COMMUNITY
connectivity program

Norwich

Main Street – Road Safety Audit

November 10, 2016

CONNECTICUT DEPARTMENT OF TRANSPORTATION

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Acknowledgements:

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

With assistance from AECOM Transportation Planning Group

Contents

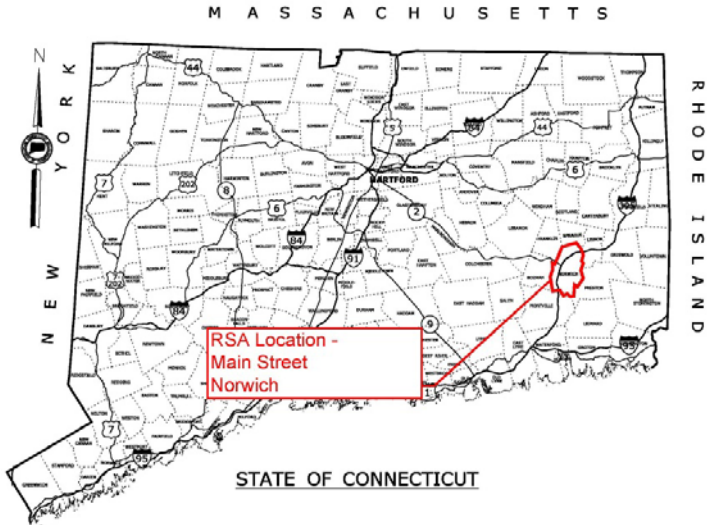
Figures

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 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 West Main Street, Norwich RSA

The City of Norwich submitted an application to complete an RSA on West Main Street and the surrounding downtown area to improve safety for pedestrians and bicyclists travelling along the corridor primarily between the Transportation Center and Park Street. This corridor experiences moderate traffic volumes and speeds, but the City feels that it can be made more appealing to pedestrians and bicyclists. There are several wide streets with minimal shoulders that have created concerns for bicyclists. This section of Norwich contains several of the City's largest traffic generators and is also an important through road to adjacent towns.

The City of Norwich'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 West Main Street and Main Street between the Transportation Center and Park Road, as well as the surrounding downtown area (Figure 1). The Average Daily Traffic (ADT) on West Main Street near the Transportation Center is 10,900 vehicles per day (vpd) and the ADT on Main Street near the Franklin Street intersection is 9,600 vpd. The ADT on Chelsea Harbor Drive is 11,200 vpd and the ADT on Water Street is 6,300 vpd. West Main Street is one way eastbound, consisting of two 12-foot through lanes and a left turn lane at the intersection with Chelsea Harbor Drive and Water Street. There are two foot +/- wide striped shoulders on each side of the road. Main Street is one way westbound from Courthouse Square to West Main Street, consisting of a single lane with parking on both sides. Main Street is a two way street from Courthouse Square to Park Road, consisting of a single through lane in each direction with parking on both sides. Chelsea Harbor Drive is one way eastbound, consisting of three through lanes and parking on the right side. Water Street is one way westbound, consisting of two through lanes and parking on both sides.

There are seven signalized intersections in the study area and several other intersections are controlled by stop signs on the minor roads.

There are several vertical curves and some steep profiles on the downtown roads that contribute to challenges that walkers and bicyclists face. Additionally, several of the shoulders in the study area are very narrow making bicycle maneuvers challenging. Figure 2 shows the study area in a regional context.

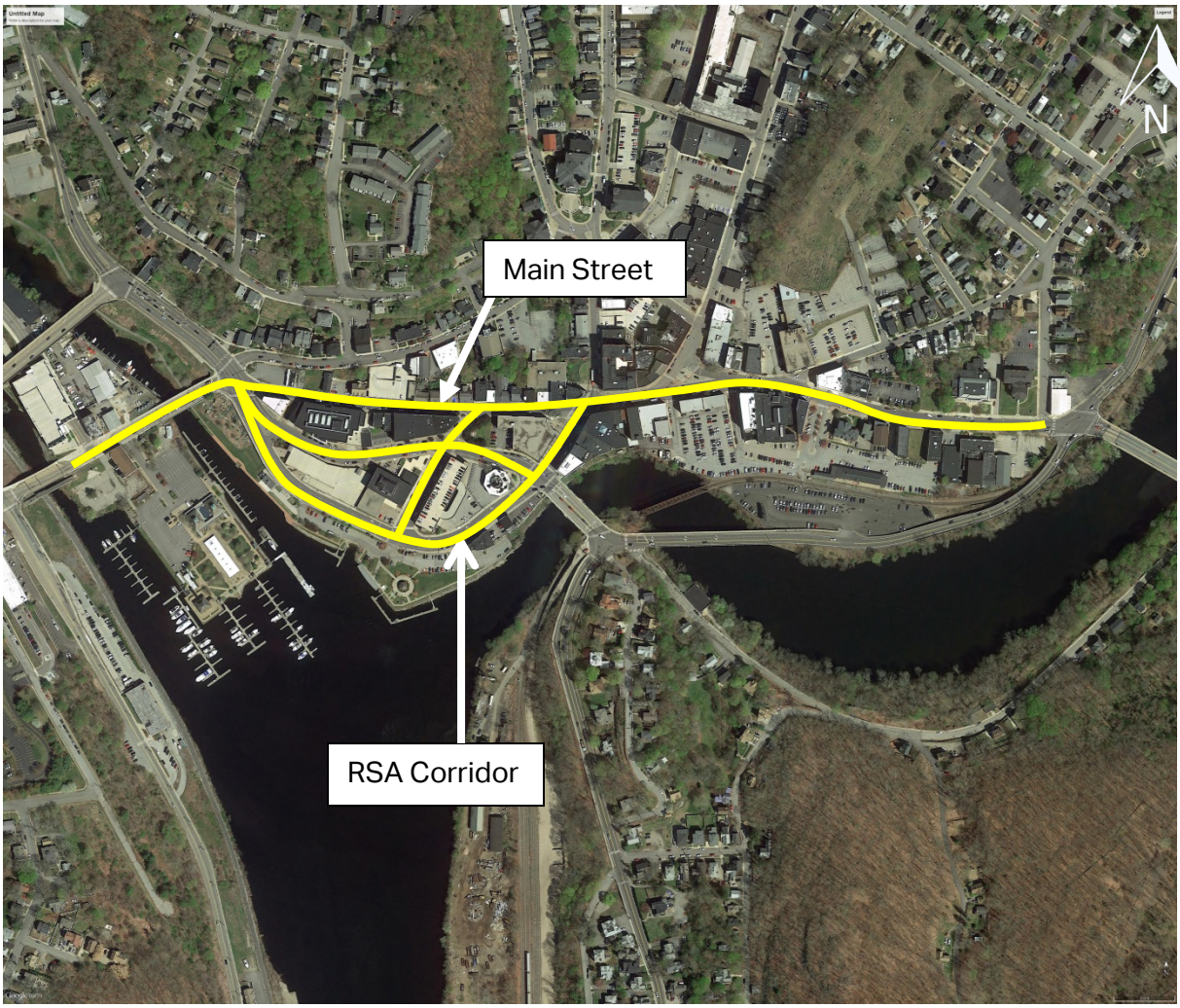


Figure 1. West Main Street, Norwich

Figure 2. Study Area – Regional Context

2 Pre-audit Assessment

2.1 Pre-audit Information

Main Street is located in the center of Norwich and is oriented in an east-west direction. There is a significant amount of through traffic in the downtown area as State Highway Route 2 traverses the downtown area. Foxwoods Casino is also nearby, and generates significant through traffic in Norwich. There are several facilities along this corridor that have the potential to generate pedestrian traffic, including the Transportation Center, the public library, the downtown businesses, Howard Brown Park, the Courthouse, Post Office, and the City offices.

The crash history in this area is significant. There were seven accidents involving pedestrians and none involving bicyclists between 2012 and 2014 (Table 1 and Table 2). Figure 3 displays crashes that occurred in this area during 2015. The majority of crashes were property damage only (89%) and a significant percentage of crashes (20%) were related to parking.

Severity Type	Number of Crashes	
Property Damage Only	93	89%
Injury (No fatality)	11	11%
Fatality	0	0%
Total	104	

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	5	5%
Sideswipe-Same Direction	27	26%
Rear-end	19	18%
Turning-Intersecting Paths	4	4%
Turning-Opposite Direction	1	1%
Fixed Object	7	7%
Backing	5	5%
Angle	0	0%
Turning-Same Direction	3	3%
Moving Object	0	0%
Parking	21	20%
Pedestrian	7	7%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	5	5%
Miscellaneous- Non Collision	0	0%
Total	104	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

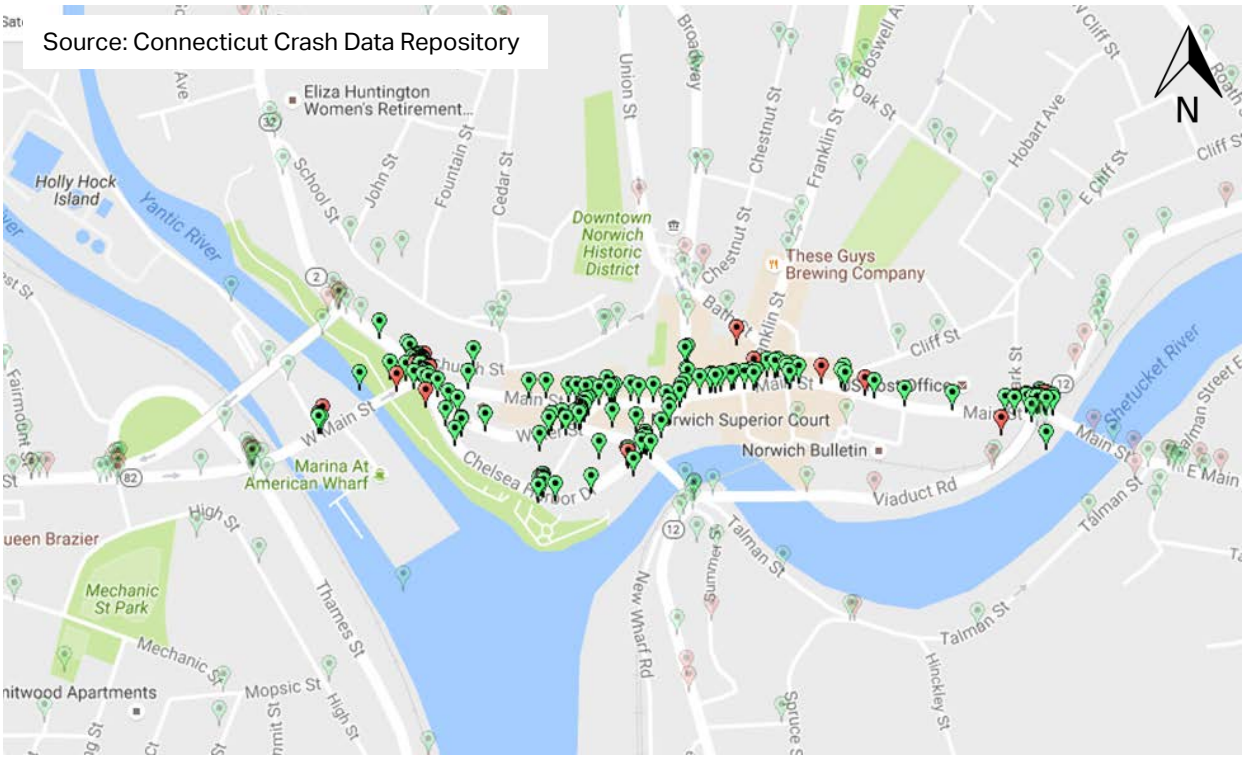


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

The City of Norwich would like to make the RSA area more appealing and inviting to cyclists and pedestrians. The alignment of the roads in the downtown area is mainly straight, although there are several vertical curves and hills. Vehicle speeds are high in some areas and there are several wide roads. There are sidewalks on both sides of most streets but there are very few bicycle accommodations in the downtown area. The majority of the sidewalks in the RSA area are brick paver sidewalks. The Town would like to revitalize the downtown area and believes that creating a more inviting atmosphere for walkers and bicyclists will help to create a more vibrant downtown.

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

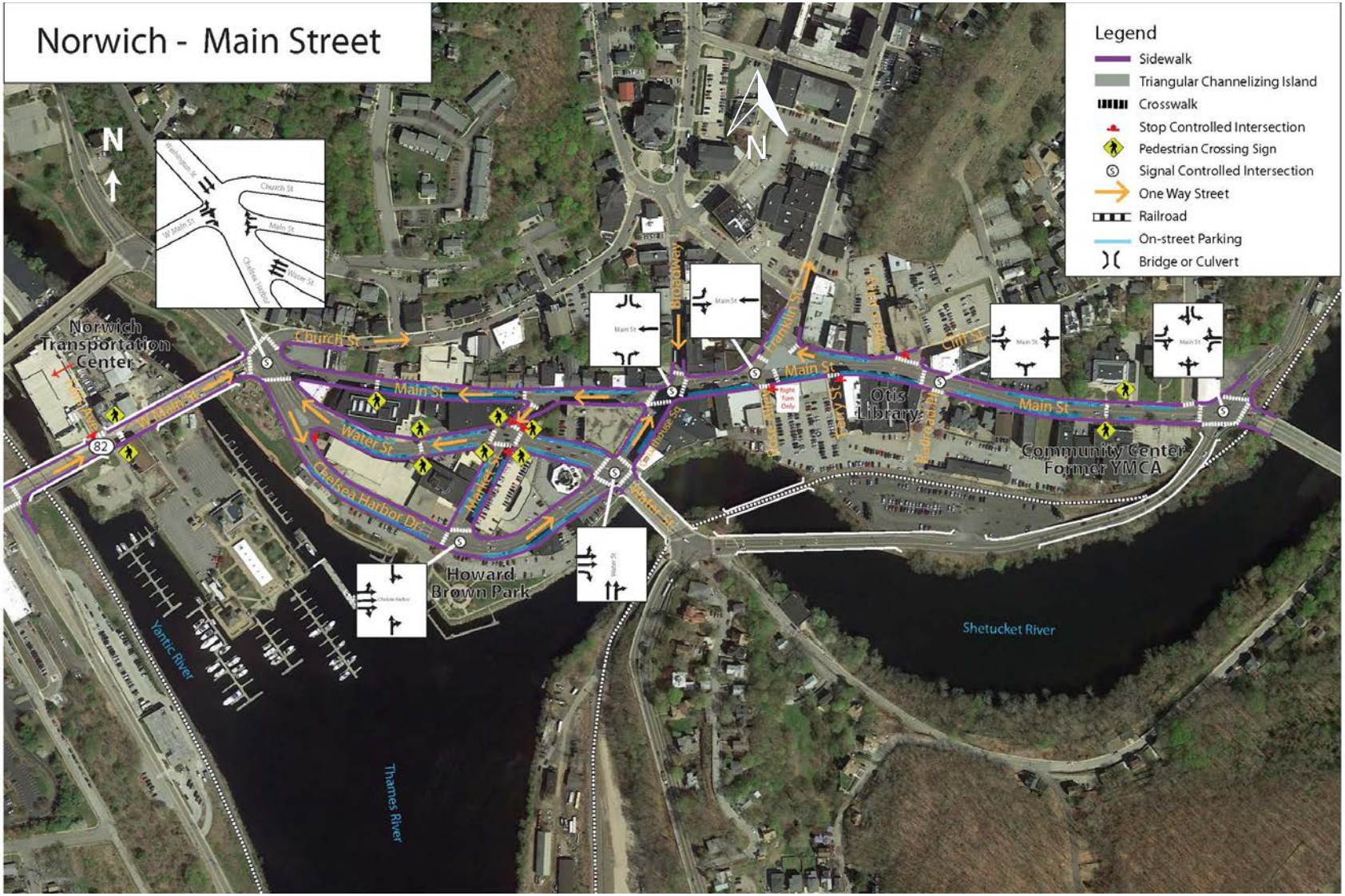


Figure 4. West Main Street Geometrics

Norwich - Downtown Area

Street Inventory

Street	Route	Lanes	Avg. Lane Width	Sidewalk				Curb	Parking	Shoulder	Ramps	
				Side	Type	Width	Condition*				Exist	Compliant
Main Street		1	12'	WB	Concrete/	8-12'	Good	Granite	8'	No	Yes	No
		1	12'	EB	Brick	8-12'	Good	Granite	8'	No	Yes	No
Main Street (One Way)		1	13'	WB	Concrete/	6-8'	Good	Granite	8'	No	Yes	No
		0		EB	Brick	6-8'	Good	Granite	8'	No	Yes	No
West Main Street	Route 82	3	12'	EB	Concrete	6-7'	Fair	Granite	No	2'	Yes	No
		0		WB	Concrete	6-7'	Fair	Granite	No	2'	Yes	No
Water Street		2	12-15'	WB	Concrete/	7-10'	Good	Granite	8'	No	Yes	No
		0		EB	Brick	7-10'	Good	Granite	8'	No	Yes	No
Chelsea Harbor Drive		3	11-13'	EB	Concrete	5-6'	Good	Granite	9'	No	Yes	No
		0		WB	Concrete	5-6'	Good	Granite	No	No	Yes	No
Market Street		1	12'	NB	Concrete	8'	Good	Granite	8'	No	Yes	No
		1	12'	SB	Concrete	8'	Good	Granite	8'	No	Yes	No
Courthouse Square		2	12-15'	NB	Concrete	8'	Good	Granite	8'	No	Yes	No
		0		SB	Concrete	8'	Good	Granite	8'	No	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

There is an Intermodal Transportation Center adjacent to the downtown area on West Main Street that was constructed fairly recently. It is serviced by local bus lines and is adjacent to the railroad. It also has a substantial parking garage attached, and retail space available. It is hoped that the facility will see a significant increase in usage along with the rejuvenation of the downtown area.

The City is pursuing re-development of the former YMCA building that was abandoned and later damaged by arson. It presents a significant redevelopment opportunity.

2.3 Pre-Audit Meeting

The RSA was conducted on November 10, 2016. The Pre-Audit meeting was held at 8:30 AM in the City Hall located on Broadway in Norwich.

The RSA Team was comprised of staff from AECOM, staff from CTDOT, a representative from SCCOG and representatives from Norwich departments including the Police Department, Department of Public Works, the City Engineer and the City Planner. 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:

- Traffic volumes in the area are significant, especially on Route 2.
- There are a few clusters of crashes at some of the intersections, but most of the crashes were dispersed throughout the RSA area.
- There is a significant number of parking crashes (20%), which is possibly exacerbated by the one way streets in the study area.
- The City recently installed audible pedestrian warnings at the exit from one of the downtown parking garages to warn pedestrians when vehicles are exiting.
- Lighting is a concern in the downtown area and the intersection of West Main Street, Main Street, Water Street, Chelsea Harbor Drive and Church Street was specifically noted as an area of concern.
- The downtown area has changed significantly since the Foxwoods Casino opened.
- The City is considering revising the traffic circulation patterns in the area, including the possibility of changing one way streets to two way and/or dead ending certain streets.
- The City would prefer that traffic to the casino go around the downtown area rather than clogging it with through traffic.
- There are several facilities in the RSA area that have the potential to generate pedestrian traffic, including the park, several parking garages, the transportation center and the courthouse.
- There is no route from the downtown area to the transportation center/marina area that is both convenient and safe for walkers.

- There are several parking garages and surface lots in the downtown area, although they may not be in ideal locations.
- There are several SEAT bus routes in the area but there are no defined stops and the bus stops whenever it is flagged by a rider.
    - There is some desire to create defined stops to improve traffic operations.
- The Transportation Center consists of a lightly used parking garage and a bus station, although there are no longer ticket sales at the station.
- People routinely take buses short distances to the Transportation Center rather than walking from the downtown area.
    - There is a sidewalk linking the Transportation Center with the downtown, but the combination of high traffic speeds, a narrow sidewalk, and a bridge crossing is not appealing to walkers.
- The City would like to calm traffic in the downtown area to create a more appealing environment for pedestrians.
- There are 4 bus routes in Norwich that all have consistent ridership despite low levels of service.
- It was noted that there are consistently small numbers of people (3-6) waiting for buses at the Transportation Center.
- The City would like to create a citywide bike plan in the future with a focus on sharrows rather than designated bike lanes.
- There are not many bicyclists noted in the downtown area and the City would like to increase bicycle usage.
    - There are very few bike racks around the downtown area and the City would like to add more.
    - The City is limited financially in its goal to add more bike racks.
- Benches were placed in the downtown area in the past but businesses did not like them because they became an attractive nuisance.

3 RSA Assessment

3.1 Field Audit Observations

General:

- Handicap ramps throughout the study area are in good condition but built according to old standards.
    - Flat landing areas are missing from many ramps.
    - Detectable warning strips are missing from many ramps.

Figure 5. Pedestrian pushbutton

- Pedestrian signals are outdated; the latest standards are audible pushbuttons, countdown signals and longer pedestrian phases (Figure 5, Figure 7).
- Street trees are in conflict with street lighting in several locations (Figure 6).
- There are many vacant buildings in the area.
- Most streets have brick paver sidewalks on both sides of the road (Figure 7).

Figure 6. Street tree obstructing illumination

Main Street:

- Crosswalks at the intersection with Broadway and Courthouse Square are diagonal and very long as a result. The longest was measured at 72-feet (Figure 8).
- One of the pedestrian signals at the intersection with Broadway and Courthouse Square is missing, causing the signal to not function properly.
- Pedestrian crossing signs are missing from the mid-block crosswalk near Market Street (Figure 9).
- One of the driveways to the former donut shop at the intersection with Church Street, West Main Street, Chelsea Harbor Drive and Water Street is in the intersection.

Figure 7. Pedestrian signal, brick paver sidewalk

Figure 8. Mid-block crossing without pedestrian signs

Figure 9. Diagonal crosswalk at the intersection of Main Street and Broadway/Courthouse Square

- There is a long (90-feet) diagonal crosswalk at the intersection with Church Street, West Main Street, Chelsea Harbor Drive and Water Street (Figure 10).
    - A straight crosswalk at the same intersection is 69-feet long.
- The intersection with Franklin Street has unconventional geometrically and may be considered for re-design by the City in the future.
- The one way section is 29-feet wide with a 13-foot lane and 8-foot parking lanes on each side.
- The two way section on the east end of the RSA area is 40-feet wide with a 12-foot lane and 8-foot shoulder/parking lane in each direction.
- Catch basin grates are not the bike friendly type.
- At the east end of the RSA area there was a crosswalk that was missing one handicap ramp (Figure 11).

West Main Street:

- Lane widths were measured to be 12-feet.
- Vehicles consistently did not yield to pedestrians despite the constant flashing beacons at the mid-block crosswalk (Figure 12).
- The parking garage at the Transportation Center is very lightly used (Figure 13).

Figure 10. Diagonal crosswalk

Figure 11. Main Street crosswalk without handicap ramp

Figure 12. Constant flashing beacon at mid-block crosswalk

Figure 13. Transportation Center parking garage

- The office inside of the Transportation Center is currently not operating (Figure 14). Soon after the site walk, the offices at the Transportation Center have become occupied by the City of Norwich Parking Commission.

Chelsea Harbor Drive:

- There are two 11-foot wide lanes, one 13-foot wide lane and a 9-foot shoulder/parking lane.
- Handicap ramps are not aligned correctly for the crosswalks (Figure 15).
- Concrete sidewalks are three feet wide at obstructions.
- Howard Brown Park is a popular pedestrian area.

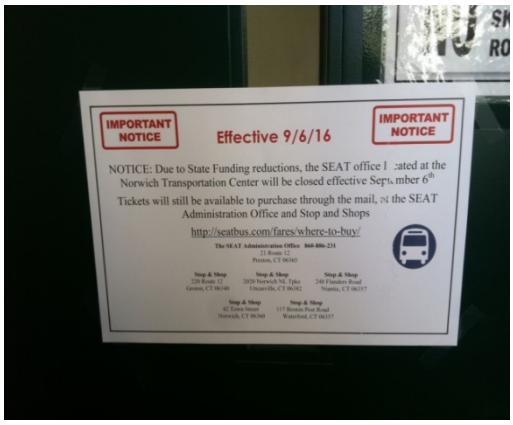


Figure 14. Closed Transportation Center office

3.2 Post Audit Workshop - Key Issues

General:

- In general, pedestrian accommodations are good, although some are outdated.
    - The sidewalk network is complete with no missing gaps; there is a minimum of narrow sidewalks throughout.
- Illumination is inconsistent throughout the RSA area; some areas have sidewalk lighting only, some areas are missing lighting.
    - The intersection of Main Street, West Main Street, Water Street, Church Street, Chelsea Harbor Drive and Washington Street was specifically noted as an area with insufficient illumination.
        - New illumination may be proposed as part of CTDOT District 2 re-design of the intersection.
    - The City would like to use decorative illumination if possible.

Figure 15. Mis-aligned handicap ramp

- There is a desire by the City to have architectural features near the Transportation Center to alert drivers that they are entering the downtown area.
- Some crosswalks are diagonal, which makes them very long; squaring them would create a much shorter crossing for pedestrians.
- The City would like to investigate traffic circulation patterns to determine if any roads can be closed to traffic. The City is looking at Chelsea Harbor Drive to be closed in some capacity.
- There is a desire to make pedestrian movements to the downtown area easier, safer and more appealing in order to generate more presence to local businesses.
- There is an excess of parking garages in the downtown area.

Main Street:

- The City would like to consider alternative geometries for the Franklin Street intersection, including a roundabout (Figure 16).
- Plowing is a concern in the downtown area especially Main Street.

Figure 16. Intersection of Franklin Street and Main Street

West Main Street:

- The constant flashing beacons at the mid-block crossing in front of the Transportation Center are ineffective and advanced measures such as rectangular rapid flashing beacons (RRFB) may be more effective.
- 12-foot lanes are currently striped and could be reduced to 11-feet to provide additional shoulder width and encourage slower vehicle speeds.
- The bridge on West Main Street was specifically noted as an area that is not inviting to pedestrians. The City would like to consider options to make this area feel safer for pedestrians including wider

shoulders and/or a railing on the inside of the sidewalk.

- The fee structure for the Transportation Center parking garage may not be optimal and should be studied.
- The right turn from West Main Street onto Chelsea Harbor Drive could be channelized better to improve vehicle operations (Figure 17).
    - The two lanes coming from Washington Street to Chelsea Harbor Drive should be directed to the left two lanes of Chelsea Harbor Drive so that the right lane is available for traffic from West Main Street.
    - Signage and striping changes at the intersection should be considered as part of the CTDOT re-design of the intersection to see if traffic operations can be improved.

Figure 17. West Main Street right turn onto Chelsea Harbor Drive

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. City to trim trees that are in conflict with existing illumination.
2. City to replace the missing pedestrian signal at the intersection of Main Street and Broadway/Courthouse Square.
3. City to install the latest pedestrian crossing signs at midblock crossings.
4. City to coordinate with CTDOT to re-stripe 11-foot wide lanes on West Main Street and provide wider shoulders.
5. City to measure illumination levels throughout the RSA area and identify any areas where there are deficiencies.
6. City to coordinate with CTDOT to consider additional signage or striping to channelize the two through lanes on Washington Street into the two left lanes of Chelsea Harbor Drive and the right turn lane on West Main Street into the right lane of Chelsea Harbor Drive.
7. City to install additional bike racks in the downtown area as current funding allows.
8. City to replace catch basin grates that are not the bike friendly type with the new style grates.

Figure 18 depicts some of these recommendations.

1. City to trim trees that are in conflict with existing illumination. (Corridor Wide)
2. City to replace the missing pedestrian signal at the intersection of Main Street and Broadway/Courthouse Square.
3. City to install the latest pedestrian crossing signs at midblock crossings.
4. City to coordinate with CTDOT re-stripe 11-foot wide lanes on West Main Street and provide wider shoulders.
5. City to measure illumination levels throughout the RSA area and identify any areas where there are deficiencies. (Corridor Wide)
6. City to coordinate with CTDOT to consider additional signage or striping to channelize the two through lanes on Washington Street into the two left lanes of Chelsea Harbor Drive and the right turn lane on West Main Street into the right lane of Chelsea Harbor Drive.
7. City to install additional bike racks in the downtown area as current funding allows. (Corridor Wide)
8. City to replace catch basin grates that are not the bike friendly type with the new style grates. (Corridor Wide)

Figure 18 Short Term Recommendations

4.2 Medium Term

1. City to coordinate with the owner of the former donut shop at the intersection of Main Street, West Main Street, Water Street, Washington Street, Chelsea Harbor Drive and Church Street to try to improve access management.
2. City to re-stripe crosswalks that are currently diagonal and construct new handicap ramps to shorten pedestrian crossing distance.
3. City to install advanced pedestrian safety measures at the mid-block crossing of West Main Street at the Transportation Center such as rectangular rapid flashing beacons (RRFB).
4. City to reconstruct handicap ramps on Chelsea Harbor Drive so that they are aligned correctly with the crosswalks.
5. City to develop an illumination plan so that additional lighting can be installed as funding becomes available.
6. City to consider adding sidewalk railing or other measures to the West Main Street bridge to make the area more inviting for pedestrians.
7. City to study the fee structure at the Transportation Center parking garage and consider changes to increase use of the garage.
8. City to develop a City-wide bike plan to guide future development and create a bike friendly environment.

Figure 19 depicts some of the recommendations.

1. City to coordinate with the owner of the former donut shop at the intersection of Main Street, West Main Street, Water Street, Washington Street, Chelsea Harbor Drive and Church Street to try to improve access management.
2. City to re-stripe crosswalks that are currently diagonal and construct new handicap ramps to shorten pedestrian crossing distance (Corridor wide).
3. City to install advanced pedestrian safety measures at the mid-block crossing of West Main Street at the Transportation Center such as rectangular rapid flashing beacons (RRFB).
4. City to reconstruct handicap ramps on Chelsea Harbor Drive so that they are aligned correctly with the crosswalks.
5. City to develop an illumination plan so that additional lighting can be installed as funding becomes available (Corridor wide).
6. City to consider adding sidewalk railing or other measures to the West Main Street bridge to make the area more inviting for pedestrians.
7. City to study the fee structure at the Transportation Center parking garage and consider changes to increase use of the garage.
8. City to develop a City-wide bike plan to guide future development and create a bike friendly environment (Corridor wide).

Figure 19 Mid Term Recommendations

4.3 Long Term

1. City to update pedestrian facilities to the latest ADA standards as construction projects occur. These include handicap ramps, detectable warning strips, pedestrian signals and pedestrian pushbuttons.
2. City to consider options for alternative geometric design of the intersection of Main Street and Franklin Street, including a roundabout.
3. City to study existing traffic circulation patterns in the downtown area and consider alternatives, including closing certain sections of roadway to traffic to encourage pedestrian presence.

Figure 20 depicts some of these recommendations.

1. City to update pedestrian facilities to the latest ADA standards as construction projects occur. These include handicap ramps, detectable warning strips, pedestrian signals and pedestrian pushbuttons (Corridor wide).
2. City to consider options for alternative geometric design of the intersection of Main Street and Franklin Street, including a roundabout.
3. City to study existing traffic circulation patterns in the downtown area and consider alternatives, including closing certain sections of roadway to traffic to encourage pedestrian presence (Corridor wide).

Figure 20 Long Term Recommendations

4.4 Summary

This report documents the observations, discussions and recommendations developed during the successful completion of the City of Norwich RSA. It provides Norwich with an outlined strategy to improve the transportation network for all road users on West Main Street and the surrounding downtown area, particularly focusing on pedestrians and cyclists. Moving forward, Norwich 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.

COMMUNITY
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Appendix A

CONNECTICUT DEPARTMENT OF TRANSPORTATION

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	Patrick McLaughlin, P.E.
Title	City Engineer
Email Address	pmclaughlin@cityofnorwich.org
Telephone Number	(860) 823-3798

2. Location information

Address	West Main St., Main St., Chelsea Harbor Dr., Water St., Market St.
Description	State and Local Roads
City / Town	Norwich

3. Roadway type
(Please select all that apply)

- [x] **State road**
- [x] **Local road**
- [ ] **Private Road**
- [ ] **Other (please specify)**

4. Zoning
(Please select all that apply)

- [ ] **Industrial**
- [ ] **Residential**
- [x] **Commercial**
- [x] **Mixed Use**
- [x] **Retail**
- [ ] **N/A (not applicable)**
- [ ] **Other (please specify)**

Otis Library, Courthouse, City Hall, churches and social services all in the area.

5. Approximate mile radius around the location

Greater than a ½ mile

Other (Please Specify)

6. Community Sites
(Please select all that apply)

- [ ] **Community Centers**
- [x] **Business Districts**
- [x] **Restaurant/Bar Districts**
- [x] **Churches**
- [x] **Housing Complexes**
- [ ] **Proximity to Schools**
- [x] **Tourist Locations (examples – Casino, Malls, Parks, Aquarium, etc...)**
- [ ] **N/A (not applicable)**
- [ ] **Other (please specify)**

Otis Library, Courthouse, City Hall, churches and social services all in the area.

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

- [x] **Yes**
- [ ] **No**

If Yes please describe (please specify)

Labor ready, State Department of Children and Family Services, a Post Office, and many retail establishments and restaurants are located in this corridor.

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)**
- [x] **Other (please specify)**

The Otis library provides numerous educational programs for children and adults.

9. Transit facilities
(Please select all that apply)

- [x] **Bus**
- [ ] **Rail**
- [ ] **Ferry**
- [ ] **Airport**
- [ ] **Park and Ride Lot**
- [ ] **N/A (not applicable)**
- [x] **Other (please specify)**

The recently completed Norwich Intermodal Transportation Center is on the west end

10. Safety Concerns
(Please select all that apply)

- [x] **Traffic (volumes & speed)**
- [ ] **Collisions**
- [x] **Sidewalks**
- [ ] **Traffic Signals**
- [ ] **Traffic Signs**
- [x] **Parking Restrictions / Additions**
- [ ] **Drainage**
- [x] **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)?

Yes

If Yes please describe and list all projects.

Recently a local developer has proposed a re-use of the old YMCA building as a Community Center. The YMCA building is across the street from the post office, on the east end of the study limits. The City is also pursuing grant money to replace the floating docks at Howard Brown Park.

12. Environmental Concerns:

Historical Preservation

If Yes please describe and list.

The downtown area is adjacent to a Historic Area and and proposed work should be designed to enhance the historic character of the area. many of the existing sidewalks utilize brick pavers, some of which are nearing the end of their serviceable life.

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

This corridor should be considered for an RSA as it connects the relatively new Intermodal Transportation Center with the Downtown. This study area also connects to the initial Connecticut DOT RSA which was completed in May of 2015 along West Main Street,(Route 82). Furthermore, the City is interested in re-configuring the traffic patterns on Water Street and Chelsea Harbor Drive to allow for a more pedestrian friendly area adjacent to Howard Brown Park, possibly even expanding the Park. The possible conversion of Water Street to two-way traffic and the removal of vehicular traffic from Chelsea Harbor Drive would allow for safer pedestrian and bicycle movement along this beautiful waterfront park. The RSA could be the first step in this direction.

The City is very committed to creating a desirable, healthy living environment in the Downtown area. There is a tremendous amount of pedestrian traffic as there is a Post Office, a large Public Library, numerous restaurants, retail establishments and office buildings on Main Street. The Heritage Trail also has it's origin in Howard Brown Park, a very popular waterfront park at the confluence of the Yantic, Shetucket, and Thames Rivers.

There are also alot of cyclists in Norwich. Currently there are no bike lanes in the City but it seems as though the downtown area would be the logical place to begin creating Bike lanes. An RSA could be the starting point of such an initiative.

14. Are there plans to expand the area?
(Transportation Oriented Development, Economic Development, housing, etc...)

Yes

The City is committed to sustaining the Downtown area. To this end, there are efforts underway to find occupants for some of the vacant buildings, particularly the YMCA building and the Reid & Hughes building, both on Main Street.

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

Yes

The one feature unique to this location that can not be emphasized enough is the Howard Brown Park. This park is the crown jewel of the City. It is the home to a very popular boat launch and some of the finest fishing in the area. The Park hosts many events throughout the year, including the Rotary Carnival, the Italian Festival and numerous musical concerts as part of "Rock the Docks" every summer. The Park is also home to the two season regional Farmer's Market, which has become very popular. Many people who work in the near-by office buildings walk down to the market on their lunch break.

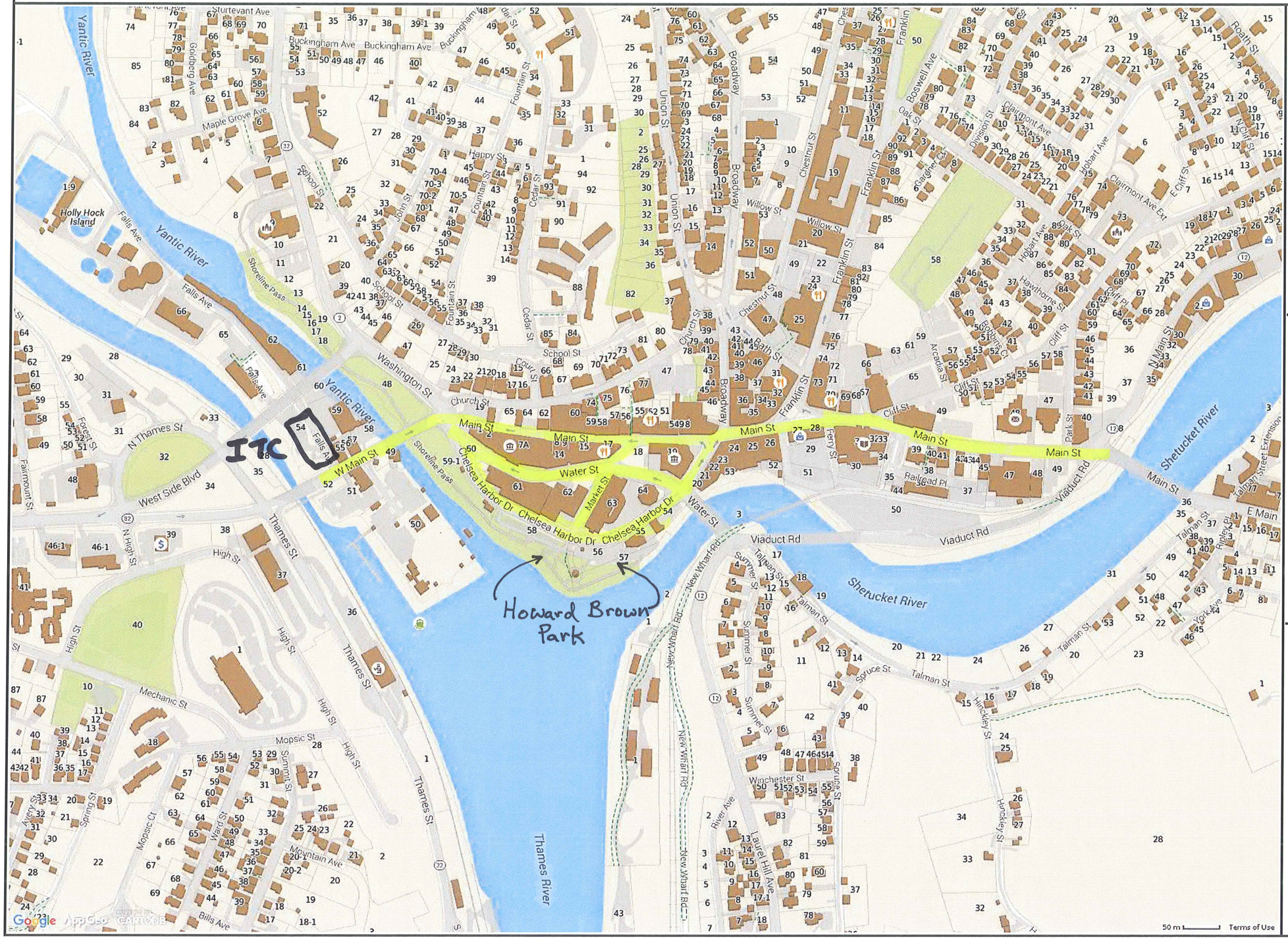
Thank you for completing the Community Connectivity application.

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)

Submit Application

Prposed Main Street RSA Area



RSA area highlighted

COMMUNITY
connectivity program

Appendix B

Built to deliver a better world

Road Safety Audit

Town: Norwich
RSA Location: Norwich Downtown
Meeting Location: Norwich City Hall rm. 390
Address: 100 Broadway, Norwich, CT 06360
Date: 11/10/2016
Time: 8:30 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Kevin Chukwu	CTDOT
Brad Sabean	Aecom
Anna Bergeron	CTDOT
Pat McLaughlin	Norwich PWD
Dick Guggenheim	SCCOG
Peta Brazaitis	CTDOT
Paul Metsack	CTDOT
Andre Rosedice	Norwich PD
Darren Powers	Norwich PD
Deanna Rhodes	City of Norwich
Ryan Thompson	Norwich Public Works
Stephen Mitchell	AECOM
Stephen Gazillo	AECOM

COMMUNITY
connectivity program

Appendix C

Built to deliver a better world

Road Safety Audit – Norwich

Meeting Location: Norwich City Hall Rm. 390
Address: 100 Broadway, Norwich, CT 06360
Date: 11/10/2016
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

Pedestrian Crossings
• Sufficient time to cross (signal)
• Signage
• Pavement Markings
• Detectable warning devices (signal)
• Adequate sight distance
• Wheelchair accessible ramps
  o Grades
  o Orientation
  o Tactile Warning Strips
• Pedestrian refuge at islands
• Other	

Pedestrian Facilities
• Sidewalk
  o Width
  o Grade
  o Materials/Condition
  o Drainage
  o Buffer
• Pedestrian lighting
• Pedestrian amenities (benches, trash receptacles)
• Other	

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

Roadway & Vehicles	
• Speed-related issues o Alignment; o Driver compliance with speed limits o Sight distance adequacy o Safe passing opportunities	
• Geometry o Road width (lanes, shoulders, medians); o Access points; o Drainage o Tapers and lane shifts o Roadside clear zone /slopes o Guide rails / protection systems	

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

• Pavement
  o Pavement Condition (excessive roughness or rutting, potholes, loose material)
  o Edge drop-offs
  o Drainage issues
• Lighting Adequacy	

• Signing
  • Correct use of signing
  • Clear Message
  • Good placement for visibility
  • Adequate retroreflectivity
  • Proper support	

• Signals
  o Proper visibility
  o Proper operation
  o Efficient operation
  o Safe placement of equipment
  o Proper sight distance
  o Adequate capacity	

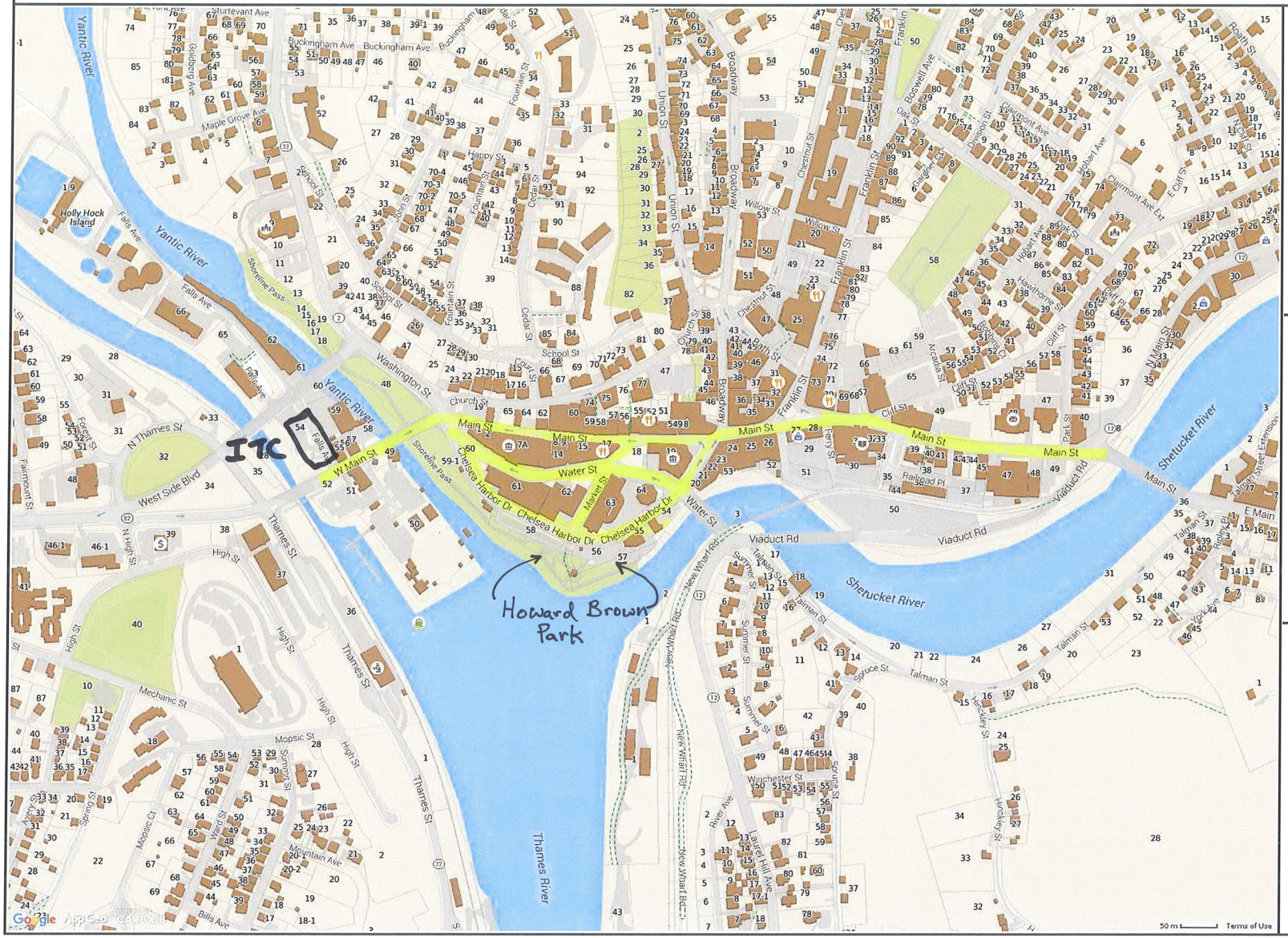
• Pavement Markings
  o Correct and consistent with MUTCD
  o Adequate visibility
  o Condition
  o Edgelines provided	

• Miscellaneous
  o Weather conditions impact on design features.
  o Snow storage	

City of Norwich, CT

February 26, 2016

Prposed Main Street RSA Area



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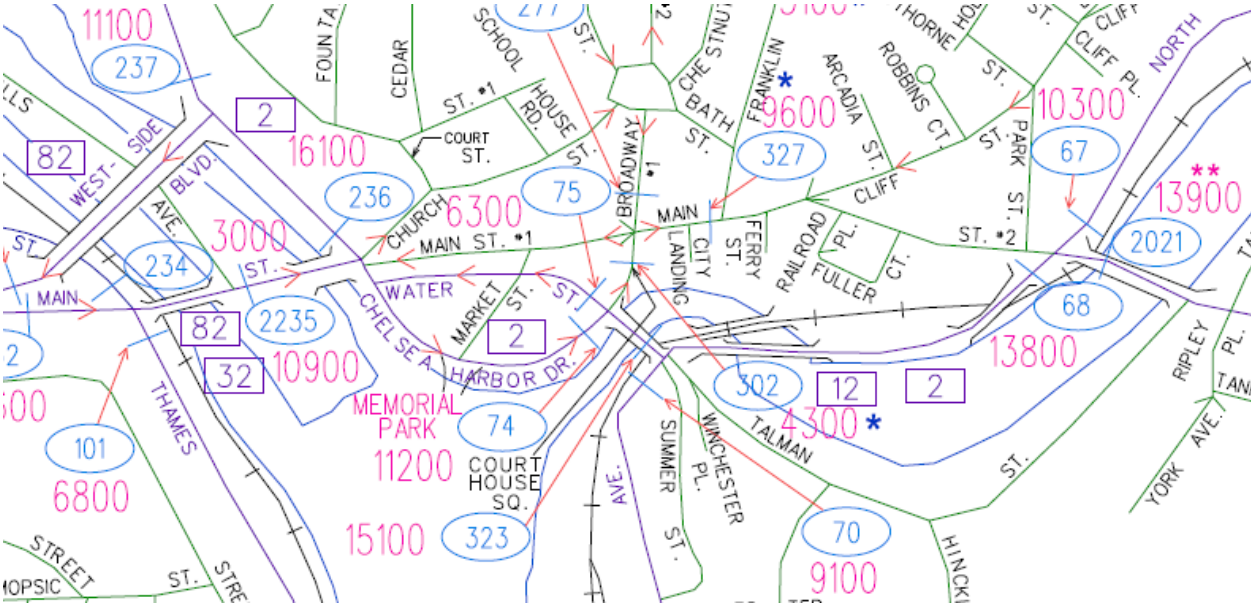
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Norwich, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 10/30/2014
Properties updated daily

RSA area highlighted

Average Daily Traffic (ADT)

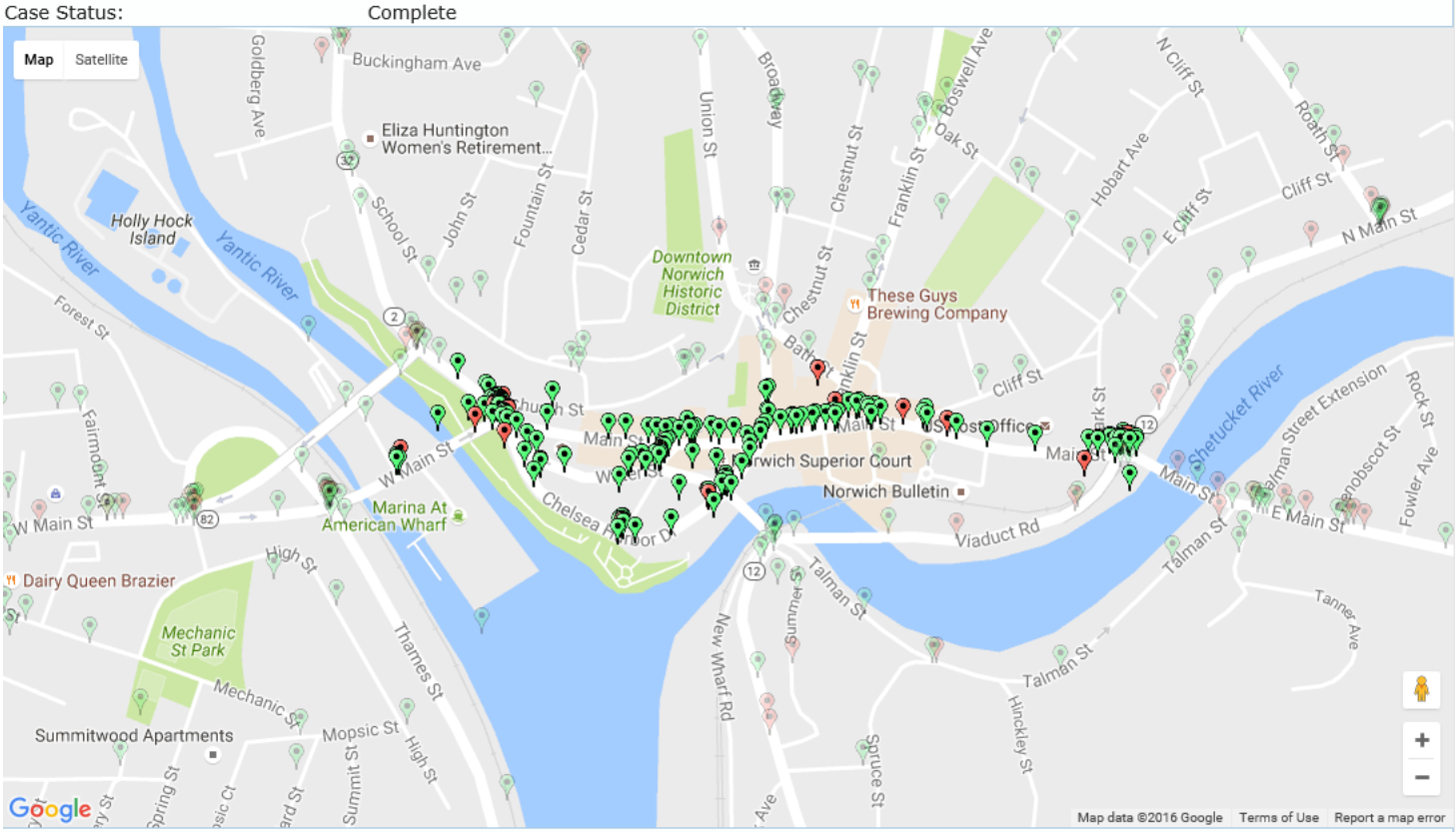


2015 Crashes

UCONN Connecticut Crash Data Repository

Search Criteria:

Dataset:	mmucc
Towns:	Norwich
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 | View Vehicle Vectors

Injury of any type (Serious, Minor, Possible) **Fatal (Kill)**

Property Damage Only

Route Segment Scale

0 0

Select All | Deselect All

Connecticut Crash Data Repository - User Guide | Contact Us

Road Safety Audit – Norwich

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	93	89%
Injury (No fatality)	11	11%
Fatality	0	0%
Total	104	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	5	5%
Sideswipe-Same Direction	27	26%
Rear-end	19	18%
Turning-Intersecting Paths	4	4%
Turning-Opposite Direction	1	1%
Fixed Object	7	7%
Backing	5	5%
Angle	0	0%
Turning-Same Direction	3	3%
Moving Object	0	0%
Parking	21	20%
Pedestrian	7	7%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	5	5%
Miscellaneous- Non Collision	0	0%
Total	104	

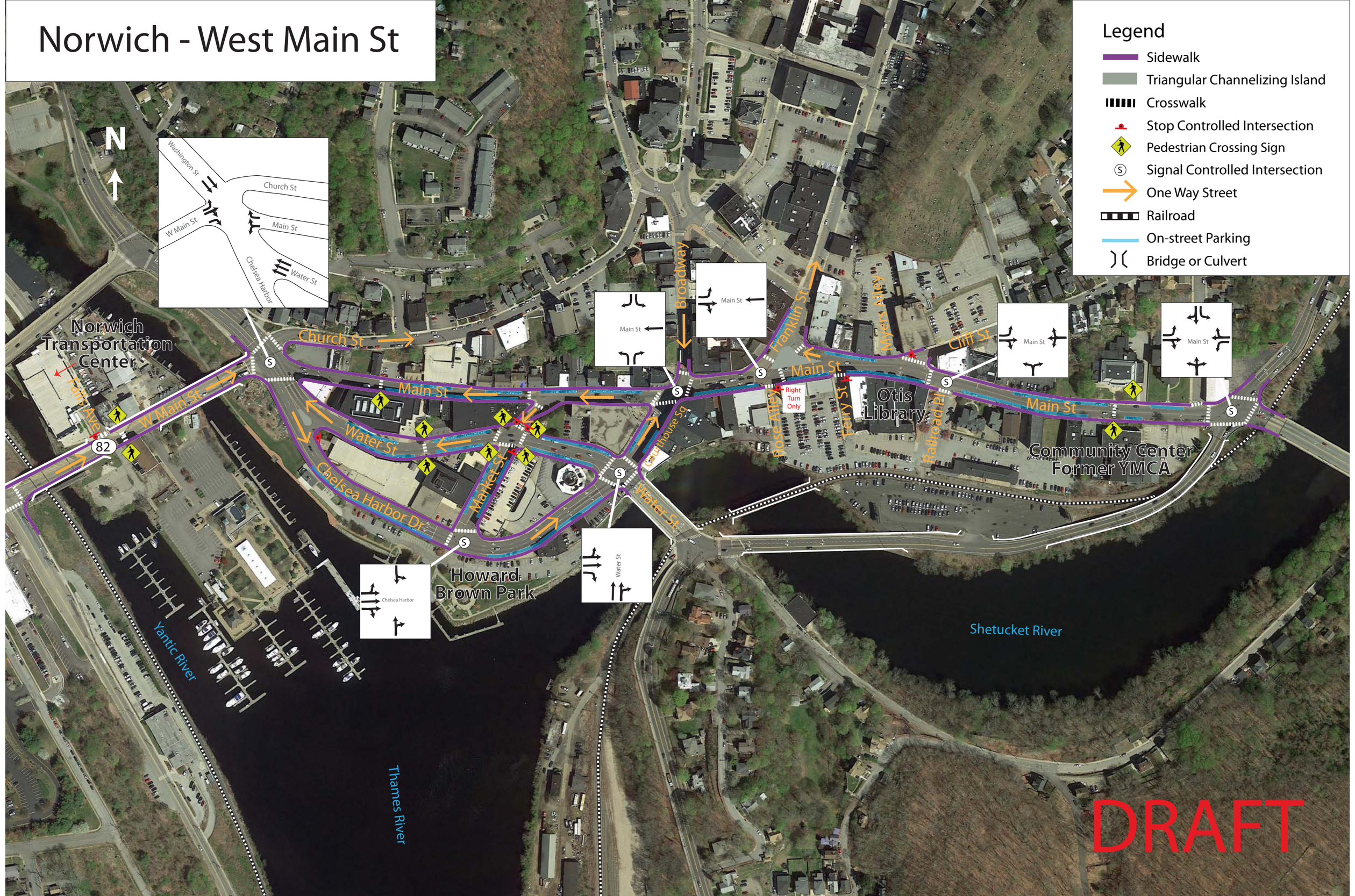
Weather Condition	Number of Crashes	
Snow	1	1%
Rain	11	11%
No Adverse Condition	90	87%
Unknown	1	1%
Fog	0	0%
Other	1	1%
Blowing Sand, Soil, Dirt or Snow	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Total	104	

Light Condition	Number of Crashes	
Dark-Not Lighted	0	0%
Dark-Lighted	14	13%
Daylight	88	85%
Dusk	0	0%
Unknown	1	1%
Dawn	1	1%
Total	104	

Road Surface Condition	Number of Crashes	
Snow/Slush	6	6%
Wet	11	11%
Dry	85	82%
Unknown	1	1%
Ice	1	1%
Other	0	0.0%
Total	104	

Time		Number of Crashes	
0:00	**0:59**	0	0%
1:00	**1:59**	1	1%
2:00	**2:59**	1	1%
3:00	**3:59**	1	1%
4:00	**4:59**	4	4%
5:00	**5:59**	1	1%
6:00	**6:59**	1	1%
7:00	**7:59**	2	2%
8:00	**8:59**	4	4%
9:00	**9:59**	11	11%
10:00	**10:59**	6	6%
11:00	**11:59**	8	8%
12:00	**12:59**	11	11%
13:00	**13:59**	11	11%
14:00	**14:59**	8	8%
15:00	**15:59**	12	12%
16:00	**16:59**	9	9%
17:00	**17:59**	7	7%
18:00	**18:59**	0	0%
19:00	**19:59**	2	2%
20:00	**20:59**	0	0%
21:00	**21:59**	1	1%
22:00	**22:59**	1	1%
23:00	**23:59**	2	2%
Total		104	

Norwich - West Main St



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

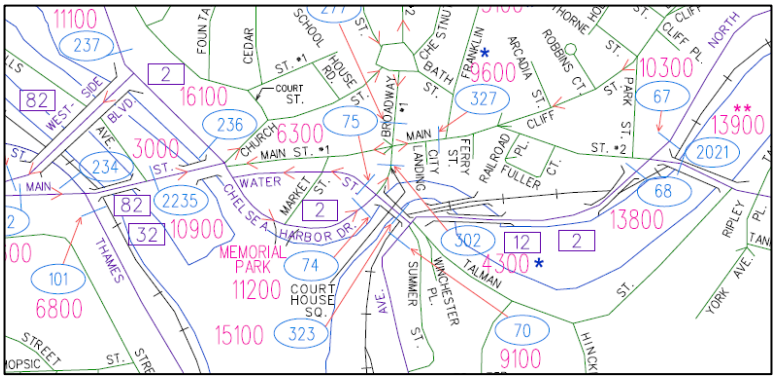
- Discussion regarding responsibilities for implementing the countermeasures (including funding)

Road Safety Audit – Norwich

Fact Sheet

Functional Classification:

- West Main Street is classified as Minor Arterial
- Main Street is classified as a Local Road
- Chelsea Harbor Dr is classified as Other
- Water Street is classified as Other
- Market Street is classified as Local Road



ADT

- ADT on West Main Street is 3,000
- ADT on Main Street is 13,900 – 16,100
- ADT on Chelsea Harbor Dr is 11,200
- ADT on Water Street is 6,300

Population and Employment Data (2014):

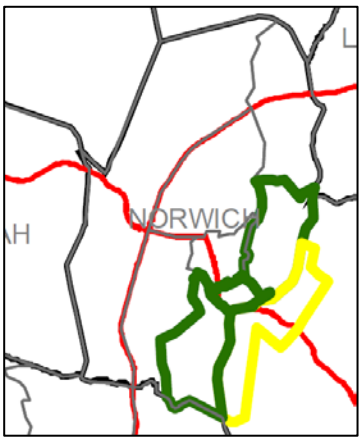
- Population: 40,378
- Employment: 16,972

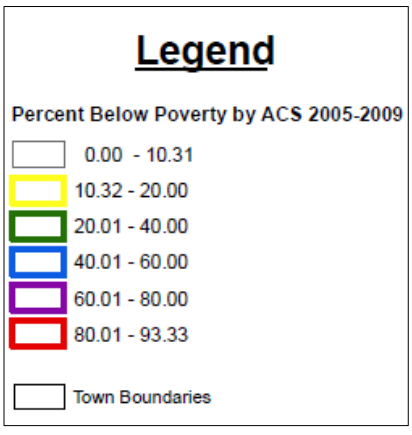
Urbanized Area

- Norwich is in the Norwich-New London Urbanized Area

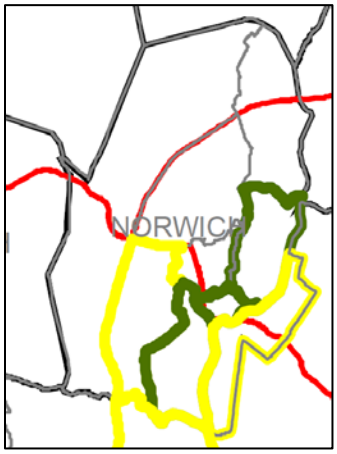
Demographics

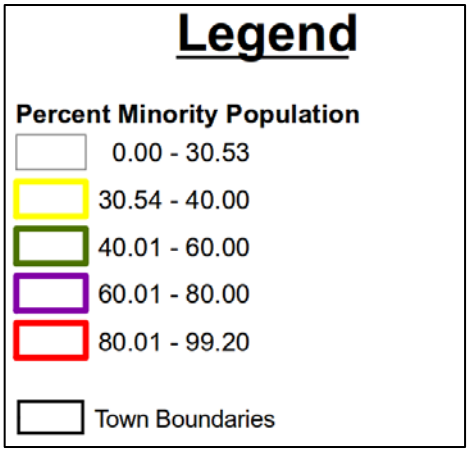
- The statewide average percentage below the poverty line is 10.31%. Within the vicinity of Main Street up to 40% of residents are below the poverty line.





- The statewide average percentage minority population is 30.53%. Within the vicinity of Main Street up to 60% of residents are minorities.





Air Quality

- Norwich's CIPP number 614
- Norwich is within the Greater CT Marginal Ozone Area
- Norwich is within a CO Attainment Area