	0	112	0	0	289
Grand Total	0	0	0	0	0	12	0	328	0	220	0	0	560
Apprch %	0	0	0	0	0	100	0	100	0	100	0	0	
Total %	0	0	0	0	0	2.1	0	58.6	0	39.3	0	0	

978-664-2565

Weather : Clear

Page No : 7

Groups Printed- Trucks

[illegible]

Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 10

Groups Printed- Bikes Peds																			
	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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	0	0	0	0	1	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	0	0	0	0	1	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	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	2	1	3
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	1	0	0	2	0	0	0	0	0	0	0	0	2	1	3
Grand Total	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	3	1	4
Apprch %	0	0	0		100	0	0		0	0	0		0	0	0				
Total %	0	0	0		100	0	0		0	0	0		0	0	0		75	25	

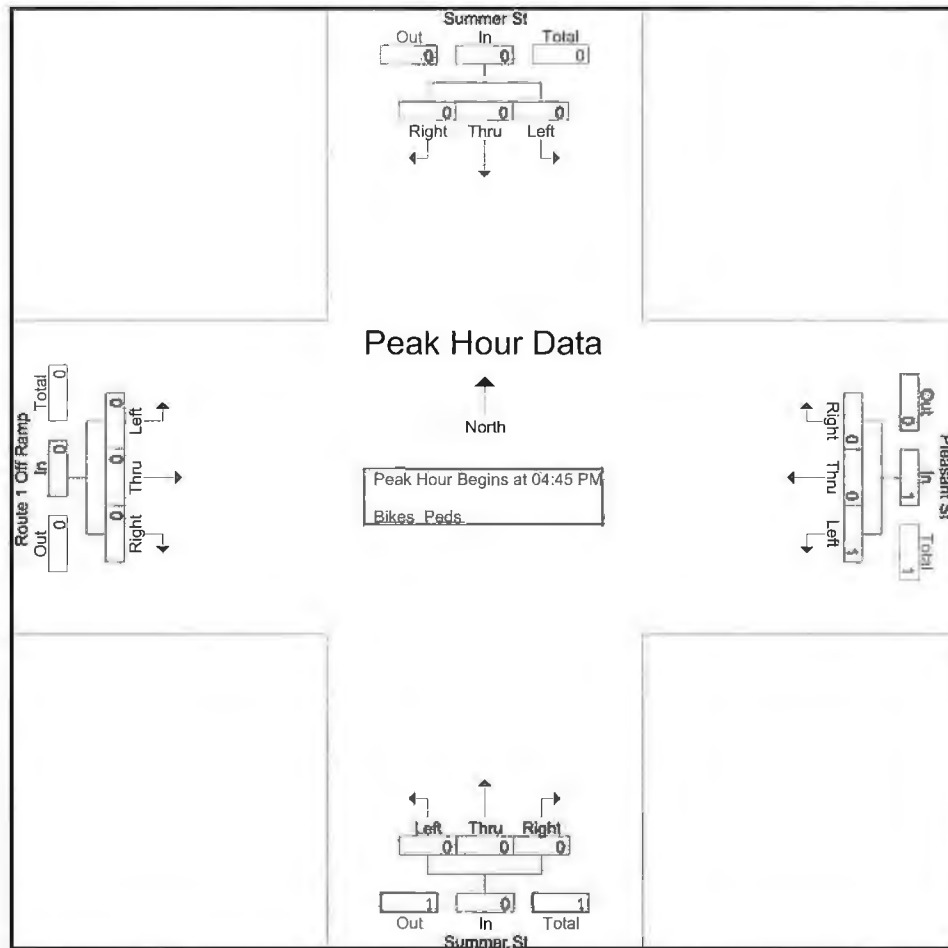
Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810009
 Site Code : 72810009
 Start Date : 6/16/2016
 Page No : 11

	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0		100	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250



Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S1
 Site Code : 72810001
 Start Date : 6/18/2016
 Page No : 1

Groups Printed- Cars - Trucks													
	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	22	8	20	12	56	45	14	30	23	21	75	11	337
11:15 AM	42	18	61	21	68	41	11	39	27	31	123	15	497
11:30 AM	33	13	57	21	83	65	12	34	28	36	89	12	483
11:45 AM	40	24	43	22	87	49	16	36	38	26	108	26	515
Total	137	63	181	76	294	200	53	139	116	114	395	64	1832
12:00 PM	47	18	25	25	76	47	15	23	29	30	123	30	488
12:15 PM	44	9	34	20	99	60	15	30	37	33	102	23	506
12:30 PM	45	19	28	31	79	44	14	26	24	37	94	27	468
12:45 PM	36	16	21	24	60	59	18	25	35	29	94	13	430
Total	172	62	108	100	314	210	62	104	125	129	413	93	1892
01:00 PM	33	17	32	16	95	38	10	25	29	32	102	17	446
01:15 PM	68	16	26	28	83	59	13	33	33	29	72	18	478
01:30 PM	59	15	28	18	82	55	12	24	35	25	96	19	468
01:45 PM	53	8	22	16	90	54	10	33	36	30	79	24	455
Total	213	56	108	78	350	206	45	115	133	116	349	78	1847
Grand Total	522	181	397	254	958	616	160	358	374	359	1157	235	5571
Apprch %	47.5	16.5	36.1	13.9	52.4	33.7	17.9	40.1	41.9	20.5	66.1	13.4	
Total %	9.4	3.2	7.1	4.6	17.2	11.1	2.9	6.4	6.7	6.4	20.8	4.2	
Cars	519	177	397	250	958	614	159	358	373	358	1155	234	5552
% Cars	99.4	97.8	100	98.4	100	99.7	99.4	100	99.7	99.7	99.8	99.6	99.7
Trucks	3	4	0	4	0	2	1	0	1	1	2	1	19
% Trucks	0.6	2.2	0	1.6	0	0.3	0.6	0	0.3	0.3	0.2	0.4	0.3

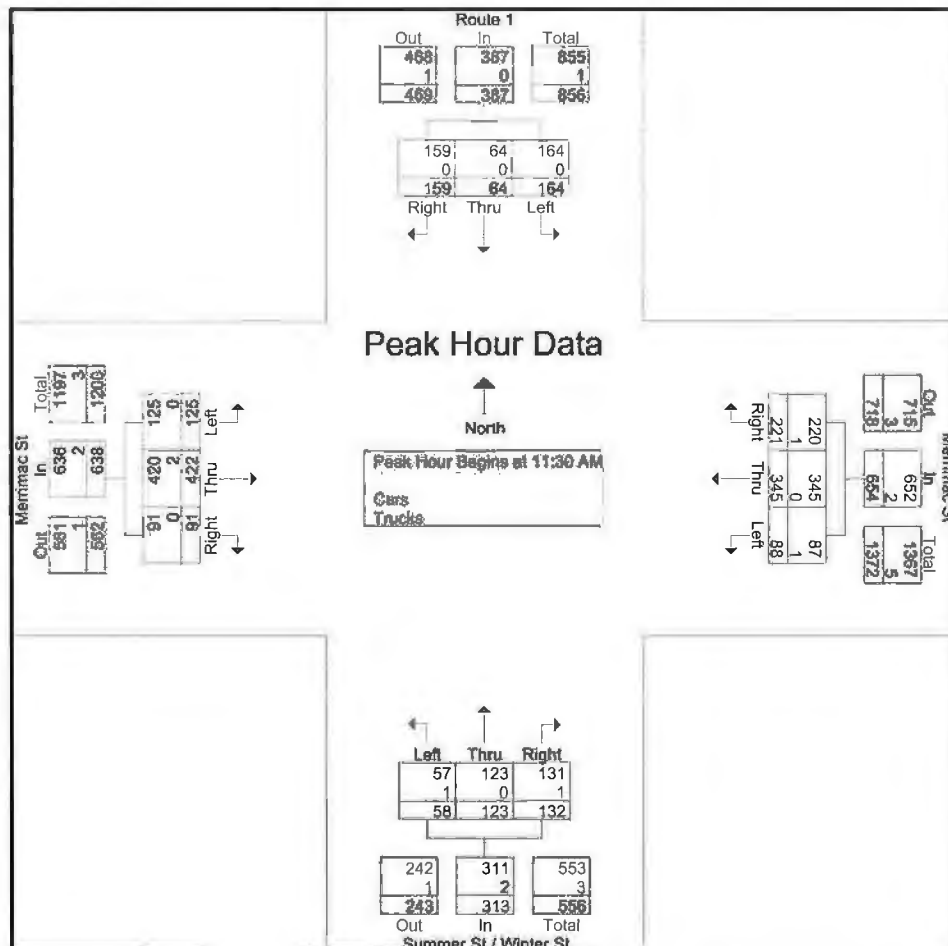
Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S1
 Site Code : 72810001
 Start Date : 6/18/2016
 Page No : 2

Route 1					Merrimac St				Summer St / Winter St				Merrimac St				
From North					From East				From South				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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30 AM																	
11:30 AM	33	13	57	103	21	83	65	169	12	34	28	74	36	89	12	137	483
11:45 AM	40	24	43	107	22	87	49	158	16	36	38	90	26	108	26	160	515
12:00 PM	47	18	25	90	25	76	47	148	15	23	29	67	30	123	30	183	488
12:15 PM	44	9	34	87	20	99	60	179	15	30	37	82	33	102	23	158	506
Total Volume	164	64	159	387	88	345	221	654	58	123	132	313	125	422	91	638	1992
% App. Total	42.4	16.5	41.1		13.5	52.8	33.8		18.5	39.3	42.2		19.6	66.1	14.3		
PHF	.872	.667	.697	.904	.880	.871	.850	.913	.906	.854	.868	.869	.868	.858	.758	.872	.967
Cars	164	64	159	387	87	345	220	652	57	123	131	311	125	420	91	636	1986
% Cars	100	100	100	100	98.9	100	99.5	99.7	98.3	100	99.2	99.4	100	99.5	100	99.7	99.7
Trucks	0	0	0	0	1	0	1	2	1	0	1	2	0	2	0	2	6
% Trucks	0	0	0	0	1.1	0	0.5	0.3	1.7	0	0.8	0.6	0	0.5	0	0.3	0.3



Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S1
 Site Code : 72810001
 Start Date : 6/18/2016
 Page No : 4

Groups Printed- Cars

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	22	8	20	12	56	45	14	30	23	20	75	11	336
11:15 AM	42	16	61	21	68	41	11	39	27	31	123	15	495
11:30 AM	33	13	57	21	83	65	12	34	27	36	89	12	482
11:45 AM	40	24	43	21	87	48	15	36	38	26	107	26	511
Total	137	61	181	75	294	199	52	139	115	113	394	64	1824
12:00 PM	47	18	25	25	76	47	15	23	29	30	123	30	488
12:15 PM	44	9	34	20	99	60	15	30	37	33	101	23	505
12:30 PM	45	18	28	31	79	44	14	26	24	37	94	27	467
12:45 PM	36	16	21	22	60	59	18	25	35	29	94	13	428
Total	172	61	108	98	314	210	62	104	125	129	412	93	1888
01:00 PM	32	17	32	16	95	38	10	25	29	32	102	17	445
01:15 PM	66	16	26	27	83	59	13	33	33	29	72	18	475
01:30 PM	59	14	28	18	82	55	12	24	35	25	96	19	467
01:45 PM	53	8	22	16	90	53	10	33	36	30	79	23	453
Total	210	55	108	77	350	205	45	115	133	116	349	77	1840
Grand Total	519	177	397	250	958	614	159	358	373	358	1155	234	5552
Apprch %	47.5	16.2	36.3	13.7	52.6	33.7	17.9	40.2	41.9	20.5	66.1	13.4	
Total %	9.3	3.2	7.2	4.5	17.3	11.1	2.9	6.4	6.7	6.4	20.8	4.2	

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S1
 Site Code : 72810001
 Start Date : 6/18/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Route 1 From North			Merrimac St From East			Summer St / Winter St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
11:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
11:45 AM	0	0	0	1	0	1	1	0	0	0	1	0	4
Total	0	2	0	1	0	1	1	0	1	1	1	0	8
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	2	0	0	0	0	0	0	0	0	2
Total	0	1	0	2	0	0	0	0	0	0	1	0	4
01:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
01:15 PM	2	0	0	1	0	0	0	0	0	0	0	0	3
01:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
01:45 PM	0	0	0	0	0	1	0	0	0	0	0	1	2
Total	3	1	0	1	0	1	0	0	0	0	0	1	7
Grand Total	3	4	0	4	0	2	1	0	1	1	2	1	19
Apprch %	42.9	57.1	0	66.7	0	33.3	50	0	50	25	50	25	
Total %	15.8	21.1	0	21.1	0	10.5	5.3	0	5.3	5.3	10.5	5.3	

Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S1
 Site Code : 72810001
 Start Date : 6/18/2016
 Page No : 10

Groups Printed- Bikes Peds																			
Start Time	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	2	0	2	0	0	0	1	0	0	0	1	0	0	2	4	6
11:15 AM	0	0	0	2	0	1	0	0	0	0	0	2	0	11	0	0	4	12	16
11:30 AM	0	1	0	1	0	4	1	0	0	0	0	4	0	4	0	0	5	10	15
11:45 AM	0	0	0	4	0	2	0	7	0	0	0	6	0	3	0	1	18	5	23
Total	0	1	0	9	0	9	1	7	0	1	0	12	0	19	0	1	29	31	60
12:00 PM	0	0	0	1	0	1	1	2	0	0	0	9	0	3	0	0	12	5	17
12:15 PM	0	0	0	1	0	2	1	0	0	0	0	2	0	2	0	0	3	5	8
12:30 PM	2	1	0	0	0	4	0	3	0	0	0	2	0	2	0	0	5	9	14
12:45 PM	0	0	0	0	0	0	0	3	0	0	0	1	0	1	0	0	4	1	5
Total	2	1	0	2	0	7	2	8	0	0	0	14	0	8	0	0	24	20	44
01:00 PM	1	0	0	7	0	0	0	1	0	0	0	0	1	1	0	0	8	3	11
01:15 PM	0	0	0	9	0	4	0	1	0	0	0	3	0	2	0	0	13	6	19
01:30 PM	0	1	0	1	0	0	0	2	0	0	1	1	0	2	0	0	4	4	8
01:45 PM	0	0	0	1	0	2	0	7	0	0	0	0	0	3	0	0	8	5	13
Total	1	1	0	18	0	6	0	11	0	0	1	4	1	8	0	0	33	18	51
Grand Total	3	3	0	29	0	22	3	26	0	1	1	30	1	35	0	1	86	69	155
Apprch %	50	50	0		0	88	12		0	50	50		2.8	97.2	0				
Total %	4.3	4.3	0		0	31.9	4.3		0	1.4	1.4		1.4	50.7	0		55.5	44.5	

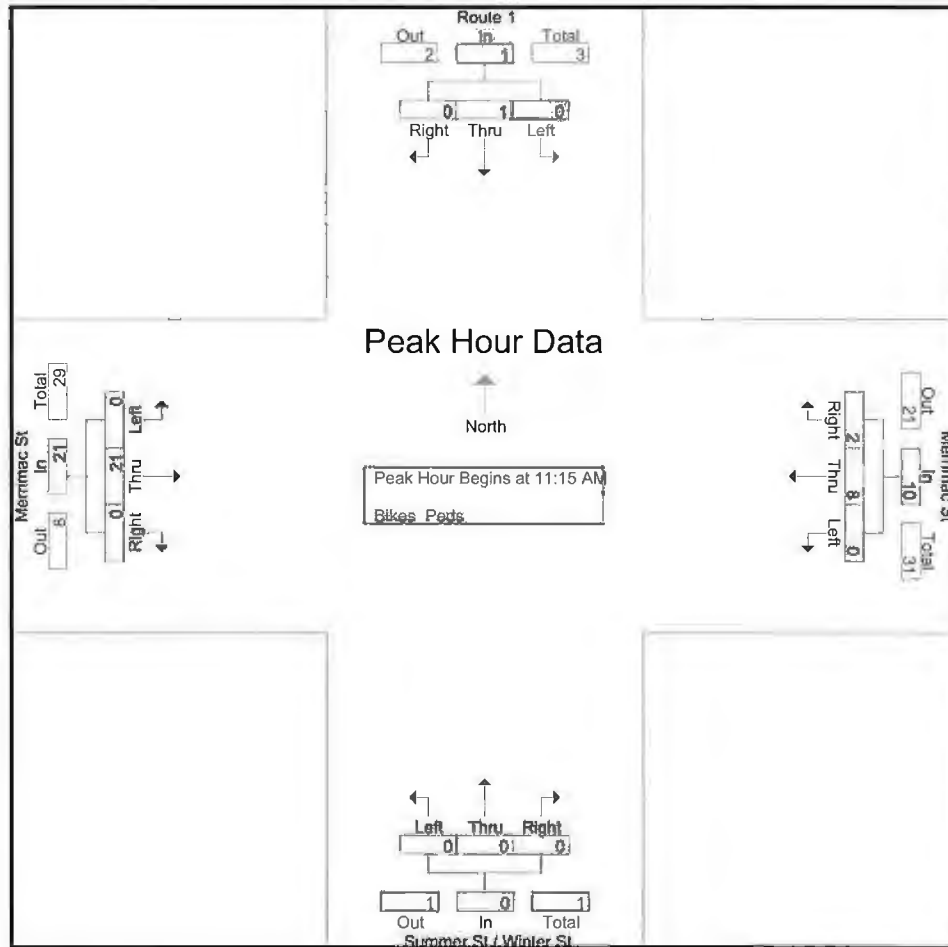
Accurate Counts

978-664-2565

N/S Street : Rt 1 / Winter / Summer
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S1
 Site Code : 72810001
 Start Date : 6/18/2016
 Page No : 11

Start Time	Route 1 From North				Merrimac St From East				Summer St / Winter St From South				Merrimac St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	11	0	11	12
11:30 AM	0	1	0	1	0	4	1	5	0	0	0	0	0	4	0	4	10
11:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
12:00 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	3	0	3	5
Total Volume	0	1	0	1	0	8	2	10	0	0	0	0	0	21	0	21	32
% App. Total	0	100	0		0	80	20		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.500	.500	.500	.000	.000	.000	.000	.000	.477	.000	.477	.667



Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S2
 Site Code : 72810002
 Start Date : 6/18/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	2	2	3	11	113	0	3	0	10	5	108	2	259
11:15 AM	1	0	7	2	133	2	6	0	11	13	182	2	359
11:30 AM	3	0	6	1	136	1	8	0	10	14	139	6	324
11:45 AM	0	0	6	1	145	7	4	4	9	18	153	1	348
Total	6	2	22	15	527	10	21	4	40	50	582	11	1290
12:00 PM	1	3	7	2	127	8	6	1	10	28	169	6	368
12:15 PM	0	2	9	0	156	4	8	3	12	23	146	10	373
12:30 PM	0	2	9	0	145	3	7	1	12	18	145	4	346
12:45 PM	7	2	7	2	123	7	4	0	7	21	139	8	327
Total	8	9	32	4	551	22	25	5	41	90	599	28	1414
01:00 PM	7	1	14	2	138	3	3	3	8	8	148	4	339
01:15 PM	4	0	11	3	159	5	6	0	8	18	165	4	383
01:30 PM	5	1	10	3	141	4	4	2	8	11	165	4	358
01:45 PM	9	0	11	4	143	9	6	4	8	16	145	10	365
Total	25	2	46	12	581	21	19	9	32	53	623	22	1445
Grand Total	39	13	100	31	1659	53	65	18	113	193	1804	61	4149
Apprch %	25.7	8.6	65.8	1.8	95.2	3	33.2	9.2	57.7	9.4	87.7	3	
Total %	0.9	0.3	2.4	0.7	40	1.3	1.6	0.4	2.7	4.7	43.5	1.5	
Cars	39	12	100	31	1655	52	65	18	113	193	1800	61	4139
% Cars	100	92.3	100	100	99.8	98.1	100	100	100	100	99.8	100	99.8
Trucks	0	1	0	0	4	1	0	0	0	0	4	0	10
% Trucks	0	7.7	0	0	0.2	1.9	0	0	0	0	0.2	0	0.2

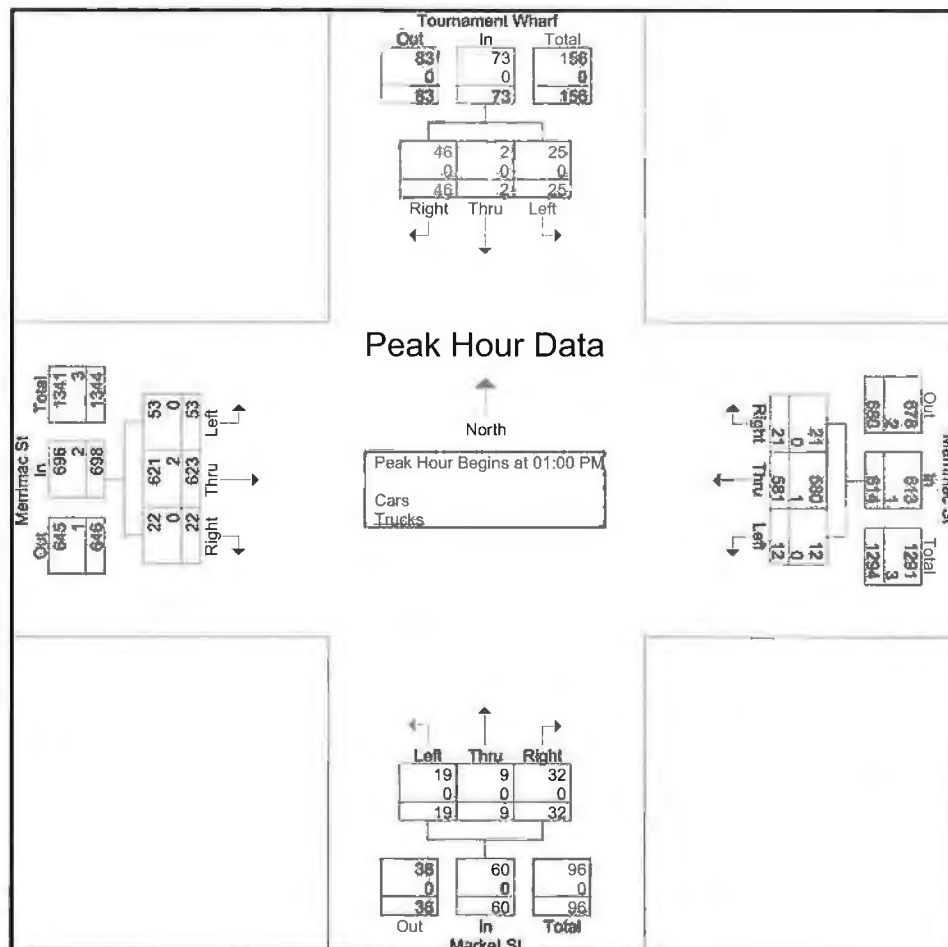
Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S2
 Site Code : 72810002
 Start Date : 6/18/2016
 Page No : 2

	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 01:00 PM																	
01:00 PM	7	1	14	22	2	138	3	143	3	3	8	14	8	148	4	160	339
01:15 PM	4	0	11	15	3	159	5	167	6	0	8	14	18	165	4	187	383
01:30 PM	5	1	10	16	3	141	4	148	4	2	8	14	11	165	4	180	358
01:45 PM	9	0	11	20	4	143	9	156	6	4	8	18	16	145	10	171	365
Total Volume	25	2	46	73	12	581	21	614	19	9	32	60	53	623	22	698	1445
% App. Total	34.2	2.7	63		2	94.6	3.4		31.7	15	53.3		7.6	89.3	3.2		
PHF	.694	.500	.821	.830	.750	.914	.583	.919	.792	.563	1.00	.833	.736	.944	.550	.933	.943
Cars	25	2	46	73	12	580	21	613	19	9	32	60	53	621	22	696	1442
% Cars	100	100	100	100	100	99.8	100	99.8	100	100	100	100	100	99.7	100	99.7	99.8
Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
% Trucks	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0	0.3	0	0.3	0.2



Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S2
 Site Code : 72810002
 Start Date : 6/18/2016
 Page No : 4

Groups Printed- Cars

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	2	2	3	11	113	0	3	0	10	5	108	2	259
11:15 AM	1	0	7	2	133	2	6	0	11	13	182	2	359
11:30 AM	3	0	6	1	136	1	8	0	10	14	138	6	323
11:45 AM	0	0	6	1	144	7	4	4	9	18	153	1	347
Total	6	2	22	15	526	10	21	4	40	50	581	11	1288
12:00 PM	1	2	7	2	127	7	6	1	10	28	168	6	365
12:15 PM	0	2	9	0	156	4	8	3	12	23	146	10	373
12:30 PM	0	2	9	0	145	3	7	1	12	18	145	4	346
12:45 PM	7	2	7	2	121	7	4	0	7	21	139	8	325
Total	8	8	32	4	549	21	25	5	41	90	598	28	1409
01:00 PM	7	1	14	2	138	3	3	3	8	8	148	4	339
01:15 PM	4	0	11	3	159	5	6	0	8	18	163	4	381
01:30 PM	5	1	10	3	141	4	4	2	8	11	165	4	358
01:45 PM	9	0	11	4	142	9	6	4	8	16	145	10	364
Total	25	2	46	12	580	21	19	9	32	53	621	22	1442
Grand Total	39	12	100	31	1655	52	65	18	113	193	1800	61	4139
Apprch %	25.8	7.9	66.2	1.8	95.2	3	33.2	9.2	57.7	9.4	87.6	3	
Total %	0.9	0.3	2.4	0.7	40	1.3	1.6	0.4	2.7	4.7	43.5	1.5	

Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S2
 Site Code : 72810002
 Start Date : 6/18/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Tournament Wharf From North			Merrimac St From East			Market St From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
11:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	0	0	0	0	0	1	0	2
12:00 PM	0	1	0	0	0	1	0	0	0	0	1	0	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	1	0	0	2	1	0	0	0	0	1	0	5
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	0	0	0	0	0	2	0	3
Grand Total	0	1	0	0	4	1	0	0	0	0	4	0	10
Apprch %	0	100	0	0	80	20	0	0	0	0	100	0	
Total %	0	10	0	0	40	10	0	0	0	0	40	0	

Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S2
 Site Code : 72810002
 Start Date : 6/18/2016
 Page No : 10

Groups Printed- Bikes Peds																				
	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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	
11:00 AM	4	0	0	2	0	2	0	2	0	0	2	2	1	1	0	0	6	10	16	
11:15 AM	0	0	0	4	0	2	1	0	0	0	0	1	1	7	0	0	5	11	16	
11:30 AM	1	0	0	4	0	8	1	0	0	0	0	0	8	7	0	0	4	25	29	
11:45 AM	1	0	0	3	0	6	0	0	0	0	0	4	2	2	0	1	8	11	19	
Total	6	0	0	13	0	18	2	2	0	0	2	7	12	17	0	1	23	57	80	
12:00 PM	1	0	0	3	0	3	0	0	0	0	0	7	1	2	0	1	11	7	18	
12:15 PM	0	0	0	1	0	4	1	2	0	0	0	0	0	7	0	0	3	12	15	
12:30 PM	2	2	2	0	0	5	0	0	0	0	4	1	1	5	0	0	1	21	22	
12:45 PM	4	0	0	0	0	1	0	2	0	0	0	1	1	1	0	0	3	7	10	
Total	7	2	2	4	0	13	1	4	0	0	4	9	3	15	0	1	18	47	65	
01:00 PM	0	0	0	8	0	0	0	0	0	0	0	1	0	2	0	0	9	2	11	
01:15 PM	0	0	0	8	0	2	0	0	1	0	0	3	0	5	1	0	11	9	20	
01:30 PM	0	0	0	0	0	0	1	0	0	0	1	3	0	4	0	0	3	6	9	
01:45 PM	0	0	0	2	0	0	0	0	0	0	0	1	0	4	0	0	3	4	7	
Total	0	0	0	18	0	2	1	0	1	0	1	8	0	15	1	0	26	21	47	
Grand Total	13	2	2	35	0	33	4	6	1	0	7	24	15	47	1	2	67	125	192	
Apprch %	76.5	11.8	11.8		0	89.2	10.8		12.5	0	87.5		23.8	74.6	1.6					
Total %	10.4	1.6	1.6		0	26.4	3.2		0.8	0	5.6		12	37.6	0.8		34.9	65.1		

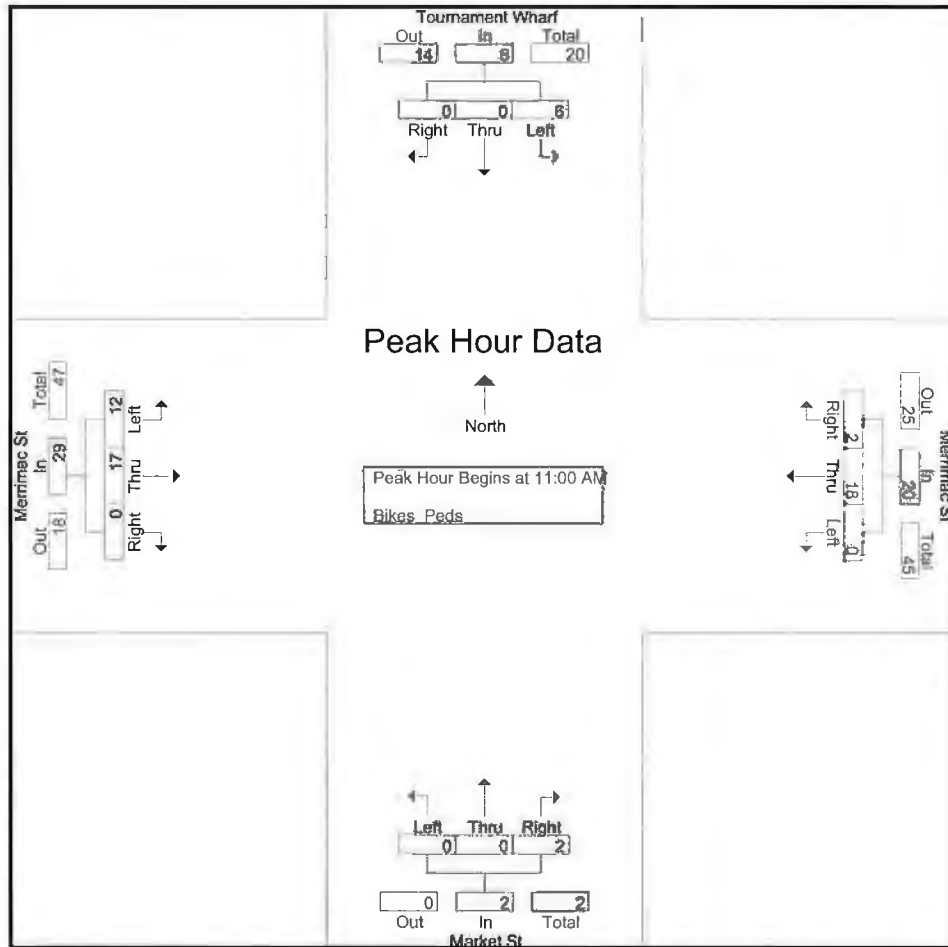
Accurate Counts

978-664-2565

N/S Street : Tournament Wharf/ Market St
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S2
 Site Code : 72810002
 Start Date : 6/18/2016
 Page No : 11

	Tournament Wharf From North				Merrimac St From East				Market St From South				Merrimac St 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	4	0	0	4	0	2	0	2	0	0	2	2	1	1	0	2	10
11:15 AM	0	0	0	0	0	2	1	3	0	0	0	0	1	7	0	8	11
11:30 AM	1	0	0	1	0	8	1	9	0	0	0	0	8	7	0	15	25
11:45 AM	1	0	0	1	0	6	0	6	0	0	0	0	2	2	0	4	11
Total Volume	6	0	0	6	0	18	2	20	0	0	2	2	12	17	0	29	57
% App. Total	100	0	0		0	90	10		0	0	100		41.4	58.6	0		
PHF	.375	.000	.000	.375	.000	.563	.500	.556	.000	.000	.250	.250	.375	.607	.000	.483	.570



Accurate Counts
978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S3
Site Code : 72810003
Start Date : 6/18/2016
Page No : 1

Groups Printed- Cars - Trucks

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	1	0	5	0	117	1	2	0	0	5	117	0	248
11:15 AM	0	0	5	1	130	0	0	0	1	8	184	0	329
11:30 AM	1	0	5	1	131	0	1	0	4	5	150	3	301
11:45 AM	0	0	11	1	148	0	1	0	2	5	155	1	324
Total	2	0	26	3	526	1	4	0	7	23	606	4	1202
12:00 PM	2	0	11	0	118	1	2	0	1	0	178	1	314
12:15 PM	1	0	5	0	151	0	0	0	0	5	158	0	320
12:30 PM	1	0	9	0	143	0	0	0	0	3	156	0	312
12:45 PM	0	2	6	0	126	0	0	0	1	7	141	1	284
Total	4	2	31	0	538	1	2	0	2	15	633	2	1230
01:00 PM	0	1	3	0	138	0	0	0	2	3	155	3	305
01:15 PM	2	0	5	0	160	0	1	1	0	2	169	2	342
01:30 PM	1	0	4	0	142	1	1	0	0	4	178	2	333
01:45 PM	0	0	4	1	154	0	1	0	2	7	150	3	322
Total	3	1	16	1	594	1	3	1	4	16	652	10	1302
Grand Total	9	3	73	4	1658	3	9	1	13	54	1891	16	3734
Apprch %	10.6	3.5	85.9	0.2	99.6	0.2	39.1	4.3	56.5	2.8	96.4	0.8	
Total %	0.2	0.1	2	0.1	44.4	0.1	0.2	0	0.3	1.4	50.6	0.4	
Cars	9	3	73	4	1653	3	9	1	13	54	1887	16	3725
% Cars	100	100	100	100	99.7	100	100	100	100	100	99.8	100	99.8
Trucks	0	0	0	0	5	0	0	0	0	0	4	0	9
% Trucks	0	0	0	0	0.3	0	0	0	0	0	0.2	0	0.2

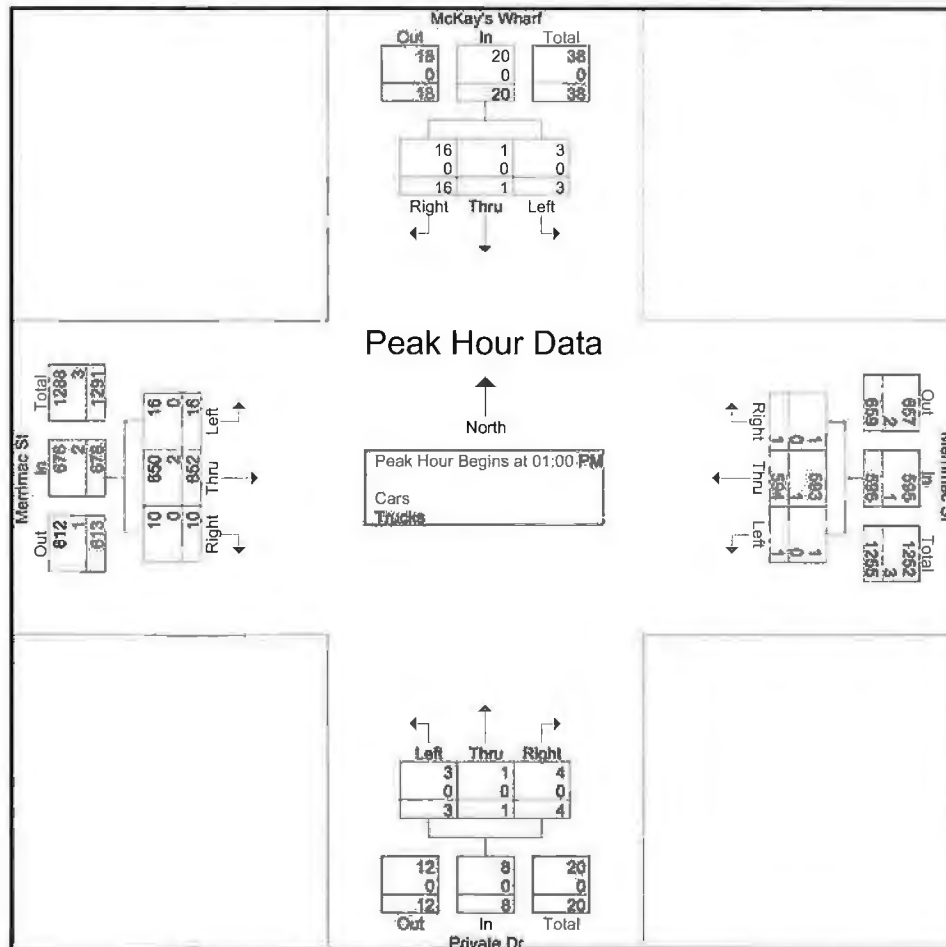
Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S3
Site Code : 72810003
Start Date : 6/18/2016
Page No : 2

	McKay's Wharf From North				Merrimac St From East				Private Dr From South				Merrimac St 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 01:00 PM																	
01:00 PM	0	1	3	4	0	138	0	138	0	0	2	2	3	155	3	161	305
01:15 PM	2	0	5	7	0	160	0	160	1	1	0	2	2	169	2	173	342
01:30 PM	1	0	4	5	0	142	1	143	1	0	0	1	4	178	2	184	333
01:45 PM	0	0	4	4	1	154	0	155	1	0	2	3	7	150	3	160	322
Total Volume	3	1	16	20	1	594	1	596	3	1	4	8	16	652	10	678	1302
% App. Total	15	5	80		0.2	99.7	0.2		37.5	12.5	50		2.4	96.2	1.5		
PHF	.375	.250	.800	.714	.250	.928	.250	.931	.750	.250	.500	.667	.571	.916	.833	.921	.952
Cars	3	1	16	20	1	593	1	595	3	1	4	8	16	650	10	676	1299
% Cars	100	100	100	100	100	99.8	100	99.8	100	100	100	100	100	99.7	100	99.7	99.8
Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
% Trucks	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0	0.3	0	0.3	0.2



Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S3
 Site Code : 72810003
 Start Date : 6/18/2016
 Page No : 4

Groups Printed- Cars

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	1	0	5	0	117	1	2	0	0	5	117	0	248
11:15 AM	0	0	5	1	130	0	0	0	1	8	184	0	329
11:30 AM	1	0	5	1	131	0	1	0	4	5	149	3	300
11:45 AM	0	0	11	1	147	0	1	0	2	5	155	1	323
Total	2	0	26	3	525	1	4	0	7	23	605	4	1200
12:00 PM	2	0	11	0	117	1	2	0	1	0	177	1	312
12:15 PM	1	0	5	0	151	0	0	0	0	5	158	0	320
12:30 PM	1	0	9	0	143	0	0	0	0	3	156	0	312
12:45 PM	0	2	6	0	124	0	0	0	1	7	141	1	282
Total	4	2	31	0	535	1	2	0	2	15	632	2	1226
01:00 PM	0	1	3	0	138	0	0	0	2	3	155	3	305
01:15 PM	2	0	5	0	160	0	1	1	0	2	167	2	340
01:30 PM	1	0	4	0	142	1	1	0	0	4	178	2	333
01:45 PM	0	0	4	1	153	0	1	0	2	7	150	3	321
Total	3	1	16	1	593	1	3	1	4	16	650	10	1299
Grand Total	9	3	73	4	1653	3	9	1	13	54	1887	16	3725
Apprch %	10.6	3.5	85.9	0.2	99.6	0.2	39.1	4.3	56.5	2.8	96.4	0.8	
Total %	0.2	0.1	2	0.1	44.4	0.1	0.2	0	0.3	1.4	50.7	0.4	

Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S3
 Site Code : 72810003
 Start Date : 6/18/2016
 Page No : 7

Groups Printed- Trucks

Start Time	McKay's Wharf From North			Merrimac St From East			Private Dr From South			Merrimac St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
11:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	0	0	0	0	0	1	0	2
12:00 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	0	0	0	3	0	0	0	0	0	1	0	4
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	0	0	0	0	0	2	0	3
Grand Total	0	0	0	0	5	0	0	0	0	0	4	0	9
Apprch %	0	0	0	0	100	0	0	0	0	0	100	0	
Total %	0	0	0	0	55.6	0	0	0	0	0	44.4	0	

Accurate Counts
978-664-2565

N/S Street : McKay's Wharf / Private Dr
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S3
Site Code : 72810003
Start Date : 6/18/2016
Page No : 10

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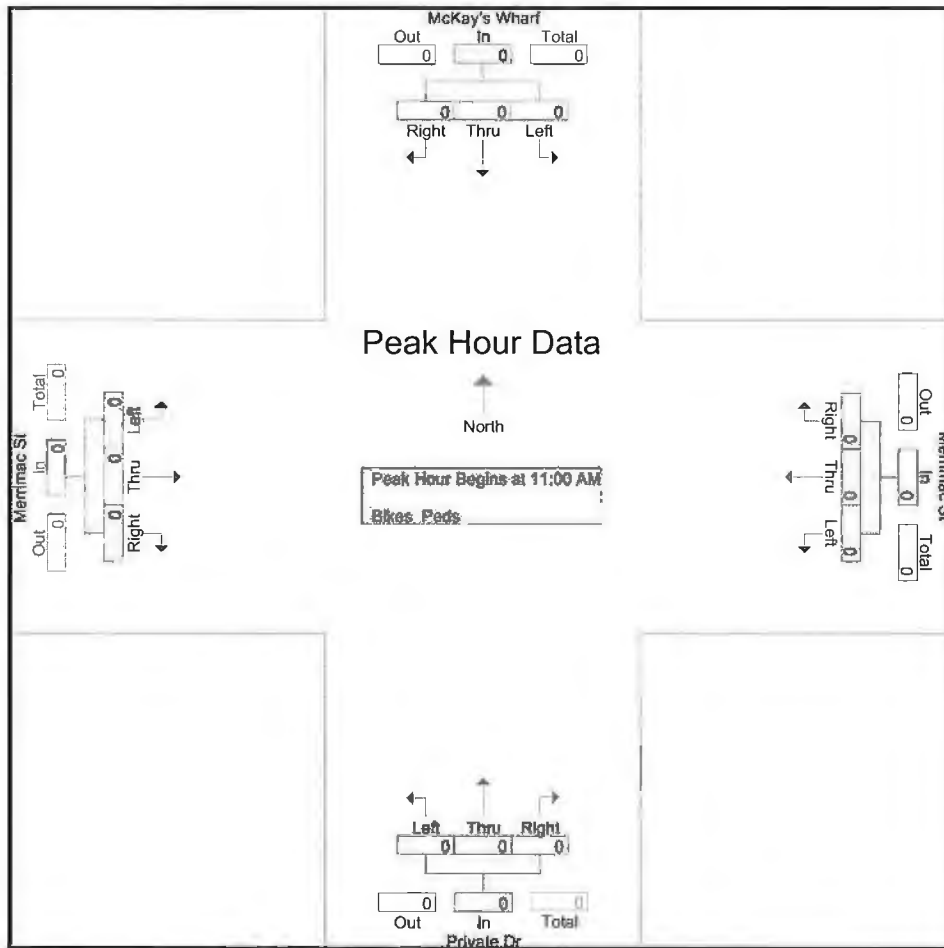
Accurate Counts

978-664-2565

N/S Street : McKay's Wharf / Private Dr
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S3
 Site Code : 72810003
 Start Date : 6/18/2016
 Page No : 11

	McKay's Wharf From North				Merrimac St From East				Private Dr From South				Merrimac St 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	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	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 : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S4
 Site Code : 72810004
 Start Date : 6/18/2016
 Page No : 1

Groups Printed: Cars - Trucks

Start Time	Merrimac St From East Left	Thru	Titcomb St From South Left	Right	Merrimac St From West Thru	Right	Int. Total
11:00 AM	15	118	3	3	114	4	257
11:15 AM	3	126	2	2	172	9	314
11:30 AM	1	129	2	4	153	7	296
11:45 AM	1	142	5	3	158	6	315
Total	20	515	12	12	597	26	1182
12:00 PM	4	113	3	2	168	4	294
12:15 PM	1	153	6	1	151	6	318
12:30 PM	4	144	2	2	153	8	313
12:45 PM	5	119	3	2	150	4	283
Total	14	529	14	7	622	22	1208
01:00 PM	5	133	8	4	146	10	306
01:15 PM	4	162	1	1	163	4	335
01:30 PM	4	143	3	2	168	4	324
01:45 PM	4	142	6	2	153	7	314
Total	17	580	18	9	630	25	1279
Grand Total	51	1624	44	28	1849	73	3669
Apprch %	3	97	61.1	38.9	96.2	3.8	
Total %	1.4	44.3	1.2	0.8	50.4	2	
Cars	50	1620	43	28	1845	73	3659
% Cars	98	99.8	97.7	100	99.8	100	99.7
Trucks	1	4	1	0	4	0	10
% Trucks	2	0.2	2.3	0	0.2	0	0.3

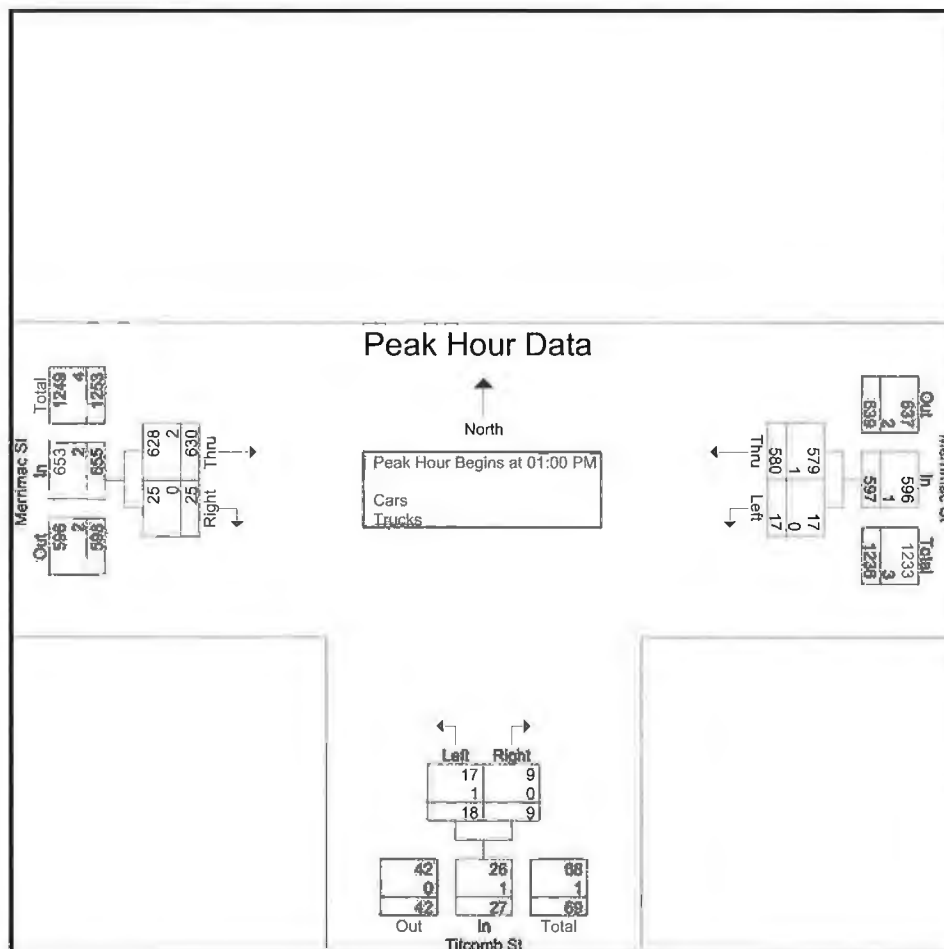
Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S4
 Site Code : 72810004
 Start Date : 6/18/2016
 Page No : 2

	Merrimac St From East			Titcomb St From South			Merrimac St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:00 PM										
01:00 PM :	5	133	138	8	4	12	146	10	156	306
01:15 PM :	4	162	166	1	1	2	163	4	167	335
01:30 PM :	4	143	147	3	2	5	168	4	172	324
01:45 PM :	4	142	146	6	2	8	153	7	160	314
Total Volume	17	580	597	18	9	27	630	25	655	1279
% App. Total	2.8	97.2		66.7	33.3		96.2	3.8		
PHF	.850	.895	.899	.563	.563	.563	.938	.625	.952	.954
Cars	17	579	596	17	9	26	628	25	653	1275
% Cars	100	99.8	99.8	94.4	100	96.3	99.7	100	99.7	99.7
Trucks	0	1	1	1	0	1	2	0	2	4
% Trucks	0	0.2	0.2	5.6	0	3.7	0.3	0	0.3	0.3



Accurate Counts
978-664-2565

N/S Street : Titcomb Street
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S4
Site Code : 72810004
Start Date : 6/18/2016
Page No : 4

Groups Printed- Cars							
Start Time	Merrimac St From East		Titcomb St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	14	118	3	3	114	4	256
11:15 AM	3	126	2	2	172	9	314
11:30 AM	1	129	2	4	152	7	295
11:45 AM	1	141	5	3	157	6	313
Total	19	514	12	12	595	26	1178
12:00 PM	4	113	3	2	168	4	294
12:15 PM	1	153	6	1	151	6	318
12:30 PM	4	143	2	2	153	8	312
12:45 PM	5	118	3	2	150	4	282
Total	14	527	14	7	622	22	1206
01:00 PM	5	133	8	4	145	10	305
01:15 PM	4	162	1	1	162	4	334
01:30 PM	4	143	2	2	168	4	323
01:45 PM	4	141	6	2	153	7	313
Total	17	579	17	9	628	25	1275
Grand Total	50	1620	43	28	1845	73	3659
Apprch %	3	97	60.6	39.4	96.2	3.8	
Total %	1.4	44.3	1.2	0.8	50.4	2	

Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S4
 Site Code : 72810004
 Start Date : 6/18/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Merrimac St From East		Titcomb St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	1	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	0	1
11:45 AM	0	1	0	0	1	0	2
Total	1	1	0	0	2	0	4
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	1
12:45 PM	0	1	0	0	0	0	1
Total	0	2	0	0	0	0	2
01:00 PM	0	0	0	0	1	0	1
01:15 PM	0	0	0	0	1	0	1
01:30 PM	0	0	1	0	0	0	1
01:45 PM	0	1	0	0	0	0	1
Total	0	1	1	0	2	0	4
Grand Total	1	4	1	0	4	0	10
Apprch %	20	80	100	0	100	0	
Total %	10	40	10	0	40	0	

Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S4
 Site Code : 72810004
 Start Date : 6/18/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Merrimac St From East			Titcomb St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
11:00 AM	0	2	1	0	0	2	9	0	3	6	11	17
11:15 AM	1	4	0	0	0	3	11	2	6	9	18	27
11:30 AM	0	7	0	0	0	7	4	1	2	9	12	21
11:45 AM	0	6	0	0	1	3	4	0	3	6	11	17
Total	1	19	1	0	1	15	28	3	14	30	52	82
12:00 PM	0	7	0	0	0	8	9	0	3	11	16	27
12:15 PM	0	2	0	0	0	2	5	0	2	4	7	11
12:30 PM	0	5	1	0	0	3	6	0	0	4	11	15
12:45 PM	0	2	0	0	0	7	6	0	2	9	8	17
Total	0	16	1	0	0	20	26	0	7	28	42	70
01:00 PM	0	0	0	0	0	4	2	0	8	12	2	14
01:15 PM	0	3	0	0	0	11	6	0	3	14	9	23
01:30 PM	0	2	0	1	1	3	4	1	6	9	9	18
01:45 PM	0	5	0	0	0	12	4	0	4	16	9	25
Total	0	10	0	1	1	30	16	1	21	51	29	80
Grand Total	1	45	2	1	2	65	70	4	42	109	123	232
Apprch %	2.2	97.8		33.3	66.7		94.6	5.4				
Total %	0.8	36.6		0.8	1.6		56.9	3.3		47	53	

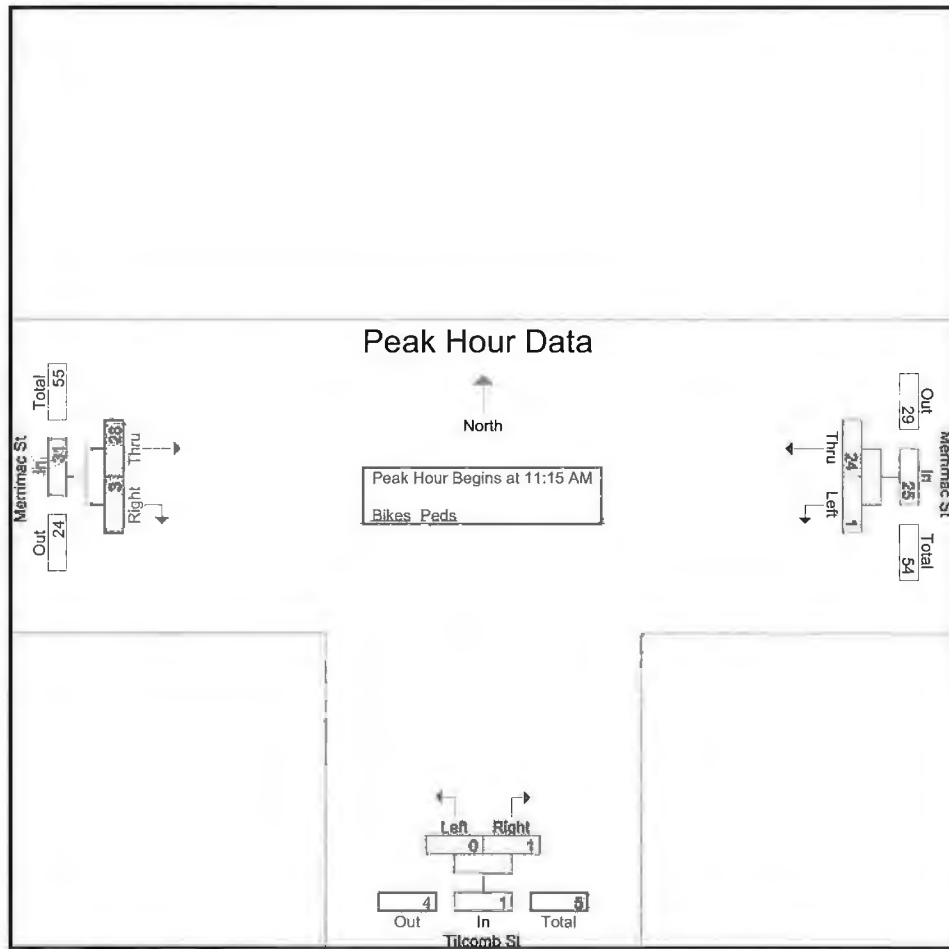
Accurate Counts

978-664-2565

N/S Street : Titcomb Street
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S4
 Site Code : 72810004
 Start Date : 6/18/2016
 Page No : 11

	Merrimac St From East			Titcomb St From South			Merrimac St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	1	4	5	0	0	0	11	2	13	18
11:30 AM	0	7	7	0	0	0	4	1	5	12
11:45 AM	0	6	6	0	1	1	4	0	4	11
12:00 PM	0	7	7	0	0	0	9	0	9	16
Total Volume	1	24	25	0	1	1	28	3	31	57
% App. Total	4	96		0	100		90.3	9.7		
PHF	.250	.857	.893	.000	.250	.250	.636	.375	.596	.792



Accurate Counts
978-664-2565

N/S Street : Green Street
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S5
Site Code : 72810005
Start Date : 6/18/2016
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	101	30	42	122	0	295
11:15 AM	0	91	26	43	172	0	332
11:30 AM	0	108	34	38	155	0	335
11:45 AM	0	108	25	53	154	0	340
Total	0	408	115	176	603	0	1302
12:00 PM	0	97	30	51	177	0	355
12:15 PM	0	122	27	42	156	0	347
12:30 PM	0	121	22	47	158	0	348
12:45 PM	0	103	29	49	149	0	330
Total	0	443	108	189	640	0	1380
01:00 PM	0	120	29	49	153	0	351
01:15 PM	0	129	32	29	165	0	355
01:30 PM	0	106	30	32	166	0	334
01:45 PM	0	115	35	30	143	0	323
Total	0	470	126	140	627	0	1363
Grand Total	0	1321	349	505	1870	0	4045
Apprch %	0	100	40.9	59.1	100	0	
Total %	0	32.7	8.6	12.5	46.2	0	
Cars	0	1319	346	503	1866	0	4034
% Cars	0	99.8	99.1	99.6	99.8	0	99.7
Trucks	0	2	3	2	4	0	11
% Trucks	0	0.2	0.9	0.4	0.2	0	0.3

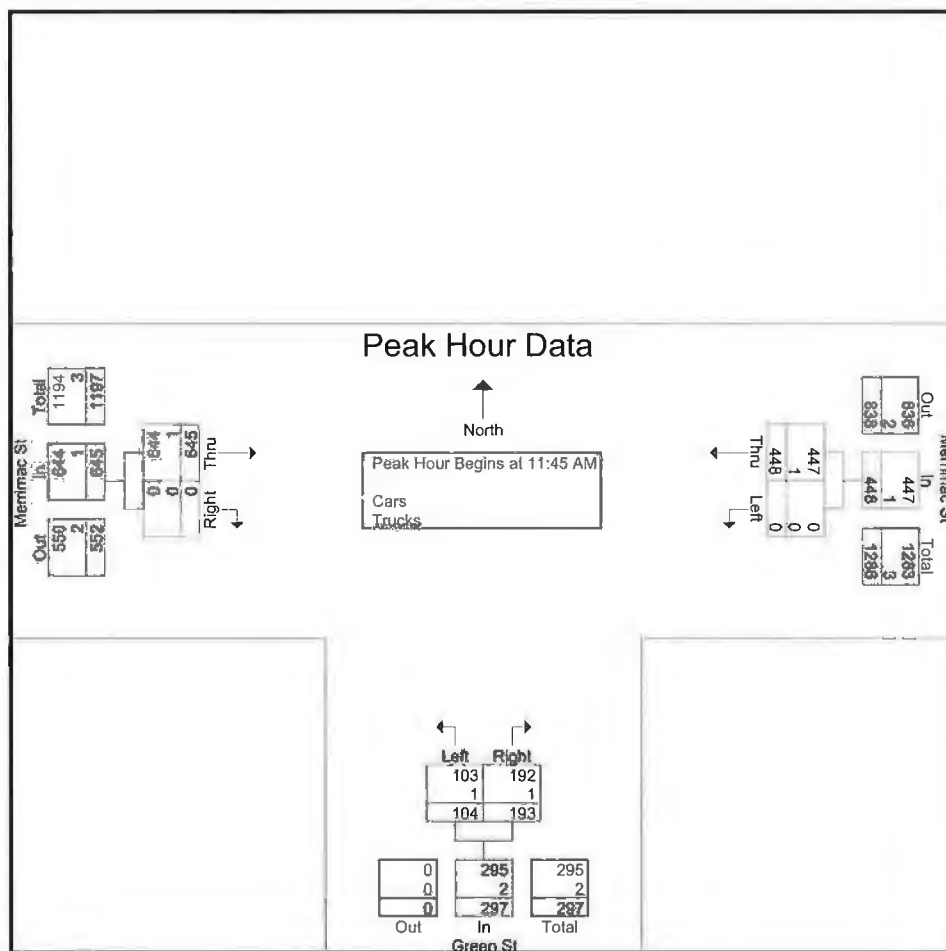
Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S5
 Site Code : 72810005
 Start Date : 6/18/2016
 Page No : 2

	Merrimac St From East			Green St From South			Merrimac St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:45 AM										
11:45 AM	0	108	108	25	53	78	154	0	154	340
12:00 PM	0	97	97	30	51	81	177	0	177	355
12:15 PM	0	122	122	27	42	69	156	0	156	347
12:30 PM	0	121	121	22	47	69	158	0	158	348
Total Volume	0	448	448	104	193	297	645	0	645	1390
% App. Total	0	100		35	65		100	0		
PHF	.000	.918	.918	.867	.910	.917	.911	.000	.911	.979
Cars	0	447	447	103	192	295	644	0	644	1386
% Cars	0	99.8	99.8	99.0	99.5	99.3	99.8	0	99.8	99.7
Trucks	0	1	1	1	1	2	1	0	1	4
% Trucks	0	0.2	0.2	1.0	0.5	0.7	0.2	0	0.2	0.3



Accurate Counts

978-664-2565

N/S Street : Green Street
E/W Street: Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S5
Site Code : 72810005
Start Date : 6/18/2016
Page No : 4

Groups Printed- Cars							
Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	101	30	42	122	0	295
11:15 AM	0	91	26	43	172	0	332
11:30 AM	0	108	34	38	154	0	334
11:45 AM	0	107	24	53	154	0	338
Total	0	407	114	176	602	0	1299
12:00 PM	0	97	30	51	176	0	354
12:15 PM	0	122	27	42	156	0	347
12:30 PM	0	121	22	46	158	0	347
12:45 PM	0	103	27	49	149	0	328
Total	0	443	106	188	639	0	1376
01:00 PM	0	120	29	49	153	0	351
01:15 PM	0	129	32	29	163	0	353
01:30 PM	0	106	30	32	166	0	334
01:45 PM	0	114	35	29	143	0	321
Total	0	469	126	139	625	0	1359
Grand Total	0	1319	346	503	1866	0	4034
Apprch %	0	100	40.8	59.2	100	0	
Total %	0	32.7	8.6	12.5	46.3	0	

Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S5
 Site Code : 72810005
 Start Date : 6/18/2016
 Page No : 7

Groups Printed- Trucks							
Start Time	Merrimac St From East		Green St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	0	1
11:45 AM	0	1	1	0	0	0	2
Total	0	1	1	0	1	0	3
12:00 PM	0	0	0	0	1	0	1
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	0	0	1	0	0	1
12:45 PM	0	0	2	0	0	0	2
Total	0	0	2	1	1	0	4
01:00 PM	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	2	0	2
01:30 PM	0	0	0	0	0	0	0
01:45 PM	0	1	0	1	0	0	2
Total	0	1	0	1	2	0	4
Grand Total	0	2	3	2	4	0	11
Apprch %	0	100	60	40	100	0	
Total %	0	18.2	27.3	18.2	36.4	0	

Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S5
 Site Code : 72810005
 Start Date : 6/18/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Merrimac St From East			Green St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
11:00 AM	0	1	14	0	1	10	4	0	2	26	6	32
11:15 AM	0	3	38	0	0	22	4	0	0	60	7	67
11:30 AM	0	9	29	1	3	7	7	0	0	36	20	56
11:45 AM	0	5	15	0	1	11	2	0	2	28	8	36
Total	0	18	96	1	5	50	17	0	4	150	41	191
12:00 PM	1	3	14	0	0	8	7	0	5	27	11	38
12:15 PM	0	1	23	1	0	15	9	0	0	38	11	49
12:30 PM	0	5	29	0	0	8	9	0	2	39	14	53
12:45 PM	0	0	16	0	0	4	4	0	0	20	4	24
Total	1	9	82	1	0	35	29	0	7	124	40	164
01:00 PM	0	0	13	0	0	4	2	0	0	17	2	19
01:15 PM	0	2	26	0	0	10	6	0	0	36	8	44
01:30 PM	0	1	9	0	0	7	3	0	0	16	4	20
01:45 PM	0	5	20	0	0	7	4	0	0	27	9	36
Total	0	8	68	0	0	28	15	0	0	96	23	119
Grand Total	1	35	246	2	5	113	61	0	11	370	104	474
Apprch %	2.8	97.2		28.6	71.4		100	0				
Total %	1	33.7		1.9	4.8		58.7	0		78.1	21.9	

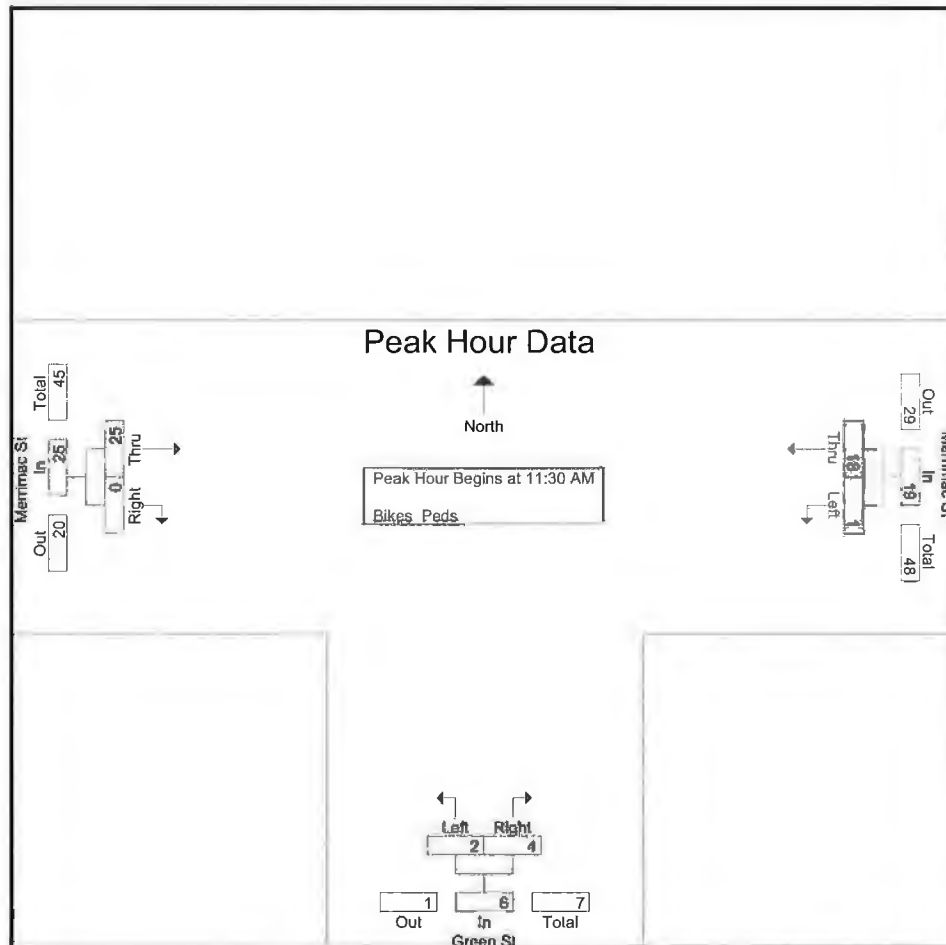
Accurate Counts

978-664-2565

N/S Street : Green Street
 E/W Street: Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S5
 Site Code : 72810005
 Start Date : 6/18/2016
 Page No : 11

	Merrimac St From East			Green St From South			Merrimac St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:30 AM										
11:30 AM	0	9	9	1	3	4	7	0	7	20
11:45 AM	0	5	5	0	1	1	2	0	2	8
12:00 PM	1	3	4	0	0	0	7	0	7	11
12:15 PM	0	1	1	1	0	1	9	0	9	11
Total Volume	1	18	19	2	4	6	25	0	25	50
% App. Total	5.3	94.7		33.3	66.7		100	0		
PHF	.250	.500	.528	.500	.333	.375	.694	.000	.694	.625



Accurate Counts

978-664-2565

N/S Street : State Street
E/W Street: Water St / Merrimac St
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S6
Site Code : 72810006
Start Date : 6/18/2016
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Water St From East Left	Thru	State St From South Left	Right	Merrimac St From West Thru	Right	Int. Total
11:00 AM	18	107	0	0	86	66	277
11:15 AM	21	90	0	0	115	66	292
11:30 AM	28	107	0	0	114	56	305
11:45 AM	20	108	0	0	95	65	288
Total	87	412	0	0	410	253	1162
12:00 PM	21	91	0	0	125	69	306
12:15 PM	16	105	0	0	109	58	288
12:30 PM	20	109	0	0	95	53	277
12:45 PM	24	87	0	0	122	55	288
Total	81	392	0	0	451	235	1159
01:00 PM	13	106	0	0	121	49	289
01:15 PM	19	97	0	0	112	58	286
01:30 PM	10	99	0	0	106	78	293
01:45 PM	18	102	0	0	89	60	269
Total	60	404	0	0	428	245	1137
Grand Total	228	1208	0	0	1289	733	3458
Apprch %	15.9	84.1	0	0	63.7	36.3	
Total %	6.6	34.9	0	0	37.3	21.2	
Cars	218	1206	0	0	1288	728	3440
% Cars	95.6	99.8	0	0	99.9	99.3	99.5
Trucks	10	2	0	0	1	5	18
% Trucks	4.4	0.2	0	0	0.1	0.7	0.5

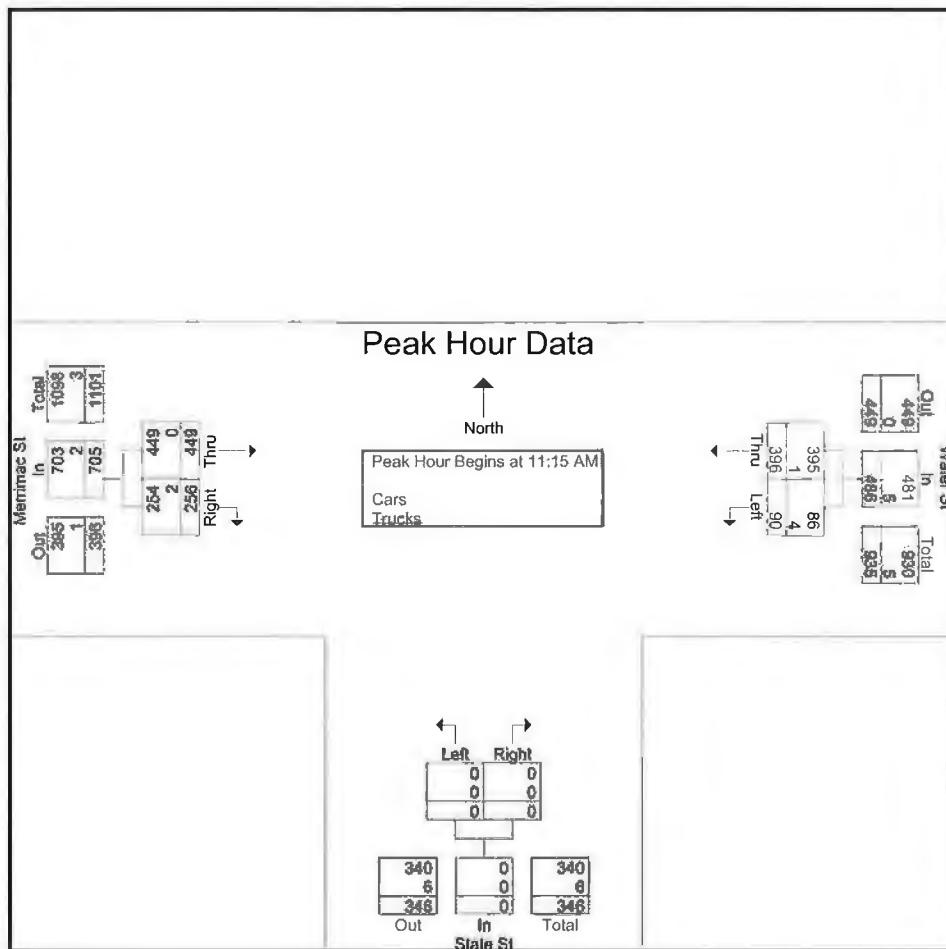
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S6
 Site Code : 72810006
 Start Date : 6/18/2016
 Page No : 2

	Water St From East			State St From South			Merrimac St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	21	90	111	0	0	0	115	66	181	292
11:30 AM	28	107	135	0	0	0	114	56	170	305
11:45 AM	20	108	128	0	0	0	95	65	160	288
12:00 PM	21	91	112	0	0	0	125	69	194	306
Total Volume	90	396	486	0	0	0	449	256	705	1191
% App. Total	18.5	81.5		0	0		63.7	36.3		
PHF	.804	.917	.900	.000	.000	.000	.898	.928	.909	.973
Cars	86	395	481	0	0	0	449	254	703	1184
% Cars	95.6	99.7	99.0	0	0	0	100	99.2	99.7	99.4
Trucks	4	1	5	0	0	0	0	2	2	7
% Trucks	4.4	0.3	1.0	0	0	0	0	0.8	0.3	0.6



Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S6
 Site Code : 72810006
 Start Date : 6/18/2016
 Page No : 4

Groups Printed- Cars

Start Time	Water St From East		State St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	18	107	0	0	85	66	276
11:15 AM	20	90	0	0	115	66	291
11:30 AM	27	107	0	0	114	55	303
11:45 AM	19	107	0	0	95	65	286
Total	84	411	0	0	409	252	1156
12:00 PM	20	91	0	0	125	68	304
12:15 PM	16	105	0	0	109	58	288
12:30 PM	19	109	0	0	95	53	276
12:45 PM	24	87	0	0	122	54	287
Total	79	392	0	0	451	233	1155
01:00 PM	12	106	0	0	121	49	288
01:15 PM	18	97	0	0	112	57	284
01:30 PM	10	99	0	0	106	78	293
01:45 PM	15	101	0	0	89	59	264
Total	55	403	0	0	428	243	1129
Grand Total	218	1206	0	0	1288	728	3440
Apprch %	15.3	84.7	0	0	63.9	36.1	
Total %	6.3	35.1	0	0	37.4	21.2	

Accurate Counts
978-664-2565

N/S Street : State Street
E/W Street: Water St / Merrimac St
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S6
Site Code : 72810006
Start Date : 6/18/2016
Page No : 7

Groups Printed- Trucks							
Start Time	Water St From East		State St From South		Merrimac St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	0	1	0	1
11:15 AM	1	0	0	0	0	0	1
11:30 AM	1	0	0	0	0	1	2
11:45 AM	1	1	0	0	0	0	2
Total	3	1	0	0	1	1	6
12:00 PM	1	0	0	0	0	1	2
12:15 PM	0	0	0	0	0	0	0
12:30 PM	1	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	1	1
Total	2	0	0	0	0	2	4
01:00 PM	1	0	0	0	0	0	1
01:15 PM	1	0	0	0	0	1	2
01:30 PM	0	0	0	0	0	0	0
01:45 PM	3	1	0	0	0	1	5
Total	5	1	0	0	0	2	8
Grand Total	10	2	0	0	1	5	18
Apprch %	83.3	16.7	0	0	16.7	83.3	
Total %	55.6	11.1	0	0	5.6	27.8	

Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S6
 Site Code : 72810006
 Start Date : 6/18/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Water St From East			State St From South			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
11:00 AM	0	1	0	0	1	6	5	2	0	6	9	15
11:15 AM	2	2	0	0	0	5	5	2	0	5	11	16
11:30 AM	0	4	0	0	0	0	7	6	0	0	17	17
11:45 AM	0	4	0	0	0	1	3	1	0	1	8	9
Total	2	11	0	0	1	12	20	11	0	12	45	57
12:00 PM	0	1	0	0	0	0	3	0	2	2	4	6
12:15 PM	0	4	0	0	0	1	4	0	1	2	8	10
12:30 PM	0	5	4	0	0	4	3	3	0	8	11	19
12:45 PM	0	0	1	0	0	9	3	2	8	18	5	23
Total	0	10	5	0	0	14	13	5	11	30	28	58
01:00 PM	0	0	0	0	1	4	3	1	0	4	5	9
01:15 PM	0	7	0	1	0	3	1	0	4	7	9	16
01:30 PM	0	1	0	0	0	7	1	1	0	7	3	10
01:45 PM	0	1	0	0	1	5	4	0	0	5	6	11
Total	0	9	0	1	2	19	9	2	4	23	23	46
Grand Total	2	30	5	1	3	45	42	18	15	65	96	161
Apprch %	6.2	93.8		25	75		70	30				
Total %	2.1	31.2		1	3.1		43.8	18.8		40.4	59.6	

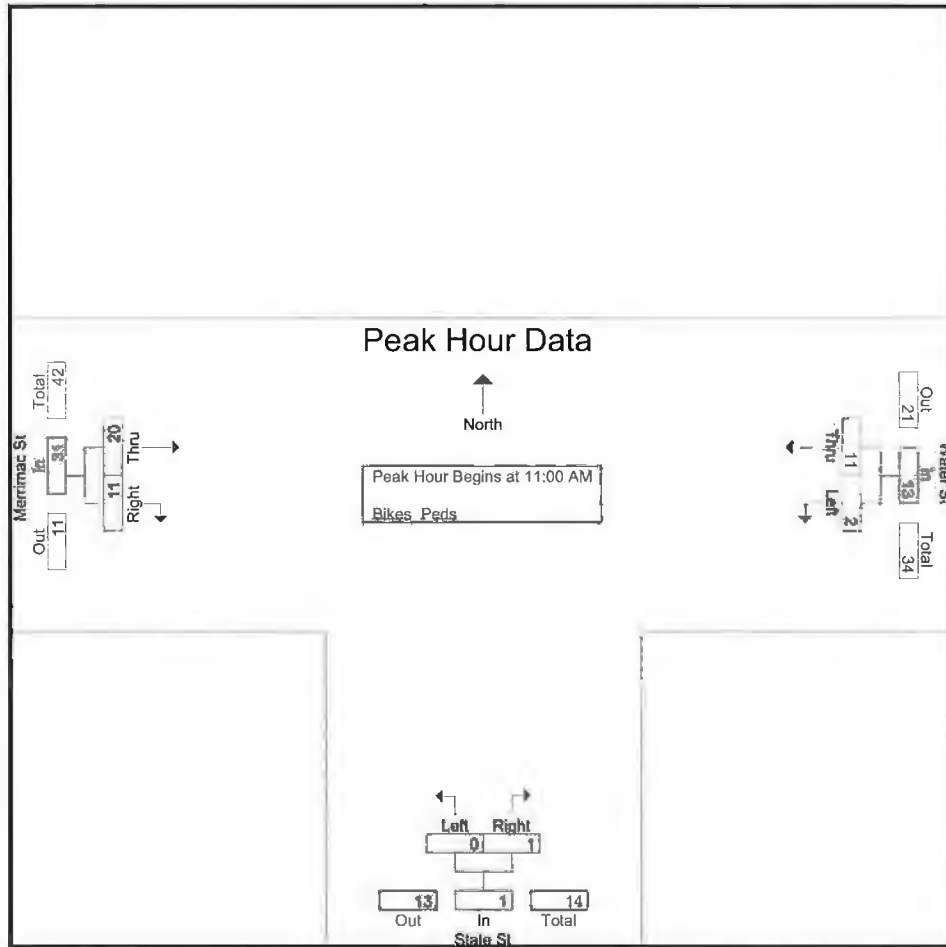
Accurate Counts

978-664-2565

N/S Street : State Street
 E/W Street: Water St / Merrimac St
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S6
 Site Code : 72810006
 Start Date : 6/18/2016
 Page No : 11

	Water St From East			State St From South			Merrimac St From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	1	1	0	1	1	5	2	7	9
11:15 AM	2	2	4	0	0	0	5	2	7	11
11:30 AM	0	4	4	0	0	0	7	6	13	17
11:45 AM	0	4	4	0	0	0	3	1	4	8
Total Volume	2	11	13	0	1	1	20	11	31	45
% App. Total	15.4	84.6		0	100		64.5	35.5		
PHF	.250	.688	.813	.000	.250	.250	.714	.458	.596	.662



Accurate Counts
978-664-2565

N/S Street : State Street
E/W Street: Liberty Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S7
Site Code : 72810007
Start Date : 6/18/2016
Page No : 1

Groups Printed- Cars - Trucks - Bikes Peds

Start Time	State St From North		Liberty St From East		State St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	84	21	0	0	0	105
11:15 AM	1	87	23	0	0	0	111
11:30 AM	0	85	18	0	0	0	103
11:45 AM	1	85	26	0	0	0	112
Total	2	341	88	0	0	0	431
12:00 PM	0	90	24	0	0	0	114
12:15 PM	0	74	29	0	0	0	103
12:30 PM	0	73	23	0	0	0	96
12:45 PM	0	79	23	0	0	0	102
Total	0	316	99	0	0	0	415
01:00 PM	0	62	14	8	0	0	84
01:15 PM	0	78	14	0	0	0	92
01:30 PM	0	88	13	0	0	0	101
01:45 PM	0	78	21	2	0	0	101
Total	0	306	62	10	0	0	378
Grand Total	2	963	249	10	0	0	1224
Apprch %	0.2	99.8	96.1	3.9	0	0	
Total %	0.2	78.7	20.3	0.8	0	0	
Cars	0	946	241	0	0	0	1187
% Cars	0	98.2	96.8	0	0	0	97
Trucks	0	15	2	0	0	0	17
% Trucks	0	1.6	0.8	0	0	0	1.4
Bikes Peds	2	2	6	10	0	0	20
% Bikes Peds	100	0.2	2.4	100	0	0	1.6

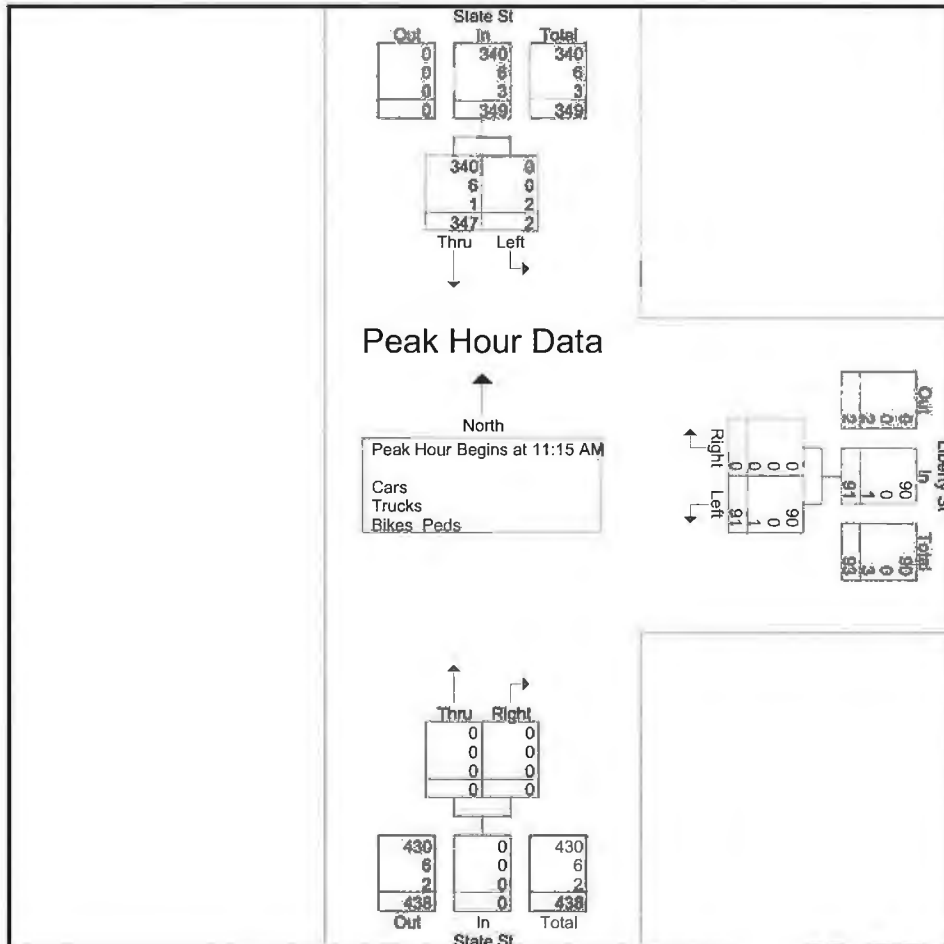
Accurate Counts

978-664-2565

N/S Street : State Street
E/W Street: Liberty Street
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S7
Site Code : 72810007
Start Date : 6/18/2016
Page No : 2

	State St From North			Liberty St From East			State St From South			Int. Total
	Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	1	87	88	23	0	23	0	0	0	111
11:30 AM	0	85	85	18	0	18	0	0	0	103
11:45 AM	1	85	86	26	0	26	0	0	0	112
12:00 PM	0	90	90	24	0	24	0	0	0	114
Total Volume	2	347	349	91	0	91	0	0	0	440
% App. Total	0.6	99.4		100	0		0	0		
PHF	.500	.964	.969	.875	.000	.875	.000	.000	.000	.965
Cars	0	340	340	90	0	90	0	0	0	430
% Cars	0	98.0	97.4	98.9	0	98.9	0	0	0	97.7
Trucks	0	6	6	0	0	0	0	0	0	6
% Trucks	0	1.7	1.7	0	0	0	0	0	0	1.4
Bikes Peds	2	1	3	1	0	1	0	0	0	4
% Bikes Peds	100	0.3	0.9	1.1	0	1.1	0	0	0	0.9



Accurate Counts
978-664-2565

N/S Street : Winter Street
E/W Street: Route 1 SB On Ramp
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S8
Site Code : 72810008
Start Date : 6/18/2016
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	14	16	0	0	0	0	30
11:15 AM	23	32	0	0	0	0	55
11:30 AM	25	25	0	0	0	0	50
11:45 AM	22	48	0	0	0	0	70
Total	84	121	0	0	0	0	205
12:00 PM	32	41	0	0	0	0	73
12:15 PM	27	23	0	0	0	0	50
12:30 PM	40	34	0	0	0	0	74
12:45 PM	21	35	0	0	0	0	56
Total	120	133	0	0	0	0	253
01:00 PM	25	21	0	0	0	0	46
01:15 PM	28	32	0	0	0	0	60
01:30 PM	28	28	0	0	0	0	56
01:45 PM	30	21	0	0	0	0	51
Total	111	102	0	0	0	0	213
Grand Total	315	356	0	0	0	0	671
Apprch %	46.9	53.1	0	0	0	0	
Total %	46.9	53.1	0	0	0	0	
Cars	314	351	0	0	0	0	665
% Cars	99.7	98.6	0	0	0	0	99.1
Trucks	1	5	0	0	0	0	6
% Trucks	0.3	1.4	0	0	0	0	0.9

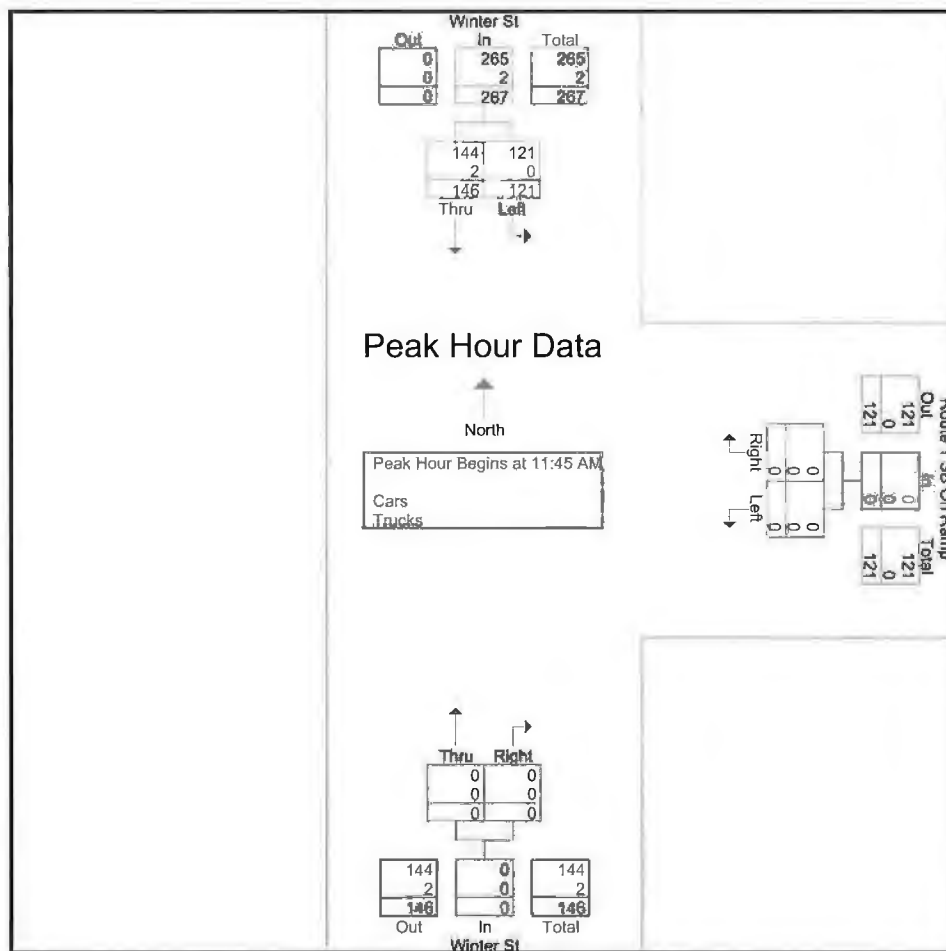
Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S8
 Site Code : 72810008
 Start Date : 6/18/2016
 Page No : 2

	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:45 AM										
11:45 AM	22	48	70	0	0	0	0	0	0	70
12:00 PM	32	41	73	0	0	0	0	0	0	73
12:15 PM	27	23	50	0	0	0	0	0	0	50
12:30 PM	40	34	74	0	0	0	0	0	0	74
Total Volume	121	146	267	0	0	0	0	0	0	267
% App. Total	45.3	54.7		0	0		0	0		
PHF	.756	.760	.902	.000	.000	.000	.000	.000	.000	.902
Cars	121	144	265	0	0	0	0	0	0	265
% Cars	100	98.6	99.3	0	0	0	0	0	0	99.3
Trucks	0	2	2	0	0	0	0	0	0	2
% Trucks	0	1.4	0.7	0	0	0	0	0	0	0.7



Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S8
 Site Code : 72810008
 Start Date : 6/18/2016
 Page No : 4

Groups Printed- Cars							
Start Time	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		Int. Total
	Left	Thru	Left	Right	Thru i	Right	
11:00 AM	14	16	0	0	0	0	30
11:15 AM	23	31	0	0	0	0	54
11:30 AM	25	25	0	0	0	0	50
11:45 AM	22	47	0	0	0	0	69
Total	84	119	0	0	0	0	203
12:00 PM	32	41	0	0	0	0	73
12:15 PM	27	23	0	0	0	0	50
12:30 PM	40	33	0	0	0	0	73
12:45 PM	20	34	0	0	0	0	54
Total	119	131	0	0	0	0	250
01:00 PM	25	21	0	0	0	0	46
01:15 PM	28	32	0	0	0	0	60
01:30 PM	28	27	0	0	0	0	55
01:45 PM	30	21	0	0	0	0	51
Total	111	101	0	0	0	0	212
Grand Total	314	351	0	0	0	0	665
Apprch %	47.2	52.8	0	0	0	0	
Total %	47.2	52.8	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Winter Street
 E/W Street: Route 1 SB On Ramp
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S8
 Site Code : 72810008
 Start Date : 6/18/2016
 Page No : 7

Start Time	Groups Printed- Trucks						Int. Total
	Winter St From North		Route 1 SB On Ramp From East		Winter St From South		
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0
11:45 AM	0	1	0	0	0	0	1
Total	0	2	0	0	0	0	2
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	1
12:45 PM	1	1	0	0	0	0	2
Total	1	2	0	0	0	0	3
01:00 PM	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0
01:30 PM	0	1	0	0	0	0	1
01:45 PM	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1
Grand Total	1	5	0	0	0	0	6
Apprch %	16.7	83.3	0	0	0	0	
Total %	16.7	83.3	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Winter Street
E/W Street: Route 1 SB On Ramp
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S8
Site Code : 72810008
Start Date : 6/18/2016
Page No : 10

Groups Printed- Bikes Peds												
Start Time	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	1	0	0	0	0	0	0	0	0	1	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	2	0	0	0	0	0	0	0	0	2	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	0	0	0	0	2	2
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	8	0	0	0	8	8
01:30 PM	0	1	0	0	0	0	0	0	0	0	1	1
01:45 PM	0	1	0	0	0	0	0	0	0	0	1	1
Total	0	2	0	0	0	0	8	0	0	0	10	10
Grand Total	0	5	0	0	0	0	8	0	0	0	13	13
Apprch %	0	100		0	0		100	0				
Total %	0	38.5		0	0		61.5	0		0	100	

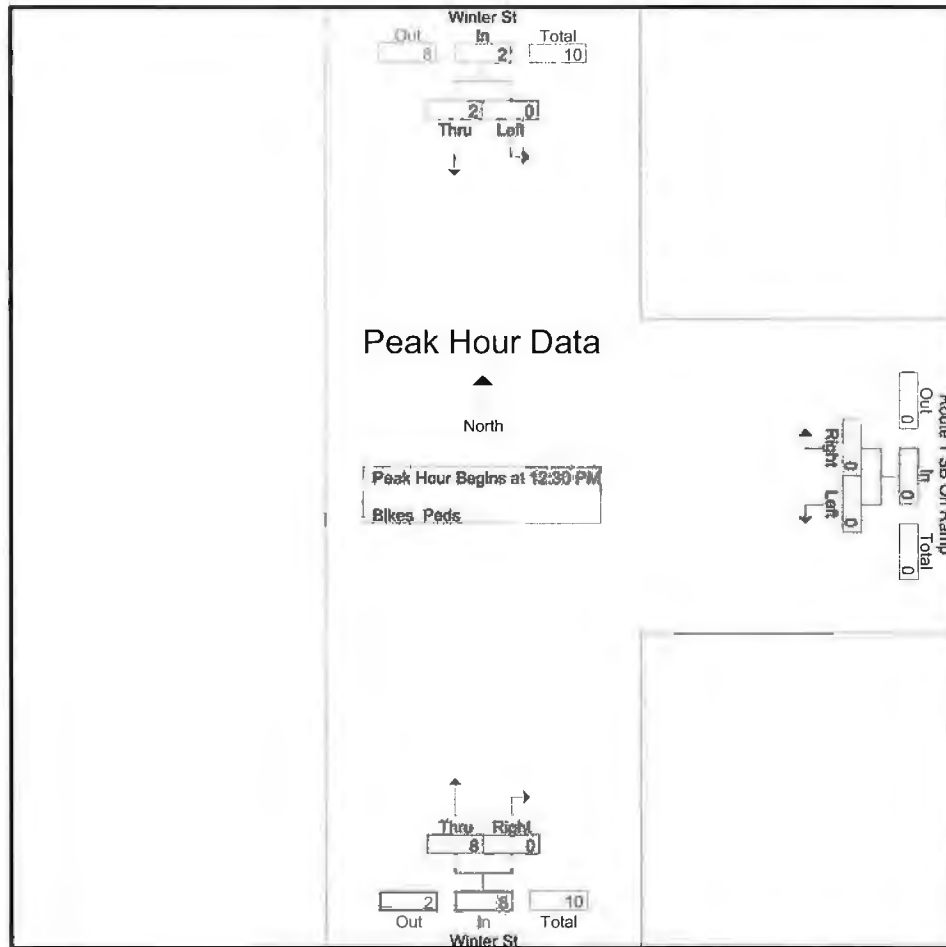
Accurate Counts

978-664-2565

N/S Street : Winter Street
E/W Street: Route 1 SB On Ramp
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S8
Site Code : 72810008
Start Date : 6/18/2016
Page No : 11

	Winter St From North			Route 1 SB On Ramp From East			Winter St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	0	2	2	0	0	0	0	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	8	0	8	8
Total Volume	0	2	2	0	0	0	8	0	8	10
% App. Total	0	100		0	0		100	0		
PHF	.000	.250	.250	.000	.000	.000	.250	.000	.250	.313



Accurate Counts

978-664-2565

N/S Street : Summer Street
E/W Street: Pleasant St / Route 1 Off
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S9
Site Code : 72810009
Start Date : 6/18/2016
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	5	0	42	0	20	0	0	67
11:15 AM	0	0	0	0	0	0	0	56	0	29	0	0	85
11:30 AM	0	0	0	0	0	1	0	37	0	31	0	0	69
11:45 AM	0	0	0	0	0	1	0	52	0	33	0	0	86
Total	0	0	0	0	0	7	0	187	0	113	0	0	307
12:00 PM	0	0	0	0	0	3	0	44	0	25	0	0	72
12:15 PM	0	0	0	0	0	4	0	39	0	34	0	0	77
12:30 PM	0	0	0	0	0	2	0	37	0	25	0	0	64
12:45 PM	0	0	0	0	0	4	0	38	0	36	0	0	78
Total	0	0	0	0	0	13	0	158	0	120	0	0	291
01:00 PM	0	0	0	0	0	4	0	38	0	28	0	0	70
01:15 PM	0	0	0	0	0	4	0	44	0	31	0	0	79
01:30 PM	0	0	0	0	0	2	0	39	0	32	0	0	73
01:45 PM	0	0	0	0	0	3	0	51	0	29	0	0	83
Total	0	0	0	0	0	13	0	172	0	120	0	0	305
Grand Total	0	0	0	0	0	33	0	517	0	353	0	0	903
Apprch %	0	0	0	0	0	100	0	100	0	100	0	0	
Total %	0	0	0	0	0	3.7	0	57.3	0	39.1	0	0	
Cars	0	0	0	0	0	33	0	517	0	351	0	0	901
% Cars	0	0	0	0	0	100	0	100	0	99.4	0	0	99.8
Trucks	0	0	0	0	0	0	0	0	0	2	0	0	2
% Trucks	0	0	0	0	0	0	0	0	0	0.6	0	0	0.2

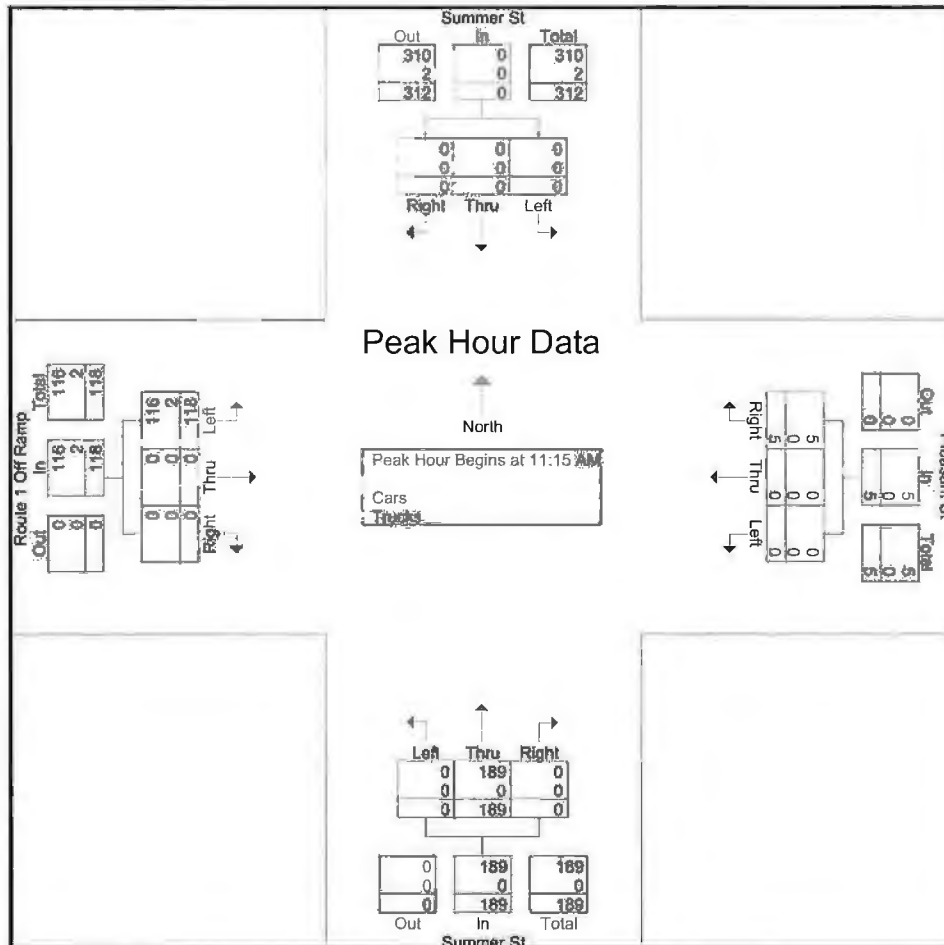
Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S9
 Site Code : 72810009
 Start Date : 6/18/2016
 Page No : 2

	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	0	0	0	0	0	56	0	56	29	0	0	29	85
11:30 AM	0	0	0	0	0	0	1	1	0	37	0	37	31	0	0	31	69
11:45 AM	0	0	0	0	0	0	1	1	0	52	0	52	33	0	0	33	86
12:00 PM	0	0	0	0	0	0	3	3	0	44	0	44	25	0	0	25	72
Total Volume	0	0	0	0	0	0	5	5	0	189	0	189	118	0	0	118	312
% App. Total	0	0	0		0	0	100		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.417	.417	.000	.844	.000	.844	.894	.000	.000	.894	.907
Cars	0	0	0	0	0	0	5	5	0	189	0	189	116	0	0	116	310
% Cars	0	0	0	0	0	0	100	100	0	100	0	100	98.3	0	0	98.3	99.4
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1.7	0	0	1.7	0.6



Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S9
 Site Code : 72810009
 Start Date : 6/18/2016
 Page No : 4

Groups Printed- Cars

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	5	0	42	0	20	0	0	67
11:15 AM	0	0	0	0	0	0	0	56	0	29	0	0	85
11:30 AM	0	0	0	0	0	1	0	37	0	30	0	0	68
11:45 AM	0	0	0	0	0	1	0	52	0	32	0	0	85
Total	0	0	0	0	0	7	0	187	0	111	0	0	305
12:00 PM	0	0	0	0	0	3	0	44	0	25	0	0	72
12:15 PM	0	0	0	0	0	4	0	39	0	34	0	0	77
12:30 PM	0	0	0	0	0	2	0	37	0	25	0	0	64
12:45 PM	0	0	0	0	0	4	0	38	0	36	0	0	78
Total	0	0	0	0	0	13	0	158	0	120	0	0	291
01:00 PM	0	0	0	0	0	4	0	38	0	28	0	0	70
01:15 PM	0	0	0	0	0	4	0	44	0	31	0	0	79
01:30 PM	0	0	0	0	0	2	0	39	0	32	0	0	73
01:45 PM	0	0	0	0	0	3	0	51	0	29	0	0	83
Total	0	0	0	0	0	13	0	172	0	120	0	0	305
Grand Total	0	0	0	0	0	33	0	517	0	351	0	0	901
Apprch %	0	0	0	0	0	100	0	100	0	100	0	0	
Total %	0	0	0	0	0	3.7	0	57.4	0	39	0	0	

Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S9
 Site Code : 72810009
 Start Date : 6/18/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Summer St From North			Pleasant St From East			Summer St From South			Route 1 Off Ramp From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	0	0	0	0	2	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 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
Grand Total	0	0	0	0	0	0	0	0	0	2	0	0	2
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	

Accurate Counts

978-664-2565

N/S Street : Summer Street
 E/W Street: Pleasant St / Route 1 Off
 City/State : Newburyport, MA
 Weather : Clear

File Name : 728100S9
 Site Code : 72810009
 Start Date : 6/18/2016
 Page No : 10

	Groups Printed: Bikes Peds																		
	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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
11:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
12:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
Total	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	3	2	5
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
01:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2	2	4
Grand Total	0	0	0	0	0	0	0	5	0	6	0	0	0	0	0	0	5	6	11
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0				
Total %	0	0	0		0	0	0		0	100	0		0	0	0		45.5	54.5	

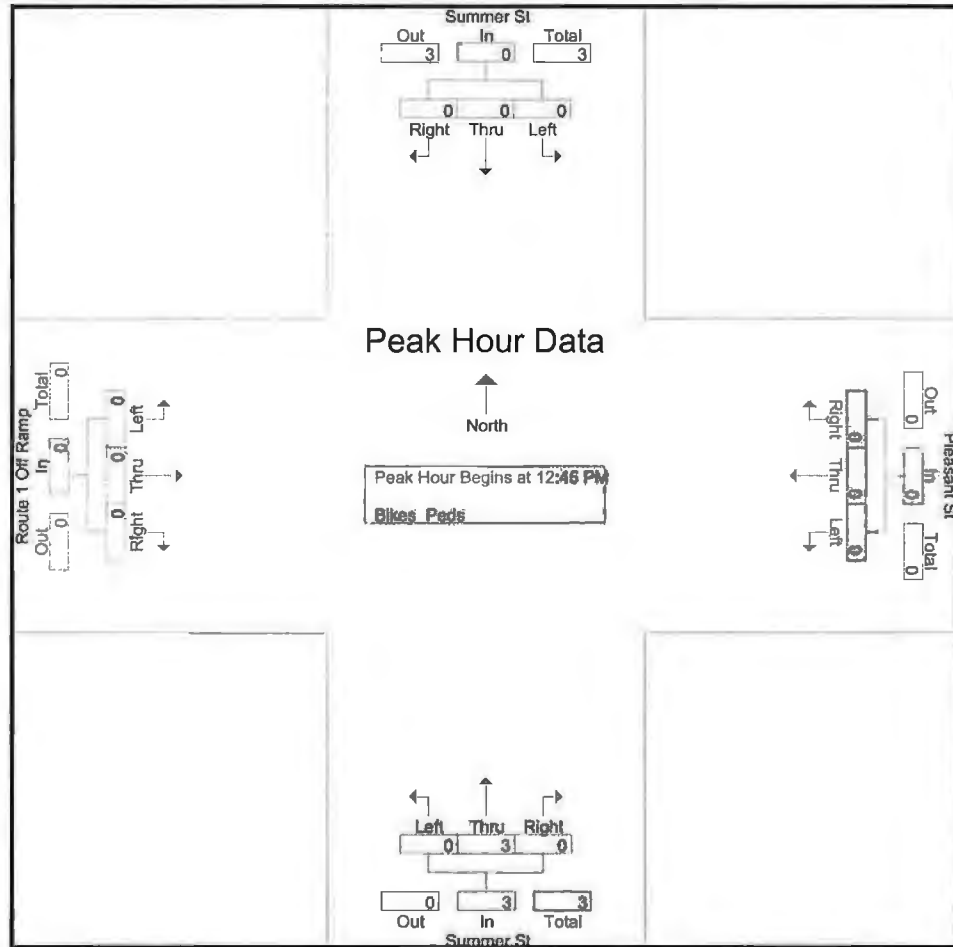
Accurate Counts

978-664-2565

N/S Street : Summer Street
E/W Street: Pleasant St / Route 1 Off
City/State : Newburyport, MA
Weather : Clear

File Name : 728100S9
Site Code : 72810009
Start Date : 6/18/2016
Page No : 11

	Summer St From North				Pleasant St From East				Summer St From South				Route 1 Off Ramp 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.375



Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/27/2010
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	0	2	136	0	4	164	30
11:15 AM	0	5	111	0	1	156	27
11:30 AM	1	1	126	0	2	156	28
11:45 AM	0	0	116	0	0	169	28
Total	1	8	489	0	7	645	115
12:00 PM	0	1	117	1	2	147	28
12:15 PM	0	2	115	0	1	163	28
12:30 PM	0	4	114	1	0	123	24
12:45 PM	1	4	142	1	3	141	29
Total	1	11	488	3	6	574	108
01:00 PM	0	1	100	0	1	170	27
01:15 PM	1	2	114	0	4	142	28
01:30 PM	0	1	143	1	1	134	28
01:45 PM	1	3	162	1	1	134	30
Total	2	7	519	2	7	580	115
Grand Total	4	26	1496	5	20	1799	335
Apprch %	13.3	86.7	99.7	0.3	1.1	98.9	
Total %	0.1	0.8	44.7	0.1	0.6	53.7	
Cars	4	26	1492	5	20	1793	334
% Cars	100	100	99.7	100	100	99.7	99
Trucks	0	0	4	0	0	6	0
% Trucks	0	0	0.3	0	0	0.3	0

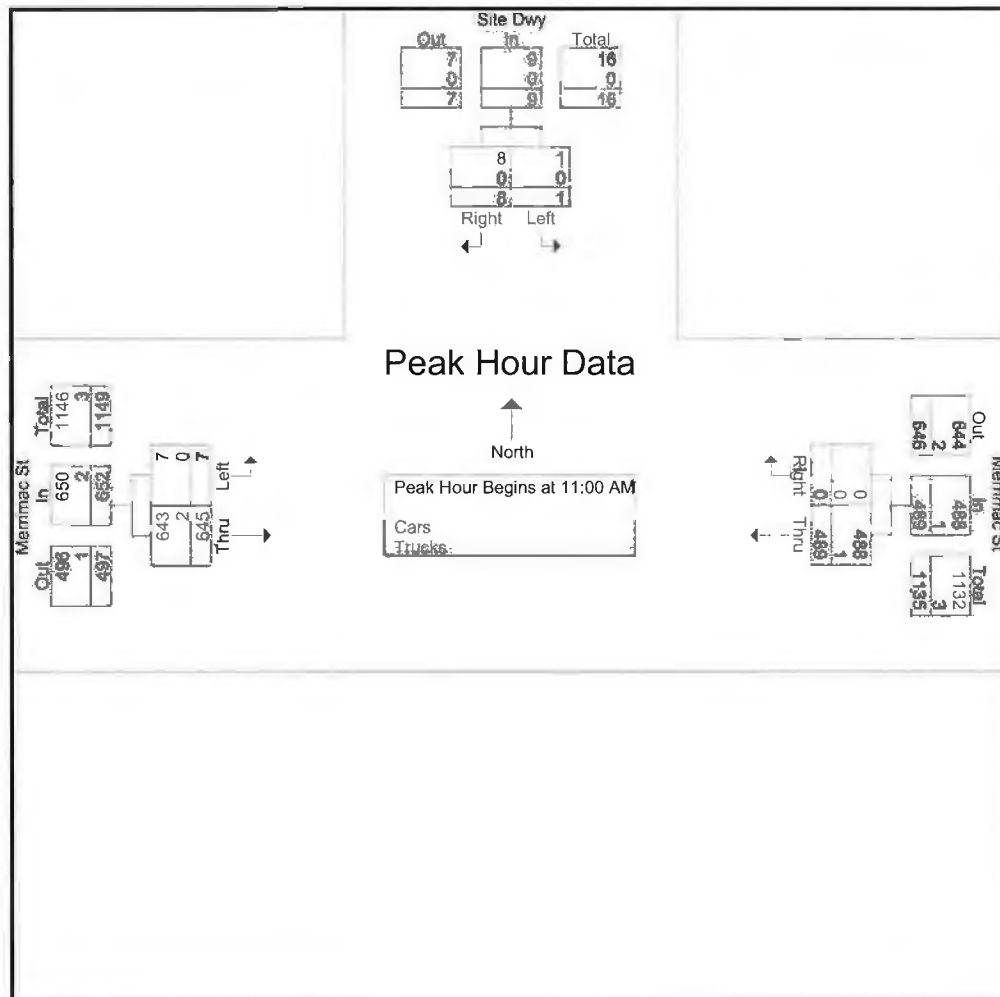
Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/27/2
Page No : 2

	Site Dwy From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	2	2	136	0	136	4	164	168	30
11:15 AM	0	5	5	111	0	111	1	156	157	27
11:30 AM	1	1	2	126	0	126	2	156	158	28
11:45 AM	0	0	0	116	0	116	0	169	169	28
Total Volume	1	8	9	489	0	489	7	645	652	115
% App. Total	11.1	88.9		100	0		1.1	98.9		
PHF	.250	.400	.450	.899	.000	.899	.438	.954	.964	.94
Cars	1	8	9	488	0	488	7	643	650	114
% Cars	100	100	100	99.8	0	99.8	100	99.7	99.7	99
Trucks	0	0	0	1	0	1	0	2	2	
% Trucks	0	0	0	0.2	0	0.2	0	0.3	0.3	0



Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/27/20
Page No : 4

Groups Printed- Cars

Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	0	2	136	0	4	163	30
11:15 AM	0	5	110	0	1	156	27
11:30 AM	1	1	126	0	2	156	28
11:45 AM	0	0	116	0	0	168	28
Total	1	8	488	0	7	643	114
12:00 PM	0	1	117	1	2	146	28
12:15 PM	0	2	115	0	1	162	28
12:30 PM	0	4	113	1	0	123	24
12:45 PM	1	4	141	1	3	141	28
Total	1	11	486	3	6	572	107
01:00 PM	0	1	100	0	1	169	27
01:15 PM	1	2	114	0	4	142	28
01:30 PM	0	1	142	1	1	133	27
01:45 PM	1	3	162	1	1	134	30
Total	2	7	518	2	7	578	114
Grand Total	4	26	1492	5	20	1793	334
Apprch %	13.3	86.7	99.7	0.3	1.1	98.9	
Total %	0.1	0.8	44.7	0.1	0.6	53.7	

Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/27/2
Page No : 7

Groups Printed- Trucks

Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	0	0	0	0	0	1	
11:15 AM	0	0	1	0	0	0	
11:30 AM	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	1	
Total	0	0	1	0	0	2	
12:00 PM	0	0	0	0	0	1	
12:15 PM	0	0	0	0	0	1	
12:30 PM	0	0	1	0	0	0	
12:45 PM	0	0	1	0	0	0	
Total	0	0	2	0	0	2	
01:00 PM	0	0	0	0	0	1	
01:15 PM	0	0	0	0	0	0	
01:30 PM	0	0	1	0	0	1	
01:45 PM	0	0	0	0	0	0	
Total	0	0	1	0	0	2	
Grand Total	0	0	4	0	0	6	
Apprch %	0	0	100	0	0	100	
Total %	0	0	40	0	0	60	

Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/27/2
Page No : 10

Groups Printed- Bikes Peds												
Start Time	Site Dwy From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Tot
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
11:00 AM	0	0	15	1	0	0	0	3	0	15	4	1
11:15 AM	0	0	4	1	0	3	0	2	0	7	3	1
11:30 AM	0	0	9	2	0	0	0	3	0	9	5	1
11:45 AM	0	0	10	1	0	0	0	0	0	10	1	1
Total	0	0	38	5	0	3	0	8	0	41	13	5
12:00 PM	0	0	11	3	0	0	0	3	0	11	6	1
12:15 PM	0	0	9	2	0	0	0	2	0	9	4	1
12:30 PM	0	3	12	2	0	0	0	0	0	12	5	1
12:45 PM	0	0	9	0	0	0	0	3	0	9	3	1
Total	0	3	41	7	0	0	0	8	0	41	18	5
01:00 PM	0	0	13	1	0	0	0	0	0	13	1	1
01:15 PM	0	0	8	6	0	0	0	1	1	9	7	1
01:30 PM	0	0	10	1	0	0	0	1	0	10	2	1
01:45 PM	0	0	9	0	1	0	0	4	0	9	5	1
Total	0	0	40	8	1	0	0	6	1	41	15	5
Grand Total	0	3	119	20	1	3	0	22	1	123	46	16
Apprch %	0	100		95.2	4.8		0	100				
Total %	0	6.5		43.5	2.2		0	47.8		72.8	27.2	

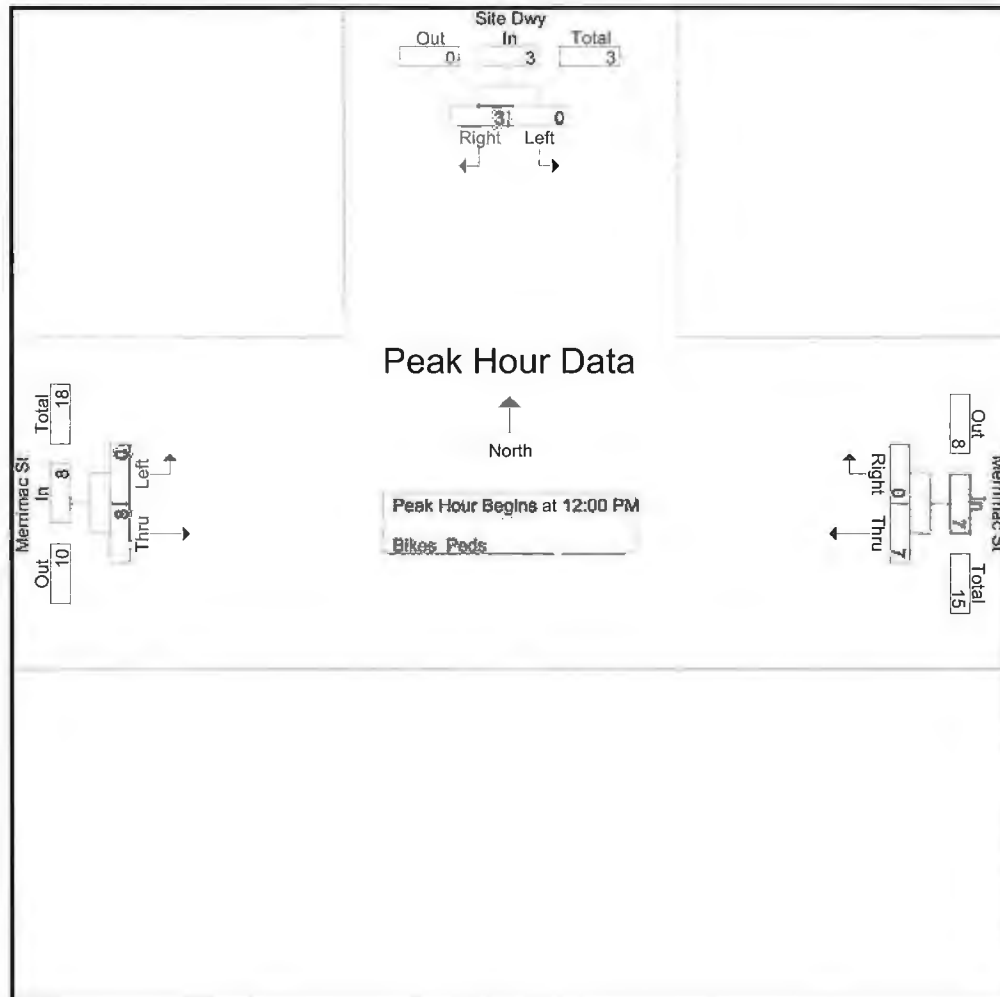
Accurate Counts

978-664-2565

S Street : Site Driveway
W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810
Site Code : 72810
Start Date : 8/27/2
Page No : 11

	Site Dwy				Merrimac St			Merrimac St			
	From North				From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 12:00 PM											
12:00 PM	0	0	0	3	0	3	0	3	3		
12:15 PM	0	0	0	2	0	2	0	2	2		
12:30 PM	0	3	3	2	0	2	0	0	0		
12:45 PM	0	0	0	0	0	0	0	3	3		
Total Volume	0	3	3	7	0	7	0	8	8	1	
% App. Total	0	100		100	0		0	100			
PHF	.000	.250	.250	.583	.000	.583	.000	.667	.667	.75	



Accurate Counts

978-664-2565

N/S Street : Site Driveway
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810S11
 Site Code : 72810011
 Start Date : 8/27/2016
 Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Total
	Left :	Right	Thru	Right	Left :	Thru	
11:00 AM	0	2	136	0	4	164	306
11:15 AM	0	5	111	0	1	156	273
11:30 AM	1	1	126	0	2	156	286
11:45 AM	0	0	116	0	0	169	285
Total	1	8	489	0	7	645	1150
12:00 PM	0	1	117	1	2	147	268
12:15 PM	0	2	115	0	1	163	281
12:30 PM	0	4	114	1	0	123	242
12:45 PM	1	4	142	1	3	141	292
Total	1	11	488	3	6	574	1083
01:00 PM	0	1	100	0	1	170	272
01:15 PM	1	2	114	0	4	142	263
01:30 PM	0	1	143	1	1	134	280
01:45 PM	1	3	162	1	1	134	302
Total	2	7	519	2	7	580	1117
Grand Total	4	26	1496	5	20	1799	3350
Apprch %	13.3	86.7	99.7	0.3	1.1	98.9	
Total %	0.1	0.8	44.7	0.1	0.6	53.7	
Cars	4	26	1492	5	20	1793	3340
% Cars	100	100	99.7	100	100	99.7	99.7
Trucks	0	0	4	0	0	6	10
% Trucks	0	0	0.3	0	0	0.3	0.3

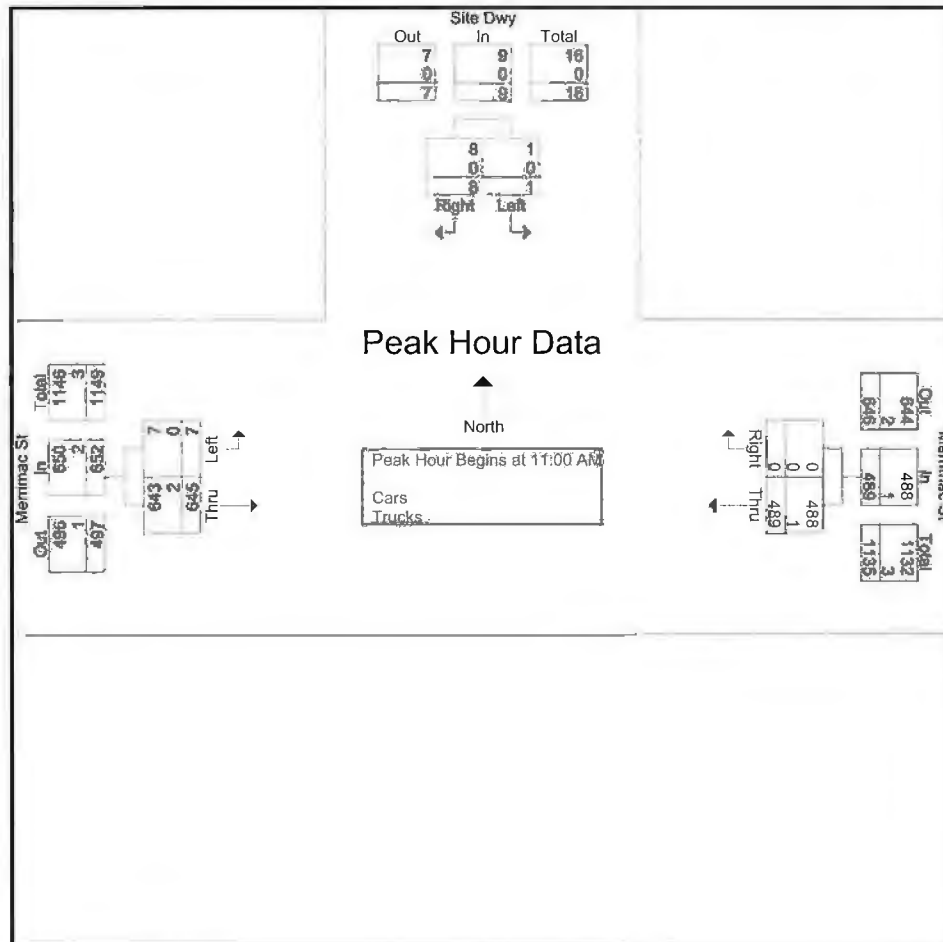
Accurate Counts

978-664-2565

N/S Street : Site Driveway
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810S11
Site Code : 72810011
Start Date : 8/27/2016
Page No : 2

	Site Dwy			Merrimac St			Merrimac St			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	2	2	136	0	136	4	164	168	306
11:15 AM	0	5	5	111	0	111	1	156	157	273
11:30 AM	1	1	2	126	0	126	2	156	158	286
11:45 AM	0	0	0	116	0	116	0	169	169	285
Total Volume	1	8	9	489	0	489	7	645	652	1150
% App. Total	11.1	88.9		100	0		1.1	98.9		
PHF	.250	.400	.450	.899	.000	.899	.438	.954	.964	.940
Cars	1	8	9	488	0	488	7	643	650	1147
% Cars	100	100	100	99.8	0	99.8	100	99.7	99.7	99.7
Trucks	0	0	0	1	0	1	0	2	2	3
% Trucks	0	0	0	0.2	0	0.2	0	0.3	0.3	0.3



Accurate Counts
978-664-2565

N/S Street : Site Driveway
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810S11
Site Code : 72810011
Start Date : 8/27/2016
Page No : 4

Groups Printed- Cars							
Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	0	2	136	0	4	163	305
11:15 AM	0	5	110	0	1	156	272
11:30 AM	1	1	126	0	2	156	286
11:45 AM	0	0	116	0	0	168	284
Total	1	8	488	0	7	643	1147
12:00 PM	0	1	117	1	2	146	267
12:15 PM	0	2	115	0	1	162	280
12:30 PM	0	4	113	1	0	123	241
12:45 PM	1	4	141	1	3	141	291
Total	1	11	486	3	6	572	1079
01:00 PM	0	1	100	0	1	169	271
01:15 PM	1	2	114	0	4	142	263
01:30 PM	0	1	142	1	1	133	278
01:45 PM	1	3	162	1	1	134	302
Total	2	7	518	2	7	578	1114
Grand Total	4	26	1492	5	20	1793	3340
Apprch %	13.3	86.7	99.7	0.3	1.1	98.9	
Total %	0.1	0.8	44.7	0.1	0.6	53.7	

Accurate Counts

978-664-2565

N/S Street : Site Driveway
E/W Street : Merrimac Street
City/State : Newburyport, MA
Weather : Clear

File Name : 72810S11
Site Code : 72810011
Start Date : 8/27/2016
Page No : 7

Groups Printed- Trucks							
Start Time	Site Dwy From North		Merrimac St From East		Merrimac St From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	0	0	0	0	0	1	1
11:15 AM	0	0	1	0	0	0	1
11:30 AM	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	1
Total	0	0	1	0	0	2	3
12:00 PM	0	0	0	0	0	1	1
12:15 PM	0	0	0	0	0	1	1
12:30 PM	0	0	1	0	0	0	1
12:45 PM	0	0	1	0	0	0	1
Total	0	0	2	0	0	2	4
01:00 PM	0	0	0	0	0	1	1
01:15 PM	0	0	0	0	0	0	0
01:30 PM	0	0	1	0	0	1	2
01:45 PM	0	0	0	0	0	0	0
Total	0	0	1	0	0	2	3
Grand Total	0	0	4	0	0	6	10
Apprch %	0	0	100	0	0	100	
Total %	0	0	40	0	0	60	

Accurate Counts

978-664-2565

N/S Street : Site Driveway
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810S11
 Site Code : 72810011
 Start Date : 8/27/2016
 Page No : 10

Groups Printed- Bikes Peds												
Start Time	Site Dwy From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
11:00 AM	0	0	15	1	0	0	0	3	0	15	4	19
11:15 AM	0	0	4	1	0	3	0	2	0	7	3	10
11:30 AM	0	0	9	2	0	0	0	3	0	9	5	14
11:45 AM	0	0	10	1	0	0	0	0	0	10	1	11
Total	0	0	38	5	0	3	0	8	0	41	13	54
12:00 PM	0	0	11	3	0	0	0	3	0	11	6	17
12:15 PM	0	0	9	2	0	0	0	2	0	9	4	13
12:30 PM	0	3	12	2	0	0	0	0	0	12	5	17
12:45 PM	0	0	9	0	0	0	0	3	0	9	3	12
Total	0	3	41	7	0	0	0	8	0	41	18	59
01:00 PM	0	0	13	1	0	0	0	0	0	13	1	14
01:15 PM	0	0	8	6	0	0	0	1	1	9	7	16
01:30 PM	0	0	10	1	0	0	0	1	0	10	2	12
01:45 PM	0	0	9	0	1	0	0	4	0	9	5	14
Total	0	0	40	8	1	0	0	6	1	41	15	56
Grand Total	0	3	119	20	1	3	0	22	1	123	46	169
Apprch %	0	100		95.2	4.8		0	100				
Total %	0	6.5		43.5	2.2		0	47.8		72.8	27.2	

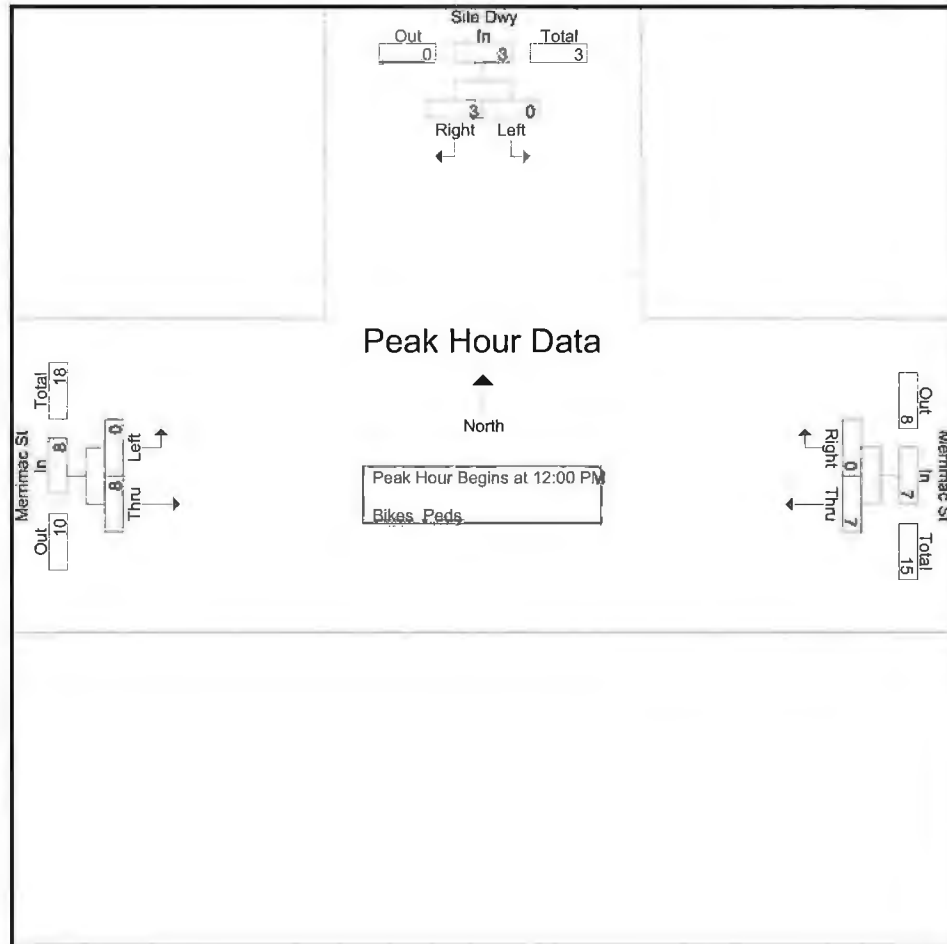
Accurate Counts

978-664-2565

N/S Street : Site Driveway
 E/W Street : Merrimac Street
 City/State : Newburyport, MA
 Weather : Clear

File Name : 72810S11
 Site Code : 72810011
 Start Date : 8/27/2016
 Page No : 11

	Site Dwy From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:00 PM										
12:00 PM	0	0	0	3	0	3	0	3	3	6
12:15 PM	0	0	0	2	0	2	0	2	2	4
12:30 PM	0	3	3	2	0	2	0	0	0	5
12:45 PM	0	0	0	0	0	0	0	3	3	3
Total Volume	0	3	3	7	0	7	0	8	8	18
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.583	.000	.583	.000	.667	.667	.750



Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
ather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/18/2
Page No : 1

Groups Printed- Cars - Trucks							
Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	6	7	0	3	18	0	26
11:15 AM	11	2	0	5	24	0	40
11:30 AM	8	10	0	12	18	0	38
11:45 AM	5	8	0	5	26	0	39
Total	30	27	0	25	86	0	143
12:00 PM	9	10	0	4	31	0	44
12:15 PM	6	10	0	10	25	0	41
12:30 PM	7	17	0	6	26	0	49
12:45 PM	18	16	0	8	36	0	62
Total	40	53	0	28	118	0	231
01:00 PM	20	12	0	4	31	0	47
01:15 PM	15	11	0	6	30	0	42
01:30 PM	16	10	0	6	17	0	39
01:45 PM	11	14	0	4	25	0	40
Total	62	47	0	20	103	0	232
Grand Total	132	127	0	73	307	0	639
Apprch %	51	49	0	100	100	0	100
Total %	20.7	19.9	0	11.4	48	0	100
Cars	132	127	0	73	307	0	639
% Cars	100	100	0	100	100	0	100
Trucks	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0

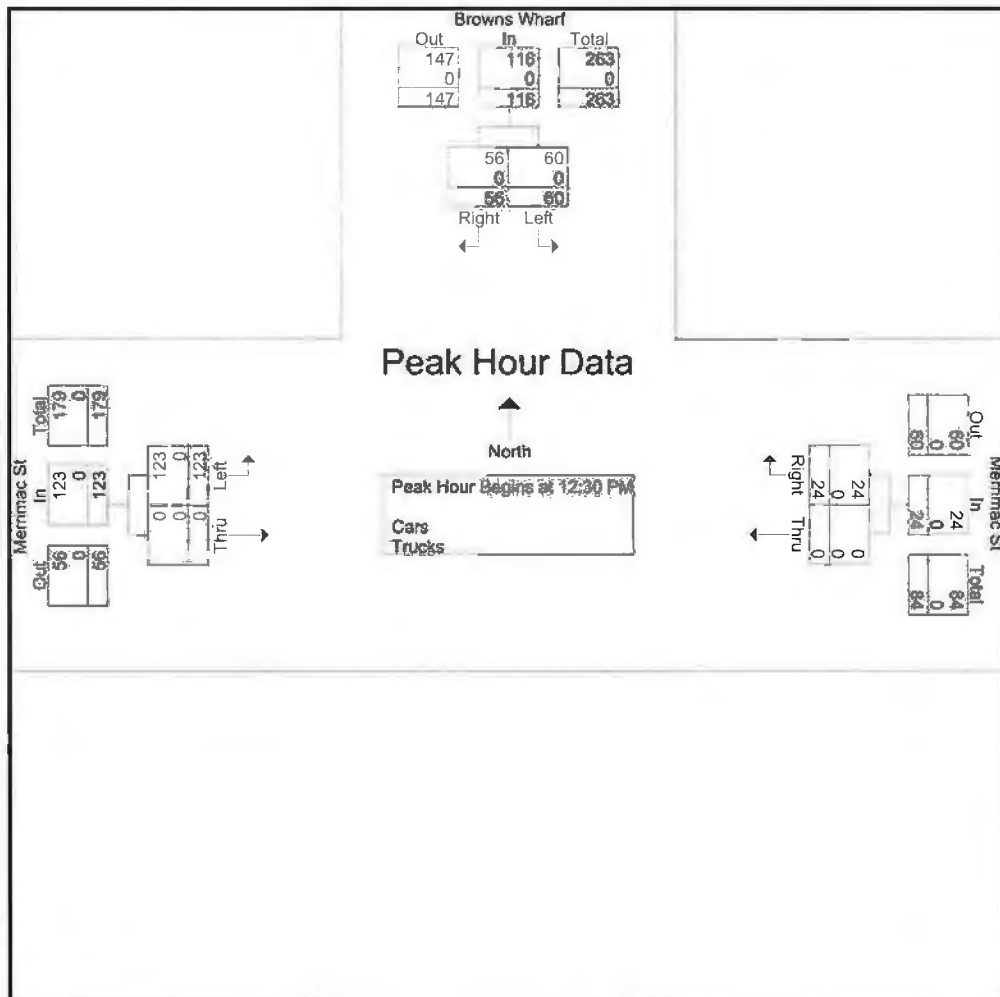
Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/18/2
Page No : 2

	Browns Wharf From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	7	17	24	0	6	6	26	0	26	5
12:45 PM	18	16	34	0	8	8	36	0	36	7
01:00 PM	20	12	32	0	4	4	31	0	31	6
01:15 PM	15	11	26	0	6	6	30	0	30	6
Total Volume	60	56	116	0	24	24	123	0	123	26
% App. Total	51.7	48.3		0	100		100	0		
PHF	.750	.824	.853	.000	.750	.750	.854	.000	.854	.84
Cars	60	56	116	0	24	24	123	0	123	26
% Cars	100	100	100	0	100	100	100	0	100	100
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

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/18/2
Page No : 4

Groups Printed- Cars

Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tot
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	6	7	0	3	18	0	26
11:15 AM	11	2	0	5	24	0	40
11:30 AM	8	10	0	12	18	0	38
11:45 AM	5	8	0	5	26	0	39
Total	30	27	0	25	86	0	143
12:00 PM	9	10	0	4	31	0	44
12:15 PM	6	10	0	10	25	0	41
12:30 PM	7	17	0	6	26	0	49
12:45 PM	18	16	0	8	36	0	62
Total	40	53	0	28	118	0	231
01:00 PM	20	12	0	4	31	0	67
01:15 PM	15	11	0	6	30	0	62
01:30 PM	16	10	0	6	17	0	49
01:45 PM	11	14	0	4	25	0	50
Total	62	47	0	20	103	0	232
Grand Total	132	127	0	73	307	0	639
Apprch %	51	49	0	100	100	0	
Total %	20.7	19.9	0	11.4	48	0	

Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
eather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/18/2
Page No : 7

Groups Printed- Trucks							
Start Time	Browns Wharf From North		Merrimac St From East		Merrimac St From West		Int. Tol
	Left	Right	Thru	Right	Left	Thru	
11:00 AM	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	
Total	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	
Total	0	0	0	0	0	0	
01:00 PM	0	0	0	0	0	0	
01:15 PM	0	0	0	0	0	0	
01:30 PM	0	0	0	0	0	0	
01:45 PM	0	0	0	0	0	0	
Total	0	0	0	0	0	0	
Grand Total	0	0	0	0	0	0	
Apprch %	0	0	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
ather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/18/2
Page No : 10

Groups Printed- Bikes Peds												
Start Time	Browns Wharf From North			Merrimac St From East			Merrimac St From West			Exclu. Total	Inclu. Total	Int. Tot
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
11:00 AM	0	0	3	0	0	1	0	0	0	4	0	
11:15 AM	1	0	1	0	0	1	0	0	0	2	1	
11:30 AM	0	0	9	0	0	0	1	0	0	9	1	1
11:45 AM	2	0	6	0	0	1	0	0	0	7	2	
Total	3	0	19	0	0	3	1	0	0	22	4	2
12:00 PM	0	0	4	0	0	0	0	0	0	4	0	
12:15 PM	0	0	3	0	0	1	1	0	0	4	1	
12:30 PM	0	0	2	0	0	0	0	0	0	2	0	
12:45 PM	0	0	4	0	0	2	0	0	0	6	0	
Total	0	0	13	0	0	3	1	0	0	16	1	1
01:00 PM	0	0	4	0	0	1	0	0	0	5	0	
01:15 PM	0	0	0	0	1	0	0	0	0	0	1	
01:30 PM	0	0	0	0	0	2	0	0	0	2	0	
01:45 PM	0	0	3	0	0	0	0	0	0	3	0	
Total	0	0	7	0	1	3	0	0	0	10	1	1
Grand Total	3	0	39	0	1	9	2	0	0	48	6	5
Apprch %	100	0		0	100		100	0				
Total %	50	0		0	16.7		33.3	0		88.9	11.1	

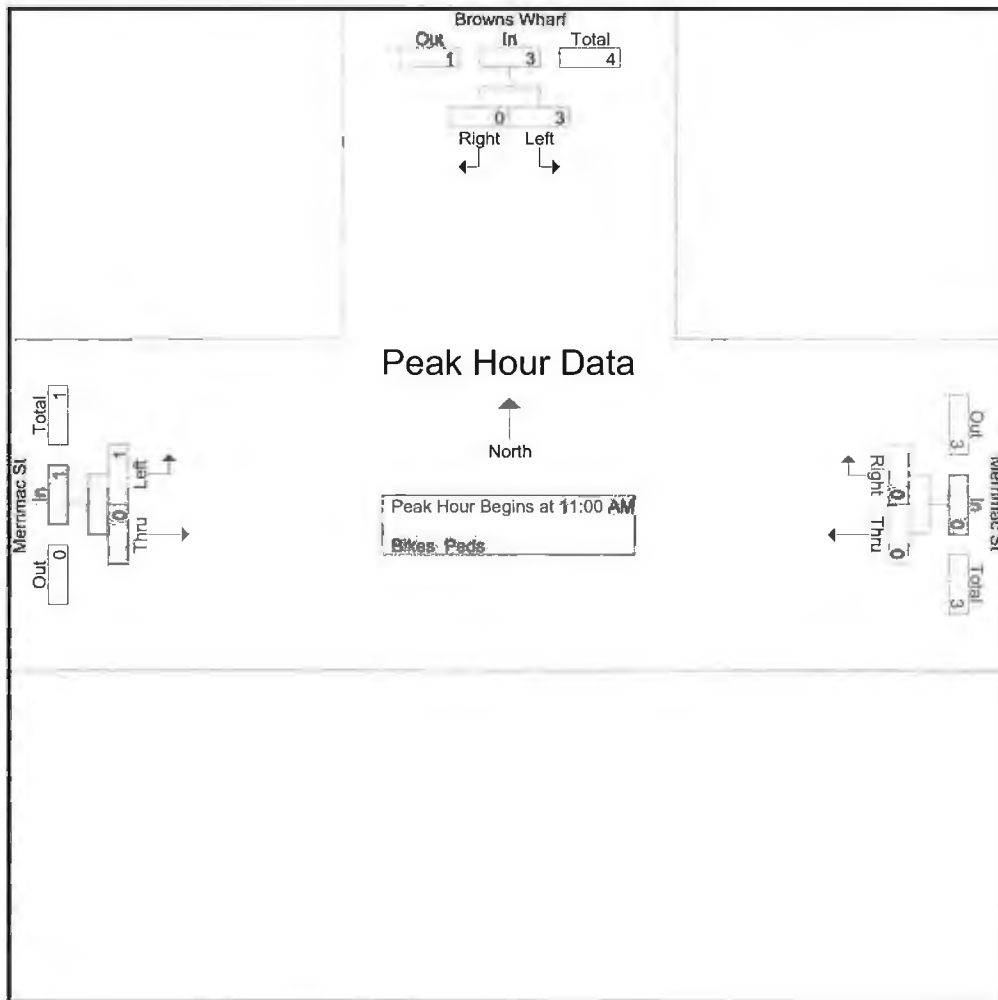
Accurate Counts

978-664-2565

S Street : Browns Wharf
W Street: Merrimac Street
y/State : Newburyport, MA
ather : Clear

File Name : 72810
Site Code : 72810
Start Date : 6/18/2
Page No : 11

	Browns Wharf From North			Merrimac St From East			Merrimac St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Tot
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	0	0	0	0	0	0	0	0	
11:15 AM	1	0	1	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	1	0	1	
11:45 AM	2	0	2	0	0	0	0	0	0	
Total Volume	3	0	3	0	0	0	1	0	1	
% App. Total	100	0		0	0		100	0		
PHF	.375	.000	.375	.000	.000	.000	.250	.000	.250	.50



SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department

5258: Monthly Hourly Volume for June 2015

Location ID: 5258
 County: ESSEX
 Functionl Class 1
 Location: INTERSTATE 95

Seasonal Factor Group: R1
 Daily Factor Group:
 Axle Factor Group: R1
 Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL
1	310	211	191	302	809	2807	3809	4752	4202	3337	3320	3446	3423	3271	3669	4442	4732	5221	3637	2466	1577	1290	738	539	62501
2	349	213	200	290	731	2535	3594	4677	4187	3226	3071	3141	3148	3295	3924	4515	5164	5411	3783	2396	1790	1398	967	701	62706
3																									
4	391	283	195	289	765	2660	3834	4902	4370	3541	3456	3689	3675	3808	4382	5056	5438	5677	4086	3173	2519	1983	1272	813	70257
5	502	302	205	311	710	2429	3645	4447	4171	3762	4033	4348	4615	4973	5413	5989	6517	6344	5077	4085	2894	2146	1649	1151	79718
6	659	407	228	182	321	782	1550	2551	3317	4333	5087	5352	5489	5162	5124	4857	4746	4403	3626	3056	2828	2432	1808	1155	69455
7	653	427	235	180	209	456	925	1465	2344	3488	4728	5594	5693	5558	5689	5715	5689	5444	4899	3970	3174	2026	1126	623	70310
8	370	236	221	321	922	3000	4089	4883	4398	3568	3649	3657	3475	3874	4005	4725	5122	5387	3855	2602	1872	1284	883	594	66992
9	393	279	245	295	774	2745	3849	4796	4406	3535	3335	3381	3415	3414	4039	4692	5006	5438	3967	2480	1896	1457	1000	638	65475
10	381	282	187	299	790	2676	3893	4627	4510	3670	3727	3688	3484	3648	4234	5053	5442	5581	4085	2876	2259	1786	1143	703	69024
11	442	248	227	270	774	2696	3757	4773	4477	3702	3835	3703	3811	4099	4550	5321	5662	5860	4252	3318	2599	2017	1345	787	72525
12	559	317	218	321	734	2452	3721	4719	4152	3941	4517	4761	4811	5235	5595	6362	6715	6581	5233	4048	3283	2325	1699	1339	83638
13	764	443	246	204	348	790	1636	2783	3872	4707	5564	5698	5485	5113	4999	5010	4953	4902	4105	3400	2817	2305	1817	1231	73192
14	763	512	253	201	258	489	1048	1744	2699	4036	5461	6068	6138	5803	5680	5615	5748	5969	5753	4662	3599	2342	1289	745	76875
15	390	286	177	305	871	2850	3898	4490	4582	3403	3539	3865	3758	3663	3994	4595	4920	5396	3740	2640	1860	1325	990	678	66215
16	395	248	204	310	765	2755	3841	4768	4332	3483	3625	3577	3421	3660	4166	4860	5238	5503	3929	2807	2073	1526	1025	761	67272
17	405	245	213	292	801	2759	3852	4829	4335	3568	3764	3743	3590	3748	4254	4932	5576	5803	4152	3164	2325	1811	1316	749	70226
18	458	276	199	288	810	2705	3819	4854	4391	3730	3892	4037	3888	4003	4523	5233	5695	5794	4417	3280	2467	2055	1278	864	72956
19	525	293	245	288	714	2311	3484	4550	4265	3831	4461	4849	4767	4966	5663	6319	6626	6411	5563	4453	3249	2388	1649	1085	82955
20	735	413	252	249	373	849	1627	2547	3591	4894	5689	5794	5448	5373	5423	4950	5079	4740	4182	3630	2890	2507	2023	1286	74544
21	675	389	225	194	215	369	663	1123	1845	2979	4511	5785	5896	5792	5891	6131	6010	5229	4182	3751	3136	2079	1189	625	68884
22	359	202	178	284	816	2994	4043	5025	4412	3651	4042	4336	4091	4082	4372	5119	5349	5752	4154	2842	2200	1636	1134	638	71711
23	379	242	218	314	775	2788	3861	4808	4378	3681	3673	3855	3698	3829	4264	4878	5394	5326	3570	2635	1966	1506	1126	1022	68186
24	612	266	227	310	814	2732	3889	4837	4523	4022	4165	4267	3902	4147	4557	5381	5914	6008	4494	3241	2653	1937	1557	1111	75566
25	627	286	235	326	783	2699	3809	4708	4355	4069	4383	4583	4587	4531	5103	5579	5972	5994	4920	3826	3035	2319	1478	945	79152
26	720	380	275	292	740	2310	3476	4497	4270	4245	4745	5328	5404	5526	5836	6395	6561	6630	5319	4561	3383	2418	1716	1280	86307
27	656	422	228	247	365	889	1627	2638	3831	4927	5875	6304	5927	5622	5507	5445	5254	5171	4271	3475	2980	2596	1876	1235	77368
28	726	443	226	192	208	356	688	994	1706	2800	4252	5541	6073	5799	5669	5620	5521	5171	4050	3061	2274	1717	1065	686	64838
29	325	226	188	345	859	2884	3881	4608	4332	3789	4219	4383	4268	4085	4594	5153	5510	5820	4061	2950	2201	1679	1115	718	72193
30	393	222	233	304	773	2653	3650	4604	4387	3989	4240	4334	4116	4114	4647	5181	5476	6009	4634	3396	2517	1996	1306	799	73973

Average = 70086.66

Yearly Average = 67,000

67000/70087 = 0.95

Massachusetts Highway Department

5258: Monthly Hourly Volume for August 2015

Location ID: 5258
 County: ESSEX
 Functionl Class: 1
 Location: INTERSTATE 95

Seasonal Factor Group: R1
 Daily Factor Group:
 Axle Factor Group: R1
 Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL
1	802	498	282	244	384	833	1819	3016	4868	6995	6899	7348	7032	6041	5944	5895	5668	5200	4816	4391	3618	2991	2459	1825	89868
2	828	527	245	202	288	491	1042	1747	3336	5302	6957	7165	6699	6485	6292	6004	6037	5797	5698	5425	5242	4979	2478	1029	90295
3																									
4	407	247	187	311	730	2529	3582	4601	4352	3909	4395	4445	4405	4343	4715	5266	5502	5692	4322	2992	2220	1779	1195	804	72930
5	533	308	233	187	865	2471	3578	4589	4578	4335	4701	4772	4445	4360	5045	5442	5885	6092	4670	3564	2758	2124	1499	845	77879
6	468	291	248	305	778	2402	3562	4670	4584	4381	4947	5046	4769	4964	5486	6025	6292	6359	4961	3897	3004	2270	1481	1182	82372
7	668	401	295	296	742	2131	3383	4455	4566	4699	5576	5778	5838	6078	6030	6489	7020	6731	5505	4867	3648	2759	1804	1363	91122
8	894	451	228	232	366	776	1647	2969	4578	5878	6740	6967	6569	6388	6086	5728	5491	5238	4507	3926	3225	2932	2303	1880	85999
9	870	454	245	186	243	462	972	1497	2710	4148	5963	6708	6762	6564	6439	6272	5874	5780	5364	5017	4208	3190	1835	1148	82911
10	509	283	199	321	865	2761	4032	4910	4419	4299	4972	5080	5038	4904	5170	5648	5984	6285	4526	3342	2671	1902	1136	640	79896
11	380	235	205	326	753	2437	3681	4617	4324	3926	3881	4195	4327	4271	4552	4991	5306	5579	3751	2596	2030	1477	1075	619	69534
12	369	232	228	299	766	2504	3693	4600	4562	4270	4648	4716	4536	4459	4820	5253	5835	6140	4668	3724	2769	2018	1514	866	77489
13	496	309	228	300	810	2480	3660	4664	4568	4486	4751	4748	5215	5114	5352	5853	6524	6552	5143	4115	3258	2439	1634	1160	83859
14	731	390	235	305	764	2174	3364	4537	4648	4920	5471	5997	6118	6271	6516	6831	7219	7251	6016	5155	3894	2814	1801	1368	94790
15	834	458	231	251	407	776	1694	2952	4439	6217	6963	6613	6783	6442	6177	5912	5894	5428	4682	3798	3177	2548	1993	1448	86117
16	835	560	304	252	278	470	991	1841	3216	5141	6964	7240	6879	6638	6492	6037	5901	5815	5591	5516	5434	4348	2143	1047	89933
17	499	285	178	343	919	2754	4005	4927	4811	4595	5249	5286	5005	4749	4973	5501	6245	6383	4676	3343	2766	1936	1265	854	81547
18	421	276	240	291	817	2444	3741	4838	4585	4207	4588	4742	4519	4482	4991	5351	5835	6264	4566	3133	2515	1794	1364	1010	77014
19	461	269	243	289	786	2409	3650	4714	4455	4396	4847	4757	4657	4585	5042	5650	5983	6321	4866	3384	2781	2096	1595	1074	79310
20	490	273	221	313	785	2370	3531	4664	4612	4346	4926	5286	5012	4659	5031	5899	6371	6541	4958	3903	3031	2192	1604	1063	82081
21	549	336	336	355	721	2025	3274	4216	3948	3935	4659	5619	5650	5882	5910	6490	6705	6637	5269	4048	3406	2266	1560	1241	85037
22	628	395	243	195	375	714	1419	2519	3741	5228	6227	6974	6456	6487	5982	5755	5287	4948	3994	3277	2814	2470	1827	1486	79441
23	993	639	317	190	229	459	886	1360	2343	3668	5517	6434	6323	6085	5882	5755	5825	5903	5537	4929	3389	2201	1282	771	76917
24	466	278	189	315	877	2652	3822	4724	4456	4008	4621	4994	4750	4555	4812	5287	5550	5722	4234	2894	2399	1620	1114	699	74978
25	379	249	204	281	734	2379	3569	4704	4387	3808	4006	4319	4120	4199	4773	5300	5592	5804	4340	2913	2246	1589	973	650	71518
26	323	245	200	285	771	2342	3598	4724	4359	4041	4629	4737	4460	4368	4777	5522	5893	5947	4564	3529	2755	1869	1342	735	76015
27	417	261	208	283	738	2317	3715	4679	4514	4157	4719	4920	4759	4655	5216	5828	6018	6343	4907	3826	2998	2221	1364	817	79880
28	444	269	208	270	680	2075	3314	4387	4545	4749	5616	5879	5843	6028	6331	6823	7022	6899	5635	4440	3371	2385	1545	1188	89946
29	807	627	303	198	334	728	1508	2505	4173	5773	6375	6630	6182	5772	5643	5459	5317	5116	4370	3679	3468	2581	2072	1298	80918
30	795	597	281	197	240	441	829	1541	2850	4355	5939	6677	6410	6228	5998	5841	5852	5796	5666	5205	4136	2776	1479	855	80984
31	428	247	193	314	853	2681	3923	4936	4472	4025	4263	4413	4401	4276	4709	5348	5799	5770	4150	2939	2273	1489	911	734	73547

Average = 75465 47

Yearly Average = 67,000

67000/75466 = 0.89

Massachusetts Highway Department

5258: Monthly Hourly Volume for September 2015

Location ID: 5258
 County: ESSEX
 Functional Class: 1
 Location: INTERSTATE 95

Seasonal Factor Group: R1
 Daily Factor Group:
 Axle Factor Group: R1
 Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL
1	471	223	206	307	756	2530	3806	4827	4391	3648	3803	3943	3833	3732	4394	5040	5548	5613	4035	2845	2088	1575	1092	755	69461
2	308	198	174	309	754	2425	3857	4843	4396	3876	3927	4006	3797	4026	4328	5235	5519	5692	4199	3099	2428	1837	1176	689	71098
3	330	236	217	312	750	2478	3818	4810	4450	3821	4171	4125	4165	4367	4796	5570	6023	6433	4850	3832	2994	2098	1255	876	76777
4	688	320	252	312	762	2032	3319	4237	4278	4330	5136	5830	6010	5906	6108	6408	6462	6364	5356	4498	3823	2619	1706	1215	87971
5	656	385	241	220	305	707	1587	2882	4310	5678	6109	5826	5722	5526	4826	4990	4638	4644	4146	3749	3331	2575	1729	1241	76023
6	587	341	190	159	187	401	830	1476	2886	4604	5929	6368	5773	5487	5240	5174	5119	5449	5163	4871	4418	3310	2118	1151	77231
7	582	298	217	188	288	504	868	1530	2773	4561	5756	6111	6068	5647	5607	5412	5378	5265	4914	4775	4795	3755	1538	624	77454
8	332	184	182	337	931	3030	4310	5296	4914	4059	4197	4463	4232	4129	4611	5217	5534	5737	3984	2762	1905	1401	944	697	73388
9	419	287	197	298	811	2661	3949	4974	4432	3636	3565	3651	3706	3677	4332	4996	5362	5759	4107	2924	2064	1567	979	725	69078
10																									
11																									
12																									
13																									
14																									
15																									
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24																									
25																									
26																									
27																									
28																									
29																									
30																									

Average = 75386.78

Yearly Average = 67,000

67000/75387 = 0.89

PUBLIC TRANSPORTATION SCHEDULES

Our Services > Fixed Routes & Schedules > All Routes Listed (New) > Amesbury-Newburyport-Salisbury[Print](#) | [Show Print Help](#)[Printable Map PDF \(8.66MB\)](#)**Effective: October 19, 2015**

This route runs Monday - Sunday.

*Bus service Senior Center from High Street.

No Stop Zones:

Exiting Costello Center till Washington St. (Pass Fire House)

Exiting Stop & Shop till 7/11 Convenience Store on Storey Ave. in Newburyport

Exiting Heritage House (OB & IB) on Low St. to Pond St.

One stop allowed at the CVS beyond crosswalk

Departing CVS stop till Green St.

One stop allowed at Post Office (Blinking Caution Light)

From Post Office till Merrimac St.

One stop allowed across of Waterfront Park (Blue (P) sign on sidewalk)

Merrimac St. till State

One stop allowed after Library at Bus Stop

From State St. till Rte. 1

One stop allowed across of CVS

From CVS on Pond St. till March Rd. (Pass Stripers Grill) OB & IB

Rte. 1 and Elm St. (before set of lights) till Beach Rd. pass Salisbury House of Pizza (OB)

From CVS on Beach Rd. till turning back on Rte. 1 with exception of The Laundromat on Elm St. (IB)

[View Inbound/Outbound Map](#)**OUTBOUND SCHEDULE**

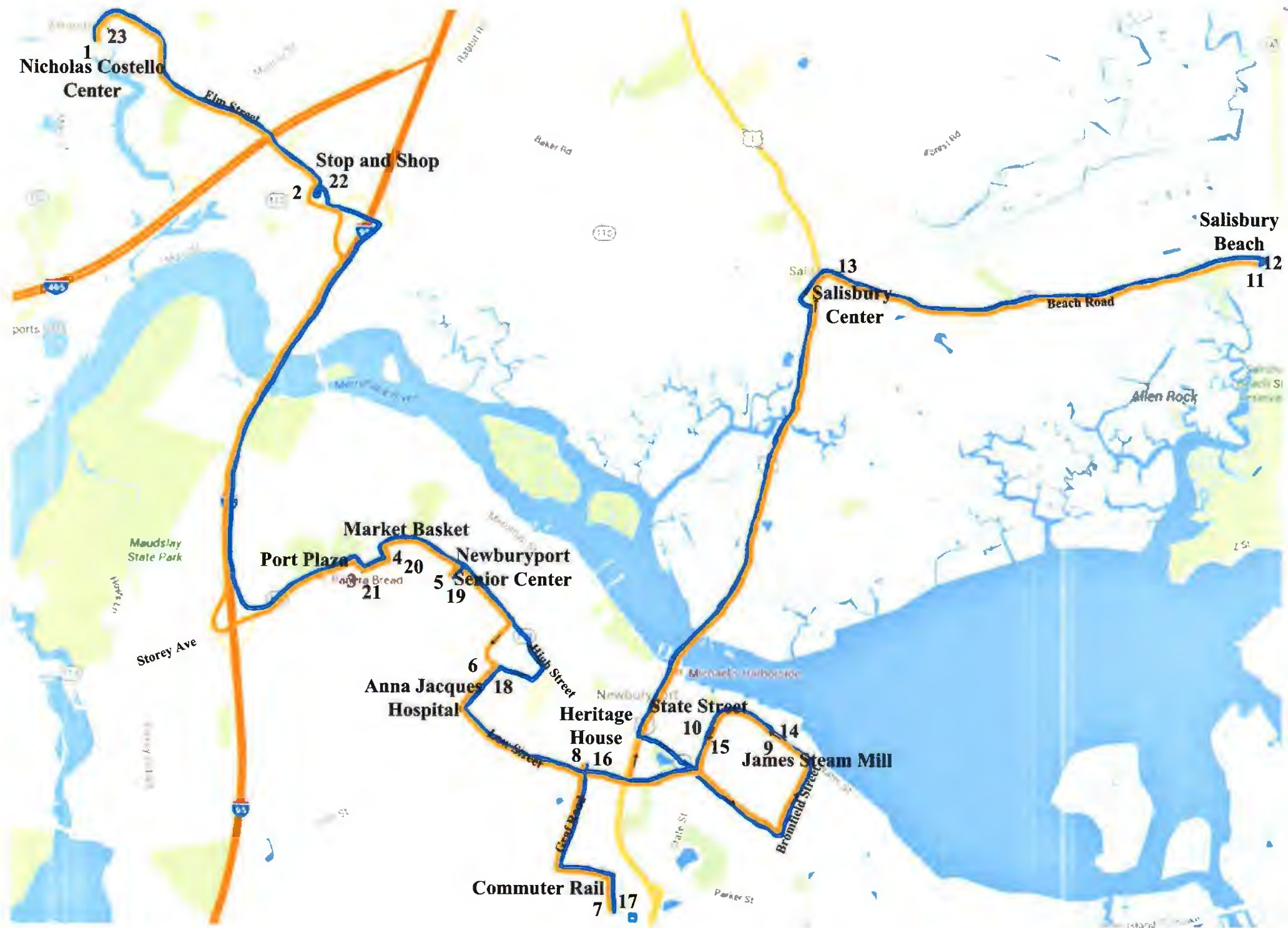
<td style="background-color: #e0e0e0;">Bus Leaves from State Street

	1	2	3	4	5	6	7	8	9	10	11
	Bus Starts at Costello Transportation Center	Bus Leaves from Stop & Shop	Bus Leaves from Port Plaza	Bus Leaves from Market Basket	Bus Leaves from Newburyport Senior / Community Center	Bus Leaves from Anna Jacques	Bus Leaves from Commuter Rail	Bus Leaves from Heritage House	Bus Leaves from James Steam Mill	Bus Leaves from State Street	Bus Ends at Salisbury Beach
WEEKDAYS											
AM	6:23	-	6:28	6:35	-*	-	6:40	6:43	6:48	6:53	7:08
	7:23	7:26	-	-	-*	-	7:35	7:38	7:43	7:48	8:03
	8:48	8:51	8:59	9:04	9:07	9:11	9:17	9:20	9:25	9:30	9:45
	9:58	10:01	10:09	10:14	10:17	10:21	10:27	10:30	10:35	10:40	10:55
PM	11:08	11:11	11:19	11:24	11:27	11:31	11:37	11:40	11:45	11:50	12:05
	12:18	12:21	12:29	12:34	12:37	12:41	12:47	12:50	12:55	1:00	1:15
	1:28	1:31	1:39	1:44	1:47	1:51	1:57	2:00	2:05	2:10	2:25
	2:38	2:41	2:49	2:54	-*	3:01	3:07	3:10	3:15	3:20	3:35
	3:48	3:51	3:59	4:04	4:07	4:11	4:17	4:20	4:25	4:30	4:45
	4:58	5:01	5:09	5:14	-*	5:21	5:27	5:30	5:35	5:40	5:55
	6:08	6:11	6:19	6:24	-*	6:31	6:37	6:40	6:45	6:50	7:05
SATURDAY/SUNDAY											
AM	8:48	8:51	8:59	9:04	-*	9:11	9:17	9:20	9:25	9:30	9:45
	9:58	10:01	10:09	10:14	-*	10:21	10:27	10:30	10:35	10:40	10:55
PM	11:08	11:11	11:19	11:24	-*	11:31	11:37	11:40	11:45	11:50	12:05
	12:18	12:21	12:29	12:34	-*	12:41	12:47	12:50	12:55	1:00	1:15
	1:28	1:31	1:39	1:44	-*	1:51	1:57	2:00	2:05	2:10	2:25
	2:38	2:41	2:49	2:54	-*	3:01	3:07	3:10	3:15	3:20	3:35
	3:48	3:51	3:59	4:04	-*	4:11	4:17	4:20	4:25	4:30	4:45
	4:58	5:01	5:09	5:14	-*	5:21	5:27	5:30	5:35	5:40	5:55
	6:08	6:11	6:19	6:24	-*	6:31	6:37	6:40	6:45	6:50	7:05

INBOUND SCHEDULE

	9	10	11	12	13	14	15	16	17	18	19	20	

	Bus Starts at Salisbury Beach	Bus Leaves from Salisbury Center	Bus Leaves from James Steam Mill	Bus Leaves from State Street	Bus Leaves from Heritage House	Bus Leaves from Commuter Rail	Bus Leaves from Anna Jaques	Bus Leaves from Newburyport Senior / Community Center	Bus Leaves from Market Basket	Bus Leaves from Port Plaza	Bus Leaves at Stop and Shop	Bus Ends at Costello Transportation Center	Bus Continues on as Route:
WEEKDAYS													
AM	-	-	-*	5:00	-	5:05	-	-	5:12	5:16	5:21	5:32	51
	6:24	6:30	6:37	6:40	6:50	6:53	6:59	-*	7:06	7:15	7:20	7:22	51
	7:28	7:34	7:41	7:44	7:54	7:57	8:03	-*	8:10	8:19	8:24	8:26	51
	8:23	8:29	8:36	8:39	8:49	8:52	8:58	9:02	9:05	9:14	9:19	9:21	51
	9:54	10:00	10:07	10:10	10:20	10:23	10:29	10:33	10:36	10:45	10:50	10:52	51
PM	11:04	11:10	11:17	11:20	11:30	11:33	11:39	11:43	11:46	11:55	12:00	12:02	51
	12:14	12:20	12:27	12:30	12:40	12:43	12:49	12:53	12:56	1:05	1:10	1:12	51
	1:24	1:30	1:37	1:40	1:50	1:53	1:59	-*	2:06	2:15	2:20	2:22	51
	2:34	2:40	2:47	2:50	3:00	3:03	3:09	3:13	3:16	3:25	3:30	3:32	51
	3:44	3:50	3:57	4:00	4:10	4:13	4:19	4:23	4:26	4:35	4:40	4:42	51
	4:54	5:00	5:07	5:10	5:20	5:23	5:29	-*	5:36	5:45	5:50	5:52	51
	6:04	6:10	6:17	6:20	6:30	6:33	6:39	-*	6:46	6:55	7:00	7:02	51
SATURDAY/SUNDAY													
AM	7:34*	7:40*	7:47*	7:50*	8:00	8:03	8:09	-*	8:16	8:25	8:30	8:32	51
	8:44	8:50	8:57	9:00	9:10	9:13	9:19	-*	9:26	9:35	9:40	9:42	51
	9:54	10:00	10:07	10:10	10:20	10:23	10:29	-*	10:36	10:45	10:50	10:52	51
PM	11:04	11:10	11:17	11:20	11:30	11:33	11:39	-*	11:46	11:55	12:00	12:02	51
	12:14	12:20	12:27	12:30	12:40	12:43	12:49	-*	12:56	1:05	1:10	1:12	51
	1:24	1:30	1:37	1:40	1:50	1:53	1:59	-*	2:06	2:15	2:20	2:22	51
	2:34	2:40	2:47	2:50	3:00	3:03	3:09	-*	3:16	3:25	3:30	3:32	51
	3:44	3:50	3:57	4:00	4:10	4:13	4:19	-*	4:26	4:35	4:40	4:42	51
	4:54	5:00	5:07	5:10	5:20	5:23	5:29	-*	5:36	5:45	5:50	5:52	51
	6:04*	6:10*	6:17*	6:20*	6:30*	6:33*	6:39*	-*	6:46*	6:55*	7:00*	7:02*	51



Summer Shuttle Cost

CHARLIE CARD*

Adult	\$1.00
Senior/Disabled/Student	\$0.50

1 DAY PASS

Adult	\$3.00
Senior/Disabled/Student	\$1.50

CASH

Adult	\$1.25
Senior/Disabled/Student	\$0.60

CHILDREN

Ages 5 & under with an adult	FREE
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*Stored Value is a transfer of cash to a "Charlie Card". Once you store your cash on a Charlie Card, you can TAP and RIDE on any transit system Charlie Cards are accepted (for example: the MBTA or Lowell Regional Transit Authority). A minimum of \$5.00 is required to activate your Charlie Card. Upon activation, when using the Charlie Card, full fare is \$1.00 per person (a cost savings of \$0.25 per trip). If you transfer to Route 54 (the Amesbury/Newburyport/Salisbury Route), a free transfer is automatically added to your card; transfers expire within 90-minutes of the time you board the bus.

Flag Policy

Persons wishing to board the bus must wave to the bus operator as the bus approaches and be on the same side of the street as the bus.

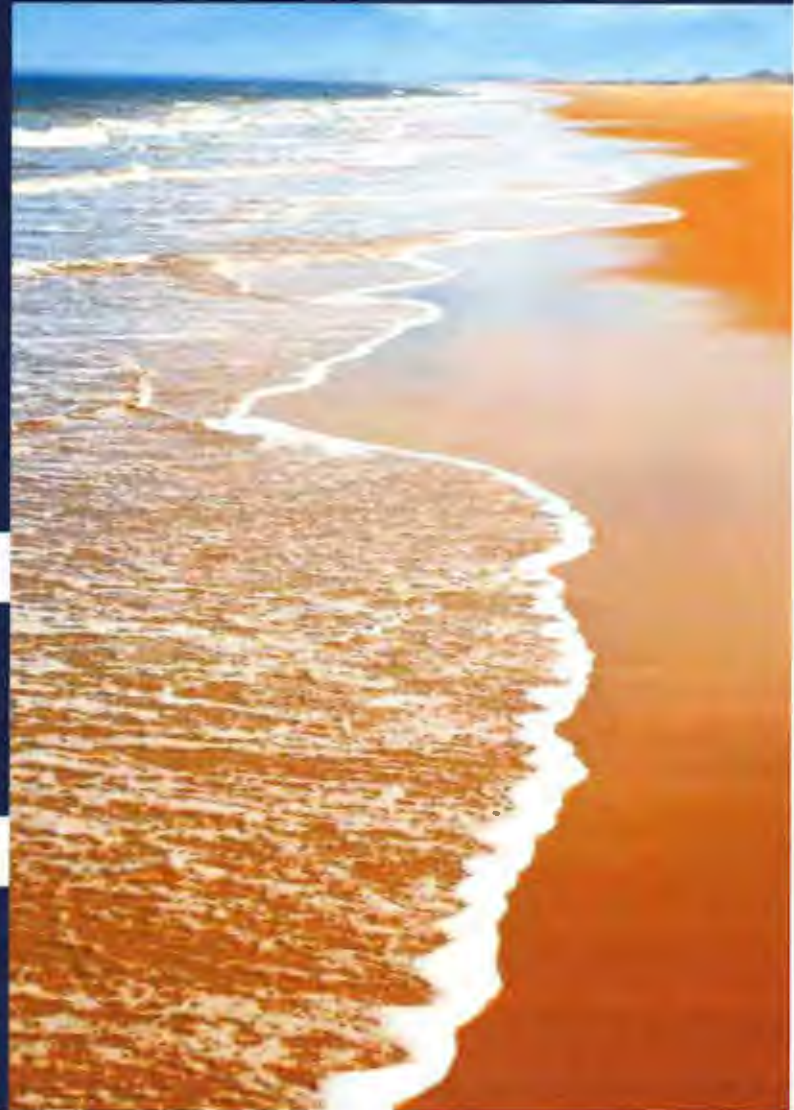
For More Information

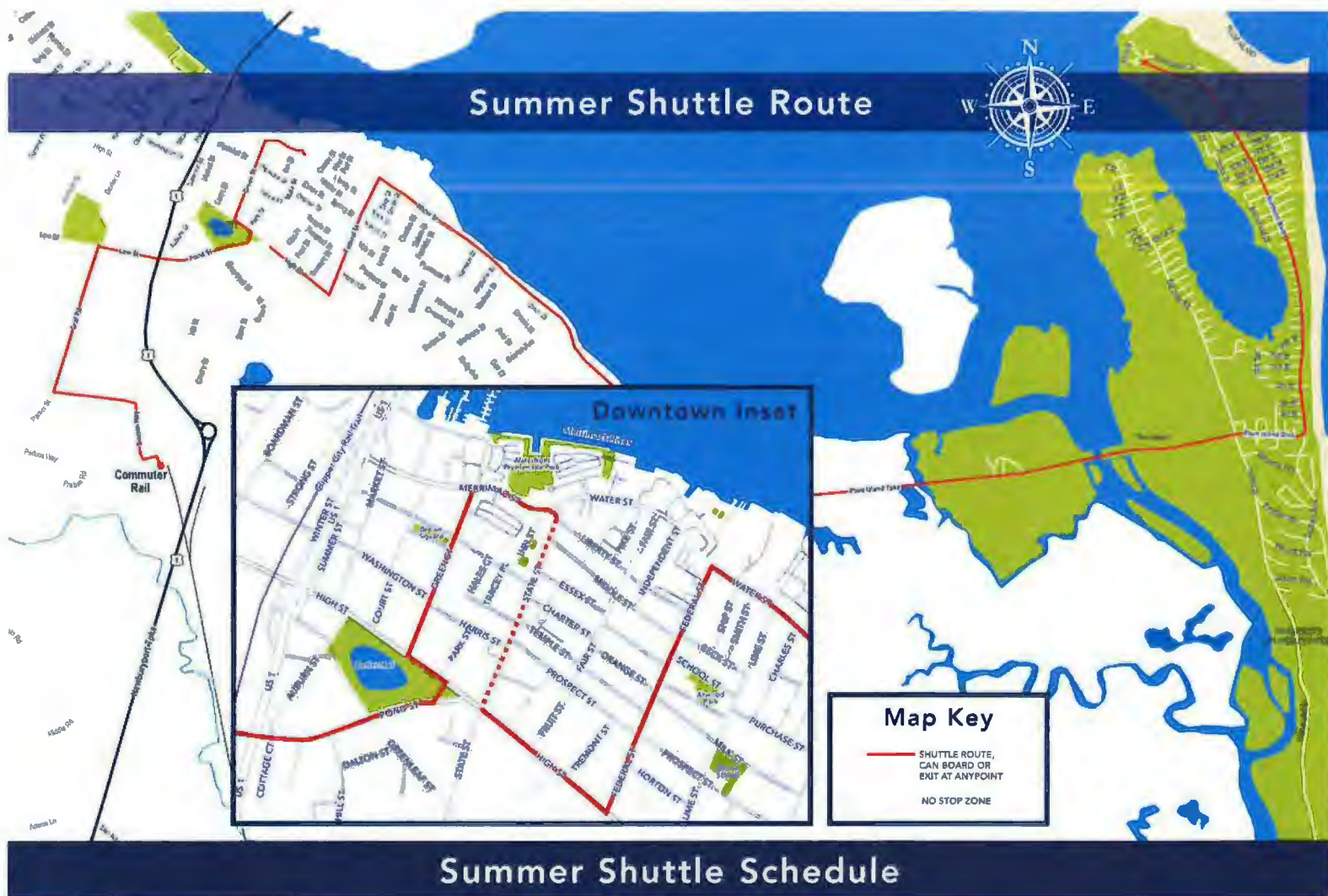
PLEASE VISIT:

www.cityofnewburyport.com or
www.facebook.com/pages/NBPT-Summer-Shuttle/592674390869714

THIS IS WHAT A WEEKEND DAY SHOULD LOOK LIKE...

Summer Shuttle





Summer Shuttle Schedule

Friday, Saturday & Sunday Service Only - MAY 29 - SEPTEMBER 6, 2015

LEAVES PLUM ISLAND	STATE STREET	COMMUTER RAIL / INDUSTRIAL PARK	STATE STREET	ARRIVES AT PLUM ISLAND
-	-	10:40	10:50	11:00
11:15	11:30	-	-	11:45
11:45	12:00	-	-	12:15
12:15	12:30	12:40	12:50	1:00
1:15	1:30	-	-	1:45
1:45	2:00	-	-	2:15
2:15	2:30	2:40	2:50	3:00
3:15	3:30	-	-	3:45
3:45	4:00	-	-	4:15
4:15*	4:30*	4:40	4:50	5:00
5:15	5:30	5:40	5:50	6:00

*FINAL TRAIN TO NORTH STATION - Friday 5:26 p.m. / Weekends 5:34 p.m.

Fare Info > Fixed Routes & Schedules

Charlie Card One Way Fare Information	
Type	Fare
Full Fare (Adulto)	\$1.00
Senior Citizens, age 60 & over (Mayores de 60 años o más)*	\$.50
Transportation Disabled (Discapacitados)**	\$.50
Passengers with valid Medicare Card (Con Tarjeta de Medicare)**	\$.50
Students, (Estudiantes) ages 13-17	\$.50
Children, (Niños) 6-12	\$.50
Children, 5 & under with adult (Niños menos de 5 con un adulto)	Free
Transfer (Transferencia)	Free

The MBTA Charlie Card is also accepted at these fares.

* A valid Medicare card may be used as proof of age to qualify for a half-fare Charlie Card

** A valid Medicare card or Statewide Access Pass may be used as proof of disability

Cash One Way Fare Information	
Type	Fare
Full Fare (Adulto)	\$1.25
Senior Citizens, age 60 & over (Mayores de 60 años o más)*	\$.60
Transportation Disabled (Discapacitados)**	\$.60
Passengers with valid Medicare Card (Con Tarjeta de Medicare)**	\$.60
Students, (Estudiantes) ages 13-17	\$.60
Children, (Niños) 6-12	\$.60
Children, 5 & under with adult (Niños menos de 5 con un adulto)	Free
Transfer (Transferencia)	Free

* A valid Medicare card may be used as proof of age to qualify for half-fare

** A valid Medicare card or Statewide Access Pass may be used as proof of disability

Pass & Fare Information	
Type	Price
31 Day Pass Full Fare (Pase para 31 días, Adulto):	\$30.00 Each
31 Day Pass Half Fare (Pase para 31 días, Mayores de 60 años o Discapacitados):	\$15.00 Each
*All Day Pass Full Fare (Pase para 31 días, Adulto):	\$3.00 Each
*All Day Pass Half Fare (Pase para 31 días, Mayores de 60 años o Discapacitados):	\$1.50 Each

*All-Day Passes allow one passenger unlimited rides for an entire day. When boarding the MVRTA bus simply advise the bus operator that you would like to purchase an All-Day Pass. The All-Day Pass will then be issued directly from the farebox once you deposit the appropriate fare. When using the All-Day Pass you will simply have to swipe the pass through the MVRTA farebox each time you board the bus throughout the day.

*Tickets are not refundable and lost, stolen, or damaged tickets cannot be replaced. Lost, stolen, and damaged Charlie Cards should be reported immediately to preserve as much value as possible. Riders are responsible for fares while lost, stolen, or damaged Charlie Cards issues are resolved.

[View "Places to Purchase Passes"](#)

[Statewide Transportation Access Pass Application](#)

The Statewide Transportation Access Pass program is a reduced-fare program for Massachusetts

residents who have a disability and use the public transportation system. This pass allows you to pay a reduced fare in your local service area and use other Transit Authority services across the state at a reduced rate.

Forms can be printed out from this link or picked up from our Haverhill or Lawrence Transit Center. Completed forms should be returned to a transit center or mailed to the MVRTA office at:

Merrimack Valley Regional Transit Authority

Administration Office

85 Railroad Avenue

Haverhill, MA 01835

For more farebox information click here: [English](#) [Spanish](#)

NEWBURYPORT/ROCKPORT LINE Train Schedule Effective May 23, 2016



Massachusetts Bay
Transportation Authority

Keolis

Monday to Friday

Inbound to Boston

Inbound to Boston										AM										PM																	
Station	Bikes Allowed	100	150	152	102	154	104	156	106	158	160	192	108	162	110	164	112	166	114	168	116	170	118	172	194	120	122	174	176	124	178	126	180	128	182		
8 Rockport	6	4:55	-	-	5:48	-	6:30	-	7:10	-	-	-	8:15	-	9:20	-	11:00	-	12:30	-	1:50	-	3:22	-	4:00	-	5:10	5:45	-	-	7:15	-	8:45	-	10:30	-	
7 Gloucester	6	5:02	-	-	5:55	-	6:37	-	7:17	-	-	-	8:22	-	9:27	-	11:07	-	12:37	-	1:57	-	3:29	-	4:07	-	5:17	5:52	-	-	7:22	-	8:52	-	10:37	-	
7 West Gloucester	6	5:08	-	-	6:01	-	6:43	-	7:23	-	-	-	8:28	-	9:33	-	11:13	-	12:43	-	2:03	-	3:35	-	4:13	-	5:23	5:58	-	-	7:28	-	8:58	-	10:43	-	
6 Manchester	6	5:15	-	-	6:08	-	6:50	-	7:30	-	-	-	8:35	-	9:40	-	11:20	-	12:50	-	2:10	-	3:42	-	4:20	-	5:30	6:05	-	-	7:35	-	9:05	-	10:50	-	
5 Beverly Farms	6	5:22	-	-	6:15	-	6:57	-	7:37	-	-	-	8:42	-	9:47	-	11:27	-	12:57	-	2:17	-	3:49	-	4:27	-	5:37	6:12	-	-	7:42	-	9:12	-	10:57	-	
5 Prides Crossing	6	-	-	-	6:18	-	7:00	-	7:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4 Montserrat	6	5:30	-	-	6:24	-	7:06	-	7:46	-	-	-	8:51	-	9:55	-	11:35	-	1:05	-	2:25	-	3:57	-	4:35	-	5:45	6:20	-	-	7:50	-	9:20	-	11:05	-	
3 Newburyport	6	-	5:20	5:50	-	6:25	-	7:00	-	7:30	7:55	-	-	9:15	-	10:00	-	11:40	-	1:10	-	2:55	-	4:44	-	5:10	-	6:20	7:06	-	-	8:10	-	9:25	-	11:03	-
7 Rowley	6	5:25	5:55	-	6:30	-	7:05	-	7:35	8:00	-	-	-	9:20	-	10:05	-	11:45	-	1:15	-	3:00	-	4:49	-	5:15	-	6:25	7:11	-	-	8:15	-	9:30	-	11:08	-
6 Ipswich	6	-	5:31	6:02	-	6:37	-	7:12	-	7:42	8:07	-	-	9:26	-	10:11	-	11:51	-	1:21	-	3:06	-	4:55	-	5:21	-	6:31	7:17	-	-	8:21	-	9:36	-	11:14	-
5 Hamilton/Wenham	6	-	5:37	6:08	-	6:43	-	7:18	-	7:48	8:13	-	-	9:32	-	10:17	-	11:57	-	1:27	-	3:12	-	5:01	-	5:27	-	6:37	7:23	-	-	8:32	-	9:42	-	11:20	-
5 North Beverly	6	-	5:41	6:13	-	6:48	-	7:23	-	7:53	8:18	-	-	9:36	-	10:21	-	12:01	-	1:31	-	3:16	-	5:05	-	5:31	-	6:41	7:27	-	-	8:36	-	9:46	-	11:24	-
4 Beverly	6	5:33	5:47	6:18	6:27	6:53	7:09	7:28	7:49	7:58	8:24	8:33	8:54	9:42	9:58	10:27	11:38	12:07	10:18	1:37	2:28	3:22	4:00	5:11	5:35	5:48	6:23	6:48	7:33	7:53	8:42	9:23	9:52	11:08	11:30	-	
3 Salem	6	5:37	5:51	6:22	6:31	6:57	7:13	7:32	7:53	8:02	8:28	8:37	8:58	9:46	10:02	10:31	11:42	12:11	1:12	1:41	2:32	3:26	4:04	5:15	5:39	5:52	6:27	6:52	7:37	7:57	8:46	9:27	9:56	11:12	11:34	-	
3 Swampscott	6	5:45	5:59	-	6:39	7:05	-	7:40	-	8:10	-	8:45	9:06	9:54	10:10	10:39	11:50	12:19	1:20	1:49	2:40	3:34	4:12	5:23	-	6:00	6:35	-	7:45	8:05	8:54	9:35	10:04	11:20	-	-	
2 Lynn	6	5:49	6:03	-	6:43	7:09	-	7:44	-	8:14	-	8:49	9:10	9:58	10:14	10:43	11:54	12:23	1:24	1:53	2:44	3:38	4:16	5:27	-	6:04	6:39	-	7:49	8:09	8:58	9:39	10:08	11:24	-	-	
2 River Works	6	5:53	6:06	-	6:46	7:12	-	7:47	-	8:17	-	8:52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1A Chelsea	6	5:59	6:13	-	6:53	7:19	-	7:54	-	8:24	-	8:59	9:19	10:07	10:23	10:52	12:03	12:32	1:33	2:02	2:54	3:48	4:26	5:37	-	6:14	6:49	-	7:58	8:18	9:07	9:48	10:17	11:34	-	-	
1A North Station	6	6:11	6:25	6:49	7:05	7:31	7:40	8:05	8:20	8:36	8:55	9:11	9:31	10:19	10:34	11:03	12:14	12:43	1:44	2:13	3:05	3:59	4:37	5:50	6:05	6:25	7:00	7:18	8:09	8:29	9:18	10:00	10:28	11:45	12:00	-	
Trains in purple box indicate peak period trains																																					

Trains in purple box indicate peak period trains

Monday to Friday

Outbound from Boston

Outbound from Boston										AM										PM										AM									
ZONE	STATION	PLANS #	153	101	191	155	103	157	105	159	107	161	109	163	111	165	113	115	167	193	117	169	119	171	173	121	175	123	177	125	179	127	181	129	183				
	Bikes Allowed		6:26	6:39	7:08	7:37	7:50	8:10	8:35	9:40	10:35	11:20	12:00	1:20	1:50	3:15	3:37	4:15	4:30	4:40	5:00	5:15	5:30	5:40	6:05	6:25	6:45	7:15	7:35	8:45	9:10	10:20	10:50	12:10	12:15				
1A	North Station	6	6:26	6:39	7:08	7:37	7:50	8:10	8:35	9:40	10:35	11:20	12:00	1:20	1:50	3:15	3:37	4:15	4:30	4:40	5:00	5:15	5:30	5:40	6:05	6:25	6:45	7:15	7:35	8:45	9:10	10:20	10:50	12:10	12:15				
1A	Chelsea		6:30	6:43	7:12	7:41	7:54	8:14	8:39	9:44	10:39	11:24	12:04	1:24	1:54	3:19	3:41	4:27	-	4:52	-	5:27	-	5:52	6:17	6:37	6:57	7:27	7:47	8:57	9:22	10:32	11:02	12:22	12:27				
2	River Works		6:35	6:48	7:17	7:46	7:59	8:19	8:44	9:49	10:44	11:29	12:09	1:29	1:59	3:24	3:46	4:32	-	4:57	-	5:32	-	5:57	6:22	6:42	7:12	7:42	8:52	9:17	10:27	10:57	12:17	12:22					
2	Lynn	6	6:35	6:48	7:17	7:46	7:59	8:19	8:44	9:49	10:44	11:29	12:09	1:29	1:59	3:24	3:46	4:32	-	4:57	-	5:32	-	5:57	6:22	6:42	7:12	7:42	8:52	9:17	10:27	10:57	12:17	12:22					
3	Swampscott		6:40	6:53	7:22	7:51	8:04	8:24	8:49	9:54	10:49	11:34	12:14	1:34	2:04	3:29	3:51	4:37	-	5:02	-	5:35	-	6:02	6:25	6:47	7:07	7:36	7:55	9:05	9:30	10:41	11:10	12:30	12:35				
3	Salem	6	6:52	7:07	7:40	8:09	8:23	8:43	9:07	10:12	11:07	11:52	12:32	1:52	2:23	3:49	4:11	4:49	4:56	5:12	5:26	5:47	5:56	6:14	6:37	6:59	7:19	7:48	8:07	9:17	9:42	10:53	11:22	12:42	12:47				
4	Beverly	6	6:56	7:11	7:44	8:13	8:27	8:47	9:11	10:16	11:11	11:56	12:36	1:56	2:27	3:53	4:15	4:53	5:00	5:16	5:30	5:51	6:00	6:18	6:41	7:03	7:23	7:52	8:11	9:21	9:46	10:57	11:26	12:46	12:51				
5	North Beverly	6	7:00	-	-	8:17	-	8:51	-	10:20	-	11:30	-	1:00	-	3:58	-	-	5:05	-	5:56	-	6:23	6:46	-	7:28	-	8:15	-	9:50	-	11:30	-	12:55					
5	Hamilton/Wenham	6	7:04	-	-	8:21	-	8:55	-	10:24	-	11:34	-	1:04	-	4:02	-	-	5:09	-	6:00	-	6:27	6:50	-	7:32	-	8:19	-	9:54	-	11:34	-	12:59					
6	Ipswich	6	7:15	-	-	8:27	-	9:03	-	10:30	-	12:10	-	2:10	-	4:08	-	-	5:15	-	6:06	-	6:33	6:56	-	7:38	-	8:25	-	10:00	-	11:40	-	1:05					
7	Rowley	6	-	-	-	8:32	-	9:08	-	10:35	-	12:15	-	2:15	-	4:14	-	-	5:21	-	6:12	-	6:39	7:02	-	7:44	-	8:30	-	10:05	-	11:45	-	1:10					
8	Newburyport	6	7:29	-	-	8:40	-	9:16	-	10:43	-	12:23	-	2:23	-	4:22	-	-	5:29	-	6:20	-	6:47	7:10	-	7:52	-	8:38	-	10:13	-	11:53	-	1:18					
4	Montserrat	6	-	7:15	-	8:31	-	9:15	-	11:15	-	12:40	-	2:31	-	4:19	4:57	-	-	5:34	-	6:04	-	6:34	-	7:07	-	7:56	-	9:25	-	11:01	-	12:50					
5	Prides Crossing		-	-	-	8:37	-	9:21	-	11:21	-	12:46	-	2:37	-	4:23	-	-	5:38	-	6:08	-	6:38	-	7:11	-	8:00	-	9:29	-	11:05	-	12:51	-					
5	Beverly Farms	6	-	7:21	-	8:37	-	9:21	-	11:21	-	12:46	-	2:37	-	4:27	5:03	-	-	5:42	-	6:12	-	6:42	-	7:15	-	8:04	-	9:31	-	11:07	-	12:56					
6	Manchester	6	-	7:26	-	8:42	-	9:26	-	11:26	-	12:51	-	2:42	-	4:32	5:08	-	-	5:47	-	6:17	-	6:47	-	7:20	-	8:09	-	9:36	-	11:12	-	1:01					
7	West Gloucester	6	-	7:32	-	8:48	-	9:32	-	11:32	-	12:57	-	2:48	-	4:38	5:15	-	-	5:53	-	6:23	-	6:53	-	7:26	-	8:15	-	9:42	-	11:18	-	1:07					
7	Gloucester	6	-	7:39	-	8:55	-	9:39	-	11:39	-	1:04	-	2:55	-	4:46	5:22	-	-	6:01	-	6:31	-	7:01	-	7:34	-	8:22	-	9:49	-	11:25	-	1:14					
8	Rockport	6	-	7:47	-	9:03	-	9:47	-	11:47	-	1:12	-	3:03	-	4:55	5:32	-	-	6:10	-	6:40	-	7:10	-	7:43	-	8:30	-	9:57	-	11:33	-	1:22					



**Massachusetts Bay
Transportation Authority**

08 Wednesday
June 2016

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Newburyport **Zone 8**

25 Boston Way Newburyport, MA 01950-4067

For train information at Newburyport Station tune to 1630 AM

This MBTA station is accessible ([Accessibility Key](#))

Parking

Parking Spaces: 814

Average Weekday Availability:
79%

Parking Rate: \$4.00 daily
\$70.00/Month

[Park & Pay By Phone](#)

Location #: 4239

Accessible Spaces: 24

Bike Spaces: 22

Managed By: [LAZ Parking](#)

(781) 794-1791

[Website](#)

Comments:

LAZ Parking is responsible for parking lot snow removal, maintenance and fee collection. Please contact [MBTA Customer Service](#) regarding station and platform snow removal, cleanliness and maintenance issues.

Commuter Rail Lines

[Newburyport/Rockport Line](#)

[Intercity Bus Service](#)

[Merrimack Valley Regional Transit Authority](#)



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[MBTA Services Nearby](#)

Plan your trip

From Newburyport to:
(Address or intersection)

Preferences:

Using:

☐ Trip must be accessible



Service Alerts

Newburyport/Rockport Line:

1 Current



Policy Change: New fares go into effect Friday, July 1.

[Click here for all service alerts](#)

Fare Information

Travel anywhere on the MBTA system for the same price.
[See all Fares & Passes information.](#)

**TRANSIT
MODE**

Rail

PASSES / TICKETS

\$2.10 - \$11.50 Zones 1A - 10

\$75 - \$362 Monthly Pass, unlimited travel to and from your zone plus travel on all bus, subway and Inner Harbor Ferry.

50% Seniors and Persons with Disabilities

Accessibility Key ([Back to Top](#))

 Elevator  Escalator  Mini-high  Mobile Lift  Ramp  TTY Phone  Parking

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**Massachusetts Bay
Transportation Authority**

Commuter Rail Fares and Passes

Commuter Rail fares are based on a "Zone" and "Interzone" system with Zone 1A servicing the Greater Boston area and Zones 1 through 10 servicing communities and suburban areas outside of Boston. Each Commuter Rail station's zone is identified in the chart below.

Zone Fares

"Zone fares" are intended for direct travel between any suburban area commuter rail station to a Zone 1A station and the Greater Boston area, including North Station, South Station, and Back Bay. Your fare or pass is based on the Zone from which you are travelling.

For example, if your commute includes boarding the Lowell Line at Lowell Station (Zone 6) and getting off the train at North Station (Zone 1A), you would buy one single ride Zone 6 ticket.

Interzone Fares

"Interzone fares" are intended for travel between suburban area stations outside of the Zone 1A Greater Boston area. Interzone fares and passes are NOT valid for travel to Zone 1A stations, including North Station, South Station, and Back Bay. Interzone monthly pass and ticket fares are based on TOTAL zones "travelled" in.

For example, if your commute includes boarding the Lowell Line at Lowell Station (Zone 6) and getting off the train at Anderson/Woburn Station (Zone 2), you would pass through three zones and would buy one single ride Interzone 5 ticket.

Effective July 1, 2012, Commuter Rail tickets will have the following expiration periods:

- All 10-ride tickets will be sold with an expiration time limit of ninety (90) days.
- Single ride tickets will be sold with an expiration time limit of ninety (90) days.

ZONE	RIDE FARE	MONTHLY PASS	10-RIDE PASS ¹	CASH-ON-BOARD	
1A	\$2.10 ²	\$75.00 ³	\$21.00	\$5.10	Buy Now
1	\$5.75 ²	\$182.00 ⁴	\$57.50	\$8.75	Buy Now
Interzone 1 ⁷	\$2.75	\$86.00 ⁶			Buy Now

2	\$6.25 ²	\$198.00 ⁴	\$62.50	\$9.25	Buy Now
Interzone 2 ⁷	\$3.25	\$105.00 ⁶			Buy Now
3	\$7.00 ²	\$222.00 ⁴	\$70.00	\$10.00	Buy Now
Interzone 3 ⁷	\$3.50	\$114.00 ⁶			Buy Now
4	\$7.50 ²	\$239.00 ⁴	\$75.00	\$10.50	Buy Now
Interzone 4 ⁷	\$3.75	\$124.00 ⁶			Buy Now
5	\$8.50 ²	\$265.00 ⁴	\$85.00	\$11.50	Buy Now
Interzone 5 ⁷	\$4.25	\$141.00 ⁶			Buy Now
6	\$9.25 ²	\$289.00 ⁵	\$92.50	\$12.25	Buy Now
Interzone 6 ⁷	\$4.75	\$159.00 ⁶			Buy Now
7	\$9.75 ²	\$306.00 ⁵	\$97.50	\$12.75	Buy Now
Interzone 7 ⁷	\$5.25	\$175.00 ⁶			Buy Now
8	\$10.50 ²	\$330.00 ⁵	\$105.00	\$13.50	Buy Now
Interzone 8 ⁷	\$5.75	\$193.00 ⁶			Buy Now
9	\$11.00 ²	\$345.00 ⁵	\$110.00	\$14.00	Buy Now
Interzone 9 ⁷	\$6.25	\$211.00 ⁶			Buy Now
10	\$11.50 ²	\$362.00 ⁵	\$115.00	\$14.50	Buy Now

Seniors and Persons with Disabilities 50% Off Rides

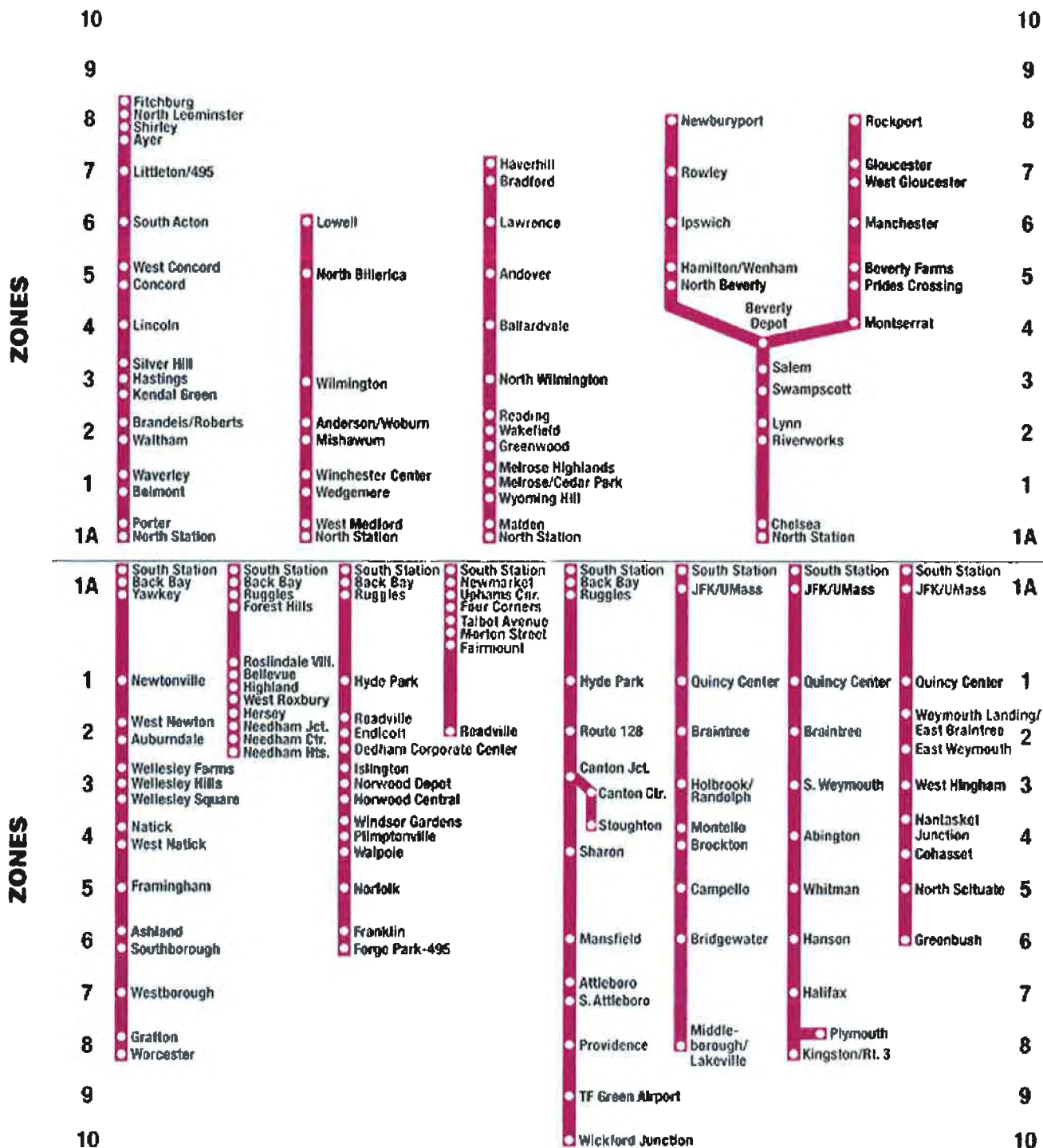
(Blind persons ride for free) Percentage off based on Commuter Rail 'ride' fares noted above.
Requires a Senior/TAP ID or Mass Commission for the Blind ID.
10-Ride Tickets available based on ten half fares.

Children 11 years old and under Free

Children under the age of twelve ride free when accompanied by an adult with a limit of two children for each adult.

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Commuter Rail Zone Chart



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¹ 10-Ride passes cannot be bought online.

² A \$3.00 surcharge will be added to tickets purchased on-board all trains departing from North Station, South Station, and Back Bay Station. Monday-through-Friday customers will be charged \$3.00 surcharge by the conductor when a ticket is purchased on board from a station with an MBTA ticket vending machine or where a Ticket Vendor is open. A list of these stations can be found on the MBTA website here: http://www.mbtta.com/fares_and_passes/sales_locations/

³ Zone passes valid on Local Bus, Subway, and Inner Harbor Ferries.

⁴ Zone passes valid on Local Bus, Subway, Express Bus, and Inner Harbor Ferries.

• ⁵ Zone passes valid on Local Bus, Subway, Express Bus, Inner Harbor Ferries, and Commuter Boat.

⁶ Interzone passes valid on Local bus.

⁷ Interzone tickets and passes are not available on our automated ticket vending machines. Interzone tickets and passes are sold on our mTicketing app, at ticket sales offices, at retail sales outlets, and passes are sold online. A list of sales locations can be found here:

http://www.mbtta.com/fares_and_passes/sales_locations/

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VEHICLE TRAVEL SPEED DATA

Accurate Counts

978-664-2565

Page 1

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

WB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
06/16/16	0	0	0	0	0	1	3	9	6	10	8	3	0	0	40
01:00	0	0	0	0	0	0	0	2	3	2	4	1	1	0	13
02:00	0	0	0	0	0	0	0	1	0	2	0	0	0	0	3
03:00	0	0	0	0	0	0	0	1	3	3	0	0	1	0	8
04:00	0	0	0	0	0	0	1	4	5	2	2	3	0	0	17
05:00	0	0	0	0	0	0	5	12	22	26	14	8	2	0	89
06:00	9	0	0	0	0	5	13	33	66	68	26	9	1	0	230
07:00	16	0	0	0	2	6	26	74	95	83	34	9	1	0	346
08:00	30	0	0	1	3	7	48	117	122	56	14	2	0	0	400
09:00	28	0	3	0	5	28	73	120	79	25	7	0	0	0	368
10:00	36	0	1	2	9	41	120	120	70	21	0	0	0	0	420
11:00	32	0	1	0	15	46	148	110	62	9	2	0	0	0	425
12 PM	56	0	2	7	25	112	164	105	51	8	0	0	0	0	530
13:00	44	0	3	7	24	122	156	111	42	8	1	0	0	0	518
14:00	48	1	3	10	52	146	176	126	46	7	0	0	0	0	615
15:00	62	0	5	6	24	92	200	139	54	8	3	0	0	0	593
16:00	52	0	2	9	26	85	203	162	57	12	0	0	0	0	608
17:00	90	4	8	27	49	96	175	168	46	7	0	0	0	0	670
18:00	49	2	2	2	18	75	136	130	58	14	0	1	0	0	487
19:00	32	1	3	5	34	73	159	118	43	10	1	0	0	0	479
20:00	27	0	0	2	8	49	136	175	78	15	2	0	0	0	492
21:00	11	0	0	0	1	6	62	119	106	34	7	0	0	0	346
22:00	1	0	0	1	0	2	14	38	73	56	10	2	0	0	197
23:00	2	0	0	0	0	0	8	32	38	34	8	0	1	0	123
Total	625	8	33	79	295	992	2026	2026	1225	520	143	38	7	0	8017

Daily

15th Percentile : 15 MPH
50th Percentile : 20 MPH
85th Percentile : 25 MPH
95th Percentile : 28 MPH

Mean Speed(Average) : 20 MPH

10 MPH Pace Speed : 18-27 MPH

Number in Pace : 5608

Percent in Pace : 70.0%

Number of Vehicles > 20 MPH : 4634

Percent of Vehicles > 20 MPH : 57.8%

Accurate Counts

978-664-2565

Page 2

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

WB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
06/17/16	0	0	0	0	0	0	4	4	16	20	7	0	2	0	53
01:00	0	0	0	0	0	0	2	0	3	1	2	2	1	0	11
02:00	0	0	0	0	0	0	0	0	2	2	2	1	0	0	7
03:00	0	0	0	0	0	0	0	1	2	0	1	0	1	0	5
04:00	0	0	0	0	0	0	4	2	2	3	6	3	0	0	20
05:00	0	0	0	0	0	0	3	10	18	30	15	6	2	0	84
06:00	4	0	0	0	0	2	15	37	58	68	28	9	0	0	221
07:00	24	0	0	0	0	4	28	61	125	67	25	6	1	0	341
08:00	39	0	2	2	1	7	38	133	118	61	19	1	0	0	421
09:00	33	0	0	1	2	26	87	140	83	13	7	0	0	0	392
10:00	45	1	1	3	17	59	113	125	80	20	2	0	0	0	466
11:00	69	0	2	8	15	58	165	111	41	12	2	0	0	0	483
12 PM	97	0	1	8	31	89	160	115	28	5	0	0	0	0	534
13:00	86	1	3	17	49	103	143	118	28	10	1	0	0	0	559
14:00	68	0	6	12	46	145	196	121	43	13	2	0	0	0	652
15:00	79	2	1	11	42	126	189	160	47	10	1	0	0	0	668
16:00	64	0	7	21	39	118	178	136	28	7	1	1	0	0	600
17:00	88	4	6	25	57	136	116	89	38	7	2	0	0	1	569
18:00	56	0	6	12	34	96	151	86	45	12	2	0	0	0	500
19:00	56	2	9	24	41	139	170	83	24	3	1	0	0	0	552
20:00	44	0	4	8	25	107	163	121	29	4	2	0	0	0	507
21:00	16	0	2	3	5	53	130	113	49	13	2	0	0	0	386
22:00	6	0	0	0	3	35	104	164	51	16	6	0	0	0	385
23:00	1	0	0	1	0	6	19	43	53	37	7	4	0	0	170
Total	875	10	50	158	407	1308	2178	1973	1011	434	143	33	7	1	8586

Daily

15th Percentile : 13 MPH
50th Percentile : 20 MPH
85th Percentile : 25 MPH
95th Percentile : 28 MPH

Mean Speed(Average) : 19 MPH

10 MPH Pace Speed : 16-25 MPH

Number in Pace : 5796

Percent in Pace : 67.5%

Number of Vehicles > 20 MPH : 4328

Percent of Vehicles > 20 MPH : 50.4%

Accurate Counts

978-664-2565

Page 3

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

WB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	Total
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	
06/18/16	0	0	0	0	1	0	4	18	28	18	9	3	1	0	82
01:00	0	0	0	0	0	0	0	3	11	15	2	2	2	0	35
02:00	0	0	0	0	0	0	3	3	8	8	1	2	0	0	25
03:00	0	0	0	0	2	0	0	0	2	4	5	1	0	0	14
04:00	0	0	0	0	0	0	1	1	4	7	6	1	0	0	20
05:00	0	0	0	0	1	1	2	5	10	10	9	2	0	1	41
06:00	3	0	0	0	1	4	8	17	40	38	13	3	0	0	127
07:00	8	0	0	1	1	3	29	60	69	39	20	2	0	0	232
08:00	25	0	2	3	9	24	66	108	72	15	2	0	0	0	326
09:00	38	0	1	3	9	55	124	133	62	11	0	0	0	0	436
10:00	53	0	1	10	34	79	119	123	45	9	2	1	0	0	476
11:00	76	5	4	20	34	103	147	85	17	5	0	0	0	0	496
12 PM	73	0	2	13	55	135	136	52	20	4	0	0	0	0	490
13:00	78	1	7	11	69	150	139	83	19	5	0	0	0	0	562
14:00	72	0	18	27	59	120	136	68	27	6	0	0	0	0	533
15:00	81	0	11	11	60	158	160	85	12	1	1	0	1	0	579
16:00	72	3	6	21	85	143	165	80	25	3	0	0	0	0	603
17:00	81	1	1	9	64	152	182	81	23	1	0	0	0	0	595
18:00	55	0	0	8	43	120	145	87	31	8	1	0	0	0	498
19:00	42	2	1	25	52	119	187	81	26	2	0	0	0	0	537
20:00	31	0	0	0	28	114	207	111	36	7	0	0	0	0	534
21:00	25	1	3	13	18	82	156	122	44	8	1	0	0	0	473
22:00	12	0	0	3	9	48	113	125	58	27	3	1	0	0	399
23:00	3	0	1	0	0	3	23	68	76	40	9	3	0	0	226
Total	828	13	58	178	634	1611	2252	1599	765	291	84	21	4	1	8339

Daily
15th Percentile : 12 MPH
50th Percentile : 19 MPH
85th Percentile : 23 MPH
95th Percentile : 26 MPH

Mean Speed(Average) : 18 MPH
10 MPH Pace Speed : 16-25 MPH
Number in Pace : 5717
Percent in Pace : 68.6%
Number of Vehicles > 20 MPH : 3516
Percent of Vehicles > 20 MPH : 42.2%

Grand Total	2328	31	141	413	1336	3911	6456	5598	3001	1245	370	92	18	2	24942
-------------	------	----	-----	-----	------	------	------	------	------	------	-----	----	----	---	-------

Overall
15th Percentile : 13 MPH
50th Percentile : 20 MPH
85th Percentile : 24 MPH
95th Percentile : 28 MPH
Mean Speed(Average) : 19 MPH
10 MPH Pace Speed : 16-25 MPH
Number in Pace : 16965
Percent in Pace : 68.0%
Number of Vehicles > 20 MPH : 12478
Percent of Vehicles > 20 MPH : 50.0%

Accurate Counts

978-664-2565

Page 4

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

EB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
06/16/16	0	0	0	0	0	2	2	8	7	6	2	0	0	0	27
01:00	0	0	0	0	0	0	1	2	4	5	4	0	0	0	16
02:00	0	0	1	0	0	0	0	2	2	3	2	1	0	0	11
03:00	0	0	0	0	0	0	1	2	4	1	0	1	0	0	9
04:00	0	0	0	0	0	1	6	4	5	4	3	0	0	0	23
05:00	2	0	0	0	4	8	16	32	40	29	9	4	1	0	145
06:00	7	0	0	0	1	3	20	34	60	53	19	6	0	0	203
07:00	19	0	0	3	1	11	42	124	158	67	15	2	0	0	442
08:00	35	0	4	6	22	78	166	221	129	37	4	0	0	0	702
09:00	39	0	1	11	31	107	180	185	64	11	2	0	0	0	631
10:00	42	2	8	10	45	147	162	140	44	6	1	0	0	0	607
11:00	64	4	14	34	57	147	185	112	37	4	0	0	0	0	658
12 PM	82	6	13	24	85	127	164	103	33	5	0	0	0	0	642
13:00	76	1	17	24	80	169	140	100	36	7	0	0	0	0	650
14:00	65	1	9	36	65	116	140	94	34	6	1	0	0	0	567
15:00	81	4	6	26	73	153	170	98	34	1	0	0	0	0	646
16:00	76	2	3	16	58	121	195	107	30	7	1	0	0	0	616
17:00	74	4	9	30	101	155	159	72	27	4	1	0	0	0	636
18:00	56	1	4	22	68	147	204	144	35	6	0	1	0	0	688
19:00	40	0	2	9	34	114	155	130	43	9	0	0	0	0	536
20:00	35	0	1	6	15	57	109	114	38	10	1	0	0	0	386
21:00	12	0	0	0	2	12	45	69	75	14	5	0	0	0	234
22:00	5	0	0	0	1	4	18	33	35	10	7	0	0	0	113
23:00	1	0	0	0	0	1	3	15	17	9	10	0	0	0	56
Total	811	25	92	257	743	1680	2283	1945	991	314	87	15	1	0	9244

Daily

15th Percentile : 12 MPH
50th Percentile : 19 MPH
85th Percentile : 24 MPH
95th Percentile : 26 MPH

Mean Speed(Average) : 19 MPH
10 MPH Pace Speed : 16-25 MPH
Number in Pace : 6238
Percent in Pace : 67.5%
Number of Vehicles > 20 MPH : 4114
Percent of Vehicles > 20 MPH : 44.5%

Accurate Counts

978-664-2565

Page 5

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

EB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
06/17/18	0	0	0	0	0	0	6	10	13	11	3	2	0	0	45
01:00	0	0	0	0	0	0	0	10	6	4	3	2	2	1	28
02:00	0	0	0	0	0	0	1	3	2	3	1	0	0	0	10
03:00	0	0	0	0	0	0	2	1	2	2	0	1	0	0	8
04:00	0	0	0	0	2	3	2	6	3	6	9	0	0	0	31
05:00	0	0	0	1	0	5	10	19	32	27	16	5	0	0	115
06:00	6	0	0	0	0	2	15	39	66	60	11	3	0	0	202
07:00	29	0	0	0	1	10	40	107	158	64	25	3	0	0	437
08:00	40	2	9	13	23	55	144	206	141	43	5	1	0	0	682
09:00	58	0	4	20	52	124	231	138	51	13	3	0	0	0	694
10:00	68	0	9	36	79	138	168	105	27	3	1	0	0	0	634
11:00	87	8	27	75	104	132	135	78	22	5	0	0	0	0	673
12 PM	164	35	68	109	127	122	95	23	7	0	0	0	0	0	750
13:00	147	20	53	98	102	109	106	44	12	1	0	0	0	0	692
14:00	90	1	6	33	75	154	169	84	25	5	1	1	0	0	644
15:00	89	9	14	22	85	161	175	87	39	6	0	0	0	0	687
16:00	105	2	18	46	99	133	153	94	25	2	1	0	0	0	678
17:00	121	5	19	51	141	197	118	59	10	2	1	0	0	0	724
18:00	91	14	26	55	119	161	148	61	14	4	0	0	0	0	693
19:00	69	1	6	48	95	170	106	65	11	1	0	0	0	0	572
20:00	32	2	7	9	29	69	102	81	42	7	0	0	0	0	380
21:00	19	0	0	1	12	32	78	94	43	15	3	0	0	0	297
22:00	6	0	0	0	1	12	44	65	34	14	2	0	0	0	178
23:00	3	0	0	0	0	0	12	34	41	23	5	1	0	0	119
Total	1224	99	266	617	1146	1789	2060	1513	826	321	90	19	2	1	9973

Daily

15th Percentile : 7 MPH
50th Percentile : 17 MPH
85th Percentile : 23 MPH
95th Percentile : 26 MPH

Mean Speed(Average) : 17 MPH

10 MPH Pace Speed : 15-24 MPH

Number in Pace : 5744

Percent in Pace : 57.6%

Number of Vehicles > 20 MPH : 3459

Percent of Vehicles > 20 MPH : 34.7%

Accurate Counts

978-664-2565

Page 6

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

EB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
08/18/16	0	0	0	0	0	2	5	7	19	9	3	1	1	0	47
01:00	0	0	0	0	0	0	2	8	15	9	3	0	0	0	37
02:00	0	0	0	0	0	0	2	6	3	3	0	2	0	0	16
03:00	0	0	0	0	0	0	2	1	3	5	1	0	0	0	12
04:00	1	0	0	0	0	1	6	1	9	6	3	4	1	0	32
05:00	0	0	0	0	0	2	8	16	19	13	13	2	0	0	73
06:00	2	0	0	1	4	7	20	46	65	40	15	3	1	0	204
07:00	10	0	0	1	3	18	48	102	116	51	16	1	0	0	366
08:00	27	0	0	3	40	77	156	176	74	21	4	1	0	0	579
09:00	50	1	4	19	84	168	169	110	38	6	0	0	0	0	649
10:00	87	7	41	101	154	159	135	48	9	2	0	0	0	0	743
11:00	112	14	39	71	96	103	133	48	13	2	0	0	0	0	631
12 PM	153	61	128	147	76	33	35	8	5	0	0	0	0	0	646
13:00	111	23	54	95	104	152	91	30	3	5	0	0	0	0	668
14:00	122	23	54	38	104	119	99	43	16	2	0	0	0	0	620
15:00	94	6	28	42	106	149	127	45	11	1	0	0	0	0	609
16:00	111	20	54	70	97	117	106	43	12	0	0	0	0	0	630
17:00	103	13	37	44	85	129	123	57	11	4	0	0	0	0	606
18:00	60	3	21	39	88	155	152	86	25	7	0	0	0	0	636
19:00	58	6	5	21	64	132	120	79	41	5	0	0	0	0	531
20:00	33	0	0	5	16	92	117	91	26	11	0	0	0	0	391
21:00	23	0	0	0	12	47	84	80	53	10	2	0	0	0	311
22:00	11	0	0	0	5	11	43	68	45	12	2	0	0	0	197
23:00	5	0	0	2	1	1	16	38	36	23	11	1	0	0	134
Total	1173	177	465	699	1139	1674	1799	1237	667	247	73	15	3	0	9368

Daily

15th Percentile : 6 MPH
50th Percentile : 16 MPH
85th Percentile : 23 MPH
95th Percentile : 26 MPH

Mean Speed(Average) : 16 MPH
10 MPH Pace Speed : 15-24 MPH
Number in Pace : 5090
Percent in Pace : 54.3%
Number of Vehicles > 20 MPH : 2842
Percent of Vehicles > 20 MPH : 30.3%

Grand Total	3208	301	823	1573	3028	5143	6142	4695	2484	882	250	49	6	1	28585
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Overall

15th Percentile : 8 MPH
50th Percentile : 18 MPH
85th Percentile : 23 MPH
95th Percentile : 26 MPH

Mean Speed(Average) : 17 MPH
10 MPH Pace Speed : 15-24 MPH
Number in Pace : 16989
Percent in Pace : 59.4%
Number of Vehicles > 20 MPH : 10414
Percent of Vehicles > 20 MPH : 36.4%

Accurate Counts 978-664-2565

Page 7

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

WB, EB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
06/16/16	0	0	0	0	0	3	5	17	13	16	10	3	0	0	67
01:00	0	0	0	0	0	0	1	4	7	7	8	1	1	0	29
02:00	0	0	1	0	0	0	0	3	2	5	2	1	0	0	14
03:00	0	0	0	0	0	0	1	3	7	4	0	1	1	0	17
04:00	0	0	0	0	0	1	7	8	10	6	5	3	0	0	40
05:00	2	0	0	0	4	8	21	44	62	55	23	12	3	0	234
06:00	16	0	0	0	1	8	33	67	126	121	45	15	1	0	433
07:00	35	0	0	3	3	17	68	198	253	150	49	11	1	0	788
08:00	65	0	4	7	25	85	214	338	251	93	18	2	0	0	1102
09:00	67	0	4	11	36	135	253	305	143	36	9	0	0	0	999
10:00	78	2	9	12	54	188	282	260	114	27	1	0	0	0	1027
11:00	98	4	15	34	72	193	333	222	99	13	2	0	0	0	1083
12 PM	138	6	15	31	110	239	328	208	84	13	0	0	0	0	1172
13:00	120	1	20	31	104	291	296	211	78	15	1	0	0	0	1168
14:00	113	2	12	46	117	262	316	220	80	13	1	0	0	0	1182
15:00	143	4	11	32	97	245	370	237	88	9	3	0	0	0	1239
16:00	128	2	5	25	84	206	398	269	87	19	1	0	0	0	1224
17:00	164	6	17	57	150	251	334	240	73	11	1	0	0	0	1306
18:00	105	3	6	24	86	222	340	274	93	20	0	2	0	0	1175
19:00	72	1	5	14	68	187	314	248	86	19	1	0	0	0	1015
20:00	62	0	1	8	23	106	245	289	116	25	3	0	0	0	876
21:00	23	0	0	0	3	18	107	168	181	48	12	0	0	0	580
22:00	6	0	0	1	1	6	32	71	108	66	17	2	0	0	310
23:00	3	0	0	0	0	1	11	47	55	43	18	0	1	0	179
Total	1436	33	125	336	1038	2672	4309	3971	2216	834	230	53	8	0	17261

Daily

15th Percentile : 13 MPH
50th Percentile : 20 MPH
85th Percentile : 25 MPH
95th Percentile : 27 MPH

Mean Speed(Average) : 19 MPH
10 MPH Pace Speed : 16-25 MPH

Number in Pace : 11691
Percent in Pace : 67.7%

Number of Vehicles > 20 MPH : 8748
Percent of Vehicles > 20 MPH : 50.7%

Accurate Counts

978-664-2565

Page 8

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

WB, EB

Start	1	4	7	10	13	16	19	22	25	28	31	34	37	40	
Time	3	6	9	12	15	18	21	24	27	30	33	36	39	999	Total
06/17/16	0	0	0	0	0	0	10	14	29	31	10	2	2	0	98
01:00	0	0	0	0	0	0	2	10	9	5	5	4	3	1	39
02:00	0	0	0	0	0	0	1	3	4	5	3	1	0	0	17
03:00	0	0	0	0	0	0	2	2	4	2	1	1	1	0	13
04:00	0	0	0	0	2	3	6	8	5	9	15	3	0	0	51
05:00	0	0	0	1	0	5	13	29	50	57	31	11	2	0	199
06:00	10	0	0	0	0	4	30	76	124	128	39	12	0	0	423
07:00	53	0	0	0	1	14	68	168	283	131	50	9	1	0	778
08:00	79	2	11	15	24	62	182	339	259	104	24	2	0	0	1103
09:00	91	0	4	21	54	150	318	278	134	26	10	0	0	0	1086
10:00	113	1	10	39	96	197	281	230	107	23	3	0	0	0	1100
11:00	156	8	29	83	119	190	300	189	63	17	2	0	0	0	1156
12 PM	261	35	69	117	158	211	255	138	35	5	0	0	0	0	1284
13:00	233	21	56	115	151	212	249	162	40	11	1	0	0	0	1251
14:00	158	1	12	45	121	299	365	205	68	18	3	1	0	0	1296
15:00	168	11	15	33	127	287	364	247	86	16	1	0	0	0	1355
16:00	169	2	25	67	138	251	331	230	53	9	2	1	0	0	1278
17:00	209	9	25	76	198	333	234	148	48	9	3	0	0	1	1293
18:00	147	14	32	67	153	257	299	147	59	16	2	0	0	0	1193
19:00	125	3	15	72	136	309	276	148	35	4	1	0	0	0	1124
20:00	76	2	11	17	54	176	265	202	71	11	2	0	0	0	887
21:00	35	0	2	4	17	85	208	207	92	28	5	0	0	0	683
22:00	12	0	0	0	4	47	148	229	85	30	8	0	0	0	563
23:00	4	0	0	1	0	5	31	77	94	60	12	5	0	0	289
Total	2099	109	316	773	1553	3097	4238	3486	1837	755	233	52	9	2	18559

Daily

15th Percentile : 10 MPH
50th Percentile : 18 MPH
85th Percentile : 24 MPH
95th Percentile : 27 MPH

Mean Speed(Average) : 18 MPH

10 MPH Pace Speed : 16-25 MPH

Number in Pace : 11433

Percent in Pace : 61.6%

Number of Vehicles > 20 MPH : 7787

Percent of Vehicles > 20 MPH : 42.0%

Accurate Counts

978-664-2565

Page 9

Location : Merrimac Street
Location : East of Market Street
City/State: Newburyport, MA

7281SPD1

WB, EB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	Total
	3	6	9	12	15	18	21	24	27	30	33	36	39	999	
06/18/16	0	0	0	0	1	2	9	25	47	27	12	4	2	0	129
01:00	0	0	0	0	0	0	2	11	26	24	5	2	2	0	72
02:00	0	0	0	0	0	0	5	9	11	11	1	4	0	0	41
03:00	0	0	0	0	2	0	2	1	5	9	6	1	0	0	26
04:00	1	0	0	0	0	1	7	2	13	13	9	5	1	0	52
05:00	0	0	0	0	1	3	10	21	29	23	22	4	0	1	114
06:00	5	0	0	1	5	11	28	63	105	78	28	6	1	0	331
07:00	18	0	0	2	4	21	77	162	185	90	36	3	0	0	598
08:00	52	0	2	6	49	101	222	284	146	36	6	1	0	0	905
09:00	88	1	5	22	93	223	293	243	100	17	0	0	0	0	1085
10:00	140	7	42	111	188	238	254	171	54	11	2	1	0	0	1219
11:00	188	19	43	91	130	206	280	133	30	7	0	0	0	0	1127
12 PM	226	61	130	160	131	168	171	60	25	4	0	0	0	0	1136
13:00	189	24	61	106	173	302	230	113	22	10	0	0	0	0	1230
14:00	194	23	72	65	163	239	235	111	43	8	0	0	0	0	1153
15:00	175	6	39	53	166	305	287	130	23	2	1	0	1	0	1188
16:00	183	23	60	91	182	260	271	123	37	3	0	0	0	0	1233
17:00	184	14	38	53	149	281	305	138	34	5	0	0	0	0	1201
18:00	115	3	21	47	131	275	297	173	56	15	1	0	0	0	1134
19:00	100	8	6	48	116	251	307	160	67	7	0	0	0	0	1068
20:00	64	0	0	5	44	206	324	202	62	18	0	0	0	0	925
21:00	48	1	3	13	30	129	240	202	97	18	3	0	0	0	784
22:00	23	0	0	3	14	59	156	193	103	39	5	1	0	0	596
23:00	8	0	1	2	1	4	39	108	112	63	20	4	0	0	360
Total	2001	190	523	877	1773	3285	4051	2838	1432	538	157	36	7	1	17707

Daily

15th Percentile : 8 MPH
50th Percentile : 18 MPH
85th Percentile : 23 MPH
95th Percentile : 26 MPH

Mean Speed(Average) : 17 MPH
10 MPH Pace Speed : 15-24 MPH

Number in Pace : 10763
Percent in Pace : 60.8%
Number of Vehicles > 20 MPH : 6357
Percent of Vehicles > 20 MPH : 35.9%

Grand Total

5536 332 964 1986 4364 9054 12598 10293 5485 2127 620 141 24 3 53527

Overall

15th Percentile : 10 MPH
50th Percentile : 19 MPH
85th Percentile : 24 MPH
95th Percentile : 27 MPH

Mean Speed(Average) : 18 MPH
10 MPH Pace Speed : 16-25 MPH

Number in Pace : 33773
Percent in Pace : 63.1%
Number of Vehicles > 20 MPH : 22892
Percent of Vehicles > 20 MPH : 42.8%

MASSDOT CRASH RATE WORKSHEETS

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street
 MINOR STREET(S) : Winter Street/Route 1 SB Off-Ramp

ST #

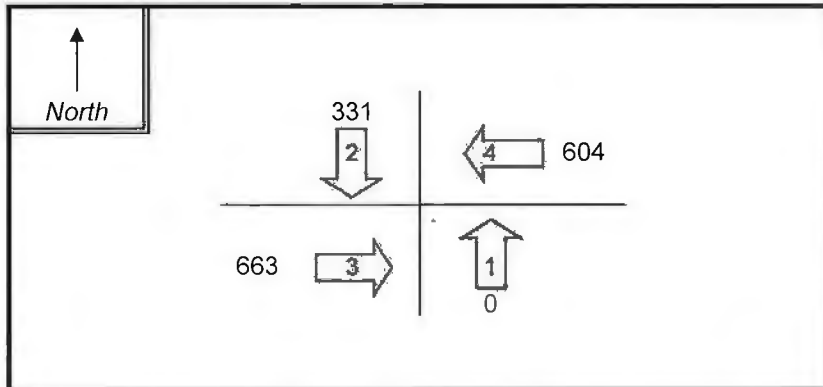
ST #

ST #

ST #

ST #

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	0	331	663	604		1,598

"K" FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection

and >0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

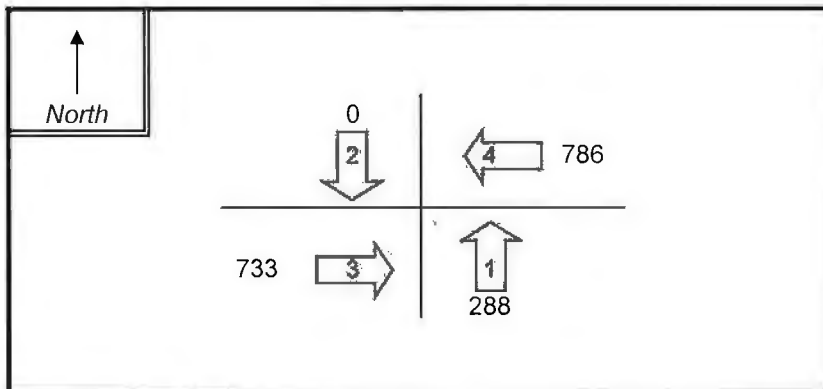
MHD USE ONLY
 Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street
 MINOR STREET(S) : Summer Street/Route 1 NB On-Ramp

ST #
 ST #
 ST #
 ST #
 ST #

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



INTERSECTION
 REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	288	0	733	786		1,807

"K" FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and > 0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street
 MINOR STREET(S) : Market Street/Tournment Wharf

ST #

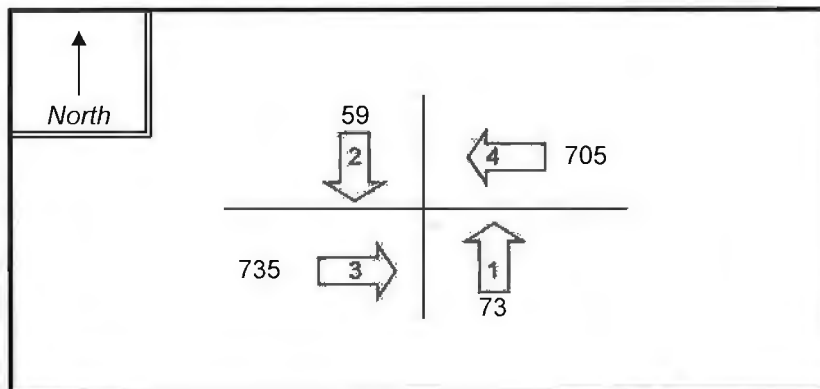
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	73	59	735	705		1,572

"K" FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and > 0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street
 MINOR STREET(S) : McKay's Wharf

ST #

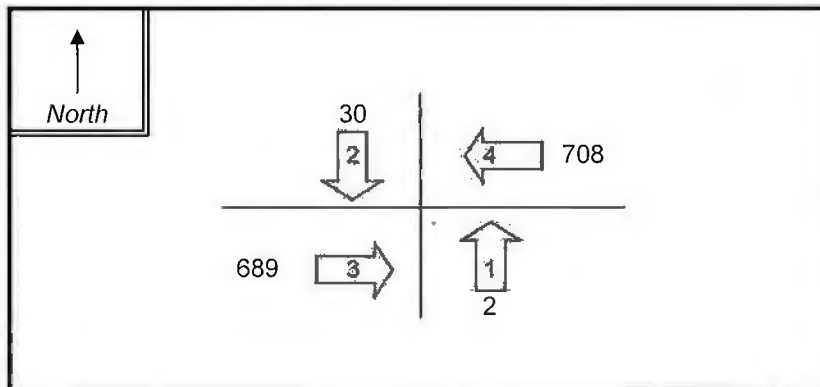
ST #

ST #

ST #

ST #

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	2	30	689	708		1,429

"K" FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and > 0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street

ST #

MINOR STREET(S) : Titcomb Street

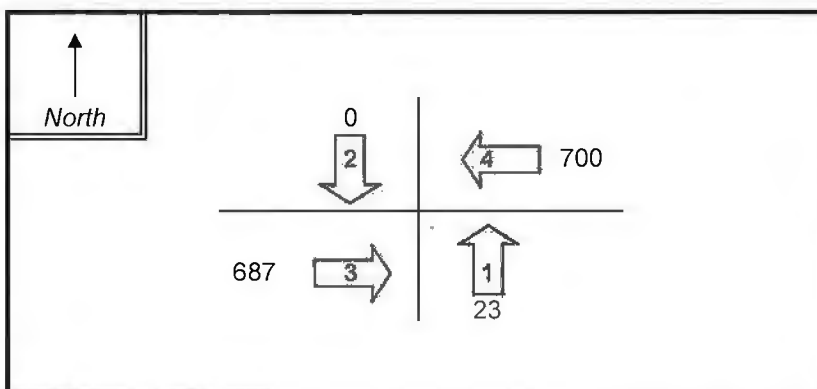
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	23	0	687	700		1,410

"K" FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and >0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street

ST #

MINOR STREET(S) : Green Street

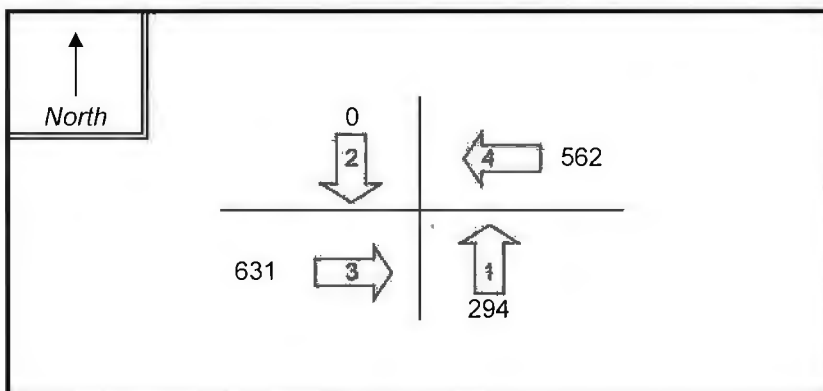
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	294	0	631	562		1,487

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

CRASH RATE CALCULATION :

0.17

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and > 0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☐ Yes

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Merrimac Street
 MINOR STREET(S) : Water Street/State Street

ST #

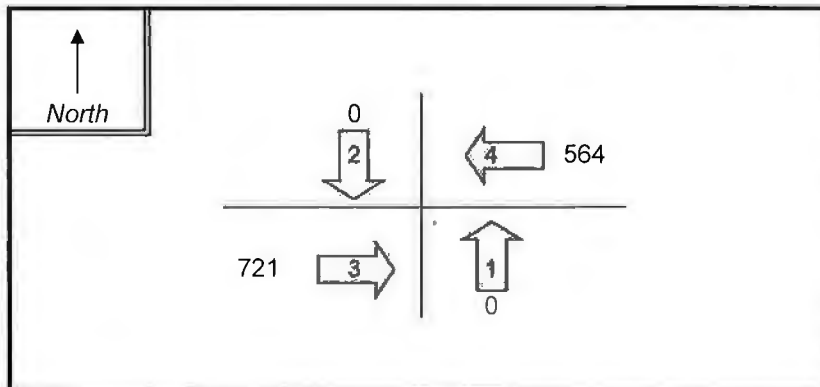
ST #

ST #

ST #

ST #

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :	0	0	721	564		1,285

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and > 0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

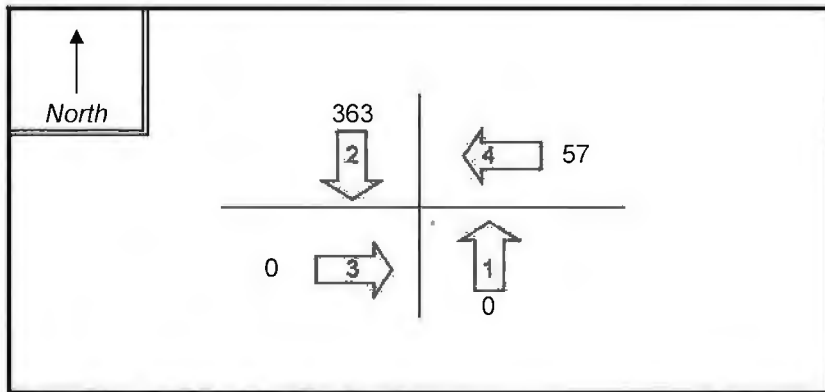
MHD USE ONLY
 Source #

~ INTERSECTION DATA ~

MAJOR STREET : State Street
 MINOR STREET(S) : Liberty Street

ST #
 ST #
 ST #
 ST #
 ST #

**INTERSECTION
 DIAGRAM**
 (Label Approaches)



INTERSECTION
 REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :		363	0	57		420

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and >0.73 crashes per mev for a signalized intersection for MassDOT District 4.

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Newburyport COUNT DATE : 2016
 DISTRICT : 4 UNSIGNALIZED : ☒ Yes SIGNALIZED : ☐

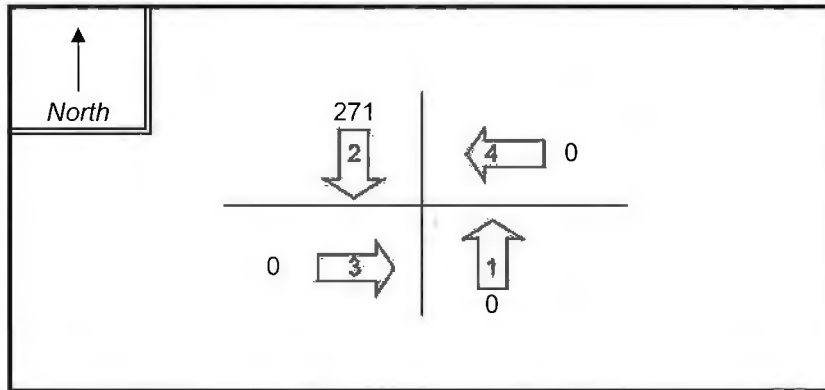
MHD USE ONLY
 Source #

~ INTERSECTION DATA ~

MAJOR STREET : Winter Street
 MINOR STREET(S) : Route 1 SB On-Ramp

ST #
 ST #
 ST #
 ST #
 ST #

**INTERSECTION
 DIAGRAM**
 (Label Approaches)



INTERSECTION
 REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/PM) :		271	0	0		271

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Crash rate is significant if > 0.56 crashes per mev for an unsignalized intersection
and > 0.73 crashes per mev for a signalized intersection for MassDOT District 4.



The Official Website of The Massachusetts Department of Transportation

[Mass.gov](#)

Top Crash Locations

[Home](#) > [GIS Maps And Data Products](#) > [Maps](#) > [Interactive Maps](#) > [Top Crash Locations](#)



GENERAL BACKGROUND TRAFFIC GROWTH



Vai & Associates, Inc.
Transportation Engineers & Planners

Calculations

10 New England Business Center Drive
Suite 314
Andover, MA 01810-1066
Office 978-474-8800
Fax 978-688-6508

Job: West End Development
Location: Newburyport, MA
Title: Annual Growth Calculations
Calculated by: BL

Job Number: 7281
Date: 11/3/16
Sheet _____ of _____
Checked by: _____

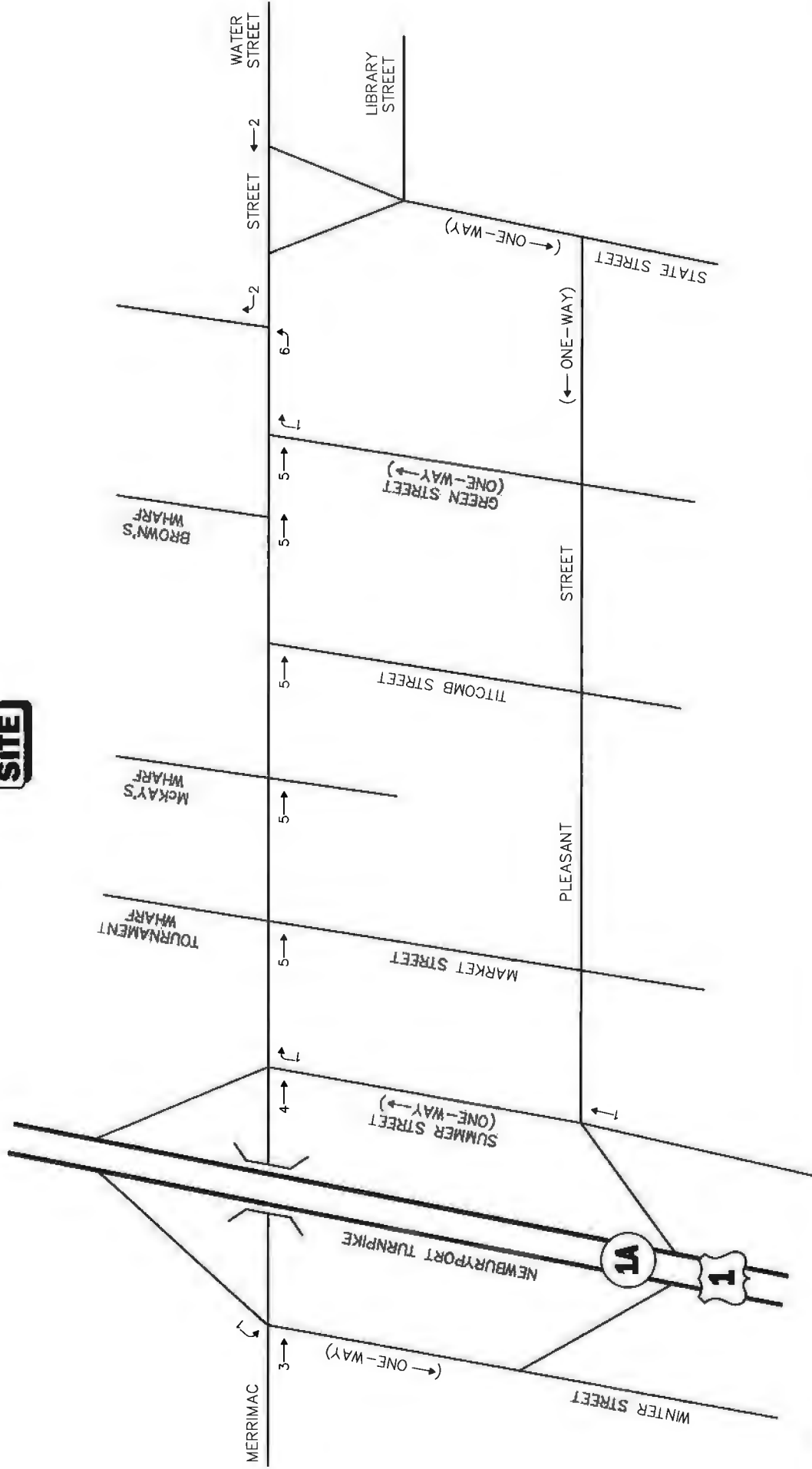
Count Station #5258 I-95, north of Scotland Road,
Newbury, MA

2006 = 65,791
2015 = 67,000

Annual Growth $\approx 67,000 / 65,791 \approx 0.2\%$ per yr.

BACKGROUND DEVELOPMENT NETWORKS

SITE



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

Not To Scale

Figure A-1

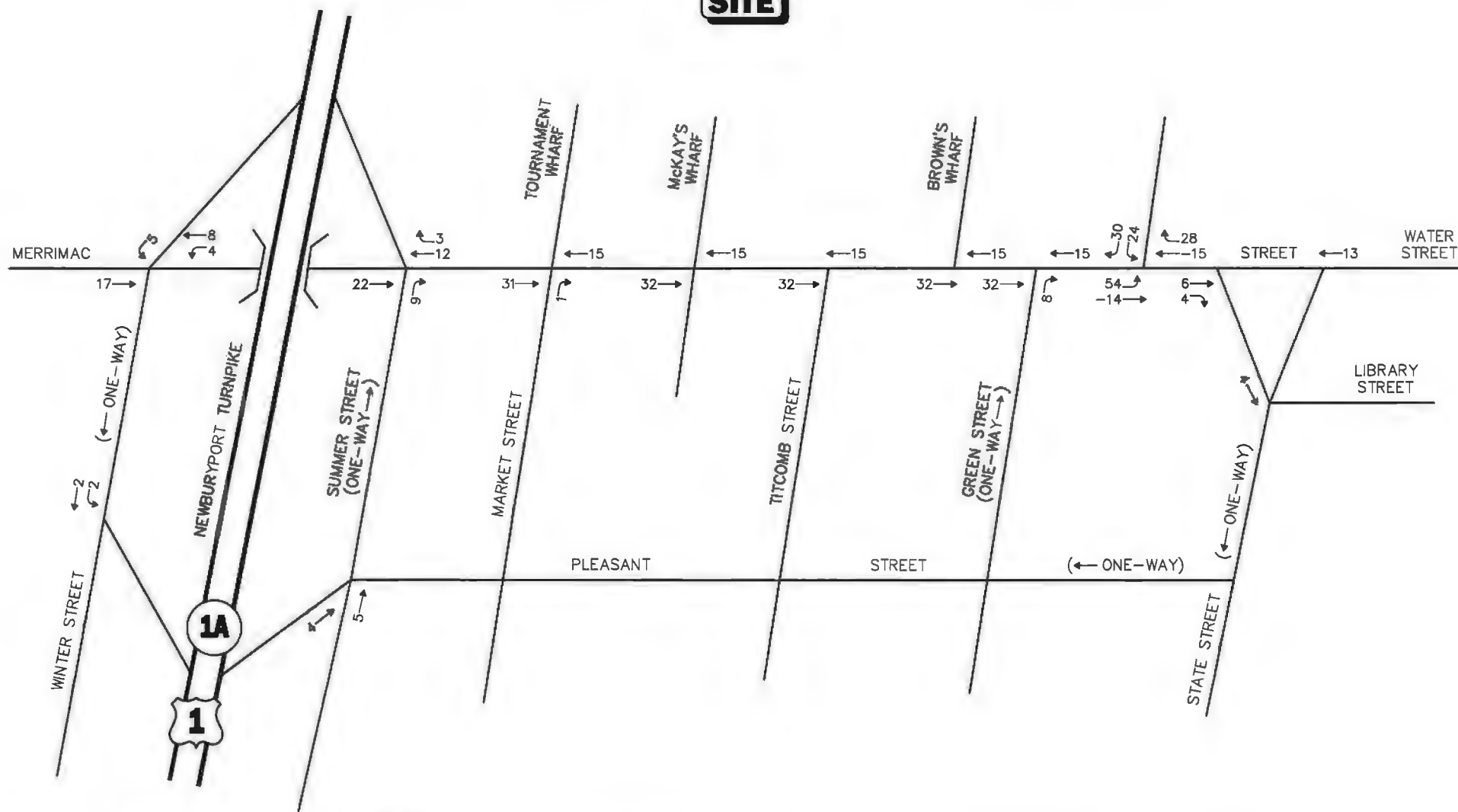
Merrimac Ale Houses

Weekday Morning

Peak Hour Traffic Volumes

VAI Vanasse & Associates, Inc.
Transportation Engineers & Planners

SITE

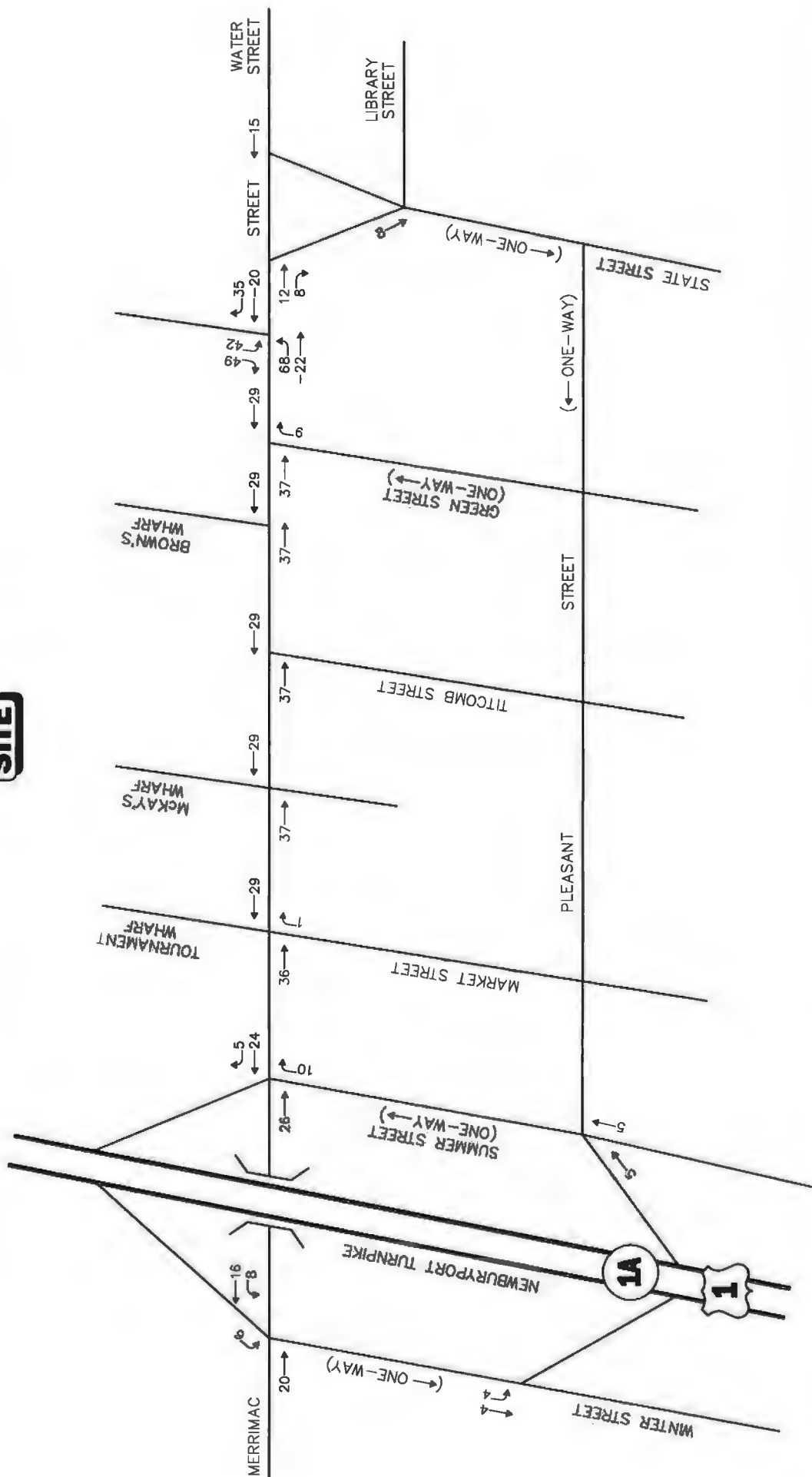


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure A-2

**Merrimac Ale House
Weekday Evening
Peak Hour Traffic Volumes**



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

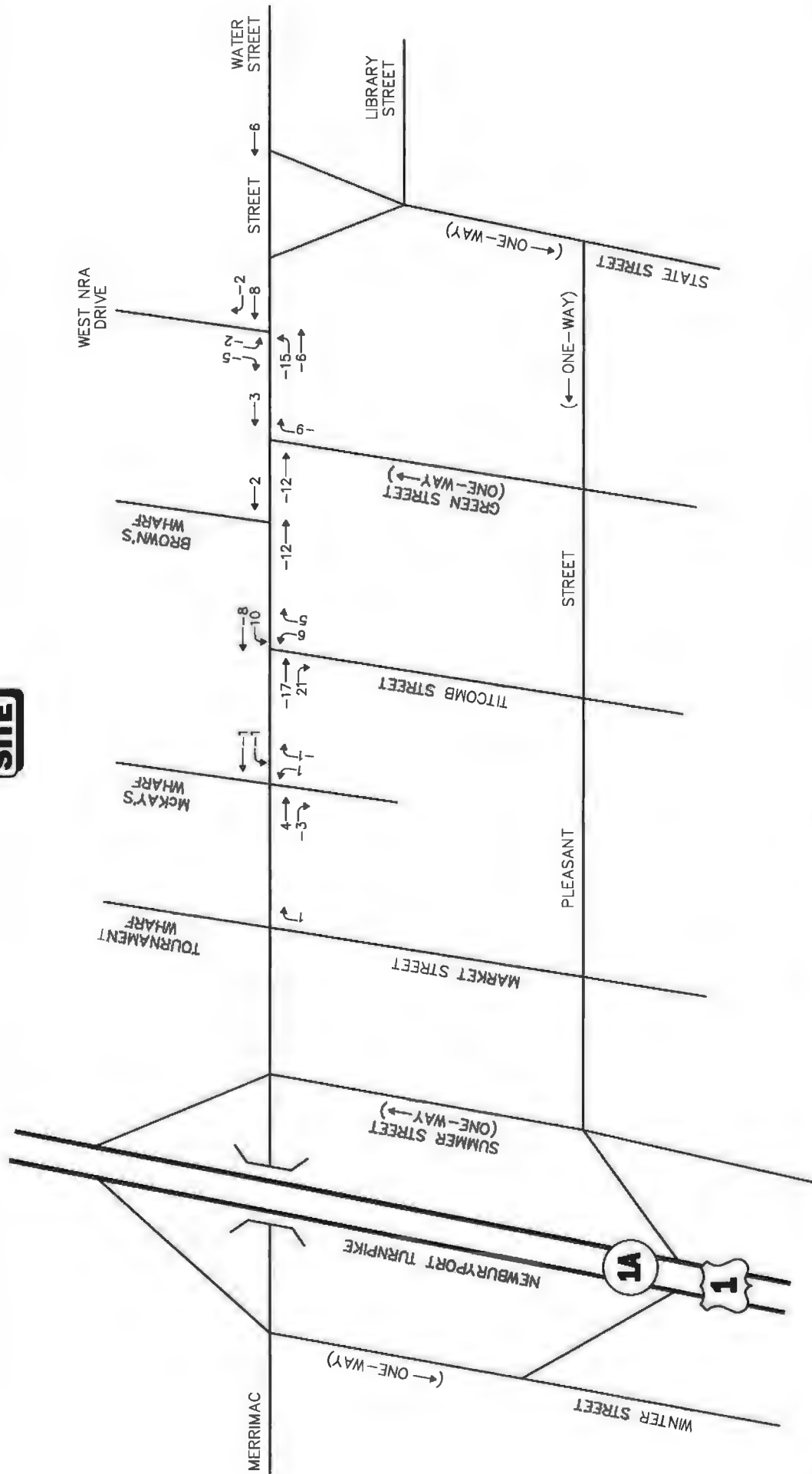
Not To Scale

Figure A-3

**Merrimac Ale House
Saturday Midday
Peak Hour Traffic Volumes**

Vanasse & Associates, Inc.
Transportation Engineers & Planners

SITE



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

Not To Scale

Figure A-4

Intermodal Parking Facility
Weekday Morning
Peak Hour Traffic Volumes

V Vanasse & Associates, Inc.
Transportation Engineers & Planners

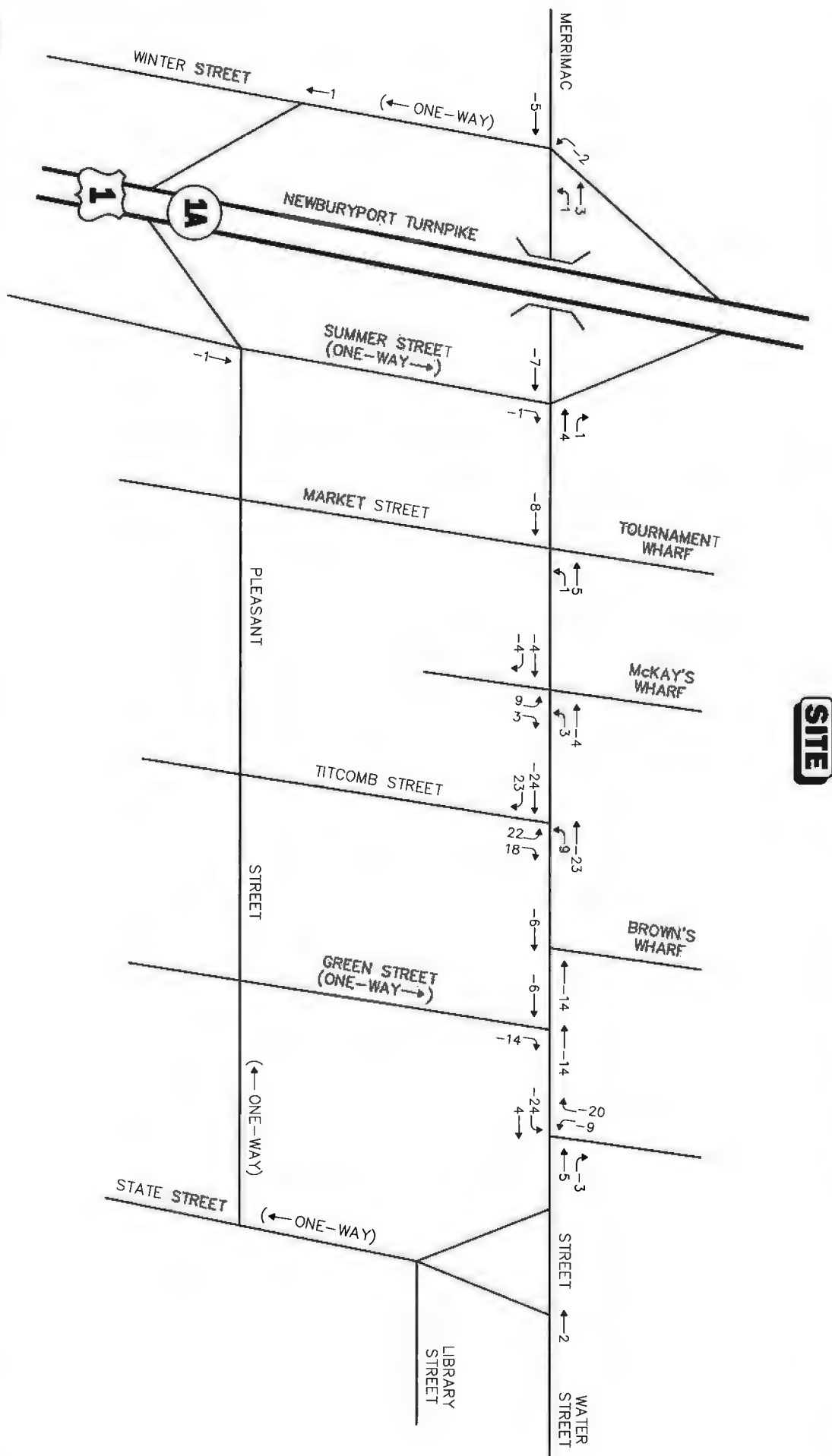


Figure A-5

Intermodal Parking Facility

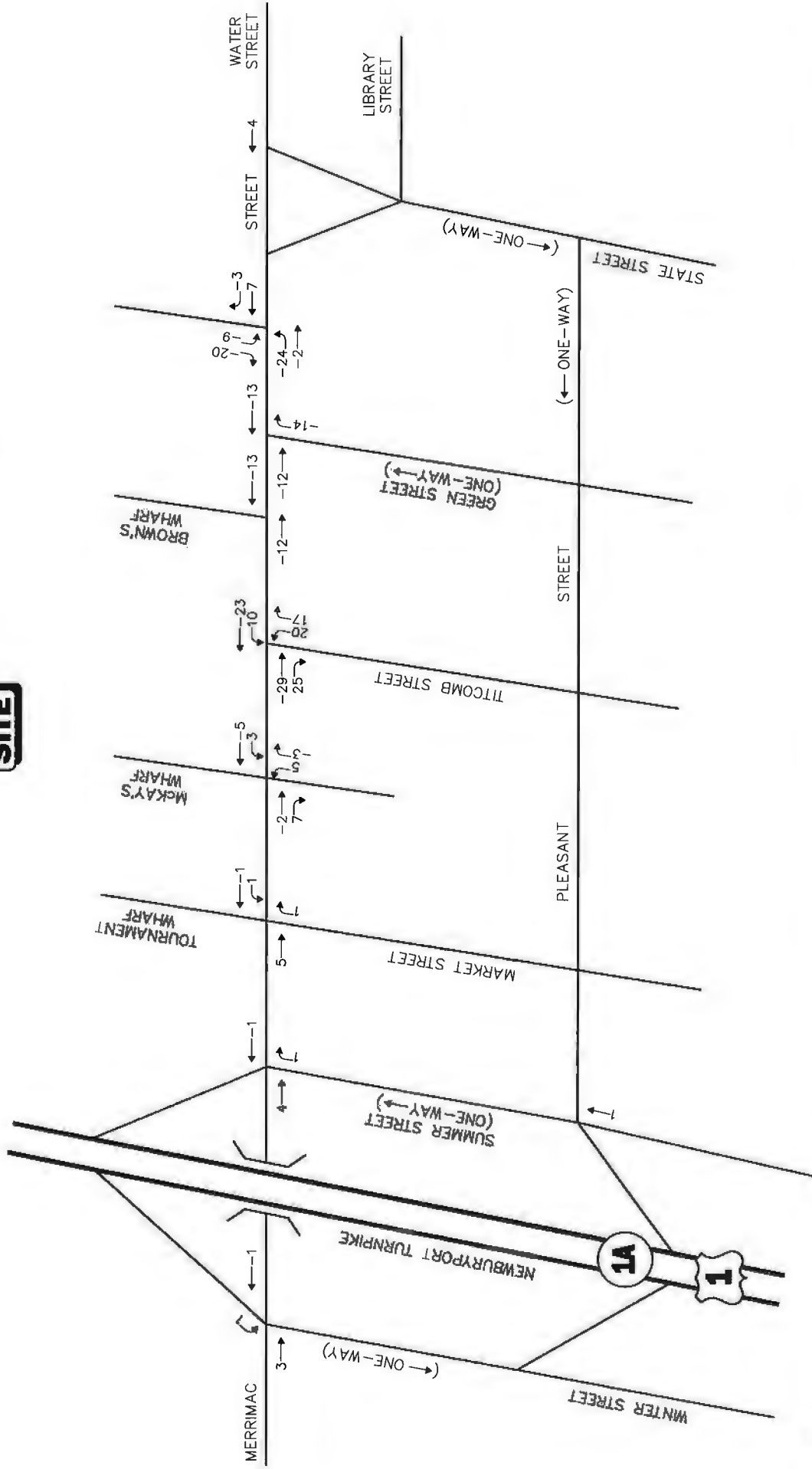
Weekday Evening

Peak Hour Traffic Volumes

Vanasse & Associates, Inc.
Transportation Engineers & Planners



SITE



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

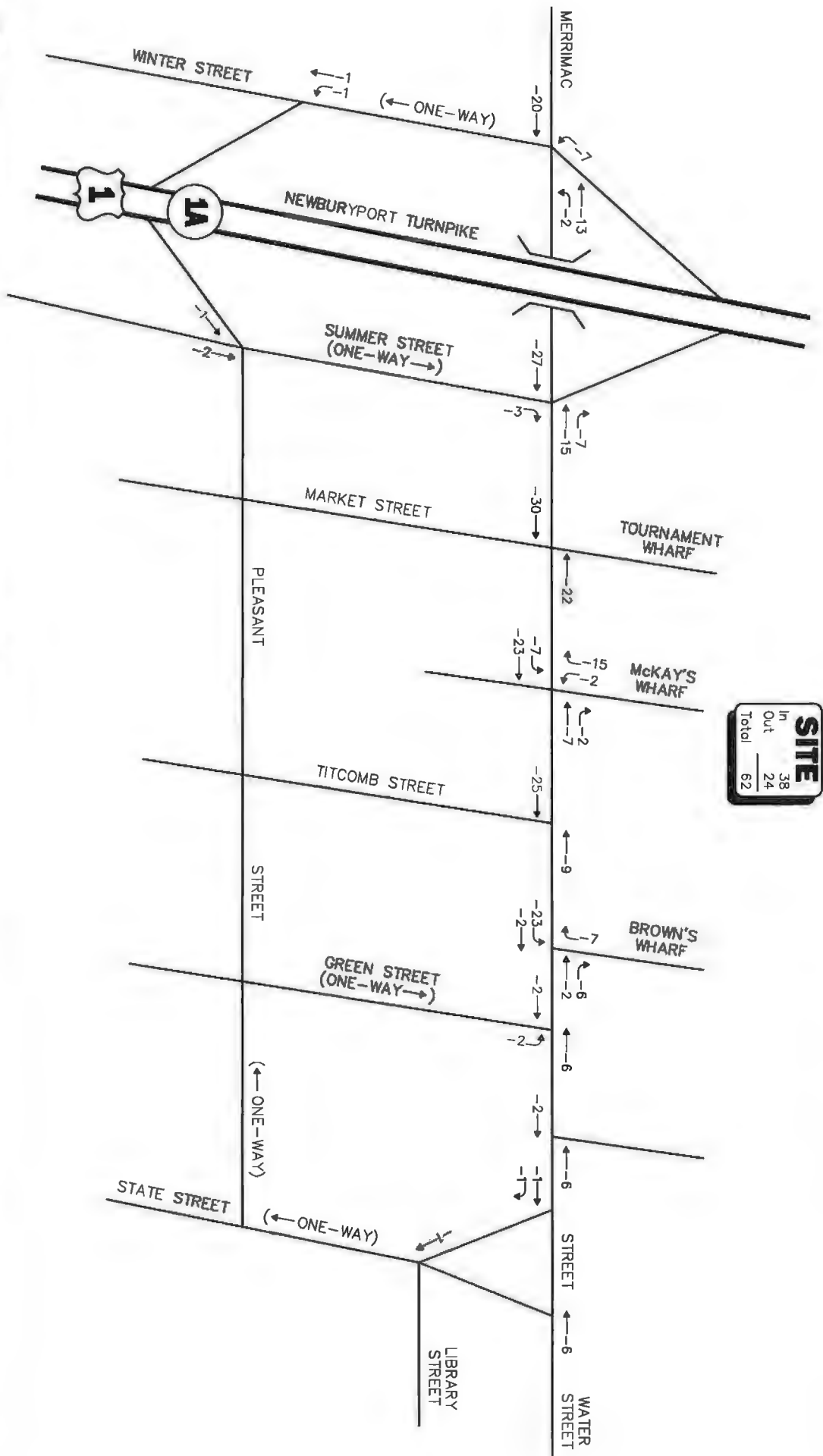
Not To Scale

Figure A-6

Vanasse & Associates, Inc.
Transportation Engineers & Planners

intermodal Parking Facility
Saturday Midday
Peak Hour Traffic Volumes

REMOVAL OF EXISTING SITE-GENERATED TRAFFIC NETWORKS

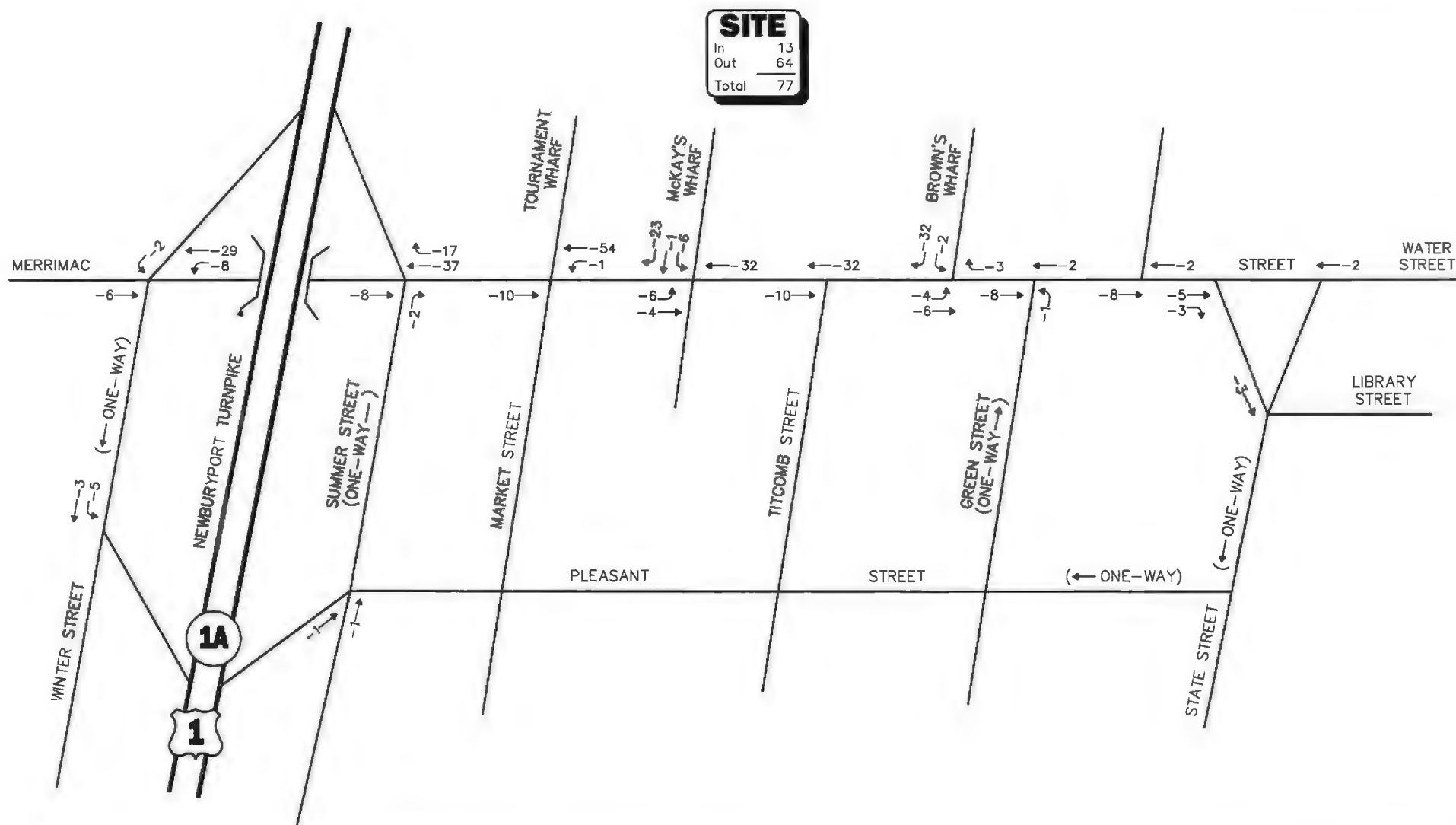


SITE		
In	38	
Out	24	
Total	62	



Not To Scale

Figure A-7
Removal of Existing Trips
Weekday Morning
Peak Hour Traffic Volumes



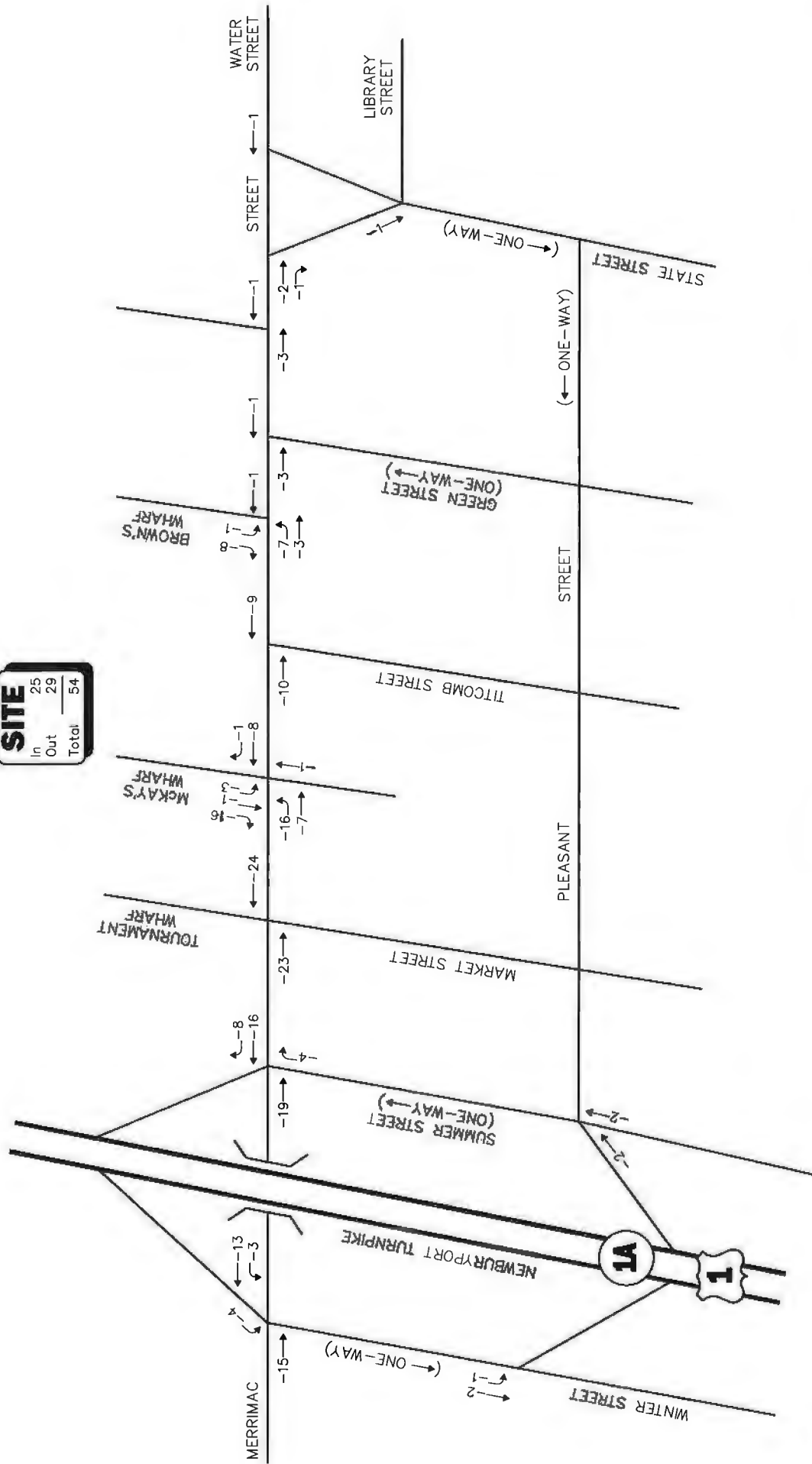
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure A-8

Removal of Existing Trips
Weekday Evening
Peak Hour Traffic Volumes

SITE		
In	25	
Out	29	
Total	54	



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

Not To Scale

Figure A-9

VAI Vanasse & Associates, Inc.
Transportation Engineers & Planners

Removal of Existing Trips
Saturday MIDDAY
Peak Hour Traffic Volumes

TRIP-GENERATION CALCULATIONS

Institute of Transportation Engineers (ITE)

Trip Generation, 9th Edition

Land Use Code (LUC) 230 - Residential Condominium/Townhouse

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 200

AVERAGE WEEKDAY DAILY

$$\ln T = 0.87 \ln (X) + 2.46$$

$$\ln T = 0.87 \ln 200 + (2.46)$$

$$\ln T = 7.07$$

$$T = 1175.60$$

$$T = 1,176 \text{ vehicle trips}$$

with 50% (588 vpd) entering and 50% (588 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.80 \ln (X) + 0.26$$

$$\ln T = 0.80 \ln 200 + (0.26)$$

$$\ln T = 4.50$$

$$T = 89.90$$

$$T = 90 \text{ vehicle trips}$$

with 17% (15 vph) entering and 83% (75 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.82 \ln (X) + 0.32$$

$$\ln T = 0.82 \ln 200 + (0.32)$$

$$\ln T = 4.66$$

$$T = 106.13$$

$$T = 106 \text{ vehicle trips}$$

with 67% (71 vph) entering and 33% (35 vph) exiting.

SATURDAY DAILY

$$T = 3.62 * (X) + 427.93$$

$$T = 3.62 * 200 + 427.93$$

$$T = 1151.93$$

$$T = 1,152 \text{ vehicle trips}$$

with 50% (576 vph) entering and 50% (576 vph) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$$T = 0.29 * (X) + 42.63$$

$$T = 0.29 * 200 + 42.63$$

$$T = 100.63$$

$$T = 101 \text{ vehicle trips}$$

with 54% (55 vph) entering and 46% (46 vph) exiting.¹

Institute of Transportation Engineers (ITE)
Trip Generation, 9th Edition
Land Use Code (LUC) 310 - Hotel

Average Vehicle Trips Ends vs: Rooms
Independent Variable (X): 100

AVERAGE WEEKDAY DAILY

$$T = 8.95 * (X) - 373.16$$

$$T = 8.95 * 100 - 373.16$$

$$T = 521.84$$

$$T = 522 \text{ vehicle trips}$$

with 50% (261 vpd) entering and 50% (261 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.53 * (X)$$

$$T = 0.53 * 100$$

$$T = 53.00$$

$$T = 54.00 \text{ vehicle trips}$$

with 59% (32 vpd) entering and 41% (22 vpd) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.60 * (X)$$

$$T = 0.60 * 100$$

$$T = 60.00$$

$$T = 60 \text{ vehicle trips}$$

with 51% (31 vpd) entering and 49% (29 vpd) exiting.

SATURDAY DAILY

$$T = 9.62 * (X) - 294.56$$

$$T = 9.62 * 100 - 294.56$$

$$T = 667.44$$

$$T = 668 \text{ vehicle trips}$$

with 50% (334 vpd) entering and 50% (334 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$$T = 0.69 * (X) + 4.32$$

$$T = 0.69 * 100 + 4.32$$

$$T = 73.32$$

$$T = 73 \text{ vehicle trips}$$

with 56% (41 vph) entering and 44% (32 vph) exiting.

Institute of Transportation Engineers (ITE)
Trip Generation, 9th Edition
Land Use Code (LUC) 820 - Shopping Center

Average Vehicle Trips Ends vs: 1,000 Square Feet Gross Leasable Area
Independent Variable (X): 20.000

AVERAGE WEEKDAY DAILY

$$\ln T = 0.65 \ln (X) + 5.83$$

$$\ln T = 0.65 \ln 20.000 + (5.83)$$

$$\ln T = 7.78$$

$$T = 2385.65$$

$$T = 2,386 \text{ vehicle trips}$$

with 50% (1,193 vpd) entering and 50% (1,193 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.96 * (X)$$

$$T = 0.96 * 20.000$$

$$T = 19.20$$

$$T = 19 \text{ vehicle trips}$$

with 62% (12 vph) entering and 38% (7 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.67 \ln (X) + 3.31$$

$$\ln T = 0.67 \ln 20.000 + (3.31)$$

$$\ln T = 5.32$$

$$T = 203.80$$

$$T = 204 \text{ vehicle trips}$$

with 48% (98 vph) entering and 52% (106 vph) exiting.

SATURDAY DAILY

$$\ln T = 0.63 \ln (X) + 6.23$$

$$\ln T = 0.63 \ln 20.000 + (6.23)$$

$$\ln T = 8.12$$

$$T = 3352.00$$

$$T = 3,352 \text{ vehicle trips}$$

with 50% (1,676 vpd) entering and 50% (1,676 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$$\ln T = 0.65 \ln (X) + 3.78$$

$$\ln T = 0.65 \ln 20.000 + (3.78)$$

$$\ln T = 5.73$$

$$T = 307.12$$

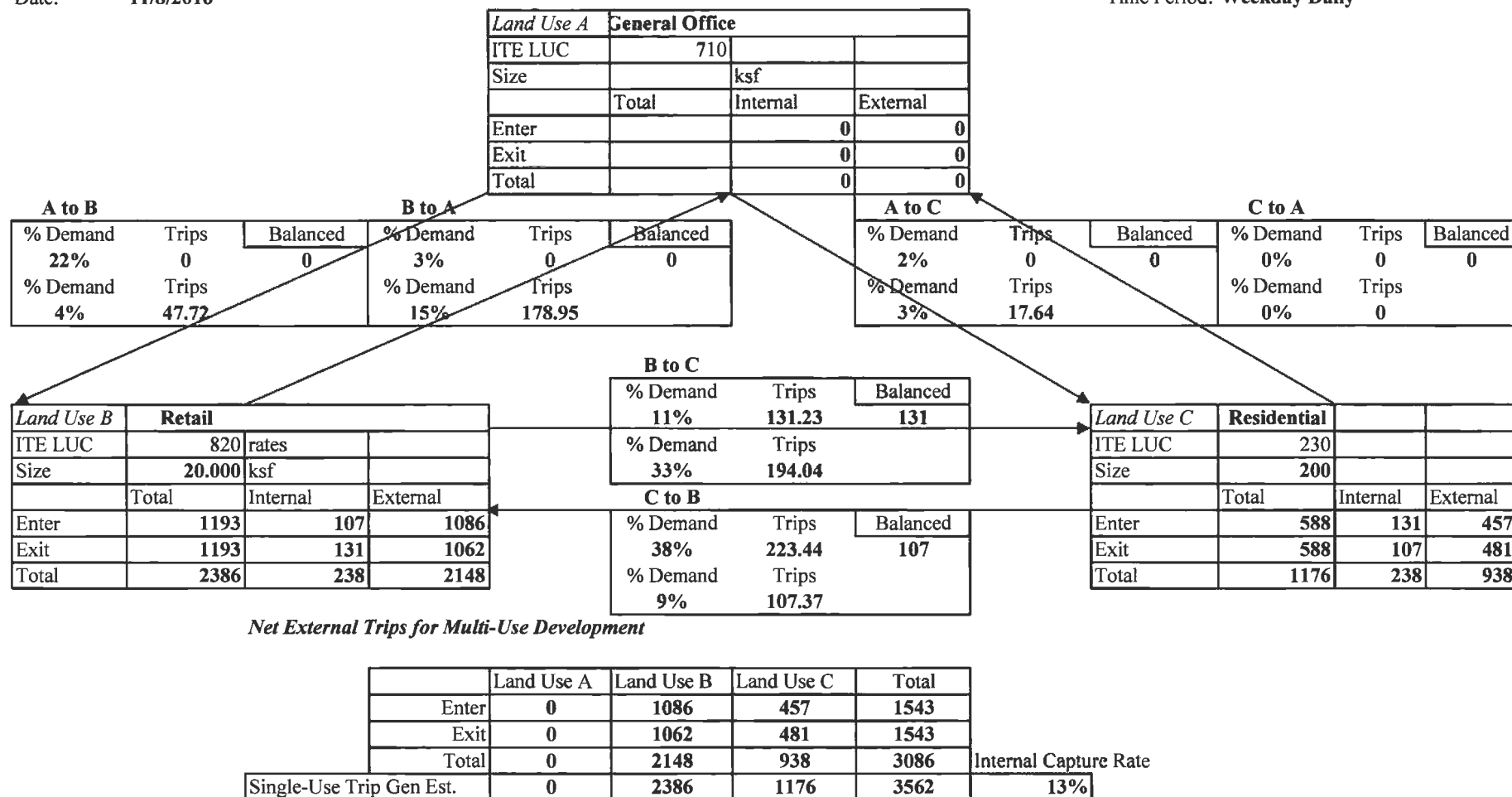
$$T = 307 \text{ vehicle trips}$$

with 52% (160 vph) entering and 48% (147 vph) exiting.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: **11/8/2016**

Job No. **7281**
Time Period: **Weekday Daily**

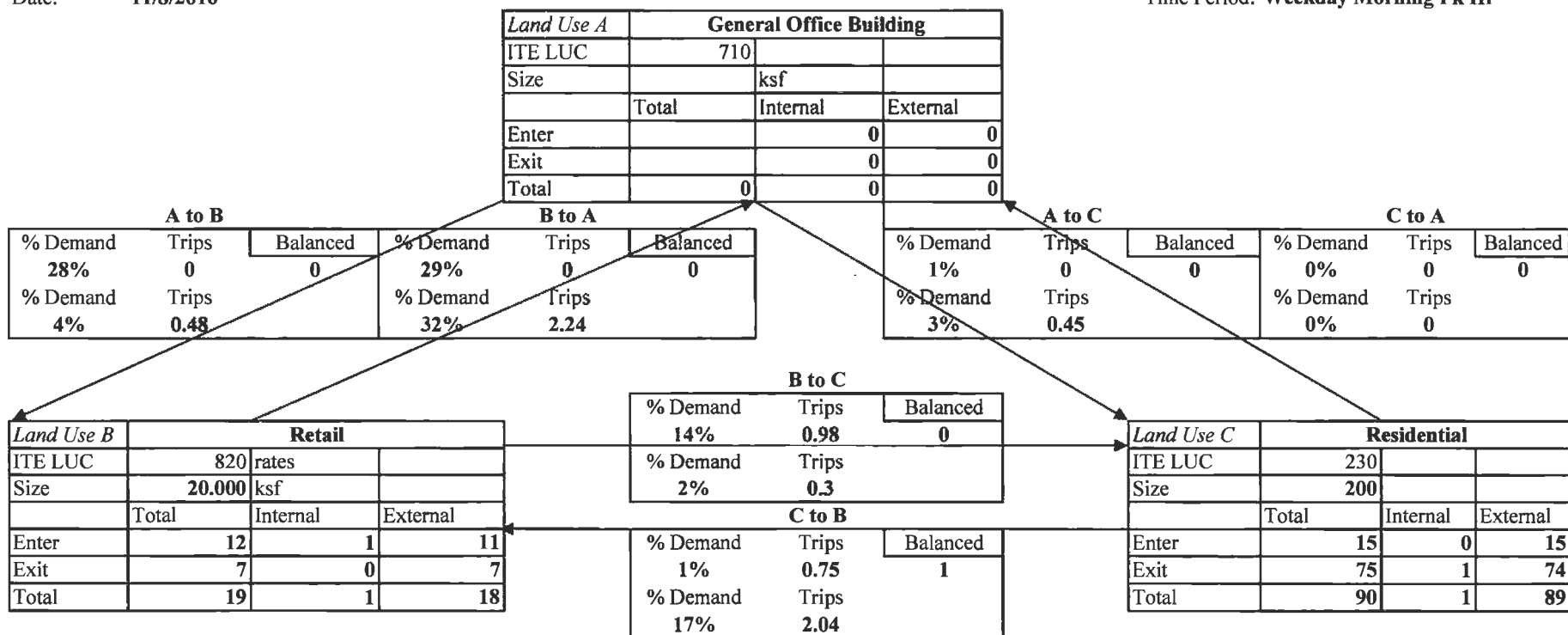


* from ITE Trip Generation Handbook, 9th Edition, 2012.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: **11/8/2016**

Job No. **7281**
Time Period: **Weekday Morning Pk Hr**



Net External Trips for Multi-Use Development

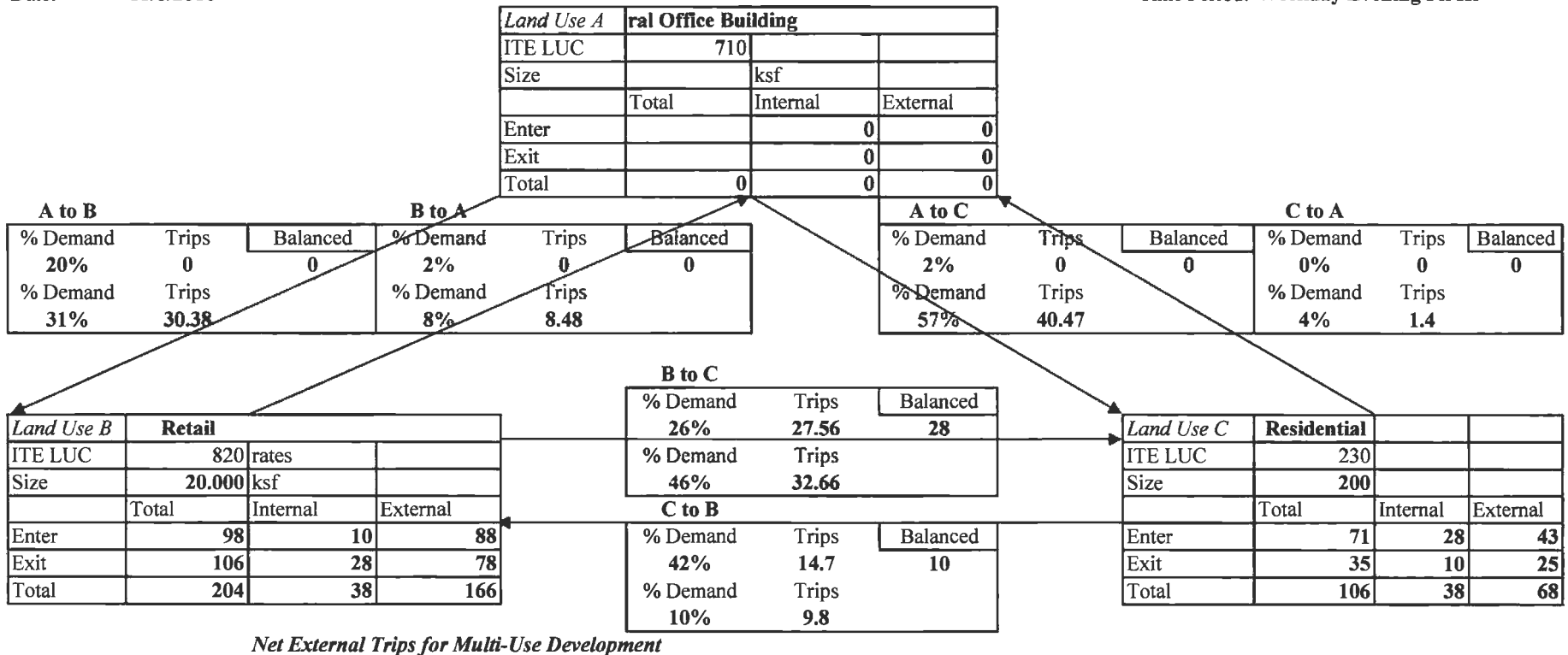
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	11	15	26	
Exit	0	7	74	81	
Total	0	18	89	107	
Single-Use Trip Gen Est.	0	19	90	109	Internal Capture Rate
					2%

* from ITE Trip Generation Handbook, 3rd Edition, 2014.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: **11/8/2016**

Job No. **7281**
Time Period: **Weekday Evening Pk Hr**



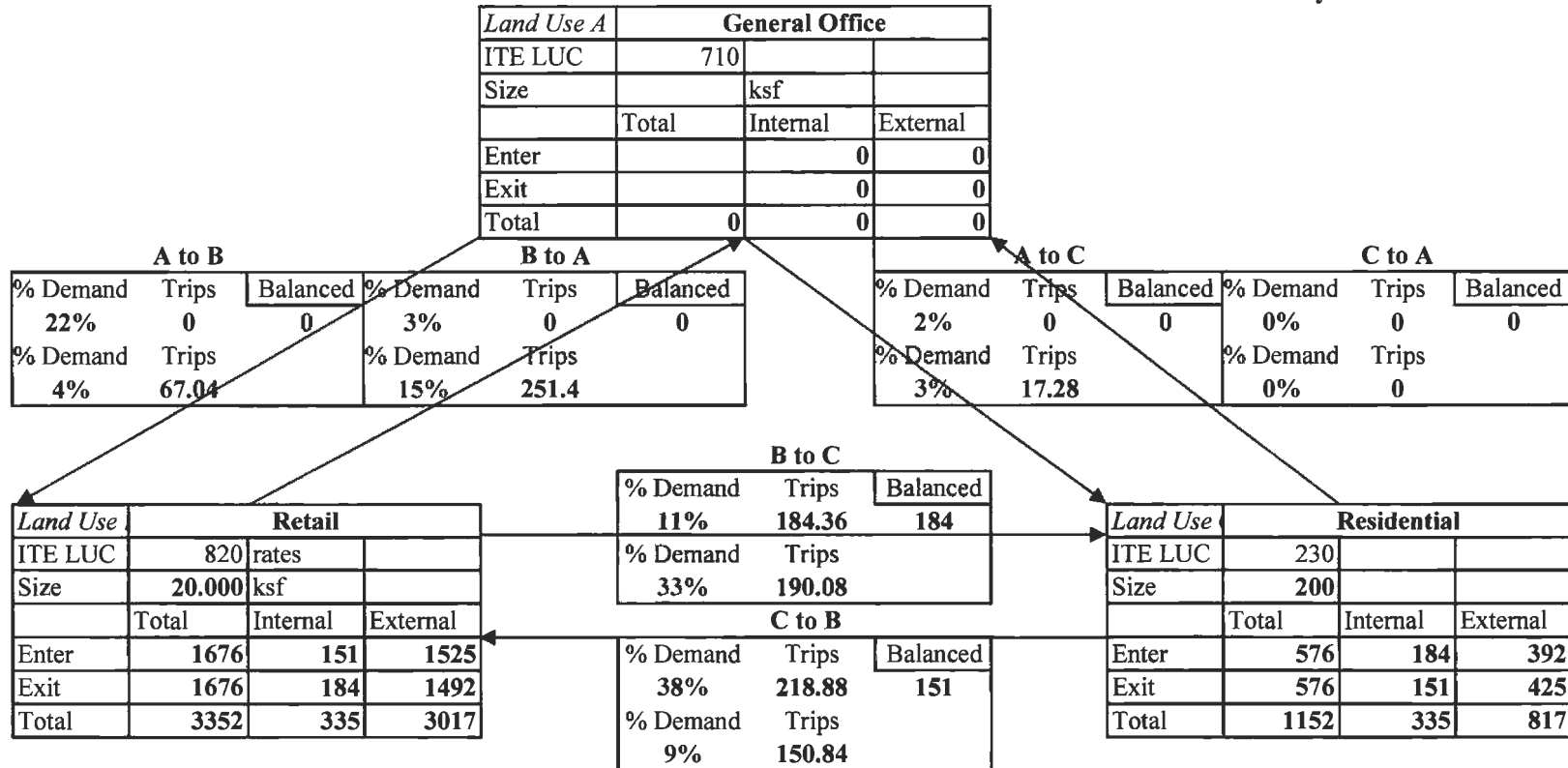
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	88	43	131	
Exit	0	78	25	103	
Total	0	166	68	234	
Single-Use Trip Gen Est.	0	204	106	310	Internal Capture Rate
					25%

* from ITE Trip Generation Handbook, 3rd Edition, 2014.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: BG
Date: 11/8/2016

Job No. 7281
Time Period: Saturday



Net External Trips for Multi-Use Development

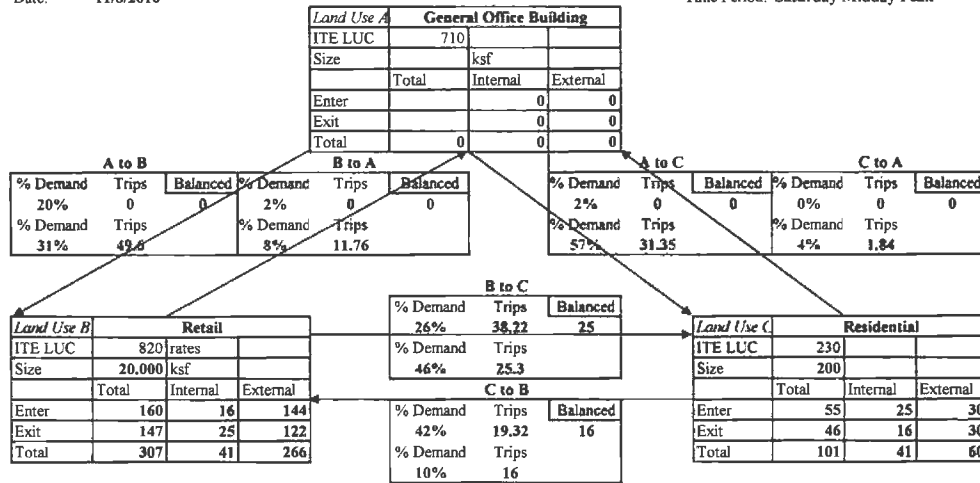
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	1525	392	1917	
Exit	0	1492	425	1917	
Total	0	3017	817	3834	Internal Capture Rate
Single-Use Trip Gen	0	3352	1152	4504	15%

* from ITE Trip Generation Handbook, 9th Edition, 2012 (use weekday daily).

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: 11/8/2016

Job No: 7281
Time Period: Saturday Midday Peak



Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	0	144	30	174	
Exit	0	122	30	152	
Total	0	266	60	326	Internal Capture Rate
Single-Use Trip Gen	0	307	101	408	20%

* from ITE Trip Generation Handbook, 3rd Edition, 2014 (use weekday evening peak-hour)

Trip Origins			
	AM Peak Hour	PM Peak Hour	Daily
From Office to Office	n/a	n/a	2%
to Retail	28%	20%	22%
to Residential	1%	2%	2%
From Retail to Office	29%	2%	3%
to Retail	n/a	n/a	30%
to Residential	14%	26%	11%
From Residential to Office	2%	4%	n/a
to Retail	1%	42%	38%
to Residential	n/a	n/a	n/a

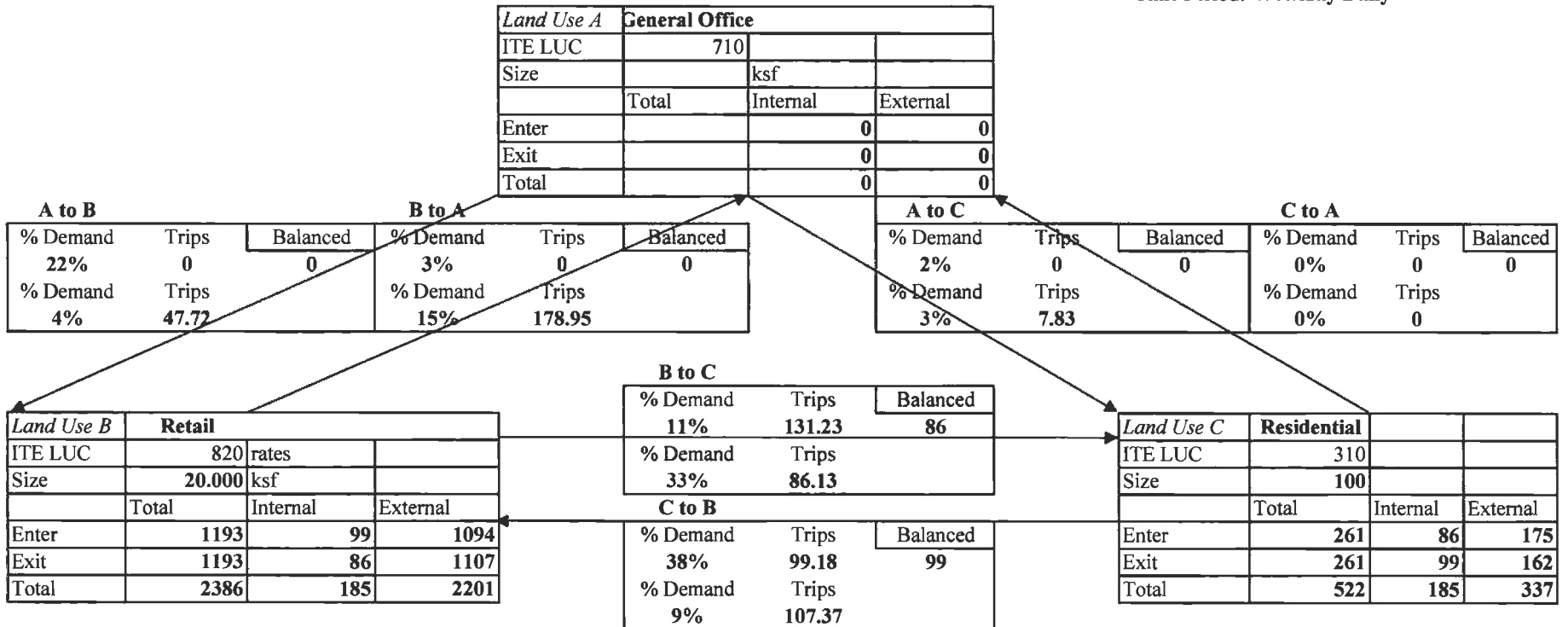
Trip Destinations			
	AM Peak Hour	PM Peak Hour	Daily
To Office from Office	n/a	n/a	2%
From Retail	4%	31%	15%
From Residential	3%	57%	n/a
to Retail From Office	32%	8%	4%
From Retail	n/a	n/a	28%
From Residential	17%	10%	9%
to Residential From Office	0%	4%	3%
From Retail	2%	46%	33%
From Residential	n/a	n/a	n/a

* from ITE Trip Generation Handbook, 3rd Edition, 2014 (use weekday evening peak-hour)

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: **11/8/2016**

Job No. **7281**
Time Period: **Weekday Daily**



Net External Trips for Multi-Use Development

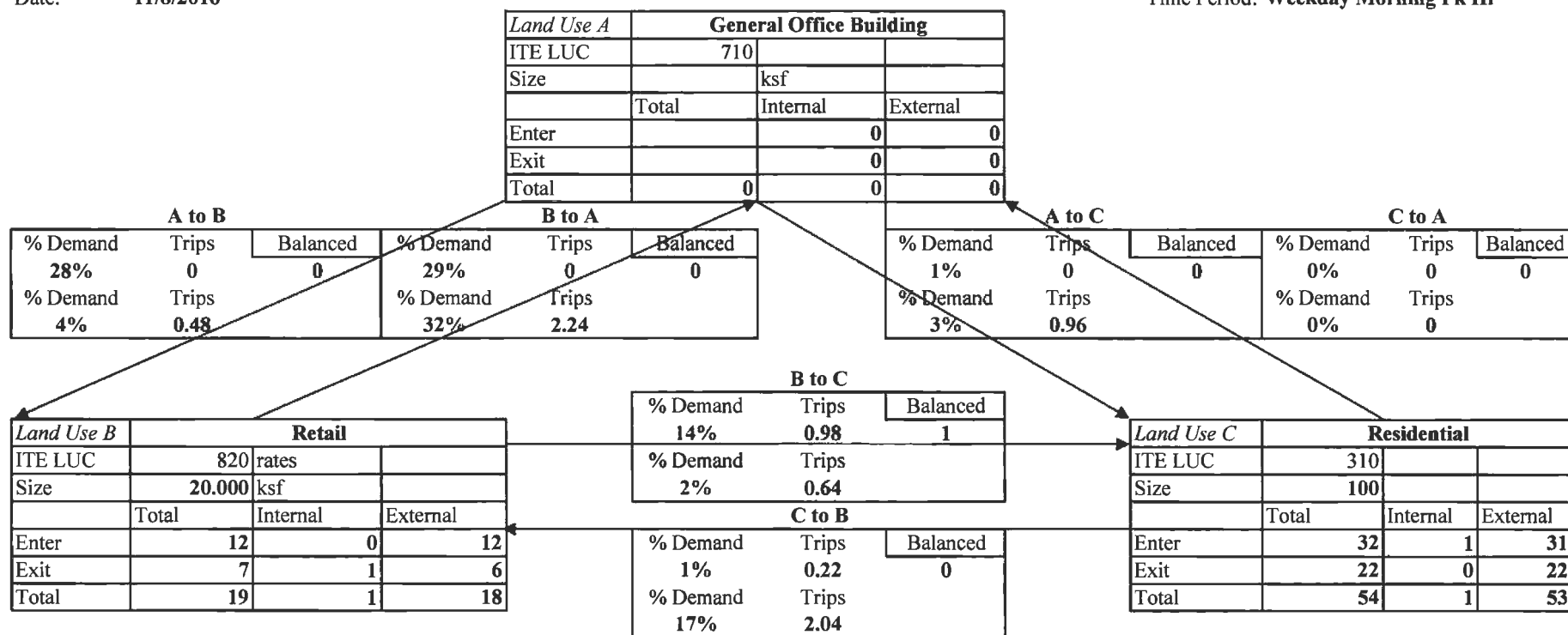
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	1094	175	1269	
Exit	0	1107	162	1269	
Total	0	2201	337	2538	
Single-Use Trip Gen Est.	0	2386	522	2908	Internal Capture Rate
					13%

* from ITE Trip Generation Handbook, 9th Edition, 2012.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: **11/8/2016**

Job No. **7281**
Time Period: **Weekday Morning Pk Hr**



Net External Trips for Multi-Use Development

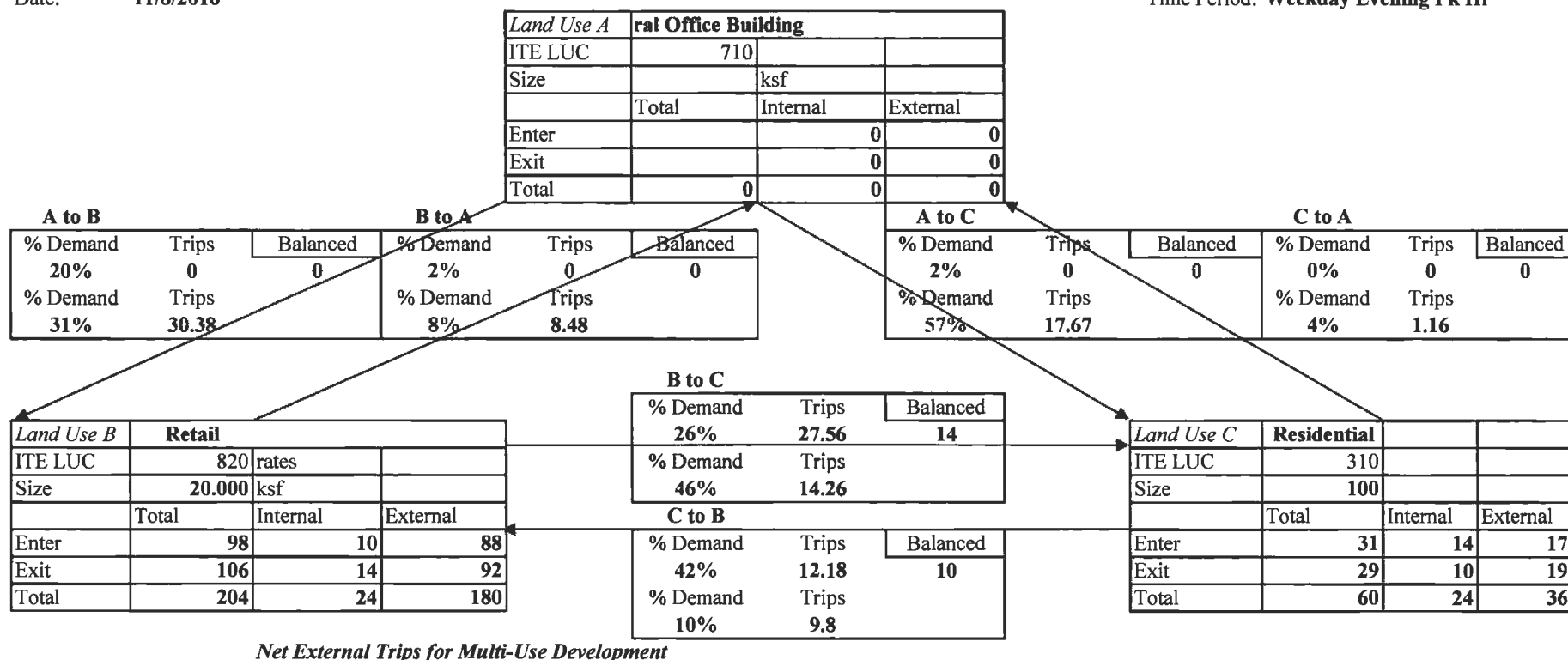
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	12	31	43	
Exit	0	6	22	28	
Total	0	18	53	71	
Single-Use Trip Gen Est.	0	19	54	73	Internal Capture Rate
					3%

* from ITE Trip Generation Handbook, 3rd Edition, 2014.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: **BG**
Date: **11/8/2016**

Job No. **7281**
Time Period: **Weekday Evening Pk Hr**



Net External Trips for Multi-Use Development

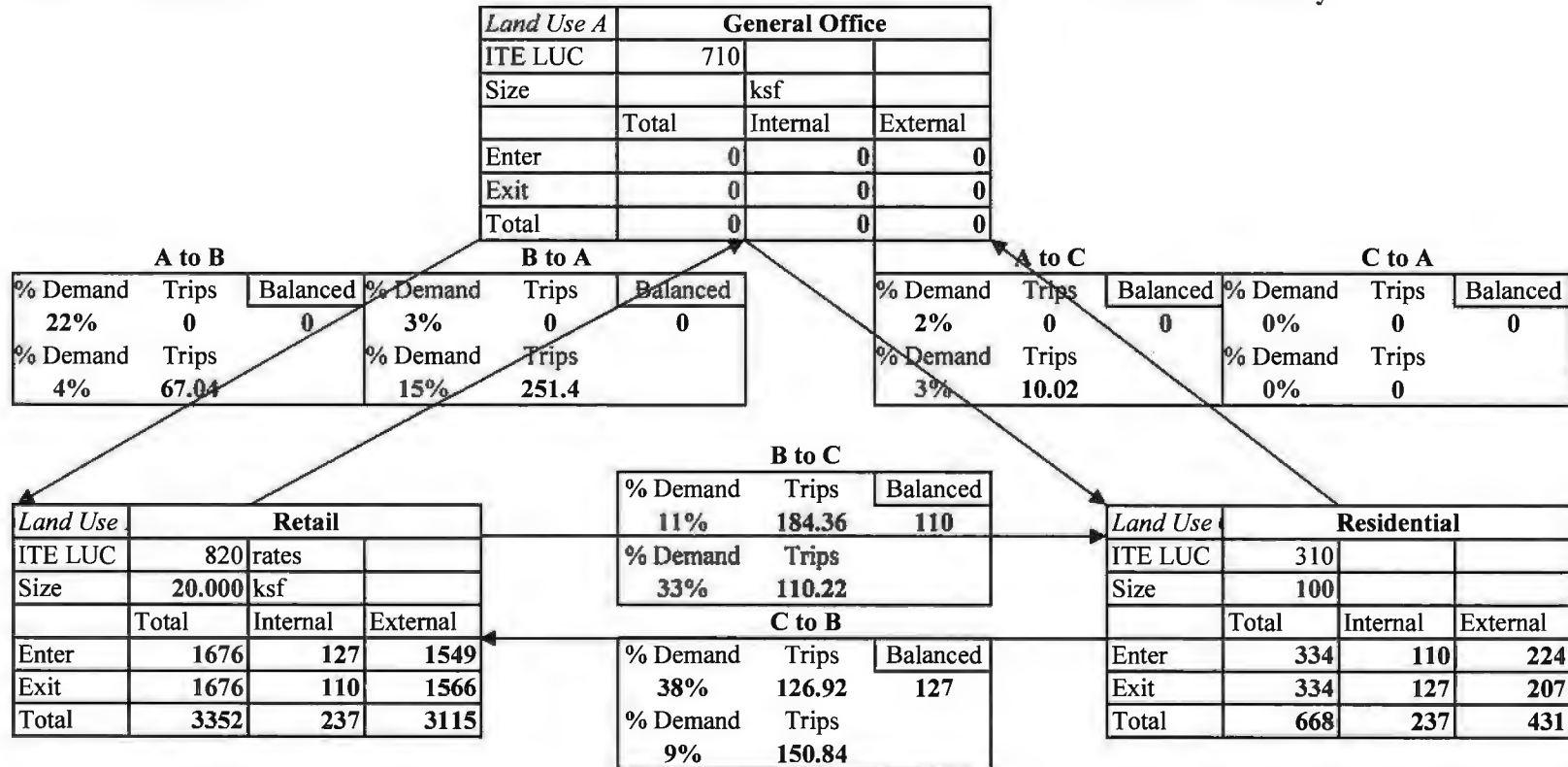
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	88	17	105	
Exit	0	92	19	111	
Total	0	180	36	216	
Single-Use Trip Gen Est.	0	204	60	264	Internal Capture Rate
					18%

* from ITE Trip Generation Handbook, 3rd Edition, 2014.

Proposed Mixed-Use Development - Newburyport, MA

Analyst: BG
Date: 11/8/2016

Job No. 7281
Time Period: Saturday



Net External Trips for Multi-Use Development

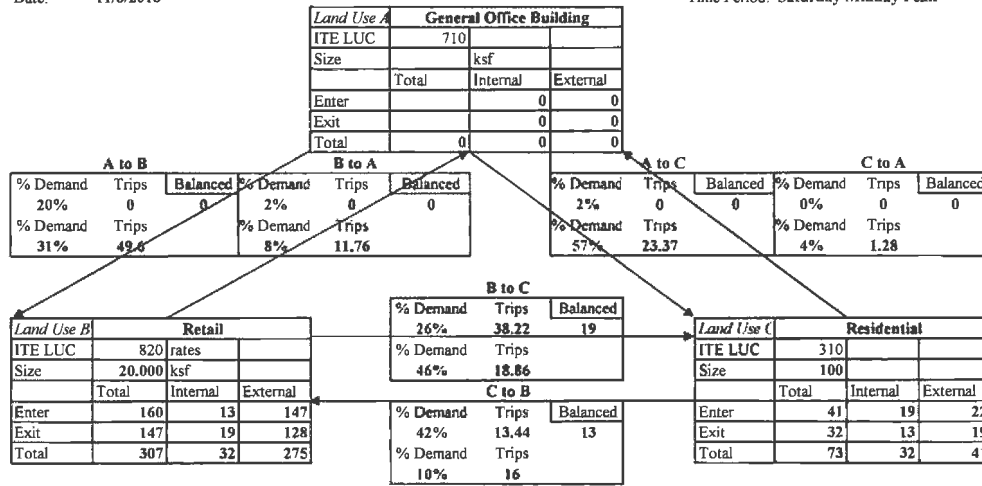
	Land Use A	Land Use B	Land Use C	Total	
Enter	0	1549	224	1773	
Exit	0	1566	207	1773	
Total	0	3115	431	3546	Internal Capture Rate
Single-Use Trip Gen	0	3352	668	4020	12%

* from ITE Trip Generation Handbook, 9th Edition, 2012 (use weekday daily).

Proposed Mixed-Use Development - Newburyport, MA

Analyst: BG
Date: 11/8/2016

Job No: 7281
Time Period: Saturday Midday Peak



* from ITE Trip Generation Handbook, 3rd Edition, 2014 (use weekday evening peak-hour)

	Trip Origins		
	AM Peak Hour	PM Peak Hour	Daily
From Office to Office	n/a	n/a	2%
to Retail	28%	20%	22%
to Residential	1%	2%	2%
From Retail to Office	29%	2%	3%
to Retail	n/a	n/a	30%
to Residential	14%	26%	11%
From Residential to Office	2%	4%	n/a
to Retail	1%	42%	38%
to Residential	n/a	n/a	n/a

	Trip Destinations		
	AM Peak Hour	PM Peak Hour	Daily
To Office from Office	n/a	n/a	2%
From Retail	4%	31%	15%
From Residential	3%	57%	n/a
to Retail from Office	32%	8%	4%
From Retail	n/a	n/a	28%
From Residential	17%	10%	9%
to Residential from Office	0%	4%	3%
From Retail	2%	46%	33%
From Residential	n/a	n/a	n/a

* from ITE Trip Generation Handbook, 3rd Edition, 2014 (use weekday evening peak-hour)

JOURNEY TO WORK TRIP DISTRIBUTION

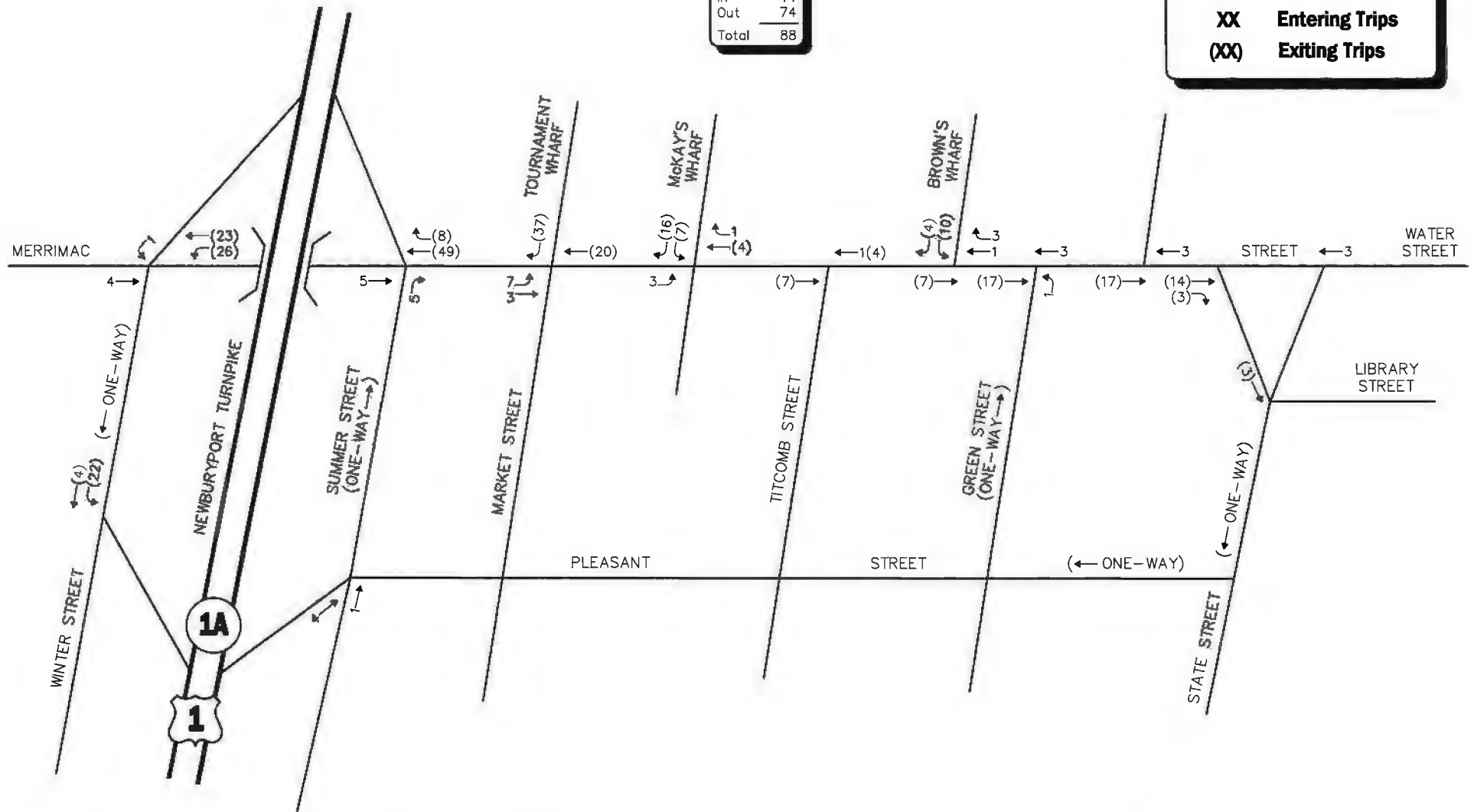
Residence			Workplace			Number	Merrimac Street (East)	Merrimac Street West	Route 1 North	Route 1 South	State Street/Green Street South	Summer Street/Winter Street South
State	County	MCD	State/U S. Island Area/Foreign Country	County	MCD							
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Newburyport city	3,532	1413	1237		177	353	353
Massachusetts	Essex County	Newburyport city	Massachusetts	Suffolk County	Boston city	709				709		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Haverhill city	235		235				
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Andover town	234		234				
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Peabody city	229				229		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Danvers town	192				192		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Salisbury town	188			188			
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Newbury town	170			170			
Massachusetts	Essex County	Newburyport city	New Hampshire	Rockingham County	Portsmouth city	169				169		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Amesbury Town city	155			155			
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Lawrence city	136		136				
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Rowley town	132				132		
Massachusetts	Essex County	Newburyport city	Massachusetts	Middlesex County	Medford city	128				128		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Beverly city	124				124		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Ipswich town	114				114		
Massachusetts	Essex County	Newburyport city	New Hampshire	Rockingham County	Seabrook town	104			104			
Massachusetts	Essex County	Newburyport city	Massachusetts	Middlesex County	Cambridge city	102				102		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Georgetown town	87		87				
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Lynn city	85				85		
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	West Newbury town	85		85				
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	Gloucester city	82	21			61		
Massachusetts	Essex County	Newburyport city	Massachusetts	Middlesex County	Chelmsford town	75		75				
Massachusetts	Essex County	Newburyport city	Massachusetts	Middlesex County	Lowell city	75		75				
Massachusetts	Essex County	Newburyport city	Massachusetts	Essex County	North Andover town	73		37		36		
Massachusetts	Essex County	Newburyport city	New Hampshire	Rockingham County	Salem town	67				67		
Massachusetts	Essex County	Newburyport city	Massachusetts	Suffolk County	Winthrop Town city	65		33		32		
Massachusetts	Essex County	Newburyport city	Massachusetts	Middlesex County	Tewksbury town	64		32		32		
Massachusetts	Essex County	Newburyport city	Massachusetts	Middlesex County	Burlington town	61		31		30		
7,472							1,434	2,297	786	2,250	353	353
							19%	31%	10%	30%	5%	5%

PROJECT-GENERATED RESIDENTIAL AND COMMERCIAL TRAFFIC NETWORKS

SITE	
In	14
Out	74
Total	88

Legend:

XX Entering Trips
(XX) Exiting Trips



Not To Scale



Figure A-10

**Project - Generated
 Weekday Morning
 Peak Hour Traffic Volumes
 Residential Component**

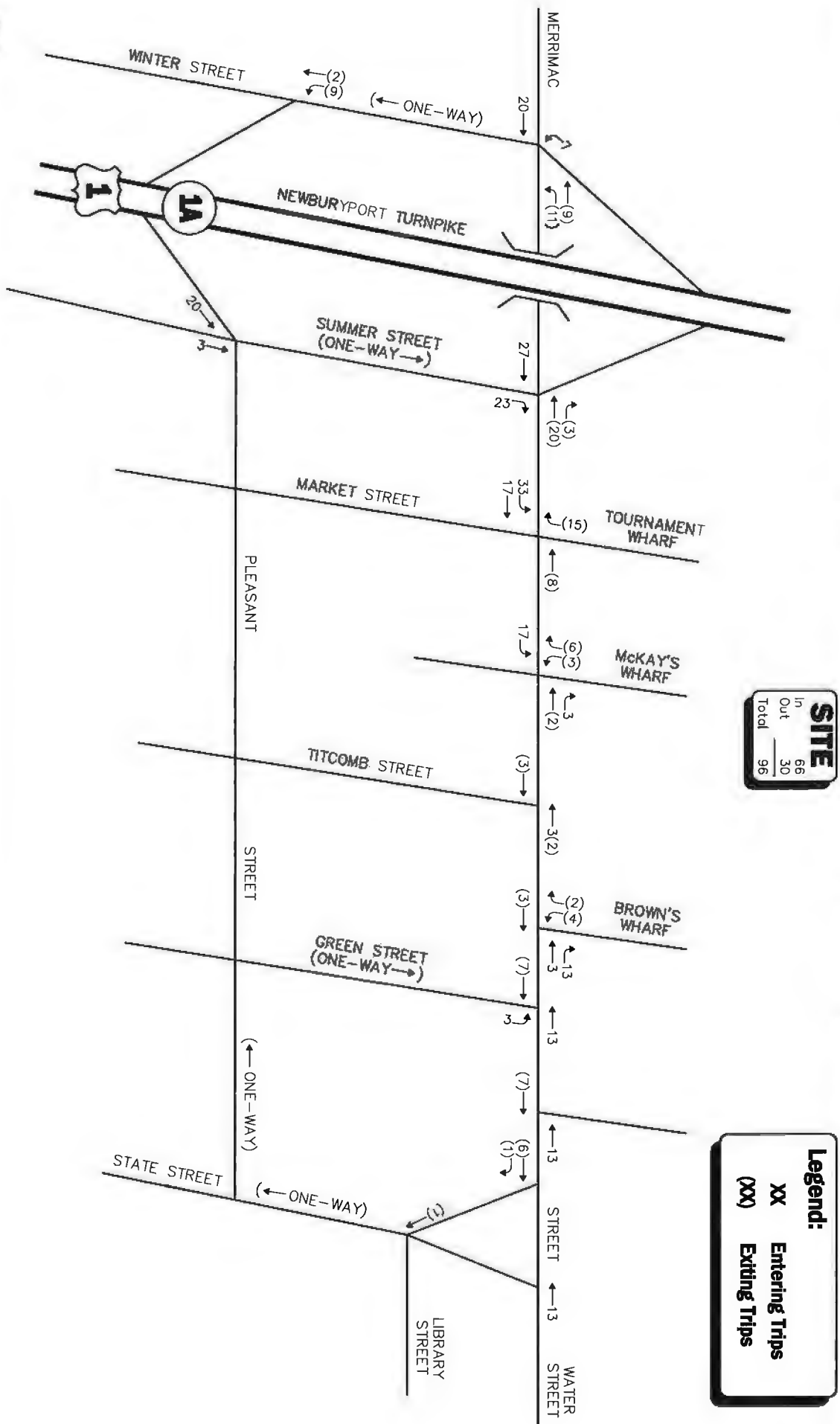


Figure A-11

Vanasse & Associates, Inc.
Engineers & Planners



SITE		
In	47	
Out	38	
Total	85	

Legend:
 XX Entering Trips
 (XX) Exiting Trips

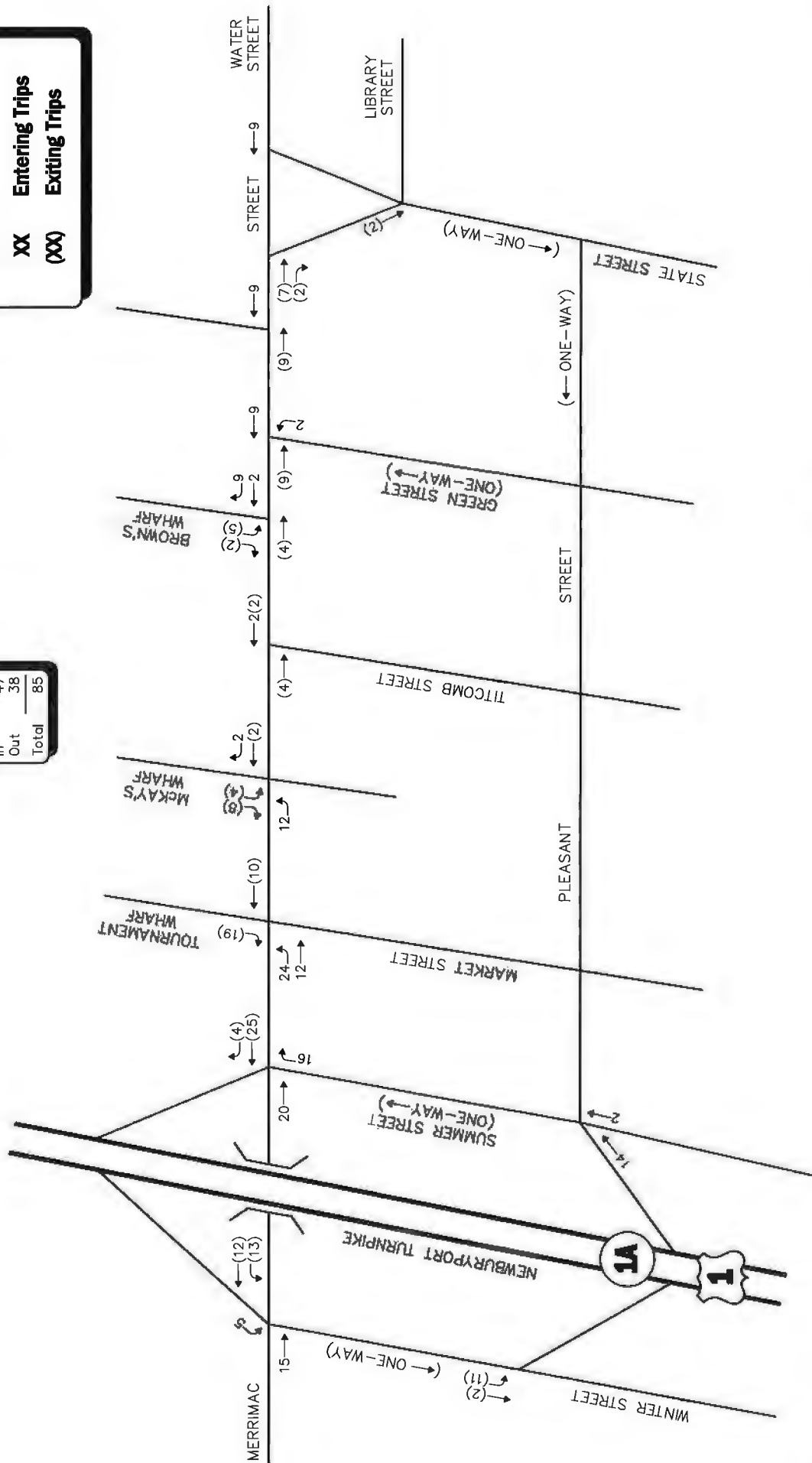
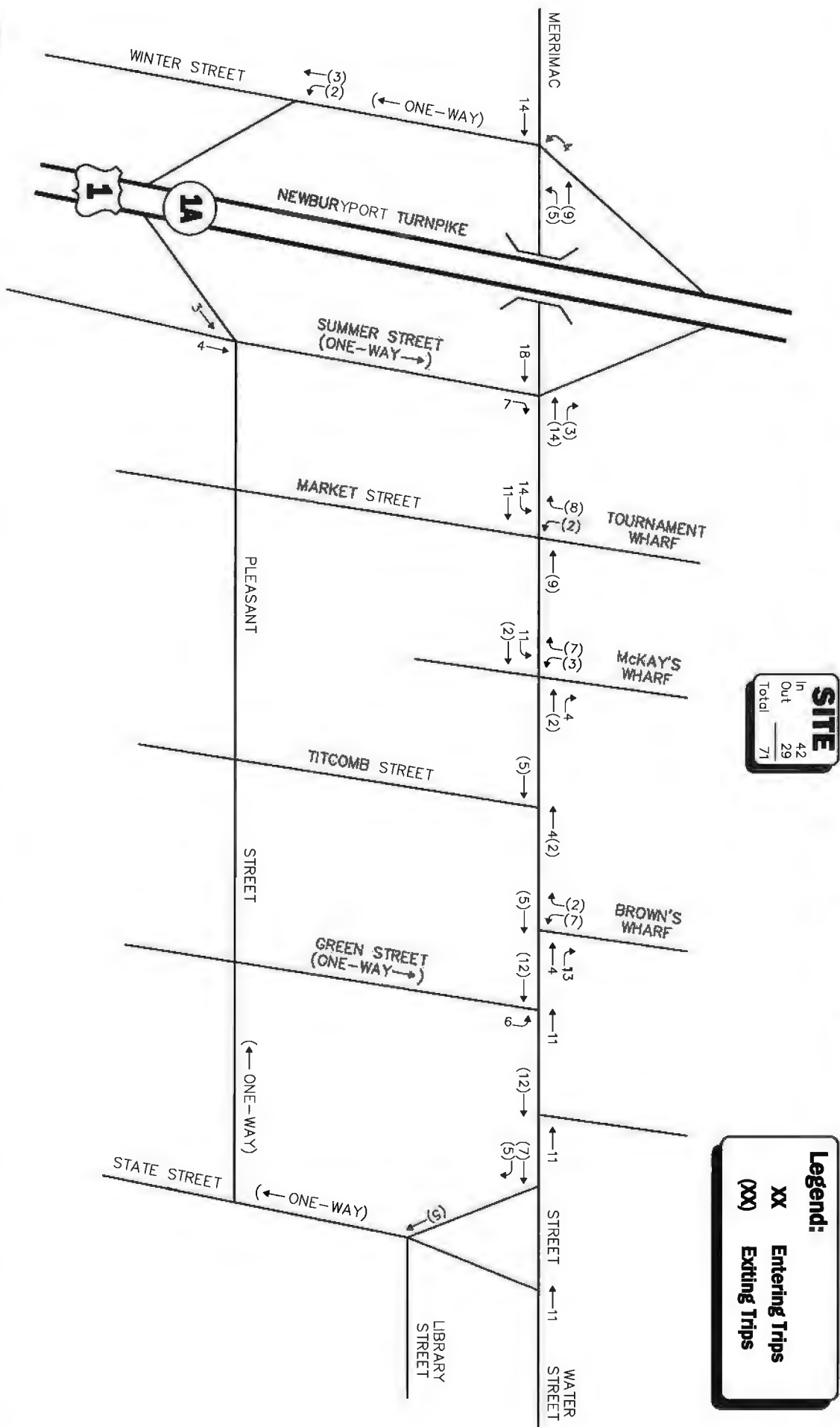


Figure A-12

**Project - Generated
 Saturday MIDDAY
 Peak Hour Traffic Volumes
 Residential Component**

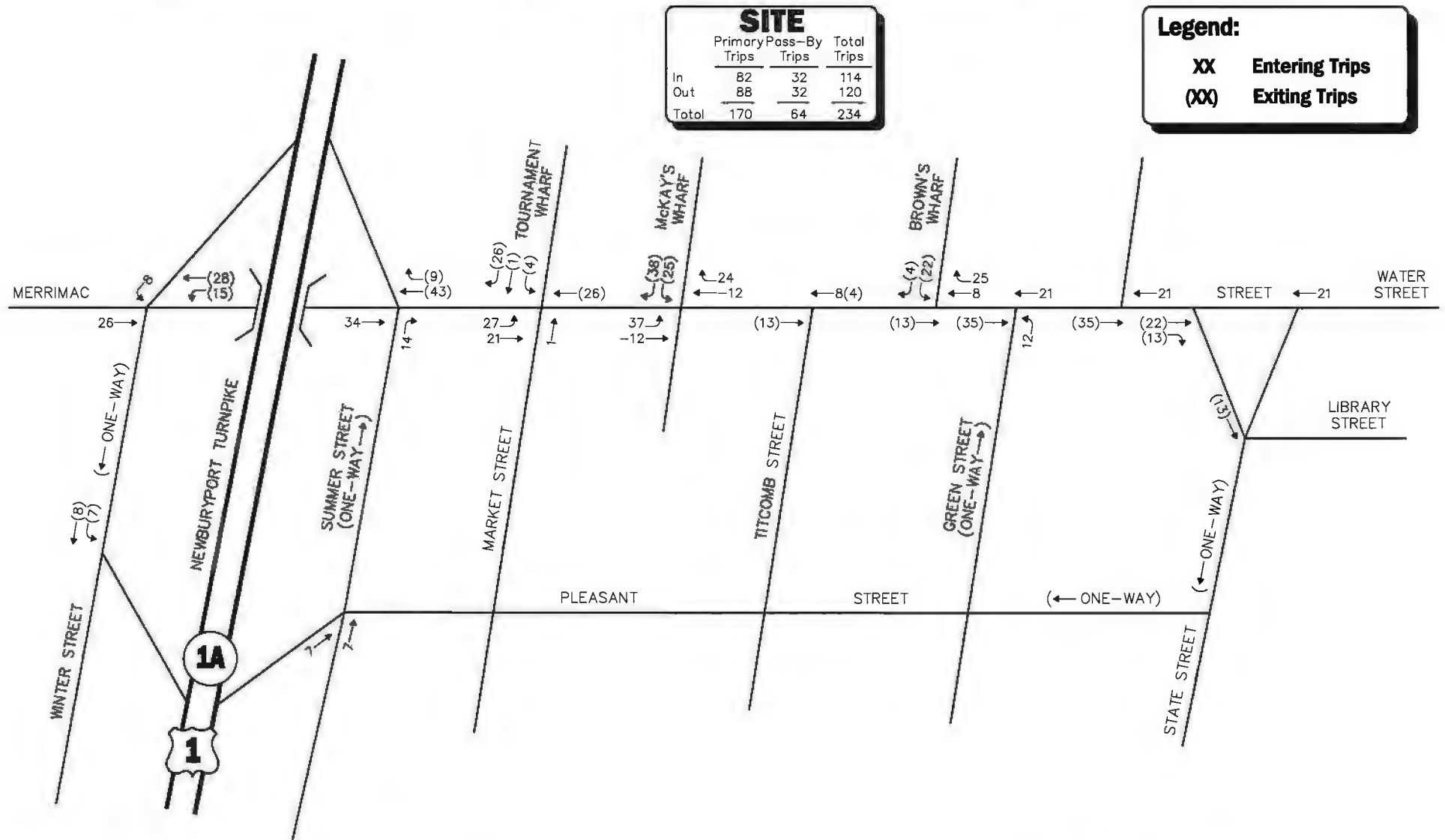
Vanasse & Associates, Inc.
 Transportation Engineers & Planners





Not To Scale

VAI Vanasse & Associates, Inc.
 Transportation Engineers & Planners



Not To Scale



Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure A-14

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

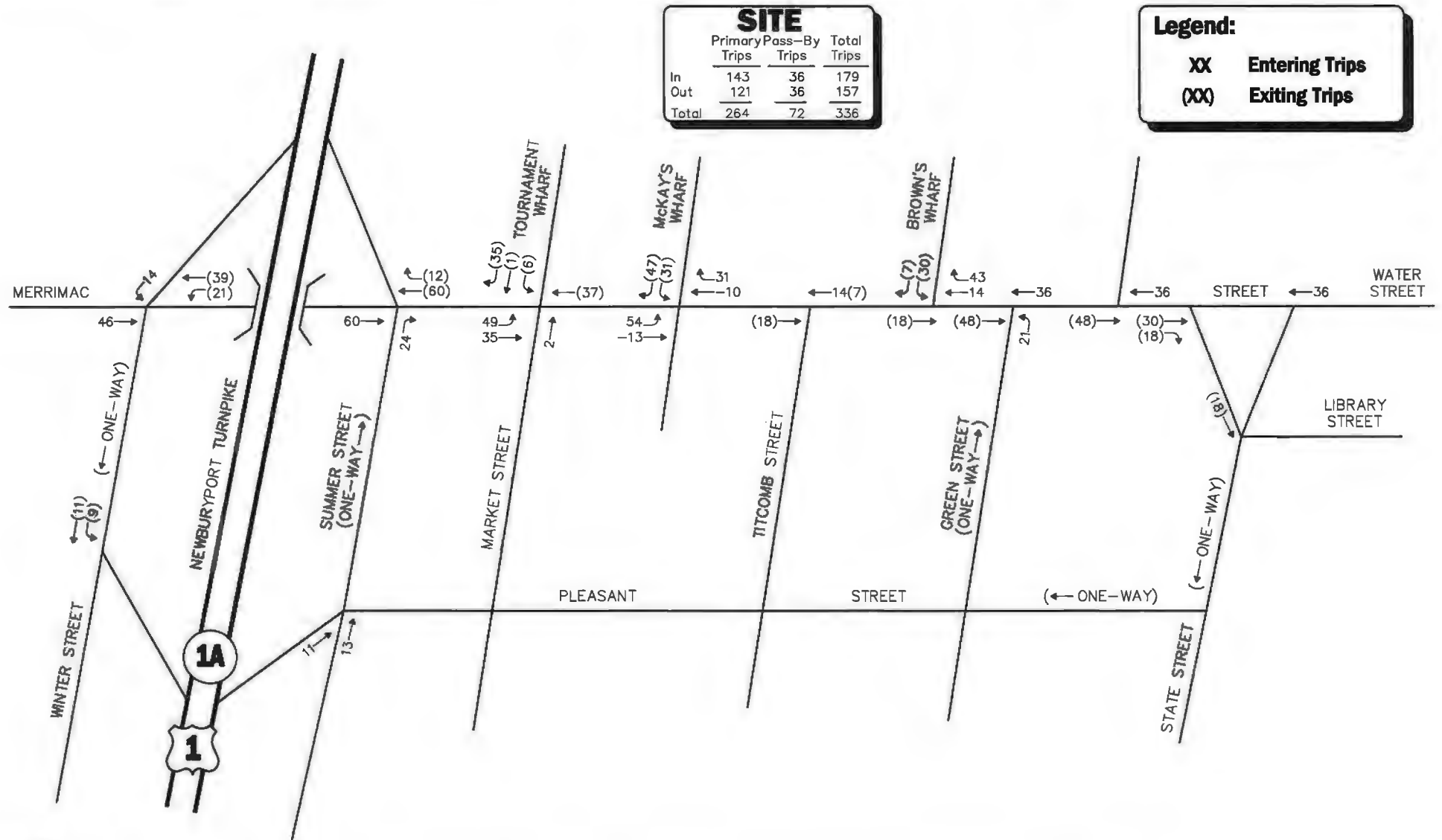


Figure A-15

Project - Generated
Saturday Midday
Peak Hour Traffic Volumes
Commercial Component

CAPACITY ANALYSIS WORKSHEETS

Merrimac Street and Water Street at State Street
Merrimac Street at the Route 1 Southbound Off-Ramp and Winter Street
Merrimac Street at the Route 1 Northbound On-Ramp and Summer Street
Merrimac Street at Market Street and Tournament Wharf
Merrimac Street at McKay's Wharf
Merrimac Street at Titcomb Street
Merrimac Street at Brown's Wharf
Merrimac Street at Green Street
Merrimac Street at the Waterfront Park Drive
State Street at Liberty Street
Winter Street at the Route 1 Southbound On-Ramp
Summer Street at the Route 1 Northbound Off-Ramp and Pleasant Street

Merrimac Street and Water Street at State Street

2016 Existing Wkdy AM Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑		↗
Volume (vph)	370	329	69	341	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1511	1631	1768	0	1796
Flt Permitted			0.402			
Satd. Flow (perm)	1796	1511	690	1768	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		383				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.92	0.92
Heavy Vehicles (%)	0%	1%	4%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	430	383	80	397	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	16.9	16.9	16.9	16.9		
Actuated g/C Ratio	0.41	0.41	0.41	0.41		
v/c Ratio	0.59	0.45	0.28	0.55		
Control Delay	12.6	2.9	10.3	12.0		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	12.6	2.9	10.3	12.0		
LOS	B	A	B	B		
Approach Delay	8.0			11.7		
Approach LOS	A			B		
Queue Length 50th (ft)	71	0	11	64		
Queue Length 95th (ft)	117	25	29	107		
Internal Link Dist (ft)	525			669	87	

2016 Existing Wkdy AM Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL*	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1564	1365	601	1540		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.27	0.28	0.13	0.26		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 41.4

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.4

Intersection LOS: A

Intersection Capacity Utilization 30.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

02	→04
19 s	40 s
	←08
	40 s

2016 Existing Wkdy PM Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑		↗
Volume (vph)	444	277	86	478	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1526	1663	1786	0	1796
Flt Permitted			0.376			
Satd. Flow (perm)	1796	1526	658	1786	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		292				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.95	0.95	0.89	0.89	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	467	292	97	537	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	18.8	18.8	18.8	18.8		
Actuated g/C Ratio	0.43	0.43	0.43	0.43		
v/c Ratio	0.60	0.35	0.34	0.69		
Control Delay	12.4	2.3	11.1	14.7		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	12.4	2.3	11.1	14.7		
LOS	B	A	B	B		
Approach Delay	8.6			14.2		
Approach LOS	A			B		
Queue Length 50th (ft)	79	0	14	96		
Queue Length 95th (ft)	138	25	37	164		
Internal Link Dist (ft)	525			669	87	

2016 Existing Wkdy PM Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1514	1332	554	1505		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.31	0.22	0.18	0.36		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 43.3

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 11.1

Intersection LOS: B

Intersection Capacity Utilization 34.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

→ p2	→ p4
19 s	40 s
	← p8
	40 s

2016 Existing Saturday Midday Peak
9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑		↗
Volume (vph)	449	256	90	396	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1511	1631	1786	0	1796
Flt Permitted			0.368			
Satd. Flow (perm)	1796	1511	632	1786	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		264				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.97	0.97	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	463	264	100	440	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effect Green (s)	17.0	17.0	17.0	17.0		
Actuated g/C Ratio	0.41	0.41	0.41	0.41		
v/c Ratio	0.63	0.34	0.39	0.60		
Control Delay	13.5	2.5	12.7	12.9		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	13.5	2.5	12.7	12.9		
LOS	B	A	B	B		
Approach Delay	9.5			12.9		
Approach LOS	A			B		
Queue Length 50th (ft)	78	0	15	73		
Queue Length 95th (ft)	138	25	41	129		
Internal Link Dist (ft)	525			669	87	

2016 Existing Saturday Midday Peak
 9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Turn Bay Length (ft)							
Base Capacity (vph)	1566	1351	551	1557			
Starvation Cap Reductn	0	0	0	0			
Spillback Cap Reductn	0	0	0	0			
Storage Cap Reductn	0	0	0	0			
Reduced v/c Ratio	0.30	0.20	0.18	0.28			

Intersection Summary

Area Type: Other
 Cycle Length: 59
 Actuated Cycle Length: 41.5
 Natural Cycle: 40
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 10.9
 Intersection Capacity Utilization 35.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 9: State Street & Merrimac Street/Water Street

→ Ø2	→ Ø4
19 s	40 s
	← Ø8
	40 s

2023 No-Build Wkdy AM Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑		↗
Volume (vph)	397	353	74	374	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1511	1631	1768	0	1796
Flt Permitted			0.376			
Satd. Flow (perm)	1796	1511	646	1768	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		410				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.92	0.92
Heavy Vehicles (%)	0%	1%	4%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	462	410	86	435	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	18.1	18.1	18.1	18.1		
Actuated g/C Ratio	0.42	0.42	0.42	0.42		
v/c Ratio	0.61	0.47	0.32	0.58		
Control Delay	12.7	2.8	10.7	12.2		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	12.7	2.8	10.7	12.2		
LOS	B	A	B	B		
Approach Delay	8.1			12.0		
Approach LOS	A			B		
Queue Length 50th (ft)	78	0	12	72		
Queue Length 95th (ft)	127	25	32	118		
Internal Link Dist (ft)	525			669	87	

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1529	1347	550	1505		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.30	0.30	0.16	0.29		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 42.7

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 32.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

02	→ 04
10.3	40.5
	← 08
	40.5

2023 No-Build Wkdy PM Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑		↗
Volume (vph)	482	301	92	527	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1526	1663	1786	0	1796
Flt Permitted			0.351			
Satd. Flow (perm)	1796	1526	615	1786	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		317				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.95	0.95	0.89	0.89	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	507	317	103	592	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	21.0	21.0	21.0	21.0		
Actuated g/C Ratio	0.46	0.46	0.46	0.46		
v/c Ratio	0.61	0.36	0.37	0.72		
Control Delay	12.2	2.2	11.2	15.0		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	12.2	2.2	11.2	15.0		
LOS	B	A	B	B		
Approach Delay	8.4			14.5		
Approach LOS	A			B		
Queue Length 50th (ft)	89	0	16	111		
Queue Length 95th (ft)	151	25	40	185		
Internal Link Dist (ft)	525			669	87	

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1455	1296	498	1446		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.35	0.24	0.21	0.41		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 45.6

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 11.2

Intersection LOS: B

Intersection Capacity Utilization 37.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

ø2	→ ø4
19 s	40 s
	← ø8
	40 s

2023 No-Build Saturday Midday Peak
9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑		↗
Volume (vph)	493	282	96	444	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1511	1631	1786	0	1796
Flt Permitted			0.336			
Satd. Flow (perm)	1796	1511	577	1786	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		291				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.97	0.97	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	508	291	107	493	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	19.0	19.0	19.0	19.0		
Actuated g/C Ratio	0.44	0.44	0.44	0.44		
v/c Ratio	0.65	0.35	0.43	0.63		
Control Delay	13.4	2.3	13.5	13.0		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	13.4	2.3	13.5	13.0		
LOS	B	A	B	B		
Approach Delay	9.4			13.1		
Approach LOS	A			B		
Queue Length 50th (ft)	89	0	16	85		
Queue Length 95th (ft)	153	25	45	148		
Internal Link Dist (ft)	525			669	87	

2023 No-Build Saturday Midday Peak
 9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1501	1311	482	1493		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.34	0.22	0.22	0.33		

Intersection Summary

Area Type: Other
 Cycle Length: 59
 Actuated Cycle Length: 43.6
 Natural Cycle: 40
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 11.0
 Intersection Capacity Utilization 37.9%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 9: State Street & Merrimac Street/Water Street

→ 02	→ 04
19 s	40 s
	← 08
	40 s

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑		↗
Volume (vph)	417	360	74	382	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1511	1631	1768	0	1796
Flt Permitted			0.361			
Satd. Flow (perm)	1796	1511	620	1768	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		419				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.92	0.92
Heavy Vehicles (%)	0%	1%	4%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	419	86	444	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	19.3	19.3	19.3	19.3		
Actuated g/C Ratio	0.44	0.44	0.44	0.44		
v/c Ratio	0.61	0.47	0.32	0.57		
Control Delay	12.6	2.7	10.6	11.8		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	12.6	2.7	10.6	11.8		
LOS	B	A	B	B		
Approach Delay	8.0			11.6		
Approach LOS	A			B		
Queue Length 50th (ft)	83	0	13	74		
Queue Length 95th (ft)	133	25	32	120		
Internal Link Dist (ft)	525			669	87	

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1498	1330	517	1475		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.32	0.32	0.17	0.30		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 43.9

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 33.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

02	→04
19 s	40 s
	←08
	40 s

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑		↗
Volume (vph)	505	312	92	559	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1526	1663	1786	0	1796
Flt Permitted			0.334			
Satd. Flow (perm)	1796	1526	585	1786	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		328				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.95	0.95	0.89	0.89	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	532	328	103	628	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	22.2	22.2	22.2	22.2		
Actuated g/C Ratio	0.47	0.47	0.47	0.47		
v/c Ratio	0.63	0.37	0.37	0.74		
Control Delay	12.2	2.1	11.3	15.4		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	12.2	2.1	11.3	15.4		
LOS	B	A	B	B		
Approach Delay	8.4			14.9		
Approach LOS	A			B		
Queue Length 50th (ft)	95	0	16	122		
Queue Length 95th (ft)	159	25	40	200		
Internal Link Dist (ft)	525			669	87	

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1418	1273	461	1410		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.38	0.26	0.22	0.45		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 46.9

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 38.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

σ2	→σ4
19s	40s
	←σ8
	40s

2023 Build Saturday Midday Peak

9: State Street & Merrimac Street/Water Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑		↗
Volume (vph)	528	301	96	488	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	11%			12%	11%	
Satd. Flow (prot)	1796	1511	1631	1786	0	1796
Flt Permitted			0.312			
Satd. Flow (perm)	1796	1511	536	1786	0	1796
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		310				
Link Speed (mph)	30			30	30	
Link Distance (ft)	605			749	167	
Travel Time (s)	13.8			17.0	3.8	
Peak Hour Factor	0.97	0.97	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	544	310	107	542	0	0
Turn Type	NA	Perm	Perm	NA		Perm
Protected Phases	4			8		
Permitted Phases		4	8			2
Detector Phase	4	4	8	8		2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0
Total Split (s)	40.0	40.0	40.0	40.0		19.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%		32.2%
Maximum Green (s)	36.0	36.0	36.0	36.0		15.0
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None		Max
Walk Time (s)	5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	20.5	20.5	20.5	20.5		
Actuated g/C Ratio	0.45	0.45	0.45	0.45		
v/c Ratio	0.67	0.36	0.44	0.67		
Control Delay	13.5	2.2	13.9	13.6		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	13.5	2.2	13.9	13.6		
LOS	B	A	B	B		
Approach Delay	9.4			13.6		
Approach LOS	A			B		
Queue Length 50th (ft)	98	0	17	97		
Queue Length 95th (ft)	165	25	46	166		
Internal Link Dist (ft)	525			669	87	

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBT	WBL	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)	1461	1287	436	1453		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	0.37	0.24	0.25	0.37		

Intersection Summary

Area Type: Other

Cycle Length: 59

Actuated Cycle Length: 45.2

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 11.2

Intersection LOS: B

Intersection Capacity Utilization 39.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: State Street & Merrimac Street/Water Street

















02	→ 04
19 s	40 s
	← 08
	40 s

Merrimac Street at the Route 1 Southbound Off-Ramp and Winter Street

2016 Existing Wkdy AM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	521	87	40	315	0	0	0	0	198	64	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1786	0	0	2103	0	0	0	0	1745	1633	0
Flt Permitted					0.994					0.950		
Satd. Flow (perm)	0	1786	0	0	2103	0	0	0	0	1745	1633	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	0%	1%	0%	8%	1%	2%	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	647	0	0	413	0	0	0	0	228	182	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 67.8%

ICU Level of Service C

Analysis Period (min) 15

2016 Existing Wkdy AM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 16.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	521	87	40	315	0	0	0	0	198	64	94
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	86	86	86	92	92	92	87	87	87
Heavy Vehicles, %	0	1	0	8	1	2	0	0	0	0	6	0
Mvmt Flow	0	554	93	47	366	0	0	0	0	228	74	108

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	366	0	0	647	0	0	1060	1106	366
Stage 1	-	-	-	-	-	-	459	459	-
Stage 2	-	-	-	-	-	-	601	647	-
Critical Hdwy	4.1	-	-	4.18	-	-	6.4	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.56	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4.054	3.3
Pot Cap-1 Maneuver	1204	-	-	911	-	-	250	207	684
Stage 1	-	-	-	-	-	-	641	560	-
Stage 2	-	-	-	-	-	-	551	460	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1204	-	-	911	-	-	234	0	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	234	0	-
Stage 1	-	-	-	-	-	-	599	0	-
Stage 2	-	-	-	-	-	-	551	0	-

















Approach	EB	WB	SB
HCM Control Delay, s	0	1	59.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1204	-	-	911	-	-	234	684
HCM Lane V/C Ratio	-	-	-	0.051	-	-	0.973	0.266
HCM Control Delay (s)	0	-	-	9.2	0	-	96.5	12.2
HCM Lane LOS	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	8.8	1.1

2016 Existing Wkdy PM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	569	94	125	479	0	0	0	0	164	47	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1802	0	0	2132	0	0	0	0	1745	1629	0
Flt Permitted					0.990					0.950		
Satd. Flow (perm)	0	1802	0	0	2132	0	0	0	0	1745	1629	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	745	0	0	663	0	0	0	0	169	172	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 87.6%

ICU Level of Service E

Analysis Period (min) 15

2016 Existing Wkdy PM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 38.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	569	94	125	479	0	0	0	0	164	47	120
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	91	91	91	92	92	92	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	0	639	106	137	526	0	0	0	0	169	48	124

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	526	0	0	745	0	0	1493	1546	526
Stage 1	-	-	-	-	-	-	801	801	-
Stage 2	-	-	-	-	-	-	692	745	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.018	3.3
Pot Cap-1 Maneuver	1051	-	-	872	-	-	~ 137	114	556
Stage 1	-	-	-	-	-	-	445	397	-
Stage 2	-	-	-	-	-	-	500	421	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1051	-	-	872	-	-	~ 107	0	556
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 107	0	-
Stage 1	-	-	-	-	-	-	346	0	-
Stage 2	-	-	-	-	-	-	500	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2	191.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1051	-	-	872	-	-	107	556
HCM Lane V/C Ratio	-	-	-	0.158	-	-	1.58	0.31
HCM Control Delay (s)	0	-	-	9.9	0	-	371.6	14.4
HCM Lane LOS	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0	-	-	0.6	-	-	12.7	1.3

















Notes

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

2016 Existing Saturday Midday Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	547	91	88	403	0	0	0	0	164	64	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1802	0	0	2134	0	0	0	0	1745	1640	0
Flt Permitted					0.991					0.950		
Satd. Flow (perm)	0	1802	0	0	2134	0	0	0	0	1745	1640	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	734	0	0	540	0	0	0	0	182	248	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

2016 Existing Saturday Midday Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 24.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	547	91	88	403	0	0	0	0	164	64	159
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	91	91	91	92	92	92	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	629	105	97	443	0	0	0	0	182	71	177

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	443	0	0	733	0	0	1317	1369	443
Stage 1	-	-	-	-	-	-	636	636	-
Stage 2	-	-	-	-	-	-	681	733	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1128	-	-	881	-	-	~175	148	619
Stage 1	-	-	-	-	-	-	531	475	-
Stage 2	-	-	-	-	-	-	506	429	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1128	-	-	881	-	-	~149	0	619
Mov Cap-2 Maneuver	-	-	-	-	-	-	~149	0	-
Stage 1	-	-	-	-	-	-	453	0	-
Stage 2	-	-	-	-	-	-	506	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.7	95.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1128	-	-	881	-	-	149	619
HCM Lane V/C Ratio	-	-	-	0.11	-	-	1.223	0.4
HCM Control Delay (s)	0	-	-	9.6	0	-	205.1	14.6
HCM Lane LOS	A	-	-	A	A	-	F	B
HCM 95th %ile Q(veh)	0	-	-	0.4	-	-	10.6	1.9

















Notes

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

2023 No-Build Wkdy AM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	562	93	43	337	0	0	0	0	213	69	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1786	0	0	2103	0	0	0	0	1745	1633	0
Flt Permitted					0.994					0.950		
Satd. Flow (perm)	0	1786	0	0	2103	0	0	0	0	1745	1633	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	0%	1%	0%	8%	1%	2%	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	442	0	0	0	0	245	195	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 27.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	562	93	43	337	0	0	0	0	213	69	101
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	86	86	86	92	92	92	87	87	87
Heavy Vehicles, %	0	1	0	8	1	2	0	0	0	0	6	0
Mvmt Flow	0	598	99	50	392	0	0	0	0	245	79	116

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	392	0	0	697	0	0	1139	1189	392
Stage 1	-	-	-	-	-	-	492	492	-
Stage 2	-	-	-	-	-	-	647	697	-
Critical Hdwy	4.1	-	-	4.18	-	-	6.4	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.56	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4.054	3.3
Pot Cap-1 Maneuver	1178	-	-	872	-	-	~ 225	185	661
Stage 1	-	-	-	-	-	-	619	541	-
Stage 2	-	-	-	-	-	-	525	437	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1178	-	-	872	-	-	~ 209	0	661
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 209	0	-
Stage 1	-	-	-	-	-	-	574	0	-
Stage 2	-	-	-	-	-	-	525	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.1	96.6
HCM LOS			F

Minor Lane Volume	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Capacity (veh/h)	1178	-	-	872	-	-	209	661				
HCM Lane V/C Ratio	-	-	-	0.057	-	-	1.171	0.296				
HCM Control Delay (s)	0	-	-	9.4	0	-	163.6	12.7				
HCM Lane LOS	A	-	-	A	A	-	F	B				
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	12.1	1.2				

















Notes

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

2023 No-Build Wkdy PM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	622	101	139	524	0	0	0	0	179	50	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1802	0	0	2132	0	0	0	0	1745	1629	0
Flt Permitted					0.990					0.950		
Satd. Flow (perm)	0	1802	0	0	2132	0	0	0	0	1745	1629	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	812	0	0	729	0	0	0	0	185	185	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 94.7%

ICU Level of Service F

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 69.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	622	101	139	524	0	0	0	0	179	50	129
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	91	91	91	92	92	92	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	0	699	113	153	576	0	0	0	0	185	52	133

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	576	0	0	812	0	0	1637	1693	576
Stage 1	-	-	-	-	-	-	881	881	-
Stage 2	-	-	-	-	-	-	756	812	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.018	3.3
Pot Cap-1 Maneuver	1007	-	-	823	-	-	~ 112	93	521
Stage 1	-	-	-	-	-	-	408	365	-
Stage 2	-	-	-	-	-	-	467	392	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1007	-	-	823	-	-	~ 81	0	521
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 81	0	-
Stage 1	-	-	-	-	-	-	297	0	-
Stage 2	-	-	-	-	-	-	467	0	-

Approach	EBL	WBL	SBL
HCM Control Delay, s	0	2.2	\$ 355.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1007	-	-	823	-	-	81	521
HCM Lane V/C Ratio	-	-	-	0.186	-	-	2.278	0.354
HCM Control Delay (s)	0	-	-	10.4	0	-	\$ 695.2	15.7
HCM Lane LOS	A	-	-	B	A	-	F	C
HCM 95th %tile Q(veh)	0	-	-	0.7	-	-	17	1.6

















Notes

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

2023 No-Build Saturday Midday Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	609	98	102	447	0	0	0	0	183	69	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1802	0	0	2134	0	0	0	0	1745	1640	0
Flt Permitted					0.991					0.950		
Satd. Flow (perm)	0	1802	0	0	2134	0	0	0	0	1745	1640	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	813	0	0	603	0	0	0	0	203	266	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 91.2%

ICU Level of Service F

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 50.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	609	98	102	447	0	0	0	0	183	69	170
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	91	91	91	92	92	92	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	700	113	112	491	0	0	0	0	203	77	189

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	491	0	0	813	0	0	1471	1528	491
Stage 1	-	-	-	-	-	-	715	715	-
Stage 2	-	-	-	-	-	-	756	813	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1083	-	-	823	-	-	~ 141	119	582
Stage 1	-	-	-	-	-	-	488	438	-
Stage 2	-	-	-	-	-	-	467	395	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1083	-	-	823	-	-	~ 115	0	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 115	0	-
Stage 1	-	-	-	-	-	-	397	0	-
Stage 2	-	-	-	-	-	-	467	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.9	201.4
HCM LOS			F

Minor Lane/Minor Volume	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Capacity (veh/h)	1083	-	-	823	-	-	115	582	
HCM Lane V/C Ratio	-	-	-	0.136	-	-	1.768	0.456	
HCM Control Delay (s)	0	-	-	10.1	0	-	\$ 443.2	16.3	
HCM Lane LOS	A	-	-	B	A	-	F	C	
HCM 95th %tile Q(veh)	0	-	-	0.5	-	-	15.9	2.4	

















Notes

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

2023 Build Wkdy AM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	542	93	72	376	0	0	0	0	211	69	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1785	0	0	2092	0	0	0	0	1745	1633	0
Flt Permitted					0.992					0.950		
Satd. Flow (perm)	0	1785	0	0	2092	0	0	0	0	1745	1633	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	0%	1%	0%	8%	1%	2%	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	676	0	0	521	0	0	0	0	243	195	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 79.6%

ICU Level of Service D

Analysis Period (min) 15

2023 Build Wkdy AM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 41

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	542	93	72	376	0	0	0	0	211	69	101
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	86	86	86	92	92	92	87	87	87
Heavy Vehicles, %	0	1	0	8	1	2	0	0	0	0	6	0
Mvmt Flow	0	577	99	84	437	0	0	0	0	243	79	116

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	437	0	0	676	0	0	1231	1281	437
Stage 1	-	-	-	-	-	-	605	605	-
Stage 2	-	-	-	-	-	-	626	676	-
Critical Hdwy	4.1	-	-	4.18	-	-	6.4	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.56	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4.054	3.3
Pot Cap-1 Maneuver	1134	-	-	888	-	-	~ 198	163	624
Stage 1	-	-	-	-	-	-	549	481	-
Stage 2	-	-	-	-	-	-	537	447	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1134	-	-	888	-	-	~ 173	0	624
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 173	0	-
Stage 1	-	-	-	-	-	-	480	0	-
Stage 2	-	-	-	-	-	-	537	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.5	151.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1134	-	-	888	-	-	173	624
HCM Lane V/C Ratio	-	-	-	0.094	-	-	1.402	0.313
HCM Control Delay (s)	0	-	-	9.5	0	-	262.2	13.4
HCM Lane LOS	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0	-	-	0.3	-	-	14.8	1.3

Notes

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

2023 Build Wkdy PM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

	↖	→	↘	↙	←	↖	↘	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations		↖			↖					↖	↖	
Volume (vph)	0	662	101	157	532	0	0	0	0	192	50	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1804	0	0	2130	0	0	0	0	1745	1629	0
Flt Permitted					0.989					0.950		
Satd. Flow (perm)	0	1804	0	0	2130	0	0	0	0	1745	1629	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	857	0	0	758	0	0	0	0	198	185	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 98.3%

ICU Level of Service F

Analysis Period (min) 15

2023 Build Wkdy PM Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection	104.9
Int Delay, s/veh	104.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	662	101	157	532	0	0	0	0	192	50	129
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	91	91	91	92	92	92	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	0	744	113	173	585	0	0	0	0	198	52	133

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	585	0	0	857	0	0	1731	1787	585
Stage 1	-	-	-	-	-	-	930	930	-
Stage 2	-	-	-	-	-	-	801	857	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.018	3.3
Pot Cap-1 Maneuver	1000	-	-	792	-	-	~ 98	81	515
Stage 1	-	-	-	-	-	-	387	346	-
Stage 2	-	-	-	-	-	-	445	374	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1000	-	-	792	-	-	~ 66	0	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 66	0	-
Stage 1	-	-	-	-	-	-	262	0	-
Stage 2	-	-	-	-	-	-	445	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.5	\$ 543
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1000	-	-	792	-	-	66	515
HCM Lane V/C Ratio	-	-	-	0.218	-	-	2.999	0.358
HCM Control Delay (s)	0	-	-	10.8	0	\$ 1034.6	15.8	
HCM Lane LOS	A	-	-	B	A	-	F	C
HCM 95th %tile Q(veh)	0	-	-	0.8	-	-	20.2	1.6

















Notes

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

2023 Build Saturday Midday Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	655	98	133	485	0	0	0	0	198	69	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	16	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1804	0	0	2130	0	0	0	0	1745	1640	0
Flt Permitted					0.989					0.950		
Satd. Flow (perm)	0	1804	0	0	2130	0	0	0	0	1745	1640	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	866	0	0	679	0	0	0	0	220	266	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 97.4%

ICU Level of Service F

Analysis Period (min) 15

2023 Build Saturday Midday Peak

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 97.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	655	98	133	485	0	0	0	0	198	69	170
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	91	91	91	92	92	92	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	753	113	146	533	0	0	0	0	220	77	189

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	533	0	0	866	0	0	1634	1691	533
Stage 1	-	-	-	-	-	-	825	825	-
Stage 2	-	-	-	-	-	-	809	866	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1045	-	-	786	-	-	~ 112	94	551
Stage 1	-	-	-	-	-	-	434	390	-
Stage 2	-	-	-	-	-	-	441	373	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1045	-	-	786	-	-	~ 82	0	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 82	0	-
Stage 1	-	-	-	-	-	-	319	0	-
Stage 2	-	-	-	-	-	-	441	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.3	\$ 404.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1045	-	-	786	-	-	82	551
HCM Lane V/C Ratio	-	-	-	0.186	-	-	2.683	0.482
HCM Control Delay (s)	0	-	-	10.6	0	-	\$ 870.7	17.5
HCM Lane LOS	A	-	-	B	A	-	F	C
HCM 95th %tile Q(veh)	0	-	-	0.7	-	-	21.2	2.6


















Notes

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

2023 Build Wkdy AM Peak w/Mitigation

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/10/2016













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations												
Volume (vph)	0	542	93	72	376	0	0	0	0	211	69	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1785	0	1671	1881	0	0	0	0	1745	1633	0
Flt Permitted				0.232						0.950		
Satd. Flow (perm)	0	1785	0	408	1881	0	0	0	0	1745	1633	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15									90	
Link Speed (mph)		30			30				30		30	
Link Distance (ft)		302			143				225		345	
Travel Time (s)		6.9			3.3				5.1		7.8	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	0%	1%	0%	8%	1%	2%	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	676	0	84	437	0	0	0	0	243	195	0
Turn Type		NA		pm+pt	NA					Perm	NA	
Protected Phases		4		3	8						6	
Permitted Phases				8						6		
Detector Phase		4		3	8					6	6	
Switch Phase												
Minimum Initial (s)		4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)		21.0		9.0	21.0					21.0	21.0	
Total Split (s)		44.0		11.0	55.0					25.0	25.0	
Total Split (%)		55.0%		13.8%	68.8%					31.3%	31.3%	
Maximum Green (s)		39.0		6.0	50.0					20.0	20.0	
Yellow Time (s)		4.0		4.0	4.0					4.0	4.0	
All-Red Time (s)		1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0					-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0					4.0	4.0	
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Recall Mode		C-Max		None	C-Max					None	None	
Walk Time (s)		5.0			5.0					5.0	5.0	
Flash Dont Walk (s)		11.0			11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0			0					0	0	
Act Effct Green (s)		45.9		55.0	55.0					17.0	17.0	
Actuated g/C Ratio		0.57		0.69	0.69					0.21	0.21	
v/c Ratio		0.66		0.21	0.34					0.66	0.47	
Control Delay		17.3		4.8	4.3					37.1	17.9	
Queue Delay		0.0		0.8	0.6					15.9	0.0	
Total Delay		17.3		5.6	4.9					53.0	17.9	
LOS		B		A	A					D	B	
Approach Delay		17.3			5.0						37.4	
Approach LOS		B			A						D	
Queue Length 50th (ft)		229		9	48					111	44	
Queue Length 95th (ft)		391		17	64					168	92	
Internal Link Dist (ft)		222			63				145		265	

Lane Group	02
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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 (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	21.0
Total Split (s)	25.0
Total Split (%)	31%
Maximum Green (s)	20.0
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	

2023 Build Wkdy AM Peak w/Mitigation

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1031		396	1293					458	495	
Starvation Cap Reductn		0		156	492					0	0	
Spillback Cap Reductn		8		0	0					196	0	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		0.66		0.35	0.55					0.93	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15


















Splits and Phases: 1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

#2 ↑ ø2	#1 ↙ ø3	#1 #2 → → ø4 (R)
25 s	11 s	44 s
#1 ↓ ø6	#1 #2 ← ← ø8 (R)	
25 s	55 s	

2023 Build Wkdy PM Peak w/Mitigation

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/10/2016













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	662	101	157	532	0	0	0	0	192	50	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1804	0	1805	1900	0	0	0	0	1745	1629	0
Flt Permitted				0.115						0.950		
Satd. Flow (perm)	0	1804	0	218	1900	0	0	0	0	1745	1629	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14									133	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	857	0	173	585	0	0	0	0	198	185	0
Turn Type		NA		pm+pt	NA					Perm	NA	
Protected Phases		4		3	8						6	
Permitted Phases				8						6		
Detector Phase		4		3	8					6	6	
Switch Phase												
Minimum Initial (s)		4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)		21.0		9.0	21.0					21.0	21.0	
Total Split (s)		45.0		11.0	56.0					24.0	24.0	
Total Split (%)		56.3%		13.8%	70.0%					30.0%	30.0%	
Maximum Green (s)		40.0		6.0	51.0					19.0	19.0	
Yellow Time (s)		4.0		4.0	4.0					4.0	4.0	
All-Red Time (s)		1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0					-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0					4.0	4.0	
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Recall Mode		C-Max		None	C-Max					None	None	
Walk Time (s)		5.0			5.0					5.0	5.0	
Flash Dont Walk (s)		11.0			11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0			0					0	0	
Act Effect Green (s)		44.5		56.7	56.7					15.3	15.3	
Actuated g/C Ratio		0.56		0.71	0.71					0.19	0.19	
v/c Ratio		0.85		0.55	0.43					0.59	0.44	
Control Delay		26.4		18.2	3.3					36.4	12.4	
Queue Delay		1.1		4.3	1.0					6.9	0.0	
Total Delay		27.4		22.4	4.2					43.3	12.4	
LOS		C		C	A					D	B	
Approach Delay		27.4			8.4						28.4	
Approach LOS		C			A						C	
Queue Length 50th (ft)		342		13	45					91	22	
Queue Length 95th (ft)		#617		m69	60					146	71	
Internal Link Dist (ft)		222			63			145			265	

Lane Group	
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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 (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	21.0
Total Split (s)	24.0
Total Split (%)	30%
Maximum Green (s)	19.0
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	

2023 Build Wkdy PM Peak w/Mitigation

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1010		316	1346					436	507	
Starvation Cap Reductn		0		83	483					0	0	
Spillback Cap Reductn		40		0	0					188	0	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		0.88		0.74	0.68					0.80	0.36	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 20.4

Intersection LOS: C

Intersection Capacity Utilization 120.1%

ICU Level of Service H






Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.













Splits and Phases: 1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

#2  ø2	#1  ø3	#1 #2  ø4 (R)
24 s	11 s	45 s
#1  ø6	#1 #2  ø8 (R)	
24 s	56 s	

2023 Build Saturday Midday Peak w/Mitigation

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SET	SEB
Lane Configurations		↑		↑	↑					↑	↑	
Volume (vph)	0	655	98	133	485	0	0	0	0	198	69	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	11	12
Satd. Flow (prot)	0	1804	0	1805	1900	0	0	0	0	1745	1640	0
Flt Permitted				0.118						0.950		
Satd. Flow (perm)	0	1804	0	224	1900	0	0	0	0	1745	1640	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15									143	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		302			143			225			345	
Travel Time (s)		6.9			3.3			5.1			7.8	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	866	0	146	533	0	0	0	0	220	266	0
Turn Type		NA		pm+pt	NA					Perm	NA	
Protected Phases		4		3	8						6	
Permitted Phases				8						6		
Detector Phase		4		3	8					6	6	
Switch Phase												
Minimum Initial (s)		4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)		21.0		9.0	21.0					21.0	21.0	
Total Split (s)		47.0		11.0	58.0					22.0	22.0	
Total Split (%)		58.8%		13.8%	72.5%					27.5%	27.5%	
Maximum Green (s)		42.0		6.0	53.0					17.0	17.0	
Yellow Time (s)		4.0		4.0	4.0					4.0	4.0	
All-Red Time (s)		1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)		-1.0		-1.0	-1.0					-1.0	-1.0	
Total Lost Time (s)		4.0		4.0	4.0					4.0	4.0	
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Recall Mode		C-Max		None	C-Max					None	None	
Walk Time (s)		5.0			5.0					5.0	5.0	
Flash Dont Walk (s)		11.0			11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0			0					0	0	
Act Effct Green (s)		45.2		56.5	56.5					15.5	15.5	
Actuated g/C Ratio		0.56		0.71	0.71					0.19	0.19	
v/c Ratio		0.84		0.48	0.40					0.65	0.62	
Control Delay		25.1		14.3	3.1					38.9	19.8	
Queue Delay		0.8		1.9	0.8					32.7	0.0	
Total Delay		25.8		16.2	3.9					71.5	19.8	
LOS		C		B	A					E	B	
Approach Delay		25.8			6.5						43.2	
Approach LOS		C			A						D	
Queue Length 50th (ft)		351		11	42					99	53	
Queue Length 95th (ft)		#576		m49	56					168	125	
Internal Link Dist (ft)		222			63			145			265	

Lane Group

Lane Configurations

Volume (vph)

Ideal Flow (vphpl)

Lane Width (ft)

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 (%)

Shared Lane Traffic (%)

Lane Group Flow (vph)

Turn Type

Protected Phases 2

Permitted Phases

Detector Phase

Switch Phase

Minimum Initial (s) 4.0

Minimum Split (s) 21.0

Total Split (s) 22.0

Total Split (%) 28%

Maximum Green (s) 17.0

Yellow Time (s) 4.0

All-Red Time (s) 1.0

Lost Time Adjust (s)

Total Lost Time (s)

Lead/Lag

Lead-Lag Optimize?

Vehicle Extension (s) 3.0

Recall Mode None

Walk Time (s) 5.0

Flash Dont Walk (s) 11.0

Pedestrian Calls (#/hr) 0

Act Effct Green (s)

Actuated g/C Ratio

v/c Ratio

Control Delay

Queue Delay

Total Delay

LOS

Approach Delay

Approach LOS

Queue Length 50th (ft)













Queue Length 95th (ft)

Internal Link Dist (ft)

2023 Build Saturday Midday Peak w/Mitigation

1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1025		303	1341					392	479	
Starvation Cap Reductn		0		66	487					0	0	
Spillback Cap Reductn		33		0	0					173	0	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		0.87		0.62	0.62					1.00	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 120.2%

ICU Level of Service H






Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Winter Street/Route 1 SB Off-Ramp & Merrimac Street /Merrimac Street



















#2  ø2	#1  ø3	#1 #2  ø4 (R)
22 s	11 s	47 s
#1  ø6	#1 #2  ø8 (R)	
22 s	58 s	

Merrimac Street at the Northbound On-Ramp and Summer Street

2016 Existing Wkdy AM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	652	0	0	296	132	59	51	83	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1728	1900	0	0	2049	0	1770	1900	1760	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1728	1900	0	0	2049	0	1770	1900	1760	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	694	0	0	497	0	69	60	98	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.1%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	67	652	0	0	296	132	59	51	83	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	86	86	86	85	85	85	92	92	92
Heavy Vehicles, %	1	0	0	0	1	0	2	0	4	0	0	0
Mvmt Flow	71	694	0	0	344	153	69	60	98	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	498	0	0	694	0	0	1257	1334	694
Stage 1	-	-	-	-	-	-	836	836	-
Stage 2	-	-	-	-	-	-	421	498	-
Critical Hdwy	4.11	-	-	4.1	-	-	6.42	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.518	4	3.336
Pot Cap-1 Maneuver	1071	-	-	911	-	-	189	155	439
Stage 1	-	-	-	-	-	-	425	385	-
Stage 2	-	-	-	-	-	-	662	548	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1071	-	-	911	-	-	176	0	439
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	0	-
Stage 1	-	-	-	-	-	-	397	0	-
Stage 2	-	-	-	-	-	-	662	0	-



















Approach	EB	WB	NB
HCM Control Delay, s	0.8	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	176	-	439	1071	-	-	911	-	-
HCM Lane V/C Ratio	0.394	-	0.222	0.067	-	-	-	-	-
HCM Control Delay (s)	38.2	-	15.5	8.6	-	-	0	-	-
HCM Lane LOS	E	-	C	A	-	-	A	-	-
HCM 95th %tile Q(veh)	1.7	-	0.8	0.2	-	-	0	-	-

2016 Existing Wkdy PM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	601	0	0	542	244	62	86	140	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2057	0	1805	1881	1830	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1745	1900	0	0	2057	0	1805	1881	1830	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	148	675	0	0	864	0	64	89	144	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

2016 Existing Wkdy PM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	132	601	0	0	542	244	62	86	140	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	91	91	91	97	97	97	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	0	1	0	0	0	0
Mvmt Flow	148	675	0	0	596	268	64	89	144	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	864	0	0	675	0	0	1702	1836	675
Stage 1	-	-	-	-	-	-	972	972	-
Stage 2	-	-	-	-	-	-	730	864	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.51	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.51	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.009	3.3
Pot Cap-1 Maneuver	787	-	-	926	-	-	102	~ 76	457
Stage 1	-	-	-	-	-	-	370	332	-
Stage 2	-	-	-	-	-	-	481	373	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	787	-	-	926	-	-	83	0	457
Mov Cap-2 Maneuver	-	-	-	-	-	-	83	0	-
Stage 1	-	-	-	-	-	-	300	0	-
Stage 2	-	-	-	-	-	-	481	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.9	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	83	-	457	787	-	-	926	-	-
HCM Lane V/C Ratio	0.77	-	0.316	0.188	-	-	-	-	-
HCM Control Delay (s)	129.7	-	16.5	10.6	-	-	0	-	-
HCM Lane LOS	F	-	C	B	-	-	A	-	-
HCM 95th %tile Q(veh)	3.8	-	1.3	0.7	-	-	0	-	-



















Notes

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

2016 Existing Saturday Midday Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	586	0	0	433	221	58	123	132	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2047	0	1770	1900	1812	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1745	1900	0	0	2047	0	1770	1900	1812	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	674	0	0	719	0	67	141	152	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 59.7%

ICU Level of Service B

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	125	586	0	0	433	221	58	123	132	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	91	91	91	87	87	87	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	2	0	1	0	0	0
Mvmt Flow	144	674	0	0	476	243	67	141	152	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	719	0	0	674	0	0	1558	1680	674
Stage 1	-	-	-	-	-	-	961	961	-
Stage 2	-	-	-	-	-	-	597	719	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.42	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.518	4	3.309
Pot Cap-1 Maneuver	892	-	-	927	-	-	124	~ 96	456
Stage 1	-	-	-	-	-	-	371	337	-
Stage 2	-	-	-	-	-	-	550	436	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	892	-	-	927	-	-	104	0	456
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	0	-
Stage 1	-	-	-	-	-	-	311	0	-
Stage 2	-	-	-	-	-	-	550	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	104	-	456	892	-	-	927	-	-
HCM Lane V/C Ratio	0.641	-	0.333	0.161	-	-	-	-	-
HCM Control Delay (s)	87.3	-	16.8	9.8	-	-	0	-	-
HCM Lane LOS	F	-	C	A	-	-	A	-	-
HCM 95th %tile Q(veh)	3.2	-	1.4	0.6	-	-	0	-	-



















Notes:

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

2023 No-Build Wkdy AM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	703	0	0	317	142	63	55	89	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1728	1900	0	0	2049	0	1770	1900	1760	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1728	1900	0	0	2049	0	1770	1900	1760	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	748	0	0	534	0	74	65	105	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.2%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	72	703	0	0	317	142	63	55	89	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	86	86	86	85	85	85	92	92	92
Heavy Vehicles, %	1	0	0	0	1	0	2	0	4	0	0	0
Mvmt Flow	77	748	0	0	369	165	74	65	105	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	534	0	0	748	0	0	1352	1435	748
Stage 1	-	-	-	-	-	-	901	901	-
Stage 2	-	-	-	-	-	-	451	534	-
Critical Hdwy	4.11	-	-	4.1	-	-	6.42	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.518	4	3.336
Pot Cap-1 Maneuver	1039	-	-	870	-	-	165	135	409
Stage 1	-	-	-	-	-	-	396	360	-
Stage 2	-	-	-	-	-	-	642	528	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1039	-	-	870	-	-	153	0	409
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	0	-
Stage 1	-	-	-	-	-	-	367	0	-
Stage 2	-	-	-	-	-	-	642	0	-



















Major/Minor	Major1	Major2	Minor1
HCM Control Delay, s	0.8	0	-
HCM LOS	-	-	-

Major Lane	MB	WB	WB	WB	WB	WB	WB	WB	
Capacity (veh/h)	153	-	409	1039	-	-	870	-	-
HCM Lane V/C Ratio	0.484	-	0.256	0.074	-	-	-	-	-
HCM Control Delay (s)	48.9	-	16.8	8.7	-	-	0	-	-
HCM Lane LOS	E	-	C	A	-	-	A	-	-
HCM 95th %tile Q(veh)	2.3	-	1	0.2	-	-	0	-	-

2023 No-Build Wkdy PM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	659	0	0	597	266	66	92	158	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2057	0	1805	1881	1830	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1745	1900	0	0	2057	0	1805	1881	1830	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	740	0	0	948	0	68	95	163	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	142	659	0	0	597	266	66	92	158	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	91	91	91	97	97	97	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	0	1	0	0	0	0
Mvmt Flow	160	740	0	0	656	292	68	95	163	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	948	0	0	740	0	0	1862	2008	740
Stage 1	-	-	-	-	-	-	1060	1060	-
Stage 2	-	-	-	-	-	-	802	948	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.51	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.51	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.009	3.3
Pot Cap-1 Maneuver	732	-	-	876	-	-	81	~ 60	420
Stage 1	-	-	-	-	-	-	336	302	-
Stage 2	-	-	-	-	-	-	445	341	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	732	-	-	876	-	-	~ 63	0	420
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 63	0	-
Stage 1	-	-	-	-	-	-	263	0	-
Stage 2	-	-	-	-	-	-	445	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	63	-	420	732	-	-	876	-	-
HCM Lane V/C Ratio	1.08	-	0.388	0.218	-	-	-	-	-
HCM Control Delay (s)	247.8	-	18.9	11.3	-	-	0	-	-
HCM Lane LOS	F	-	C	B	-	-	A	-	-
HCM 95th %tile Q(veh)	5.4	-	1.8	0.8	-	-	0	-	-



















Notes

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

2023 No-Build Saturday Midday Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	658	0	0	487	242	62	132	153	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2050	0	1770	1900	1812	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1745	1900	0	0	2050	0	1770	1900	1812	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	756	0	0	801	0	71	152	176	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 64.8%

ICU Level of Service C

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Vol, veh/h	134	658	0	0	487	242	62	132	153	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	91	91	91	87	87	87	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	2	0	1	0	0	0
Mvmt Flow	154	756	0	0	535	266	71	152	176	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	801	0	0	756	0	0	1732	1865	756
Stage 1	-	-	-	-	-	-	1064	1064	-
Stage 2	-	-	-	-	-	-	668	801	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.42	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.518	4	3.309
Pot Cap-1 Maneuver	831	-	-	864	-	-	97	~ 74	410
Stage 1	-	-	-	-	-	-	332	302	-
Stage 2	-	-	-	-	-	-	510	400	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	831	-	-	864	-	-	79	0	410
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	0	-
Stage 1	-	-	-	-	-	-	270	0	-
Stage 2	-	-	-	-	-	-	510	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	79	-	410	831	-	-	864	-	-
HCM Lane V/C Ratio	0.902	-	0.429	0.185	-	-	-	-	-
HCM Control Delay (s)	166.3	-	20.2	10.3	-	-	0	-	-
HCM Lane LOS	F	-	C	B	-	-	A	-	-
HCM 95th %tile Q(veh)	4.7	-	2.1	0.7	-	-	0	-	-



















Notes

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

2023 Build Wkdy AM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	699	0	0	365	146	63	55	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1728	1900	0	0	2055	0	1770	1900	1760	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1728	1900	0	0	2055	0	1770	1900	1760	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	744	0	0	594	0	74	65	115	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	72	699	0	0	365	146	63	55	98	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	86	86	86	85	85	85	92	92	92
Heavy Vehicles, %	1	0	0	0	1	0	2	0	4	0	0	0
Mvmt Flow	77	744	0	0	424	170	74	65	115	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	594	0	0	744	0	0	1406	1491	744
Stage 1	-	-	-	-	-	-	897	897	-
Stage 2	-	-	-	-	-	-	509	594	-
Critical Hdwy	4.11	-	-	4.1	-	-	6.42	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.518	4	3.336
Pot Cap-1 Maneuver	987	-	-	873	-	-	153	125	411
Stage 1	-	-	-	-	-	-	398	361	-
Stage 2	-	-	-	-	-	-	604	496	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	987	-	-	873	-	-	141	0	411
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	0	-
Stage 1	-	-	-	-	-	-	367	0	-
Stage 2	-	-	-	-	-	-	604	0	-



















Approach	EB	WB	NB
HCM Control Delay, s	0.8	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	141	-	411	987	-	-	873	-	-
HCM Lane V/C Ratio	0.526	-	0.281	0.078	-	-	-	-	-
HCM Control Delay (s)	55.8	-	17.1	9	-	-	0	-	-
HCM Lane LOS	F	-	C	A	-	-	A	-	-
HCM 95th %tile Q(veh)	2.5	-	1.1	0.3	-	-	0	-	-

2023 Build Wkdy PM Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	712	0	0	623	261	66	92	193	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2061	0	1805	1881	1830	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1745	1900	0	0	2061	0	1805	1881	1830	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	800	0	0	972	0	68	95	199	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SB	SBT	SBR
Vol, veh/h	142	712	0	0	623	261	66	92	193	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	91	91	91	97	97	97	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	0	1	0	0	0	0
Mvmt Flow	160	800	0	0	685	287	68	95	199	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	971	0	0	800
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	718	-	-	832
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	718	-	-	832
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	1.9	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	56	-	388	718	-	-	832	-	-
HCM Lane V/C Ratio	1.215	-	0.513	0.222	-	-	-	-	-
HCM Control Delay (s)	\$ 311.3	-	23.6	11.4	-	-	0	-	-
HCM Lane LOS	F	-	C	B	-	-	A	-	-
HCM 95th %ile Q(veh)	5.9	-	2.8	0.8	-	-	0	-	-



















Notes

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

2023 Build Saturday Midday Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	719	0	0	556	250	62	132	189	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2057	0	1770	1900	1812	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1745	1900	0	0	2057	0	1770	1900	1812	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	826	0	0	886	0	71	152	217	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

2023 Build Saturday Midday Peak

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	134	719	0	0	556	250	62	132	189	0	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	0	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	91	91	91	87	87	87	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	2	0	1	0	0	0
Mvmt Flow	154	826	0	0	611	275	71	152	217	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	886	0	0	826	0	0	1882	2020	826
Stage 1	-	-	-	-	-	-	1134	1134	-
Stage 2	-	-	-	-	-	-	748	886	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.42	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.518	4	3.309
Pot Cap-1 Maneuver	773	-	-	813	-	-	78	~ 59	373
Stage 1	-	-	-	-	-	-	307	280	-
Stage 2	-	-	-	-	-	-	468	365	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	773	-	-	813	-	-	~ 62	0	373
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 62	0	-
Stage 1	-	-	-	-	-	-	246	0	-
Stage 2	-	-	-	-	-	-	468	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	62	-	373	773	-	-	813	-	-
HCM Lane V/C Ratio	1.149	-	0.582	0.199	-	-	-	-	-
HCM Control Delay (s)	273.2	-	27.3	10.8	-	-	0	-	-
HCM Lane LOS	F	-	D	B	-	-	A	-	-
HCM 95th %tile Q(veh)	5.8	-	3.5	0.7	-	-	0	-	-



















Notes

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

2023 Build Wkdy AM Peak w/Mitigation

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	699	0	0	365	146	63	55	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1728	1900	0	0	2055	0	1770	1900	1760	0	0	0
Flt Permitted	0.440						0.950					
Satd. Flow (perm)	800	1900	0	0	2055	0	1770	1900	1760	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					50				115			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	744	0	0	594	0	74	65	115	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4						2		2			
Detector Phase	4	4			8		2	2	2			
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	21.0	21.0			21.0		21.0	21.0	21.0			
Total Split (s)	44.0	44.0			55.0		25.0	25.0	25.0			
Total Split (%)	55.0%	55.0%			68.8%		31.3%	31.3%	31.3%			
Maximum Green (s)	39.0	39.0			50.0		20.0	20.0	20.0			
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	0.0	0.0			
Total Lost Time (s)	4.0	4.0			4.0		4.0	5.0	5.0			
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Recall Mode	C-Max	C-Max			C-Max		None	None	None			
Walk Time (s)	5.0	5.0			5.0		5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0			0		0	0	0			
Act Effct Green (s)	45.9	45.9			55.0		17.0	16.0	16.0			
Actuated g/C Ratio	0.57	0.57			0.69		0.21	0.20	0.20			
v/c Ratio	0.17	0.68			0.42		0.20	0.17	0.26			
Control Delay	10.1	15.2			5.6		25.6	25.9	6.8			
Queue Delay	1.5	3.5			0.0		0.1	0.0	0.0			
Total Delay	11.6	18.7			5.6		25.7	25.9	6.8			
LOS	B	B			A		C	C	A			
Approach Delay		18.0			5.6			17.2				
Approach LOS		B			A			B				
Queue Length 50th (ft)	14	180			83		30	27	0			
Queue Length 95th (ft)	m25	336			151		58	53	33			
Internal Link Dist (ft)		63			55			84			255	

Lane Group	03	06
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
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 (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	6
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	9.0	21.0
Total Split (s)	11.0	25.0
Total Split (%)	14%	31%
Maximum Green (s)	6.0	20.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)		5.0
Flash Dont Walk (s)		11.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		

2023 Build Wkdy AM Peak w/Mitigation

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/10/2016

	↗	→	↘	↖	←	↗	↖	↑	↗	↘	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	459	1090			1428		464	475	526			
Starvation Cap Reductn	262	249			0		0	0	0			
Spillback Cap Reductn	0	0			8		70	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.39	0.88			0.42		0.19	0.14	0.22			

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 13.5

Intersection LOS: B

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.



















Splits and Phases: 2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

#2 ↑ p2	#1 ↖ p3	#1 #2 → → p4 (R)
25 s	11 s	44 s
#1 ↓ p6	#1 #2 ↖ ↖ p8 (R)	
25 s	55 s	

2023 Build Wkdy PM Peak w/Mitigation

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/10/2016













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	712	0	0	623	261	66	92	193	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2061	0	1805	1881	1830	0	0	0
Flt Permitted	0.232						0.950					
Satd. Flow (perm)	426	1900	0	0	2061	0	1805	1881	1830	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					54				199			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	800	0	0	972	0	68	95	199	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4						2		2			
Detector Phase	4	4			8		2	2	2			
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	21.0	21.0			21.0		21.0	21.0	21.0			
Total Split (s)	45.0	45.0			56.0		24.0	24.0	24.0			
Total Split (%)	56.3%	56.3%			70.0%		30.0%	30.0%	30.0%			
Maximum Green (s)	40.0	40.0			51.0		19.0	19.0	19.0			
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0	-1.0			
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Recall Mode	C-Max	C-Max			C-Max		None	None	None			
Walk Time (s)	5.0	5.0			5.0		5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0			0		0	0	0			
Act Effct Green (s)	44.5	44.5			56.7		15.3	15.3	15.3			
Actuated g/C Ratio	0.56	0.56			0.71		0.19	0.19	0.19			
v/c Ratio	0.68	0.76			0.66		0.20	0.26	0.39			
Control Delay	22.5	13.7			9.5		26.9	28.0	6.4			
Queue Delay	6.9	23.8			0.1		0.1	0.0	0.0			
Total Delay	29.3	37.5			9.5		27.0	28.0	6.4			
LOS	C	D			A		C	C	A			
Approach Delay		36.2			9.5			16.0				
Approach LOS		D			A			B				
Queue Length 50th (ft)	22	113			205		29	41	0			
Queue Length 95th (ft)	m47	m239			401		58	76	49			
Internal Link Dist (ft)		63			55			84			255	

Lane Group	03	06
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
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 (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	6
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	9.0	21.0
Total Split (s)	11.0	24.0
Total Split (%)	14%	30%
Maximum Green (s)	6.0	19.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)		5.0
Flash Dont Walk (s)		11.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		

2023 Build Wkdy PM Peak w/Mitigation

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	237	1057			1476		451	470	606			
Starvation Cap Reductn	43	279			0		0	0	0			
Spillback Cap Reductn	0	0			32		75	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.82	1.03			0.67		0.18	0.20	0.33			

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.7

Intersection LOS: C






Intersection Capacity Utilization 120.1%

ICU Level of Service H

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.



















Splits and Phases: 2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

#2  ø2	#1  ø3	#1 #2  ø4 (R)
24 s	11 s	45 s
#1  ø6	#1 #2  ø8 (R)	
24 s	56 s	

2023 Build Saturday Midday Peak w/Mitigation

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	719	0	0	556	250	62	132	189	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	16	12	12	12	16	12	12	12
Satd. Flow (prot)	1745	1900	0	0	2057	0	1770	1900	1812	0	0	0
Flt Permitted	0.279						0.950					
Satd. Flow (perm)	512	1900	0	0	2057	0	1770	1900	1812	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					60				217			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		143			135			164			335	
Travel Time (s)		3.3			3.1			3.7			7.6	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	826	0	0	886	0	71	152	217	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4						2		2			
Detector Phase	4	4			8		2	2	2			
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	21.0	21.0			21.0		21.0	21.0	21.0			
Total Split (s)	47.0	47.0			58.0		22.0	22.0	22.0			
Total Split (%)	58.8%	58.8%			72.5%		27.5%	27.5%	27.5%			
Maximum Green (s)	42.0	42.0			53.0		17.0	17.0	17.0			
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0		-1.0	0.0	0.0			
Total Lost Time (s)	5.0	5.0			5.0		4.0	5.0	5.0			
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Recall Mode	C-Max	C-Max			C-Max		None	None	None			
Walk Time (s)	5.0	5.0			5.0		5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0			0		0	0	0			
Act Effct Green (s)	44.2	44.2			55.5		15.5	14.5	14.5			
Actuated g/C Ratio	0.55	0.55			0.69		0.19	0.18	0.18			
v/c Ratio	0.55	0.79			0.61		0.21	0.44	0.43			
Control Delay	14.5	15.2			8.8		27.4	32.7	7.0			
Queue Delay	6.3	34.9			0.0		0.1	0.0	0.0			
Total Delay	20.8	50.1			8.8		27.5	32.7	7.0			
LOS	C	D			A		C	C	A			
Approach Delay		45.5			8.8			19.2				
Approach LOS		D			A			B				
Queue Length 50th (ft)	24	137			199		29	66	0			
Queue Length 95th (ft)	m36	m302			317		61	114	48			
Internal Link Dist (ft)		63			55			84			255	

2023 Build Saturday Midday Peak w/Mitigation
 2: Summer Street/Route 1 NB On-Ramp & Merrimac Street













11/10/2016

Lane Group	ø3'	ø6'
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
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 (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	6
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	9.0	21.0
Total Split (s)	11.0	22.0
Total Split (%)	14%	28%
Maximum Green (s)	6.0	17.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)		5.0
Flash Dont Walk (s)		11.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		

2023 Build Saturday Midday Peak w/Mitigation

2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

11/10/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	282	1049			1445		398	403	555			
Starvation Cap Reductn	83	271			0		0	0	0			
Spillback Cap Reductn	0	0			4		49	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.77	1.06			0.61		0.20	0.38	0.39			

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 26.4

Intersection LOS: C






Intersection Capacity Utilization 120.2%

ICU Level of Service H

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Summer Street/Route 1 NB On-Ramp & Merrimac Street

















#2  ø2	#1  ø3	#1 #2  ø4 (R)
22 s	11 s	47 s
#1  ø6	#1 #2  ø8 (R)	
22 s	56 s	

Mccrimac Street at Market Street and Tournament Wharf

2016 Existing Wkdy AM Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	670	96	2	394	7	20	3	5	0	1	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2097	0	0	2128	0	0	2032	0	0	1398	0
Flt Permitted		0.999						0.966				
Satd. Flow (perm)	0	2097	0	0	2128	0	0	2032	0	0	1398	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.96	0.96	0.96	0.85	0.85	0.85	0.79	0.79	0.79	0.75	0.75	0.75
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	816	0	0	474	0	0	35	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

2016 Existing Wkdy AM Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	17	670	96	2	394	7	20	3	5	0	1	14
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	96	96	96	85	85	85	79	79	79	75	75	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	7
Mvmt Flow	18	698	100	2	464	8	25	4	6	0	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	472	0	0	798	0	0	1265	1259	748	1260	1305	468
Stage 1	-	-	-	-	-	-	783	783	-	472	472	-
Stage 2	-	-	-	-	-	-	482	476	-	788	833	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	1100	-	-	833	-	-	147	172	416	149	162	585
Stage 1	-	-	-	-	-	-	390	407	-	576	562	-
Stage 2	-	-	-	-	-	-	569	560	-	387	386	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1100	-	-	833	-	-	138	166	416	141	157	585
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	166	-	141	157	-
Stage 1	-	-	-	-	-	-	378	395	-	559	560	-
Stage 2	-	-	-	-	-	-	548	558	-	366	374	-

















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	33.8	12.6
HCM LOS	D	D	D	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Capacity (veh/h)	160	1100	-	-	833	-	-	-	495	-	-	-
HCM Lane V/C Ratio	0.222	0.016	-	-	0.003	-	-	-	0.04	-	-	-
HCM Control Delay (s)	33.8	8.3	0	-	9.3	0	-	-	12.6	-	-	-
HCM Lane LOS	D	A	A	-	A	A	-	-	B	-	-	-
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	-	0.1	-	-	-

2016 Existing Wkdy PM Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	650	28	10	685	10	35	2	36	7	7	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2115	0	0	2147	0	0	1935	0	0	1525	0
Flt Permitted		0.996			0.999			0.977			0.994	
Satd. Flow (perm)	0	2115	0	0	2147	0	0	1935	0	0	1525	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.96	0.96	0.96	0.90	0.90	0.90	0.79	0.79	0.79	0.78	0.78	0.78
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	765	0	0	783	0	0	93	0	0	76	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 87.5%

ICU Level of Service E

Analysis Period (min) 15

2016 Existing Wkdy PM Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	57	650	28	10	685	10	35	2	36	7	7	45
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	96	96	96	90	90	90	79	79	79	78	78	78
Heavy Vehicles, %	0	1	0	0	0	0	3	0	0	0	0	0
Mvmt Flow	59	677	29	11	761	11	44	3	46	9	9	58

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	772	0	0	706	0	0	1632	1604	692	1623	1614	767
Stage 1	-	-	-	-	-	-	810	810	-	789	789	-
Stage 2	-	-	-	-	-	-	822	794	-	834	825	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	852	-	-	902	-	-	81	107	447	83	105	405
Stage 1	-	-	-	-	-	-	372	396	-	387	405	-
Stage 2	-	-	-	-	-	-	367	403	-	365	390	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	852	-	-	902	-	-	58	93	447	66	91	405
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	93	-	66	91	-
Stage 1	-	-	-	-	-	-	329	350	-	342	396	-
Stage 2	-	-	-	-	-	-	301	395	-	288	345	-

















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	137.8	33.3
HCM LOS	F	F	F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	103	852	-	-	902	-	-	201
HCM Lane V/C Ratio	0.897	0.07	-	-	0.012	-	-	0.376
HCM Control Delay (s)	137.8	9.5	0	-	9	0	-	33.3
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %ile Q(veh)	5.3	0.2	-	-	0	-	-	1.6

2016 Existing Saturday Midday Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	623	22	12	581	21	19	9	32	25	2	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2136	0	0	2140	0	0	1966	0	0	1540	0
Flt Permitted		0.996			0.999			0.984			0.983	
Satd. Flow (perm)	0	2136	0	0	2140	0	0	1966	0	0	1540	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.83	0.83	0.83	0.83	0.83	0.87
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	751	0	0	668	0	0	73	0	0	85	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 75.2%

ICU Level of Service D

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

Intersection

















Int Delay, s/veh 5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	53	623	22	12	581	21	19	9	32	25	2	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	92	92	92	83	83	83	83	83	87
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	57	670	24	13	632	23	23	11	39	30	2	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	654	0	0	694	0	0	1493	1476	682	1489	1477	643
Stage 1	-	-	-	-	-	-	796	796	-	669	669	-
Stage 2	-	-	-	-	-	-	697	680	-	820	808	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	943	-	-	911	-	-	103	127	453	103	127	477
Stage 1	-	-	-	-	-	-	383	402	-	450	459	-
Stage 2	-	-	-	-	-	-	435	454	-	372	397	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	943	-	-	911	-	-	82	112	453	79	112	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	112	-	79	112	-
Stage 1	-	-	-	-	-	-	345	362	-	405	448	-
Stage 2	-	-	-	-	-	-	376	444	-	297	358	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	46.1	47.7
HCM LOS	E	E	E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	943	-	-	911	-	-	166
HCM Lane V/C Ratio	0.46	0.06	-	-	0.014	-	-	0.514
HCM Control Delay (s)	46.1	9.1	0	-	9	0	-	47.7
HCM Lane LOS	E	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	2.1	0.2	-	-	0	-	-	2.5

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	723	103	2	422	7	21	3	6	0	1	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2099	0	0	2128	0	0	2024	0	0	1398	0
Flt Permitted		0.999						0.967				
Satd. Flow (perm)	0	2099	0	0	2128	0	0	2024	0	0	1398	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.96	0.96	0.96	0.85	0.85	0.85	0.79	0.79	0.79	0.75	0.75	0.75
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	878	0	0	506	0	0	39	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	17	723	103	2	422	7	21	3	6	0	1	14
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	96	96	96	85	85	85	79	79	79	75	75	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	7
Mvmt Flow	18	753	107	2	496	8	27	4	8	0	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	505	0	0	860	0	0	1357	1351	807	1353	1401	501
Stage 1	-	-	-	-	-	-	842	842	-	505	505	-
Stage 2	-	-	-	-	-	-	515	509	-	848	896	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	1070	-	-	790	-	-	127	152	385	128	141	560
Stage 1	-	-	-	-	-	-	362	383	-	553	544	-
Stage 2	-	-	-	-	-	-	546	541	-	359	362	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1070	-	-	790	-	-	118	146	385	120	136	560
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	146	-	120	136	-
Stage 1	-	-	-	-	-	-	350	370	-	535	542	-
Stage 2	-	-	-	-	-	-	524	539	-	337	350	-

















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	40	13.1
HCM LOS			E	B

Minor Street/Block/Man	NBL	EBL	EBT	EBR	WBL	WBT	WBR	SBL
Capacity (veh/h)	140	1070	-	-	790	-	-	464
HCM Lane V/C Ratio	0.271	0.017	-	-	0.003	-	-	0.043
HCM Control Delay (s)	40	8.4	0	-	9.6	0	-	13.1
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0.1	-	-	0	-	-	0.1

2023 No-Build Wkdy PM Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	720	30	12	754	10	38	2	39	7	7	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2117	0	0	2147	0	0	1937	0	0	1525	0
Flt Permitted		0.997			0.999			0.977			0.994	
Satd. Flow (perm)	0	2117	0	0	2147	0	0	1937	0	0	1525	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.96	0.96	0.96	0.90	0.90	0.90	0.79	0.79	0.79	0.78	0.78	0.78
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	840	0	0	862	0	0	100	0	0	76	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 90.6%

ICU Level of Service E

Analysis Period (min) 15

Intersection

Int Delay, s/veh 18

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	57	720	30	12	754	10	38	2	39	7	7	45
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	96	96	96	90	90	90	79	79	79	78	78	78
Heavy Vehicles, %	0	1	0	0	0	0	3	0	0	0	0	0
Mvmt Flow	59	750	31	13	838	11	48	3	49	9	9	58

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	849	0	0	781	0	0	1787	1760	766	1780	1770	843
Stage 1	-	-	-	-	-	-	884	884	-	870	870	-
Stage 2	-	-	-	-	-	-	903	876	-	910	900	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	798	-	-	845	-	-	63	85	406	65	84	367
Stage 1	-	-	-	-	-	-	339	366	-	349	372	-
Stage 2	-	-	-	-	-	-	330	369	-	332	360	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	798	-	-	845	-	-	~ 42	72	406	49	71	367
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 42	72	-	49	71	-
Stage 1	-	-	-	-	-	-	295	318	-	303	361	-
Stage 2	-	-	-	-	-	-	263	358	-	251	313	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	297.4	45.3
HCM LOS			F	E













Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	77	798	-	-	845	-	-	162
HCM Lane V/C Ratio	1.299	0.074	-	-	0.016	-	-	0.467
HCM Control Delay (s)	297.4	9.9	0	-	9.3	0	-	45.3
HCM Lane LOS	F	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	7.7	0.2	-	-	0	-	-	2.2

Notes

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

2023 No-Build Saturday Midday Peak
3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	53	709	24	14	651	21	20	9	35	25	2	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2138	0	0	2143	0	0	1964	0	0	1540	0
Flt Permitted		0.997			0.999			0.985			0.983	
Satd. Flow (perm)	0	2138	0	0	2143	0	0	1964	0	0	1540	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.83	0.83	0.83	0.83	0.83	0.87
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	845	0	0	746	0	0	77	0	0	85	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 79.2%

ICU Level of Service D

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

Intersection: 1

Int Delay, s/veh 7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	53	709	24	14	651	21	20	9	35	25	2	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	92	92	92	83	83	83	83	83	87
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	57	762	26	15	708	23	24	11	42	30	2	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	730	0	0	788	0	0	1666	1650	775	1665	1651	719
Stage 1	-	-	-	-	-	-	889	889	-	749	749	-
Stage 2	-	-	-	-	-	-	777	761	-	916	902	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	883	-	-	840	-	-	78	100	401	78	100	432
Stage 1	-	-	-	-	-	-	341	364	-	407	422	-
Stage 2	-	-	-	-	-	-	393	417	-	329	359	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	883	-	-	840	-	-	60	86	401	56	86	432
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	86	-	56	86	-
Stage 1	-	-	-	-	-	-	302	322	-	360	409	-
Stage 2	-	-	-	-	-	-	333	404	-	252	318	-

















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	75.2	81.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	122	883	-	-	840	-	-	124
HCM Lane V/C Ratio	0.632	0.065	-	-	0.018	-	-	0.689
HCM Control Delay (s)	75.2	9.4	0	-	9.4	0	-	81.9
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	3.3	0.2	-	-	0.1	-	-	3.7

2023 Build Wkdy AM Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	707	103	2	429	7	21	3	6	2	1	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2097	0	0	2128	0	0	2024	0	0	1401	0
Flt Permitted		0.998						0.967			0.997	
Satd. Flow (perm)	0	2097	0	0	2128	0	0	2024	0	0	1401	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.96	0.96	0.96	0.85	0.85	0.85	0.79	0.79	0.79	0.75	0.75	0.75
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	883	0	0	515	0	0	39	0	0	56	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15

Intersection

















Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	38	707	103	2	429	7	21	3	6	2	1	39
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	96	96	96	85	85	85	79	79	79	75	75	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	7
Mvmt Flow	40	736	107	2	505	8	27	4	8	3	1	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	844	0	0	1409	1387	790	1389	1437	509
Stage 1	-	-	-	-	-	-	869	869	-	514	514	-
Stage 2	-	-	-	-	-	-	540	518	-	875	923	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	1063	-	-	801	-	-	117	144	393	121	135	554
Stage 1	-	-	-	-	-	-	349	372	-	547	539	-
Stage 2	-	-	-	-	-	-	530	536	-	347	351	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1063	-	-	801	-	-	99	133	393	109	125	554
Mov Cap-2 Maneuver	-	-	-	-	-	-	99	133	-	109	125	-
Stage 1	-	-	-	-	-	-	324	345	-	508	537	-
Stage 2	-	-	-	-	-	-	478	534	-	312	326	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	48.3	14.5
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	120	1063	-	-	801	-	-	434
HCM Lane V/C Ratio	0.316	0.037	-	-	0.003	-	-	0.129
HCM Control Delay (s)	48.3	8.5	0	-	9.5	0	-	14.5
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0	-	-	0.4

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	748	30	12	734	10	38	2	39	11	8	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2112	0	0	2147	0	0	1937	0	0	1485	0
Flt Permitted		0.993			0.999			0.977			0.995	
Satd. Flow (perm)	0	2112	0	0	2147	0	0	1937	0	0	1485	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			252			212			305	
Travel Time (s)		3.1			5.7			4.8			6.9	
Peak Hour Factor	0.96	0.96	0.96	0.90	0.90	0.90	0.79	0.79	0.79	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	3%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	932	0	0	840	0	0	100	0	0	114	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 108.8%

ICU Level of Service G

Analysis Period (min) 15

Intersection

Int Delay, s/veh 40

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	117	748	30	12	734	10	38	2	39	11	8	86
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	96	96	96	90	90	90	79	79	79	92	92	92
Heavy Vehicles, %	0	1	0	0	0	0	3	0	0	2	2	2
Mvmt Flow	122	779	31	13	816	11	48	3	49	12	9	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	827	0	0	810	0	0	1938	1892	795	1912	1902	821
Stage 1	-	-	-	-	-	-	1039	1039	-	848	848	-
Stage 2	-	-	-	-	-	-	899	853	-	1064	1054	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	813	-	-	825	-	-	49	71	391	52	69	374
Stage 1	-	-	-	-	-	-	277	310	-	356	378	-
Stage 2	-	-	-	-	-	-	332	378	-	270	303	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	813	-	-	825	-	-	~ 25	50	391	34	49	374
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 25	50	-	34	49	-
Stage 1	-	-	-	-	-	-	201	225	-	258	367	-
Stage 2	-	-	-	-	-	-	236	367	-	169	220	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.1	\$ 683.9	85.8
HCM LOS			F	F

Major Lane Major Minor	NBL	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR
Capacity (veh/h)	48	813	-	-	825	-	-	146	-	-
HCM Lane V/C Ratio	2.083	0.15	-	-	0.016	-	-	0.782	-	-
HCM Control Delay (s)	\$ 683.9	10.2	0	-	9.4	0	-	85.8	-	-
HCM Lane LOS	F	B	A	-	A	A	-	F	-	-
HCM 95th %tile Q(veh)	10.2	0.5	-	-	0	-	-	4.8	-	-













Notes

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

2023 Build Saturday Midday Peak

3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SET	SEB
Lane Configurations	↔			↔			↔			↔		
Volume (vph)	126	733	24	14	674	21	20	9	35	31	3	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	16	12	12	9	12
Satd. Flow (prot)	0	2130	0	0	2143	0	0	1964	0	0	1489	0
Flt Permitted	0.993			0.999			0.985			0.988		
Satd. Flow (perm)	0	2130	0	0	2143	0	0	1964	0	0	1489	0
Link Speed (mph)	30			30			30			30		
Link Distance (ft)	135			252			212			305		
Travel Time (s)	3.1			5.7			4.8			6.9		
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	949	0	0	771	0	0	77	0	0	146	0
Sign Control	Free			Free			Stop			Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 104.2%

ICU Level of Service G

Analysis Period (min) 15

2023 Build Saturday Midday Peak
3: Market Street/Tournament Wharf & Merrimac Street

11/9/2016

Intersection	
Int Delay, s/veh	33.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	126	733	24	14	674	21	20	9	35	31	3	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	92	92	92	83	83	83	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	135	788	26	15	733	23	24	11	42	34	3	109

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	755	0	0	814	0	0	1902	1858	801	1873	1859	744
Stage 1	-	-	-	-	-	-	1072	1072	-	774	774	-
Stage 2	-	-	-	-	-	-	830	786	-	1099	1085	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	865	-	-	822	-	-	53	74	388	55	73	415
Stage 1	-	-	-	-	-	-	269	299	-	391	408	-
Stage 2	-	-	-	-	-	-	367	406	-	258	293	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	865	-	-	822	-	-	28	51	388	~ 32	50	415
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	51	-	~ 32	50	-
Stage 1	-	-	-	-	-	-	192	213	-	279	395	-
Stage 2	-	-	-	-	-	-	260	393	-	156	209	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.2	279.3	290.7
HCM LOS			F	F

















Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	65	865	-	-	822	-	-	106
HCM Lane V/C Ratio	1.186	0.157	-	-	0.019	-	-	1.374
HCM Control Delay (s)	279.3	9.9	0	-	9.5	0	-	290.7
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	6.2	0.6	-	-	0.1	-	-	10.3

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

Merrimac Street at McKay's Wharf

2016 Existing Wkdy AM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	663	12	1	380	2	1	0	2	2	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1753	0	0	1817	0	0	1937	0	0	1551	0
Flt Permitted								0.982			0.995	
Satd. Flow (perm)	0	1753	0	0	1817	0	0	1937	0	0	1551	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.38	0.38	0.38	0.61	0.61	0.61
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	703	0	0	407	0	0	8	0	0	28	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 50.8%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	663	12	1	380	2	1	0	2	2	0	15
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	97	97	97	94	94	94	38	38	38	61	61	61
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	7	684	12	1	404	2	3	0	5	3	0	25

















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	406	0	0	696	0	0	1124	1113	690	1114	1117	405
Stage 1	-	-	-	-	-	-	704	704	-	407	407	-
Stage 2	-	-	-	-	-	-	420	409	-	707	710	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1164	-	-	909	-	-	184	210	449	187	209	650
Stage 1	-	-	-	-	-	-	431	443	-	625	601	-
Stage 2	-	-	-	-	-	-	615	600	-	429	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	909	-	-	176	208	449	183	207	650
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	208	-	183	207	-
Stage 1	-	-	-	-	-	-	427	439	-	619	600	-
Stage 2	-	-	-	-	-	-	591	599	-	420	436	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	17.5	12.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	296	1164	-	-	909	-	-	500
HCM Lane V/C Ratio	0.027	0.006	-	-	0.001	-	-	0.056
HCM Control Delay (s)	17.5	8.1	0	-	9	0	-	12.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

2016 Existing Wkdy PM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	678	5	1	707	0	0	0	2	6	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1754	0	0	1819	0	0	1863	0	0	1575	0
Flt Permitted											0.990	
Satd. Flow (perm)	0	1754	0	0	1819	0	0	1863	0	0	1575	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.38	0.38	0.38	0.61	0.61	0.61
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	710	0	0	753	0	0	5	0	0	50	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.5%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	678	5	1	707	0	0	0	2	6	1	23
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	97	97	97	94	94	94	38	38	38	61	61	61
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	699	5	1	752	0	0	0	5	10	2	38

















Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	752	0	0	704	0	0	1488	1468	702	1471	1470	752
Stage 1	-	-	-	-	-	-	714	714	-	754	754	-
Stage 2	-	-	-	-	-	-	774	754	-	717	716	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	867	-	-	903	-	-	103	129	442	106	129	413
Stage 1	-	-	-	-	-	-	425	438	-	404	420	-
Stage 2	-	-	-	-	-	-	394	420	-	424	437	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	867	-	-	903	-	-	92	127	442	104	127	413
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	127	-	104	127	-
Stage 1	-	-	-	-	-	-	420	433	-	400	419	-
Stage 2	-	-	-	-	-	-	356	419	-	414	432	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	13.2	23.2
HCM LOS	B	B	B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	442	867	-	-	903	-	-	247
HCM Lane V/C Ratio	0.012	0.007	-	-	0.001	-	-	0.199
HCM Control Delay (s)	13.2	9.2	0	-	9	0	-	23.2
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.7

2016 Existing Saturday Midday Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	652	10	1	594	1	3	1	4	3	1	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1768	0	0	1837	0	0	1958	0	0	1565	0
Flt Permitted		0.999						0.982			0.993	
Satd. Flow (perm)	0	1768	0	0	1837	0	0	1958	0	0	1565	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.67	0.67	0.67	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	737	0	0	641	0	0	11	0	0	28	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.2%

ICU Level of Service B

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	652	10	1	594	1	3	1	4	3	1	16
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	92	92	93	93	93	67	67	67	71	71	71
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	17	709	11	1	639	1	4	1	6	4	1	23













Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	640	0	0	720	0	0	1402	1391	714	1394	1395	639
Stage 1	-	-	-	-	-	-	749	749	-	641	641	-
Stage 2	-	-	-	-	-	-	653	642	-	753	754	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	954	-	-	891	-	-	119	143	435	120	143	480
Stage 1	-	-	-	-	-	-	407	422	-	466	473	-
Stage 2	-	-	-	-	-	-	460	472	-	405	420	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	954	-	-	891	-	-	110	138	435	115	138	480
Mov Cap-2 Maneuver	-	-	-	-	-	-	110	138	-	115	138	-
Stage 1	-	-	-	-	-	-	395	409	-	452	472	-
Stage 2	-	-	-	-	-	-	436	471	-	386	407	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	26	18.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	954	-	-	891	-	-	300
HCM Lane V/C Ratio	0.065	0.018	-	-	0.001	-	-	0.094
HCM Control Delay (s)	26	8.8	0	-	9	0	-	18.2
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3

2023 No-Build Wkdy AM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	7	720	9	0	406	2	0	0	1	2	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1753	0	0	1817	0	0	1863	0	0	1551	0
Flt Permitted											0.995	
Satd. Flow (perm)	0	1753	0	0	1817	0	0	1863	0	0	1551	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.38	0.38	0.38	0.61	0.61	0.61
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	758	0	0	434	0	0	3	0	0	28	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection												
Int Delay, s/veh	0.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	720	9	0	406	2	0	0	1	2	0	15
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	97	97	97	94	94	94	38	38	38	61	61	61
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	7	742	9	0	432	2	0	0	3	3	0	25













Major/Minor	Major1			Major2			Minor1			Minor2			7
Conflicting Flow All	434	0	0	752	0	0	1206	1195	747	1196	1199	433	
Stage 1	-	-	-	-	-	-	761	761	-	433	433	-	
Stage 2	-	-	-	-	-	-	445	434	-	763	766	-	
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-	
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3	
Pot Cap-1 Maneuver	1136	-	-	867	-	-	162	188	416	164	187	627	
Stage 1	-	-	-	-	-	-	401	417	-	605	585	-	
Stage 2	-	-	-	-	-	-	596	585	-	400	415	-	
Platoon blocked, %		-	-		-	-							
Mov Cap-1 Maneuver	1136	-	-	867	-	-	154	186	416	162	185	627	
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	186	-	162	185	-	
Stage 1	-	-	-	-	-	-	397	412	-	598	585	-	
Stage 2	-	-	-	-	-	-	573	585	-	393	410	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	13.7	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	416	1136	-	-	867	-	-	469
HCM Lane V/C Ratio	0.006	0.006	-	-	-	-	-	0.059
HCM Control Delay (s)	13.7	8.2	0	-	0	-	-	13.2
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

2023 No-Build Wkdy PM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	6	755	9	4	769	0	9	0	5	6	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1753	0	0	1819	0	0	1989	0	0	1575	0
Flt Permitted								0.969			0.990	
Satd. Flow (perm)	0	1753	0	0	1819	0	0	1989	0	0	1575	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.38	0.38	0.38	0.61	0.61	0.61
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	793	0	0	822	0	0	37	0	0	50	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.4%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	755	9	4	769	0	9	0	5	6	1	23
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	97	97	97	94	94	94	38	38	38	61	61	61
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	778	9	4	818	0	24	0	13	10	2	38

















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Conflicting Flow All	818	0	0	788	0	0	1641	1622	783	1629	1627	818
Stage 1	-	-	-	-	-	-	795	795	-	827	827	-
Stage 2	-	-	-	-	-	-	846	827	-	802	800	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	819	-	-	840	-	-	81	104	397	82	103	379
Stage 1	-	-	-	-	-	-	384	402	-	369	389	-
Stage 2	-	-	-	-	-	-	360	389	-	381	400	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	819	-	-	840	-	-	71	102	397	78	101	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	71	102	-	78	101	-
Stage 1	-	-	-	-	-	-	379	397	-	364	385	-
Stage 2	-	-	-	-	-	-	320	385	-	364	395	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
HCM Control Delay, s	0.1	-	-	0	-	-	60.6	-	-	28.3	-	-
HCM LOS	-	-	-	-	-	-	F	-	-	D	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Capacity (veh/h)	100	819	-	-	840	-	-	-	203	-	-	-
HCM Lane V/C Ratio	0.368	0.008	-	-	0.005	-	-	-	0.242	-	-	-
HCM Control Delay (s)	60.6	9.4	0	-	9.3	0	-	-	28.3	-	-	-
HCM Lane LOS	F	A	A	-	A	A	-	-	D	-	-	-
HCM 95th %ile Q(veh)	1.5	0	-	-	0	-	-	-	0.9	-	-	-

2023 No-Build Saturday Midday Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	734	17	4	661	1	23	1	21	3	1	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1766	0	0	1837	0	0	1967	0	0	1565	0
Flt Permitted		0.999						0.975			0.993	
Satd. Flow (perm)	0	1766	0	0	1837	0	0	1967	0	0	1565	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.67	0.67	0.67	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	833	0	0	716	0	0	66	0	0	28	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 64.1%

ICU Level of Service C

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	734	17	4	661	1	23	1	21	3	1	16
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	92	92	93	93	93	67	67	67	71	71	71
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	17	798	18	4	711	1	34	1	31	4	1	23













Major/Minor	Major1			Major2			Minor1-2			Minor2		
Conflicting Flow All	712	0	0	816	0	0	1574	1562	807	1578	1571	711
Stage 1	-	-	-	-	-	-	842	842	-	720	720	-
Stage 2	-	-	-	-	-	-	732	720	-	858	851	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	897	-	-	820	-	-	90	113	385	90	112	436
Stage 1	-	-	-	-	-	-	362	383	-	422	435	-
Stage 2	-	-	-	-	-	-	416	435	-	354	379	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	897	-	-	820	-	-	82	108	385	79	107	436
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	108	-	79	107	-
Stage 1	-	-	-	-	-	-	349	370	-	407	432	-
Stage 2	-	-	-	-	-	-	390	432	-	313	366	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	58.3	22.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	131	897	-	-	820	-	-	238
HCM Lane V/C Ratio	0.513	0.019	-	-	0.005	-	-	0.118
HCM Control Delay (s)	58.3	9.1	0	-	9.4	0	-	22.1
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.4	0.1	-	-	0	-	-	0.4

2023 Build Wkdy AM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	14	699	9	0	405	5	0	0	1	10	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1751	0	0	1815	0	0	1863	0	0	1552	0
Flt Permitted		0.999									0.985	
Satd. Flow (perm)	0	1751	0	0	1815	0	0	1863	0	0	1552	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.38	0.38	0.38	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	744	0	0	436	0	0	3	0	0	36	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

2023 Build Wkdy AM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	14	699	9	0	405	5	0	0	1	10	0	23
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	97	97	97	94	94	94	38	38	38	92	92	92
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	2	2	2
Mvmt Flow	14	721	9	0	431	5	0	0	3	11	0	25

















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	436	0	0	730	0	0	1200	1190	725	1189	1193	434
Stage 1	-	-	-	-	-	-	754	754	-	434	434	-
Stage 2	-	-	-	-	-	-	446	436	-	755	759	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	1134	-	-	883	-	-	163	189	428	165	187	622
Stage 1	-	-	-	-	-	-	404	420	-	600	581	-
Stage 2	-	-	-	-	-	-	595	583	-	401	415	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1134	-	-	883	-	-	154	185	428	161	183	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	185	-	161	183	-
Stage 1	-	-	-	-	-	-	396	411	-	587	581	-
Stage 2	-	-	-	-	-	-	571	583	-	390	406	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	13.5	17.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	428	1134	-	-	883	-	-	333
HCM Lane V/C Ratio	0.006	0.013	-	-	-	-	-	0.108
HCM Control Delay (s)	13.5	8.2	0	-	0	-	-	17.1
HCM Lane LOS	B	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

2023 Build Wkdy PM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	739	9	4	727	27	9	0	5	28	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1750	0	0	1810	0	0	1989	0	0	1564	0
Flt Permitted		0.997						0.969			0.981	
Satd. Flow (perm)	0	1750	0	0	1810	0	0	1989	0	0	1564	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.38	0.38	0.38	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	827	0	0	806	0	0	37	0	0	78	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 89.3%

ICU Level of Service E

Analysis Period (min) 15

2023 Build Wkdy PM Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	54	739	9	4	727	27	9	0	5	28	0	44
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	97	97	97	94	94	94	38	38	38	92	92	92
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	2	2	2
Mvmt Flow	56	762	9	4	773	29	24	0	13	30	0	48

















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	802	0	0	771	0	0	1698	1689	766	1680	1678	788
Stage 1	-	-	-	-	-	-	878	878	-	796	796	-
Stage 2	-	-	-	-	-	-	820	811	-	884	882	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	830	-	-	853	-	-	74	94	406	75	95	391
Stage 1	-	-	-	-	-	-	345	368	-	380	399	-
Stage 2	-	-	-	-	-	-	372	396	-	340	364	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	830	-	-	853	-	-	59	82	406	66	83	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	82	-	66	83	-
Stage 1	-	-	-	-	-	-	304	325	-	335	395	-
Stage 2	-	-	-	-	-	-	324	392	-	290	321	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	76.4	64.1
HCM LOS	F	F	F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	85	830	-	-	853	-	-	134
HCM Lane V/C Ratio	0.433	0.067	-	-	0.005	-	-	0.584
HCM Control Delay (s)	76.4	9.6	0	-	9.2	0	-	64.1
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1.8	0.2	-	-	0	-	-	3

2023 Build Saturday Midday Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	714	17	4	645	33	23	1	21	35	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	11	12	12	16	12	12	10	12
Satd. Flow (prot)	0	1761	0	0	1826	0	0	1967	0	0	1564	0
Flt Permitted		0.996						0.975			0.981	
Satd. Flow (perm)	0	1761	0	0	1826	0	0	1967	0	0	1564	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			140			205			293	
Travel Time (s)		5.7			3.2			4.7			6.7	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.67	0.67	0.67	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	866	0	0	733	0	0	66	0	0	98	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 94.5%

ICU Level of Service F

Analysis Period (min) 15

2023 Build Saturday Midday Peak
4: Merrimac Street & McKay's Wharf

11/9/2016

Intersection

Int Delay, s/veh 9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	66	714	17	4	645	33	23	1	21	35	0	55
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	92	92	93	93	93	67	67	67	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	72	776	18	4	694	35	34	1	31	38	0	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	729	0	0	795	0	0	1679	1667	785	1665	1658	711
Stage 1	-	-	-	-	-	-	929	929	-	720	720	-
Stage 2	-	-	-	-	-	-	750	738	-	945	938	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	884	-	-	835	-	-	76	97	396	77	98	433
Stage 1	-	-	-	-	-	-	324	349	-	419	432	-
Stage 2	-	-	-	-	-	-	407	427	-	314	343	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	884	-	-	835	-	-	58	82	396	62	83	433
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	82	-	62	83	-
Stage 1	-	-	-	-	-	-	277	298	-	358	429	-
Stage 2	-	-	-	-	-	-	348	424	-	246	293	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	100.8	88.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	97	884	-	-	835	-	-	130
HCM Lane V/C Ratio	0.692	0.081	-	-	0.005	-	-	0.753
HCM Control Delay (s)	100.8	9.4	0	-	9.3	0	-	88.7
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	3.5	0.3	-	-	0	-	-	4.4

Merrimac Street at Titcomb Street

2016 Existing Wkdy AM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	626	49	14	374	9	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1739	0	0	1753	1634	0
Flt Permitted				0.998	0.964	
Satd. Flow (perm)	1739	0	0	1753	1634	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.60	0.60
Heavy Vehicles (%)	1%	0%	0%	1%	11%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	718	0	0	422	20	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.9%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	626	49	14	374	9	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	94	94	92	92	60	60
Heavy Vehicles, %	1	0	0	1	11	0
Mvmt Flow	666	52	15	407	15	5

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1129
Stage 1	-	-	692
Stage 2	-	-	437
Critical Hdwy	-	4.1	6.51
Critical Hdwy Stg 1	-	-	5.51
Critical Hdwy Stg 2	-	-	5.51
Follow-up Hdwy	-	2.2	3.599
Pot Cap-1 Maneuver	-	892	217
Stage 1	-	-	481
Stage 2	-	-	632
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	892	212
Mov Cap-2 Maneuver	-	-	212
Stage 1	-	-	481
Stage 2	-	-	618

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	244	-	-	892	-
HCM Lane V/C Ratio	0.082	-	-	0.017	-
HCM Control Delay (s)	21.1	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

2016 Existing Wkdy PM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (vph)	641	46	9	691	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1757	0	0	1772	1690	0
Flt Permitted				0.999	0.967	
Satd. Flow (perm)	1757	0	0	1772	1690	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.97	0.97	0.88	0.88	0.72	0.72
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	708	0	0	795	32	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	641	46	9	691	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	88	88	72	72
Heavy Vehicles, %	0	0	0	0	6	0
Mvmt Flow	661	47	10	785	22	10

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	708	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.2	-
Pot Cap-1 Maneuver	-	-	900	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	900	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	31.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	-	-	900	-
HCM Lane V/C Ratio	0.192	-	-	0.011	-
HCM Control Delay (s)	31.8	-	-	9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

2016 Existing Saturday Midday Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↓	↖	↗
Volume (vph)	630	25	17	580	18	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1764	0	0	1772	1689	0
Flt Permitted				0.999	0.968	
Satd. Flow (perm)	1764	0	0	1772	1689	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.56	0.56
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	0	0	663	48	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	630	25	17	580	18	9
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	95	95	90	90	56	56
Heavy Vehicles, %	0	0	0	0	6	0
Mvmt Flow	663	26	19	644	32	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	689	0	1358	676
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	-	-	4.1	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.2	-	3.554	3.3
Pot Cap-1 Maneuver	-	-	915	-	161	457
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	915	-	156	457
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLh1	EBT	EBR	WBL	WBT
Capacity (veh/h)	200	-	-	915	-
HCM Lane V/C Ratio	0.241	-	-	0.021	-
HCM Control Delay (s)	28.6	-	-	9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

2023 No-Build Wkdy AM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Volume (vph)	660	74	25	393	16	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1733	0	0	1752	1635	0
Flt Permitted				0.997	0.967	
Satd. Flow (perm)	1733	0	0	1752	1635	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.60	0.60
Heavy Vehicles (%)	1%	0%	0%	1%	11%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	781	0	0	454	40	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.2%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	660	74	25	393	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	92	92	60	60
Heavy Vehicles, %	1	0	0	1	11	0
Mvmt Flow	702	79	27	427	27	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	781	0	1223	741
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	482	-
Critical Hdwy	-	-	4.1	-	6.51	6.2
Critical Hdwy Stg 1	-	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	-	5.51	-
Follow-up Hdwy	-	-	2.2	-	3.599	3.3
Pot Cap-1 Maneuver	-	-	845	-	190	420
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	603	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	845	-	182	420
Mov Cap-2 Maneuver	-	-	-	-	182	-
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	578	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	224	-	-	845	-
HCM Lane V/C Ratio	0.179	-	-	0.032	-
HCM Control Delay (s)	24.5	-	-	9.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

2023 No-Build Wkdy PM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	
Volume (vph)	695	72	19	733	39	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1750	0	0	1772	1686	0
Flt Permitted				0.999	0.971	
Satd. Flow (perm)	1750	0	0	1772	1686	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.97	0.97	0.88	0.88	0.72	0.72
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	790	0	0	855	89	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	695	72	19	733	39	25
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	97	97	88	88	72	72
Heavy Vehicles, %	0	0	0	0	6	0
Mvmt Flow	716	74	22	833	54	35

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	791
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	838
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	838
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	61.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	147	-	-	838	-
HCM Lane V/C Ratio	0.605	-	-	0.026	-
HCM Control Delay (s)	61.3	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	3.2	-	-	0.1	-

2023 No-Build Saturday Midday Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↲	
Volume (vph)	683	52	28	628	37	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1756	0	0	1770	1683	0
Flt Permitted				0.998	0.972	
Satd. Flow (perm)	1756	0	0	1770	1683	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.56	0.56
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	774	0	0	729	114	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 66.2%

ICU Level of Service C

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	683	52	28	628	37	27
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	95	95	90	90	56	56
Heavy Vehicles, %	0	0	0	0	6	0
Mvmt Flow	719	55	31	698	66	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	774
Stage 1	-	-	746
Stage 2	-	-	760
Critical Hdwy	-	4.1	6.46
Critical Hdwy Stg 1	-	-	5.46
Critical Hdwy Stg 2	-	-	5.46
Follow-up Hdwy	-	2.2	3.554
Pot Cap-1 Maneuver	-	851	130
Stage 1	-	-	462
Stage 2	-	-	455
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	851	122
Mov Cap-2 Maneuver	-	-	122
Stage 1	-	-	462
Stage 2	-	-	428

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	58.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	174	-	-	851	-
HCM Lane V/C Ratio	0.657	-	-	0.037	-
HCM Control Delay (s)	58.4	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	3.8	-	-	0.1	-

2023 Build Wkdy AM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (vph)	647	74	25	395	16	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1733	0	0	1752	1635	0
Flt Permitted				0.997	0.967	
Satd. Flow (perm)	1733	0	0	1752	1635	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.60	0.60
Heavy Vehicles (%)	1%	0%	0%	1%	11%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	767	0	0	456	40	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.3%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy AM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	647	74	25	395	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	92	92	60	60
Heavy Vehicles, %	1	0	0	1	11	0
Mvmt Flow	688	79	27	429	27	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	767	0	1212	728
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	484	-
Critical Hdwy	-	-	4.1	-	6.51	6.2
Critical Hdwy Stg 1	-	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	-	5.51	-
Follow-up Hdwy	-	-	2.2	-	3.599	3.3
Pot Cap-1 Maneuver	-	-	856	-	193	427
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	856	-	185	427
Mov Cap-2 Maneuver	-	-	-	-	185	-
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	577	-

Intersection	EBT	WBT	NBT
HCM Control Delay, s	0	0.6	24.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	228	-	-	856	-
HCM Lane V/C Ratio	0.175	-	-	0.032	-
HCM Control Delay (s)	24.1	-	-	9.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

2023 Build Wkdy PM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (vph)	701	72	19	718	39	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1750	0	0	1772	1686	0
Flt Permitted				0.999	0.971	
Satd. Flow (perm)	1750	0	0	1772	1686	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.97	0.97	0.88	0.88	0.72	0.72
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	797	0	0	838	89	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.4%

ICU Level of Service B

Analysis Period (min) 15

2023 Build Wkdy PM Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	701	72	19	718	39	25
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	97	97	88	88	72	72
Heavy Vehicles, %	0	0	0	0	6	0
Mvmt Flow	723	74	22	816	54	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	797	0	1619	760
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	859	-
Critical Hdwy	-	-	4.1	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.2	-	3.554	3.3
Pot Cap-1 Maneuver	-	-	834	-	111	409
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	408	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	834	-	106	409
Mov Cap-2 Maneuver	-	-	-	-	106	-
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	59.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLh1	EBT	EBR	WBL	WBT
Capacity (veh/h)	149	-	-	834	-
HCM Lane V/C Ratio	0.597	-	-	0.026	-
HCM Control Delay (s)	59.7	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %ile Q(veh)	3.1	-	-	0.1	-

2023 Build Saturday Midday Peak
5: Titcomb Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (vph)	695	52	28	644	37	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	10	12	12
Satd. Flow (prot)	1757	0	0	1770	1683	0
Flt Permitted				0.998	0.972	
Satd. Flow (perm)	1757	0	0	1770	1683	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	140			278	178	
Travel Time (s)	3.2			6.3	4.0	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.56	0.56
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	787	0	0	747	114	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

2023 Build Saturday Midday Peak
5: Titcomb Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	695	52	28	644	37	27
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	95	95	90	90	56	56
Heavy Vehicles, %	0	0	0	0	6	0
Mvmt Flow	732	55	31	716	66	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	786
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	842
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	842
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-










Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	63.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	167	-	-	842	-
HCM Lane V/C Ratio	0.684	-	-	0.037	-
HCM Control Delay (s)	63.6	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	4	-	-	0.1	-

Merrimac Street at Brown's Wharf

2016 Existing Wkdy AM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	23	612	411	6	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1815	1815	0	1698	0
Flt Permitted		0.998				
Satd. Flow (perm)	0	1815	1815	0	1698	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.94	0.94	1.00	0.89	0.44	0.44
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	675	418	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.8%

ICU Level of Service B

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	612	411	6	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	100	89	44	44
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	24	651	411	7	0	16










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	418	0	1114
Stage 1	-	-	414
Stage 2	-	-	700
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1152	-	232
Stage 1	-	-	671
Stage 2	-	-	496
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1152	-	224
Mov Cap-2 Maneuver	-	-	224
Stage 1	-	-	671
Stage 2	-	-	480

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1152	-	-	-	643
HCM Lane V/C Ratio	0.021	-	-	-	0.025
HCM Control Delay (s)	8.2	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

2016 Existing Wkdy PM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	4	629	704	3	2	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1837	1817	0	1662	0
Flt Permitted					0.997	
Satd. Flow (perm)	0	1837	1817	0	1662	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.87	0.87	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	0%	0%	1%	0%	0%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	728	768	0	68	0
Sign Control		Free	Free		Stop	

Intersection Summary

1

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.2%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	4	629	704	3	2	32
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	87	87	92	92	50	50
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	5	723	765	3	4	64










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	768	0	1499
Stage 1	-	-	767
Stage 2	-	-	732
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	855	-	136
Stage 1	-	-	462
Stage 2	-	-	480
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	855	-	135
Mov Cap-2 Maneuver	-	-	135
Stage 1	-	-	462
Stage 2	-	-	475

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.4
HCM LOS			C

Minor Lane Movt	EB	WB	SB
Capacity (veh/h)	855	-	359
HCM Lane V/C Ratio	0.005	-	0.189
HCM Control Delay (s)	9.2	0	17.4
HCM Lane LOS	A	A	C
HCM 95th %tile Q(veh)	0	-	0.7

2016 Existing Saturday Midday Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	7	645	602	0	1	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1835	1837	0	1670	0
Flt Permitted		0.999			0.995	
Satd. Flow (perm)	0	1835	1837	0	1670	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.96	0.96	0.90	0.90	0.45	0.45
Heavy Vehicles (%)	0%	0%	0%	0%	0%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	679	669	0	20	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	645	602	0	1	8
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	96	96	90	90	45	45
Heavy Vehicles, %	0	0	0	0	0	3
Mvmt Flow	7	672	669	0	2	18










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	669	0	1355
Stage 1	-	-	669
Stage 2	-	-	686
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	931	-	166
Stage 1	-	-	513
Stage 2	-	-	504
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	931	-	164
Mov Cap-2 Maneuver	-	-	164
Stage 1	-	-	513
Stage 2	-	-	498

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	931	-	-	-	381
HCM Lane V/C Ratio	0.008	-	-	-	0.052
HCM Control Delay (s)	8.9	0	-	-	15
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2023 No-Build Wkdy AM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	23	649	443	6	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1815	1815	0	1698	0
Flt Permitted		0.998				
Satd. Flow (perm)	0	1815	1815	0	1698	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.94	0.94	1.00	0.89	0.44	0.44
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	714	450	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	649	443	6	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	100	89	44	44
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	24	690	443	7	0	16










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	450	0	1185
Stage 1	-	-	446
Stage 2	-	-	739
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1121	-	211
Stage 1	-	-	649
Stage 2	-	-	476
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1121	-	204
Mov Cap-2 Maneuver	-	-	204
Stage 1	-	-	649
Stage 2	-	-	459

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11
HCM LOS			B

Line	EB	WB	SB
Capacity (veh/h)	1121	-	617
HCM Lane V/C Ratio	0.022	-	0.026
HCM Control Delay (s)	8.3	0	11
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0.1	-	0.1

2023 No-Build Wkdy PM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	4	700	751	3	2	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1837	1819	0	1662	0
Flt Permitted					0.997	
Satd. Flow (perm)	0	1837	1819	0	1662	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.87	0.87	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	0%	0%	1%	0%	0%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	810	819	0	68	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 50.0%

ICU Level of Service A

Analysis Period (min) 15

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	4	700	751	3	2	32
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	87	87	92	92	50	50
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	5	805	816	3	4	64










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	820	0	1632
Stage 1	-	-	818
Stage 2	-	-	814
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	818	-	113
Stage 1	-	-	437
Stage 2	-	-	439
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	818	-	112
Mov Cap-2 Maneuver	-	-	112
Stage 1	-	-	437
Stage 2	-	-	434

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	18.8
HCM LOS			C

Approach	EB	WB	SB
Capacity (veh/h)	818	-	329
HCM Lane V/C Ratio	0.006	-	0.207
HCM Control Delay (s)	9.4	0	18.8
HCM Lane LOS	A	A	C
HCM 95th %tile Q(veh)	0	-	0.8

2023 No-Build Saturday Midday Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	7	717	658	0	1	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1837	1837	0	1670	0
Flt Permitted					0.995	
Satd. Flow (perm)	0	1837	1837	0	1670	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.96	0.96	0.90	0.90	0.45	0.45
Heavy Vehicles (%)	0%	0%	0%	0%	0%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	754	731	0	20	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.3%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	717	658	0	1	8
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	96	96	90	90	45	45
Heavy Vehicles, %	0	0	0	0	0	3
Mvmt Flow	7	747	731	0	2	18










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	731	0	1492
Stage 1	-	-	731
Stage 2	-	-	761
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	883	-	137
Stage 1	-	-	480
Stage 2	-	-	465
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	883	-	135
Mov Cap-2 Maneuver	-	-	135
Stage 1	-	-	480
Stage 2	-	-	458

HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	883	-	-	-	340	
HCM Lane V/C Ratio	0.008	-	-	-	0.059	
HCM Control Delay (s)	9.1	0	-	-	16.2	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

2023 Build Wkdy AM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	659	446	16	17	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1818	1810	0	1787	0
Flt Permitted					0.965	
Satd. Flow (perm)	0	1818	1810	0	1787	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.94	0.94	1.00	0.89	0.92	0.92
Heavy Vehicles (%)	0%	1%	1%	0%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	701	464	0	25	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 44.7%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy AM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBL	WBR	SBL	SBR
Vol, veh/h	0	659	446	16	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	100	89	92	92
Heavy Vehicles, %	0	1	1	0	2	2
Mvmt Flow	0	701	446	18	18	7










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	464	0	1156
Stage 1	-	-	455
Stage 2	-	-	701
Critical Hdwy	4.1	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.2	-	3.518
Pot Cap-1 Maneuver	1108	-	217
Stage 1	-	-	639
Stage 2	-	-	492
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1108	-	217
Mov Cap-2 Maneuver	-	-	217
Stage 1	-	-	639
Stage 2	-	-	492

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBR	SBL	SBR
Capacity (veh/h)	1108	-	-	-	261	-
HCM Lane V/C Ratio	-	-	-	-	0.096	-
HCM Control Delay (s)	0	-	-	-	20.2	-
HCM Lane LOS	A	-	-	-	C	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	-

2023 Build Wkdy PM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	710	762	38	26	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1837	1808	0	1802	0
Flt Permitted					0.962	
Satd. Flow (perm)	0	1837	1808	0	1802	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.87	0.87	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	816	869	0	35	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.4%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy PM Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	0	710	762	38	26	6	
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	87	87	92	92	92	92	
Heavy Vehicles, %	0	0	1	0	2	2	
Mvmt Flow	0	816	828	41	28	7	










Major/Minor	Major1	Major2	Minor2	
Conflicting Flow All	870	0	1665	849
Stage 1	-	-	849	-
Stage 2	-	-	816	-
Critical Hdwy	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	5.42	-
Critical Hdwy Stg 2	-	-	5.42	-
Follow-up Hdwy	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	783	-	106	361
Stage 1	-	-	419	-
Stage 2	-	-	435	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	783	-	106	361
Mov Cap-2 Maneuver	-	-	106	-
Stage 1	-	-	419	-
Stage 2	-	-	435	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	45.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	783	-	-	-	122
HCM Lane V/C Ratio	-	-	-	-	0.285
HCM Control Delay (s)	0	-	-	-	45.9
HCM Lane LOS	A	-	-	-	E
HCM 95th %ile Q(veh)	0	-	-	-	1.1

2023 Build Saturday Midday Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	736	673	52	35	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	13	12
Satd. Flow (prot)	0	1837	1818	0	1800	0
Flt Permitted					0.962	
Satd. Flow (perm)	0	1837	1818	0	1800	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		278	62		220	
Travel Time (s)		6.3	1.4		5.0	
Peak Hour Factor	0.96	0.96	0.90	0.90	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	767	806	0	48	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.7%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Saturday Midday Peak
6: Merrimac Street & Brown's Wharf

11/9/2016

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	736	673	52	35	9
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	96	96	90	90	92	92
Heavy Vehicles, %	0	0	0	0	2	2
Mvmt Flow	0	767	748	58	38	10

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	806	0	1544
Stage 1	-	-	777
Stage 2	-	-	767
Critical Hdwy	4.1	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.2	-	3.518
Pot Cap-1 Maneuver	828	-	126
Stage 1	-	-	453
Stage 2	-	-	458
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	828	-	126
Mov Cap-2 Maneuver	-	-	126
Stage 1	-	-	453
Stage 2	-	-	458

Approach	EB	WB	SB
HCM Control Delay, s	0	0	41.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	828	-	-	-	146
HCM Lane V/C Ratio	-	-	-	-	0.328
HCM Control Delay (s)	0	-	-	-	41.2
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	1.3

Merrimac Street at Green Street

2016 Existing Wkdy AM Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	612	0	0	346	71	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1837	1805	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1837	1805	1615
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.78	0.78
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	673	0	0	380	91	222
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.6%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	612	0	0	346	71	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	78	78
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	673	0	0	380	91	222

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	673
Stage 1	-	-	673
Stage 2	-	-	380
Critical Hdwy	-	4.11	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.209	3.5
Pot Cap-1 Maneuver	-	923	253
Stage 1	-	-	511
Stage 2	-	-	696
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	923	253
Mov Cap-2 Maneuver	-	-	253
Stage 1	-	-	511
Stage 2	-	-	696

Control	EB	WB	NB
HCM Control Delay, s	0	0	22
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	253	459	-	-	923	-
HCM Lane V/C Ratio	0.36	0.483	-	-	-	-
HCM Control Delay (s)	27	20	-	-	0	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	2.6	-	-	0	-

2016 Existing Wkdy PM Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	631	0	0	562	145	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1818	1787	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1818	1787	1615
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	664	0	0	639	161	166
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.1%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 11.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	631	0	0	562	145	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	88	88	90	90
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	664	0	0	639	161	166

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	664	1303
Stage 1	-	-	664
Stage 2	-	-	639
Critical Hdwy	-	4.1	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	-	2.2	3.509
Pot Cap-1 Maneuver	-	935	178
Stage 1	-	-	514
Stage 2	-	-	528
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	935	178
Mov Cap-2 Maneuver	-	-	178
Stage 1	-	-	514
Stage 2	-	-	528

Approach

HCM Control Delay, s 0 0 56.5
HCM LOS F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	178	464	-	-	935	-
HCM Lane V/C Ratio	0.905	0.357	-	-	-	-
HCM Control Delay (s)	97.1	17	-	-	0	-
HCM Lane LOS	F	C	-	-	A	-
HCM 95th %tile Q(veh)	6.8	1.6	-	-	0	-

2016 Existing Saturday Midday Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	646	0	0	498	104	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1837	1787	1599
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1837	1787	1599
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	710	0	0	541	113	210
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.6%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection	
Int Delay, s/veh	6.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	646	0	0	498	104	193
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	710	0	0	541	113	210

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	710	0
Stage 1	-	-	710	-
Stage 2	-	-	541	-
Critical Hdwy	-	4.1	6.41	6.21
Critical Hdwy Stg 1	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	-
Follow-up Hdwy	-	2.2	3.509	3.309
Pot Cap-1 Maneuver	-	899	191	435
Stage 1	-	-	489	-
Stage 2	-	-	585	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	899	191	435
Mov Cap-2 Maneuver	-	-	191	-
Stage 1	-	-	489	-
Stage 2	-	-	585	-

Control	EBT	EBR	WBL	WBT	NBL	NBR
HCM Control Delay, s	0	0	0	0	30.3	30.3
HCM LOS	D	D	D	D	D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	435	-	-	899	-
HCM Lane V/C Ratio	0.592	0.482	-	-	-	-
HCM Control Delay (s)	48	20.7	-	-	0	-
HCM Lane LOS	E	C	-	-	A	-
HCM 95th %tile Q(veh)	3.3	2.6	-	-	0	-

2023 No-Build Wkdy AM Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	649	0	0	374	76	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1837	1805	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1837	1805	1615
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.78	0.78
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	713	0	0	411	97	227
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.8%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	649	0	0	374	76	177
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	78	78
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	713	0	0	411	97	227

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	713
Stage 1	-	-	713
Stage 2	-	-	411
Critical Hdwy	-	4.11	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.209	3.5
Pot Cap-1 Maneuver	-	892	229
Stage 1	-	-	489
Stage 2	-	-	674
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	892	229
Mov Cap-2 Maneuver	-	-	229
Stage 1	-	-	489
Stage 2	-	-	674

Control	EBT	EBR	WBL	WBT	NBL	NBR
HCM Control Delay, s	0	0	0	0	25	25
HCM LOS	D	D	D	D	D	D

Minor Lane/Minor Movement	NBL	NBR	EBT	EBR	WBL	WBT
Capacity (veh/h)	229	435	-	-	892	-
HCM Lane V/C Ratio	0.425	0.522	-	-	-	-
HCM Control Delay (s)	31.9	22	-	-	0	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	2	2.9	-	-	0	-

2023 No-Build Wkdy PM Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	702	0	0	599	155	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1818	1787	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1818	1787	1615
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	739	0	0	681	172	171
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.1%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 19

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	702	0	0	599	155	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	88	88	90	90
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	739	0	0	681	172	171

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	739
Stage 1	-	-	739
Stage 2	-	-	681
Critical Hdwy	-	4.1	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	-	2.2	3.509
Pot Cap-1 Maneuver	-	876	~ 151
Stage 1	-	-	474
Stage 2	-	-	504
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	876	~ 151
Mov Cap-2 Maneuver	-	-	~ 151
Stage 1	-	-	474
Stage 2	-	-	504

Approach	EB	WB	NB
HCM Control Delay, s	0	0	97.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	151	421	-	-	876	-
HCM Lane V/C Ratio	1.141	0.406	-	-	-	-
HCM Control Delay (s)	175.5	19.3	-	-	0	-
HCM Lane LOS	F	C	-	-	A	-
HCM 95th %tile Q(veh)	9.5	1.9	-	-	0	-

Notes

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

2023 No-Build Saturday Midday Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	718	0	0	546	112	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1837	1787	1599
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1837	1787	1599
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	789	0	0	593	122	223
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 8.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	718	0	0	546	112	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	789	0	0	593	122	223

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	789	0
Stage 1	-	-	789	-
Stage 2	-	-	593	-
Critical Hdwy	-	-	4.1	-
Critical Hdwy Stg 1	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-
Pot Cap-1 Maneuver	-	-	840	-
Stage 1	-	-	449	-
Stage 2	-	-	554	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	840	-
Mov Cap-2 Maneuver	-	-	159	-
Stage 1	-	-	449	-
Stage 2	-	-	554	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	44
HCM LOS			E

Minor Lane/Approach	NEB	NB	WB	WBT
Capacity (veh/h)	159	392	-	840
HCM Lane V/C Ratio	0.766	0.568	-	-
HCM Control Delay (s)	77.8	25.6	-	0
HCM Lane LOS	F	D	-	A
HCM 95th %ile Q(veh)	4.8	3.4	-	0

2023 Build Wkdy AM Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	676	0	0	382	81	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1837	1805	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1837	1805	1615
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.78	0.78
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	743	0	0	420	104	227
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.2%

ICU Level of Service A

Analysis Period (min) 15

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	676	0	0	382	81	177
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	78	78
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	743	0	0	420	104	227

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	743
Stage 1	-	-	743
Stage 2	-	-	420
Critical Hdwy	-	4.11	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.209	3.5
Pot Cap-1 Maneuver	-	869	217
Stage 1	-	-	474
Stage 2	-	-	667
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	869	217
Mov Cap-2 Maneuver	-	-	217
Stage 1	-	-	474
Stage 2	-	-	667

Approach	EB	WB	NB
HCM Control Delay, s	0	0	27.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	217	418	-	-	869	-
HCM Lane V/C Ratio	0.479	0.543	-	-	-	-
HCM Control Delay (s)	35.9	23.4	-	-	0	-
HCM Lane LOS	E	C	-	-	A	-
HCM 95th %ile Q(veh)	2.4	3.1	-	-	0	-

2023 Build Wkdy PM Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	736	0	0	631	169	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1818	1787	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1818	1787	1615
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	775	0	0	717	188	171
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.9%

ICU Level of Service A

Analysis Period (min) 15

Int Delay, s/veh	29
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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	736	0	0	631	169	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	88	88	90	90
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	775	0	0	717	188	171

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	775
Stage 1	-	-	775
Stage 2	-	-	717
Critical Hdwy	-	4.1	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	-	2.2	3.509
Pot Cap-1 Maneuver	-	850	~ 137
Stage 1	-	-	456
Stage 2	-	-	485
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	850	~ 137
Mov Cap-2 Maneuver	-	-	~ 137
Stage 1	-	-	456
Stage 2	-	-	485

Approach	EB	WB	NB
HCM Control Delay, s	0	0	149.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	137	401	-	-	850	-
HCM Lane V/C Ratio	1.371	0.427	-	-	-	-
HCM Control Delay (s)	266.9	20.5	-	-	0	-
HCM Lane LOS	F	C	-	-	A	-
HCM 95th %tile Q(veh)	12.1	2.1	-	-	0	-

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

2023 Build Saturday Midday Peak
7: Green Street & Merrimac Street

11/9/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Volume (vph)	772	0	0	590	135	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12
Satd. Flow (prot)	1837	0	0	1837	1787	1599
Flt Permitted					0.950	
Satd. Flow (perm)	1837	0	0	1837	1787	1599
Link Speed (mph)	30			30	30	
Link Distance (ft)	50			70	128	
Travel Time (s)	1.1			1.6	2.9	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	848	0	0	641	147	223
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.0%

ICU Level of Service B

Analysis Period (min) 15

2023 Build Saturday Midday Peak
7: Green Street & Merrimac Street

11/9/2016

Intersection

Int Delay, s/veh 16.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	772	0	0	590	135	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	848	0	0	641	147	223

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	848
Stage 1	-	-	848
Stage 2	-	-	641
Critical Hdwy	-	4.1	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	-	2.2	3.509
Pot Cap-1 Maneuver	-	798	~ 137
Stage 1	-	-	422
Stage 2	-	-	527
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	798	~ 137
Mov Cap-2 Maneuver	-	-	~ 137
Stage 1	-	-	422
Stage 2	-	-	527

Approach	EB	WB	NB
HCM Control Delay, s	0	0	81.7
HCM LOS			F


















Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	137	363	-	-	798	-
HCM Lane V/C Ratio	1.071	0.614	-	-	-	-
HCM Control Delay (s)	160.9	29.5	-	-	0	-
HCM Lane LOS	F	D	-	-	A	-
HCM 95th %tile Q(veh)	8.1	3.9	-	-	0	-

Notes

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

2023 Build Wkdy AM Peak w/Mitigation
7: Green Street & Merrimac Street













3/9/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	642	0	0	365	17	81	0	177	18	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	14	12
Satd. Flow (prot)	0	1833	0	0	1826	0	1805	0	1615	0	1802	0
Flt Permitted		0.966					0.950				0.975	
Satd. Flow (perm)	0	1774	0	0	1826	0	1805	0	1615	0	1802	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				227		120	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			675			128			108	
Travel Time (s)		1.4			15.3			2.9			2.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.78	0.78	0.78	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	742	0	0	420	0	104	0	227	0	43	0
Turn Type	Perm	NA			NA		Prot		Perm	Split	NA	
Protected Phases		4			8		5			6	6	
Permitted Phases	4								5			
Detector Phase	4	4			8		5		5	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0		4.0		4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0			21.0		18.0		18.0	13.0	13.0	
Total Split (s)	53.0	53.0			53.0		18.0		18.0	13.0	13.0	
Total Split (%)	53.0%	53.0%			53.0%		18.0%		18.0%	13.0%	13.0%	
Maximum Green (s)	48.0	48.0			48.0		13.0		13.0	8.0	8.0	
Yellow Time (s)	4.0	4.0			4.0		4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0			1.0		1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0		-1.0		-1.0	
Total Lost Time (s)		4.0			4.0		4.0		4.0		4.0	
Lead/Lag							Lead		Lead	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	
Recall Mode	Min	Min			Min		None		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		38.0			38.0		11.7		11.7		7.7	
Actuated g/C Ratio		0.55			0.55		0.17		0.17		0.11	
v/c Ratio		0.77			0.42		0.35		0.49		0.14	
Control Delay		23.4			14.3		37.4		10.1		1.0	
Queue Delay		0.0			0.0		0.0		0.0		0.0	
Total Delay		23.4			14.3		37.4		10.1		1.0	
LOS		C			B		D		B		A	
Approach Delay		23.4			14.3						1.0	
Approach LOS		C			B						A	
Queue Length 50th (ft)		206			87		36		0		0	
Queue Length 95th (ft)		#650			259		99		39		0	
Internal Link Dist (ft)		1			595			48			28	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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 (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	16%
Maximum Green (s)	12.0
Yellow Time (s)	3.5
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	20
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	

2023 Build Wkdy AM Peak w/Mitigation
7: Green Street & Merrimac Street

3/9/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1322			1362		427		555		376	
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		0.56			0.31		0.24		0.41		0.11	

Intersection Summary


















Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 69.7
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 19.3
 Intersection LOS: B
 Intersection Capacity Utilization 74.6%
 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: 7: Green Street & Merrimac Street

 05	 06	 04	 09
18 s	13 s	53 s	16 s
		 08	
		53 s	

2023 Build Wkdy PM Peak w/Mitigation
7: Green Street & Merrimac Street

3/9/2017













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	666	0	0	574	36	169	0	154	57	0	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	14	12
Satd. Flow (prot)	0	1827	0	0	1805	0	1787	0	1615	0	1844	0
Flt Permitted		0.739					0.950				0.976	
Satd. Flow (perm)	0	1357	0	0	1805	0	1787	0	1615	0	1844	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					4				171		100	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			675			128			156	
Travel Time (s)		1.4			15.3			2.9			3.5	
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.90	0.90	0.90	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	1%	2%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	775	0	0	693	0	188	0	171	0	142	0
Turn Type	Perm	NA			NA		Prot		Prot	Split	NA	
Protected Phases		4			8		5		5	6	6	
Permitted Phases	4											
Detector Phase	4	4			8		5		5	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0		4.0		4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0			21.0		11.0		11.0	11.0	11.0	
Total Split (s)	68.0	68.0			68.0		25.0		25.0	11.0	11.0	
Total Split (%)	56.7%	56.7%			56.7%		20.8%		20.8%	9.2%	9.2%	
Maximum Green (s)	63.0	63.0			63.0		20.0		20.0	6.0	6.0	
Yellow Time (s)	4.0	4.0			4.0		4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0			1.0		1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0		-1.0		-1.0	
Total Lost Time (s)		4.0			4.0		4.0		4.0		4.0	
Lead/Lag							Lead		Lead	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	
Recall Mode	None	None			None		None		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		64.6			64.6		16.3		16.3		7.0	
Actuated g/C Ratio		0.62			0.62		0.16		0.16		0.07	
v/c Ratio		0.91			0.61		0.67		0.43		0.65	
Control Delay		36.3			16.9		54.3		9.9		32.7	
Queue Delay		0.0			0.8		0.0		0.0		0.0	
Total Delay		36.3			17.6		54.3		9.9		32.7	
LOS		D			B		D		A		C	
Approach Delay		36.3			17.6						32.7	
Approach LOS		D			B						C	
Queue Length 50th (ft)		372			230		112		0		26	
Queue Length 95th (ft)		#950			554		223		62		80	
Internal Link Dist (ft)		1			595			48			76	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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 (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	13%
Maximum Green (s)	12.0
Yellow Time (s)	3.5
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	

2023 Build Wkdy PM Peak w/Mitigation

7: Green Street & Merrimac Street

3/9/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		847			1129		366		467		219	
Starvation Cap Reductn		0			180		0		0		0	
Spillback Cap Reductn		0			0		0		0		0	
Storage Cap Reductn		0			0		0		0		0	
Reduced v/c Ratio		0.91			0.73		0.51		0.37		0.65	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 103.4

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 28.9

Intersection LOS: C

Intersection Capacity Utilization 97.3%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.


















Splits and Phases: 7: Green Street & Merrimac Street

 05	 06	 04	 09
25 s	11 s	68 s	18 s
		 08	
		68 s	

2023 Build Saturday Midday Peak w/Mitigation

7: Green Street & Merrimac Street

3/9/2017













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	688	0	0	507	56	135	0	205	93	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	14	12
Satd. Flow (prot)	0	1827	0	0	1813	0	1787	0	1599	0	1852	0
Flt Permitted		0.748					0.950				0.974	
Satd. Flow (perm)	0	1374	0	0	1813	0	1787	0	1599	0	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8				223		100	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			675			128			78	
Travel Time (s)		1.4			15.3			2.9			1.8	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	848	0	0	612	0	147	0	223	0	202	0
Turn Type	Perm	NA			NA		Prot		Prot	Split	NA	
Protected Phases		4			8		5		5	6	6	
Permitted Phases	4								5			
Detector Phase	4	4			8		5		5	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0		4.0		4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0			21.0		16.0		16.0	13.0	13.0	
Total Split (s)	72.0	72.0			72.0		19.0		19.0	13.0	13.0	
Total Split (%)	60.0%	60.0%			60.0%		15.8%		15.8%	10.8%	10.8%	
Maximum Green (s)	67.0	67.0			67.0		14.0		14.0	8.0	8.0	
Yellow Time (s)	4.0	4.0			4.0		4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0			1.0		1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0		-1.0		-1.0	
Total Lost Time (s)		4.0			4.0		4.0		4.0		4.0	
Lead/Lag							Lead		Lead	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	
Recall Mode	Min	Min			Min		None		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		68.7			68.7		13.5		13.5		9.0	
Actuated g/C Ratio		0.62			0.62		0.12		0.12		0.08	
v/c Ratio		0.99			0.54		0.67		0.57		0.83	
Control Delay		52.6			16.1		64.1		12.7		54.7	
Queue Delay		0.0			0.7		0.0		0.0		0.0	
Total Delay		52.6			16.8		64.1		12.7		54.7	
LOS		D			B		E		B		D	
Approach Delay		52.6			16.8						54.7	
Approach LOS		D			B						D	
Queue Length 50th (ft)		460			189		92		0		67	
Queue Length 95th (ft)		#1031			437		#202		75		#197	
Internal Link Dist (ft)		1			595			48			1	

Lane Group		09
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
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 (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases		9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)		4.0
Minimum Split (s)		16.0
Total Split (s)		16.0
Total Split (%)		13%
Maximum Green (s)		12.0
Yellow Time (s)		3.5
All-Red Time (s)		0.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)		3.0
Recall Mode		None
Walk Time (s)		5.0
Flash Dont Walk (s)		11.0
Pedestrian Calls (#/hr)		20
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		

2023 Build Saturday Midday Peak w/Mitigation

7: Green Street & Merrimac Street

3/9/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		854			1130		245		411		244	
Starvation Cap Reductn		0			233		0		0		0	
Spillback Cap Reductn		0			0		0		0		0	
Storage Cap Reductn		0			0		0		0		0	
Reduced v/c Ratio		0.99			0.68		0.60		0.54		0.83	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.4

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 38.5

Intersection LOS: D

Intersection Capacity Utilization 97.6%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.










Splits and Phases: 7: Green Street & Merrimac Street

 05	 06	 04	 09
19 s	16 s	72 s	16 s
		 08	
		72 s	

Merrimac Street at the Waterfront Park Drive

2016 Existing Wkdy AM Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	54	731	324	17	20	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1814	1807	0	1795	0
Flt Permitted		0.997			0.977	
Satd. Flow (perm)	0	1814	1807	0	1795	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.81	0.81
Heavy Vehicles (%)	0%	1%	1%	0%	0%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	862	375	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	54	731	324	17	20	22
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	91	91	81	81
Heavy Vehicles, %	0	1	1	0	0	5
Mvmt Flow	59	803	356	19	25	27










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	375	0	1287
Stage 1	-	-	365
Stage 2	-	-	922
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1195	-	183
Stage 1	-	-	707
Stage 2	-	-	391
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1195	-	167
Mov Cap-2 Maneuver	-	-	167
Stage 1	-	-	707
Stage 2	-	-	356

Approach	EBL	EBT	WBT	WBR	SBL	SBR
HCM Control Delay, s	0.6	-	0	-	21	-
HCM LOS	-	-	-	-	C	-

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1195	-	-	-	276
HCM Lane V/C Ratio	0.05	-	-	-	0.188
HCM Control Delay (s)	8.2	0	-	-	21
HCM Lane LOS	A	A	-	-	C
HCM 95th %ile Q(veh)	0.2	-	-	-	0.7

2016 Existing Wkdy PM Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	63	717	515	11	42	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1829	1813	0	1839	0
Flt Permitted		0.996			0.977	
Satd. Flow (perm)	0	1829	1813	0	1839	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.86	0.86
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	821	597	0	104	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 84.2%

ICU Level of Service E

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	63	717	515	11	42	47
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	95	95	88	88	86	86
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	66	755	585	12	49	55










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	598	0	1478
Stage 1	-	-	591
Stage 2	-	-	887
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	989	-	140
Stage 1	-	-	557
Stage 2	-	-	406
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	989	-	124
Mov Cap-2 Maneuver	-	-	124
Stage 1	-	-	557
Stage 2	-	-	359

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	38.6
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	989	-	-	-	207
HCM Lane V/C Ratio	0.067	-	-	-	0.5
HCM Control Delay (s)	8.9	0	-	-	38.6
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	2.5

2016 Existing Saturday Midday Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	123	716	448	24	60	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1824	1824	0	1852	0
Flt Permitted		0.993			0.973	
Satd. Flow (perm)	0	1824	1824	0	1852	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	922	513	0	130	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 85.9%

ICU Level of Service E

Analysis Period (min) 15

2016 Existing Saturday MIDDAY Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 8.2

Movement	EBL	EBT	WBT	WBR	SBT	SBR
Vol, veh/h	123	716	448	24	60	50
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	92	92	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	135	787	487	26	71	59

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	513	0	1557
Stage 1	-	-	500
Stage 2	-	-	1057
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1063	-	125
Stage 1	-	-	613
Stage 2	-	-	337
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1063	-	97
Mov Cap-2 Maneuver	-	-	97
Stage 1	-	-	613
Stage 2	-	-	261

Approach










HCM Control Delay, s 1.3 0 90.2
HCM LOS F

Major Lane V/C Ratio

	EBL	EBT	WBT	WBR	SBT	SBR
Capacity (veh/h)	1063	-	-	-	156	-
HCM Lane V/C Ratio	0.127	-	-	-	0.83	-
HCM Control Delay (s)	8.9	0	-	-	90.2	-
HCM Lane LOS	A	A	-	-	F	-
HCM 95th %tile Q(veh)	0.4	-	-	-	5.5	-

2023 No-Build Wkdy AM Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	45	781	357	17	18	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1814	1808	0	1802	0
Flt Permitted		0.997			0.975	
Satd. Flow (perm)	0	1814	1808	0	1802	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.81	0.81
Heavy Vehicles (%)	0%	1%	1%	0%	0%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	907	411	0	43	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 76.7%

ICU Level of Service D

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	45	781	357	17	18	17
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	91	91	81	81
Heavy Vehicles, %	0	1	1	0	0	5
Mvmt Flow	49	858	392	19	22	21










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	411	0	1359
Stage 1	-	-	402
Stage 2	-	-	957
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1159	-	165
Stage 1	-	-	680
Stage 2	-	-	376
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1159	-	152
Mov Cap-2 Maneuver	-	-	152
Stage 1	-	-	680
Stage 2	-	-	346

Approach	EBL	WB	SB
HCM Control Delay, s	0.4	0	23.1
HCM LOS			C

Minor Lane V/C Ratio	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	1159	-	-	-	242	
HCM Lane V/C Ratio	0.043	-	-	-	0.179	
HCM Control Delay (s)	8.2	0	-	-	23.1	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %ile Q(veh)	0.1	-	-	-	0.6	

2023 No-Build Wkdy PM Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	93	763	542	36	57	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1827	1805	0	1844	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1827	1805	0	1844	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.86	0.86
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	901	657	0	132	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 92.7%

ICU Level of Service F

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 8.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	93	763	542	36	57	57
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	95	95	88	88	86	86
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	98	803	616	41	66	66










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	657	0	1635
Stage 1	-	-	636
Stage 2	-	-	999
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	940	-	112
Stage 1	-	-	531
Stage 2	-	-	359
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	940	-	91
Mov Cap-2 Maneuver	-	-	91
Stage 1	-	-	531
Stage 2	-	-	292

Approach	EB	WB	SB
HCM Control Delay, s	1	0	98.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	940	-	-	-	153	-
HCM Lane V/C Ratio	0.104	-	-	-	0.866	-
HCM Control Delay (s)	9.3	0	-	-	98.9	-
HCM Lane LOS	A	A	-	-	F	-
HCM 95th %tile Q(veh)	0.3	-	-	-	5.9	-

2023 No-Build Saturday Midday Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	167	753	463	56	93	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1820	1809	0	1852	0
Flt Permitted		0.991			0.974	
Satd. Flow (perm)	0	1820	1809	0	1852	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1011	564	0	202	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 96.6%

ICU Level of Service F

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 56.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	167	753	463	56	93	79
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	92	92	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	184	827	503	61	109	93

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	564	0	1729
Stage 1	-	-	534
Stage 2	-	-	1195
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1018	-	~ 98
Stage 1	-	-	592
Stage 2	-	-	290
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1018	-	~ 65
Mov Cap-2 Maneuver	-	-	~ 65
Stage 1	-	-	592
Stage 2	-	-	193

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	\$ 485.1
HCM LOS			F










Minor1	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	1018	-	-	-	109	
HCM Lane V/C Ratio	0.18	-	-	-	1.856	
HCM Control Delay (s)	9.3	0	-	-	\$ 485.1	
HCM Lane LOS	A	A	-	-	F	
HCM 95th %tile Q(veh)	0.7	-	-	-	16.3	

Notes

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

2023 Build Wkdy AM Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	45	810	365	17	18	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1814	1808	0	1802	0
Flt Permitted		0.997			0.975	
Satd. Flow (perm)	0	1814	1808	0	1802	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.81	0.81
Heavy Vehicles (%)	0%	1%	1%	0%	0%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	939	420	0	43	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 78.7%

ICU Level of Service D

Analysis Period (min) 15

2023 Build Wkdy AM Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	45	810	365	17	18	17
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	91	91	81	81
Heavy Vehicles, %	0	1	1	0	0	5
Mvmt Flow	49	890	401	19	22	21










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	420	0	1399
Stage 1	-	-	410
Stage 2	-	-	989
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1150	-	156
Stage 1	-	-	674
Stage 2	-	-	363
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1150	-	143
Mov Cap-2 Maneuver	-	-	143
Stage 1	-	-	674
Stage 2	-	-	333

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	24.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	229
HCM Lane V/C Ratio	0.043	-	-	-	0.189
HCM Control Delay (s)	8.3	0	-	-	24.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

2023 Build Wkdy PM Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	93	797	574	36	57	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1827	1805	0	1844	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1827	1805	0	1844	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.86	0.86
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	937	693	0	132	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 96.1%

ICU Level of Service F

Analysis Period (min) 15

2023 Build Wkdy PM Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection:

Int Delay, s/veh 10.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	93	797	574	36	57	57
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	95	95	88	88	86	86
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	98	839	652	41	66	66










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	693	0	1708
Stage 1	-	-	673
Stage 2	-	-	1035
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	912	-	101
Stage 1	-	-	511
Stage 2	-	-	345
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	912	-	81
Mov Cap-2 Maneuver	-	-	81
Stage 1	-	-	511
Stage 2	-	-	276

Approach	EB	WB	SB
HCM Control Delay, s	1	0	128.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	912	-	-	-	138
HCM Lane V/C Ratio	0.107	-	-	-	0.961
HCM Control Delay (s)	9.4	0	-	-	128.8
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	6.7

2023 Build Saturday Midday Peak
8: Merrimac Street & Driveway

11/9/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	167	807	507	56	93	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	14	12
Satd. Flow (prot)	0	1820	1813	0	1852	0
Flt Permitted		0.991			0.974	
Satd. Flow (perm)	0	1820	1813	0	1852	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		70	605		127	
Travel Time (s)		1.6	13.8		2.9	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1071	612	0	202	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 101.8%

ICU Level of Service G

Analysis Period (min) 15

2023 Build Saturday Midday Peak
8: Merrimac Street & Driveway

11/9/2016

Intersection

Int Delay, s/veh 73

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	167	807	507	56	93	79
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	92	92	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	184	887	551	61	109	93

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	612	0	1836
Stage 1	-	-	582
Stage 2	-	-	1254
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	977	-	~ 84
Stage 1	-	-	563
Stage 2	-	-	271
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	977	-	~ 53
Mov Cap-2 Maneuver	-	-	~ 53
Stage 1	-	-	563
Stage 2	-	-	170

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	\$ 671.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	977	-	-	-	90
HCM Lane V/C Ratio	0.188	-	-	-	2.248
HCM Control Delay (s)	9.5	0	-	-	\$ 671.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.7	-	-	-	18.2

Notes

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

State Street at Liberty Street

2016 Existing Wkdy AM Peak
12: Liberty Street & State Street

11/9/2016

	←	↖	↑	↗	→	↓
Lane Group	WB	WB	NB	SB	SB	SB
Lane Configurations	↖					↑↑
Volume (vph)	91	0	0	0	0	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.84	0.84	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	0	0	433
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 22.7%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
12: Liberty Street & State Street

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	91	0	0	0	0	398
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	108	0	0	0	0	433










Major/Minor	Minor1	Major2
Conflicting Flow All	216	0
Stage 1	0	-
Stage 2	216	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	727	-
Stage 1	-	-
Stage 2	772	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	727	-
Mov Cap-2 Maneuver	727	-
Stage 1	-	-
Stage 2	772	-

Approach	WB	SB
HCM Control Delay, s	-	0
HCM LOS	-	-

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

2016 Existing Wkdy PM Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	57	0	0	0	0	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3574
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3574
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.84	0.84	0.92	0.92	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	0	0	437
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.0%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
12: Liberty Street & State Street

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	57	0	0	0	0	363
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	92	92	83	83
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	68	0	0	0	0	437










Major/Minor	Minor1	Major2
Conflicting Flow All	219	0
Stage 1	0	-
Stage 2	219	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	724	-
Stage 1	-	-
Stage 2	769	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	724	-
Mov Cap-2 Maneuver	724	-
Stage 1	-	-
Stage 2	769	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLh1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

2016 Existing Saturday Midday Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	91	0	0	0	0	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.88	0.88	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	0	0	0	0	384
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.3%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
12: Liberty Street & State Street

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	91	0	0	0	0	346
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	92	92	90	90
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	103	0	0	0	0	384










Major/Minor	Minor1	Major2
Conflicting Flow All	192	0
Stage 1	0	-
Stage 2	192	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	756	-
Stage 1	-	-
Stage 2	797	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	756	-
Mov Cap-2 Maneuver	756	-
Stage 1	-	-
Stage 2	797	-

Approach	WB	SB
HCM Control Delay, s	-	0
HCM LOS	-	-

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

2023 No-Build Wkdy AM Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	98	0	0	0	0	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.84	0.84	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	0	0	0	0	464
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 23.9%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
12: Liberty Street & State Street

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	98	0	0	0	0	427
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	117	0	0	0	0	464










Major/Minor	Minor1	Major2
Conflicting Flow All	232	0
Stage 1	0	-
Stage 2	232	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	709	-
Stage 1	-	-
Stage 2	756	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	709	-
Mov Cap-2 Maneuver	709	-
Stage 1	-	-
Stage 2	756	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	SBL	SBTn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

2023 No-Build Wkdy PM Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	61	0	0	0	0	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3574
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3574
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.84	0.84	0.92	0.92	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	0	0	0	473
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.9%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak
12: Liberty Street & State Street

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	61	0	0	0	0	393
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	92	92	83	83
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	73	0	0	0	0	473

Major/Minor	Minor1	Major2
Conflicting Flow All	237	0
Stage 1	0	-
Stage 2	237	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	703	-
Stage 1	-	-
Stage 2	751	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	703	-
Mov Cap-2 Maneuver	703	-
Stage 1	-	-
Stage 2	751	-

ATIS/RTIS










HCM Control Delay, s 0

HCM LOS -

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %ile Q(veh)	-	-	-

2023 No-Build Saturday Midday Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	98	0	0	0	0	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.88	0.88	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	0	0	0	420
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 22.5%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
12: Liberty Street & State Street

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	98	0	0	0	0	378
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	92	92	90	90
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	111	0	0	0	0	420










Major/Minor	Minor1	Major2
Conflicting Flow All	210	0
Stage 1	0	-
Stage 2	210	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	734	-
Stage 1	-	-
Stage 2	778	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	734	-
Mov Cap-2 Maneuver	734	-
Stage 1	-	-
Stage 2	778	-

Approach	WB	SB
HCM Control Delay, s	-	0
HCM LOS	-	-

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

2023 Build Wkdy AM Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	98	0	0	0	0	434
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.84	0.84	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	0	0	0	0	472
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.1%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy AM Peak
12: Liberty Street & State Street

11/9/2016

Intersection	TP
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	98	0	0	0	0	434
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	117	0	0	0	0	472










Major/Minor	Minor1	Major2
Conflicting Flow All	236	0
Stage 1	0	-
Stage 2	236	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	704	-
Stage 1	-	-
Stage 2	752	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	704	-
Mov Cap-2 Maneuver	704	-
Stage 1	-	-
Stage 2	752	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Movement	WB	SB
Capacity (veh/h)	-	-
HCM Lane V/C Ratio	-	-
HCM Control Delay (s)	-	0
HCM Lane LOS	-	A
HCM 95th %tile Q(veh)	-	-

2023 Build Wkdy PM Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	61	0	0	0	0	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3574
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3574
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.84	0.84	0.92	0.92	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	0	0	0	487
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.2%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy PM Peak
12: Liberty Street & State Street

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	61	0	0	0	0	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	92	92	83	83
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	73	0	0	0	0	487










Major/Minor	Minor1	Major2
Conflicting Flow All	243	0
Stage 1	0	-
Stage 2	243	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	696	-
Stage 1	-	-
Stage 2	745	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	696	-
Mov Cap-2 Maneuver	696	-
Stage 1	-	-
Stage 2	745	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

2023 Build Saturday Midday Peak
12: Liberty Street & State Street

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (vph)	98	0	0	0	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1805	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	0	0	0	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	115		188			167
Travel Time (s)	2.6		4.3			3.8
Peak Hour Factor	0.88	0.88	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	0	0	0	441
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 23.1%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Saturday Midday Peak
12: Liberty Street & State Street

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	98	0	0	0	0	397
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	92	92	90	90
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	111	0	0	0	0	441

Major/Minor	Minor1	Major2
Conflicting Flow All	221	0
Stage 1	0	-
Stage 2	221	-
Critical Hdwy	7.5	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.5	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	721	-
Stage 1	-	-
Stage 2	767	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	721	-
Mov Cap-2 Maneuver	721	-
Stage 1	-	-
Stage 2	767	-








Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Winter Street at the Route 1 Southbound On-Ramp

2016 Existing Wkdy AM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	104	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1770
Flt Permitted						0.977
Satd. Flow (perm)	0	1900	0	0	0	1770
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	255
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.1%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	104	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	86	86
Heavy Vehicles, %	0	0	0	0	7	3
Mvmt Flow	0	0	0	0	121	134









Major/Minor	Minor1	Major2
Conflicting Flow All	376	0
Stage 1	0	-
Stage 2	376	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	585	-
Stage 1	-	-
Stage 2	649	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	585	-
Mov Cap-2 Maneuver	585	-
Stage 1	-	-
Stage 2	649	-

Approach	WBL	SBT
HCM Control Delay, s	0	-
HCM LOS	A	-

Minor/Approach/Type	WBL	SBT
Capacity (veh/h)	-	-
HCM Lane V/C Ratio	-	-
HCM Control Delay (s)	0	-
HCM Lane LOS	A	-
HCM 95th %tile Q(veh)	-	-

2016 Existing Wkdy PM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	159	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1827
Flt Permitted						0.971
Satd. Flow (perm)	0	1900	0	0	0	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	334
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 18.0%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	159	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	81	81
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	0	0	0	0	196	138









Major/Minor	Minor1	Major2
Conflicting Flow All	531	0
Stage 1	0	-
Stage 2	531	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	462	-
Stage 1	-	-
Stage 2	536	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	462	-
Mov Cap-2 Maneuver	462	-
Stage 1	-	-
Stage 2	536	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %ile Q(veh)	-	-	-

2016 Existing Saturday Midday Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	121	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1840
Flt Permitted						0.978
Satd. Flow (perm)	0	1900	0	0	0	1840
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	296
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.7%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	121	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	90	90
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	0	0	0	0	134	162









Major/Minor	Minor1	Major2
Conflicting Flow All	431	0
Stage 1	0	-
Stage 2	431	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	538	-
Stage 1	-	-
Stage 2	607	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	538	-
Mov Cap-2 Maneuver	538	-
Stage 1	-	-
Stage 2	607	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

2023 No-Build Wkdy AM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	112	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1770
Flt Permitted						0.977
Satd. Flow (perm)	0	1900	0	0	0	1770
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	273
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.0%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	112	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	86	86
Heavy Vehicles, %	0	0	0	0	7	3
Mvmt Flow	0	0	0	0	130	143









Major/Minor	Minor1	Major2
Conflicting Flow All	403	0
Stage 1	0	-
Stage 2	403	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	562	-
Stage 1	-	-
Stage 2	628	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	562	-
Mov Cap-2 Maneuver	562	-
Stage 1	-	-
Stage 2	628	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

2023 No-Build Wkdy PM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	172	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1829
Flt Permitted						0.972
Satd. Flow (perm)	0	1900	0	0	0	1829
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	364
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.3%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy PM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	172	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	81	81
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	0	0	0	0	212	152









Major/Minor	Minor1	Major2
Conflicting Flow All	577	0
Stage 1	0	-
Stage 2	577	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	431	-
Stage 1	-	-
Stage 2	506	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	431	-
Mov Cap-2 Maneuver	431	-
Stage 1	-	-
Stage 2	506	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

2023 No-Build Saturday Midday Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	134	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1840
Flt Permitted						0.978
Satd. Flow (perm)	0	1900	0	0	0	1840
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	328
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	134	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	90	90
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	0	0	0	0	149	179









Major/Minor	Minor1	Major2
Conflicting Flow All	477	0
Stage 1	0	-
Stage 2	477	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	502	-
Stage 1	-	-
Stage 2	573	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	502	-
Mov Cap-2 Maneuver	502	-
Stage 1	-	-
Stage 2	573	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

2023 Build Wkdy AM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	135	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1764
Flt Permitted						0.975
Satd. Flow (perm)	0	1900	0	0	0	1764
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	307
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.6%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy AM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	135	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	86	86
Heavy Vehicles, %	0	0	0	0	7	3
Mvmt Flow	0	0	0	0	157	150









Major/Minor	Minor1	Major2
Conflicting Flow All	464	0
Stage 1	0	-
Stage 2	464	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	512	-
Stage 1	-	-
Stage 2	582	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	512	-
Mov Cap-2 Maneuver	512	-
Stage 1	-	-
Stage 2	582	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

2023 Build Wkdy PM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	183	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1829
Flt Permitted						0.972
Satd. Flow (perm)	0	1900	0	0	0	1829
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	386
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 20.3% ICU Level of Service A
Analysis Period (min) 15

2023 Build Wkdy PM Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	183	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	81	81
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	0	0	0	0	226	160









Major/Minor	Minor1	Major2
Conflicting Flow All	612	0
Stage 1	0	-
Stage 2	612	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	408	-
Stage 1	-	-
Stage 2	484	-
Platoon blocked, %		-
Mov Cap-1 Maneuver	408	-
Mov Cap-2 Maneuver	408	-
Stage 1	-	-
Stage 2	484	-

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

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

2023 Build Saturday Midday Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	0	0	153	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1900	0	0	0	1838
Flt Permitted						0.977
Satd. Flow (perm)	0	1900	0	0	0	1838
Link Speed (mph)	30		30			30
Link Distance (ft)	64		115			225
Travel Time (s)	1.5		2.6			5.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	362
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.9%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Saturday Midday Peak
10: Winter Street & Route 1 SB On-Ramp

11/9/2016

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	0	0	153	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	90	90
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	0	0	0	0	170	192

Major/Minor	Minor1	Major2
Conflicting Flow All	532	0
Stage 1	0	-
Stage 2	532	-
Critical Hdwy	7.1	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	6.1	-
Follow-up Hdwy	3.5	-
Pot Cap-1 Maneuver	461	-
Stage 1	-	-
Stage 2	535	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	461	-
Mov Cap-2 Maneuver	461	-
Stage 1	-	-
Stage 2	535	-

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

















Minor Lane Major Lane	WBL	SBL	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Summer Street at the Route 1 Northbound Off-Ramp and Pleasant Street

2016 Existing Wkdy AM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	0	0	0	0	4	0	101	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1811	1900	0	0	0	1863	0	2132	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1811	1900	0	0	0	1863	0	2132	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.77	0.77	0.77	0.50	0.50	0.50	0.90	0.90	0.90	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	0	0	0	0	8	0	112	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.1%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	98	0	0	0	0	4	0	101	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	50	50	50	90	90	90	92	92	92
Heavy Vehicles, %	3	0	0	0	0	0	0	1	0	2	2	2
Mvmt Flow	127	0	0	0	0	8	0	112	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	112	112	0	112	112	112	0	0	0
Stage 1	0	0	-	112	112	-	-	-	-
Stage 2	112	112	-	0	0	-	-	-	-
Critical Hdwy	6.43	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	882	782	-	890	782	947	-	-	-
Stage 1	-	-	-	918	807	-	-	-	-
Stage 2	910	807	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	882	0	-	890	0	947	-	-	-
Mov Cap-2 Maneuver	882	0	-	890	0	-	-	-	-
Stage 1	-	0	-	918	0	-	-	-	-
Stage 2	910	0	-	-	0	-	-	-	-

















Major/Minor	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
HCM Control Delay, s	9.8	-	-	8.8	-	-	0	-	-
HCM LOS	A	-	-	A	-	-	-	-	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	882	-	947
HCM Lane V/C Ratio	-	-	-	0.144	-	0.008
HCM Control Delay (s)	0	-	-	9.8	0	8.8
HCM Lane LOS	A	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	-	0.5	-	0

2016 Existing Wkdy PM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	0	0	0	7	0	170	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.89	0.89	0.89	0.58	0.58	0.58	0.89	0.89	0.89	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	0	0	0	0	12	0	191	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.5%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	112	0	0	0	0	7	0	170	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	58	58	58	89	89	89	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	126	0	0	0	0	12	0	191	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	191	191	0	191	191	191	0	0	0
Stage 1	0	0	-	191	191	-	-	-	-
Stage 2	191	191	-	0	0	-	-	-	-
Critical Hdwy	6.4	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	803	708	-	803	708	856	-	-	-
Stage 1	-	-	-	846	746	-	-	-	-
Stage 2	846	746	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	803	0	-	803	0	856	-	-	-
Mov Cap-2 Maneuver	803	0	-	803	0	-	-	-	-
Stage 1	-	0	-	846	0	-	-	-	-
Stage 2	846	0	-	-	0	-	-	-	-

















Approach	EB	WB	NB
HCM Control Delay, s	10.3	9.3	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	803	-	856
HCM Lane V/C Ratio	-	-	-	0.157	-	0.014
HCM Control Delay (s)	0	-	-	10.3	0	9.3
HCM Lane LOS	A	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.6	-	0

2016 Existing Saturday Midday Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	0	0	0	0	5	0	189	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.89	0.89	0.89	0.42	0.42	0.42	0.84	0.84	0.84	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	0	0	0	0	12	0	225	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.8%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Saturday Midday Peak
11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	118	0	0	0	0	5	0	189	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	42	42	42	84	84	84	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	133	0	0	0	0	12	0	225	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	225	225	0	225	225	225	0	0	0
Stage 1	0	0	-	225	225	-	-	-	-
Stage 2	225	225	-	0	0	-	-	-	-
Critical Hdwy	6.4	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	768	678	-	768	678	819	-	-	-
Stage 1	-	-	-	817	721	-	-	-	-
Stage 2	817	721	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	768	0	-	768	0	819	-	-	-
Mov Cap-2 Maneuver	768	0	-	768	0	-	-	-	-
Stage 1	-	0	-	817	0	-	-	-	-
Stage 2	817	0	-	-	0	-	-	-	-

















Approach	EB	WB	NB
HCM Control Delay, s	10.7	9.5	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	768	-	819
HCM Lane V/C Ratio	-	-	-	0.173	-	0.015
HCM Control Delay (s)	0	-	-	10.7	0	9.5
HCM Lane LOS	A	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.6	-	0

2023 No-Build Wkdy AM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	0	0	0	0	4	0	109	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1811	1900	0	0	0	1863	0	2132	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1811	1900	0	0	0	1863	0	2132	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.77	0.77	0.77	0.50	0.50	0.50	0.90	0.90	0.90	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	0	0	0	0	8	0	121	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.9%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Wkdy AM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	105	0	0	0	0	4	0	109	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	50	50	50	90	90	90	92	92	92
Heavy Vehicles, %	3	0	0	0	0	0	0	1	0	2	2	2
Mvmt Flow	136	0	0	0	0	8	0	121	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	121	121	0	121	121	121	0	0	0
Stage 1	0	0	-	121	121	-	-	-	-
Stage 2	121	121	-	0	0	-	-	-	-
Critical Hdwy	6.43	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	872	773	-	879	773	936	-	-	-
Stage 1	-	-	-	909	800	-	-	-	-
Stage 2	902	800	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	872	0	-	879	0	936	-	-	-
Mov Cap-2 Maneuver	872	0	-	879	0	-	-	-	-
Stage 1	-	0	-	909	0	-	-	-	-
Stage 2	902	0	-	-	0	-	-	-	-

















Approach	EB	WB	NB
HCM Control Delay, s	9.9	8.9	0
HCM LOS	A	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	872	-	936
HCM Lane V/C Ratio	-	-	-	0.156	-	0.009
HCM Control Delay (s)	0	-	-	9.9	0	8.9
HCM Lane LOS	A	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	-	0.6	-	0

2023 No-Build Wkdy PM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	0	0	0	0	8	0	186	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.89	0.89	0.89	0.58	0.58	0.58	0.89	0.89	0.89	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	0	0	0	0	14	0	209	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.0%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	124	0	0	0	0	8	0	186	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	58	58	58	89	89	89	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	139	0	0	0	0	14	0	209	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	209	209	0	209	209	209	0	0	0
Stage 1	0	0	-	209	209	-	-	-	-
Stage 2	209	209	-	0	0	-	-	-	-
Critical Hdwy	6.4	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	784	692	-	784	692	836	-	-	-
Stage 1	-	-	-	831	733	-	-	-	-
Stage 2	831	733	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	784	0	-	784	0	836	-	-	-
Mov Cap-2 Maneuver	784	0	-	784	0	-	-	-	-
Stage 1	-	0	-	831	0	-	-	-	-
Stage 2	831	0	-	-	0	-	-	-	-

Control	EBL	WBL	NBL
HCM Control Delay, s	10.6	9.4	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	784	-	836
HCM Lane V/C Ratio	-	-	-	0.178	-	0.016
HCM Control Delay (s)	0	-	-	10.6	0	9.4
HCM Lane LOS	A	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.6	-	0.1

2023 No-Build Saturday Midday Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

	↖	→	↘	↙	←	↗	↘	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	GBL	GST	GBR
Lane Configurations	↖	↑				↑	↑					
Volume (vph)	132	0	0	0	0	5	0	209	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.89	0.89	0.89	0.42	0.42	0.42	0.84	0.84	0.84	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	148	0	0	0	0	12	0	249	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.6%

ICU Level of Service A

Analysis Period (min) 15

2023 No-Build Saturday Midday Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	132	0	0	0	0	5	0	209	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	42	42	42	84	84	84	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	148	0	0	0	0	12	0	249	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	249	249	0	249	249	249	0	0	0
Stage 1	0	0	-	249	249	-	-	-	-
Stage 2	249	249	-	0	0	-	-	-	-
Critical Hdwy	6.4	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	744	657	-	744	657	795	-	-	-
Stage 1	-	-	-	797	704	-	-	-	-
Stage 2	797	704	-	-	-	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	744	0	-	744	0	795	-	-	-
Mov Cap-2 Maneuver	744	0	-	744	0	-	-	-	-
Stage 1	-	0	-	797	0	-	-	-	-
Stage 2	797	0	-	-	0	-	-	-	-

















Approach	EB	WB	NB
HCM Control Delay, s	11	9.6	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	744	-	795
HCM Lane V/C Ratio	-	-	-	0.199	-	0.015
HCM Control Delay (s)	0	-	-	11	0	9.6
HCM Lane LOS	A	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.7	-	0

2023 Build Wkdy AM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	0	0	0	0	4	0	112	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1811	1900	0	0	0	1863	0	2132	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1811	1900	0	0	0	1863	0	2132	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.77	0.77	0.77	0.50	0.50	0.50	0.90	0.90	0.90	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	0	0	0	0	8	0	124	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 25.4%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy AM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	111	0	0	0	0	4	0	112	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	50	50	50	90	90	90	92	92	92
Heavy Vehicles, %	3	0	0	0	0	0	0	1	0	2	2	2
Mvmt Flow	144	0	0	0	0	8	0	124	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	124	124	0	124	124	124	0	0	0
Stage 1	0	0	-	124	124	-	-	-	-
Stage 2	124	124	-	0	0	-	-	-	-
Critical Hdwy	6.43	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	869	770	-	876	770	932	-	-	-
Stage 1	-	-	-	907	797	-	-	-	-
Stage 2	899	797	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	869	0	-	876	0	932	-	-	-
Mov Cap-2 Maneuver	869	0	-	876	0	-	-	-	-
Stage 1	-	0	-	907	0	-	-	-	-
Stage 2	899	0	-	-	0	-	-	-	-

















Approach	EB	WB	NB
HCM Control Delay, s	10	8.9	0
HCM LOS	B	A	

Minor Approach	EBL	NBT	NBR	EBL	EBT	WBL
Capacity (veh/h)	-	-	-	869	-	932
HCM Lane V/C Ratio	-	-	-	0.166	-	0.009
HCM Control Delay (s)	0	-	-	10	0	8.9
HCM Lane LOS	A	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.6	-	0

2023 Build Wkdy PM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	0	0	0	0	8	0	195	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.89	0.89	0.89	0.58	0.58	0.58	0.89	0.89	0.89	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	169	0	0	0	0	14	0	219	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.9%

ICU Level of Service A

Analysis Period (min) 15

2023 Build Wkdy PM Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Vol, veh/h	150	0	0	0	0	8	0	195	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	58	58	58	89	89	89	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	169	0	0	0	0	14	0	219	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	219	219	0	219	219	219	0	0	0
Stage 1	0	0	-	219	219	-	-	-	-
Stage 2	219	219	-	0	0	-	-	-	-
Critical Hdwy	6.4	6.5	-	6.4	6.5	6.2	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	3.5	4	3.3	-	-	-
Pot Cap-1 Maneuver	774	683	-	774	683	826	-	-	-
Stage 1	-	-	-	822	726	-	-	-	-
Stage 2	822	726	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	774	0	-	774	0	826	-	-	-
Mov Cap-2 Maneuver	774	0	-	774	0	-	-	-	-
Stage 1	-	0	-	822	0	-	-	-	-
Stage 2	822	0	-	-	0	-	-	-	-

















Approach	EB	WB	NB
HCM Control Delay, s	10.9	9.4	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1
Capacity (veh/h)	-	-	-	774	-	826
HCM Lane V/C Ratio	-	-	-	0.218	-	0.017
HCM Control Delay (s)	0	-	-	10.9	0	9.4
HCM Lane LOS	A	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.8	-	0.1

2023 Build Saturday Midday Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	0	0	0	0	5	0	222	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	16	12	16	12	12	12	12
Satd. Flow (prot)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	1865	1900	0	0	0	1863	0	2153	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		62			61			278			164	
Travel Time (s)		1.4			1.4			6.3			3.7	
Peak Hour Factor	0.89	0.89	0.89	0.42	0.42	0.42	0.84	0.84	0.84	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	0	0	0	0	12	0	264	0	0	0	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.6%
Analysis Period (min)	15
	ICU Level of Service A

2023 Build Saturday Midday Peak

11: Route 1 NB Off-Ramp/Pleasant Street & Summer Street

11/9/2016

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	155	0	0	0	0	5	0	222	0	0	0	0
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	0	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	42	42	42	84	84	84	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	174	0	0	0	0	12	0	264	0	0	0	0

Major/Minor	Minor2	Minor1	Major	Minor	Major	Minor	Major	Minor	Major	Minor	Major	Minor
Conflicting Flow All	264	264	0	264	264	264	0	0	0	0	0	0
Stage 1	0	0	-	264	264	-	-	-	-	-	-	-
Stage 2	264	264	-	0	0	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	-	6.4	6.5	6.2	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	3.5	4	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	729	645	-	729	645	780	-	-	-	-	-	-
Stage 1	-	-	-	785	694	-	-	-	-	-	-	-
Stage 2	785	694	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	729	0	-	729	0	780	-	-	-	-	-	-
Mov Cap-2 Maneuver	729	0	-	729	0	-	-	-	-	-	-	-
Stage 1	-	0	-	785	0	-	-	-	-	-	-	-
Stage 2	785	0	-	-	0	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	11.5	9.7	0
HCM LOS	B	A	

Minor Lane/Map Flow	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	-	-	-	729	-	780	-	-	-
HCM Lane V/C Ratio	-	-	-	0.239	-	0.015	-	-	-
HCM Control Delay (s)	0	-	-	11.5	0	9.7	-	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	0.9	-	0	-	-	-