



COMMUNITY
connectivity program

Mansfield

Middle Turnpike (Route 44) and Storrs Road (Route 195) –
Road Safety Audit

September 29, 2016



AECOM

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Acknowledgements:

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CONNECTICUT DEPARTMENT OF TRANSPORTATION

With assistance from AECOM Transportation Planning Group

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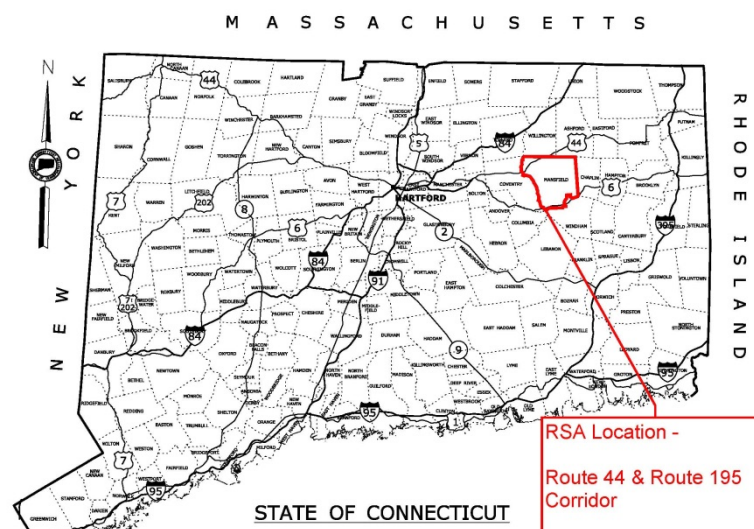
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The Connecticut Department of Transportation (CTDOT) is undertaking a Community Connectivity Program that focuses on improving the state's transportation network for all users, with an emphasis on bicyclists and pedestrians. A major component of this 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 Route 44 and Route 195, Mansfield RSA

The Town of Mansfield submitted an application to complete an RSA on Storrs Road and adjacent portions of Middle Turnpike to improve safety for drivers, pedestrians and bicyclists travelling along the corridor. Storrs Road, which is designated as Route 195, experiences high traffic volumes and moderate speeds, but has limited sidewalks. Middle Turnpike, which is designated as US Route 44, experiences moderate traffic and speeds, and has a bituminous multi-use path on the south side of the road. There have been concerns for pedestrians and cyclists through this area because Route 195 is currently a narrow corridor. At the intersection of Route 195 and Moulton Road there are also sight line restrictions, which is a concern for the safety of all users. This area is very close to the University of Connecticut Storrs Campus and E. O. Smith High School. It is therefore used by significant number of vehicles, bicyclists and pedestrians.

The Town of Mansfield's application contained background information on the area, mapping and a description of the corridor. The application is included in Appendix A.

1.1 Location

The RSA site is the section of State Route 195 (Storrs Road) between Timber Drive and Moulton Road, with a specific focus on the intersections at Moulton Road, US Route 44 (Middle Turnpike) and State Route 320 (Willington Hill Road) (Figure 1). The Average Daily Traffic (ADT) on Route 195 in the RSA area ranges from 10,900 to 15,500 vehicles per day (vpd) and the ADT on Route 44 near the Route 195 intersection ranges from 6,800 to 7,400 vpd. Route 195 consists of a single 12 foot wide lane in each direction, separated by a double yellow center line. The small section of Route 195 between Route 44 and Route 320 consists of two 12-foot wide through lanes in each direction with additional turning lanes at the Route 44 intersection. There are striped shoulders with varying widths on each side of the road. Route 44 consists of a single 12-foot wide lane in each direction, separated by a double yellow center line, with additional turn lanes provided at the Route 195 intersection. There are striped shoulders with varying widths on both sides of the road.

There are three signalized intersections with Route 195 in the study area - Route 320 (Willington Hill Road), Route 44 (Middle Turnpike), and Moulton Road. The Route 44 (Middle Turnpike) and Route 195 (Storrs Road) Intersection is commonly referred to as the "four corners" intersection.

Near the Moulton Road intersection there is a vertical crest curve on Route 195 and a horizontal curve at the same location. Figure 2 shows the study area in a regional context.

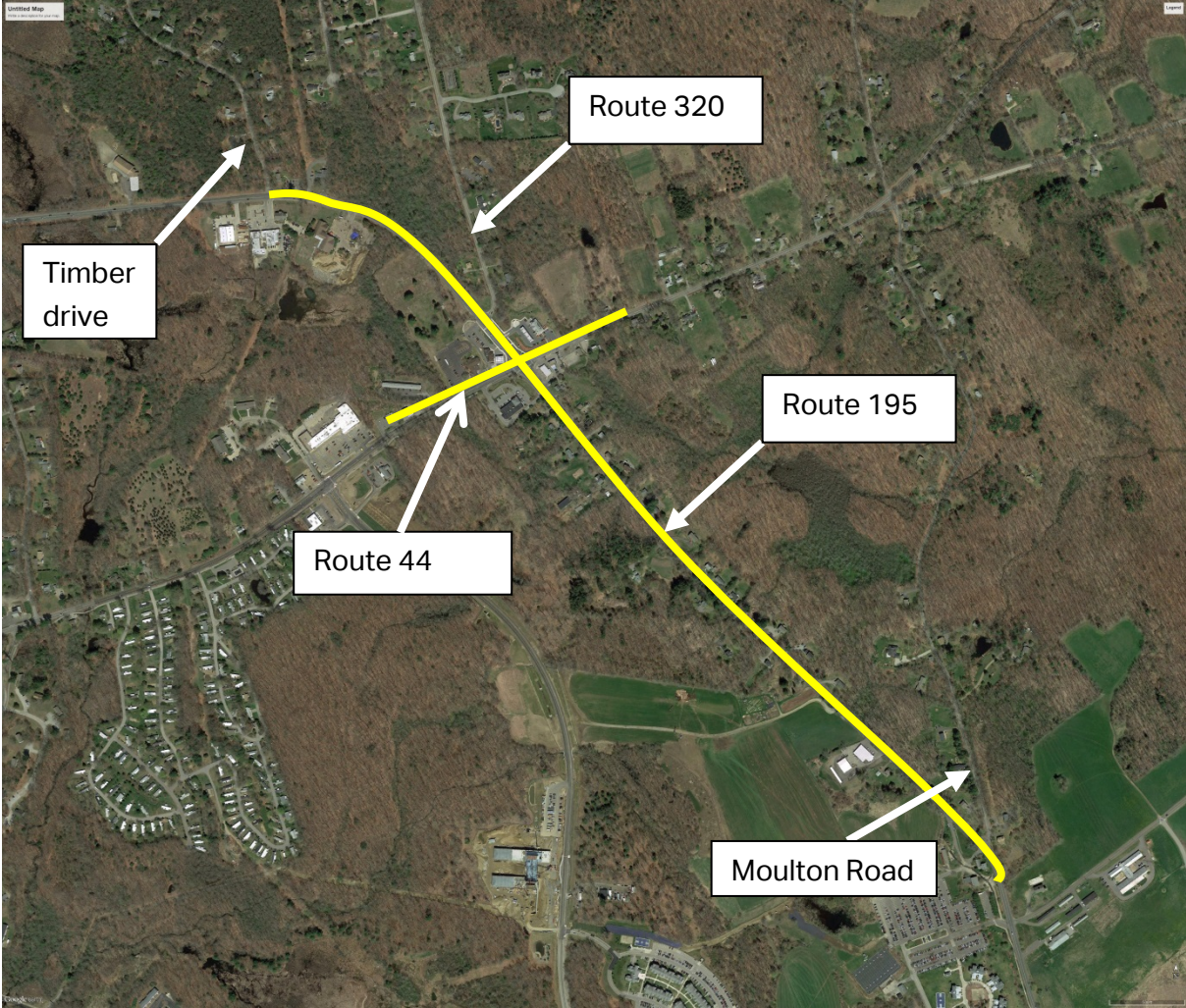


Figure 1. Route 195 and Route 44, Mansfield

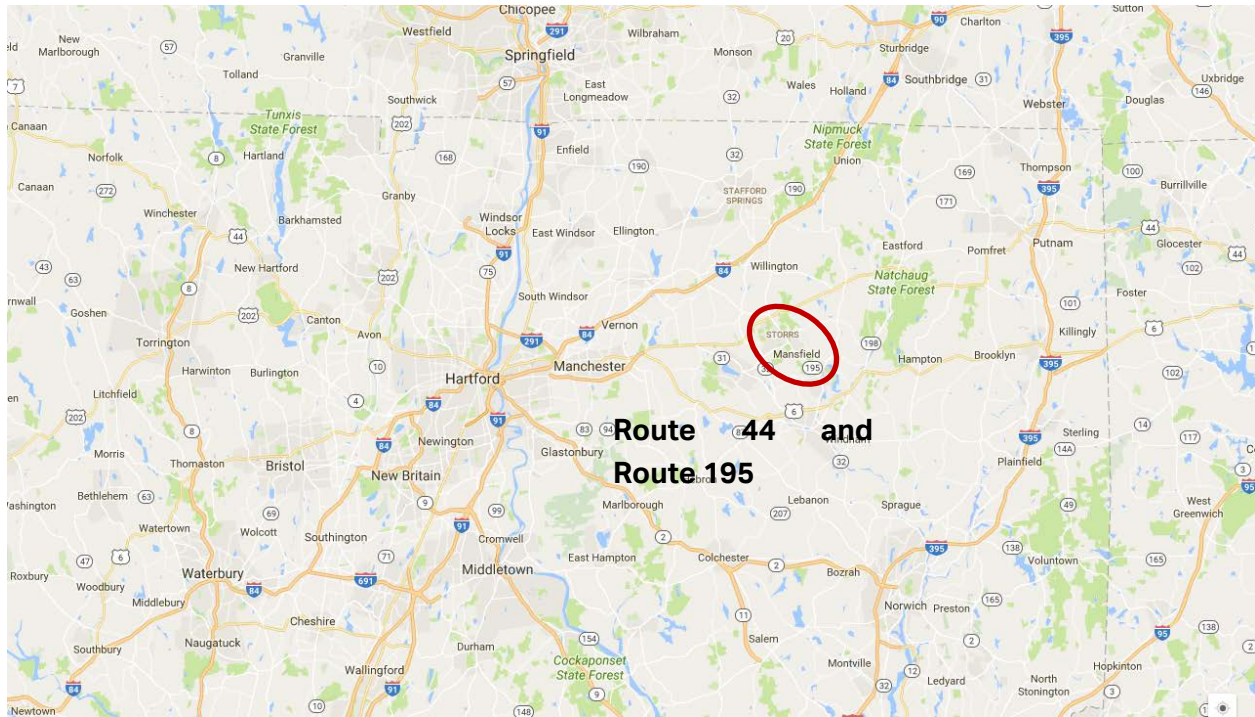


Figure 2. Study Area – Regional Context

2 Pre-audit Assessment

2.1 Pre-audit Information

Route 195 is one of the primary access Routes for the University of Connecticut. It is oriented in a northwest/southeast direction. A significant number of heavy trucks use the route. The University requires that all of its contractors avoid local roads, and this directs additional truck traffic to Route 195 and Route 44.

In addition to the University of Connecticut, there are several facilities near this corridor that generate vehicular and pedestrian traffic, including public schools, several restaurants, retail uses, housing developments, and the town offices. The RSA corridor is a popular area for runners and cyclists from the university campus and town residents who live nearby.

The crash history in this area is moderately high although there were no accidents involving pedestrians or bicyclists between 2012 and 2014 (Table 1 and Table 2). Figure 3 displays crashes that occurred in this area during 2015. The primary accident type from 2012-2014 was rear-end collisions (63%).

Severity Type	Number of Crashes	
Property Damage Only	92	86%
Injury (No fatality)	15	14%
Fatality	0	0%
Total	107	

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	4	4%
Rear-end	67	63%
Turning-Intersecting Paths	12	11%
Turning-Opposite Direction	11	10%
Fixed Object	5	5%
Backing	0	0%
Angle	3	3%
Turning-Same Direction	3	3%
Moving Object	1	1%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	1	1%
Miscellaneous- Non Collision	0	0%
Total	107	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

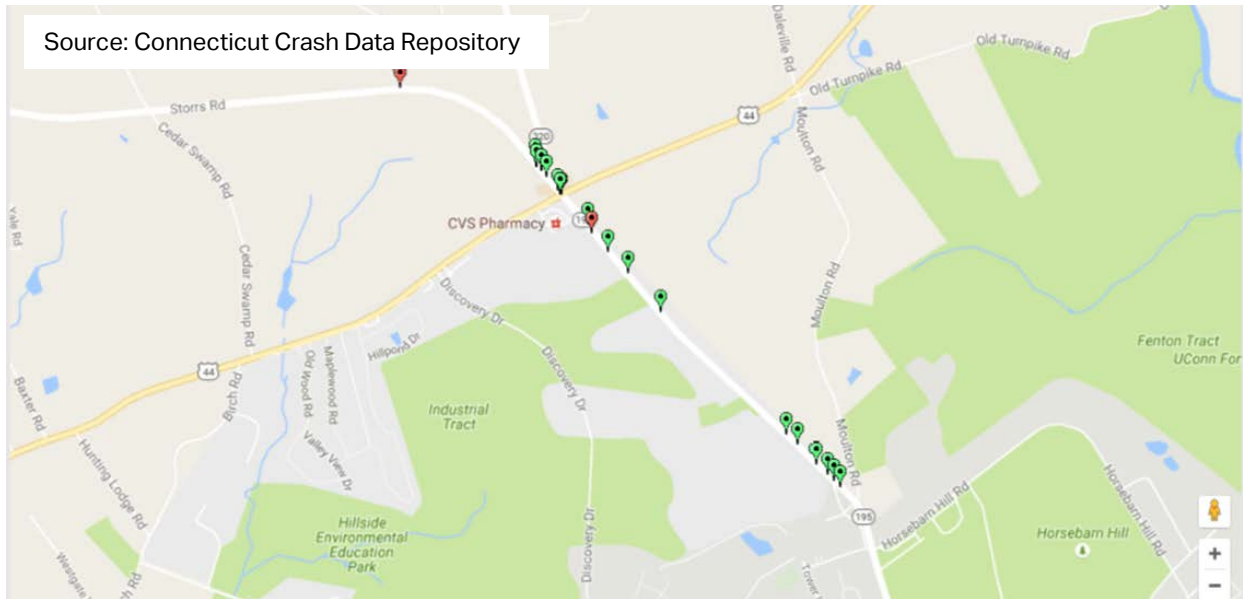


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

The Town of Mansfield would like to make the RSA area more accommodating to cyclists and pedestrians, as well as improving vehicle operations. Most of Route 195 within the RSA area consists of a tangent alignment with the primary exception being the area around Moulton Road. This intersection is near a vertical crest of the road and is also located on a horizontal curve. The combination limits sight distance for all users. Route 195 is currently narrow, and has limited shoulders available for pedestrian and bicycle use. There is a 10-foot wide bituminous multi-use path on the south side of Route 44 that ends just west of the intersection with Route 195. This area is expected to become more developed in the near future as sewer service becomes available. The Town would like to coordinate improvements that provide safe and efficient facilities for all current and potential users.

Figure 4 and Table 3 summarize the roadway geometrics in the study area.

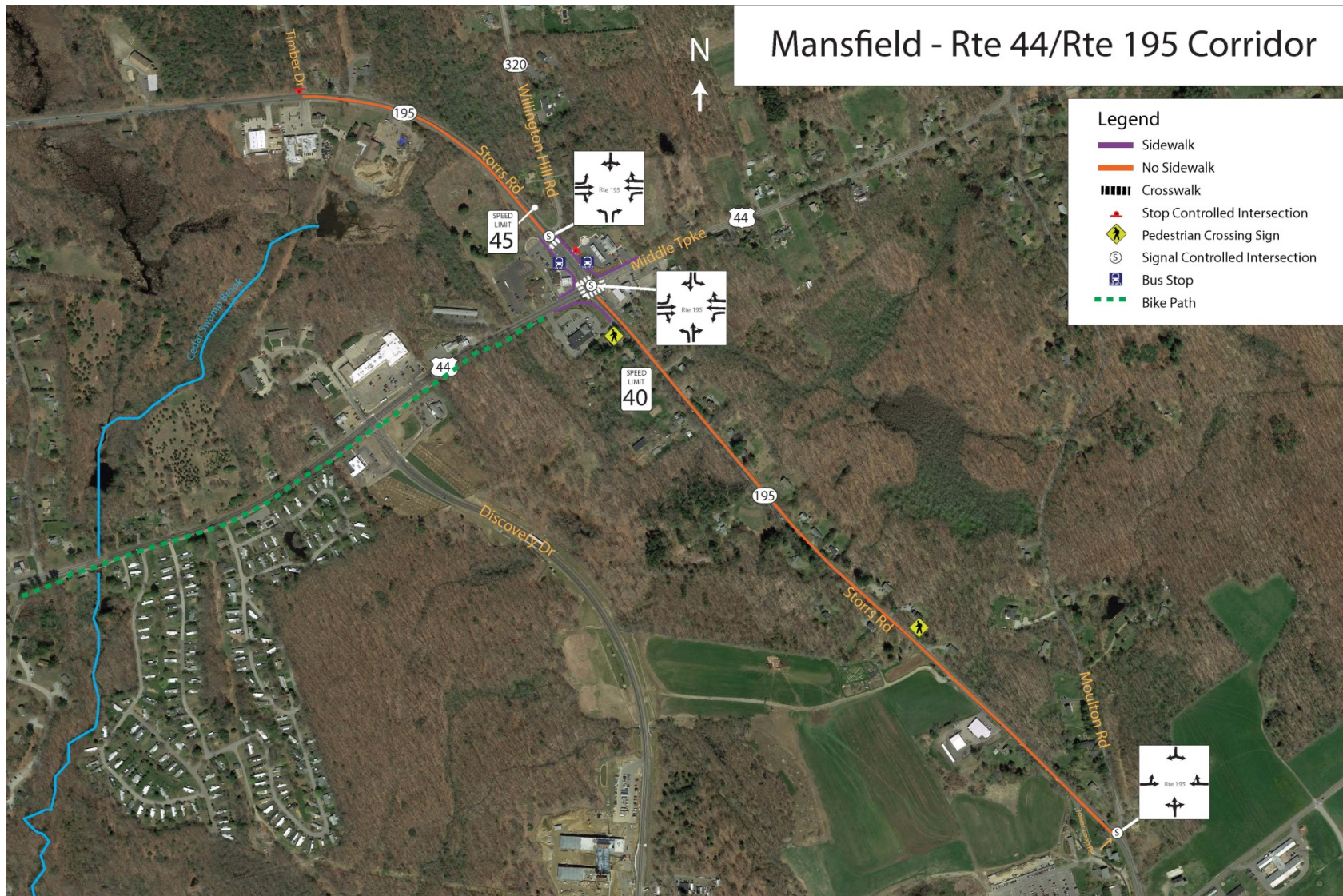


Figure 4. Route 44 and Route 195 Geometrics

Mansfield - Route 195 and Route 44 Street Inventory

Street	Route	Lanes	Avg. Lane Width	Sidewalk				Curb	Parking	Shoulder	Ramps	
				Side	Type	Width	Condition*				Exist	Compliant
Storrs Road	Route 195	1-2	12'	NB	No	N/A	N/A	Asphalt	No	2-5'	Yes	No
		1-2	12'	SB	No	N/A	N/A	Asphalt	No	1-2'	Yes	No
Middle Turnpike	Route 44	1	12'	EB	No	N/A	N/A	Asphalt	No	4'	Yes	No
		1	12'	WB	No	N/A	N/A	Asphalt	No	6'	Yes	No

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

Table 3. Street Inventory

2.2 Prior Successful Effort

The Town has a number of bituminous multi-use paths including the one on the south side of Route 44. They are working to finish a network of multi-use trails surrounding the University of Connecticut.

Discovery Drive was recently opened for traffic just west of the RSA area and is now an additional access to the university. This may help to ease traffic through the Route 195 corridor, which has historically been the primary access to the UConn campus.

Storrs Center, a dense, mixed use development further south on Route 195, was successfully completed, and similar development is anticipated around the four corners area.

The Connecticut Water Company (CWC) water pipeline was completed in August this year. A sanitary sewer project has been planned and designed for the future. Once this is completed, it is expected to make the Four Corners and surrounding areas very attractive to developers.

2.3 Pre-Audit Meeting

The RSA was conducted on September 29, 2016. The Pre-Audit meeting was held at 8:30 AM in the Town Hall located on South Eagleville Road in Mansfield.

The RSA Team was comprised of staff from AECOM, staff from CTDOT, a representative from CRCOG and representatives from Mansfield departments including Department of Public Works, Planning, Engineering and a resident of the town. The complete list of attendees can be found in Appendix B.

Several items were presented for general information prior to conducting the Audit in the field:

- The pavement condition is deteriorating. There were utility cuts made for a water line project and additional utility cuts are proposed for an upcoming sanitary sewer project.
 - There is a desire to wait until after the future sewer work to re-pave the road if possible.
- The RSA area is expected to be developed further in the near future and the Town would like to improve aesthetics as well as safety.
- Discovery Drive was recently opened giving users a new access to the UConn campus. This is the first full school year that the road will be open and the Town anticipates that the new roadway might alter accident and traffic patterns.
 - The current speed limit is 25 mph on Discovery Drive.
 - There are sidewalks on Discovery Drive that are close to 10-feet wide.
- Police indicated that speeding is not a major problem on Route 44.

- The four corners intersection (Route 44 and Route 195) is currently very wide and a roundabout may be considered as an alternative to improve operations at the intersection.
- There are some events throughout the year at the university that generate significant traffic volumes, and result in severe traffic congestion on the roadways. Vehicular queuing has been observed that extends all the way onto the Interstate 84 (I-84) Off - Ramp (approximately 5 miles from the campus).
- The Town would like to connect their multi-use paths in the future.
 - This proposal would include a connection from the current path on Route 44 to the Town Hall area on Route 275.
- There is regional bus service within the study area.
- There are early discussions to extend CT *fastrak* to Mansfield.
- The Town has a draft Complete Streets policy.
- There is a fairly extensive bike/pedestrian facility network currently and the Town would like to formalize a master plan for the network.
 - Some serious bikers do not use the multi-use paths because they think there are too many pedestrians on them.
 - The Town plows the multi-use paths in the winter and maintains them.
- Route 195 is a narrow corridor currently, but a lot of bikers still ride on it.
- There are some historic areas east of the Four Corners intersection on Route 44.
- There is an elementary school nearby just off of Route 44 to the west of the Four Corners intersection.
 - This school is accessible via the multi-use paths.
- The Town is developing a Safe Routes to School program for one of their schools near Route 89.
- Some streetscape work was done around the Four Corners intersection when the Cumberland Farms gas station and store was built.
- There are some bus pull outs currently at the Four Corners Intersection, but not all stops have them.
- Signal timing could be improved at both the Four Corners intersection and the Discovery Drive/Route 44 intersection.
- The Moulton Road intersection has issues with sight lines due to the horizontal curve and vertical crest.
- Depending on when counts are taken ADT volumes may be skewed because the area experiences a heavy seasonal split when UConn is in session and when it is not.

3 RSA Assessment

3.1 Field Audit Observations

Four Corners Intersection (Route 44 and Route 195):

- The bituminous multi-use path west of the intersection is 10-feet wide (Figure 5).
- There are overgrown trees and brush blocking some of the signs on the trail.
- There are many broken sections of split-rail fencing along the multiuse trail.
- There are non-standard “Share the Road” signs on Route 44 westbound.
- UConn directs its contractors to avoid town roads and use state roads, resulting in decreased truck volumes on local roads and increased truck volumes on state roads.
- The pavement condition at the intersection is deteriorating (Figure 6).
- Route 44 was measured as having a 4-foot eastbound shoulder, 12-foot eastbound lane, 11-foot eastbound turn lane, 12-foot westbound lane, 6-foot westbound shoulder.
- Route 195 widths north of the intersection are 2-foot northbound shoulder, two 12-foot northbound lanes, two 12-foot southbound lanes, 10-foot turning lane and a 1-foot southbound shoulder.
- The four corners intersection is very large resulting long crossing distances.
 - Crosswalk distances measured on the four sides of the intersection are as follows:
 - West side: 75 feet.
 - South side: 122 feet.
 - East side: 53 feet.
 - North side: 85 feet (Figure 7).



Figure 5. Bituminous multi-use path



Figure 6. Deteriorating pavement



Figure 7. Long crosswalk, no detectable warning strips

- The pedestrian signal phase is approximately 30 seconds, which does not appear adequate for crossing at the longest crosswalk.
- There are no detectable warning strips on the sidewalk ramps at the intersection (Figure 7).
- Some sidewalk ramps at the intersection are very steep and do not meet ADA requirements (Figure 8).
- The pedestrian push buttons are not Accessible Pedestrian Signals (APS) and are not ADA compliant.
- There is an historic district to the east of the intersection.
- High groundwater may have caused the properties around the intersection to be raised in order to accommodate septic systems.
- Bus stop signs are in poor condition and with low retro-reflectivity (Figure 9).
- Several signs need to be adjusted to provide a 7-foot minimum clearance.
- The sidewalk ramp at Cumberland Farms is not aligned correctly (Figure 10).
- Trucks are not able to navigate the existing curb radius at one of the entrances to Cumberland Farms (Figure 11).

Route 320 and Route 195 Intersection:

- There are updated pedestrian facilities (countdown pedestrian signals with APS pushbuttons, sidewalk ramps with detectable warning strips) at this intersection.



Figure 8. Steep sidewalk ramp



Figure 9. Bus stop sign in poor condition



Figure 10. Mis-aligned sidewalk ramp

- The crosswalk at the Route 320 intersection is 63 feet long.
- The pedestrian phase at the Route 320 intersection is 21 seconds long with a 14 second countdown.
- Some of the catch basin grates are the bike friendly type and others are not.
- In addition to the three roadway legs, there is a driveway leg controlled by the signal (for the Sunoco/Dunkin Donuts property). There is some uncertainty at the intersection as to who has the right of way for drivers exiting the driveway and drivers on the Route 320 approach.
- The painted arrows in the eastbound driveway at the Route 320 intersection do not match the mounted sign. Additionally, the placement of the sign makes it difficult for drivers to see it due to its orientation and the direction drivers approach the intersection (Figure 12).
- The proposed sewer project is scheduled to take two years to construct and may begin as soon as spring 2017. Because construction is imminent, the Town would like to wait until after construction of the sewer project to re-pave.
- The crosswalk at the driveway does not have a sidewalk ramp at the northwest corner. There are currently two communication cabinets at that location protected by bollards. The town stated that there are plans to relocate these cabinets in the future and provide an ADA accessible sidewalk ramp.
- There is a sidewalk ramp at the southeast corner of the intersection but no receiving ramp at the northeast corner.

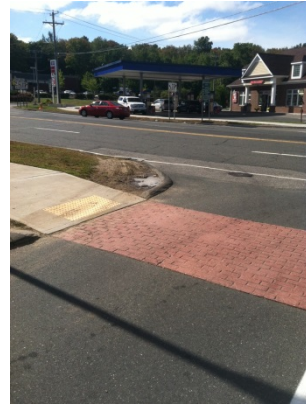


Figure 11. Short curb radius



Figure 12. Painted arrows and sign not matching

Route 195 and Moulton Road Intersection:

- Roadway widths on Route 195 were measured as 2-foot southbound shoulder, 12-foot southbound lane, 12-foot northbound lane, 5-foot northbound shoulder.
- Some signs are in poor condition and some signs are fading (Figure 13).
- Trimming of some of the trees and bushes around the intersection is needed for utility maintenance and to improve sight lines (Figure 14).
- There is a concern as to the location of the 30 mph speed limit sign along Route 195. It seems it would make sense to place it before the intersection and the start of the sharp horizontal curve.
- There are pedestrian pushbuttons for crossing Route 195 on the north side of the intersection with a side street green pedestrian phase. However, there are no ramps or crosswalks and the push buttons are not ADA accessible.
- The roadway geometry of Route 195 creates poor sightlines for vehicles approaching the intersection from Moulton Road and Tower Loop Road.
- There are not enough One-Direction Large Arrow (W1-6) warning signs for the horizontal curve in the southbound direction.



Figure 13. Signs lacking retro-reflectivity



Figure 14. Tree branches around power lines

3.2 Post Audit Workshop - Key Issues

Four Corners Intersection (Route 44 and Route 195 and Bike Path):

- Sidewalk ramps are not ADA compliant.
- It is expected that the public will support re-developing the four corners area with more dense land use.
- Development on both sides of Route 195 and the northwest of the intersection is expected in the future.
- Some pedestrian pushbuttons are not ADA compliant.
- Pedestrian signals are not countdown type (Figure 15).
- Pedestrian crossings are very long (122-foot maximum).
- Detectable warning strips are missing from sidewalk ramps.
- The intersection needs to be re-striped to refresh faded markings (Figure 16).
- Some of the signage is old and in poor condition and should be updated.
- Trimming of trees and bushes is needed around some of the multi-use path signage (Figure 17).
- There is a painted bike symbol in the shoulder of Route 44 westbound. It may be useful to add signage at the intersection directing bikers and pedestrians to the multi-use path.
- A CRCOG study that includes this area is scheduled to conclude in spring 2017. The Town should coordinate with CRCOG on future development based on this study.



Figure 15. Pedestrian signal not countdown type



Figure 16. Faded pavement markings



Figure 17. Multi-use path signs obstructed by branches

- In the long term the intersection could either be reconstructed or realigned with reduced curb-to-curb widths and curb radii or converted into a roundabout.
- It is unclear if the traffic signals at the Route 320/Route 195 and Four Corners intersections are coordinated.
- A long term goal is to extend the multi-use path along Route 44 to the intersection and continue it along one side of Route 195.
- The sidewalk alignment is unclear near the curb return from CVS and could be reconfigured (Figure 18).
- Way-finding signs for Discovery Drive may be warranted once new traffic patterns are established.
- A bus pullout on Route 195 northbound next to the existing bus stop could be considered as a long term goal.
- The curb radius at Cumberland Farms needs to be increased to accommodate trucks.
- The alignment of one of the sidewalk ramps at Cumberland Farms driveway north of the intersection should be fixed.

Route 320 and Route 195 Intersection:

- There is no receiving ramp on the north side of Route 320 at the intersection of Route 320 and Route 195 (Figure 19).
- The pavement marking arrows exiting the parking lot at the Route 320 intersection need to be revised.
 - The lane use sign could be hung from the span wire to be more visible.



Figure 18. Sidewalk alignment near curb return



Figure 19. No receiving ramp on Route 320 north side

- After telecommunications cabinets are relocated a ramp can be constructed at the northwest corner of Dunkin Donuts/Sunoco gas station driveway (Figure 20).
- Several signs need to be adjusted to provide a 7-foot minimum clearance.

Route 195 and Moulton Road Intersection:

- The bike route signs on Route 44 should be relocated to the multi-use path.
- There is a desire for pedestrian facilities on both sides of Route 195 in the future. Due to right-of-way constraints, constructing pedestrian facilities on one side of Route 195 may be a more realistic goal.
- A long term goal is to consider extending Discovery Drive through Route 44 and connecting it to Route 195 further north.
- Reducing the number of curb cuts and improving access management at the intersection could be considered as a long term goal.
- The pedestrian pushbuttons are not in the ideal location on the north side of the intersection because sight distance for pedestrians is better on the south side (Figure 21, Figure 22).
- Pavement markings at the intersection are faded.
- Some signs at the intersection have faded and lost retro-reflectivity over time.
- Adding "No Turn on Red" signs should be considered due to the sightline constraints.
- The Town would like to investigate the possibility of adding strobes to the signal heads.
- Adding advance warning lights/beacons to "Signal Ahead" signs could provide advance warning to drivers.



Figure 20
Telecommunications boxes adjacent to Dunkin Donuts sidewalk



Figure 21. Sight distance looking south from north side of Moulton Rd. intersection



Figure 22. Sight distance looking south from south side of Moulton Rd. intersection

- Trimming of trees and bushes is required around the intersection.
- The lane widths are currently 12-feet. Re-stripping to 11-foot lanes throughout the corridor could create a little more space for pedestrians and bikes in the shoulders.
- Lowering and/or re-aligning the intersection may be a long term option for improvement of sightline issues.
- There is currently not enough street lighting at the intersection. Adding an additional street light to the existing utility pole at the intersection could improve this.
- The existing superelevation does not appear to transition correctly and should be investigated.
- Further evaluation is needed to determine if a multi-use path is possible in this area.
- There have been a number of accidents at the hardware store north of this intersection. This may be due to limited sight distance through the intersection. Vehicles stop to make a left turn at the hardware store and are often involved in rear-end collisions.
- Pedestrian signage throughout the corridor is ambiguous and outdated. The State currently has a project to remove these pedestrian signs off state roadways.

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 or more years when funding is available.

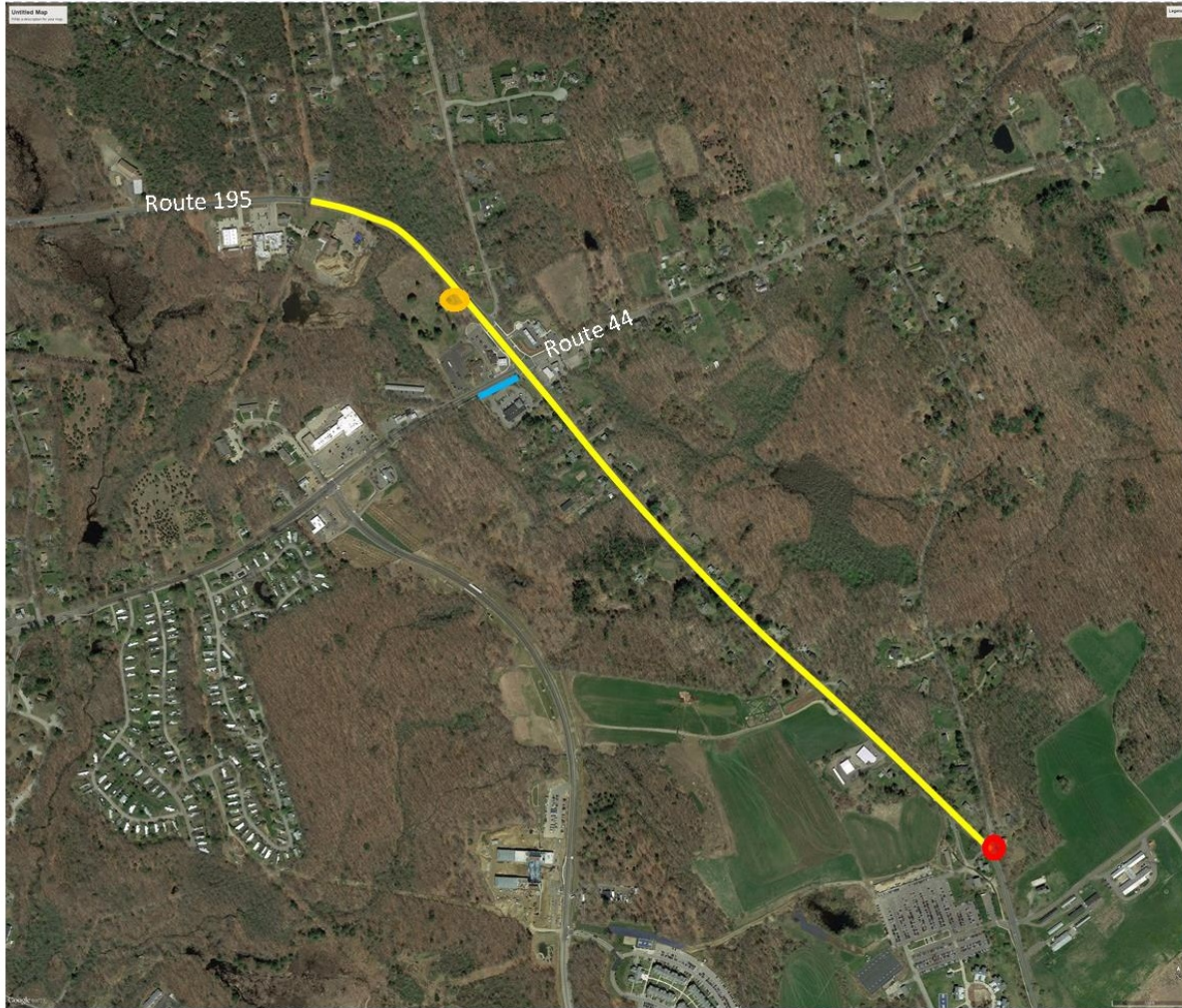
4.1 Short Term

1. Town to coordinate with the CTDOT to restripe pavement markings throughout the corridor to narrow lanes to 11 feet wide and provide 4-foot shoulders in each direction.
2. Town to coordinate with the CTDOT to replace signs that are faded and lack retro-reflectivity.
3. Town to coordinate with the CTDOT to add additional One-Direction Large Arrow (W1-6) warning signs in the southbound direction at the Route 195/Moulton Road intersection (Figure 23).
4. Town to request utility companies to trim branches around power lines and Town to trim trees and bushes restricting sight lines at the Route 195/Moulton Road intersection.
5. Town to trim branches around the signage on the Route 44 multi-use path.
6. Town to provide signage at the four corners intersection directing bikes and pedestrians to the multi-use path.
7. Town to re-stripe the pavement arrows at the Dunkin Donuts exit across from Route 320 to match the mounted intersection lane control sign.
8. Town to coordinate with the CTDOT to reset signs to provide 7-foot minimum clearance.
9. Town to relocate bike route signs from Route 44 to the multi-use path. The existing bike signs posted on Route 44 do not appear to comply with the latest edition of the MUTCD. The Town should remove existing signs along Route 44, and install signs in compliance with the MUTCD along the multi-use path.

Figure 24 depicts some of these recommendations.



Figure 23. Arrow sign



Restripe 11-foot lanes (#1)

Restripe pavement arrows at the Dunkin Donuts exit across from Route 320 (#7)

Add additional One-Direction Large Arrow warning signs, Trimming (#3,4)

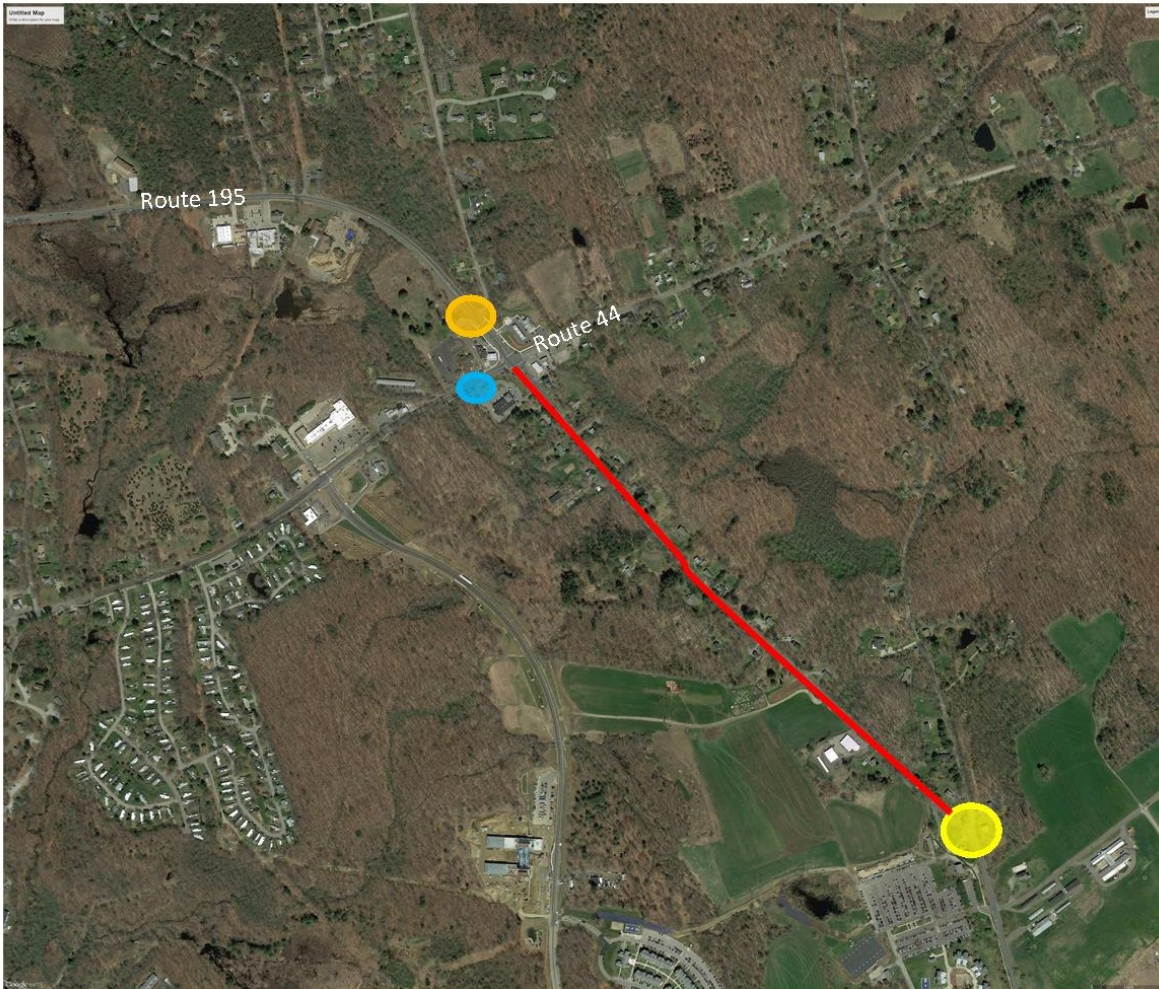
Trim branches around multi use path signage, relocate bike route signs (#5,9)

Figure 24. Short term recommendations

4.2 Medium Term

1. Town to coordinate with Eversource to improve lighting at the Route 195/Moulton Road intersection.
2. Town to evaluate the possibility of constructing a multi-use path on Route 195 to connect to the existing path on Route 44.
3. Town to coordinate with the Capital Region Council of Governments (CRCOG) when the Gateways to UConn Corridor study is completed to determine what improvements or projects can be undertaken in the corridor.
4. Town to reconfigure the sidewalk at the CVS driveway to clarify the crossing.
5. Town to coordinate with the Dunkin Donuts to construct a sidewalk ramp at the Dunkin Donuts driveway once the telecommunications cabinets are relocated.
6. Town to coordinate with the Dunkin Donuts to relocate the lane use arrow sign that is currently at the Dunkin Donuts driveway to the signal span wire.

Figure 25 depicts some of the recommendations.



Add an additional street lighting (#1)

Investigate the possibility of a multi-use path on Route 195 (#2)

Reconfigure the sidewalk at CVS driveway to clarify the crossing (#4)

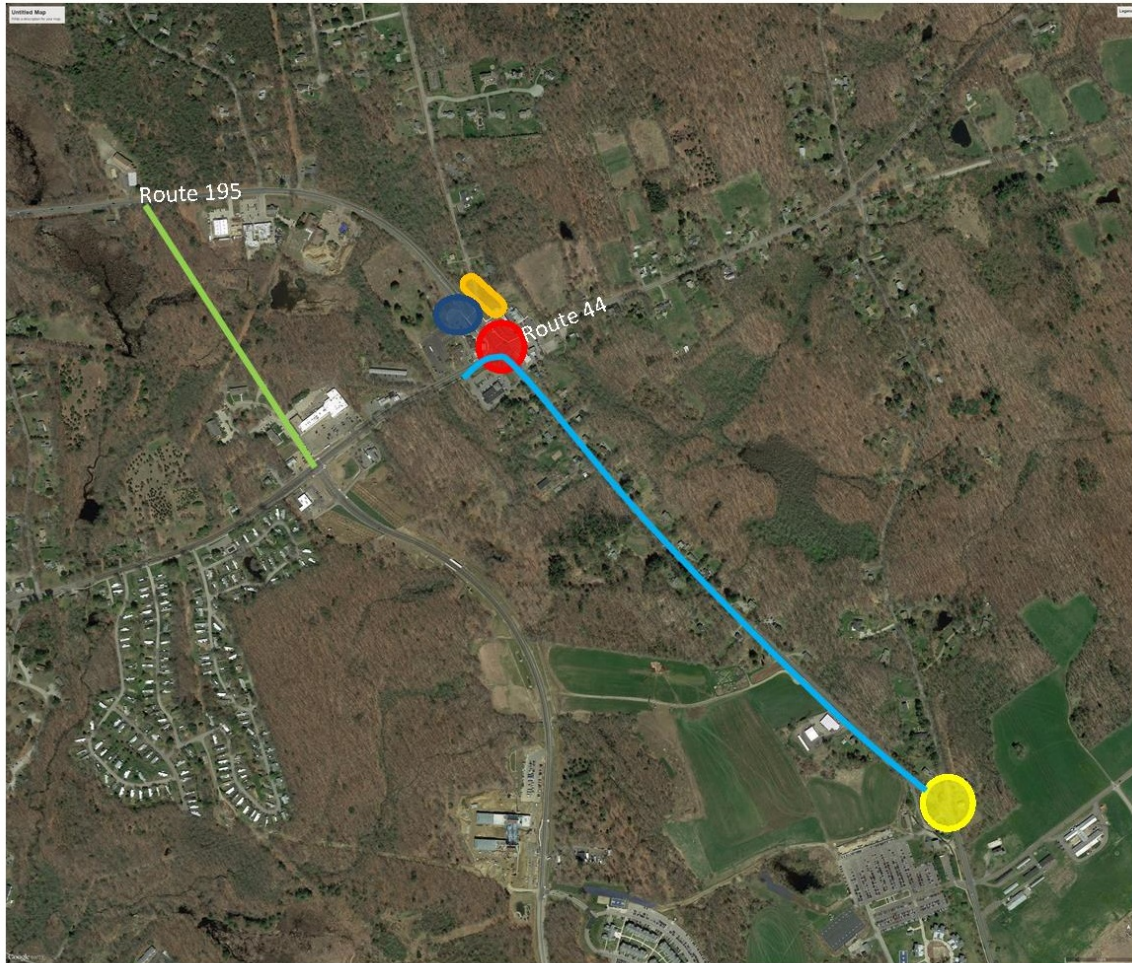
Construct a ramp at the Dunkin Donuts driveway when telecommunications boxes are relocated; hang the directional arrow sign that is currently in the Dunkin Donuts driveway from the signal (#5,6)

Figure 25. Medium term recommendations

4.3 Long Term

1. Town to coordinate with the CTDOT to analyze the superelevation and transitions at the Route 195 at Moulton Road intersection and consider options to improve if necessary.
2. Town to coordinate with the CTDOT to consider lowering and/or re-aligning the Route 195/Moulton Road intersection to improve sight lines.
3. Town to coordinate with the CTDOT to consider long term options to improve operations at the four corners intersection including narrowing the approaches, reducing curb radii or replacing the signal with a roundabout.
4. Town to extend the existing multi-use path on Route 44 through the intersection with Route 195 and alongside Route 195 south towards the university.
5. Town to coordinate with Windham Region Transit District (WRTD) to investigate the feasibility of constructing a WRTD bus pullout on Route 195 northbound at the existing bus stop in front of Cumberland farms.
6. Town to coordinate with the CTDOT to consider the feasibility of extending Discovery Drive past Route 44 and connecting it to Route 195.
7. Town to coordinate with property owners to reduce curb cuts and improve access management at the four corners intersection.
8. Town to require developers to upgrade pedestrian facilities to the latest standards at the Four Corners intersection as they develop the area.
9. Town to coordinate with the CTDOT to remove the outdated pedestrian pushbuttons on the north side of the Route 195/Moulton Road intersection and provide pushbuttons along with ADA accessible sidewalk ramps and crosswalk at the south side of the intersection.
10. Town to coordinate with the CTDOT to provide a receiving handicap ramp on the northeast corner of Route 195 and Route 320 intersection.

Figure 26 depicts some of these recommendations.



Analyze existing superelevation and improve; consider lowering and/or re-aligning the intersection (#1,2)

Consider options such as roundabout or narrowed approaches and reduced radii (#3)

Extend existing multi-use path (#4)

Construct bus pullout (#5)

Consider the feasibility of extending Discovery Drive past Route 44 and connecting to Route 195 (#6)

Construct a receiving ramp on the northeast corner of intersection; remove the outdated pedestrian pushbuttons on the north side of the Route 195/ Moulton Road intersection and provide pushbuttons along with ADA accessible sidewalk ramps and crosswalk at the south side of the intersection (#9,10)

Figure 26. Long term recommendations

4.4 Summary

This report documents the observations, discussions and recommendations developed during the successful completion of the Town of Mansfield RSA. It provides Mansfield with an outlined strategy to improve the transportation network for all road users between Timber Road and Moulton Road on Route 195, particularly focusing on pedestrians and cyclists. Moving forward, Mansfield 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.



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Appendix A



AECOM
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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)

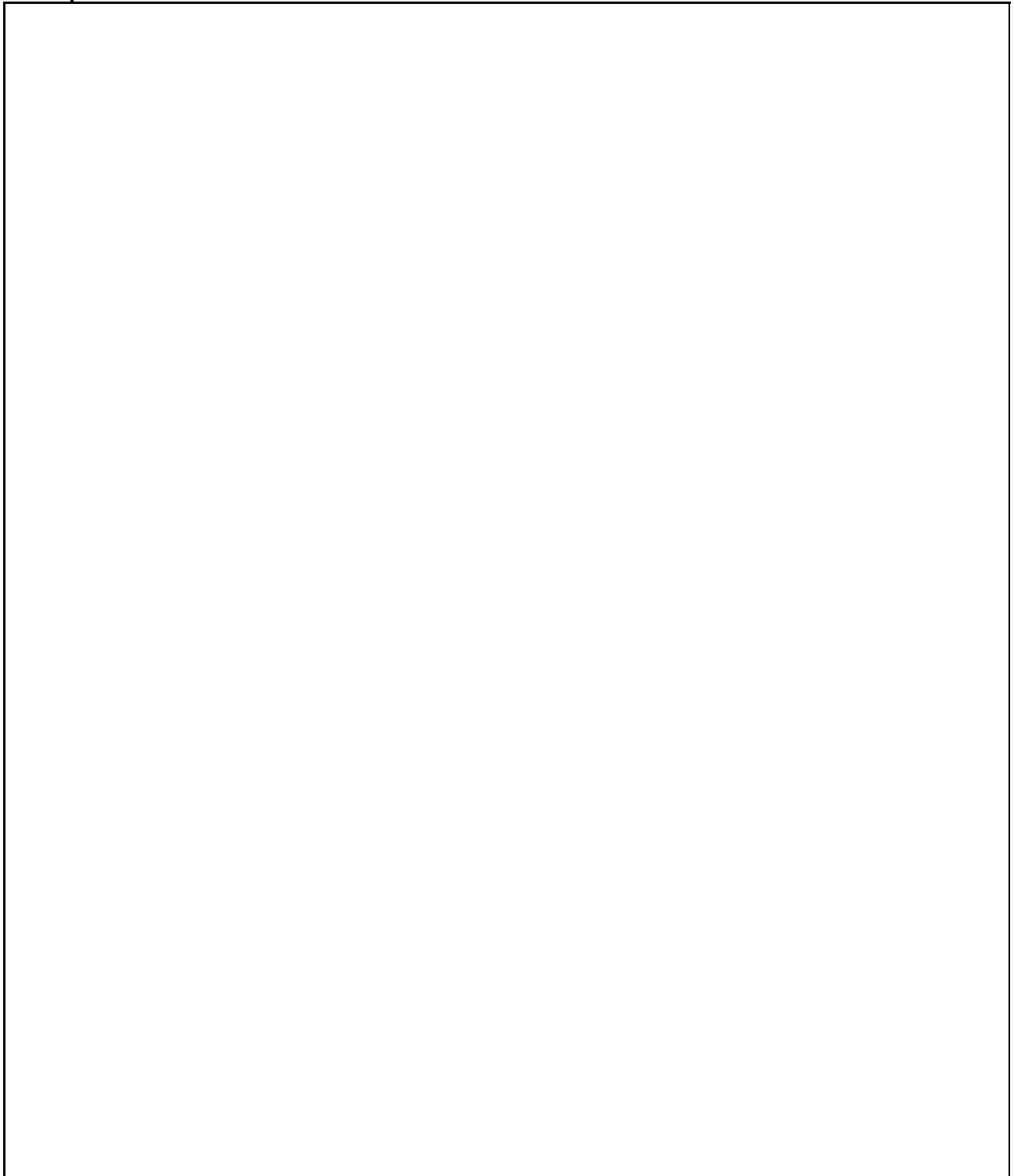
11. Are there any past, current or future transportation/economic development projects near this location (i.e. Federal, State or local projects)?

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.

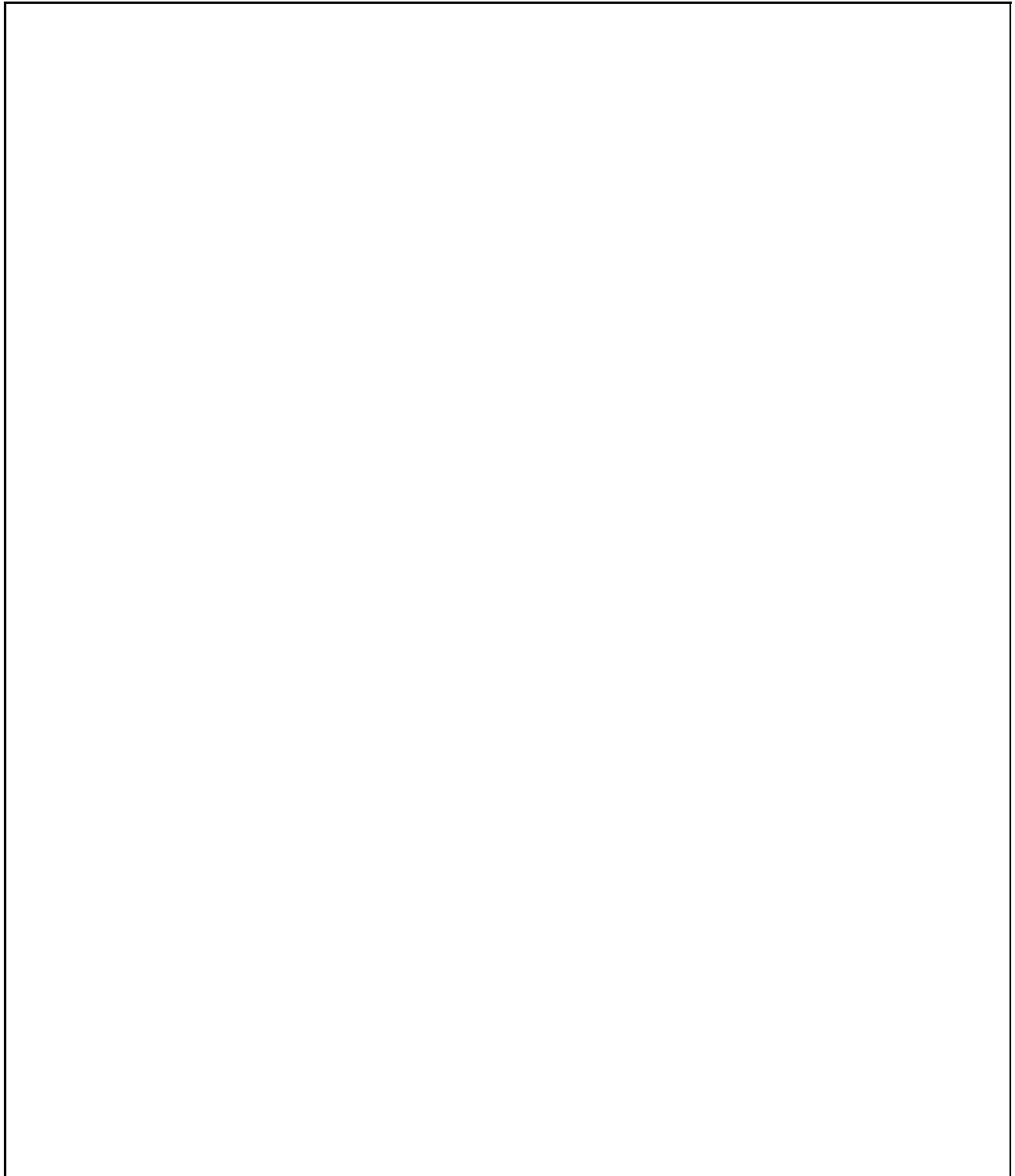
A large, empty rectangular box with a thin black border, intended for the user to describe and list any environmental concerns. The box occupies most of the page's vertical space below the instruction.

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

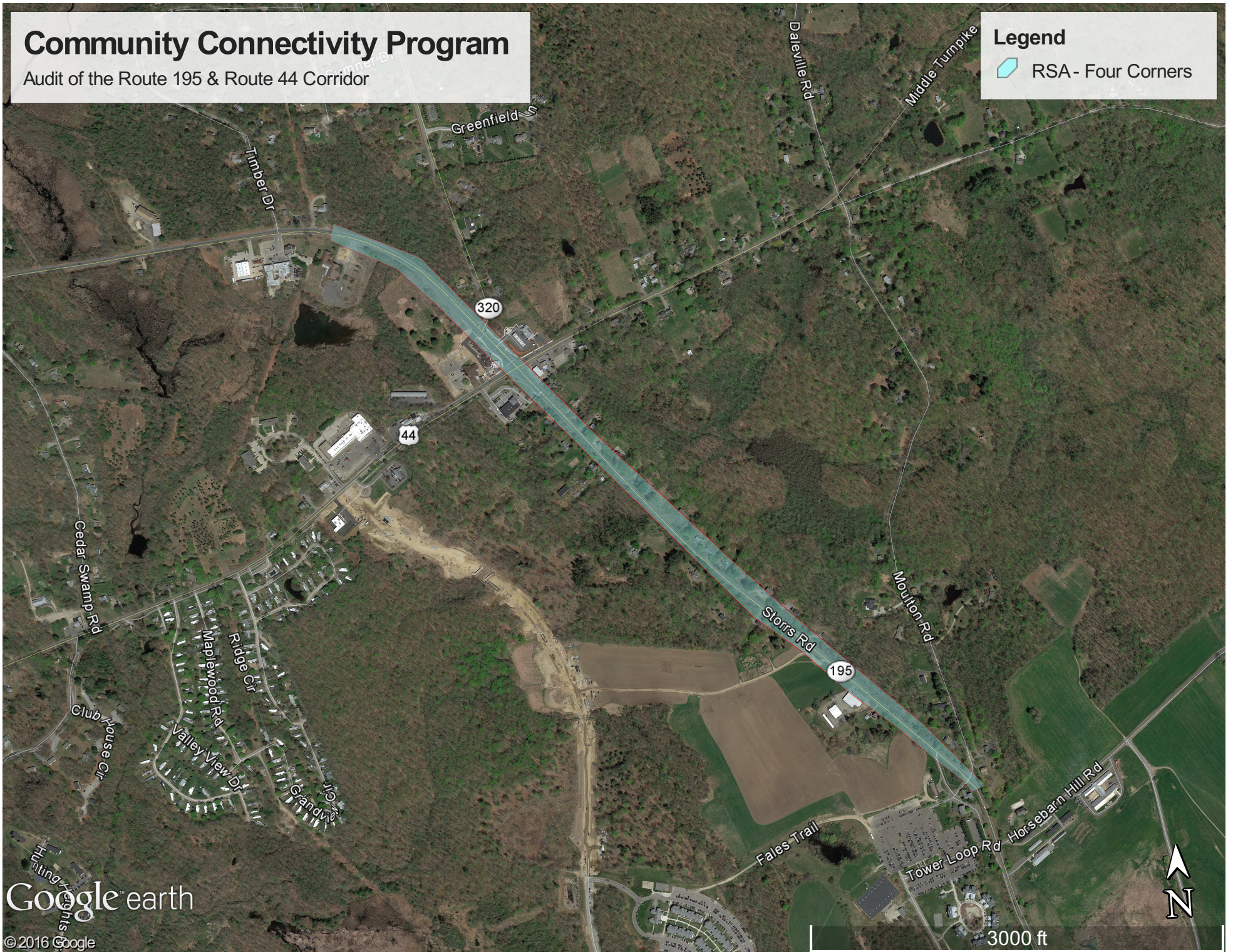
- 1 Location map (google, GIS) **(Required)**
- 2 Collision data (If available)
- 3 Traffic data (ADT or VMT) (If available)
- 4 Pedestrian/bicycle data (If available)

Community Connectivity Program

Audit of the Route 195 & Route 44 Corridor

Legend

 RSA - Four Corners



Google earth

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Appendix B



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Road Safety Audit

Town: Mansfield
RSA Location: Rte 44/Rte 195 Corridor
Meeting Location: Mansfield Town Hall (Conference Room B)
Address: 4 S Eagleville Rd, Storrs, CT 06268
Date: 9/29/2016
Time: 8:30 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Brad Sabean	Aecom
Craig Babowicz	CTDOT
Kwame Aidoo	Aecom
John Carrington	Mansfield
Wilfred T Bigl	Mansfield
Derek Dilaj	Mansfield
Janell M	Mansfield
Cara Radzins	CRCOG



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Appendix C



AECOM
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Road Safety Audit – Mansfield

Meeting Location: Mansfield Town Hall (Conference Room B)
Address: 4 S Eagleville Rd, Storrs, CT 06268
Date: 9/29/2016
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:
 - 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	
--	--




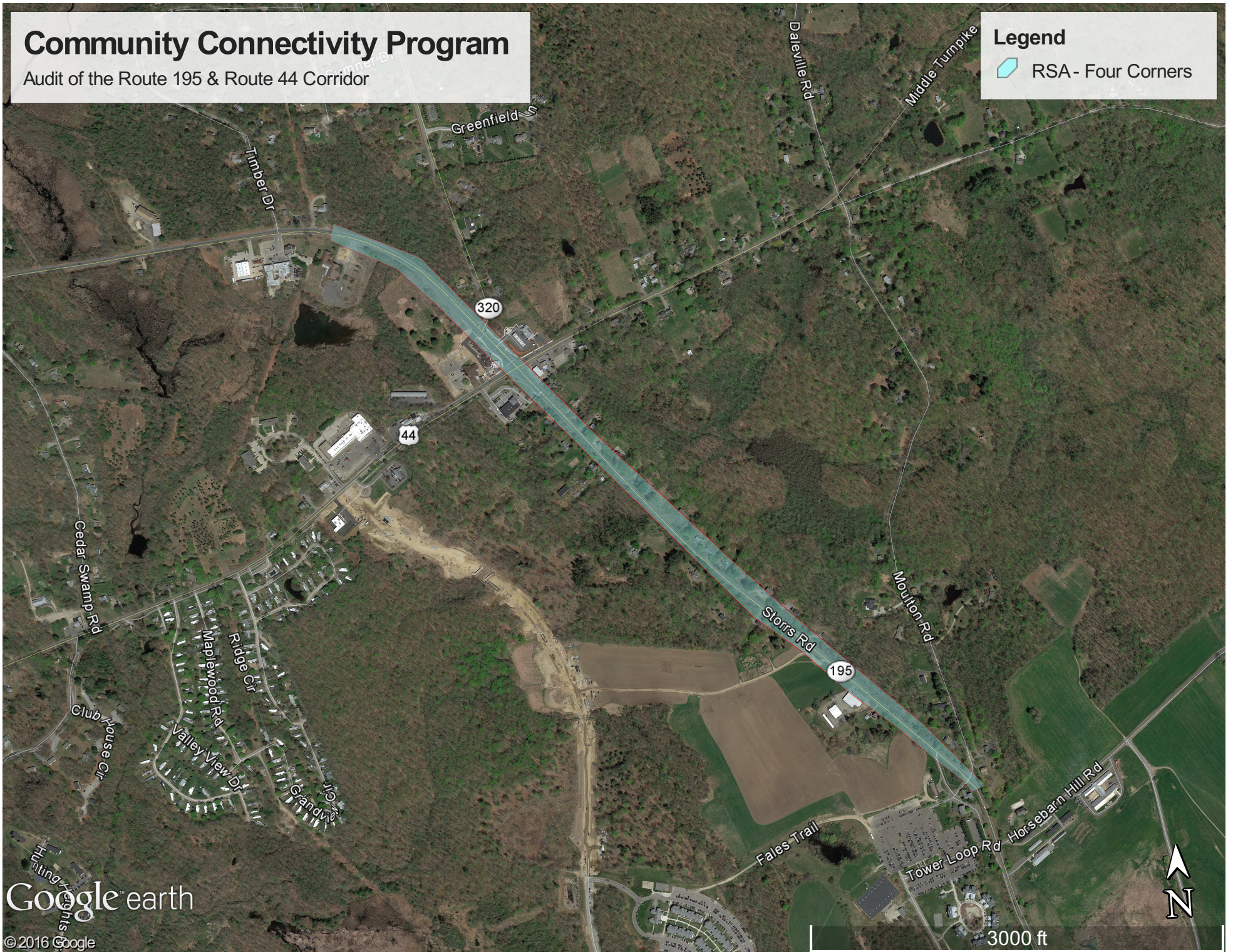
<ul style="list-style-type: none">• Pavement<ul style="list-style-type: none">○ Pavement Condition (excessive roughness or rutting, potholes, loose material)○ Edge drop-offs○ Drainage issues• Lighting Adequacy	
<ul style="list-style-type: none">• Signing<ul style="list-style-type: none">• Correct use 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	

Community Connectivity Program

Audit of the Route 195 & Route 44 Corridor

Legend

 RSA - Four Corners



Google earth

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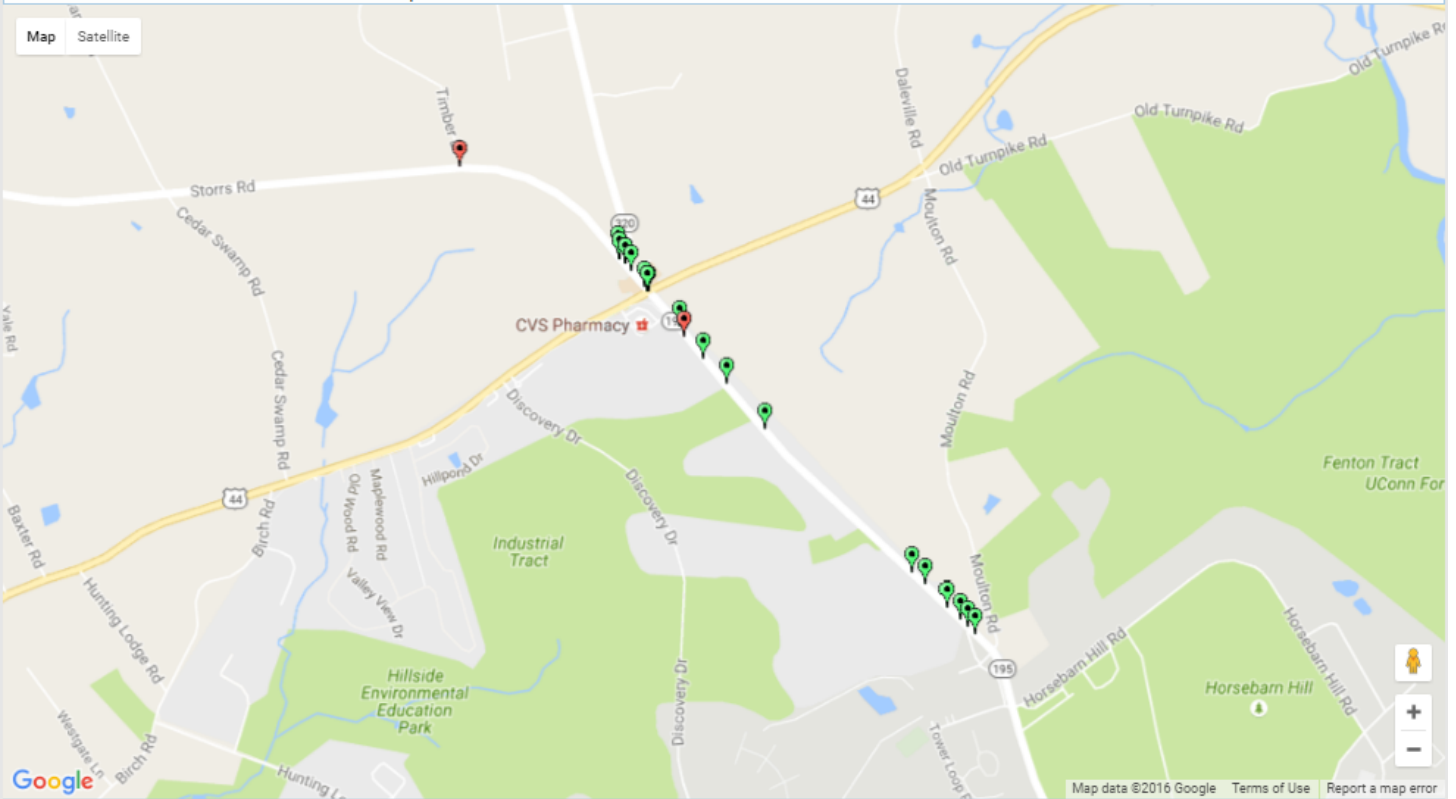
2015 Crashes

UConn

Connecticut Crash Data Repository

Search Criteria:

Dataset: mmucc
Date From: 01/01/2015
Date To: 12/31/2015
Towns: Mansfield
Town & Route: Town:78 Route:195 Intersection:undefined Milepost:8.5-9.8
Crash Severity: Injury of any type (Serious, Minor, Possible), Fatal (Kill), Property Damage Only
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

This web site is exempt from discovery or admission under 23 U.S.C. 409.

Connecticut Crash Data Repository [User Guide](#) [Contact Us](#)



Road Safety Audit – Mansfield

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	92	86%
Injury (No fatality)	15	14%
Fatality	0	0%
Total	107	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	4	4%
Rear-end	67	63%
Turning-Intersecting Paths	12	11%
Turning-Opposite Direction	11	10%
Fixed Object	5	5%
Backing	0	0%
Angle	3	3%
Turning-Same Direction	3	3%
Moving Object	1	1%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	1	1%
Miscellaneous- Non Collision	0	0%
Total	107	



Weather Condition	Number of Crashes	
Snow	3	3%
Rain	21	20%
No Adverse Condition	81	76%
Unknown	0	0%
Fog	0	0%
Other	0	0%
Blowing Sand, Soil, Dirt or Snow	1	1%
Severe Crosswinds	1	1%
Sleet, Hail	0	0%
Total	107	

Light Condition	Number of Crashes	
Dark-Not Lighted	4	4%
Dark-Lighted	15	14%
Daylight	86	80%
Dusk	1	1%
Unknown	0	0%
Dawn	1	1%
Total	107	

Road Surface Condition	Number of Crashes	
Snow/Slush	4	4%
Wet	29	27%
Dry	74	69%
Unknown	0	0%
Ice	0	0%
Other	0	0.0%
Total	107	











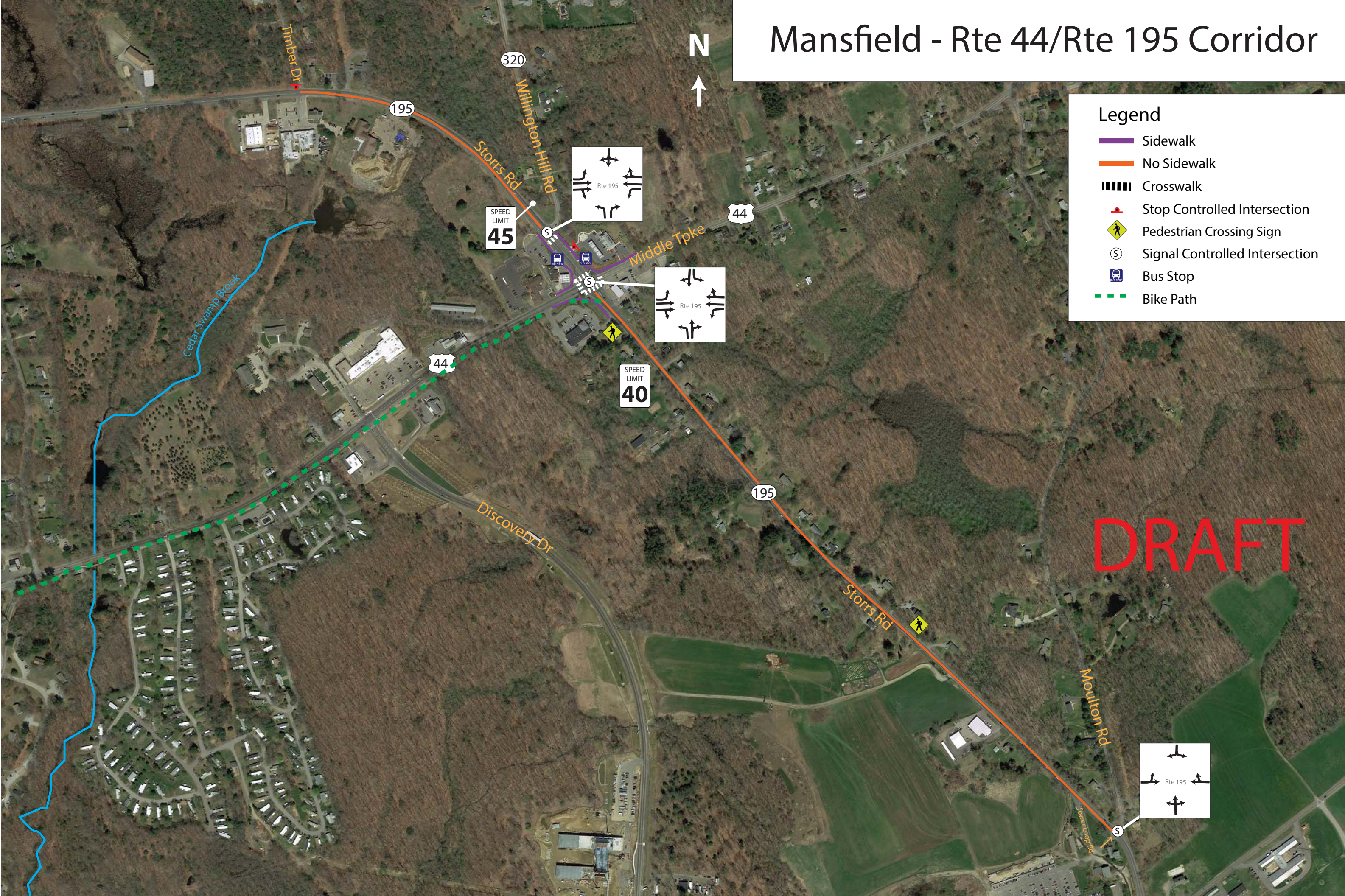
Time		Number of Crashes	
0:00	0:59	0	0%
1:00	1:59	1	1%
2:00	2:59	0	0%
3:00	3:59	0	0%
4:00	4:59	0	0%
5:00	5:59	1	1%
6:00	6:59	2	2%
7:00	7:59	1	1%
8:00	8:59	6	6%
9:00	9:59	15	14%
10:00	10:59	3	3%
11:00	11:59	7	7%
12:00	12:59	9	8%
13:00	13:59	10	9%
14:00	14:59	13	12%
15:00	15:59	6	6%
16:00	16:59	8	7%
17:00	17:59	7	7%
18:00	18:59	4	4%
19:00	19:59	4	4%
20:00	20:59	3	3%
21:00	21:59	0	0%
22:00	22:59	5	5%
23:00	23:59	2	2%
Total		107	

Mansfield - Rte 44/Rte 195 Corridor



Legend

-  Sidewalk
-  No Sidewalk
-  Crosswalk
-  Stop Controlled Intersection
-  Pedestrian Crossing Sign
-  Signal Controlled Intersection
-  Bus Stop
-  Bike Path



DRAFT





Road Safety Audit – Mansfield

Fact Sheet

Functional Classification:

- Route 195 is classified as a Principal Arterial

ADT

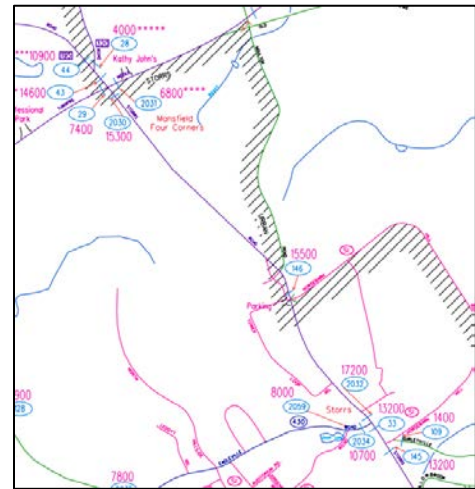
- ADT on Route 195 is 10,900 – 17,200

Population and Employment Data (2014):

- Population: 26,328
- Employment: 11,460

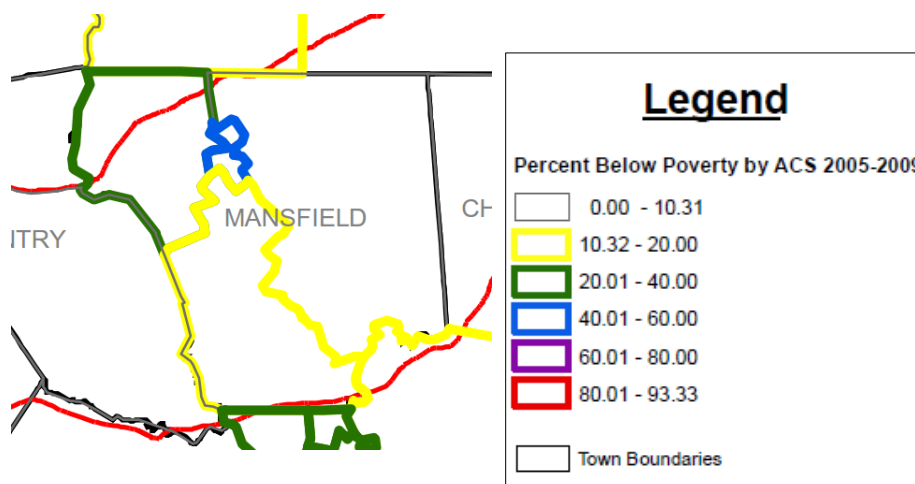
Urbanized Area

- Route 195 is in the Hartford Urbanized Area



Demographics

- The statewide average percentage below the poverty line is 10.31%. Within the vicinity of Route 195 up to 60% of residents are below the poverty line



- The statewide average percentage minority population is 30.53%. There are no areas within the vicinity of Route 195 that exceed the state's average.

Air Quality

- Mansfield's CIPP number 707
- Mansfield is within the Greater CT Marginal Ozone Area
- Mansfield is within a CO Attainment Area