

Stonington

Route 27 – Road Safety Audit September 28, 2016





Acknowledgements:

OFFICE OF INTERMODAL PLANNING BUREAU OF POLICY AND PLANNING CONNECTICUT DEPARTMENT OF TRANSPORTATION

With assistance from AECOM Transportation Planning Group

Contents

1	Intro	duction to the Stonington (Route 27) RSA	5
	1.1	Location	5
2	Pre-A	Audit Assessment	6
	2.1	Pre-Audit Information	6
	2.2	Prior Successful Efforts	11
	2.3	Pre-Audit Meeting	11
3	RSA A	Assessment	13
	3.1	Field Audit Observations	13
	3.2	Post-Audit Workshop - Key Issues	23
4	Reco	mmendations	24
	4.1	Short Term	24
	4.2	Medium Term	
	4.3	Long Term	30
	4.4	Summary	32
Fig	jure	S	
Figu	ıre 1. l	Route 27, Stonington	5
_		Route 27 and Old Post Road Regional Context	
_		Crashes that Occurred in 2015 (Connecticut Crash Data Repository)	
		Old Post Road/Tolland Stage Road Geometrics	
_		Sidewalk in Front of The Seaport	
_		Crosswalk at Rossie Street Ending at Utility Pole	
_		Retaining Wall Against Sidewalk	
_		Crosswalk Across Isham Street	
_		Clearing and Grubbing Needed on Sidewalk	
		Crossing at School Street	
_		Newer Driveway Aprons	
_		Shrubs Growing into Sidewalk	
_		Old Water Valve	
_		Church Street Intersection	
_		Faded Signs	
Figu	ire 17	Route 27 and Rossie Pentway Intersection	17

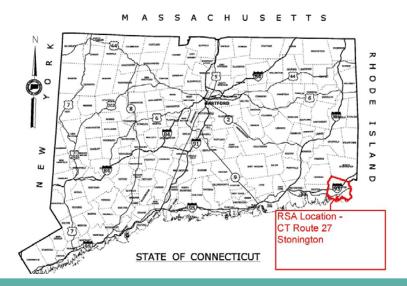
Figure 18. Long Crossing Across Rossie Pentway	18
Figure 19. Sediment Build-up Due to Drainage Issue	18
Figure 20. School Group Waiting to Cross	19
Figure 21. Long Crossing at Intersection	19
Figure 22. Wide Sidewalk on the West Side	19
Figure 23. Lack of Pedestrian signal Heads	19
Figure 24. Driveway in Intersection	20
Figure 25. End of Sidewalk	20
Figure 26. Sign Blocked by Utility Pole	21
Figure 27. Goat Path to Sidewalk	21
Figure 28. Unclear Which Crosswalk For Pedestrian Push Button	21
Figure 29. No Sidewalk on the East Side	22
Figure 30. Inadequate Sight Distance for Potential Crosswalk	22
Figure 31. LED Lighting at Crosswalk	24
Figure 32. Passive Rumble Strips	25
Figure 33. Share the Road Sign	25
Figure 34. Example of Colorful Crosswalk	25
Figure 35. Advanced Warning Pedestrian Crossing Sign	26
Figure 36. Vegetation Needing Trimming	26
Figure 37. Short Term Recommendations	27
Figure 38. Active Pedestrian Crossing Sign	28
Figure 39. Tactile Warning Strip	28
Figure 40. Bike Friendly Catch Basin Grate	28
Figure 41. Tactile Push Button (Left), Countdown Pedestrian Signal Head (Right)	28
Figure 42. Mid Term Recommendations	29
Figure 43. Long Term Recommendations	31
Tables	
Table 1. Crash Severity 2012-2014	7
Table 2. Crash Type 2012-2014	
Table 3. Street Inventory	



The Connecticut Department of Transportation (CTDOT) is undertaking a Community Connectivity Program that focuses on improving the state's transportation network for all users, with an emphasis on bicyclists and pedestrians. A major component of this program is conducting Road Safety Audits (RSA's) at selected locations. An RSA is a formal safety assessment of the existing conditions of walking and biking routes and is intended to identify the issues that may discourage or prevent walking and bicycling. 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 or severity.

The RSA team is made up of CTDOT staff, municipal officials and staff, enforcement agents, AECOM staff, and community leaders. An 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, presence or absence of bicycle lanes or sidewalks, and social influences.

Each RSA was conducted using RSA protocols published by the Federal Highway Administration (FHWA). For details on this program, please refer to www.ctconnectivity.com. Prior to the site visit, area topography and land use characteristics are examined using available mapping and imagery. Potential sight distance issues, sidewalk locations, on-street and off-street parking, and bicycle facilities are also investigated using available resources. The site visit includes a "Pre-Audit" meeting, the "Field Audit" itself, and a "Post-Audit" meeting to discuss the field observations and formulate recommendations. This procedure is discussed in the following sections.



1 Introduction to the Stonington (Route 27) RSA

The Town of Stonington submitted an application to complete an RSA along Route 27 to improve safety for pedestrians and bicyclists. This corridor has several major attractions, resulting in heavy tourist traffic. Route 27 is the primary connector between the Mystic Aquarium and Mystic Village in the north, The Mystic Seaport in the center, and Route 1 at the southern end. Many visitors are using bicycles and walking, but the lack of proper pedestrian accommodations is creating conflicts between user groups. The greatest challenge is at The Mystic Seaport, where the attraction is on the west side of Route 27 and all parking is on the east. There are several other points of interest along the corridor, including restaurants, retail uses, Coogan's Farm, the boathouse, and lodging facilities. There are also opportunities for adaptive reuse of many of the commercial properties located within the RSA corridor and it is critical that future projects incorporate pedestrian and bicycle infrastructure. Stonington wishes to create safe pedestrian and bicycle connections to destinations on Route 27.

The Tolland application contained information on traffic volumes, crash data, and mapping of the intersection. The application and supporting documentation are included in Appendix A.

1.1 Location

The RSA corridor includes Route 27 from I-95 Frontage Road/Exit 90 northbound to U.S. Route 1 (Figure 1). Route 27 is classified as a minor arterial. The Route 27 Average Daily Traffic (ADT) ranges from 19,700 vehicles per day (vpd) north of Coogan Boulevard to 6,800 vpd just north of Route 1. Just south of Coogan Boulevard the ADT is 13,900 vpd, indicating that a large percentage of traffic is oriented between I-95 and Coogan Boulevard. In contrast, the Frontage Road ADT is 2,900 vpd. In the vicinity of The Mystic Seaport, the ADT ranges between 12,600 vpd and 10,800 vpd but then drops to 7,600 just south of Mistuxet Street. These are significant volumes of traffic for the corridor to process, particularly north of Mistuxet Street. Figure 2 shows the regional context of the study area.



Figure 1. Route 27, Stonington

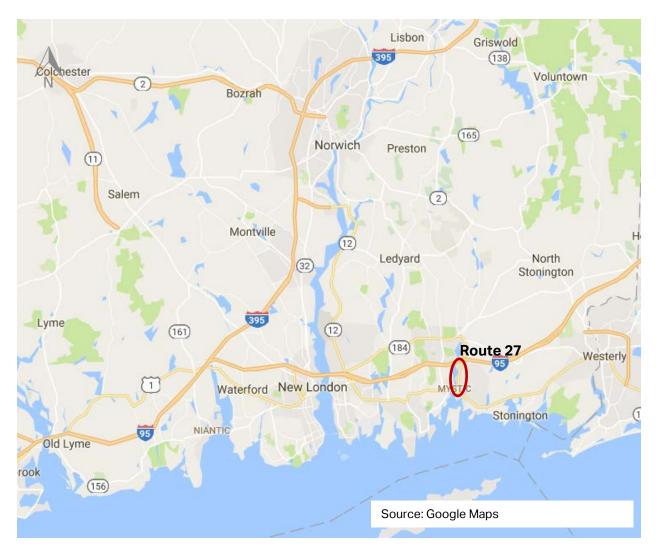


Figure 2. Route 27 and Old Post Road Regional Context

2 Pre-Audit Assessment

2.1 Pre-Audit Information

Between 2012 and 2014 there were 113 crashes in the RSA Area. The majority of crashes (79%) reported in this area resulted in property damage only; however 21% of crashes did result in an injury (Table 1 and Table 2). No crashes involved pedestrians or bicyclists. The crash types reported were primarily rear end collisions, turning-intersecting paths, and turning-opposite direction. Figure 3 displays crashes that occurred in this area during 2015. The crash history for year 2015 shows that they are clustered around intersections.

Severity Type	Number of Accidents			
Property Damage Only	89	79%		
Injury (No fatality)	24	21%		
Fatality	0	0%		
Total	113			

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact Number of Accid		ccidents
Unknown	0	0%
Sideswipe-Same Direction	7	6%
Rear-end	65	58%
Turning-Intersecting Paths	16	14%
Turning-Opposite Direction	10	9%
Fixed Object	4	4%
Backing	1	1%
Angle	2	2%
Turning-Same Direction	3	3%
Moving Object	2	2%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	1	1%
Sideswipe-Opposite Direction	2	2%
Miscellaneous- Non Collision	0	0%
Total	113	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

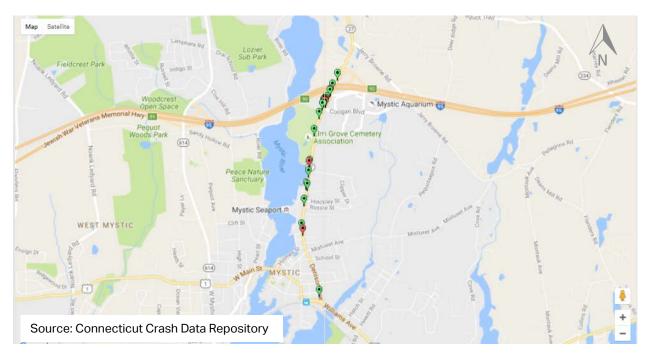


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

Route 27 is a two lane, state owned road with a speed limit of 30 mph. There are six signalized intersections and numerous stop controlled intersections within the 1.7 mile study corridor (Figure 4). All six signalized intersections have crosswalks across two or more legs. Sidewalk exists along the entire corridor on the west side of the road, but is intermittent on the east side. There are seven midblock crosswalks within the corridor. The road is striped with a double yellow centerline to separate the northbound and southbound flows of traffic, and there are shoulder lines on both sides for the entire length. Table 3 is a summary of the roadway conditions throughout the RSA area.

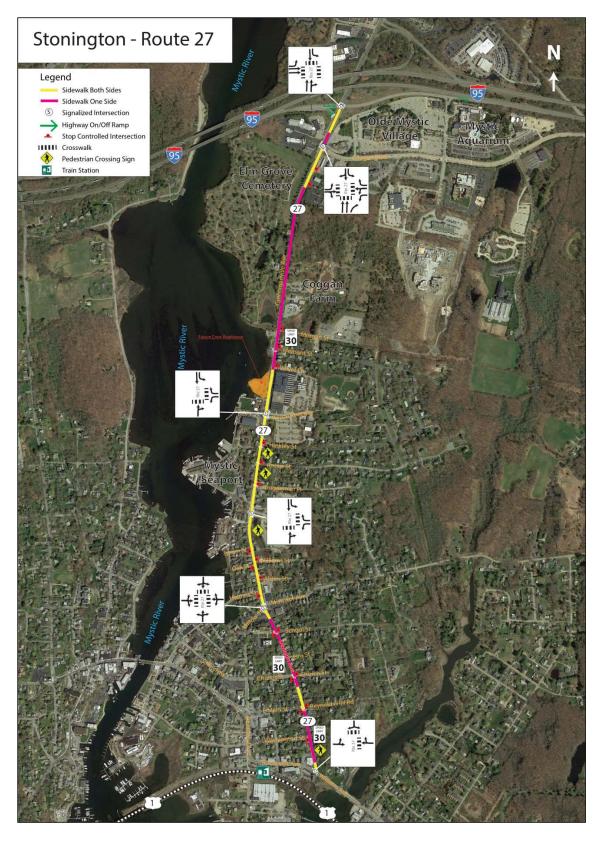


Figure 4. Old Post Road/Tolland Stage Road Geometrics

Stonington - Route 27 Street Inventory

						Sidewalk				Ram	ips
From	То	Distance	Width	Side	Туре	Width	Condition	Curb	Snow shelf	Exist	Compliant
Exit 90 NB	Hyatt	0.2 miles	2 lanes	SB	Concrete	5'	Good	Asphalt	Yes	Yes	No
			2 lanes	NB	Concrete	5'	Good	Asphalt	Yes	Yes	No
Hyatt	Velvet Lane	0.45 miles	2 lanes	SB	Asphalt	4'	Poor	Asphalt	Yes	Yes	No
			2 lanes	NB	N/A	N/A	N/A	Asphalt	N/A	N/A	N/A
Velvet Lane	Hincklet Street	0.2 miles	2 lanes	SB	Concrete	5'-9'	Good	Granite	No	Yes	Yes
			2 lanes	NB	Concrete	5'	Good	Granite	Yes	Yes	Yes
Hinckely Street	Bruggeman Place	530 feet	2 lanes	SB	Concrete	5'-12'	Good	Granite	Yes	Yes	No
			2 lanes	NB	Concrete	5'	Good	Granite	Yes	Yes	No
Bruggeman Place	Isham Street	0.15 miles	2 lanes	SB	Concrete	5'	Good	Concrete	No	Yes	No
			2lanes -	NB	Concrete	5'	Good	Granite	Yes	Yes	No
Isham Street	Mistuxet Avenue	580 feet	2 lanes	SB	Concrete	5'	Fair	Concrete	Yes	Yes	No
			2 lanes	NB	Concree	5'	Fair	Concrete	Yes	Yes	No
Mistuxet Avenue	Church Street	0.18 miles	2 lanes	SB	Asphalt	4'	Poor	Asphalt	Yes	Yes	No
			2 lanes	NB	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Church Street	Reynolds Hill	430 feet	2 lanes	SB	Concrete	5'	Fair	Concrete	No	Yes	No
MA network and the second seco	Road		2 lanes	NB	Concree	5'	Fair	Concrete	No	Yes	No
Reynolds Hill	Route 1	0.15 miles	2 lanes	SB	Concrete	5'	Fair	Concrete	Yes	Yes	No
Road			2 lanes	NB	N/A	N/A	N/A	N/A	N/A	N/A	N/A

^{*}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.

Table 3. Street Inventory

2.2 Prior Successful Efforts

A number of best practices have already been applied to this corridor. The Mystic Mobility study was conducted in 2010 that looked at mobility for pedestrians, bicycles and vehicles in the corridor. This study examined the feasibility of providing permanent shuttle bus service in the corridor, as well as intersection improvements and complete streets alterations. The town has established several bicycle trails adjacent to the corridor, and is expanding this trail system.

2.3 Pre-Audit Meeting

The RSA was conducted on September 28, 2016. The Pre-Audit meeting was held at 8:30 AM at the Mystic Seaport Conference Room located at 90 Greenmanville Road in Stonington.

The RSA Team was comprised of staff from CTDOT, staff from AECOM, and representatives from several departments and organizations including local residents, Mystic Community Bikes, Police Department, Mystic Seaport, and the Planning and Engineering Department. The complete list of attendees can be found in Appendix B. Materials distributed to the RSA Team, including the agenda, audit checklist, ADT counts, crash data and road geometrics, can be found in Appendix C.

RSA Team members from Stonington presented relevant information for the audit, including:

- Route 27 is a heavily used corridor with a substantial amount of non-commuter traffic.
 The tourist and visitor traffic increases between Memorial Day and Labor Day.
- There is a need for more public transit (as noted in the Mystic Mobility Study) in the
 area but there is no sustainable funding source for operation. The region just
 experienced a decrease in funding from the state for Southeast Area Transit (SEAT),
 the local fixed-route operator.
- During the summer months, events are held at the Seaport, in the downtown, and other locations in the corridor, which causes traffic increases and queuing to worsen.
- The parking for the Seaport is on the east side of Route 27 and the Seaport on the west side. Over 1000 people cross the street daily here but the pedestrian infrastructure is not optimal. Each parking lot has a signalized intersection with crosswalks, and there are three additional unsignalized intersections with crosswalks across Route 27. Vehicles do not anticipate the unsignalized crossing due to the road design and minimal signage. Vehicle awareness of the crossings can be improved through passive rumble strips, embedded LED lighting or flashing beacons.
- The unsignalized crossings act as school bus stops, with buses stopping on one side in the morning and then the other in the afternoon.

- The timing of the signals for the Seaport parking lots needs to be evaluated for the
 pedestrian phase to determine if it meets the latest MUTCD standards. Operations
 could benefit from seasonally adjusted signal timings. For the summer season, the
 signals need a quicker cycle to get traffic through.
- There are several restaurants on the west side of the corridor. During the morning commute, it is not unusual for tractor trailer deliveries to back into adjacent driveways, blocking the street and impeding traffic flow.
- The service road between Latitude 44 restaurant and the new Thompson Exhibition Building was recently closed and bollards were added.
- The address for the Seaport is 75 Greenman Avenue and this is where GPSs send people, but parking is on the other side of the road, which causes confusion for motorists.
- Lighting at the midblock crossings is inadequate.
- The snow shelf is very small; there is no place to store snow in the winter and as a result the sidewalks become narrower.
- Over the six past weeks Stonington has been working with CTDOT regarding the intersections along Route 27 and CTDOT plans to upgrade all of the pedestrian crossings with new signage and striping.
- Route 27 was repaved in 2014.
- There are unsigned mid-block crossings south of Mistuxet Avenue.
- There is no biking infrastructure along Route 27 due to the narrow roadway width. The town is hesitant to add bike lanes due to the high traffic volumes. At the same time, use of Route 27 by bicyclist is not likely to stop.
- There is the possibility for a multi-use path off of Route 27 since there are trails on the east side.
- It is a challenge to encourage bicycling and to move traffic safely.
- The highway ramps and intersections are not cohesive and needs to be more functional and integrate sidewalks. In the northern end of the corridor, attractions are on the east side of the road and the sidewalk is on the west. This diminishes connectivity between the Seaport, Old Mystic Village, and the Aquarium. Sidewalks on both sides would be ideal.
- At the intersection of Route 27 and Coogan Boulevard there are crosswalks with ramps on one side but no crosswalks on the other.
- Crosswalks should be strategically placed with signing and pavement markings to warn motorists that it is a crossing.
- Beautification such as lighting, street trees and architecture would promote a sense of community.
- At the signal for the I-95 ramps, the key is to move vehicles off the ramp to prevent them from backing up onto the highway. All signals need to be evaluated for timing.
- Route 27 has very little room on either side to increase width.

- There needs to be education on the rules of the road for biking, especially tourists who use the Mystic Community Bikes bike sharing program.
- The signal timing and capacity at Cogan Boulevard does not allow enough vehicles to take a left onto Coogan Boulevard. Many of these vehicles are coming from the highway and headed towards the Seaport. The intent is for vehicles to bypass this intersection and proceed straight through the I-95 ramp signal to access the aquarium via Delcore Drive. However there is minimal signage and Delcore Drive appears to motorists to be the on ramp for I-95.
- There needs to be signage for bicyclists along Route 27.
- Gateways should be created in order to encourage walking between destinations.
- Maps should be provided to tourists using the bike share program with planned loops through town which are safe and that avoid congested areas.
- Bikers can ride on the sidewalk as there is no ordinance against it.
- The Mystic Community Bikes does have a handout that has rules of the road.
- People are attracted to Route 27 for biking because of the numerous destinations in the corridor.
- It was asked if there are there any other communities that have widened sidewalks to make a multi-use path. There may be room on the west side of Route 27 to do so without taking property, if trees are cut down.
- The Seaport has looked into a tunnel or overpass, but the cost is very high due to height clearance requirements (15 feet).

3 RSA Assessment

3.1 Field Audit Observations

Route 27

- There is a sidewalk along the entirety of the west side of the RSA corridor, although it varies in width. From the I-95 ramp to Morgan Street there is a snow shelf, but the snow shelf is intermittent south of that point.
- There is sidewalk on the east side between Velvet Lane and Mistuxet Avenue. It is concrete and has a snow shelf along its entirety. There are several other short pieces of disconnected sidewalk on the east side.

- Approximately 100 feet north of the Hinckley Street intersection, the sidewalk narrows to 5 feet in width with a 3.5 foot wide snow shelf. The frontage of the Seaport is planted with trees and has decorative stone posts. Along the entire length of The Seaport, the sidewalk abuts a fence. (Figure 5)
- From Hinkley Street to Bruggeman Place the shoulder on the west side is three feet wide and the east shoulder is four feet wide. The northbound travel lane is 12 feet wide, the southbound is 11 feet.
- There is a crosswalk at Hinckley Street that is 30 feet in length. There is no pedestrian crossing signage, and the ramps are not ADA compliant and do not have tactile warning strips. There is no crosswalk across Hinckley Street, although there is a ramp on the north side.
- At Rossie Street there is a crosswalk. On the east side the crosswalk ends at a utility pole (Figure 6). The ramps are not ADA compliant, are oriented incorrectly, and lack detectable warning strips. There is an advanced warning sign for this crosswalk northbound but it is blocked by the tree canopy. There is not a crosswalk across Rossie Street, although there is a non-compliant ramp on the south corner.
- At Bruggeman Place there is a crosswalk. The ramps are not ADA compliant, are oriented incorrectly, and lack detectable warning strips. There is not a crosswalk across Bruggeman Place, although there is a non-compliant ramp on the south corner.



Figure 5. Sidewalk in Front of The Seaport



Figure 6. Crosswalk at Rossie Street Ending at Utility Pole



Figure 7. Retaining Wall Against Sidewalk

- The snow shelf on the west side of Route 27 ends at Bruggeman Place and begins again at Isham Street.
- South of The Seaport, on the west side the sidewalk width becomes five feet with concrete curbing. Between the Seaport and Isham Street there is no room to widen the sidewalk due to the side slope and retaining walls (Figure 7).
- The crosswalks across Isham Street and Oak Street are narrow and the road is in poor condition, resulting in uneven pavement. There are no tactile warning strips. (Figure 8).
- In the northeast corner of Isham Street and Route
 27 there is an unused utility pole.
- The stop sign on Isham Street is on the left. On the back of the sign is a "no bus sign" that is restricting access to Isham Street. (Figure 9).
- Between Oak Street and Holmes Street there are several overgrown shrubs and trees encroaching on the sidewalk.
- Alden Street and Williams Street do not have crosswalks, although there are non-compliant ramps.
- The snow shelf on the west side begins again at Isham Street and continues to Holmes Street; it is five feet in width. The sidewalk is concrete and five feet wide.
- Holmes Street does not have a crosswalk. It has ramps but is missing the tactile warning strips.
- South of Willow Street, the sidewalk becomes asphalt and is four feet wide. A snow shelf is reintroduced and the curb is asphalt. The asphalt



Figure 8. Crosswalk Across Isham Street



Figure 9. Stop Sign on the Left



Figure 10. Clearing and Grubbing Needed on Sidewalk



Figure 11. Crossing at School Street

sidewalk is in poor condition and dirt/grass encroaches on it. (Figure 10).

- At School Street there are crosswalks on the west and south legs. On the east side ends at a utility pole and there is no sidewalk or ramp. The west side runs into a fairly new catch basin, and there is no ramp. It will be difficult to install a ramp because of the catch basin. (Figure 11).
- The crosswalk across School Street also does not have ramps, although the sidewalk is essentially flush with the pavement on both corners. There are no tactile warning strips.
- Many of the driveways south of School Street have had new concrete aprons installed (Figure 12).
- Shrubs have begun to encroach on the sidewalk (Figure 13).
- There is an old water valve which is missing its cover and has been filled in with dirt (Figure 14).
- At Church Street the sidewalk becomes concrete and is five feet wide.
- There is a crosswalk across Church Street with ramps and tactile warning strips (Figure 15).
- There is a crosswalk across the south leg of Route 27 at Church Street. It has a poorly aligned ramp on the west side and no ramp or sidewalk on the east side.
- Between Church Street and Reynolds Hill Road/East Main Street there is a short segment of concrete sidewalk on the east side of Route 27.



Figure 12. Newer Driveway Aprons



Figure 13. Shrubs Growing into Sidewalk



Figure 14. Old Water Valve



Figure 15. Church Street Intersection

- At East Main Street there is a narrow crosswalk with ramps on both sides and tactile warning strips on the north side. A utility pole encroaches on the pedestrian path on the south-west corner.
- There is a crosswalk on the north leg or Route 27 that does not have ramps or connect to sidewalk on the east side, and is poorly aligned with the ramp on the west side.
- There is a crosswalk at Washington Street with ramps on both sides and tactile warning strips on the south side.
- There is also a midblock crosswalk, just south of Washington Street. It does not have ADA compliant ramps and does not connect to sidewalk on the east side.
- Many of the catch basin grates are not bicycle friendly.
- Many of the signs along Route 27 and intersecting side streets are faded and not retroreflective (Figure 16).
- The sidewalk along Route 27 extends at grade through most driveways.
- The utility poles are on the east side from the northern section of the corridor until Reynolds Hill Road where they transition to the west side of the road until the intersection with Route 1.
- There were several signs that did not meet minimum height requirements.

Route 27 & Rossie Pentway (Figure 17)



Figure 16. Faded Signs



Figure 17. Route 27 and Rossie Pentway Intersection

- This signal has an exclusive pedestrian phase.
 There are crosswalks across Rossie Pentway and the southern leg of Route 27.
- The pedestrian signal heads are not count down, the pushbuttons are not tactile and the landing ramps do not have tactile warning strips.
- Rossie Pentway provides access to the northern parking lot for The Seaport. This is a very busy intersection.
- The pedestrian signal to cross has 7 seconds of walk time, followed by 18 seconds after the warning hand appears. This does not appear to be enough time to cross. The crosswalk across Route 27 is 44 feet and across Rossie Pentway is 84 feet. (Figure 18).
- There is no snow shelf on the west side of Route 27 in the vicinity of this intersection. It ends 1,000 feet to the north and begins again 100 feet to the south. The sidewalk here is concrete and nine feet wide. The sidewalk on the east side is five foot wide concrete with a 3.5 tree planted snow shelf. Curbing is granite.
- The curb on the west side of Route 27 at this intersection is mountable.
- There appears to be a drainage issue on the northeast corner of the intersection (Figure 19).

Route 27 and Seaport South Parking Lot Signal

 The south parking lot is the Seaport's largest and most popular parking lot (in addition to bus parking), resulting in large amounts of pedestrian activity and crossings.



Figure 18. Long Crossing Across Rossie Pentway



Figure 19. Sediment Build-up Due to Drainage Issue

- This signal has an exclusive pedestrian phase.
 There are crosswalks across the parking lot
 entrance and the southern side of Route 27. The
 crosswalk across Route 27 is on a diagonal,
 resulting in a longer crossing.
- The pedestrian signal heads are not count down, the pushbuttons are not tactile and the landing ramps do not have tactile warning strips.
- The waiting area on the southeast corner is small and cannot accommodate large groups (Figure 20).
- The pedestrian signal to cross has 7 seconds of walk time, followed by 18 seconds after the warning hand appears. This does not appear to be enough time to cross. The crosswalk across Route 27 is 54 feet and the crosswalk across the parking lot entrance is 79 feet. (Figure 21).
- There is no snow shelf on the west side of Route 27 in the vicinity of this intersection. The sidewalk here is concrete and 10 feet wide. (Figure 22) The sidewalk on the east side is five foot wide concrete with a 3.5 tree planted snow shelf. Curbing is granite.
- The pedestrian push button on the northeast corner of the intersection is not functioning.

Mistuxet Avenue, Route 27, and Willow Street

- There are crosswalks across Mistuxet Avenue,
 Willow Street and the northern leg of Route 27.
- The pedestrian push buttons are the older "Push Button for Green Light" style. There are no pedestrian signal heads. (Figure 23).



Figure 20. School Group Waiting to Cross



Figure 21. Long Crossing at Intersection



Figure 22. Wide Sidewalk on the West Side



Figure 23. Lack of Pedestrian signal Heads

- The northwest corner has a very large turning radius.
- The ramps lack tactile warning strips.
- There are cat tracks through the intersection.
- There is a driveway within the intersection at the northwest corner. Vehicles back out of the property into the intersection from this driveway. (Figure 24).

Figure 24. Driveway in Intersection

Route 1 and Route 27

- The sidewalk on the west side ends 50 feet before the intersection (Figure 25).
- This signal has an exclusive pedestrian phase.
 There is a long crosswalk across Route 27. It is
 faded, and lacks ADA compliant ramps on either
 side. The crosswalk across Route 1 is on the
 western leg. The southern side of the crosswalk
 does not connect to a sidewalk and has no ramp.
- The pedestrian signal to cross has 7 seconds of walk time, followed by 16 seconds after the warning hand appears. This does not appear to be enough time to cross. The crosswalk across Route 27 is 84 feet and across Route 1 is 35 feet.
- The pedestrian signal heads are not count down and the push buttons are not tactile.
- The push button in the northwest corner is far from the crosswalk.
- The pedestrian phase is not called quickly upon pushing.
- The sidewalk location is not well defined on the northwest corner.



Figure 25. End of Sidewalk

Coogan Boulevard and Route 27

- This signal has a concurrent pedestrian signal phase. There are crosswalks across the right turn for the channelizing island, both sides of Coogan Boulevard, and the southern side of Route 27.
- LThe crosswalk across the eastern side of Coogan Boulevard does not have a landing pad on the northeast corner, nor is there a pedestrian push button or signal head. There is a pedestrian crossing sign, but it is blocked by a utility pole (Figure 26). The southern side connects to the channelizing island. It has a ramp but no tactile warning strips.
- There is a worn path along the east side of Route 27 that connects the crosswalk with the sidewalk, which ends 200 feet to the north (Figure 27).
- The channelizing island does not provide a sense of refuge for pedestrians, it is unwelcoming. It does have a pedestrian signal head and push button. It is unclear which crossing the button is for. (Figure 28).
- For crossing Route 27 there are pushbuttons and pedestrian signal heads, but they are not countdown. There are ramps on either side but both lack tactile warning strips. The pedestrian signal to cross has 16 seconds of walk time, followed by 11 seconds after the warning hand appears. This does not appear to be enough time to cross. The pedestrian signal is concurrent with the southbound advanced left arrow from Route 27 to Coogan Boulevard.
- The crosswalk across the west leg of Coogan Boulevard lacks pushbuttons, pedestrian signal heads, tactile warning strips, and is faded. The



Figure 26. Sign Blocked by Utility Pole



Figure 27. Goat Path to Sidewalk



Figure 28. Unclear Which Crosswalk For Pedestrian Push Button

ramp on the southwest corner is oriented incorrectly.

- The crosswalk across the east leg of Coogan Boulevard lacks pushbuttons and pedestrian signal heads. The ramp on the south (in the island) is not ADA compliant and lacks tactile warning strips. The northeast corner has no ramp or sidewalk. There is also a pedestrian crossing sign on the northeast corner that is inappropriate for a signalized intersection. It is also placed directly behind a utility pole, making it very difficult to see.
- The intersection lacks pedestrian scale lighting.
- There is no wayfinding at this intersection.

Coogan Farm

- Coogan Farm is trying to become an event center, but there is minimal parking and cars park on the street.
- In this vicinity there are three event venues, the Seaport, the boathouse, and Coogan Farm. There are pedestrian connection needs amongst these venues.
- Currently the sidewalk is on the west side but not the east. There is a crossing at Pleasant Street but it does not connect to the sidewalk on the east side (Figure 29). There is no pedestrian crossing signage.
 - There is poor sight distance at Coogan Farm for a crosswalk (Figure 30).
 - Eliminating the Pleasant Street crosswalk would eliminate the connection from that neighborhood to the ice cream shop.



Figure 29. No Sidewalk on the East Side



Figure 30. Inadequate Sight Distance for Potential Crosswalk

- There are wetland concerns on the east side of Route 27 between Coogan Farm and Morgan Street.
- At Coogan Farm the shoulder widths are two feet on the west side and four and a half feet on the east. The northbound travel lane is 11.5 feet wide, and the southbound lane is 12 feet wide.

3.2 Post-Audit Workshop - Key Issues

- The midblock crosswalks between the signals for the Seaport parking lots need better signage and advanced warning systems. Many different devices could be used such as LED lighting in the pavement or signs with high intensity flashing lights imbedded in the sign. It was cautioned that lighting in the pavement requires a lot of maintenance and can break with plows.
- Improving overhead lighting at all crosswalks would improve visibility.
- Stonington has active speed signs that collect very useful data. Putting active speed signs on state roads would require permission from CTDOT.
- Most of the signals do not have tactile pushbuttons, countdown heads or audible notification. There is a state program where CTDOT is replacing older equipment with ADA compatible equipment.
- The signals do not appear to meet current timing standards for pedestrian crossing time.
- The Coogan Boulevard and I-95 off ramp signals operate as a single signal to increase capacity.
- There is no gateway to the aquarium from Delcore Drive. Delcore Drive also provides access to Old Mystic Village via Clara Drive but it is not signed. Signing it could change driver behavior and take pressure off of Coogan Boulevard. An alternative option would be to create a driveway specifically for Old Mystic Village from Delcore Drive; however the location of the non-access line could prevent this.
- Coogan Boulevard lacks street lighting.
- At Coogan farm it seems that there is a lot of potential for increased pedestrian traffic between the farm, boathouse, ice cream shop and the Seaport. To connect the farm to these locations crosswalks would need to be added and/or sidewalks extended. There are concerns regarding the sight distance at Coogan Farm for a crosswalk.
- Long term, the town would like to see the sidewalk on the east side extended north to Coogan Boulevard. There may be right-of-way constraints and trees may need to be eliminated. An alternative may be a shared multi-use trail along the west side but it would require widening the sidewalk and reducing the snow shelf. Crossings would still be needed.

- Pleasant Street crossing should be maintained, as many people from seaport heights area use it. An additional crossing should be located that maintains Pleasant Street.
- Many of the side street crossings are not ADA compliant.
- There is a long stretch between the north end of the Seaport and the next crosswalk.
- The Willow Street intersection needs to be redesigned; the driveway should not be in the center of the intersection.
- Sharrows along Route 27 would encourage more bikes on the road. The town does not want to promote biking on Route 27 but recognizes that they cannot prevent it. Signage could notify motorists that bicyclists may be on the road.
- The police department did a Public Service Announcement (PSA) for bike safety on the rules of the road and safety in town. It got very little interest.

4 Recommendations

From the discussions during the Post-Audit meeting, the RSA team compiled a set of recommendations that are divided into short-term, mid-term, and long-term categories. For the purposes of the RSA, **Short-term** is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right-of way acquisition). **Mid-term** recommendations may be more costly and require establishment of a funding source, or they may need some additional study or design in order to be accomplished. Nonetheless, they are relatively quick turn-around items, and should not require significant lengths of time before they can be implemented. Generally, they should be completed within a window of eighteen months to two years if funding is available. **Long-term** improvements are those that require substantial study and engineering, and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more when funding is available.

4.1 Short Term

- 1. Fix broken sidewalk sections.
- 2. Evaluate local roads for the appropriateness of signing for no buses.
- 3. The Town to coordinate with the CTDOT to identify signs that are too low and raise them.
- Contact Eversource to improve overhead lighting on crosswalks by installing LED bulbs and adjusting light shed (Figure 31).



Figure 31. LED Lighting at Crosswalk

- 5. The Town to coordinate with the CTDOT to put up active speed signs. A letter from The Seaport should be submitted in support of this.
- 6. The Town to coordinate with the CTDOT district office to determine where Route 27 is on the list to upgrade pedestrian amenities at all signals.
- 7. Retime signals to meet new standards for pedestrian crossing time.
- 8. Examine passive rumble strips across the road on the approaches to mid-block crossings (Figure 32).
- 9. Investigate the Coogan Boulevard signal to see if there is a better way to incorporate the pedestrian phase.
- 10. Add Mystic Village to the Aquarium sign.
- 11. Determine where the non-access line is on Delcore Drive.
- 12. Remove the pedestrian sign behind the utility poles in the northeast corner of the Coogan Boulevard and Route 27 Intersection.
- 13. Trim trees blocking signs along Route 27.
- 14. Create a mailing to educate property owners on sidewalk maintenance.
- 15. Relocate the sign and pedestrian push button on the pole in the channelizing island at Coogan Boulevard and Route 27 to indicate the correct crossing.
- 16. Inventory locations for safe crossings along Route27.
- 17. Install share the road signs (Figure 33).
- 18. Create maps that highlight bike friendly routes and points of interest for tourists.
- 19. Develop outreach programs to teach people how to ride bicycles safely and follow the rules of road.



Figure 32. Passive Rumble Strips



Figure 33. Share the Road Sign



Figure 34. Example of Colorfu Crosswalk

- 20. Replace faded and worn-out signs that are not retroreflective.
- 21. Investigate where the best location for a crosswalk is between Coogan Farm and the north Seaport parking lot.
- 22. Add a crosswalk across and ADA ramps with tactile warnings strips at Bruggeman Place, Rossie Street, Alden Street, Williams Street, Holmes Street.
- 23. Repaint the side street crosswalks at Isham Street and Oak Streets and the western one at Coogan Boulevard.
- 24. The Town to coordinate with the CTDOT to repaint the crosswalks at the signalized intersections for the Seaport parking lots to stand out more using a red and blue striping scheme (Figure 34).
- 25. Perform clearing and grubbing on the asphalt section of the sidewalk.
- 26. Install advanced warning signs for all pedestrian mid-block crossings (Figure 35).
- 27. Contact homeowners to trim vegetation encroaching on the sidewalk (Figure 36).
- 28. Repair the broken pushbutton in the northeast corner of the Route 27 and southern parking lot entrance.
- 29. Remove the unused telephone pole in the northeast corner of Isham Street and Route 27.
- 30. Contact the water company to repair the water valve with a missing cover.



Figure 35. Advanced Warning Pedestrian Crossing Sign



Figure 36. Vegetation Needing Trimming

Figure 37 depicts these recommendations.

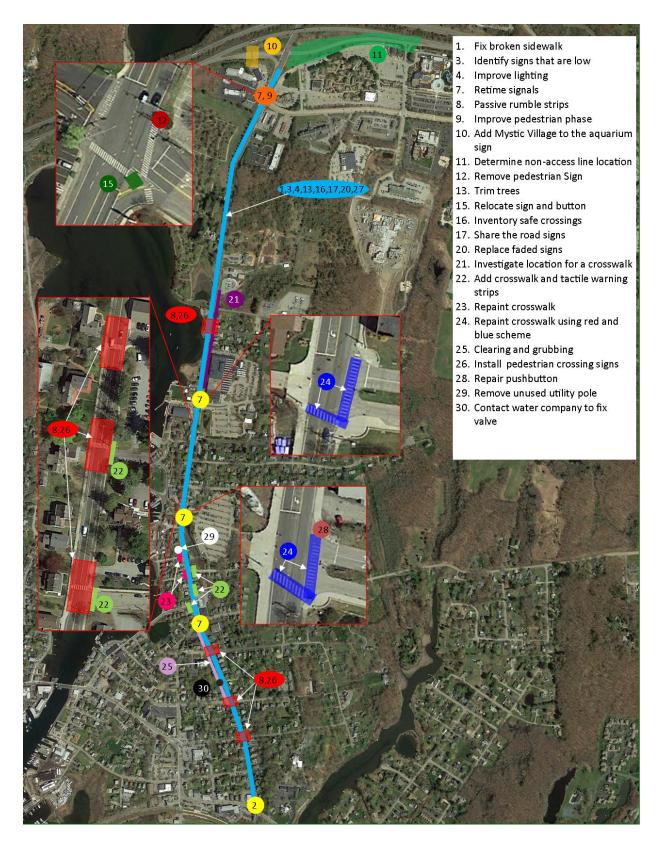


Figure 37. Short Term Recommendations

4.2 Medium Term

- 1. Install active warning systems at the three unsignalized crosswalks in front of the seaport (Figure 38).
- 2. Update all ramps to be ADA compliant with tactile warning strips (Figure 39).
- 3. Add ramps to all crosswalks where missing.
- 4. Create a gateway entrance to Aquarium that encourages motorists to use Delcore Drive.
- Implement the findings from the safe crossing inventory by adding, relocating or eliminating midblock crosswalks.
- 6. Determine the best way to connect the new boathouse to Coogan Farm.
- 7. Tighten up the northeast radius at the Willow Street intersection in order to shorten the crosswalk and remove the driveway from the middle of the intersection.
- 8. Install bicycle friendly catch basins grates (Figure 40).
- Upgrade all signals to have countdown heads and push buttons to be ADA compliant with audible and tactile directional arrows (Figure 41),
- 10. Add street lighting along Coogan Boulevard and the intersection with Route 27
- 11. Add a crosswalk, landing ramps, and tactile warning strips across Hinckley Street.
- 12. Expand the landing/waiting area in the southeast corner at the signal for the southern parking lot.
- 13. Extend the sidewalk on the east side, which ends 200 feet to the north of Coogan Boulevard to the intersection.

Figure 42 depicts these recommendations.



Figure 38. Active Pedestrian Crossing Sign



Figure 39. Tactile Warning Strip



Figure 40. Bike Friendly Catch Basin Grate



Figure 41. Tactile Push Button (Left), Countdown Pedestrian Signal Head (Right)

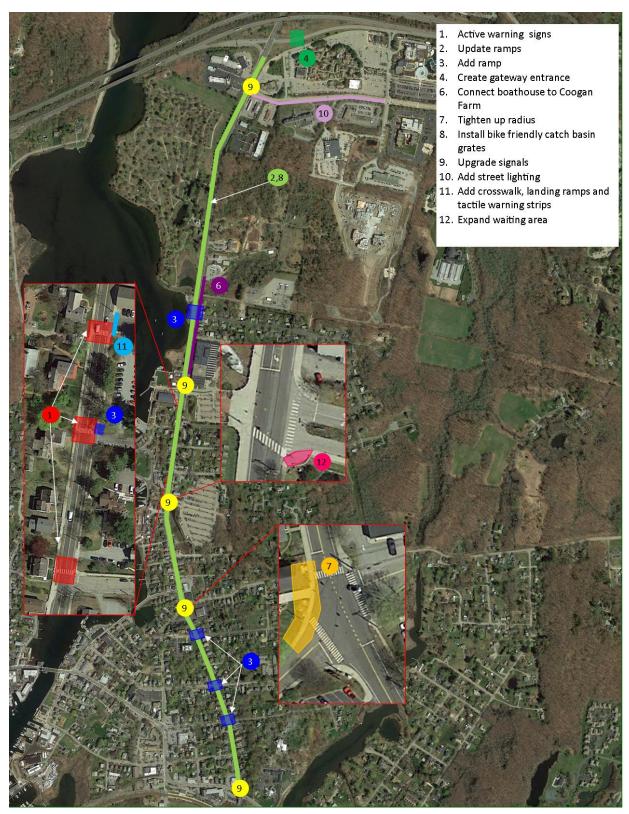


Figure 42. Mid Term Recommendations

4.3 Long Term

- Create multiuse trails from Maritime Drive connecting to the Seaport with a greenway to Mistuxet Avenue and Coogan Boulevard. If needed to traverse wetlands install a boardwalk.
- 2. Upgrade the Coogan Boulevard signal with ramps, a safer refuge island, crosswalks across all legs, and pedestrian signal heads.
- 3. Install a sidewalk along the east side of Route 27 from The Hyatt to Velvet Lane.
- 4. Repave the intersecting local roads south of The Seaport.
- 5. Widen the sidewalk between Willow Street, Church Street, Coogan Boulevard, and Morgan Street to a minimum of five feet and concrete.
- 6. Redesign the Route 1 and Route 27 intersection to shorten the crossing, expand the sidewalk and improve flow per the Mystic Mobility Study.
- 7. Create safe pedestrian connections between The Seaport, boathouse, and Coogan Farm.
- 8. Create driveway access from Delcore Drive to Old Mystic Village.

Figure 43 depicts these recommendations.

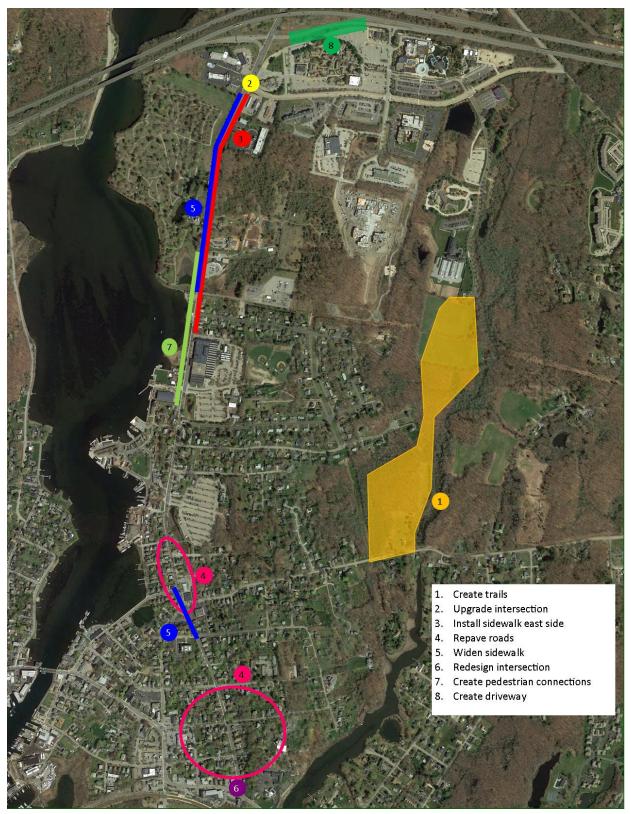


Figure 43. Long Term Recommendations

4.4 Summary

This report outlines the observations, discussions and recommendations developed during the RSA. It documents the successful completion of the Town of Stonington RSA and provides Stonington with an outlined strategy to improve the transportation along Route 27 for all road users, particularly focusing on pedestrians and cyclists. Moving forward, Stonington may use this report to prepare strategies for funding and implementing the improvements, and as a tool to plan for including these recommendations into future development along Route 27.



Appendix A





Welcome to the Community Connectivity Program Application



Please fill in the following information to provide the Audit team leaders with a comprehensive description of the area contained in this application.

1. Applicant contact information

Name	
Title	
Email Address	
Telephone	
Number	
2. Location infor	nation
Address	
Description	
City / Town	

State ro	ad			
Local re	ad			
Private	Road			
Other (lease specify)			
4. Zoning (Please	select all that apply)		
Industr	al			
Reside	itial			
Comme	rcial			
Mixed U	se			
Retail				
N/A (no	applicable)			
Other (lease specify)			
5. Approx	mate mile radius ar	ound the loc	ation	

Community Centers
Business Districts
Restaurant/Bar Districts
Churches
Housing Complexes
Proximity to Schools
Tourist Locations (examples – Casino, Malls, Parks, Aquarium, etc)
N/A (not applicable)
Other (please specify)
Employment Facilities (Retail, Industrial, etc)
No
If Yes please describe (please specify)

Public, Paroc	hial, Private Schools (mor	e than 1 school wi	thin a ½ mile)	
University / 0	Community Colleges			
N/A (not appl	cable)			
Other (please	specify)			
9. Transit facil				
(Please selec	t all that apply)			
Bus				
Rail				
Ferry				
Airport				
Park and Ride	. Lot			
N/A (not appli				
Other (please	specify)			

Traffic (volumes & speed)
Collisions
Sidewalks
Traffic Signals
Traffic Signs
Parking Restrictions / Additions
Drainage
ADA Accommodations
Agricultural & Live Stock crossing
Maintenance issues (cutting grass, leaves, snow removal)
N/A (not applicable)
Other (please specify)

If Yes please de	scribe and list all _l	projects.		
n ree predect de		<u> </u>		

Page 6 of 11

If Yes please desc	ribe and list.		

Page 7 of 11

Page 9 of 11

Thank you for completing the Community Connectivity application.

Please click on the "submit button" below and include the following attachments

- 1 Location map (google, GIS) (Required)
- 2 Collision data (If available)
- 3 Traffic data (ADT or VMT) (If available)
- 4 Pedestrian/bicycle data (If available)



Appendix B









Road Safety Audit

Town: Stonington RSA Location: Route 27

Meeting Location: Mystic Seaport Conference Room

Address: 90 Greenmanville Avenue, Mystic, CT 06355

Date: 9/28/2016 **Time:** 8:30 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Krystal Oldread	Aecom
Steve Mitchell	Aecom
Stephen Gazillo	Aecom
Ken Wilson	MSM
Jason Vincent	Town of Stonington
Melanie Zimyeski	CTDOT
Scot Deledda	Town of Stonington
Robert Mohr	Old Mystic/Stonington
Frank Pucci	Mystic
Nancy Nieuwenhuls	Mystic
Darrew Stewart	Stonington Police Dept



Appendix C









Road Safety Audit – Stonington

Meeting Location: Mystic Seaport Conference Room

Address: 90 Greenmanville Avenue

Mystic, CT 06355

Date: 9/28/2016 **Time:** 8:30 AM

Agenda

Type of Meeting: Road Safety Audit – Pedestrian Safety

Attendees: Invited Participants to Comprise a Multidisciplinary Team

Please Bring: Thoughts and Enthusiasm!!

8:30 AM Welcome and Introductions

Purpose and Goals

Agenda

8:45 AM Pre-Audit

Definition of Study Area

Review Site Specific Data:

o Average Daily Traffic

o Crash Data

Geometrics

Issues

Safety Procedures

10:00 AM Audit

Visit Site

As a group, identify areas for improvements

12:00 PM Post-Audit Discussion / Completion of RSA

Discussion observations and finalize findings

• Discuss potential improvements and final recommendations

Next Steps

2:30 PM Adjourn for the Day – but the RSA has not ended

Instruction for Participants:

- Before attending the RSA, participants are encouraged to observe the intersection and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to
 come with thoughts and ideas, but are reminded that the synergy that develops and respect for
 others' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.





Audit Checklist

Pedestrians and Bicycles	Comment
Pedestrian Crossings Sufficient time to cross (signal) Signage Pavement Markings Detectable warning devices (signal) Adequate sight distance Wheelchair accessible ramps Grades Orientation Tactile Warning Strips Pedestrian refuge at islands Other	
Pedestrian Facilities	
 Sidewalk Width Grade Materials/Condition Drainage Buffer Pedestrian lighting Pedestrian amenities (benches, trash receptacles) Other 	





Bicycles

- Bicycle facilities/design
- Separation from traffic
- · Conflicts with on-street parking
- Pedestrian Conflicts
- Bicycle signal detection
- Visibility
- Roadway speed limit
- Bicycle signage/markings
- Shared Lane Width
- Shoulder condition/width
- Traffic volume
- Heavy vehicles
- Pavement condition
- Other

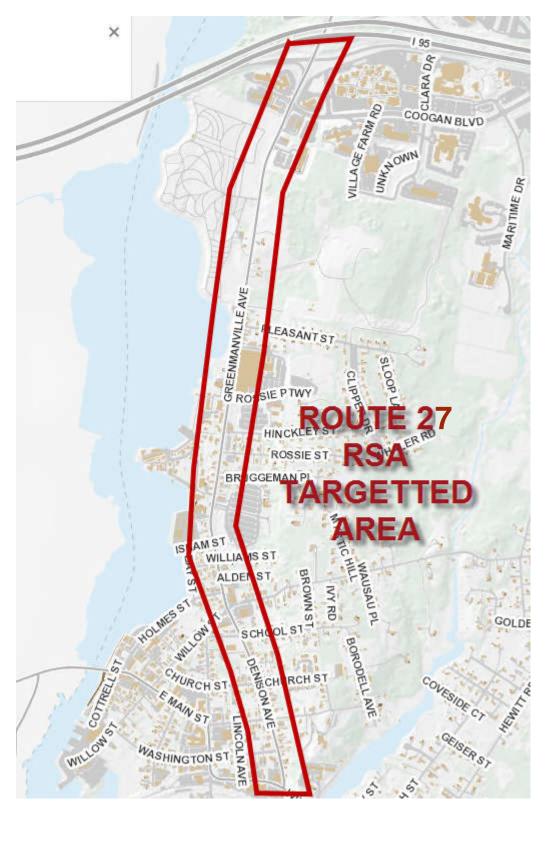
Intersections

- Geometrics
- o Sight Distance
- Traffic control devices
- Safe storage for turning vehicles
- Capacity Issues

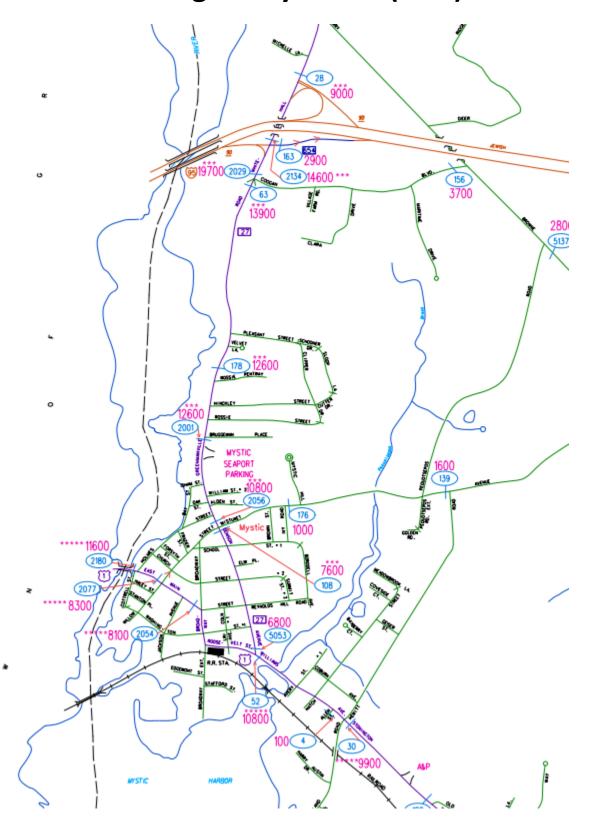




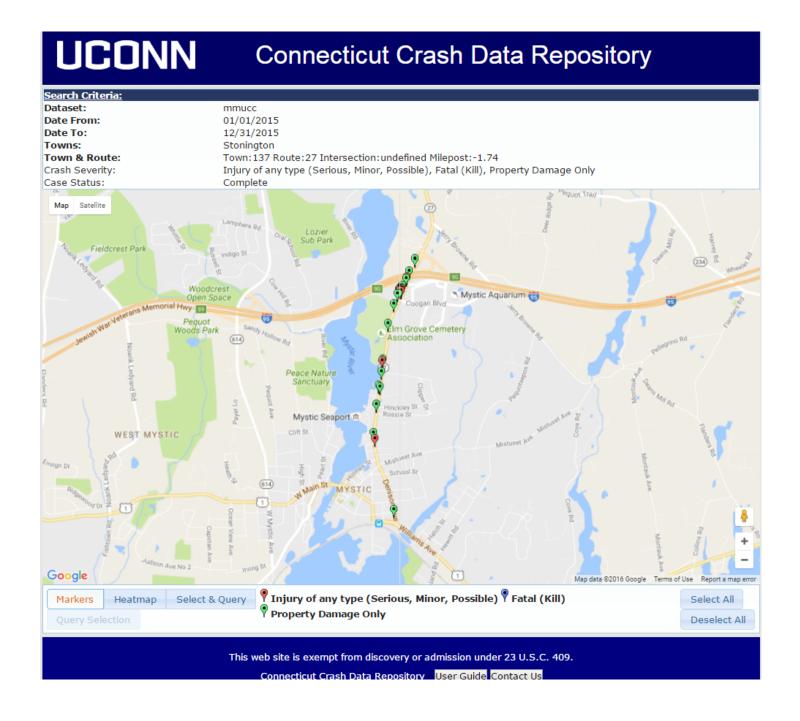
 Pavement Pavement Condition (excessive roughness or rutting, potholes, loose material) Edge drop-offs Drainage issues Lighting Adequacy 	
 Signing Correct use of signing Clear Message Good placement for visibility Adequate retroreflectivity Proper support 	
 Signals Proper visibility Proper operation Efficient operation Safe placement of equipment Proper sight distance Adequate capacity 	
 Pavement Markings Correct and consistent with MUTCD Adequate visibility Condition Edgelines provided 	
 Miscellaneous Weather conditions impact on design features. Snow storage 	



Average daily traffic (ADT)



2015 Crashes







Road Safety Audit – Stonington

Crash Summary

Data: 3 years (2012-2014)

There were no crashes that involved pedestrians.

There were no crashes involving bicyclists.

Severity Type	Number o	of Crashes
Property Damage Only	89	79%
Injury (No fatality)	24	21%
Fatality	0	0%
Total	113	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	7	6%
Rear-end	65	58%
Turning-Intersecting Paths	16	14%
Turning-Opposite Direction	10	9%
Fixed Object	4	4%
Backing	1	1%
Angle	2	2%
Turning-Same Direction	3	3%
Moving Object	2	2%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	1	1%
Sideswipe-Opposite Direction	2	2%
Miscellaneous- Non Collision	0	0%
Total	113	





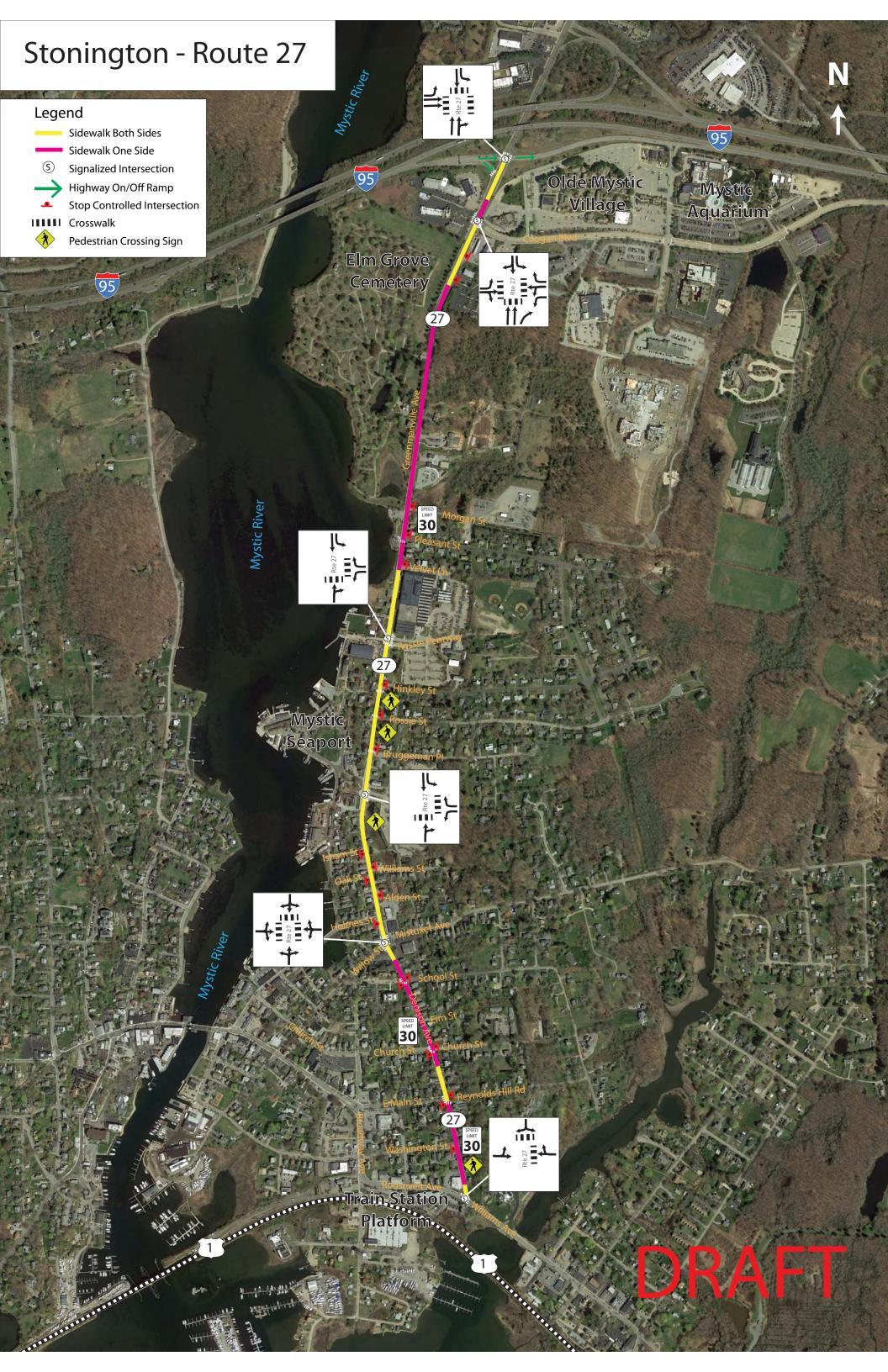
Weather Condition	Number of Crashes	
Snow	2	2%
Rain	7	6%
No Adverse Condition	104	92%
Unknown	0	0%
Fog	0	0%
Other	0	0%
Blowing Sand, Soil, Dirt or		
Snow	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Total	113	

Light Condition	Number of Crashes	
Dark-Not Lighted	1	1%
Dark-Lighted	12	11%
Daylight	99	88%
Dusk	1	1%
Unknown	0	0%
Dawn	0	0%
Total	113	

Road Surface Condition	Number of Crashes	
Snow/Slush	1	1%
Wet	9	8%
Dry	103	91%
Unknown	0	0%
Ice	0	0%
Other	0	0.0%
Total	113	



Time		Number of C	rashes
0:00	0:59	0	0%
1:00	1:59	1	1%
2:00	2:59	0	0%
3:00	3:59	0	0%
4:00	4:59	0	0%
5:00	5:59	0	0%
6:00	6:59	1	1%
7:00	7:59	2	2%
8:00	8:59	2	2%
9:00	9:59	9	8%
10:00	10:59	3	3%
11:00	11:59	11	10%
12:00	12:59	8	7%
13:00	13:59	8	7%
14:00	14:59	15	13%
15:00	15:59	15	13%
16:00	16:59	15	13%
17:00	17:59	9	8%
18:00	18:59	4	4%
19:00	19:59	5	4%
20:00	20:59	1	1%
21:00	21:59	1	1%
22:00	22:59	2	2%
23:00	23:59	1	1%
Total		113	







Post-Audit Discussion Guide

Safety Issues

• Confirmation of safety issues identified during walking audit

Potential Countermeasures

• Short Term recommendations

• Medium Term recommendations

• Long Term recommendations

Next Steps

• Discussion regarding responsibilities for implementing the countermeasures (including funding)





Road Safety Audit – Stonington

Fact Sheet

Functional Classification:

• Route 27 is classified as a Minor Arterial

ADT

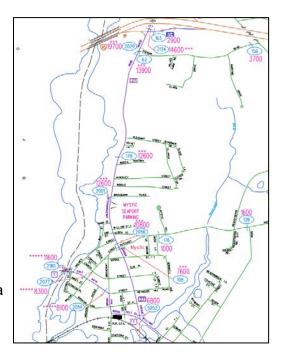
• ADT on Route 27 is 6,800 – 19,700

Population and Employment Data (2014):

Population: 18,539Employment: 7,277

Urbanized Area

Stonington is in the Norwich-New London Urbanized Area



Demographics

- The statewide average percentage below the poverty line is 10.31%. There are no areas in Stonington exceeding the state average.
- The statewide average percentage minority population is 30.53%. There are no areas in Stonington exceeding the state average.

Air Quality

- Stonington's CIPP number 619
- Stonington is within the Greater CT Marginal Ozone Area
- Stonington is within a CO Attainment Area