COMMUNITY
connectivity program

Seymour

Town Center

– Road Safety Audit

August 17, 2016

CONNECTICUT DEPARTMENT OF TRANSPORTATION

AECOM

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Acknowledgements:

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With assistance from AECOM Transportation Planning Group

Contents

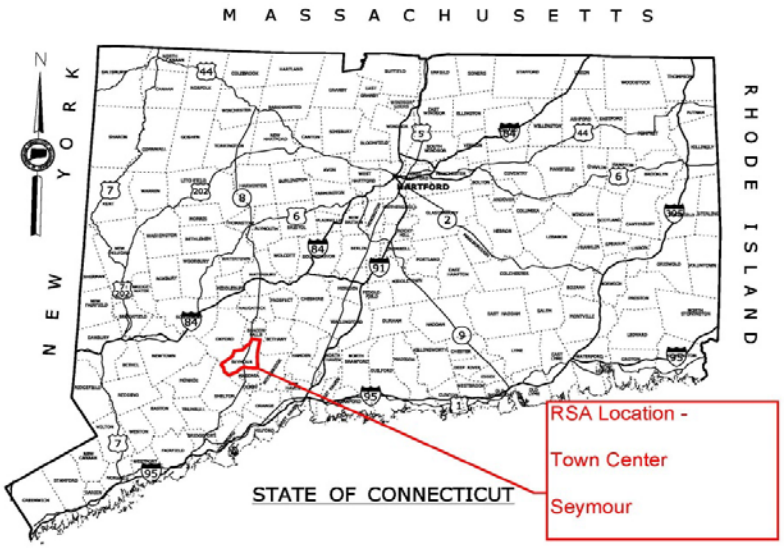
Figures

Tables

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 the Seymour (Town Center) RSA

The Town of Seymour submitted an application to complete an RSA in the town center to improve safety for pedestrians and bicyclists with a specific focus on the proposed pedestrian bridge connecting the Tingue Dam Fish By-pass Park with the Broad Street Park. The Seymour town center is fairly compact with several short streets in a central grid. Within the downtown area there are numerous retail stores, restaurants and smaller office buildings, connected by a continuous sidewalk system. In general, however, the downtown area does not effectively provide for safe pedestrian mobility outside of its limits. Accessible ramps and crosswalks are not consistent, some intersections are geometrically difficult and uninviting, and there are some gaps in pedestrian paths. The primary challenge of connecting the Route 67 corridor to downtown Seymour is the Route 8 interchange that separates these two areas, and the Naugatuck River that forms the westernmost boundary of the downtown area. Safety measures, physical improvements, and streetscape enhancements are needed in order to encourage pedestrian activity. There are many unique features including three park areas within the study area that provide opportunities to create linkages and a safer and much more inviting experience for pedestrians. A major needed link is a pedestrian connection over the Naugatuck Ricker between the Tingue Dam Fish By-pass Park and the Broad Street Park. The current route between the two parks is very circuitous.

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

1.1 Location

The RSA corridor includes Bank Street (Route 67), Main Street, Wakeley Street, Columbus Street, First Street and Deforest Street (Figure 1). Bank Street west of the Naugatuck River is classified as minor arterial, and east of the River it is a local road. Main Street is a Principal Arterial. The remaining roads are classified as local roads. The Bank Street Average Daily Traffic (ADT) on the bridge is 18,700 vehicles per day (vpd) and just west of River Street it is 21,800 vpd. These high volumes are associated with the Route 8 highway ramps. The ADT on Main Street ranges from 4,700 to 5,700 vpd, which is much more reasonable for a downtown network of streets. Figure 2 shows the regional context of the study area.

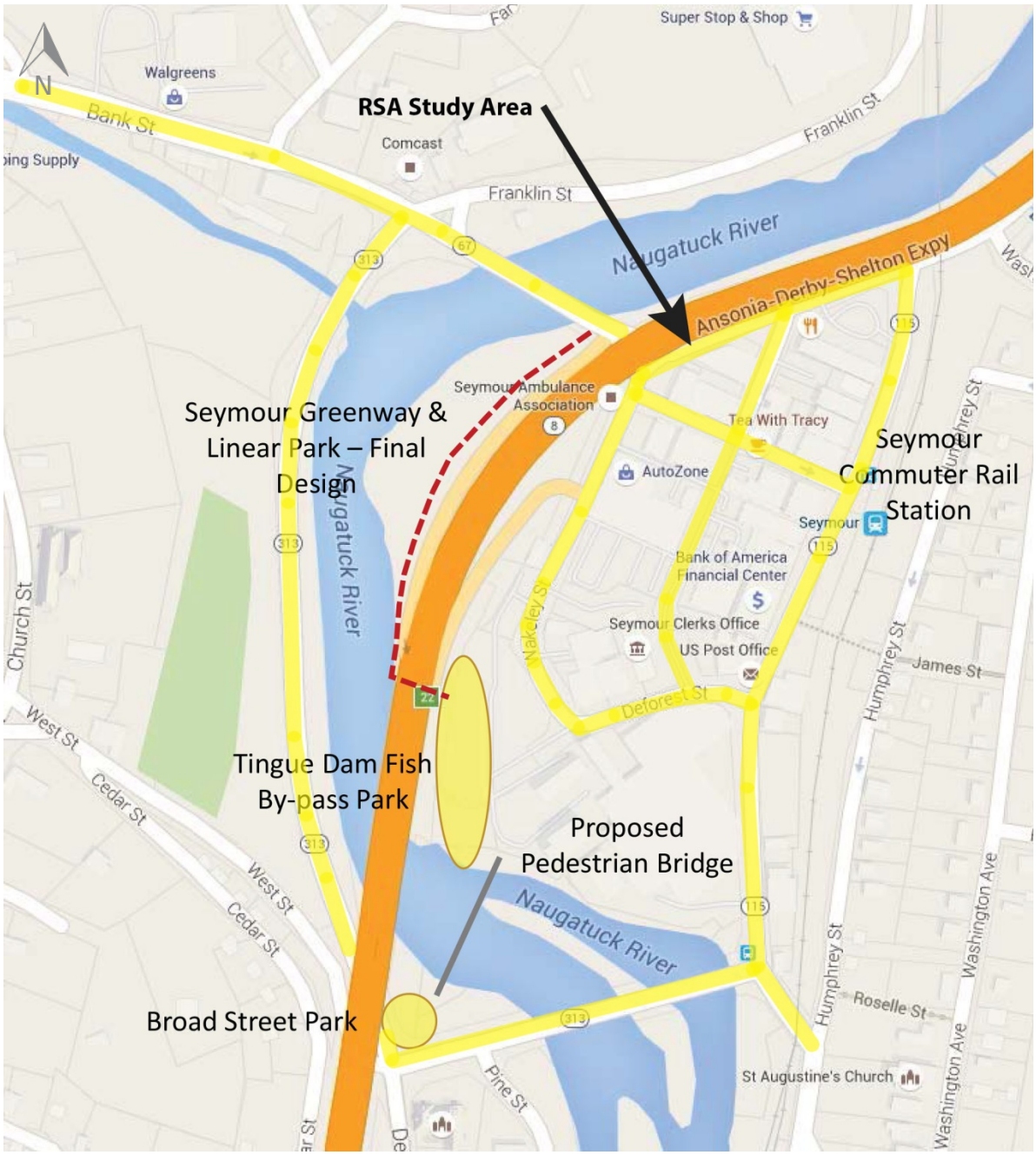


Figure 1 - Town Center Seymour

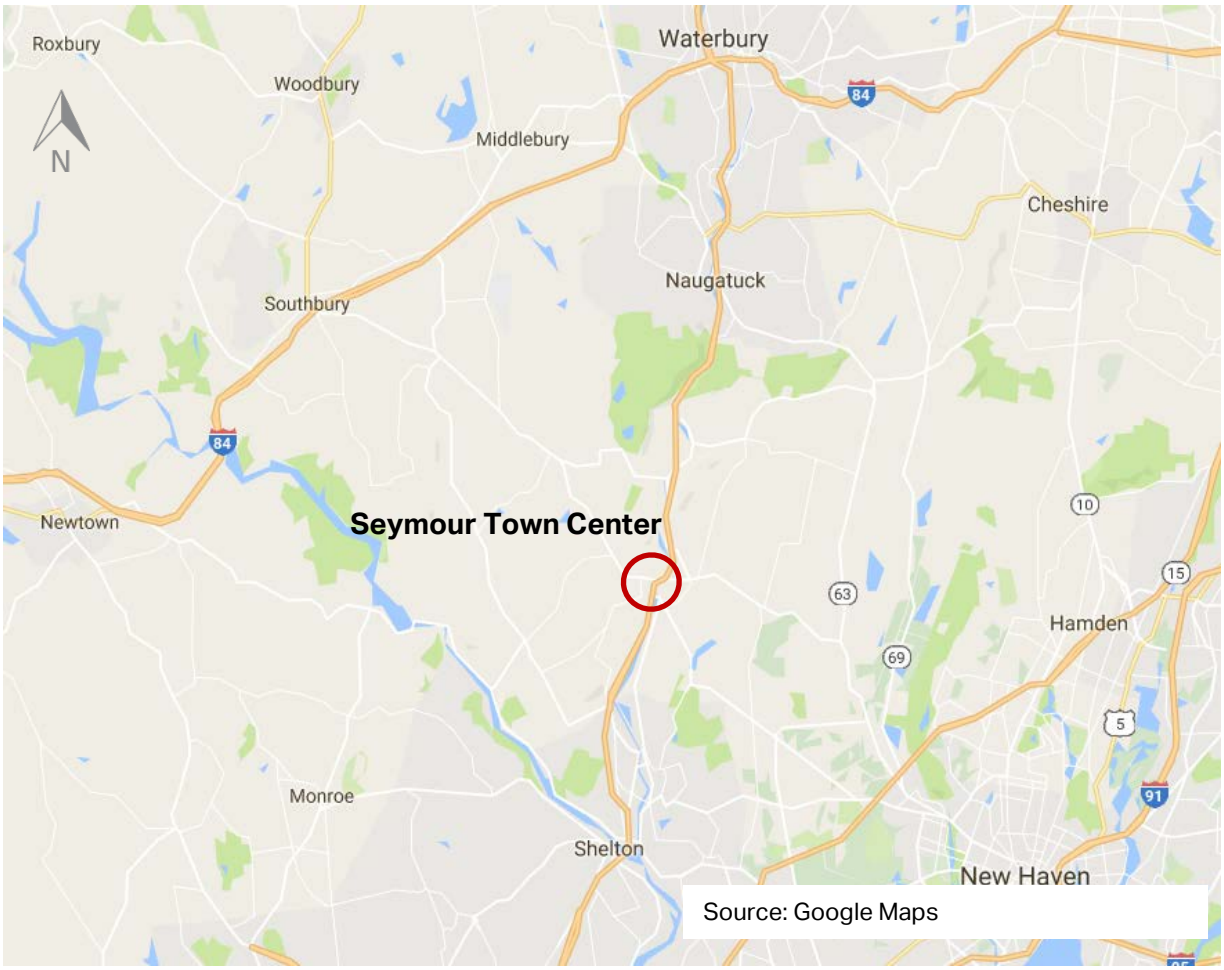


Figure 2 - Seymour Town Center Regional Context

2 Pre-Audit Assessment

2.1 Pre-Audit Information

Between 2012 and 2014 there were 164 crashes in the RSA Area. The majority of crashes (79%) reported in this area resulted in property damage only; however 21% of crashes did result in an injury (Table 1and Table 2). There was one crash which involved a pedestrian and one which involved a bicycle, both resulting in injuries. The pedestrian crash occurred mid-block on Bank Street between Columbus Street and Main Street. The pedestrian was cited as being at fault. The crash types reported were primarily rear-end and sideswipes in the same direction. Figure 3 displays crashes that occurred in this area during 2015. The crash history for year 2015 shows that they are primarily clustered around intersections. The peak crash rate is in the afternoon, which can be attributed to commuting, shopping, and school activities.

Severity Type	Number of Accidents	
Property Damage Only	129	79%
Injury (No fatality)	35	21%
Fatality	0	0%
Total	164	

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Accidents	
Unknown	0	0%
Sideswipe-Same Direction	30	18%
Rear-end	75	46%
Turning-Intersecting Paths	7	4%
Turning-Opposite Direction	13	8%
Fixed Object	8	5%
Backing	6	4%
Angle	3	2%
Turning-Same Direction	13	8%
Moving Object	0	0%
Parking	3	2%
Pedestrian	1	1%
Overturn	0	0%
Head-on	1	1%
Sideswipe-Opposite Direction	4	2%
Miscellaneous- Non Collision	0	0%
Total	164	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

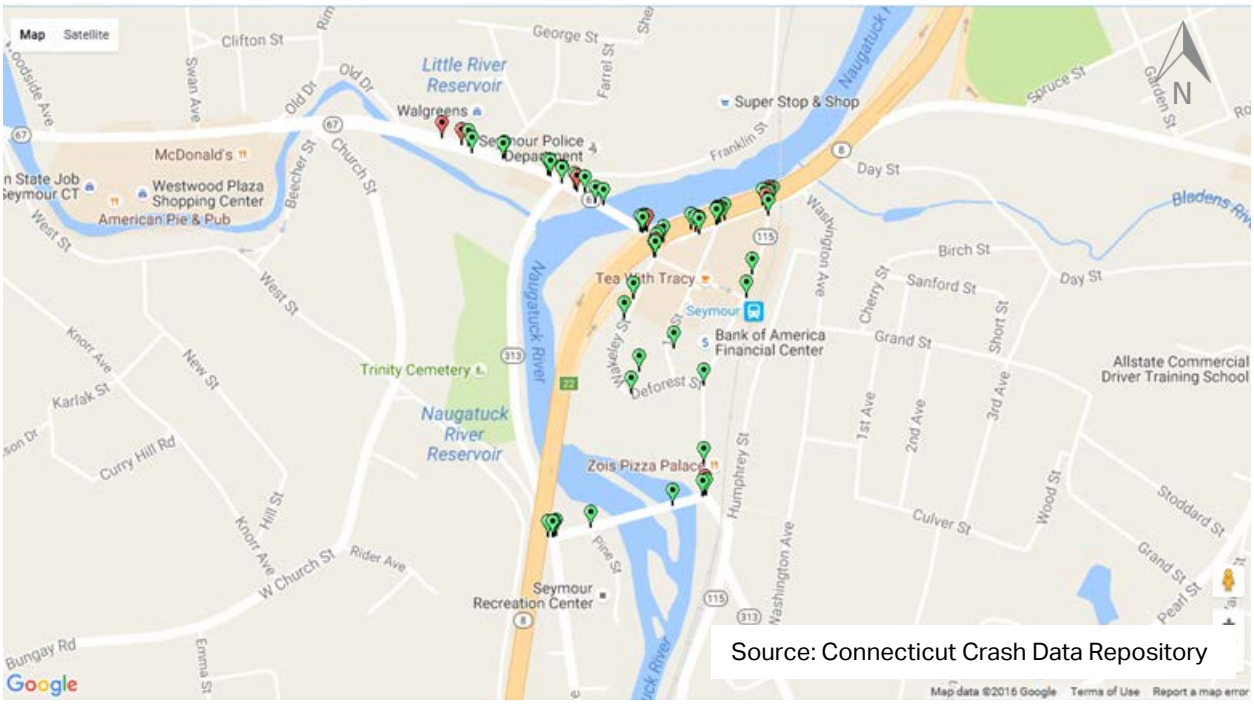


Figure 3 - Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

West of Route 8, Bank Street is a state owned and maintained facility. In downtown, it is a local, single lane, one-way road. There are sidewalks and on-street parallel parking on both sides of the street in downtown. Main Street (Route 115) is a state owned road in the RSA area, and extends from Broad Street to Derby Street, a distance of approximately 1,500 feet. There are sidewalks and on-street parking in the vicinity of the rail station. The RSA includes the southern portion of Main Street, between Broad Street and Deforest Street. Wakeley Street, Columbus Street, First Street and Deforest Street are all two lane, bi-directional local roads with sidewalks throughout the town center (Figure 4and Table 3). Most allow on-street parking. Unless intersecting with a state route these local road intersections are typically stop controlled.

There are five signalized intersections and two Route 8 highway ramps in the RSA area.

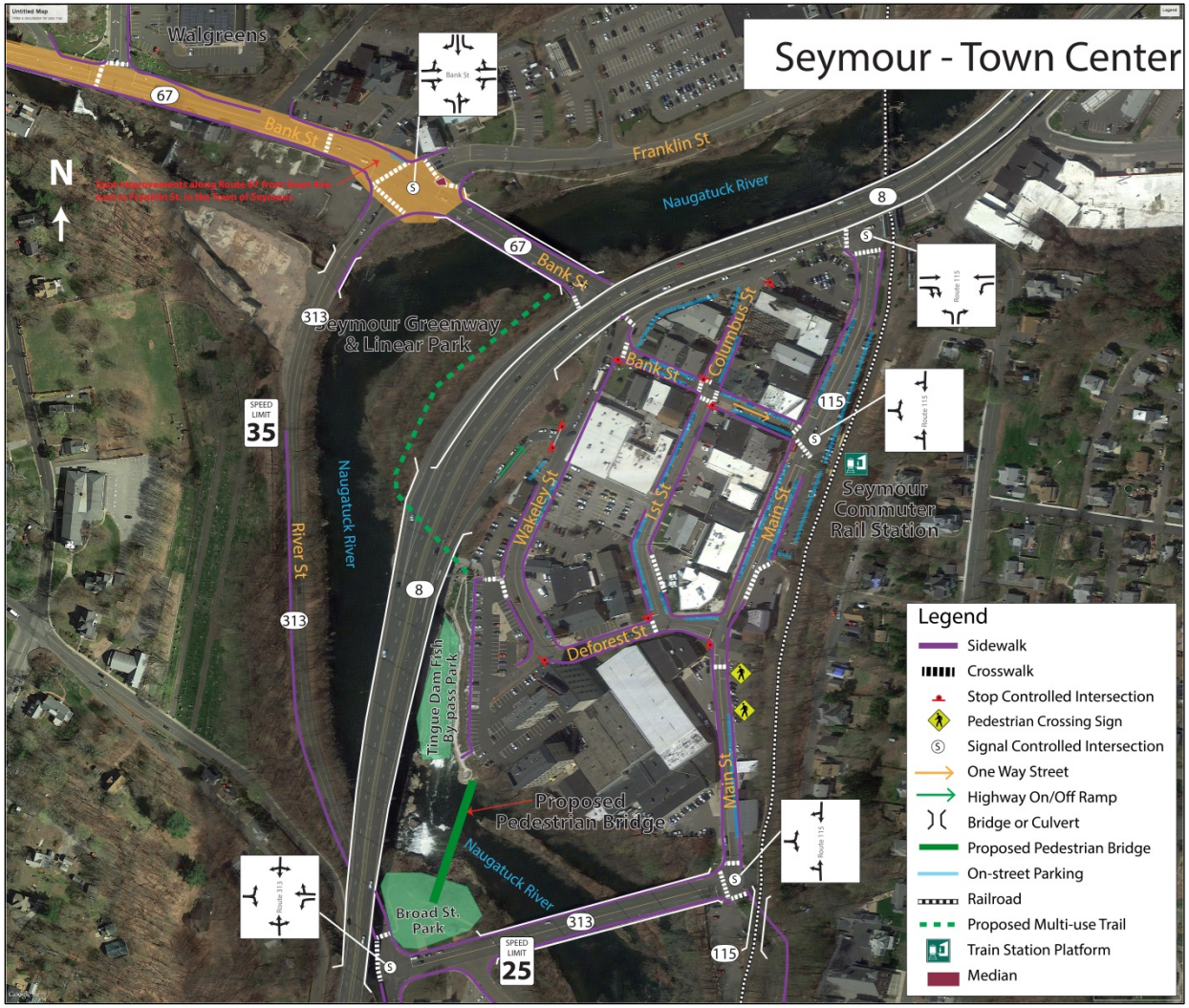


Figure 4 - Seymour – Town Center Road Geometrics

***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.**

Seymour Town Center

Street Inventory

Roadway / Intersection		Roadway width	Sidewalk					Curb	Parking	Shoulder	Ramps	
			Side	Type	Grass Shelf	Sidewalk Width	Condition				Exist	Compliant
Bank Street	W/O Route 8	20' - 24'	North	Concrete	None	3.5' - 8'	Varies	Concrete	No	6" - 6'	Yes	No
(Route 67)		20' - 24'	South	Concrete	None	4' - 6'	Varies	Concrete	No	6" - 8'	Yes	No
	Wakeley to Main	28' Overall	North	Paver	None	6'	Good	Concrete	Yes	No	Yes	No
	(One Way)	13' Travel Lane	South	Paver	None	6'	Good	Concrete	Yes	No	Yes	No
Main Street	Bank to Broad	20' Overall	West	Concrete	None	6' - 12'	Fair	Concrete	Yes	Unstriped	Yes	No
(Route 115)		13' Travel Lane	East	Paver	None	6'	Good	Concrete	Yes	Varies	Yes	No
Wakeley Street	Bank to Rt 8 Exit	16'	West	None	N/A	N/A	N/A	Concrete	No	Unstriped	Yes	No
		20'	East	Concrete	None	6'	Good	Concrete	No	Unstriped	None	None
	Rt 8 Exit to Deforest	12'	West	Concrete	None	7'	Good	Concrete	No	Unstriped	None	None
		22' Overall	East	Concrete	None	7'	Good	Concrete	Yes	Unstriped	None	None
First Street	Bank to Deforest	16'	West	Paver	None	8'	Good	Concrete	Yes	Unstriped	Yes	No
		16'	East	Paver	None	8'	Good	Concrete	Yes	Unstriped	Yes	No
Deforest Street	Wakeley to Main	13'	North	Paver	None	6'	Good	Concrete	Np/Yes	Unstriped	None	None
		13'	South	Paver	None	6'	Good	Concrete	No	Unstriped	None	None
Broad Street	River to Main	24' (2 Lanes)	North	Concrete	None	3'	Good	Concrete	No	6"	Yes	No
(Route 313)		24' (2 Lanes)	South	Concrete	None	5'	Good	Concrete	No	6"	Yes	No
River Street	Bank to Broad	12'	West	Conc/Asph	None	3'	Poor	Concrete	No	2'	None	None
(Route 313)		12'	East	None	None	N/A	N/A	None	No	3'	None	None

Table 3. Street Inventory

2.2 Prior Successful Efforts

A number of best practices have already been applied to this corridor.

- In 2012, renovations of the Broad Street Park were initiated, including a 500-foot brick walkway, benches overlooking the dam and Naugatuck River waterfalls, and lighting for safety.
- The town is working with a private developer interested in developing land north of downtown; these plans envision the relocation of the Seymour rail station and construction of mixed-use residential buildings next to the new station.
- In 2014, the Tingue Dam Fish By-pass Park was constructed, including over 1000 feet of walkway, parking facilities, landscaping, scenic views of the dam and by-pass, and passive recreational areas.
- Plans for a multi-use trail from Route 67 (Bank Street) to the Tingue Dam Park are in design.
- *Plannimetrics* completed an inventory of the downtown infrastructure.
- Seymour received an award in 2014 for master plan and restoration attempts in downtown.
- Plans for connecting the Broad Street Park with the Tingue Dam Fish By-pass Park with a pedestrian bridge over the Naugatuck River are in the Planning stages at this time.

2.3 Pre-Audit Meeting

The RSA was conducted on August 17, 2016. The Pre-Audit meeting was held at 8:30 AM in the Seymour Town Hall – Norma Drummer Room located at 1 First Street in Seymour.

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

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

- With the future developments coming to the downtown there will be a higher demand for better connections.
- *Plannimetrics* completed an inventory of the downtown infrastructure.
- Seymour would like to take better advantage of the Naugatuck river that borders their downtown.

    - Master plan for green way trail developed.
    - Received award in 2014 for restoration attempts in downtown with master plan.
- Opportunity to develop 2 parcels of land (about 5 acres) as a new mixed use site (residential/retail) (Figure 5).
- Most of study area has sidewalks on both sides.
- Usage of the downtown:
    - In the downtown they see more pedestrian traffic.
        - Currently improving sidewalk network.
    - In terms of parking the downtown has added about 21 additional parking spaces where possible.
        - Made First Street a one-way street to gain on street parking.
        - Since one way conversion there are drivers who travel the wrong way.
        - Construction of new parking lots by the Fish Bypass.

Figure 5 - Potential Development Parcel

- Adding pedestrian walkways should keep pedestrians and bikers in the downtown and benefit the downtown businesses.
- Apartments: Residents walk to business district and Stop and Shop.
- 2012 Downtown Strategic Plan:
    - The town has been following this plan to implement improvements.
    - Some limitations on where the town owns land.
- Downtown parking plan:
    - Maps out areas where there is parking.
    - New signage with all parking.
    - Originally there was a perception that there wasn't enough parking.
        - It was identified that there is enough there just wasn't the desired turn over.
    - One issue is commuters who use the train station will park in the downtown all day.
    - Want to make it more pleasant to walk longer distances in downtown so people don't feel they need to park right outside their destination.
- Town doesn't think that biking is prohibited on sidewalks.

3 RSA Assessment

3.1 Field Audit Observations

Wakeley Street:

- "No Parking" sign was left in the middle of a newly installed section of sidewalk. (It was removed following Audit)

Bank Street and Wakeley Street Under Route 8:

- Crosswalk configuration is not convenient for pedestrians (Figure 6).
    - Paths do not follow desired crossing routes
    - Signal phasing requires multiple phases (and excessive waiting) to cross, resulting in long crossing time
    - Jay-walking provides more direct, quicker crossing in locations that are incorrectly perceived to be safer.
- Underbridge crossing is generally not pedestrian friendly. There are no amenities and intrusive drainage structures.

Figure 6 - Wakeley Street under

Bank Street (bridge):

- The sidewalk is 5 feet wide from parapet to street.
- The width of the road is 44 feet and consists of 4 travel lanes.

Figure 7 - River Street Bridge

River Street (Bridge):

- The sidewalk is 4 feet wide. (Figure 7).
- There are 3 travel lanes. The 2 northbound lanes are 11 feet wide and the southbound lane is 12 feet wide. Both shoulders are 2 feet wide.

River Street (Route 313) (Figure 8)**:**

- River Street provides an overall inviting appearance.

Figure 8 - River Street

- No sidewalk on the east side and poor sidewalk condition on west side.
- Could serve (with improvements) as a temporary pedestrian route until pedestrian bridge is installed.
- There is a cantilever system sidewalk proposed for the east side of the road with the guardrail as a buffer between the sidewalk and road.
    - Good option since there are higher vehicle speeds on the road.
- The width of the roadway consists of two 11 foot travel lanes and two 2.5 foot shoulders.
- The sidewalk on the west side of the road is 4 feet wide.
    - The sidewalk is in poor condition.
    - The sidewalk is mostly concrete with asphalt overlay in some areas.
    - There is no curb reveal.
        - Curb may be redone if the road is planned for VIP soon.

Figure 9 - River Street/Broad Street Crossing

River Street (Route 313) at Broad Street:

- The crossing on the River Street approach:
    - Compliant ADA ramps with detectable warning strips.
    - Painted crosswalk.
    - Pedestrian phase is not exclusive (concurrent with Broad and West green phase) (Figure 9).
        - No pedestrian signal – should be countdown.
- Crossing on West Street approach:
    - Crosswalk paint is faded.
    - There is no pedestrian button on the south west corner despite having a crosswalk (Figure 10).
- Town would like to have a crosswalk on the Broad Street approach so that people can park in the lot

Figure 10 - West Street Approach

Figure 11 - Broad Street Bridge

opposite the Park and cross Broad Street to the Broad Street Parklet.

- A Pedestrian Bridge is planned to cross the Naugatuck River to connect the Broad Street Parklet to the Tingue Dam Fish By-pass Park.

Figure 12 – Rt. 115 & Rt. 313

Broad Street (Bridge):

- There are 4 lanes of travel.
- There is a 5 foot wide sidewalk only on the south side of the bridge (Figure 11).

Intersection of Route 115 and Route 313:

- There are ADA ramps only on 1 corner.
- Pedestrian signals do not have countdown heads (Figure 12).
- Crosswalks are in fair condition.

Main Street:

- Main Street has an overall width of 27 feet to 30 feet, with on-street parking located on the east side, and a single travel lane in each direction. The west side of the roadway has a striped 1 foot wide shoulder.
- There are concrete sidewalks on both sides of the street, with buildings abutting the back of walk. The west side sidewalk is 5 feet wide and the east side sidewalk is 6 feet wide. There are no snow shelves.
- For the northerly 100 feet, the east side of Main Street uses brick pavers.
- Approximately 85 feet south of the Deforest Street intersection, there is a mid-block crosswalk. It has painted "sharks teeth" and pedestrian crossing signs only. There are no handicap ramps on either side (Figure 13).
- The Town Post Office is on the north-west corner of Main Street and Deforest Street (Figure 14). This corner has a very tall curb section due to the grade on the intersecting streets. There are stairs

Figure 13 - Main Street Mid-Block Crossing

Figure 14 - Northwest corner of Main and Deforest Streets

and a handrail leading to the street, open drain pipes in the gutter, and parking along the curb, that prohibits passengers from opening their door.

Figure 15 - River Street Sidewalk

3.2 Post-Audit Workshop - Key Issues

- There are dis-continuities in the pedestrian paths.
- Crosswalks are not ADA compliant.
- Bank Street under Route 8 is uninviting. Crosswalks are not direct, crossing lengths are too long, and traffic controls are not optimal. Island areas are paved with asphalt with no defined pedestrian paths. Lighting is poor, even in daytime.
- Proposed trail comes out to Bank Street at southeast corner of the bridge (adjacent to Bank Street and Route 8 entrance ramp). Distance to parapet wall is restricted, sidewalk width is minimal, and sidewalk ramp is not compliant.
- The Bank Street Bridge has only 5 foot sidewalks. There are 4 lanes of travel (45' total width). It is only possible to widen the sidewalk with a cantilever or reducing number/width of lanes.
- River Street has a short section of sidewalk on the east side, but it disappears south of the River Street Bridge (Figure 15). The sidewalk on the west side is in very poor condition. It is concrete, and sometimes has an asphalt overlay, but is broken in multiple locations. The curb reveal has been reduced to near zero.
- River Street abuts an area of likely redevelopment, and has potential for increased pedestrian traffic. It is also a likely path for connecting the two parks until the bridge connection is constructed.
- Broad Street/River Street intersection does not have ADA compliant pedestrian crossing features.
- Broad Street Bridge has sidewalk only on the south side. This is only 5 feet wide between travel way and parapet wall. Since it is on the south side of the bridge, pedestrians must cross Broad Street in order to access the bridge walkway.
- Main Street mid-block crosswalk is in an awkward location.
- Main Street/Deforest Street intersection has very difficult sidewalk grading on the north-west side. The curb reveal makes it impossible for pedestrians to access the street directly from the sidewalk. A set of steps, complete with a handrail, must be used to pass between the street and sidewalk. The Post Office entrance (with its own staircase) is located immediately at the back of walk.
- There is a significant number of physically challenged users in the downtown area.

4 Recommendations

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

4.1 Short Term

1. Repaint/upgrade pedestrian crosswalks on all Town roads throughout the RSA area.
2. Formalize crosswalk across Broad Street at Park to allow pedestrians to cross after parking on the opposite side. Upgrade signal indications to provide pedestrian count-down heads and ADA accessible buttons, indications and ramps.
3. Upgrade pedestrian crossing signs at Main Street mid-block crossing to retroreflective green signs, per MUTCD (Figure 16).
4. Determine status of River Street as part of the VIP paving project. Coordinate with CT DOT to provide proper curb reveal and to replace sidewalk on the west side.
5. Provide trail blazer signing to designate River Street as the temporary connection between the parks (Figure 17).
6. Examine the corner of the parapet wall at Bank Street and Wakeley Street to determine the best way to have the proposed trail merge with the bridge sidewalk. Reconstruction of a portion of the parapet is likely to be required.

Figure 16 - Pedestrian Crossing Sign

Figure 17 - Typical Urban Trailblazer

Figure 18 depicts these recommendations.

Figure 18 - Short Term Recommendations

4.2 Medium Term

1. Replace all pedestrian signals with countdown pedestrian signals (Figure 19).
2. Replace all pedestrian pushbuttons with ADA accessible buttons (Figure 19).
3. Install and/or modify all handicap ramps to meet ADA requirements for grade, location and tactile warning strips (Figure 20).
4. Re-orient all crosswalks to meet relocated ADA ramps.
5. Revise pedestrian paths under the Route 8 overpass to achieve more direct and well defined paths.
6. Improve lighting and other amenities under the Route 8 overpass to make the area more inviting for pedestrian usage (Figure 21).
7. Where practical, reconstruct sidewalks to a minimum standard of 5 feet wide. River Street is a priority on the west side to provide connectivity between the parks. Use consistent materials throughout the downtown area.
8. Provide better crossing ability and ADA compliance at the Route 115/Route 313 intersection.
9. Provide Rapid Flashing Rectangular Beacons at the Main Street mid-block crosswalk (Figure 22).
10. Investigate provision of a crosswalk on the north leg of the Main Street/Deforest Street intersection.
11. Complete the planned trail connection between the Tringue Dam Fish By-pass Park and the Broad Street Bridge.

Figure 19 - Pedestrian Signal Equipment

Figure 20 - Tactile Warning Strip

Figure 21 - Route 8 Overpass

Figure 22 - Rectangular Rapid Flashing Beacon

Figure 23 depicts these recommendations.

5. Revise pedestrian paths under the Route 8 overpass to achieve more direct and well defined paths.

7. Where practical, reconstruct sidewalks to a minimum standard of 5 feet wide. River Street is a priority on the west side to provide connectivity between the parks.

8. Provide better crossing ability and ADA compliance at the Route 115/Route 313 intersection.

9. Provide Rapid Flashing Rectangular Beacons at the Main Street mid-block crosswalk.

11. Complete the planned trail connection between the Tringue Dam Fish By-pass Park and the Broad Street Bridge.

Figure 23 - Mid Term Recommendations

4.3 Long Term

1. Determine best way to provide additional sidewalk width on the Bank Street Bridge. Reducing the travel lanes/widths on the bridge is an option. Alternatively, removal of the parapet and placing the sidewalk on a cantilever would be necessary.
2. Examine the potential for providing a sidewalk on the east side of River Street. This will likely require construction of a path on structure or cantilevered from the roadway, due to the steep banks between the road and the Naugatuck River.
3. Plans for a pedestrian bridge over the Naugatuck River between the two parks should be continued to provide a better connection and circulation path, as well as to enhance the views of the River and Dam (Figure 24).
4. Determine best way to provide additional sidewalk width on the Broad Street Bridge. Reducing the travel lanes/widths on the bridge is an option. Alternatively, removal of the parapet and placing the sidewalk on a cantilever will be necessary.

Figure 24 - Location of Proposed Pedestrian Bridge

5. Reconstruct the intersection of Main Street and Deforest Street to normalize the grades between the sidewalk and roadway. This will potentially allow for the removal of the mid-block crossing on Main Street.

Figure 25 depicts these recommendations.

1. Provide additional sidewalk width on the Bank Street Bridge.

5. Determine best way to provide additional sidewalk width on the Broad Street Bridge.

4. Plans for a pedestrian bridge over the Naugatuck River between the two parks should be continued to provide a better connection and circulation path, as well as to enhance the views of the River and Dam

6. Reconstruct the intersection of Main Street and Deforest Street to normalize the grades between the sidewalk and roadway.

3. Examine the potential for providing a sidewalk on the east side of River Street.

Figure 25 - Long Term Recommendations

4.4 Summary

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