



COMMUNITY
connectivity program

Norfolk

Norfolk Downtown– Road Safety Audit

April 4, 2017



AECOM

Built to deliver a better world

Acknowledgements:

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

With assistance from AECOM Transportation Planning Group

Contents

1	Introduction to the Norfolk Downtown, Norfolk RSA	5
1.1	Location	5
2	Pre-Audit Assessment	6
2.1	Pre-Audit Information.....	6
2.2	Prior Successful Efforts.....	12
2.3	Pre-Audit Meeting	12
3	RSA Assessment.....	17
3.1	Field Audit Observations	17
3.2	Post-Audit Workshop - Key Issues.....	21
4	Recommendations	23
4.1	Short Term	23
4.2	Medium Term	26
4.3	Long Term.....	28
4.4	Summary.....	30

Figures

Figure 1: Norfolk RSA Corridors.....	6
Figure 2: Regional Context.....	6
Figure 3: Crashes that Occurred in 2015 (Connecticut Crash Data Repository)	8
Figure 4: Downtown Norfolk Road Geometric.....	10
Figure 5: Greenwoods Road East looking westbound in front of Botelle Elementary School..	13
Figure 6: Looking east at intersection of Greenwoods Road West/Greenwoods Road East/Litchfield Road with two flashing beacons hanging from overhead span wires	13
Figure 7: Crosswalk on Greenwoods Road East looking west. Note pedestrian bollard on left side.....	13
Figure 8: Large truck traveling northbound on Greenwoods Road West approaching Station Place.....	14
Figure 9: Snow and deteriorated curb on east side of Greenwoods Road West northbound between curve and Station Place.....	14
Figure 10: View from Station Place looking south at Greenwoods Road West toward curve..	14
Figure 11: Direction sign on the northwest corner of Norfolk Village Green with protective bollards.....	15

Figure 12: Damaged cable and wooden post guard rail on Greenwoods Road East looking west, east of Maple Avenue.....	16
Figure 13: Decorative gate demarking old train tunnel near library on Maple Avenue north of Greenwoods Road East	17
Figure 14: Sidewalk on the west side of Maple Avenue.....	17
Figure 15: Looking east at Greenwoods Road East Avenue at Maple Avenue	17
Figure 16: Advance pedestrian crosswalk sign on Greenwoods Road East westbound approaching Maple Avenue.....	18
Figure 17: Greenwoods Road east looking west at shrubs growing over slate sidewalk at #3 and diagonal striping to designate no parking.....	18
Figure 18: Looking south at intersection of Greenwoods Road East and West with Litchfield Road.....	19
Figure 19: Greenwoods Road West looking south with sidewalk and retaining wall on the left (east) side.....	19
Figure 20: Intersection of Greenwoods Road West and Station Place looking north	20
Figure 21: Greenwoods Road East looking westbound at school children ahead sign with flashing yellow beacon.....	21
Figure 22: Detectable Warning Strip	23
Figure 23: Pedestrian crossing sign	23
Figure 24: Short Term Recommendations	25
Figure 25: Medium Term Recommendations	27
Figure 26: Long Term Recommendations	29

Tables

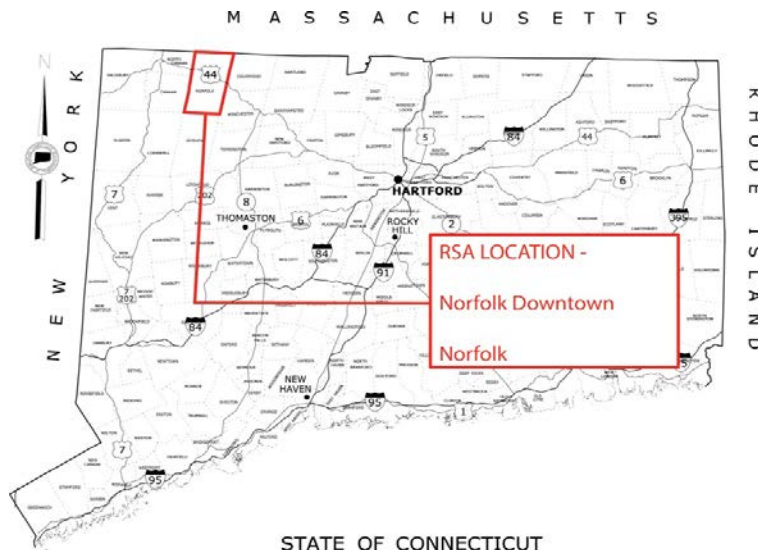
Table 1. Crash Severity 2012-2014.....	7
Table 2. Crash Type 2012-2014	7
Table 3. Intersection Street Inventory	11



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 Norfolk Downtown, Norfolk RSA

The Town of Norfolk submitted an application to complete an RSA in the downtown area to improve safety for pedestrians and bicyclists. Norfolk has the potential for creating better connectivity for residents and visitors who attend concerts at Infinity Music Hall. The population in the downtown area is also expected to grow in the near future, as work begins on transforming five buildings into moderate income housing facilities and below market rental housing. The combination of this new residential housing, existing senior housing and expanding retail and services will create a more vibrant downtown. During the summer the population in the downtown district grows significantly as a result of the Yale Summer Music School. Many students cross Route 44 in the center of town traveling between shops, the library and restaurants and the music school campus. The Town would like the area to be more pedestrian friendly and is focusing on appropriate locations to provide additional crossings as well as improving safety at existing crosswalks.

The Town of Norfolk's application contained information on traffic volumes, crash data, and mapping of the corridor. The application and supporting documentation is included in Appendix A.

1.1 Location

The RSA area includes Route 44 from Shepard Road to Maple Avenue; Maple Avenue from Route 44 to Emerson Street; Emerson Street; John J Curtis Road; Shepard Road between Route 44 and Mills Way; and Station Place (Figure 1). Route 44 is classified as a Principal Arterial – Other, and runs in an east-west direction connecting with New York on the west and Hartford, CT, Providence, RI; and Plymouth, MA to the east. The remaining roads are classified as local roads. The Route 44 Average Daily Traffic (ADT) ranges from 4,800 vehicles per day (vpd) east of Maple Avenue to 5,500 vpd south of Station Place. While these are relatively low traffic volumes, the high concentration of pedestrian traffic and on-street parking make the area complicated and present potential concerns. Figure 2 shows the regional context of the study area.

During the Pre-Audit portion of the RSA, The Town requested that the crosswalks and posted speed limits at the Botelle Elementary School on Greenwoods Road East be included in the RSA. In addition, the Town requested that the RSA focus on the area in downtown along Route 44 from Maple Avenue to Station Place.

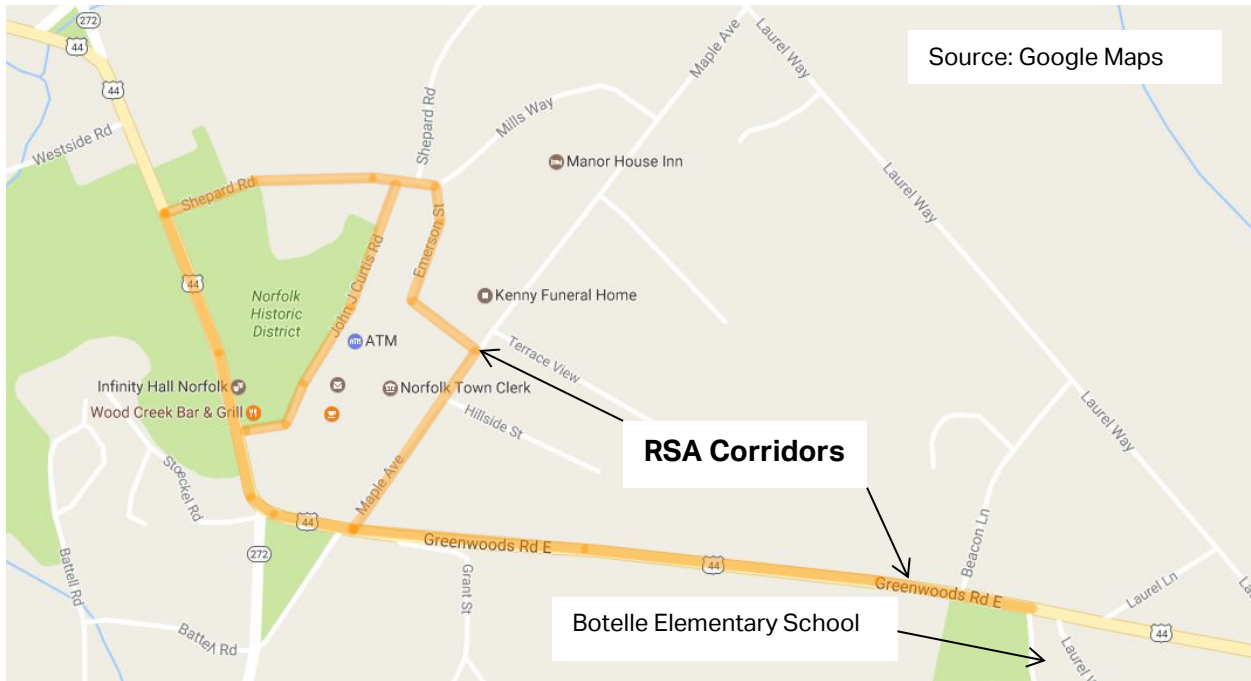


Figure 1: Norfolk RSA Corridors

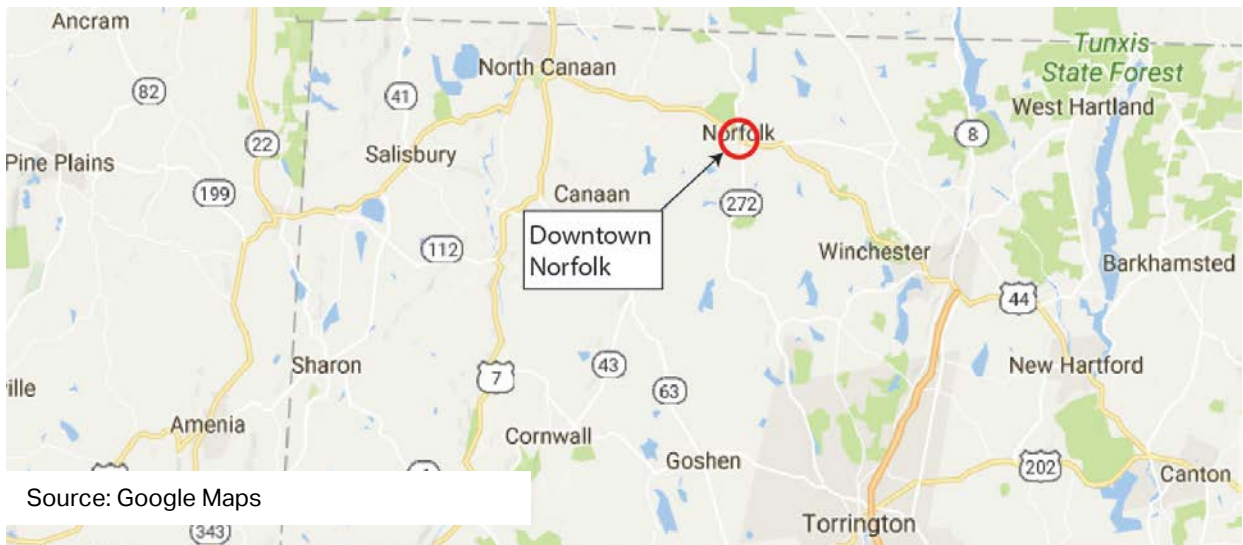


Figure 2: Regional Context

2 Pre-Audit Assessment

2.1 Pre-Audit Information

Between 2012 and 2014 there were 55 crashes reported in the RSA Area. The majority of crashes (75%) reported in this area resulted in property damage only; however 24% of crashes did result in an injury and there was one fatality (Table 1). The fatality occurred in

December of 2013 on Ashpohtag Road (outside the study area), the operator was under the influence and hit another vehicle head-on. No crashes involved bicyclists or pedestrians. The crash types reported were primarily fixed-object (51%) where the operator was either speeding and/or lost control (Table 2). Figure 3 displays crashes that occurred in this area during 2015, and shows that they are predominately located on Route 44.

Severity Type	Number of Accidents	
Property Damage Only	41	75%
Injury (No fatality)	13	24%
Fatality	1	1%
Total	55	

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Accidents	
Unknown	0	0%
Sideswipe-Same Direction	6	11%
Rear-end	9	16%
Turning-Intersecting Paths	4	7%
Turning-Opposite Direction	0	0%
Fixed Object	28	51%
Backing	1	2%
Angle	0	0%
Turning-Same Direction	1	2%
Moving Object	1	2%
Parking	0	0%
Pedestrian	0	0%
Overturn	1	2%
Head-on	2	4%
Sideswipe-Opposite Direction	2	4%
Miscellaneous- Non Collision	0	0%
Total	55	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

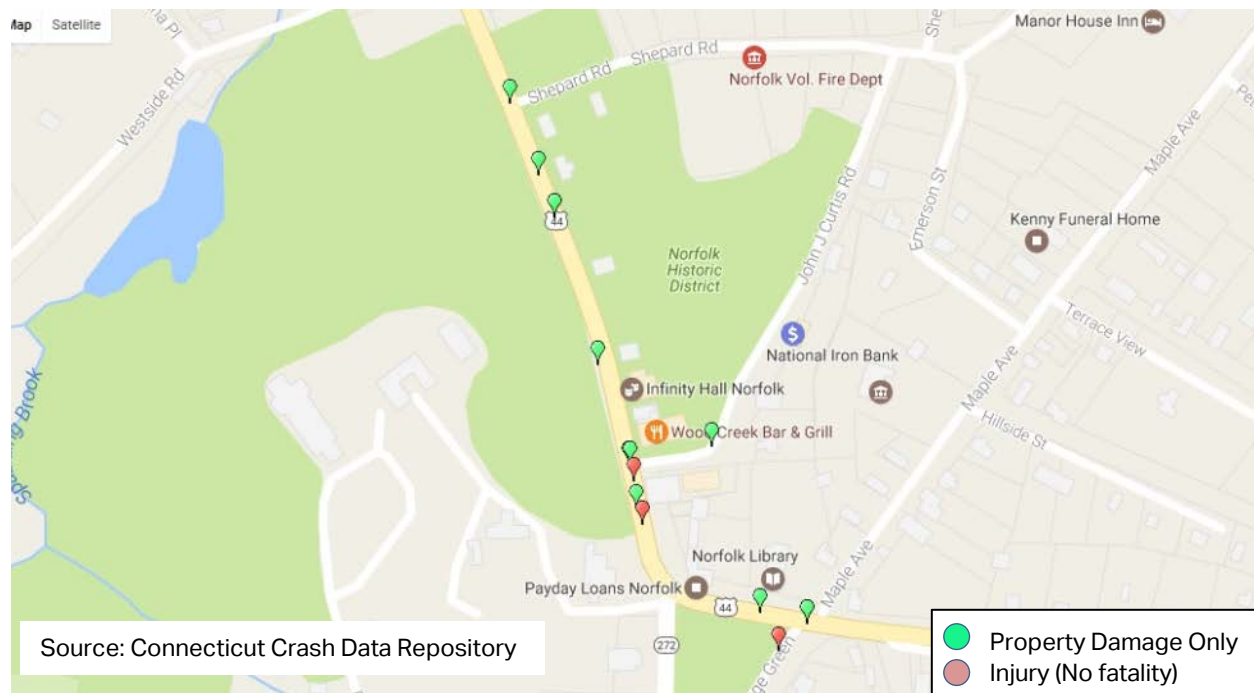


Figure 3: Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

Greenwoods Road West (Routes 44 & 272) and Greenwood Roads East (Route 44) are two-lane, state-owned roads with a speed limit of 25 mph throughout downtown. A sidewalk is provided along the north and east sides. On-street parking is allowed adjacent to the sidewalk, except in some areas so as not to restrict sight distance. Greenwood Road West runs generally north-south in the downtown area and Greenwood Road East runs east-west. They meet at a near 90-degree turn at the Norfolk Village Green. Greenwood Road East slopes downward from east to west approaching the downtown and Greenwood Road West slopes upward west to east approaching the downtown. Route 44 is relatively flat between Maple Avenue and the 90-degree bend. Travel lanes range between 11 and 12 feet wide and shoulder widths are between 3 and 9 feet wide, with the wider sections accommodating on-street parking. Sidewalks range between four and five feet wide. Sidewalk materials include brick bordered concrete, bituminous and blue slate.

Shepard Road, Maple Avenue, Emerson Street, John J Curtis Road, and Station Place are local two-lane roads. On-street parking is allowed on the south side of Shepard Road and both sides of Emerson Street, but there are no sidewalks on either street. Maple Avenue has sidewalk along the entire west side and on the east side near the intersection with Greenwood Road East. The sidewalk materials include a patchwork of brick bordered concrete, concrete, bituminous and blue slate. On-street parking is allowed on the west side of Maple Road, except near the intersection with Greenwood Road East. John J Curtis Road and Station Place have sidewalks on both sides of the road for approximately 850 feet from

Greenwoods Road West, and Station Place has 90-degree on-street parking on the south side. There is also 90-degree on-street parking on both sides on John J Curtis Road.

Within the study area there are two designated crosswalks on Station Place, one on John J Curtis Road, and one across Greenwoods Road East connecting the library to the Norfolk Village Green. There is a pedestrian bollard at this location that the town maintains on the side of the road (not in the center of the road). There are no signalized intersections within the study area; all intersections are Stop controlled. The intersection of Greenwoods Road West (Routes 4 and 272)/Greenwoods Road East (Route 44) and Litchfield Road (Route 272) has a flashing beacon mounted on span wire. The roadway characteristics and geometry of the study area is shown in Figure 4 and described in Table 3.

Norfolk – Route 44, Route 272, Maple Avenue, Shepard Road, John J Curtis Road, Emerson Street, Station Place Street Inventory

Street	Route	Direction	Travel Direction	Lanes (width)	Sidewalk				Curb	Parking	Shoulder	Ramps	
					Side	Type	Width	Condition				Exist	Compliant
Greenwoods Road East	US 44	WB	2-way	2 37-39'	North	Concrete with brick lined, slate	4'	Poor-Fair	Bituminous, Granite	Yes	Yes	Yes	No
		EB			South	None	N/A	N/A	Concrete	No	Yes	Yes	No
Greenwoods Road West	US 44/SR 272	NB	2-way	2 32'	East	Slate, bituminous, concrete with brick lined	4-5'	Poor-Fair	Granite, Bituminous, Concrete	Yes	Yes	Yes	No
		SB			West	None	N/A	N/A	Concrete	No	Yes	No	N/A
Maple Avenue	Local	SB	2-way	2 27'	West	Concrete with brick lined, concrete, bituminous, slate	4'	Poor-Fair	Bituminous	Yes	No	No	N/A
		NB			Partial East	Bituminous	4'	Poor	None	No	No	No	N/A
John J Curtis Road	Local	NB	2-way	2	East	Concrete with brick lined	6'	Good	Granite	Yes	No	No	N/A
		SB			West		6'	Good	Granite	Yes	No	No	N/A
Station Place	Local	WB	2-way	2 25'	North	Concrete with brick lined	8'	Good	Granite	No	Yes	No	N/A
		EB			South		6'	Good	Granite	Yes	No	No	N/A
Shepard Road	Local	EB	2-way	2	None	N/A	N/A	N/A	None	Yes	No	No	N/A
		WB			None	N/A	N/A	N/A	None	No	No	No	N/A
Emerson Street	Local	East-West	2-way	2	None	N/A	N/A	N/A	None	Yes	No	No	N/A
		North-South			None	N/A	N/A	N/A	None	Yes	No	No	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. Intersection Street Inventory

2.2 Prior Successful Efforts

The Town of Norfolk has completed several improvements in the downtown area to enhance connectivity and pedestrian facilities. These include:

1. The Town completed sidewalk and streetscape improvements along Greenwoods Road West, Station Place and John J Curtis Road in 1997. Sidewalk improvements on Greenwoods Road East in front of the library were completed in 2005. This sidewalk is scheduled to be replaced this year as part of the library improvements project.
2. The Town coordinated with CTDOT to provide on-street parking on Greenwoods Road East and West to help accommodate parking for events at the Infinity Music Hall.
3. The Town has maintained a pedestrian bollard at the crosswalk on Greenwoods Road east in front of the library.

Several projects are currently underway or are planned in the near future in the downtown area. These include:

1. Improvements to the town library, which will include sidewalk and ADA accessibility improvements.
2. Wetland restoration improvements at the meadow in the center of town.
3. New residential housing project in the center of town

2.3 Pre-Audit Meeting

The RSA was conducted on April 4, 2017. The Pre-Audit meeting was held at 8:30 AM in the Norfolk Town Hall located at 19 Maple Avenue in Norfolk.

The RSA Team was comprised of staff from CTDOT, staff from AECOM, the Norfolk First Selectman and representatives from Norfolk departments and organizations including Public Works and the Town Historian. 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.

The following observations and conditions were discussed prior to conducting the field audit of the downtown area:

- The Town requested that the crosswalks and posted speed limits at the Botelle Elementary School on Greenwood Road East be included in the RSA (See Figure 5).
- All children in town are bused to school. Parents have safety issues with children walking to school.
- Students are not allowed to park bicycles at the school.
- Traffic speeds are higher than 25 mph through the downtown area and conflicts with pedestrians are a concern.
- There have been suggestions to install a traffic signal at the intersection of Greenwood Road West (Routes 4 and 272)/Greenwood Road East (Route 44)/Litchfield Road (Route 272). This intersection currently is stop controlled with a flashing beacon, and has no crosswalks. It was noted that a State trooper was struck by a vehicle at this intersection approximately six years ago (See Figure 6).
- During the summer, many students attend the Yale School of Music Norfolk Chamber Music Festival. Students live on the Ellen Battell Stoeckel Estate located south/west of downtown Norfolk. Students often cross Route 44 traveling between the campus on the west and the general store, library, and restaurants on the east side of Route 44.
- The existing crosswalk on Greenwood Road East is a concern due to speeding traffic (See Figure 7). Traffic and large trucks approaching downtown from the east (westbound) descend a steep hill which begins to level out just east of Maple Avenue. Potential ideas to improve



Figure 5: Greenwood Road East looking westbound in front of Botelle Elementary School



Figure 6: Looking east at intersection of Greenwood Road West/Greenwood Road East/Litchfield Road with two flashing beacons hanging from overhead span wires



Figure 7: Crosswalk on Greenwood Road East looking west. Note pedestrian bollard on left side.

visibility and safety at this location were discussed, including installing flashing beacons.

- There is a mid-block crosswalk on Litchfield Road (Route 272) north of Village Green and Battell Road.
- People park on Litchfield Road for church on Sundays.
- Many trucks travel on Route 44 through Norfolk. These include lime trucks from North Canaan, 18-wheel semi-trailer trucks, delivery trucks and farm vehicles. Trucks traveling southbound on Greenwood Road West have to ascend a steep hill approaching downtown. This often slows traffic traveling behind the trucks (See Figure 8).
- Route 272 does not carry much truck traffic.
- The CTDOT plows Routes 44 and 272.
- The Town removes snow on the sidewalk on Route 44 between the library and Maple Avenue and west of Station Place. Snow is not removed between Station Place and the library. (See Figure 9). The Town also removes snow on pedestrian paths within the downtown area.
- It was mentioned that there was a recent crash on Greenwood Road West in front of the Infinity Music Hall where one motorist struck up to 18 parked vehicles.
- The sight line for motorists turning from Station Place westbound onto Greenwood Road West is limited due to the intersection geometrics and topography of Greenwood Road West (See Figure 10). This situation is exacerbated by speeding vehicles, parked delivery trucks and vehicles parked along



Figure 8: Large truck traveling northbound on Greenwood Road West approaching Station Place



Figure 9: Snow and deteriorated curb on east side of Greenwood Road West northbound between curve and Station Place



Figure 10: View from Station Place looking south at Greenwood Road West toward curve

the east side of Greenwood Road West, (typically for a concert at the Infinity Music Hall).

- One fatality recently occurred north of the downtown area. It was mentioned that the crash was a head-on collision with a delivery vehicle.
- The direction sign on the Village Green had been struck repeatedly in the past. As a result, the Town moved the sign further into the Green and installed granite bollards around it to protect it (See Figure 11). It has not been struck since these improvements were made.
- Other locations noted where vehicles struck fixed objects include the bridge near the Catholic Church and lamp posts near the Infinity Music Hall.
- The Town previously had a Resident State Trooper, but Troop D in Canaan now responds to calls in Norfolk. The Town representatives noted there is no issue with the current operation.
- The intersection of Shepard Road/John J Curtis Road and Mills Way is an off-set four-way intersection with Stop control on all approaches except the Shepard Road eastbound approach. There is a sight line constraint due to the slope, but the intersection operates well.
- About 20 years ago the Town changed the circulation on Station Place as a pilot program. Station Place was made one-way eastbound so vehicles could not exit onto Greenwood Road West. As a result, vehicles had to exit via John J Curtis Road and Shepard Road. This resulted in increasing trip lengths for motorists and some motorists avoiding the center altogether. The pilot program was



Figure 11: Direction sign on the northwest corner of Norfolk Village Green with protective bollards

unsuccessful and Station Place was changed back to two-way operation.

- The group discussed the idea of developing Gateway signage for vehicles approaching the downtown area.
- It was noted there are generally no drainage issues in the study area.
- The Town will soon be starting a wetland restoration project in the meadow in the downtown area.
- Bicycle groups ride through the town.
- Bike racks are provided in the downtown.
- There are no designated bicycle facilities in town.
- Bicyclists often drive to town and park in downtown and begin their ride from here. Route 272 is a popular route.
- Paul Newman's Hole in the Wall Foundation runs an annual bicycle race. The race starts in the downtown.
- There is a town road race on Memorial Day on Route 272.
- There is also a pub run around Christmas time.
- A rails-to-trails group has been coordinating with the State to provide a connection through Haystack Mountain.
- There is an old abandoned railroad track that runs through town.
- Some landowners have purchased the right of way.
- There are many trails in town such as Haystack Mountain, Great Mountain Forest, etc. The Norfolk Land Trust maintains many of these trails.
- On Greenwood Road East, east of Maple Avenue, there is old cable and wooden post guide rail on both sides of the road. It is in poor condition (See Figure 12).

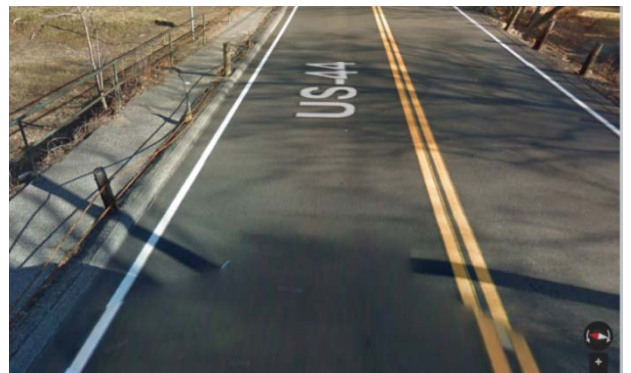


Figure 12: Damaged cable and wooden post guard rail on Greenwood Road East looking west, east of Maple Avenue

- There is an old train tunnel that runs underneath the intersection of Greenwood Road East/Maple Avenue. A decorative gate structure is located at this location (See Figure 13).



Figure 13: Decorative gate demarking old train tunnel near library on Maple Avenue north of Greenwood Road East

3 RSA Assessment

3.1 Field Audit Observations

Maple Avenue

- Sidewalk on west side is a patchwork of materials: brick lined concrete, concrete, bituminous, slate in poor-fair condition (See Figure 14). There is a new bituminous curb on the west side for a short segment, but this ends before Greenwood Road East.
- There is a bituminous sidewalk on the east side only along the frontage of the historic house on the corner.
- There is no crosswalk or handicap ramps at the intersection of Greenwood Road east and Maple Avenue (See Figure 15).
- Maple Avenue forms the stem of the T-intersection with Greenwood Road East and is controlled with a Stop sign and Stop Bar.



Figure 14: Sidewalk on the west side of Maple Avenue

Greenwood Road East

- The travel lanes are 11.5 feet wide, with a seven-foot eastbound shoulder and a 9-foot westbound shoulder to accommodate on-street parking. Parking is prohibited on the south (eastbound) side.



Figure 15: Looking east at Greenwood Road East Avenue at Maple Avenue

- There is a mid-block painted crosswalk in front of the library with pedestrian yield lines in each direction.
- There is a pedestrian sign and down arrow placard on each side of the crosswalk. The signs are the older yellow sign and do not meet retro-reflectivity standards.
- There are two advance pedestrian crosswalk signs with "200 FT" placards on Greenwood Road East eastbound and westbound approaching the crosswalk. The signs are the older yellow style (See Figure 16).
- The pedestrian landings are flat but there are no ADA tactile warning strips.
- The Town maintains a pedestrian bollard at this crosswalk, but it is placed on the south side of the road because trucks turning left from Village Green hit it.
- The sidewalk on the north side between Maple Avenue and the library driveway is concrete with brick edges on both sides and is four feet wide. The sidewalk, which is in poor condition, is scheduled to be replaced as part of the library renovation project. The curb in this section is bituminous. The south side has a concrete curb, but no sidewalk on the Village Green.
- West of the library driveway, the sidewalk is slate in poor condition, and is slightly narrower than four feet wide. The shrubs in front of the house on the corner (#3) overhang the sidewalk and reduce the effective sidewalk width (See Figure 17).
- Between the driveway for #3 Greenwood Road East and the curve to the west, on-street parking is prohibited on the north side (See Figure 17).
- The intersection of Greenwood Road West (Routes 4 and 272)/Greenwood



Figure 16: Advance pedestrian crosswalk sign on Greenwood Road East westbound approaching Maple Avenue



Figure 17: Greenwood Road east looking west at shrubs growing over slate sidewalk at #3 and diagonal striping to designate no parking

Road East (Route 44)/Litchfield Road (Route 272) has a flashing beacon mounted on span wire. There are no crosswalks at this intersection and the sight lines are restricted due to the curve and topography (See Figure 18).

Greenwoods Road West

- The travel lanes are approximately 11 feet wide on each side with a seven-foot northbound shoulder to accommodate on-street parking and a three-foot southbound shoulder. Parking is prohibited on the west (southbound) side.
- There is a 25 MPH speed limit sign for the northbound direction approaching Station Place that is set well to the right of the roadway.
- There is sidewalk on the east side that changes from slate to bituminous and ranges between 4.5 and 5 feet wide. The sidewalk is in poor to fair condition. There is low curb reveal and the curb is deteriorated. The curb is a combination of granite, concrete and bituminous. There is a retaining wall east of the sidewalk and there is a grass buffer between the sidewalk and a rock wall. The west side has a concrete curb, but no sidewalk (See Figure 19).
- At Station Place and continuing to the north, the sidewalk changes to concrete with brick edges.



Figure 18: Looking south at intersection of Greenwood Road East and West with Litchfield Road



Figure 19: Greenwood Road West looking south with sidewalk and retaining wall on the left (east) side

Intersection of Greenwood Road West and Station Place

- Station Place forms the stem of the T-intersection and is controlled with a Stop sign and Stop bar.
- Station Place is 26 feet wide including a one-foot shoulder on the north side. There is no center line. There are 90-degree striped parking spaces on the south side that are approximately 18.5 feet long. Parking is prohibited on the north side.
- There are concrete sidewalks with brick edges on both sides of the road. The sidewalk on is eight feet wide on the north side and six feet wide on the south side. There is granite curb on both sides.
- There is a curb extension on the southeast corner that aligns with the parking spaces.
- The crosswalk is brick with granite edges and is approximately 37 feet long. The pedestrian landing areas are flat, but there are no ADA tactile warning strips.
- The sight lines for motorists turning from Station Place westbound onto Greenwood Road West are limited due to the intersection geometrics and topography of Greenwood Road West. This situation is exacerbated by speeding vehicles, parked delivery trucks and vehicles parked along the east side of Greenwood Road West (typically for a concert at the Infinity Music Hall). (See Figure 20).



Figure 20: Intersection of Greenwood Road West and Station Place looking north

Botelle Elementary School on Greenwoods Road East

- There are two crosswalks in front of the school. Neither is connected to a sidewalk, and the south end of the westerly sidewalk faces a guiderail.
- Crosswalk signs with downward placards are located at each crosswalk in both directions. There are two advance “School Children ahead” signs in each direction approaching the crosswalks. The closest sign in each direction is 200 to 250 feet from the closest crosswalk, and is static. The farthest is 500 to 600 feet from the closest crosswalk and has non-actuated flashing yellow beacons (See Figure 21). There is a yellow “Speed Limit Ahead 25 MPH” sign for westbound traffic located between the two crosswalks (See Figure 5, previously).
- There is no 25 MPH School Zone signing.



Figure 21: Greenwoods Road East looking westbound at school children ahead sign with flashing yellow beacon

3.2 Post-Audit Workshop - Key Issues

- The Norfolk Land Trust has requested that a new mid-block crosswalk be placed on Greenwoods Road East near #63-85 to connect to a trail.
- Replace old crosswalk signs on Greenwoods Road East at library with new retro-reflective signs. Consider adding flashing beacons in the longer term.
- Consider crosswalk and handicap ramps across Maple Avenue at Greenwoods Road east.
- There was discussion about the potential for a new sidewalk on the south side of Greenwoods Road East within the Town Green. The Town representatives indicated that most people would not use it.
- There was discussion about providing a new crosswalk across Litchfield Road at the curve and connecting with a new sidewalk to the north on the west side of Greenwoods Road West. The new sidewalk would connect with a new crosswalk to Station Place.
- Many large trucks were observed traveling on Route 44 above 25 MPH.

- There was discussion about the issues of clearing snow from the sidewalk on Greenwoods Road East and West between the library and Station Place. The state plows the road, but the Town is unable to get equipment there to plow/blow snow and there is nowhere to put it due to the wall. The group viewed right of way plans that showed that the stone wall may be on the state highway right of way. There was interest in developing a long-term solution.
- There was discussion about prohibiting on-street parking on Greenwoods Road West on the east side to improve sight distance for motorists exiting Station Place.
- The need to develop gateways into town to make motorists more aware of pedestrians and slow traffic down was discussed. Different types of gateway signs were discussed including archways and monument signs.
- It was mentioned that the CTDOT will be widening Greenwoods Road West by 11 feet and adding a retaining wall near the cemetery north of downtown.

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. Town to maintain the pedestrian bollard in the center of the road during the summer at the crosswalk on Greenwoods Road East at the library.
2. Town to begin developing a draft plan for the downtown area focusing on pedestrian safety and operations. This should include:
 - a. Short-, medium-, and long-term pedestrian improvements and facilities.
 - b. Gateway signage alternatives.
 - c. Schedule for maintenance and upgrading facilities.
3. Town to coordinate with CTDOT to install a new crosswalk, handicap ramps and detectable warning devices across Maple Avenue at Greenwoods Road East (See Figure 22).
4. Town to coordinate with CTDOT to upgrade the pedestrian crosswalk signs and advance pedestrian signs with new retro-reflective signs at the crosswalk on Greenwoods Road East at the library (See Figure 23), and install tactile warning strips on the ramps.
5. Town to coordinate with CTDOT to replace the current intersection ahead signs on Greenwoods Road East and West approaching the curve with new retro-reflective signs.



Figure 22: Detectable Warning Strip



Figure 23: Pedestrian crossing sign

6. Town to trim shrubs overhanging the sidewalk on the corner of #3 Greenwoods Road East and West (or coordinate with owner).
7. Town to coordinate with CTDOT to move the 25 mph speed limit on Greenwoods Road West north of the curve closer to the roadway.
8. Town to coordinate with CTDOT to install detectable warning strips at the crosswalk landings on Station Place at Greenwoods Road West.
9. Town to coordinate with CTDOT to evaluate prohibiting some on-street parking spaces on the east side of Greenwoods Road West, north and south of Station Place. This measure would improve sight distance for vehicles exiting Station Place onto Greenwoods Road West.
10. Town to coordinate with CTDOT to evaluate installing "15-Minute Parking for Truck Delivery" signs on Greenwoods Road West near Station Place.
11. Town to coordinate with CTDOT to remove the two existing crosswalks on Greenwoods Road East at the Botelle School and replace with one new crosswalk located further south at the intersection with Beacon Lane. In addition, providing a School Zone with a 25 mph speed limit when school is in session should be evaluated.
12. Town to coordinate with CTDOT to replace the damaged cable and wooden post guide rail on Greenwoods Road East, east of Maple Avenue.

Figure 24 depicts these recommendations.

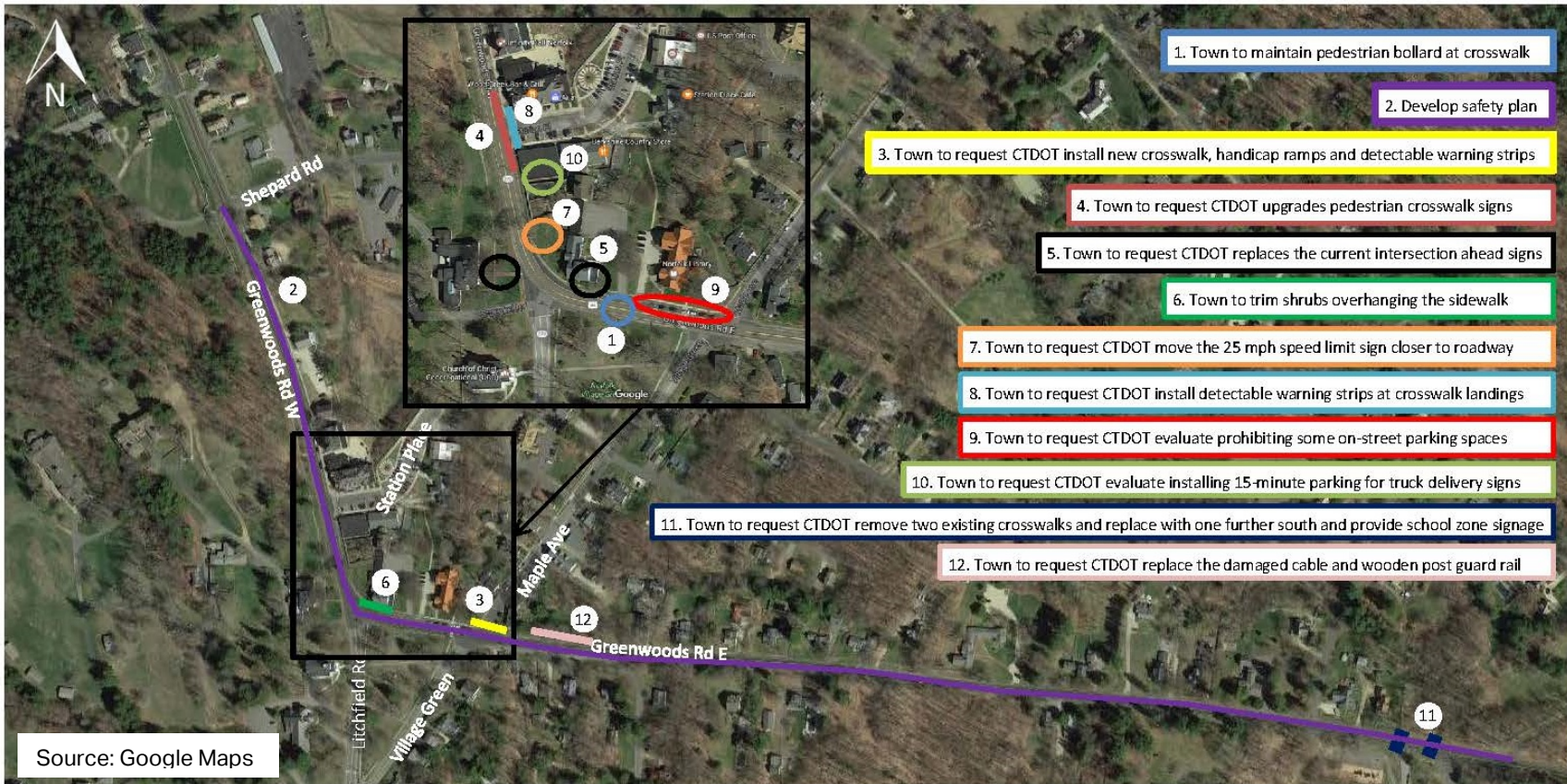


Figure 24: Short Term Recommendations

4.2 Medium Term

1. Coordinate with CTDOT to install a new crosswalk, handicap ramps and detectable warning devices across Maple Avenue at Greenwoods Road East.
2. Coordinate with CTDOT to install detectable warning strips at the crosswalk landings on Station Place at Greenwoods Road West.
3. Coordinate with CTDOT to replace the current "Intersection Ahead" signs on Greenwoods Road East and West approaching the curve with new retro-reflective signs.
4. Coordinate with CTDOT to evaluate prohibiting some on-street parking spaces on the east side of Greenwoods Road West, north and south of Station Place. This measure would improve sight distance for vehicles exiting Station Place onto Greenwoods Road West.
5. Coordinate with CTDOT to evaluate installing 15-Minute Parking for Truck Delivery signs on Greenwoods Road West near Station Place.
6. Coordinate with CTDOT to remove the two existing crosswalks on Greenwoods Road East at the Botelle School and replace with one new crosswalk located further south at the intersection with Beacon Lane. The pedestrian signage should be relocated as needed and a 25 mph School Zone should be established and signed.
7. Coordinate with CTDOT to install new retro-reflective pedestrian crossing and advance pedestrian signs at the crosswalk on Greenwoods Road East at the library. CTDOT to install detectable warning strips on both ends of the crosswalk.
8. Town to Coordinate with CTDOT to evaluate the pedestrian crosswalk on Greenwoods Road East at the library for installation of a new rectangular rapid flashing beacon.
9. Town to coordinate with the CTDOT to evaluate extending a 25 mph speed zone approaching the downtown on Greenwoods Road East and West. The Town to develop gateway signage alternatives (including monument style signs).
10. Town to coordinate with the CTDOT as to the state highway layout on Greenwoods Road West on the east side between the existing sidewalk and the stone wall. The feasibility of moving the sidewalk closer to the wall should be evaluated. This measure would allow the Town to remove snow from this section of sidewalk.
11. Town to Coordinate with CTDOT to evaluate installing a new crosswalk across 1.) Greenwoods Road West at Station Place with enhanced treatments such as a rectangular rapid flashing beacon; and 2.) a crosswalk across Litchfield Road at Greenwoods West Road.
12. Town in conjunction with the CTDOT to evaluate the feasibility of providing a new sidewalk along the west side of Greenwoods Road west between Station Place and Litchfield Road. Town to research funding from private sources.
13. Coordinate with CTDOT to replace the damaged cable and wooden post guard rail on Greenwoods Road East, east of Maple Avenue.

Figure 25 depicts these recommendations.



Figure 25: Medium Term Recommendations

4.3 Long Term

1. Town to repair/replace sidewalk on Maple Avenue and on Greenwoods Road East and West between the library and Station Place.
2. Coordinate with CTDOT to construct new sidewalk on Greenwoods Road West on the east side closer to the existing stone wall and remove existing sidewalk. Repair/replace curb.
3. CTDOT in coordination with the Town to install new crosswalks across Greenwoods Road West at Station Place (with Rectangular rapid flashing beacon or similar device) and Litchfield Road at Greenwoods Road west with a new sidewalk on the west side of Greenwoods Road West connecting the two new crosswalks.

Figure 26 depicts these recommendations.

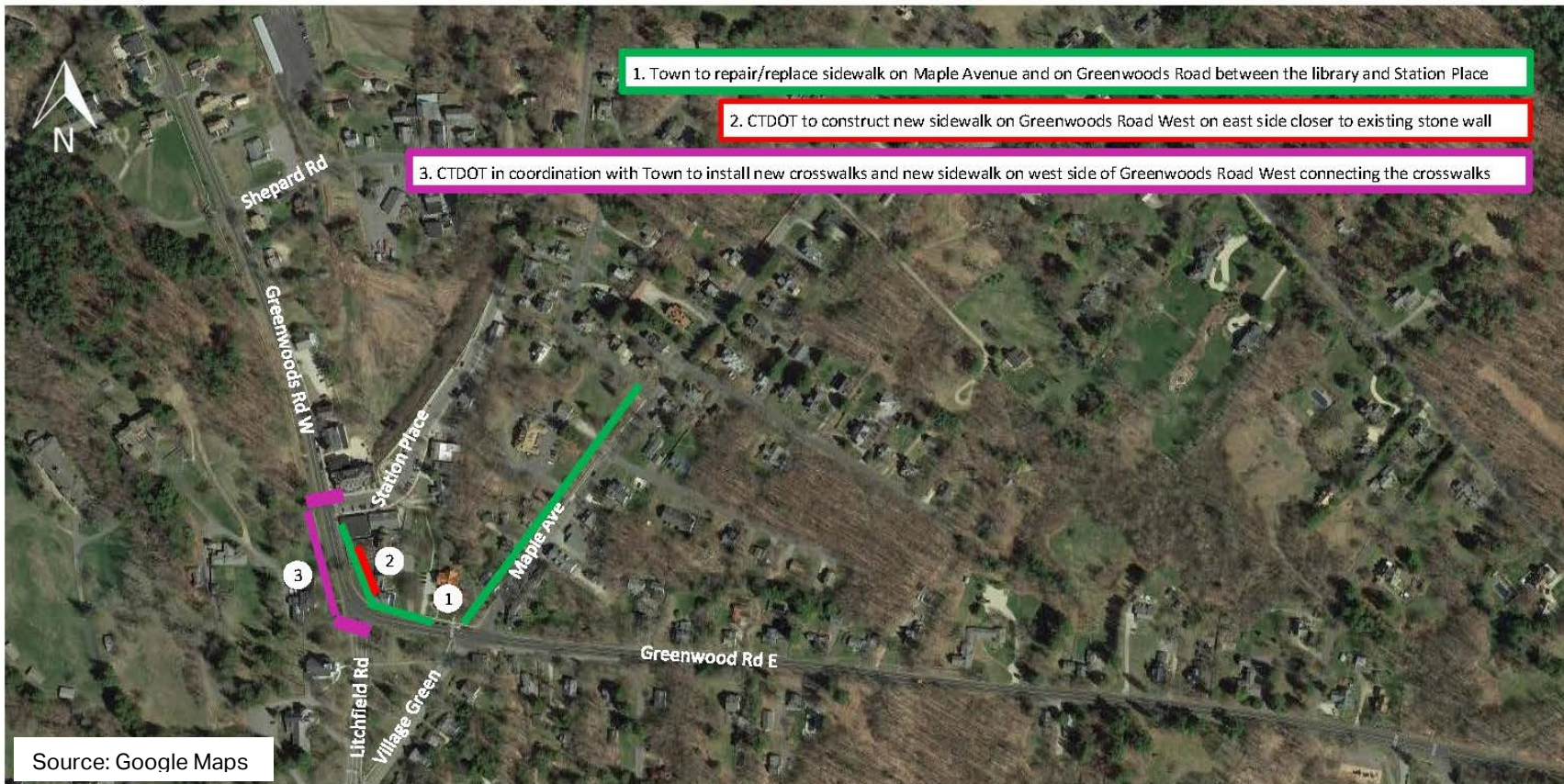


Figure 26: Long Term Recommendations

4.4 Summary

This report outlines the observations, discussions and recommendations developed during the RSA. It documents the successful completion of the Town of Norfolk RSA and provides Norfolk with an outlined strategy to improve the transportation network in their downtown for all road users, particularly focusing on pedestrians and cyclists. Moving forward, Norfolk 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 for downtown.



COMMUNITY
connectivity program

Appendix A



AECOM
Built to deliver a better world

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	<input type="text"/>
Title	<input type="text"/>
Email Address	<input type="text"/>
Telephone Number	<input type="text"/>

2. Location information

Address	<input type="text"/>
Description	<input type="text"/>
City / Town	<input type="text"/>

3. Roadway type
(Please select all that apply)

State road

Local road

Private Road

Other (please specify)

4. Zoning
(Please select all that apply)

Industrial

Residential

Commercial

Mixed Use

Retail

N/A (not applicable)

Other (please specify)

5. Approximate mile radius around the location

Other (Please Specify)

6. Community Sites
(Please select all that apply)

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)

7. Employment Facilities
(Retail, Industrial, etc...)

Yes

No

If Yes please describe (please specify)

8. Educational facilities

(Please select all that apply)

Public, Parochial, Private Schools (more than 1 school within a ½ mile)

University / Community Colleges

N/A (not applicable)

Other (please specify)

9. Transit facilities

(Please select all that apply)

Bus

Rail

Ferry

Airport

Park and Ride Lot

N/A (not applicable)

Other (please specify)

10. Safety Concerns
(Please select all that apply)

Traffic (volumes & speed)

Collisions

Sidewalks

Traffic Signals

Traffic Signs

Parking Restrictions / Additions

Drainage

ADA Accommodations

Agricultural & Live Stock crossing

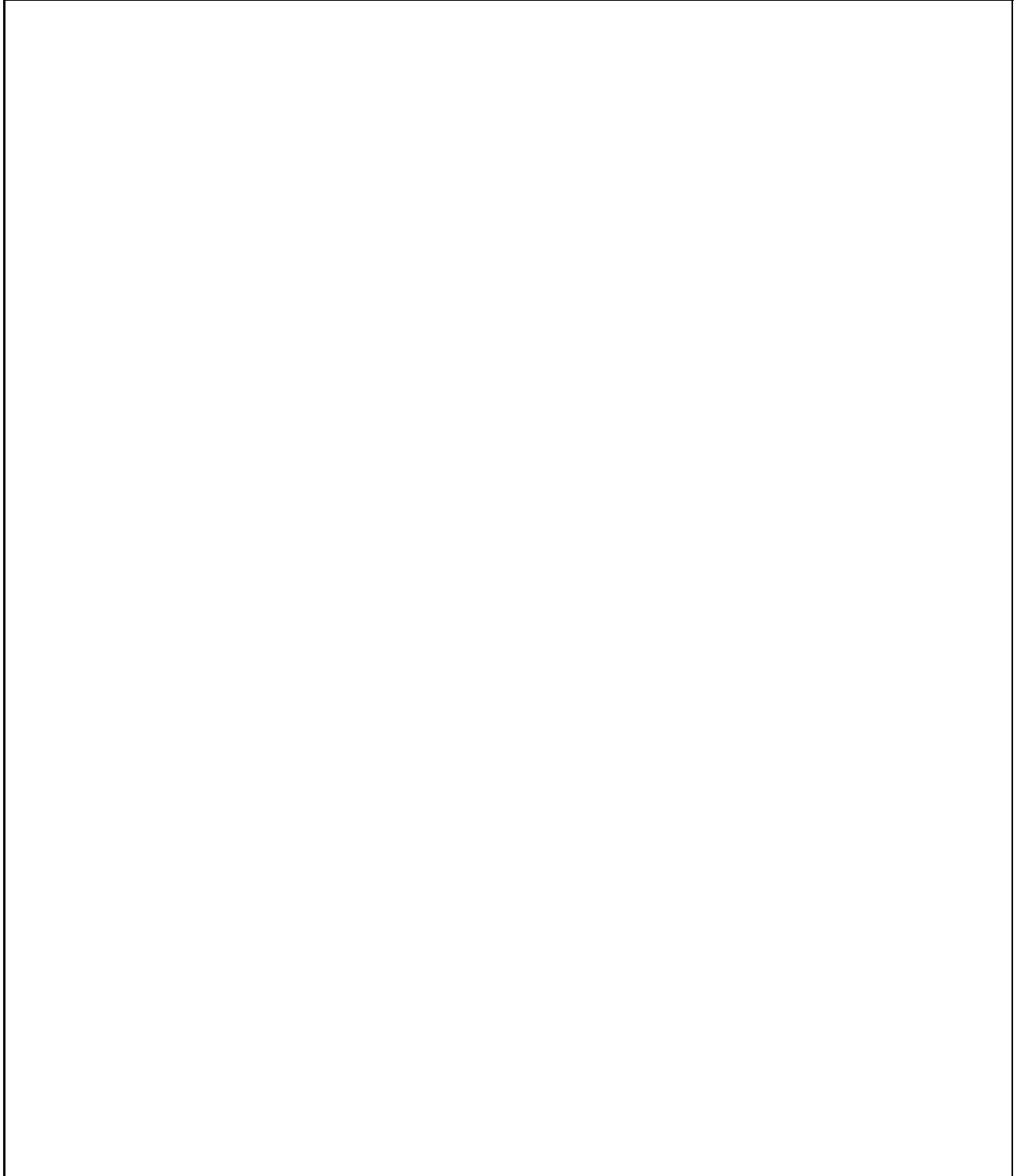
Maintenance issues (cutting grass, leaves, snow removal)

N/A (not applicable)

Other (please specify)

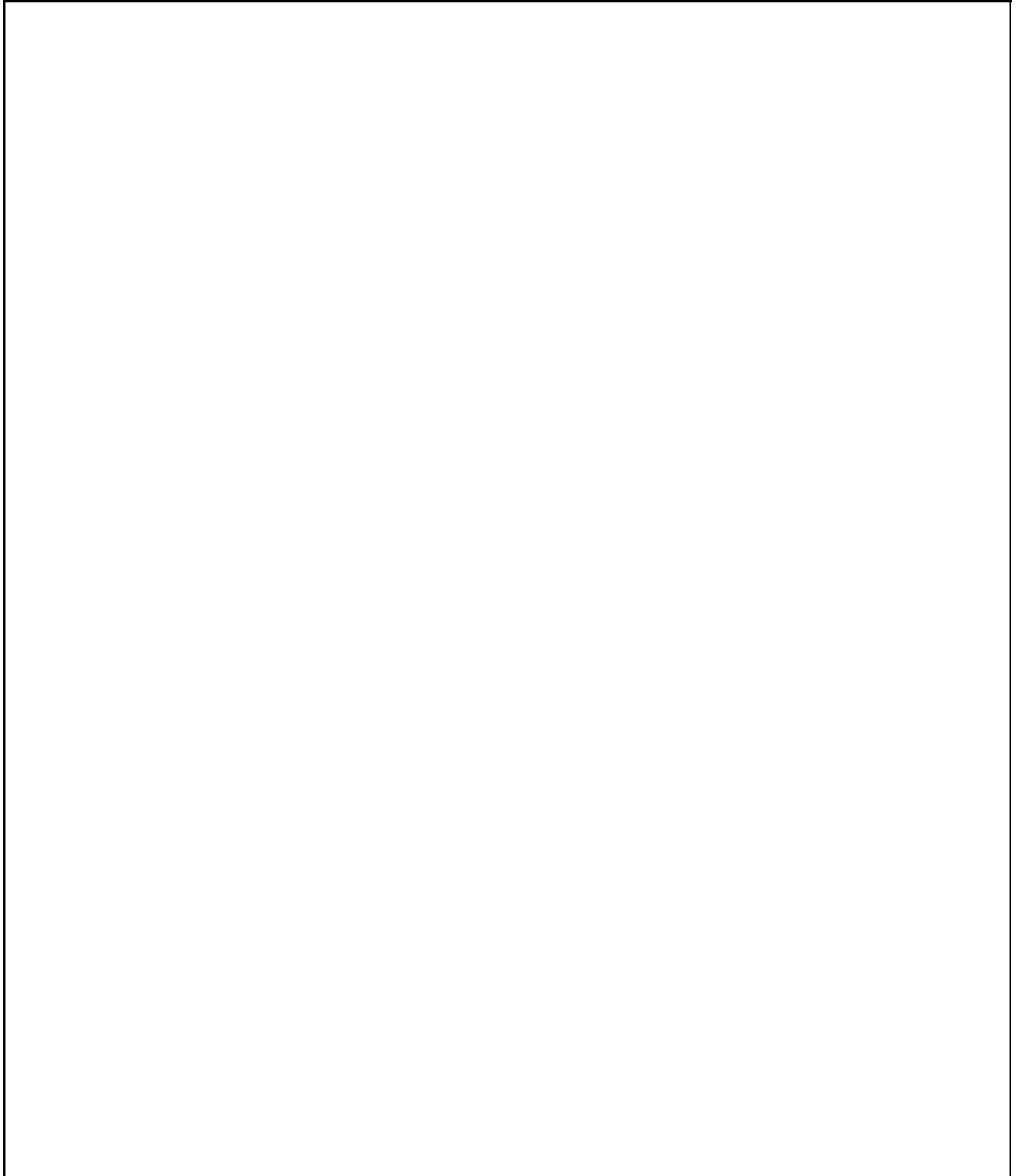
11. Are there any past, current or future transportation/economic development projects near this location (i.e. Federal, State or local projects)?

If Yes please describe and list all projects.

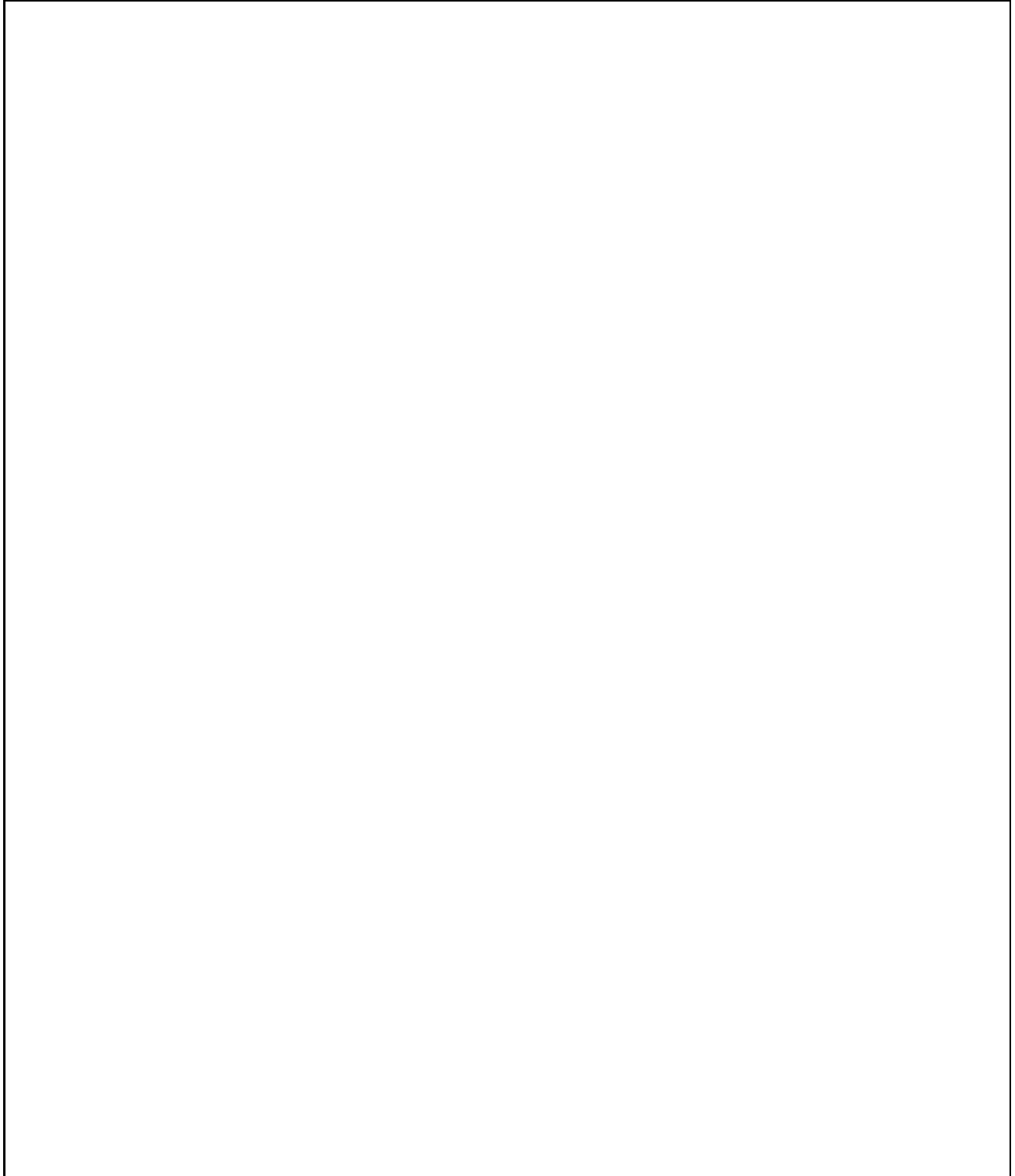
A large, empty rectangular box with a thin black border, intended for the user to describe and list any past, current, or future transportation or economic development projects near the location. The box is currently blank.

12. Environmental Concerns:

If Yes please describe and list.

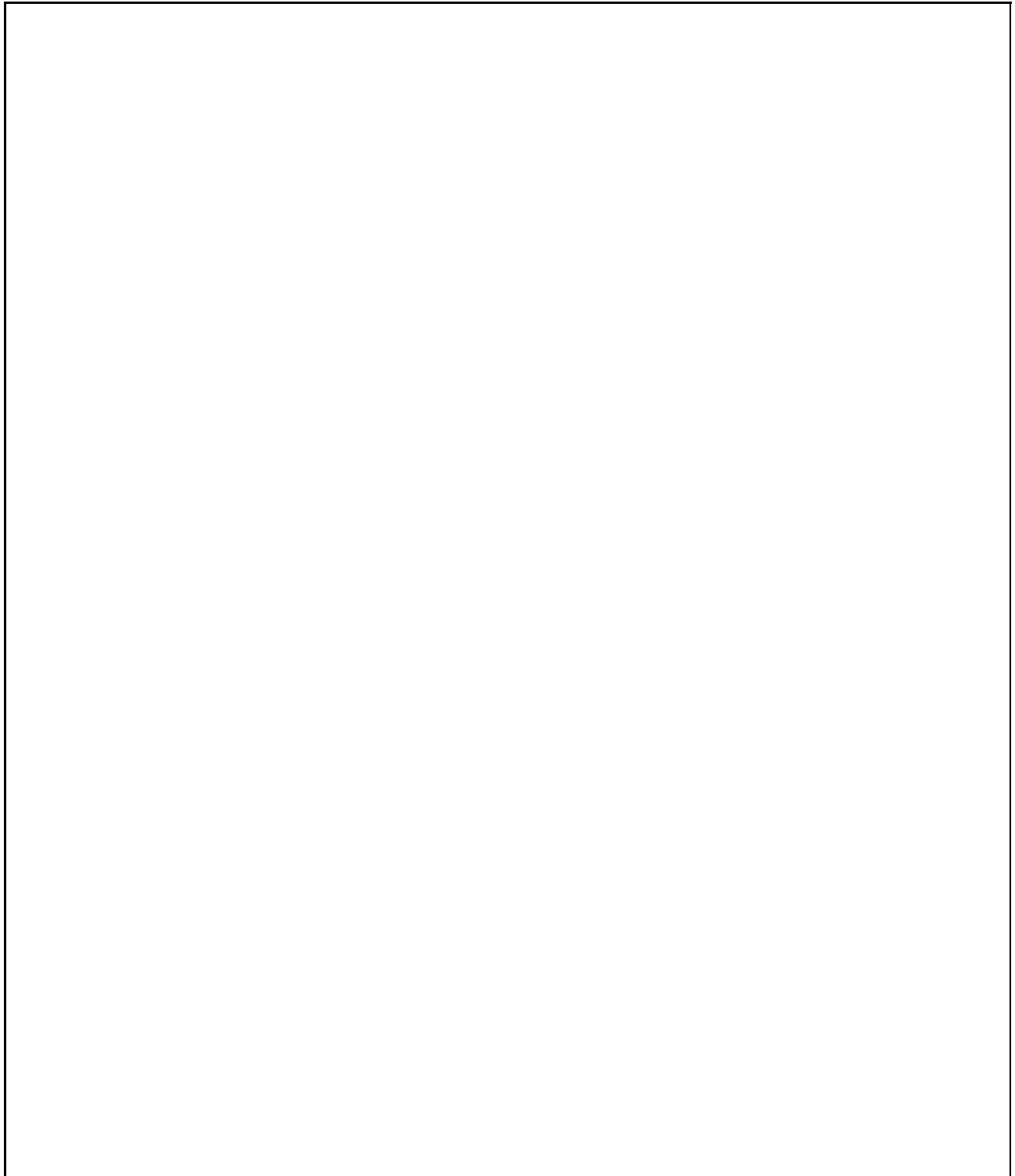
A large, empty rectangular box with a thin black border, intended for the user to describe and list any environmental concerns. The box occupies most of the page's vertical space below the instruction.

13. Please explain why this location should be considered for an RSA

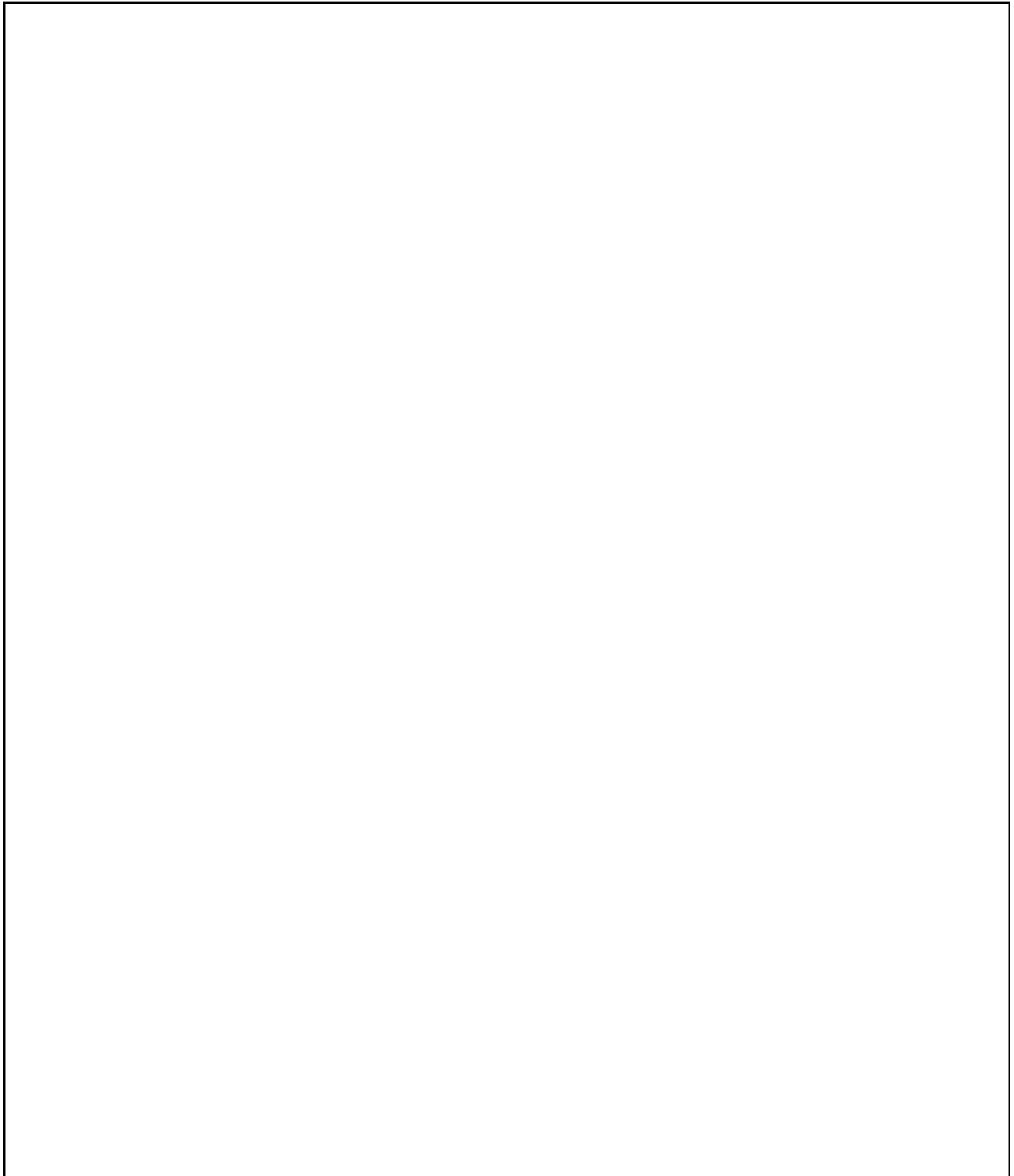
A large, empty rectangular box with a thin black border, intended for the user to provide an explanation for why a location should be considered for an RSA. The box occupies most of the page's vertical space below the question.

14. Are there plans to expand the area?

(Transportation Oriented Development, Economic Development, housing, etc...)



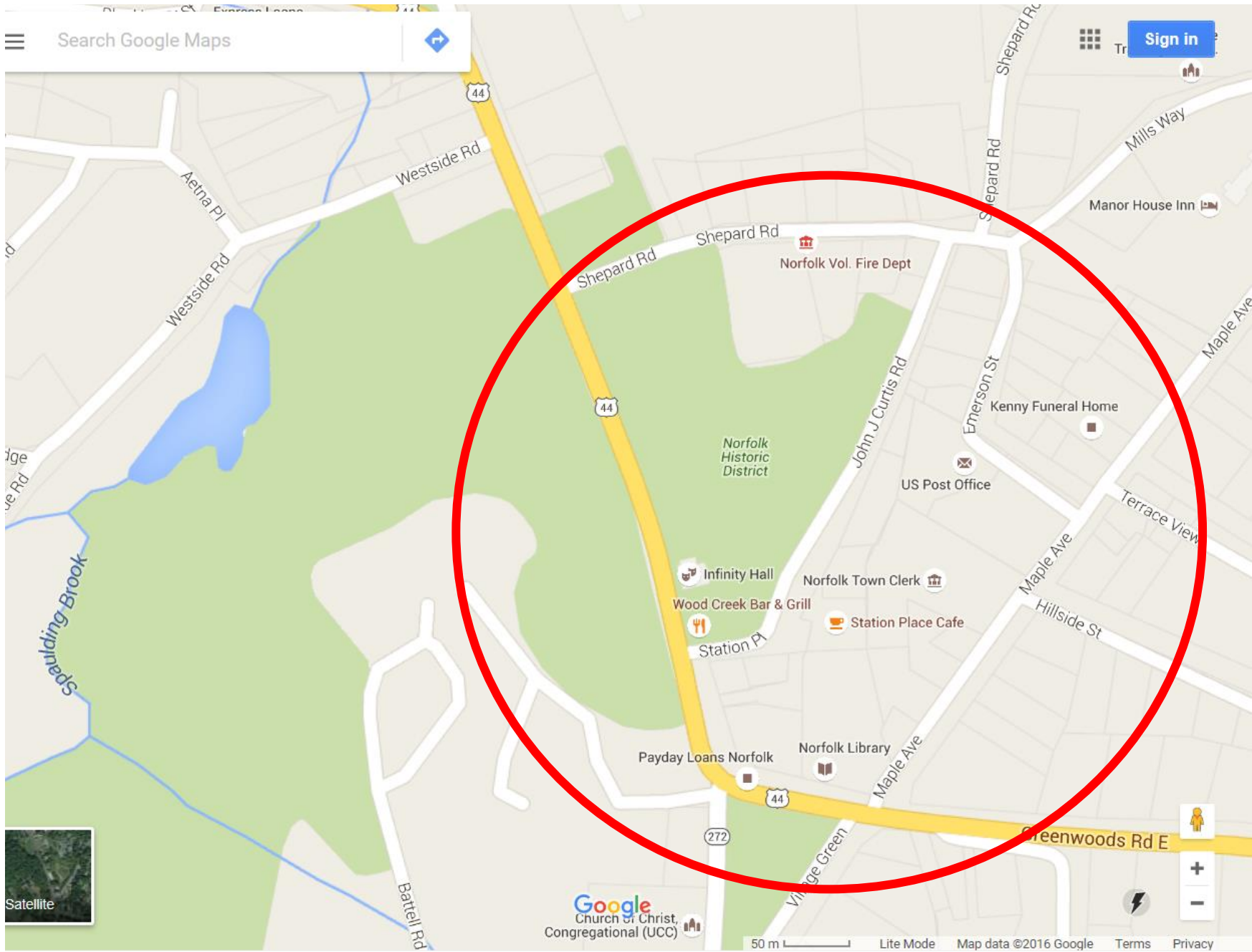
15. Any other pertinent information that is unique to this location?

A large, empty rectangular box with a thin black border, intended for the user to provide any other pertinent information unique to the location.

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)





COMMUNITY
connectivity program

Appendix B



AECOM
Built to deliver a better world



Road Safety Audit

Town: Norfolk
RSA Location: Maple Ave-Rte 44-Rte 272-Shepard Rd-John Curtis Rd-Emerson St-Station Pl
Meeting Location: Norfolk Town Hall
Address: 19 Maple Avenue, Norfolk, CT
Date: 4/4/2017
Time: 8:30 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Colleen Kissane	CT DOT
Kerry Ross	CT DOT
Susan Dyer	Town of Norfolk
Richard Byrne	Town of Norfolk
John Allyn	Town of Norfolk



COMMUNITY
connectivity program

Appendix C



AECOM
Built to deliver a better world



Road Safety Audit – Norfolk

Meeting Location: Norfolk Town Hall
Address: 19 Maple Avenue, Norfolk, CT
Date: 4/04/2017
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:
 - Average Daily Traffic
 - 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
<p>Pedestrian Crossings</p> <ul style="list-style-type: none">• Sufficient time to cross (signal)• Signage• Pavement Markings• Detectable warning devices (signal)• Adequate sight distance• Wheelchair accessible ramps<ul style="list-style-type: none">○ Grades○ Orientation○ Tactile Warning Strips• Pedestrian refuge at islands• Other	
<p>Pedestrian Facilities</p> <ul style="list-style-type: none">• Sidewalk<ul style="list-style-type: none">○ Width○ Grade○ Materials/Condition○ Drainage○ Buffer• Pedestrian lighting• Pedestrian amenities (benches, trash receptacles)• Other	



Bicycles <ul style="list-style-type: none">• 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	
--	--

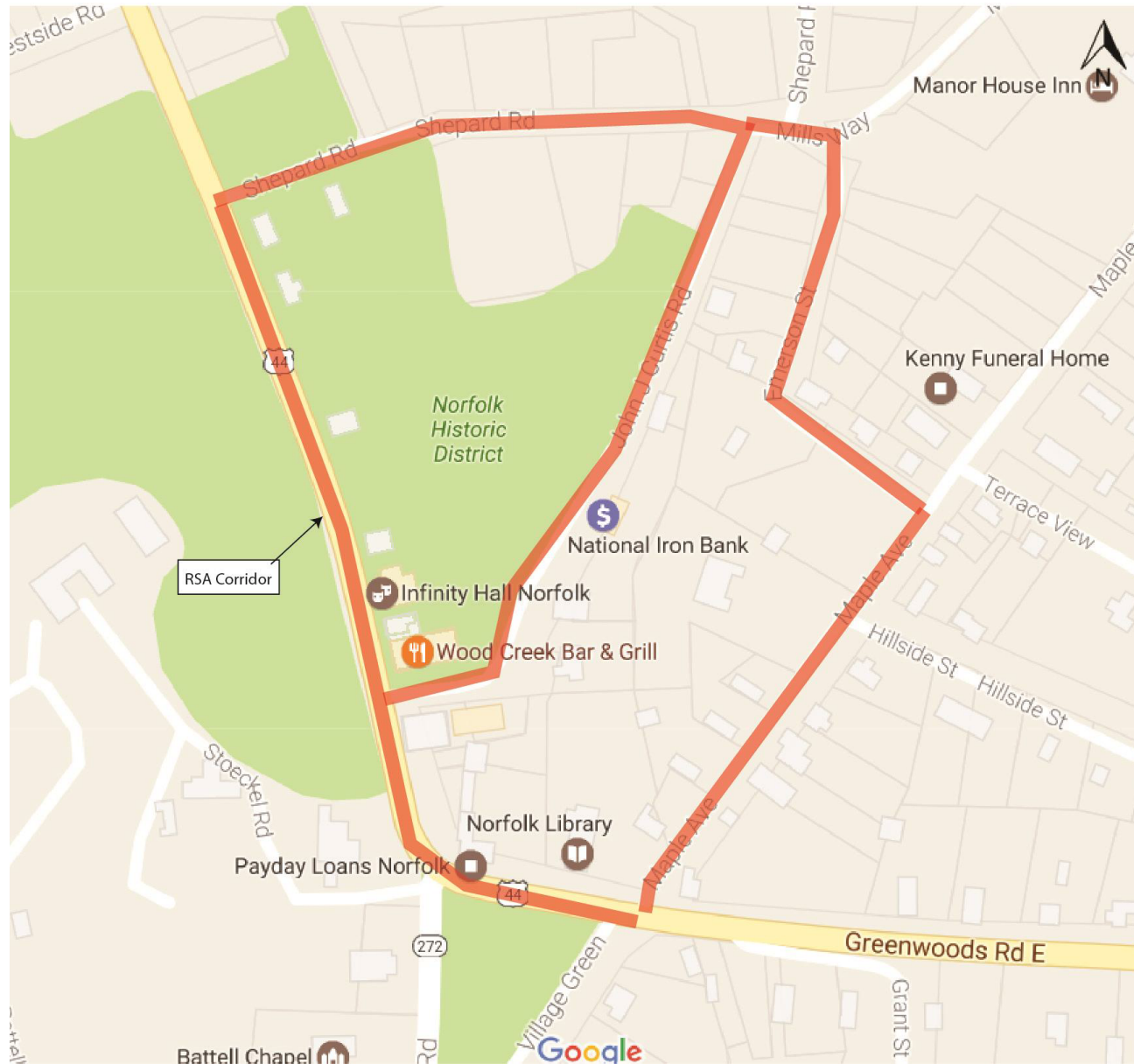
Roadway & Vehicles	
<ul style="list-style-type: none">• Speed-related issues<ul style="list-style-type: none">○ Alignment;○ Driver compliance with speed limits○ Sight distance adequacy○ Safe passing opportunities	
<ul style="list-style-type: none">• Geometry<ul style="list-style-type: none">○ Road width (lanes, shoulders, medians);○ Access points;○ Drainage○ Tapers and lane shifts○ Roadside clear zone /slopes○ Guide rails / protection systems	

<ul style="list-style-type: none">• Intersections<ul style="list-style-type: none">○ Geometrics○ Sight Distance○ Traffic control devices○ Safe storage for turning vehicles○ Capacity Issues	
--	--

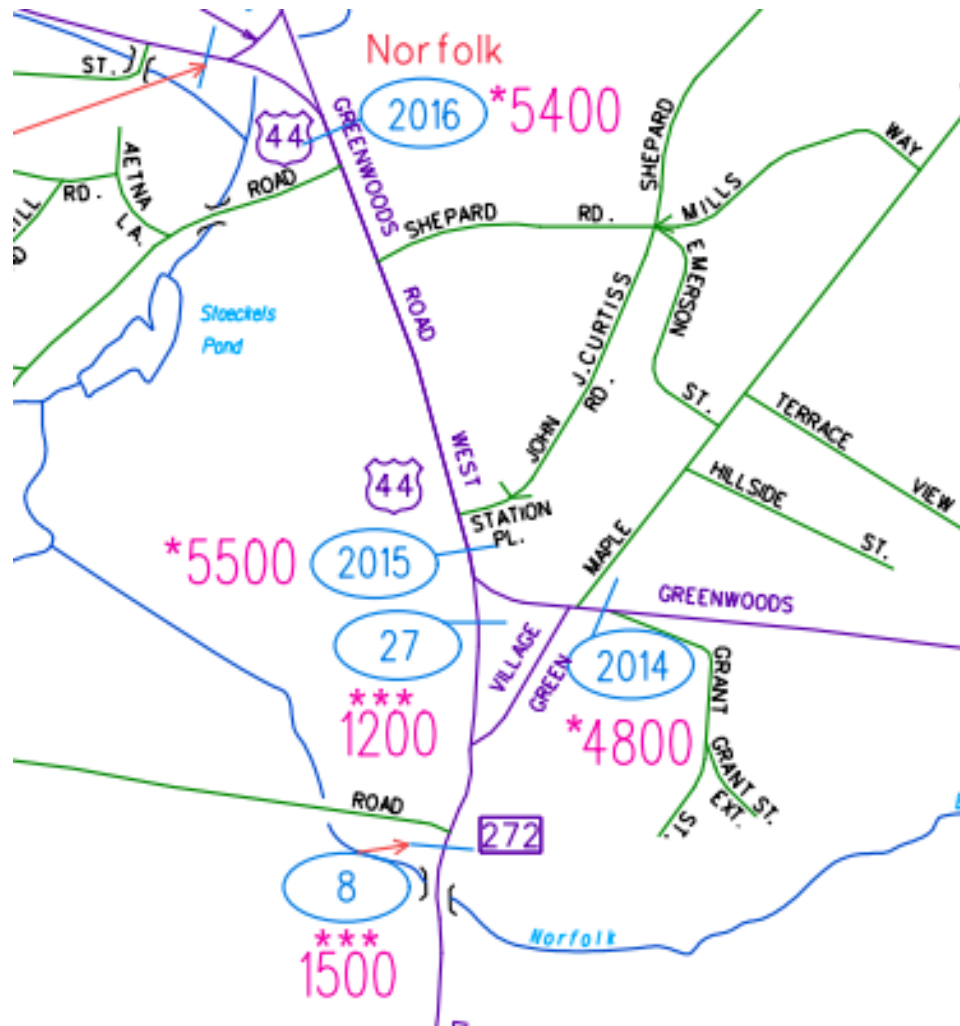


<ul style="list-style-type: none">• Pavement<ul style="list-style-type: none">○ Pavement Condition (excessive roughness or rutting, potholes, loose material)○ Edge drop-offs○ Drainage issues• Lighting Adequacy	
<ul style="list-style-type: none">• Signing<ul style="list-style-type: none">• Correct use of signing• Clear Message• Good placement for visibility• Adequate retroreflectivity• Proper support	
<ul style="list-style-type: none">• Signals<ul style="list-style-type: none">○ Proper visibility○ Proper operation○ Efficient operation○ Safe placement of equipment○ Proper sight distance○ Adequate capacity	
<ul style="list-style-type: none">• Pavement Markings<ul style="list-style-type: none">○ Correct and consistent with MUTCD○ Adequate visibility○ Condition○ Edgelines provided	
<ul style="list-style-type: none">• Miscellaneous<ul style="list-style-type: none">○ Weather conditions impact on design features.○ Snow storage	

Location Map



ADT MAP



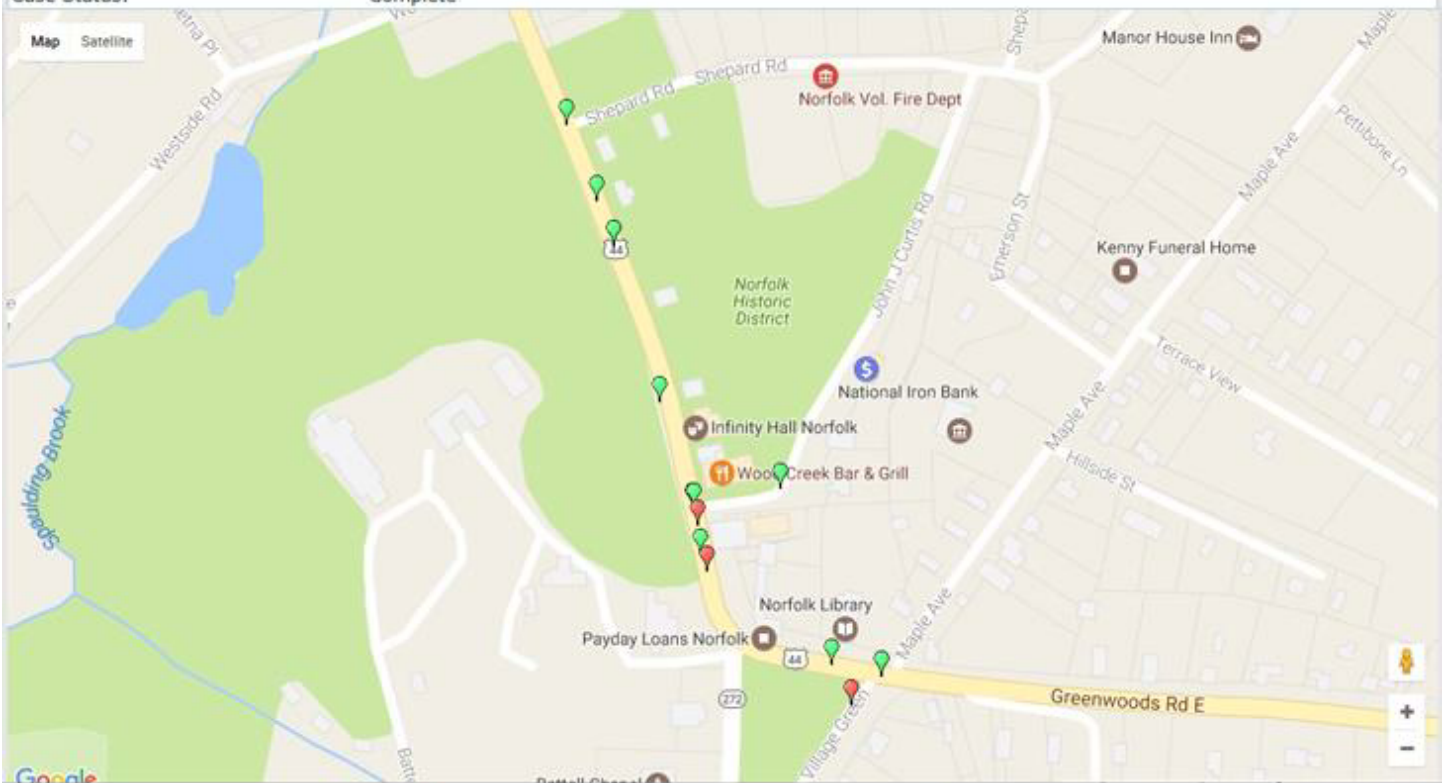
2015 Crashes

UConn

Connecticut Crash Data Repository

Search Criteria:

Dataset: mmucc
Towns: Norfolk
Crash Severity: Injury of any type (Serious, Minor, Possible), Fatal (Kill), Property Damage Only
Trafficway Ownership: Public Road, Private Road, Not Applicable, Unknown
Trafficway Class: Trafficway, On Road, Trafficway, Not on Road, Parking Lot, Unknown
Case Status: Complete



Markers Heatmap Select & Query Query Selection

📍 Injury of any type (Serious, Minor, Possible) 📍 Fatal (Kill)
📍 Property Damage Only

Select All
Deselect All



Road Safety Audit – Norfolk

Crash Summary

Data: 3 years (2012-2014)

There were no crashes that involved pedestrians.

There were no crashes involving bicyclists.

Severity Type	Number of Crashes	
Property Damage Only	41	75%
Injury (No fatality)	13	24%
Fatality	1	2%
Total	55	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	6	11%
Rear-end	9	16%
Turning-Intersecting Paths	4	7%
Turning-Opposite Direction	0	0%
Fixed Object	28	51%
Backing	1	2%
Angle	0	0%
Turning-Same Direction	1	2%
Moving Object	1	2%
Parking	0	0%
Pedestrian	0	0%
Overturn	1	2%
Head-on	2	4%
Sideswipe-Opposite Direction	2	4%
Miscellaneous- Non Collision	0	0%
Total	55	



Weather Condition	Number of Crashes	
Snow	3	5%
Rain	10	18%
No Adverse Condition	38	69%
Unknown	1	2%
Blowing Sand, Soil, Dirt or Snow	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	2	4%
Other	1	2%
Total	55	

Light Condition	Number of Crashes	
Dark-Not Lighted	13	24%
Dark-Lighted	10	18%
Daylight	30	55%
Dusk	2	4%
Unknown	0	0%
Dawn	0	0%
Total	55	







Road Surface Condition	Number of Crashes	
Snow/Slush	3	5%
Wet	15	27%
Dry	33	60%
Unknown	0	0%
Ice	4	7%
Other	0	0.0%
Total	55	



Time		Number of Crashes	
0:00	0:59	0	0%
1:00	1:59	0	0%
2:00	2:59	1	2%
3:00	3:59	2	4%
4:00	4:59	1	2%
5:00	5:59	0	0%
6:00	6:59	2	4%
7:00	7:59	1	2%
8:00	8:59	2	4%
9:00	9:59	3	5%
10:00	10:59	3	5%
11:00	11:59	4	7%
12:00	12:59	1	2%
13:00	13:59	1	2%
14:00	14:59	3	5%
15:00	15:59	4	7%
16:00	16:59	2	4%
17:00	17:59	5	9%
18:00	18:59	4	7%
19:00	19:59	4	7%
20:00	20:59	1	2%
21:00	21:59	2	4%
22:00	22:59	8	15%
23:00	23:59	1	2%
Total		55	



DRAFT

- Legend**
-  Existing Sidewalk
 -  Flashing Beacon
 -  On-street Parking
 -  Stop Controlled Intersection
 -  Crosswalk
 -  Pedestrian Crossing Sign
 -  Pedestrian Crossing Sign

Norfolk - Maple Ave-Rte 44
 -Rte 272-Shepard Rd-John Curtiss Rd
 -Emerson Street-Station Pl





Road Safety Audit – Norfolk

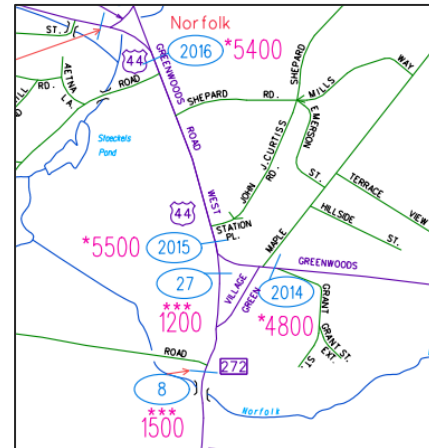
Fact Sheet

Functional Classification:

- Route 44 is classified as a Principal Arterial other
- Route 272 is classified as a Major Collector
- Shepard Rd is classified as a local road
- Station PL. is classified as a local road
- Emerson St. is classified as a local road
- John J. Curtis Rd is classified as a local road
- Maple Ave is classified as a local road

ADT

- ADT on Route 44 is 4,800-5,500
- ADT on Route 272 Ave is 1,200-1,500



Population and Employment Data (2014):

- Population: 1,486
- Employment: 363

Urbanized Area

- Norfolk is not in an Urbanized Area

Demographics

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

Air Quality

- Norfolk's CIPP number 314
- Norfolk is within the Greater CT Marginal Ozone Area
- Norfolk is within a CO Attainment Area