



COMMUNITY
connectivity program

Bolton

Notch Road, Bolton Center Road, Brandy Street, Loomis Road and Hebron Road – Road Safety Audit

July 22, 2016



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Acknowledgements:

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With assistance from AECOM Transportation Planning Group

Contents

1	Introduction to Notch Road, Bolton Center Road, Brandy Street, Loomis Road and Hebron Road, Bolton RSA	6
1.1	Location	6
2	Pre-audit Assessment.....	8
2.1	Pre-audit Information	8
2.2	Prior Successful Effort.....	14
2.3	Pre-Audit Meeting	14
3	RSA Assessment.....	15
3.1	Field Audit Observations	15
3.2	Post Audit Workshop - Key Issues	21
4	Recommendations	22
4.1	Short Term	22
4.2	Medium Term	25
4.3	Long Term.....	27
4.4	Summary.....	29

Figures

Figure 1.	Notch Road, Bolton Center Road, Brandy Street, Loomis Road and Hebron Road, Bolton.....	7
Figure 2.	Study Area – Regional Context.....	8
Figure 3.	Crashes that Occurred in 2015 (Connecticut Crash Data Repository)	10
Figure 4.	Notch Road, Bolton Center Road, Brandy Street, Hebron Road - Road Geometrics. 12	
Figure 5.	Bolton Center Road East Leg at Hebron Road.....	15
Figure 6.	Low Mounted Street Sign.....	16
Figure 7.	Hebron Road Approach Stop Sign.....	16
Figure 8.	Drainage Issue on Notch Road.....	16
Figure 9.	Intersection of Notch Road and Bolton Center Road	17
Figure 10.	Open Drainage Ditch on Bolton Center Road.....	17
Figure 11.	Library Green	17
Figure 12.	Drainage Issues by Library Green.....	18
Figure 13.	South Toomey Road Cross Section.....	18
Figure 14.	Bike Route Signage on Brandy Street.....	19
Figure 15.	Loomis Road Approach Stop Bar at Brandy Street.....	19

Figure 16. Loomis Road Cross Section	20
Figure 17. Bates Way Faded Stop Bar.....	20
Figure 18. Hebron Road Cross Section.....	20
Figure 19. Examples of School Zone Signs.....	23
Figure 20. Short Term Recommendations	24
Figure 21. Medium Term Recommendations	26
Figure 22. Gravel Path	27
Figure 23. Long Term Recommendations	28

Tables

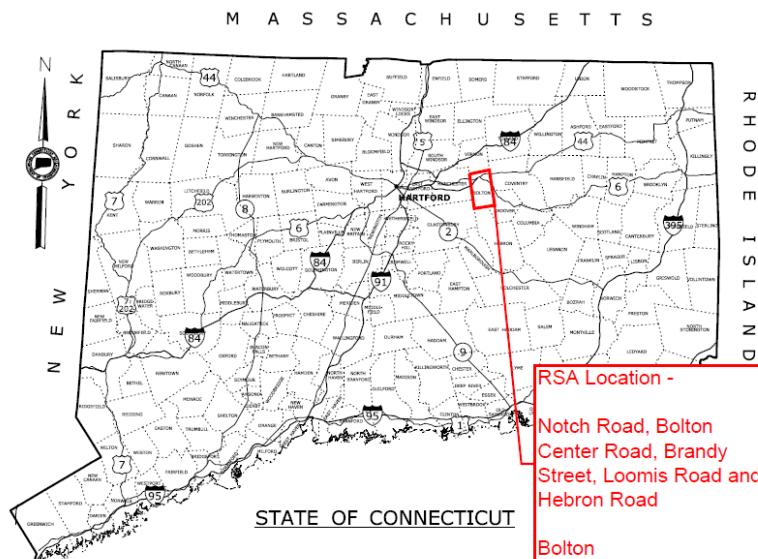
Table 1. Crash Severity 2012-2014.....	9
Table 2. Crash Type 2012-2014	9
Table 3. Street Inventory	13



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 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 Notch Road, Bolton Center Road, Brandy Street, Loomis Road and Hebron Road, Bolton RSA

The Town of Bolton submitted an application to complete an RSA on Bolton Center Road, Hebron Road, Notch Road, Loomis Road and Brandy Street to improve safety for pedestrians and bicyclists travelling along the corridor between town center, Bolton High School and Bolton Center School. At the beginning of the Audit, it was determined that Toomey Road should be added to the RSA study area. This particular corridor is located within the Hartford Urbanized area. This corridor experiences low to moderate traffic volumes and high speeds, especially on Hebron Road and Bolton Center Road. The study area does not have any sidewalks. Because Bolton is a relatively small town in area, the Town facilities are centered in close proximity to each other but lack multi modal connectivity. Connectivity would create and expand a more vibrant use of the town center area that would also maintain the Town's rural character. The Town's main goal is to provide connectivity to the town center.

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

1.1 Location

The RSA corridor includes Notch Road, Bolton Center Road, Brandy Street, Loomis Road and Hebron Street (Figure 1). Figure 2 shows the study area in a regional context. Notch Road is a local road and provides north-south connection from Bolton Center Road to Routes 44, 6 and I-384 to the north. Bolton Center Road runs east-west through the town center. East of Hebron Road, Bolton Center Road is classified as a local road and west of Hebron Road, it is classified as a collector road. The Average Daily Traffic (ADT) on Bolton Center Road west of Route 85 is 6,300 vehicles per day (vpd) and east of Route 85 is 4,700 vpd. These are considered low to moderate for rural roadways. Hebron Road is a collector road and runs north-south from the town center to the Town's southern boundary line. Brandy Street is a local road and runs north-south past Bolton High School. Loomis Road is a local road and runs east-west between Brandy Street and Route 85. All the roads in the RSA corridor have single lanes in each direction. All intersections throughout the study area are controlled by stop signs.



Figure 1. Notch Road, Bolton Center Road, Brandy Street, Loomis Road and Hebron Road, Bolton

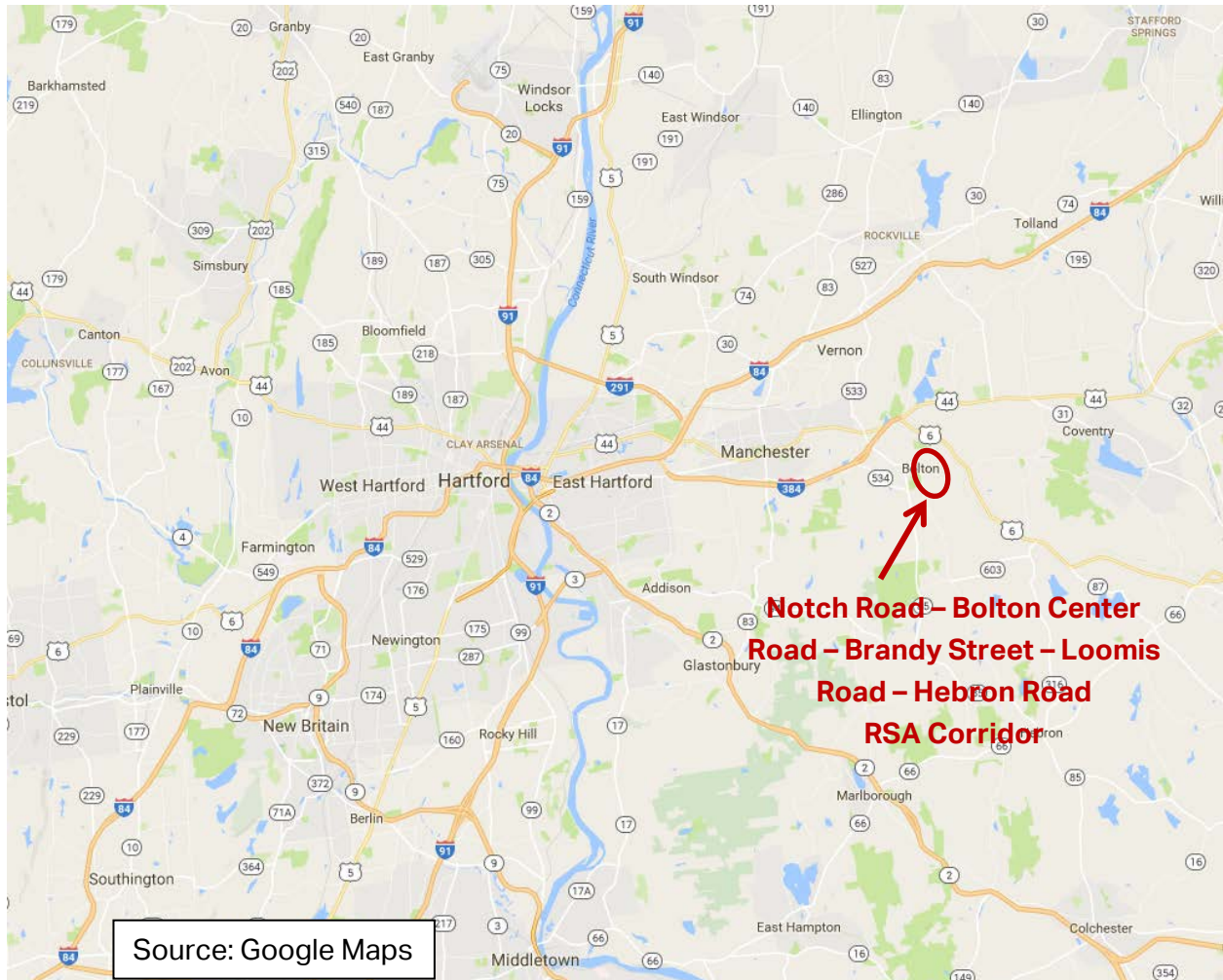


Figure 2. Study Area – Regional Context

2 Pre-audit Assessment

2.1 Pre-audit Information

As noted above, traffic volumes are low to moderate along this corridor, given the rural nature of this town. Between 2012 and 2014 there were 10 crashes in the RSA area. A majority of crashes in this area were fixed object collisions. Table 1 and Table 2 provide additional information on the type of collision as well as the severity of the crash. While a majority of crashes (90%) resulted in property damage, one crash did result in injuries. There were no crashes involving pedestrians or bicyclists between 2012 and 2014.

Figure 3 displays crashes that occurred in this area during 2015. Crashes are sparsely dispersed throughout the RSA area without any significant cluster of crashes.

Severity Type	Number of Accidents	
Property Damage Only	9	90%
Injury (No fatality)	1	10%
Fatality	0	0%
Total	10	

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	1	10%
Rear-end	1	10%
Turning-Intersecting Paths	2	20%
Turning-Opposite Direction	0	0%
Fixed Object	6	60%
Backing	0	0%
Angle	0	0%
Turning-Same Direction	0	0%
Moving Object	0	0%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	0	0%
Miscellaneous- Non Collision	0	0%
Total	10	

Table 2. Crash Type 2012-2014

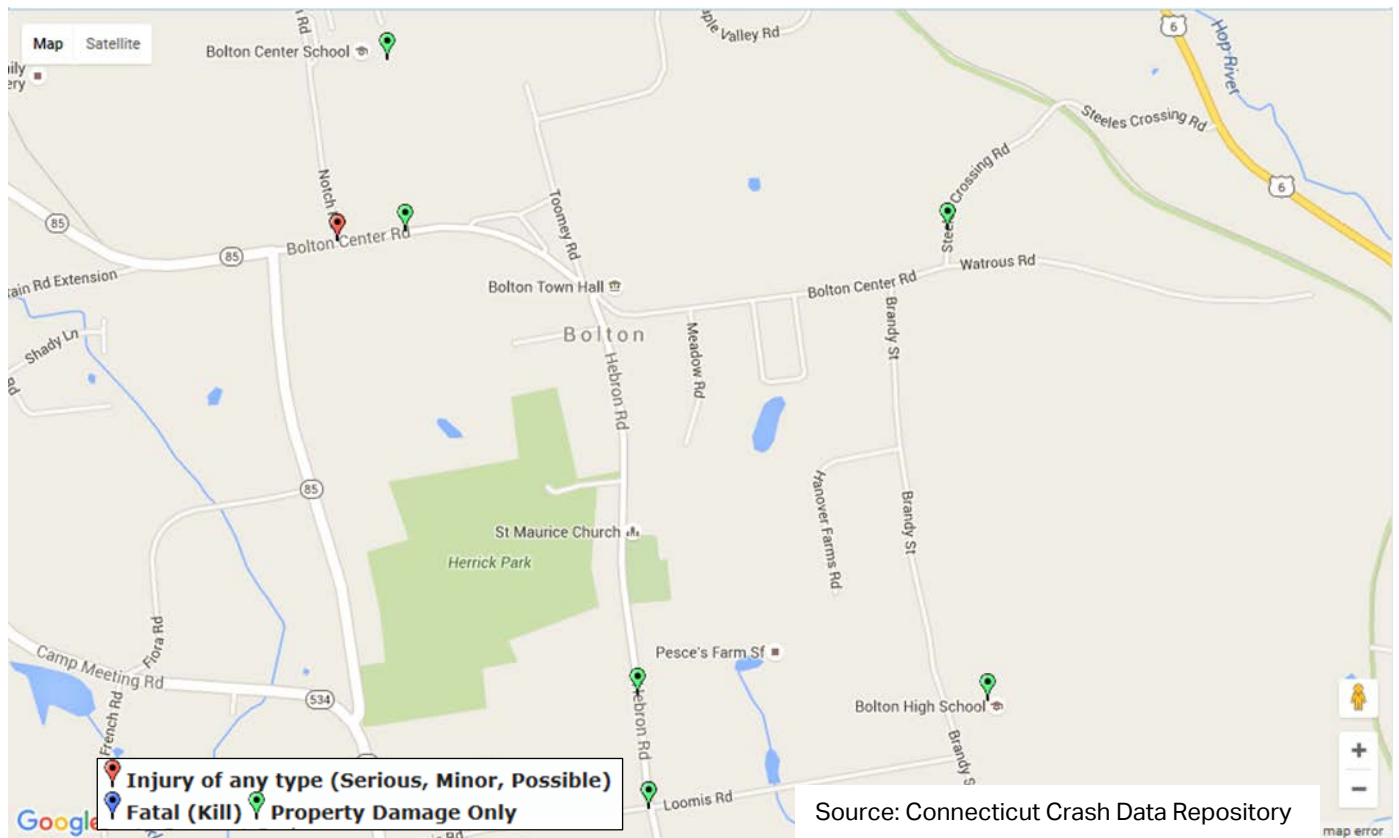


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

Notch Road has single lanes in each direction and shoulders on both sides. The posted speed limit on Notch Road is 35 mph. At Bolton Center School, the shoulders on Notch Road are 2.5 feet wide and the travel lanes are 11 to 12 feet wide.

The intersection of Notch Road and Bolton Center Road is a T-intersection controlled by a stop sign on Notch Road. Bolton Center Road is the eastbound/westbound approach and Notch Road is the southbound approach to the intersection. Both Bolton Center Road and Notch Road have 11-foot single lanes in each direction. The Bolton Center Road west leg has 4 foot wide shoulders on both sides. The Bolton Center Road east leg and Notch Road have three-foot wide shoulders on both sides. The intersection has no crosswalk.

The intersection of Bolton Center Road and Hebron Road in front of the Town Hall is a three-way intersection controlled by stop signs on all approaches. Bolton Center Road is the eastbound/westbound approach and is classified as a collector west of Hebron Road and as a local road east of Hebron Road. Hebron Road is the northbound approach to the intersection. Bolton Center Road and Hebron Road have single lanes in each direction (11 feet wide) and shoulders on both sides. Hebron Road has four-foot wide shoulders on both sides. Bolton

Center Road has three to six foot wide shoulders on the north side and three to five foot wide shoulders on south side. On-street parking is located in front of the Town Hall along the north side of Bolton Center Road westbound approach. There are no crosswalks at this location.

Brandy Street has single travel lanes in each direction. At Bolton High School, the lanes on Brandy Street are 10 feet wide in each direction and shoulders are one-foot wide on both sides. The posted speed limit in this area is 25 mph. There are no crosswalks at this location.

The intersection of Hebron Road and Loomis Road is a four-way intersection with stop signs on Loomis Road. Hebron Road is the northbound/southbound approach with single lanes (11 feet wide) in each direction and three-foot wide shoulders on both sides. Loomis Road is the eastbound/westbound approach with single lanes (10 feet wide) in each direction and one to two-foot wide shoulders on both sides.

Roadway geometrics for study area roadways and intersections are shown in Figure 4. An inventory of existing conditions of the intersection can be found in Table 3.



Figure 4. Notch Road, Bolton Center Road, Brandy Street, Hebron Road - Road Geometrics

Bolton - RSA Corridor Street Inventory

Street	Direction	Lanes	Avg. Lane Width	Sidewalk				Curb	Parking	Shoulder	Ramps	
				Side	Type	Width	Condition *				Exist	Compliant
Notch Road at Bolton Center School	Northbound	1	12'	East	None	None	None	None	No	2.5'	None	None
	Southbound	1	11'	West	None	None	None	None	No	2.5'	None	None
Notch Road at Bolton Center Road	Northbound	1	11'	East	None	None	None	None	No	3'	None	None
	Southbound	1	11'	West	None	None	None	None	No	3'	None	None
Bolton Center Rd at Notch Rd	Eastbound	1	11'	North	None	None	None	None	No	3'-4'	None	None
	Westbound	1	11'	South	None	None	None	None	No	4'	None	None
Hebron Road at Bolton Center Road	Northbound	1	11'	East	None	None	None	None	No	4'	None	None
	Southbound	1	11'	West	None	None	None	None	No	4'	None	None
Bolton Center Road (in front of Town Hall)	Eastbound	1	11'	North	None	None	None	None	No	3' - 6'	None	None
	Westbound	1	11'	South	None	None	None	Concrete	Yes	3'-5'	None	None
Brandy Street at Bolton High School	Northbound	1	10'	East	None	None	None	None	No	1'	None	None
	Southbound	1	10'	West	None	None	None	None	No	1'	None	None
Hebron Rd at Loomis Rd	Northbound	1	11'	East	None	None	None	None	No	3'	None	None
	Southbound	1	11'	West	None	None	None	None	No	3'	None	None
Loomis Rd at Hebron Rd	Eastbound	1	10'	North	None	None	None	None	No	1' - 2' (varies)	None	None
	Westbound	1	10'	South	None	None	None	None	No	1' - 2' (varies)	None	None

Table 3. Street Inventory

2.2 Prior Successful Effort

The Town of Bolton has a Vibrant Communities Study completed for their town center. During this RSA it was recommended that the Town look into closing the east approach of Bolton Center Road to the intersection with Hebron Road and extending the town green. The Town of Bolton has supported this idea and would like to move towards it in the future to create more public space in the town center. The Town also uses the Bentley Memorial Library and Green to host community events such as concerts and markets.

2.3 Pre-Audit Meeting

The RSA was conducted on July 22, 2016. The Pre-Audit meeting was held at 8:30 AM in the Town Hall located at 222 Bolton Center Road in Bolton.

The RSA Team was comprised of staff from AECOM, staff from CTDOT, representatives from several Bolton departments including the Town Planner, State Police, the Highway Supervisor, the First Selectman, Bolton High School Principal, the Director of Community Development and the Administrative Officer and two members of the public at large. 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 Town of Bolton is not interested in constructing sidewalks in town. They feel that sidewalks may take away from the rural character of the Town.
 - The Town would like to improve safety for pedestrians and bikers while maintaining the Town's rural character.
- Vehicles travel up to 60 mph on Route 85, which leads directly to Bolton Center Road and the town center.
- The Town's main goal is to connect the elementary school and high school to the town center.
- The Town requested to include Loomis Road in the study area and extend both Brandy Street and Hebron Road to their intersection with Loomis Road.
- The intersection of Hebron Road and Loomis Road has operational issues.
- Speed is an issue on Hebron Road. Drivers use this road as a commuter route. State Police enforce speeds on Hebron Road.
- The Town would like to look into strategies for significantly lowering speeds in the town center.
- Distracted drivers are a major safety concern statewide and an issue in the study area. The police need to continue enforcement of distracted driving statutes.
- The Town supports the addition of sharrows where they would be applicable.
- The Town feels that over use of signage in the study area can give the roads more of a highway feel.

- Bolton recognizes that lane narrowing is an option that could reduce vehicle speeds. This would require the Local Traffic Authority to contact the CTDOT.
- The Town of Bolton may consider beginning traffic calming measures such as lane narrowing on Bolton Center Road just past the Route 85 intersection near the bike trail crossing to begin the transition into the town center.
- Street lighting is only provided at intersections.
- The town center is part of the annual town road race. The roads in the study area are frequently used as running routes by high school running teams.
- Lowering speed limits without changing the design of the road does not encourage drivers to travel at lower speeds. A gateway treatment to the town center may cause drivers to drive slower.
- Sharrows are not recommended for higher speed roadways.
- There are no crosswalks in the study area or the Town.
- Community members are accustomed to walking in the road.
- Bolton would like to look into ways of educating road users (drivers and bikers) on bike laws and safety without the over use of signage. The CTDOT has educational bicycle information.
- The state police have a portable speed trailer they can locate in the town center.
- Installing crosswalks at stop signs could be useful in encouraging drivers to come to full stops at stop signs.
- Gathering speed data to determine 85th percentile speed on the roadway could give CTDOT hard evidence that speed limits may need to be lowered and approve the installation of town center gateway signing
- The Town should consider using a portable speed recorder to show drivers how fast they are going. Another option would be to use a decoy trooper vehicle so that state troopers do not have to dedicate as much time monitoring traffic speeds.
- On street parking can be used as a passive traffic calming technique. Rapid flashing beacons can be used at crosswalks.

3 RSA Assessment

3.1 Field Audit Observations

Intersection of Bolton Center Road and Hebron Road in front of Town Hall:

- The widths on Hebron Road consist of two four-foot shoulders and two 11-foot travel lanes.
- The widths on Bolton Center Road consist of three to five-foot shoulders and two 11-foot travel lanes.



Figure 5. Bolton Center Road East Leg at Hebron Road

- The Town has a plan to realign Hebron Road and Bolton Center Road to create a T-intersection.
- A crosswalk across the Bolton Center Road east leg would be beneficial (Figure 5):
 - There would need to be advanced pedestrian crossing signage installed.
 - On-street parking in front of the Town Hall would need to be shifted east or one space may need to be removed.
- Drainage is not a concern in the town center area.
- All signs in the town center are mounted below seven feet (Figure 6).
- The stop sign on the Hebron Road approach is set far back from the intersection (Figure 7).
 - If moved up it would force drivers to come to a stop at the intersection.
 - Currently drivers do not stop at this stop sign if there is no oncoming traffic.
- The Town has a significant amount of right of way on the southwest corner of Hebron Road and Bolton Center Road.
 - The town can consider the possibility of low landscaping on the corner to force drivers to come to the intersection and make a complete stop to see traffic (without obstructing sightlines).
- Consider on-street parking on Bolton Center Road as a passive traffic calming measure.
- A roundabout at the town center may be considered for the redesign of this intersection.

Notch Road at Bolton Center School:

- The speed limit is posted at 35 mph in this area.



Figure 6. Low Mounted Street Sign



Figure 7. Hebron Road Approach Stop Sign



Figure 8. Drainage Issue on Notch Road

- The roadway is 27.5 feet wide including two and a half foot shoulders.
- This is a good area to consider the addition of school zone signing.
- The stop signs in this area are mounted below seven feet.

Notch Road at Bolton Center Road near Fire Department:

- At this location on Notch Road the shoulders are three feet wide and the travel lanes are 11 feet wide.
 - A three foot shoulder is the minimum for a bike to use the shoulder.
- There is a drainage issue on the west side of Notch Road (Figure 8).
- The stop bar on Notch Road is set back from the intersection with Bolton Center Road, which limits sight distance.
- The lane at the stop bar widens significantly and drivers treat it as two lanes (right and left turn onto Bolton Center Road) (Figure 9).
- The intersection is wide. Across the opening of Notch Road at Bolton Center Road it is 112 feet wide.
- An open drainage ditch on the south side of Bolton Center Road is in the recovery area (Figure 10).

Bentley Memorial Library and Green:

- The Town frequently hosts community events on the green such as concerts and markets (Figure 11).
 - The green is often wet so vehicles cannot park on it.



Figure 9. Intersection of Notch Road and Bolton Center Road



Figure 10. Open Drainage Ditch on Bolton Center Road



Figure 11. Bentley Memorial Library and Green

- Cars park on surrounding side roads during events.
- The library has a bike rack.
- There are drainage issues on the Bolton Center Road side of the green (Figure 12).
- Old Bolton Road is a one-way street and the stop sign intersection with Bolton Center Road has limited visibility for left turns due to posts with reflectors.
- Reflectors on posts along with chevrons make Bolton Center Road feel like a highway and the Town will look into removing them.
- The Town does not want to install concrete sidewalks, but would like a connection between library green and the Town Hall area with a crushed stone, gravel or stone dust path.
 - There may be concerns about vehicles parking on any created gravel path.
 - A buffer can be left between the pathway and road to discourage parking.



Figure 12. Drainage Issues by Library Green

Toomey Road:

- This road could be used as a possible connection between Town Hall and Bolton Center School.
 - This would provide a route so people could avoid walking on Bolton Center Road.
 - An informal trail already exists to the school property.
 - A back entrance to Bolton Center School via Toomey Road can be considered, although access, security and safety issues need to be addressed.



Figure 13. South Toomey Road Cross Section

- Once connection is made, wayfinding could be installed to guide pedestrians to the preferred route.
- Traffic volume and speeds on Toomey Road are low so no formal bicycle and pedestrian facilities are needed.
- Two of the three approaches have a stop control at the intersection of Toomey Road and Summer Road.
- The width of Toomey Road is 21.5 feet with no centerline, shoulder or curbing (Figure 13).

Bolton Center Road at Bolton Heritage Farm (BHF):

- Bolton Center Road lane widths measure 10 and 11 feet with a two-foot shoulder on the north side and a six inch shoulder on the south side.
- Can consider narrowing travel lanes to increase shoulder width for bikes, but there is not much space to work with.
- There is the possibility of using a crushed gravel path to create a connection between Town Hall and BHF on the north side of Bolton Center Road.

Brandy Street at Bolton High School:

- Brandy Street has 10-foot wide travel lanes and one-foot wide shoulders.
- The shoulder lines are faded.
- The speed limit in this area is 25 mph.
- There is bike route signage (Figure 14).
- There are drainage issues on the road side.
- There are good sightlines in front of the high school.
- Consider adding crosswalks and school ahead signage.

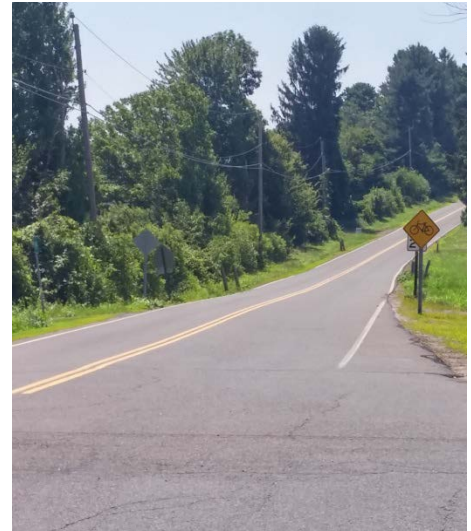


Figure 14. Bike Route Signage on Brandy Street



Figure 15. Loomis Road Approach Stop Bar at Brandy Street

- Consider striping narrower lanes.

Intersection of Brandy Street and Loomis Road:

- The stop bar for the Loomis Road approach is set back and sightlines are blocked by the tree on the northwest corner (Figure 15).
- Loomis Road lane widths consist of 10-foot travel lanes and one foot shoulders.
- Loomis Road is flat and straight which encourages speeding. Consider striping narrower lanes (Figure 16).



Figure 16. Loomis Road Cross Section

Intersection of Loomis Road and Hebron Road:

- Consider a flashing beacon and advance "intersection ahead" signage.

Hebron Road:

- The posted speed limit is 40 mph.
- Vehicles travel at high speeds on this road.
- Consider striping narrower lanes.

Herrick Park (Intersection of Bates Way and Hebron Road):

- Faded stop bar paint on Bates Way approach (Figure 17).
- Hebron Road at this location includes 11-foot travel lanes with two-foot shoulders (Figure 18).
 - Consider striping narrower lanes to 10-foot travel lanes which would increase the shoulders to three feet wide.
 - Further north on Hebron road near the curve the widths change to 11 and 11.5-foot travel lanes with 12 and 18 inch shoulders.



Figure 17. Bates Way Faded Stop Bar



Figure 18. Hebron Road Cross Section

- Lane and shoulder widths should be striped consistently.
- Consider a crushed stone path between Bates Way and the town center on the west side of Hebron Road.

3.2 Post Audit Workshop - Key Issues

- Traffic signs in the area of the town center and Bolton Center School are mounted below seven feet.
- The stop bar at the Hebron Road approach to Bolton Center Road is set back. At its current location, if drivers see there is no oncoming traffic before arriving at the intersection they often do not come to a full stop. The stop bars at the Loomis Road approach to Brandy Street and Notch Road approach to Bolton Center Road are set back, which limits driver's sightlines.
- On Notch Road, within the area of Bolton Center School, there is no school zone signing. This allows vehicles to travel at the posted speed of 35 mph by the school.
- The majority of roads in the study area have shoulders less than three feet in width. Three foot shoulders are the minimum width to allow bicyclists to bike in the shoulder.
- There were multiple drainage issues identified within the study area:
 - The west side of Notch Road in the vicinity of the Fire Department;
 - The open drainage on the south side of Bolton Center Road in front of the Fire Department;
 - The north side of Bolton Center Road bordering the Bentley Memorial Library and Green;
 - Both sides of Brandy Street in the vicinity of Bolton High School.
- The intersection of Notch Road and Bolton Center Road is wide with a large turning radius. This allows drivers to turn onto Notch Road at high speeds. In addition, the Notch Road approach to Bolton Center Road is wide which allows vehicles to use the lane simultaneously for right and left turns.
- The study area does not have any sidewalks and the Town of Bolton is not interested in adding sidewalks due to their urban feel and the maintenance issues that would need to be addressed with them.
- There are no established connections from the Town Hall to the Bolton Heritage Farm, Bentley Memorial Library and green, Bolton Center School, Bolton High School or Bolton Herrick Park. Pedestrians must walk in the street to reach these destinations.

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. Stripe a crosswalk across the east leg of Bolton Center Road at the intersection of Hebron Road:
 - a) Move the stop bar back to make room for crosswalk.
 - b) Eliminate one or two on-street parking spaces.
2. Move the stop bar ahead at these locations:
 - a) Hebron Road approach to the intersection with Bolton Center Road.
 - b) Loomis Road approach to Brandy Street.
3. Consider low level landscaping to the south west corner of the intersection of Bolton Center Road and Hebron Road.
4. Raise the heights of traffic signs to at least seven feet at the town center and Bolton Center School.
5. Wood posts on Bolton Center Road at these locations:
 - a) Evaluate the need to retain the wood posts on Bolton Center Road across from Notch Road to allow pedestrians more room to walk on the side of the road.
 - b) Remove the wood posts with reflectors on Bolton Center Road in the vicinity of the Bentley Memorial Library and Green.
6. Install school zone signs (this would include school zone signs, 20 MPH speed limit signs when school is in session and end school zone signs) (Figure 19) on Notch Road in the vicinity of Bolton Center School.

7. Restripe the Notch Road approach at Bolton Center Road to reduce the approach to one lane wide and increase the shoulder width. Move up stop bar.
8. Repaint the stop bar on the Bates Way approach to Hebron Road.

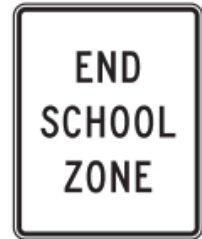


Figure 19. Examples of School Zone Signs

Figure 20 depicts these recommendations.

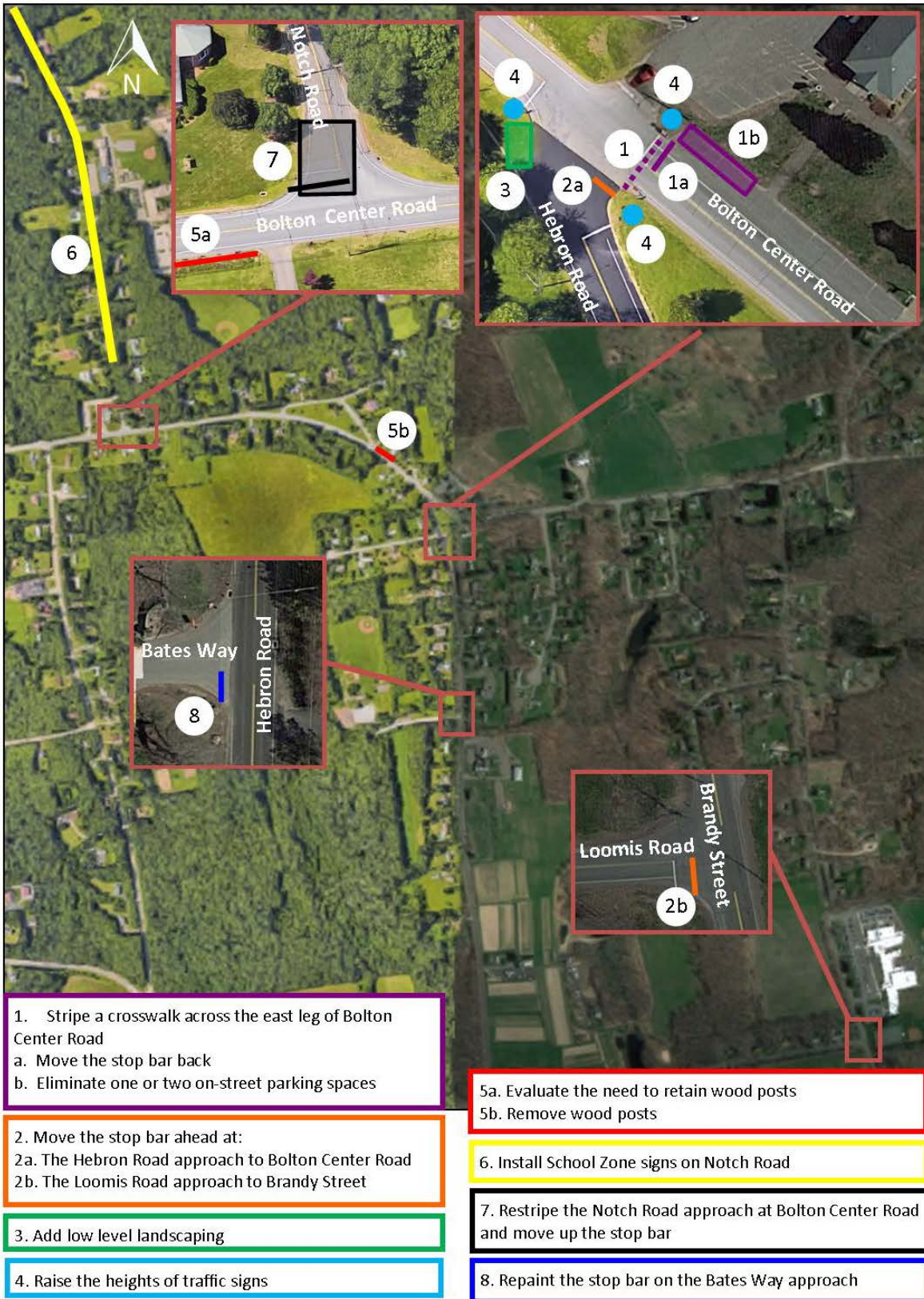


Figure 20. Short Term Recommendations

4.2 Medium Term

1. If the temporary streetscaping on the southwest corner of the intersection of Hebron Road and Bolton Center Road is successful consider implementing more permanent low landscaping.
2. Restripe the following roads within the study area to 10-foot travel lanes and three-foot shoulders where possible:
 - a. Hebron Road;
 - b. Bolton Center Road where Route 85 turns right near the Fire House;
 - c. Notch Road.
3. At the Notch Road intersection with Bolton Center Road:
 - a. Paint a crosswalk in front of the stop bar.
 - b. Decrease the turning radius.
 - c. Add curbing to tighten intersection, reduce overall width and make Notch Road's approach one lane.
4. After evaluation of possible effects on the Green, consider the feasibility of adding on-street parking on Bolton Center Road near Town Hall center as a passive traffic calming measure.

Figure 21 depicts some of the recommendations.



Figure 21. Medium Term Recommendations

4.3 Long Term

1. At the intersection of Bolton Center Road and Hebron Road, consider eliminating the east leg of Bolton Center Road and extend the green toward the Town hall. Realign the intersection of Bolton Center Road and Hebron Road to create a T-intersection.
2. Evaluate the possibility of replacing the stop controlled intersection of Bolton Center Road and Hebron Road with a roundabout.
3. Construct gravel paths (Figure 22) to complete connections between popular town destinations. Pass a town policy that states that residents do not need to maintain the path in front of their property and that the Town will not maintain the path during the winter.
 - a. Construct path from Town Hall to Bentley Memorial Library and Green on the north side of Old Bolton Road. Extend the gravel path along the green and leave a 10-15 foot buffer between the road and path to discourage parking on the path.
 - b. As an alternate connection to the Bentley Memorial Library and Green and the Bolton Center School, construct a path on the east side of Toomey Road.
 - c. Construct a path from the Town Hall to the Bolton Heritage Farm on the north side of Bolton Center Road.
 - d. Construct a path from Town Hall to Bolton Herrick Park on the west side of Hebron Road, and a crosswalk from the Town Hall to Hebron Road.
4. If a pathway connection is made using Toomey Road, consider adding wayfinding signing to direct pedestrians off of Bolton Center Road.
5. Realign Bolton Center Road in the vicinity of Bolton Heritage Farm toward the north to make room for striping a three foot wide shoulder to accommodate for bikes.
6. Install a flashing beacon at the intersection of Loomis Road and Hebron Road. Attach span wire to utility pole.
7. Request CTDOT to conduct a speed study to reduce posted speed limit on Bolton Center Road after complete streets measures have been completed.
8. Widen Brandy Street and Loomis Road to provide 10 foot (minimum) wide travel lanes and 3-4 foot wide shoulders.



Figure 22. Gravel Path

Figure 23 depicts some of these recommendations.

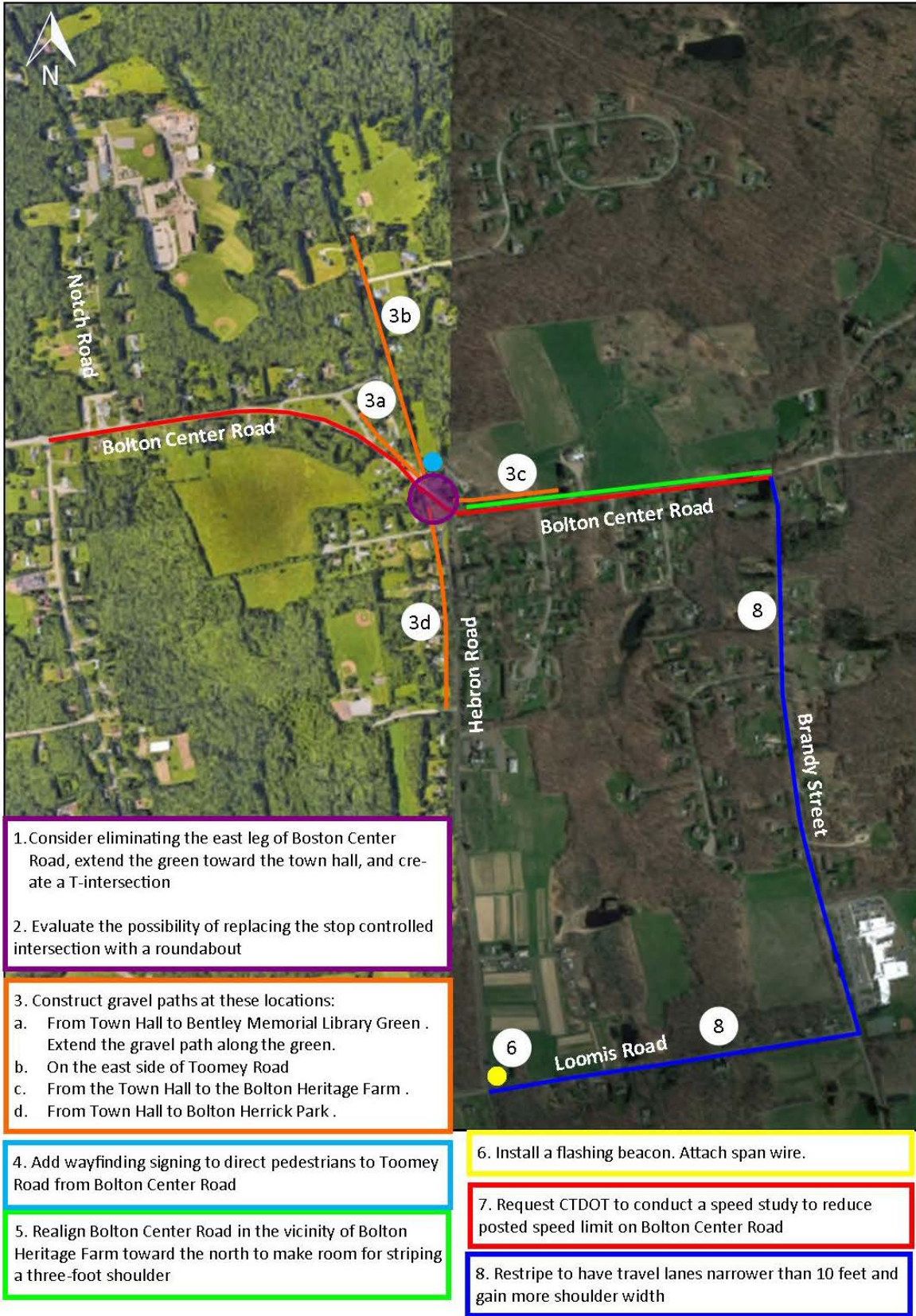


Figure 23. Long Term Recommendations

4.4 Summary

This report documents the observations, discussions and recommendations developed during the successful completion of the Town of Bolton RSA. It provides Bolton with an outlined strategy to improve the transportation network for all road users on Bolton Center Road, Hebron Road, Notch Road, Toomey Road, Loomis Road and Brandy Street, particularly focusing on pedestrians and cyclists. Moving forward, Bolton 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 in the vicinity of the town center, Bolton Town Hall, Bolton High School, Bolton Center School, Bolton Heritage Farm, Bentley Memorial Library, and Bolton Herrick Park.



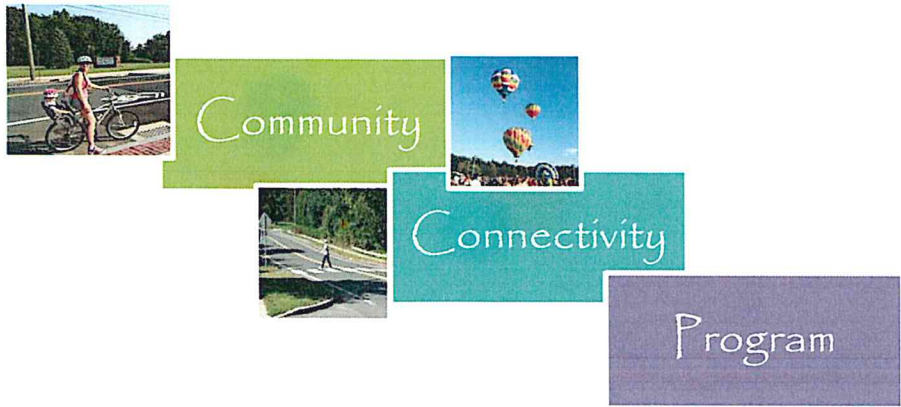
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Appendix A



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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

Title

Email Address

Telephone Number

2. Location information

Address

Description

City / Town
Municipal Center (Senior Center)

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)

Library, Town Hall, Senior Center and Public Access TV Station

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

Yes

No

If Yes please describe (please specify)

Government (Town and Schools) and Non-Profits

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)

Most of connections are on Town roads; no sidewalks exist.

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

Yes

If Yes please describe and list all projects.

In February, 2014, the Bolton Board of Selectmen adopted the Bolton Center Study completed under the Vibrant Communities Initiatives Program. The purpose was to develop a land use study and plan that created a unified vision for Bolton Center focusing on its historic, municipal and recreational assets and potential linkages among key Town Center assets. The Study provided a guide for the implementation of a long-term unified vision for Bolton Center. This Study coincides with our request under the Community Connectivity Program Application. Here is a link to the resolution adopted by the Board of Selectmen, Executive Summary & Key Recommendations, and Chapter 8 - Regulatory Recommendations for Implementing the Vision Plan:

http://www.bolton.govoffice.com/vertical/Sites/%7B30EEBA3C-BE1C-42AE-911F-0E304A672785%7D/uploads/Bolton_Center_Study.pdf

12. Environmental Concerns:

Historical Preservation

If Yes please describe and list.

For connectivity purposes possible environmental concerns might include historic preservation regarding Bolton Heritage Farm and wetlands but the wetlands impact would be minimal.

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

The Bolton Center Study identified the lack of true connectivity between town facilities in the center of town including Bolton High School, Herrick Park, Bolton Heritage Farm, Town Hall, Resident State Troopers Office, two town greens (home to town events, i.e., summer concert series, memorial ceremonies, farmers market), Library, Notch Road Municipal Center (including the Town Senior Center) and Bolton Center School. Connectivity would create and expand a more vibrant use of the town center area that currently is limited to vehicular traffic. The Town is struggling with creating safe connectivity that would also maintain our rural character.

14. Are there plans to expand the area?

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

Yes

The town recently completed an expansion/renovation project of Bolton High School. Current discussion includes expansion of athletic facilities at Bolton High School and Herrick Park. Opportunities at Bolton Heritage Farm include further trail expansion and use of the barn for community events. The 102-year old town hall and adjacent Resident State Troopers Office are being evaluated for space needs and reuse. Notch Road Municipal Center excluding the Senior Center is also being evaluated for long-term use. Connectivity should be a factor in any expansion discussions to enhance use.

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

Yes

Because Bolton is a relatively small town in area, our facilities are uniquely centered in close proximity to each other but lack multi modal connectivity. This program allows us the opportunity to enhance residents and visitors ability to connect town facilities and activities without needing a motor vehicle. This also promotes the town's identified Plan of Conservation and Development's goals for a healthy community, ability to foster culture and sense of community.

Thank you for this opportunity.

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)





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Appendix B



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Road Safety Audit

Town: Bolton
RSA Location: Bolton Center
Meeting Location: Bolton Town Hall
Address: 222 Bolton Center Road, Bolton, CT 06043
Date: 7/22/2016
Time: 8:30AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Jeff Maxtutis	AECOM
Lorenzo Varone	AECOM
Joyce Stille	Town of Bolton
Joseph Masilli	Bolton Schools
Bob Morra	Town of Bolton
Patrick Zapatka	CT DOT
Matt Wraight	Resident
Patrice Carson	Town of Bolton
Dave Piela	Town of Bolton



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Appendix C



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Road Safety Audit – Bolton

Meeting Location: Bolton Town Hall
Address: 222 Bolton Center Road
Date: 7/22/2016
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	



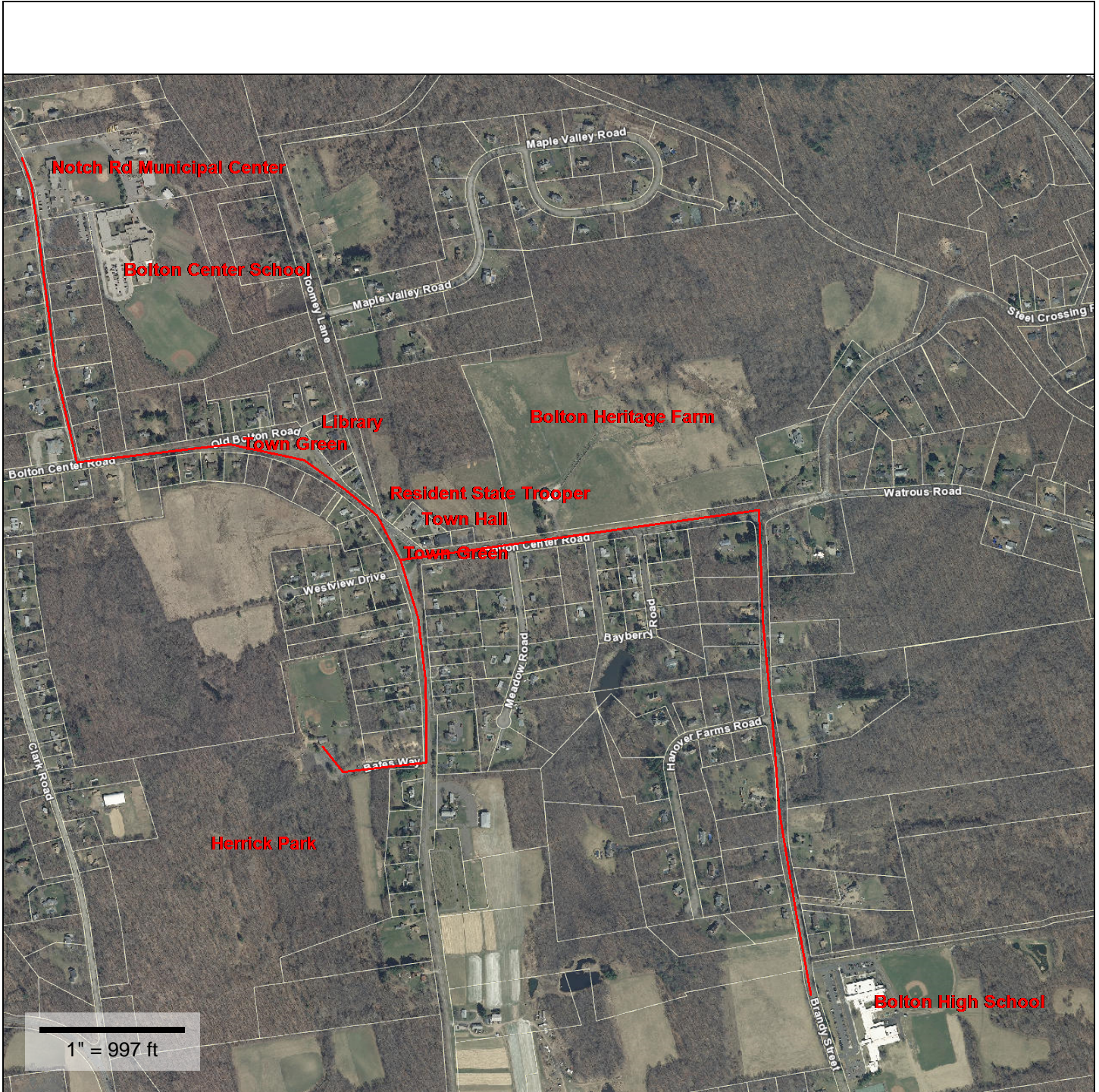
Bicycles <ul style="list-style-type: none">• Bicycle facilities/design• Separation from traffic• Conflicts with on-street parking• Pedestrian Conflicts• Bicycle signal detection• Visibility• Roadway speed limit• Bicycle signage/markings• Shared Lane Width• Shoulder condition/width• Traffic volume• Heavy 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	



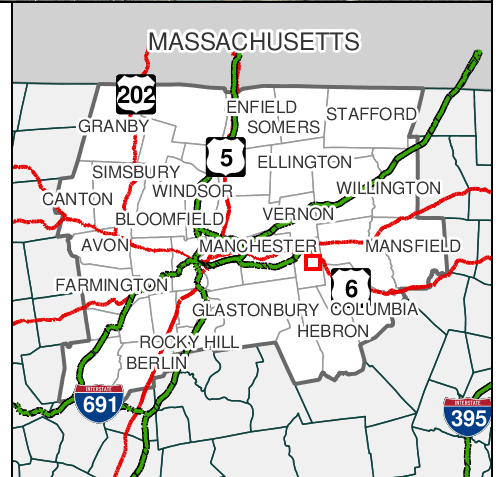
1" = 997 ft



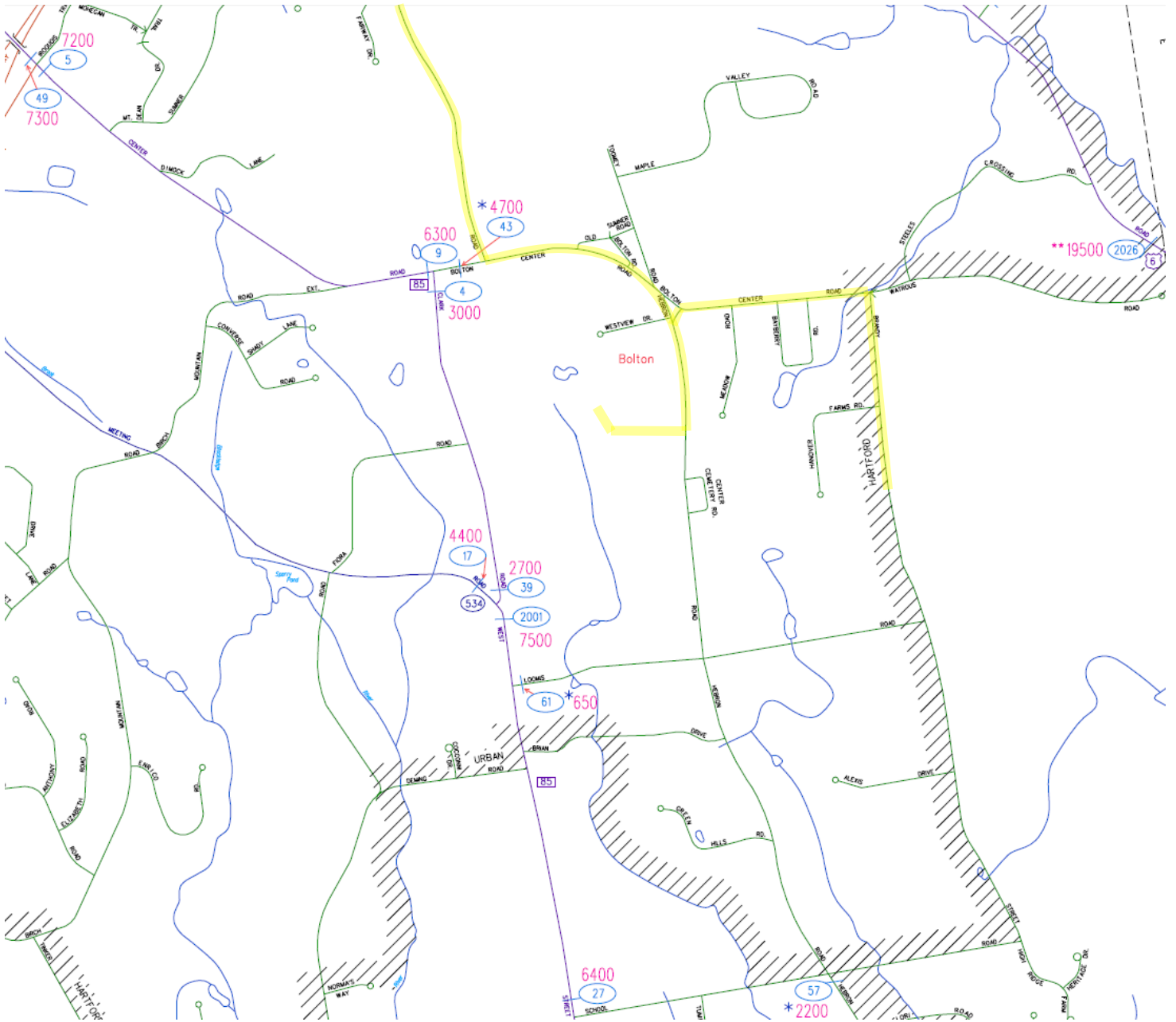
**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

CRCOG and AppGeo make no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated October 1, 2013



Average Daily Traffic (ADT)



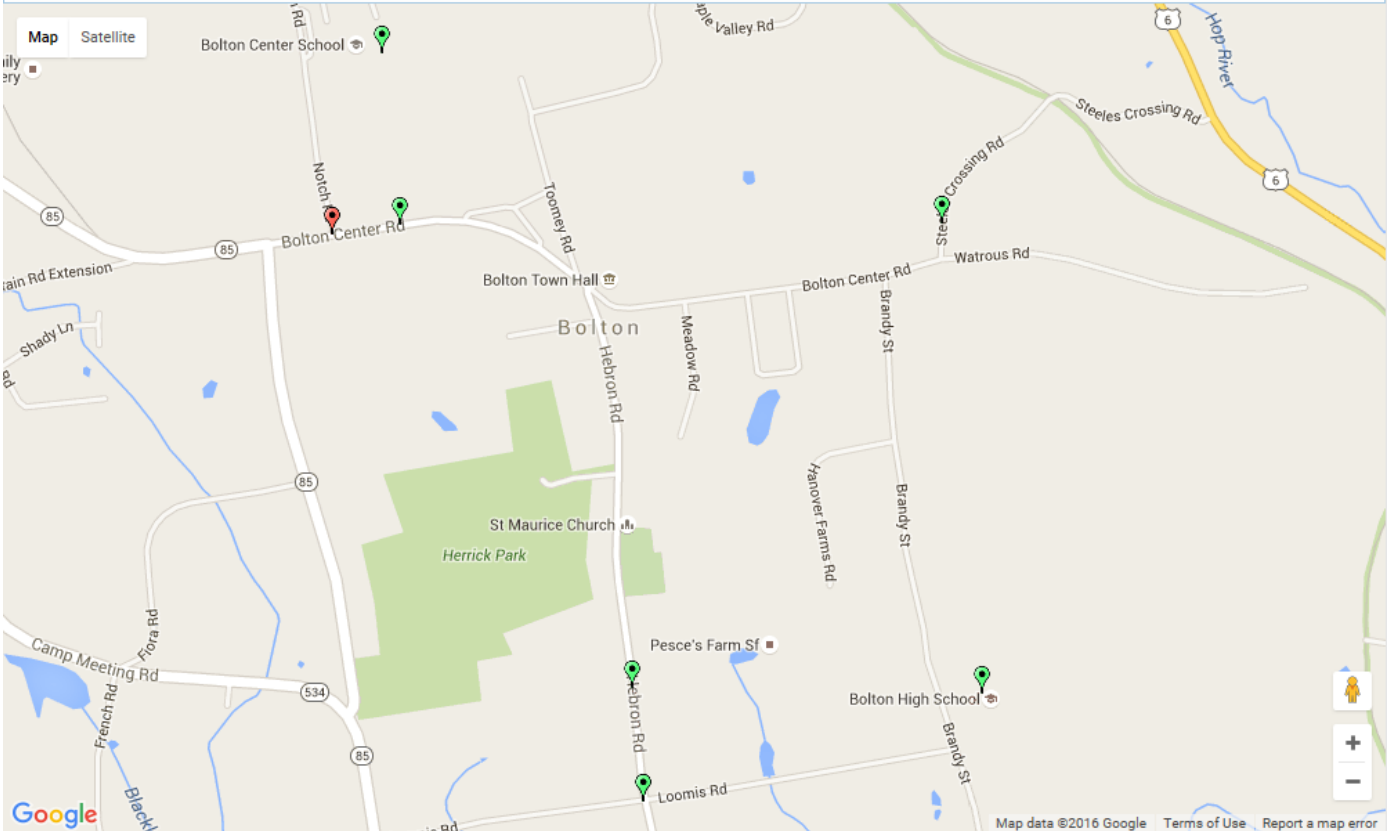
2015 Crashes

UConn

Connecticut Crash Data Repository

Search Criteria:

Dataset: mmucc
Towns: Bolton
Crash Severity: Injury of any type (Serious, Minor, Possible), Fatal (Kill), Property Damage Only
Case Status: Complete



Markers Heatmap Crashes By Route Select & Query

Query Selection

Injury of any type (Serious, Minor, Possible) **Select All**

Fatal (Kill) **Property Damage Only** **Deselect All**

Route Segment Scale

0 0

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 – Bolton

Crash Summary

Data: 3 years (2012-2014)

There were no crashes involving bicyclists.

There were no crashes involving pedestrians.

Severity Type	Number of Crashes	
Property Damage Only	9	90%
Injury (No fatality)	1	10%
Fatality	0	0%
Total	10	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	1	10%
Rear-end	1	10%
Turning-Intersecting Paths	2	20%
Turning-Opposite Direction	0	0%
Fixed Object	6	60%
Backing	0	0%
Angle	0	0%
Turning-Same Direction	0	0%
Moving Object	0	0%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	0	0%
Miscellaneous- Non Collision	0	0%
Total	10	



Weather Condition	Number of Crashes	
Snow	2	20%
Rain	1	10%
No Adverse Condition	7	70%
Unknown	0	0%
Blowing Sand, Soil, Dirt or Snow	0	0%
Other	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Total	10	

Light Condition	Number of Crashes	
Dark-Not Lighted	2	20%
Dark-Lighted	2	20%
Daylight	6	60%
Dusk	0	0%
Unknown	0	0%
Dawn	0	0%
Total	10	

Road Surface Condition	Number of Crashes	
Snow/Slush	2	20%
Wet	1	10%
Dry	7	70%
Unknown	0	0%
Ice	0	0%
Other	0	0.0%
Total	10	








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

Bolton - Bolton Center



Legend

-  Sidewalk
-  Stop Controlled Intersection
-  One-way Street
-  On Street Parking
-  Study Corridor



Post-Audit Discussion Guide

Safety Issues

- Confirmation of safety issues identified during walking audit

Potential Countermeasures

- Short Term recommendations

- Medium Term recommendations

- Long Term recommendations

Next Steps

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



Road Safety Audit – Bolton

Fact Sheet

Functional Classification:

- Notch Road is classified as a Local road
- Bolton Center Road east of Hebron Road is classified as a Local road
- Bolton Center Road west of Hebron Road is classified as a Collector
- Old Bolton Road is classified as a Local road
- Hebron Road is classified as a Collector
- Brandy Street is classified as a Local road

ADT

- ADT on Bolton Center Road west of Hebron Road is 4,700
- ADT on Bolton Center Road east of Hebron Road is 6,300

Population and Employment Data (2014):

- Population: 4,963
- Employment: 1,256

Urbanized Area

- Bolton Center is located within the Hartford Urbanized Area

Demographics

- The statewide average percentage below the poverty line is 10.31%. There are no areas in Bolton exceeding the state's average.
- The statewide average percentage minority population is 30.53%. There are no areas in Bolton that exceed the state's average.

Air Quality

- Bolton's CIPP number 702
- Bolton is within the Greater CT Marginal Ozone Area
- Bolton is within a CO Attainment Area