



COMMUNITY
connectivity program

Bridgeport

Main Street on the east and west sides of Route 8 – Road
Safety Audit

September 9, 2016



AECOM

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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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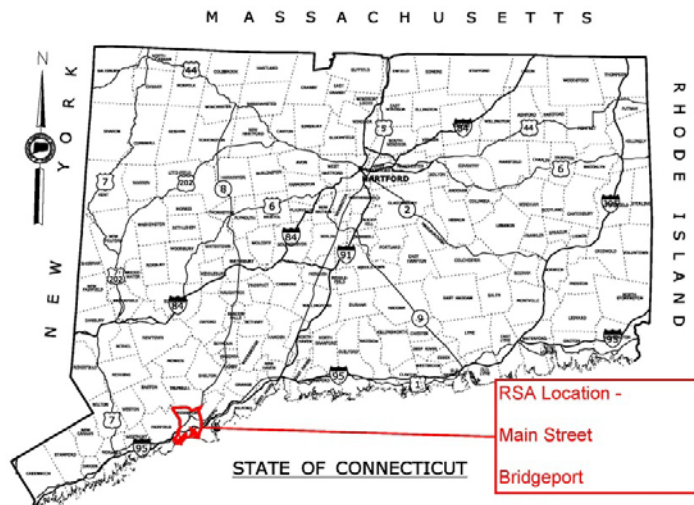
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The Connecticut Department of Transportation (CTDOT) is undertaking a Community Connectivity Program that focuses on improving the state's transportation network for all users, with an emphasis on bicyclists and pedestrians. A major component of this program is conducting Road Safety Audits (RSA's) at selected locations. An RSA is a formal safety assessment of the existing conditions of walking and biking routes and is intended to identify the issues that may discourage or prevent walking and bicycling. It is a qualitative review by an independent team experienced in traffic, pedestrian, and bicycle operations and design that considers the safety of all road users and proactively assesses mitigation measures to improve the safe operation of the facility by reducing the potential crash risk frequency and 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 Main Street, Bridgeport RSA

The City of Bridgeport submitted an application to complete an RSA in the Main Street area adjacent to Route 8 to strategize ways to reduce crashes, improve safety, and improve connectivity between the Hollow (a dense residential area), the city's commercial area and the intermodal transportation centers. This focus area is a one way loop design which is a challenge to motorists and pedestrians due to highway and local road transitional speeds and some navigational difficulties that distract drivers from looking for pedestrians and cyclists. The intersecting streets inventoried include Main Street, Washington Avenue, Catherine Street, Housatonic Avenue, and the Route 8 on- and off-ramps. This section of the city has a significant number of pedestrians. There is significant pedestrian infrastructure, but the landscape is not always inviting for non-motorized users. Due to the high vehicular traffic, speeding, and transitioning on or off of the highway, there is a sense of vulnerability for pedestrians and cyclists. It should be noted that this area is within a half mile of the Pequonnock River and there are environmental concerns regarding drainage and infrastructure impacts.

The City of Bridgeport's application contained information on traffic volumes, crash data, and mapping of the study area. The application and supporting documentation are included in Appendix A.

1.1 Location

The RSA site is located along Main Street on the west and east side of Route 8 in Bridgeport, and includes Main Street, Washington Avenue, Catherine Street, Housatonic Avenue, and the Route 8 on- and off-ramps (Figure 1 and Figure 2). The Average Daily Traffic (ADT) on Main Street is between 10,000 vehicles per day (vpd.) and 21,100 vpd., according to 2013 CT DOT Traffic Count Data, showing this is a heavily travelled corridor.

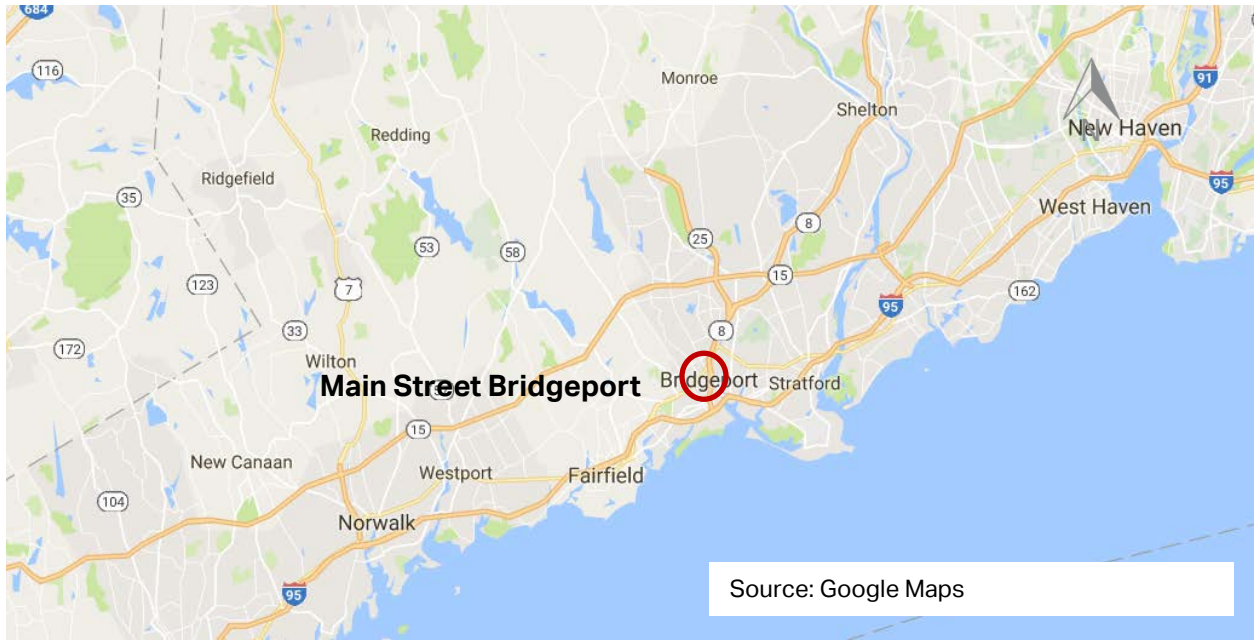


Figure 1. Main Street Regional Context

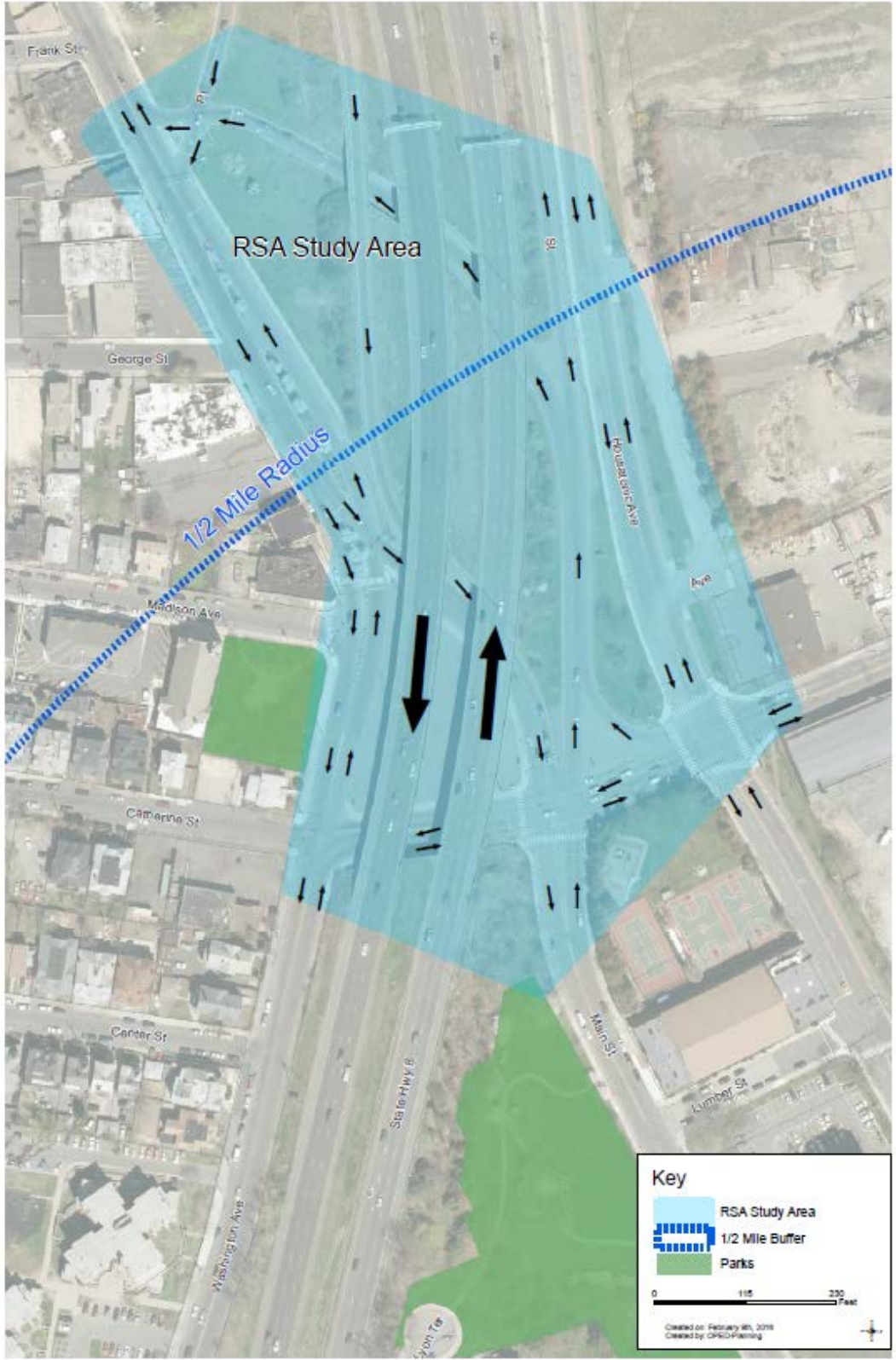


Figure 2. Main Street, Bridgeport

Main Street is classified as a Principal Arterial. It is a north-south roadway that crosses Route 8 in the study area. The streets in the study area generally lack shoulder striping or bike lanes. The pavement is in fair condition and pavement markings are worn. There are double yellow center lines on Washington Avenue, Main Street, Catherine Street, Housatonic Avenue and East Washington Avenue. Most intersections are signal controlled, and have either concurrent pedestrian phases or none at all.

There are two sites that specifically impact pedestrian travel in this area. The Sheehan Center located at 1494 Main Street is a non-profit facility that runs many day programs. Although these programs do not greatly impact traffic flow, their larger events attract visitors to the area, causing parking issues, with some patrons illegally parking along the west side of Main Street. The Thomas Merton Center located at 43 Madison Avenue off of Washington Avenue provides breakfast, lunch and day shelter to approximately 260 clients daily, and contributes to the area's pedestrian traffic. Many of these clients are unaware of the dangers of jaywalking especially across the Route 8 on-ramp. Several walkers originate from or traverse the triangular section under the highway to connect them to their travel points.

This area is also expected to grow considerably with the new high-density transit-oriented development in Downtown North, and within the recently zoned Downtown Transit-Oriented Development Village District. Additionally, with the proposed Pequonnock River Trail passing through this area, connectivity improvements would provide a bicycle and walking link to Seaside Park, Beardsley Park and north all of the way to Newtown.

2 Pre-audit Assessment

2.1 Pre-audit Information

Traffic volumes are high within this urbanized corridor, with a convergence of highway and local traffic. The three year crash data (summarized in Tables 1 and 2) contained no reported crashes involving pedestrians or bicyclists. The majority of the crashes were rear end collisions that resulted in low percentages of injury and no fatalities. Most of these were not under adverse conditions and the majority occurred during daylight, with peaks around noon and the hours of 3:00 pm to 7:00 pm. Figure 3 is a plot of the locations of the 2015 crash data.

Severity Type	Number of Accidents	
Property Damage Only	14	78%
Injury (No fatality)	4	22%
Fatality	0	0%
Total	18	

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	1	6%
Rear-end	12	67%
Turning-Intersecting Paths	0	0%
Turning-Opposite Direction	3	17%
Fixed Object	0	0%
Backing	0	0%
Angle	1	6%
Turning-Same Direction	1	6%
Moving Object	0	0%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	0	0%
Miscellaneous- Non Collision	0	0%
Total	18	

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

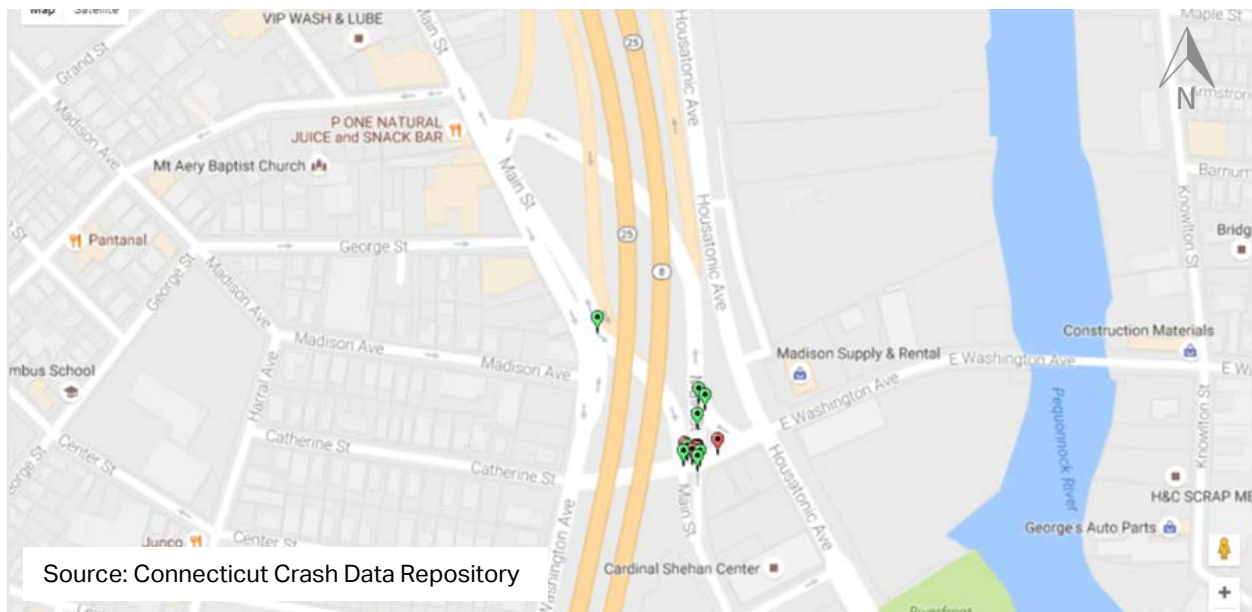


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

Main Street consists of a single lane in each direction with curbside parking, and a double yellow center line from downtown Bridgeport to its junction with Route 8, where it widens to two lanes in each direction. Just north of the Catherine Street/East Washington Avenue intersection, Main Street splits into northbound and southbound roadways, crossing Route 8 in separate underpasses, and then rejoining north-west of the highway near Frank Street. Main Street then continues to the north with a single travel lane in each direction with a double yellow centerline and parking on both sides of the street.

Washington Avenue and Catherine Street each provide a single wide travel lane in each direction, with parking on both sides of the street. The only markings are a double yellow center line.

Housatonic Avenue provides two travel lanes in each direction and generally prohibits parking. A double yellow centerline is provided north of Lumber Street. South of this point, there is a center median and a center left turn lane at most intersections. North of East Washington Avenue, Housatonic Avenue narrows to a single lane in each direction.

Route 8 is a divided highway that is elevated at its junction with Main Street. There is a southbound exit ramp that touches down at a signalized intersection at the point where Main Street northbound and Main Street southbound rejoin, just north of the junction. This ramp is generally used for Main Street northbound traffic, but can also be used to access Main Street southbound and Washington Avenue. A second exit ramp merges directly into Main Street southbound at an uncontrolled merge just north of Catherine Street. This merge is problematic because it is not clear as to which movement has the right of way, and the Main Street traffic has just left a signalized intersection.

A northbound entrance ramp is provided from northbound Main Street after the north/south split. Traffic from any other direction must go through adjoining intersections to turn onto Main Street northbound to access the highway. Traffic from Main Street southbound must use Washington Avenue to Catherine Street to turn onto Main Street northbound.

The speed limit is posted at 25 MPH but traffic exiting the highway and merging with local traffic on Main Street was observed travelling at higher speeds

There are marked crosswalks in generally good condition on Main Street, Catherine Street, and East Washington Avenue. Sidewalk connectivity is adequate throughout the corridor, but somewhat circuitous within the interchange. The sidewalks are in fair to good condition, although they do not have buffers. Most ramps are not Americans with Disabilities Act (ADA) compliant except at the corner of Madison and Washington Avenue. Figure 4 and Table 3 summarize the physical and geometric conditions of the RSA area.

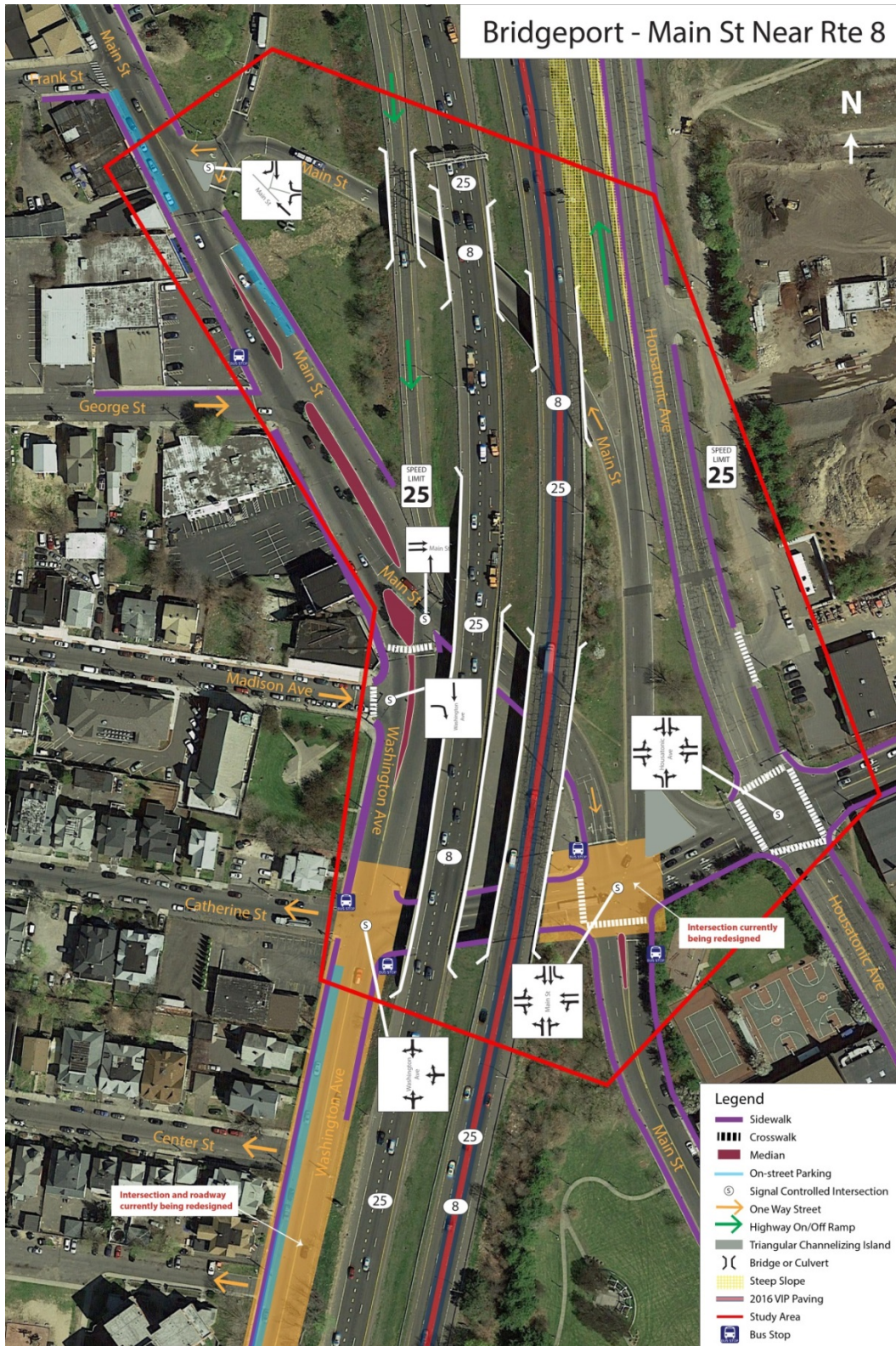


Figure 4. Bridgeport Geometrics

Bridgeport - Main Street Street Inventory

Road	Lane Width	Sidewalk				Curb	Speed MPH	Shoulder	Ramps	
		Side	Type	Width	Condition				Exist	Compliant
Catherine Street	12'(two lanes)	North	Concrete	6'	fair	Concrete	25	No	Yes	Yes
	12'(two lanes)	South	Concrete	6'	fair	Concrete	25	No	Yes	Yes
									East side	No
Main Street	11-19'	East	Concrete	7'	good	Concrete	25	No	Some	N/A
	11-19'	West	Concrete	4-7'	good	Concrete	25	No	Yes	No
East Washington Avenue	11' (two lanes)	North	Concrete	9'	fair	Concrete	25	No	Yes	No
	11' (two lanes)	South	Concrete	8'	Fair	Concrete	25	No	Yes	No
Washington Avenue	20'	East	None	None	None	None	25	No	N/A	N/A
	21'	West	Concrete	9'	Fair	Concrete	25	No	Yes	Yes

***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 Efforts

A number of best practices have already been applied to this corridor, including the following projects:

- The City of Bridgeport Office of Planning and Economic Development (OPED) and six private developers have put significant time, effort and financial investment into Downtown North, which is currently undergoing major rehabilitation to more than eleven historic buildings and multiple new construction sites on more than six blocks in downtown Bridgeport.

Development Name	Total Residential/(Commercial)	Completion Date
The Preservation Block	50 units/ (9,000 SF)	Dec. 2017
Jayson-Newfield	105 units/ (18,000 SF)	Dec. 2017
Financial Services Tower	(200,000 SF)	Jun. 2018
The Security Building	70 units, (5,000 SF)	Jun. 2016
Tulip Museum & Gallery	(8,400 SF)	Jun. 2016
The Davidson Building	200 units/ (16,000 SF)	Jun. 2018
TOTALS:	425 units and (256,400 SF)	

- The City has applied to the Responsible Growth and Transit-Oriented Development Grant Program with the State Office of Policy and Management. If the City receives this grant, it will work with Connecticut Metropolitan Council of Governments (MetroCOG) and the Bridgeport Downtown Special Services District (DSSD) to create Downtown Streetscape Design Guidelines and implement strategic streetscape improvements in Downtown North to support this growth. Redevelopment of Downtown North is expected to bring approximately 1,000 new residents. It is the City's goal to redesign streets to improve safety, vibrancy, encourage walking, and maximize access to public transit in downtown Bridgeport.
- CTDOT Project 15-365 is in semi-final design phase and the Main Street Catherine Street signal update Project 15-360 is approved. Project 15-360 includes the installation of pedestrian countdown signals at the northern, southern and eastern corners of the intersection of Main Street and Catherine Street.

- The Pequonnock River Trail will pass through this area and is expected to be constructed by 2020 (\$1.8 million CMAQ funding.)
- Bridgeport Train Station, which is within 0.5 miles of this area, will undergo platform, canopy and streetscape improvements spring 2016 by CTDOT (\$10 million CTDOT funding).
- Lafayette Circle is a realignment project within 0.5 miles of this area to transform Lafayette Circle into boulevards that fit into the downtown street grid and improve traffic flow and efficiency, which is expected to be completed by 2018 (\$16 million).

2.3 Pre-Audit Meeting

The RSA was conducted on September 9, 2016. The Pre-Audit meeting was held at 8:30 AM in the OPED Conference Room A located at 999 Broad Street, Bridgeport.

The RSA Team was comprised of staff from CTDOT, AECOM, VN Engineers, representatives from several Bridgeport departments including the Police Department, town planners and engineers, and a Thomas Merton center employee. 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.

Prior to the field study the committee discussed the area's demographics, infrastructure and any pertinent details that would inform the team of this corridor's current conditions and concerns:

- The RSA area is the confluence of several streets under highway Route 8.
- This area on Main Street at Route 8 is a hot spot for car crashes as well as crashes that involve non-motorists. A road safety audit is needed in this area to strategize ways to reduce crashes, improve safety, and improve non-motorized connectivity to downtown, cultural and entertainment centers, and the intermodal transportation center. It was also designed for cars to efficiently enter and exit Route 8, and flow quickly to and from Downtown Bridgeport. As a result, a system of one-way roads gives way to two Route 8 overpass over Main Street; northbound Main Street and southbound Main Street. This street configuration is very challenging for non-motorists for several reasons including:
 - Speed of cars.
 - The one-way loop design.
 - Lack of sidewalks, crosswalks, ADA ramps, pedestrian signals.
 - Lack of pedestrian amenities, lighting, signage, seating, etc.
 - Lack of shoulder width, bike lanes, signage to direct bike traffic.
 - Over-scaled design of overpasses and lack of public space definition.

- There is driver confusion about how to navigate through the intersections.
- Many of the issues also have to do with pedestrians and are not necessarily an exclusive infrastructure issue. Pedestrians often do not use crosswalks and cut through several lanes of traffic. At peak times the Merton Center has provided volunteers to help with pedestrian crossings
- There is virtually no bicycle infrastructure, bike lanes or shoulder striping. On the southeast corner of Catherine Street and Washington Avenue there is a public school bus stop that residents noted was extremely dangerous due to traffic, tight turning radius, and lack of buffer separating the road and sidewalk.
- Stamford would like to have a more coherent system at this area in order to move pedestrians more efficiently and safely.
- From Washington Avenue southbound there is no way to access the Route 8 northbound ramp without doing a U-turn. If there was on-ramp access from Housatonic Avenue this would help.
- There are several bus stops in the study area, many lack connections to destinations in the area.
- There are parking issues around the Sheehan Center on Main Street, people illegally park, police have little recourse to rectify, but there is pressure from citizens and religious groups.
- Exits off and on Route 8 make for higher vehicular velocities. The transition area on and off the highway makes it feel chaotic.
- According to the City Engineer, all five signals on Washington are in final design for improvements.
- The signal at Main Street and North Street experiences delay and long queues. This has resulted in many vehicles cutting through side streets.

3 RSA Assessment

3.1 Field Audit Observations

Catherine Street and Washington Avenue

- There are no crosswalks at the Washington Avenue and Catherine Street intersection. (Figure 5)
- The sight lines for traffic heading south on Washington Avenue is restricted for right turning vehicles due to the highway overpass.



Figure 5. Intersection of Washington Avenue and Catherine Street

- The turning radius heading south on Washington Avenue and making a right hand turn onto Catherine Street is insufficient for commercial trucks and buses.
- Washington Avenue is 45 feet wide with two way travel and intermittent on-street parking. It is currently being redesigned and will be striped with eight foot parking and 11 foot travel lanes. The curb line will not change.
- Traffic travelling north on Washington heads downhill and speed is a concern. Due to the large radius of the right hand turn, many vehicles take it at speeds above 20 MPH.
- The sidewalk on the west side of Washington Avenue is nine feet wide with no buffer and concrete curbing.
- The goat trail on the east side of Washington Avenue demonstrates that pedestrians walk this narrow strip rather than crossing to the sidewalk on the west side.
- A bus stop and a school bus stop are situated on the southeast corner of Washington Avenue and Catherine Street. This location is not ideal for waiting passengers, there is not adequate space for passenger discharge, and there are no crosswalks or crossing guards at this intersection. There is also significant vegetation overgrowth in this area. (Figure 6)
- There are ADA compliant ramps at the northwest and southwest corners of Washington Avenue and Catherine Street but not the northeast and southeast corners. There are no pedestrian signals or push buttons to cross. (Figure 7)
- Pavement markings are faded on Washington Avenue.

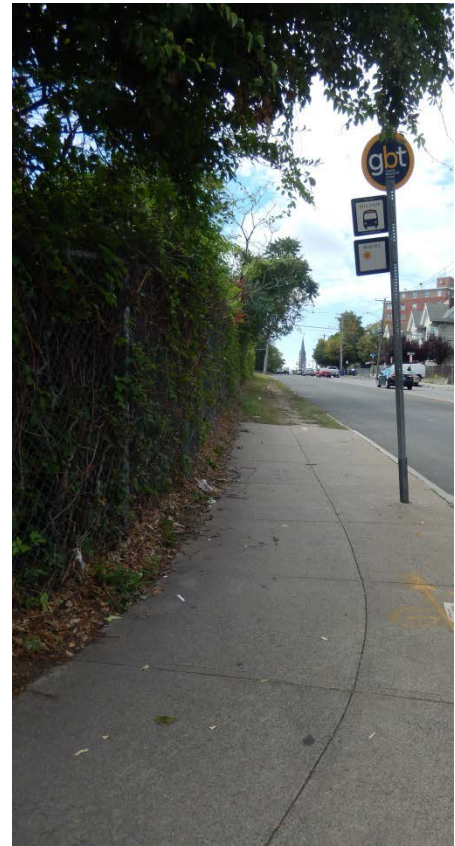


Figure 6. Bus Stop Waiting Area With No Amenities and Overgrown Vegetation



Figure 7. ADA Compliant Ramps on the West Side of Washington Avenue

- There is no street sign for Catherine Street.
- West of Washington Avenue, Catherine Street is one-way westbound. It is marked as a school zone and parking is allowed on both sides of the street.
- There are no bus shelters at this location. A passenger was observed waiting under the Route 8 overpass and running across traffic lanes to catch the bus on the opposite side as it approached

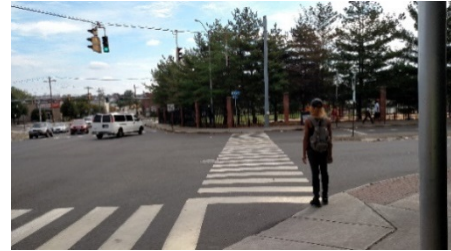


Figure 8. East Washington Avenue and Main Street

Main Street and East Washington Avenue

- East Washington Avenue and Main Street is a signalized four way intersection with crosswalks across two of the legs. (Figure 8)
- There are non-ADA compliant ramps on the southern and western corners of the East Washington and Main Street intersection.
- There is only one pedestrian push button at this intersection (south-east corner) and it was broken. (Figure 9)
- There are no pedestrian signal heads.
- The geometry of this intersection is confusing. The north-east corner is actually a very large channelizing island. Northbound Main Street traffic will split just north of the intersection for the Route 8 entrance. Westbound traffic from East Washington Street takes the large radius, free-flow right turn to merge with northbound Main Street, and then faces the Route 8 split only 250 feet away.
- East Washington Avenue is 47 feet wide with two lanes in each direction. It merges to a single lane



Figure 9. Broken Pedestrian Push Button

in each direction east of the Housatonic Avenue intersection.

- Several pedestrians were observed jaywalking across the northern leg of Main Street at this intersection.
- Several people on bicycles were observed.
- This signal is not coordinated with the Housatonic Street signal 200 feet to the east. This signal is currently being redesigned and will be coordinated with the Housatonic Street Signal
- There is no pedestrian connectivity between the western corner and the eastern corner on the north side of the Main Street and East Washington Avenue intersection, due to the on-ramp location. Despite this lack of connectivity people still cross here or north of here on the entrance ramp. (Figure 10)
- Traffic turning left From Main Street on to East Washington Avenue can back up because there is only one left turn lane.

East Washington and Housatonic Avenue

- Housatonic Avenue and East Washington is a four way signalized intersection with marked crosswalks. The ramps lack tactile warning strips. (Figure 11)
- The pedestrian push buttons are tactile but not audible.
- There are pedestrian signals, but they are not countdown.
- The sidewalk between Housatonic Avenue and Main Street is in poor condition.



Figure 10. On-Ramp for Route 8 Southbound



Figure 11. East Washington and Housatonic Avenue

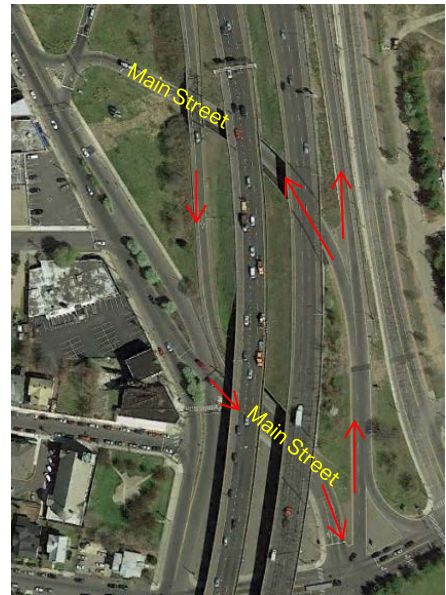


Figure 12. Main Street Traffic Circulation

- The Congress Street Bridge Closed sign does not meet minimum height requirements.
- The signal at Housatonic Avenue and East Washington has a concurrent, actuated pedestrian phase. It did not appear that the preemption for the signal was working properly.



Figure 13. Route 8 Off-ramp and Main Street Merge

Main Street

- North of East Washington Avenue Main Street splits into separate roadways in each direction. The Route 8 Northbound ramp splits off to the east just north of the intersection. This can be confusing. (Figure 12)
- Southbound Main Street traffic merges with Route 8 Exit ramp traffic adjacent to the signal that allows southbound Main Street traffic to cross northbound Washington Avenue traffic. It is not clear as to which approach is supposed to yield, as it is striped to merge but there are no yield signs. (Figure 13)
- Vehicles coming off of the highway ramp tend to speed on this section of the corridor.
- Main Street has two travel lanes heading north and south at this location.
- Main Street has sidewalks with some buffers on both sides of the street, no shoulder lines, intermittent on street parking, and faded pavement markings. (Figure 14)
- There is on-street lighting on Main Street.

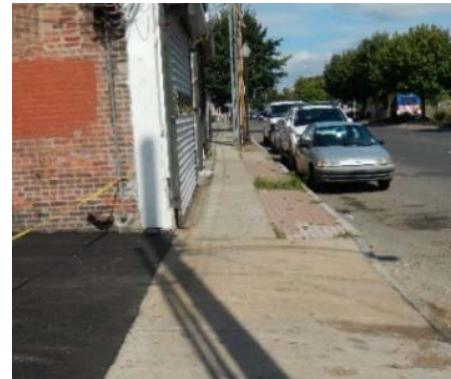


Figure 14. Main Street



Figure 15. Main Street, Madison Avenue and Washington Avenue Intersection

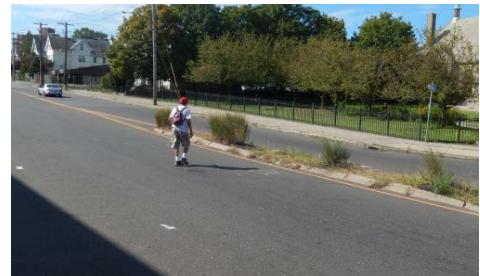


Figure 16. Individual Jaywalking Just South of Madison Avenue

Main Street/ Madison Avenue/Washington Avenue

- This multi-leg intersection is controlled by one coordinated signal, with planted medians to channelize and direct traffic. There is a crosswalk across Madison Avenue and Washington Avenue where Main Street splits. (Figure 15)
- Due to the crosswalk configuration many individuals jaywalk to the south of the intersection. (Figure 16)
- The signal provides an exclusive pedestrian phase with count down pedestrian heads and ADA compliant ramps.
- The planted median has trees whose branches block signs. (Figure 17)
- Madison Avenue is a one-way street eastbound, with parking allowed on both sides. Vehicles often park past the stop bar.



Figure 17. Tree Blocking Sign

George Street and Main Street

- At Main Street and George Street there are no crosswalks. There are ramps but they are not ADA compliant.
- South of the Main Street and George Street intersection, the road diverges to Main Street southbound in the left lane and Washington Avenue southbound in the right lane.



Figure 18. Vehicle Parked in Front of Ramp

Main Street, Route 8 Ramp and Washington Avenue

- This is a signalized intersection where the Route 8 South Ramp, Main Street northbound and Washington Avenue converge.
- There are no crosswalks but there are ramps with pedestrian push buttons.



Figure 19. Route 8 Underpass

- Parking is allowed on the west side of the street in the intersection. One vehicle was observed parking in front of the crossing ramp. (Figure 18)

Other/general

- The posted Speed limit in this area is 25 MPH.
- There are no bike lanes or shoulder lines on any of the inventoried roads.
- In the center of this area is a wide open, paved area beneath the underpass. This is an uninviting location, but is the straightest route between northern Main Street and southern Main Street, so people frequently cut through (requiring jay-walking). Occasionally police park in this area. (Figure 19)
- Some of the catch basin grates are not bike friendly. (Figure 20)
- All new crosswalks will need to be ADA compliant with ramps and detectable warning devices for the sight impaired.
- Sheehan Center on Main Street south of the intersection has insufficient parking during events. Although "No Parking" signs are posted on the west side, there is a significant degree of parking violation.
- There is a lack of wayfinding in the corridor.
- Washington Avenue and Madison Avenue is a signalized intersection with a pedestrian actuated crossing. The crosswalk cuts through the median, and the ramps are ADA compliant.
- Several of the lights under the Route 8 bridge appear to be inoperative. (Figure 21)



Figure 20. Non-Bike Friendly Catch Basin Grate



Figure 21. Light Out Under Bridge

3.2 Post Audit Workshop - Key Issues

- The Team noted that the majority of pedestrians in this corridor jaywalk and cross haphazardly, endangering the walkers themselves and drivers, primarily from the triangle area below the highway and across Main Street and the Route 8 on-ramp. Barriers need to be installed to limit/reduce this. Installing a crosswalk across the northern edge of Main Street is not advised due to the free flow movements.
- Wayfinding could assist pedestrians in providing safe paths to key destinations.
- Increase visual cues for pedestrians.
- Improved crosswalk markings may increase driver awareness and encourage pedestrians to use them. Examples include textured pavements or alternative color schemes.
- Installing speed humps or tables was discussed. Speed tables with long approaches are favored over speed humps.
- The lack of signage where southbound Main Street merges with the Route 8 off-ramp causes confusion.
- Tree vegetation blocks several signs and low canopies infringe upon the sidewalk in multiple locations
- Bus shelters could prevent passengers from waiting under the highway for shelter and darting across for the bus. Advertising could be used to help pay for the shelters.
- There are limited sight lines for northbound traffic on Washington Avenue at Catherine Street and vehicles take the right hand turn at high speeds.
- An education program in the schools regarding safe procedures to cross intersections could begin to slowly change the culture.
- Variable Message Signs should be used to communicate with travelers on any upcoming traffic changes.

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 all crosswalks to stand out using alternative color schemes or textured pavement. (Figure 21)
2. Install School Zone signs along Catherine Street. (Figure 22)
3. Replace worn-out signs with reflective signs based on current standards.
4. Add no turn on red sign for northbound traffic at the corner of Washington Avenue and Catherine Street.
5. Raise sign heights where necessary to meet minimum height requirements.
6. Install a street sign for Catherine Street at Washington Avenue
7. Implement bike and pedestrian education programs in schools, throughout the city by collaborating work with the Safe Corridor Program.
8. Install a user friendly passenger area for students waiting for the bus at Washington Avenue and Catherine Street, by removing the overgrown vegetation.
9. Trim trees and vegetation for clearance along the sidewalks.
10. Remove vegetation blocking signs.
11. Install barriers to prevent crossing the Route 8 on-ramp, for example fences, planters, jersey barriers. It must be large enough to deter trampling. Barriers should be installed on the channelizing triangle and at where the sidewalk ends in the northwest corner of the East Washington Avenue and Housatonic Street intersection. (Figure 23)
12. Install proper signage for southbound Main Street traffic that merges with Route 8 off-ramp, directing one of the flows of traffic to yield.
13. Repair broken sidewalk.
14. Fix broken lighting under bridge.

Figure 25 depicts these recommendations.



Figure 22. Example of Painted and Textured Crosswalk



Figure 23. School Advance Crossing Assembly



Figure 24: Safety Shape Barrier

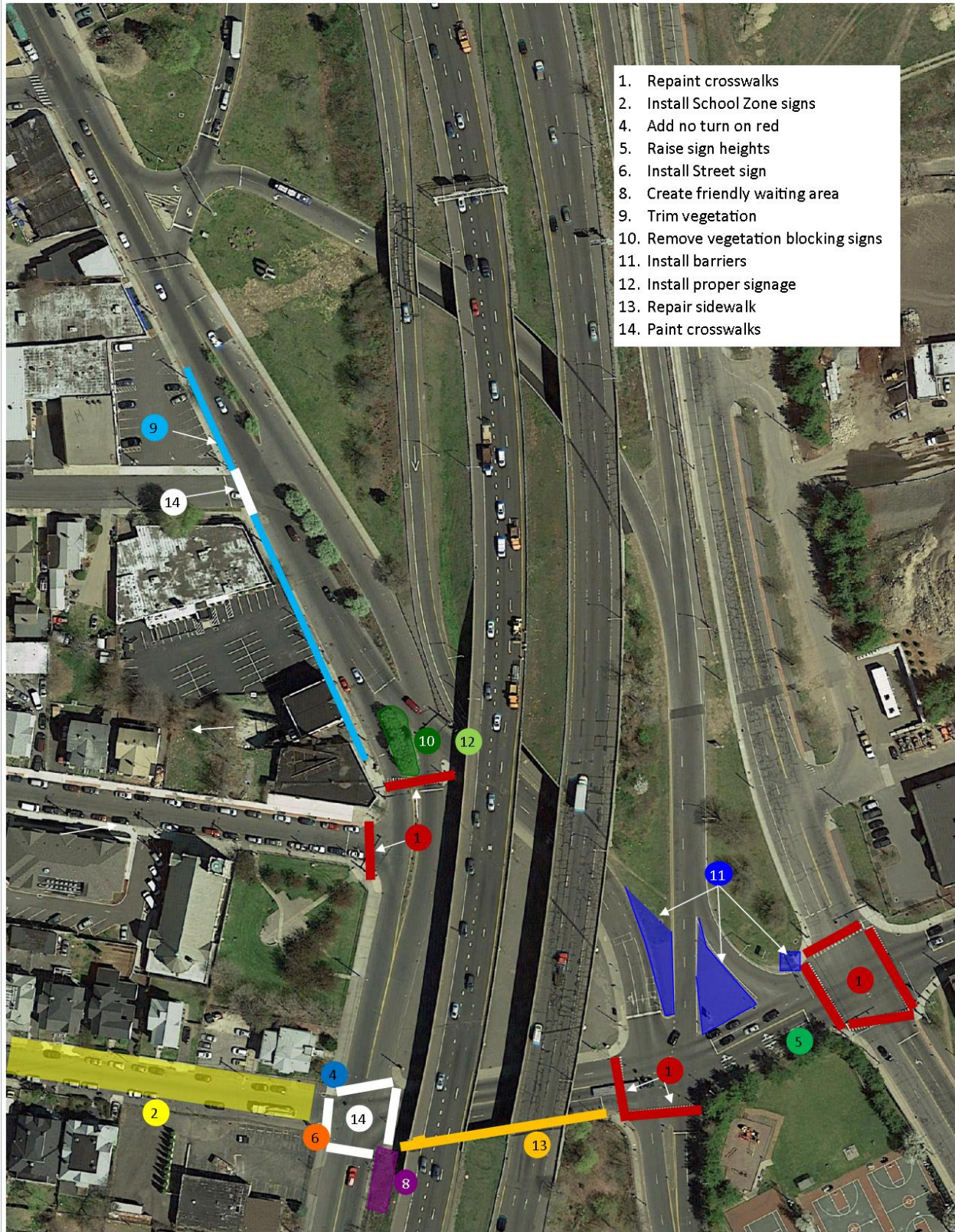


Figure 25. Short Term Recommendations Map

4.2 Medium Term

1. Provide safe walking brochures and tips for clients at The Merton Center to encourage them to use the crosswalks and to be more aware of the hazards of jaywalking and using the on-ramp as a short cut.
2. Investigate projects for public spaces for the underpass triangle, search for grants to allow this development to cultivate community building.
3. Install public seating along Main Street to improve walkability.
4. Partner with community organizations and local artists to have artists submit proposals for painting the underpass area, to beautify. (Figure 26)
5. Install pedestrian signals with countdown heads, audible, and tactile pushbuttons at the intersections of Catherine Street and Washington Avenue, Main Street and East Washington Avenue and Main Street, Route 8 Ramp and Washington Avenue.
6. Replace the Pedestrian signal heads at Housatonic Avenue and East Washington Avenue with countdown ones. (Figure 27)
7. Install tactile warning strips where missing. (Figure 28)
8. City of Bridgeport could adopt a Vision Zero policy with the goal of zero traffic fatalities.
9. Install bus shelters at GBT stops.
10. Work with businesses to sponsor parklets.
11. Replace catch basin grates with bicycle friendly ones. (Figure 29)
12. Install wayfinding. (Figure 30)

Figure 31 depicts these recommendations.



Figure 26. Example of Mural Painted on Underpass



Figure 27. Countdown Pedestrian Head



Figure 28. Example of Tactile Warning Strips



Figure 29: Bike friendly catch basin



Figure 30. Wayfinding Example

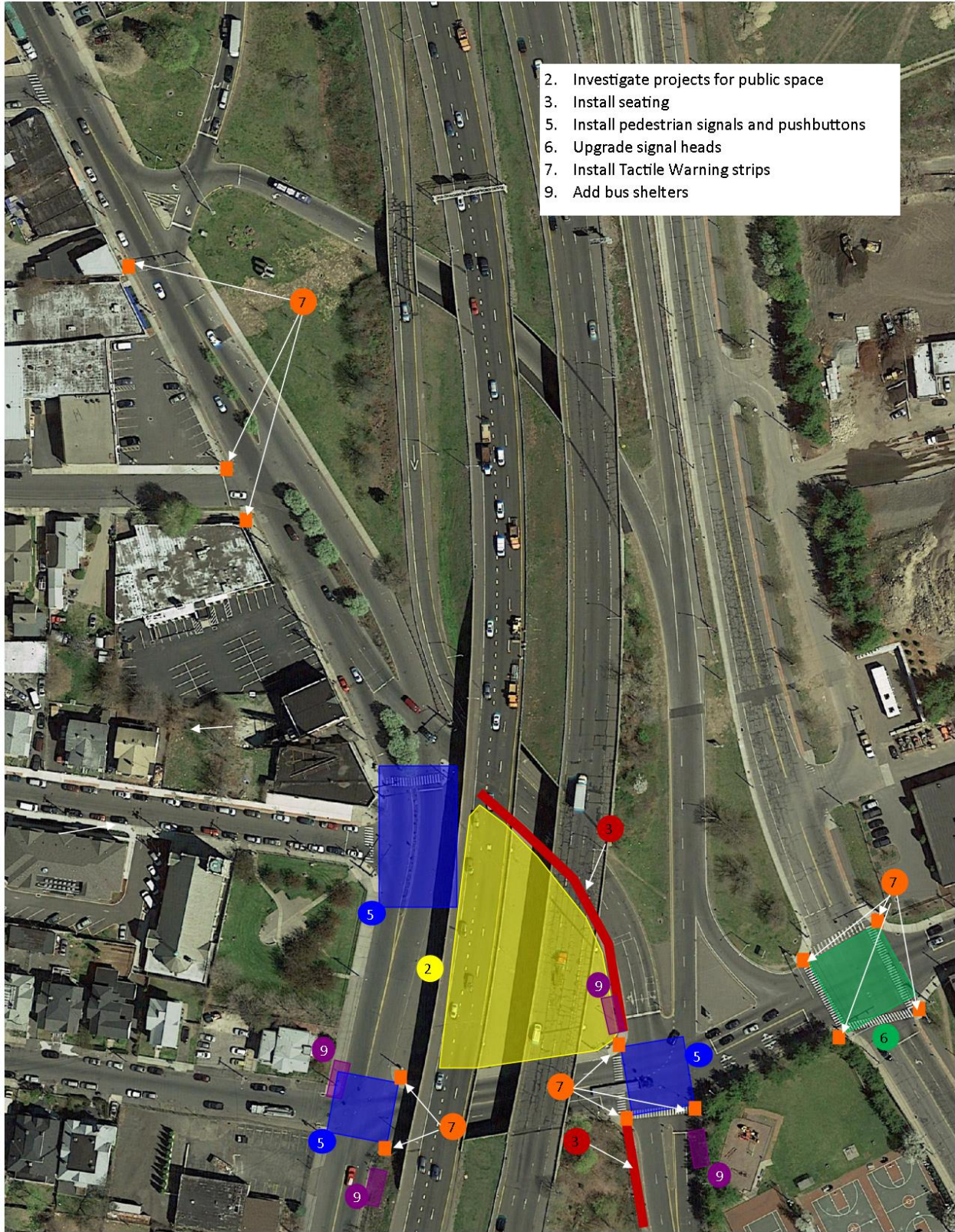


Figure 31. Mid Term Recommendations Map

4.3 Long Term

1. Launch a city wide safe walking campaign.
2. Install a speed table at the Housatonic Avenue and East Washington Avenue intersection.
3. Upgrade sidewalks where damaged or insufficient width.
4. Redesign the northbound ramp to provide access from Housatonic Street.
5. Redesign the southbound ramps to improve flow, reduce confusion and reduce conflicts.
6. Investigate installing a roundabout under Route 8 to improve traffic flow.

Figure 32 depicts these recommendations.

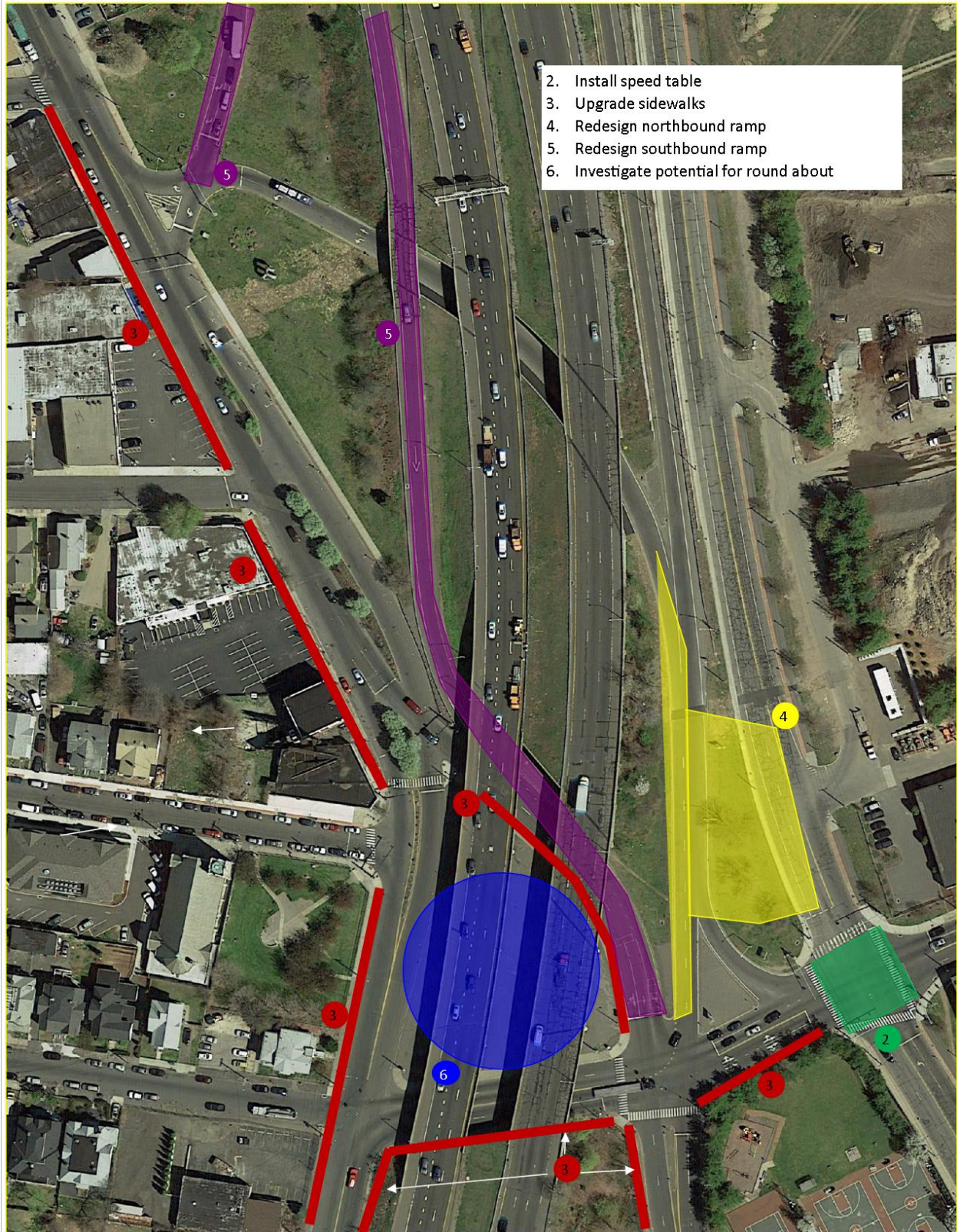


Figure 32. Long Term Recommendations Map

4.4 Summary

This report outlines the observations, discussions and recommendations developed during the RSA. It documents the successful completion of the City of Bridgeport RSA and provides Bridgeport with an outlined strategy to improve the transportation network at the town village center for all road users in Bridgeport, particularly focusing on pedestrians and cyclists. Moving forward, Bridgeport 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 along the Main Street and Route 8 area.



COMMUNITY
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Appendix A



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Welcome to the Community Connectivity Program Application



Please fill in the following information to provide the Audit team leaders with a comprehensive description of the area contained in this application.

1. Applicant contact information

Name	<input type="text"/>
Title	<input type="text"/>
Email Address	<input type="text"/>
Telephone Number	<input type="text"/>

2. Location information

Address	<input type="text"/>
Description	<input type="text"/>
City / Town	<input type="text"/>

3. Roadway type
(Please select all that apply)

State road

Local road

Private Road

Other (please specify)

4. Zoning
(Please select all that apply)

Industrial

Residential

Commercial

Mixed Use

Retail

N/A (not applicable)

Other (please specify)

5. Approximate mile radius around the location

Other (Please Specify)

6. Community Sites
(Please select all that apply)

Community Centers

Business Districts

Restaurant/Bar Districts

Churches

Housing Complexes

Proximity to Schools

Tourist Locations (examples – Casino, Malls, Parks, Aquarium, etc...)

N/A (not applicable)

Other (please specify)

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

Yes

No

If Yes please describe (please specify)

8. Educational facilities

(Please select all that apply)

Public, Parochial, Private Schools (more than 1 school within a ½ mile)

University / Community Colleges

N/A (not applicable)

Other (please specify)

9. Transit facilities

(Please select all that apply)

Bus

Rail

Ferry

Airport

Park and Ride Lot

N/A (not applicable)

Other (please specify)

10. Safety Concerns

(Please select all that apply)

Traffic (volumes & speed)

Collisions

Sidewalks

Traffic Signals

Traffic Signs

Parking Restrictions / Additions

Drainage

ADA Accommodations

Agricultural & Live Stock crossing

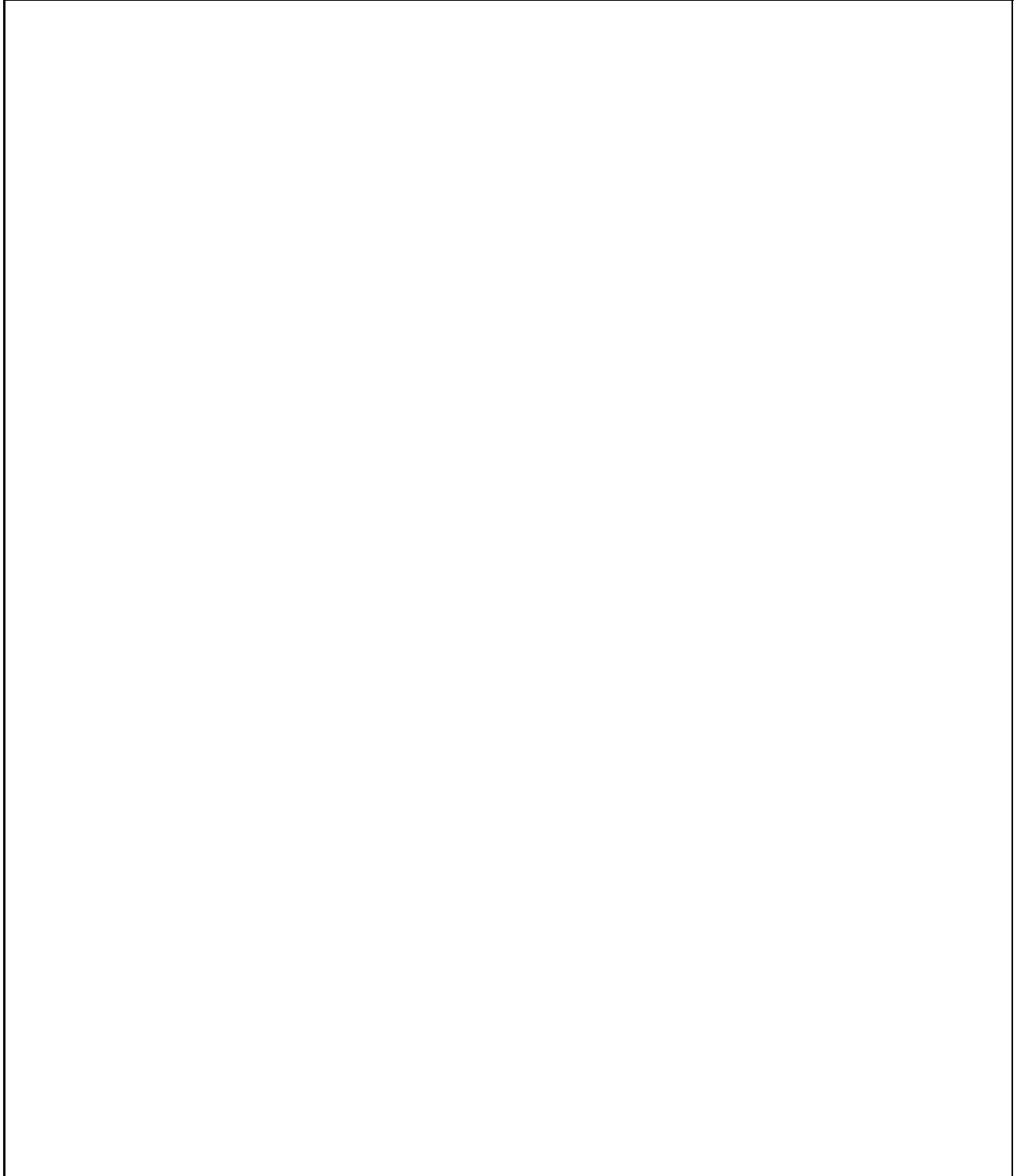
Maintenance issues (cutting grass, leaves, snow removal)

N/A (not applicable)

Other (please specify)

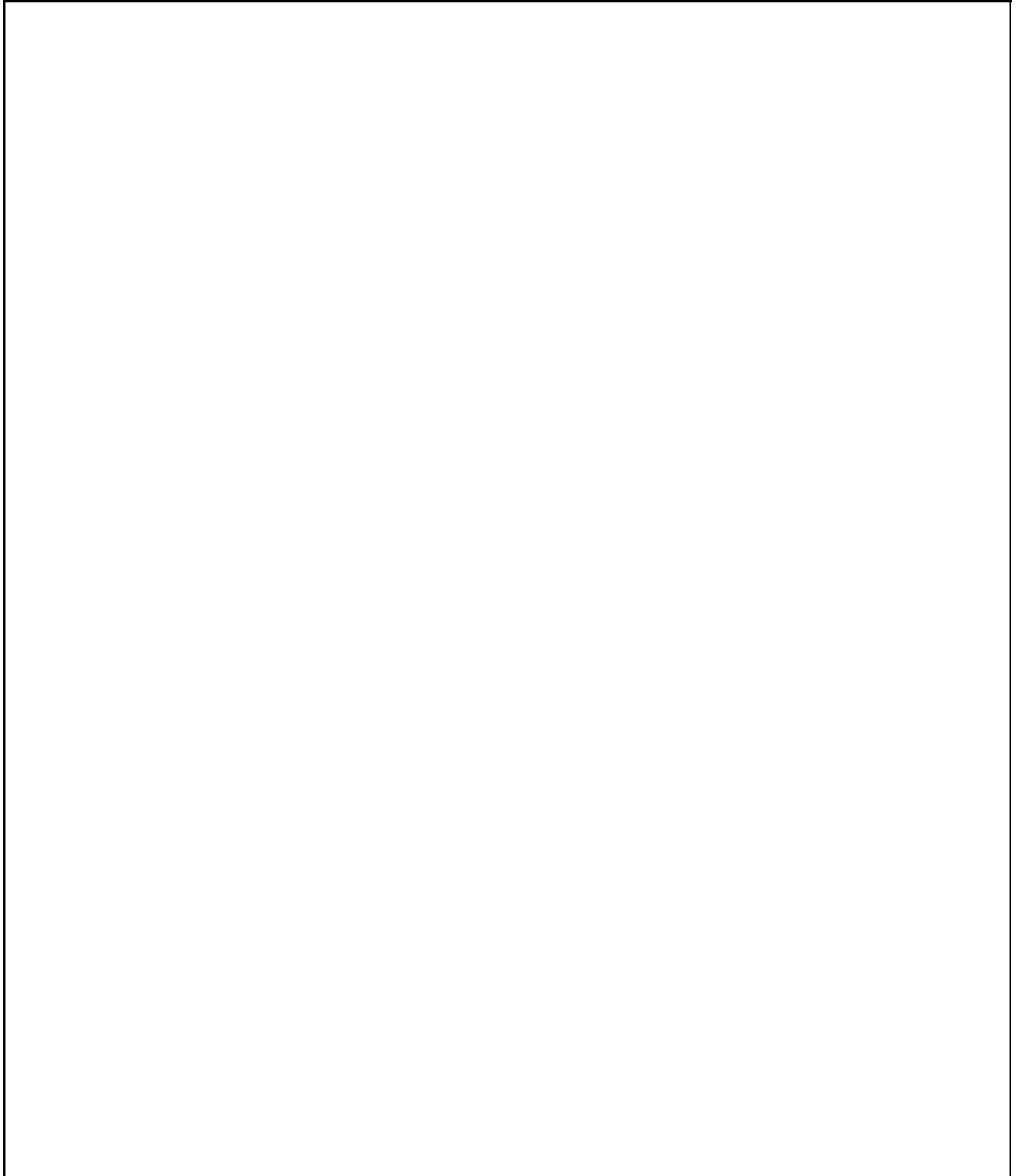
11. Are there any past, current or future transportation/economic development projects near this location (i.e. Federal, State or local projects)?

If Yes please describe and list all projects.

A large, empty rectangular box with a thin black border, intended for the user to describe and list any past, current, or future transportation or economic development projects near the location.

12. Environmental Concerns:

If Yes please describe and list.

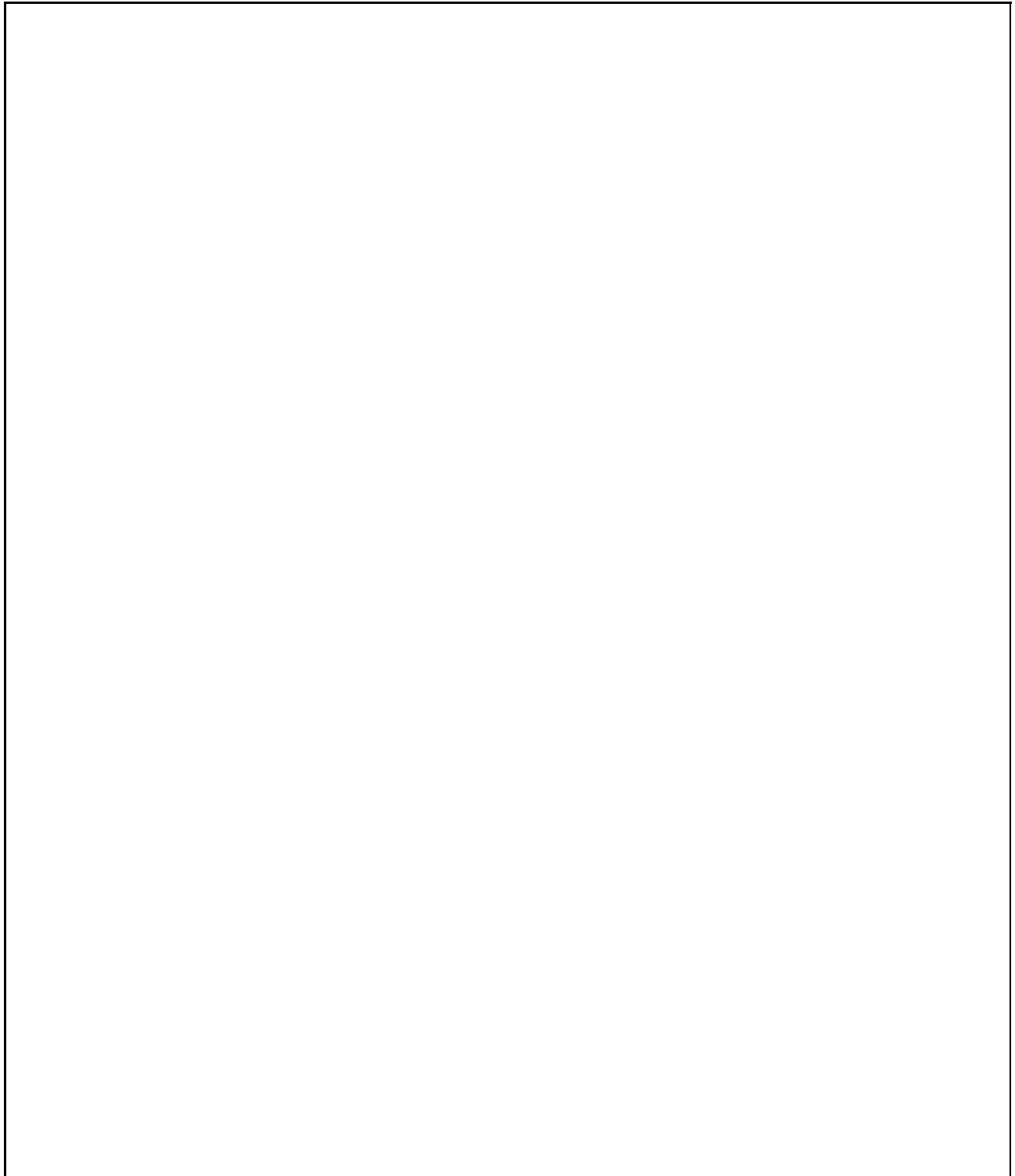
A large, empty rectangular box with a thin black border, intended for the user to describe and list any environmental concerns. The box occupies most of the page's vertical space below the instruction.

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

A large, empty rectangular box with a thin black border, intended for the user to provide an explanation for why a location should be considered for an RSA. The box occupies most of the page's vertical space below the question.

14. Are there plans to expand the area?

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



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

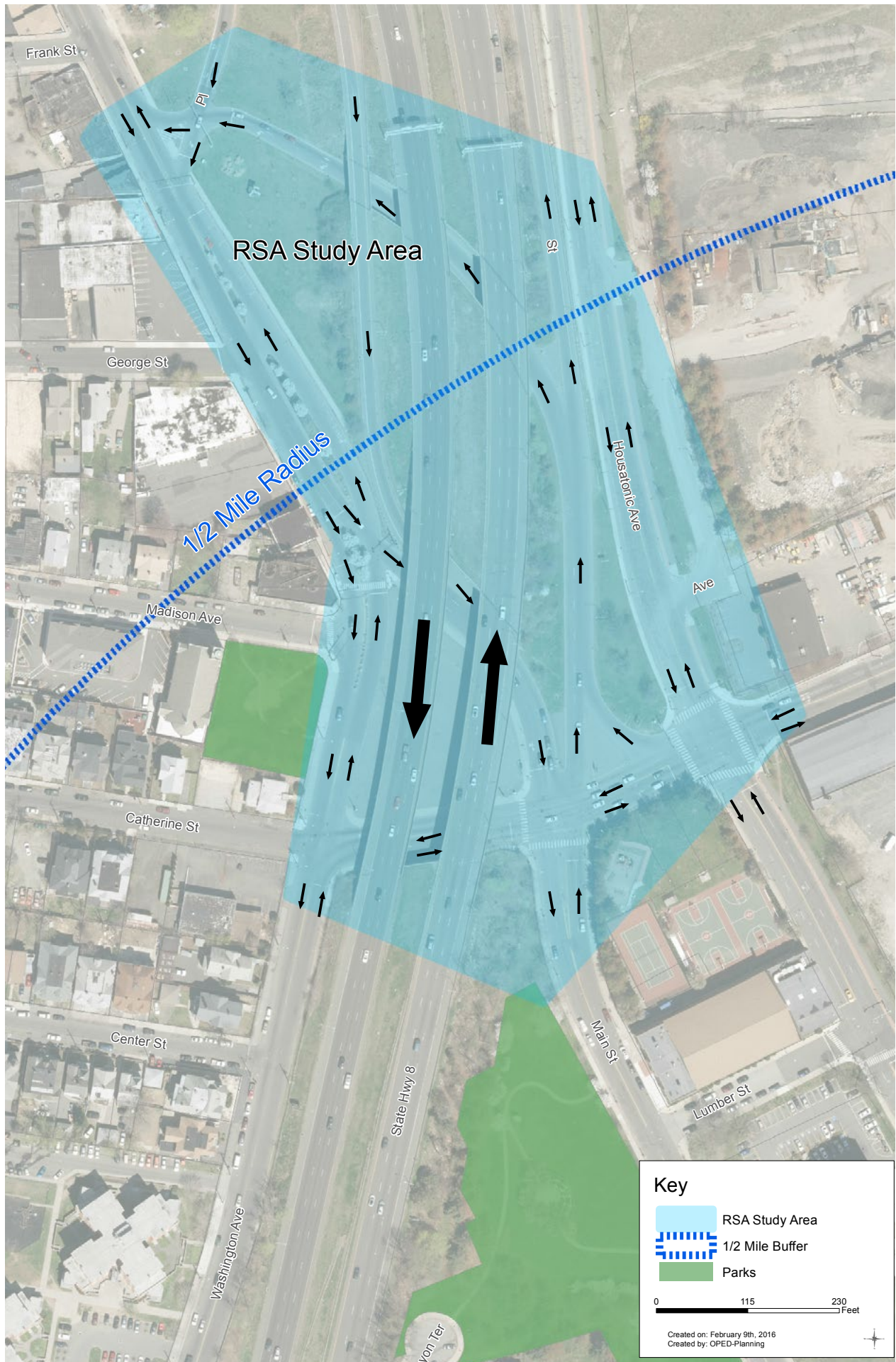
A large, empty rectangular box with a thin black border, intended for the user to provide any other pertinent information unique to the location.

Thank you for completing the Community Connectivity application.

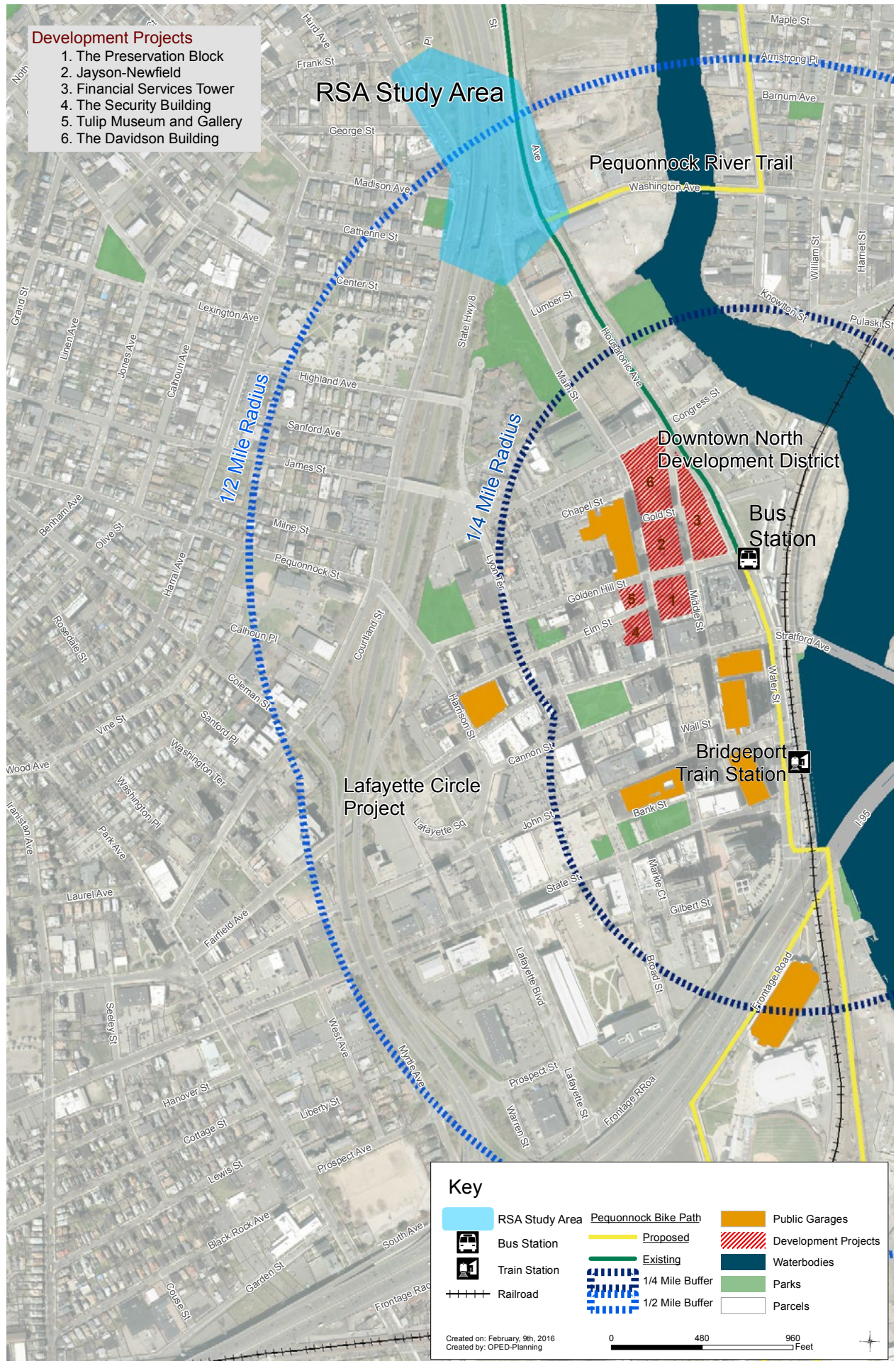
Please click on the "submit button" below and include the following attachments

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

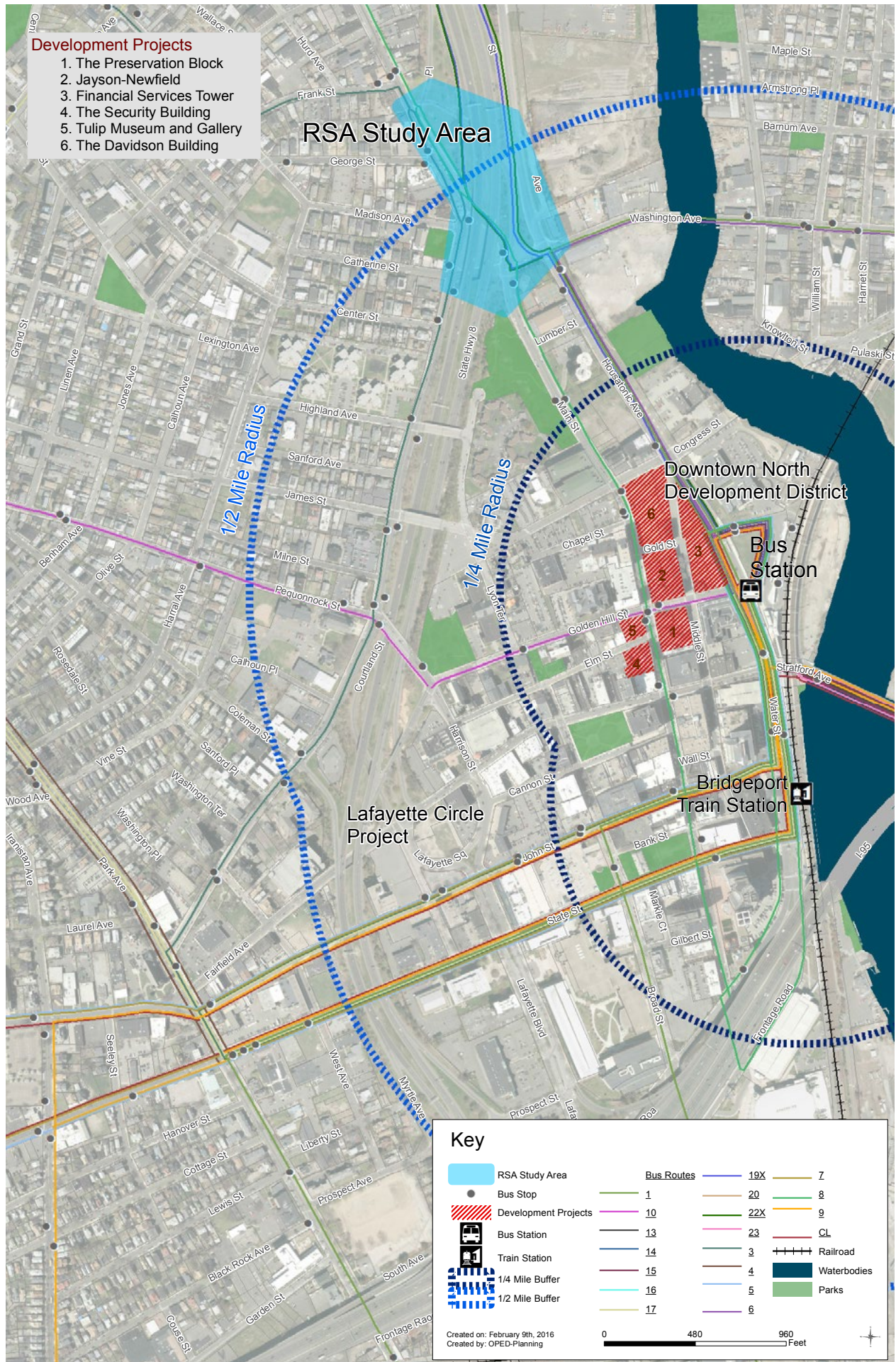
Map 1. RSA Study Area: State Route 8 and Main Street



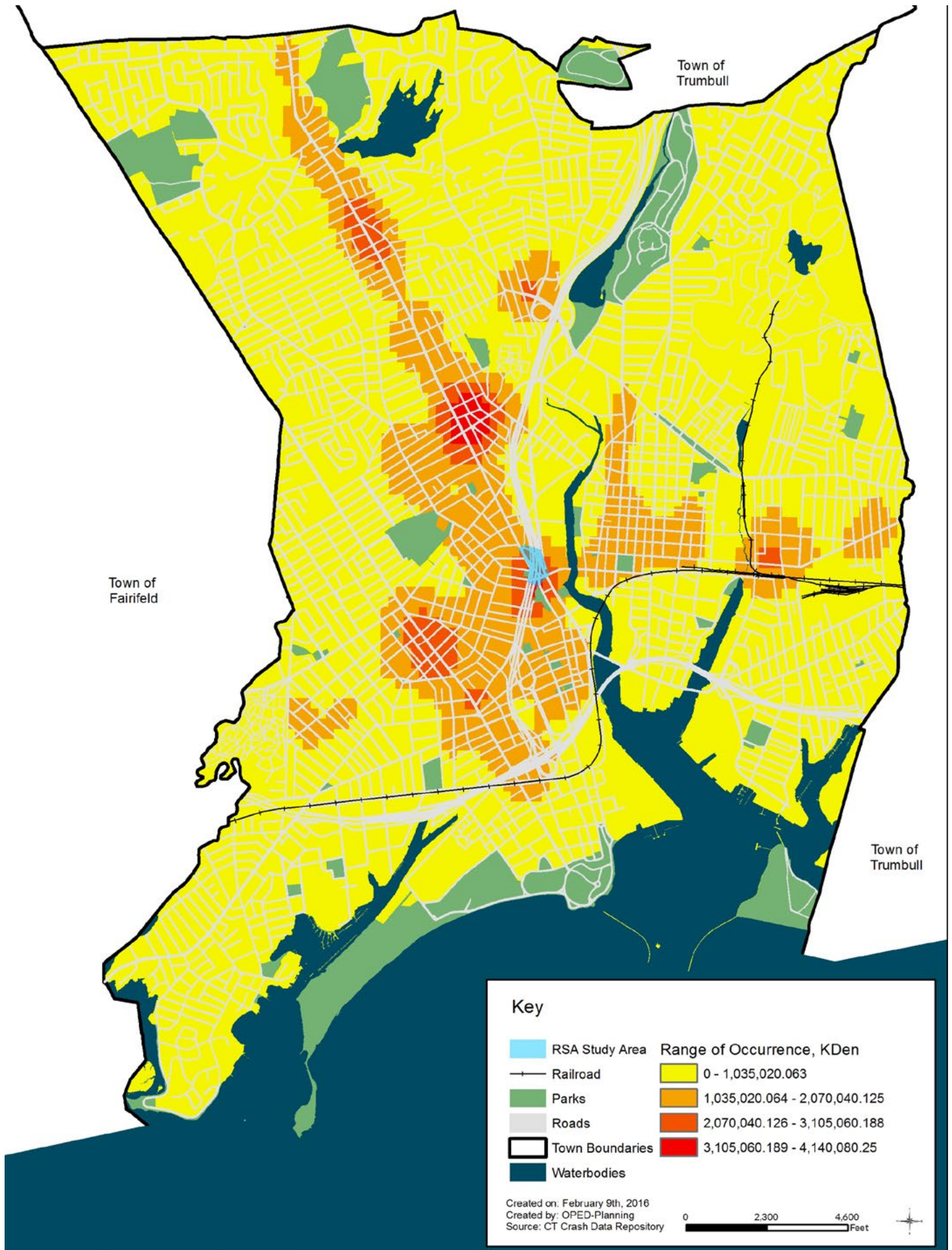
Map 2. RSA Study Area: Downtown North Developments and Bicycle and Pedestrian Facilities



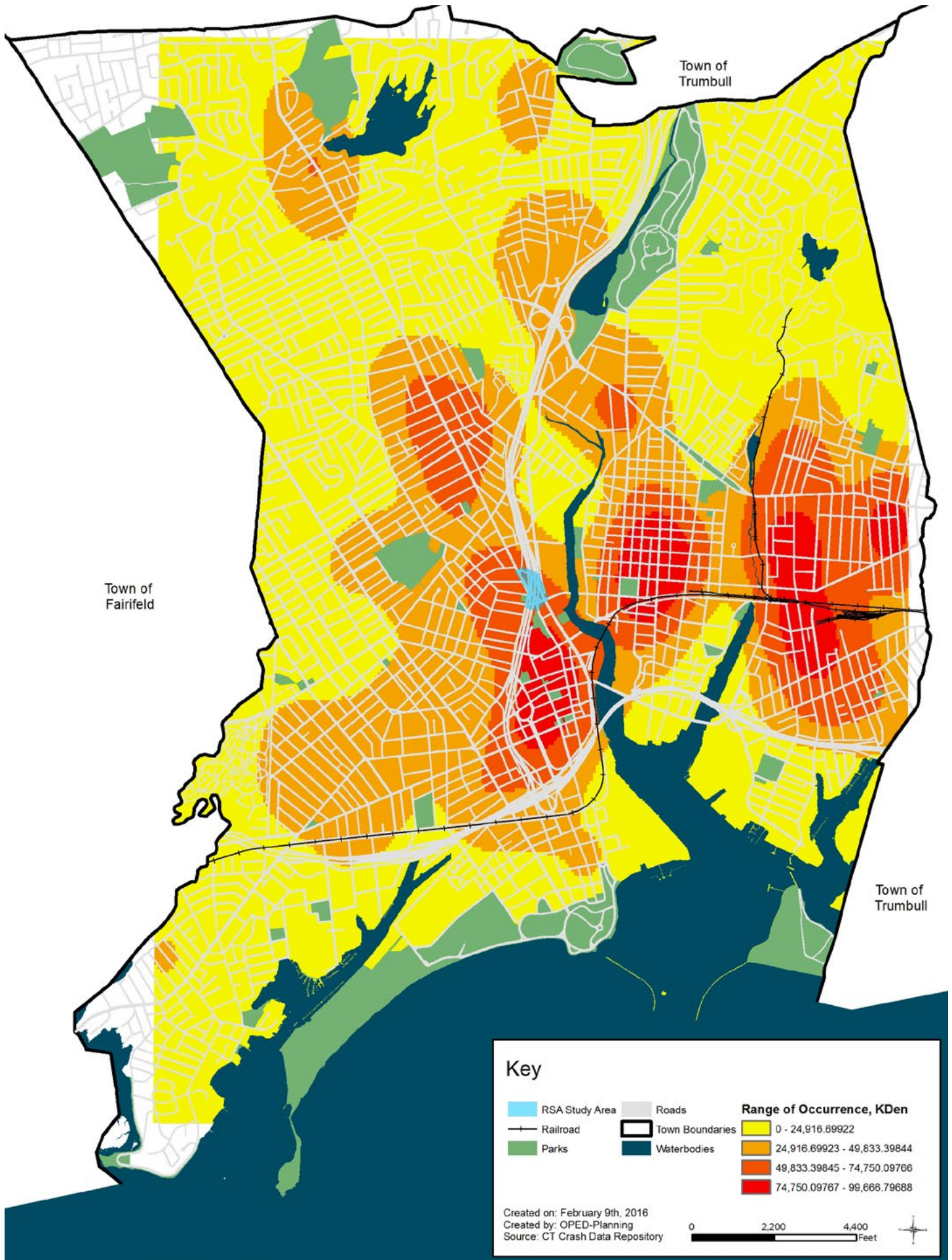
Map 3. RSA Study Area: Downtown North Developments, Bus Stops and Bus Routes



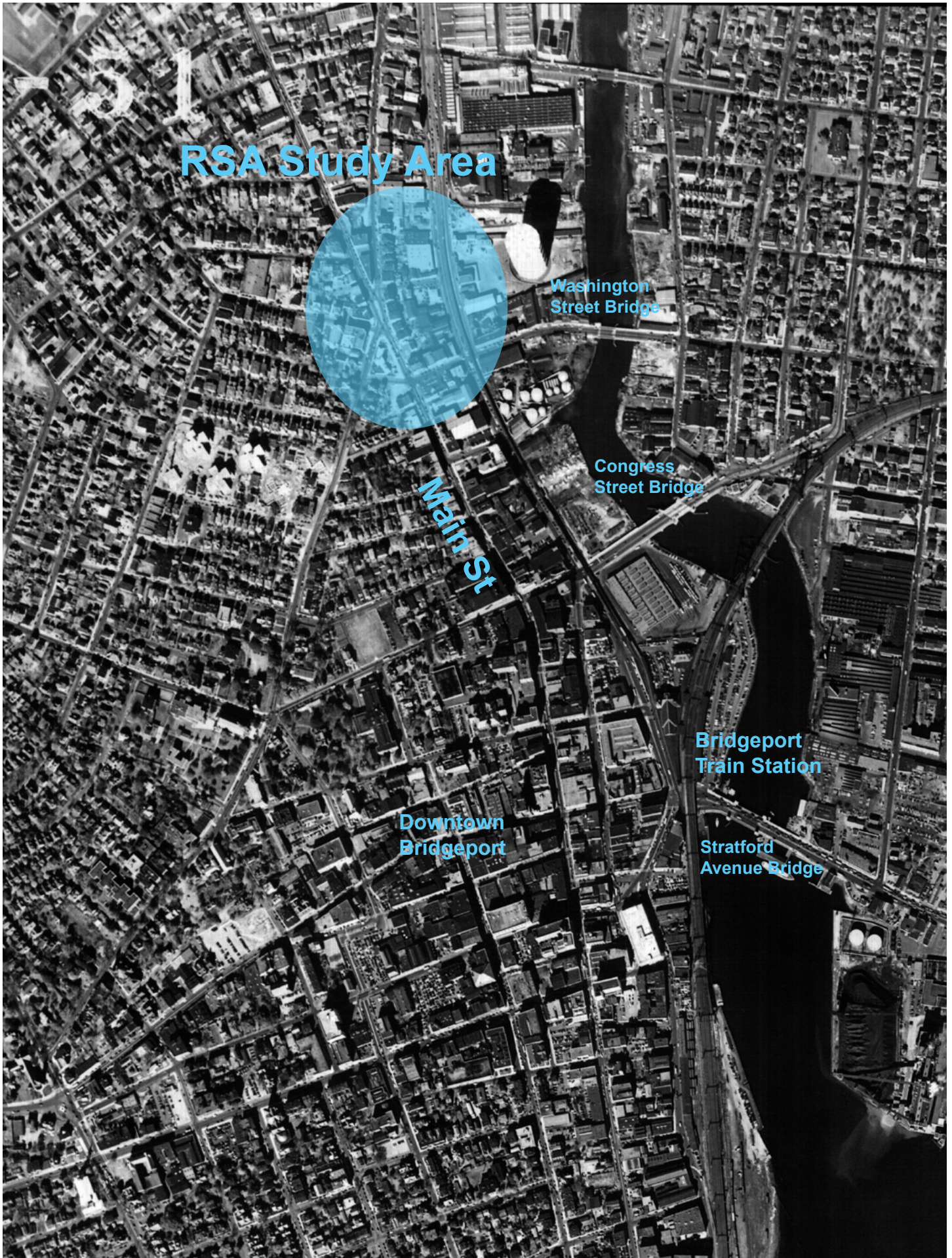
Map 4. City of Bridgeport: Occurrence of Crashes of All Transportation Modes in 2105



Map 5. City of Bridgeport: Occurrence of Nonmotorist Crashes in 2105



Map 6. Historic context showing increased connectivity before Route 8 construction in 1951



STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF POLICY AND PLANNING
 PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF BRIDGEPORT	ROUTE							DIRECTION W
CATHERINE ST #1 - EAST OF WASHINGTON AVE	SUN	MON	TUE	WED	THU	FRI	SAT	
DAY								
DATE	0	03/08/2010	03/09/2010	0	0	0	0	
TYPE								
HOUR								
	2010 ADT = 4600		ACF = NA					

12A	0	0	43	0	0	0	0	
01A	0	0	48	0	0	0	0	
02A	0	0	20	0	0	0	0	
03A	0	0	11	0	0	0	0	
04A	0	0	17	0	0	0	0	
05A	0	30	0	0	0	0	0	
06A	0	87	0	0	0	0	0	
07A	0	217	0	0	0	0	0	
08A	0	337	0	0	0	0	0	
09A	0	311	0	0	0	0	0	
10A	0	270	0	0	0	0	0	
11A	0	311	0	0	0	0	0	
12P	0	304	0	0	0	0	0	
01P	0	336	0	0	0	0	0	
02P	0	332	0	0	0	0	0	
03P	0	340	0	0	0	0	0	
04P	0	333	0	0	0	0	0	
05P	0	375	0	0	0	0	0	
06P	0	279	0	0	0	0	0	
07P	0	207	0	0	0	0	0	
08P	0	206	0	0	0	0	0	
09P	0	162	0	0	0	0	0	
10P	0	130	0	0	0	0	0	
11P	0	85	0	0	0	0	0	
TOT	0	4652	139	0	0	0	0	

STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF POLICY AND PLANNING
 PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF BRIDGEPORT		ROUTE						DIRECTION B
MAIN STREET #3 - NW OF CONGRESS STREET		SUN	MON	TUE	WED	THU	FRI	SAT
DAY	DATE	0	03/18/2013	03/19/2013	0	0	0	0
TYPE	ADT	ACF = NA						
HOUR	2013 ADT = 7100							

12A	0	0	44	0	0	0	0	0
01A	0	0	19	0	0	0	0	0
02A	0	0	10	0	0	0	0	0
03A	0	0	22	0	0	0	0	0
04A	0	35	0	0	0	0	0	0
05A	0	118	0	0	0	0	0	0
06A	0	281	0	0	0	0	0	0
07A	0	475	0	0	0	0	0	0
08A	0	665	0	0	0	0	0	0
09A	0	622	0	0	0	0	0	0
10A	0	512	0	0	0	0	0	0
11A	0	507	0	0	0	0	0	0
12P	0	400	0	0	0	0	0	0
01P	0	468	0	0	0	0	0	0
02P	0	455	0	0	0	0	0	0
03P	0	520	0	0	0	0	0	0
04P	0	551	0	0	0	0	0	0
05P	0	531	0	0	0	0	0	0
06P	0	365	0	0	0	0	0	0
07P	0	238	0	0	0	0	0	0
08P	0	150	0	0	0	0	0	0
09P	0	129	0	0	0	0	0	0
10P	0	121	0	0	0	0	0	0
11P	0	83	0	0	0	0	0	0
TOT	0	7226	95	0	0	0	0	0



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Appendix B



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Road Safety Audit

Town: Bridgeport
RSA Location: Main Street Near Rte 8
Meeting Location: 2nd Floor, OPED Conference Room A
Address: 999 Broad Street
Date: 9/9/2016
Time: 8:30 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Krystal Oldread	Aecom
Jacob Robinson	COB
Bridget Boucaud	VN Engineers Inc.
Melanie Zimyeski	CTDOT
Sabine Kuczo	Thomas Mert Ctr-CC
Steve Mitchell	Aecom
Anthony S. Armuno	Bridgeport PD
Joe Tiago	Bridgeport P.F
Robert Evans	Bridgeport PD



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Appendix C



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Road Safety Audit – Bridgeport

Meeting Location: 2nd Floor, OPED Conference Room A
Address: 999 Broad Street
Date: 9/9/16
Time: 8:30 AM

Agenda

- Type of Meeting:** Road Safety Audit – Pedestrian Safety
- Attendees:** Invited Participants to Comprise a Multidisciplinary Team
- Please Bring:** Thoughts and Enthusiasm!!
- 8:30 AM** **Welcome and Introductions**
- Purpose and Goals
 - Agenda
- 8:45 AM** **Pre-Audit**
- Definition of Study Area
 - Review Site Specific Data:
 - Average Daily Traffic
 - Crash Data
 - Geometrics
 - Issues
 - Safety Procedures
- 10:00 AM** **Audit**
- Visit Site
 - As a group, identify areas for improvements
- 12:00 PM** **Post-Audit Discussion / Completion of RSA**
- Discussion observations and finalize findings
 - Discuss potential improvements and final recommendations
 - Next Steps
- 2:30 PM** **Adjourn for the Day – but the RSA has not ended**

Instruction for Participants:

- Before attending the RSA, participants are encouraged to observe the intersection and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.



Audit Checklist

Pedestrians and Bicycles	Comment
<p>Pedestrian Crossings</p> <ul style="list-style-type: none">• Sufficient time to cross (signal)• Signage• Pavement Markings• Detectable warning devices (signal)• Adequate sight distance• Wheelchair accessible ramps<ul style="list-style-type: none">○ Grades○ Orientation○ Tactile Warning Strips• Pedestrian refuge at islands• Other	
<p>Pedestrian Facilities</p> <ul style="list-style-type: none">• Sidewalk<ul style="list-style-type: none">○ Width○ Grade○ Materials/Condition○ Drainage○ Buffer• Pedestrian lighting• Pedestrian amenities (benches, trash receptacles)• Other	



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

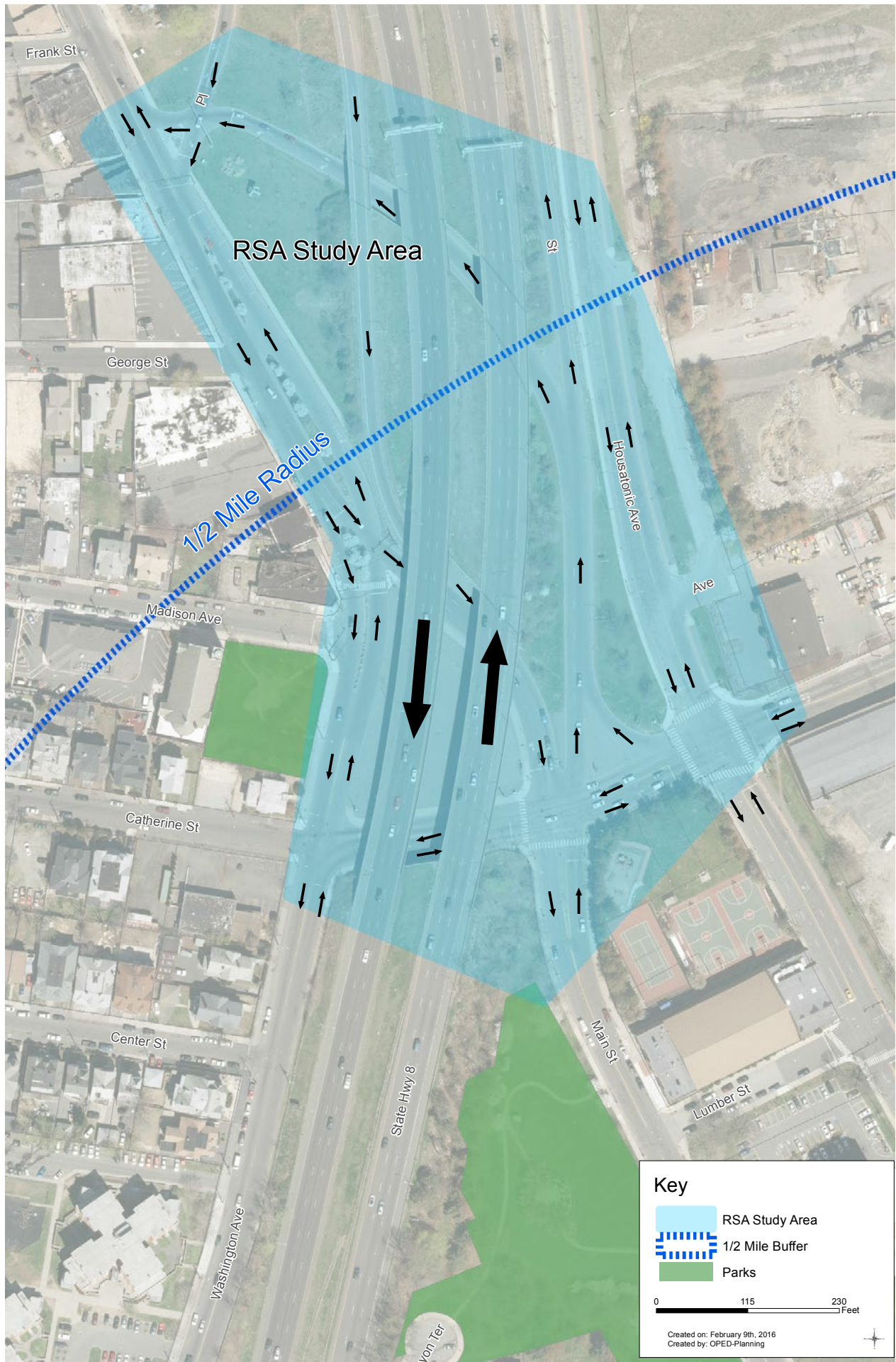
Roadway & Vehicles	
<ul style="list-style-type: none">• Speed-related issues<ul style="list-style-type: none">○ Alignment;○ Driver compliance with speed limits○ Sight distance adequacy○ Safe passing opportunities	
<ul style="list-style-type: none">• Geometry<ul style="list-style-type: none">○ Road width (lanes, shoulders, medians);○ Access points;○ Drainage○ Tapers and lane shifts○ Roadside clear zone /slopes○ Guide rails / protection systems	

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

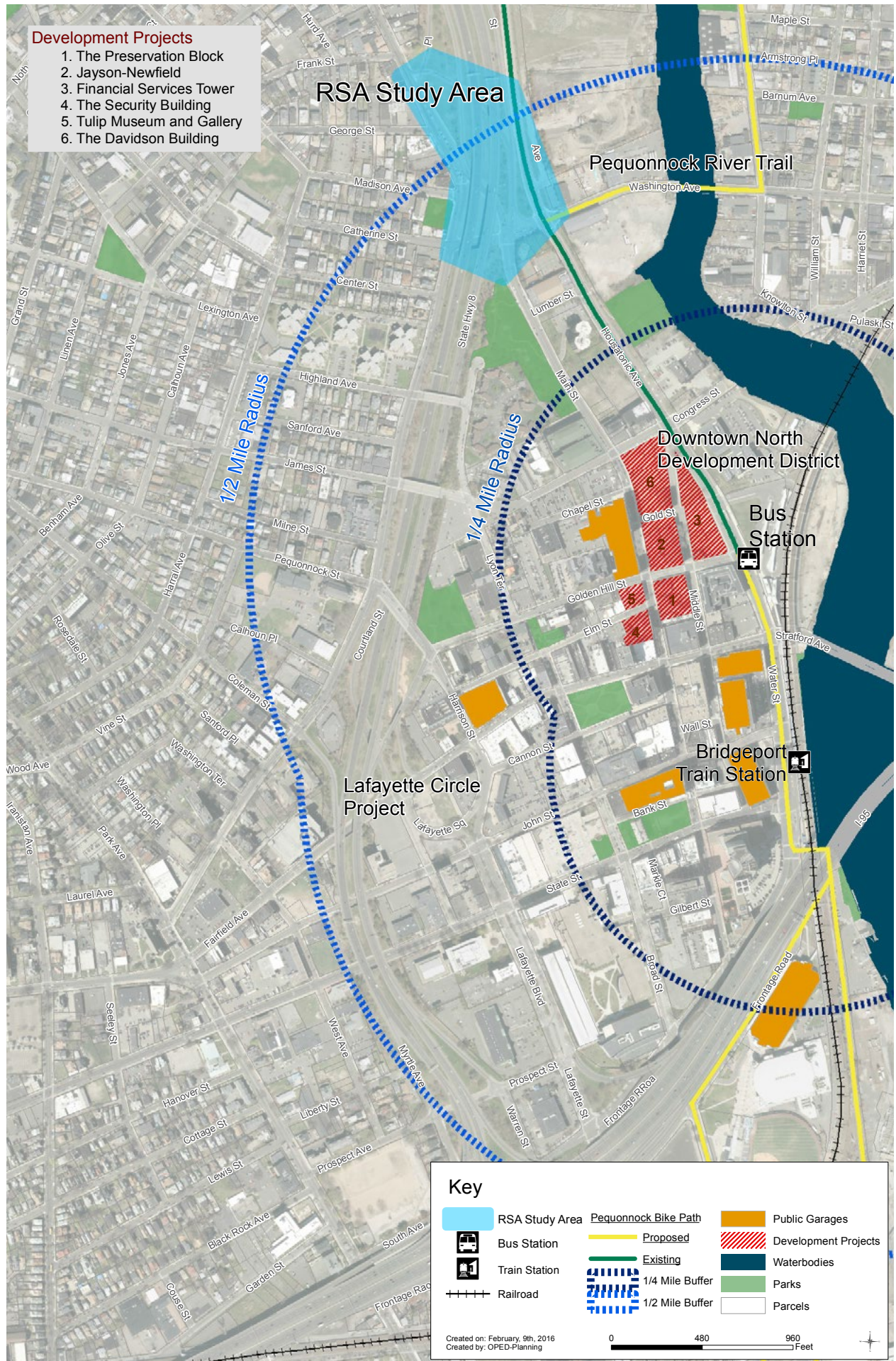


<ul style="list-style-type: none">• Pavement<ul style="list-style-type: none">○ Pavement Condition (excessive roughness or rutting, potholes, loose material)○ Edge drop-offs○ Drainage issues• Lighting Adequacy	
<ul style="list-style-type: none">• Signing<ul style="list-style-type: none">• Correct use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

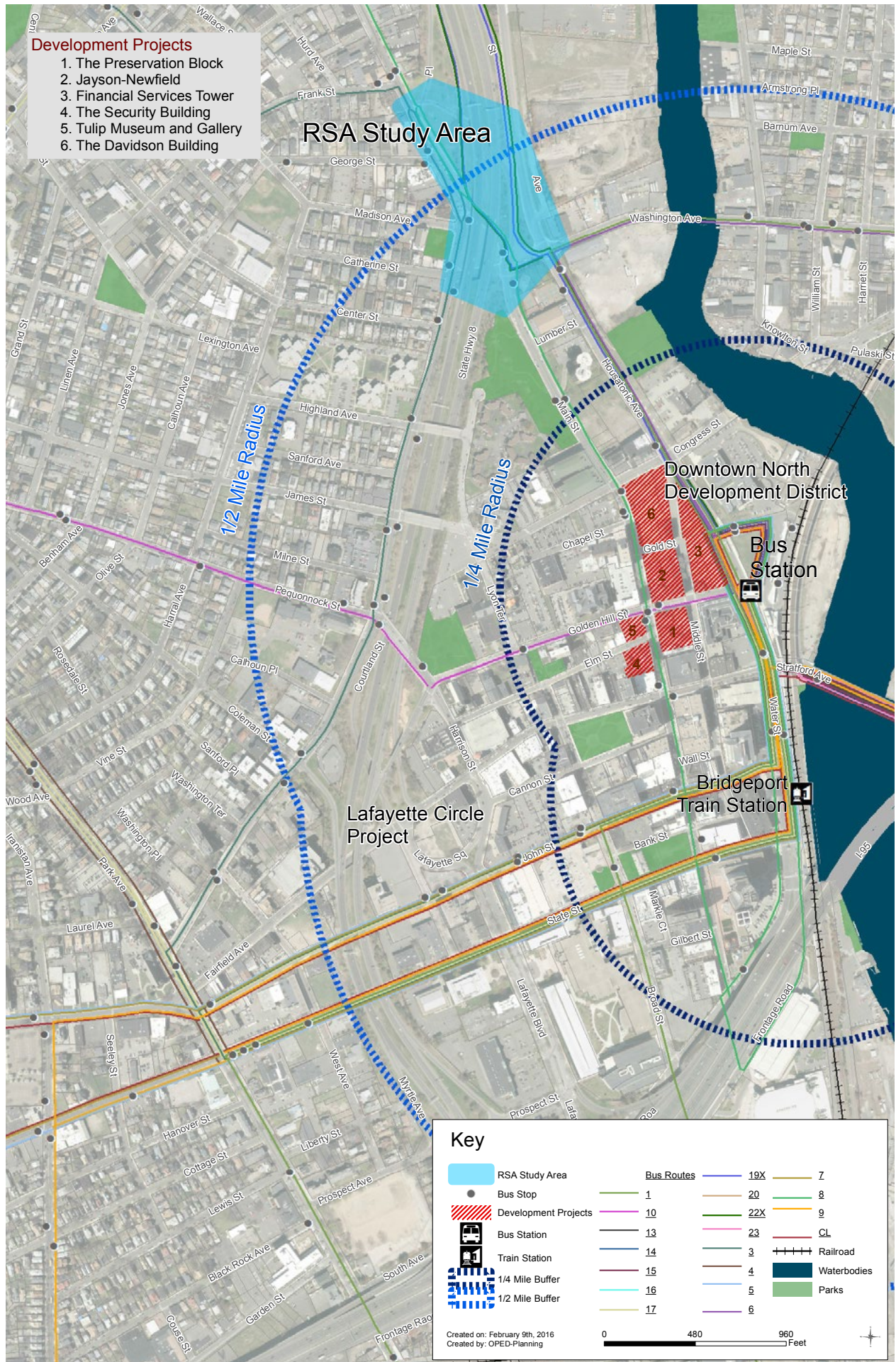
Map 1. RSA Study Area: State Route 8 and Main Street



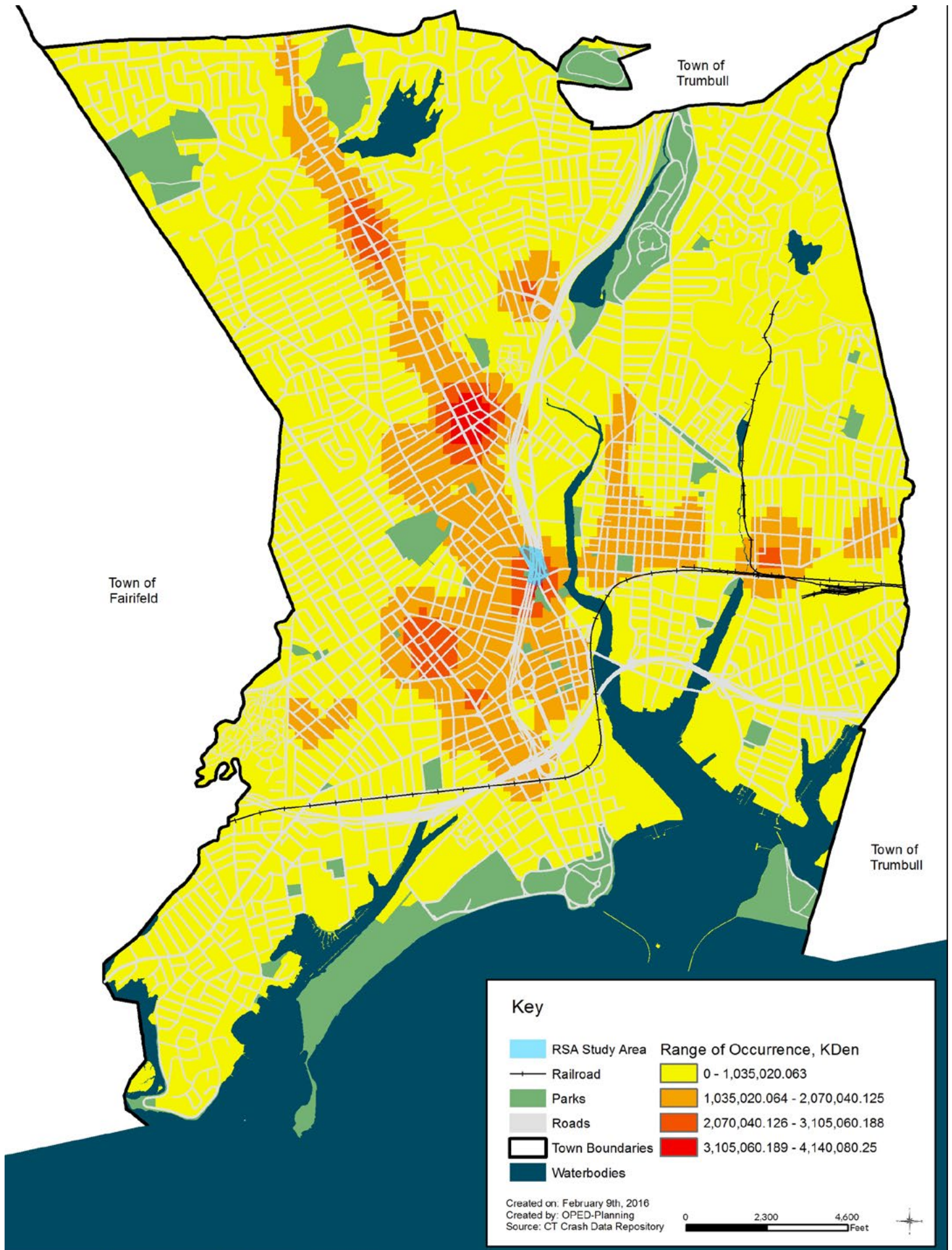
Map 2. RSA Study Area: Downtown North Developments and Bicycle and Pedestrian Facilities



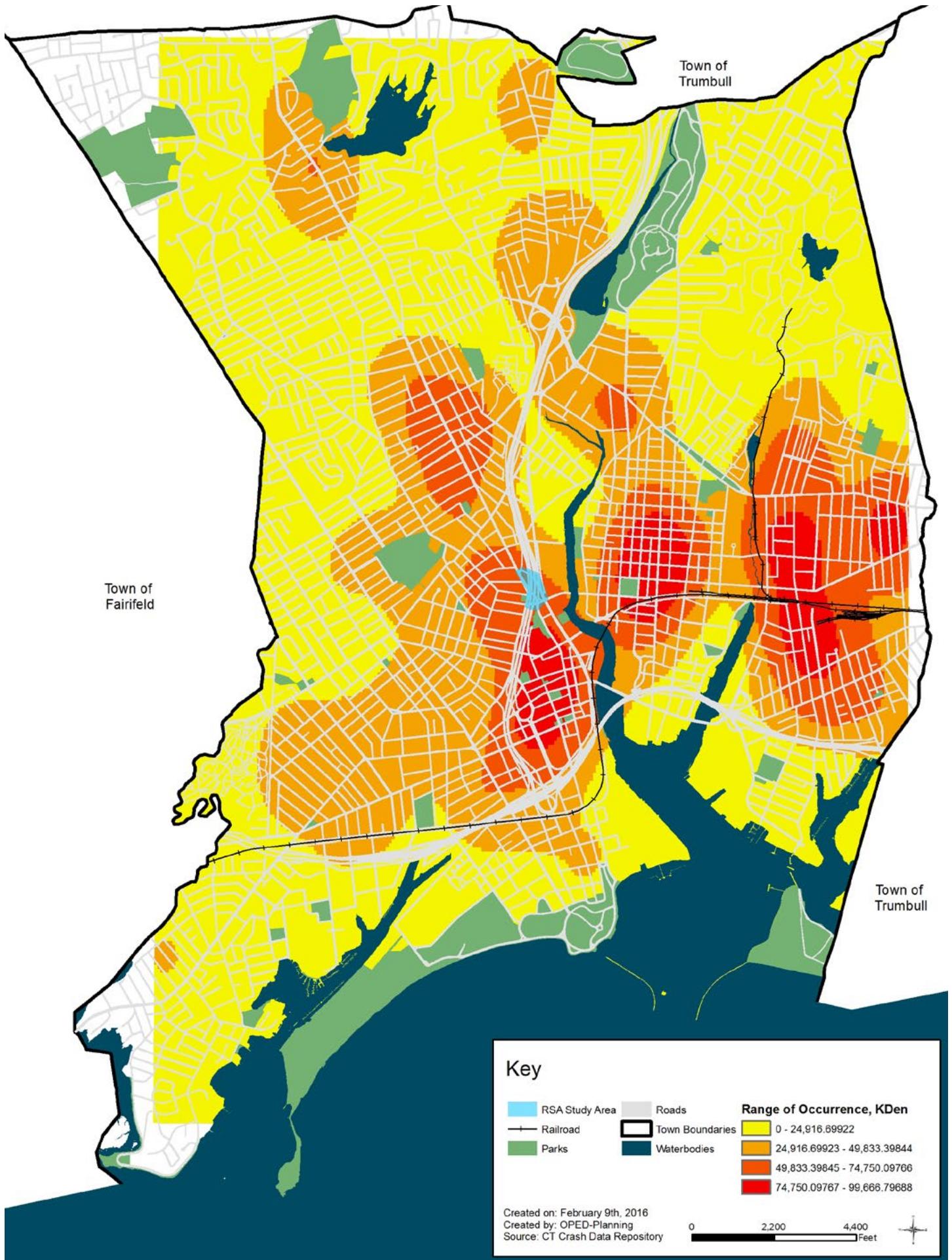
Map 3. RSA Study Area: Downtown North Developments, Bus Stops and Bus Routes



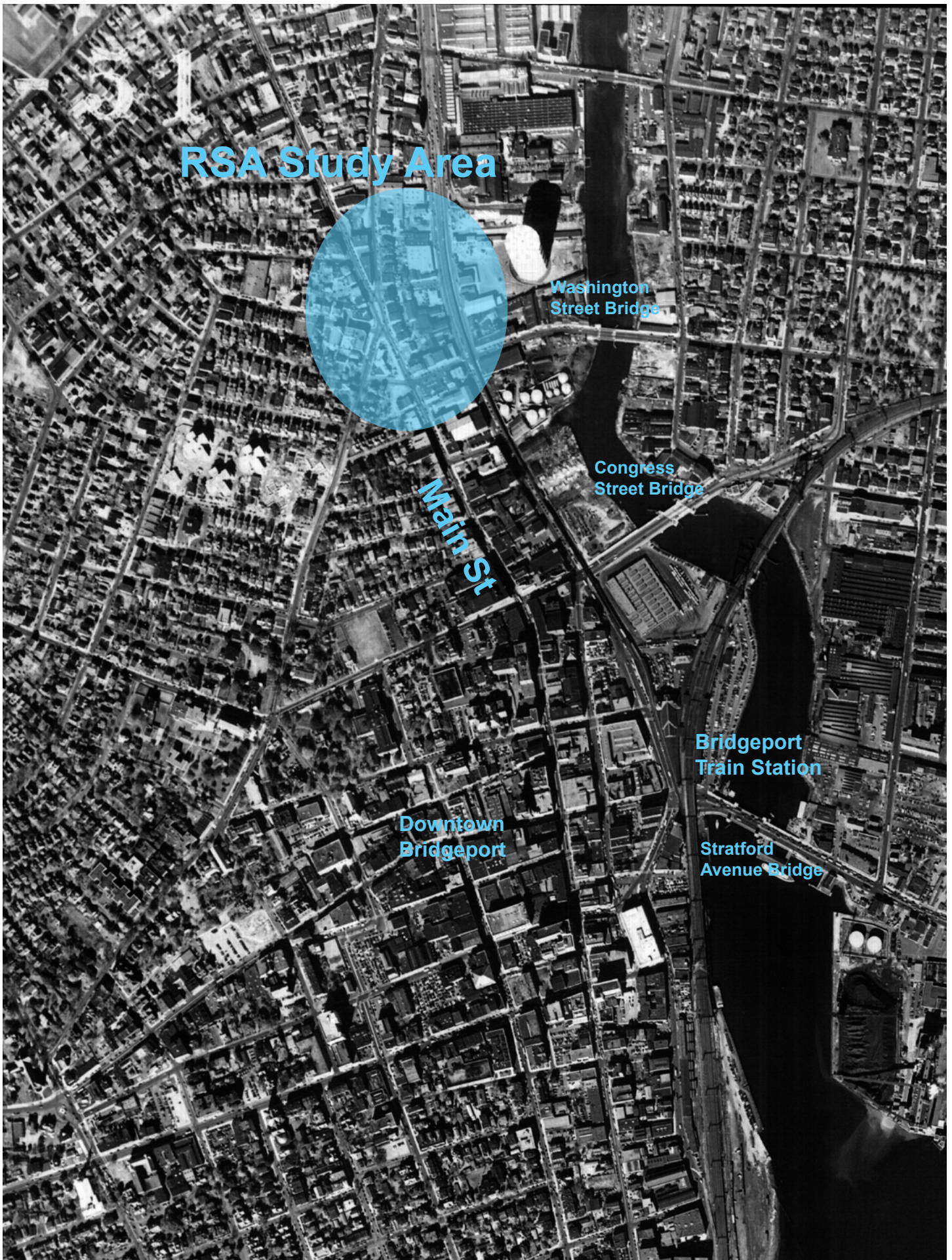
Map 4. City of Bridgeport: Occurrence of Crashes of All Transportation Modes in 2105



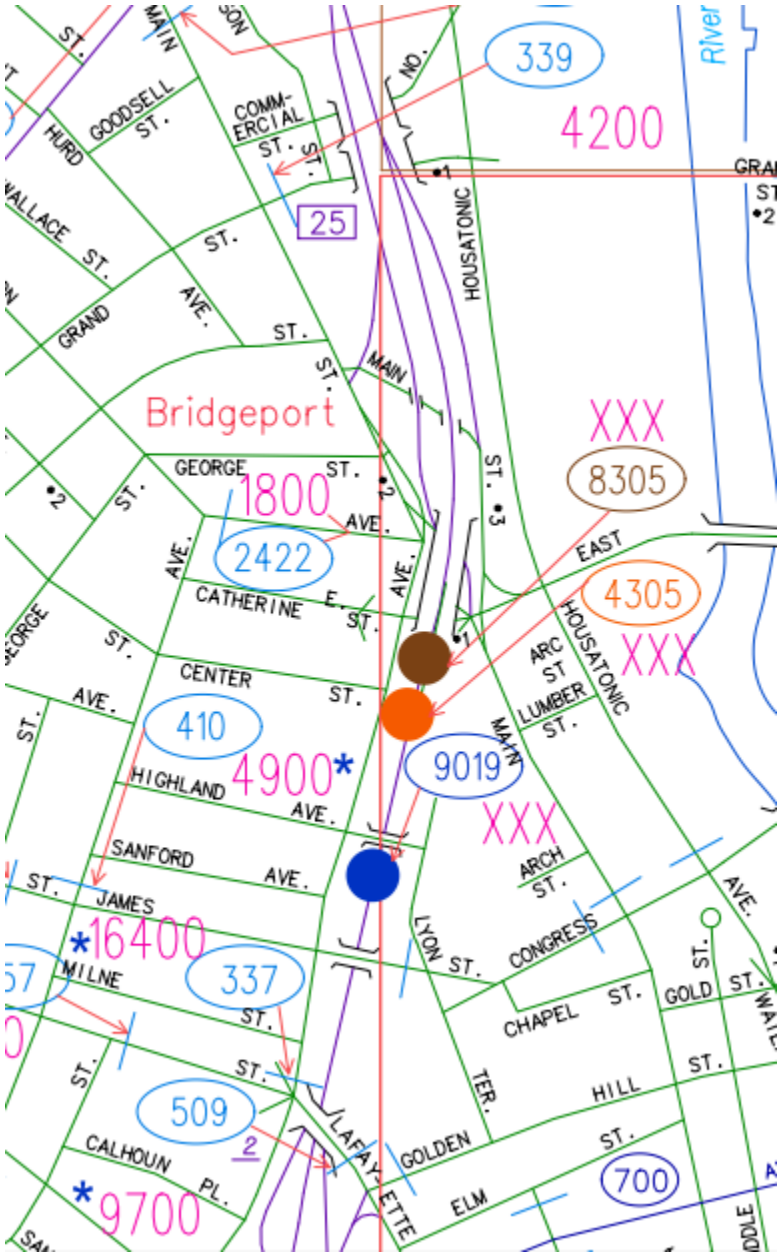
Map 5. City of Bridgeport: Occurrence of Nonmotorist Crashes in 2105



Map 6. Historic context showing increased connectivity before Route 8 construction in 1951



Average daily traffic (ADT)



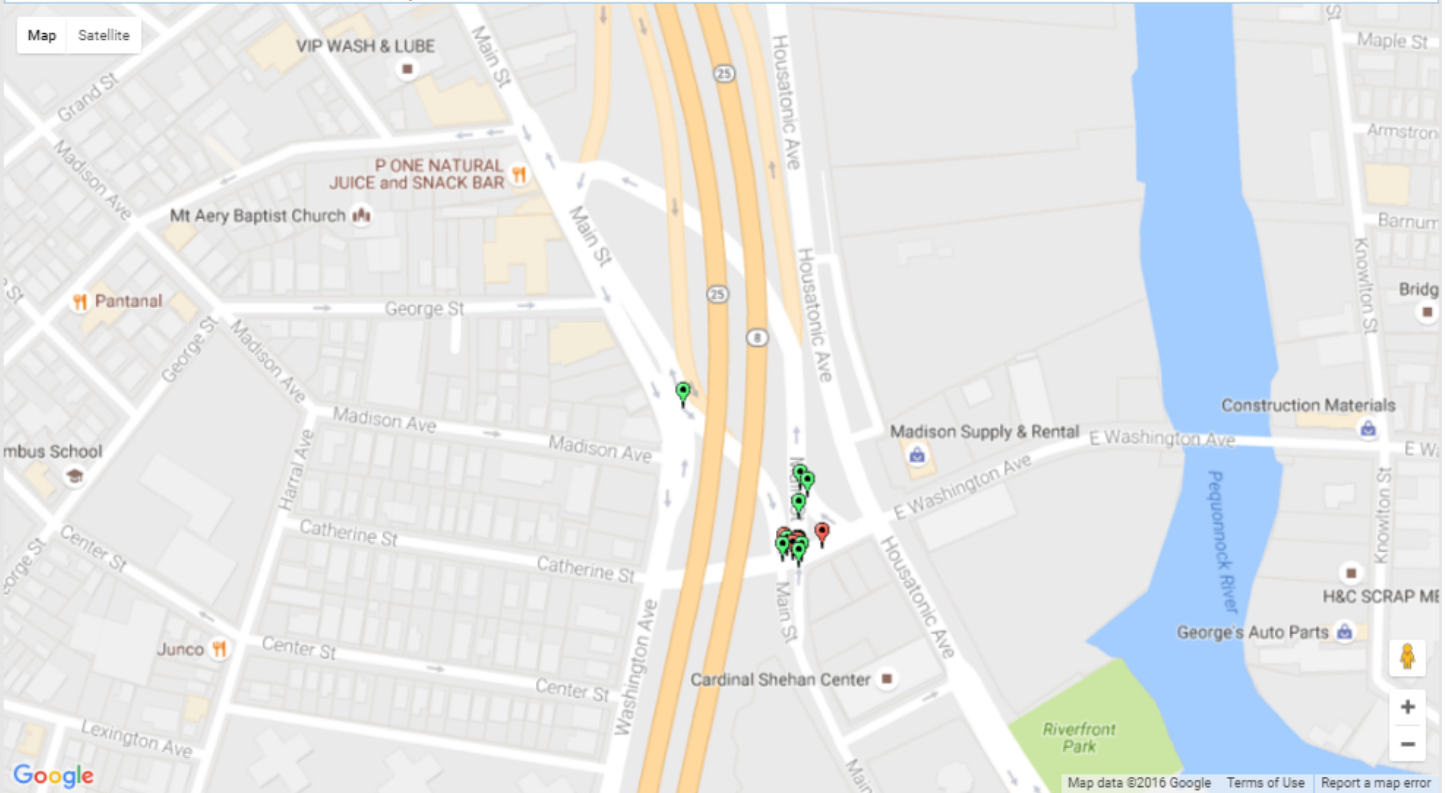
2015 Crashes

UConn

Connecticut Crash Data Repository

Search Criteria:

Dataset: mmucc
Date From: 01/01/2015
Date To: 12/31/2015
Towns: Bridgeport
Town & Route: Town: 15 Route: 1098 Intersection: undefined Milepost: -
Crash Severity: Injury of any type (Serious, Minor, Possible), Fatal (Kill), Property Damage Only
Case Status: Complete



Map data ©2016 Google Terms of Use Report a map error

Markers Heatmap Select & Query

- Injury of any type (Serious, Minor, Possible)
- Fatal (Kill)
- Property Damage Only

Query Selection

Select All
Deselect All

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

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



Road Safety Audit – Bridgeport

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	14	78%
Injury (No fatality)	4	22%
Fatality	0	0%
Total	18	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	1	6%
Rear-end	12	67%
Turning-Intersecting Paths	0	0%
Turning-Opposite Direction	3	17%
Fixed Object	0	0%
Backing	0	0%
Angle	1	6%
Turning-Same Direction	1	6%
Moving Object	0	0%
Parking	0	0%
Pedestrian	0	0%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	0	0%
Miscellaneous- Non Collision	0	0%
Total	18	



Weather Condition	Number of Crashes	
Snow	0	0%
Rain	2	11%
No Adverse Condition	16	89%
Unknown	0	0%
Fog	0	0%
Other	0	0%
Blowing Sand, Soil, Dirt or Snow	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Total	18	

Light Condition	Number of Crashes	
Dark-Not Lighted	0	0%
Dark-Lighted	2	11%
Daylight	16	89%
Dusk	0	0%
Unknown	0	0%
Dawn	0	0%
Total	18	

Road Surface Condition	Number of Crashes	
Snow/Slush	0	0%
Wet	3	17%
Dry	15	83%
Unknown	0	0%
Ice	0	0%
Other	0	0.0%
Total	18	



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

Bridgeport - Main St Near Rte 8



Legend

- Sidewalk
- Crosswalk
- Median
- On-street Parking
- Signal Controlled Intersection
- One Way Street
- Highway On/Off Ramp
- Triangular Channelizing Island
- Bridge or Culvert
- Steep Slope
- 2016 VIP Paving
- Study Area

DRAFT



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 – Bridgeport

Fact Sheet

Functional Classification:

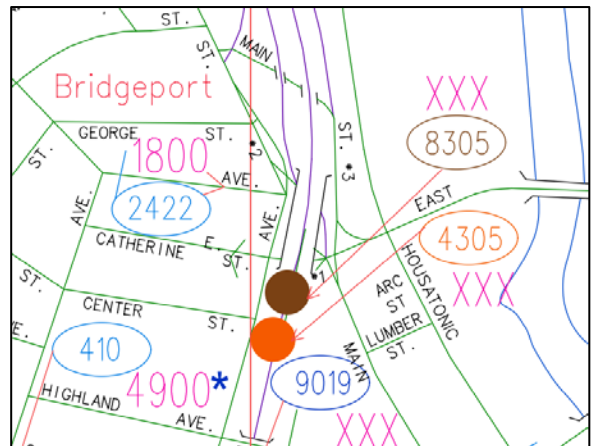
- Main Street is classified as a Principal Arterial

ADT

- ADT on Main Street is 10,000 – 16,400

Population and Employment Data (2014):

- Population: 146,680
- Employment: 42,959

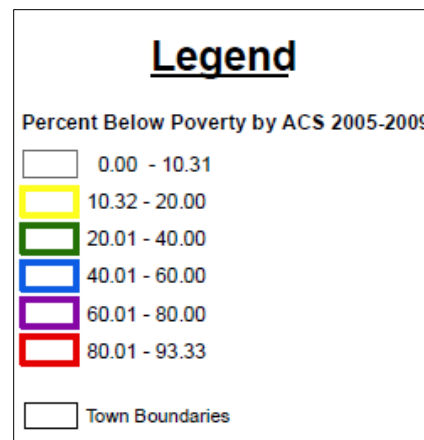


Urbanized Area

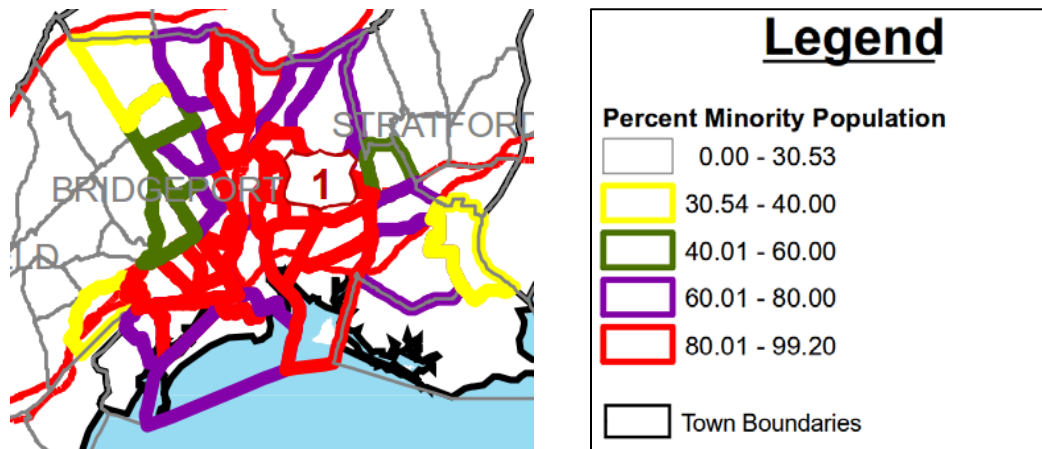
- Bridgeport is in the Bridgeport-Stamford Urbanized Area

Demographics

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



- The statewide average percentage minority population is 30.53%. Within the vicinity of Main Street up to 99.2% of residents are minorities.



Air Quality

- Bridgeport's CIPP number 102
- Bridgeport is within the NY/NJ/CT Marginal Ozone Area & $PM_{2.5}$ Attainment/Maintenance Area
- Bridgeport is within a CO Maintenance Area