



COMMUNITY
connectivity program

City of Stamford

U. S. Route 1 Road Safety Audit

West Main Street, Tresser Blvd. and East Main Street

April 19, 2018 and July 12, 2018



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Acknowledgements:

OFFICE OF INTERMODAL PLANNING
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CONNECTICUT DEPARTMENT OF TRANSPORTATION

With assistance from AECOM Transportation Planning Group

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1 Introduction to the U. S. Route 1 Corridor RSA

The Connecticut Department of Transportation (CT DOT) is undertaking an RSA along the U.S. Route 1 corridor between the New York State line and the Westport/Fairfield border, a total distance of 22.77 miles. This corridor encompasses five municipalities: Greenwich, Stamford, Darien, Norwalk, and Westport. Because of the length of the corridor, and the differing stakeholders in the various municipalities, it was decided to treat each town as an individual RSA corridor. This report presents the findings of the RSA conducted in the City of Stamford.

The City of Stamford RSA includes U.S. Route 1 from the town line of Greenwich to the town line of Darien. Throughout this corridor, U.S. Route 1 is named West Main Street, Tresser Blvd. and East Main Street. The study area generally has sidewalks throughout, but concerns of sidewalk geometry, condition, width, driveway location and ADA compliance were the primary focus to improve connectivity for pedestrians and bicycles. Safer Connectivity creates and expands the vibrant use of the city center.

1.1 Location

The RSA corridor within Stamford includes West Main Street, Tresser Blvd. and East Main Street, as shown in Figure 1. Figure 2 shows the study area in a regional context. The Average Daily Traffic (ADT) on West Main Street is 12,700 vehicles per day (vpd) and on East Main Street, it is 29,800 vpd.

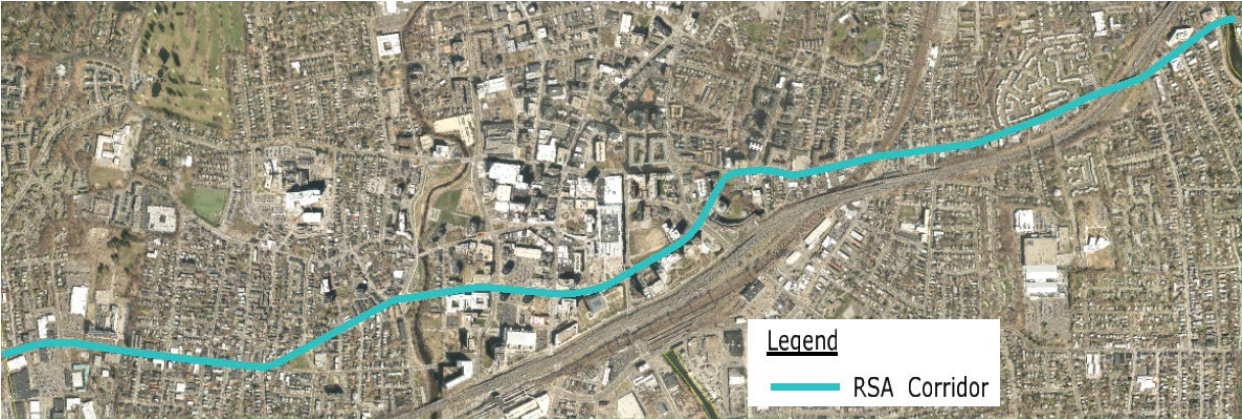


Figure 1, West Main Street, Tresser Blvd. and East Main Street (Route 1) Stamford

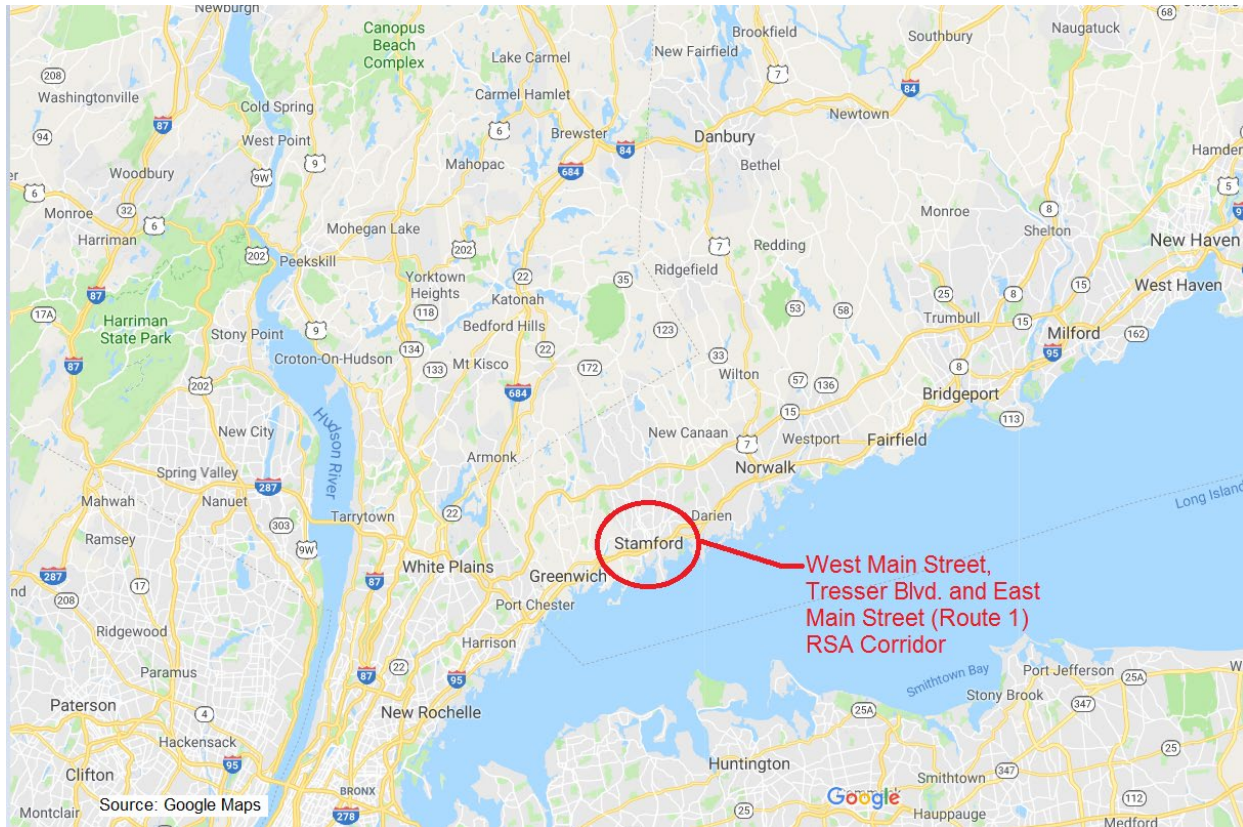


Figure 2. Study Area – Regional Context

2 Pre-audit Assessment

2.1 Pre-audit Information

As noted above, traffic volumes (up to 29,800) are significant along this corridor. A high number of crashes (1,208) were reported along the study corridor between 2015 and 2017. Table 1 and Table 2 provide data on Crash Severity and Type, respectively. Almost 50% of the crashes occurred between Noon and 6:00 PM. Five fatalities were reported; one at a pedestrian crossing on East Main Street near Seaton Road and the others at Tresser Blvd near Edith Sherman Drive and Greenwich Avenue.

Figure 3 displays crashes that occurred in this area from 2015 to 2017.

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 (76%) resulted only in property damage, 24% involved injuries or fatalities.

Severity Type	Number of Crashes	
Property Damage Only	924	76%
Injury of any type (Serious, Minor, Possible)	279	23%
Fatal (Kill)	5	< 1%
Total	1,208	

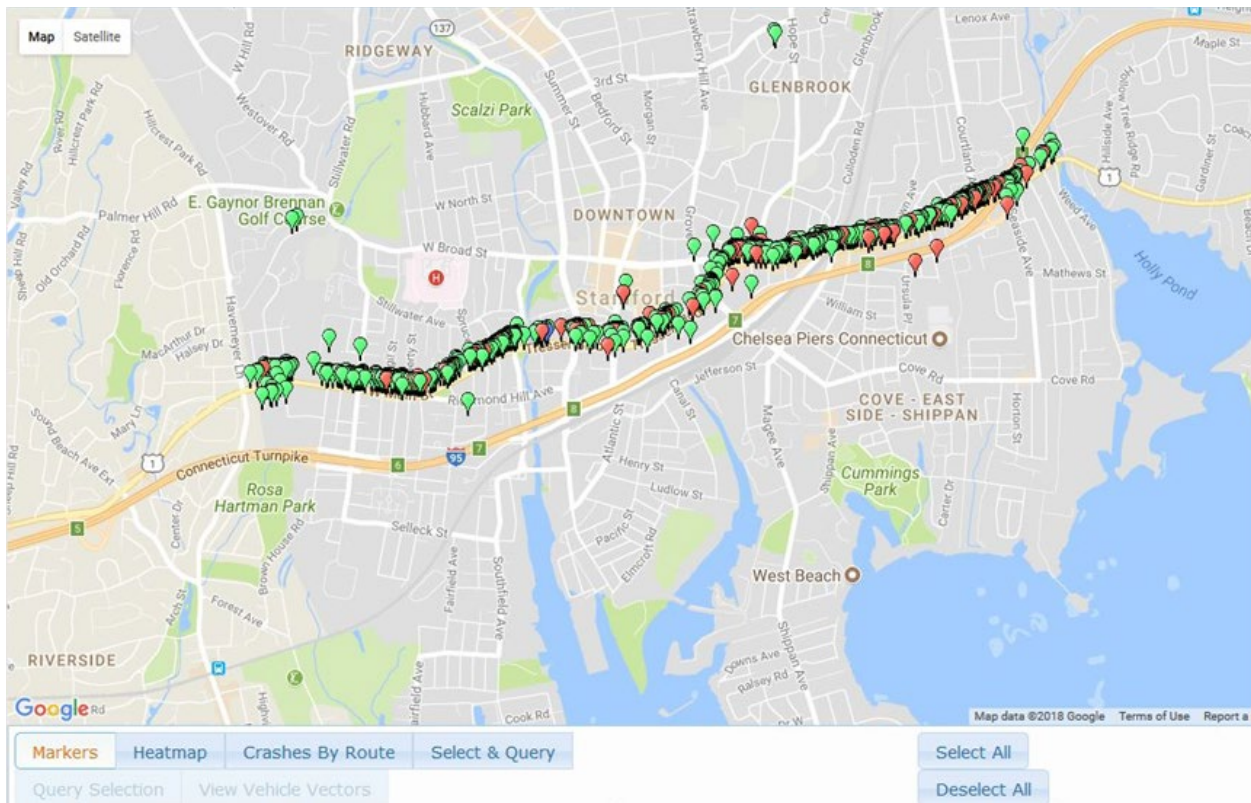
Table 1. Crash Severity 2015-2017

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Crashes	
Front to rear	425	35%
Angle	353	29%
Sideswipe, same direction	255	21%
Sideswipe, opposite direction	25	2%
Not Applicable	92	8%
Rear to side	12	1%
Other	19	2%
Rear to rear	10	1%
Unknown	5	0%
Front to front	12	1%
Total	1,208	

Table 2. Crash Type 2015-2017

Source: UConn Connecticut Crash Data Repository



Source: Connecticut Crash Data Repository

Figure 3. Crashes that Occurred from 2015 - 2017 (Connecticut Crash Data Repository)

There are 27 signalized intersections within the study corridor, with many of them spaced closely together. There are also many driveway curb cuts to private businesses located along this corridor, and several CT Transit bus stops.

Roadway geometrics for study area roadways and intersections are shown in Figure 4, Figure 5, and Figure 6. An inventory of existing conditions of the intersection can be found in Table 3.

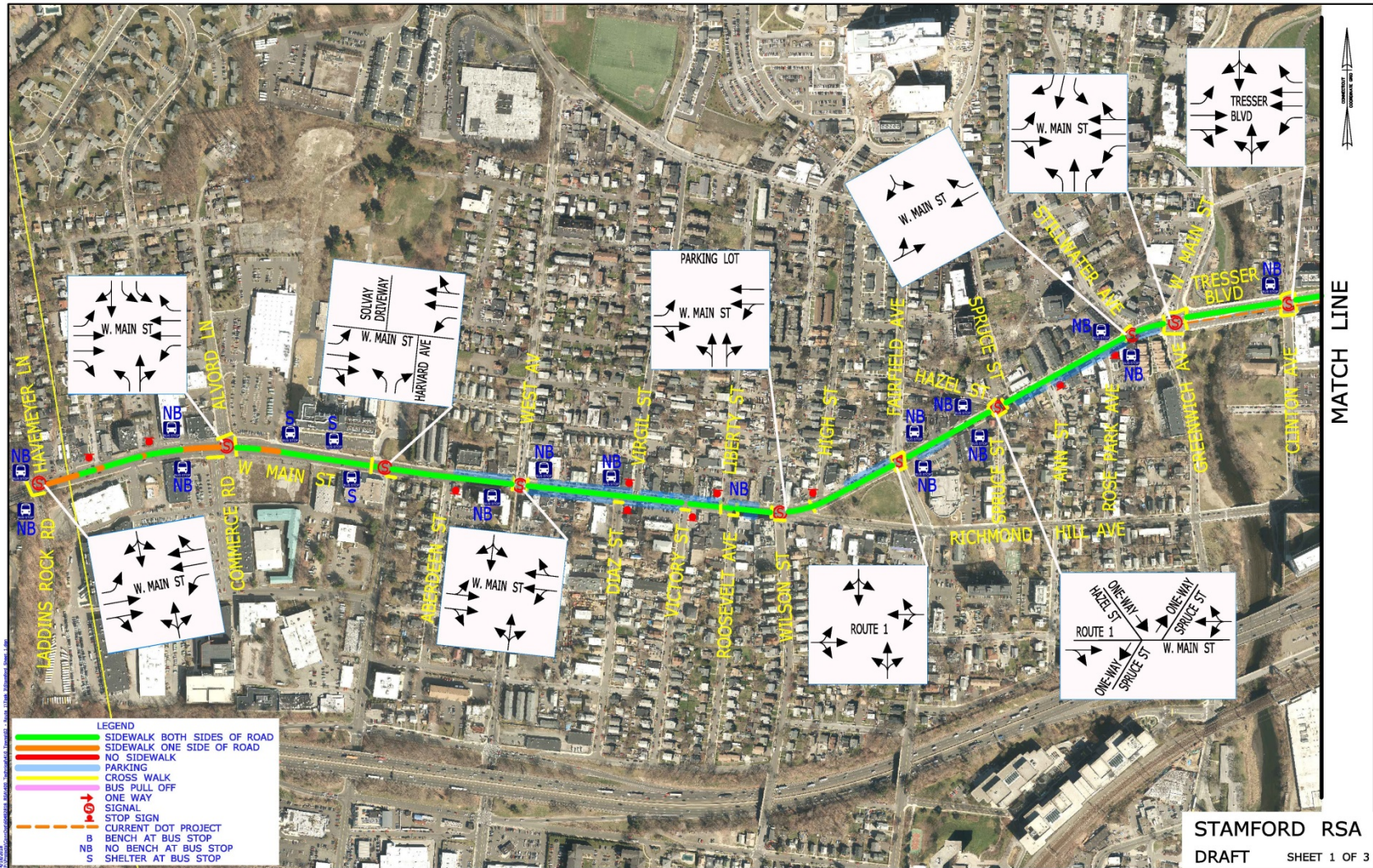


Figure 4. West Main Street to Tresser Blvd., Stamford Route 1 - Road Geometrics



Figure 5. Tresser Blvd. to East Main Street, Stamford Route 1 – Road Geometrics

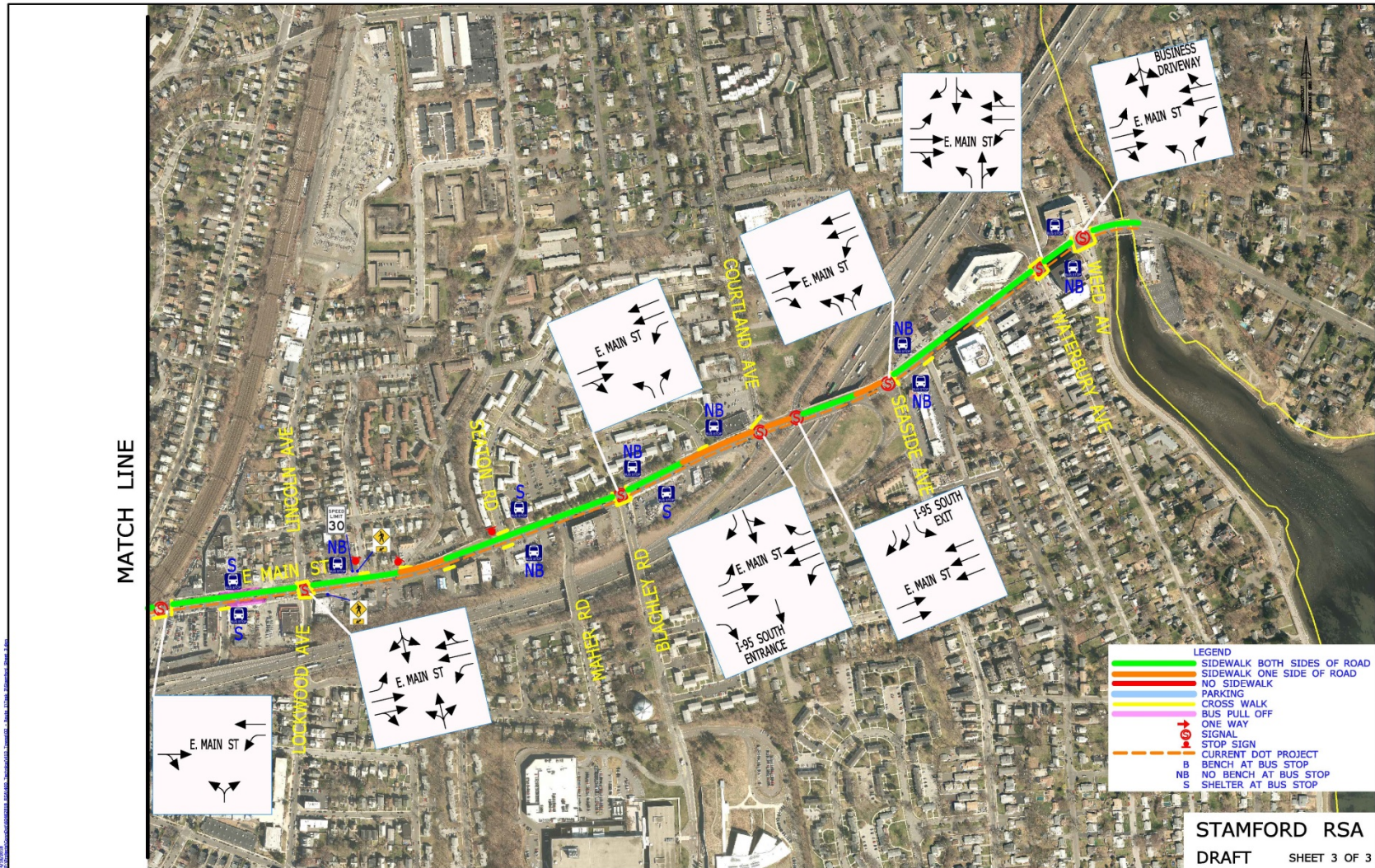


Figure 6. East Main Street, Stamford Route 1 - Road Geometrics

Stamford RSA

Street Inventory

From	To	Length	Lanes (Width)	Sidewalk				Curb	Parking	Shoulder	Ramps	
				Side	Type	Width	Condition				Exist	Compliant
Weed Ave	Seaside Ave	1082 ft	2 (11')	EB	Concrete	7'	Fair	Concrete	No	Varies	No	No
			2 (11')	WB	Concrete	6'	Fair	Concrete	No	Varies	No	No
Seaside Ave	Lockwood Ave	2892 ft	2 (12')	EB	Concrete	8'	Fair	Concrete	No	Varies	No	No
			2 (12')	WB	Concrete	8'	Fair	Concrete	No	Varies	No	No
Lockwood Ave	Myrtle Ave	687 ft	2 (11')	EB	Concrete	6'	Fair	Concrete	No	Varies	No	No
			2 (11')	WB	Concrete	7'	Fair	Concrete	No	Varies	No	No
N State St	Lafayette St	667 ft	1 (20')	EB	Concrete	10'	Fair	Concrete	Yes	Varies	Yes	No
			1 (20')	WB	Concrete	7'	Fair	Concrete	No	Varies	Yes	No
Lafayette St	Broad St	1088 ft	2 (11')	EB	Concrete	8'	Fair	Concrete	No	Varies	Yes	No
			2 (11')	WB	Concrete	8'	Fair	Concrete	Yes	Varies	Yes	No
Broad St	Greyrock Pl	1837 ft	2 (11')	EB	Concrete	7'	Fair	Concrete	No	Varies	Yes	No
			2 (11')	WB	Concrete	10'	Fair	Concrete	No	Varies	Yes	No
Greyrock Pl	Washington Blvd	1710 ft	3 (11')	EB	Concrete	9'	Fair	Concrete	No	Varies	Yes	No
			3 (11')	WB	Concrete	9'	Fair	Concrete	No	Varies	Yes	No
Clinton Ave	Stillwater Ave	773 ft	2 (11')	EB	Concrete	8'	Fair	Concrete	No	Varies	Yes	No
			2 (11')	WB	Concrete	9'	Fair	Concrete	Yes	Varies	Yes	No
Stillwater Ave	High St	1630 ft	1 (13')	EB	Concrete	7'	Fair	Concrete	Yes	Varies	Yes	No
			1 (13')	WB	Concrete	5'	Fair	Concrete	Yes	Varies	Yes	No
High St	West Ave	1398 ft	1 (16')	EB	Concrete	7'	Fair	Concrete	Yes	Varies	Yes	No
			1 (16')	WB	Concrete	5'	Fair	Concrete	Yes	Varies	Yes	No
West Ave	Alvord Lane	1396 ft	2 (11')	EB	Concrete	6'	Fair	Concrete	No	Varies	Yes	No
			2 (11')	WB	Concrete	5'	Fair	Concrete	No	Varies	Yes	No
Alvord Lane	Havemeyer Lane	907 ft	2 (12')	EB	Concrete	6'	Fair	Concrete	No	Varies	Yes	No
			2 (12')	WB	Concrete	5'	Fair	Concrete	No	Varies	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 are several development/redevelopment projects underway in this area of Route 1.

- There is an ongoing Bus Shuttle and Pedestrian Study.
- On-Street Parking is being added at Tresser Blvd, Washington Street and Broad Street.
- New Street Lighting is being added near Stamford Center Mall.
- Courtland Avenue has an ongoing lane configuration project.
- Transportation Demand Management (TDM) plan is being prepared.
- The city is in the process of defining building guidelines.

2.3 Pre-Audit Meeting

The RSA was conducted on April 19, 2018 for the portion of Route 1 from Washington Street to Darien, and on July 12, 2018 for the portion from Washington Street to Greenwich. The Pre-Audit meeting was held each day at 8:00 AM in the Stamford Government Center at 888 Washington Blvd. The RSA Team was comprised of staff from AECOM, staff from CTDOT, representatives from several Stamford departments including the Stamford Police Dept., Traffic Engineers, and Traffic Signals Division. Representatives from VN Engineers were also present at the second meeting on behalf of the City. The complete list of attendees can be found in Appendix B.

At the Pre-Audit meeting, several items were presented for general information prior to conducting the Audit in the field:

- Focus on Western end of Rte. 1, which has lower volumes but is more narrow.
- Non-motorized vehicles and pedestrian safety are a top priority for Stamford.
- Focus on access for bikes, wheelchairs, and pedestrians.
- Making sure that crossing times are sufficient is an important concern.
- Making sure that sidewalks, ramps, and crosswalks are up to standard and can be utilized by all pedestrians and non-motorized vehicles is another top priority.
- Parking is not a major concern.
- Most changes expected to be short term – shouldn't require too much funding/engineering
- Weather is not really a factor for crashes; 83% of the crashes reported were in clear weather conditions.
- Roadway Signs don't meet the MUTCD standards for height.
- Pavement conditions are poor and pavement markings are faded in certain areas.
- Sidewalk is on both sides of the roadway.
- ADA ramps are missing or misaligned and are not ADA complaint.
- There are 400 private shuttle companies in the area.
- Seaton Road has heavy pedestrian activity; midblock crossing.

- Education and public awareness is inadequate.
- All signals are being optimized; fiber optic cable being used.

3 RSA Assessment

3.1 Field Audit Observations

Waterbury Ave. and East Main Street

- Faded crosswalks crossing East Main Street.
- ADA compliant ramps needed at all four corners of the intersection.

Houston Terrace and East Main Street

- Observed frequent mid-block crossings from World Wrestling Entertainment (WWE) buildings at this location (Figure 7).
- Possible mid-block crossing at this location with RRFB, however, steep eastbound grade may be issue.



Figure 7: Pedestrians crossing mid-block

Seaside Avenue and East Main Street

- Observed pedestrians crossing on the south side of East Main Street across Seaside Ave.
- Utility poles in middle of sidewalk creates pedestrian access issues.

Blachley Road and East Main Street

- Concurrent pedestrian signal phasing.
- Utility poles and or pedestrian ramps relocation is needed to remove poles from the center of the current pedestrian ramps (Figure 8).
- Starting at Blachley Road, a road diet was discussed (starting at Blachley and heading west towards the downtown).
- Left turns into the right-in/right-out only McDonald's driveway was witnessed on several occasions.



Figure 8: Utility poll blocking pedestrian sidewalk ramp

Maher Road and East Main Street

- Crosswalk and ramps needed across Maher Road.
- Tree trimming needed along sidewalks (south side of East Main heading east from Maher road) (Figure 9).
- Road diet.
 - Terrain concerns:
 - Starting from Blachley Road, East Main Street has a significant downhill grade heading towards downtown until you reach Lockwood Ave.
 - Higher vehicle speeds observed in this area.

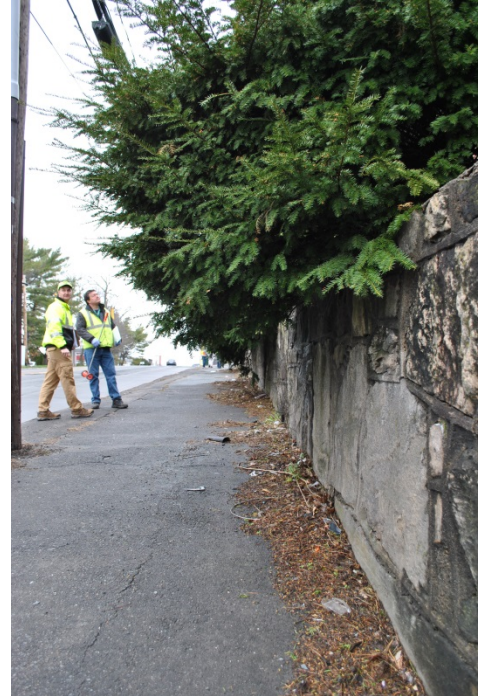


Figure 9: Tree trimming needed

Seaton Road and East Main Street

- Location of a pedestrian fatality.
- Bus stops located on both sides of the street with regular use Seaton/Main St. – many people crossing from the bus stop.
- Bus shelter not ADA compliant – bus pull out.
- Pedestrians were observed frequently crossing mid-block at this location to use the bus or visit the small shopping center on the south side of East Main Street (Figure 10).
- Narrow and/or missing sidewalk on south side vic. of Sergio's Pizza and El Charrito Restaurants.



Figure 10: Pedestrians crossing mid-block

Lawn Avenue and East Main Street

- Road diet
 - Terrain concerns:
 - Starting from Blachley Road, East Main Street has a significant downhill grade heading towards downtown until you reach Lockwood Ave.

- Higher vehicle speeds observed in this area.
 - Lawn Ave. has a very steep grade and sharp angle coming off of East Main Street.
 - Drainage Issues.
- Frequent mid-block crossings observed – mid-block crossing was discussed but issues with sightlines to the east could be problematic. (Figure 10).

East Main Street and Lincoln Avenue

- Continuity is an issue.
- Missing warning strips.
- Convert to one lane in each direction – left/right turn lane in center.
- 5 signalized crossings.
- Many pedestrians are not using the crosswalks and jaywalking.
- Very narrow sidewalk.
- Clogged catch basins.
- Parked cars at Las Americas Market block sidewalk.

East Main Street and Lafayette Street

- Deteriorating sidewalk (Figure 11).
- Non ADA compliant ramps.
- Poor pavement here.
- Going through the intersection, lane drops after East Main.
- Tractor trailers fit in the shoulder in front of Walgreens.
- Shared left/U-turn lane.
- Ideal tile has parking in front that blocks the sidewalk.
- Lafayette is very narrow to have on-street parking.
- North parking lot has closed so parking has been a problem in this area.



Figure 11: Poor sidewalk condition

East Main Street and Broad Street

- No way to cross here.
- Possible long term realignment.
- Signalized crosswalk.
- Lindale Street sidewalk.

East Main Street and Elm Street

- This crosswalk was realigned a few years ago.
- The Stamford Plaza Sign is blocking the sight distance.
- Poor crosswalk markings.

Tresser Boulevard and Greylock Place

- Bus center near Marriot too close to intersection - pull this bus stop back.
- Lack of consistency with sidewalk ramps;
- There are many misaligned sidewalk ramps

Tresser Boulevard and Edith Sherman

- Median is in poor shape.
- Remove the island and add on-street parking (Figure 12).
- There are sight distance issues with the private town center sign (Figure 13).

Tresser Boulevard and Atlantic Street

- Right turn lane is completely blocked when there is a show at the Jerry Springer Show venue.
- Design guidelines for the city need to be worked on for detail on type of trees, seating area etc.
- Drainage and ADA issues around crosswalks (Figure 14).

Tresser Boulevard and Washington Boulevard

- Add on-street parking on Tresser Boulevard.



Figure 12: Island not necessary



Figure 13: City Sign causing sight line issue



Figure 14: Detectable warning strip missing and poor drainage

- Fix the driveway – streamline sidewalk and curb.
- Placement of Bus Shelter and back slope is not ideal; it reduces the actual usable sidewalk (Figure 15).
- As part of an ongoing project, Pedestrian Signals are being added with Leading Pedestrian Interval (LPI) and new ADA compliant sidewalk ramps.
- Median refuge islands are very narrow (Figure 16).



Figure 15: Bus Shelter - Back slope not ideal

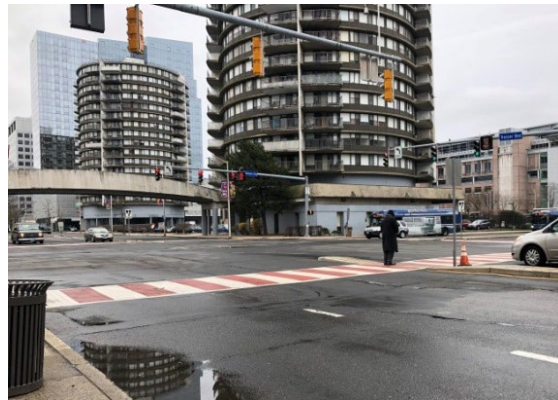


Figure 16: Narrow refuge island

Tresser Boulevard and Clinton Avenue

- Detectable Warning Strips are missing at Sidewalk Ramps (Figure 17).
- Parking Lane can be added at the Southwest side.
- The 8' shoulder allows for parking.

West Main Street/Tresser Boulevard/Greenwich Avenue

- Four-way signalized intersection.
- Pedestrian refuge islands on all approaches-no barrier or buffer for island.
- The on-street parking on the southern side of West Main Street creates mobility issue-Town wants to eliminate the parking spaces near the corner and create a right turn lane.

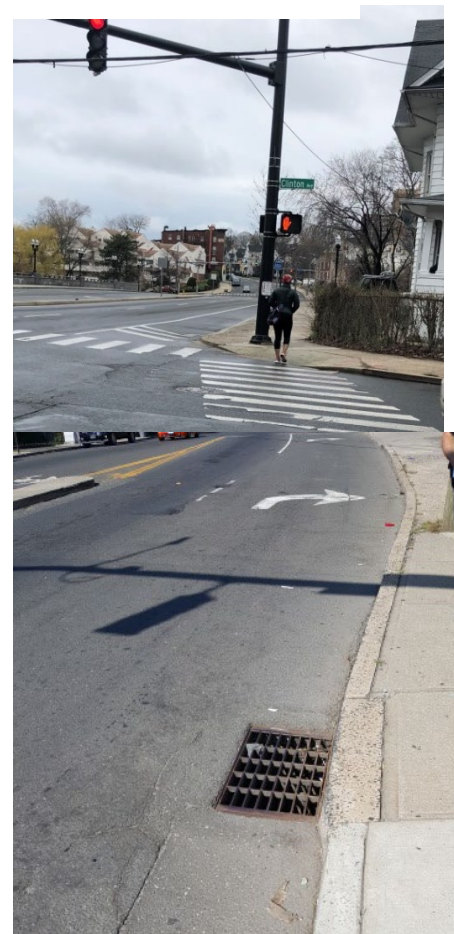


Figure 18: Storm drain covers are not bicycle friendly

- Curbs on pedestrian islands are damaged from being hit - need some reflective materials to make them more visual at night.
- Town mentioned pedestrians don't always obey the signals.
- Storm drain slots too large for bicycle tires to go over without getting stuck/damaging them (Figure 18).
- Suggestion to add a bumpout at Greenwich Avenue.

West Main Street and Stillwater Ave

- Tree on corner could potentially block seeing signal for crosswalk (Figure 19).
- Many of the sidewalk ramps have uneven curbs and could be trip hazards.
- Signalized T- Intersection.
- Faded pavement Markings.
- Crosswalk on Stillwater is faded on northern and western legs.

West Main Street and Parkside Gables Driveway

- 20 foot radius.
- Articulated busses don't fit between Stillwater Ave and the bus stop.
- West of Stillwater the bus stop sign is not to standard height-too low.
- 38' curb to curb.

West Main Street and Ann Street

- Empty lot on southern side of West Main-City wants to use this site for parking lot.
- Parking along southern side is permissible - limited to one hour.
- People park on northern side illegally to patronize businesses on southern side.

West Main/Spruce Street/Hazel Street

- Five-way skewed signalized intersection.



Figure 19: Tree is blocking pedestrian signal



Figure 20: Tree trunk tripping hazard

- Missing crosswalk across Spruce Street, missing ramp.
- Sidewalk west of intersection is 5.5 feet.
- At pedestrian push button the sidewalk measures to 3.5 feet.
- Hazel Street is one way.
- Exclusive pedestrian phase-short cycle.
- Many of the sidewalks not ADA compliant; signs for no parking placed poorly next to trees making the sidewalks very narrow.
- Sidewalks have trip hazards were trees have been placed (Figure 20).
- Tree stumps need to be removed from sidewalks.
- Sidewalks very cracked and uneven in multiple places and could be trip hazards.
- Wheels/tires of bikes/skateboards/rollerblades could get stuck in these cracks and cause injury.
- Ramps not compliant; not pointing in the right direction at any of the intersections on this section of Rte. 1 with the exception of the new ones at Harvard Ave.

Hazel St to High St

- We found that parking and the sidewalk are an issue in this portion of the route; the sidewalk ends in front of the auto body shop/car wash and there are no markings to show that it should continue (Figure 21).
- Customers of the auto body shop park directly where the sidewalk should be, making it difficult for pedestrians to get by.
- The same issue occurs down the street by the Citgo gas station; the sidewalk continues but it does not stop people from parking on it because there is limited parking in this lot.
- 39' street width.
- On-street parking on south side.
- Vertical curvature issue impacts sight lines.
- Parked cars also impede sight lines.

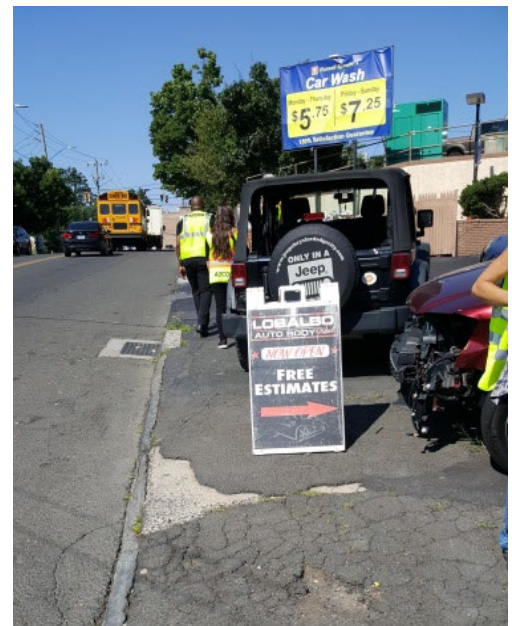


Figure 21: Cars parked where the sidewalk should be located

- Cars have difficulty leaving facility and entering West Main.

West Main Street at Fairfield

- Four-way signalized intersection.
- Bus stop at intersection.
- Green phase activated push button (Figure 22).
- No pedestrian signals.
- Faded crosswalks on all legs.

West Main street/Richmond Hill/High Street/Wilson Street

- Signalized except High Street, which is Stop Controlled.
- Crosswalk across West Main at Richmond Hill, no crosswalk on Richmond Hill.
- Two thru lanes on westbound West Main reduce to one thru lane at Wilson Street.
- On -Street Parking continues on north side, west of the Wilson Street and West Main Street Intersection.

West Main Street/Roosevelt/Liberty Street

- Signalized dog-leg intersection.
- Faded crosswalks.

West Main Street west of Victory Street

- Bottleneck from lane reduction and parking.
- Congested section of road.

West Main Street and West Avenue

- Intersection being redesigned by CTDOT
 - Plans to add left turn on all approaches.
 - Redesigning signal.
 - Eliminating parking.

West Main Street and Harvard lane/Home Depot Entrance

- Signalized intersection.
- Pavement improves between here and



Figure 22: Push for green pedestrian crossing



Figure 23: New stamped crosswalks

Greenwich.

- Stamped crosswalks on US-1(Figure 23).
- 60' across West Main Street.
- 11' left turn lane.

West Main Street /Alvord Lane/Commerce Road

- Dog-leg, four-way signalized intersection.
- New CVS being built on southeast corner - may improve dog-leg.
- Restaurant on northwest corner has angle parking that blocks the West Main Street sidewalk.

West Main Street / Havemeyer Lane

- Some sidewalk discontinuity on north side – one parcel east of Whitmore Lane and 2 parcels east of Havemeyer Lane.
- Approximately 175' of sidewalk is missing approaching the intersection.
- Corner parcel to re-orient driveway to connect to second parcel and move it out of the intersection radius. Sidewalk to be completed.
- Ramp will be very difficult due to the steep grade on Havemeyer Lane.

3.2 Post Audit Workshop - Key Issues

- Signs too low per MUTCD.
- Pavement conditions are poor and markings are faded in various segments.
- Sidewalks on both sides of road have discontinuity and need to be completed.
- Sidewalk obstructions: signs, posts, utilities, pedestrian buttons, driveways.
- On-street parking intermittently located on West Main Street.
- Congested /Narrow Corridor.
- ADA ramps are missing or misaligned.
- Road gets wider as you head west.
- Sidewalks are very narrow because of poor placement of signs/poles/trees.
- Not as much parking on the north side but people still need to be able to go to these businesses; more parking behind stores is needed.
- Need more right turn only lanes.
- West Main Street and Richmond Hill Avenue has ramp but no crosswalk, no push button, no signal.

- West St and West Main Street is too narrow. Width of 48 ft. is causing sideswipes.
- At new CVS; crosswalk is set too far back and cross time is too short.
- Need to define sidewalk in front of Athens Restaurant because the concrete sidewalk ends. Could use paint to define the walk area.
- At the vet; sidewalk ends and there is landscaping blocking the pedestrian's path.
- Cross walk only on 2 out of 4 sides at Greenwich line.

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. Complete an inventory of all sidewalk handicap ramps for compliance with ADA requirements for grade, direction, location of detectable warning strips and curb condition (Figure 25).
2. Add Keep Right signs to the medians in road at Tresser Boulevard at Greenwich Avenue.
3. Study parking in the vicinity of Ann Street, Rose Park Avenue Stillwater Avenue and Greenwich Avenue in conjunction with adding off-street parking to see if additional lanes, such as a right-turn lane, can be added to reduce congestion in this area.
4. Install signs to aid pedestrians crossing. Check for compliance with MUTCD.
5. Add detectable warning strip at Northwest Corner of Tresser Boulevard and Clinton Avenue intersection.
6. Restripe the shoulder on the southwest side to add a parking lane at Tresser Boulevard and Clinton Avenue intersection.
7. Restripe the shoulder on Tresser Boulevard to add a parking lane at the intersection with Washington Boulevard.

8. Fix the median island on Tresser Boulevard at the intersection with Edith Sherman Drive (Figure 24).
9. Add detectable warning strips at Northwest and Southeast Corners of Tresser Boulevard and Edith Sherman Drive intersection.
10. Investigate conditions of crosswalks and pavement markings and repaint as necessary throughout the corridor.
11. Remove on-street parking on Lafayette Street because of the narrow road width.
12. Move bus stop farther west at West Main Street and Parkside Gables Driveway.
13. At the West Main Street intersection with Spruce Street and Hazel Street, move the north touchdown of the eastern crosswalk closer to Hazel Street. Relocate the pedestrian signal accordingly.
14. Eliminate parking on the south side of West Main Street in front of the Boys and Girls Club.
15. Paint over the asphalt to delineate pedestrian pathway at Body Shop and Car Wash.
16. Paint the asphalt area to delineate the pedestrian pathway west of the Athens restaurant and remove the parking stalls that back out onto West Main Street at the Alvard Lane/Commerce Road intersection.
17. Tree trimming needed along sidewalks (south side of East Main Street heading east from Maher Road).



Figure 24 Example of median island

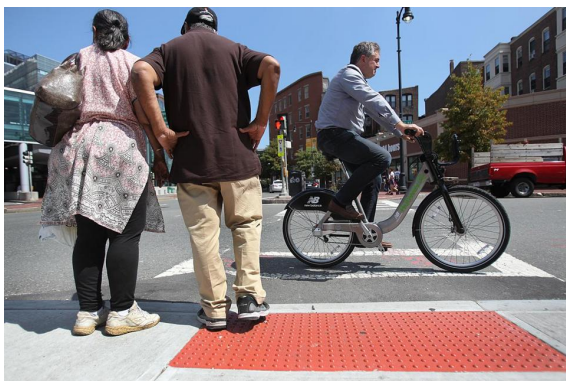


Figure 25 Example of ADA compliant crosswalk

- 2. Add 'Keep Right Signs' to the medians in road at Tresser Boulevard at Greenwich Avenue.
- 3. Study parking in the vicinity of Ann Street, Rose Park Avenue Stillwater Avenue and Greenwich Avenue.
- 5. Add detectable warning strips at Northwest and Southeast corners of Tresser Boulevard and Clinton Avenue intersection.
- 12. Move bus stop farther west at West Main Street and Parkside Gables Driveway.
- 13. Move the north touchdown of the eastern crosswalk closer to Hazel Street.
- 14. Eliminate parking.
- 15/16. Paint over the asphalt to delineate pedestrian pathway.



Figure 26 Short Term Recommendations Map 1

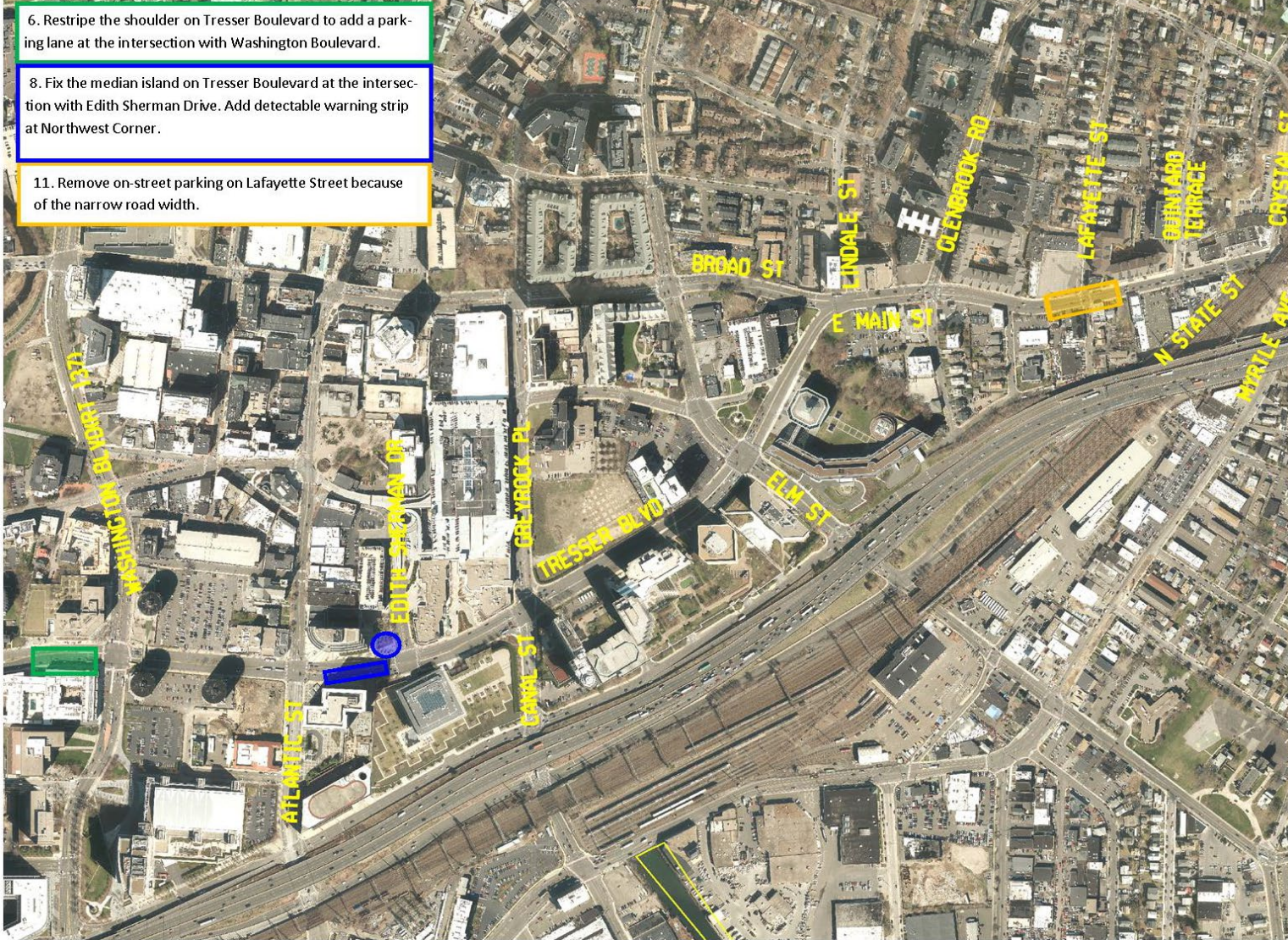


Figure 27 Short Term Recommendations Map 2



Figure 28 Short Term Recommendations Map 3

4.2 Medium Term

1. Bring all sidewalk handicap ramps into compliance for grade, direction, location of detectable warning strips and curb condition.
2. Add bump out on Tresser Boulevard at the Greenwich Avenue intersection (Figure 29).
3. Narrow driveway and curb cuts at the driveway at the intersection of Tresser Boulevard with Washington Boulevard.
4. Regrade along the Bus shelter on the northwest corner of Tresser Boulevard with Washington Boulevard.
5. Remove the island on the northwest corner of Tresser Boulevard at the intersection with Edith Sherman Drive and add on-street parking.
6. Round out the driveway entrance to the condos at West Main Street and Parkside Gables Driveway.
7. Add bump outs at West Main Street at Boys and Girls club.
8. Add bump outs and complete the sidewalk at the Body Shop/Car Wash.
9. Add a dedicated left turn lane on West Main Street westbound at Wilson Street.
10. Add parking meters on the south side of West Main Street at Wilson street intersection.
11. Study a possible RRFB mid-block crossing at the WWE building locations.
12. Add sidewalk on south side between Seaside Ave and on-ramp to I-95 North and a crosswalk across the south leg of East Main Street at Seaside Ave.
13. Install a RRFB pedestrian crossing at Seaton Road and East Main Street.



Figure 29 Bump out example

- 2. Add bump out on Tresser Boulevard at the Greenwich Avenue intersection
- 6. Round out the driveway entrance.
- 7/8. Add bump outs at West Main Street at Boys and Girls club. Add bump outs and complete the sidewalk at the Body Shop/ Car Wash.
- 9/10. Add a dedicated left turn lane on West Main Street westbound at Wilson Street. Add parking meters on the south side of West Main Street at Wilson Street intersection.

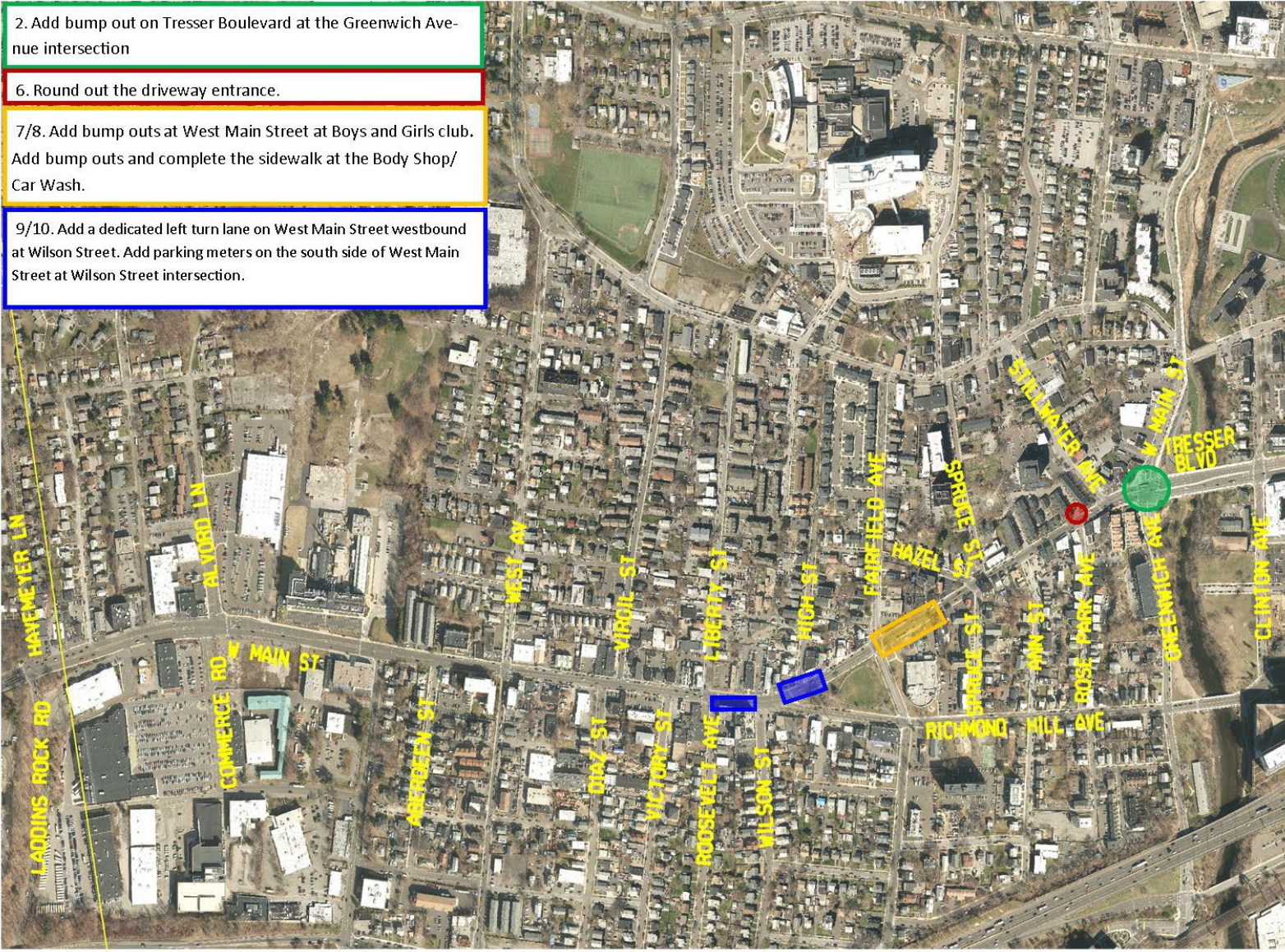


Figure 30 Medium Term Recommendations Map 1

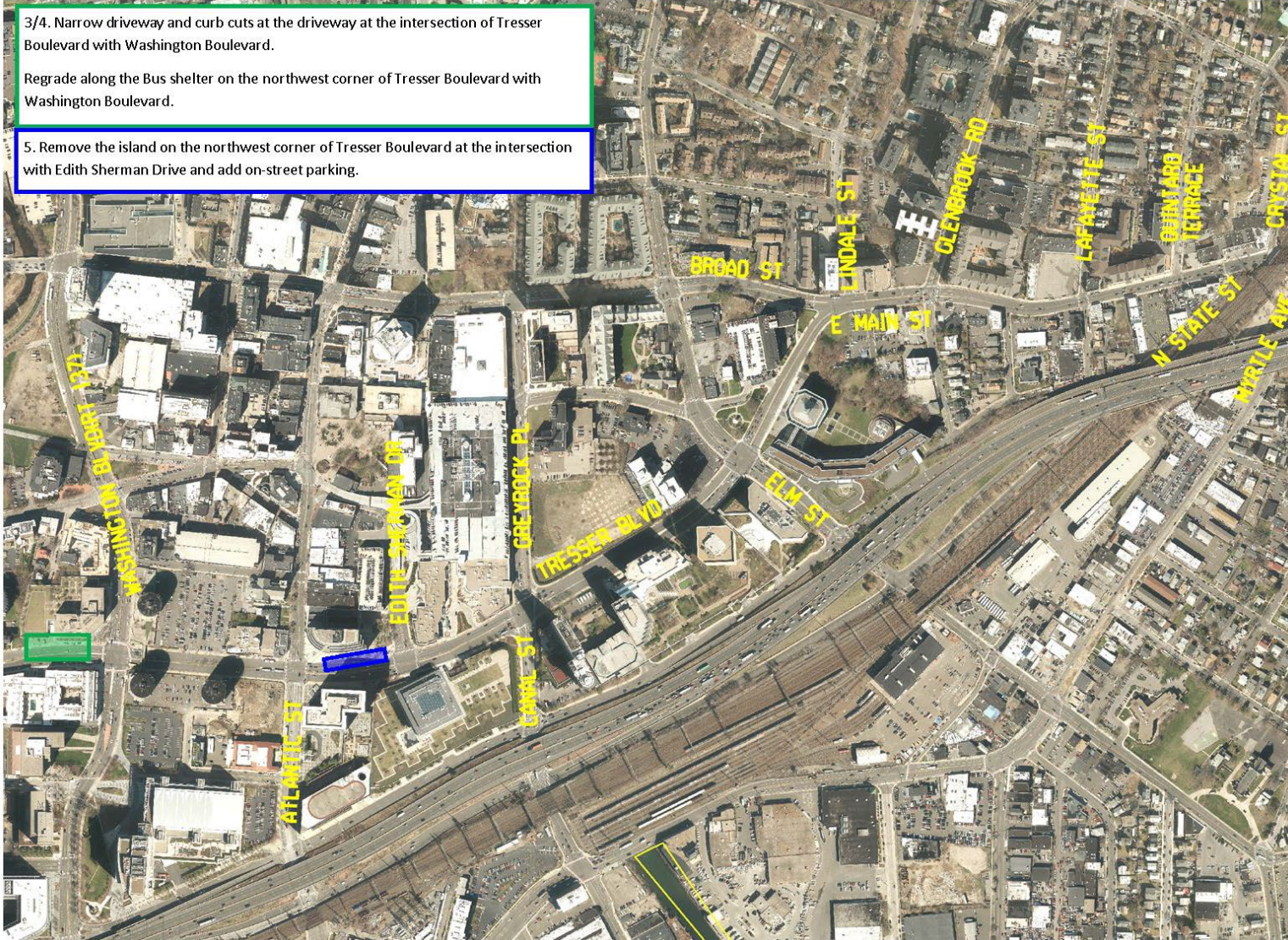


Figure 31 Medium Term Recommendations Map 2

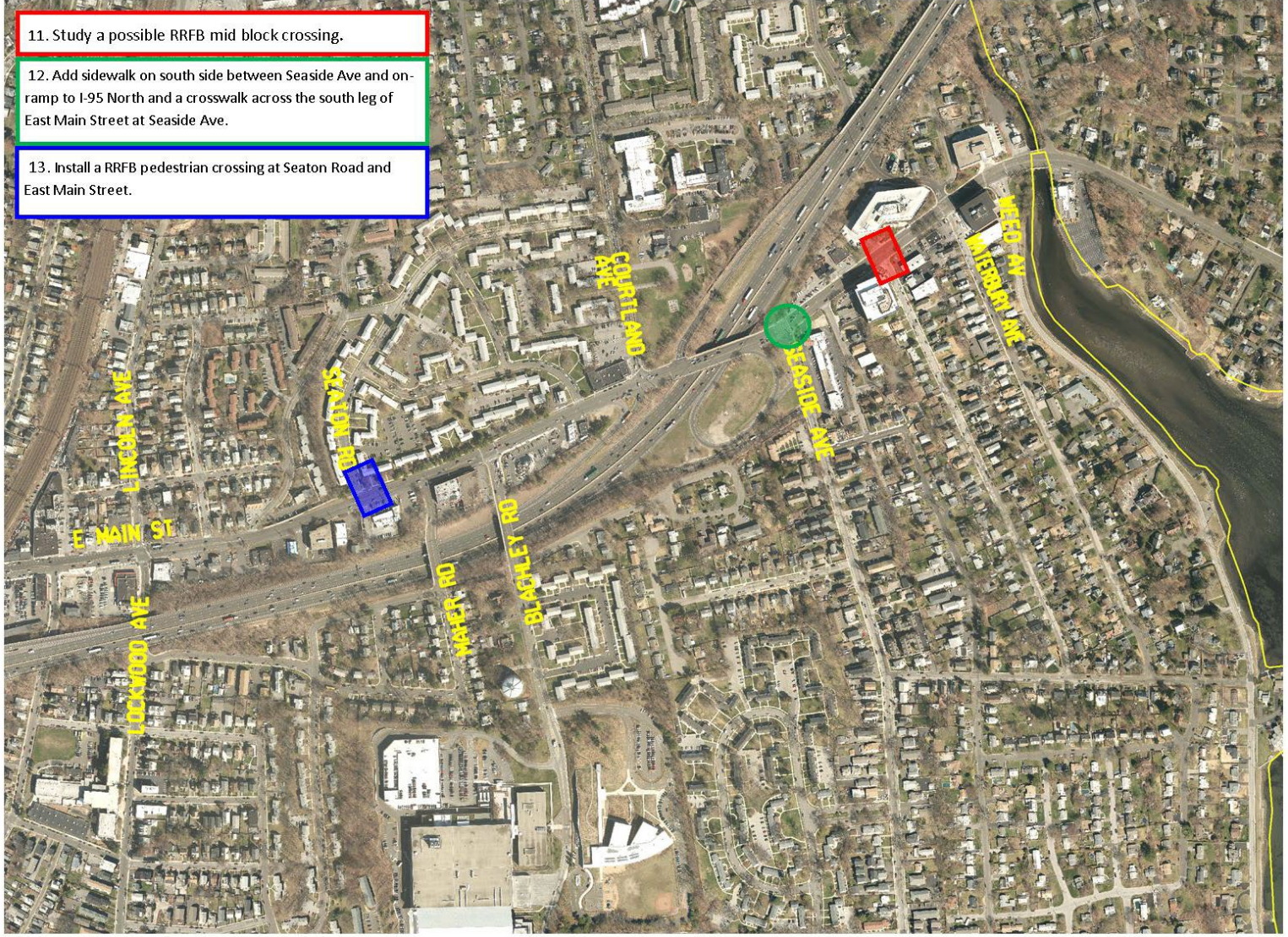


Figure 32 Medium Term Recommendations Map 3

4.3 Long Term

1. Implement a Road Diet on East Main Street starting at Blachley Road and heading west towards downtown.
2. Widen the median island at the intersection of Tresser Boulevard with Washington Boulevard (Figure 33).
3. Compile a formal set of design guidelines for City, detailing design standards for seating areas, locations and types of trees other vegetation, and other pedestrian streetscape elements.
4. Relocate the private Town Center Sign at the intersection of Tresser Boulevard and Edith Sherman Drive.
5. Relocate the Bus shelter on the southeast corner of Tresser Boulevard and Greylock Place.
6. Relocate the Stamford Plaza Sign at the intersection of East Main Street and Elm Street.
7. Realign and reconstruct the Intersection of Tresser Boulevard and Broad Street to improve the steep grade and overall operation of the intersection.
8. Update the traffic signal at the intersection of West Main Street with Richmond Hill Avenue and High Street.
9. Re-align Richmond Hill Avenue to a "Tee" intersection opposite High Street.
10. Investigate relocation of utility poles and pedestrian ramps at Blachley Road and East Main Street intersection.



Figure 33 Example of wide median islands

8. Update the traffic signal at the intersection of West Main Street with Richmond Hill Avenue and High Street.

9. Re-align Richmond Hill Avenue to a "Tee" intersection opposite High Street.

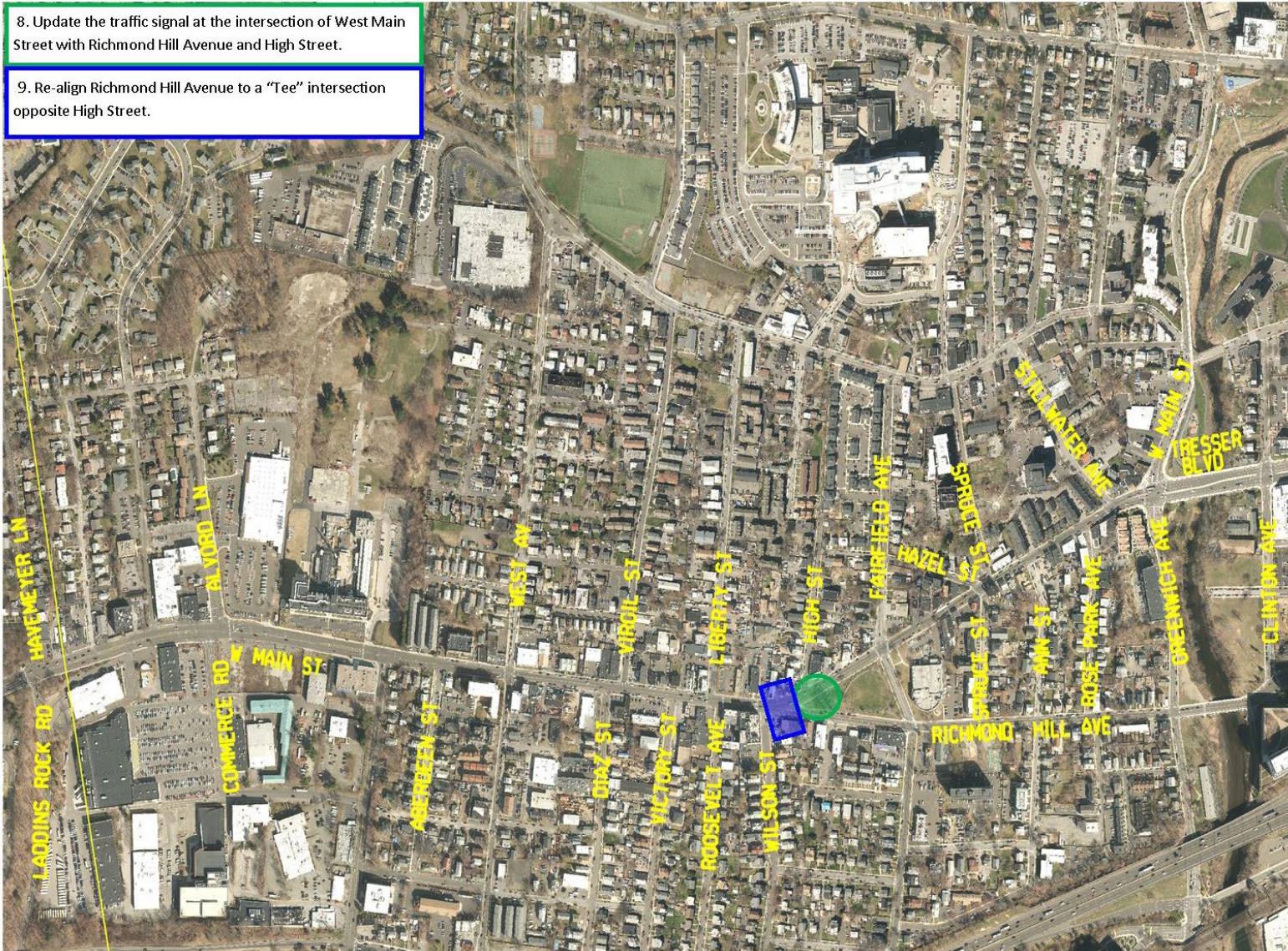
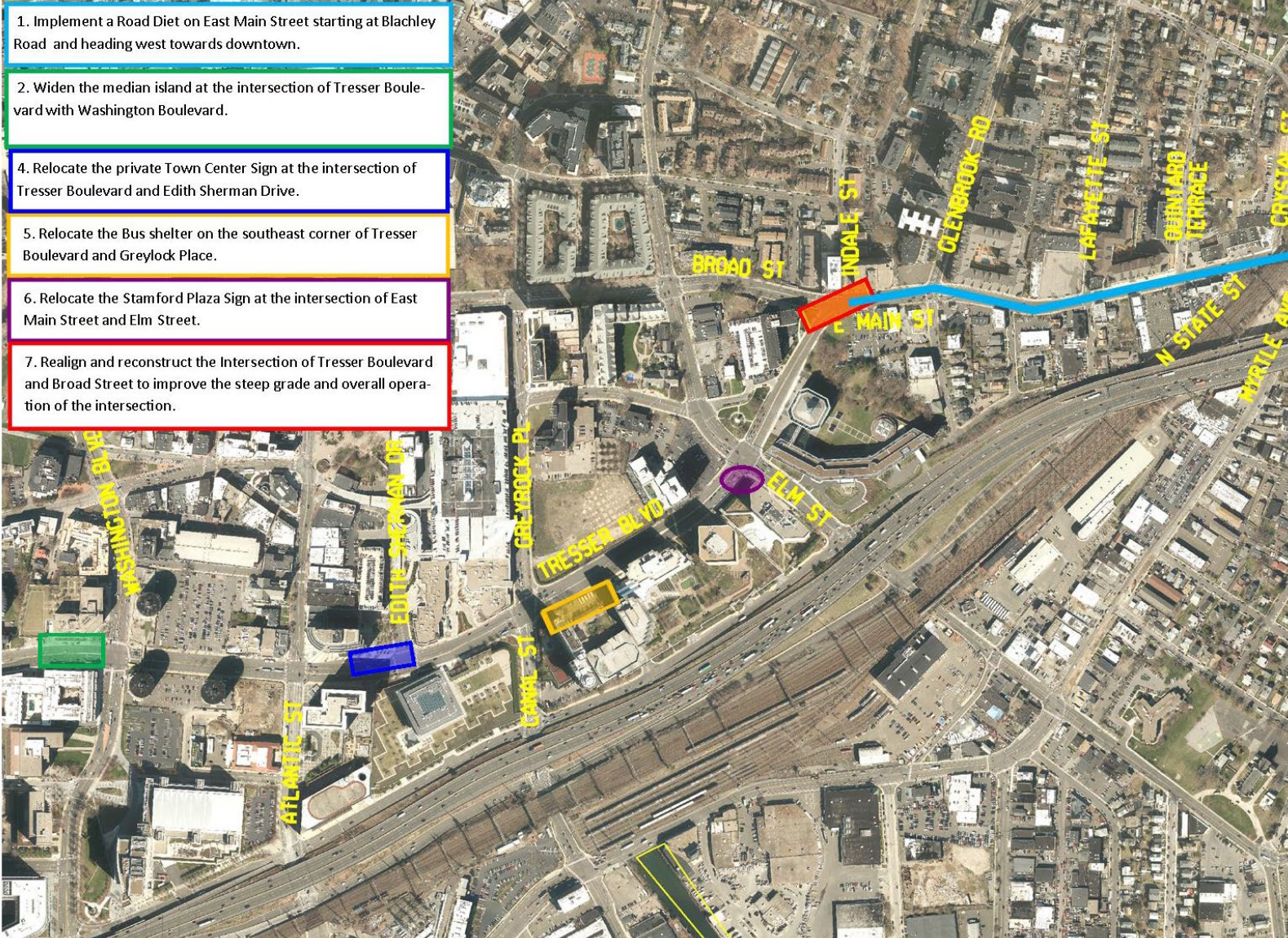


Figure 34 Long Term Recommendations Map 1



1. Implement a Road Diet on East Main Street starting at Blachley Road and heading west towards downtown.
2. Widen the median island at the intersection of Tresser Boulevard with Washington Boulevard.
4. Relocate the private Town Center Sign at the intersection of Tresser Boulevard and Edith Sherman Drive.
5. Relocate the Bus shelter on the southeast corner of Tresser Boulevard and Greylock Place.
6. Relocate the Stamford Plaza Sign at the intersection of East Main Street and Elm Street.
7. Realign and reconstruct the Intersection of Tresser Boulevard and Broad Street to improve the steep grade and overall operation of the intersection.

Figure 35 Long Term Recommendations Map 2

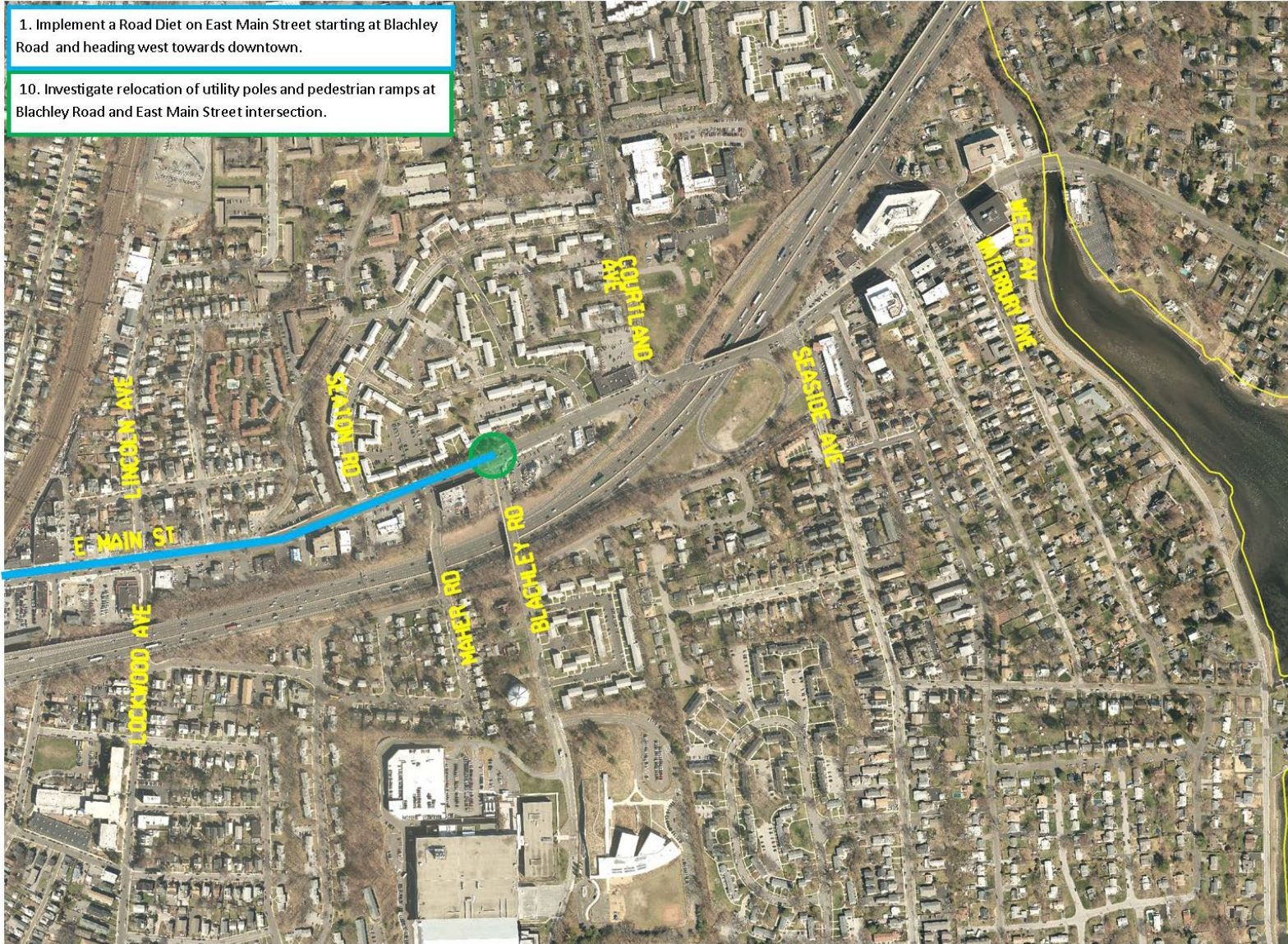


Figure 36 Long Term Recommendations Map 3

4.4 Summary

This report documents the observations, discussions and recommendations developed during the successful completion of the U.S. Route 1 RSA within the City of Stamford. It provides an outlined strategy to improve the transportation network for the Route 1 corridor, particularly focusing on pedestrians and cyclists. Moving forward, this report may be used to prepare strategies for funding and implementing the improvements, and as a tool to plan for including these recommendations into future development in the City.



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Appendix A



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Road Safety Audit – Stamford

Meeting Location: Stamford Government Center
Address: 888 Washington Boulevard, 6th Floor
Date: 07/12/2018
Time: 8:00 AM

Agenda

- Type of Meeting:** Road Safety Audit – Pedestrian Safety
- Attendees:** Invited Participants to Comprise a Multidisciplinary Team
- Please Bring:** Thoughts and Enthusiasm!!
- 8:00 AM** **Welcome and Introductions**
- Purpose and Goals
 - Agenda
- 8:15 AM** **Pre-Audit**
- Definition of Study Area
 - Review Site Specific Data:
 - Average Daily Traffic
 - Crash Data
 - Geometrics
 - Issues
 - Safety Procedures
- 8:45 AM** **Audit**
- Visit Site
 - As a group, identify areas for improvements
- 11:15 AM** **Post-Audit Discussion / Completion of RSA**
- Discussion observations and finalize findings
 - Discuss potential improvements and final recommendations
 - Next Steps
- 1:00 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	
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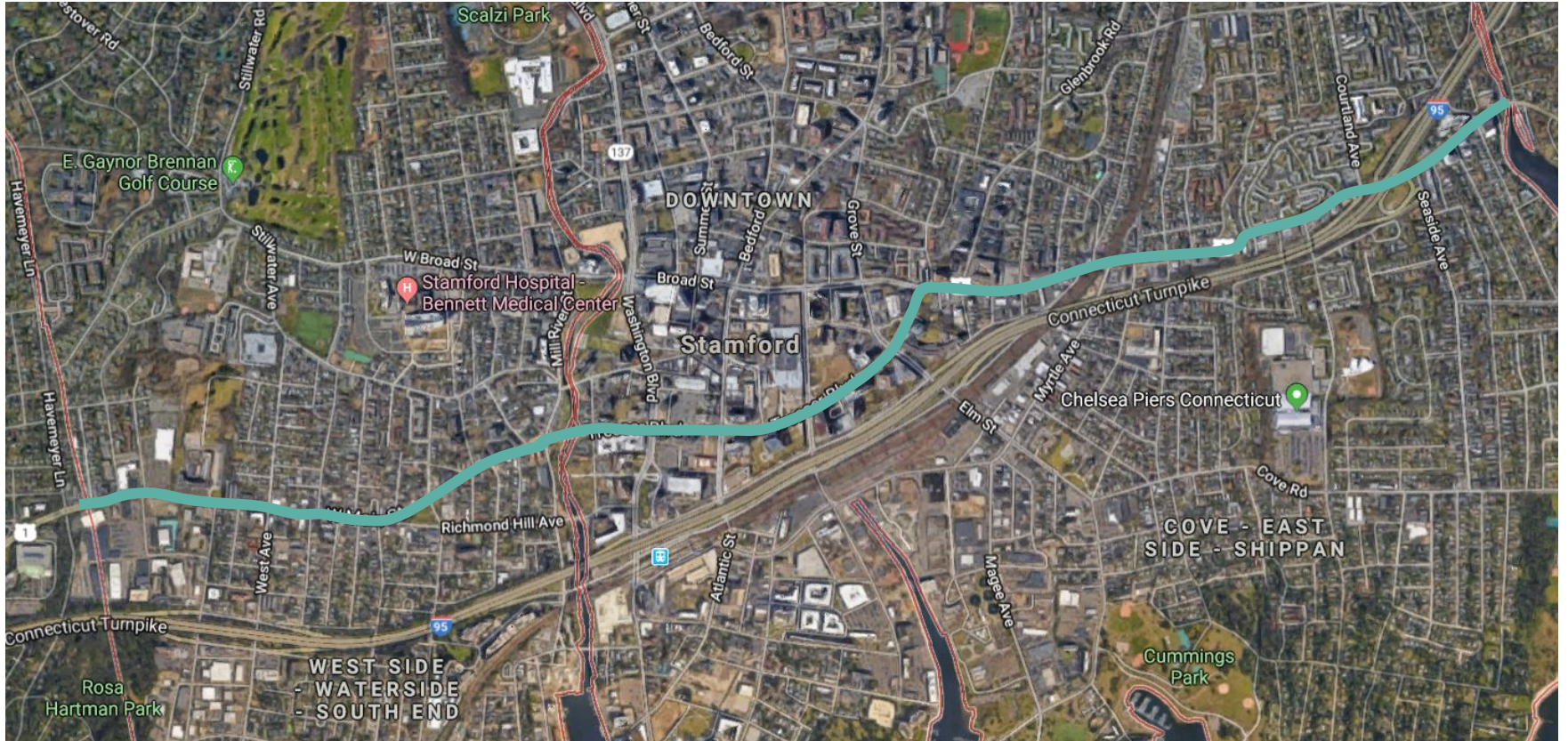
Roadway & Vehicles	
<ul style="list-style-type: none">• Speed-related issues<ul style="list-style-type: none">○ Alignment;○ Driver compliance with speed limits○ Sight distance adequacy○ Safe passing opportunities	
<ul style="list-style-type: none">• Geometry<ul style="list-style-type: none">○ Road width (lanes, shoulders, medians);○ Access points;○ Drainage○ Tapers and lane shifts○ Roadside clear zone /slopes○ Guide rails / protection systems	

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

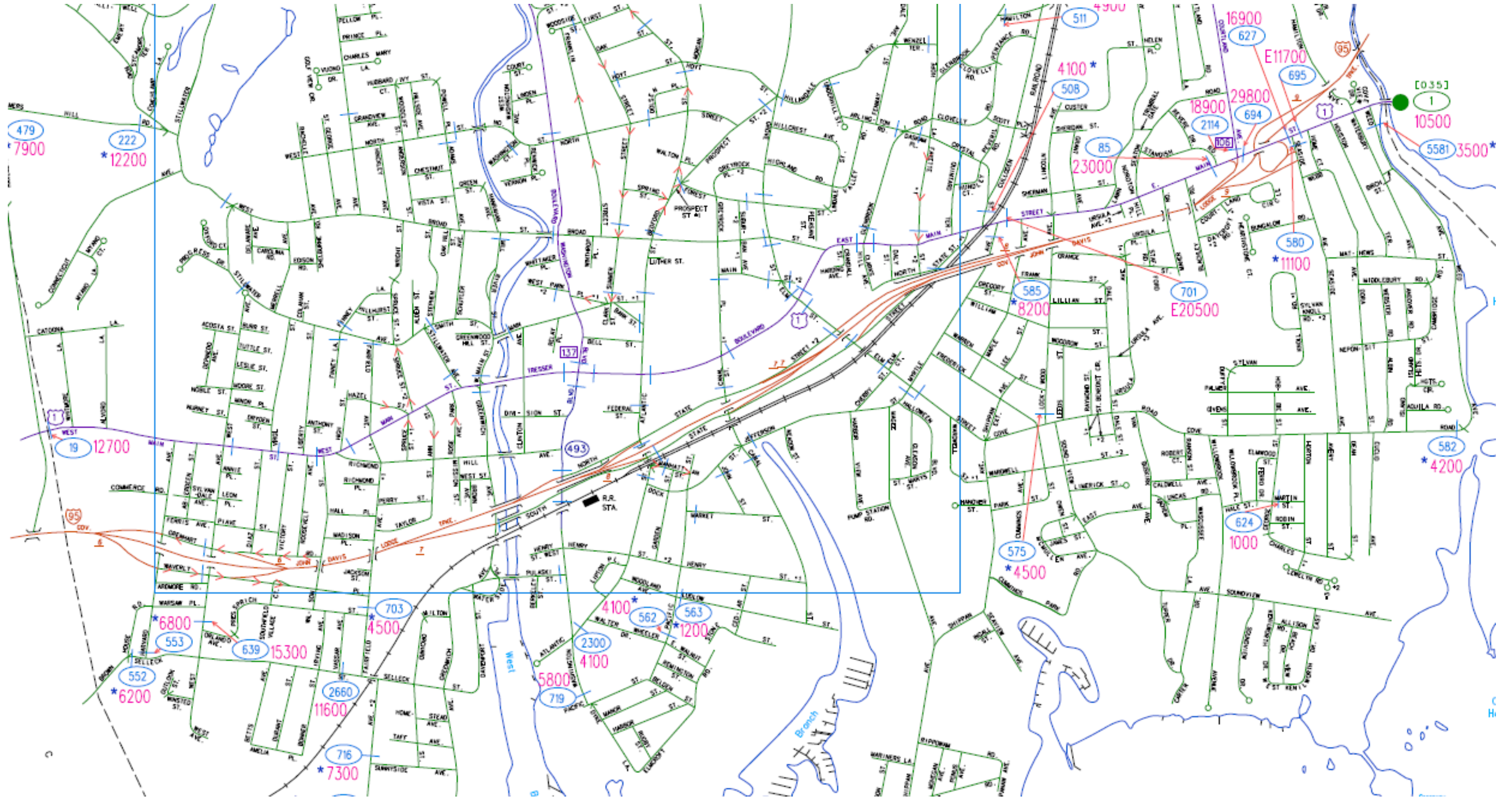


<ul style="list-style-type: none">• Pavement<ul style="list-style-type: none">○ Pavement Condition (excessive roughness or rutting, potholes, loose material)○ Edge drop-offs○ Drainage issues• Lighting Adequacy	
<ul style="list-style-type: none">• Signing<ul style="list-style-type: none">• Correct use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

LOCATION MAP



Stamford

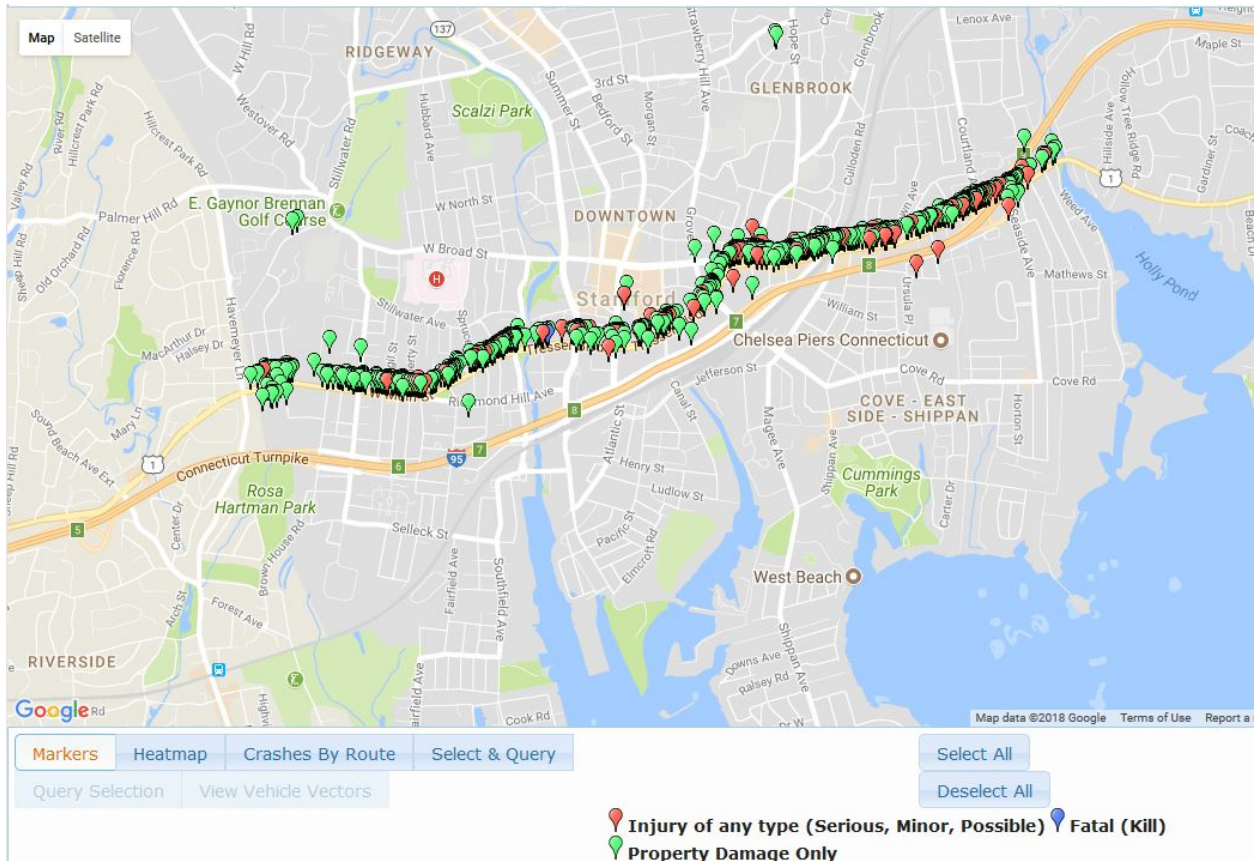






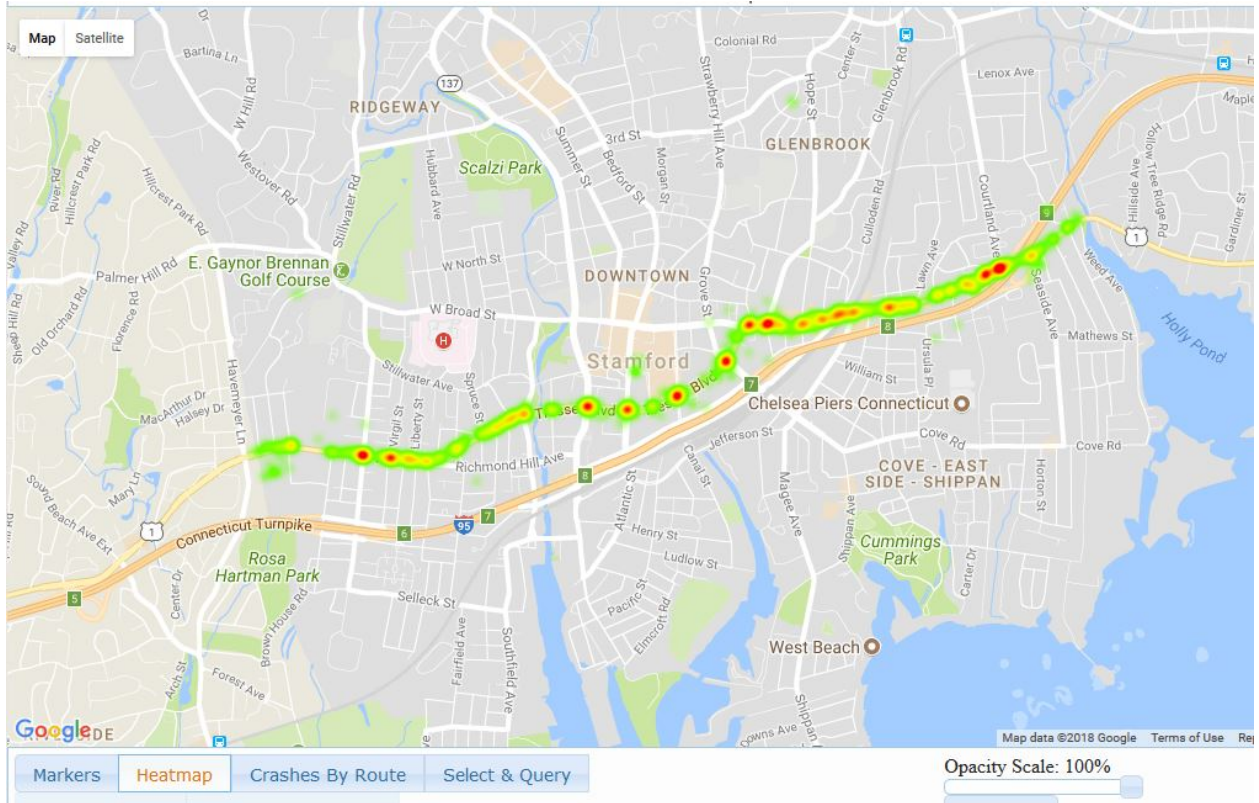
Road Safety Audit – Stamford

Crash Summary





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Data: 3 years (2015-2017)

Severity Type	Number of Crashes	
Property Damage Only	924	76%
Injury of any type (Serious, Minor, Possible)	279	23%
Fatal (Kill)	5	0%
Total	1208	

Manner of Crash / Collision Impact	Number of Crashes	
Front to rear	425	35%
Angle	353	29%
Sideswipe, same direction	255	21%
Sideswipe, opposite direction	25	2%
Not Applicable	92	8%
Rear to side	12	1%
Other	19	2%
Rear to rear	10	1%
Unknown	5	0%
Front to front	12	1%
Total	1208	

Weather Condition	Number of Crashes	
Clear	1002	83%
Rain	105	9%
Cloudy	73	6%
Snow	18	1%
Freezing Rain or Freezing Drizzle	4	0%
Sleet or Hail	1	0%
Blowing Snow	1	0%
Fog, Smog, Smoke	1	0%
Blowing Sand, Soil, Dirt	2	0%
Unknown	1	0%
Total	1208	



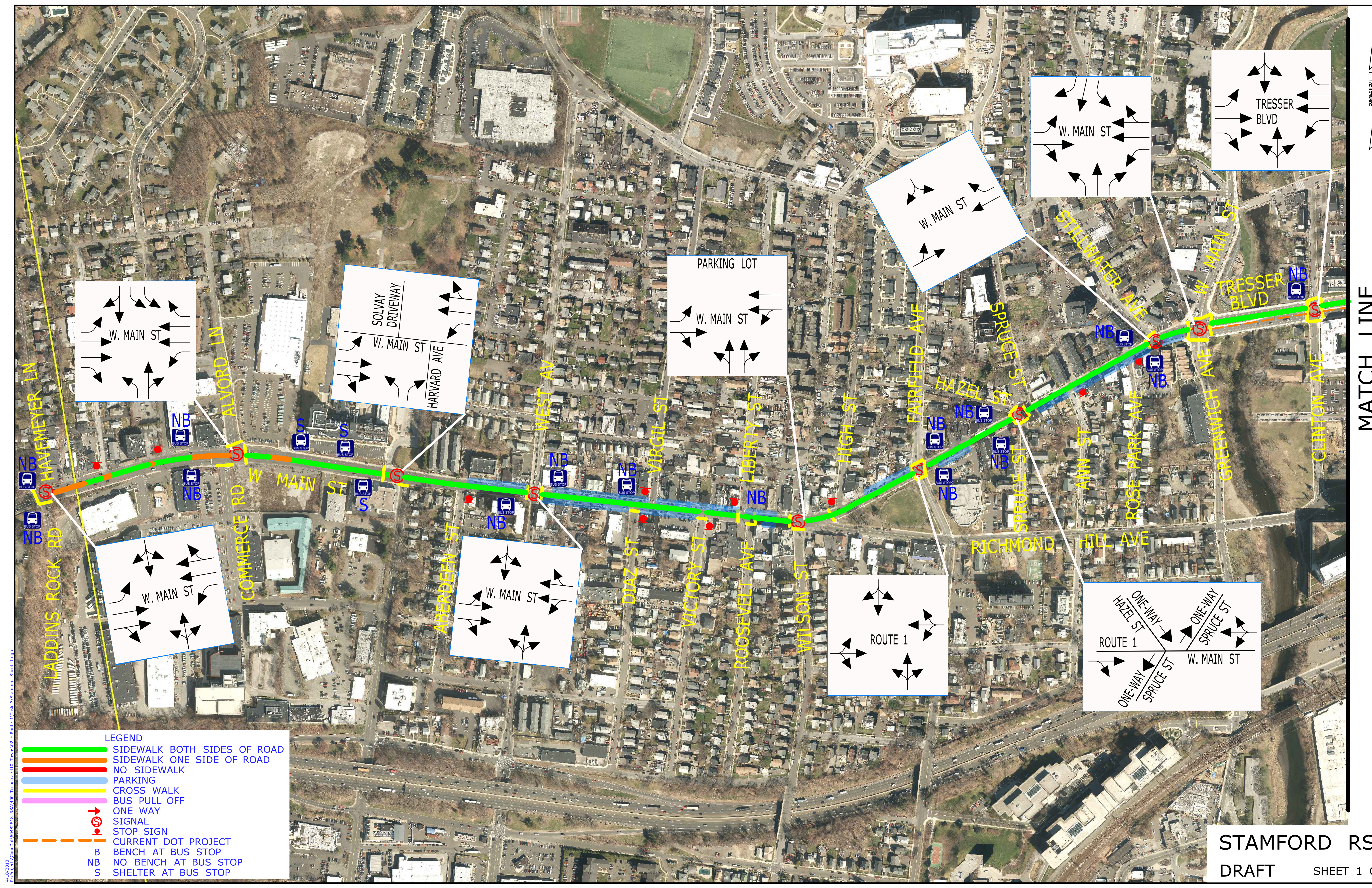
Light Condition	Number of Crashes	
Daylight	827	68%
Dark-Not Lighted	26	2%
Dark-Lighted	312	26%
Dusk	29	2%
Dawn	4	0%
Unknown	8	1%
Other	1	0%
Dark-Unknown Lighting	1	0%
Total	1208	

Road Surface Condition	Number of Crashes	
Dry	1007	83%
Wet	171	14%
Snow	19	2%
Ice / Frost	3	0%
Slush	5	0%
Unknown	2	0%
Standing Water	1	0%
Total	1208	

Person Type	Number
Driver	2319
Passenger	645
Bicyclist	7
Pedestrian	49



Time		Number of Crashes	
0:00	0:59	15	1%
1:00	1:59	23	2%
2:00	2:59	10	1%
3:00	3:59	6	0%
4:00	4:59	3	0%
5:00	5:59	5	0%
6:00	6:59	15	1%
7:00	7:59	44	4%
8:00	8:59	77	6%
9:00	9:59	71	6%
10:00	10:59	53	4%
11:00	11:59	53	4%
12:00	12:59	72	6%
13:00	13:59	64	5%
14:00	14:59	76	6%
15:00	15:59	74	6%
16:00	16:59	95	8%
17:00	17:59	125	10%
18:00	18:59	99	8%
19:00	19:59	66	5%
20:00	20:59	59	5%
21:00	21:59	45	4%
22:00	22:59	33	3%
23:00	23:59	25	2%
Total		1208	



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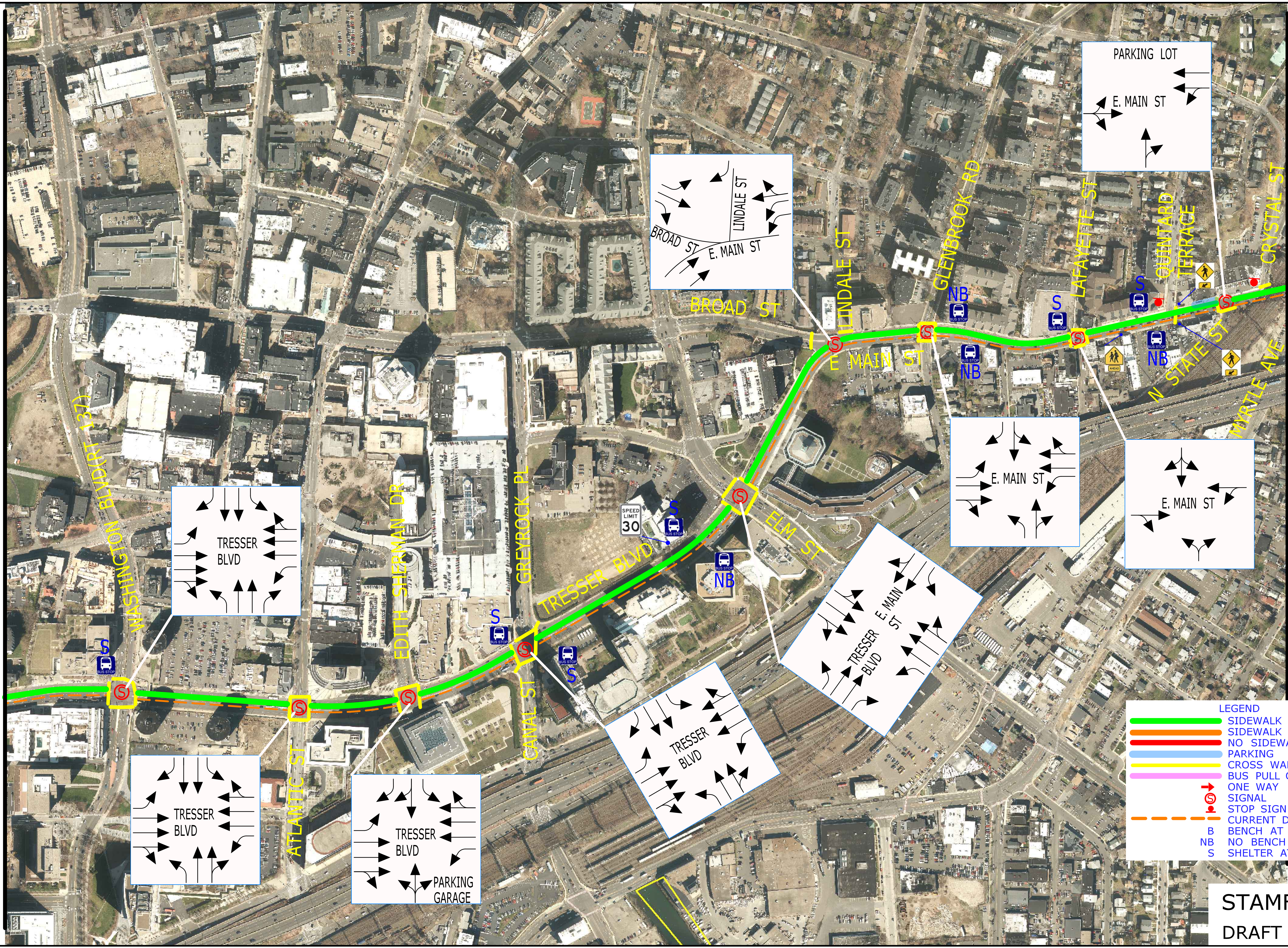
- LEGEND**
- █ SIDEWALK BOTH SIDES OF ROAD
 - █ SIDEWALK ONE SIDE OF ROAD
 - █ NO SIDEWALK
 - █ PARKING
 - █ CROSS WALK
 - █ BUS PULL OFF
 - █ ONE WAY
 - SIGNAL
 - STOP SIGN
 - CURRENT DOT PROJECT
 - B BENCH AT BUS STOP
 - NB NO BENCH AT BUS STOP
 - S SHELTER AT BUS STOP

MATCH LINE



4/18/2018
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MATCH LINE

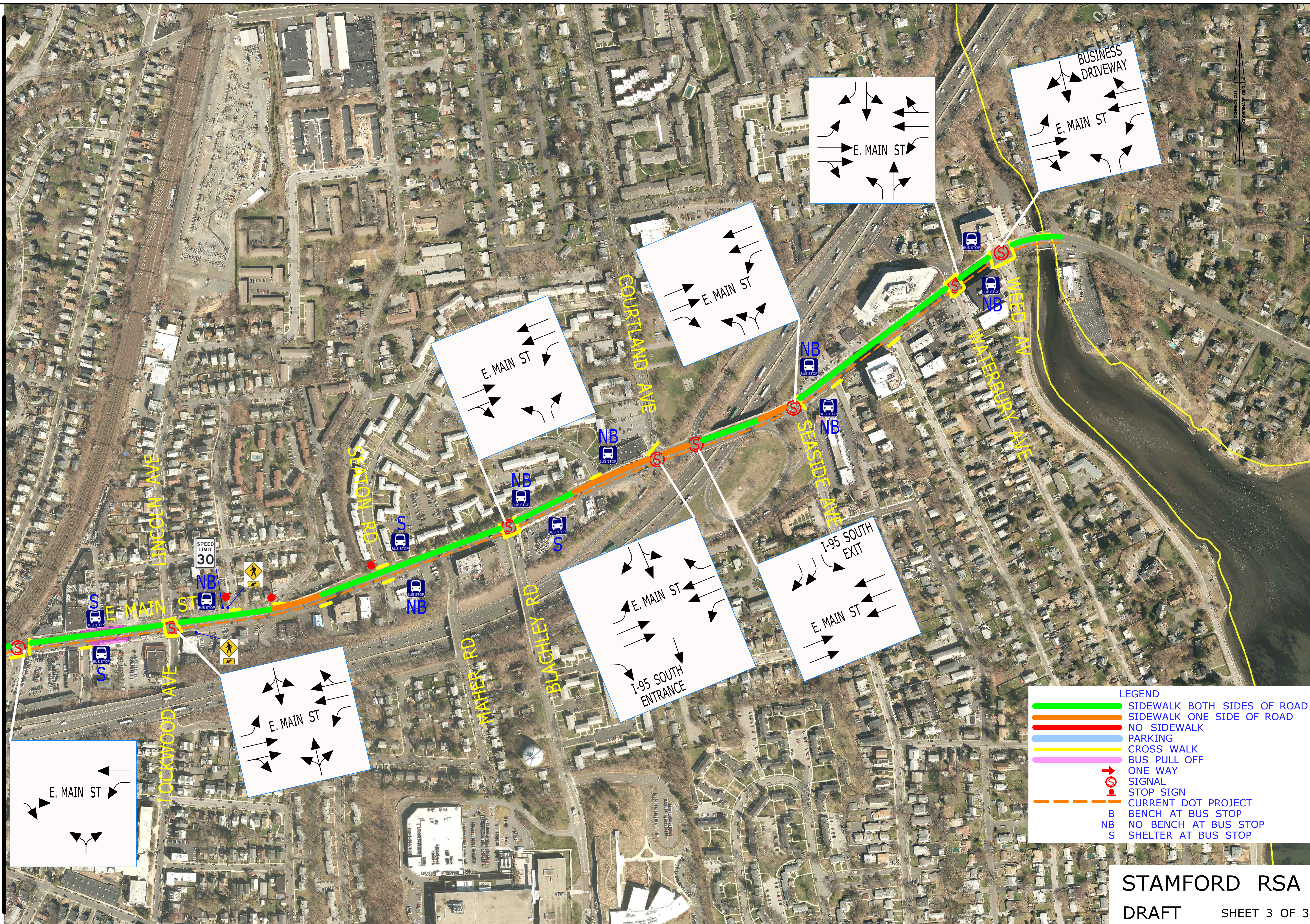


MATCH LINE

- LEGEND**
- SIDEWALK BOTH SIDES OF ROAD
 - SIDEWALK ONE SIDE OF ROAD
 - NO SIDEWALK
 - PARKING
 - CROSS WALK
 - BUS PULL OFF
 - ONE WAY
 - ⊙ SIGNAL
 - ⊙ STOP SIGN
 - - - CURRENT DOT PROJECT
 - B BENCH AT BUS STOP
 - NB NO BENCH AT BUS STOP
 - S SHELTER AT BUS STOP

STAMFORD RSA
DRAFT SHEET 2 OF 3

MATCH LINE



LEGEND

- █ SIDEWALK BOTH SIDES OF ROAD
- █ SIDEWALK ONE SIDE OF ROAD
- █ NO SIDEWALK
- █ PARKING
- █ CROSS WALK
- █ BUS PULL OFF
- ONE WAY
- ⊙ SIGNAL
- ⊙ STOP SIGN
- - - CURRENT DOT PROJECT
- B BENCH AT BUS STOP
- NB NO BENCH AT BUS STOP
- S SHELTER AT BUS STOP

4/18/2018
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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 – STAMFORD

Fact Sheet

Functional Classification:

- Route 1 is classified as a Principal Arterial (Other)

ADT

- ADT on Route 1 is between 12,700 and 29,800

Population and Employment Data (2016 US Census Bureau):

- Population: 126,592
- Employment: 75,807

Urbanized Area

- The study area of Route 1 is in the Bridgeport - Stamford Urbanized Area

Demographics

- The statewide average percentage below the poverty line is 10.5%
The poverty level of Stamford is 9.4%
- The statewide average percentage minority population is 23%
The minority level of Stamford is 38%

Air Quality

- Stamford CIPP number 118
- Stamford is within the NY/NJ/CT Moderate Ozone Area
PM_{2.5} Attainment/Maintenance Area
- Stamford is within a Southwestern Region CO Attainment Area



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Appendix B



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Road Safety Audit

Town: Stamford

RSA Location: Rt. 1

Meeting Location:

Address:

Date: 04/19/18

Time: 8:00 am

Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Garrett Bolella	Traffic Engineer, City of Stamford
Jim Travers	Bureau Chief, City of Stamford
Frank Petise	Traffic Engineer, City of Stamford
Veera Karukonda	Traffic Signals, City of Stamford
Stephen Frycz	Traffic Signals, City of Stamford
Andrew Gallagher	SPD, City of Stamford
Patrick Zapatka	CTDOT
Kendra Hall	AECOM
Gabrielle Shepherd	Traffic/Transportation Intern
Laiza Moise	Traffic/Transportation Intern
Orazio Cireli	City Traffic Dept
Steve Mitchell	AECOM
Rodney Pratt	BOR
Bridget Boucaud	VN Engineers
Todd Ingarra	CTDOT