# *MEMORANDUM*

**DATE:** **April 17, 2014**

**TO:** **Boston Region Metropolitan Planning Organization (MPO)**

**FROM:** **Chen-Yuan Wang, MPO Staff**

**RE:** **Routes 127A/127 Subregional Priority Roadway Study in Gloucester and Rockport**

## 1 INTRODUCTION

The study corridor comprises Route 127A in Gloucester and Rockport, Route 127 from Route 127A in Rockport to Grant Circle on Route 128 in Gloucester, and major roadways in downtown Rockport. It is one of two corridors selected for analysis as part of a larger study funded by the Boston Region MPO: Addressing Safety, Mobility, and Access on Subregional Priority Roadways.[1]

This memorandum summarizes the existing conditions and issues, roadway operations and safety analyses, and proposes improvements for the entire corridor and specific locations. It contains the following sections:

1. Introduction
2. Existing Conditions and Issues
3. Safety and Operations Analyses
4. Proposed Improvements
5. Summary and Recommendations

This memorandum also includes appendices that contain relevant technical data and methods applied in the study.

## 1.1 Background

During the MPO's outreach process for developing the Unified Planning Work Program (UPWP) and Long-Range Transportation Plan (LRTP), Metropolitan Area Planning Council (MAPC) subregional groups and other entities submit comments and identify transportation issues that concern them. Often, these issues are related to bicycle, pedestrian, and freight accommodation, bottlenecks, safety, or lack of safe or convenient access for abutters along

[1] The study's work program was approved on December 6, 2012. The other selected corridor is Route 3A in Cohasset and Scituate, whose findings are reported in a separate memorandum.

roadway corridors. In addition to affecting mobility and safety, such issues also can influence livability, including economic development and air quality.

To address these kinds of concerns, this study was included in the federal fiscal year (FFY) 2013 UPWP.[2] The purpose of this study was to identify roadway segments in the MPO region that concern subregional groups but that have not been identified in the LRTP regional needs assessment.

This study focusses on issues identified by relevant subregional groups and the recommendations developed to address them. In addition to mobility, safety, and access, the study considers transit feasibility, truck issues, bicycle and pedestrian transportation, preservation, and other topics.

## 1.2 Selection Procedure

The MPO used a comprehensive procedure to select the study location. First, staff identified potential study locations via various means: soliciting suggestions during the outreach process for the FFY 2014 UPWP; reviewing meeting records from the UPWP outreach process for the past-five years; appraising potential locations in the MPO's LRTP Priority Corridors study; and monitoring roadways in the MPO's Congestion Management Process (CMP) program.

MPO staff identified 20 potential study locations in the MPO region. Staff then assembled detailed data on the identified roadways and evaluated them according to five selection criteria:

- *Safety Conditions:* Location has a high crash rate for its functional class or contains areas with a high number of crashes or a significant number of pedestrian/bicycle crashes
- *Multimodal Significance:* Location supports transit, bicycle, or pedestrian activity or has an implementation project to support one or more of these activities
- *Subregional Significance:* Location carries a significant proportion of subregional vehicle, bicycle, or pedestrian traffic[3]
- *Subregional Priority:* Location is endorsed by a subregion and is a priority for that subregion

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[2] Boston Region Metropolitan Planning Organization, Unified Planning Work Program, Federal Fiscal Year 2013, Endorsed by the Boston Region Metropolitan Planning Organization on June 28, 2012.

[3] Geographic equity among subregions also was considered in this criterion.

- *Implementation Potential:* Location is proposed by the roadway agency or related agencies that have identified prospective funding resources for design and implementation

The Boston Region MPO selected and approved two roadway corridors for study:[4]

- Routes 127A/127 in Gloucester and Rockport (also known as the "Cape Ann Loop" by bicyclists)
- Route 3A in Cohasset and Scituate (from the Massachusetts Bay Transportation Authority (MBTA) commuter rail station in Cohasset to Henry Turner Bailey Road in Scituate)

The section of Routes 127A/127 in Gloucester and Rockport is a part of the 90-mile state-designated Essex Coastal Scenic Byway. The Essex National Heritage Commission (ENHC) and the North Shore Task Force subregion proposed three roadway sections in the byway system for review and potential improvements—for all users, with emphasis on pedestrian and bicycle safety and accommodations. This corridor was regarded as the highest priority among the three proposed sections.[5] (See Appendix A for a description of Essex Coastal Scenic Byway and a map of the designated byway system.)

## 1.3 Study Objectives

The objectives of this study are to:

- Identify the safety, mobility, access, and other transportation-related problems in the corridor
- Develop and evaluate potential multimodal—pedestrian, bicycle, trucks, and transit modes—transportation solutions to the problems

## 1.4 Study Area and Data Collection

The study corridor is about 16 miles long, and consists of three sections:

- Route 127A from Route 128 in Gloucester to Route 127 (Main Street) in Rockport
- Route 127 from Route 127A (Broadway) in Rockport to Route 128 (Grant Circle) in Gloucester
- Major Roadways in downtown Rockport:

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[4] *Selection of Study Locations: Addressing Safety, Mobility, and Access on Subregional Priority Roadways*, Memorandum to Boston Region MPO, Chen-Yuan Wang, February 7, 2013.

[5] The other two proposed roadways were Route 127 from Beverley to Gloucester and Route 133 from Gloucester to Ipswich.

- Mount Pleasant Street from Broadway to Main Street
- Main Street from Mount Pleasant Street to Broadway[6]
- Beach Street from Main Street to Granite Street

The sections of Route 127A and Route 127 are under the jurisdiction of the City of Gloucester or the Town of Rockport, depending on their specific locations. The major roadways in downtown Rockport are under the jurisdiction of the Town. Massachusetts Department of Transportation (MassDOT) Highway Division District 4 oversees the development and maintenance of the state routes in the area.

With the assistance of MassDOT, Gloucester, and Rockport, MPO staff collected roadway traffic counts, speed data, and intersection turning movement counts (including pedestrian crossings, bicycle movements, and heavy-vehicle counts) at a number of selected locations; they also gathered relevant transportation and land use data in the areas adjacent to the study corridor.

## 1.5 Study Advisory Meetings

During the course of the study, MPO staff conducted three meetings with representatives from Gloucester, Rockport, MassDOT, MAPC, and ENHC. The first two meetings—held in Gloucester on April 4, 2013 and Rockport on May 22, 2013—introduced and coordinated the study, and discussed the concerns about the study corridor. The third and final meeting—held in Rockport Town Hall on February 10, 2014—presented findings from data analyses and reviewed the proposed improvements.

On May 3, 2103, the Gloucester Community Development Department led a bicycle tour of the study corridor to examine roadway conditions for cycling and to discuss various transportation issues on site. (See Appendix B for a list of participants in the three advisory meetings and bicycle tour.)

# 2 EXISTING CONDITIONS AND ISSUES

This section examines the corridor's location; adjacent major transportation roadway configurations and facilities; adjacent land uses; and observed traffic, pedestrian, and bicycle conditions. It also summarizes issues and concerns raised in the study advisory meetings.

[6] Broadway is another major roadway in downtown Rockport and is included in the Route 127A section of this study.

## 2.1 Study Corridor and Major Transportation Facilities in the Area

Cape Ann—which includes the city of Gloucester, and the towns of Essex, Manchester-by-the-Sea, and Rockport—is located about 30 miles northeast of Boston on the Atlantic Ocean. The study corridor is basically a circular route, the Cape Ann Loop, around "The Island" of Cape Ann.[7]

Route 127 is a major state route in the North Shore area, which runs east along the shore from Beverley Harbor, through Manchester-by-the-Sea, to downtown Gloucester. It then turns north, away from the shore, crosses Route 128, and continues into Rockport. At the "Five-Corner" intersection[8], Route 127 veers northwest near the shore, passes the MBTA commuter rail station, Rowe's Cove, Pigeon Cove, and Halibut Point State Park, and bends southward, re-entering Gloucester. It then runs along Rowley Shore and the banks of the Annisquam and Mill Rivers and ends at Grant Circle (Route 128).

Route 127A is a north–south state route that runs from Route 127 (Eastern Avenue) in Gloucester to Route 127 (Main Street) in Rockport. It serves as a coastal alternative to the Route 127 inland section (from downtown Gloucester to the Five-Corner intersection in Rockport) on "The Island."

Figure 1 shows the location of the study corridor and major transportation facilities in the area. The 16-mile corridor consists of about 9.5 miles of Route 127, about 5.5 miles of Route 127A, and about 1.0 miles of major roadways in downtown Rockport. About half of the selected roadways are located in Gloucester and the other half in Rockport.

All of the study-corridor roadways are classified as urban minor arterials. Besides two principal arterials on the Island, Route 128 and the inland section of Route 127, these roadways are significant to the area's residents and businesses.

They all have two lanes and are undivided (one travel lane in each direction with no median). Each travel lane is about 12 feet wide, with a shoulder of two feet or less. Most of the roadways have sidewalks on one side (usually the coastal side) and some have sidewalks on both sides (such as the streets in downtown Rockport). However, a substantial section of Route127A (Thatcher Road) and another section of Route 127 (Granite Street/Washington Street) have no sidewalks on either side. No bike lanes exist on the study corridor roadways.

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[7] At the end of Cape Ann, the Annisquam River splits Gloucester into two parts: East and West Gloucester. Local residents refer to the land east of the Annisquam River (East Gloucester and Rockport) as "The Island."

[8] The intersection of Main Street, Broadway, Railroad Avenue, and Parker Street has five legs. It is the most traveled intersection in Rockport and locally known as the "Five-Corner" intersection.

The MBTA Rockport commuter rail line is the major regional transit service for commuters to and from Boston and communities along the line, and for people visiting the area. The commuter rail runs parallel to Route 127 in the middle of the "island" with two stops: Gloucester Station and Rockport Station. Gloucester Station has 96 parking spaces, with a parking rate of $4.00 per day. Rockport Station has 140 parking spaces, with no charge for parking. Commuters usually can find a parking space at the two stations. In summer, the MBTA provides a "bicycle coach" on the line so that riders may carry their bikes with them.

Locally, the Cape Ann Transportation Authority (CATA) provides bus services along the major roadways in the area.[9] Major bus routes that serve the study area include:

- *Thatcher Road Route (Red Line):* Downtown Gloucester and Rockport via East Gloucester, Rocky Neck, and Back Shore
- *Rockport Express (Green Line):* Downtown Gloucester and Rockport via Eastern Avenue
- *Lanesville Route (Blue Line):* Downtown Gloucester and Rockport via Lanesville
- *Rockport Park & Ride Loop (seasonal):* Blue Gate Meadows Parking Lot to Dock Square
- *Gloucester Crossing and Business Express Loop (Orange Line):* Gloucester Senior Center to Mill Pond Medical Center via Addison Gilbert Hospital and Blackburn Industrial Park

These routes run five to ten trips each way on weekdays and four-to-eight trips on Saturdays; except for the Rockport Park & Ride Loop, which operates daily in July and August, Saturday and Sundays in June and September, and on a few special days in May and October. (Please see Appendix C for details of CATA service routes and schedules.)

## 2.2 Adjacent Land Use and Developments

In general, adjacent land use on Route 127A and Route 127 is mainly residential; though mainly commercial and institutional in downtown Rockport. There are some variations of land use and development density given the roadway locations and surrounding natural environment. Existing land use and developments are summarized below.

[9] CATA is a nonprofit transit service for the Cape Ann area, with additional service to the Danvers and Peabody Malls, and Ipswich, Essex, and Beverly.

### Route 127A in Gloucester

- *Bass Avenue*: Medium-to-high density residential developments and extensive business developments
- *Thatcher Road*: Low-to-medium density residential and a few business developments near Witham Street and Rockport Street
- *Good Harbor Beach*: Located on the south side between Barn Lane and Witham Street

### Route 127A in Rockport

- *Thatcher Road*: Low-density single-family residential developments and vacant woodlands
- *South Street*: Mostly single-family houses with scattered woodlands
- *Mount Pleasant Street*: Fully developed medium-density residential areas

### Major Roadways in Downtown Rockport

- *Mt. Pleasant Street and Main Street*: Souvenir shops, bakeries, restaurants, art galleries, and retail stores located on both sides
- *Broadway*: Mainly institutional developments (Town Hall, Town Library, Town Fire Station, and churches), with Rockport Market and a few stores
- *Main Street (south of Beach Street)*: Medium-to-high density residential developments
- *Beach Street*: A number of small houses and a hotel
- *Shalin Liu Performance Center*: At the intersection of Main Street and School Street
- *Bearskin Neck, adjacent to Dock Square (the junction of Mt. Pleasant Street and Main Street*): A popular spot for viewing the ocean and coastal landscape
- *Beach Street*: Front and back beaches
- *Barletts Park and Harvey Park (Broadway at Mt. Pleasant Street):* Small town greens

### Route 127 in Rockport

- *Railroad Avenue*: Medium-density residential developments, with local businesses
- *MBTA Rockport Station*: South side near King Street

- *Granite Street:* Low-to-medium density residential developments (mostly single-family houses), with a few restaurants on the north side near the Gloucester city line

Route 127 in Gloucester

- *Washington Street (from Rockport border to Langsford Stree*t): Low-density single-family residential developments and woodlands
- *Langsford Street*: Mostly low-to-medium density residential developments and two cemeteries (near eastern leg of Washington Street)
- *Lanesville Village Center*: Local business and high-density residential districts
- *Washington Street from Langsford Street to Holly Street*: Mostly single-family houses, with scattered open spaces
- *Washington Street from Holly Street to Route* 128: Low-to-medium residential developments, with increasing density as roadway approaches Route 128

No major large-scale business developments are expected in the study corridor in the near future, as the city and town generally constrain these on Route 128 and the inland section of Route 127. The only anticipated major development is the old Cape Ann Tool Company on Granite Street (Route 127). The area's potential land use would be townhouses or multiple residential units with limited businesses. (See Appendices D and E for the current zoning maps for Gloucester and Rockport.)

Beyond the roadside developments, an abundance of open space—sandy beaches, inlets, rocky shores, swamplands, ponds, coastal woods, nature trails, hilly woods, tranquil quarries—flanks Routes 127A and 127. (See Appendix F, the Cape Ann Trail Map (produced by MAPC).)

## 2.3 Traffic Volumes, Pedestrians, and Bicycles

The study area is a popular tourist destination for beaches and sightseeing. Traffic, pedestrians, and bicycles increase significantly from May to October, especially on weekend days and holidays from late June to early September.

### *2.3.1 Traffic Volumes*

According to study advisory members, traffic at most locations in the study corridor generally moves well on weekdays, except at the Five-Corner intersection in the evening peak hour. However, during peak tourism hours on Saturdays and Sundays (usually around noontime), roadways are congested at popular destinations, such as the areas adjacent to Good Harbor Beach and

the roadways and intersections in downtown Rockport. The congestion start time and duration differ somewhat from location to location.

In order to estimate the effect of tourism on traffic, MPO staff requested MassDOT's assistance in collecting traffic counts for a series of weekend and weekdays in the summer peak season. The counts were performed from July 10 to 14, 2013, at 14 selected locations.

Figure 2 shows two sets of estimated traffic volumes, one for an average weekday and one for an average summer weekend day, by direction.[10] The figure also shows average daily traffic (total of both directions) on Route 128 and the inland section of Route 127—from the MassDOT Roadway Inventory database.[11]

Depending upon their locations, the roadways in the study corridor carry about 3,000-to-13,500 vehicles per average weekday, and about 3,500-to-14,000 vehicles per summer weekend day. Comparisons of the average weekday and summer weekend day traffic volumes indicate that summer weekend daily traffic increases about 20-to-30 percent at most locations in the corridor. Notably, summer daily traffic increases about 40-to-50 percent on the major roadways in downtown Rockport and nearly 100 percent on Route 127A at the Good Harbor Beach.[12] Appendix G summarizes the traffic volume estimations and comparisons at the count location.

Staff also analyzed traffic volumes by hours of the day. Figure 3 shows the peak-hour traffic volumes for average weekdays and summer weekend days.

The weekday peak hour occurs from 3:00 to 6:00 PM, and the summer weekend peak hour is generally between 11:00 AM to 2:00 PM. Analysis indicates that summer weekend daily traffic increases about 15-to-30 percent at most locations in the corridor. Notably, summer peak-hour traffic increases about 40-to-60 percent on Route 127 at the Good Harbor Beach and about 30-to-80 percent on the major roadways in downtown Rockport. (See Appendix G for a summary of estimated traffic volumes.)

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[10] Staff estimated the average weekday traffic by averaging the counts on July 10 (Wednesday) to July 12 (Friday) and adjusting them with seasonal factors to represent average annual weekday traffic. Staff estimated the average weekend day traffic by averaging the counts on July 13 (Saturday) and July 14 (Sunday) to represent average weekend day traffic in the peak summer season.

[11] Summer traffic data and directional information are not available from the database.

[12] The increase on Route 127A at Good Harbor Beach could be overestimated. Field observations indicated that during peak hours, visitors often queued on Route 127A waiting to enter the beach parking lot; or they drove back and forth looking for other places nearby to park their cars.

In addition to the roadway traffic counts, MassDOT collected turning movement counts at six selected intersections for this study, which are:

1. Route 127A (Thatcher Road/Bass Avenue) at Atlantic Road in Gloucester
2. Route 127A (Thatcher Road) at Barn Lane in Gloucester
3. Route 127A (Thatcher Road) at Witham Street in Gloucester
4. Route 127A (Mt. Pleasant Street/Broadway) at T-Wharf in Rockport
5. Dock Square (Mt. Pleasant St. at Main Street) in Rockport
6. Route 127 (Washington Street) at Stanwood Street in Gloucester

The counts were performed on Saturday, July 13, 2013 from 10:00 AM to 2:00 PM. Counts by various modes, including pedestrians, bicycles, and heavy vehicles, were collected. (Appendix H presents the data in 15-minute intervals at the six selected locations. Appendix I presents a summary of the counts by mode by hour, with the peak hour highlighted in yellow in the summary table.)

It is essential to examine the proportion of heavy-vehicle (truck and bus) traffic in a corridor, as an unusually high share of these may seriously affect roadway and intersection operations. The counts indicate that the corridor's heavy vehicles comprised about 1.0 to 1.5 percent of total traffic on the count date—a summertime weekend day. (See Appendix I for heavy-vehicle percentage summarized by hour.)

According to the study advisory members from Gloucester and Rockport, heavy-vehicle traffic may be slightly higher on weekdays than on weekend days. However, it is in the similar range of about two percent or less, as the area's heavy vehicles generally use Route 128 and the inland section of Route 127 as their major routes. This percentage is considered normal, or even slightly lower, than that of some urban minor arterials.

### *2.3.2 Pedestrians*

Based on the pedestrian crossing counts collected by MassDOT, Figure 4 shows the highest hourly pedestrian crossings at the major intersections between 10:00 AM and 2:00 PM on Saturday, July 13, 2103.[13] For contrast, the figure also shows traffic movement counts at the major intersections during the peak pedestrian crossing hour.

[13] In addition to the MassDOT counts, the figure includes counts at the Five-Corner intersection, which were taken from a recent MPO Study: *Rockport Five-Corner Intersection Improvement Study*, Community Transportation Technical Assistance Program, Boston Region MPO, May 2, 2011.

In general, the area adjacent to Dock Square in downtown Rockport has the most intensive pedestrian activity in the corridor. Pedestrian counts indicate that, during the peak hour, as many as nearly 1,000 pedestrians crossed the intersection of Mount Pleasant Street at Broadway/T-Wharf, and nearly 500 pedestrians crossed Dock Square. About 160 pedestrians crossed the Five-Corner intersection, located at the perimeter of downtown. At the same time, traffic volume approaching these intersections also was high.

Good Harbor Beach is another pedestrian-heavy area. A recent count conducted by volunteers from the city (see Appendix J) shows that on Route 127A (Thatcher Road) near the beach entrance, about 60-to-110 pedestrians per hour were observed from 10:30 AM to 2:30 PM, with the most active pedestrian hour defined as 10:30 to 11:30 AM.[14] The counts also indicate that traffic on Route 127A was very congested during the noon hour in the area adjacent to the entrance.

Depending upon the location, the peak pedestrian-crossing hour is usually around noon. At popular tourist locations, such as the areas adjacent to Dock Square and Good Harbor Beach, peak pedestrian crossings can last as long as three-to-four hours. (See Appendix I for total pedestrian crossings summarized by hour at the major intersections.)

### *2.3.3 Bicycles*

Based on the MassDOT turning movement counts, Figure 5 presents the highest hourly bicycle movement counts at the major intersections in the study corridor. The figure also shows directional bicycle counts on Route 127A and Route 127, estimated from the bicycle turning movement counts.

Approximately 40-to-50 bicycles per hour traveled at various locations in the corridor on July 13, 2013, an average summer weekend day. The bicycle peak hour is identified as 10:00 to 11:00 AM at most count locations. At Dock Square, the peak bicycle hour is identified as 10:30 to 11:30 AM, which indicates that cyclists might take a snack break or detour to Bearskin Neck for sightseeing. (See Appendix I for the hourly bicycle counts at selected locations.)

The directional bicycle counts indicate that most cyclists travel the Cape Ann Loop in a counter-clockwise direction (on the coastal side of the corridor). The directional spilt is about 80% on the coastal side and 20% on the inland side.

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[14] The Gloucester Community Development Department also performed pedestrian and bicycle counts at the beach entrance on July 22, 2013, for this study. It was a very hot day and there was less-than-normal pedestrian and bicycle activity. The counts, therefore, were not used to represent normal summer weekend pedestrian activity.

## 2.4 Issues and Concerns

In the scope meetings on April 4 and May 22, 2013, study advisory members from Gloucester, Rockport, MassDOT, and MAPC shared their concerns about the study corridor, which are summarized below.

- Discontinuous sidewalks at several locations
- Pedestrian safety—long crossing distance and poor view of traffic at intersections and busy roadway sections
- Lack of bicycle accommodations on Routes 127A/127
- No clear signage to identify Cape Ann Loop bike route
- High travel speeds in residential areas
- Summer traffic congestion in popular areas, such as Good Harbor Beach and downtown Rockport
- Pedestrian safety and traffic issues in downtown Rockport
- Roadway maintenance issues
- Preservation of the area's character

The study advisory members also discussed safety and operational problems at specific locations in the corridor. These, along with the proposed improvements, are summarized by location in Section 4 of this memorandum.

# 3 SAFETY AND OPERATIONS ANALYSES

To explore potential improvements, this section examines recent five-year crash data, existing speed controls and prevailing travel speeds, and existing roadway cross-sections.

## 3.1 Crash Data Analysis

Crash data are essential for identifying safety and operational problems in a study area. Analysis of crash locations, collision types, time-of-day, roadway conditions, and other factors can help to develop improvement strategies.

Based on the 2006–10 MassDOT crash data, 202 crashes occurred in the study corridor in the five-year period. Figure 6 shows the crash locations and crash rates in different sections of the corridor.

In general, all the roadway sections have a crash rate lower than the state average of 3.63 crashes per million vehicle miles traveled on urban minor arterials. Most of them have a crash rate of less than 1.60 crashes per million vehicle miles traveled. A few sections of the study area have a slightly higher crash rate because of greater vehicle and pedestrian activity. These sections

are Bass Avenue from Route 128 to Thatcher Road in Gloucester and Mt. Pleasant Street, Broadway, and Railroad Avenue in Rockport. The section of Mt. Pleasant Street between Broadway and Prospect Street has the highest crash rate. It is a transition zone into downtown Rockport but already experiences intense roadway activity.

With one (or less) crash per year on average, most of the intersections in the corridor are low-crash locations, except for the following intersections:

- Five-Corner (Main Street at Broadway): 4.4 crashes per year
- Railroad Avenue at King Street: 2.2 crashes per year
- Mt. Pleasant Street at Broadway: 1.2 crashes per year
- Bass Avenue at Thatcher Road/Atlantic Road: 1.2 crashes per year

Figure 6 also shows that seven crashes involved a pedestrian and four involved a cyclist. Six of the seven pedestrian crashes occurred in downtown Rockport (three on Main Street, two on Bearskin Neck Road, and one at the Five-Corner intersection). One pedestrian crash occurred at the intersection of South Street at Jerdens Lane. (The Rockport School District is located further south of the intersection on Jerdens Lanes.)

Two of the bicycle crashes occurred near the downtown area, both on Mt. Pleasant Street northbound near Norwood Avenue. The other two bicycle crashes occurred near the intersection of Bass Avenue and Thatcher Road near the Good Harbor Beach.

According to Gloucester, Grant Circle is a tough location for pedestrians and cyclists to cross; thus, the city designated Cherry Street-Popular Street-Maplewood Avenue as an alternate bike route. The crash data indicate that one pedestrian crash occurred in 2008 and one bicycle crash in 2006, at this location.

In 2008, one fatal crash—a head-on collision that involved three vehicles—occurred on Washington Street just south of Stanwood Street in Gloucester. The day was clear and the cause is not identified in the database. This incident is considered to be a random case in the study corridor.

## 3.2 Travel Speeds and Speed Controls

Figure 7 shows the existing speed controls and observed 85th percentile travel speeds in the study corridor. The “85th percentile” is the principle value used for establishing speed controls. It is the speed at or below which 85 percent of vehicles passing a given point are traveling. The 85th percentile speeds at seven selected locations in the corridor were derived from spot speed studies performed by MassDOT in July 2013.

Speed limits in the corridor are regulated in five ranges: 15-, 20-, 25-, 30-, and 35 miles per hour (mph). Most sections on Route 127A are designated as 30- or 35-mph speed zones. Exceptions are Bass Avenue between Route 128 and Thatcher Road in Gloucester and Mt. Pleasant Street between Prospect Street and Broadway in Rockport, which are designated as 25-mph zones because of their dense business and residential districts.

All of the study roadways in downtown Rockport are designated as 20-mph zones, including Mt. Pleasant Street, Main Street, Broadway, and Beach Street. Drivers usually do not travel too fast on these roadways because they are narrow, with on-road traffic and roadside activities. However, drivers tend to travel somewhat faster on Broadway, as it is a straight and downhill path toward downtown.

Speed regulations on Route 127 from Five-Corner to Route 128, are variable, ranging between 15-and-30 mph. Most sections, however, are 25-mph zones, as they are thickly settled residential districts. A number sections scattered along Route 127 are designated as 20-mph zones. These usually are narrow, winding, and near a village center, or adjacent to a major intersection. The other sections are 30-mph zones, except for a small section of Granite Street just south of Beach Street, which is only about 600 feet long and is designated as a 15-mph zone.[15] The section of Route 127 parallel to the Annisquam River is narrow and winding. Though it is mostly under a 20-mph speed-limit control, a third of the section, between Bennett Street and Bittersweet Road, is zoned for 30 mph.

As shown in Figure 7, the observed 85th percentile speeds are about two-to-five mph higher than the posted speed limits at most count locations. The following locations have a wider variation between the observed 85th percentile speed and its posted speed limit:

- Route 127 (Granite Street) north of Beach Street: About nine-to-ten mph higher than the posted 25-mph speed in both directions
- Route 127 (Granite Street) north of the Gloucester border: About eight mph higher than the posted 25-mph speed in both directions
- Route 127 (Washington) north of Stanwood Street: About 9-to-11 mph higher than the posted 20-mph speed in the southbound direction

[15] This section is straight, somewhat narrow, and downhill; no crash history or other strong reason may be found for why it is zoned at such a low speed. There are a few houses located very close to the roadway, whose residents would prefer a lower travel speed. However, such a regulation usually has little effect on speeds of drivers who do not live in the area.

A review of the regulated and observed speeds, and the roadway's adjacent land use, indicates that some speed-regulation adjustments could be considered at the following locations:

- Adjust regulation from 35-mph to 30-mph:
  - Route 127A (Thatcher Road) between Rockport Road and Briny Way
  - Route 127A (South Street) between Eden Road and Briarstone Road
- Adjust regulation from 30-mph to 25-mph:
  - Route 127A (South Street) between Jerdens Lane and Prospect Street
  - Route 127 (Granite Street) between Wharf Road and Landmark Lane
  - Route 127 (Langsford Street) between Butman Avenue and Andrews Street
  - Route 127 (Washington Street) between Bennett Street and Bittersweet Road

Establishing or modifying speed regulations is a complicated procedure that requires careful engineering analyses. The proposed locations for modification were based on limited speed data collected as part of the recent traffic counts.[16] They should be further examined and validated according to the procedures required by MassDOT.[17]

## 3.3 Roadway Cross-section Analysis

To address two major concerns in the study corridor, this section examines the existing roadway cross-sections and explores those with the potential to accommodate pedestrians and bicycles (see Figure 8).

Currently most sections on Route 127A and Route 127 have a roadway surface of about 24-to-28 feet that contains two 12-foot travel lanes and outside shoulders generally less than two feet wide. In general, sidewalks are on the coastal side only; and a substantial section of Route127A (Thatcher Road) and another section on Route 127 (Granite Street/Washington Street) have no sidewalks at all. Cyclists need to travel with traffic on the 12-foot travel lanes.

16 The 85th percentile speeds for this study were spot speeds derived from data collected from automatic traffic recorders. To establish or modify speed controls, MassDOT requires data to be collected using radar or laser guns at critical locations for an area not to exceed 0.25 miles, in addition to vehicle trial runs in the study area.

17 *Procedures for Speed Zoning on State and Municipal Roadways*, MassDOT Highway Division, May 2012.

The corridor does not contain a separate lane or sufficient shoulder for bicycle travel. Although no pavement markings or traffic signs clearly indicate the corridor as a shared roadway, it is regarded as one since bicycles are not prohibited in any sections of the corridor.[18] However, it is desirable to consider separate or clearly indicated shared-road bicycle accommodations, as the prevailing traffic speed is nearly 40 mph in many sections of the corridor.

The MassDOT Roadway Inventory file indicates that the roadways in the corridor generally have a right-of-way of about 36-to-50 feet (mostly 40 or 50 feet), except for a narrow section of Route 127A (Thatcher Road) from the Gloucester borderline to Briny Way in Rockport. However, the roadways appear much narrower than that, as most roadside areas are either developed or occupied by natural elements such as trees and boulders. In some residential districts, houses are built very close to the road with stone fences against the edges of sidewalks. This “narrow country road” charm surrounded by rich natural and man-made (with local materials) elements is a local trait that should be preserved. Meanwhile, the narrow-road appearance presumably should influence drivers not to travel too fast.

This study identifies a few potential cross-sections that could improve pedestrian and bicycle accommodations without major roadway expansions. The potential improvements include continuous sidewalks for pedestrians and five-foot wide shoulders for bicycles in as much of the corridor as possible, while preserving area’s ambience.

The second graphic in Figure 8 shows an example of a potential shared-road cross-section that is confined by nature or developed surroundings with little space for expansion. Essential components these cross-sections include:

- Continuous standard five-foot sidewalks on the coastal side for pedestrians[19]
- 12-to-13 foot shared bicycle and vehicle travel lanes
- At least one foot outside shoulders for maintaining roads and keeping traffic away from sidewalks[20]

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[18] Because it is legal for bicyclists to use nearly all roadways, most of them can be technically classified as shared roadways; except where bicycling has been expressly prohibited by ordinance or law, such as on city streets or access-controlled freeways in some states.

[19] Sidewalks should be installed on the inland sides as well, wherever the right-of-way is available, especially in residential districts.

[20] State-numbered routes are required to contain outside shoulder lines for guiding traffic and roadway maintenance.

The third graphic in Figure 8 shows a sample cross-section that contains five-foot shoulders to accommodate bicycles apart from vehicular traffic. This cross-section may be used where a right-of-way of about 42 feet is available to include standard five-foot sidewalks on both sides. Major elements of the proposed wide-shoulder cross-sections include:

- Five-foot sidewalks on both sides for pedestrians
- Five-foot shoulders on both sides for bicycles
- Reduced 11-foot travel lanes[21]

It is important that wide shoulders for bicycle travel are continuous (preferably for at least half a mile); fragmented wide shoulders would cause bicycles to weave in and out of traffic, and create difficulties for roadway maintenance.

For areas with a tight right-of-way, but which also hold potential for wide-shoulder application, a four-foot shoulder may be considered. However, MassDOT requires a standard five-foot shoulder for bicycle travel, and a four-foot shoulder would require a design exemption, if federal or state funding is applied.[22]

Study advisory members from MAPC suggested a roadway cross-section without centerlines in order to accommodate bicycles (see Appendix K). This “no center-line” design would remove centerlines that delineate opposite traffic streams and provide wide shoulders on both sides for bicycle travel (also known as “advisory bicycle lanes”) by using dashed lines to delineate vehicle and bicycle travels. The dashed lines would allow vehicles to travel on the shoulders while passing from opposite directions. The design is intended for narrow roadways with relatively low traffic volume and speed. See Appendix L for details about this design concept and its application.

Currently, staff does not propose such an application in the study corridor because:

- Routes 127 and 127A are minor principal arterials with relatively high traffic volumes.[23]
- The roads are steep and winding in many sections, with frequent horizontal and vertical transitions, where centerlines are essential for safety.

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[21] Though no extensive research indicates significant evidence in the reduction of travel speeds, narrowing travel lanes in an appropriate dimension is generally considered to have effects on the majority of drivers to slow down somewhat or at least not to travel too fast .

[22] MassDOT Project Development and Design Guide, January 2006, Massachusetts Department of Transportation.

[23] Except for the section of Route 127 between Halibut Point State Park and Lanesville, all of the roadways in the corridor carry about 5,000-to-10,000 vehicles per day.

- Limited application in the study corridor would be a sudden and drastic change from the rest of the corridor and likely would cause drivers' confusion.
- A major transition section to alert drivers the change would be required before and after the application section.

However, this no centerline application is effective in slowing traffic and providing bicycle and pedestrian accommodations and could be considered for local streets or low-volume collectors in areas adjacent to the study corridor.

Staff consulted with various bicycle advocates, MAPC transportation planners, and MassDOT design professionals about what elements to include and how to design bicycle, pedestrian, and vehicle accommodations that share a roadway with significant right-of-way constraints. These views are included in Appendix K. As some of the opinions are not consistent, we expect that, at the design stage and depending upon the funding source, all of these views would be taken into account and compared against the design standards. At that time, various existing design standards could also be contested by proceeding through the formal design exemption application process.

# 4 PROPOSED IMPROVEMENTS

Based on the preceding analyses, this section proposes a series of safety and operational improvements for pedestrians, bicycles, and traffic in the study corridor and at a number of selected locations.

## 4.1 Pedestrian Accommodations and Safety Improvements

Figure 9 shows the locations of existing sidewalks and proposed locations for standard five-foot sidewalk installation. Major proposed improvements include:

- Install five-foot sidewalks on the coastal side to provide a continuous path
- Install five-foot sidewalks on the inland side in sections are thickly settled
- Upgrade existing substandard sidewalks, such as those on Langsford Street (Route 127) adjacent to Lanesville and Beach Streets on the inland side
- Designate Bearskin Neck Road as a pedestrian zone.[24]

Note that standard five-foot sidewalks on both sides of the roadways, especially in dense residential districts, are desirable in the corridor. However, some sections in the corridor likely would have a right-of-way only wide enough for

[24] Vehicle travels are prohibited on the roadway, except for residents and customers of hotels and restaurants located in the stretch, people with disabilities, and deliveries.

sidewalks on one side. The goal is to provide at least a continuous pedestrian path on the coastal side of the corridor. Based on the recently issued MassDOT Engineering Directive E-14-001 (see Appendix M), the sections with sidewalks on only one side would require a design exemption process, if federal or state funding is used for the improvements.

Also note that the proposed locations were based on field observations and reviews of online assessors' maps. Further investigation of right-of-way availabilities and roadside obstructions (such as utility poles) is required to determine exact locations for proposed improvements.

Although the roadways in the study corridor are narrow, the layouts of many intersections in the corridor are relatively wide.[25] These intersections create long crossing distances for pedestrians; and it is difficult for drivers to observe pedestrians at the far corners. These intersections mostly could be reconfigured into tighter layouts with reduced curb radii in order to slow turning traffic. Sidewalk extensions and pedestrian bulb-outs could be installed—to compensate for lessened curb radii—to shorten pedestrian crossing distances and so drivers and pedestrians could see each other better. See Section 4.3 for further discussion of these improvements.

There are many crosswalks at intersections and at mid-blocks of the roadways in the corridor; and a large number of them are not equipped with Americans with Disabilities Act (ADA) standard wheelchair ramps. Their locations and viability for enhancements, along with those of wide intersections, should be examined further to provide a systematic outcome for pedestrian safety improvements.

## 4.2 Bicycle Accommodation and Safety Improvements

Figure 10 shows the locations of the existing bicycle lanes and the proposed locations for the installation of wide shoulders and the designation of shared roads for bike travels. Major proposed improvements include:

- Designate the entire study corridor as the Cape Ann Loop bike route.
- Connect the Loop to the existing bike routes designated by Gloucester.
- Install five-foot shoulders on both sides for bicycle travels in sections where the potential wide shoulder cross-section is applicable (Figure 8). Potential locations for such applications include sections on Route 127A and Route 127 and Beach Street from King Street to Granite Street.

[25] Route 127 was built in the 1930s and Route 127A in early 1950s. The layout of these intersections probably has not changed much since then, when the area was relatively rural with much fewer residents than today.

- Install “share the road with bicycles” signs[26] or sharrow markings at selected locations, such as narrow, steep, or curved sections, or thickly settled areas.
- Install bike racks at the proposed rest stops.
- Regularly maintain the roadways clear of potholes and debris for safe bicycle travel.

The proposed locations were based on field observations and reviews of online assessors’ and wetland maps. Further analyses of right-of-way and wetland constraints are required to determine exact locations for proposed improvements. For instance, the section of Route 127A in Rockport from Red Fox lane to Briny Way is located in an environmentally sensitive area and its wide-shoulder expansion should be examined further.

The section of Route 127A (Thatcher Road) from Witham Street in Gloucester to Eden Street in Rockport provides some scenic ocean views on the coastal side and is relatively narrow, so that wide-shoulders potentially may be applied only on one side. However, based on a number of context-sensitive factors (below), it may be feasible to consider the wide-shoulder accommodation on the coastal side as well:

- Unique roadway character with limited right-of-way
- High bicycle travel demand with 80% split on coastal side
- 35-mph posted speed
- Relatively low crash rate in the corridor

Study advisory members from MassDOT expressed their concerns about wide-shoulder bicycle accommodation on only one side of roadways based on the principal of consistency in highway design (see Appendix K) and stressed that such application would require a design-exemption process, if federal or state funding is used for the roadway improvements.

## 4.3 Traffic Operations and Safety Improvements

The study corridor carries substantial numbers of pedestrians and bicycles, especially in the tourism season. The key to traffic operations in the corridor is how to maintain suitable low- to-medium travel speeds in order to accommodate all travel modes and enhance safety for all users, including

[26] The standard Manual on Uniform Traffic Control Devices (MUTCD) application consists of an assembly of the “bicycle” (W11-1) warning sign and “share the road” (W16-1P) warning plaque.

pedestrians, cyclists, and drivers. Major proposed improvements related to traffic operations include:

- Consider speed regulation adjustments in the roadway sections suggested in Section 3.2, with further engineering analyses.
- Install solar-powered “Your Speed” warning signs to calm traffic at three critical locations that enter downtown Rockport. The town currently is working with MassDOT to identify the exact location for Route 127 (Main Street) northbound approaching the Five-Corner intersection. This study suggests that the following two additional locations be considered for improvements.
    - Route 127A northbound before Jerdens Lane (Rockport School District): The vicinity is somewhat open and visitors may be not aware that they are about to enter the school district and dense residential area.
    - Route 127 northbound before Wharf Road (Keystone Bridge): Keystone Bridge is somewhat narrower than its adjacent roadway and the downhill section following the bridge is steep and curved. It is a 25-mph speed zone and the 85-percentile traffic speed is nearly 10 MPH higher than the posted speed limit (see Section 3.2).
- Preserve roadside elements that have the effect of calming traffic, such as sidewalks, stone fences, trees, boulders, and a variation in natural landscape.
- Regularly maintain speed-limit signs and periodically enforce the posted speed limits.
- Redesign and reconstruct wide-layout intersections with reduced curb radii to slow turning vehicles; and add sidewalk extensions (pedestrian bulb-outs) to shorten pedestrian crossing distances. A review of aerial photos indicates that about 27 intersections in the corridor are suitable for these improvements (see Appendix N for a list of the identified intersections). Figure 11 shows an example of Route 127A (Bass Avenue/Thatcher Road) at Atlantic Road in Gloucester with these proposed improvements.
- Remove excessive warning signs and upgrade parking-regulation signs. On Route 127 in the study corridor, there are excessive warning (mostly Children at Play) and parking-regulation signs (most for beach goers in residential districts) that are not MUTCD[27] compliant. Excessive signs

[27] *Manual on Uniform Traffic Control Devices*, Federal Highway Administration, Washington D.C., May 2012.

should be removed and parking signs should be consistent with MUTCD standards.

- Update or install pedestrian warning signs at major crossing locations. Many of the existing pedestrian crossing warning signs are faded. They should be replaced with MUTCD-compliant reflective materials.

## 4.4 Proposed Improvements at Selected Locations

Based on discussions with study advisory members, the major locations of concern in the corridor are Good Harbor Beach in Gloucester and downtown Rockport.

### *4.4.1 Good Harbor Beach*

Good Harbor Beach is a popular destination in summers, especially on weekend days. Its parking lot that takes nearly 950 passenger cars is usually full around 11:00 AM on weekend days. Major issues and concerns include:

- The roadway section is narrow with no sidewalks or sufficient shoulders to accommodate pedestrians and bicycles.
- Route 127A between Barn Lane and Witham Street is highly congested during summer weekend days. Traffic congestion impedes pedestrian and bicycle movements.
- The roadway section is adjacent to wetlands and it may not be feasible to add sidewalks or bike lanes.
- Visitors do not have sufficient parking information before they enter the beach area. Some of them travel back and forth on Route 127A looking for parking spaces, which increases traffic in the area.

Proposed roadway improvements and traffic and parking management schemes for the beach area include:

- Install sidewalks on either side or on both sides of Route 127A between Barn Lane and Witham Street (depending upon an environmental evaluation of its potential effect on the adjacent wetlands). A pedestrian path with wood structure (boardwalk) could also be considered.
- Install five-foot shoulders for bicycle travel if the environmental evaluation permits.[28]
- Install an electronic sign stating “Parking Lot Full. No Stopping” in the vicinity of the parking entrance.

[28] Major roadway expansions affecting environmentally sensitive areas would require an extensive MEPA (Massachusetts Environmental Policy Act) review process.

- In the long term, install advanced warning signs (electronic with remote controls) indicating parking availability at the following locations:
  - Route 128 eastbound before Grant Circle
  - Route 127 northbound after Flannagan Square and before Eastern Avenue
  - Route 127A southbound before Witham Street
- Install bike racks in the parking lot.
- Move the fee collection booth further into the parking lot (currently the space between the booth and Route 127A is limited, which results in queues on Route 127A during peak entry hours).
- Hire a consultant to redesign the entire parking system and space arrangement; and consider an automatic fee-collection system.
- Study seasonal traffic-management measures, such as one-way circulation or street closings, which should aim to improve pedestrian and bicycle movements.

### *4.4.2 Downtown Rockport*

Downtown Rockport has many commercial and historical attractions, and is a very popular destination during the summer season. Streets are usually mixed with vehicles, pedestrians, and bicycles, especially on weekend days. Major issues and concerns of the area include:

- There is parking on most downtown streets and in municipal lots. However, more parking and transportation options for visitors in the tourism season are needed.
- To improve parking and transportation service for visitors, the town and CATA worked together to provide shuttles between a park-and-ride lot and Dock Square.[29] However, some visitors do not seem to know about the service, and they tend to circle the downtown area looking for parking spaces.
- There are no clearly defined walking paths or way-finding systems to guide visitors to historical and commercial attractions.

[29] The service is referred as “Rockport Park & Ride Loop” (see Section 2.1). The designated park-and-ride lot is located next to the town’s transfer station on Blue Gate lane. All parking is free. The parking lot has 199 spaces and six accessible spaces. The shuttle fee is $1.00 per person. The shuttles (with about 20-25 minute headway) will operate on most days of the season from May 18 to September 29, and on October 19 for the Rockport Harvest Festival.

- Sidewalks are usually about five-to-six feet wide, which is not sufficient in places where people tend to gather.

Proposed improvements for the area in general include:

- Increase visitor awareness of the park-and-ride service via the Internet and other media.
- Install electronic signs at the park-and-ride lot, and let visitors know the location and arrival time of shuttle buses via global positioning system and smart-phone applications.
- The town's Economic Development Committee has proposed constructing a walking trail modeled on Boston's Freedom Tail in order to promote downtown cultural and economic activities. The initial idea is to use an iconic image stenciled on the sidewalk to guide visitors from the commuter rail station to the downtown cultural district.
- Expand sidewalks at spots with intensive pedestrian activity.
- Extend sidewalks at major intersections to improve pedestrian crossing safety.

Improvements for pedestrian accommodation and safety are proposed at the following specific locations.

### Intersection of Route 127A (Mt. Pleasant Street/Broadway) at T-Wharf

There is intensive pedestrian activity at this intersection, which is relatively wide and undefined, and has a small traffic island holding a mini lighthouse that extends from Broadway. Crosswalks are located away from the intersection and create long crossing distances for pedestrians. Figure 12 shows the intersection's existing conditions and proposed improvements.

### Dock Square (Mt. Pleasant Street at Main Street/Bearskin Neck Road)

Dock Square is located close to the T-Wharf intersection and also carries intensive pedestrian activity. Traffic splits at a central island. Through-town traffic is advised to use the left lane. There is a crosswalk from the east side of Mt. Pleasant Street to the central island but no crosswalks from the central island to the west side of Mt. Pleasant Street.

Figures 13 and 14 show the existing conditions and three proposed alternatives for the intersection, which are:

- Alternative 1: Install crosswalks and ADA-compliant ramps without modifying existing central island
- Alternative 2: Expand central island, expand sidewalk on north side of Main Street, and install crosswalks and ADA-compliant ramps

- Alternative 3: Remove central island, and redesign and reconstruct the intersection

### Bearskin Neck Road

Bearskin Neck Road—which leads to a grand ocean view—is relatively narrow with stores and shops located densely on both sides and is a popular walking area. There are no clear entry policies for traffic control. Two crashes occurred between 2006 and 2010; both involved a pedestrian being hit by a vehicle. Proposed improvements for this road include:

- Convert entire stretch into a pedestrian zone.
- Prohibit vehicular traffic, except those driven by residents, customers to hotels and restaurants with reserved parking spaces, people with disabilities, and delivery vehicles.
- Pave the road with local cobblestones or other textured materials suitable for inclement weather.
- Install pedestrian-scale street lighting.

### Five-Corner (Intersection of Main Street/Railroad Avenue at Broadway and Parker Street)

MPO staff and MAPC jointly studied this intersection in 2011.[30] Signalization and modern roundabout options were reviewed but not preferred. The preferred options include modifying intersection layouts, extending sidewalks, and relocating crosswalks.

### Intersection of Main Street at Beach Street

Beach Street and Main Street south of Beach Street are located in mostly residential districts; and residents expressed concern about pedestrian accessibility and safety at this intersection. Figure 15 shows the existing conditions and proposed improvements for this intersection. The existing crosswalk is located at the lower side of the intersection. Installing a pedestrian bulb-out and relocating the crosswalk to a higher position would significantly increase pedestrians' view of traffic and drivers' view of pedestrians.

[30] *Rockport Five-Corner Intersection Improvement Study*, Community Transportation Technical Assistance Program, Boston Region MPO, May 2, 2011.

# 5 SUMMARY AND RECOMMENDATIONS

This study performed various analyses to identify safety and operational problems in the study corridor and proposed improvements to address the identified problems. Benefits of proposed improvements:

- Sidewalk additions and upgrades would provide continuous and safe access for pedestrians.
- Shoulder expansions and upgrades would accommodate bicycle travel and enhance cyclists' safety.
- Speed-limit adjustments would make speeds more consistent and smooth transitions, improving safety for all.
- Improvements at major locations, such as Good Harbor Beach and intersections in downtown Rockport, would improve traffic operations, enhancing safety, mobility, and access for all roadway users.
- Widening intersections would slow traffic and enhance safety and mobility for pedestrians and cyclists.
- Context-sensitive roadway reconstruction would preserve the character of this scenic area.

The study outlines transportation improvements that the city and town could consider for the corridor's long-term plan. In the near term, however, the following measures should be considered to enhance safety, mobility, and access for all:

- Update or install pedestrian warning signs at major crossing locations.
- Designate Bearskin Neck Road as a pedestrian zone.
- Upgrade substandard sidewalks wherever funds are available.
- Designate the entire study corridor as the Cape Ann Loop bike route.[31]
- Install Share the Road with Bike MUTCD signs or sharrow markings at critical locations, such as narrow, steep, or curved sections, or thickly settled areas to enhance cyclists' safety.
- Regularly keep roadways clear of potholes and debris for safe bicycle travel.

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[31] ENHC is currently working with MassDOT to install scenic way-finding signs along the routes in the byway system. The comprehensive signage system will serve as the principal on-road method of directing travelers to the byway from the region's three arterial highways (I-95, Rt. 128, and Rt. 1); then once on the byway, guiding them along the entire route. In the study advisory meeting, the possibility of placing a plaque indicating the Cape Ann Loop bike route underneath the byway way-finding signs was mentioned.

- Install solar-powered Your Speed warning signs to calm traffic at proposed locations entering downtown Rockport.
- Regularly maintain speed-limit signs and periodically enforce speed limits.
- Remove excessive warning signs and upgrade parking signs on Route 127.
- Promote the information about MBTA and CATA services, especially the Rockport Park & Ride Loop shuttle, to reduce vehicular traffic in the corridor.

In the past few years, Gloucester has been promoting walking and cycling in the city through a number of projects, including “Get Fit Gloucester!” and a series of Compete Streets Community Forums based on a draft complete streets plan.[32] A master plan for downtown Rockport (2011) addresses the pedestrian safety and access issues. More significantly, MassDOT recently issued an engineering directive E 14-001 (Appendix M) containing new design criteria for pedestrian and bicycle accommodations that support healthy transportation alternatives.

These initiatives indicate that the city, the town, and MassDOT are moving toward a consensus vision of complete streets and context-sensitive roadway design and reconstruction. Implementing the proposed improvements, however, would require sufficient resources and cooperation from the city, the town, and related agencies (such as MassDOT and ENHC), as well as residents, business owners, and citizen groups.

CW/CW/cw

[32] *Planning for Complete Streets in Gloucester (draft)*, Gloucester Community Development Department, April 2012.

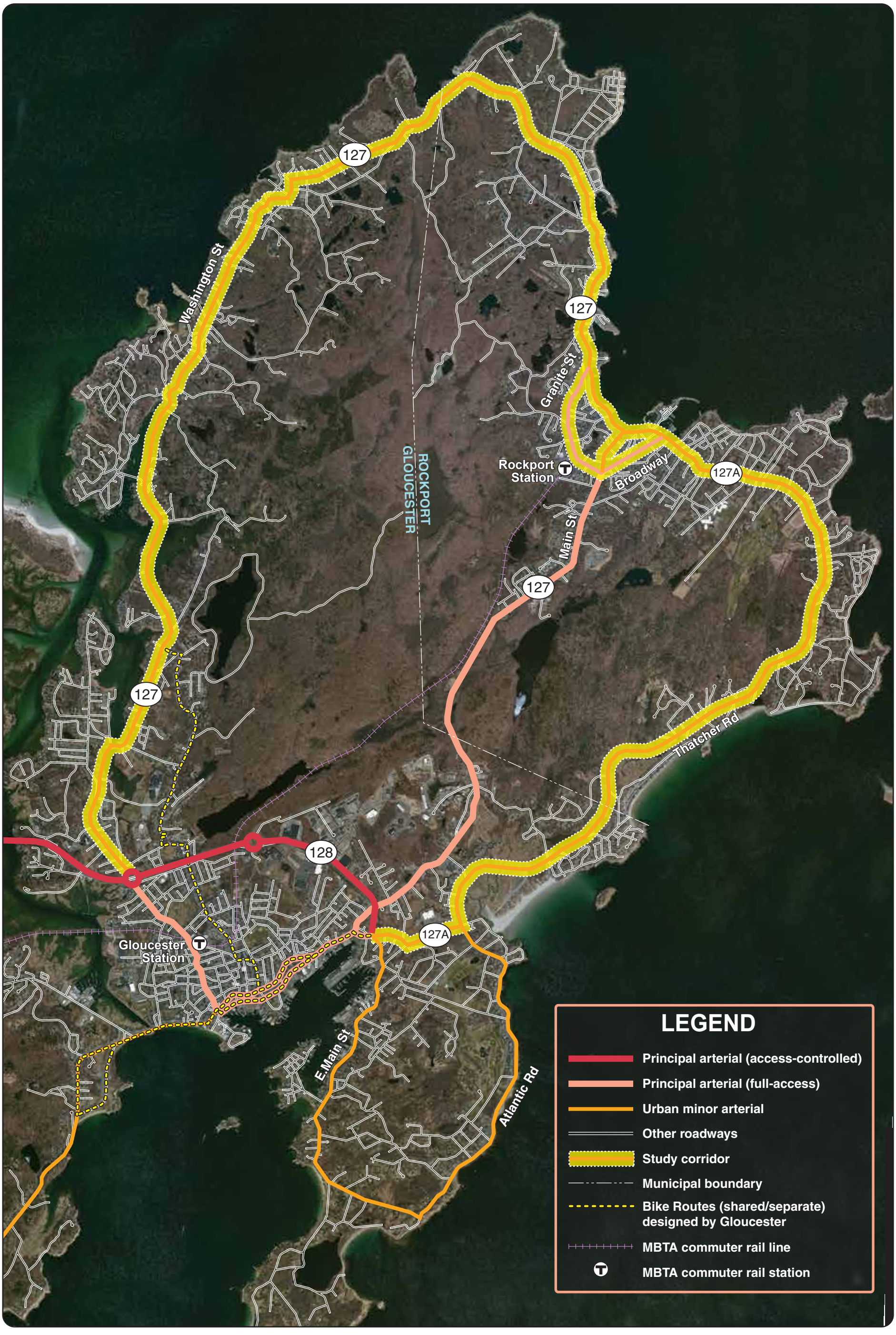


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**FIGURE 1**
**Study Corridor and Adjacent Major Transportation Facilities**
**Routes 127A/127 in Gloucester and Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*

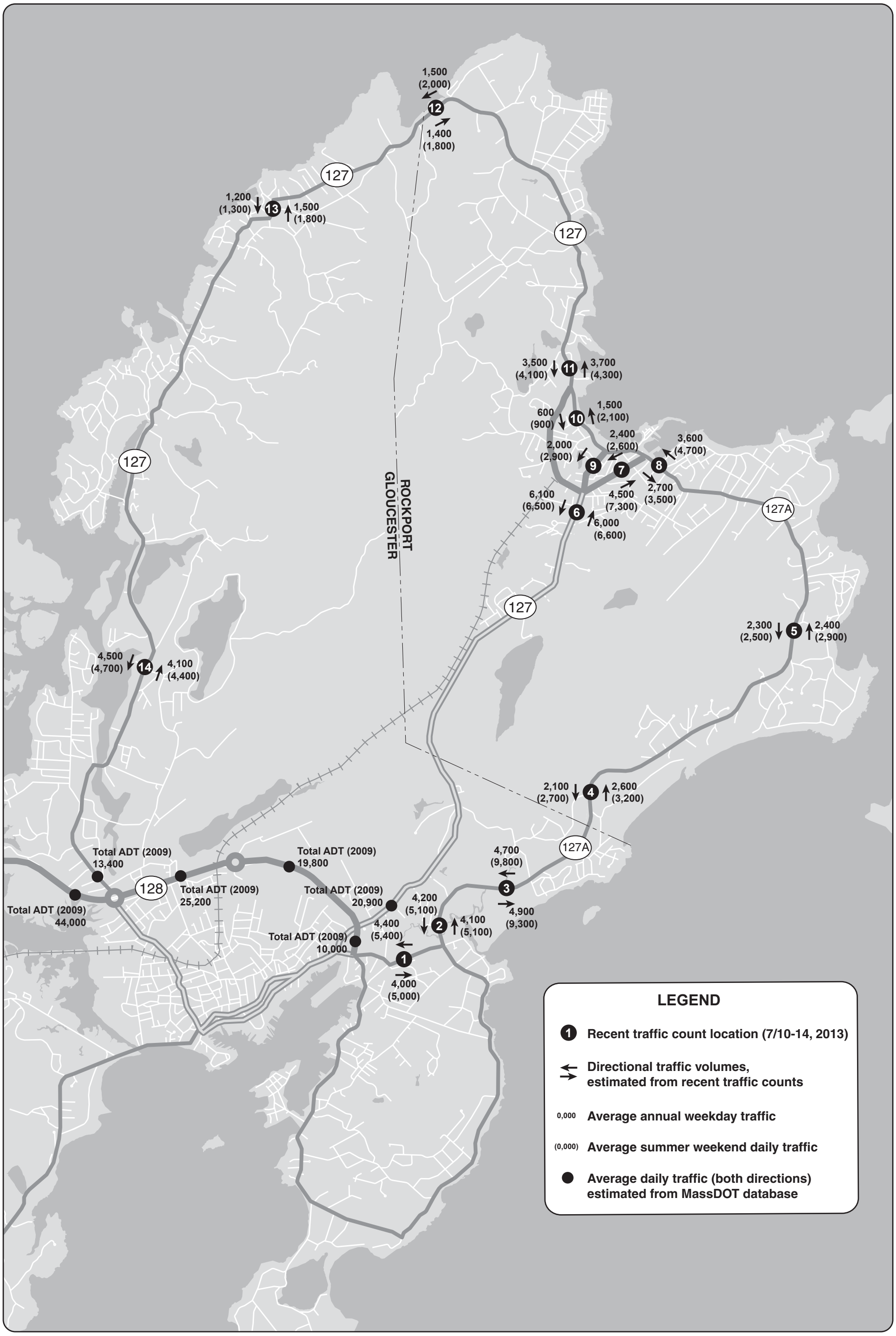


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**FIGURE 2**
**Daily Traffic Volumes**
**Routes 127A/127 in Gloucester and Rockport**

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*Mobility, and Access on*
*Subregional Priority Roadways*

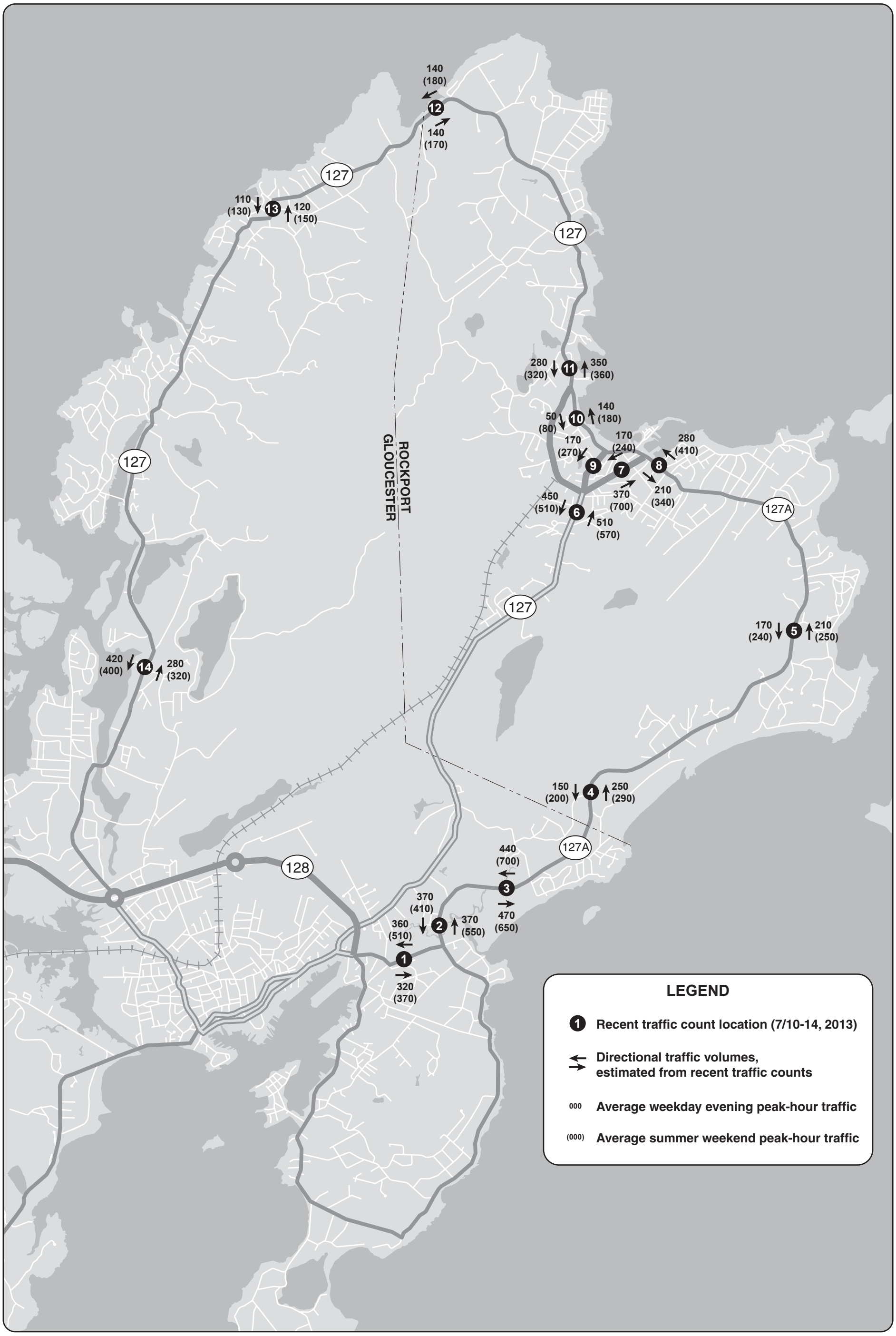


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**FIGURE 3**
**Peak-Hour Traffic Volumes**
**Routes 127A/127 in Gloucester and Rockport**

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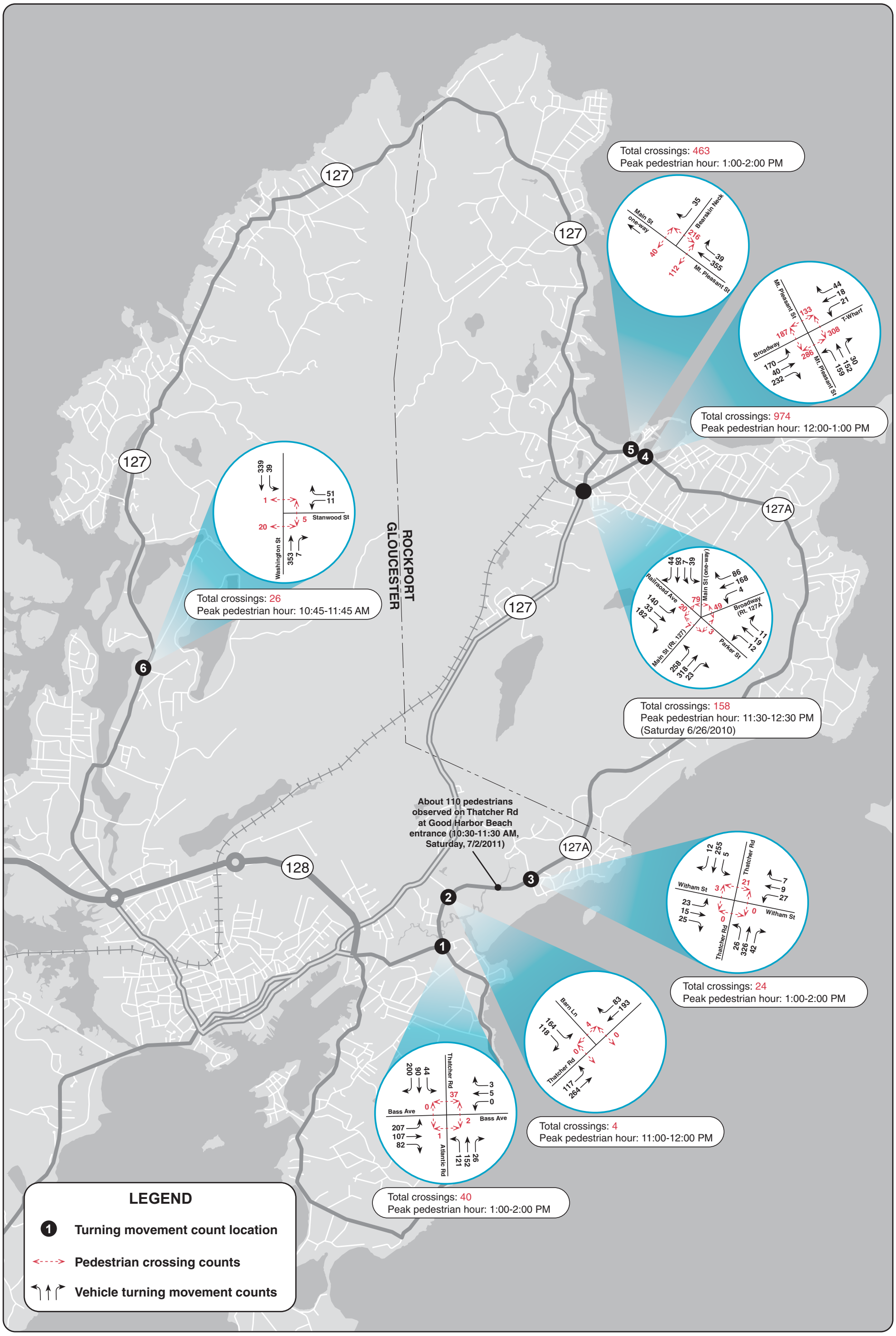


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**FIGURE 4**
**Pedestrian Peak-Hour Crossings and Traffic Movements**
**(Saturday 7/13/2013)**
**Routes 127A/127 in Gloucester and Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*

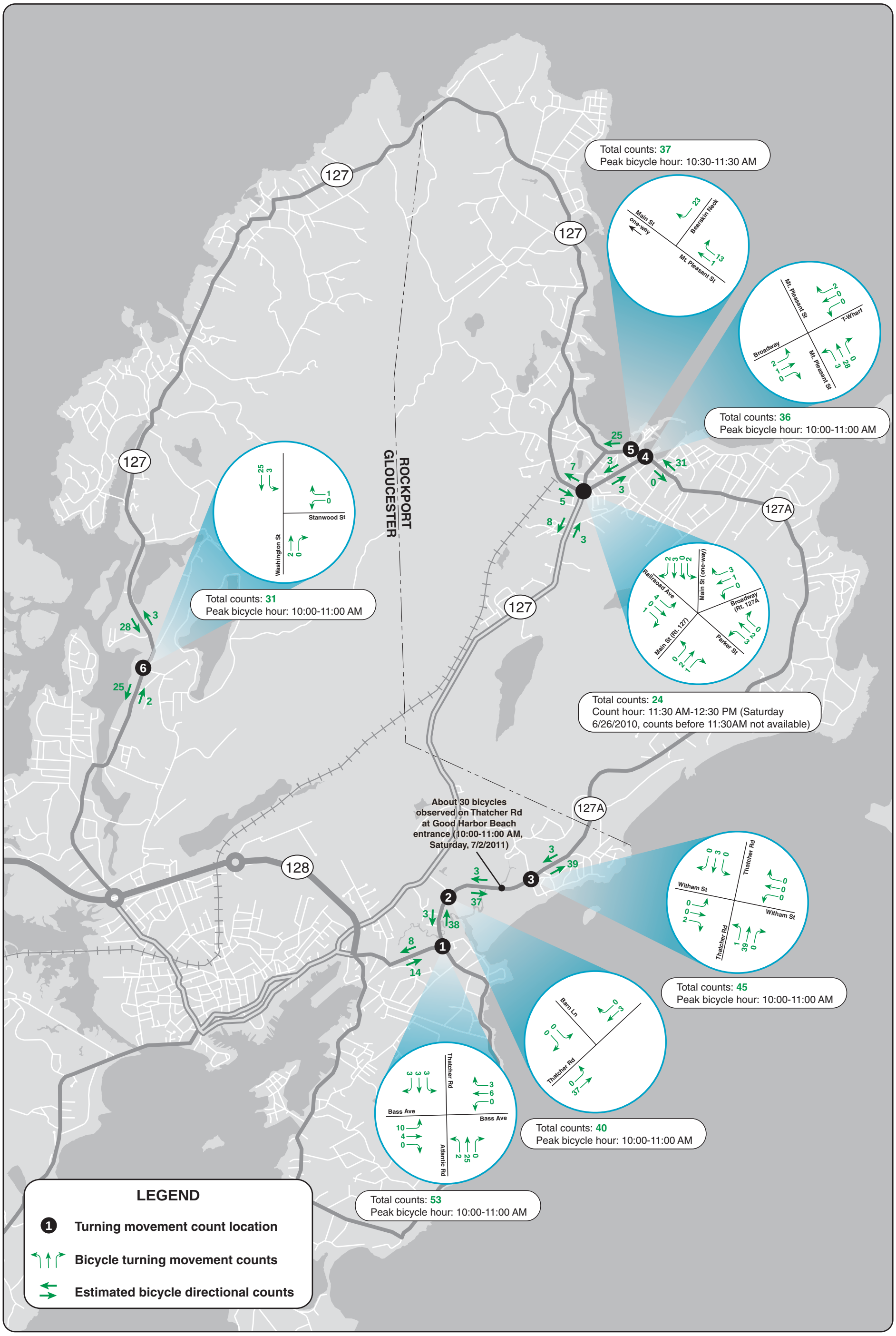


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**FIGURE 5**
**Bicycle Peak-Hour Counts (Saturday 7/13/2013)**
**Routes 127A/127 in Gloucester and Rockport**

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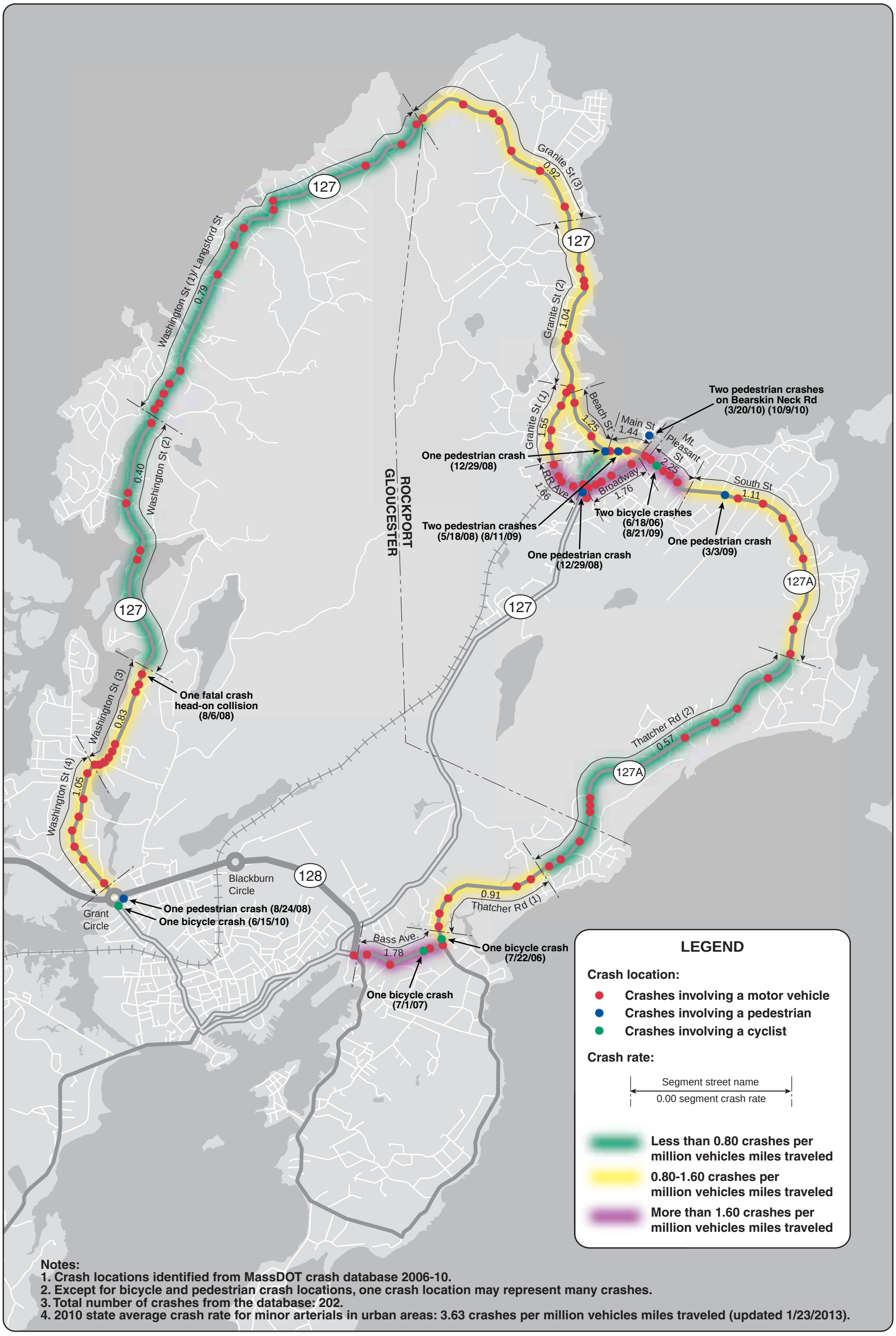


**Notes:**
1. Crash locations identified from MassDOT crash database 2006-10.
2. Except for bicycle and pedestrian crash locations, one crash location may represent many crashes.
3. Total number of crashes from the database: 202.
4. 2010 state average crash rate for minor arterials in urban areas: 3.63 crashes per million vehicles miles traveled (updated 1/23/2013).

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**FIGURE 6**
**Crash Locations and Crash Rates**
**Routes 127A/127 in Gloucester and Rockport**

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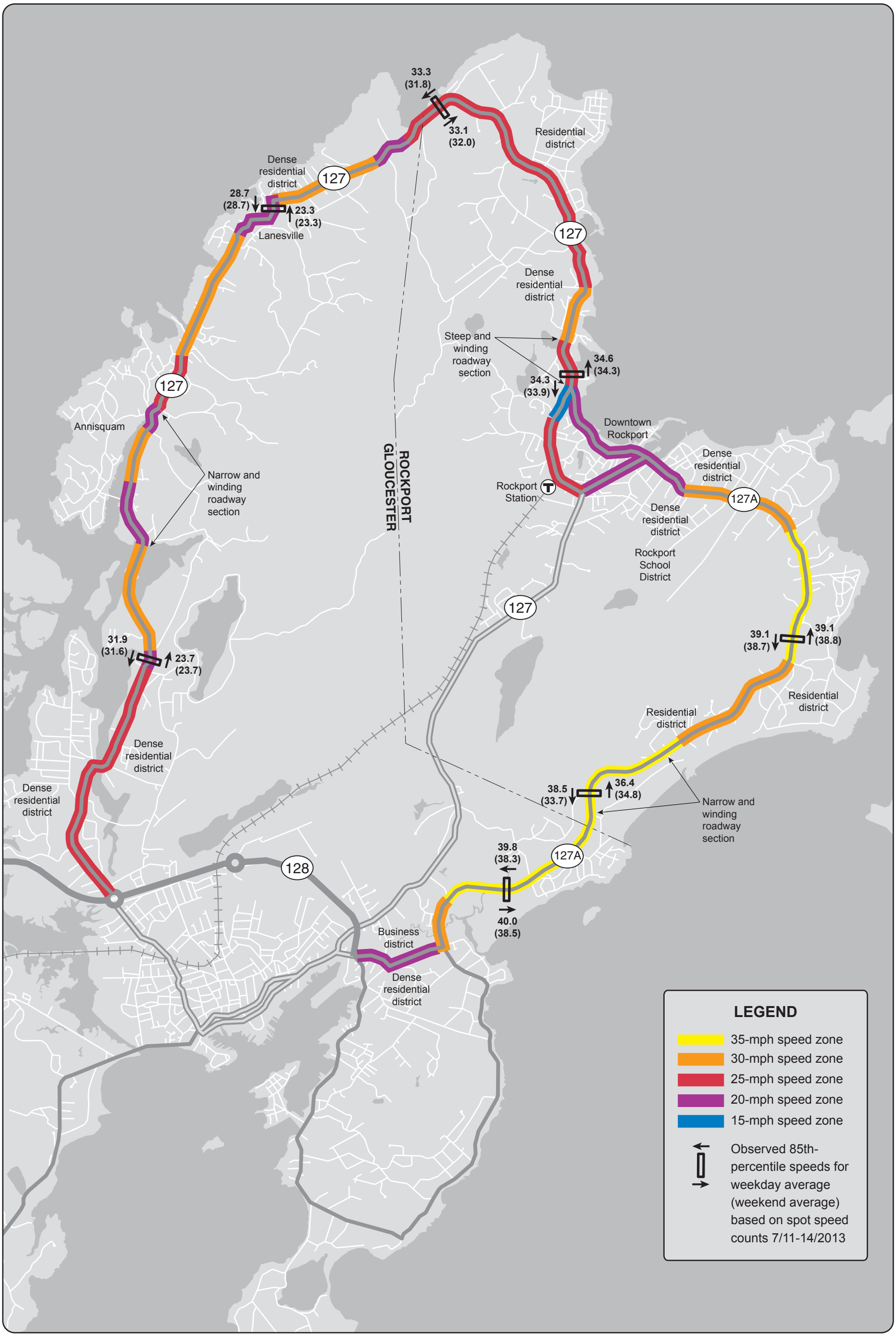


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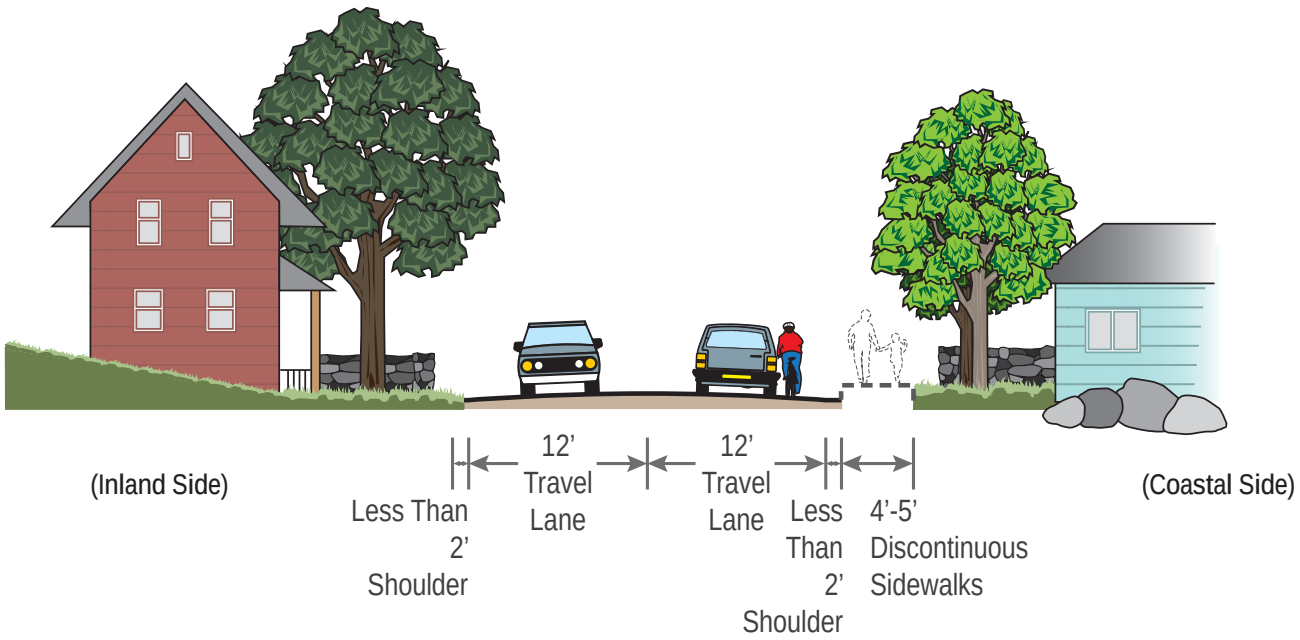
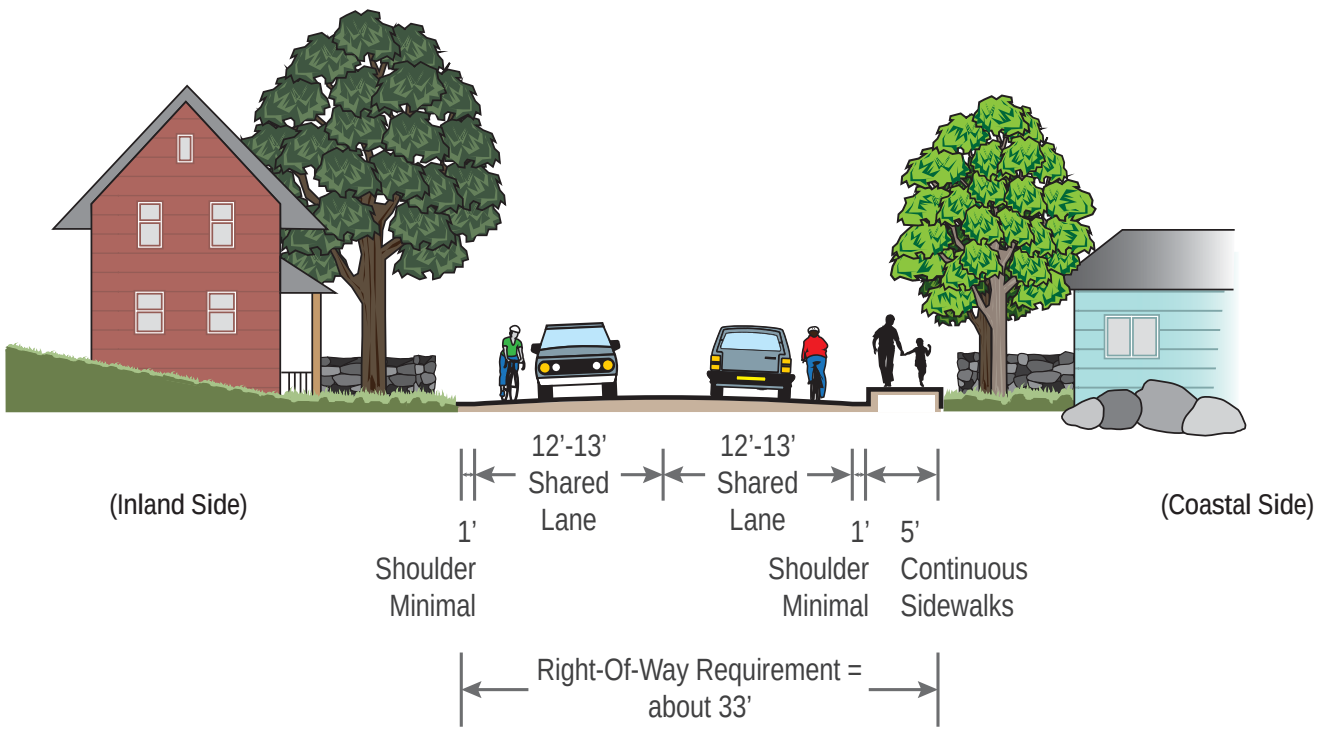
**FIGURE 7**
**Existing Speed Regulations and Observed 85th-Percentile Speeds**
**Routes 127A/127 in Gloucester and Rockport**

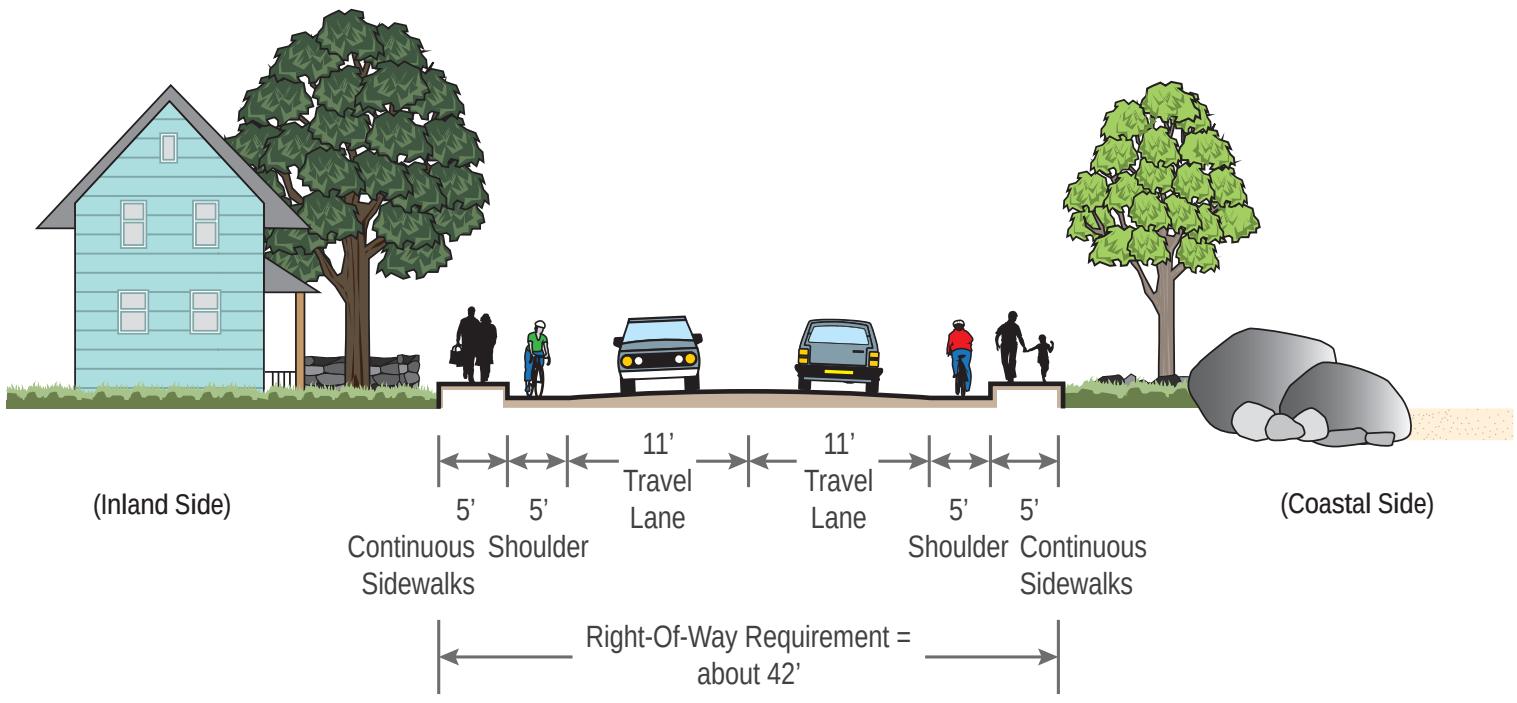
*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*




Existing Roadway Typical Cross-Section




Potential Shared-Road Cross-Section




Potential Wide-Shoulder Cross-Section

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**FIGURE 8**
**Existing and Potential Roadway Cross-Sections**
**Route 127A/127 in Gloucester and Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*

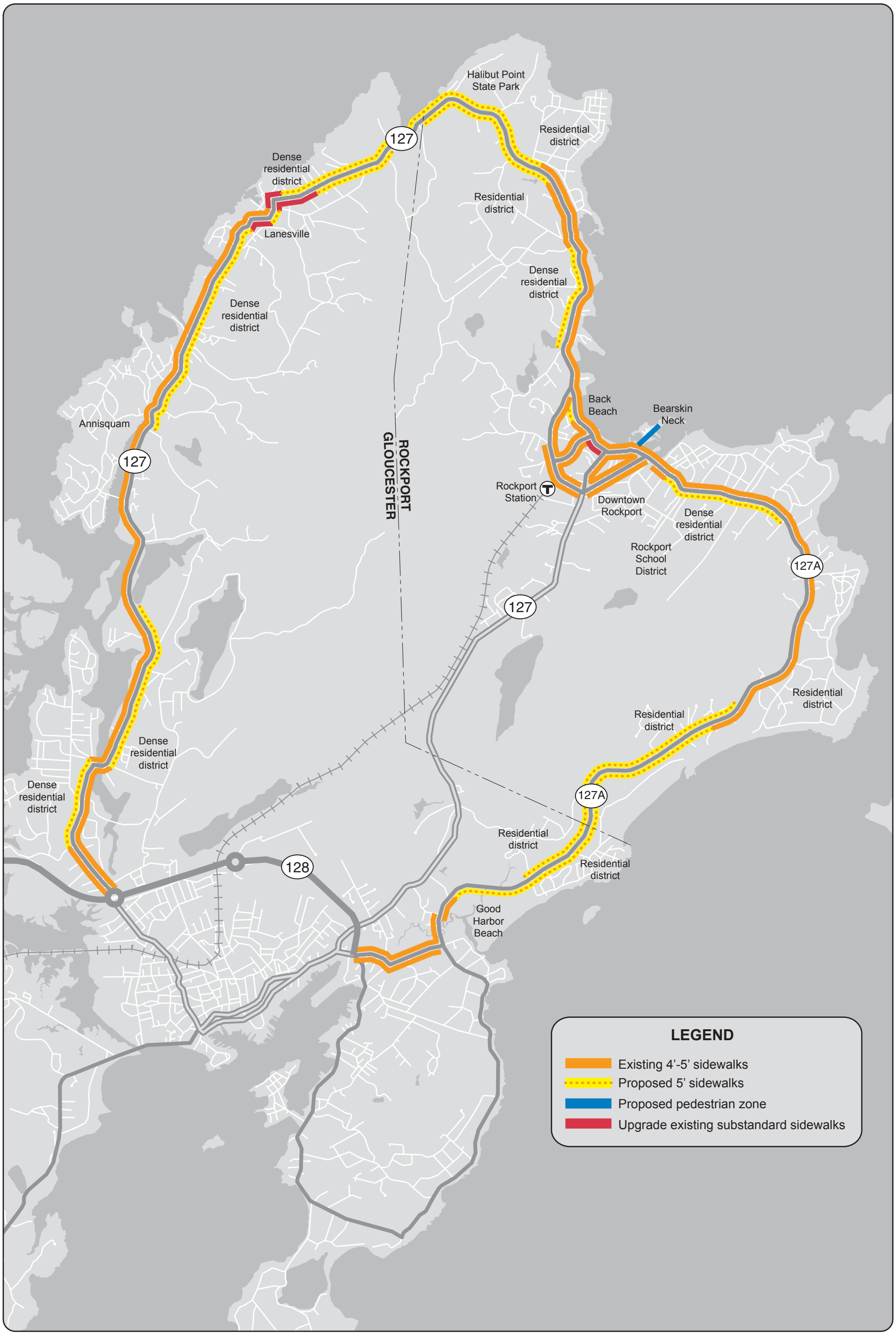


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**FIGURE 9**
**Existing Sidewalks and Proposed Improvements**
**Routes 127A/127 in Gloucester and Rockport**

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*Subregional Priority Roadways*

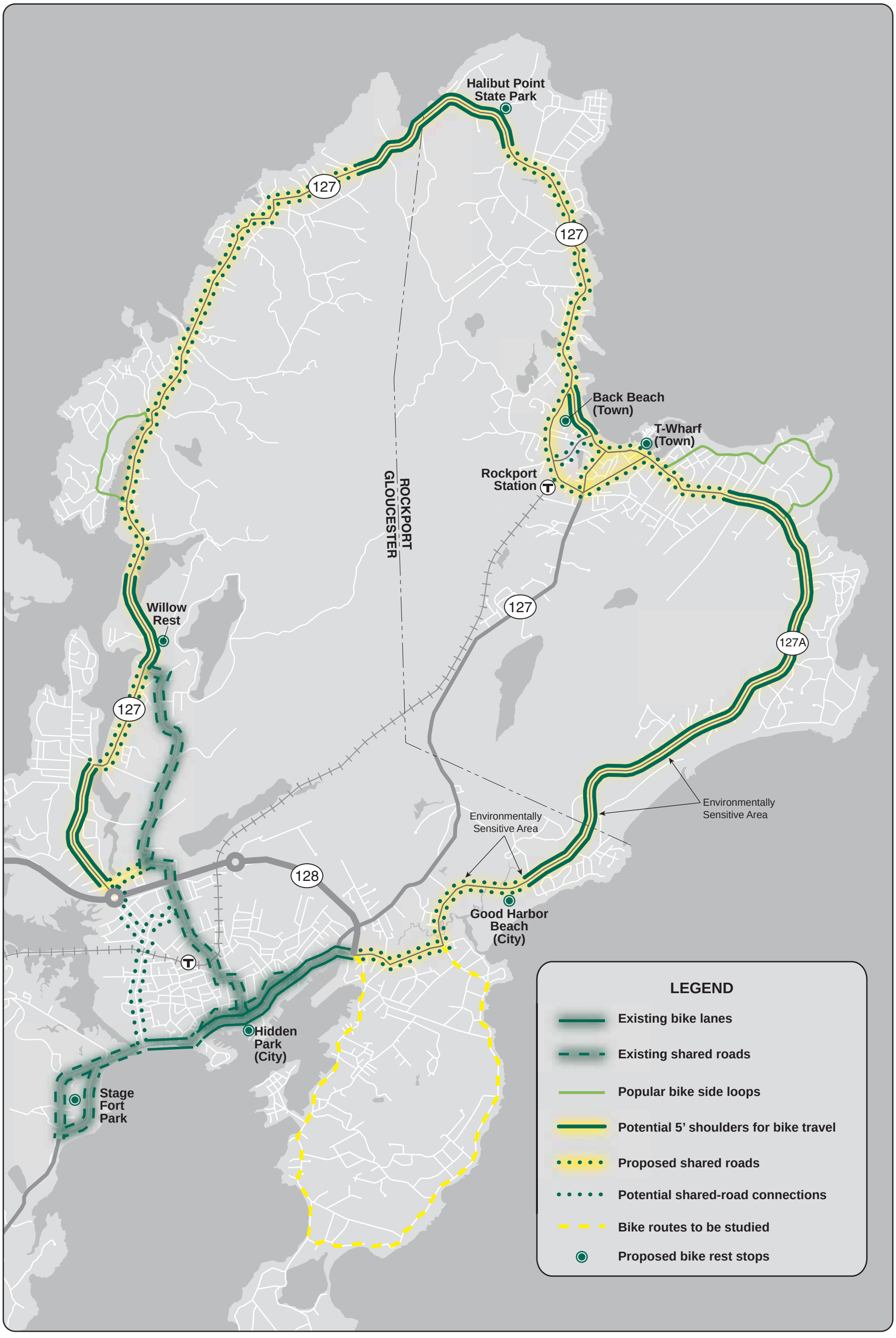


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**FIGURE 10**
**Existing and Proposed Bicycle Accommodations**
**Routes 127A/127 in Gloucester and Rockport**

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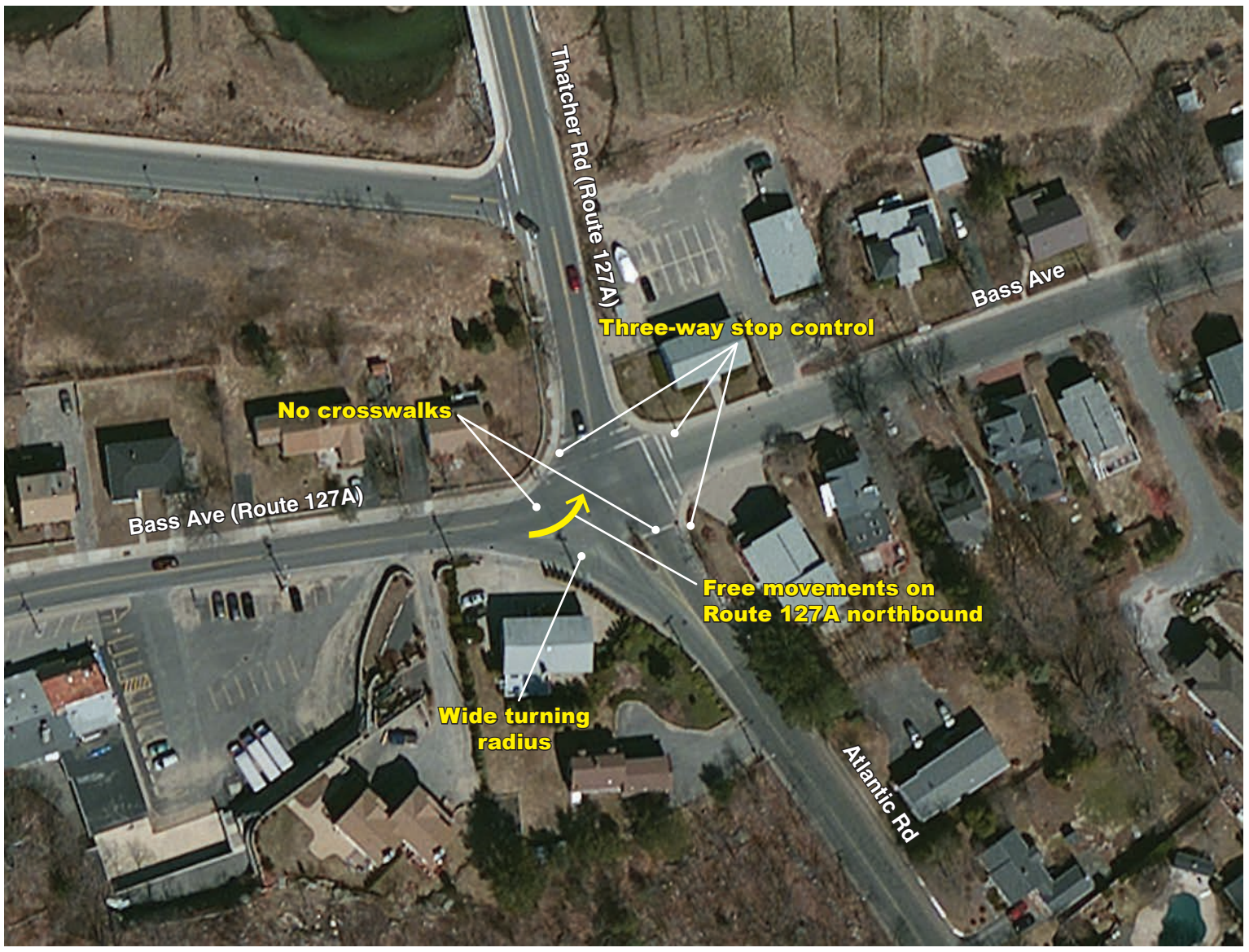
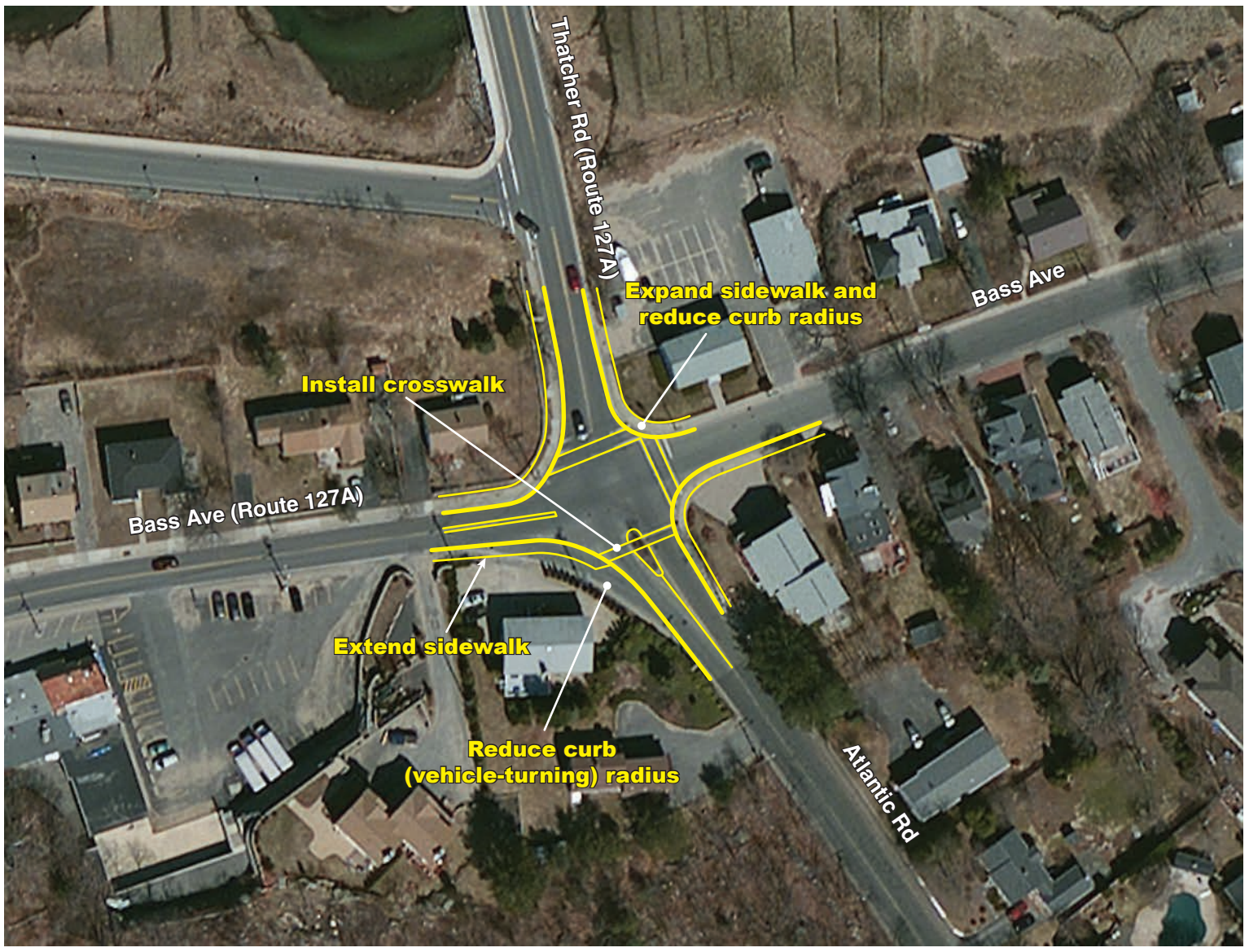



Existing Conditions




Proposed Improvements

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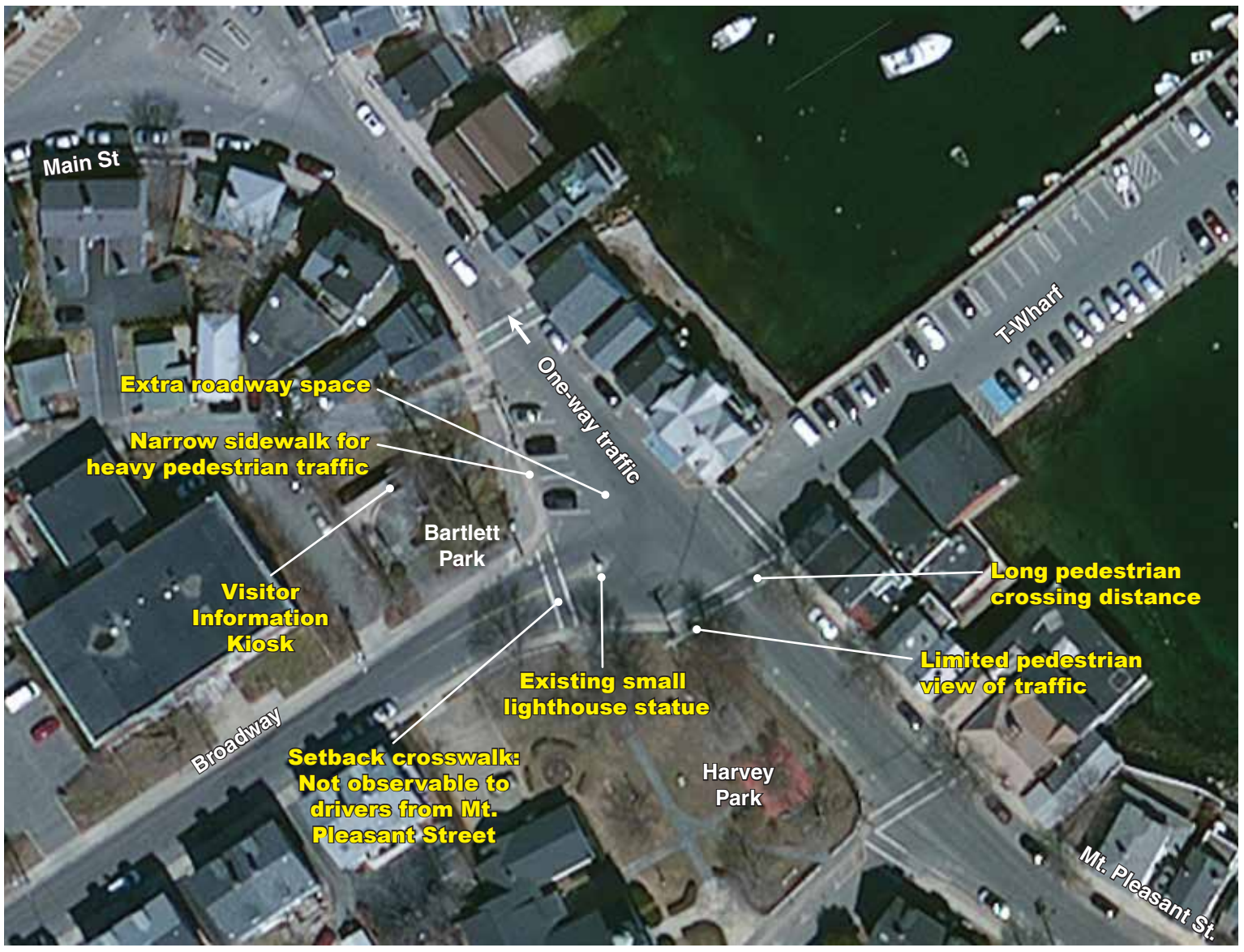
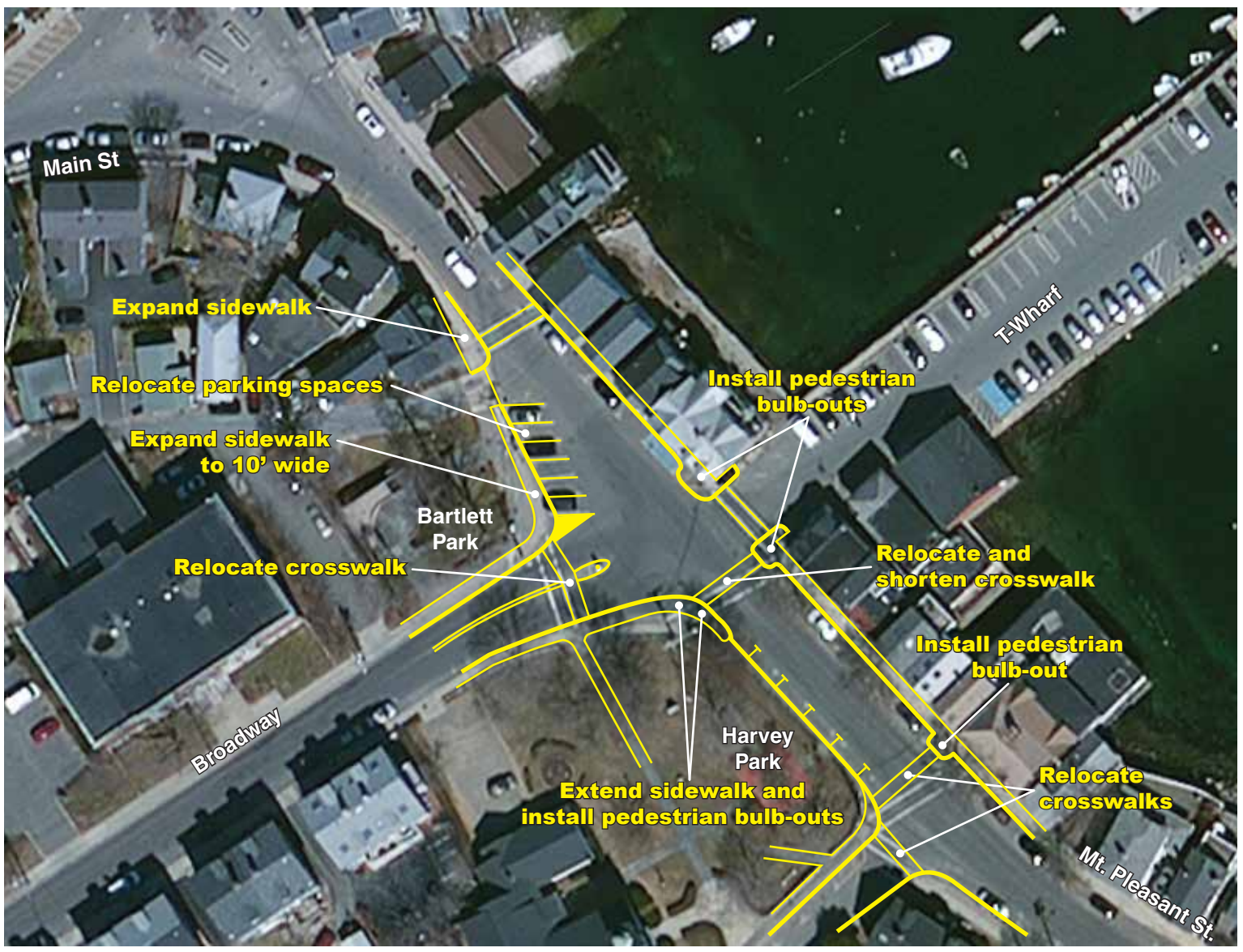
**FIGURE 11**
**Existing Conditions and Proposed Improvements**
**Routes 127A (Bass Avenue/Thatcher Road)**
**at Atlantic Road, Gloucester**

*Addressing Safety,*
*Mobility, and Access on*
*Subregional Priority Roadways*




**Existing Conditions**




**Proposed Improvements**

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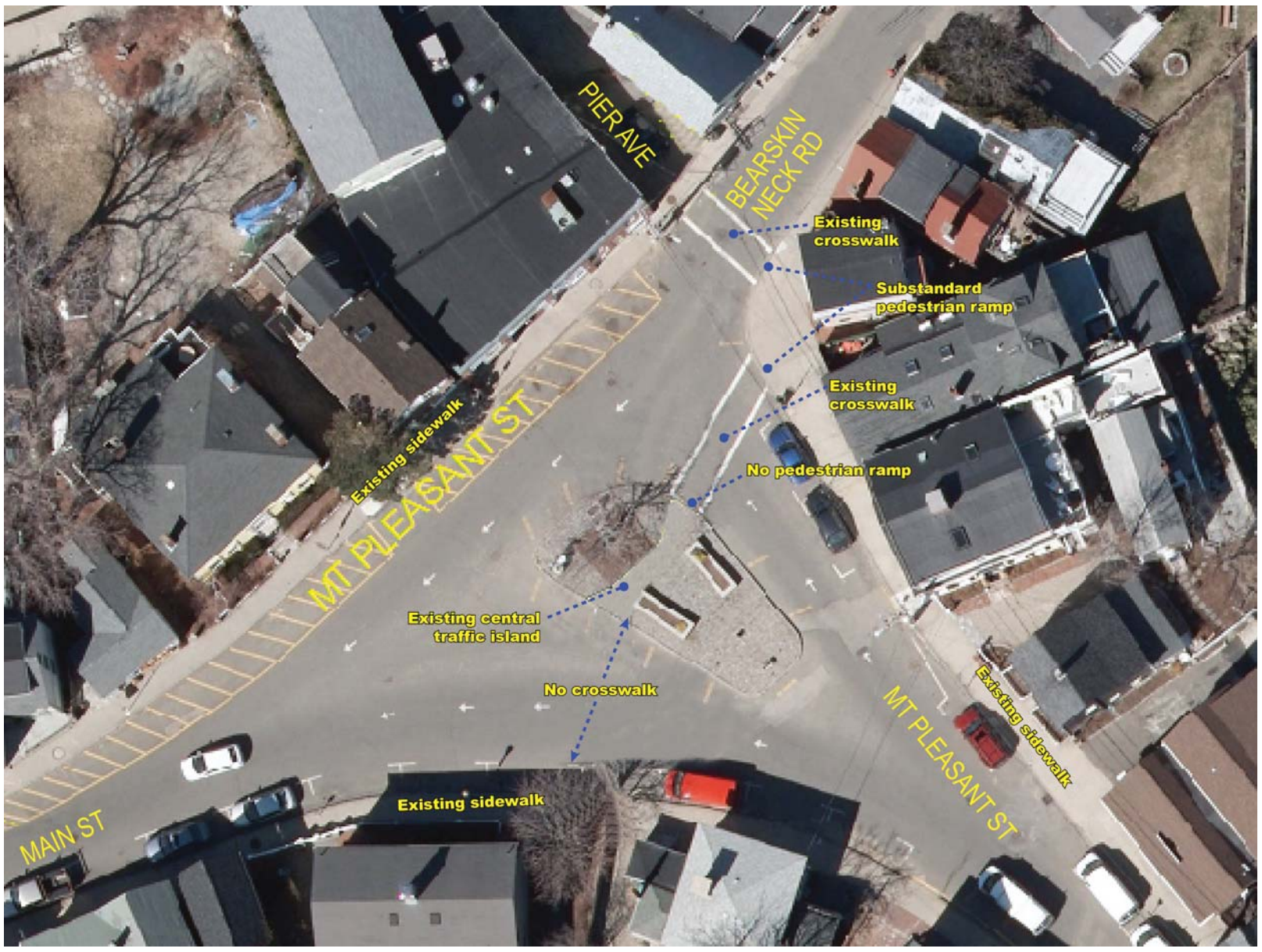
**FIGURE 12**
**Existing Conditions and Proposed Improvements**
**Routes 127A (Mt. Pleasant Street/Broadway) at T-Wharf Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*




**Existing Conditions**


**Proposed Improvements Alternative 1:**
**Install Crosswalks and ADA Ramps**

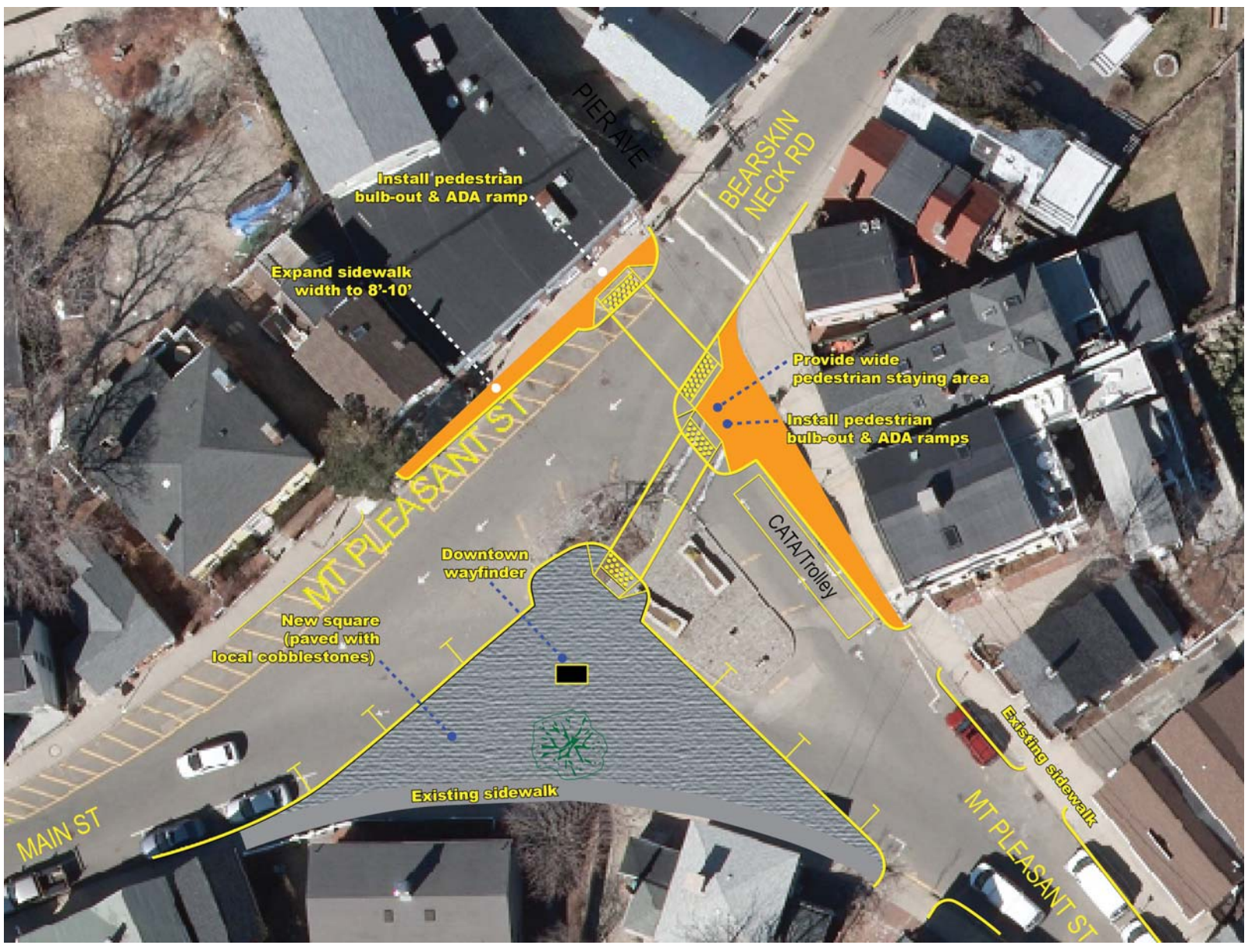
BOSTON REGION MPO

N

**FIGURE 13**
**Existing Conditions and Proposed Improvements Alternative 1**
**Dock Square (Main Street at Mt. Pleasant Street), Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*


**Proposed Improvements Alternative 2:**
**Expand Central Island and Install Crosswalks and ADA Ramps**




**Proposed Improvements Alternative 3:**
**Redesign and Reconstruct the Intersection**

BOSTON REGION MPO

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**FIGURE 14**
**Proposed Improvements Alternatives 2 and 3**
**Dock Square (Main Street at Mt. Pleasant Street), Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*


**Existing Conditions**


**Proposed Improvements**

BOSTON REGION MPO

N

**FIGURE 15**
**Existing Conditions and Proposed Improvements**
**Main Street at Beach Street, Downtown Rockport**

*Addressing Safety, Mobility, and Access on Subregional Priority Roadways*

# APPENDIX A

## Essex Coastal Scenic Byway Region

**Map 1: Essex Coastal Scenic Byway Region**

# APPENDIX B

## List of Participants

**Study Advisory Meetings**
**April 4, 2013**
**May 22, 2013**
**February 10, 2014**

**Bicycle Tour:**
**Reconnaissance of Roadway Conditions**
**May 3, 2013**

## List of Participants at Study Advisory Meetings
## Subregional Priority Roadways Study: Routes 127A/127 in Gloucester and Rockport

| Name | Affliation | Email Address | 4/4/13 | 5/3/13 | 5/22/13 | 2/10/14 |
|---|---|---|---|---|---|---|
| Tom Daniel | Gloucester Community Development | tdaniel@gloucester-ma.gov | √ | | | |
| Gregg Cademartori | Gloucester Community Development | gcademartori@gloucester-ma.gov | √ | √ | | |
| Stephen Winslow | Gloucester Community Development | swinslow@gloucester-ma.gov | √ | √ | √ | √ |
| Joseph Parisi | Rockport Department of Public Works | jparisi@town.rockport.ma.us | | | √ | √ |
| Tim Olson | Rockport Department of Public Works | tolson@town.rockport.ma.us | | | √ | √ |
| John T. McCathy | Rockport Police Department | chief@rockportpd.org | | | | √ |
| Carolyn Britt | Rockport Planning | cbritt@communityinvestment.net | | | √ | |
| Bill Steelman | Essex National Heritage Commission | bills@essexheritage.org | √ | √ | | √ |
| Barry Pett | State Senator Tarr's Office | barry.pett@masenate.gov | | | | √ |
| Jeff Cox | North Shore Cyclists | jeffrey.cox2@gmail.com | √ | | | |
| Peter Webber | Cape Ann Chamber of Commerce | peter@capeannchamber.com | √ | | | |
| Dana Menon | Salem Planning Department | dmenon@salem.com | √ | | | |
| Michael Karas | MassDOT District 4 Traffic | MIKE.KARAS@DOT.STATE.MA.US | √ | | | |
| Sam Cleaves | MAPC NSTF Coordinator | scleaves@MAPC.org | √ | √ | | √ |
| David Loutzenheiser | MAPC Bike/Ped. Transportation | dloutzenheiser@MAPC.org | √ | √ | √ | √ |
| Efi Pagitsas | CTPS Traffic Analysis & Design | epagitsas@ctps.org | | | | √ |
| Chen-Yuan Wang | CTPS Traffic Analysis & Design | cwang@ctps.org | √ | √ | √ | √ |

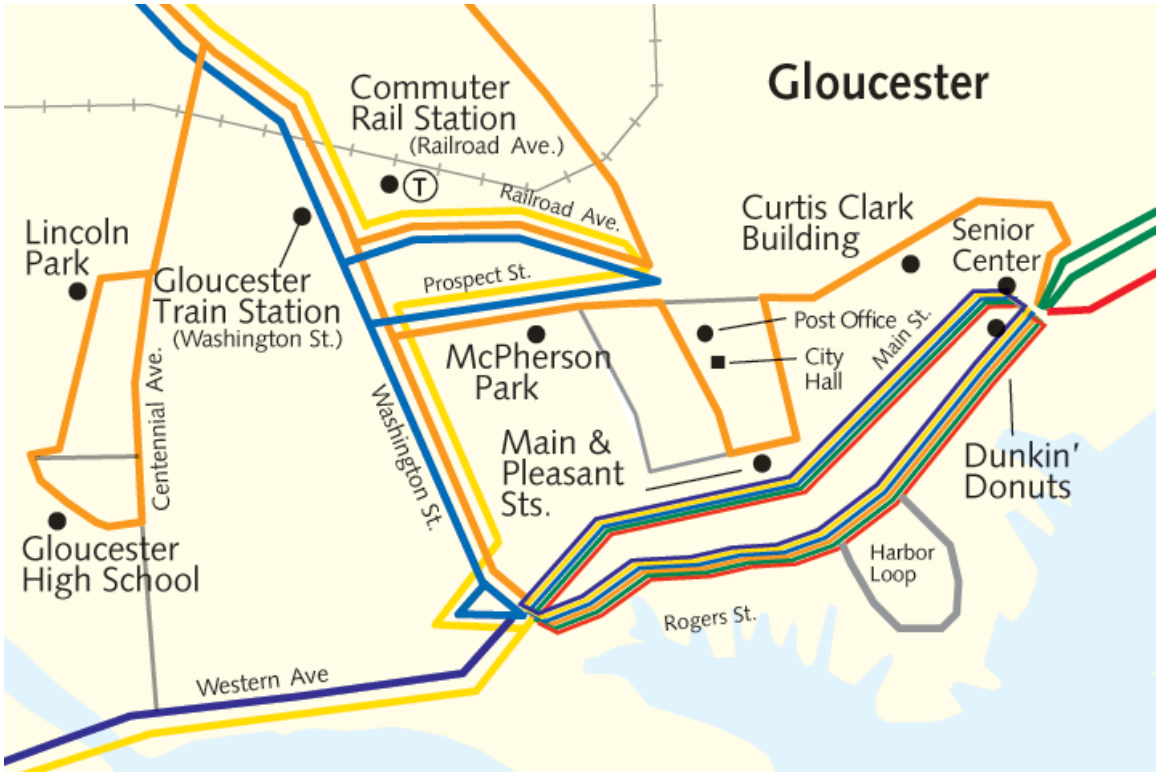
# APPENDIX C

## Cape Ann Transportation Authority Bus Services in the Study Area


MBTA Newburyport / Rockport Commuter Rail Line from Beverly

Halibut Point State Park
Lanesville P.O.
Pigeon Cove Ledges (on request)
Pigeon Cove P.O.
Annisquam Village Church
Toad Hall Bookstore
see Downtown Rockport map
Dock Square
Rockport Market
Rockport
Cape Hedge Inn
West Gloucester
Gloucester
Long Beach
Mill Pond Mecical Building
O'Maley School
Blackburn Center
Essex Line
Route 128
A.G.H.
Poplar Park
Gloucester Crossing
Route 128
Shaw's
Good Harbor Beach
Commuter Rail Station
Concord St.
Lincoln Park
Footbridge to Good Harbor Beach
East Gloucester Shopping Center
Heights at Cape Ann
G.H.S.
Atlantic Rd./ Moorland Rd.
West Gloucester Train Station
Stage Fort Park
Downtown Gloucester (see map at right)
Rocky Neck
N.S. Arts Assn.
Harbor Loop
East Gloucester
Bass Rocks
Niles Beach
Magnolia
Route 128
Magnolia Ave./ Western Ave.
Hammond Castle
Lexington Ave./Flume Rd.

MAP KEY:
- TRAIN CONNECTION
- DENOTES **CATA** STOPS
- ZONE BOUNDARY


Gloucester
Commuter Rail Station
(Railroad Ave.)
Railroad Ave.
Lincoln Park
Gloucester Train Station
(Washington St.)
Centennial Ave.
Prospect St.
Washington St.
McPherson Park
Curtis Clark Building
Senior Center
Post Office
City Hall
Main St.
Main & Pleasant Sts.
Dunkin' Donuts
Harbor Loop
Rogers St.
Gloucester High School
Western Ave


Rockport
Bearskin Neck
Granite St.
Beach St.
Toad Hall Bookstore
Dock Square
King St.
Summit Ave.
Main St
Broadway
Railroad Ave.
Mt. Pleasant St.
Rockport Market
Rockport Train Station
Parker St.
Five Corners
Pleasant St.
South St.
Summer St.
Prospect St.
High St.
Main St.

# CATA ANNUAL SCHEDULE

**Cape Ann Transportation Authority**

**FARES**

| zone | regular | disabled Medicare seniors* | children 5–12† |
|---|---|---|---|
| 1: Gloucester | 1.00 | .50 | 1.00 |
| 2: Rockport | 1.25 | .60 | 1.25 |
| West Gloucester (west of Route 128) | | | |
| Magnolia (south of Western and Hesperus Avenues) | | | |
| *A senior is anyone 60 or older. Verification of age may be required. | | | |
| †Children under five (5) ride free of charge. | | | |
| Danvers and Peabody Malls: | | | |
| round-trip | 5.00 | 2.50 | 2.00 |
| one-way | 3.00 | 1.50 | 1.00 |

**STUDENT PASS OPTIONS**

**The Unlimited Pass**: An annual or semester pass that allows the holder unlimited use of the CATA system at no additional cost per ride.

**The Pass Plus**: An annual pass that allows the holder to ride at a reduced fare of 50 cents per trip.
Note: Student passes are not valid for Danvers and Peabody Malls.

**GENERAL INFORMATION**

- For your safety, do not cross in front of the bus. Let the bus pass and look both ways before crossing street.
- No smoking, eating or drinking.
- No loud talking, noise or radios.
- Offensive behavior will not be tolerated. The offender will be subject to ejection from the bus.
- Pay or show pass upon boarding - exact change is required.
- Appropriate dress, shirt and shoes required
- No rollerblades.
- Only caged or service animals allowed.

**WAVE-A-BUS**

Anywhere along the route, as well as at designated bus stops, passengers wishing to board the bus may wave to the driver, and the driver will stop at the first safe location. Passengers must stand on the same side of the road as the bus. During school pick-up and drop-off, Wave-A-Bus is not in effect.

**HOLIDAYS**

No bus service on Sundays or the following
New Year's Day • Martin Luther King Day
Presidents Day • Patriots Day
Memorial Day • July 4th • Labor Day
Columbus Day • Veterans Day
Thanksgiving • Christmas Day

**SNOW EMERGENCIES**

Reports of bus service interruption due to weather or other emergencies will be broadcast on WBOQ 104.9 FM.

**PARATRANSIT SERVICE**

Special transportation services are available for elderly and disabled persons.
For more information call CATA.

**CATA INFORMATION**

978 283 7278 · www.canntran.com

**NON DISCRIMINATION**

CATA is committed to operating its transit services without regard to race, color and national origin. For further information contact CATA Administrator, 3 Pond Road, Rear, Gloucester, Mass., 978 283 1886.

*Round-trip service from downtown Gloucester except* ■

Rockport via East Gloucester · Rocky Neck · Back Shore

Rockport via Eastern Avenue

Blackburn Industrial Park

Gloucester Crossing & Business Express

Cruiseport Trolley

Rockport via Lanesville

Magnolia

Danvers & Peabody Malls

■ Beverly Shuttle

West Gloucester

CATA System · Gloucester · Rockport · MBTA maps

Español · Italiano · Português

Maps · Glossary

## Key to Maps

Service to and from Rockport; West Gloucester (west of Route 128); and Magnolia (south of Western and Hesperus Avenues), is an additional zone.

To show service more clearly, geography is modified.

## Key to Timetables

Gray columns are shown for readability.

Times in bus-line color indicate service that operates on school days only.

Times in bus-line color shaded columns indicate service that operates on non-school days only.

## Transfers

For Travel in one direction, no additional fare is required for transfers from the Red, Red/Blue, Blue, Yellow or Purple lines to lines of another color except the Orange line. No free transfers are allowed from the Orange line (Gloucester Crossing & Business Express) to lines of another color.

For MBTA commuter rail station connections, see schedule below for Rockport, Gloucester, and West Gloucester departures and arrivals (for Beverly, see yellow line, Beverly Shuttle; for Ipswich, see purple line, Ipswich · Essex). Schedule is effective November 20, 2010. For holiday service consult MBTA printed schedule, or (and for any changes) go to:

http://mbta.com/schedules_and_maps/rail/lines/

MBTA: 800 392 6100 or 617 222 3200
http://www.mbta.com/

MBTA Newburyport / Rockport Commuter Rail Line

## INBOUND ROCKPORT · NORTH STATION / BOSTON

| | MONDAY THROUGH FRIDAY | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rockport | 5 05 | 6 05 | 6 44 | 7 25 | 9 07 | 10 00 | 12 00 | 2 00 | 4 00 | 5 25 | 6 45 | 7 50 | 10 45 | |
| Gloucester | 5 13 | 6 13 | 6 52 | 7 33 | 9 15 | 10 08 | 12 08 | 2 08 | 4 08 | 5 33 | **6 53** | 7 58 | **10 53** | |
| West Glou. | **5 18** | 6 18 | 6 57 | 7 38 | **9 20** | 10 13 | **12 13** | **2 13** | **4 13** | **5 38** | — | **8 03** | **10 58** | |

| | SATURDAY & SUNDAY | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rockport | — | — | — | 7 00 | — | 10 00 | 12 00 | 2 00 | — | 5 10 | — | 7 30 | 10 00 | |
| Gloucester | — | — | — | 7 08 | — | 10 08 | 12 08 | 2 08 | — | 5 18 | — | 7 38 | 10 08 | |
| West Glou. | — | — | — | **7 13** | — | **10 13** | **12 13** | **2 13** | — | **5 23** | — | **7 43** | **10 13** | |

## OUTBOUND NORTH STATION / BOSTON · ROCKPORT

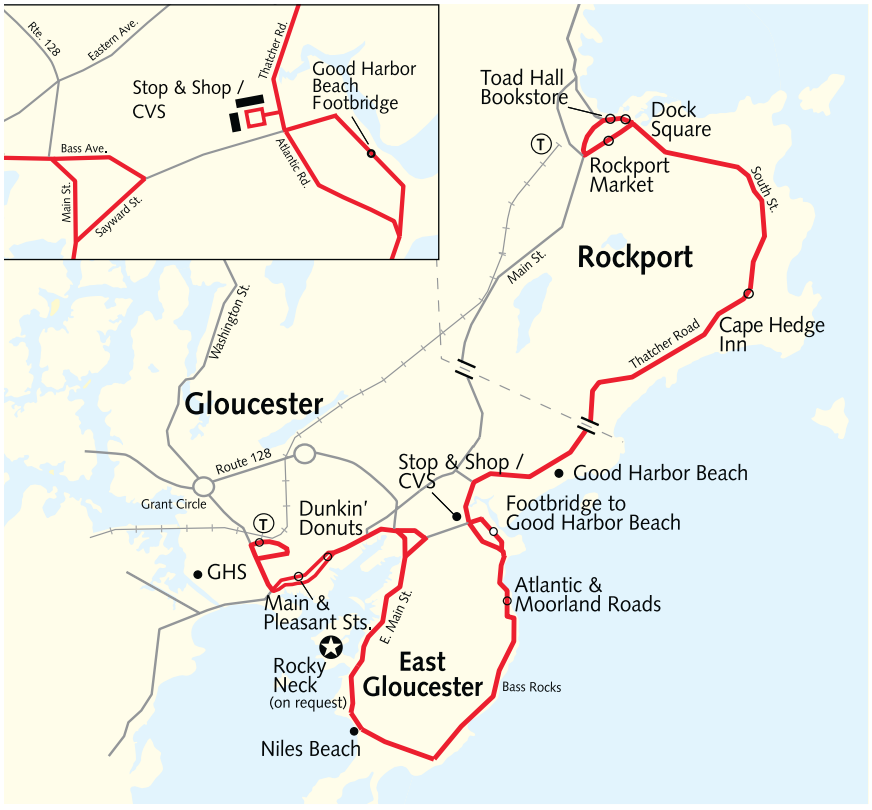
| | MONDAY THROUGH FRIDAY | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| West Glou. | **8 36** | **9 30** | **11 14** | **1 14** | **3 16** | 4 59 | 5 52 | 6 20 | 7 09 | **7 57** | **9 24** | **11 36** | **1 02** | |
| Gloucester* | 8 41 | 9 35 | 11 19 | 1 19 | 3 21 | 5 04 | 5 57 | 6 25 | 7 14 | 8 02 | 9 29 | 11 41 | 1 07 | |
| Rockport | 8 51 | 9 43 | 11 27 | 1 27 | 3 29 | 5 12 | 6 06 | 6 35 | 7 22 | 8 10 | 9 37 | 11 49 | 1 16 | |

| | SATURDAY & SUNDAY | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| West Glou. | — | **9 25** | **11 12** | **1 10** | **3 08** | — | — | **6 25** | — | — | **9 23** | **12 22** | — | |
| Gloucester | — | 9 30 | 11 17 | 1 15 | 3 13 | — | — | 6 30 | — | — | 9 28 | 12 27 | — | |
| Rockport | — | 9 40 | 11 27 | 1 25 | 3 22 | — | — | 6 39 | — | — | 9 37 | 12 36 | — | |

*Trains may leave ahead of schedule.

# ROCKPORT · GLOUCESTER · GHS / GHS · GLOUCESTER · ROCKPORT

| AM | | SCHOOL SERVICE | PM | | |
|---|---|---|---|---|---|
| — | — | Dock Square | 2 58 | — | — |
| — | — | South Street & Jerdens Lane | 2 55 | — | — |
| — | — | South Street & Eden Road | 2 53 | — | — |
| — | — | Cape Hedge Inn | 2 51 | — | — |
| — | — | South & Frank Streets | 2 50 | — | — |
| 6 49 | — | Long Beach Dairy Maid | 2 47 | — | — |
| 6 50 | — | Thatcher Road & Witham Street | 2 46 | — | — |
| 6 50 | — | Good Harbor Beach | — | — | — |
| — | — | Thatcher Road & Marina Drive | 2 45 | — | — |
| 6 53 | — | Atlantic & Beach Roads | 2 37 | — | — |
| 6 55 | — | Beach & Moorland Roads | — | — | — |
| 6 56 | — | Atlantic & Moorland Roads | 2 34 | — | — |
| 6 57 | — | Atlantic & High Popples Roads | 2 33 | — | — |
| 6 58 | — | Atlantic & Grapevine Roads | 2 32 | — | — |
| 7 01 | — | Niles Beach | 2 29 | — | — |
| 7 02 | — | Eastern Point & Grapevine Roads | 2 28 | — | — |
| 7 03 | 7 03 | East Main St. & Rocky Neck Avenue | 2 27 | 2 38 | 3 06 |
| 7 05 | 7 05 | East Gloucester Square | 2 25 | 2 36 | — |
| — | 7 06 | East Main & Haskell Streets | — | — | — |
| — | — | Bass Avenue & East Main Street | 2 22 | 2 33 | — |
| — | — | Bass Avenue & Hartz Street | — | 2 32 | — |
| — | 7 07 | Sayward Street & Bass Avenue | — | — | — |
| — | 7 08 | Thatcher Road & Marina Drive | — | 2 31 | — |
| — | 7 09 | Thatcher Road & Barn Lane | — | 2 30 | — |
| — | — | Eastern Avenue & Barn Lane | — | 2 29 | — |
| — | — | Eastern Avenue & Hartz Street | — | 2 27 | — |
| — | 7 11 | Eastern & Harrison Avenues | — | — | — |
| — | 7 13 | Eastern Avenue & Webster Street | — | 2 26 | — |
| — | — | depart Dunkin' Donuts® / Rogers St. | — | — | 3 00 |
| — | 7 15 | arrive Dunkin' Donuts / Rogers St. | 2 20 | — | 2 45 |
| 7 10 | — | Dunkin' Donuts | — | — | — |
| 7 11 | — | Main & Pleasant Streets | — | — | — |
| — | — | Prospect & Rogers Streets | — | 2 23 | — |
| 7 15 | — | Commuter Rail Station | — | — | — |
| 7 20 | 7 20 | GLOUCESTER HIGH SCHOOL | 2 15 | 2 15 | 2 41 |



## GLOUCESTER · ROCKPORT via Thatcher Road

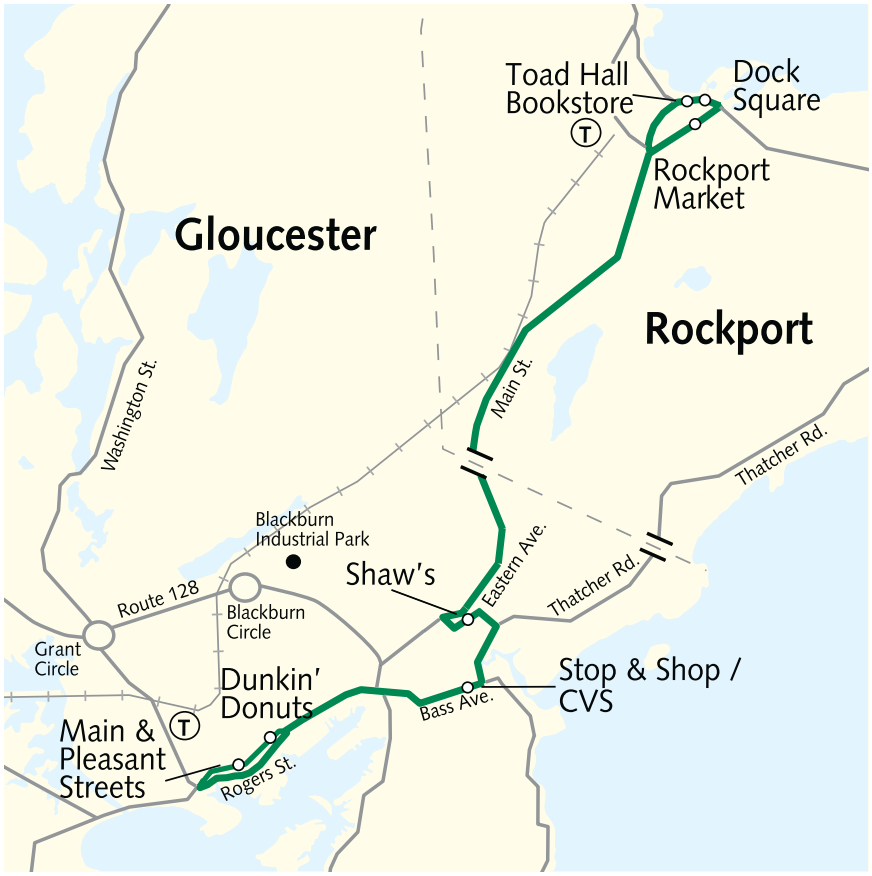
| MONDAY THROUGH FRIDAY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Commuter Rail Station | — | — | — | — | — | — | 5 57 | 6 22 |
| ar Dunkin' Donuts / Rogers St | — | — | — | — | 2 45 | — | — | — |
| dp Dunkin' Donuts / Rogers St | — | — | — | 2 20 | 3 00 | — | 6 01 | 6 26 |
| Dunkin' Donuts | 8 25 | — | 12 25 | — | — | 4 20 | — | — |
| Main & Pleasant Streets | 8 26 | — | 12 26 | — | — | 4 21 | — | — |
| E. Main St & Rocky Neck Ave | 8 35 | — | 12 35 | 2 27 | 3 06 | 4 30 | 6 09 | 6 34 |
| Niles Beach | 8 37 | — | 12 37 | 2 29 | — | 4 32 | 6 11 | 6 36 |
| Atlantic & Moorland Roads | 8 40 | — | 12 40 | 2 34 | — | 4 35 | — | 6 39 |
| Stop & Shop® / CVS® | 8 43 | — | 12 43 | 2 43 | — | 4 38 | — | |
| Good Harbor Beach | 8 45 | — | 12 45 | 2 45 | — | 4 40 | — | |
| Cape Hedge Inn | 8 51 | — | 12 51 | 2 51 | — | 4 46 | — | |
| arrive Dock Square | 8 56 | — | 12 56 | 2 58 | — | 4 51 | — | |
| depart Dock Square | 9 00 | — | 1 00 | 3 00 | — | 4 51 | — | |
| Toad Hall Bookstore | 9 01 | — | 1 01 | 3 01 | — | 4 52 | — | |

| SATURDAY | | | | | | |
|---|---|---|---|---|---|---|
| Dunkin' Donuts | — | 10 25 | 12 25 | 2 25 | — | 4 25 |
| Main & Pleasant Streets | — | 10 26 | 12 26 | 2 26 | — | 4 26 |
| E. Main St. & Rocky Neck Ave. | — | 10 35 | 12 35 | 2 35 | — | 4 35 |
| Niles Beach | — | 10 37 | 12 37 | 2 37 | — | 4 37 |
| Atlantic & Moorland Roads | — | 10 40 | 12 40 | 2 40 | — | 4 40 |
| Stop & Shop / CVS | — | 10 43 | 12 43 | 2 43 | — | 4 43 |
| Good Harbor Beach | — | 10 45 | 12 45 | 2 45 | — | 4 45 |
| Cape Hedge Inn | — | 10 51 | 12 51 | 2 51 | — | 4 51 |
| arrive Dock Square | — | 10 56 | 12 56 | 2 56 | — | 4 56 |
| depart Dock Square | — | 11 00 | 1 00 | 3 00 | — | 5 00 |
| Toad Hall Bookstore | — | 11 01 | 1 01 | 3 01 | — | 5 01 |

## ROCKPORT · GLOUCESTER via Thatcher Road

| MONDAY THROUGH FRIDAY | | | | | | | |
|---|---|---|---|---|---|---|---|
| Rockport Market | — | — | 8 55 | 10 55 | 12 55 | 2 55 | 4 55 |
| Cape Hedge Inn | — | — | 9 00 | 11 00 | 1 00 | 3 00 | 5 00 |
| Good Harbor Beach | — | 6 50 | 9 06 | 11 06 | 1 06 | 3 06 | 5 06 |
| Stop & Shop / CVS | — | — | 9 08 | 11 08 | 1 08 | 3 08 | 5 08 |
| Atlantic & Moorland Roads | 6 16 | 6 55 | 9 11 | 11 11 | 1 11 | 3 11 | 5 11 |
| Niles Beach | 6 19 | 6 58 | 9 14 | 11 14 | 1 14 | 3 14 | 5 14 |
| E. Main St & Rocky Neck Ave | 6 21 | 7 00 | 9 16 | 11 16 | 1 16 | 3 16 | 5 16 |
| arrive Dunkin' Donuts | 6 29 | 7 08 | 9 24 | 11 24 | 1 24 | 3 24 | 5 24 |
| depart Dunkin Donuts | 6 29 | 7 10 | 9 30 | 11 30 | 1 30 | 3 30 | 5 25 |
| Main & Pleasant Streets | 6 30 | 7 11 | 9 31 | 11 31 | 1 31 | 3 31 | 5 26 |
| Commuter Rail Station | 6 34 | 7 15 | — | — | — | — | |
| Addison Gilbert Hospital | 6 37 | — | — | — | — | — | |
| Blackburn Industrial Park | 6 42 | — | — | — | — | — | |

| SATURDAY | | | | | | |
|---|---|---|---|---|---|---|
| Rockport Market | — | — | — | 10 55 | 12 55 | 2 55 |
| Cape Hedge Inn | — | — | — | 11 00 | 1 00 | 3 00 |
| Good Harbor Beach | — | — | — | 11 06 | 1 06 | 3 06 |
| Stop & Shop / CVS | — | — | — | 11 08 | 1 08 | 3 08 |
| Atlantic & Moorland Roads | — | — | — | 11 11 | 1 11 | 3 11 |
| Niles Beach | — | — | — | 11 14 | 1 14 | 3 14 |
| E. Main St & Rocky Neck Ave | — | — | — | 11 16 | 1 16 | 3 16 |
| arrive Dunkin' Donuts | — | — | — | 11 24 | 1 24 | 3 24 |
| depart Dunkin' Donuts | — | — | — | 11 30 | 1 30 | 3 30 |
| Main & Pleasant Streets | — | — | — | 11 31 | 1 31 | 3 31 |


Toad Hall
Bookstore
Dock
Square
Rockport
Market
Gloucester
Rockport
Washington St.
Main St.
Thatcher Rd.
Blackburn
Industrial Park
Shaw's
Eastern Ave.
Thatcher Rd.
Route 128
Blackburn
Circle
Grant
Circle
Dunkin'
Donuts
Stop & Shop /
CVS
Bass Ave.
Main &
Pleasant
Streets
Rogers St.


Barn Lane
Shaw's
Rte. 128
Eastern Ave.
Thatcher Rd.
Stop & Shop /
CVS
To Footbridge
to Good Harbor
Beach
Bass Ave.

## GLOUCESTER · ROCKPORT via Eastern Avenue

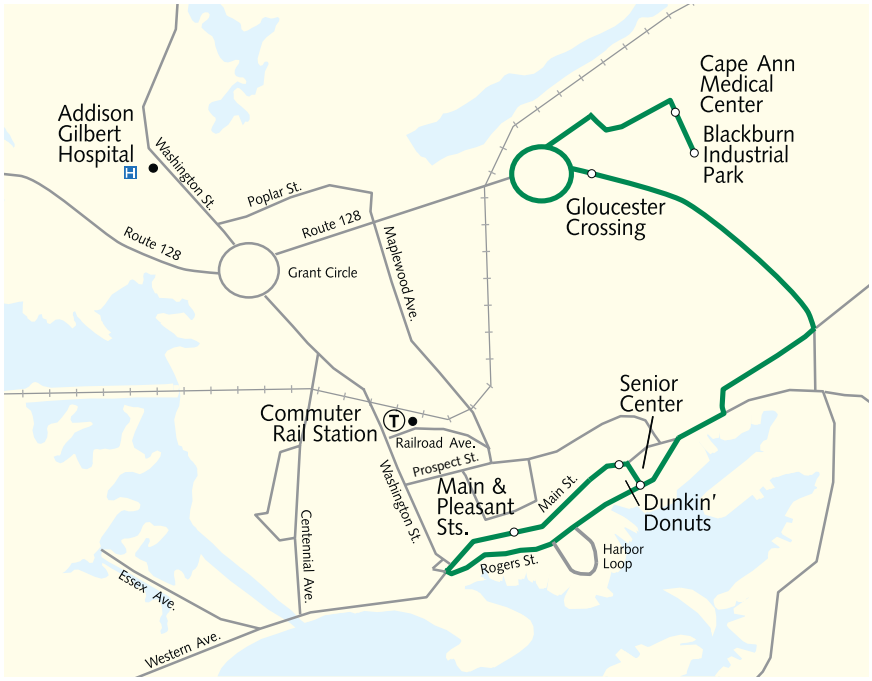
| | MONDAY THROUGH FRIDAY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | 7 30 | 8 30 | 9 30 | 10 30 | 11 30 | 12 30 | 1 30 | — | — | 5 20 |
| Main & Pleasant Sts. | 7 31 | 8 31 | 9 31 | 10 31 | 11 31 | 12 31 | 1 31 | — | — | 5 21 |
| Stop & Shop / CVS | 7 40 | 8 40 | 9 40 | 10 40 | 11 40 | 12 40 | 1 40 | — | — | 5 30 |
| Shaw's Supermarket | 7 41 | 8 41 | 9 41 | 10 41 | 11 41 | 12 41 | 1 41 | — | — | 5 31 |
| arr Rockport Market | 7 47 | 8 47 | 9 47 | 10 47 | 11 47 | 12 47 | 1 47 | — | — | 5 37 |
| dp Rockport Market | 7 50 | 8 55 | 9 50 | 10 55 | 11 50 | 12 55 | 1 50 | — | — | 5 40 |
| Dock Sq/Toad Hall Bkst | 7 51 | — | 9 51 | — | 11 51 | — | 1 51 | — | — | 5 41 |

| | SATURDAY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | — | — | 9 30 | 10 30 | 11 30 | 12 30 | 1 30 | 2 30 | 3 30 |
| Main & Pleasant Sts. | — | — | 9 31 | 10 31 | 11 31 | 12 31 | 1 31 | 2 31 | 3 31 |
| Stop & Shop / CVS | — | — | 9 40 | 10 40 | 11 40 | 12 40 | 1 40 | 2 40 | 3 40 |
| Shaw's Supermarket | — | — | 9 41 | 10 41 | 11 41 | 12 41 | 1 41 | 2 41 | 3 41 |
| ar Rockport Market | — | — | 9 47 | 10 47 | 11 47 | 12 47 | 1 47 | 2 47 | 3 47 |
| dp Rockport Market | — | — | 9 55 | 10 55 | 11 55 | 12 55 | 1 55 | 2 55 | 3 55 |
| Dock Sq/Toad Hall Bkst | — | — | 9 56 | — | 11 56 | — | 1 56 | — | 3 56 |

## ROCKPORT · GLOUCESTER via Eastern Avenue

| | MONDAY THROUGH FRIDAY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rockport Market | 7 55 | — | 10 00 | — | 12 00 | — | 2 00 | — | 4 00 | 4 55 | 5 40 |
| Dock Square | 7 56 | 9 00 | 10 01 | — | 12 01 | 1 00 | 2 01 | 3 00 | 4 01 | 4 56 | 5 41 |
| Toad Hall Bookstore | 7 56 | 9 01 | 10 01 | — | 12 01 | 1 01 | 2 01 | 3 01 | 4 01 | 4 56 | 5 41 |
| Commuter Rail Sta. | — | — | — | — | — | — | — | — | — | — | 5 57 |
| Shaw's Supermarket | 8 04 | 9 09 | 10 09 | — | 12 09 | 1 09 | 2 09 | 3 09 | 4 09 | 5 04 | |
| Stop & Shop / CVS | 8 05 | 9 10 | 10 10 | — | 12 10 | 1 10 | 2 10 | 3 10 | 4 10 | 5 05 | |
| Blackburn Ind. Park | — | — | — | — | — | — | — | — | — | 5 11 | |
| arr Dunkin' Donuts | 8 10 | 9 15 | 10 15 | — | 12 15 | 1 15 | 2 15 | 3 15 | 4 15 | 5 16 | |
| dep Dunkin' Donuts | 8 10 | 9 25 | 10 25 | — | 12 25 | 1 20 | 2 20 | 3 20 | 4 20 | 5 20 | |
| Main & Pleasant Sts. | 8 11 | 9 26 | 10 26 | — | 12 26 | 1 21 | 2 21 | 3 21 | 4 21 | 5 21 | |

| | SATURDAY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rockport Market | — | — | 10 00 | — | 12 00 | — | 2 00 | — | 4 00 | — |
| Dock Square | — | — | 10 01 | 11 00 | 12 01 | 1 00 | 2 01 | 3 00 | 4 01 | 5 00 |
| Toad Hall Bookstore | — | — | 10 01 | 11 01 | 12 01 | 1 01 | 2 01 | 3 01 | 4 01 | 5 01 |
| Shaw's Supermarket | — | — | 10 09 | 11 09 | 12 09 | 1 09 | 2 09 | 3 09 | 4 09 | 5 09 |
| Stop & Shop / CVS | — | — | 10 10 | 11 10 | 12 10 | 1 10 | 2 10 | 3 10 | 4 10 | 5 10 |
| arr Dunkin' Donuts | — | — | 10 15 | 11 15 | 12 15 | 1 15 | 2 15 | 3 15 | 4 15 | 5 15 |
| dep Dunkin' Donuts | — | — | 10 25 | 11 25 | 12 25 | 1 20 | 2 25 | 3 25 | 4 25 | 5 20 |
| Main & Pleasant Sts. | — | — | 10 26 | 11 26 | 12 26 | 1 21 | 2 26 | 3 26 | 4 26 | 5 21 |


Addison Gilbert Hospital
Washington St.
Poplar St.
Route 128
Route 128
Grant Circle
Maplewood Ave.
Cape Ann Medical Center
Blackburn Industrial Park
Gloucester Crossing
Senior Center
Commuter Rail Station
Railroad Ave.
Prospect St.
Main & Pleasant Sts.
Main St.
Dunkin' Donuts
Washington St.
Rogers St.
Harbor Loop
Centennial Ave.
Essex Ave.
Western Ave.

## GLOUCESTER · Blackburn Industrial Park

| | MONDAY THROUGH FRIDAY |
|---|---|
| Dunkin' Donuts | 6 29 |
| Main & Pleasant Sts. | 6 30 |
| Commuter Rail Sta. | 6 34 |
| Addison Gilbert Hosp. | 6 37 |
| Blackburn Ind. Park | 6 42 |

Additional service via Gloucester Crossing & Business Express, **on request**, see below and/or orange-line timetable:

## via Business Express · Blackburn Industrial Park

| | BLACKBURN ON REQUEST: MONDAY THROUGH FRIDAY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | — | 8 00 | 9 00 | 10 00 | 11 00 | 12 00 | 1 00 | 2 00 | 3 00 | 4 00 | 5 00 |
| Main & Pleasant Sts. | — | 8 01 | 9 01 | 10 01 | 11 01 | 12 01 | 1 01 | 2 01 | 3 01 | 4 01 | 5 01 |
| ar Gloucester Crossing | — | 8 16 | 9 16 | 10 16 | 11 16 | 12 16 | 1 16 | 2 16 | 3 16 | 4 16 | 5 16 |
| dp Gloucester Crossing | — | 8 21 | 9 21 | 10 21 | 11 21 | 12 21 | 1 21 | 2 21 | 3 21 | 4 21 | 5 21 |
| Blackburn (**on request**) | — | 8 24 | 9 24 | 10 24 | 11 24 | 12 24 | 1 24 | 2 24 | 3 24 | 4 24 | 5 24 |

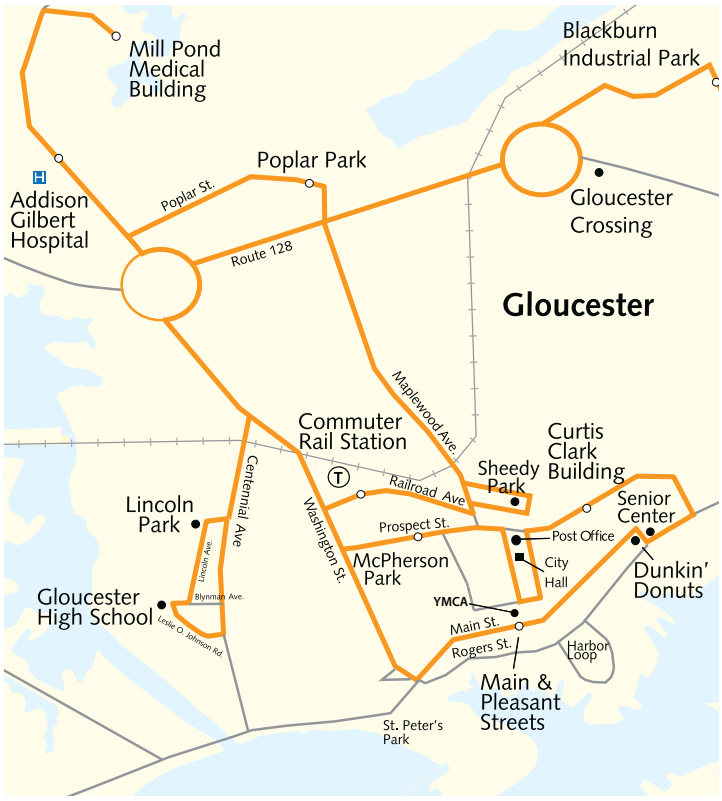
## GLOUCESTER · O'Maley MS · GHS / O'Maley MS · GLOUCESTER

| AM | | | SCHOOL SERVICE | PM |
|---|---|---|---|---|
| — | 7 32 | 7 33 | O'MALEY MIDDLE SCHOOL* | 2 15 |
| 6:58 | — | — | Washington & Poplar Streets | — |
| 6 59 | — | — | Poplar St. & Maplewood Avenue | — |
| 7 00 | — | — | Maplewood & Gloucester Avenues | 2 19 |
| 7 01 | — | 7 31 | Maplewood Avenue & Grove St. | 2 20 |
| 7 02 | — | 7 30 | Maplewood Ave. & Cleveland St. | 2 21 |
| 7 04 | 7 25 | — | McDonald's® | 2 22 |
| — | — | — | Commuter Rail Station | 2 23 |
| 7 06 | — | — | Maplewood Avenue & Prospect St. | — |
| — | — | 7 26 | McPherson Park | — |
| — | — | 7 25 | Washington & Prospect Streets | 2 25 |
| — | — | 7 24 | Commuter Rail Station | — |
| — | — | — | McPherson Park | 2 26 |
| 7 07 | — | 7 22 | Prospect & Pleasant Streets | 2 27 |
| 7 08 | — | 7 21 | Prospect & Warner Streets | 2 28 |
| 7 09 | — | — | Destino's | 2 29 |
| 7 10 | — | 7 19 | Dunkin' Donuts / Rogers Street | — |
| — | — | — | Dunkin' Donuts | 2 30 |
| 7 15 | — | — | GLOUCESTER HIGH SCHOOL† | — |

*Additional stops hourly at Mill Pond Medical Building at 2:27, 3:27 and 4:27 p.m.

†Additional service hourly from 8:07 a.m. until 5:07 p.m.

See main timetable at right.



## Gloucester Crossing & Business Express Loop

| MONDAY THROUGH FRIDAY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | 8 00 | 9 00 | 10 00 | 11 00 | 12 00 | 1 00 | 2 00 | 3 00 | 4 00 | 5 00 |
| Main & Pleasant Streets | 8 01 | 9 01 | 10 01 | 11 01 | 12 01 | 1 01 | 2 01 | 3 01 | 4 01 | 5 01 |
| Lincoln Park | 8 06 | 9 06 | 10 06 | 11 06 | 12 06 | 1 06 | 2 06 | 3 06 | 4 06 | 5 06 |
| GLOU. HIGH SCHOOL | 8 07 | 9 07 | 10 07 | 11 07 | 12 07 | 1 07 | 2 07 | 3 07 | 4 07 | 5 07 |
| arr Gloucester Crossing | 8 16 | 9 16 | 10 16 | 11 16 | 12 16 | 1 16 | 2 16 | 3 16 | 4 16 | 5 16 |
| dep Glou. Crossing | 8 21 | 9 21 | 10 21 | 11 21 | 12 21 | 1 21 | 2 21 | 3 21 | 4 21 | 5 21 |
| Blackburn (**on request**) | 8 24 | 9 24 | 10 24 | 11 24 | 12 24 | 1 24 | 2 24 | 3 24 | 4 24 | 5 24 |
| Mill Pond Medical Bldg. | 8 27 | 9 27 | 10 27 | 11 27 | 12 27 | 1 27 | 2 27 | 3 27 | 4 27 | 5 27 |
| Addison Gilbert Hosp. | 8 29 | 9 29 | 10 29 | 11 29 | 12 29 | 1 29 | 2 29 | 3 29 | 4 29 | 5 29 |
| Poplar Park | 8 31 | 9 31 | 10 31 | 11 31 | 12 31 | 1 31 | 2 31 | 3 31 | 4 31 | 5 31 |
| Sheedy Park | 8 37 | 9 37 | 10 37 | 11 37 | 12 37 | 1 37 | 2 37 | 3 37 | 4 37 | 5 37 |
| Commuter Rail Station | 8 41 | 9 41 | 10 41 | 11 41 | 12 41 | 1 41 | 2 41 | 3 41 | 4 41 | 5 41 |
| McPherson Park | 8 43 | 9 43 | 10 43 | 11 43 | 12 43 | 1 43 | 2 43 | 3 43 | 4 43 | |
| Post Office / City Hall | 8 44 | 9 44 | 10 44 | 11 44 | 12 44 | 1 44 | 2 44 | 3 44 | 4 44 | |
| YMCA Dale Ave & Middle St. | 8 45 | 9 45 | 10 45 | 11 45 | 12 45 | 1 45 | 2 45 | 3 45 | 4 45 | |
| Curtis B. Clark Building | 8 48 | 9 48 | 10 48 | 11 48 | 12 48 | 1 48 | 2 48 | 3 48 | 4 48 | |
| Dunkin' Donuts/Sr. Ctr. | 8 50 | 9 50 | 10 50 | 11 50 | 12 50 | 1 50 | 2 50 | 3 50 | 4 50 | |

| SATURDAY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | — | 9 00 | 10 00 | 11 00 | 12 00 | 1 00 | 2 00 | 3 00 |
| Main & Pleasant Streets | — | 9 01 | 10 01 | 11 01 | 12 01 | 1 01 | 2 01 | 3 01 |
| Lincoln Park | — | 9 06 | 10 06 | 11 06 | 12 06 | 1 06 | 2 06 | 3 06 |
| GLOU. HIGH SCHOOL | — | 9 07 | 10 07 | 11 07 | 12 07 | 1 07 | 2 07 | 3 07 |
| arr Gloucester Crossing | — | 9 16 | 10 16 | 11 16 | 12 16 | 1 16 | 2 16 | 3 16 |
| depart Glou. Crossing | — | 9 21 | 10 21 | 11 21 | 12 21 | 1 21 | 2 21 | 3 21 |
| Mill Pond Medical Bldg. | — | 9 27 | 10 27 | 11 27 | 12 27 | 1 27 | 2 27 | 3 27 |
| Addison Gilbert Hosp. | — | 9 29 | 10 29 | 11 29 | 12 29 | 1 29 | 2 29 | 3 29 |
| Poplar Park | — | 9 31 | 10 31 | 11 31 | 12 31 | 1 31 | 2 31 | 3 31 |
| Sheedy Park | — | 9 37 | 10 37 | 11 37 | 12 37 | 1 37 | 2 37 | 3 37 |
| Commuter Rail Station | — | 9 41 | 10 41 | 11 41 | 12 41 | 1 41 | 2 41 | 3 41 |
| McPherson Park | — | 9 43 | 10 43 | 11 43 | 12 43 | 1 43 | 2 43 | 3 43 |
| Post Office / City Hall | — | 9 44 | 10 44 | 11 44 | 12 44 | 1 44 | 2 44 | 3 44 |
| YMCA Dale Ave & Middle St. | — | 9 45 | 10 45 | 11 45 | 12 45 | 1 45 | 2 45 | 3 45 |
| Curtis B. Clark Building | — | 9 48 | 10 48 | 11 48 | 12 48 | 1 48 | 2 48 | 3 48 |
| Dunkin' Donuts/Sr. Ctr. | — | 9 50 | 10 50 | 11 50 | 12 50 | 1 50 | 2 50 | 3 50 |

## Cruiseship Trolley Route

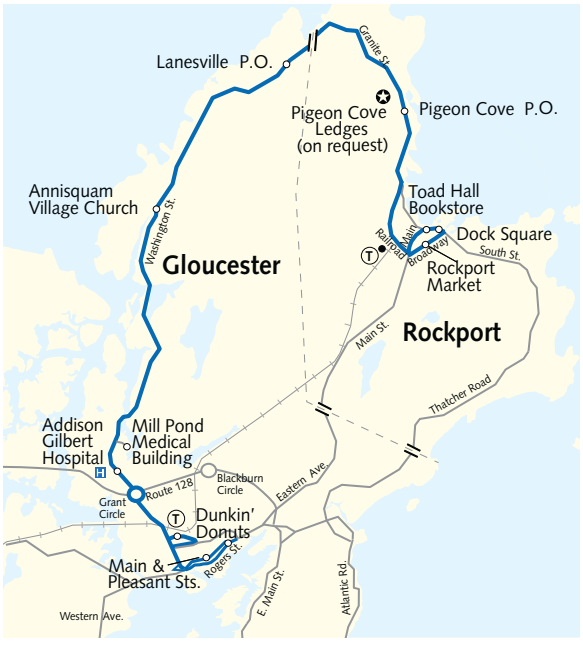
Seasonal - April through October
Frequency: every 15 minutes
(see map supplement)

Cruiseport Gloucester
Main & Pleasant Streets
Main & Hancock Streets
Washington & Rogers Streets
Middle Street & Western Avenue
Rogers & Hancock Streets
Rogers Street & Harbor Loop
Cruiseport Gloucester

# ROCKPORT · O'Maley MS · GHS · GLOUCESTER / GLOUCESTER · GHS · O'Maley MS · ROCKPORT

| AM | | | SCHOOL SERVICE | PM | | | |
|---|---|---|---|---|---|---|---|
| — | — | — | Dock Sq. / Toad Hall Bookstore | — | — | 3 01 | 4 01 |
| 6 45 | — | — | Rockport Market | 2 46 | — | 3 00 | 4 00 |
| 6 46 | — | — | Dock Sq. / Toad Hall Bookstore | — | — | — | — |
| 6 49 | — | — | Commuter Rail Station | 2 43 | — | 2 57 | 3 58 |
| 6 52 | — | — | Pigeon Cove Post Office | 2 40 | — | 2 54 | 3 55 |
| 6 55 | — | — | Washington & Woodbury Streets | 2 37 | 2 39 | — | 3 53 |
| 6 56 | — | — | Langsford St. & Rockwood Lane | — | — | — | — |
| 6 57 | — | — | Langsford St. & Norseman Ave. | — | — | — | — |
| — | — | — | Washington St. & Munsey Lane | 2 35 | — | — | — |
| — | — | — | Langsford & Andrews Streets | — | 2 37 | — | 3 51 |
| 6 58 | — | — | Lanesville Post Office | 2 33 | — | 2 48 | 3 51 |
| 7 00 | — | — | Bay View Fire Station | 2 30 | 2 34 | — | 3 48 |
| — | 6 58 | — | Washington & Colburn Streets | — | — | — | — |
| — | 7 00 | — | Washington & Revere Streets | — | — | — | — |
| 7 02 | 7 02 | — | Annisquam Village Church | 2 29 | 2 33 | 2 44 | 3 47 |
| 7 03 | — | — | Annisquam Wooden Bridge | 2 28 | 2 32 | — | 3 46 |
| 7 04 | — | — | Washington & Dennison Streets | 2 26 | 2 30 | — | 3 44 |
| — | 7 05 | — | Willow Rest | 2 25 | 2 29 | — | 3 43 |
| — | — | 7:21 | Centennial & Commonwealth Av | — | — | — | — |
| — | — | 7:23 | Centennial Ave. & Exchange St. | — | — | — | — |
| — | — | 7 24 | Washington & Grove Streets | — | — | — | — |
| — | — | 7 25 | Washington St. & Madison Ave. | — | — | — | — |
| — | — | 7 25 | Washington St & Gloucester Ave | — | — | — | — |
| — | 7 06 | 7 29 | Washington & Stanwood Streets | — | — | 2 41 | — |
| — | — | 7 29 | Stanwood Street & Gee Avenue | — | 2 28 | — | 3 42 |
| — | 7 07 | — | Gee Avenue & Cherry Street | — | — | 2 40 | — |
| — | 7 08 | — | Cherry Street & Cherry Hill Road | — | 2 27 | 2 39 | 3 41 |
| — | 7 09 | 7 31 | Cherry Street & Finch Lane | — | 2 26 | 2 38 | 3 40 |
| — | 7 11 | — | Cherry & Reynard Streets | — | 2 24 | 2 36 | 3 39 |
| — | — | 7 33 | O'MALEY MIDDLE SCHOOL | — | — | 2 32 | — |
| 7 08 | — | — | Washington & Hodgkins Streets | — | — | — | — |
| 7 09 | — | — | Washington & Wheeler Streets | 2 22 | 2 22 | 2 29 | 3 36 |
| 7 10 | — | — | Addison Gilbert Hospital | 2 21 | 2 21 | 2 28 | 3 35 |
| 7 11 | — | — | Washington & Poplar Streets | 2 20 | 2 20 | — | 3 34 |
| 7 13 | — | — | Commuter Rail Station | — | — | — | — |
| 7 18 | 7 18 | — | GLOUCESTER HIGH SCHOOL | 2 15 | 2 15 | — | 3 30 |
| — | — | — | Commuter Rail Station | — | — | 2 25 | 3 25 |
| — | — | — | Main & Pleasant Streets | — | — | 2 21 | 3 21 |
| 7 23 | — | — | arrive Dunkin' Donuts | — | — | — | — |
| 7 25 | — | — | depart Dunkin' Donuts | — | — | 2 20 | 3 20 |
| 7 26 | — | — | Main & Pleasant Streets | — | — | — | — |

School Day



## GLOUCESTER · ROCKPORT via Lanesville

| MONDAY THROUGH FRIDAY | | | | | | NON-SCHOOL | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | 7 25 | 9 25 | 11 25 | 1 20 | 2 20 | 3 30 | 4 25 | 5 25 | — | — |
| Main & Pleasant Streets | 7 26 | 9 26 | 11 26 | 1 21 | 2 21 | 3 31 | 4 26 | 5 26 | — | — |
| Commuter Rail Station | 7 30 | 9 30 | 11 30 | 1 25 | 2 25 | 3 35 | 4 30 | 5 30 | 5 57 | 6 22 |
| Addison Gilbert Hospital | 7 33 | 9 33 | 11 33 | 1 28 | 2 28 | 3 38 | 4 33 | 5 33 | 6 00 | 6 25 |
| Annisquam Village Church | 7 39 | 9 39 | 11 39 | 1 34 | 2 34 | 3 44 | 4 39 | 5 39 | 6 06 | 6 31 |
| Lanesville Post Office | 7 42 | 9 42 | 11 42 | 1 37 | 2 37 | 3 47 | 4 42 | 5 42 | 6 09 | 6 34 |
| Pigeon Cove Post Office | 7 48 | 9 48 | 11 48 | 1 43 | 2 43 | 3 53 | 4 48 | 5 48 | 6 15 | 6 40 |
| Commuter Rail Station | 7 51 | 9 51 | 11 51 | 1 46 | 2 46 | 3 56 | 4 51 | 5 51 | 6 18 | 6 43 |
| arrive Rockport Market | 7 54 | 9 54 | 11 54 | 1 49 | 2 49 | 3 59 | 4 54 | 5 54 | 6 21 | 6 46 |
| depart Rockport Market | 7 55 | 10 00 | 12 00 | 2 00 | 2 49 | 4 00 | 4 55 | 5 55 | 6 21 | 6 46 |
| Dock Square | 7 56 | 10 01 | 12 01 | 2 01 | 2 50 | 4 01 | 4 56 | 5 56 | 6 22 | 6 47 |
| Toad Hall Bookstore | 7 56 | 10 01 | 12 01 | 2 01 | 2 50 | 4 01 | 4 56 | 5 56 | 6 22 | 6 47 |

| SATURDAY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dunkin' Donuts | — | 9 30 | 11 25 | 1 25 | — | 3 25 | — | 5 20 |
| Main & Pleasant Streets | — | 9 31 | 11 26 | 1 26 | — | 3 26 | — | 5 21 |
| Commuter Rail Station | — | 9 35 | 11 30 | 1 30 | — | 3 30 | — | 5 25 |
| Addison Gilbert Hospital | — | 9 38 | 11 33 | 1 33 | — | 3 33 | — | 5 28 |
| Annisquam Village Church | — | 9 44 | 11 39 | 1 39 | — | 3 39 | — | 5 34 |
| Lanesville Post Office | — | 9 47 | 11 42 | 1 42 | — | 3 42 | — | 5 37 |
| Pigeon Cove Post Office | — | 9 53 | 11 48 | 1 48 | — | 3 48 | — | 5 43 |
| Commuter Rail Station | — | 9 56 | 11 51 | 1 51 | — | 3 51 | — | 5 46 |
| arrive Rockport Market | — | 9 59 | 11 54 | 1 54 | — | 3 54 | — | 5 49 |
| depart Rockport Market | — | 10 00 | 12 00 | 2 00 | — | 4 00 | — | 5 49 |
| Dock Square | — | 10 01 | 12 01 | 2 01 | — | 4 01 | — | 5 50 |
| Toad Hall Bookstore | — | 10 01 | 12 01 | 2 01 | — | 4 01 | — | 5 50 |

## ROCKPORT · GLOUCESTER via Lanesville

| MONDAY THROUGH FRIDAY | | NON - SCHOOL | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Rockport Market | 6 20 | 6 45 | 7 50 | 9 50 | 11 50 | 1 50 | — | 5 55 |
| Dock Square | 6 21 | 6 46 | 7 51 | 9 51 | 11 51 | 1 51 | — | 5 56 |
| Toad Hall Bookstore | 6 21 | 6 46 | 7 51 | 9 51 | 11 51 | 1 51 | — | 5 56 |
| Commuter Rail Station | 6 24 | 6 49 | 7 54 | 9 54 | 11 54 | 1 54 | — | 5 59 |
| Pigeon Cove Post Office | 6 27 | 6 52 | 7 57 | 9 57 | 11 57 | 1 57 | — | 6 02 |
| Lanesville Post Office | 6 33 | 6 58 | 8 03 | 10 03 | 12 03 | 2 03 | — | 6 08 |
| Annisquam Village Church | 6 36 | 7 01 | 8 06 | 10 06 | 12 06 | 2 06 | — | 6 11 |
| Addison Gilbert Hospital | 6 42 | 7 07 | 8 12 | 10 12 | 12 12 | 2 12 | — | 6 17 |
| Commuter Rail Station | 6 45 | 7 10 | 8 15 | 10 15 | 12 15 | 2 15 | — | 6 22 |
| Dunkin' Donuts/Rogers St | — | — | — | — | — | — | — | 6 26 |
| arrive Dunkin' Donuts | — | 7 15 | 8 20 | 10 20 | 12 20 | 2 20 | — | |
| depart Dunkin' Donuts | — | 7 25 | 8 30 | 10 30 | 12 30 | — | — | |
| Main & Pleasant Streets | — | 7 26 | 8 31 | 10 31 | 12 31 | — | — | |

| SATURDAY | | | | | | | |
|---|---|---|---|---|---|---|---|
| Rockport Market | — | — | 8 25 | 9 55 | 11 55 | 1 55 | 3 55 |
| Dock Square | — | — | 8 26 | 9 56 | 11 56 | 1 56 | 3 56 |
| Toad Hall Bookstore | — | — | 8 26 | 9 56 | 11 56 | 1 56 | 3 56 |
| Commuter Rail Station | — | — | 8 29 | 9 56 | 11 56 | 1 56 | 3 56 |
| Pigeon Cove Post Office | — | — | 8 32 | 9 59 | 11 59 | 1 59 | 3 59 |
| Lanesville Post Office | — | — | 8 38 | 10 02 | 12 02 | 2 02 | 4 02 |
| Annisquam Village Church | — | — | 8 41 | 10 11 | 12 11 | 2 11 | 4 11 |
| Addison Gilbert Hospital | — | — | 8 47 | 10 17 | 12 17 | 2 17 | 4 17 |
| Commuter Rail Station | — | — | 8 50 | 10 20 | 12 20 | 2 20 | 4 20 |
| arrive Dunkin' Donuts | — | — | 8 55 | 10 25 | 12 25 | 2 25 | 4 25 |
| depart Dunkin' Donuts | — | — | 9 00 | 10 30 | — | 2 30 | 4 30 |
| Main & Pleasant Streets | — | — | 9 01 | 10 31 | — | 2 31 | 4 31 |

# APPENDIX D

## Zoning Map
## City of Gloucester

Ipswich Bay

WINGAERSHEEK RD
ATLANTIC AVE
SEA FOX LN
LONG WHRF
CONCORD ST
ATLANTIC ST
BRAY ST
FERNALD ST
SUMNER ST
ESSEX AVE
RT-128
13
12
KENT RD
NEW WAY LN
PEW AVE
UNCAS RD
LAUREL ST
MAGNOLIA AVE
BOND ST
RT-133
RT-127
KONDELIN RD
WESTERN AVE
EMILY LN
LAKE RD
HESPERUS AVE
FULLER ST
LEXINGTON AVE
DOLLIVER'S NCK
LEONARD ST
WASHINGTON ST
AMES DR
QUARRY ST
DULEY ST
LANGSFORD ST
HIGH ST
HOLLY ST
GEE AVE
WHEELER ST
HODGKINS ST
APPLE ST
CHERRY ST
MARSH ST
POPLAR ST
DORY RD
POND RD
EASTERN AVE
RT-127A
SALT ISLAND RD
HARTZ ST
BASS AVE
BEACH RD
MOORLAND RD
DERBY ST
WILLETT ST
TRASK ST
GREEN ST
FRIEND ST
PEARL ST
PROSPECT ST
GRANITE ST
MAIN ST
E MAIN ST
CHAPEL ST
RUM ST
LEDGE RD
LINKS RD
ATLANTIC RD
ELM AVE
ROUSE RD

Atlantic Ocean

N
W
E
S

1 0.5 0 1 Miles

**Legend**

**Zoning Districts**

**ZONE1**

- BP
- CB
- CCD
- EB
- GI
- MI
- NB
- R-10
- R-20
- R-30
- R-40
- R-5
- R-80
- RC-40
- VB

# Zoning Map

Figure 7

# APPENDIX E

## Zoning Map
## Town of Rockport

# PLANNING BOARD
# ZONING MAP

## TOWN OF ROCKPORT
**MASSACHUSETTS**
**September 11, 2012**

Map adopted at Fall Town Meeting, September 10, 2012. Zone B, and the boundaries of the Coastal Flood Plain District do not appear on this map. The zoning lines are approximate. Please refer to documents on file with the Rockport Assessors Office or the South Essex Registry of Deeds for the exact location of boundaries. Zone A Boundary source is MA DEP DWP - MassGIS layer.

Water Supply Protection Overlay District: The Water Supply Protection Overlay District Zones of Protection are defined in 310 CMR 22.02 and the Rockport Zoning By-Laws. Zone A, Zone I, and Zone II are delineated on this Zoning Map for the Town's surface &ground water supplies.

## LEGEND

### Zoning Districts
- Single Residential 'AA' District
- Single Residential District
- Residential 'A' District
- Residential District
- Semi-Residential District
- General District
- Downtown

### Water Supply Protection Overlay District

#### Ground Water Supplies
- Deep Rock Well
- Zone I (Deep Rock Well - 400' Protective Radius)
- Zonell (Deep Rock Well)
- Mill Brook Wells
- Zone I (Mill Brook Wellfield - 250' Protective Radius))
- Zone II (Mill Brook Wellfield)

#### Surface Water Supplies
- Zone A
- Watershed Boundaries

### Miscellaneous Districts
- Wireless Communications Facility Overlay District
- Town Owned
- Unzoned Districts

N W E S

850 425 0 850 1,700 Feet

1 inch = 800 feet

ATLANTIC OCEAN

TOWN OF ROCKPORT MASSACHUSETTS INCORPORATED FEB. 27. 1840.

*Prepared by:*
*Jeff Amero, Cape Ann Mapping*
*Rockport, MA*

# APPENDIX F

## Cape Ann Trail Map
## Metropolitan Area Planning Council

# Cape Ann Trail Map

| | Proposed | Existing |
|---|---|---|
| **Shared-use paths** | | |
| Improved path | | |
| Unimproved path | | |
| **Bicycle facilities (on-road)** | | |
| Cycle track | | |
| Bike lane | | |
| Shared lane | | |
| On-road route | | |

| | Proposed | Existing |
|---|---|---|
| **Walking facilities** | | |
| Walking path or trail | | |
| **Water facilities** | | |
| Water trail | | |

Fairmount Greenway
Building
Municipal boundary
Water body
Open space

Data Sources: MAPC, MassGIS, MassDOT

January, 2014

**Regional facilities**

Regional Greenway (proposed)
Regional walking trail (proposed)

0 1,000 Feet

2

MAPC 50 YEARS
METROPOLITAN AREA PLANNING COUNCIL
SMART GROWTH AND REGIONAL COLLABORATION

# APPENDIX G

## Average Weekday and Summer Weekend Day Traffic Volume Estimates

**Summary of Average Weekday and Summer Weekend Day Traffic Estimates**

**STA 1: Route 127A (Bass Ave) W. of Atlantic Rd**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 4423 | 4000 | 320 | 0.08 |
| SB | 4904 | 4400 | 360 | 0.08 |
| Sum | 9327 | 8400 | 680 | 0.08 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 4599 | 5478 | 5000 | 370 | 0.07 |
| SB | 5206 | 5608 | 5400 | 515 | 0.10 |
| Sum | 9805 | 11086 | 10400 | 885 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 125% | 116% |
| 123% | 143% |
| 124% | 130% |

**STA 2: Route 127A (Thatcher Rd) W. of Bass Ave**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 4550 | 4100 | 370 | 0.09 |
| SB | 4610 | 4200 | 370 | 0.09 |
| Sum | 9160 | 8300 | 740 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 4994 | 5304 | 5100 | 550 | 0.11 |
| SB | 4908 | 5275 | 5100 | 410 | 0.08 |
| Sum | 9902 | 10579 | 10200 | 960 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 124% | 149% |
| 121% | 111% |
| 123% | 130% |

**STA 3: Route 127A(Thatcher Rd) at Good Harbor Beach**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 5410 | 4900 | 470 | 0.10 |
| SB | 5185 | 4700 | 440 | 0.09 |
| Sum | 10595 | 9600 | 910 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 9007 | 9683 | 9300 | 650 | 0.07 |
| SB | 9975 | 9674 | 9800 | 700 | 0.07 |
| Sum | 18982 | 19357 | 19100 | 1350 | 0.07 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 190% | 138% |
| 209% | 159% |
| 199% | 148% |

**STA 4: Route 127A (Thatcher Rd) N. of Glenmere Rd**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 2850 | 2600 | 250 | 0.10 |
| SB | 2327 | 2100 | 150 | 0.07 |
| Sum | 5177 | 4700 | 400 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 3381 | 3097 | 3200 | 290 | 0.09 |
| SB | 2689 | 2634 | 2700 | 200 | 0.07 |
| Sum | 6070 | 5731 | 5900 | 490 | 0.08 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 123% | 116% |
| 129% | 133% |
| 126% | 123% |

**STA 5: Route 127A (Thatcher Rd) S. of Oakes Lane**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 2653 | 2400 | 210 | 0.09 |
| SB | 2512 | 2300 | 170 | 0.07 |
| Sum | 5165 | 4700 | 380 | 0.08 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 2969 | 2868 | 2900 | 250 | 0.09 |
| SB | 2420 | 2555 | 2500 | 240 | 0.10 |
| Sum | 5389 | 5423 | 5400 | 490 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 121% | 119% |
| 109% | 141% |
| 115% | 129% |

**STA 6: Route 127 (Main St) S. of Parker St**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 6688 | 6000 | 510 | 0.09 |
| SB | 6784 | 6100 | 420 | 0.07 |
| Sum | 13472 | 12100 | 930 | 0.08 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 7012 | 6254 | 6600 | 570 | 0.09 |
| SB | 6674 | 6315 | 6500 | 510 | 0.08 |
| Sum | 13686 | 12569 | 13100 | 1080 | 0.08 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 110% | 112% |
| 107% | 121% |
| 108% | 116% |

**STA 7: Route 127 (Broadway) N. of School St**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 2637 | 2400 | 170 | 0.07 |
| SB | 5028 | 4500 | 370 | 0.08 |
| Sum | 7665 | 6900 | 540 | 0.08 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 2904 | 2157 | 2600 | 240 | 0.09 |
| SB | 7522 | 7125 | 7300 | 700 | 0.10 |
| Sum | 10426 | 9282 | 9900 | 940 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 108% | 141% |
| 162% | 189% |
| 143% | 174% |

**STA 8: Route 127 (Mt. Pleasant St) S. of Broadway**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 3994 | 3600 | 280 | 0.08 |
| SB | 2948 | 2700 | 210 | 0.08 |
| Sum | 6942 | 6300 | 490 | 0.08 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 4815 | 4478 | 4700 | 410 | 0.09 |
| SB | 3543 | 3446 | 3500 | 340 | 0.10 |
| Sum | 8358 | 7924 | 8200 | 750 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 131% | 146% |
| 130% | 162% |
| 130% | 153% |

**STA 9: Main St E. of Beach St (One-way WB only)**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| WB | 2211 | 2000 | 170 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 2692 | 3082 | 2900 | 270 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 145% | 159% |

**STA 10: Beach St E. of Route 127 (Granite St)**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 1703 | 1500 | 140 | 0.09 |
| SB | 643 | 600 | 50 | 0.08 |
| Sum | 2346 | 2100 | 190 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 1935 | 2218 | 2100 | 180 | 0.09 |
| SB | 834 | 1063 | 900 | 80 | 0.09 |
| Sum | 2769 | 3281 | 3000 | 260 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 140% | 129% |
| 150% | 160% |
| 143% | 137% |

**STA 11: Route 127 (Granite St) N. of Beach St**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 4113 | 3700 | 350 | 0.09 |
| SB | 3911 | 3500 | 280 | 0.08 |
| Sum | 8024 | 7200 | 630 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 4366 | 4327 | 4300 | 360 | 0.08 |
| SB | 4153 | 3981 | 4100 | 320 | 0.08 |
| Sum | 8519 | 8308 | 8400 | 680 | 0.08 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 116% | 103% |
| 117% | 114% |
| 117% | 108% |

**STA 12: Route 127 (Granite St) N. of Woodbury Hill**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 1501 | 1400 | 140 | 0.10 |
| SB | 1639 | 1500 | 140 | 0.09 |
| Sum | 3140 | 2900 | 280 | 0.10 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 1745 | 1773 | 1800 | 170 | 0.09 |
| SB | 1910 | 2069 | 2000 | 180 | 0.09 |
| Sum | 3655 | 3842 | 3800 | 350 | 0.09 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 129% | 121% |
| 133% | 129% |
| 131% | 125% |

**STA 13: Route 127 (Langsford St) S. of Andrews St**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 1634 | 1500 | 120 | 0.08 |
| SB | 1327 | 1200 | 110 | 0.09 |
| Sum | 2961 | 2700 | 230 | 0.09 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 1768 | 1808 | 1800 | 150 | 0.08 |
| SB | 1274 | 1132 | 1500 | 130 | 0.09 |
| Sum | 3042 | 2940 | 3300 | 280 | 0.08 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 120% | 125% |
| 125% | 118% |
| 122% | 122% |

**STA 14: Route 127 (Washington St) S. ofStanwood St**

Average Weekday Traffic

| | Average | Adjusted | Peak-Hour | PH/24-Hr |
|---|---|---|---|---|
| NB | 4526 | 4100 | 280 | 0.07 |
| SB | 4991 | 4500 | 420 | 0.09 |
| Sum | 9517 | 8600 | 700 | 0.08 |

Average Summer Weekend Day Traffic

| | 7/13 Sat | 7/14 Sun | Average | Peak Hour | PH/24-Hr |
|---|---|---|---|---|---|
| NB | 4507 | 4275 | 4400 | 320 | 0.07 |
| SB | 4916 | 4538 | 4700 | 400 | 0.09 |
| Sum | 9423 | 8813 | 9100 | 720 | 0.08 |

Summer Weekend /Average Weekday

| Daily Traffic | Peak Hour Traffic |
|---|---|
| 107% | 114% |
| 104% | 95% |
| 106% | 103% |

## APPENDIX H

### Turning Movement Counts
### Saturday, July 13, 2013, 10:00 AM – 2:00 PM

Location 1
Rt127A (Thatcher Rd./Bass Ave.) at Atlantic Rd., Gloucester

Location 2
Rt127A (Thatcher Rd.) at Barn Ln., Gloucester

Location 3
Rt127A (Thatcher Rd.) at Witham St., Gloucester

Location 4
Rt127A (Mt. Pleasant St./Broadway) at T-Wharf, Rockport

Location 5
Dock Square (Mt. Pleasant St. at Main St.), Rockport

Location 6:
Route 127 (Washington St.) at Stanwood St., Gloucester

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Bass Ave. @ Thatcher & Atlantic Rds.
Counted by Miovision
S13-037 TMC # 1

File Name : S13-037 1 Gloucester
Site Code : 119272
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car - Truck

| | Route 127A Thatcher Road From North | | | | Bass Avenue From East | | | | Atlantic Road From South | | | | Route 127A Bass Avenue From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 39 | 21 | 8 | 68 | 0 | 1 | 0 | 1 | 2 | 24 | 31 | 57 | 16 | 27 | 36 | 79 | 205 |
| 10:15 AM | 42 | 21 | 8 | 71 | 1 | 2 | 0 | 3 | 4 | 35 | 40 | 79 | 10 | 18 | 39 | 67 | 220 |
| 10:30 AM | 38 | 31 | 14 | 83 | 0 | 0 | 1 | 1 | 8 | 33 | 31 | 72 | 13 | 17 | 47 | 77 | 233 |
| 10:45 AM | 52 | 30 | 7 | 89 | 1 | 1 | 0 | 2 | 4 | 27 | 31 | 62 | 22 | 19 | 47 | 88 | 241 |
| Total | 171 | 103 | 37 | 311 | 2 | 4 | 1 | 7 | 18 | 119 | 133 | 270 | 61 | 81 | 169 | 311 | 899 |
| 11:00 AM | 47 | 23 | 17 | 87 | 0 | 1 | 0 | 1 | 3 | 30 | 31 | 64 | 17 | 29 | 50 | 96 | 248 |
| 11:15 AM | 50 | 19 | 8 | 77 | 2 | 0 | 0 | 2 | 7 | 30 | 52 | 89 | 15 | 23 | 55 | 93 | 261 |
| 11:30 AM | 33 | 36 | 16 | 85 | 4 | 2 | 0 | 6 | 3 | 43 | 33 | 79 | 20 | 23 | 53 | 96 | 266 |
| 11:45 AM | 49 | 21 | 13 | 83 | 4 | 2 | 0 | 6 | 3 | 45 | 28 | 76 | 22 | 35 | 51 | 108 | 273 |
| Total | 179 | 99 | 54 | 332 | 10 | 5 | 0 | 15 | 16 | 148 | 144 | 308 | 74 | 110 | 209 | 393 | 1048 |
| 12:00 PM | 46 | 24 | 16 | 86 | 1 | 0 | 0 | 1 | 14 | 36 | 32 | 82 | 23 | 31 | 43 | 97 | 266 |
| 12:15 PM | 39 | 18 | 12 | 69 | 0 | 0 | 1 | 1 | 10 | 33 | 50 | 93 | 19 | 26 | 38 | 83 | 246 |
| 12:30 PM | 39 | 25 | 9 | 73 | 1 | 1 | 0 | 2 | 4 | 28 | 28 | 60 | 23 | 30 | 45 | 98 | 233 |
| 12:45 PM | 30 | 22 | 10 | 62 | 0 | 2 | 0 | 2 | 6 | 48 | 22 | 76 | 18 | 35 | 68 | 121 | 261 |
| Total | 154 | 89 | 47 | 290 | 2 | 3 | 1 | 6 | 34 | 145 | 132 | 311 | 83 | 122 | 194 | 399 | 1006 |
| 01:00 PM | 50 | 29 | 11 | 90 | 0 | 0 | 0 | 0 | 5 | 27 | 29 | 61 | 17 | 31 | 54 | 102 | 253 |
| 01:15 PM | 57 | 20 | 16 | 93 | 0 | 0 | 0 | 0 | 7 | 40 | 31 | 78 | 22 | 27 | 56 | 105 | 276 |
| 01:30 PM | 41 | 22 | 10 | 73 | 2 | 3 | 0 | 5 | 8 | 37 | 24 | 69 | 25 | 21 | 52 | 98 | 245 |
| 01:45 PM | 52 | 19 | 7 | 78 | 1 | 2 | 0 | 3 | 6 | 48 | 37 | 91 | 18 | 28 | 45 | 91 | 263 |
| Total | 200 | 90 | 44 | 334 | 3 | 5 | 0 | 8 | 26 | 152 | 121 | 299 | 82 | 107 | 207 | 396 | 1037 |
| Grand Total | 704 | 381 | 182 | 1267 | 17 | 17 | 2 | 36 | 94 | 564 | 530 | 1188 | 300 | 420 | 779 | 1499 | 3990 |
| Apprch % | 55.6 | 30.1 | 14.4 | | 47.2 | 47.2 | 5.6 | | 7.9 | 47.5 | 44.6 | | 20 | 28 | 52 | | |
| Total % | 17.6 | 9.5 | 4.6 | 31.8 | 0.4 | 0.4 | 0.1 | 0.9 | 2.4 | 14.1 | 13.3 | 29.8 | 7.5 | 10.5 | 19.5 | 37.6 | |
| Car | 692 | 379 | 178 | 1249 | 17 | 17 | 2 | 36 | 94 | 557 | 526 | 1177 | 298 | 415 | 771 | 1484 | 3946 |
| % Car | 98.3 | 99.5 | 97.8 | 98.6 | 100 | 100 | 100 | 100 | 100 | 98.8 | 99.2 | 99.1 | 99.3 | 98.8 | 99 | 99 | 98.9 |
| Truck | 12 | 2 | 4 | 18 | 0 | 0 | 0 | 0 | 0 | 7 | 4 | 11 | 2 | 5 | 8 | 15 | 44 |
| % Truck | 1.7 | 0.5 | 2.2 | 1.4 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0.8 | 0.9 | 0.7 | 1.2 | 1 | 1 | 1.1 |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Rd (Rte 127A) & Barn Lane
Counted by Miovision
S13-037 TMC # 2

File Name : S13-037 2 Gloucester
Site Code : 119285
Start Date : 7/13/2013
Page No : 1

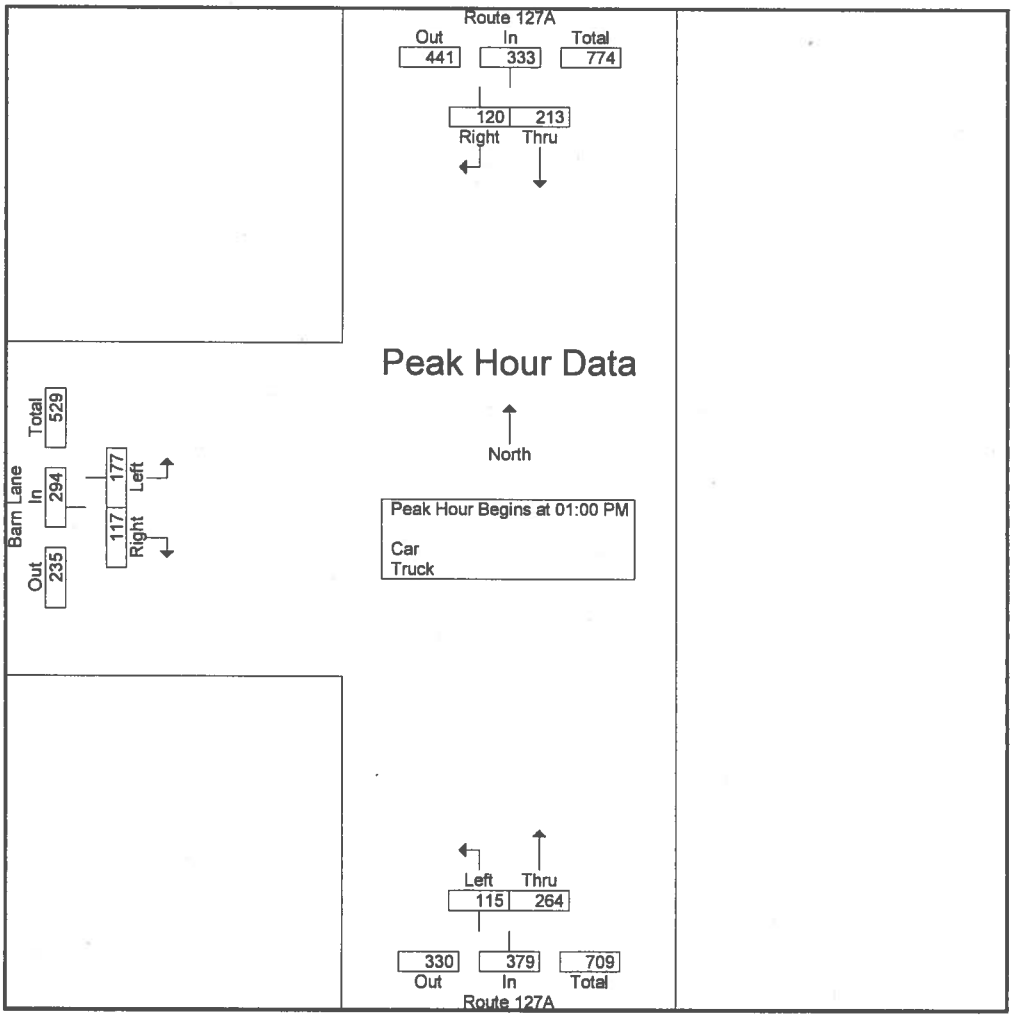
Groups Printed- Car - Truck

| | Route 127A From North | | | Route 127A From South | | | Barn Lane From West | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | App. Total | Thru | Left | App. Total | Right | Left | App. Total | Int. Total |
| 10:00 AM | 30 | 40 | 70 | 33 | 31 | 64 | 34 | 37 | 71 | 205 |
| 10:15 AM | 30 | 53 | 83 | 51 | 25 | 76 | 22 | 33 | 55 | 214 |
| 10:30 AM | 22 | 48 | 70 | 57 | 26 | 83 | 20 | 46 | 66 | 219 |
| 10:45 AM | 22 | 72 | 94 | 53 | 38 | 91 | 35 | 31 | 66 | 251 |
| Total | 104 | 213 | 317 | 194 | 120 | 314 | 111 | 147 | 258 | 889 |
| | | | | | | | | | | |
| 11:00 AM | 22 | 44 | 66 | 61 | 32 | 93 | 33 | 36 | 69 | 228 |
| 11:15 AM | 16 | 44 | 60 | 66 | 26 | 92 | 29 | 42 | 71 | 223 |
| 11:30 AM | 23 | 48 | 71 | 62 | 30 | 92 | 28 | 52 | 80 | 243 |
| 11:45 AM | 22 | 57 | 79 | 75 | 29 | 104 | 20 | 36 | 56 | 239 |
| Total | 83 | 193 | 276 | 264 | 117 | 381 | 110 | 166 | 276 | 933 |
| | | | | | | | | | | |
| 12:00 PM | 23 | 54 | 77 | 58 | 32 | 90 | 30 | 38 | 68 | 235 |
| 12:15 PM | 24 | 45 | 69 | 59 | 23 | 82 | 36 | 40 | 76 | 227 |
| 12:30 PM | 23 | 40 | 63 | 47 | 29 | 76 | 28 | 48 | 76 | 215 |
| 12:45 PM | 17 | 39 | 56 | 88 | 38 | 126 | 24 | 38 | 62 | 244 |
| Total | 87 | 178 | 265 | 252 | 122 | 374 | 118 | 164 | 282 | 921 |
| | | | | | | | | | | |
| 01:00 PM | 17 | 53 | 70 | 62 | 29 | 91 | 35 | 43 | 78 | 239 |
| 01:15 PM | 32 | 55 | 87 | 63 | 33 | 96 | 35 | 40 | 75 | 258 |
| 01:30 PM | 42 | 46 | 88 | 78 | 25 | 103 | 24 | 45 | 69 | 260 |
| 01:45 PM | 29 | 59 | 88 | 61 | 28 | 89 | 23 | 49 | 72 | 249 |
| Total | 120 | 213 | 333 | 264 | 115 | 379 | 117 | 177 | 294 | 1006 |
| | | | | | | | | | | |
| Grand Total | 394 | 797 | 1191 | 974 | 474 | 1448 | 456 | 654 | 1110 | 3749 |
| Apprch % | 33.1 | 66.9 | | 67.3 | 32.7 | | 41.1 | 58.9 | | |
| Total % | 10.5 | 21.3 | 31.8 | 26 | 12.6 | 38.6 | 12.2 | 17.4 | 29.6 | |
| Car | 392 | 790 | 1182 | 966 | 463 | 1429 | 448 | 653 | 1101 | 3712 |
| % Car | 99.5 | 99.1 | 99.2 | 99.2 | 97.7 | 98.7 | 98.2 | 99.8 | 99.2 | 99 |
| Truck | 2 | 7 | 9 | 8 | 11 | 19 | 8 | 1 | 9 | 37 |
| % Truck | 0.5 | 0.9 | 0.8 | 0.8 | 2.3 | 1.3 | 1.8 | 0.2 | 0.8 | 1 |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

File Name : S13-037 2 Gloucester
Site Code : 119285
Start Date : 7/13/2013
Page No : 2

| | Route 127A From North | | | Route 127A From South | | | Barn Lane From West | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | App. Total | Thru | Left | App. Total | Right | Left | App. Total | Int. Total |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 01:00 PM | | | | | | | | | | |
| 01:00 PM | 17 | 53 | 70 | 62 | 29 | 91 | **35** | 43 | **78** | 239 |
| 01:15 PM | 32 | 55 | 87 | 63 | **33** | 96 | 35 | 40 | 75 | 258 |
| 01:30 PM | **42** | 46 | **88** | **78** | 25 | **103** | 24 | 45 | 69 | **260** |
| 01:45 PM | 29 | **59** | 88 | 61 | 28 | 89 | 23 | **49** | 72 | 249 |
| Total Volume | 120 | 213 | 333 | 264 | 115 | 379 | 117 | 177 | 294 | 1006 |
| % App. Total | 36 | 64 | | 69.7 | 30.3 | | 39.8 | 60.2 | | |
| PHF | .714 | .903 | .946 | .846 | .871 | .920 | .836 | .903 | .942 | .967 |



# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Rd (Rte 127A) & Barn Lane
Counted by Miovision
S13-037 TMC # 2

File Name : S13-037 2 Gloucester
Site Code : 119285
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car

| | Route 127A From North | | | Route 127A From South | | | Barn Lane From West | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | App. Total | Thru | Left | App. Total | Right | Left | App. Total | Int. Total |
| 10:00 AM | 29 | 40 | 69 | 33 | 30 | 63 | 33 | 37 | 70 | 202 |
| 10:15 AM | 30 | 53 | 83 | 50 | 25 | 75 | 22 | 33 | 55 | 213 |
| 10:30 AM | 22 | 48 | 70 | 57 | 25 | 82 | 20 | 45 | 65 | 217 |
| 10:45 AM | 22 | 71 | 93 | 52 | 37 | 89 | 35 | 31 | 66 | 248 |
| Total | 103 | 212 | 315 | 192 | 117 | 309 | 110 | 146 | 256 | 880 |
| 11:00 AM | 22 | 43 | 65 | 61 | 31 | 92 | 32 | 36 | 68 | 225 |
| 11:15 AM | 16 | 44 | 60 | 66 | 24 | 90 | 28 | 42 | 70 | 220 |
| 11:30 AM | 23 | 48 | 71 | 62 | 29 | 91 | 28 | 52 | 80 | 242 |
| 11:45 AM | 22 | 56 | 78 | 75 | 29 | 104 | 19 | 36 | 55 | 237 |
| Total | 83 | 191 | 274 | 264 | 113 | 377 | 107 | 166 | 273 | 924 |
| 12:00 PM | 23 | 54 | 77 | 58 | 32 | 90 | 29 | 38 | 67 | 234 |
| 12:15 PM | 24 | 44 | 68 | 57 | 23 | 80 | 35 | 40 | 75 | 223 |
| 12:30 PM | 23 | 39 | 62 | 47 | 27 | 74 | 28 | 48 | 76 | 212 |
| 12:45 PM | 17 | 39 | 56 | 87 | 38 | 125 | 24 | 38 | 62 | 243 |
| Total | 87 | 176 | 263 | 249 | 120 | 369 | 116 | 164 | 280 | 912 |
| 01:00 PM | 16 | 52 | 68 | 61 | 28 | 89 | 34 | 43 | 77 | 234 |
| 01:15 PM | 32 | 55 | 87 | 61 | 33 | 94 | 35 | 40 | 75 | 256 |
| 01:30 PM | 42 | 45 | 87 | 78 | 24 | 102 | 23 | 45 | 68 | 257 |
| 01:45 PM | 29 | 59 | 88 | 61 | 28 | 89 | 23 | 49 | 72 | 249 |
| Total | 119 | 211 | 330 | 261 | 113 | 374 | 115 | 177 | 292 | 996 |
| Grand Total | 392 | 790 | 1182 | 966 | 463 | 1429 | 448 | 653 | 1101 | 3712 |
| Apprch % | 33.2 | 66.8 | | 67.6 | 32.4 | | 40.7 | 59.3 | | |
| Total % | 10.6 | 21.3 | 31.8 | 26 | 12.5 | 38.5 | 12.1 | 17.6 | 29.7 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Rd (Rte 127A) & Barn Lane
Counted by Miovision
S13-037 TMC # 2

File Name : S13-037 2 Gloucester
Site Code : 119285
Start Date : 7/13/2013
Page No : 1

Groups Printed- Truck

| | Route 127A From North | | | Route 127A From South | | | Barn Lane From West | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | App. Total | Thru | Left | App. Total | Right | Left | App. Total | Int. Total |
| 10:00 AM | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 3 |
| 10:15 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 10:30 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 |
| 10:45 AM | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 3 |
| Total | 1 | 1 | 2 | 2 | 3 | 5 | 1 | 1 | 2 | 9 |
| 11:00 AM | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 3 |
| 11:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 3 |
| 11:30 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 11:45 AM | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 2 | 2 | 0 | 4 | 4 | 3 | 0 | 3 | 9 |
| 12:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 12:15 PM | 0 | 1 | 1 | 2 | 0 | 2 | 1 | 0 | 1 | 4 |
| 12:30 PM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 3 |
| 12:45 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Total | 0 | 2 | 2 | 3 | 2 | 5 | 2 | 0 | 2 | 9 |
| 01:00 PM | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 1 | 5 |
| 01:15 PM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 2 |
| 01:30 PM | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 3 |
| Total | 1 | 2 | 3 | 3 | 2 | 5 | 2 | 0 | 2 | 10 |
| Grand Total | 2 | 7 | 9 | 8 | 11 | 19 | 8 | 1 | 9 | 37 |
| Apprch % | 22.2 | 77.8 | | 42.1 | 57.9 | | 88.9 | 11.1 | | |
| Total % | 5.4 | 18.9 | 24.3 | 21.6 | 29.7 | 51.4 | 21.6 | 2.7 | 24.3 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Rd (Rte 127A) & Barn Lane
Counted by Miovision
S13-037 TMC # 2

File Name : S13-037 2 Gloucester
Site Code : 119285
Start Date : 7/13/2013
Page No : 1

Groups Printed- Pedal Bike (Road)

| | Route 127A From North | | | Route 127A From South | | | Barn Lane From West | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | App. Total | Thru | Left | App. Total | Right | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 1 | 1 | 4 | 0 | 4 | 0 | 0 | 0 | 5 |
| 10:15 AM | 0 | 1 | 1 | 8 | 0 | 8 | 0 | 0 | 0 | 9 |
| 10:30 AM | 0 | 0 | 0 | 20 | 0 | 20 | 0 | 0 | 0 | 20 |
| 10:45 AM | 0 | 1 | 1 | 5 | 0 | 5 | 0 | 0 | 0 | 6 |
| Total | 0 | 3 | 3 | 37 | 0 | 37 | 0 | 0 | 0 | 40 |
| 11:00 AM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 2 |
| 11:15 AM | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 3 |
| 11:30 AM | 0 | 2 | 2 | 3 | 0 | 3 | 0 | 0 | 0 | 5 |
| 11:45 AM | 0 | 1 | 1 | 3 | 0 | 3 | 0 | 0 | 0 | 4 |
| Total | 0 | 5 | 5 | 9 | 0 | 9 | 0 | 0 | 0 | 14 |
| 12:00 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:30 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:45 PM | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 2 |
| Total | 0 | 5 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 6 |
| 01:00 PM | 0 | 1 | 1 | 3 | 0 | 3 | 0 | 0 | 0 | 4 |
| 01:15 PM | 0 | 1 | 1 | 7 | 0 | 7 | 0 | 1 | 1 | 9 |
| 01:30 PM | 1 | 1 | 2 | 3 | 0 | 3 | 0 | 0 | 0 | 5 |
| 01:45 PM | 0 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 4 |
| Total | 1 | 5 | 6 | 15 | 0 | 15 | 0 | 1 | 1 | 22 |
| Grand Total | 1 | 18 | 19 | 62 | 0 | 62 | 0 | 1 | 1 | 82 |
| Apprch % | 5.3 | 94.7 | | 100 | 0 | | 0 | 100 | | |
| Total % | 1.2 | 22 | 23.2 | 75.6 | 0 | 75.6 | 0 | 1.2 | 1.2 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Rd (Rte 127A) & Barn Lane
Counted by Miovision
S13-037 TMC # 2

File Name : S13-037 2 Gloucester
Site Code : 119285
Start Date : 7/13/2013
Page No : 1

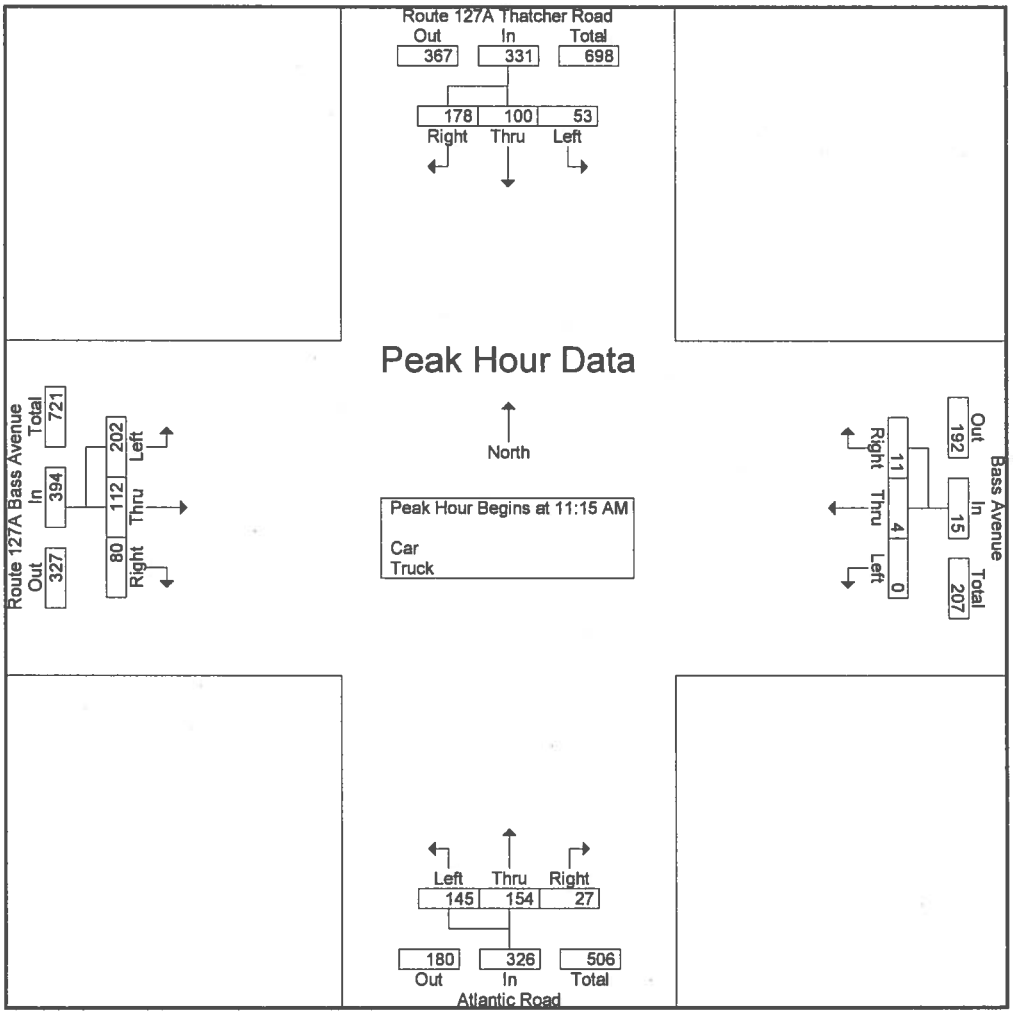
Groups Printed- Ped

| | Route 127A From North | | Route 127A From South | | Barn Lane From West | | |
|---|---|---|---|---|---|---|---|
| Start Time | Peds | App. Total | Peds | App. Total | Peds | App. Total | Int. Total |
| 10:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 11:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 11:30 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 11:45 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 4 | 4 | 4 |
| Grand Total | 0 | 0 | 0 | 0 | 5 | 5 | 5 |
| Apprch % | 0 | | 0 | | 100 | | |
| Total % | 0 | 0 | 0 | 0 | 100 | 100 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

File Name : S13-037 1 Gloucester
Site Code : 119272
Start Date : 7/13/2013
Page No : 2

| | Route 127A Thatcher Road From North | | | | Bass Avenue From East | | | | Atlantic Road From South | | | | Route 127A Bass Avenue From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 11:15 AM | | | | | | | | | | | | | | | | | |
| 11:15 AM | **50** | 19 | 8 | 77 | 2 | 0 | 0 | 2 | 7 | 30 | **52** | **89** | 15 | 23 | **55** | 93 | 261 |
| 11:30 AM | 33 | **36** | **16** | 85 | **4** | **2** | 0 | **6** | 3 | 43 | 33 | 79 | 20 | 23 | 53 | 96 | 266 |
| 11:45 AM | 49 | 21 | 13 | 83 | 4 | 2 | 0 | 6 | 3 | **45** | 28 | 76 | 22 | **35** | 51 | **108** | **273** |
| 12:00 PM | 46 | 24 | 16 | **86** | 1 | 0 | 0 | 1 | **14** | 36 | 32 | 82 | **23** | 31 | 43 | 97 | 266 |
| Total Volume | 178 | 100 | 53 | 331 | 11 | 4 | 0 | 15 | 27 | 154 | 145 | 326 | 80 | 112 | 202 | 394 | 1066 |
| % App. Total | 53.8 | 30.2 | 16 | | 73.3 | 26.7 | 0 | | 8.3 | 47.2 | 44.5 | | 20.3 | 28.4 | 51.3 | | |
| PHF | .890 | .694 | .828 | .962 | .688 | .500 | .000 | .625 | .482 | .856 | .697 | .916 | .870 | .800 | .918 | .912 | .976 |



# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Bass Ave. @ Thatcher & Atlantic Rds.
Counted by Miovision
S13-037 TMC # 1

File Name : S13-037 1 Gloucester
Site Code : 119272
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car

| | Route 127A Thatcher Road From North | | | | Bass Avenue From East | | | | Atlantic Road From South | | | | Route 127A Bass Avenue From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 39 | 21 | 8 | 68 | 0 | 1 | 0 | 1 | 2 | 24 | 31 | 57 | 16 | 27 | 35 | 78 | 204 |
| 10:15 AM | 40 | 21 | 8 | 69 | 1 | 2 | 0 | 3 | 4 | 35 | 39 | 78 | 10 | 17 | 38 | 65 | 215 |
| 10:30 AM | 38 | 31 | 14 | 83 | 0 | 0 | 1 | 1 | 8 | 32 | 31 | 71 | 13 | 17 | 46 | 76 | 231 |
| 10:45 AM | 52 | 29 | 7 | 88 | 1 | 1 | 0 | 2 | 4 | 27 | 31 | 62 | 22 | 19 | 47 | 88 | 240 |
| Total | 169 | 102 | 37 | 308 | 2 | 4 | 1 | 7 | 18 | 118 | 132 | 268 | 61 | 80 | 166 | 307 | 890 |
| 11:00 AM | 47 | 23 | 16 | 86 | 0 | 1 | 0 | 1 | 3 | 30 | 30 | 63 | 17 | 29 | 50 | 96 | 246 |
| 11:15 AM | 49 | 19 | 8 | 76 | 2 | 0 | 0 | 2 | 7 | 29 | 51 | 87 | 15 | 23 | 55 | 93 | 258 |
| 11:30 AM | 33 | 36 | 16 | 85 | 4 | 2 | 0 | 6 | 3 | 43 | 33 | 79 | 20 | 22 | 52 | 94 | 264 |
| 11:45 AM | 48 | 21 | 12 | 81 | 4 | 2 | 0 | 6 | 3 | 45 | 27 | 75 | 22 | 35 | 51 | 108 | 270 |
| Total | 177 | 99 | 52 | 328 | 10 | 5 | 0 | 15 | 16 | 147 | 141 | 304 | 74 | 109 | 208 | 391 | 1038 |
| 12:00 PM | 45 | 24 | 16 | 85 | 1 | 0 | 0 | 1 | 14 | 36 | 32 | 82 | 23 | 31 | 43 | 97 | 265 |
| 12:15 PM | 37 | 17 | 12 | 66 | 0 | 0 | 1 | 1 | 10 | 31 | 50 | 91 | 19 | 25 | 38 | 82 | 240 |
| 12:30 PM | 37 | 25 | 9 | 71 | 1 | 1 | 0 | 2 | 4 | 28 | 28 | 60 | 23 | 30 | 43 | 96 | 229 |
| 12:45 PM | 30 | 22 | 10 | 62 | 0 | 2 | 0 | 2 | 6 | 47 | 22 | 75 | 17 | 35 | 68 | 120 | 259 |
| Total | 149 | 88 | 47 | 284 | 2 | 3 | 1 | 6 | 34 | 142 | 132 | 308 | 82 | 121 | 192 | 395 | 993 |
| 01:00 PM | 50 | 29 | 10 | 89 | 0 | 0 | 0 | 0 | 5 | 26 | 29 | 60 | 17 | 31 | 53 | 101 | 250 |
| 01:15 PM | 56 | 20 | 16 | 92 | 0 | 0 | 0 | 0 | 7 | 39 | 31 | 77 | 21 | 27 | 56 | 104 | 273 |
| 01:30 PM | 40 | 22 | 9 | 71 | 2 | 3 | 0 | 5 | 8 | 37 | 24 | 69 | 25 | 20 | 51 | 96 | 241 |
| 01:45 PM | 51 | 19 | 7 | 77 | 1 | 2 | 0 | 3 | 6 | 48 | 37 | 91 | 18 | 27 | 45 | 90 | 261 |
| Total | 197 | 90 | 42 | 329 | 3 | 5 | 0 | 8 | 26 | 150 | 121 | 297 | 81 | 105 | 205 | 391 | 1025 |
| Grand Total | 692 | 379 | 178 | 1249 | 17 | 17 | 2 | 36 | 94 | 557 | 526 | 1177 | 298 | 415 | 771 | 1484 | 3946 |
| Apprch % | 55.4 | 30.3 | 14.3 | | 47.2 | 47.2 | 5.6 | | 8 | 47.3 | 44.7 | | 20.1 | 28 | 52 | | |
| Total % | 17.5 | 9.6 | 4.5 | 31.7 | 0.4 | 0.4 | 0.1 | 0.9 | 2.4 | 14.1 | 13.3 | 29.8 | 7.6 | 10.5 | 19.5 | 37.6 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Bass Ave. @ Thatcher & Atlantic Rds.
Counted by Miovision
S13-037 TMC # 1

File Name : S13-037 1 Gloucester
Site Code : 119272
Start Date : 7/13/2013
Page No : 1

Groups Printed- Truck

| | Route 127A Thatcher Road From North | | | | Bass Avenue From East | | | | Atlantic Road From South | | | | Route 127A Bass Avenue From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:15 AM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 5 |
| 10:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 |
| 10:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 3 | 4 | 9 |
| 11:00 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 11:15 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 3 |
| 11:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| 11:45 AM | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| Total | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 1 | 1 | 2 | 10 |
| 12:00 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:15 PM | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 6 |
| 12:30 PM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 |
| 12:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 2 |
| Total | 5 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 1 | 2 | 4 | 13 |
| 01:00 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| 01:15 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 3 |
| 01:30 PM | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 4 |
| 01:45 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 3 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 2 | 2 | 5 | 12 |
| Grand Total | 12 | 2 | 4 | 18 | 0 | 0 | 0 | 0 | 0 | 7 | 4 | 11 | 2 | 5 | 8 | 15 | 44 |
| Apprch % | 66.7 | 11.1 | 22.2 | | 0 | 0 | 0 | | 0 | 63.6 | 36.4 | | 13.3 | 33.3 | 53.3 | | |
| Total % | 27.3 | 4.5 | 9.1 | 40.9 | 0 | 0 | 0 | 0 | 0 | 15.9 | 9.1 | 25 | 4.5 | 11.4 | 18.2 | 34.1 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Bass Ave. @ Thatcher & Atlantic Rds.
Counted by Miovision
S13-037 TMC # 1

File Name : S13-037 1 Gloucester
Site Code : 119272
Start Date : 7/13/2013
Page No : 1

Groups Printed- Pedal Bike (Road)

| | Route 127A Thatcher Road From North | | | | Bass Avenue From East | | | | Atlantic Road From South | | | | Route 127A Bass Avenue From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 5 |
| 10:15 AM | 0 | 0 | 2 | 2 | 0 | 6 | 0 | 6 | 0 | 7 | 0 | 7 | 0 | 1 | 1 | 2 | 17 |
| 10:30 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 18 | 1 | 19 | 0 | 1 | 2 | 3 | 23 |
| 10:45 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 7 | 8 |
| Total | 0 | 0 | 3 | 3 | 3 | 6 | 0 | 9 | 0 | 25 | 2 | 27 | 0 | 4 | 10 | 14 | 53 |
| 11:00 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 6 |
| 11:15 AM | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 11:30 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11:45 AM | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 5 |
| Total | 0 | 0 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 2 | 0 | 4 | 16 |
| 12:15 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 3 |
| 12:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:45 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 1 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 6 |
| 01:00 PM | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 01:15 PM | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 0 | 0 | 3 | 3 | 0 | 0 | 6 | 6 | 13 |
| 01:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 3 |
| Total | 0 | 1 | 0 | 1 | 4 | 4 | 0 | 8 | 0 | 0 | 3 | 3 | 0 | 0 | 8 | 8 | 20 |
| Grand Total | 1 | 2 | 13 | 16 | 7 | 10 | 0 | 17 | 0 | 28 | 5 | 33 | 2 | 8 | 19 | 29 | 95 |
| Apprch % | 6.2 | 12.5 | 81.2 | | 41.2 | 58.8 | 0 | | 0 | 84.8 | 15.2 | | 6.9 | 27.6 | 65.5 | | |
| Total % | 1.1 | 2.1 | 13.7 | 16.8 | 7.4 | 10.5 | 0 | 17.9 | 0 | 29.5 | 5.3 | 34.7 | 2.1 | 8.4 | 20 | 30.5 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Bass Ave. @ Thatcher & Atlantic Rds.
Counted by Miovision
S13-037 TMC # 1

File Name : S13-037 1 Gloucester
Site Code : 119272
Start Date : 7/13/2013
Page No : 1

Groups Printed- Ped

| | Route 127A Thatcher Road From North | | Bass Avenue From East | | Atlantic Road From South | | Route 127A Bass Avenue From West | | |
|---|---|---|---|---|---|---|---|---|---|
| Start Time | Peds | App. Total | Peds | App. Total | Peds | App. Total | Peds | App. Total | Int. Total |
| 10:00 AM | 6 | 6 | 2 | 2 | 1 | 1 | 0 | 0 | 9 |
| 10:15 AM | 7 | 7 | 0 | 0 | 2 | 2 | 1 | 1 | 10 |
| 10:30 AM | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 10:45 AM | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| Total | 15 | 15 | 2 | 2 | 4 | 4 | 2 | 2 | 23 |
| 11:00 AM | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 11:15 AM | 6 | 6 | 4 | 4 | 0 | 0 | 1 | 1 | 11 |
| 11:30 AM | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 11:45 AM | 9 | 9 | 2 | 2 | 3 | 3 | 0 | 0 | 14 |
| Total | 24 | 24 | 6 | 6 | 3 | 3 | 2 | 2 | 35 |
| 12:00 PM | 3 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 4 |
| 12:15 PM | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 12:30 PM | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:45 PM | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 3 |
| Total | 18 | 18 | 0 | 0 | 3 | 3 | 0 | 0 | 21 |
| 01:00 PM | 8 | 8 | 0 | 0 | 0 | 0 | 1 | 1 | 9 |
| 01:15 PM | 9 | 9 | 0 | 0 | 1 | 1 | 1 | 1 | 11 |
| 01:30 PM | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| 01:45 PM | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 37 | 37 | 0 | 0 | 1 | 1 | 2 | 2 | 40 |
| Grand Total | 94 | 94 | 8 | 8 | 11 | 11 | 6 | 6 | 119 |
| Apprch % | 100 | | 100 | | 100 | | 100 | | |
| Total % | 79 | 79 | 6.7 | 6.7 | 9.2 | 9.2 | 5 | 5 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Road (Rte 127A) & Witham Street
Counted by Miovision
S13-037 TMC # 3

File Name : S13-037 3 Gloucester
Site Code : 119286
Start Date : 7/13/2013
Page No : 1

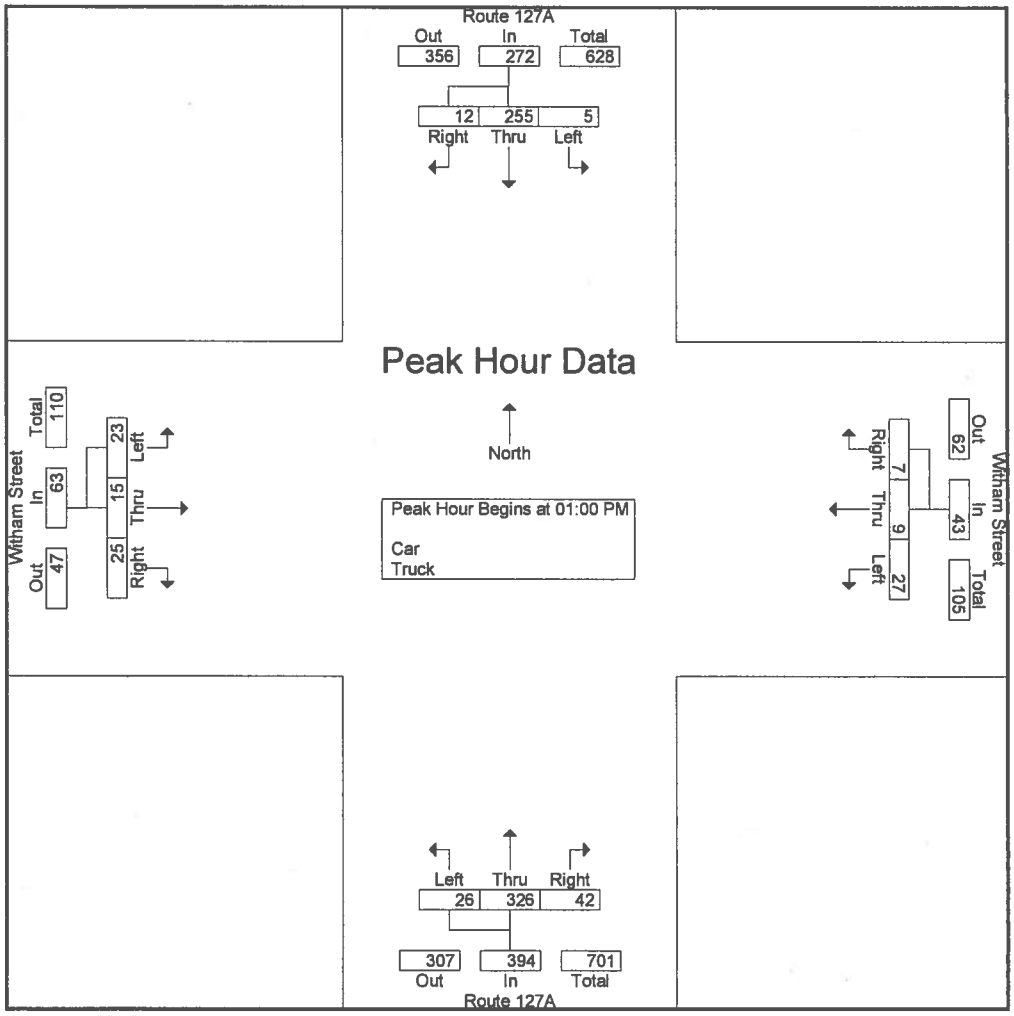
Groups Printed- Car - Truck

| | Route 127A From North | | | | Witham Street From East | | | | Route 127A From South | | | | Witham Street From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 5 | 62 | 2 | 69 | 2 | 1 | 3 | 6 | 2 | 57 | 2 | 61 | 8 | 2 | 12 | 22 | 158 |
| 10:15 AM | 3 | 59 | 1 | 63 | 1 | 1 | 7 | 9 | 6 | 55 | 6 | 67 | 11 | 5 | 5 | 21 | 160 |
| 10:30 AM | 6 | 56 | 2 | 64 | 1 | 5 | 12 | 18 | 13 | 60 | 9 | 82 | 8 | 4 | 9 | 21 | 185 |
| 10:45 AM | 4 | 71 | 2 | 77 | 2 | 1 | 13 | 16 | 5 | 52 | 7 | 64 | 7 | 4 | 15 | 26 | 183 |
| Total | 18 | 248 | 7 | 273 | 6 | 8 | 35 | 49 | 26 | 224 | 24 | 274 | 34 | 15 | 41 | 90 | 686 |
| 11:00 AM | 6 | 59 | 1 | 66 | 1 | 1 | 7 | 9 | 11 | 57 | 6 | 74 | 4 | 3 | 16 | 23 | 172 |
| 11:15 AM | 6 | 41 | 0 | 47 | 0 | 0 | 6 | 6 | 6 | 81 | 6 | 93 | 6 | 1 | 9 | 16 | 162 |
| 11:30 AM | 1 | 57 | 1 | 59 | 0 | 0 | 9 | 9 | 8 | 75 | 8 | 91 | 5 | 1 | 7 | 13 | 172 |
| 11:45 AM | 5 | 60 | 0 | 65 | 0 | 3 | 6 | 9 | 7 | 83 | 4 | 94 | 6 | 2 | 7 | 15 | 183 |
| Total | 18 | 217 | 2 | 237 | 1 | 4 | 28 | 33 | 32 | 296 | 24 | 352 | 21 | 7 | 39 | 67 | 689 |
| 12:00 PM | 2 | 64 | 2 | 68 | 1 | 1 | 9 | 11 | 10 | 64 | 6 | 80 | 13 | 1 | 5 | 19 | 178 |
| 12:15 PM | 3 | 51 | 2 | 56 | 0 | 1 | 5 | 6 | 7 | 82 | 4 | 93 | 3 | 3 | 2 | 8 | 163 |
| 12:30 PM | 3 | 55 | 3 | 61 | 1 | 2 | 6 | 9 | 5 | 76 | 9 | 90 | 3 | 1 | 10 | 14 | 174 |
| 12:45 PM | 6 | 51 | 3 | 60 | 1 | 1 | 7 | 9 | 13 | 83 | 8 | 104 | 1 | 3 | 7 | 11 | 184 |
| Total | 14 | 221 | 10 | 245 | 3 | 5 | 27 | 35 | 35 | 305 | 27 | 367 | 20 | 8 | 24 | 52 | 699 |
| 01:00 PM | 1 | 54 | 0 | 55 | 1 | 2 | 2 | 5 | 7 | 89 | 6 | 102 | 5 | 4 | 7 | 16 | 178 |
| 01:15 PM | 4 | 69 | 1 | 74 | 1 | 3 | 5 | 9 | 14 | 69 | 3 | 86 | 6 | 0 | 3 | 9 | 178 |
| 01:30 PM | 3 | 70 | 3 | 76 | 2 | 3 | 11 | 16 | 11 | 80 | 9 | 100 | 6 | 4 | 7 | 17 | 209 |
| 01:45 PM | 4 | 62 | 1 | 67 | 3 | 1 | 9 | 13 | 10 | 88 | 8 | 106 | 8 | 7 | 6 | 21 | 207 |
| Total | 12 | 255 | 5 | 272 | 7 | 9 | 27 | 43 | 42 | 326 | 26 | 394 | 25 | 15 | 23 | 63 | 772 |
| Grand Total | 62 | 941 | 24 | 1027 | 17 | 26 | 117 | 160 | 135 | 1151 | 101 | 1387 | 100 | 45 | 127 | 272 | 2846 |
| Apprch % | 6 | 91.6 | 2.3 | | 10.6 | 16.2 | 73.1 | | 9.7 | 83 | 7.3 | | 36.8 | 16.5 | 46.7 | | |
| Total % | 2.2 | 33.1 | 0.8 | 36.1 | 0.6 | 0.9 | 4.1 | 5.6 | 4.7 | 40.4 | 3.5 | 48.7 | 3.5 | 1.6 | 4.5 | 9.6 | |
| Car | 61 | 938 | 23 | 1022 | 17 | 26 | 116 | 159 | 135 | 1144 | 99 | 1378 | 98 | 45 | 127 | 270 | 2829 |
| % Car | 98.4 | 99.7 | 95.8 | 99.5 | 100 | 100 | 99.1 | 99.4 | 100 | 99.4 | 98 | 99.4 | 98 | 100 | 100 | 99.3 | 99.4 |
| Truck | 1 | 3 | 1 | 5 | 0 | 0 | 1 | 1 | 0 | 7 | 2 | 9 | 2 | 0 | 0 | 2 | 17 |
| % Truck | 1.6 | 0.3 | 4.2 | 0.5 | 0 | 0 | 0.9 | 0.6 | 0 | 0.6 | 2 | 0.6 | 2 | 0 | 0 | 0.7 | 0.6 |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

File Name : S13-037 3 Gloucester
Site Code : 119286
Start Date : 7/13/2013
Page No : 2

| | Route 127A From North | | | | Witham Street From East | | | | Route 127A From South | | | | Witham Street From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 01:00 PM | | | | | | | | | | | | | | | | | |
| 01:00 PM | 1 | 54 | 0 | 55 | 1 | 2 | 2 | 5 | 7 | **89** | 6 | 102 | 5 | 4 | **7** | 16 | 178 |
| 01:15 PM | 4 | 69 | 1 | 74 | 1 | **3** | 5 | 9 | **14** | 69 | 3 | 86 | 6 | 0 | 3 | 9 | 178 |
| 01:30 PM | 3 | **70** | **3** | **76** | 2 | 3 | **11** | **16** | 11 | 80 | **9** | 100 | 6 | 4 | 7 | 17 | **209** |
| 01:45 PM | 4 | 62 | 1 | 67 | **3** | 1 | 9 | 13 | 10 | 88 | 8 | **106** | **8** | **7** | 6 | **21** | 207 |
| Total Volume | 12 | 255 | 5 | 272 | 7 | 9 | 27 | 43 | 42 | 326 | 26 | 394 | 25 | 15 | 23 | 63 | 772 |
| % App. Total | 4.4 | 93.8 | 1.8 | | 16.3 | 20.9 | 62.8 | | 10.7 | 82.7 | 6.6 | | 39.7 | 23.8 | 36.5 | | |
| PHF | .750 | .911 | .417 | .895 | .583 | .750 | .614 | .672 | .750 | .916 | .722 | .929 | .781 | .536 | .821 | .750 | .923 |



# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Road (Rte 127A) & Witham Street
Counted by Miovision
S13-037 TMC # 3

File Name : S13-037 3 Gloucester
Site Code : 119286
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car

| | Route 127A From North | | | | Witham Street From East | | | | Route 127A From South | | | | Witham Street From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 5 | 62 | 2 | 69 | 2 | 1 | 3 | 6 | 2 | 56 | 2 | 60 | 8 | 2 | 12 | 22 | 157 |
| 10:15 AM | 3 | 59 | 1 | 63 | 1 | 1 | 7 | 9 | 6 | 55 | 5 | 66 | 11 | 5 | 5 | 21 | 159 |
| 10:30 AM | 6 | 56 | 2 | 64 | 1 | 5 | 12 | 18 | 13 | 60 | 9 | 82 | 8 | 4 | 9 | 21 | 185 |
| 10:45 AM | 4 | 70 | 2 | 76 | 2 | 1 | 13 | 16 | 5 | 51 | 7 | 63 | 7 | 4 | 15 | 26 | 181 |
| Total | 18 | 247 | 7 | 272 | 6 | 8 | 35 | 49 | 26 | 222 | 23 | 271 | 34 | 15 | 41 | 90 | 682 |
| 11:00 AM | 6 | 58 | 1 | 65 | 1 | 1 | 7 | 9 | 11 | 57 | 6 | 74 | 4 | 3 | 16 | 23 | 171 |
| 11:15 AM | 6 | 41 | 0 | 47 | 0 | 0 | 6 | 6 | 6 | 81 | 6 | 93 | 6 | 1 | 9 | 16 | 162 |
| 11:30 AM | 1 | 57 | 1 | 59 | 0 | 0 | 9 | 9 | 8 | 75 | 8 | 91 | 5 | 1 | 7 | 13 | 172 |
| 11:45 AM | 5 | 60 | 0 | 65 | 0 | 3 | 6 | 9 | 7 | 83 | 4 | 94 | 6 | 2 | 7 | 15 | 183 |
| Total | 18 | 216 | 2 | 236 | 1 | 4 | 28 | 33 | 32 | 296 | 24 | 352 | 21 | 7 | 39 | 67 | 688 |
| 12:00 PM | 2 | 64 | 2 | 68 | 1 | 1 | 9 | 11 | 10 | 63 | 6 | 79 | 13 | 1 | 5 | 19 | 177 |
| 12:15 PM | 3 | 51 | 2 | 56 | 0 | 1 | 4 | 5 | 7 | 82 | 3 | 92 | 3 | 3 | 2 | 8 | 161 |
| 12:30 PM | 3 | 55 | 2 | 60 | 1 | 2 | 6 | 9 | 5 | 76 | 9 | 90 | 2 | 1 | 10 | 13 | 172 |
| 12:45 PM | 6 | 51 | 3 | 60 | 1 | 1 | 7 | 9 | 13 | 82 | 8 | 103 | 1 | 3 | 7 | 11 | 183 |
| Total | 14 | 221 | 9 | 244 | 3 | 5 | 26 | 34 | 35 | 303 | 26 | 364 | 19 | 8 | 24 | 51 | 693 |
| 01:00 PM | 1 | 53 | 0 | 54 | 1 | 2 | 2 | 5 | 7 | 88 | 6 | 101 | 5 | 4 | 7 | 16 | 176 |
| 01:15 PM | 4 | 69 | 1 | 74 | 1 | 3 | 5 | 9 | 14 | 69 | 3 | 86 | 6 | 0 | 3 | 9 | 178 |
| 01:30 PM | 2 | 70 | 3 | 75 | 2 | 3 | 11 | 16 | 11 | 78 | 9 | 98 | 5 | 4 | 7 | 16 | 205 |
| 01:45 PM | 4 | 62 | 1 | 67 | 3 | 1 | 9 | 13 | 10 | 88 | 8 | 106 | 8 | 7 | 6 | 21 | 207 |
| Total | 11 | 254 | 5 | 270 | 7 | 9 | 27 | 43 | 42 | 323 | 26 | 391 | 24 | 15 | 23 | 62 | 766 |
| Grand Total | 61 | 938 | 23 | 1022 | 17 | 26 | 116 | 159 | 135 | 1144 | 99 | 1378 | 98 | 45 | 127 | 270 | 2829 |
| Apprch % | 6 | 91.8 | 2.3 | | 10.7 | 16.4 | 73 | | 9.8 | 83 | 7.2 | | 36.3 | 16.7 | 47 | | |
| Total % | 2.2 | 33.2 | 0.8 | 36.1 | 0.6 | 0.9 | 4.1 | 5.6 | 4.8 | 40.4 | 3.5 | 48.7 | 3.5 | 1.6 | 4.5 | 9.5 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Road (Rte 127A) & Witham Street
Counted by Miovision
S13-037 TMC # 3

File Name : S13-037 3 Gloucester
Site Code : 119286
Start Date : 7/13/2013
Page No : 1

Groups Printed- Truck

| | Route 127A From North | | | | Witham Street From East | | | | Route 127A From South | | | | Witham Street From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 10:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 10:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 4 |
| 11:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 12:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 12:30 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 12:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 3 | 1 | 0 | 0 | 1 | 6 |
| 01:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 01:30 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 4 |
| Total | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 6 |
| Grand Total | 1 | 3 | 1 | 5 | 0 | 0 | 1 | 1 | 0 | 7 | 2 | 9 | 2 | 0 | 0 | 2 | 17 |
| Apprch % | 20 | 60 | 20 | | 0 | 0 | 100 | | 0 | 77.8 | 22.2 | | 100 | 0 | 0 | | |
| Total % | 5.9 | 17.6 | 5.9 | 29.4 | 0 | 0 | 5.9 | 5.9 | 0 | 41.2 | 11.8 | 52.9 | 11.8 | 0 | 0 | 11.8 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Road (Rte 127A) & Witham Street
Counted by Miovision
S13-037 TMC # 3

File Name : S13-037 3 Gloucester
Site Code : 119286
Start Date : 7/13/2013
Page No : 1

Groups Printed- Pedal Bike (Road)

| | Route 127A From North | | | | Witham Street From East | | | | Route 127A From South | | | | Witham Street From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 4 |
| 10:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 7 |
| 10:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 26 | 0 | 0 | 0 | 0 | 26 |
| 10:45 AM | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 8 |
| Total | 0 | 3 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 39 | 1 | 40 | 0 | 0 | 0 | 0 | 45 |
| 11:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 3 |
| 11:15 AM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 11:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| 11:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 0 | 6 | 0 | 6 | 1 | 0 | 0 | 1 | 12 |
| 12:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 12:30 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 12:45 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 6 | 0 | 6 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 10 |
| 01:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 01:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 01:30 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 7 |
| 01:45 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 6 |
| Total | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 0 | 0 | 1 | 1 | 18 |
| Grand Total | 0 | 18 | 0 | 18 | 2 | 1 | 1 | 4 | 0 | 59 | 1 | 60 | 1 | 0 | 2 | 3 | 85 |
| Apprch % | 0 | 100 | 0 | | 50 | 25 | 25 | | 0 | 98.3 | 1.7 | | 33.3 | 0 | 66.7 | | |
| Total % | 0 | 21.2 | 0 | 21.2 | 2.4 | 1.2 | 1.2 | 4.7 | 0 | 69.4 | 1.2 | 70.6 | 1.2 | 0 | 2.4 | 3.5 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Thatcher Road (Rte 127A) & Witham Street
Counted by Miovision
S13-037 TMC # 3

File Name : S13-037 3 Gloucester
Site Code : 119286
Start Date : 7/13/2013
Page No : 1

Groups Printed- Ped

| | Route 127A From North | | Witham Street From East | | Route 127A From South | | Witham Street From West | | |
|---|---|---|---|---|---|---|---|---|---|
| Start Time | Peds | App. Total | Peds | App. Total | Peds | App. Total | Peds | App. Total | Int. Total |
| 10:15 AM | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 10:30 AM | 5 | 5 | 0 | 0 | 1 | 1 | 0 | 0 | 6 |
| 10:45 AM | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 11 | 11 | 0 | 0 | 1 | 1 | 0 | 0 | 12 |
| 11:00 AM | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 11:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 11:30 AM | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 11:45 AM | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 8 | 8 | 0 | 0 | 0 | 0 | 1 | 1 | 9 |
| 12:00 PM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:15 PM | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 12:30 PM | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:45 PM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 01:00 PM | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 01:15 PM | 6 | 6 | 0 | 0 | 0 | 0 | 2 | 2 | 8 |
| 01:30 PM | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 01:45 PM | 6 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | 7 |
| Total | 21 | 21 | 0 | 0 | 0 | 0 | 3 | 3 | 24 |
| Grand Total | 47 | 47 | 0 | 0 | 1 | 1 | 4 | 4 | 52 |
| Apprch % | 100 | | 0 | | 100 | | 100 | | |
| Total % | 90.4 | 90.4 | 0 | 0 | 1.9 | 1.9 | 7.7 | 7.7 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant St & Broadway & T-Wharf
Counted by Miovision
S13-037 TMC # 4

File Name : S13-037 4 Rockport
Site Code : 119287
Start Date : 7/13/2013
Page No : 1

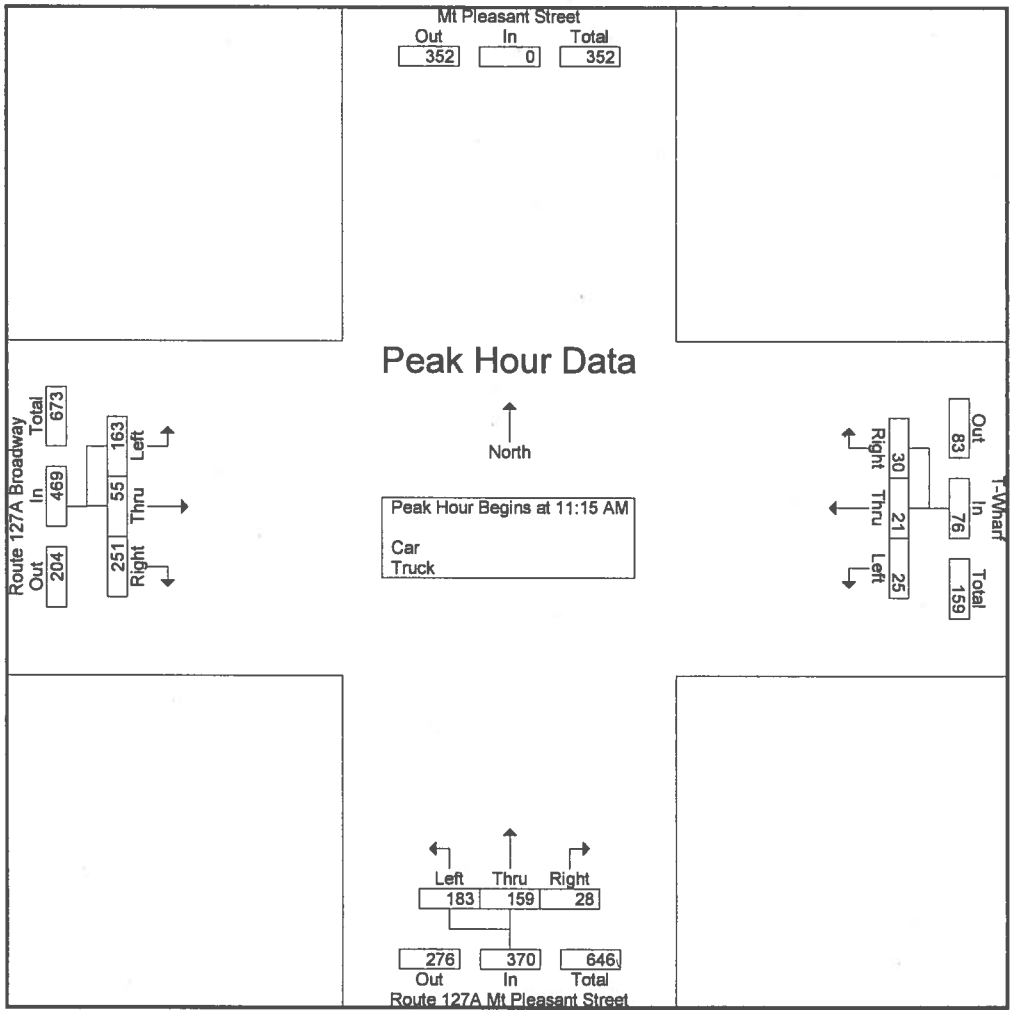
Groups Printed- Car - Truck

| | From North | T-Wharf From East | | | | Route 127A Mt Pleasant Street From South | | | | Route 127A Broadway From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 3 | 5 | 6 | 14 | 1 | 34 | 47 | 82 | 47 | 8 | 50 | 105 | 201 |
| 10:15 AM | 0 | 6 | 2 | 5 | 13 | 8 | 44 | 41 | 93 | 55 | 8 | 39 | 102 | 208 |
| 10:30 AM | 0 | 12 | 2 | 2 | 16 | 4 | 27 | 50 | 81 | 62 | 10 | 38 | 110 | 207 |
| 10:45 AM | 0 | 4 | 2 | 6 | 12 | 10 | 36 | 38 | 84 | 52 | 8 | 33 | 93 | 189 |
| Total | 0 | 25 | 11 | 19 | 55 | 23 | 141 | 176 | 340 | 216 | 34 | 160 | 410 | 805 |
| 11:00 AM | 0 | 8 | 4 | 1 | 13 | 5 | 33 | 41 | 79 | 71 | 5 | 45 | 121 | 213 |
| 11:15 AM | 0 | 9 | 3 | 6 | 18 | 9 | 37 | 39 | 85 | 62 | 11 | 46 | 119 | 222 |
| 11:30 AM | 0 | 8 | 4 | 5 | 17 | 8 | 43 | 49 | 100 | 48 | 17 | 36 | 101 | 218 |
| 11:45 AM | 0 | 10 | 8 | 8 | 26 | 6 | 40 | 55 | 101 | 69 | 11 | 39 | 119 | 246 |
| Total | 0 | 35 | 19 | 20 | 74 | 28 | 153 | 184 | 365 | 250 | 44 | 166 | 460 | 899 |
| 12:00 PM | 0 | 3 | 6 | 6 | 15 | 5 | 39 | 40 | 84 | 72 | 16 | 42 | 130 | 229 |
| 12:15 PM | 0 | 5 | 4 | 6 | 15 | 4 | 33 | 44 | 81 | 68 | 13 | 38 | 119 | 215 |
| 12:30 PM | 0 | 6 | 4 | 2 | 12 | 6 | 46 | 31 | 83 | 56 | 9 | 35 | 100 | 195 |
| 12:45 PM | 0 | 7 | 2 | 7 | 16 | 15 | 34 | 44 | 93 | 63 | 9 | 50 | 122 | 231 |
| Total | 0 | 21 | 16 | 21 | 58 | 30 | 152 | 159 | 341 | 259 | 47 | 165 | 471 | 870 |
| 01:00 PM | 0 | 11 | 5 | 3 | 19 | 5 | 47 | 39 | 91 | 61 | 9 | 47 | 117 | 227 |
| 01:15 PM | 0 | 13 | 4 | 6 | 23 | 7 | 34 | 44 | 85 | 67 | 13 | 42 | 122 | 230 |
| 01:30 PM | 0 | 12 | 5 | 5 | 22 | 4 | 38 | 43 | 85 | 57 | 10 | 36 | 103 | 210 |
| 01:45 PM | 0 | 8 | 4 | 7 | 19 | 6 | 41 | 44 | 91 | 47 | 8 | 45 | 100 | 210 |
| Total | 0 | 44 | 18 | 21 | 83 | 22 | 160 | 170 | 352 | 232 | 40 | 170 | 442 | 877 |
| Grand Total | 0 | 125 | 64 | 81 | 270 | 103 | 606 | 689 | 1398 | 957 | 165 | 661 | 1783 | 3451 |
| Apprch % | | 46.3 | 23.7 | 30 | | 7.4 | 43.3 | 49.3 | | 53.7 | 9.3 | 37.1 | | |
| Total % | 0 | 3.6 | 1.9 | 2.3 | 7.8 | 3 | 17.6 | 20 | 40.5 | 27.7 | 4.8 | 19.2 | 51.7 | |
| Car | 0 | 124 | 64 | 81 | 269 | 102 | 601 | 681 | 1384 | 952 | 165 | 646 | 1763 | 3416 |
| % Car | 0 | 99.2 | 100 | 100 | 99.6 | 99 | 99.2 | 98.8 | 99 | 99.5 | 100 | 97.7 | 98.9 | 99 |
| Truck | 0 | 1 | 0 | 0 | 1 | 1 | 5 | 8 | 14 | 5 | 0 | 15 | 20 | 35 |
| % Truck | 0 | 0.8 | 0 | 0 | 0.4 | 1 | 0.8 | 1.2 | 1 | 0.5 | 0 | 2.3 | 1.1 | 1 |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

File Name : S13-037 4 Rockport
Site Code : 119287
Start Date : 7/13/2013
Page No : 2

| | From North | T-Wharf From East | | | | Route 127A Mt Pleasant Street From South | | | | Route 127A Broadway From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 11:15 AM | | | | | | | | | | | | | | |
| 11:15 AM | 0 | 9 | 3 | 6 | 18 | **9** | 37 | 39 | 85 | 62 | 11 | **46** | 119 | 222 |
| 11:30 AM | 0 | 8 | 4 | 5 | 17 | 8 | **43** | 49 | 100 | 48 | **17** | 36 | 101 | 218 |
| 11:45 AM | 0 | **10** | **8** | **8** | **26** | 6 | 40 | **55** | **101** | 69 | 11 | 39 | 119 | **246** |
| 12:00 PM | 0 | 3 | 6 | 6 | 15 | 5 | 39 | 40 | 84 | **72** | 16 | 42 | **130** | 229 |
| Total Volume | 0 | 30 | 21 | 25 | 76 | 28 | 159 | 183 | 370 | 251 | 55 | 163 | 469 | 915 |
| % App. Total | | 39.5 | 27.6 | 32.9 | | 7.6 | 43 | 49.5 | | 53.5 | 11.7 | 34.8 | | |
| PHF | .000 | .750 | .656 | .781 | .731 | .778 | .924 | .832 | .916 | .872 | .809 | .886 | .902 | .930 |



# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant St & Broadway & T-Wharf
Counted by Miovision
S13-037 TMC # 4

File Name : S13-037 4 Rockport
Site Code : 119287
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car

| | From North | T-Wharf From East | | | | Route 127A Mt Pleasant Street From South | | | | Route 127A Broadway From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 3 | 5 | 6 | 14 | 1 | 34 | 47 | 82 | 47 | 8 | 49 | 104 | 200 |
| 10:15 AM | 0 | 6 | 2 | 5 | 13 | 7 | 44 | 40 | 91 | 54 | 8 | 39 | 101 | 205 |
| 10:30 AM | 0 | 11 | 2 | 2 | 15 | 4 | 27 | 50 | 81 | 61 | 10 | 37 | 108 | 204 |
| 10:45 AM | 0 | 4 | 2 | 6 | 12 | 10 | 35 | 37 | 82 | 50 | 8 | 33 | 91 | 185 |
| Total | 0 | 24 | 11 | 19 | 54 | 22 | 140 | 174 | 336 | 212 | 34 | 158 | 404 | 794 |
| 11:00 AM | 0 | 8 | 4 | 1 | 13 | 5 | 33 | 41 | 79 | 71 | 5 | 45 | 121 | 213 |
| 11:15 AM | 0 | 9 | 3 | 6 | 18 | 9 | 37 | 36 | 82 | 62 | 11 | 44 | 117 | 217 |
| 11:30 AM | 0 | 8 | 4 | 5 | 17 | 8 | 43 | 48 | 99 | 48 | 17 | 35 | 100 | 216 |
| 11:45 AM | 0 | 10 | 8 | 8 | 26 | 6 | 40 | 55 | 101 | 69 | 11 | 38 | 118 | 245 |
| Total | 0 | 35 | 19 | 20 | 74 | 28 | 153 | 180 | 361 | 250 | 44 | 162 | 456 | 891 |
| 12:00 PM | 0 | 3 | 6 | 6 | 15 | 5 | 39 | 40 | 84 | 72 | 16 | 39 | 127 | 226 |
| 12:15 PM | 0 | 5 | 4 | 6 | 15 | 4 | 33 | 44 | 81 | 68 | 13 | 37 | 118 | 214 |
| 12:30 PM | 0 | 6 | 4 | 2 | 12 | 6 | 45 | 31 | 82 | 56 | 9 | 34 | 99 | 193 |
| 12:45 PM | 0 | 7 | 2 | 7 | 16 | 15 | 33 | 44 | 92 | 62 | 9 | 50 | 121 | 229 |
| Total | 0 | 21 | 16 | 21 | 58 | 30 | 150 | 159 | 339 | 258 | 47 | 160 | 465 | 862 |
| 01:00 PM | 0 | 11 | 5 | 3 | 19 | 5 | 47 | 38 | 90 | 61 | 9 | 47 | 117 | 226 |
| 01:15 PM | 0 | 13 | 4 | 6 | 23 | 7 | 34 | 44 | 85 | 67 | 13 | 41 | 121 | 229 |
| 01:30 PM | 0 | 12 | 5 | 5 | 22 | 4 | 37 | 42 | 83 | 57 | 10 | 35 | 102 | 207 |
| 01:45 PM | 0 | 8 | 4 | 7 | 19 | 6 | 40 | 44 | 90 | 47 | 8 | 43 | 98 | 207 |
| Total | 0 | 44 | 18 | 21 | 83 | 22 | 158 | 168 | 348 | 232 | 40 | 166 | 438 | 869 |
| Grand Total | 0 | 124 | 64 | 81 | 269 | 102 | 601 | 681 | 1384 | 952 | 165 | 646 | 1763 | 3416 |
| Apprch % | | 46.1 | 23.8 | 30.1 | | 7.4 | 43.4 | 49.2 | | 54 | 9.4 | 36.6 | | |
| Total % | 0 | 3.6 | 1.9 | 2.4 | 7.9 | 3 | 17.6 | 19.9 | 40.5 | 27.9 | 4.8 | 18.9 | 51.6 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant St & Broadway & T-Wharf
Counted by Miovision
S13-037 TMC # 4

File Name : S13-037 4 Rockport
Site Code : 119287
Start Date : 7/13/2013
Page No : 1

Groups Printed- Truck

| | From North | T-Wharf From East | | | | Route 127A Mt Pleasant Street From South | | | | Route 127A Broadway From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 3 |
| 10:30 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 3 |
| 10:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 2 | 4 |
| Total | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 4 | 4 | 0 | 2 | 6 | 11 |
| 11:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 2 | 2 | 5 |
| 11:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 2 |
| 11:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 4 | 8 |
| 12:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 |
| 12:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 12:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 |
| 12:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 5 | 6 | 8 |
| 01:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 01:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 01:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 1 | 3 |
| 01:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 4 | 4 | 8 |
| Grand Total | 0 | 1 | 0 | 0 | 1 | 1 | 5 | 8 | 14 | 5 | 0 | 15 | 20 | 35 |
| Apprch % | | 100 | 0 | 0 | | 7.1 | 35.7 | 57.1 | | 25 | 0 | 75 | | |
| Total % | 0 | 2.9 | 0 | 0 | 2.9 | 2.9 | 14.3 | 22.9 | 40 | 14.3 | 0 | 42.9 | 57.1 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant St & Broadway & T-Wharf
Counted by Miovision
S13-037 TMC # 4

File Name : S13-037 4 Rockport
Site Code : 119287
Start Date : 7/13/2013
Page No : 1

Groups Printed- Pedal Bike (Road)

| | From North | T-Wharf From East | | | | Route 127A Mt Pleasant Street From South | | | | Route 127A Broadway From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 10:00 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 10:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 5 |
| 10:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 2 | 2 | 11 |
| 10:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 17 | 0 | 1 | 0 | 1 | 18 |
| Total | 0 | 2 | 0 | 0 | 2 | 0 | 28 | 3 | 31 | 0 | 1 | 2 | 3 | 36 |
| 11:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 0 | 1 | 0 | 1 | 6 |
| 11:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 11:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 4 |
| 11:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2 | 15 | 0 | 2 | 0 | 2 | 17 |
| 12:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| 12:15 PM | 0 | 3 | 0 | 0 | 3 | 0 | 2 | 0 | 2 | 0 | 1 | 5 | 6 | 11 |
| 12:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 1 | 1 | 0 | 2 | 6 |
| Total | 0 | 3 | 0 | 0 | 3 | 5 | 5 | 0 | 10 | 1 | 2 | 5 | 8 | 21 |
| 01:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 4 |
| 01:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 01:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 01:45 PM | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 2 | 0 | 0 | 2 | 0 | 6 | 1 | 7 | 0 | 1 | 0 | 1 | 10 |
| Grand Total | 0 | 7 | 0 | 0 | 7 | 5 | 52 | 6 | 63 | 1 | 6 | 7 | 14 | 84 |
| Apprch % | | 100 | 0 | 0 | | 7.9 | 82.5 | 9.5 | | 7.1 | 42.9 | 50 | | |
| Total % | 0 | 8.3 | 0 | 0 | 8.3 | 6 | 61.9 | 7.1 | 75 | 1.2 | 7.1 | 8.3 | 16.7 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant St & Broadway & T-Wharf
Counted by Miovision
S13-037 TMC # 4

File Name : S13-037 4 Rockport
Site Code : 119287
Start Date : 7/13/2013
Page No : 1

Groups Printed- Ped

| | Mt Pleasant Street From North | | T-Wharf From East | | Route 127A Mt Pleasant Street From South | | Route 127A Broadway From West | | |
|---|---|---|---|---|---|---|---|---|---|
| Start Time | Peds | App. Total | Peds | App. Total | Peds | App. Total | Peds | App. Total | Int. Total |
| 10:00 AM | 8 | 8 | 64 | 64 | 48 | 48 | 51 | 51 | 171 |
| 10:15 AM | 2 | 2 | 62 | 62 | 75 | 75 | 40 | 40 | 179 |
| 10:30 AM | 4 | 4 | 72 | 72 | 67 | 67 | 53 | 53 | 196 |
| 10:45 AM | 7 | 7 | 71 | 71 | 59 | 59 | 45 | 45 | 182 |
| Total | 21 | 21 | 269 | 269 | 249 | 249 | 189 | 189 | 728 |
| 11:00 AM | 3 | 3 | 84 | 84 | 22 | 22 | 29 | 29 | 138 |
| 11:15 AM | 6 | 6 | 46 | 46 | 52 | 52 | 52 | 52 | 156 |
| 11:30 AM | 4 | 4 | 65 | 65 | 41 | 41 | 63 | 63 | 173 |
| 11:45 AM | 9 | 9 | 80 | 80 | 68 | 68 | 73 | 73 | 230 |
| Total | 22 | 22 | 275 | 275 | 183 | 183 | 217 | 217 | 697 |
| 12:00 PM | 37 | 37 | 94 | 94 | 84 | 84 | 38 | 38 | 253 |
| 12:15 PM | 36 | 36 | 100 | 100 | 82 | 82 | 53 | 53 | 271 |
| 12:30 PM | 37 | 37 | 83 | 83 | 68 | 68 | 47 | 47 | 235 |
| 12:45 PM | 23 | 23 | 91 | 91 | 52 | 52 | 49 | 49 | 215 |
| Total | 133 | 133 | 368 | 368 | 286 | 286 | 187 | 187 | 974 |
| 01:00 PM | 8 | 8 | 90 | 90 | 44 | 44 | 15 | 15 | 157 |
| 01:15 PM | 10 | 10 | 96 | 96 | 48 | 48 | 39 | 39 | 193 |
| 01:30 PM | 6 | 6 | 113 | 113 | 43 | 43 | 33 | 33 | 195 |
| 01:45 PM | 15 | 15 | 72 | 72 | 46 | 46 | 34 | 34 | 167 |
| Total | 39 | 39 | 371 | 371 | 181 | 181 | 121 | 121 | 712 |
| Grand Total | 215 | 215 | 1283 | 1283 | 899 | 899 | 714 | 714 | 3111 |
| Apprch % | 100 | | 100 | | 100 | | 100 | | |
| Total % | 6.9 | 6.9 | 41.2 | 41.2 | 28.9 | 28.9 | 23 | 23 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant & Main St & Bearskin Neck
Counted by Miovision
S13-037 TMC # 5

File Name : S13-037 5 Rockport
Site Code : 119307
Start Date : 7/13/2013
Page No : 1

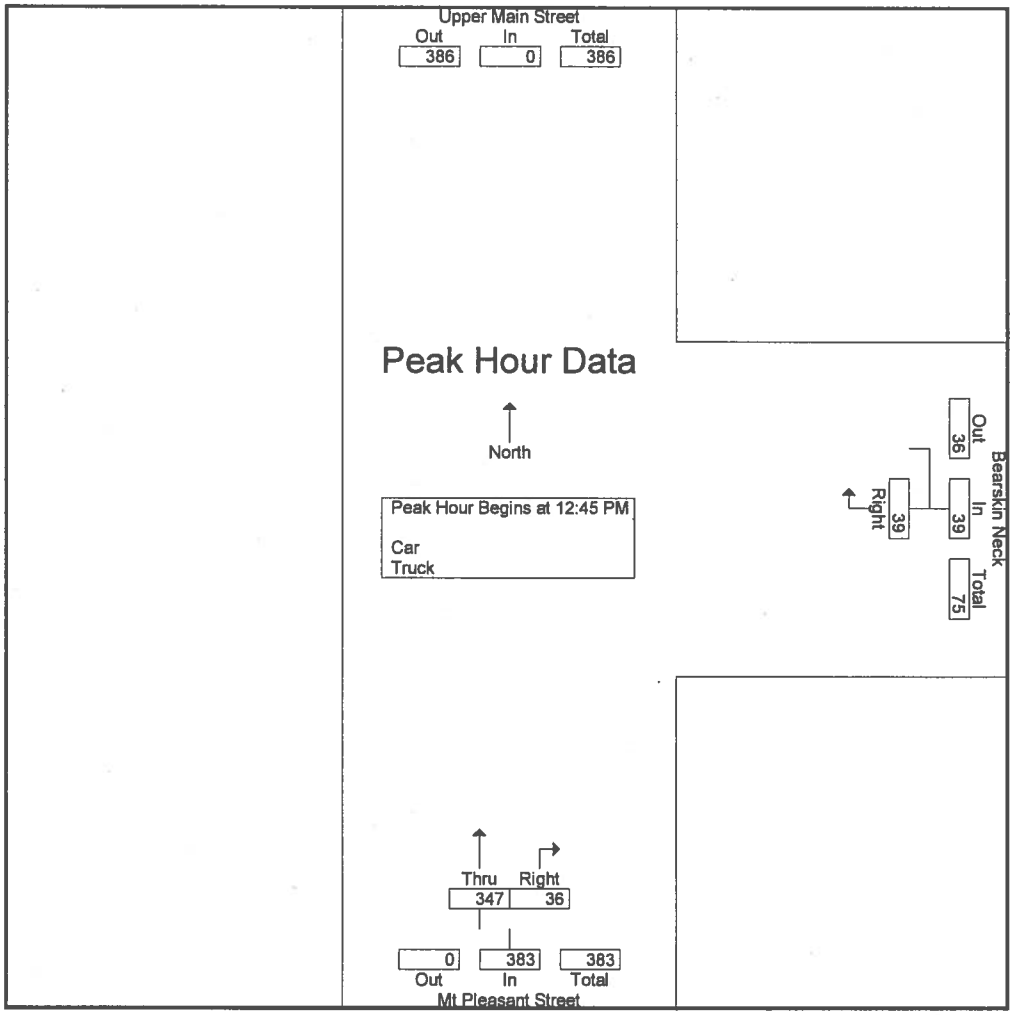
Groups Printed- Car - Truck

| | From North | Bearskin Neck From East | | Mt Pleasant Street From South | | | |
|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 0 | 10 | 10 | 21 | 68 | 89 | 99 |
| 10:15 AM | 0 | 15 | 15 | 15 | 65 | 80 | 95 |
| 10:30 AM | 0 | 11 | 11 | 17 | 62 | 79 | 90 |
| 10:45 AM | 0 | 15 | 15 | 14 | 59 | 73 | 88 |
| Total | 0 | 51 | 51 | 67 | 254 | 321 | 372 |
| 11:00 AM | 0 | 11 | 11 | 17 | 64 | 81 | 92 |
| 11:15 AM | 0 | 16 | 16 | 17 | 65 | 82 | 98 |
| 11:30 AM | 0 | 8 | 8 | 10 | 69 | 79 | 87 |
| 11:45 AM | 0 | 12 | 12 | 11 | 66 | 77 | 89 |
| Total | 0 | 47 | 47 | 55 | 264 | 319 | 366 |
| 12:00 PM | 0 | 7 | 7 | 12 | 75 | 87 | 94 |
| 12:15 PM | 0 | 15 | 15 | 9 | 63 | 72 | 87 |
| 12:30 PM | 0 | 8 | 8 | 5 | 81 | 86 | 94 |
| 12:45 PM | 0 | 9 | 9 | 7 | 88 | 95 | 104 |
| Total | 0 | 39 | 39 | 33 | 307 | 340 | 379 |
| 01:00 PM | 0 | 10 | 10 | 13 | 91 | 104 | 114 |
| 01:15 PM | 0 | 9 | 9 | 13 | 79 | 92 | 101 |
| 01:30 PM | 0 | 11 | 11 | 3 | 89 | 92 | 103 |
| 01:45 PM | 0 | 5 | 5 | 10 | 76 | 86 | 91 |
| Total | 0 | 35 | 35 | 39 | 335 | 374 | 409 |
| Grand Total | 0 | 172 | 172 | 194 | 1160 | 1354 | 1526 |
| Apprch % | | 100 | | 14.3 | 85.7 | | |
| Total % | 0 | 11.3 | 11.3 | 12.7 | 76 | 88.7 | |
| Car | 0 | 170 | 170 | 192 | 1137 | 1329 | 1499 |
| % Car | 0 | 98.8 | 98.8 | 99 | 98 | 98.2 | 98.2 |
| Truck | 0 | 2 | 2 | 2 | 23 | 25 | 27 |
| % Truck | 0 | 1.2 | 1.2 | 1 | 2 | 1.8 | 1.8 |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

File Name : S13-037 5 Rockport
Site Code : 119307
Start Date : 7/13/2013
Page No : 2

| | From North | Bearskin Neck From East | | Mt Pleasant Street From South | | | |
|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | App. Total | Right | Thru | App. Total | Int. Total |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | |
| Peak Hour for Entire Intersection Begins at 12:45 PM | | | | | | | |
| 12:45 PM | 0 | 9 | 9 | 7 | 88 | 95 | 104 |
| 01:00 PM | 0 | 10 | 10 | **13** | **91** | **104** | **114** |
| 01:15 PM | 0 | 9 | 9 | 13 | 79 | 92 | 101 |
| 01:30 PM | 0 | **11** | **11** | 3 | 89 | 92 | 103 |
| Total Volume | 0 | 39 | 39 | 36 | 347 | 383 | 422 |
| % App. Total | | 100 | | 9.4 | 90.6 | | |
| PHF | .000 | .886 | .886 | .692 | .953 | .921 | .925 |



# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant & Main St & Bearskin Neck
Counted by Miovision
S13-037 TMC # 5

File Name : S13-037 5 Rockport
Site Code : 119307
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car

| | From North | Bearskin Neck From East | | Mt Pleasant Street From South | | | |
|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 0 | 10 | 10 | 21 | 67 | 88 | 98 |
| 10:15 AM | 0 | 15 | 15 | 15 | 65 | 80 | 95 |
| 10:30 AM | 0 | 11 | 11 | 16 | 61 | 77 | 88 |
| 10:45 AM | 0 | 15 | 15 | 14 | 59 | 73 | 88 |
| Total | 0 | 51 | 51 | 66 | 252 | 318 | 369 |
| 11:00 AM | 0 | 11 | 11 | 17 | 63 | 80 | 91 |
| 11:15 AM | 0 | 15 | 15 | 17 | 63 | 80 | 95 |
| 11:30 AM | 0 | 8 | 8 | 10 | 68 | 78 | 86 |
| 11:45 AM | 0 | 12 | 12 | 11 | 66 | 77 | 89 |
| Total | 0 | 46 | 46 | 55 | 260 | 315 | 361 |
| 12:00 PM | 0 | 7 | 7 | 11 | 72 | 83 | 90 |
| 12:15 PM | 0 | 15 | 15 | 9 | 62 | 71 | 86 |
| 12:30 PM | 0 | 8 | 8 | 5 | 79 | 84 | 92 |
| 12:45 PM | 0 | 8 | 8 | 7 | 85 | 92 | 100 |
| Total | 0 | 38 | 38 | 32 | 298 | 330 | 368 |
| 01:00 PM | 0 | 10 | 10 | 13 | 90 | 103 | 113 |
| 01:15 PM | 0 | 9 | 9 | 13 | 76 | 89 | 98 |
| 01:30 PM | 0 | 11 | 11 | 3 | 87 | 90 | 101 |
| 01:45 PM | 0 | 5 | 5 | 10 | 74 | 84 | 89 |
| Total | 0 | 35 | 35 | 39 | 327 | 366 | 401 |
| Grand Total | 0 | 170 | 170 | 192 | 1137 | 1329 | 1499 |
| Apprch % | | 100 | | 14.4 | 85.6 | | |
| Total % | 0 | 11.3 | 11.3 | 12.8 | 75.9 | 88.7 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant & Main St & Bearskin Neck
Counted by Miovision
S13-037 TMC # 5

File Name : S13-037 5 Rockport
Site Code : 119307
Start Date : 7/13/2013
Page No : 1

Groups Printed- Truck

| | From North | Bearskin Neck From East | | Mt Pleasant Street From South | | | |
|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:30 AM | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Total | 0 | 0 | 0 | 1 | 2 | 3 | 3 |
| 11:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 11:15 AM | 0 | 1 | 1 | 0 | 2 | 2 | 3 |
| 11:30 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 1 | 1 | 0 | 4 | 4 | 5 |
| 12:00 PM | 0 | 0 | 0 | 1 | 3 | 4 | 4 |
| 12:15 PM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 12:30 PM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 12:45 PM | 0 | 1 | 1 | 0 | 3 | 3 | 4 |
| Total | 0 | 1 | 1 | 1 | 9 | 10 | 11 |
| 01:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 01:15 PM | 0 | 0 | 0 | 0 | 3 | 3 | 3 |
| 01:30 PM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 01:45 PM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| Total | 0 | 0 | 0 | 0 | 8 | 8 | 8 |
| Grand Total | 0 | 2 | 2 | 2 | 23 | 25 | 27 |
| Apprch % | | 100 | | 8 | 92 | | |
| Total % | 0 | 7.4 | 7.4 | 7.4 | 85.2 | 92.6 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant & Main St & Bearskin Neck
Counted by Miovision
S13-037 TMC # 5

File Name : S13-037 5 Rockport
Site Code : 119307
Start Date : 7/13/2013
Page No : 1

Groups Printed- Pedal Bike (Road)

| | From North | Bearskin Neck From East | | Mt Pleasant Street From South | | | |
|---|---|---|---|---|---|---|---|
| Start Time | App. Total | Right | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 0 | 2 | 2 | 0 | 0 | 0 | 2 |
| 10:15 AM | 0 | 0 | 0 | 4 | 0 | 4 | 4 |
| 10:30 AM | 0 | 3 | 3 | 0 | 7 | 7 | 10 |
| 10:45 AM | 0 | 0 | 0 | 13 | 1 | 14 | 14 |
| Total | 0 | 5 | 5 | 17 | 8 | 25 | 30 |
| 11:00 AM | 0 | 3 | 3 | 2 | 1 | 3 | 6 |
| 11:15 AM | 0 | 17 | 17 | 3 | 0 | 3 | 20 |
| 11:30 AM | 0 | 1 | 1 | 2 | 0 | 2 | 3 |
| 11:45 AM | 0 | 1 | 1 | 6 | 0 | 6 | 7 |
| Total | 0 | 22 | 22 | 13 | 1 | 14 | 36 |
| 12:00 PM | 0 | 0 | 0 | 2 | 1 | 3 | 3 |
| 12:15 PM | 0 | 0 | 0 | 3 | 3 | 6 | 6 |
| 12:45 PM | 0 | 0 | 0 | 2 | 2 | 4 | 4 |
| Total | 0 | 0 | 0 | 7 | 6 | 13 | 13 |
| 01:15 PM | 0 | 2 | 2 | 0 | 1 | 1 | 3 |
| Total | 0 | 2 | 2 | 0 | 1 | 1 | 3 |
| Grand Total | 0 | 29 | 29 | 37 | 16 | 53 | 82 |
| Apprch % | | 100 | | 69.8 | 30.2 | | |
| Total % | 0 | 35.4 | 35.4 | 45.1 | 19.5 | 64.6 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Rockport
Mt Pleasant & Main St & Bearskin Neck
Counted by Miovision
S13-037 TMC # 5

File Name : S13-037 5 Rockport
Site Code : 119307
Start Date : 7/13/2013
Page No : 1

Groups Printed- Ped

| | Upper Main Street From North | | Bearskin Neck From East | | Mt Pleasant Street From South | | |
|---|---|---|---|---|---|---|---|
| Start Time | Peds | App. Total | Peds | App. Total | Peds | App. Total | Int. Total |
| 10:00 AM | 5 | 5 | 11 | 11 | 11 | 11 | 27 |
| 10:15 AM | 0 | 0 | 23 | 23 | 29 | 29 | 52 |
| 10:30 AM | 6 | 6 | 17 | 17 | 8 | 8 | 31 |
| 10:45 AM | 4 | 4 | 15 | 15 | 7 | 7 | 26 |
| Total | 15 | 15 | 66 | 66 | 55 | 55 | 136 |
| 11:00 AM | 9 | 9 | 28 | 28 | 20 | 20 | 57 |
| 11:15 AM | 7 | 7 | 23 | 23 | 27 | 27 | 57 |
| 11:30 AM | 10 | 10 | 54 | 54 | 20 | 20 | 84 |
| 11:45 AM | 5 | 5 | 44 | 44 | 38 | 38 | 87 |
| Total | 31 | 31 | 149 | 149 | 105 | 105 | 285 |
| 12:00 PM | 1 | 1 | 50 | 50 | 25 | 25 | 76 |
| 12:15 PM | 17 | 17 | 57 | 57 | 17 | 17 | 91 |
| 12:30 PM | 10 | 10 | 47 | 47 | 32 | 32 | 89 |
| 12:45 PM | 6 | 6 | 62 | 62 | 38 | 38 | 106 |
| Total | 34 | 34 | 216 | 216 | 112 | 112 | 362 |
| 01:00 PM | 10 | 10 | 33 | 33 | 65 | 65 | 108 |
| 01:15 PM | 10 | 10 | 67 | 67 | 57 | 57 | 134 |
| 01:30 PM | 7 | 7 | 53 | 53 | 55 | 55 | 115 |
| 01:45 PM | 13 | 13 | 55 | 55 | 38 | 38 | 106 |
| Total | 40 | 40 | 208 | 208 | 215 | 215 | 463 |
| Grand Total | 120 | 120 | 639 | 639 | 487 | 487 | 1246 |
| Apprch % | 100 | | 100 | | 100 | | |
| Total % | 9.6 | 9.6 | 51.3 | 51.3 | 39.1 | 39.1 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Rte 127(Washington St) & Stanwood Street
Counted by Miovision
S13-037 TMC # 6

File Name : S13-037 6 Gloucester
Site Code : 119308
Start Date : 7/13/2013
Page No : 1

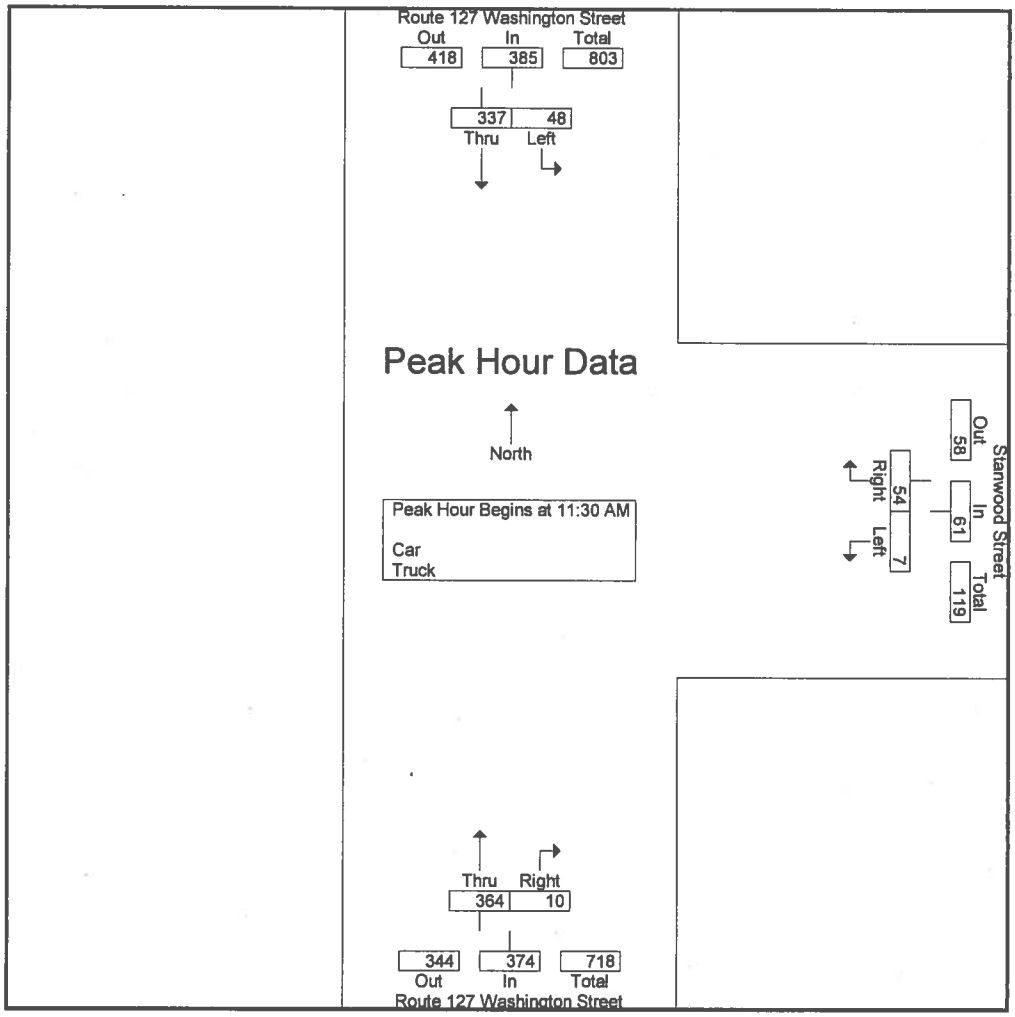
Groups Printed- Car - Truck

| | Route 127 Washington Street From North | | | Stanwood Street From East | | | Route 127 Washington Street From South | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 87 | 13 | 100 | 13 | 0 | 13 | 0 | 66 | 66 | 179 |
| 10:15 AM | 102 | 14 | 116 | 13 | 2 | 15 | 2 | 74 | 76 | 207 |
| 10:30 AM | 91 | 8 | 99 | 9 | 5 | 14 | 3 | 60 | 63 | 176 |
| 10:45 AM | 86 | 3 | 89 | 9 | 3 | 12 | 2 | 86 | 88 | 189 |
| Total | 366 | 38 | 404 | 44 | 10 | 54 | 7 | 286 | 293 | 751 |
| 11:00 AM | 89 | 7 | 96 | 14 | 2 | 16 | 1 | 81 | 82 | 194 |
| 11:15 AM | 74 | 7 | 81 | 14 | 3 | 17 | 1 | 88 | 89 | 187 |
| 11:30 AM | 90 | 22 | 112 | 14 | 3 | 17 | 3 | 98 | 101 | 230 |
| 11:45 AM | 82 | 8 | 90 | 17 | 3 | 20 | 3 | 73 | 76 | 186 |
| Total | 335 | 44 | 379 | 59 | 11 | 70 | 8 | 340 | 348 | 797 |
| 12:00 PM | 92 | 7 | 99 | 13 | 1 | 14 | 2 | 93 | 95 | 208 |
| 12:15 PM | 73 | 11 | 84 | 10 | 0 | 10 | 2 | 100 | 102 | 196 |
| 12:30 PM | 64 | 4 | 68 | 18 | 1 | 19 | 1 | 89 | 90 | 177 |
| 12:45 PM | 67 | 6 | 73 | 14 | 2 | 16 | 1 | 112 | 113 | 202 |
| Total | 296 | 28 | 324 | 55 | 4 | 59 | 6 | 394 | 400 | 783 |
| 01:00 PM | 80 | 13 | 93 | 16 | 2 | 18 | 0 | 74 | 74 | 185 |
| 01:15 PM | 81 | 12 | 93 | 6 | 3 | 9 | 2 | 74 | 76 | 178 |
| 01:30 PM | 86 | 6 | 92 | 9 | 2 | 11 | 1 | 93 | 94 | 197 |
| 01:45 PM | 73 | 12 | 85 | 17 | 2 | 19 | 1 | 91 | 92 | 196 |
| Total | 320 | 43 | 363 | 48 | 9 | 57 | 4 | 332 | 336 | 756 |
| Grand Total | 1317 | 153 | 1470 | 206 | 34 | 240 | 25 | 1352 | 1377 | 3087 |
| Apprch % | 89.6 | 10.4 | | 85.8 | 14.2 | | 1.8 | 98.2 | | |
| Total % | 42.7 | 5 | 47.6 | 6.7 | 1.1 | 7.8 | 0.8 | 43.8 | 44.6 | |
| Car | 1298 | 153 | 1451 | 205 | 32 | 237 | 22 | 1337 | 1359 | 3047 |
| % Car | 98.6 | 100 | 98.7 | 99.5 | 94.1 | 98.8 | 88 | 98.9 | 98.7 | 98.7 |
| Truck | 19 | 0 | 19 | 1 | 2 | 3 | 3 | 15 | 18 | 40 |
| % Truck | 1.4 | 0 | 1.3 | 0.5 | 5.9 | 1.2 | 12 | 1.1 | 1.3 | 1.3 |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

File Name : S13-037 6 Gloucester
Site Code : 119308
Start Date : 7/13/2013
Page No : 2

| | Route 127 Washington Street From North | | | Stanwood Street From East | | | Route 127 Washington Street From South | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 11:30 AM | | | | | | | | | | |
| 11:30 AM | 90 | **22** | **112** | 14 | **3** | 17 | **3** | 98 | 101 | **230** |
| 11:45 AM | 82 | 8 | 90 | **17** | 3 | **20** | 3 | 73 | 76 | 186 |
| 12:00 PM | **92** | 7 | 99 | 13 | 1 | 14 | 2 | 93 | 95 | 208 |
| 12:15 PM | 73 | 11 | 84 | 10 | 0 | 10 | 2 | **100** | **102** | 196 |
| Total Volume | 337 | 48 | 385 | 54 | 7 | 61 | 10 | 364 | 374 | 820 |
| % App. Total | 87.5 | 12.5 | | 88.5 | 11.5 | | 2.7 | 97.3 | | |
| PHF | .916 | .545 | .859 | .794 | .583 | .763 | .833 | .910 | .917 | .891 |



# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Rte 127(Washington St) & Stanwood Street
Counted by Miovision
S13-037 TMC # 6

File Name : S13-037 6 Gloucester
Site Code : 119308
Start Date : 7/13/2013
Page No : 1

Groups Printed- Car

| | Route 127 Washington Street From North | | | Stanwood Street From East | | | Route 127 Washington Street From South | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 86 | 13 | 99 | 13 | 0 | 13 | 0 | 65 | 65 | 177 |
| 10:15 AM | 101 | 14 | 115 | 12 | 2 | 14 | 2 | 73 | 75 | 204 |
| 10:30 AM | 89 | 8 | 97 | 9 | 5 | 14 | 3 | 60 | 63 | 174 |
| 10:45 AM | 86 | 3 | 89 | 9 | 3 | 12 | 2 | 85 | 87 | 188 |
| Total | 362 | 38 | 400 | 43 | 10 | 53 | 7 | 283 | 290 | 743 |
| 11:00 AM | 87 | 7 | 94 | 14 | 2 | 16 | 0 | 78 | 78 | 188 |
| 11:15 AM | 73 | 7 | 80 | 14 | 3 | 17 | 1 | 88 | 89 | 186 |
| 11:30 AM | 89 | 22 | 111 | 14 | 3 | 17 | 3 | 97 | 100 | 228 |
| 11:45 AM | 81 | 8 | 89 | 17 | 2 | 19 | 3 | 71 | 74 | 182 |
| Total | 330 | 44 | 374 | 59 | 10 | 69 | 7 | 334 | 341 | 784 |
| 12:00 PM | 90 | 7 | 97 | 13 | 1 | 14 | 2 | 93 | 95 | 206 |
| 12:15 PM | 72 | 11 | 83 | 10 | 0 | 10 | 2 | 100 | 102 | 195 |
| 12:30 PM | 64 | 4 | 68 | 18 | 0 | 18 | 0 | 88 | 88 | 174 |
| 12:45 PM | 67 | 6 | 73 | 14 | 2 | 16 | 1 | 112 | 113 | 202 |
| Total | 293 | 28 | 321 | 55 | 3 | 58 | 5 | 393 | 398 | 777 |
| 01:00 PM | 78 | 13 | 91 | 16 | 2 | 18 | 0 | 74 | 74 | 183 |
| 01:15 PM | 81 | 12 | 93 | 6 | 3 | 9 | 1 | 72 | 73 | 175 |
| 01:30 PM | 84 | 6 | 90 | 9 | 2 | 11 | 1 | 93 | 94 | 195 |
| 01:45 PM | 70 | 12 | 82 | 17 | 2 | 19 | 1 | 88 | 89 | 190 |
| Total | 313 | 43 | 356 | 48 | 9 | 57 | 3 | 327 | 330 | 743 |
| Grand Total | 1298 | 153 | 1451 | 205 | 32 | 237 | 22 | 1337 | 1359 | 3047 |
| Apprch % | 89.5 | 10.5 | | 86.5 | 13.5 | | 1.6 | 98.4 | | |
| Total % | 42.6 | 5 | 47.6 | 6.7 | 1.1 | 7.8 | 0.7 | 43.9 | 44.6 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Rte 127(Washington St) & Stanwood Street
Counted by Miovision
S13-037 TMC # 6

File Name : S13-037 6 Gloucester
Site Code : 119308
Start Date : 7/13/2013
Page No : 1

Groups Printed- Truck

| | Route 127 Washington Street From North | | | Stanwood Street From East | | | Route 127 Washington Street From South | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 10:15 AM | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 3 |
| 10:30 AM | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 10:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 4 | 0 | 4 | 1 | 0 | 1 | 0 | 3 | 3 | 8 |
| 11:00 AM | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 3 | 4 | 6 |
| 11:15 AM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11:30 AM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 11:45 AM | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 2 | 2 | 4 |
| Total | 5 | 0 | 5 | 0 | 1 | 1 | 1 | 6 | 7 | 13 |
| 12:00 PM | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:15 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:30 PM | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 3 |
| Total | 3 | 0 | 3 | 0 | 1 | 1 | 1 | 1 | 2 | 6 |
| 01:00 PM | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 01:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 3 |
| 01:30 PM | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 01:45 PM | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 6 |
| Total | 7 | 0 | 7 | 0 | 0 | 0 | 1 | 5 | 6 | 13 |
| Grand Total | 19 | 0 | 19 | 1 | 2 | 3 | 3 | 15 | 18 | 40 |
| Apprch % | 100 | 0 | | 33.3 | 66.7 | | 16.7 | 83.3 | | |
| Total % | 47.5 | 0 | 47.5 | 2.5 | 5 | 7.5 | 7.5 | 37.5 | 45 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Rte 127(Washington St) & Stanwood Street
Counted by Miovision
S13-037 TMC # 6

File Name : S13-037 6 Gloucester
Site Code : 119308
Start Date : 7/13/2013
Page No : 1

Groups Printed- Pedal Bike (Road)

| | Route 127 Washington Street From North | | | Stanwood Street From East | | | Route 127 Washington Street From South | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| 10:00 AM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 10:15 AM | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 10:30 AM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 3 |
| 10:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 2 | 2 | 4 | 2 | 0 | 2 | 0 | 3 | 3 | 9 |
| 11:00 AM | 8 | 2 | 10 | 1 | 0 | 1 | 0 | 0 | 0 | 11 |
| 11:15 AM | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 11:30 AM | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 1 | 1 | 16 |
| 11:45 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 25 | 3 | 28 | 1 | 0 | 1 | 0 | 2 | 2 | 31 |
| 12:00 PM | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:15 PM | 3 | 3 | 6 | 1 | 0 | 1 | 0 | 0 | 0 | 7 |
| 12:30 PM | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:45 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 6 | 5 | 11 | 1 | 0 | 1 | 0 | 0 | 0 | 12 |
| 01:15 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 01:30 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 01:45 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| Grand Total | 35 | 11 | 46 | 4 | 0 | 4 | 0 | 6 | 6 | 56 |
| Apprch % | 76.1 | 23.9 | | 100 | 0 | | 0 | 100 | | |
| Total % | 62.5 | 19.6 | 82.1 | 7.1 | 0 | 7.1 | 0 | 10.7 | 10.7 | |

# Massachusetts Department of Transportation
## Highway Division
**Statewide Traffic Data Collection**

Gloucester
Rte 127(Washington St) & Stanwood Street
Counted by Miovision
S13-037 TMC # 6

File Name : S13-037 6 Gloucester
Site Code : 119308
Start Date : 7/13/2013
Page No : 1

Groups Printed- Ped

| | Route 127 Washington Street From North | | Stanwood Street From East | | Route 127 Washington Street From South | | |
|---|---|---|---|---|---|---|---|
| Start Time | Peds | App. Total | Peds | App. Total | Peds | App. Total | Int. Total |
| 10:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 10:45 AM | 0 | 0 | 5 | 5 | 2 | 2 | 7 |
| Total | 0 | 0 | 5 | 5 | 4 | 4 | 9 |
| 11:00 AM | 1 | 1 | 0 | 0 | 3 | 3 | 4 |
| 11:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 11:30 AM | 0 | 0 | 0 | 0 | 7 | 7 | 7 |
| Total | 1 | 1 | 0 | 0 | 12 | 12 | 13 |
| 12:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 12:15 PM | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 12:45 PM | 2 | 2 | 0 | 0 | 1 | 1 | 3 |
| Total | 2 | 2 | 0 | 0 | 4 | 4 | 6 |
| 01:00 PM | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 01:15 PM | 2 | 2 | 0 | 0 | 2 | 2 | 4 |
| 01:30 PM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 01:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 2 | 2 | 1 | 1 | 4 | 4 | 7 |
| Grand Total | 5 | 5 | 6 | 6 | 24 | 24 | 35 |
| Apprch % | 100 | | 100 | | 100 | | |
| Total % | 14.3 | 14.3 | 17.1 | 17.1 | 68.6 | 68.6 | |

## APPENDIX I

**Summary of Turning Movement Counts by Modes**
**Saturday, July 13, 2013, 10:00 AM – 2:00 PM**

Location 1
Rt127A (Thatcher Rd./Bass Ave.) at Atlantic Rd., Gloucester

Location 2
Rt127A (Thatcher Rd.) at Barn Ln., Gloucester

Location 3
Rt127A (Thatcher Rd.) at Witham St., Gloucester

Location 4
Rt127A (Mt. Pleasant St./Broadway) at T-Wharf, Rockport

Location 5
Dock Square (Mt. Pleasant St. at Main St.), Rockport

Location 6
Route 127 (Washington St.) at Stanwood St., Gloucester

**Routes 127A/127 Turning Movement Counts by Modes (10:00AM-2:00PM, Saturday, 7/13/2013)**

**Summary of Peak Hourly Counts by Modes**

| Locations | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| TMC # 1 | 40 | 53 | 1048 | 13 | 1.3% |
| TMC # 2 | 4 | 40 | 1006 | 10 | 1.0% |
| TMC # 3 | 24 | 45 | 772 | 6 | 0.8% |
| TMC # 4 | 974 | 36 | 899 | 11 | 1.4% |
| TMC # 5 | 463 | 36 | 409 | 11 | 2.9% |
| TMC # 6 | 13 | 31 | 797 | 13 | 1.6% |

* The peak hourly counts are derived from the highlighted cells in the tables below.

**TMC # 1 Rt127A (Thatcher Rd/Bass Ave) at Atlantic Rd, Gloucester**

| Time | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| 10:00-11:00 | 23 | 53 | 899 | 9 | 1.0% |
| 11:00-12:00 | 35 | 16 | 1048 | 10 | 1.0% |
| 12:00-13:00 | 21 | 6 | 1006 | 13 | 1.3% |
| 13:00-14:00 | 40 | 20 | 1037 | 12 | 1.2% |

**TMC # 2 Rt127A (Thatcher Rd) at Barn Ln, Gloucester**

| Time | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| 10:00-11:00 | 1 | 40 | 889 | 9 | 1.0% |
| 11:00-12:00 | 4 | 14 | 933 | 9 | 1.0% |
| 12:00-13:00 | 0 | 6 | 921 | 9 | 1.0% |
| 13:00-14:00 | 0 | 22 | 1006 | 10 | 1.0% |

**TMC # 3 Rt127A (Thatcher Rd) at Witham St, Gloucester**

| Time | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| 10:00-11:00 | 12 | 45 | 686 | 4 | 0.6% |
| 11:00-12:00 | 9 | 12 | 689 | 1 | 0.1% |
| 12:00-13:00 | 7 | 10 | 699 | 6 | 0.9% |
| 13:00-14:00 | 24 | 18 | 772 | 6 | 0.8% |

**TMC # 4 Rt127A (Mt. Pleasant St/Broadway) at T-Wharf, Rockport**

| Time | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| 10:00-11:00 | 728 | 36 | 805 | 11 | 1.4% |
| 11:00-12:00 | 697 | 17 | 899 | 8 | 0.9% |
| 12:00-13:00 | 974 | 21 | 870 | 8 | 0.9% |
| 13:00-14:00 | 712 | 10 | 877 | 8 | 0.9% |

**TMC # 5 Dock Square (Mt. Pleasant St at Main St), Rockport**

| Time | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| 10:00-11:00 | 136 | 30 | 372 | 3 | 0.8% |
| 11:00-12:00 | 285 | 36 | 366 | 5 | 1.4% |
| 12:00-13:00 | 362 | 13 | 379 | 11 | 2.9% |
| 13:00-14:00 | 463 | 3 | 409 | 8 | 2.0% |

**TMC # 6 Route 127 (Washington St) at Stanwood St, Gloucester**

| Time | Ped Crossings | Bike Counts | Vehicle Counts | Heavy Vehicles | Heavy Veh. % |
|---|---|---|---|---|---|
| 10:00-11:00 | 9 | 9 | 751 | 8 | 1.1% |
| 11:00-12:00 | 13 | 31 | 797 | 13 | 1.6% |
| 12:00-13:00 | 6 | 12 | 783 | 6 | 0.8% |
| 13:00-14:00 | 7 | 4 | 756 | 13 | 1.7% |

# APPENDIX J

## Pedestrian and Bicycle Counts
## Saturday, July 2, 2011
## Volunteers of Friends of Gloucester Harbor

# Walker Count

## Thatcher Road at Entrance to Good Harbor Beach
## Volunteers of Friends of Good Harbor (FOGH)
## July 2, 2011 (Saturday)

The following persons served as counters:

| | |
|---|---|
| 8:30-10:30 | Don Seccombe |
| 10:30-12:30 | Dolores Mack |
| 12:30-1:30 | Tony Mack |
| 1:30-3:30 | Kathe German & Denton Crews |
| 3:30-4:30 | Kathe German |

The following counts were taken:

| Period | Cars | M-cycles | B-cycles | Joggers | Walkers | Carriages | Total (W&C) |
|---|---|---|---|---|---|---|---|
| 8:30 9:30 | | | 30 | | 6 | | 6 |
| 9:30 – 10:30 | | | 22 | 4 | 18 | | 18 |
| 10:30-11:30 | HC | 3 | 29 | 3 | 109 | 2 | 111 |
| 11:30-12:30 | HC | 11 | 17 | 4 | 51 | 1 | 52 |
| 12:30-1:30 | HC | 18 | 11 | | 79 | 2 | 81 |
| 1:30-2:30 | MC | 29 | 20 | | 106 | 1 | 107 |
| 2:30-3:30 | MC | 2 | 21 | | 56 | 2 | 58 |
| 3:30-4:30 | LC | 35 | 22 | | 99 | 0 | 99 |
| ***Totals** | | 98 | 172 | 11 | 524 | 8 | 532 |

**Key:** Cars (HC=Heavy Congestion; MC = Medium Congestion; LC = Light Congestion)

**Observations:**

1. Between 8:30 and 9:00 over 750 cars traveled the road – traffic was stalled by 9:05 AM.
2. People walking on both sides of road, sometimes three-abreast, one with a ukulele!
3. Paraphernalia (chairs, etc) and baby strollers (sometimes twin) extend into roadway
4. Bicyclists often ride around walkers between cars – including a stretch limo
5. Parking lot full at for non-residents at 9:30 am and residents at 11:30 (usually occurs at 1:00); lot re-opened to residents at 2:30; open to others at 3:30
6. Drop-off area congested; cars sent to Witham for drop-off and Long Beach for parking; some simply drop-off in the street!
7. Trolley drop-off at the boardwalk adds to the congestion on the beach; when the lot is full, the beach is full!
8. On duty: 3 parking lot attendants; 2 patrolmen; supervisor also on-site on day-off
9. Most were on the beach by 3 or so…then the tide reversed…
10. Comments heard: Walker leaving gate - "Here we go again, risking our lives"
    Another walker – "Isn't there a better way that's not so dangerous?"
11. People had lots of questions…about parking, availability, other places to park, etc.

Note: *Totals corrected by Stephen Winslow 8/6/2012

# APPENDIX K

## Comments and Responses

## Chen-Yuan Wang

**From:** Loutzenheiser, David
**Sent:** Tuesday, February 11, 2014 2:50 PM
**To:** Chen-Yuan Wang; Stephen Winslow; Joseph Parisi; Bill Steelman; Cleaves, Sam; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; peter@capeannchamber.com; jim@easyridertours.com; misrak.sultan@state.ma.us; william.palmer@state.ma.us; jeffrey.cox2@gmail.com; dmenon@salem.com
**Cc:** Efi Pagitsas; Nelson, Paul (DOT); Scott Peterson; Bourassa, Eric
**Subject:** RE: Routes 127A/127 (Cape Ann Loop) Study Meeting 2/10/2014 Monday 1:30PM
**Attachments:** CH_5.pdf

All,

Thank you to CTPS for the presenting their comprehensive analysis and recommendations yesterday in Rockport.

It's clear on the Cape Ann loop that there are very limited opportunities if any to increase the pavement width, so we need to accommodate cyclists (and pedestrians until continuous sidewalks are constructed) in the existing cross section. Therefore we need to consider narrowing the travel lanes as much as feasible to provide proper bicycle accommodation, or alternatively where proper shoulder width is not available (at least 3-4 ft) to stripe the road such that all users of the road share equally the space provided.

I just want to follow up on the lane width discussion. The enclosed chapter of the MassDOT Design Guide provides guidance on lane widths – section 5.3.3.3. 11 ft wide travel lanes are clearly allowed per guidelines, and narrower lanes can be considered via a design exception on urban minor arterials. I believe that 10 ft travel lanes should be considered in some sections.

Furthermore on p 5-32 "In areas of limited ROW, 10 ft lanes can be provided so that the width of the shoulder can be increased to provide greater separation between pedestrians, cyclists, and motor vehicles."

Thanks,

**David Loutzenheiser**
*Transportation Planner*
*Bicycle and Pedestrian Program*

Online Regional Cycling and Walking Map now Available!
trailmap.mapc.org

Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111
617-933-0743

MAPC 50 YEARS
METROPOLITAN AREA PLANNING COUNCIL
SMART GROWTH AND REGIONAL COLLABORATION

-----Original Message-----
From: Chen-Yuan Wang [mailto:cwang@ctps.org]
Sent: Friday, February 07, 2014 4:00 PM
To: Stephen Winslow; Joseph Parisi; Bill Steelman; Cleaves, Sam; Loutzenheiser, David; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; peter@capeannchamber.com; jim@easyridertours.com; misrak.sultan@state.ma.us; william.palmer@state.ma.us; jeffrey.cox2@gmail.com; dmenon@salem.com
Cc: Efi Pagitsas; Nelson, Paul (DOT); Scott Peterson
Subject: RE: Routes 127A/127 (Cape Ann Loop) Study Meeting 2/10/2014 Monday 1:30PM

Dear all,

Please be reminded of our final meeting for this study on Monday, 2/10/2014, 1:30PM at Rockport Town Hall. Attached are the agenda and meeting materials for your information. Hope to see you then. Thank you.

Regards, Chen-Yuan Wang

_____

From: Chen-Yuan Wang [mailto:cwang@ctps.org]
Sent: Tuesday, January 28, 2014 3:27 PM

Dear Study Advisory members,

Please note the final meeting will be held on 2/10/2014 Monday 1:30PM at the Lower-Lever Conference Room A, Rockport City Hall, 34 Broadway, Rockport. The main purposes of the meeting are to present findings and to discuss the proposed improvements for the study corridor.  Hope to see you then.

Regards, Chen-Yuan Wang
Chen-Yuan Wang  |  Chief Transportation Planner CENTRAL TRANSPORTATION PLANNING STAFF
617.973.8009  | cwang@ctps.org
www.ctps.org/bostonmpo
<< OLE Object: Picture (Device Independent Bitmap) >>

## Chen-Yuan Wang

**From:** Loutzenheiser, David
**Sent:** Wednesday, March 19, 2014 4:57 PM
**To:** Chen-Yuan Wang; Stephen Winslow; Joseph Parisi; Nelson, Paul (DOT); Bill Steelman; Cleaves, Sam; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; barry.pett@masenate.gov; chief@rockportpd.org
**Cc:** Efi Pagitsas; Bourassa, Eric
**Subject:** RE: Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Thank you Chen-Yuan for providing us the latest draft of this study.

The recommendations for bicycle accommodation still does not address the concerns that I brought up, nor do they reflect the reality of the roadway conditions that limit any widening for much of the corridor. Two foot shoulders are not acceptable bicycle accommodation. Another recommendation needs to be made.

Referring to Figure 8 in the report we do not believe that widening the road to provide shoulder cross sections 1 or 2 are possible on most sections of the roadway due to various physical constraints. The analysis does not address where this may be possible.

Sam and I discussed the draft and offer the following MAPC recommendations for this corridor.

Where 4 foot shoulders are not possible – eliminate the shoulders all together, particularly in sections with sidewalks, and stripe sharrows. Roadway widths are estimated in the 24-28 ft range. Unfortunately the report does not identify existing cross sections at various sample points along the corridor. Elimination of the shoulder consists of either removing the edge line entirely, or moving the edge line to 6 inches from edge of pavement. This allows for clear shared roadway space between bicycle and motor vehicles, as width does not allow for separate accommodation.

Remove the center line and stripe dashed shoulders for pedestrian and bicycle accommodation between Lanesville and Haven Ave (Rockport). A pilot installation of centerline removal and dash shoulders is ideal in this location due to low traffic volumes (< 4000 ADT in the summer, <3000 ADT in winter) and 30mph or less speed limits. A shorter initial section with minimal curves between Lanesville and the Rockport line could be implemented first to evaluate.

Detailed design guidance for such an installation here. Used extensively in Europe, ideal conditions here in Gloucester/Rockport. Plus we can draw on the expertise from Northeastern University that has studied these pavement markings extensively.
http://sustainabletransportationholland.org/topics/bicycle-advisory-lanes/

Thanks,

David

---

**From:** Chen-Yuan Wang [mailto:cwang@ctps.org]
**Sent:** Friday, March 14, 2014 12:01 PM
**To:** Stephen Winslow; Joseph Parisi; Nelson, Paul (DOT); Bill Steelman; Cleaves, Sam; Loutzenheiser, David; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; barry.pett@masenate.gov; chief@rockportpd.org
**Cc:** Efi Pagitsas
**Subject:** Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Dear Study Advisory members,

Attached please find a draft of the final report for your review (the appendices is separated from the report due to file size). We hope to get your comments back by next Friday (3/21/2014). We schedule to submit it for MPO approval on 4/17/2014. We apologize for the short notice, as it would take nearly a month to complete the MPO/MassDOT review process. Please note this is a draft not ready for public release until the MPO's approval. Thank you for your helps. Let me know if you have any questions in the documents.

Regards, Chen-Yuan Wang

**Chen-Yuan Wang** | Chief Transportation Planner

CENTRAL TRANSPORTATION PLANNING STAFF

617.973.8009 | cwang@ctps.org

www.ctps.org/bostonmpo

<<...>> <<...>>

## Chen-Yuan Wang

**From:** Raphael, Connie (DOT)
**Sent:** Monday, February 10, 2014 9:25 AM
**To:** Chen-Yuan Wang
**Subject:** RE: Routes 127A/127 (Cape Ann Loop) Study Meeting 2/10/2014 Monday 1:30PM

Hi Chen-Yuan,

I will not be able to attend this afternoon's meeting. I do have a comment on the draft report. MassDOT has a new Engineering Directive regarding design criteria in accordance with the Healthy Transportation Initiative. This directive calls for a minimum of 5 foot shoulders to accommodate bicycles and sidewalks on both sides of the road in urban areas. This applies to all projects on State Highways or funded with State and/or Federal funding. So I would recommend that your proposed cross section include the 5 foot shoulders and two sidewalks where feasible. You may want to consider narrower travel lanes (11 foot).

Connie Raphael
District Four Planning Coordinator
MassDOT - Highway Division

781-641-8468-----Original Message-----
From: Chen-Yuan Wang [mailto:cwang@ctps.org]
Sent: Friday, February 07, 2014 4:00 PM
To: Stephen Winslow; Joseph Parisi; Bill Steelman; Cleaves, Sam; Loutzenheiser, David; Raphael, Connie (DOT); Karas, Mike (DOT); Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; peter@capeannchamber.com; jim@easyridertours.com; Sultan, Misrak (DOT); Palmer, William (DOT); jeffrey.cox2@gmail.com; dmenon@salem.com
Cc: Efi Pagitsas; Nelson, Paul (DOT); Scott Peterson
Subject: RE: Routes 127A/127 (Cape Ann Loop) Study Meeting 2/10/2014 Monday 1:30PM

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Regards, Chen-Yuan Wang

_____

From: Chen-Yuan Wang [mailto:cwang@ctps.org]
Sent: Tuesday, January 28, 2014 3:27 PM

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Regards, Chen-Yuan Wang
Chen-Yuan Wang | Chief Transportation Planner CENTRAL TRANSPORTATION PLANNING STAFF
617.973.8009 | cwang@ctps.org
www.ctps.org/bostonmpo
<< OLE Object: Picture (Device Independent Bitmap) >>

## Chen-Yuan Wang

**From:** Raphael, Connie (DOT)
**Sent:** Monday, March 17, 2014 2:28 PM
**To:** Chen-Yuan Wang
**Cc:** Onorato, Joseph (DOT)
**Subject:** RE: Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Hi Chen-Yuan,

I still do not support the one directional bike accommodation. It would be better to narrow the lanes and even the shoulders. I noticed that you mention the need for a waiver. This only applies on State Highway and when the Towns intend to use MassDOT funding. In those cases sidewalks are required on both sides of the roadway and the shoulder width is five feet.

*Connie*

---

**From:** Chen-Yuan Wang [mailto:cwang@ctps.org]
**Sent:** Friday, March 14, 2014 12:01 PM
**To:** Stephen Winslow; Joseph Parisi; Nelson, Paul (DOT); Bill Steelman; Cleaves, Sam; Loutzenheiser, David; Raphael, Connie (DOT); Karas, Mike (DOT); Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; barry.pett@masenate.gov; chief@rockportpd.org
**Cc:** Efi Pagitsas
**Subject:** Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Dear Study Advisory members,

Attached please find a draft of the final report for your review (the appendices is separated from the report due to file size). We hope to get your comments back by next Friday (3/21/2014). We schedule to submit it for MPO approval on 4/17/2014. We apologize for the short notice, as it would take nearly a month to complete the MPO/MassDOT review process. Please note this is a draft not ready for public release until the MPO's approval. Thank you for your helps. Let me know if you have any questions in the documents.

Regards, Chen-Yuan Wang

**Chen-Yuan Wang** | Chief Transportation Planner

CENTRAL TRANSPORTATION PLANNING STAFF

617.973.8009 | cwang@ctps.org

www.ctps.org/bostonmpo

<<...>> <<...>>

## Chen-Yuan Wang

**From:** Rabito, Luciano (DOT)
**Sent:** Friday, March 21, 2014 6:54 AM
**To:** 'Chen-Yuan Wang'
**Subject:** RE: Routes 127A/127 Bike Designs

Mr. Wang,

Thank you for reaching out to me regarding your questions on bicycle accommodations. Below are the questions and my responses asked both as part of this email and from our follow up meeting on March 20th at CTPS. Please see my responses below:

- Are wide shoulders (4'-5') on only one side (ocean side) of the roadways in this scenic area acceptable?

Per the Healthy Transportation Policy Directive and Engineering Directive E-14-001 5' is the minimum width for bicycle accommodations.
The attached map shows clearly that there are many sections which transition from bike lanes or usable shoulders to shared use. I would first suggest updating the map to only show bike lanes which measure 5' in width. My guess is this will further reduce the lengths of these sections. I do not see a real benefit to providing accommodations on one side and not the other. In fact I would consider using shared lane and redistributing the width from the bike lane/shoulder more equitably. This is of course based on the assumption that speeds are low (35MPH or less) as are volumes. Narrow travel lanes (<13') generally imply that bicycles should take the lane as there is not enough width for a vehicle to pass a bicycle. Some energy and resources can be directed at other actions such as traffic calming to help reduce speeds and make it more palatable for bicycles to share the road with vehicles.

- Can or should shoulders be completely eliminated on shared travel lanes?

On state highways we stripe a shoulder line as it helps define the edge of travel way. On town roads we typically match existing. In this case assuming it is a state road(s) then I would stripe both shoulders at 2' and take the extra 2-3' and add it to the travel lanes. Note that this may trigger a design exception report for both bicycle accommodation and right shoulder width.

- What is the desirable width for shared road? And a few others.

This is influenced by speed, volumes (both vehicular & bicycle), geometry (horizontal & vertical). The width at which sharrows can be considered is below 16' (this assumes an 11' lane and 5' bike lane/shoulder). From 15' to 13' the placement of the sharrow is 4' from the curb (11' if there is parking). For less than 13' the placement is recommended in the middle of the lane.

- Would it be feasible to not stripe a center line and allow vehicles to pass around bike who would be given a dedicated space?

While this practice has been implemented in other countries it is not an acceptable approach here at this time. Not defining a center line on a roadway that has speeds up to 35MPH and volumes that exceed 10,000 VPD during peak season would not be a recommended action. Wide shared lanes and speed calming techniques would be a viable option to improve safety and comfort for bicycles.

- What is the requirement regarding sidewalks?

The Healthy Transportation Policy Directive issues in September of 2013 has very specific goals and requirements for all MassDOT projects. On all urban roadways we are required to provide two sidewalks for each project. As a way to enforce and monitor this directive MassDOT issued Engineering Directive E-14-001. This directive improved upon our Design Exception process to now include sidewalks and pedestrian

elements. So, any project such as the Route 127A/127 project which fails to meet the two sidewalk requirement and the 5' bike lane/shoulder requirement will need to go through the design exception process. As is the case at this location, sometimes there is just not enough available right of way to meet the needs of all users in the form of separate accommodations for all. The design exception process gives the designer the option to discuss other options which still provide safe and equitable accommodations for all users. Additionally, there are contextual elements that help guide our decision one way or the other.

Thanks,
Lou

Luciano Rabito, P.E.
Complete Streets Engineer
MassDOT
10 Park Plaza
Boston, MA 02116
857.368.9441

## Chen-Yuan Wang

**From:** Chen-Yuan Wang [mailto:cwang@ctps.org]
**Sent:** Monday, April 07, 2014 2:16 PM
**To:** 'Bill Steelman'; 'Loutzenheiser, David'; 'Stephen Winslow'; 'Joseph Parisi'; 'Nelson, Paul (DOT)'; 'Cleaves, Sam'; 'Raphael, Connie (DOT)'; 'mike.karas@state.ma.us'; 'Tim Olson'; 'tdaniel@gloucester-ma.gov'; 'gcademartori@gloucester-ma.gov'; 'barry.pett@masenate.gov'; 'chief@rockportpd.org'
**Cc:** Efi Pagitsas; 'Bourassa, Eric'; 'speterson@ctps.org'; bisler@ctps.org; Luciano.Rabito@state.ma.us
**Subject:** RE: Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Hi Bill,

Thank you for your comments. We also received comments from MAPC and MassDOT, all very helpful; they can be reviewed in the appendix of the memo. We incorporated them all as best as we could; bicycle accommodation is probably the issue that has received the most interest in this study.

Because the major roadways we examined in this study are State numbered routes, they have to follow MassDOT design standards, especially if Federal or State funds are to be used for the improvements. We consulted with MassDOT Complete Streets Engineer and received the following guidance about various design elements which were recommended in comments we received:

- Complete elimination of shoulders: This recommendation could probably only apply to roadways in Downtown Rockport but not on the major sections of Routes 127A/127. On state highways, MassDOT requires the striping of shoulder lines because they help define the edge of travel way, especially at night. In cases of shared road operations for bicycles and vehicles, MassDOT indicated that minimum 1' shoulders are still required.
- Removal of centerlines: Per MassDOT, the removal of centerlines is inappropriate for a corridor such as this due to its speed limit (35 MPH), high traffic volumes, and curved alignments. It would be particularly inappropriate for this specific corridor because:
  - Routes 127 and 127A are minor principal arterials in terms of functional class.
  - The roads are steep and winding in many sections, with frequent horizontal and vertical transitions, where centerlines are essential for safety.
  - Limited selected application in the study corridor would create an inconsistent design and be drastic change from the rest of the corridor, likely causing driver confusion. As such, its application to the limited section near Lanesville would not be appropriate.
  - A major transition section and signing to alert drivers about the change would be required before and after the application section. There no areas in the corridor are sufficient for such transitions.

However, we do think that this no-centerline can be effective in slowing traffic and providing bicycle and pedestrian accommodations in certain situations. In the documentation, we did recommend that elimination of centerlines could be considered for local streets or low-volume collectors in areas adjacent to the study corridor.

I like to stress that this was a study at the conceptual planning stage. Its purpose was to create awareness of the issues and identify potential treatments and a basis from which to spring off to the detailed design stage. We tried to adhere to existing design standards, as presently required by MassDOT. Therefore, at this preliminary planning stage, we can only identify rough sections for shared-road or wide-shoulder applications (as shown in the figures of proposed pedestrian and bicycle accommodations). It is not practical to be specific in terms of locations, as these have to be decided by actual field surveys at the design stage. However, we did try to be inclusive and identify as many potential applications to accommodate pedestrians and bicycles as possible. We discussed all the applications in our report and the comments from MAPC and MassDOT are all included in the report appendices.

Thank you for your help on the study. Chen-Yuan

**From:** Bill Steelman [mailto:bills@essexheritage.org]
**Sent:** Saturday, April 05, 2014 1:05 PM
**To:** Loutzenheiser, David; Chen-Yuan Wang; Stephen Winslow; Joseph Parisi; Nelson, Paul (DOT); Cleaves, Sam; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; barry.pett@masenate.gov; chief@rockportpd.org
**Cc:** Efi Pagitsas; Bourassa, Eric
**Subject:** RE: Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Chen-Yuan:

Could I kindly ask that you reply/respond to the issues raised in the email below, particularly as they relate to MAPC's recommendations?

I know the clock is ticking but, after some consideration, I do believe that it is in the future best interests of all roadway users (cyclists, pedestrians and motorists) that the study to be as location focused and specific as it can be in its recommendations. Any monies that may be available for improvements will only likely be accessed for solutions that address the safety of the non-vehicular users. Without the promise of meaningful advancements in safety vis-a-vis the recommendations I think what is now a challenging funding request will become an impossible one.

While not the engineer in the group, it does seem to me that it is possible to implement the shoulder recommendations on certain specific sections of the route. It is those possibilities that I believe warrant further attention and consideration.

Thank you for your efforts on behalf of our region.

Regards,

Bill Steelman
Essex Heritage
(978) 740-0444

**From:** Loutzenheiser, David [mailto:DLoutzenheiser@mapc.org]
**Sent:** Wednesday, March 19, 2014 4:57 PM
**To:** Chen-Yuan Wang; Stephen Winslow; Joseph Parisi; Nelson, Paul (DOT); Bill Steelman; Cleaves, Sam; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; barry.pett@masenate.gov; chief@rockportpd.org
**Cc:** Efi Pagitsas; Bourassa, Eric
**Subject:** RE: Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Thank you Chen-Yuan for providing us the latest draft of this study.

The recommendations for bicycle accommodation still does not address the concerns that I brought up, nor do they reflect the reality of the roadway conditions that limit any widening for much of the corridor. Two foot shoulders are not acceptable bicycle accommodation. Another recommendation needs to be made.

Referring to Figure 8 in the report we do not believe that widening the road to provide shoulder cross sections 1 or 2 are possible on most sections of the roadway due to various physical constraints. The analysis does not address where this may be possible.

Sam and I discussed the draft and offer the following MAPC recommendations for this corridor.

Where 4 foot shoulders are not possible – eliminate the shoulders all together, particularly in sections with sidewalks, and stripe sharrows. Roadway widths are estimated in the 24-28 ft range. Unfortunately the report does not identify existing cross sections at various sample points along the corridor. Elimination of the shoulder consists of either removing the edge line entirely, or moving the edge line to 6 inches from edge of pavement. This allows for clear shared roadway space between bicycle and motor vehicles, as width does not allow for separate accommodation.

Remove the center line and stripe dashed shoulders for pedestrian and bicycle accommodation between Lanesville and Haven Ave (Rockport). A pilot installation of centerline removal and dash shoulders is ideal in this location due to low traffic volumes (< 4000 ADT in the summer, <3000 ADT in winter) and 30mph or less speed limits. A shorter initial section with minimal curves between Lanesville and the Rockport line could be implemented first to evaluate.

Detailed design guidance for such an installation here. Used extensively in Europe, ideal conditions here in Gloucester/Rockport. Plus we can draw on the expertise from Northeastern University that has studied these pavement markings extensively.
http://sustainabletransportationholland.org/topics/bicycle-advisory-lanes/

Thanks,

David

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**From:** Chen-Yuan Wang [mailto:cwang@ctps.org]
**Sent:** Friday, March 14, 2014 12:01 PM
**To:** Stephen Winslow; Joseph Parisi; Nelson, Paul (DOT); Bill Steelman; Cleaves, Sam; Loutzenheiser, David; Raphael, Connie (DOT); mike.karas@state.ma.us; Tim Olson; tdaniel@gloucester-ma.gov; gcademartori@gloucester-ma.gov; barry.pett@masenate.gov; chief@rockportpd.org
**Cc:** Efi Pagitsas
**Subject:** Final Draft Report for Routes 127A/127 (Cape Ann Loop) Study

Dear Study Advisory members,

Attached please find a draft of the final report for your review (the appendices is separated from the report due to file size). We hope to get your comments back by next Friday (3/21/2014). We schedule to submit it for MPO approval on 4/17/2014. We apologize for the short notice, as it would take nearly a month to complete the MPO/MassDOT review process. Please note this is a draft not ready for public release until the MPO's approval. Thank you for your helps. Let me know if you have any questions in the documents.

Regards, Chen-Yuan Wang

**Chen-Yuan Wang** | Chief Transportation Planner

CENTRAL TRANSPORTATION PLANNING STAFF

617.973.8009 | cwang@ctps.org

# APPENDIX L

## Roadway Design: Bicycle Advisory Lanes
## Sustainable Transportation in the Netherlands

**Sustainable Transportation in the Netherlands**
**A website Created by Peter Furth and students of Northeastern University**

## Bicycle Advisory Lanes

Written by Peter Ellison and William Gray, Contributions by Tomas Bertulis (2011)
Updated by Ayan Majmudar, Andrew Raffo, and Bea van den Heuvel (2012)
Updated by Andrew Brunn and Joel Shaffer (2013)

Many two-way roads are too narrow to simultaneously allow two lanes of traffic to travel and also allow two bicycles to travel. The solution in the Netherlands has been to install shared bicycle lanes on these roads called advisory lanes or suggestion lanes. Advisory lanes are created in areas where separate cycle tracks cannot be made, whether from spatial or government restrictions. The CROW manual only refers to advisory bike lanes and legal bike lanes whereas it does not mention shared bicycle lanes. A shared bicycle lane is a term that can be used to describe both legal bicycle lanes as well as advisory bicycle lanes.

Installing shared bicycle lanes versus unshared bicycle lanes on a road depends on the road's width. If a road is wide enough to accommodate two lanes for motor vehicle travel and two lanes for bicycle travel, then unshared bicycle lanes will be installed since all traffic has enough road width to safely pass. If a road is too narrow to accommodate two lanes for motor vehicle travel along with two lanes for bicycles, then shared bicycle lanes may be installed. These lanes make it possible for cars traveling in opposing direction to pass one another by allowing them to use the shared bicycle lanes as the extra room they need to pass. Normally installing shared lanes means no centerline will be installed, yet still designate sufficient space for bikes. The 1998 Dutch CROW ASVV: Recommendations for Traffic Provisions in Built-up Areas, recommends centerlines only in situations where crossing the centerline will result in great risk such as on heavily traveled roads with high speeds. In contrast, the Manual on Uniform Traffic Control Devices in the United States states that a centerline is needed for urban roads with average daily traffic (ADT) above 6,000 vehicles per day and for rural roads with average daily traffic above 3,000 vehicles per day.

Typical Shared Bicycle Lanes- Pauwstraat in Delft

## Intended Use

Advisory lanes suggest where vehicles and cyclists should operate given the confined width of a narrow street. Bicyclists are advised to travel in the designated shoulders of the road and motorists are advised to drive in the designated center (which is too narrow for two-way vehicular traffic). Therefore, motorists can easily pass cyclists when they encounter one another. When two vehicles traveling in opposing directions encounter one another, they can temporarily move into the advised cycling lanes to avoid a conflict. This reasoning can be used for a variety of potential conflicts involving personal vehicles, buses, mopeds, and bicycles traveling in the same or opposite directions.

## Designed Use

The basic setup for advisory lanes is a road for motorized vehicles sandwiched between two bicycle lanes with dashed lines. Advisory lanes do not have any centerlines and therefore leaves passing and decision making up to the cyclists and vehicle operators. These lanes ensure the best use of the entire width of the road by directing cars down the center of the road and allowing lanes of bicycles to pass on either side. When two cars traveling in opposing directions meet, they yield to passing bicyclists and then utilize the shared bicycle lanes to perform their pass. In the Netherlands, roads with shared bicycle lanes are usually collector roads that collect the traffic from small local roads and direct it to a main road. They normally do not have a centerline and mainly have low to moderate volume traffic traveling at speeds of 30 – 50 km/hr in urban areas and up to 60 km/hr in rural areas. These lanes make safe bike and vehicle travel possible on narrow roads.

## Actual Use

The Netherlands mainly utilizes shared bicycle lanes on narrow urban and rural collector roads with low to moderate traffic to allow roads to remain two-way and still provide bicycles with a safe lane of travel. Cars respect the shared bicycle lane in the same manner as an unshared bicycle lane and when attempting to pass one another give priority to any traveling bicycles and yield before completing their pass. The consistent speed of bicycle travel in the shared bicycle lane means that cars passing each other do not have to wait very long at all when yielding to a bicycle before entering the shared lane. The existence of these lanes creates a sort of etiquette on the road where both the car driver and bicyclist knows where each should be and how to efficiently share the road should an instance of passing occur. Also, these lanes cause an expectation to be created where car drivers are aware that bicycles may be traveling in this nearby marked lane.

Bicycle and Car traveling in advised areas on S. V. D. Oyeweg in Pijnacker

Car yielding to traveling bicycles by utilizing shared bicycle lane on the Westplantsoen in Delft

Car shows recognition of bicycles by moving over into shared bicycle lane on the Molenweg in Nootdorp.

Cars utilizing full road width to pass on the Zuideindseweg in Delfgauw

# APPENDIX M

## MassDOT Engineering Directive (Interim) E-14-001
## February 4, 2014

**Policy:** P-13-0001

Date: September 9, 2013

# *HEALTHY TRANSPORTATION POLICY DIRECTIVE*

**Secretary of Transportation and Chief Executive Officer**

**Highway Division Administrator**

**MBTA General Manager and Rail and Transit Administrator**

**Aeronautics Division Administrator**

**Executive Director, Office of Transportation Planning**

## I. Healthy Transportation Policy Directive:

This directive formalizes MassDOT's commitment to the implementation and maintenance of transportation networks that serve all mode choices for our customers and that was memorialized in our Mode Shift Goal announced October 2012.

## II. Goal:

To further MassDOT's GreenDOT Implementation Plan, the Commonwealth's Healthy Transportation Compact and statewide Mode Shift Goal, this *Healthy Transportation Policy Directive* is issued to ensure all MassDOT projects are designed and implemented in a way that all our customers have access to safe and comfortable healthy transportation options at all MassDOT facilities and in all the services we provide. This directive builds on other existing directives and guidance that addresses such issues. Healthy Transportation modes as defined by GreenDOT are walking, bicycling and taking transit.

## III. Implementation:

*1) Project Reviews*

In order to ensure that healthy transportation modes are considered equally as potential solutions within project design, this *Healthy Transportation Policy Directive* requires the following:

1A. All MassDOT funded and or designed projects shall seek to increase and encourage more pedestrian, bicycle and transit trips. MassDOT has established a statewide mode shift goal that seeks to triple the distance traveled by walking, bicycling and transit by 2030, promoting intermodal access to the maximum extent feasible will help the agency meet this goal.

1B. The MassDOT Highway, Rail & Transit, and Aeronautics Divisions shall undertake a review process to evaluate all projects currently under MassDOT design oversight for conformance with the specifications and spirit of this *Healthy Transportation Policy Directive*. This process must be completed by January 1, 2014 and submitted to the Secretary and CEO for review. Projects programmed for federal and state funding within the next four fiscal years should be reviewed as a priority. For projects under the Highway Division, the emphasis should be on those projects that entered the design review process before the adoption of the *2006 Project Development and Design Guide*. Projects should not advance in the design process until they have undertaken this review.

1C. MassDOT funded and or designed projects that fail to provide facilities for healthy transportation modes, as identified by the aforementioned reviews, shall require signoff by the Secretary and CEO of Transportation prior advancing additional design work. For the Highway Division, this shall not apply to roadway facilities that already prohibit bicyclists and pedestrians, such as limited access highways, or Interstates.

1D. Projects under contract for construction, currently under bid review, or advertised for construction on the date of this policy adoption, do not need to undergo major modifications. However, each MassDOT Division shall submit a list of these projects to the Secretary and CEO of Transportation by October 1, 2013 highlighting healthy transportation design opportunities.

1E. MassDOT construction projects shall include provisions of off-road accommodations (shared use path, or bridge side path) or clearly designate safe travel routes for pedestrians, bicyclists, and transit users along existing facilities, including customers that fall under the protection of the Americans with Disabilities Act.

*2) Project Design Process*

2A. All design notices and public communications for projects shall clearly state the following: 1) existing walking, bicycling and transit facilities/routes that are within the project site area to educate the community on their options for attending public meetings or hearings, and 2) walking, bicycling and transit facilities/routes that are within the project site area that are proposed in the project.

2B. All proposed project scopes of work and associated budgets being prepared by the Highway Division shall clearly detail walking (along with identified deficiencies in ADA compliance), bicycling and transit facilities/routes that are within the project site area at the time of project number issuance. In addition, existing or proposed networks within a 2-mile radius of the proposed project, critical connections to downtowns or transit facilities, and all Bay State Greenway routes shall be clearly identified.

2C. All MassDOT facilities shall be responsive to adjacent land uses and site context. Wherever adjacent land uses include commercial development or residential development of greater than five units per acre, a sidewalk should be provided along the roadway adjacent to the use. The potential for walking, bicycling and transit activity increases due to existing or planned land uses such as: schools, public parks and playgrounds, hospitals, retail centers, senior centers or housing, multi-family housing, or community centers. Design features to consider shall include, but not limited to: wider sidewalks, street trees, landscaped buffers, benches, lighting, frequent crossing opportunities and strong intermodal connectivity to transit. All project proposals being reviewed or designed by MassDOT shall provide a project site context map with basic information about the site location, and land use (commercial, office, institutional, educational, etc.).

2D. MassDOT shall initiate road safety audits of known clustered incident sites where healthy transportation users are involved, to improve customer safety for more vulnerable users. This effort shall have an initial emphasis on healthy transportation users in Environmental Justice communities. By December 31, 2014 the Highway Division shall identify and conduct road safety audits for all high crash location clusters for healthy transportation users along MassDOT owned facilities where that cluster falls in areas where two of three, or all Environmental Justice community thresholds are exceeded (low-income, minority or limited English proficiency). By June 30, 2015 the Highway Division shall have developed a process to implement safety projects to address the locations identified. This process shall include the development of metrics for success and identify a reasonable completion date.

2E. For projects along non-limited access rights-of-way in urbanized areas, sidewalks shall be provided on both sides of roadway rights-of-way with added attention to ADA compliance. Every bridge, overpass or underpass shall provide sidewalks on both sides of the road, even if comparable facilities do not yet exist on the abutting road segments, unless pedestrian travel is already prohibited along the roadway.

2F. All project proposals being reviewed or designed by MassDOT including new design, retrofits and maintenance shall not remove existing pedestrian or bicycle facilities unless those are replaced by facilities providing equal or better Level of Service. They shall also seek to add facilities that increase and encourage healthy transportation for pavement restoration and resurfacing projects including opportunities to meet ADA compliance. These plans shall be signed off on by the District Highway Engineer and electronic copies provided to the Office of Transportation Planning.

2G. The MassDOT Highway and Rail & Transit Divisions shall establish a guide for use by communities that propose Shared Use Paths on or along rail beds. The guide shall be written to assist communities in understanding the design standards (including ADA compliance) for such paths, especially along active rail lines, and acquiring rights of way with the intention of accelerating the design of Shared Use Paths, especially those facilities that are an element of the Bay State Greenway and/or provide critical connections to downtowns or transit facilities. The MassDOT Highway and Rail & Transit Divisions shall permit Shared-Use Paths to be installed along active or future railroad rights-of-way (Rails with Trails) provided appropriate fencing separates the two uses.

2H. For the design of bicycle facilities MassDOT shall consider, but not be limited to, the *AASHTO Guide for the Development of Bicycle Facilities* (2012) and the *NACTO Urban Bikeway Design Guide* (2012) as supplements to the *Project Development and Design Guide* (2006), except for pavement markings not approved by MUTCD. MassDOT should utilize other guides as they emerge and evolve from NACTO, AASHTO, and/or the US Department of Transportation.

2I. For the design of bus stop facilities MassDOT shall consider, but not be limited to, guidelines of the MBTA Bus Stop Planning and Design Guide (2013) and guidance on ADA compliance. MassDOT should utilize other guides as they emerge and evolve from NACTO, AASHTO, and/or the US Department of Transportation.

2J. Upon completion of all healthy transportation facilities, the location, description, and length must be submitted to the appropriate MassDOT offices to facilitate asset management activities.

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**Please Post_____** **Do Not Post_____**

# APPENDIX N

## List of Intersections with Relatively Wide Layouts

**List of Intersections with Relatively Wide Layouts in the Study Corridor**

Intersections on Route 127A:

- Bass Ave at Sayward Street/Brightside Avenue, Gloucester
- Bass Ave at Atlantic Road, Gloucester
- Thatcher Road at Witham Street, Gloucester
- Thatcher Road at Rockport Road, Gloucester
- Thatcher Road at South Street, Rockport
- Mount Pleasant Street at Atlantic Avenue, Rockport
- Mount Pleasant Street at Broadway, Rockport

Intersections on Route 127:

- Main Street/Railroad Avenue at Broadway/Parker Street (Five-Corner), Rockport
- Railroad Avenue/Granite Street at King Street/Summit Avenue, Rockport
- Granite Street at Beach Street, Rockport
- Granite Street at Wharf Road, Rockport
- Granite Street at Beach Street, Rockport
- Granite Street at Curtis Street (south segment) , Rockport
- Granite Street at Curtis Street (north segment) , Rockport
- Granite Street at Gott Avenue, Rockport
- Granite Street at Bay View Avenue, Rockport
- Washington Street at Langsford Street, Gloucester
- Langsford Street at Andrews Street, Gloucester
- Langsford Street at Washington Street, Gloucester
- Washington Street at Duley Street, Gloucester
- Washington Street at Brierwood Street, Gloucester
- Washington Street at Holly Street, Gloucester
- Washington Street at Reynard Street, Gloucester
- Washington Street at Hodgkins Street, Gloucester

Intersections in Downtown Rockport:

- Mount Pleasant Street at Main Street (Dock Square)
- Main Street at Beach Street