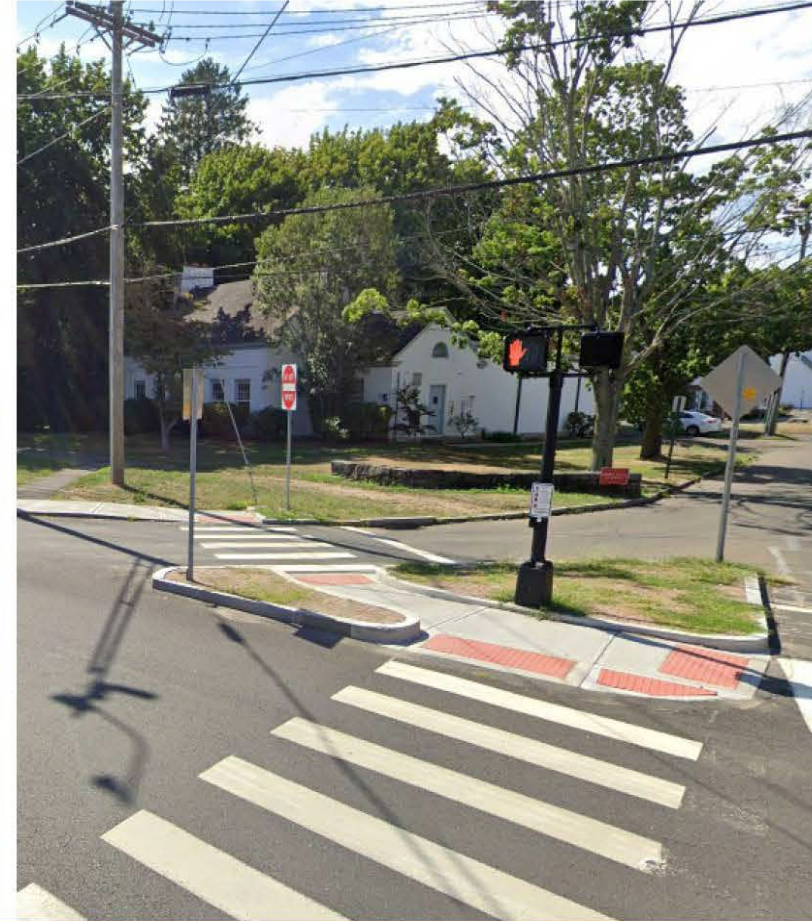


MADISON ROAD SAFETY AUDIT

US Route 1: Wall Street to Hammonasset Connector (Route 450)



SEPTEMBER 2024

TABLE OF CONTENTS

TABLE OF CONTENTS	2
1 ROAD SAFETY AUDIT PROGRAM	1
1.1 Program Background.....	1
1.2 Madison RSA Study Area and Location	2
2 PRIOR EFFORTS IN STUDY AREA.....	7
2.1 Neighborhood Traffic Calming Program	7
3 PRE-AUDIT MEETING	7
3.1 Pre-Audit Information	7
3.2 Pre-Audit Discussion.....	11
4 RSA ASSESSMENT	12
4.1 US Route 1 at Wall Street.....	12
4.2 US Route 1 at Scotland Avenue / East Wharf Road.....	12
4.3 US Route 1 at Liberty Street / Lover's Lane.....	13
4.4 US Route 1 at Liberty Street / Signal Hill Road.....	14
4.5 US Route 1 at Hammonasset Connector (Route 450).....	14
5 RECOMMENDATIONS	15
5.1 US Route 1 from Wall Street to Scotland Avenue / East Wharf Road	18
5.2 US Route 1 at Liberty Street / Lover's Lane Intersection.....	19
5.3 US Route 1 Intersection at Liberty Street/Signal Hill Road.....	20
5.4 US Route 1 at Hammonasset Connector (Route 450).....	21
6 SUMMARY	23
APPENDICES	23

1 ROAD SAFETY AUDIT PROGRAM

1.1 Program Background

The Connecticut Department of Transportation (CTDOT) has created a Road Safety Audit (RSA) Program that focuses on improving the state's transportation network for all users. An RSA is a formal safety assessment of the existing roadway at selected locations. It is a qualitative review by an independent team experienced in traffic, pedestrian, and bicycle operations and design that considers the safety of all road users and proactively assesses mitigation measures to improve the safe operation of the facility by reducing the potential crash risk frequency and/or severity.

RSAs are a collaborative effort led by a team of diverse professionals including CTDOT staff, consultants, municipal officials and staff, municipal police, the Local Traffic Authority (LTA), as well as local stakeholders and community leaders. The RSA team is established for each municipality based on the requirements of the individual location. They assess and review factors that can promote or obstruct safe walking and bicycling routes. These factors include traffic volumes and speeds, topography, roadway geometrics, crash data, roadway inventory (i.e. signage, curbs, bicycle/pedestrian facilities, amenities, safety components), and sidewalks.

Each RSA is conducted using RSA protocols published by the Federal Highway Administration (FHWA). For details on this program, please refer to the CTDOT RSA Program [webpage](#).

Prior to the site visit, area topography, land use characteristics, intersection sight distance concerns, sidewalk locations, parking, and bicycle facilities are examined using available mapping and imagery. The site visit includes a pre-audit meeting, the field audit, and a post-audit meeting immediately following the field audit to discuss the observations and formulate recommendations. This procedure and the summary results are discussed in the following sections.

The summary results section of this report, Chapter 5: Recommendations, includes several recommendations and concepts that can be considered for implementation by the municipality, regional planning organization, and / or CTDOT. While many of these recommendations are less complex and easier to implement, many of the more complex ones will require further analysis to ensure that they are feasible to implement.

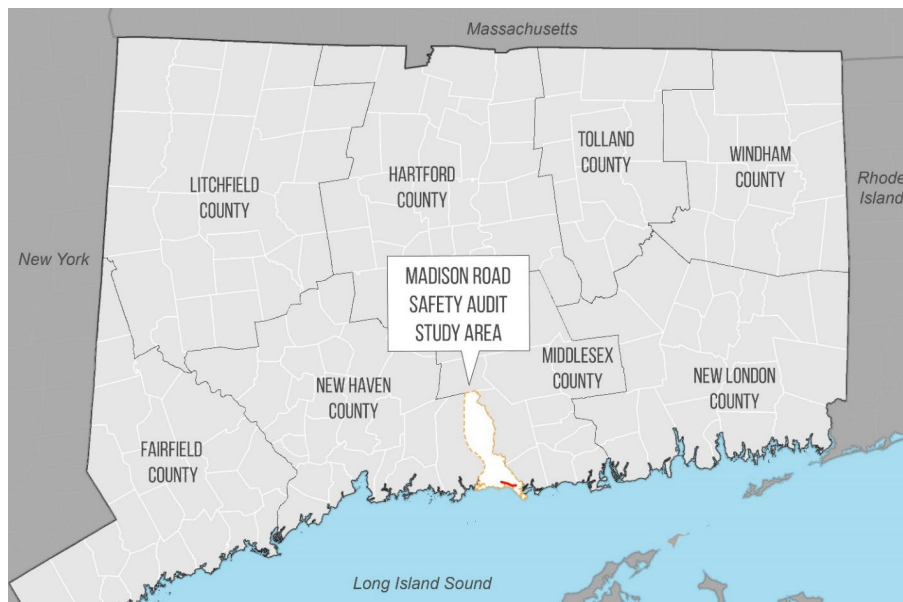
In addition, many of the more complex recommendations will likely be costly and require longer timeframes for further planning, design, and / or right-of-way (ROW) acquisition. This document does not replace future planning, design, and ROW work that may be necessary for project delivery. The more complex recommendations should be the subject of continued conversations amongst the LTA, regional planning organization, and CTDOT on planning, programming, and funding opportunities. Currently there is no dedicated funding available for construction through the RSA Program. The RSA Program [webpage](#) not only explains the RSA process but also provides information regarding potential State and Federal funding resources and guidance to help municipalities and their COGs implement RSA recommendations in the Final RSA Report.

1.2 Madison RSA Study Area and Location

CTDOT sponsored an RSA for the Town of Madison on US Route 1. The study area encompasses a roughly 2-mile corridor from the town center at Wall Street on the west to the Hammonasset Connector on the east.

Exhibit 1 shows the study area in context to the State of Connecticut, and Exhibit 2 shows the study area in further detail.

Exhibit 1: Madison RSA Regional Location



The purpose of the RSA is to observe and document existing concerns followed by recommendations for improvements to safety and operations within the study area, paying particular attention to the quality of travel for bicyclists and pedestrians. US Route 1 in Madison is the main east-west connection through the town center and provides access to neighboring

towns of Guilford and Clinton. Interstate 95 (I-95) runs parallel to US Route 1 about a half-mile to the north. Major traffic incidents or roadwork on I-95 can cause traffic to detour to US Route 1, which can cause large sudden increases in traffic volumes and congestion. The US Route 1 study area contains access to Hammonasset State Park. Scranton Library, East Wharf town beach, Wall Street shopping district, businesses at the intersection of Scotland Avenue and Boston Post Road, Stop & Shop supermarket (Samson Rock Road), Shoreline Greenway Trail, and several residential areas. Pedestrians and bicyclists use the US Route 1 corridor to access Hammonasset State Park, Shoreline Greenway Trail, homes, and businesses in the area. River Valley Transit operates its Route 641 bus service between Madison and Old Saybrook along US Route 1. This service experiences long headways and offers only limited supporting facilities for transit users except at the terminal points. Exhibit 3 displays points of interest located along the corridor.

US Route 1 is classified as a minor arterial roadway, which is typically used for vehicle trips of moderate distance and slower speeds as well as for commercial and residential access. The study area intersects with a major collector road, Wall Street, on the west, and extends to the intersection with the Hammonasset Connector, a limited-access minor arterial providing access between I-95 and Hammonasset Beach State Park. The Madison study area serves a wide variety of network users including residents, pedestrians / bicyclists, regional bus transit riders, commuters, business employees and patrons, and delivery drivers.

Average Daily Traffic (ADT) collected in October and November of 2022 in the study area ranges between 5,300 and 7,600 vehicles per day, with the highest volumes seen at the western end where US Route 1 intersects Wall Street. Additional ADT collected during the month of August 2016 reached 11,600 vehicles per day. The summer months are busier in the

area because of proximity to the state park and beach. Exhibit 4 displays daily traffic in the study area.

The study area contains a mix of signalized and unsignalized intersections as well as curb cuts and entrances in to and out of property parcels. This RSA focuses on major roadway segments and intersections where the safety concerns and pedestrian movements are most concentrated.

Exhibit 2: Madison RSA Study Area

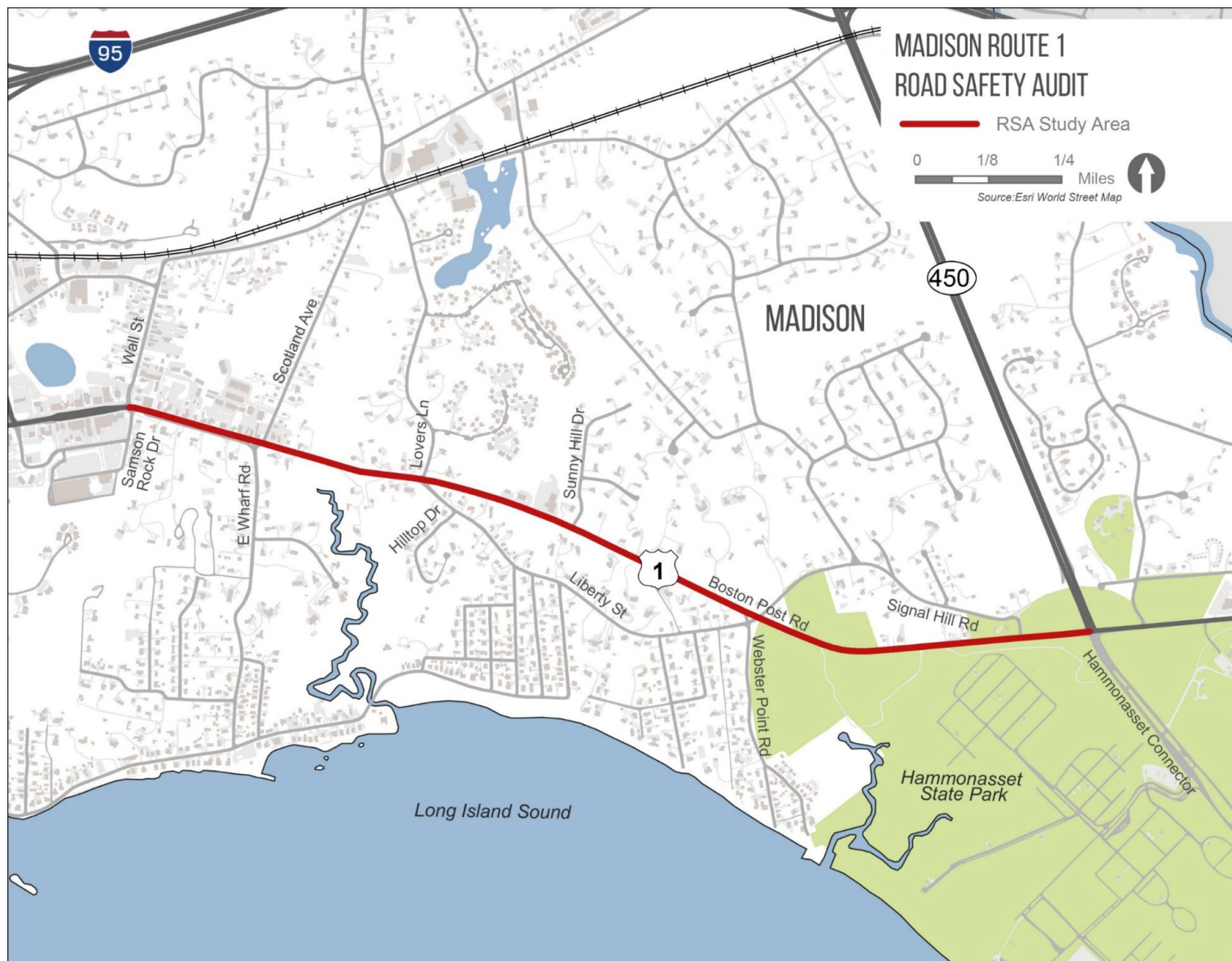


Exhibit 3: Study Area Points of Interest

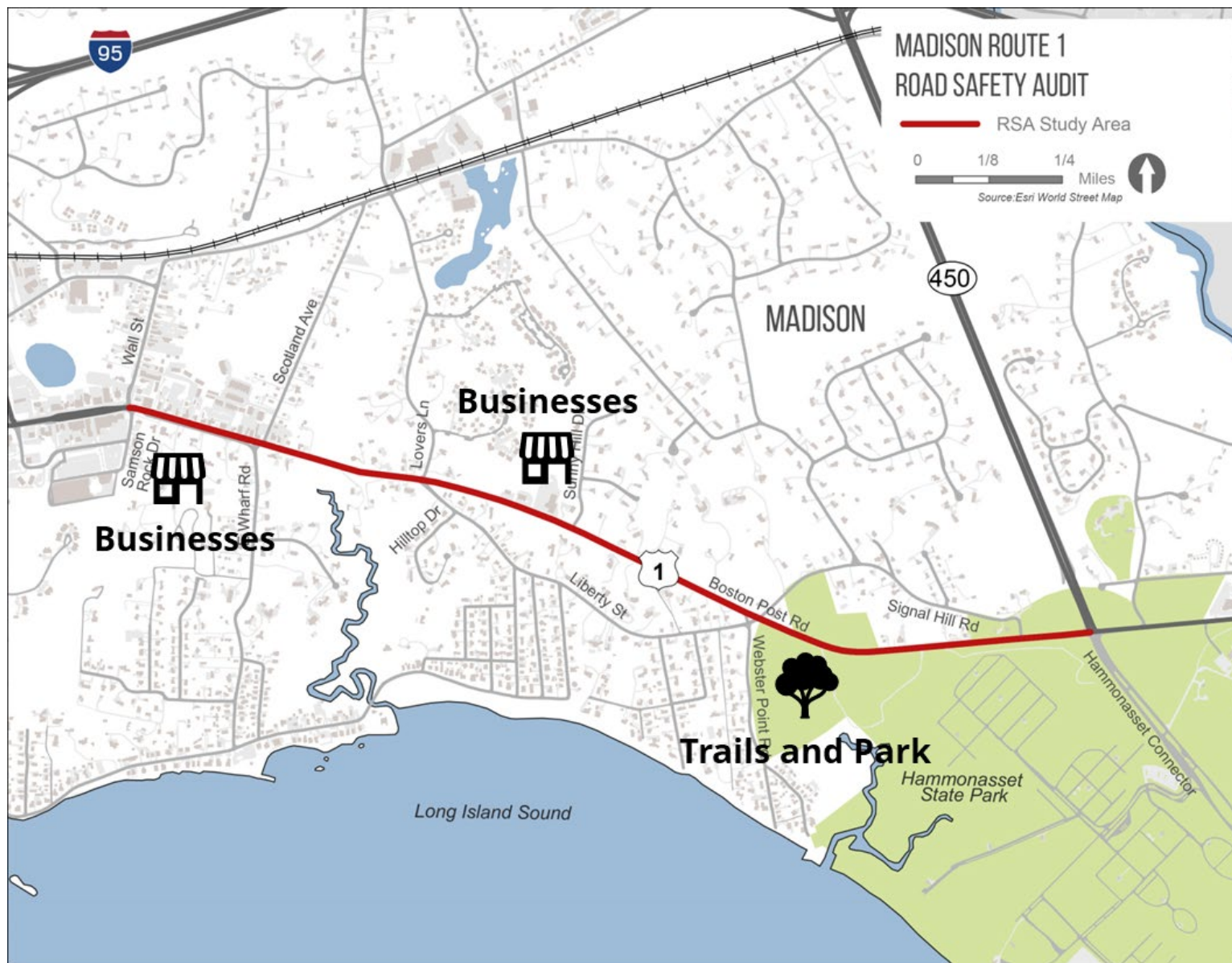
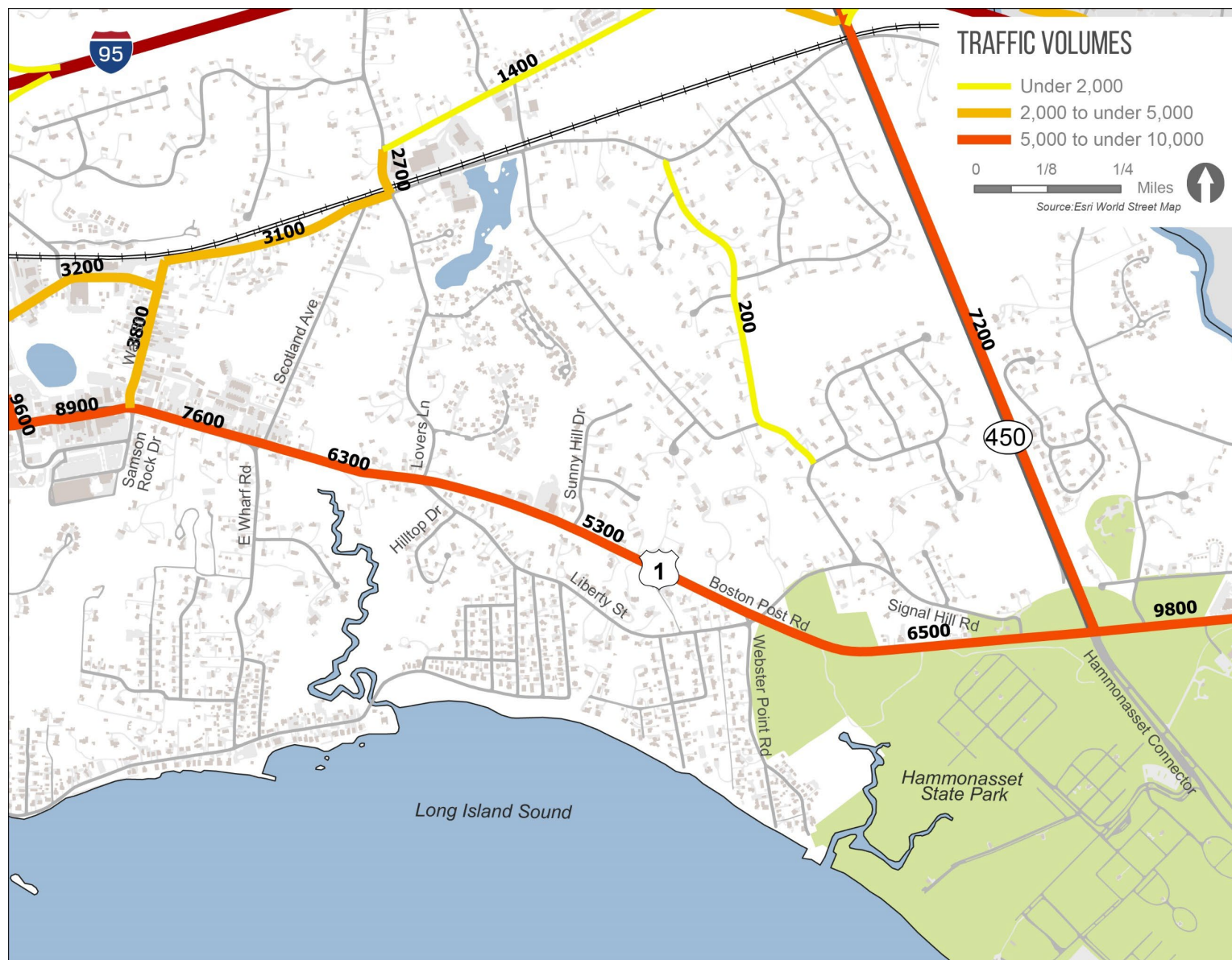


Exhibit 4: Average Daily Traffic Volumes



2 PRIOR EFFORTS IN STUDY AREA

2.1 Neighborhood Traffic Calming Program

The Town of Madison implemented a traffic calming program in 2010, however, it only applies to local roads. US Route 1 is owned and operated by CTDOT and was not included for any traffic calming implementation measures under this program.

3 PRE-AUDIT MEETING

3.1 Pre-Audit Information

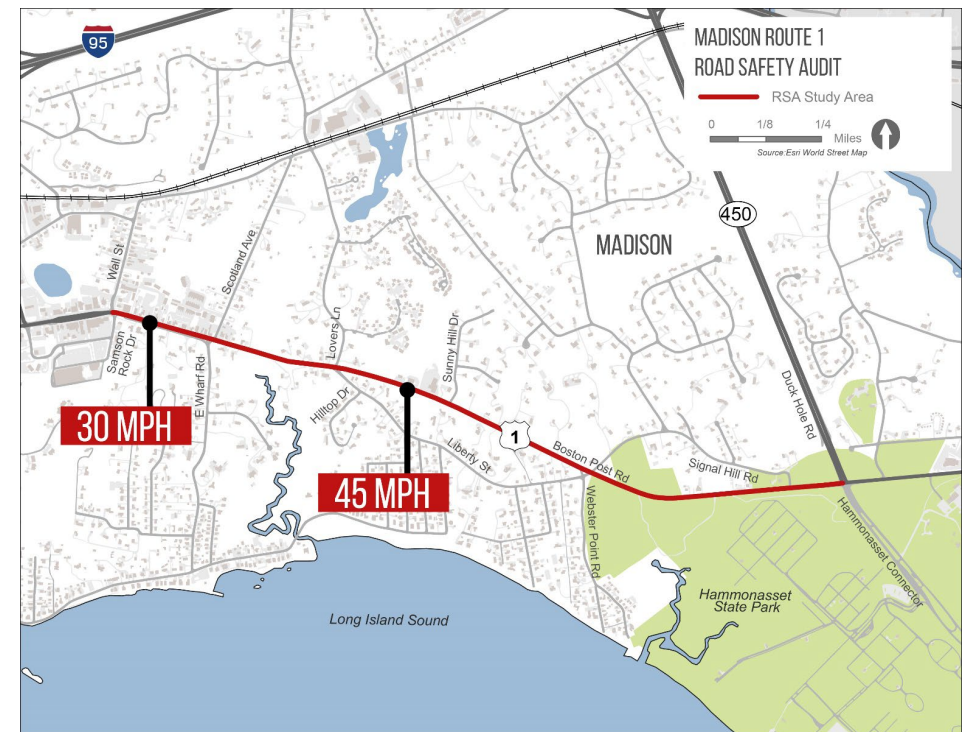
The RSA team conducted a pre-audit virtual meeting on Tuesday, April 16, 2024. The RSA team shared a brief presentation that included an overview of the Madison RSA goals and purpose, the study area, and key existing conditions findings. Key themes discussed during the pre-audit meeting are presented below.

Speeds: Speed limits range from 30 miles per hour (MPH) in the Town center to 45 MPH east of Lover's Lane / Liberty Street. Exhibit 5 displays speed limits in the study area.

Crashes: Based on data retrieved from the Connecticut Crash Data Repository (CTCDR) for the five-year period between January 2018 through December 2022, there were a total of 49 crashes in the study area. Crashes were concentrated at the intersection of US Route 1 with Hammonasset Connector (Route 450) at the eastern end of the corridor.

Exhibit 6 displays the study area crash summary by year and Exhibit 7 displays a study area crash heatmap.

Exhibit 5: Study Area Speed Limits



Crashes by Type: Most crashes were front-to-rear (rear end) and angle types. Front-to-rear crashes occur most commonly at intersections where cars are queued to make turning movements. Angle crashes are typical in areas with ingress / egress movements at property entrances. Exhibit 8 displays crashes by type and severity. Exhibit 9 displays a map of crashes by location and type in the corridor.

Exhibit 6: Study Area Crash Summary

Year	Fatality	Serious Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
2018			2	1	5	8
2019				2	7	9
2020		1		3	9	13
2021				1	5	11
2022		1	1	2	4	8
TOTAL	0	2	3	11	33	49

Exhibit 7: Study Area Crash Heatmap



Exhibit 8: Crashes by Type

	Fatality	Serious Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
Angle		1	1	3	4	9
Front to front			2			2
Front to rear		1		7	21	29
Sideswipe, same direction					1	1
Rear to Side					2	2
Not Applicable				1	5	6
TOTAL		2	3	11	33	49

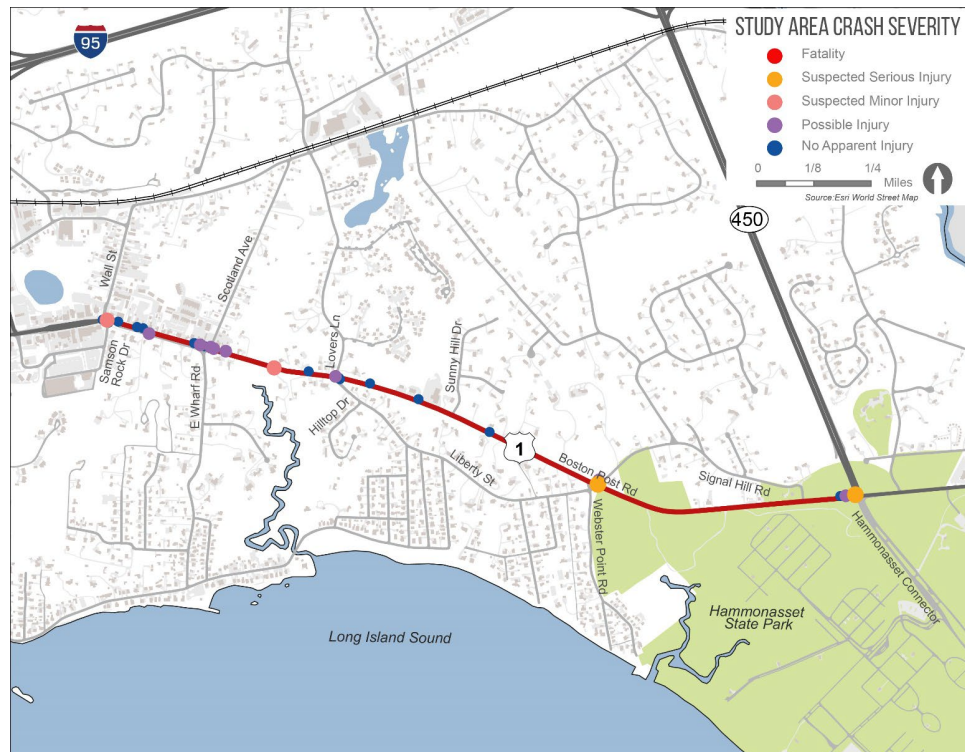
Exhibit 9: Crashes by Type



Crash Severity: Most crashes were classified as “no apparent injury” or “property damage only”. There were three (3) minor injury and two (2) serious injury crashes reported. Exhibit 10 displays the severity of crashes and their locations.

Crashes by Involved Person: There were no reported crashes involving pedestrians or bicyclists in the five-year period of 2018-2022.

Exhibit 10: Crash Severity by Location



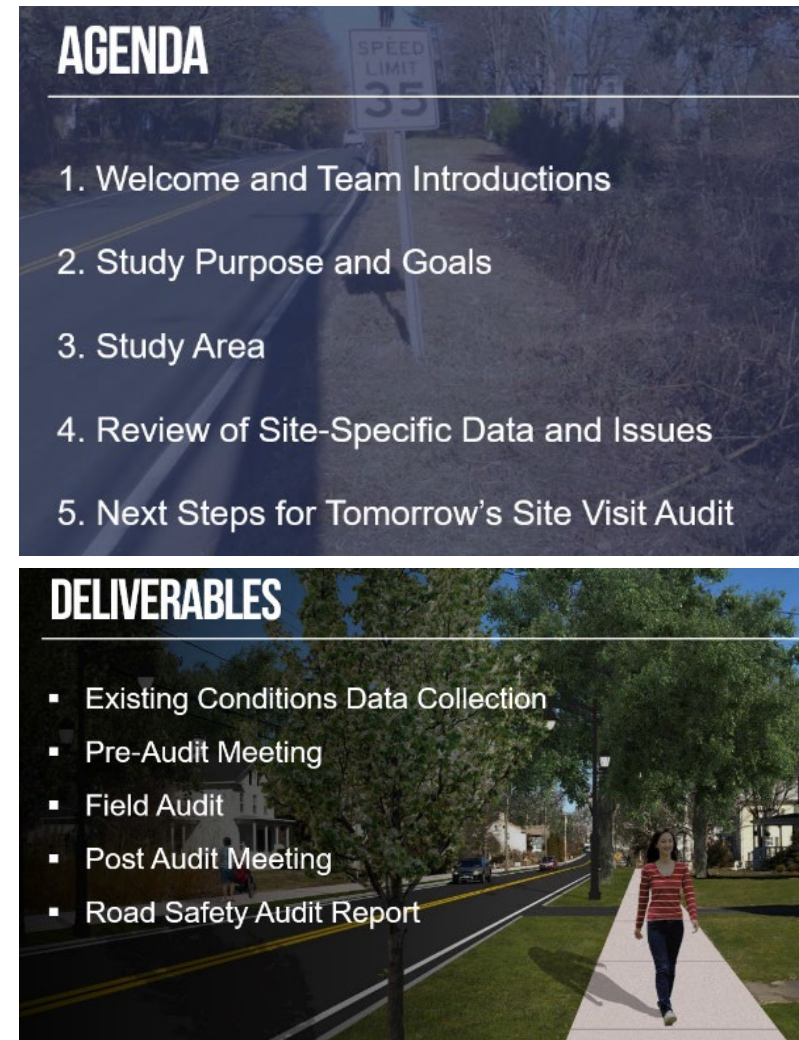
3.2 Pre-Audit Discussion

Immediately following the pre-audit presentation, a discussion followed that highlighted concerns and notes regarding the Madison RSA study area. Highlights from this discussion are presented below:

- Town officials note that US Route 1 carries local and regional travel.
- Town officials note that I-95 diversion causes heavy congestion at unpredictable times.
- The period from May-September is busiest and sees the greatest spike in both vehicle traffic and movements by pedestrians and bicyclists.
- There are many low-visibility driveways and property curb cuts due to horizontal, vertical alignments, and vegetation.
- Town officials note that pedestrians and bicyclists use US Route 1 even with access to the Shoreline Greenway Trail.
- Transit service is present but amenities for passengers are severely lacking.
- There are very few sidewalks, crosswalks, and other pedestrian facilities that encourage walking east of East Wharf Road.

Sample slides from the pre-audit presentation are shown in Exhibit 11.

Exhibit 11: Sample slides from Pre-Audit Presentation



4 RSA ASSESSMENT

A summary of the team's findings from observing conditions in the field, along with comments by stakeholders from the Town, is presented below. Exhibit 12 shows RSA participants walking the US Route 1 corridor with the help of local law enforcement officers to cross the street where there are no pedestrian facilities.

Exhibit 12: RSA Participants Cross US Route 1 with Assistance from Police Officer



4.1 US Route 1 at Wall Street

- There are inconsistent shoulder widths at intersections.
- A midblock crossing at the "Clippership Row" entrance is desirable, however, there are visibility issues with street trees. A rectangular rapid flashing beacon (RRFB) would be preferred.
- Pedestrian-scale lighting would improve streetscape and visibility for vulnerable network users.

- Old Boston Post Road is used as a sidewalk and bike lane, however, poor pavement conditions force users into the roadway and parking lane. Conditions of Old Boston Post Road are displayed in Exhibit 13.
- The US Route 1 sidewalk on the north side has heaving and missing bricks.

Exhibit 13: Poor Pavement Conditions on Old Boston Post Road



4.2 US Route 1 at Scotland Avenue / East Wharf Road

- There are challenging sightlines for turning movements in this area.
- Drivers speed as they leave the Madison Center area.
- There are limited pedestrian facilities. The east side of the intersection has a crosswalk with pedestrian signal. The southeast corner curb ramp has a tactile Americans with Disabilities Act (ADA) pad, but this landing only provides

connection to the pedestrian push button. It does not connect to sidewalk network, as displayed in Exhibit 14.

- Police noted crash activity, particularly right-angle collisions, as drivers turn right on red off Scotland Avenue onto US Route 1. They also stated that drivers run off the road at this location.
- The garage at northeast corner will be converted to a mixed-use development.

Exhibit 14: Crosswalk Across US Route 1 with Tactile ADA Pad and No Sidewalk



4.3 US Route 1 at Liberty Street / Lover's Lane

- There is poor visibility for all users at this location because of the roadway geometry.
- Participants stated that speeding is a major concern.

- Residents in the area have requested a crosswalk and audible push buttons at this intersection. The existing push buttons have ADA ramps on both sides of US Route 1 but do not have a crosswalk connecting them or have further connections to a sidewalk network. This area is currently being upgraded with crosswalk, pavement markings, accessible pedestrian signal (APS), and countdown indications. Exhibit 15 shows the RSA group at the intersection.
- Police noted that, despite the No Turn on Red (NTOR) sign, drivers often still make right turn movements. The eastbound NTOR was originally installed in 1999 at the request of the municipality to address high right turn speeds and resultant speeding onto Liberty Street.

Exhibit 15: Southbound View of US Route 1



4.4 US Route 1 at Liberty Street / Signal Hill Road

- Residents in the area have requested a crosswalk at this location.
- A new condominium project nearby is expected to generate higher pedestrian volumes.
- High speeds are a problem, and a beacon light is the only form of traffic control at this location.
- This is the location of the western terminus of the Shoreline Greenway Trail, which places users onto the roadway network.
- There are no crossings or sidewalks at this intersection, as shown in Exhibit 16.

Exhibit 16: No Pedestrian Facilities at Signal Hill Road and US Route 1 Intersection



4.5 US Route 1 at Hammonasset Connector (Route 450)

- CTDOT has a project underway for pedestrian signal upgrades.
- Participants discussed high speeds, particularly from vehicles travelling south from the Hammonasset Connector. There are no crosswalks at this wide intersection. The only pedestrian amenities are pushbuttons and ADA ramps at the northeast and southeast corners of the intersection, as displayed in Exhibit 17.
- There is no dedicated bicycle infrastructure or amenities. Participants stated that bicyclists use this road often, particularly to access Hammonasset State Park. There are several camping sites at Hammonasset State Park as well as seasonal cottages where families and children want to cross US Route 1 (primarily to the east of the study area to access Lenny & Joe's Restaurant, Dunkin' Donuts and other commercial locations).
- There are visible areas where people have climbed over vegetation to access the Shoreline Greenway Trail.

Exhibit 17: Minimal Pedestrian Accommodations at US Route 1 and Hammonasset Connector (Route 450)



5 RECOMMENDATIONS

Based on the findings discussed during the RSA, a set of recommendations for the study area was compiled. These recommendations are organized by study area location. The RSA team walked the length of the corridor starting at Wall Street and travelling east to Hammonasset Connector. The sections below are not intended to reduce the importance of other aspects of the corridor, but rather to organize the recommendations in a coherent way. Many of the recommendations identified by the RSA team are applicable to any / all intersections or roadway segments in the study area. A table of recommendations organized by location is presented in Exhibit 18. A concept drawing of the roadway segment of US Route 1 between Wall Street and Scotland Avenue is presented in Exhibit 19.

All recommendations are categorized by their complexity of implementation:

- **Least Complex Recommendations:** These are typically low-cost recommendations such as striping and signage, and generally do not require extensive engineering or construction costs. More extensive recommendations which have funding previously committed may be included.
- **Moderately Complex Recommendations:** These are improvements that may require more substantial engineering than those generally included as least complex recommendations. These may require establishment of funding in capital improvement plans, or a dedicated funding item. However, these recommendations fall between the least complex and most complex, requiring some level of design and funding, but typically do not include ROW acquisitions, extensive environmental permitting, etc.

- **Most Complex Recommendations:** These are improvements that require substantial study and engineering. These recommendations generally require significant funding for implementation and may require several years of planning to budget.

Any work within the State ROW to be done by non-State forces will require an encroachment permit from the District 3 Permit Office and/or an official request from the Madison LTA.

Further detail on recommendations is provided in the section below.

Exhibit 18: US Route 1 Corridor Summary Recommendations

Recommendation	Location					
	General	Wall St	Scotland Ave/E Wharf Rd	Liberty St/Lover's Lane	Liberty St/Signal Hill Rd	Hammonasset Conn
Least Complex						
Install pedestrian scale lighting		●	●	●		
Re-stripe parking stalls		●	●		●	
Provide consistent 11' travel lanes, 3' south and 5' north shoulders	●					
Strip bike boxes and bike lanes		●	●			
Stripe sharrows on Old Boston Post Road		●	●			
Re-lay heaving and missing bricks on north sidewalk		●	●			
Install No Parking signs and signage directing trail users to parking area adjacent to Hammonasset Park					●	
Consider westward expansion of trail and installing sharrows on Liberty Street					●	
Moderately Complex						
Install RRFB at midblock crossing		●	●			
Install ADA-compliant crosswalks, sidewalks, curb ramps, signal push buttons, refuge islands	●					
Install midblock crossing and stripe yield lines on both approaches		●	●			●
Install pedestrian refuge island over existing median		●	●			
Install ADA-compliant landings at bus stops				●	●	
Reduce southwest corner radius and remove No Turn on Red restriction				●		
Improve sightlines and remove No Turn on Red restrictions from Lovers Lane and Liberty Streets						
Revise roadway geometry to T-up Liberty Street at Route 1				●		
Most Complex						
Pursue minor roadway Right-of-Way widening				●	●	
Pursue access management for adjacent property owners		●	●			

Exhibit 19: Representative Concept



5.1 US Route 1 from Wall Street to Scotland Avenue / East Wharf Road

The recommendations for the segment of US Route 1 from Wall Street to Scotland Avenue / East Wharf Road focus on creating a safer, more coherent, and more aesthetic experience for non-motorized users. The parallel Old Boston Post Road is currently used as a parking lane, walking route, and bike path. It is recommended to create clear designated spaces for vehicles, bicyclists, and pedestrians.

Least Complex Recommendations

- 1) Re-stripe parking stalls on north side of Old Boston Post Road.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 2) Stripe bike boxes and bike lanes.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 3) Stripe sharrows for eastbound bicyclists on Old Boston Post Road.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 4) Repair / replace heaving and missing bricks on the north sidewalk.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 5) Install pedestrian-scale lighting to improve visibility and streetscape for vulnerable road users.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

Moderately Complex Recommendations

- 1) Provide consistent 11' travel lanes, and a minimum of 3' south and 5' north shoulders to reduce travel speeds and provide room for a westbound bike lane. See Exhibit 19 for concept details. Note: The roadway width exceeds 35' in some areas. Restriping and/or relocation of the centerline will require resurfacing of the roadway and changing the crown, which may have drainage impacts. US Route 1 in the study area was last repaved in 2018 and 2022 and is not scheduled to be resurfaced again in the near future.
 - **Next Step:** CTDOT to confirm 11' travel lanes with the next resurfacing project
 - **Next Step:** Municipality to provide 11' travel lanes on Old Boston Post Road
 - **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov
 - **Next Step:** LTA to contact regional planning agency, South Central Regional Council of Governments (SCRCOG), for funding is pursued through the [Encroachment Permit \(ct.gov\)](#) process
- 2) Install an RRFB at midblock.
 - **Next Step:** Municipality to contact SCRCOG for potential funding sources
 - **Next Step:** Municipality to check available ROW and roadside area for feasibility
 - **Next Step:** Municipality to coordinate with CTDOT to confirm RRFB and mid-block crossing is recommended
- 3) Install appropriate ADA-compliant pedestrian accommodations such as crosswalks across all legs of the intersection, sidewalks,

curb ramps, signal push buttons, and pedestrian refuge islands. The signal was replaced in 2021.

- **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov for consideration to include in future pedestrian upgrade project
- **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 4) Install midblock crossing and stripe yield lines on both approaches.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
 - **Next Step:** CTDOT to install required pavement markings and signs following the Town's sidewalk ramp installation
- 5) Install pedestrian refuge island over existing median.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

Most Complex Recommendations

- 1) Pursue access management for adjacent property owners, particularly with the conversion of the garage at the northeast corner of the intersection of US Route 1 and Scotland Avenue to mixed-use development.
 - **Next Step:** Municipality to initiate and coordinate access management with adjacent property owners

5.2 US Route 1 at Liberty Street / Lover's Lane Intersection

This intersection has challenging roadway geometry due to the skewed angle of the approaches. There are existing, yet minimal pedestrian

accommodations. Thus, recommendations focus on improving the visibility and safety of vulnerable users.

Least Complex Recommendations

- 1) Install pedestrian-scale lighting to improve visibility and streetscape for vulnerable road users.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

Moderately Complex Recommendations

- 1) Provide consistent 11' travel lanes, and a minimum of 3' south and 5' north shoulders to reduce travel speeds and provide room for a westbound bike lane. See Exhibit 19 for concept details. Note: The roadway width exceeds 35' in some areas. Restriping and/or relocation of the centerline will require resurfacing of the roadway and changing the crown, which may have drainage impacts. US Route 1 in the study area was last repaved in 2018 and 2022 and is not scheduled to be resurfaced again in the near future.
 - **Next Step:** CTDOT to confirm 11' travel lanes with the next resurfacing project
 - **Next Step:** Municipality to provide 11' travel lanes on Old Boston Post Road
 - **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov
 - **Next Step:** LTA to contact regional planning agency (SCRCOG) for funding is pursued through the [Encroachment Permit](#) process
- 2) Reduce southwest corner radius and remove NTOR restriction. Note: Eastbound NTOR was originally installed at the request of the

municipality to address high right turn speeds and speeding onto Liberty Street.

- **Next Step:** LTA to contact regional planning agency (SCRCOG) for funding is pursued through the [Encroachment Permit](#) process
- 3) Improve sightlines and remove NTOR restrictions from Lovers Lane and Liberty Streets.
 - **Next Step:** Municipality to check available ROW for feasibility
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 4) Install appropriate ADA-compliant pedestrian accommodations such as crosswalks, sidewalks, signal push buttons, and curb ramps where appropriate. Note: This area is currently being upgraded with crosswalk, pavement markings, APS, and countdown indications.
 - **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov for consideration to include in future pedestrian upgrade project
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 5) Install ADA-compliant bus landing pad.
 - **Next Step:** Municipality to contact DOT.BusStops@ct.gov to coordinate with CTDOT to identify bus stop enhancements
 - **Next Step:** Municipality to research available ROW for feasibility
 - **Next Step:** Municipality to research and consider need for [Encroachment Permit](#)

Most Complex Recommendations

- 1) Revise roadway geometry to T-up Liberty Street at US Route 1.

- **Next Step:** Municipality to contact South Central Regional Council of Governments (SCRCOG) for potential funding sources
- **Next Step:** Municipality to check available ROW and roadside area for feasibility
- 2) Pursue minor ROW widening to create adequate roadway width for travel lanes, shoulders, and bike lanes.
 - **Next Step:** Municipality to check available ROW for feasibility
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

5.3 US Route 1 Intersection at Liberty Street/Signal Hill Road

This intersection is currently controlled by a beacon light only. An exit from the Shoreline Greenway Trail is adjacent to the intersection and puts trail users onto the roadway network where there are no accommodations for crossing. In addition, there is limited trailhead signage and no parking for trail users. Recommendations at this intersection focus mainly on new pedestrian and bicycle facilities.

Least Complex Recommendations

- 1) Install No Parking signs and signage directing Shoreline Greenway Trail users to the parking area adjacent to Hammonasset Park on US Route 1.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office
- 2) Consider Shoreline Greenway Trail westward expansion and installing sharrows on Liberty Street.

- **Next Step:** Municipality to coordinate with Shoreline Greenway Trail 501(c)(3) organization for planning discussions

Moderately Complex Recommendations

- 1) Provide consistent 11' travel lanes, and a minimum of 3' south and 5' north shoulders to reduce travel speeds and provide room for a westbound bike lane. See Exhibit 19 for concept details. Note: The roadway width exceeds 35' in some areas. Restriping and/or relocation of the centerline will require resurfacing of the roadway and changing the crown, which may have drainage impacts. US Route 1 in the study area was last repaved in 2018 and 2022 and is not scheduled to be resurfaced again in the near future.
 - **Next Step:** CTDOT to confirm 11' travel lanes with the next resurfacing project
 - **Next Step:** Municipality to provide 11' travel lanes on Old Boston Post Road
 - **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov
 - **Next Step:** LTA to contact regional planning agency (SCRCOG) for funding is pursued through the [Encroachment Permit](#) process
- 2) Install appropriate ADA-compliant pedestrian accommodations such as crosswalks, sidewalks and curb ramps where appropriate.
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

- 3) Install ADA-compliant bus landing pad.

- **Next Step:** Municipality to contact DOT.BusStops@ct.gov to coordinate with CTDOT to identify bus stop enhancements
- **Next Step:** Municipality to research available ROW for feasibility
- **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

Most Complex Recommendations

- 1) Pursue minor ROW widening to create adequate roadway width for travel lanes, shoulders, and bike lanes.
 - **Next Step:** Municipality to check available ROW for feasibility
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

5.4 US Route 1 at Hammonasset Connector (Route 450)

This is a large intersection with minimal pedestrian facilities and high vehicle volumes particularly from I-95 that use US Route 1 to access coastal areas east and west. New and upgraded accommodations for pedestrians and bicyclists are recommended as many people access the state park using the intersection.

Moderately Complex Recommendations

- 1) Provide consistent 11' travel lanes, and a minimum of 3' south and 5' north shoulders to reduce travel speeds and provide room for a westbound bike lane. See Exhibit 19 for concept details. Note: The roadway width exceeds 35' in some areas. Restriping and/or

relocation of the centerline will require resurfacing of the roadway and changing the crown, which may have drainage impacts. US Route 1 in the study area was last repaved in 2018 and 2022 and is not scheduled to be resurfaced again in the near future.

- **Next Step:** CTDOT to confirm 11' travel lanes with the next resurfacing project
 - **Next Step:** Municipality to provide 11' travel lanes on Old Boston Post Road
 - **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov
 - **Next Step:** LTA to contact regional planning agency (SCRCOG) for funding if pursued through the [Encroachment Permit](#) process
- 2) Install appropriate ADA-compliant pedestrian accommodations such as crosswalks, sidewalks, curb ramps, signal push buttons, and pedestrian refuge islands. Note: The existing crossing of U.S. US Route 1 at this intersection is being upgraded by CTDOT under State Project 0173-0521. Crosswalk pavement markings, countdown indications, APS push buttons, concurrent phasing with leading pedestrian interval (LPI), and turning vehicles yield to pedestrian warning signs will be installed.
- **Next Step:** LTA to contact DOT.TrafficEngineering@ct.gov for consideration to include in a future pedestrian upgrade project
 - **Next Step:** Municipality to consider applying for an [Encroachment Permit](#) through the District permit office

6 SUMMARY

This report documents the observations, discussions, and recommendations developed during the completion of the Town of Madison's RSA. It provides the Town with an outlined strategy to improve the transportation network for all users in the study area, particularly focusing on pedestrians and cyclists. Moving forward, the Town of Madison and CTDOT may use this report to prepare strategies for funding and implementing the improvements. This report provides Madison with a toolkit to plan for including these multi-modal recommendations into future development within the study area.

This RSA Report is an objective review intended for the municipality to use to help assess the existing conditions within a predetermined area of Town selected by the municipality. The conclusions of this report are advisory and intended for general planning purposes to help identify bicycle, pedestrian and non-motorized transportation needs that encourage walking and bicycling, as well as assists in developing recommendations to improve the existing conditions. The contents of this report are not intended to be legally binding, but rather offer recommendations to improve safety in the vicinity of the audit location and create a more appealing transportation alternative.

APPENDICES

- A: Pre-Audit Presentation
- B: Walk Audit Materials
- C. Walk Audit Notes

MADISON ROAD SAFETY AUDIT

US Route 1 – Wall Street to Hammonasset Connector (Route 450)



APRIL 2024

INTRODUCTIONS

Boston Public

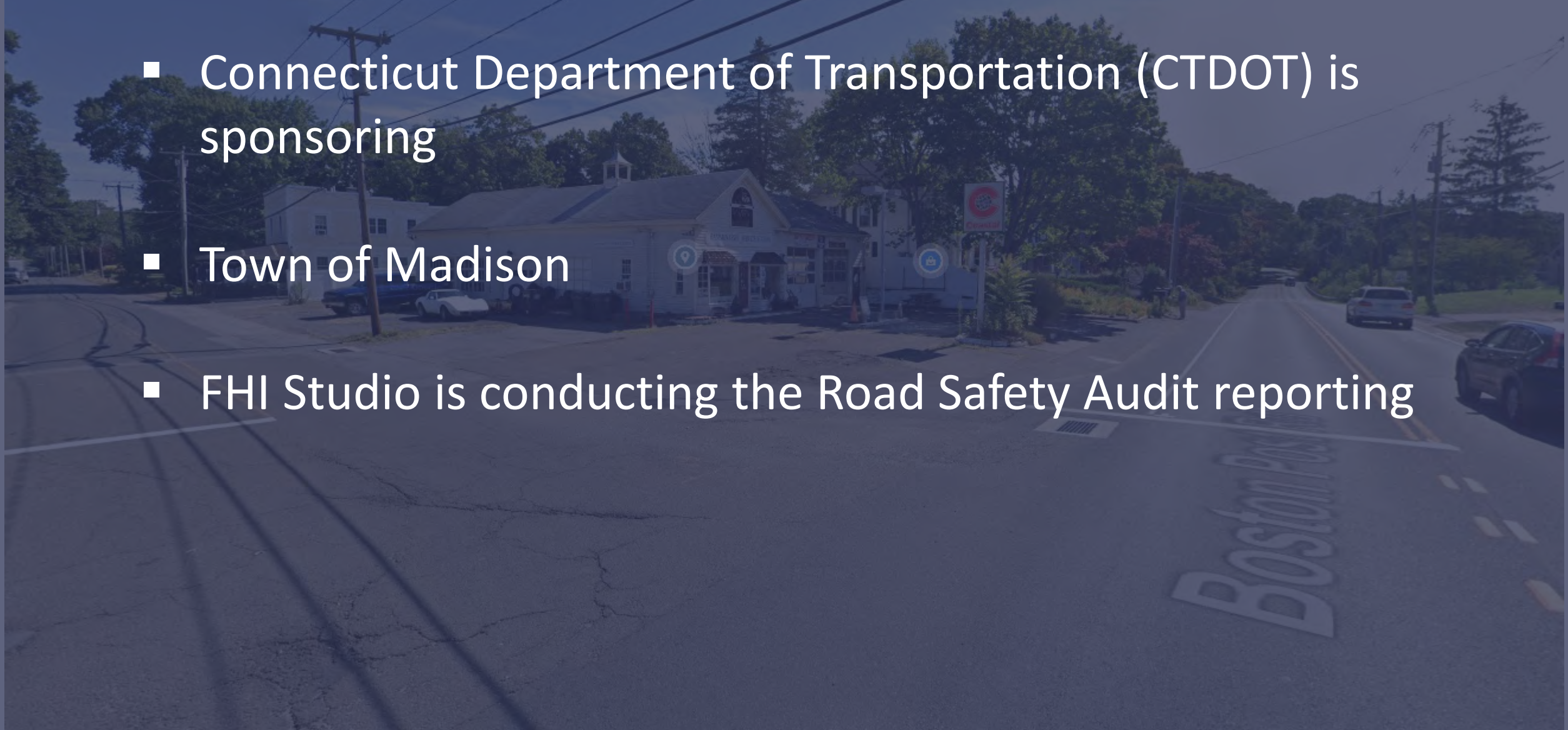


AGENDA

1. Welcome and Team Introductions
2. Study Purpose and Goals
3. Study Area
4. Review of Site-Specific Data and Issues
5. Next Steps for Tomorrow's Site Visit

PROJECT TEAM

- Connecticut Department of Transportation (CTDOT) is sponsoring
- Town of Madison
- FHI Studio is conducting the Road Safety Audit reporting



ROAD SAFETY AUDIT: PURPOSE & GOALS

Safety assessment of existing walking and bicycling routes.

Improve transportation network for all users by making conditions safer and more comfortable for pedestrians and bicyclists.

Identify issues that may discourage or prevent walking and bicycling.

Identify next steps, evaluate feasibility of proposed improvements, and potential funding sources.

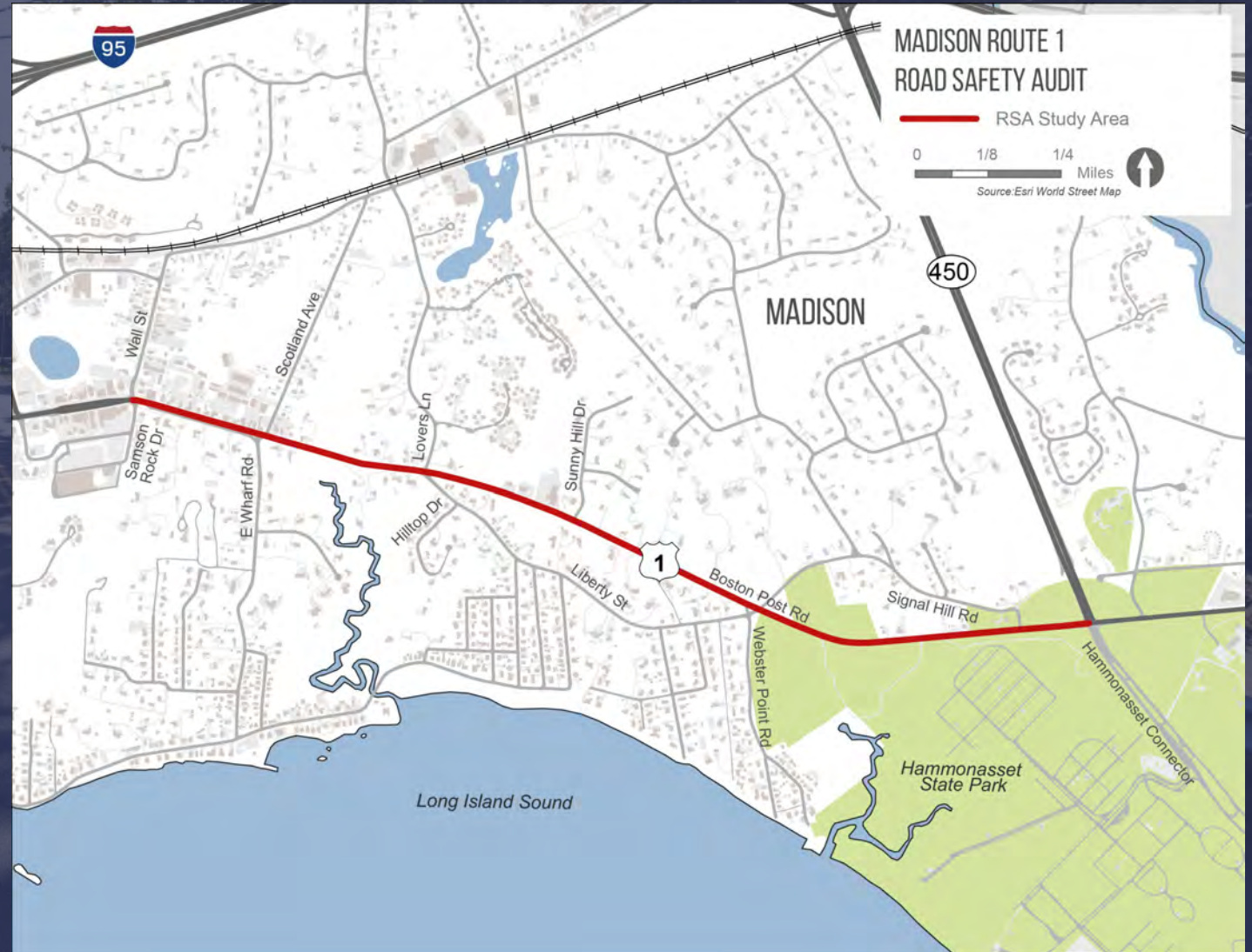
DELIVERABLES

- Existing Conditions Data Collection
- Pre-Audit Meeting
- Field Audit
- Post-Audit Meeting
- Road Safety Audit Report



STUDY AREA

- US Route 1 from Wall St. to Hammonasset Connector (Route 450)



POINTS OF INTEREST

- Businesses
- Restaurants
- Lodging
- Trail and Park access
- Residential Neighborhoods



TRANSIT

- River Valley Transit bus service
- 641 Old Saybrook – Madison



Source: River Valley Transit (rivervalleytransit.com)

REVIEW OF PAST & CURRENT WORK

- Neighborhood Traffic Calming Program adopted 2010
- Any additional items to note?

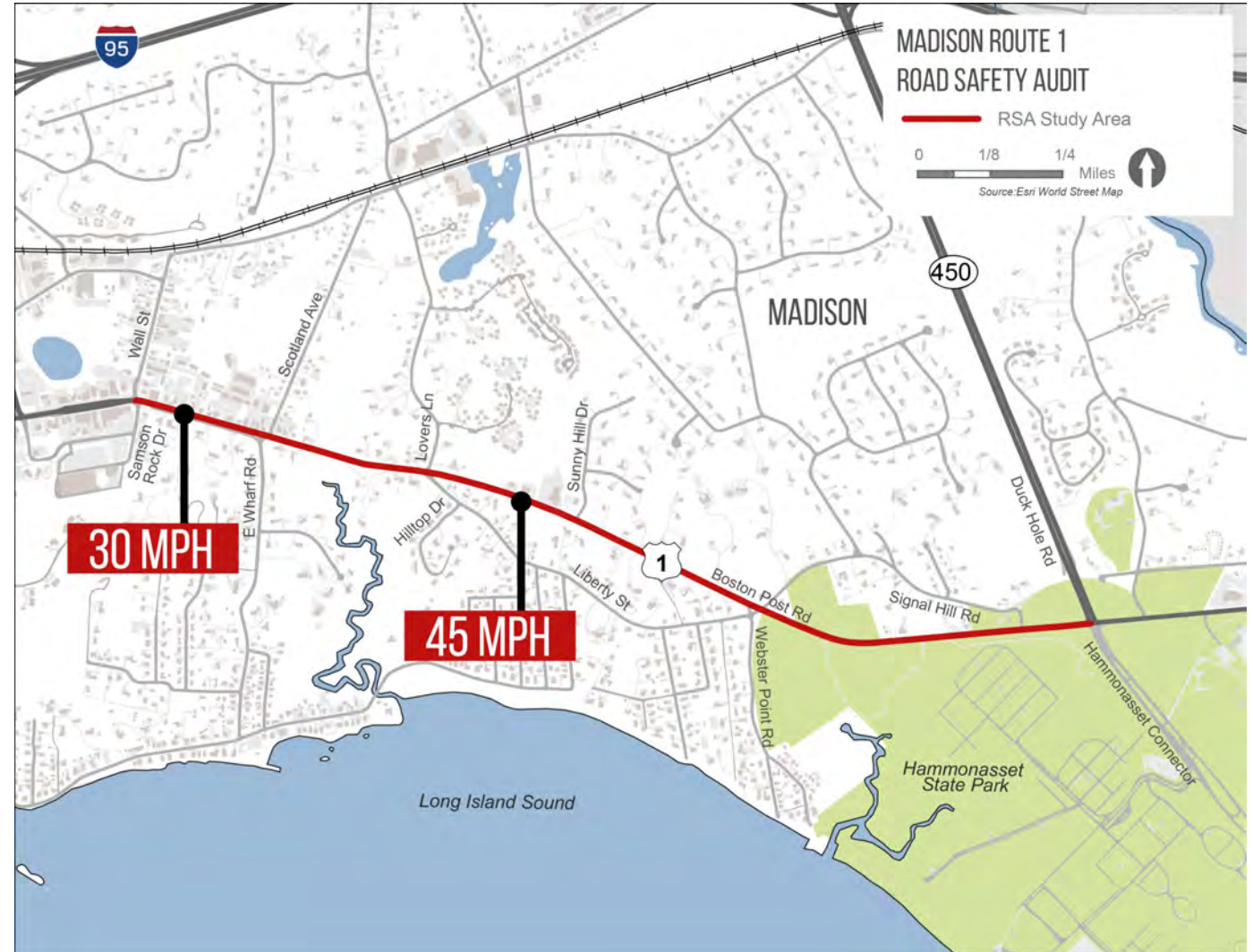
TRAFFIC VOLUMES

- Highest volumes directly outside of Town center



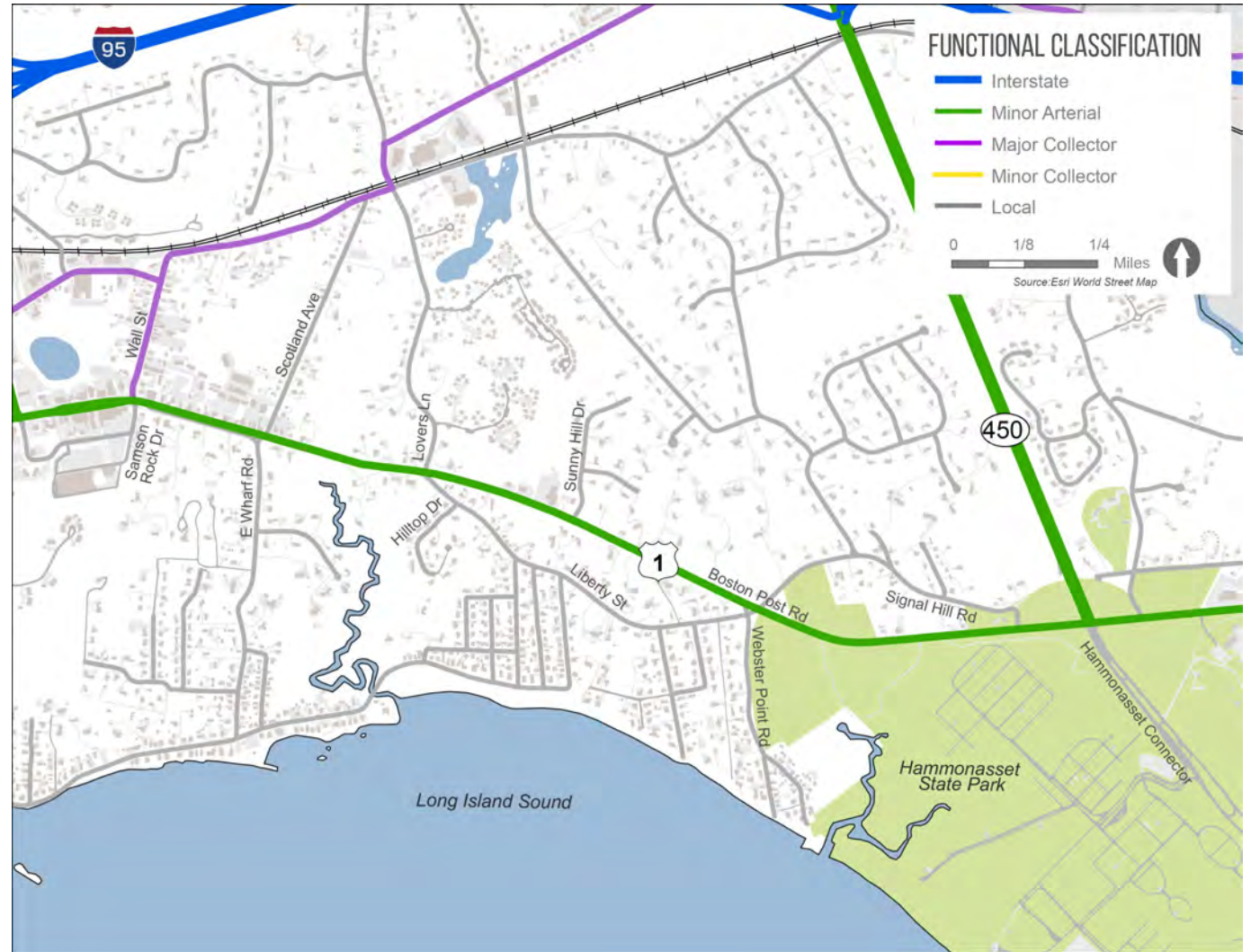
TRAFFIC SPEED LIMITS

- 45 MPH from Hammonasset Con to Scotland Ave
- 30 MPH in Town center
- 85th percentile speeds collected at signalized intersections



FUNCTIONAL CLASSIFICATION

- Route 1 is classified as a minor arterial
- Intersects with major collectors and local roads



ROADWAY GEOMETRY

Madison - RSA - Route 1 Street Inventory

Road	From	To	Distance	Functional Classification	Speed Limit	Direction	Lanes	Lane Width	Type	Sidewalk Width	Condition	ADA Present	Ramps Compliant	Curb	Parking	Shoulder	On DOT Bike Network	Notes
U.S. Route 1 (Boston Post Rd)	Wall St	Scotland Ave	0.25 Mi	Minor Arterial	30	NB	1	12'	Varies	2-6'	Poor	Yes	Yes	Asphalt	No	2-6'	No	NB sidewalk present for 1/4 of this block
						SB	1	11'	Varies	5-7'	Good	Yes	Yes	Varies	No	3-4'	No	Frontage road also present
U.S. Route 1 (Boston Post Rd)	Scotland Ave	Signal Hill Rd	0.95 Mi	Minor Arterial	45	NB	1	11-12'	N/A	N/A	N/A	N/A	N/A	Asphalt	No	2-6'	No	Sporadic curbing
						SB	1	11-12'	N/A	N/A	N/A	N/A	N/A	Asphalt	No	2-6'	No	
U.S. Route 1 (Boston Post Rd)	Signal Hill Rd	Hammonasset Connector (SSR 450)	0.62 Mi	Minor Arterial	45	NB	1	11-12'	Gravel	9'	Fair	No	N/A	Asphalt	No	2-6'	No	Sporadic curbing Turn lanes present at east end
						SB	1	11-12'	N/A	N/A	N/A	N/A	N/A	Asphalt	No	2-6'	No	

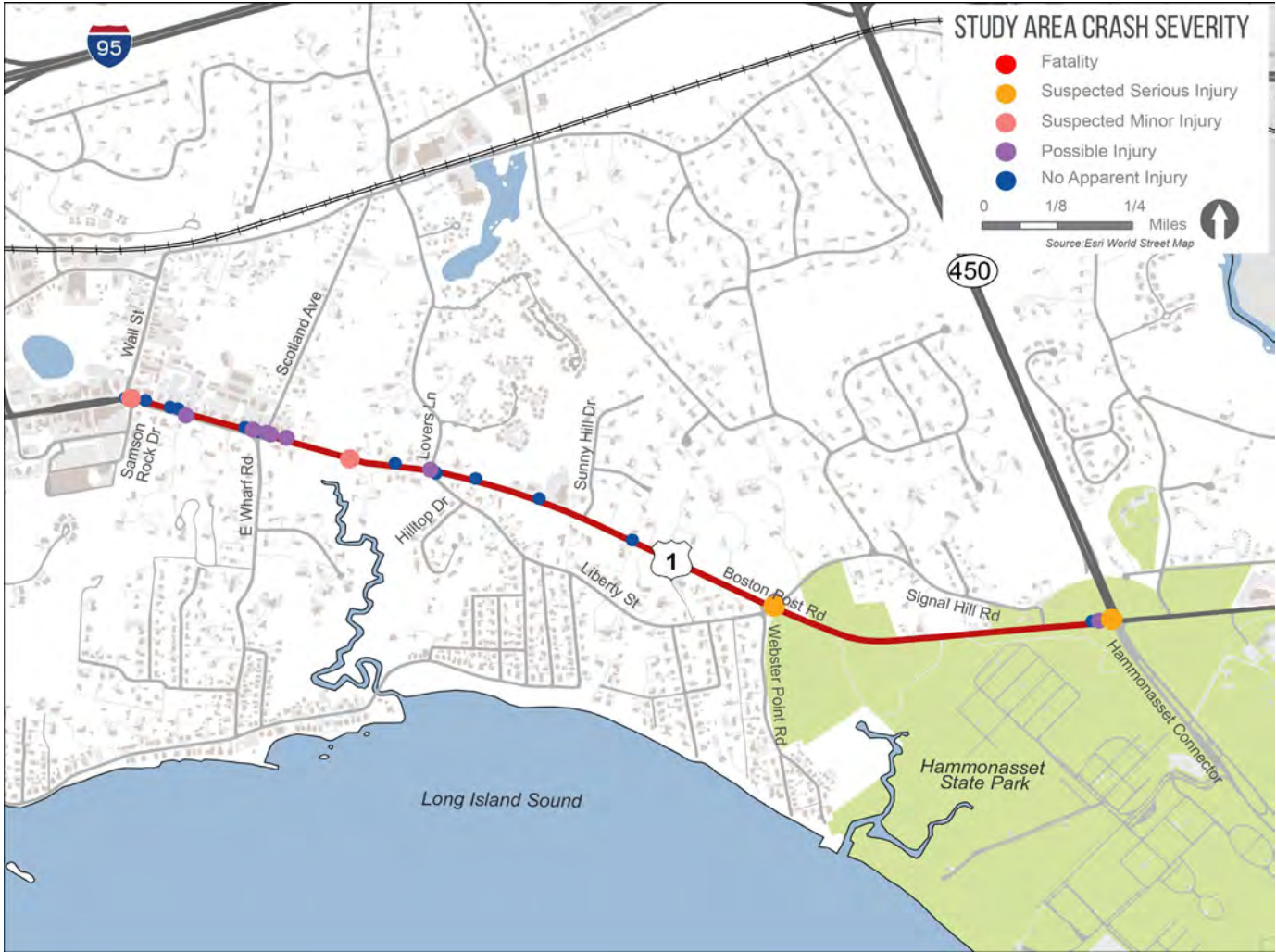
*CONDITION - "Good" is Serviceable Condition that meets current design standards. "Fair" is generally serviceable, but may need minor repairs, or may not completely align with current design standards. "Poor" is not serviceable, and generally inadequate for continued long-term use.

Highlighted cells indicate values which may warrant further investigation

CRASH ANALYSIS

2018 – 2022

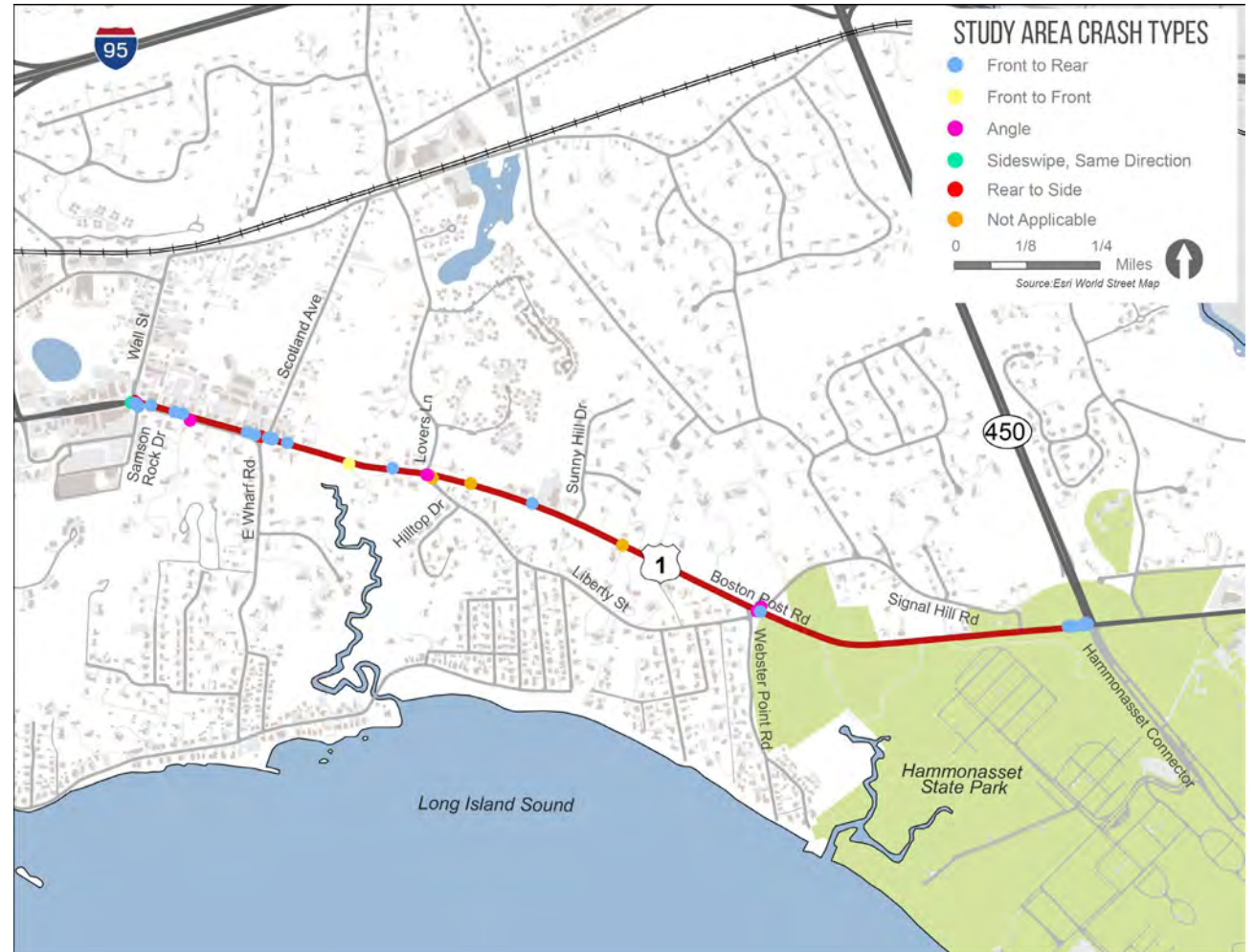
Year	Fatality	Serious Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
2018			2	1	5	8
2019				2	7	9
2020		1		3	9	13
2021				1	5	11
2022		1	1	2	4	8
TOTAL	0	2	3	11	33	49



CRASH ANALYSIS

2018 – 2022

	Fatality	Serious Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
Angle		1	1	3	4	9
Front to front			2			2
Front to rear		1		7	21	29
Sideswipe, same direction					1	1
Rear to Side					2	2
Not Applicable				1	5	6
TOTAL		2	3	11	33	49
Crashes Involving Pedestrians						
Crashes Involving Pedalcycles/ Pedalcyclist						



CRASH ANALYSIS

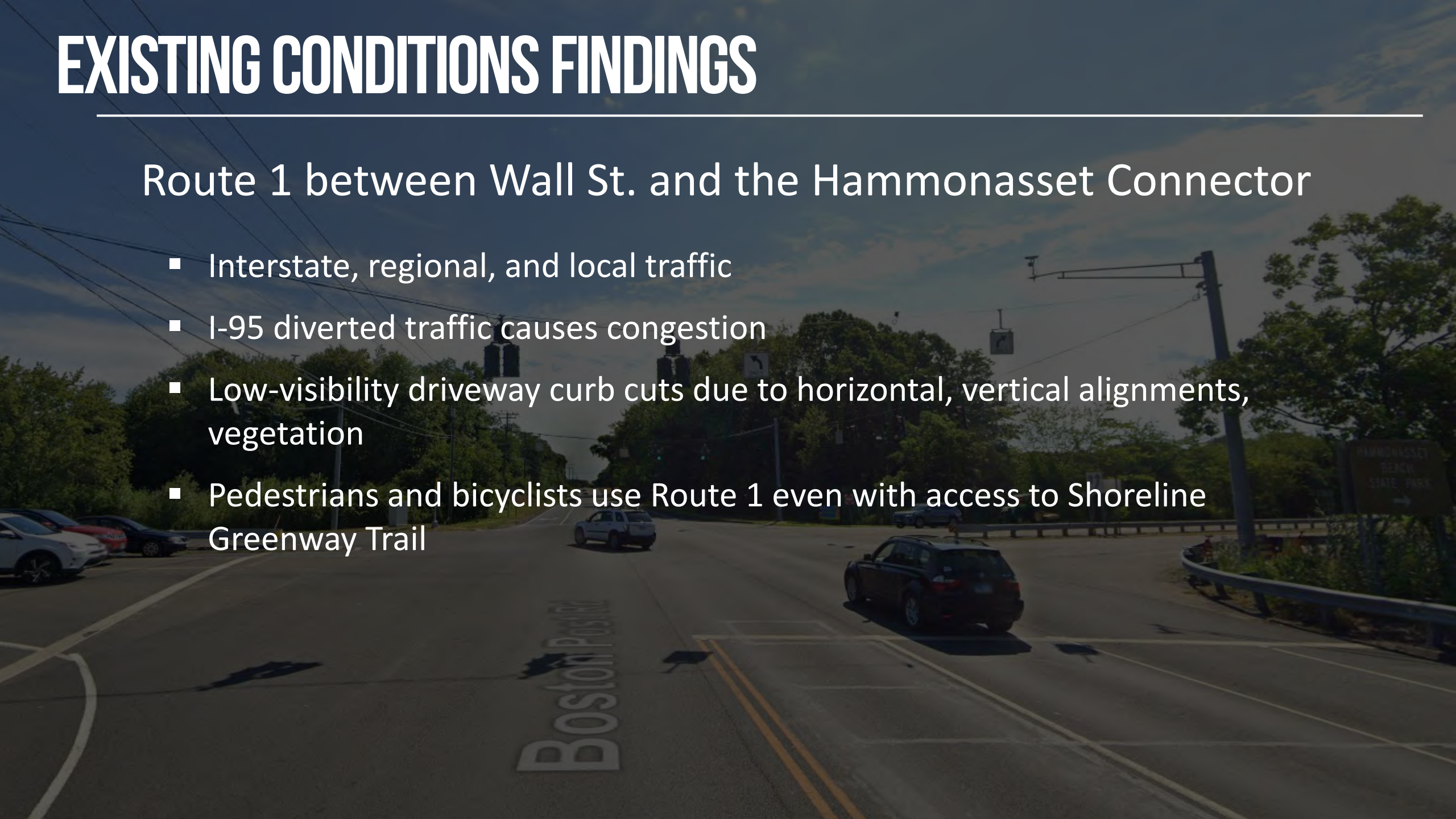
Crash Hotspots
(5 Year Crash Total approx.)
49 crashes total



EXISTING CONDITIONS FINDINGS

Route 1 between Wall St. and the Hammonasset Connector

- Interstate, regional, and local traffic
- I-95 diverted traffic causes congestion
- Low-visibility driveway curb cuts due to horizontal, vertical alignments, vegetation
- Pedestrians and bicyclists use Route 1 even with access to Shoreline Greenway Trail



A photograph of a two-lane asphalt road with a double yellow center line and white edge lines. The road stretches into the distance, flanked by dense green trees and vegetation. On the right side, a metal guardrail runs along the edge of the road. A white rectangular sign with black text that reads "DO NOT PASS" is mounted on a post next to the guardrail. A tall wooden utility pole with multiple power lines is also visible on the right. The sky is blue with some light clouds. The overall scene is a rural or suburban road environment.

SAMPLE IMPROVEMENTS TO IMPROVE SAFETY IN THE STUDY AREA

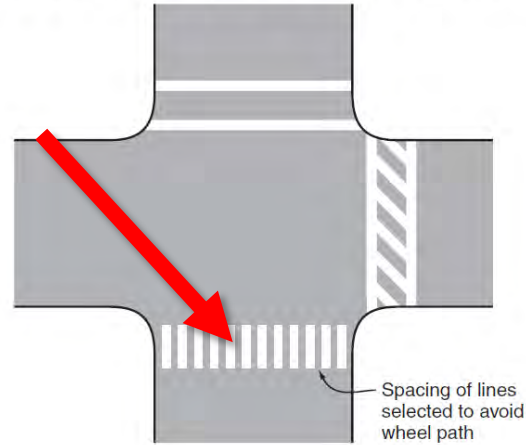
Some countermeasures may not be appropriate on certain facilities

PEDESTRIAN COUNTER MEASURES



Sidewalks

Figure 3B-19. Examples of Crosswalk Markings



Crosswalks



RRFB



Pedestrian Refuge Islands



Raised Crosswalks



Side paths

BICYCLIST COUNTER MEASURES



“Sharrows”



Bike Lanes



Buffered Bike Lanes



Side paths

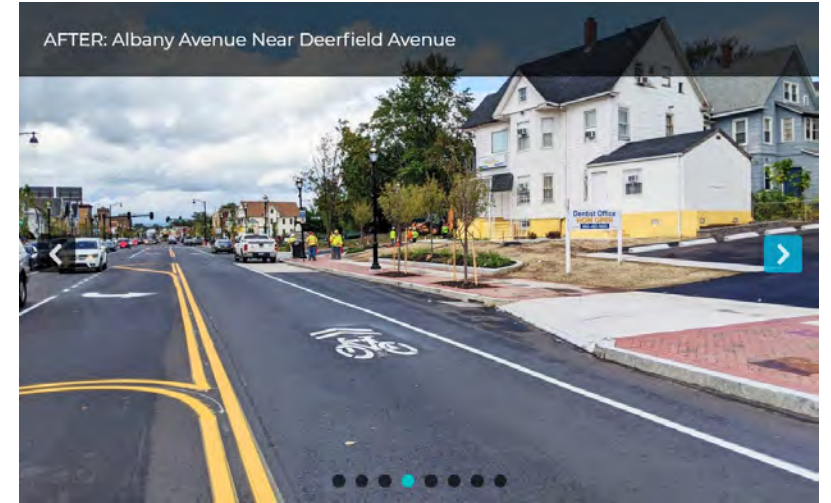
SPEED REDUCTION — CROSS SECTION AND OTHER



Lane Narrowing



On-Street Parking



Streetscape



Median Island



Street Trees



Dynamic Speed Signs

SPEED REDUCTION — HORIZONTAL TREATMENTS



Short Medians /
Lateral Shift



Roundabout



ISSUES AND OPPORTUNITIES DISCUSSION

TOMORROW'S WALK AUDIT

- Review safety protocols, reflective vests, etc.
- Meeting Location – Stop and Shop Parking Area
- Walk the Study Area corridor and assess existing conditions and identify areas for improvement
- Post-Audit discussion immediately following



THANK YOU!

Route 1 Corridor – Madison Road Safety Audit (RSA)

Site Walk / Visit

Madison, CT

Tuesday, April 16, 2024

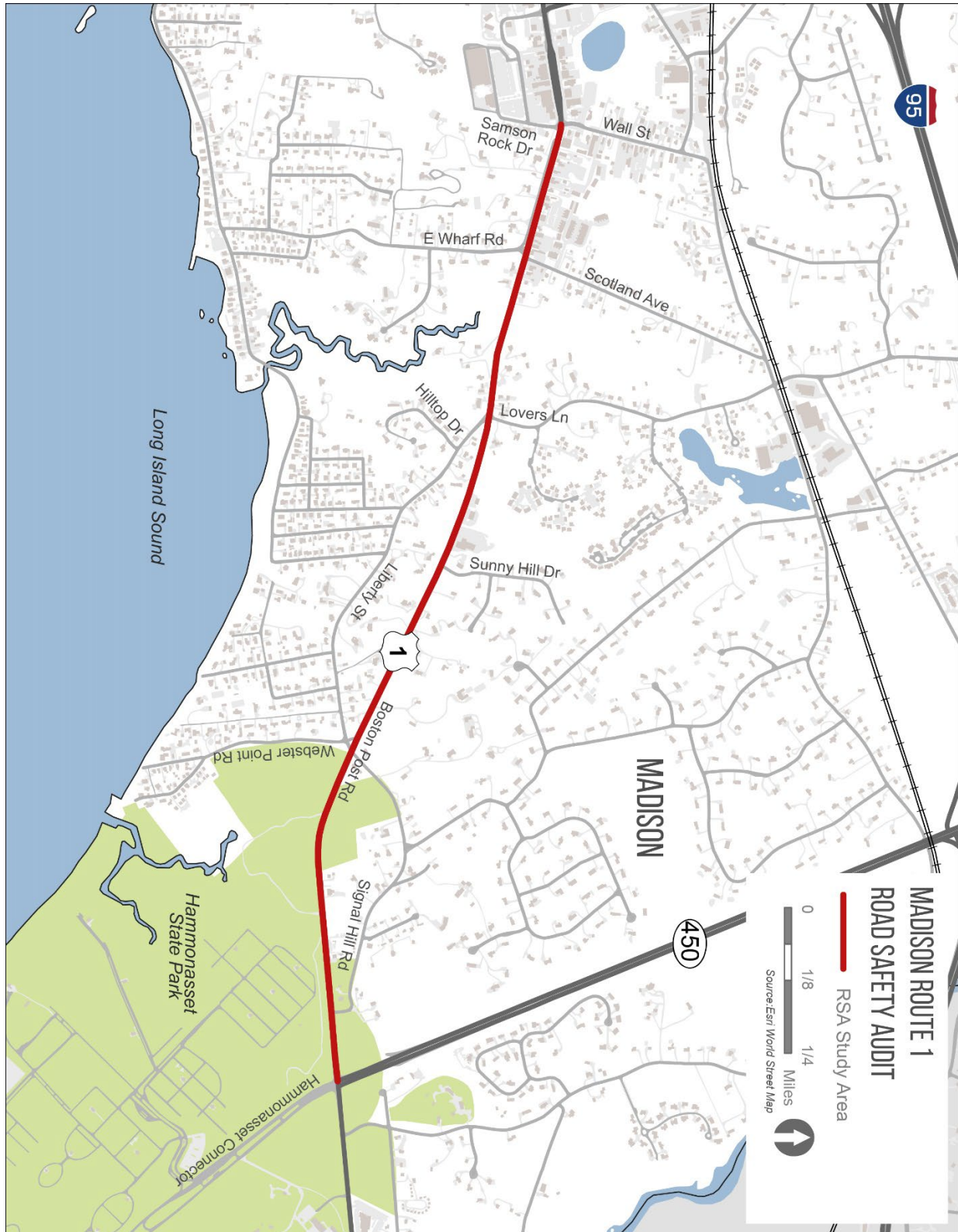
AGENDA

- 1. Welcome and Introductions**
- 2. Route Review**
- 3. Safety Reminders**
- 4. Site Walk**
 - Distribute and discuss field packets
 - Suggestions for adding feedback
 - Identify issues and improvement opportunities (all participants)
- 5. Post-Audit Recap**
 - Discuss observations and potential improvements
 - Next steps

Participant Expectations

All participants should plan to be actively involved during the entire RSA process. Participants are encouraged to share their ideas, concerns, and comments with the study team at the pre-audit meeting and during the site visit. In addition, after the RSA site visit, participants will be asked to review and comment on the draft report to assure it is reflective of the RSA completed by the multidisciplinary team. Stakeholders' opinions are key elements to the success of the RSA.

Overall Study Area



RSA Field Sheet

Location 1: Rt. 1 at Wall St / Samson Rock Dr

For each noteworthy feature that you observe along the walking route, write a number at the location on the map below. Write a brief description of your observation for that number under the Notes section. See the attached RSA Field Considerations list for suggested items to observe.

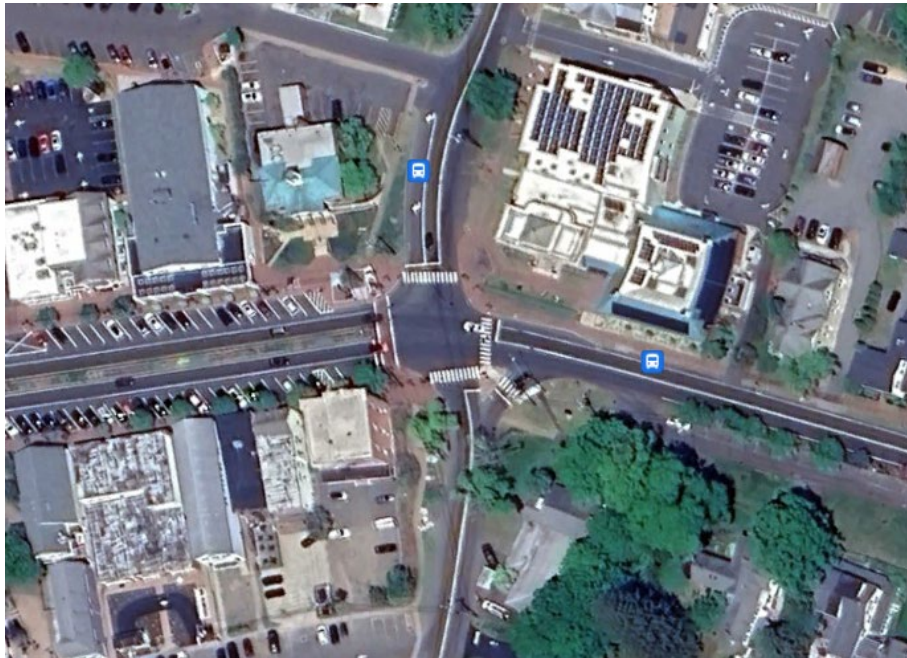


Image Credit: Google Earth Pro, accessed on 10 April 2024

Notes:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____

RSA Field Sheet

Location 2: Rt. 1 at Scotland Ave / E Wharf Rd

For each noteworthy feature that you observe along the walking route, write a number at the location on the map below. Write a brief description of your observation for that number under the Notes section. See the attached RSA Field Considerations list for suggested items to observe.

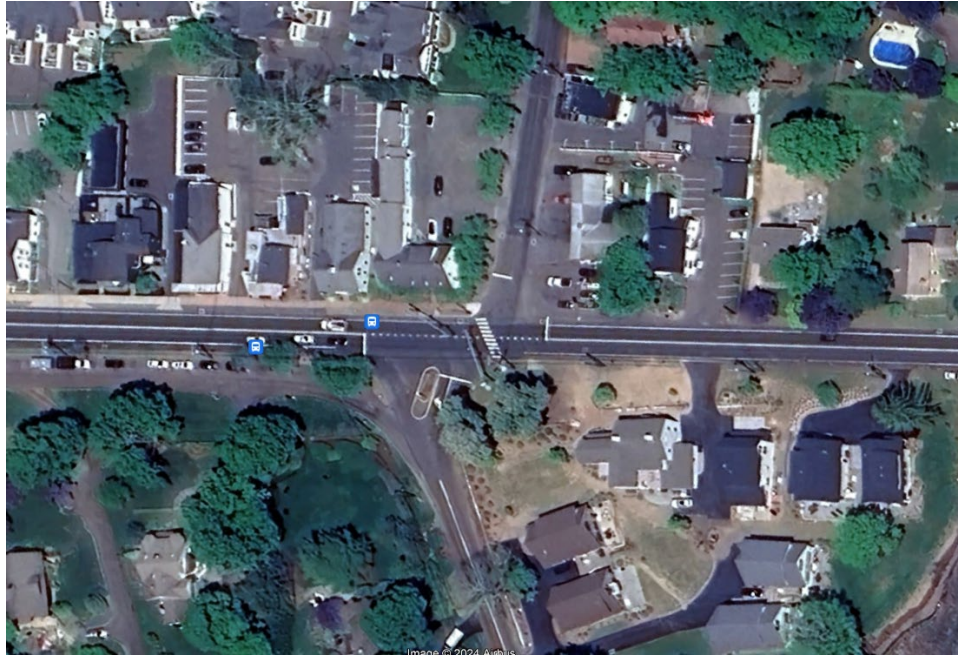


Image Credit: Google Earth Pro, accessed on 10 April 2024

Notes:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____

RSA Field Sheet

Location 3: Rt. 1 at Liberty St / Signal Hill Rd

For each noteworthy feature that you observe along the walking route, write a number at the location on the map below. Write a brief description of your observation for that number under the Notes section. See the attached RSA Field Considerations list for suggested items to observe.



Image Credit: Google Earth Pro, accessed on 10 April 2024

Notes:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____

RSA Field Sheet

Location 4: Rt. 1 at Hammonasset Connector (RT 450)

For each noteworthy feature that you observe along the walking route, write a number at the location on the map below. Write a brief description of your observation for that number under the Notes section. See the attached RSA Field Considerations list for suggested items to observe.



Image Credit: Google Earth Pro, accessed on 10 April 2024

Notes:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____

RSA Field Considerations

Pedestrian Facilities

- Sidewalk - width, slope, condition, drainage, obstruction
- Bus shelter - wheelchair access, boarding area
- Shared use path - width, slope, detectable warning surface

Pedestrian Crossings

- Crosswalks - marked crosswalk, striping, width
- Curb ramps - width, slope, orientation, detectable warning surface, wheelchair accessible grade
- Pedestrian signals - push button height, reach distance
- Crossing time
- Signage
- Sight distance
- Pavement marking
- Refuge island - width, slope, detectable warning surface

Pedestrian Accommodations

- Illumination
- Amenities - benches, trash receptacles

Bicycle Accommodations

- Bicycle facility / design
- Separation from traffic
- Roadway speed limit
- Traffic volume
- Truck / heavy vehicle %
- On-street parking conflict
- Pedestrian conflict
- Visibility
- Bicycle signage / marking
- Shared lane width
- Shoulder condition / width
- Pavement condition
- Debris

Road Facilities

- Access point
- Drainage
- Taper / lane shift
- Roadside clear zone / slope
- Guide rail / barrier
- Capacity issue
- Curbing

Road Surface Condition

- Pavement - roughness or rutting, potholes, loose material
- Edge drop-off
- Drainage

Intersections

- Geometry
- Sight distance
- Traffic control device
- Turning vehicle storage
- Through vehicle bypass width

Signals

- Visibility
- Sight distance
- Operation
- Equipment placement
- Lane capacity

Signage

- MUTCD compliant
- Visibility / placement
- Retro-reflectivity
- Clear / consistent messaging

Pavement Markings

- MUTCD compliant
- Visibility
- Condition
- Snow storage
- Edgeline

Driver Behavior

- Speed limit compliance
- Safe passing
- Distraction
- Unaware of pedestrians / cyclists
- Sight distance

Miscellaneous

- Landscaping / vegetation
- Seasonal events
- Weather impacts

Madison Route 1 Notes

- RT 1 at Wall Street/Samson Rock Drive Intersection:
 - Inconsistent shoulder widths east of the intersection
 - Visibility issues with street trees could make it challenging for mid-block crossings
 - Suitable location for a mid-block crossing with solar RRFB would be at Clippership Row
 - Pedestrian scale lighting would improve area and create a streetscape
 - Consider bicycle facility on Old Boston Post Road
 - Old Boston Post Road is used as a sidewalk/ bike lane already
 - Goat paths show pedestrian patterns- they go to road rather than walk through front yards
 - Heaving, missing bricks on sidewalk on North Side of Route 1
- RT1 at Scotland Avenue/ East Wharf Road:
 - Challenging site lines in this area
 - High speeds as drivers leave the downtown
 - Limited pedestrian facilities, east side of intersection has crosswalk with ped signal, but lands at East Wharf with no sidewalk, just landing curb with tactile strip
 - Police noted many accidents including T-Bones at this intersection.
 - Police noted drivers run off the road here
 - Consider no right turn on red when exiting Scotland Road onto RT 1. Police noted drivers often turn right on red here and visibility is poor which causes accidents
 - Garage on the corner will be converted to a mixed use development
- RT 1 at Liberty Street/ Lovers Lane
 - Poor visibility in this area
 - High vehicular speeds
 - Lovers Lane and Liberty Street residents have requested a crosswalk here
 - Request for audible buttons in this location
 - Police noted that despite No Turn on Red sign to Liberty Street, drivers often do this
- RT 1 at Liberty Street/Sigal Hill Road:
 - Strong desire from residents to have a crosswalk at this location
 - Expect to see more pedestrian traffic once condo projects are completed
 - High speeds at this location
 - Beacon light as traffic control at this location
 - This is the western terminus of the Greenway Trail
- RT 1 at the Hammonasset Connector (RT 450):
 - CTDOT project underway for pedestrian signal upgrades at this location
 - High speeds, especially drivers coming south from I-95 and down the connector
 - High volume of bicycles and pedestrians in this area
 - Visible areas where people have climbed over vegetation to get onto the Greenway Trail – notable across the street from Signal Hill east end
 - The curve on the high east of Liberty Street has very poor visibility. Police noted that drivers often run off the road at this location. Could consider the turning chevron signs