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City of
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Massachusetts

PEDESTRIAN & BICYCLE COMPREHENSIVE PLAN

HEALTHY HAMPSHIRE
Mass in Motion

JANUARY 2017

PREPARED FOR THE CITY OF NORTHAMPTON BY
ALTA PLANNING + DESIGN WITH WATSON ACTIVE

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Pioneer Valley Planning Commission

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PART I

EXECUTIVE SUMMARY

VISION

The Vision for the Walk/Bike Northampton Plan is to make Northampton one of the top leaders in walk and bike friendly streets of any small city in New England. Pedestrians and bicyclists will be integrated into the City's projects, policies and programs. Planning, design and implementation of roadway, public works and transit projects will accommodate pedestrians and bicyclists of all abilities. The non-motorized transportation system in the city will encourage mode shift and improve safety, the environment, health, and quality of life for residents, visitors and businesses. A bicycle and pedestrian-friendly Northampton will be a more green, affordable and sustainable city with improved mobility and economic vitality.

1. GOALS, OBJECTIVES, STRATEGIES + ACTIONS

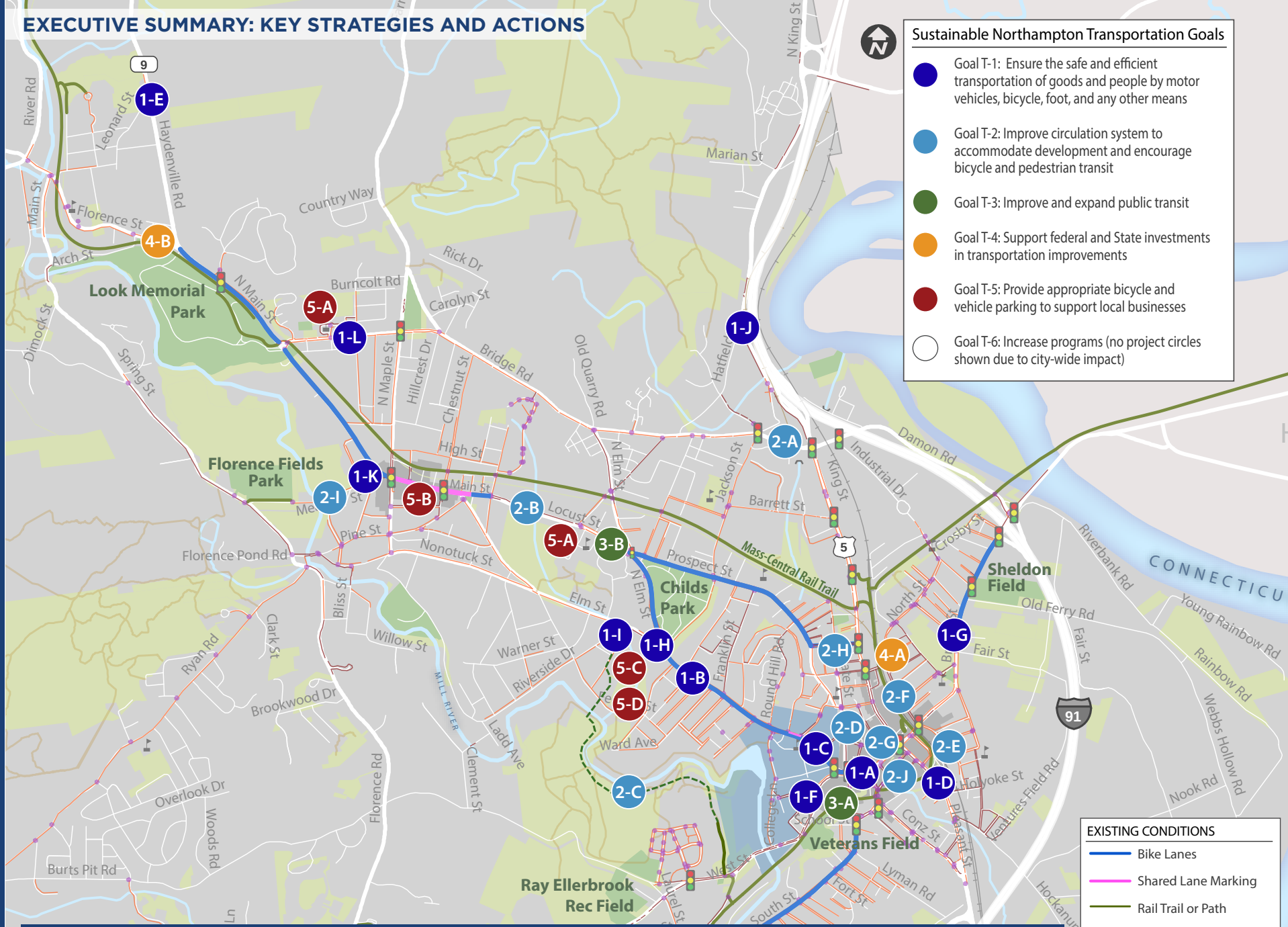
The City of Northampton aims to increase walking and bicycling by residents and visitors of all ages and abilities. The goals and objectives of the Walk/Bike Northampton Plan will guide the development and implementation of the City's sidewalk, trail and bicycle network and programming for years to come. Collectively, they support the City's vision, and are consistent with and build upon the City's current transportation goals, objectives, strategies and actions found within the Sustainable Northampton Comprehensive Plan.

A **Vision** is a broad inspirational statement for the desired future state of the city. (See blue box above.)

Goals are general statements of what the City and residents hope to achieve over time.

Objectives are more specific statements that mark progress towards the goal.

Strategies and **Actions** reference the project and program recommendations that will move the City closer to achieving its goals and objectives.



The projects referenced on this map represent the key Strategies and Actions from the Northampton Pedestrian and Bicycle Comprehensive Plan. In aggregate, they help to complete key gaps in the City's existing walking and bicycling network and improve safety and connectivity. As this portion of the pedestrian and bicycle plan is ultimately incorporated into the 2018 update of the Sustainable Northampton Comprehensive Plan, it will provide a blueprint for the city to become a more walkable and bikable community and help to offset the community's overall carbon footprint. It also aims to promote new businesses and further attract new residents interested in a small city that puts an emphasis on a high quality of life.

Goal T-1: Ensure the safe and efficient transportation of goods and people by motor vehicles, bicycle, foot, and any other means.

Objectives:

1. Maintain an efficient transportation system.

2. Maintain a transportation system that reduces air pollution and minimizes congestion.

3. Ensure that environmental impacts are considered and adverse effects are minimized on all transportation projects.

4. Reduce use of single occupancy vehicles.

5. Ensure that safety is a primary goal in transportation improvements, systems, and operations, both to reduce crashes and to ensure that both vehicular and non-vehicular modes of traffic are safe and attractive to all users on all roads.

6. Participate in regional efforts to improve utilization of intelligent transportation systems.

7. Develop a public transit plan in coordination with Pioneer Valley Transit Authority and Pioneer Valley Planning Commission.

8. Ensure that the needs of transit services, bicycle, pedestrian, and wheelchairs are considered and addressed in the design, construction, and management of every project affecting the transportation system.

9. Ensure that bicycle infrastructure incorporates current best practices such as separated bike lanes into the planning and design of the facilities

10. Improve the design of key intersections with tighter turning radii, well-designed crosswalks and audible signals with countdowns; where space is available, plan to convert appropriate intersections to roundabouts in the long term.

11. Emphasize walking and bicycling infrastructure enhancements in areas that improve connectivity to schools, commercial districts and bus stops.

Strategies + Actions

1-A. Main Street Redesign (Downtown Inset Projects #43-47) – More than any other recommended project, the redesign of Main Street would improve safe and efficient transportation, especially for people walking and bicycling downtown. The redesign will include a more-efficient channelization of traffic, improved signals, separated bicycle lanes, new crosswalk islands, bump outs, shorter crosswalks, wider sidewalks (in places), new streetscape and landscape elements that improve storm water management. Future design for Main Street will also incorporate areas for deliveries and minimize any reduction in curb side parking downtown. (Responsible agencies: *Mayor's Office, Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee*)

1-B. Elm Street Separated Bike Lanes (Downtown Inset Project #18) – The current striped bicycle lanes on Elm Street provide an adequate facility for bicyclists with moderate-to-high levels of experience and confidence riding in the roadway adjacent to traffic. Although additional study is required—especially at the intersections—it may be possible to flip the orientation of the parking and the bike lane, so that parked cars buffer bicyclists from moving traffic. Separated bike lanes are on-street bike facilities but intended to evoke a similar feeling of separation as riding along a rail trail or path. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee*)

1-C. Removal of gaps in Elm Street Bike Lanes (Downtown Inset Project #19 & 51) – In order to create a seamless bike facility along Elm Street from downtown to Cooley Dickinson Hospital, a small number of parking spaces should be removed. Gaps in the bike lanes can be eliminated with the removal of parking on one side between Prospect Street and Bedford Terrace and

on the north side of Elm, just east of the North Elm/Elm intersection. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee; note: will require outreach to Smith College*)

1-D. Pleasant Street Traffic Calming (Downtown Inset Project #60) – A raised crossing, curb extensions and related drainage improvements at the rail trail crossing will improve safety and efficiency of pedestrian and bicycle traffic across Pleasant Street. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee*)

1-E. Leonard Street Traffic Calming (Florence Inset Project #19) – Improved geometry at the Leonard Street intersection with Route 9/ Haydenville Road will help to slow traffic, discourage cut through traffic and improve pedestrian safety. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee*)

1-F. West Street Crossing (Downtown Inset Project #88) – A raised crosswalk and curb extensions at the West Street crossing at Green Street will reduce the crossing distance for pedestrians and reduce traffic speeds on the approach to the Smith campus area. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee; note: will require outreach to Smith College*)

1-G. Bridge Road Crossing (Downtown Inset Project #4) – A raised crosswalk and curb extensions at the Bridge Road crossing at Orchard Street will reduce the crossing distance for pedestrians and reduce traffic speeds to provide a safer connection to Lampron Park. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, Parks and Recreation and Transportation and Parking Committee)*

1-H. Elm and N Elm Street Crossing (Downtown Inset Project #16) – Curb extensions at the Elm/N Elm intersection and the Elm/Woodlawn intersection will reduce the crossing distance and improve safety for students looking to reach Northampton High School. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, School Department and Transportation and Parking Committee)*

1-I. Milton Avenue and Riverside Drive Intersection (Downtown Inset Project #70) – To improve safety for all roadway users—drivers, bicyclists and pedestrians—Milton should be "T-ed" into Riverside drive to create a more orthogonal intersection and reducing the length of the current crosswalk across both roadways where they meet Elm Street. Potentially replacing the currently complex intersection with a mini roundabout is worthy of future study as well. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

1-J. Hatfield Street/King Street intersection (Citywide Map Project #10) – To improve the wide intersection geometry that creates a challenging environment for pedestrians and bicyclists, replacement with a roundabout is in the planning stages and should be moved forward into final design and implementation. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

1-K. Improvements at N Main, Meadow and Park (Florence Inset Projects #24 and 26) – In order to activate the small common space in Downtown Florence, intersection improvements are needed to enhance pedestrian connectivity and safety. This includes raised crosswalks and curb extensions at the Meadow and Park intersections with N Main along with a long-term plan to address the complex Meadow/Park intersection adjacent to the Lilly Library. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

1-L. Bridge Road Bike Lanes (Florence Inset Project #3) – Bike lanes along Bridge Road between North Maple and N Main Street would improve connectivity and safety for JFK Middle School students who bicycle to school. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

Goal T-2: Improve circulation system to accommodate development and encourage bicycle and pedestrian transit.

Objectives:

1. Ensure that all new privately built streets include sidewalks, consistent with the Northampton Subdivision Regulations. When feasible and practical, concrete sidewalks on two sides of a street are most desirable.

2. Calm traffic to preserve pedestrian safety and encourage pedestrian activity in neighborhoods and villages. See Also: Transportation Goal T-1 Traffic Calming

3. Transform the Northampton Bike Path and Norwottuck Bike paths/multi-use trail into a complete rail-trail network and increase the number of spur connections to/from the rail-trails to adjacent neighborhoods, commercial districts and schools.

4. Ensure that economic development goals are considered and balanced with other City goals in all transportation objectives, decisions, and improvements

5. Upgrade transportation and public utilities to facilitate expansion of the commercial/industrial site inventory in identified growth areas

6. Ensure pedestrian, bicycle, non-motorized travel, and transit are addressed in every development project.

7. Ensure that public transit stops are located at industrial parks and commercial centers.

8. Close gaps in the pedestrian and bicycle network and address barriers to walking and cycling with new sidewalks, crosswalks, bike lanes, and improved shared lanes where striped bike lanes are not feasible.

9. Target walking and bicycling infrastructure treatments for all ages and abilities.

10. Target walking and bicycling planning and investment that reach a wide variety of neighborhoods regardless of economic status or demographics.

Strategies + Actions:

2-A. Bridge Road Sidewalk (Citywide Map Project #1) – The stretch of Bridge Road between Jackson and King Street is one of the most significant gaps in Northampton's walking network. A new sidewalk on at least the south side of the street would improve circulation between areas of low income housing and the King Street commercial district. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-B. Locust Street Bike Lanes (Florence Inset Project #20) – The stretch of Locust Street between Straw Ave/Berkshire Terrace and N Elm Street is one of the most significant gaps in Northampton's bicycling network. The roadway is wide enough to accommodate striped bike lanes, potentially enhanced with a painted buffer and/or delineator posts for additional visual separation between motor vehicles and bicyclists. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-C. Hospital Hill Trail Extension (Downtown Inset Project #32) – The currently-paved portion of the Hospital Hill Trail runs for a short distance north of West Street until it becomes a dirt path. This major trail project would extend the paved trail section along the Mill River and cross the river in order to connect to the high school, via Milton Street. The project also includes spur trail connections to the Village Hill neighborhood and to Burts Pit Road. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works and Northampton Conservation Commission)*

2-D. State Street Sidewalk (Downtown Inset Project #82) – The new sidewalk along the west side of State Street between Main Street and Center Street will fill one of the few sidewalk gaps

downtown. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-E. Hawley Street Sidewalk (Downtown Inset Project #26) – The existing sidewalks on Hawley Street are narrow asphalt walkways without proper curb ramps in some locations. This recommendations is for a newly built sidewalk that meets all ADA standards from Bridge Street to Holyoke Street. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-F. Hawley/Holyoke Street Bicycle Boulevard (Downtown Inset Project #30) – As a low-volume route that parallels Pleasant Street and King Street, the Hawley/Holyoke corridor has potential to be a critical part of Northampton's bicycle circulation network. To encourage bicycling, new shared lane markings, signage, and potential traffic calming features are recommended in order to create a "bicycle boulevard", a shared street that emphasizes bicycle safety over motorist speed and convenience. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-G. Gothic and Trumbull Street Bicycle Safety (Downtown Inset Project #24) – The Gothic/Trumbull corridor is a low-volume route that allows bicyclists to avoid busy sections of Main Street and State Street, and has potential to be a critical part of Northampton's bicycle circulation network. To encourage bicycling, new shared lane markings, signage, and potential traffic calming features are recommended in order to create a "bicycle boulevard". (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-H. State Street Traffic Calming (Downtown Inset Project #81) – State Street offers the potential for a more-direct link between the MassCentral Rail Trail and Main Street for bicyclists coming downtown from Florence and Leeds. Traffic calming and other bicycle facility improvements are required to make most bicyclists and potential bicyclists comfortable along State Street, especially between Finn and Main. To do so requires a number of traffic calming strategies such as raised crosswalks, additional signage, shared lane markings and bike lanes where space is provided. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-I. Meadow Street Sidewalks (Florence Inset Project #25) – New sidewalks along Meadow Street from N Main Street to Corticelli Street will close an important gap in Florence's walking network. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

2-J. Kirkland Avenue Alley Improvements (Downtown Inset Project #41) – Though it provides a convenient connection between the parking lots on Armory Street and Pleasant Street, the Kirkland Avenue alley is in need of better lighting, surface materials and street furniture to become a safe and comfortable space for pedestrians. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

Goal T-3: Improve and expand public transit

Objectives:

1. Leverage regional collaborations to increase funding for provision of public transit services, including shuttles where appropriate.

2. Consider transportation associations that include memberships of local businesses and government to support public transit.

3. Develop Transit Oriented Development guidelines with incentives.

4. Encourage increased use of transit options.

5. Provide reasonable options for public transit based on need, cost, and funding.

6. Develop a public transit plan in cooperation with the PVTA and PVPC to expand and enhance the transit system to the level that it is economically viable and supported by ridership.

7. Participate in regional efforts to consider the expansion of passenger rail service along the North-South rail links with service to Northampton.

Strategies + Actions

3-A. Main Street Redesign (Downtown Inset Projects #43-47) – Part of the schematic redesign for Main Street includes the incorporation of an improved PVTA Pulse point adjacent to Pulaski Park (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee, in coordination with the Pioneer Valley Transit Authority)*

3-B. Bike Share Program (See Section 8 of this report) – Because of Bike Share programs' typical orientation towards short, utilitarian trips—rather than for recreational riding—they are designed to complement a city or region's public transit network. As such, some of the recommended station locations are planned to be adjacent to the PVTA Pulse Point, the Amtrak station, the bus station and a key bus stop adjacent to Smith College. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

Goal T-4: Support federal and State investments in transportation improvements

Objectives:

1. Compare the State Transportation Improvement Plan and regional Transportation Improvement Program with the goals and objectives of Sustainable Northampton to ensure compatibility.

2. Review the State Transportation Improvement Plan and regional Transportation Improvement Program to ensure investments are programmed for the City.

3. Ensure the plans can provide support to all sectors and areas of the City.

Strategies + Actions

4-A. MassCentral Rail Trail access at North Street (Downtown Inset Project #60) – In order to maximize the long term investments made in Northampton's rail trail network—including the 2017 Norwottuck Trail underpass project—improved access points and spur trails are needed. An ADA connection from the rail trail to North Street via Edwards Square would satisfy an obvious desire line and current use patterns. The link would also enhance connectivity from the rail trail to the commercial district along King Street. (Responsible agencies: *Department of Planning*

& Sustainability, Department of Public Works, and Transportation and Parking Committee)

4-B. MassCentral Rail Trail access at N Main Street in Leeds (Florence Inset Project #13) – In order to maximize the long term investments made in Northampton's rail trail network, improved access points and spur trails are needed. Currently, there are very limited connections from the Leeds community to the rail trail. A trail connection to/from N Main Street utilizing a long ramp up the embankment would improve access, use and safety of the trail. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Transportation and Parking Committee)*

Goal T-5: Provide appropriate bicycle and vehicle parking to support local businesses.

Objectives:

1. Create additional spaces to meet current and future anticipated parking demands for vehicles and bicycles while also applying demand management solutions for better utilization.

2. Utilize strategies to minimize parking demand and maximize alternative transportation.

3. Develop parking structures or decks north of Main St. to meet parking needs.

4. Improve the operation of parking in the downtown and village centers.

5. Ensure reasonable access to businesses and services is available to all residents and visitors.

6. Ensure plentiful bike parking in all commercial districts of the city, at schools, public buildings, transit hubs and key destinations

Strategies + Actions

5-A. Enhanced Bike Parking at the JFK and Smith Voc-Ag Schools (Florence Inset Project #22) – In order to promote bicycling to school for students and staff, additional racks are recommended, including a significant percentage that are protected from the elements. The new racks should replace existing bike racks that do not meet current standards for security, access and circulation. (Responsible agencies: *Department of Planning & Sustainability, School Department and Department of Public Works)*

5-B. Enhanced Bike Parking in Downtown Florence (Florence Inset Project #32) – The current lack of bike racks in Downtown Florence discourages bicycling to the commercial district. New racks that meet current standards should be installed in various locations along Main Street between Park Street and South Main. (Responsible agencies: *Department of Planning & Sustainability, School Department and Department of Public Works)*

5-C. Enhanced Bike Parking at Northampton High School (Downtown Inset Project #59) – In order to promote bicycling to school for students and staff, additional racks are recommended, including a significant percentage that are protected from the elements. The new racks should replace existing bike racks that do not meet current standards for security, access and circulation. The new racks will complement the proposed two-way cycle track on the former Elm Street right of way in front of the high school, per Downtown Inset Project #20. (Responsible agencies: *Department of Planning & Sustainability, School Department and Department of Public Works)*

5-D. Funding Program for New Bike Parking at the High Schools – One potential method to raise funding for new bike parking is to raise parking fees (with needs-based exceptions, however) at the two high schools in Northampton. (Responsible agencies: *Department of Planning & Sustainability, School Department and Department of Public Works)*

Goal T-6: Increase walking and bicycling trips through education, encouragement, enforcement and evaluation programs

Objectives:

1. Support the establishment of a walk/bike safety education curriculum in schools, as well as through recreation and commuter programs for adults that focuses on bicycle safety.

2. Work with advocates and business interests to promote walking and bicycling through events (e.g. walk/bike to work day, community bike rides), friendly competitions (e.g. walk/bike commute challenge) and awards (e.g. Mayoral recognition to bike friendly businesses)

3. Target walking and bicycling education and encouragement programs in neighborhoods throughout Northampton, with particular focus on those that have not traditionally been involved with such programs.

4. Conduct annual trainings with public safety staff, planners, engineers, parks and recreation and other staff on policies and programs related to walking and bicycling.

5. Establish a city-wide bike share program in coordination with other regional jurisdictions, and with a focus on equitable distribution of stations.

6. Track the number of people walking and bicycling in the spring and early fall, using automated counters at key locations on city streets and on the rail trails.

7. Train local police to ensure proper enforcement of laws related to walking and bicycling; promote compliance to these laws through education efforts such as printed materials, mailers, PSA's, and through social media outlets to the wider community.

8. Designate a part-time Pedestrian and Bicycle Coordinator position to focus on the implementation of pedestrian and bicycle-related policy, program and project recommendations.

9. Gather key data metrics related to the number of miles of designated bike facilities, the bike commute mode share and crashes involving injury and death in order to provide back-up material for Bike Friendly Community applications.

Strategies + Actions

6-A. Children's Walking/Bicycling Education – An in-school "transportation literacy" program can teach and repeatedly reinforce traffic safety and safe interactions for children who walk or bicycle to school; this could also involve a more-robust Safety Village program. (Responsible agencies: *Department of Parks and Recreation and School Department)*

6-B. Seniors' Bicycling Education – Senior's bicycle education and training workshops can be held at the Northampton Senior Center and elsewhere to encourage additional mobility for older members of the community. (Responsible agencies: *Department of Parks and Recreation and Northampton Senior Services)*

6-C. Driver Behavior Education – Coordinate a public outreach campaign with PSAs and mailers to educate residents about safe interactions between motorists and walkers and bicyclists. (Responsible agencies: *Northampton Police Department and Transportation and Parking Committee)*

6-D. Nighttime Visibility Education - Develop an education campaign targeting appropriate and legal use of lights and reflective clothing for bicycling in Northampton after dark. (Responsible agencies: *Northampton Police Department and Transportation and Parking Committee)*

6-E. School-based Encouragement Programs – Create school-based Encouragement programs such as walking school buses, bike trains and neighborhood walk/bike route maps. (Responsible agencies: *Department of Parks and Recreation and*

School Department, perhaps with assistance from MassDOT's Safe Routes to School program)

6-F. Bike Maintenance Stands – To encourage more bicycling in the City, especially along the rail trails, downtown and to/from schools, publicly-accessible bike maintenance stands (and potentially drinking fountains) should be located in strategic positions (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, Parks & Recreation and the School Department)*

6-G. Open Streets Events – To encourage walking and bicycling for transportation and recreation, Open Streets events, pop-up bike lanes and other tactical urbanism projects should be scheduled on a regular basis. (Responsible agencies: *Department of Planning & Sustainability, Department of Public Works, and Parks & Recreation)*

6-H. Crosswalk Enforcement Campaign – Because motorists frequently fail to yield to pedestrians in crosswalks, additional enforcement, education stops/warnings and decoy operations are recommended. (Responsible agencies: *Police Department and Transportation and Parking Committee)*

6-I. Speed Enforcement Campaign – Because speeding presents a clear danger to pedestrians and bicyclists, targeted enforcement actions in strategic areas of the City—especially near schools and senior housing locations—are recommended. (Responsible agencies: *Police Department and Transportation and Parking Committee)*

6-J. Pedestrian and Bicycle Counts – Supplement the pedestrian and bicycle counts conducted by the Pioneer Valley Planning Commission and the Central Transportation Planning Staff with additional on-street locations in order to track changes in walking and bicycling behavior in different parts of the city (Responsible agencies: Department of Planning & Sustainability, in coordination with the Pioneer Valley Planning Commission and with help from local bicycle advocates and other volunteers)

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PART II

EXISTING CONDITIONS

2. EXISTING CONDITIONS: INTRODUCTION

Part II of the Pedestrian and Bicycle Comprehensive Plan includes summaries of pertinent existing studies, reports and policies that will inform the plan's future infrastructure, program and policy recommendations. In addition, it provides an assessment of current walking and bicycling conditions, including gaps in the walking and bicycling network. Other maps show transit routes in Northampton, as well as traffic volumes on key streets. A combination of GIS-based data, field work, and input from the City's Project Advisory Committee was used to develop the analysis. The City's Bicycle and Pedestrian Subcommittee served as the project advisory committee. The map analysis was be used to create recommendations for an integrated network of sidewalks, crosswalks, enhanced intersections, rail trail improvements and on-street bicycle facilities presented in Part III of this report.

The following section contains a synopsis of six reports that rely on common themes of creating a safer and more pleasant streetscape environment for the citizens and visitors of Northampton. The reports include a Wayfinding Pilot Program, Walk/Bike Assessment, Parking Management Study, Feasibility Study for Regional Bike Share, Open Space and Recreation / Multi-Use Trail Plan, and the Sustainable Northampton Comprehensive Plan. In each of the reports, common themes of adding appropriate signage for pedestrians, motorists, and cyclists, reducing motor vehicle congestion downtown, increasing the ability, safety, and comfort of cyclists and pedestrians on sidewalks, roads, and crosswalks, providing safe access to rail trail corridors. The Bike Share Feasibility Study recommends introducing a regional Bike Share system in key locations through-out the city and extending into the Pioneer Valley. The Open Space plan has been adopted by 10 municipal boards and provides a blueprint for the long term development and infrastructural upgrades in the future, including providing sidewalks within a mile of all schools and creating a detailed map available to the public of the City's existing and planned bicycle network.

3. ADOPTED PLANS, REPORTS & POLICIES

3.1 Summary of Adopted Plans + Reports

Northampton Walk / Bike Assessment: Main Street, Northampton, MA (January 2016)

Prepared for: Massachusetts Department of Transportation Bicycle and Pedestrian Safety Awareness and Enforcement Program

Prepared by: Toole Design Group, WalkBoston, MassBike

Plan Overview: Northampton is one of 18 communities participating in MassDOT multi-disciplined program to improve bicycle and pedestrian safety in Massachusetts. A component of the program is to conduct walk and bike assessments, identify challenges, and make short and long-term recommendations. For this effort, WalkBoston, MassBike and Toole Design Group conducted the assessment of pedestrian and bicycle infrastructure along Main Street (Route 9) in October 2015. Overall, the team found that pedestrian and bicycle movement along Main Street is compromised by the width of the roadway, multiple undefined travel lanes, poor sight lines adjacent to parked cars, long crosswalks, complex intersections and head-in angled parking (for bicyclists). Of note is that there have been several crashes involving pedestrians and bicyclists along the corridor, including one fatality.

Key Findings and Recommendations:

General Improvements:

- Reroute truck traffic on a different route to bypass Main Street through downtown
- Reconfigure the roadway width and, in places, geometry of travel lanes to provide a safer and more-coherent environment for pedestrians and bicyclists

Pedestrian Improvements:

Toole Design Group
walkBoston
MassBike

Walk/Bike Assessment
Main Street
Northampton, MA
January 18, 2016

Prepared for the Massachusetts Department of Transportation Bicycle and Pedestrian Safety Awareness and Enforcement Program

- Narrow Main Street to shorten crossing distances by installing curb extensions and refuge islands, install bike lanes
- Remove parking within 20 ft. of crosswalks
- Evaluate signal timing for consistency and accessibility (including count-down timers)
- Enforce ordinances to keep sidewalks clear of intrusions into the pedestrian thru-zone
- Upgrade curb ramps and install detectable warning strips

Bicycle Improvements:

- Install bike facilities along Main Street (with both short and longer term options), ideally separated from motor vehicle traffic
- Install bike parking and way-finding signage

More detailed recommendations were provided at the following intersections:

- Elm/West/State/New South intersection
- Cracker Barrel Alley/Crafts Ave intersection
- Old South Street to Gothic Street segment
- King/Pleasant Street intersections
- Main/Crackerbarrel Alley: converting the latter to 'pedestrian only' would have little impact on access to the parking lot but reduce one significant conflict point

Parking Management Study, Downtown Northampton, MA (April 2015)

Prepared for: City of Northampton.

Plan Overview: Although downtown is pedestrian oriented, the combination of newly planned developments and the ongoing presence of motor vehicles and the ability to meet parking demand is important to the success of downtown businesses. The three elements of this plan are: (1) to determine how parking is being utilized now and whether there is capacity to accommodate current needs. (2) To project the impact of future development on the parking system. (3) To review the City's parking management approach and offer recommendations for improvements.

Key Findings and Recommendations:

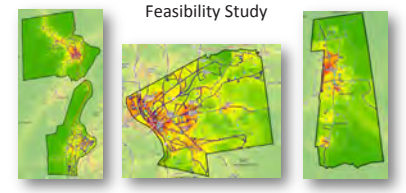
- Slowly increase price of parking on Main Street over time, from $0.75/hr today to $1.50/hr over the next few years
- Allow two-hour parking on Main Street, install signage prohibiting "re-parking" or exceeding the maximum
- Delay meter enforcement start times until 9:00am, allow three-hour parking in Armory Lot
- As single-space meters require replacement, consider upgrading to accept credit cards or pay-by-plate
- Retain a signage and graphics consultant to improve wayfinding to better facilitate access to the parking lots by car and on foot
- Explore feasibility of a parking app, a valet service for downtown businesses, and an inexpensive permit in peripheral lots for students of downtown trade schools
- To encourage turnover, step-up enforcement of meter violations

Feasibility Study for Regional Bike Share in the Pioneer Valley (March, 2015)

Prepared For: Pioneer Valley Planning Commission in collaboration with the Bike Share Feasibility Study Advisory Committee and municipalities of Northampton, Amherst, Holyoke and Springfield.

Plan Overview: From the report: "The Pioneer Valley region and its member communities are committed to creating more livable communities and downtowns, as well as reducing single occupancy vehicle trips and the resulting air pollution and greenhouse gas emissions. The region is working to increase alternative modes of transportation, including expanding

Regional Bike Share in the Pioneer Valley



Produced by the Pioneer Valley Planning Commission
in collaboration with the Bike Share Feasibility Study Advisory Committee
and municipalities of Northampton, Amherst, Holyoke and Springfield

March 2015

infrastructure for biking, walking, bus and rail service. The region is also seeking to establish commuter rail service along the north-south Amtrak rail line serving Springfield, Holyoke and Northampton, and a bike share program could provide a complementary 'last mile' component to this service." The Feasibility Study has been supplemented by a follow-up report in 2015-16 by Alta Planning + Design. The report includes more-detailed recommendations for a business model, recommended equipment, cost estimates over a 5-year period, a phasing plan for deployment and preliminary site plans for four bike share stations in each of the four municipalities that are part of PVPC's study.

Key Findings and Recommendations:

- Systems should serve as an extension of public transit, and station phasing is important
- Casual riders are important; daily, weekly, and monthly users comprise a significant factor of overall ridership. Locate stations near major tourism destinations.
- Operating 3 seasons / year minimizes snow-removal issues.
- Implement a pricing structure that allows for multi-hour rentals. This allows built-in flexibility for recreational trips where a user would want to rent a bike for more than one hour without paying additional fees.
- Smart-lock or non-kiosk based systems greatly reduce the up front and maintenance costs of system operation. Continue to monitor the success of the Phoenix, AZ bike share program to evaluate whether a public non-kiosk system would be practical for the Pioneer Valley.
- Provide discounted student memberships. Targeting the large student population for use of the bike share system will help increase its overall use, and many students who do not reside in Northampton during the summer months will have trouble justifying the membership fee for a 3-season system.
- Explore alternatives to credit card requirements. Credit-card requirements are common in order to prevent theft or vandalism to the bicycles, but present a major barrier to participation among low-income residents or those who do not have a credit card.
- Partner with other organizations to expand service to low-income individuals and locate stations in areas that have affordable housing and disproportionately low rates of bicycling. Financial assistance should be offered to low-income individuals seeking a membership.
- Explore feasibility of integrating fare payment with PVTA payment system to increase convenience of using both systems.

Open Space, Recreation & Multi-Use Trail Plan (2011)

Prepared For: City of Northampton.

Plan Overview: From the report: "The plan provides guidance on how the City of Northampton can best use limited resources to meet the City's open space, agriculture, conservation, multi-use trail, and recreation needs." The City engaged public participation and has received the endorsement of 10 municipal boards to adopt this plan in an effort to meet the needs of citizens and become one the most sustainable cities in Massachusetts.

Key Findings and Recommendations (within 13 broad categories of open space, recreation, and multi-use trail actions):

- Reclaim pavement for parks as appropriate. Report acknowledges that while "few sites are appropriate", the effect on those sites can be dramatic. Potential sites include: Historic Mill River mixed-use development and park at Pleasant Street / Hockanum Rd., an urban park along Main St. / Crafts Ave in front of City Hall, and at historically filled wetland sites in the Montview neighborhood and the Industrial Dr. traffic circle area.

- Maintain well-managed conservation areas to preserve natural systems and make areas available for visitors, including those with disabilities
- Identify places for fishing, hunting, snowmobiling, off-road vehicles, horseback riding, and mountain biking
- Acquire conservation areas to enhance neighborhoods and urban areas
- Develop a Connecticut River Boathouse
- **Connect the MassCentral / Norwottuck Rail Trail gap between Woodmont Road and King Street (funded)**
- **Extend the Connecticut River Greenway Trail 1.3 miles to Hatfield**
- **Utilize Village Hill development to extend a trail around the north edge of the campus**
- **A staircase ramp from the MassCentral / Norwottuck Rail Trail to Look Restaurant**
- **A ramp from the MassCentral / Norwottuck Rail Trail to the VA Hospital signal (develop a VA Park & Ride lot)**
- **A spur from JFK Middle School to Morningside Drive**
- **An access ramp in Haydenville to provide a northerly terminus of the MassCentral / Norwottuck Rail Trail**
- Develop a park at the triangle formed between Wright Avenue, Hockanum Road, and Pleasant St.
- **Develop a very small park in front of City Hall by reclaiming some land from Main Street and Crafts Avenue (which are unsafe for pedestrians as they are too wide)**
- Handicap Accessibility along the Nagel Walkway downtown
- The development of a handicap accessible ramp near the Jackson Street School to connect with existing rail trail (complete)
- Future projects should take environmental and cultural uniqueness into account, providing locations for specific activity within open spaces. For example, Northampton has a significant Hispanic population, so park designs should allocate space for traditional Mexican, South American, and Puerto Rican recreation.

Sustainable Northampton Comprehensive Plan (January, 2008)

Prepared For: City of Northampton

Plan Overview: A comprehensive planning effort intended to "ensure the city can continue to meet its current and ongoing environmental, social and economic needs without compromising the future for succeeding generations." It is also intended to provide a blueprint for long-term infrastructure and development projects within the city. Ultimately, the goals, objectives, and recommendations sections found in the Walk/Bike Northampton report will become a new chapter within the Sustainable Northampton Comprehensive Plan.

Key Findings and Recommendations:

- Ensure the safe and efficient transportation of goods and people by motor vehicles, bicycle, foot, and any other means
- Maintain an efficient transportation system that reduces air pollution and minimizes congestion
- Reduce use of single occupancy vehicles
- Ensure that safety is a primary goal in transportation improvements, to reduce crashes and ensure that all modes of traffic are safe and attractive to all users on all roads
- Ensure that the needs of transit services, bicycle, pedestrian, and wheelchairs are considered in every project affecting the transportation system

"Develop more multi-use trails, bike paths, bike lanes, bike routes and bike linkages to provide access to active and passive recreation and to create a healthy lifestyle and provide an alternative to single-occupancy vehicles."

- From part 7, Analysis of Needs: Resource Protection, Community, and Management Needs, # 16

SUSTAINABLE NORTHAMPTON
Comprehensive Plan, January 2008

- When designing for truck movements, utilize mountable curbs, pedestrian islands, raised pedestrian crossings, and alternate truck routes where feasible
- Ensure that all new traffic signals incorporate audible pedestrian signals, and create a prioritized list of existing traffic signals where pedestrian signals are desired
- Examine all unsafe intersections, areas of excessive speeds, and areas where neighborhoods perceive a loss of quality of life to consider traffic calming efforts, ensure that the design of all new and reconstructed streets considers incorporating appropriate traffic calming measures
- Provide sidewalks on all roads within one mile of all schools
- Improve circulation system to accommodate development and encourage bicycle and pedestrian transit
- Ensure pedestrian, bicycle, non-motorized travel, and transit are addressed in every development project
- Replace all catch basin covers that are not bicycle-friendly
- Develop a citywide bicycle system including existing and planned off-road bicycle paths, on road-bike lanes, and safe on-road bike routes. On-road bike routes and lanes that provide direct access to the growing rail-trail network and to urban core areas should receive a high priority. The system should include supporting services, such as signage, bicycle storage, and bicycle system maps and information.
- Provide appropriate bicycle and vehicle parking to support local businesses

Main Street and King Street Transportation Charrette (March 2011)

Prepared For: City of Northampton

Prepared By: Nelson / Nygaard

Plan Overview: In 2011, a 3-day design charrette worked to identify issues and opportunities along the Main St. and King St. corridors in Northampton. The impetus for this study was Northampton's desire to enhance the bicycle and pedestrian environments without decreasing the vehicle throughput, as well as preserve or improve access to downtown businesses.

Key Findings and Recommendations:

- Critical issues identified: 1) over-designed 4-lane cross sections, 2) large intersections, 3) inhospitable bicycling environment. An over-designed street is defined as one that is "over-scaled as compared to the needs of traffic volumes and adjacent land uses. The cross-section of these roads is too wide, allowing cars to travel at excessive speeds and creating unsafe conditions for bicyclists and pedestrians."
- Lowering speeds through a road-diet identified as critical solution during charrette
- Studies referenced that show a direct correlation between street width and rate of injury in collisions, "with a very steep upward curve for streets wider than 44 feet."
- Shrinking the intersection size and width with compact design treatments have a number of benefits: "reducing vehicle speeds, particularly at the end of signal phases; less wasted space, especially where right-turn lanes are poorly utilized today; stretching of vehicle queues away from multiple approach lanes linearly towards mid-block areas, with no additional vehicle delay; far more frequent pedestrian crossing phases, which are also longer in duration; significantly shorter crossing distances that reduce the barrier of intersections like Main & King; and more predictable driver and bicyclists expectations through clearly channelized movements."
- Long street widths and large intersections create "very long crossing distances for pedestrians, putting them in the path of cars for a long period of time."
- Large intersections result in additional time required for each car to pass through, reducing the number of cars that can pass through in each signal cycle.

- Pull-in angled parking spaces on Main St. limit drivers' field of view when backing out
- Additional connections are needed in places where bicycle facilities do exist but are lost at street crossings and intersections
- There is a general lack of quality bicycle parking in Northampton
- Solutions offered include road diets of four lanes to two lanes, shared bicycle boulevard style treatments, reverse angled parking on Main St., raised crossings on slip lanes, a textured crossing plaza in front of City Hall, curb extensions, new sidewalks under rail trail crossing, and widened sidewalks elsewhere

Main St. / State St. / Elm St. / West St. / New South St. Preliminary Intersection Design (July 2010)

Prepared For: City of Northampton

Prepared By: Nelson / Nygaard

Plan Overview:

In 2011, the city of Northampton brought in Nelson Nygaard to analyze the State / Main / New South intersection and to develop recommendations for redesigning the intersection to better accommodate traffic flow and pedestrian and bicycle safety. There work resulted in three alternative options, including:

Alternative A:

- Right turn "boulder style" slip lanes
- New NB left-turn lane
- Single EB through lane
- Lengthened storage
- New on-street parking

Alternative B:

- Right turn "Boulder style" slip lanes
- New NB left-turn lane
- Single EB through lane
- Lengthened storage
- New on-street parking
- Two EB receiving lanes retained
- No northwest curb extension on Main St.

Alternative C:

- Right turn "Boulder style" slip lanes
- New NB left-turn lane
- Two EB through lanes
- Lengthened storage
- Two EB receiving lanes retained
- No northwest curb extension on Main

After the completion of the three design options the city of Northampton then decided to hold back on moving forward with final design due to issues related to truck turning movements and to await the recommendations on the redesign of Main St developed during this Walk Bike Northampton effort.

"Develop more multi-use trails, bike paths, bike lanes, bike routes and bike linkages to provide access to active and passive recreation and to create a healthy lifestyle and provide an alternative to single-occupancy vehicles."

- From part 7, Analysis of Needs: Resource Protection, Community, and Management Needs, # 16

3.2 Review of Current Policies

3.2.1 Zoning Ordinances (includes Site Plan Review)

Prepared by: City of Northampton

Policy/Program Overview: Chapter 350 of the Code of Ordinances of the City of Northampton governs zoning in the City. Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key provisions related to walking and bicycling:

1. Defines short- and long-term bicycle parking (§350-2.1 General).

2. Prohibits obstruction of sightlines at intersections and driveways (§350-6.8 Other general dimensional and density provisions).

3. Sets minimum vehicle parking space requirements for different types of structures and uses, based primarily on square footage, with residential caps but no caps for businesses or institutions (§350-8.1 Off-Street parking requirements).

- Businesses can reduce parking up to 20% with an employee trip-reduction plan (§350-8.6 Shared parking)
- For the majority of the Central Business District uses there are no parking requirements. Developers can also meet parking requirement by paying $2,000 per parking space into Downtown Parking Reserve Account (§350-8.10 Special provisions in Central Business District for meeting off-street parking requirements). This only applies to very few uses (places of assembly).

4. Bicycle parking required for "any new building, addition or enlargement of existing building, or, except for in the Central Business District, for any change in the use of a building" (§350-8.11 Bicycle parking). NOTE: The

- Based on number of units for dwellings, square footage for businesses, number of classrooms for schools.
- 50% long-term bicycle parking required for residential, hotel, motel, bed & breakfast
- For consideration: Look at alternative formulations for bike parking requirements, and provision of end-of-trip facilities (showers and lockers).

5. Specifies site plan requirements (§350-11.5 Procedures)

- Requires estimated vehicle (but not bicycle or pedestrian) trip data.
- Traffic patterns for vehicle and pedestrian access.
- Traffic safety plan, which, for new commercial, office, and industrial buildings, must "evaluate alternative mitigation methods to reduce traffic by 35%", including "Encouraging pedestrian and bicycle access to the site".
- Assessment of traffic safety impacts on adjacent roadways.
- "An interior traffic and pedestrian circulation plan designed to minimize conflicts and safety problems."

6. Sets up site plan approval criteria (§350-11.6 Approval criteria)

- "The requested use will promote the convenience and safety of vehicular and pedestrian movement within the site and on adjacent streets, cycle tracks and bike paths, minimize traffic impacts on the streets and roads in the area."
- "The project, including any concurrent road improvements, will not decrease the level of service (LOS) of all area City and state roads or intersections affected by the project below the existing conditions when the project is proposed and shall consider the incremental nature of development and cumulative impacts on the LOS. The project proponent must demonstrate that all

"Safe and adequate pedestrian access, including provisions for sidewalks and/or bike paths to provide access to adjacent properties and adjacent residential neighborhoods, as applicable, and between individual businesses within a development."

- From §350-11.5 Procedures

cumulative and incremental traffic impacts have been mitigated."

- Mitigation can include payments to fund improvements for off-site traffic impacts, public transit, and pedestrian or bicycle paths. It is expected that developers mitigate even incremental impacts of their projects with improvements, or payment in lieu of improvements. Mitigation payments range from $0 - $3,000 per peak afternoon motor vehicle trip generated, when developers do not directly mitigate with off-site proejcts approved by the Planning Board. There is no fee when proposed uses generate walking trips within central business districts.
- Specific mitigation payments are set based on type of location and estimated peak trips.
- "Rear and/or side wall facades within 50 feet of a completed or planned section of a cycle track or bike path shall have features that invite pedestrian access from that side of the building".
- "Pedestrian, bicycle and vehicular traffic movement on site must be separated, to the extent possible, and sidewalks must be provided between businesses within a development and from public sidewalks, cycle tracks and bike paths. All projects shall include sidewalks and tree belts abutting the street, except where site topography or other limitations make them infeasible. In such cases where the sidewalk is infeasible, the developer shall install an equal number of feet of sidewalk and/or tree belt in another area of the community as deemed by the Planning Board or Office of Planning and Sustainability."
- Establishes technical specifications for sidewalk design:
  - » Concrete.
  - » Minimum six feet in commercial and industrial districts.
  - » Minimum five feet in residential district.
  - » Specs for ramps, cross-slope, etc.
  - » Allows, but does not require, curb extensions.
  - » Curb extensions must not impede bicycle traffic.

7. Provisions for vehicles and pedestrians must be at or near grade if at or below the 100-year floodplain in the SC or Floodplain District (§350-13.6 and §350-14.6 Development conditions).

8. Establishes Sustainable Growth Overlay District to encourage smart growth developments, including "a variety of transportation options" (§350-20 Sustainable Growth Overlay District (SG))

9. Bike parking in Highway Business District: "1 bike rack per 10 parking spaces up to 15 required (indoor or outdoor). Storage must allow locking of bicycles to racks or inside storage containers." (Chapter 350 Attachment 12)

10. Bike parking in the Entranceway Business District: "1 bike rack per 10 parking spaces up to 15 required (indoor or outdoor). Storage must allow locking of bicycles to racks or inside storage containers." (Chapter 350 Attachment 10)

3.2.2 Subdivision Regulations

Prepared by: City of Northampton

Policy/Program Overview: Chapter 290 of the Code of Ordinances of the City of Northampton governs subdivision of land in the City. Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions related to walking & bicycling:

1. In addition to governing the subdivision of land, these are the technical specifications that apply for site plan approvals.Purpose does not expressly include pedestrian or bicyclist access or safety (§290-2 Purpose): "The powers of the Planning Board and the Board of Appeals under these rules and regulations shall be exercised with due regard for the provision of adequate access to all of the lots in a subdivision

"Access by non-motorized means must be accommodated with facilities such as bike racks, sidewalk connections from the building to the street, cycle tracks, and bike paths that are clearly delineated through materials and/or markings to distinguish the vehicular route from the non-vehicular route."

- From §350-11.6

by ways that will be safe and convenient for travel; for lessening congestion on such ways and in the adjacent public ways; for reducing danger to life and limb in the operation of motor vehicles…."

2. Traffic study submittal requirements include pedestrian and bicycle modes (§290-23 Additional subdivision submittal requirements):

- Estimated daily and peak-hour trips for vehicles and pedestrians; does not specifically include bicycles.
- Traffic safety plan, including alternatives to single-occupancy motor vehicles, and evaluation of methods to reduce traffic by 35%, including "Encouraging pedestrian and bicycle access to the site".
- Network analysis showing how project enhances flow of existing network.
- Pedestrian components: interior circulation plan to minimize conflicts and safety problems, and adequate pedestrian access including sidewalks connecting to adjacent properties and businesses within the development.
- School bus and public transit stops, as appropriate.
- Maintain Level of Service (LOS): Demonstrate that project will not decrease LOS below existing conditions at time of proposal and considering future development and impacts.
- Proponent must mitigate off-site traffic impacts, or may request to pay to fund necessary off-site improvements, including public transit and pedestrian or bicycle paths.

3. Adopts Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges and its supplements (§290-28 Controlling standards).

4. Design specifications for the four street types, as relevant to pedestrian and bicycle use (§290-29 Streets and ways):

- Right-of-way
  - » Private Alley: N/A
  - » Residential Shared Street: N/A
  - » Residential Yield Street: 60'
  - » Mixed Use/Commercial Street: 70'
- Pavement width
  - » Private Alley: 14'
  - » Residential Shared Street: 20'
  - » Residential Yield Street: 20' within 30' of intersection; 24' elsewhere
  - » Mixed Use/Commercial Street: 22' within 30' of intersection; otherwise 30' when street serves <25% commercial by sq. ft.; 38' all other
- Limit of dead-end streets, measured along the center line, from the nearest public (non-alley) street that is not itself a dead-end street: 500'
- Length of block between 3+ way intersections
- Length of block if broken up at least every 500' by a walking or bicycling trail and connects permanently to protected open space
- Pavement Type: Hot mix asphalt, with textural changes for Private Alley or Residential Shared Street.
- Vehicle flow: Two-way, except Private Alley may be one-way.
- Sidewalk (cement concrete only, including where it crosses driveway)
  - » Private Alley: none
  - » Residential Shared Street: none
  - » Residential Yield Street: 5' wide, both sides, except that LID street with no curbs on one side may eliminate sidewalks on the curbless side with additional crosswalks at least every 200 feet.

  - » Mixed Use/Commercial Street: 6' wide both sides
- Crosswalks (to be located at all street and trail intersections and no other locations): Raised to elevation of sidewalk (or pedestrian path for Alley or Residential Shared Street).
- Shoulders
  - » Private Alley: not allowed
  - » Residential Shared Street: not allowed
  - » Residential Yield Street: bike facilities as necessary for arterials
  - » Mixed Use/Commercial Street: bike facilities as necessary depending on functional type
- Curbs: 30' from each intersection and on sides whenever there are no rain gardens, bioretention areas, or curb cuts.
- Stopping sight distance (considering vertical alignment, slopes, and obstructions)
  - » Private Alley: 80'
  - » Residential Shared Street: 80'
  - » Residential Yield Street: 115'
  - » Mixed Use/Commercial Street: 155'
- Design speed:
  - » Private Alley: 15 mph
  - » Residential Shared Street: 15 mph
  - » Residential Yield Street: 20 mph
  - » Mixed Use/Commercial Street: 25 mph
- Street lighting (must be LED): Intersections and crosswalks.

5. Location of Accessway (§290-29.A):

- "All streets and ways shall be designed so that, in the opinion of the Planning Board, they will provide safe vehicular travel".
- "The proposed streets shall be consistent with the goals of Sustainable Northampton".
- Requires provision "for the proper projection of streets, or for access to adjoining property that is not yet subdivided or developed".
- Dead-end/cul-de-sac: "A right-of-way from the end of all culs-de-sac and dead-end roads to adjoining property must be part of the street layout and must be shown on street acceptance plans and deeds unless there is compelling evidence that the adjoining property will never be developed."
- Requires bicycle and pedestrian access to adjoining undeveloped property: "If the adjoining property shall never be developed, there shall be a pedestrian and bicycle trail up to the property line, unless wetlands and grade make that impossible."

6. Cul-de-sac or dead-end streets (§290-29.B):

- "It is the Board's policy not to approve streets that do not connect to existing neighborhoods or do not provide for connections in the future. The applicant must show a scenario of how a street connection can be made. Further, the developer shall make every effort to avoid the creation of dead-end streets and must connect its subdivision to existing dead-end streets whenever reasonably possible. Dead-end streets are more expensive to maintain, limit emergency access, and reduce the sense of connection and equality that comes from interconnecting street grids." NOTE: Bicycle and pedestrian connectivity required when dead-ends are allowed.
- Less than 500 feet from a connected street: "Every street in the proposed subdivision shall be laid out in such a

manner that every portion of every street is less than 500 feet, as measured along the center line of construction of the street from the nearest connected existing public street which is not itself a dead-end street. Culs-de-sac or dead-end streets shall be allowed only on residential streets."

7. Street cross sections (§290-29.C): representative cross sections are shown for the four street types.

8. Traffic calming and pedestrian and bicycle access (§290-29.E):

- Traffic calming may utilize methods detailed in ITE's Traditional Neighborhood Development or Traffic Calming: State of the Practice, and "complete streets" principles from the National Complete Streets Coalition, but must utilize methods that will not make snow plowing or road maintenance especially burdensome for the City."

9. Shared streets (§290-29.F):

- Traffic calming to reduce vehicle speeds to 15 mph.
- Use chicanes to reduce speeds.
- Narrow to one travel lane at entryways, using excess space for at-grade sidewalks.

10. Sidewalk standard (§290-35 Sidewalk standards and school bus stops):

- Home Owners Association (HOA) covenants must require that HOA clear snow from all sidewalks.
- With approval, sidewalks may be built in common areas rather than right-of-way, but HOA must still do snow clearance.
- Shared streets should have paved pedestrian area on both sides, from 3-12 feet, but a pedestrian area on only one side is permissible with approval.
- Paving as indicated in §290-29, with textured pervious paving and flush granite curbing on shared streets. Bollards may be required to separate pedestrian areas and travel lanes, or around bioretention areas or sharp curves.

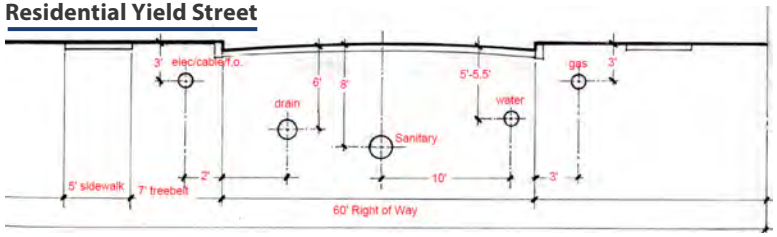
"...the design shall make every effort to reasonably calm the traffic within the subdivision and on surrounding streets to ensure pedestrian- and bicycle-friendly design and to prevent a decrease in traffic safety as a result of the additional traffic the project will generate. Bicycle and pedestrian pathways are encouraged within large developments and should be linked to adjacent properties, pathways, sidewalks, and transit stops wherever feasible.."

- From §209-29

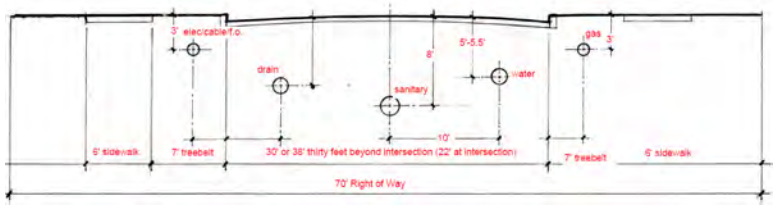
Bicycle and pedestrian access (§290-37 Adequate access from public way): Subdivision street system required to have adequate vehicular, pedestrian, and bicycle access to a City, county, or state public or private way.

Four Subdivision Street Types

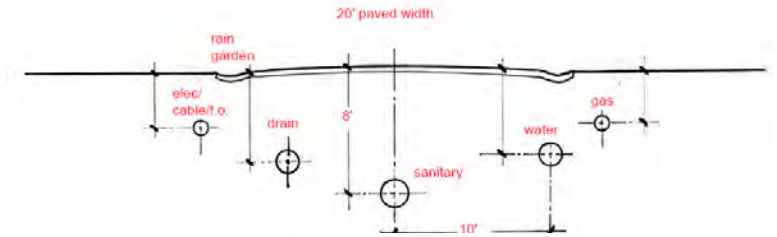
Residential Yield Street



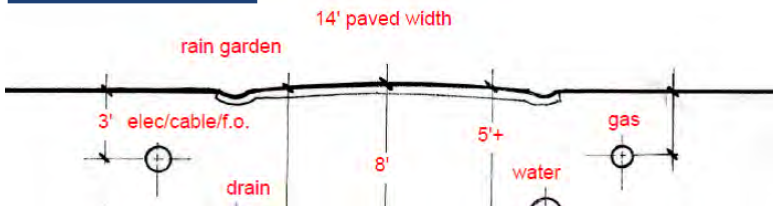
Mixed Use Street



Shared Street



Green Alley



3.2.3 Various Walk / Bike Related Policies

1. Bikeway Ordinance

Policy/Program Overview:

Chapter 312 of the Code of Ordinances of the City of Northampton governs vehicles and traffic in the City. Section 312-78 establishes rules specifically for "the bikeway". Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions:

- No motorized vehicles allowed; could limit use of e-bikes.
- Bikeway is closed from dusk to dawn; inconsistent with using the bikeway as a transportation corridor.
- Bikeway users required to:
  - » Stop at all street crossings.
  - » Yield to vehicles in the road.
  - » Keep to the right.

2. Bike Lane Ordinance

Policy/Program Overview: Chapter 312 of the Code of Ordinances of the City of Northampton governs vehicles and traffic in the City. Section 312-80 defines and regulates use of bike lanes in the City. Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions:

- Bike lanes are for preferential, but not exclusive, non-motorized bicycle use.
- Bike lanes to be designated by "painted lines, pavement coloring or other appropriate markings."
- Vehicle parking in bike lanes is prohibited, subject to a $25 fine.
- Motor vehicles must use "due caution and care" before entering or crossing a bike lane.
- City Council designates bike lanes based on recommendation of Transportation and Parking Commission, with concurrence of Department of Public Works (all three bodies must agree).

3. Bicycling Prohibited at Schools and Recreational Facilities

Policy/Program Overview: Chapter 233 of the Code of Ordinances of the City of Northampton governs parks and recreation in the City. Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions:

- "No person shall operate a motor vehicle, including, but not limited to a skimobile, minibike, trailbike, automobile, or other powered vehicle, or a bicycle, on any school grounds or in any park, playground, or recreation field operated by the Recreation Department, except on driveways and in parking lots." (§233-1 Operation of Vehicles, emphasis added

4. Enforcement of Ordinances

Policy/Program Overview: Chapter 40 of the Code of Ordinances of the City of Northampton governs enforcement of City ordinances by criminal complaint, civil action, and noncriminal disposition (fine). Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions:

- Covers all violations of city ordinances, including zoning.
- Fines are not specified for every ordinance:
  - » Where a fine is not specified for a criminal complaint, the default fine is up to $300 (§1-17 General penalty).
  - » Where a fine is not specified for a noncriminal disposition, the default fine is $20 for the first offense and $50 for subsequent offenses.

  - » Each day a violation continues is considered a separate offense.
- Fine for zoning violation (Chapter 350) is $100.
- Fine for snow/ice removal violation (§285-17) is $50.
- Fine for obstructing a street or sidewalk (§285-29) is $50.

5. Complete Streets Policy

Policy/Program Overview: Section 285-51 of the Code of Ordinances of the City of Northampton contains the City's new Complete Streets Policy, passed by the City Council on December 3, 2015, and approved by the Mayor on December 7, 2015. Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions:

- The City's Complete Streets Policy ensures that pedestrian, bicycle and transit facilities are fully integrated into a safe and efficient transportation system.
- Since the Complete Streets Policy has been approved by MassDOT, the City submitted a Complete Streets Prioritization Plan and request funding for up to five Complete Streets projects for a maximum total of $400,000. Program details can be found at: http://www.massdot.state.ma.us/highway/DoingBusinessWithUs/LocalAidPrograms/CompleteStreets/FundingProgram.aspx.

6. Street and Sidewalk Ordinances

Policy/Program Overview: Chapter 285 of the Code of Ordinances of the City of Northampton governs various aspects of construction, maintenance, and use of streets, sidewalks, and public property in the City. Analysis based on code version linked from City website at http://ecode360.com/NO2226.

Key Provisions:

- Sidewalk snow clearance (§285-17 Removal of snow and ice from sidewalks):
  - » Owner of any building, structure, or lot with a sidewalk must clear snow within 24 hours after snowfall ceased.
  - » Owner must remove or cover with sand or other suitable substance any ice within 24 hours of its appearance.
  - » Full width of sidewalk must be cleared.
  - » Sidewalk must be rendered safe and convenient for travel.
  - » Special timing for Central Business District: within 24 hours or 9:00am the next business day, whichever is sooner.
  - » Violation to move ice or snow onto paved street or gravel shoulder.
  - » $50 fine for violation, new fine each 24-hour period of violation.
  - » DPW may clear violator's sidewalk, at owner's expense.
- Preventing tire damage (§285-8 Placing items liable to damage tires on streets prohibited): illegal to place anything on a street that can damage the tires or wheels of bicycles, automobiles, or other vehicles with rubber or pneumatic tires.
- Prohibited activities (§285-12 Certain activities on streets and sidewalks prohibited):
  - » No sidewalk surfboards, skateboards, roller skates, or in-line skates on certain public area, public ways, and sidewalks (§285-12.A)
  - » Use of bicycles (§285-12.B Provisions for bicycles):
    - Bicycles allowed on all streets.

- Bicycles allowed on all sidewalks except specific sidewalks in the Downtown Business District and the Florence Business District:
- Bicycles not allowed to be "driven" in Pulaski Park.
- Important Note: Bicycling further prohibited from "any school grounds or in any park, playground, or recreation field operated by the Recreation Department, except on driveways and in parking lots" by §233-1 Operation of Vehicles (in Chapter 233: Parks and Recreation).

- Gratings (§285-24 Gratings in streets): specifies certain dimensions of grates – no more than 2 inches between bars, and no more than 18 inches from a building; does not meet requirements for bicycle-safe grate, and does not otherwise limit size or shape of grate.
- Obstructing sidewalks (§285-29 Obstructions to sidewalks): No obstructions allowed to sidewalks, or the pavement edge or shoulder where there is no sidewalk, including protruding vegetation. Owner must remove obstruction within 14 days of notice, or City will remove at owner's expense.

3.3 Walk Bike Programs Review

As a community that has strived to achieve its status as a very walkable and bikable city, Northampton has initiated a number of Active Transportation Programs. The mix of Education, Encouragement, Enforcement and Evaluation programs give residents important tools to better integrate walking and bicycling into their lives, and increase the number of both modes. This is especially critical with children as Safe Routes to School efforts will instill lessons and habits that can be used for a lifetime. The sections below give a summary of the various programs, which in aggregate have helped the City achieve designation as a walk-friendly and bicycle-friendly community.

Program: Safe Routes to School (Education and Encouragement)

Source: Erin Reed, Statewide Coordinator, Massachusetts Safe Routes to School Program

Safe Routes to Schools Overview: Safe Routes to School (SRTS) is a federally-funded, MassDOT-managed program that "promotes healthy alternatives for children and parents in their travel to and from school." SRTS has education, encouragement, and infrastructure components.

Key Activities:

- All four Northampton elementary schools and the middle school are SRTS partner schools.
- According to SRTS: "Northampton Schools have various walking clubs/activities within their gyms and/or on school grounds. During 2014 and 2015, SRTS met with the head nurse of K-12, twice with the transportation director, and once with the Superintendent. A handful of meetings were held with Northampton's Mass in Motion organizer about plans to increase walking and walking/bicycling safety. There was a big concern expressed regarding walking school bus creation and walking promotion in general: the number of local child offenders/predators in the community."
- Northampton schools have not participated in SRTS bicycle or pedestrian safety trainings.
- The Jackson Street Elementary School received a SRTS infrastructure project completed in 2010. Leading up to the project, the school conducted student travel tallies and parent surveys annually.
- Northampton Public Schools added travel safety information to the school district website (http://www.northampton-k12.us/traveling-to-school-safely):

Northampton Public Schools has employed crossing guards at the following intersections:

- Jackson Street & Barrett Street
- Florence Street and Leeds
- Prospect Street & Massasoit Street
- Florence Street & Arch Street
- Bridge Street & Hawley Street
- Parson Street & Union Street
- Bridge Street near Pomeroy Terrace
- Brookside Circle & Deerfield Drive
- JFK Middle School
- Mulberry Street & Main Street
- Ryan Road & Matthew Drive

Program: Encouragement

Sources: Wayne Feiden, Northampton Director of Planning and Sustainability; Sean Condon, President, MassBike Pioneer Valley Chapter; Craig Della Penna, Co-President, Friends of Northampton Trails and Greenways; MB/PV website (http://massbikepv.org/); Bay State Bike Week website (http://baystatebikeweek.org/); Friends of Northampton Trails and Greenways website (http://fntg.net/); Northampton Cycling Club website (http://www.nohobikeclub.org/nccwp/)

Encouragement Overview: Activities to encourage bicycling and walking in Northampton are ongoing and multi-faceted, relying on various nonprofit organizations, with very limited government funding.

Key Activities:

- Trail and bike maps: Produced by the Friends of Northampton Trails and Greenways, available for download on the FNTG website, hardcopy at local businesses.
- Wayfinding/Signage:
  - » City installed approximately 12 bike paths kiosks 12-13 with signage, funded by a Recreational Trails Grant obtained by MassBike and the City.
  - » City installed a large graphic art sign on the bike path bridge over Main Street (helps define downtown and draw people to path).
  - » City is working with WalkBoston to install wayfinding signs with distances to key destinations, 100 total, 20-30 on bike path.
  - » City plans to install mileage markers on bike paths, starting with salvaged granite marker at Union Station, with flush granite markers on bike paths.
- Trail information is available on City website at: http://www.northamptonma.gov/1346/BikeWalk-Trails.
- Bay State Bike Week: annual statewide celebration of bicycling, coordinated by MassDOT, MassBike, and MassRIDES. The Pioneer Valley is host to many Bike Week events each year. Bay State Bike Week traces its roots to Pioneer Valley Bike Commute Week, which started in 1999 and is now in its 17th year, coordinated by the Pioneer Valley Planning Commission and the MassBike Pioneer Valley Chapter.
- Northampton Cycling Club (NCC) BikeFest: annual bike tour and festival.
- MassBike/Pioneer Valley chapter is interested in holding Open Streets events in Northampton, but has not identified funding.
- National recognition for Northampton's programs (and infrastructure): recognized as a Bronze-Level "Bicycle Friendly Community" by the League of American Bicyclists and a Bronze-Level "Walk Friendly Community" by the Pedestrian and Bicycle Information Center.

Program: Education

Sources: Anne-Marie Moggio, Director, Northampton Parks & Recreation Department; Sean Condon, President, MassBike Pioneer Valley Chapter; Ruthy Woodring, Co-founder, Pedal People Cooperative; MB/PV website (http://massbikepv.org/); Bay State Bike Week website (http://baystatebikeweek.org/)

Education Overview: A variety of local programs provide education on bicycling and walking safety, and related topics, led by the City, nonprofits, Smith College, and other organizations.

Key Activities:

- Safety Village: The Parks & Recreation Department runs a summer program for 4-6 year olds that teaches various safety topics, including bicycle, pedestrian, and traffic safety, in a replica of Northampton with storefronts, streets, sidewalks, and signs. The program consists of three, two-week sessions per year, reaching up to 120 children. It has been in operation for approximately 25 years. Representatives from the police, fire department, hospitals, and other agencies participate. The children ride bicycles with training wheels and walk the sidewalks to learn traffic safety. See details at http://www.northamptonma.gov/905/Safety-Village.
- Teen Camp: The Parks & Recreation Department also offers occasional bike safety training, bike rides, and bike maintenance training at its teen camps, but less regularly than the Safety Village program.

Kids participate in the Safety Village summer program

- City distributes "Watch for Bikes" stickers for car mirrors, but not in an organized program.
- Road Cycling 101: bicycling skills class offered jointly by MassBike Pioneer Valley Chapter and Northampton Cycling Club, 14 participants in 2015
- Smith Bike Kitchen: Smith College has an on-campus bicycle repair, education, and rental organization.
- Pedal People education programs: Pedal People is a cooperative whose primary activity is delivery and cargo hauling by bicycle, and they provide training to their employees covering bike safety and maintenance, and operation of cargo trailers. Pedal People also provides educational programs to the public. The Saturday Bike Lab consists of regular workshops and classes in bicycling skills and bicycle maintenance. Since December 2014, Pedal People has partnered with Berkshire Driving School in Easthampton to offer a monthly, one-hour training to student drivers (mostly teenagers) including sharing the roads as drivers and cyclists, safe interactions between drivers and cyclists, common cyclist concerns, and cyclist behavior.
- As noted in the Safe Routes to School section, Northampton schools have not participated in bicycle and pedestrian safety trainings offered by SRTS.

Program: Enforcement

Sources: Bonnie Polin, Chief Safety Analyst, Traffic and Safety Engineering Section, MassDOT Highway Division; Gary Roux, Principal Planner/Traffic Manager, Transportation, Pioneer Valley Planning Commission; Wayne Feiden, Northampton Director of Planning and Sustainability

Enforcement Overview: A collection of target enforcement activities intended to enhance pedestrian and bicycle planning.

Key Activities:

- Northampton is currently participating in the MassDOT bicycle and pedestrian safety program, which includes an enforcement component funded through the Pioneer Valley Planning Commission. This funding has included occasional helmet giveaways by Northampton Police Department.

Program: Evaluation

Sources: Friends of Northampton Trails and Greenways, Pioneer Valley Planning Commission (PVPC), Central Transportation Planning Staff (CTPS)

Evaluation Overview: Involved a series of trail counts between 2005 and 2011 on the three rail trails within the City of Northampton. A summary of the data collected can be found on the following page.

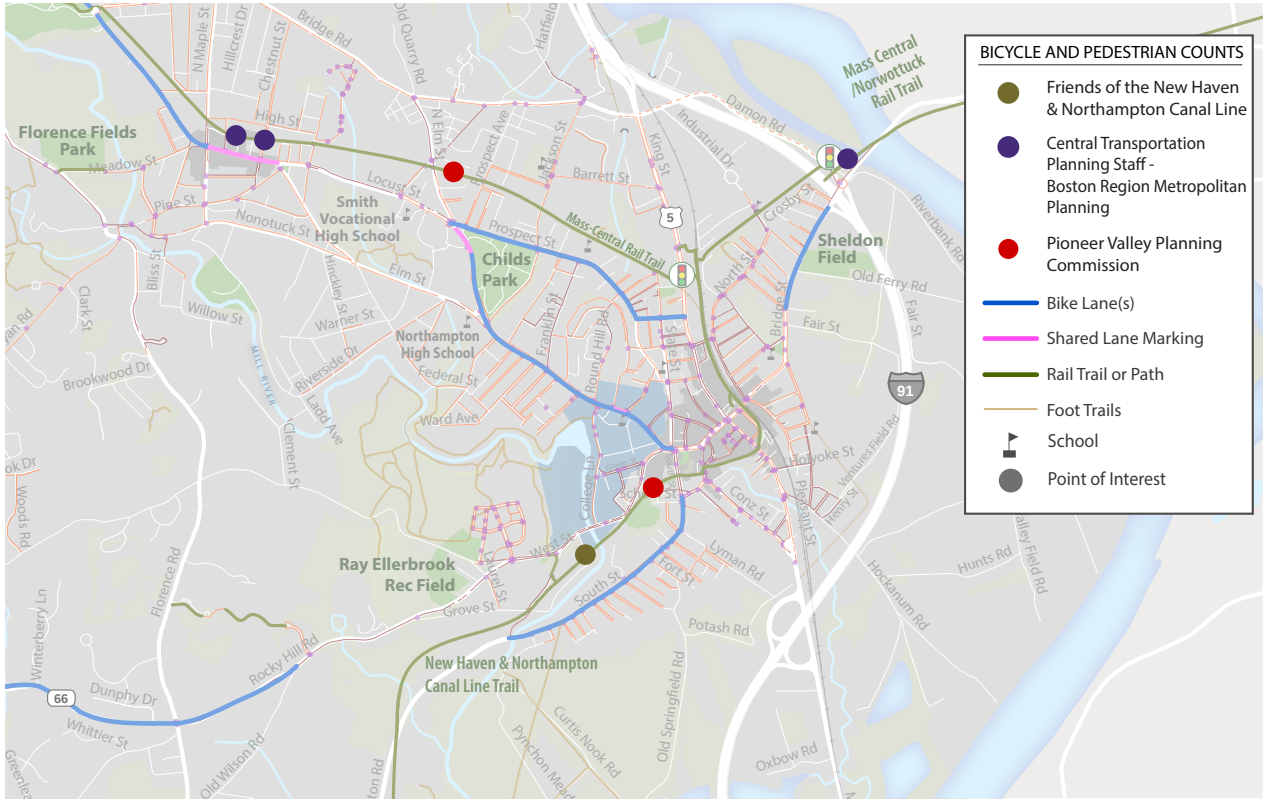
Bicycle and Pedestrian Counts - Rail Trails

Counted	All users	All users	All users	All users	Bikes	Bikes	Bikes	All users	Bikes	All users	All users	All users	All users
When	2005	2005	2005	2005	2005	2007	2008	2008	2008	2008	2008	2010	2010
Where	Mass Central Rail Trail	Mass Central Rail Trail	Mass Central Rail Trail	Mass Central Rail Trail	Mass Central Rail Trail	Mass Central Rail Trail	Mass Central Rail Trail	Mass Central Rail Trail	MassCentral Rail Trail / Norwottuck Rail Trail	MassCentral Rail Trail / Norwottuck Rail Trail	New Haven & Northampton Canal Line	New Haven & Northampton Canal Line	New Haven & Northampton Canal Line
Daily Average	301	280	417	470	514	341	-	-	-	-	-	650	286
Count	-	-	-	-	-	-	35 / hour	68 / hour	109 / hour	129 / hour	450 / day	-	-
Month	April	November	-	-	-	-	September	September	September	September	April - September	May, July, September	May, July, September
Day	Weekday	Weekday	Weekday	Weekend	-	-	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekday

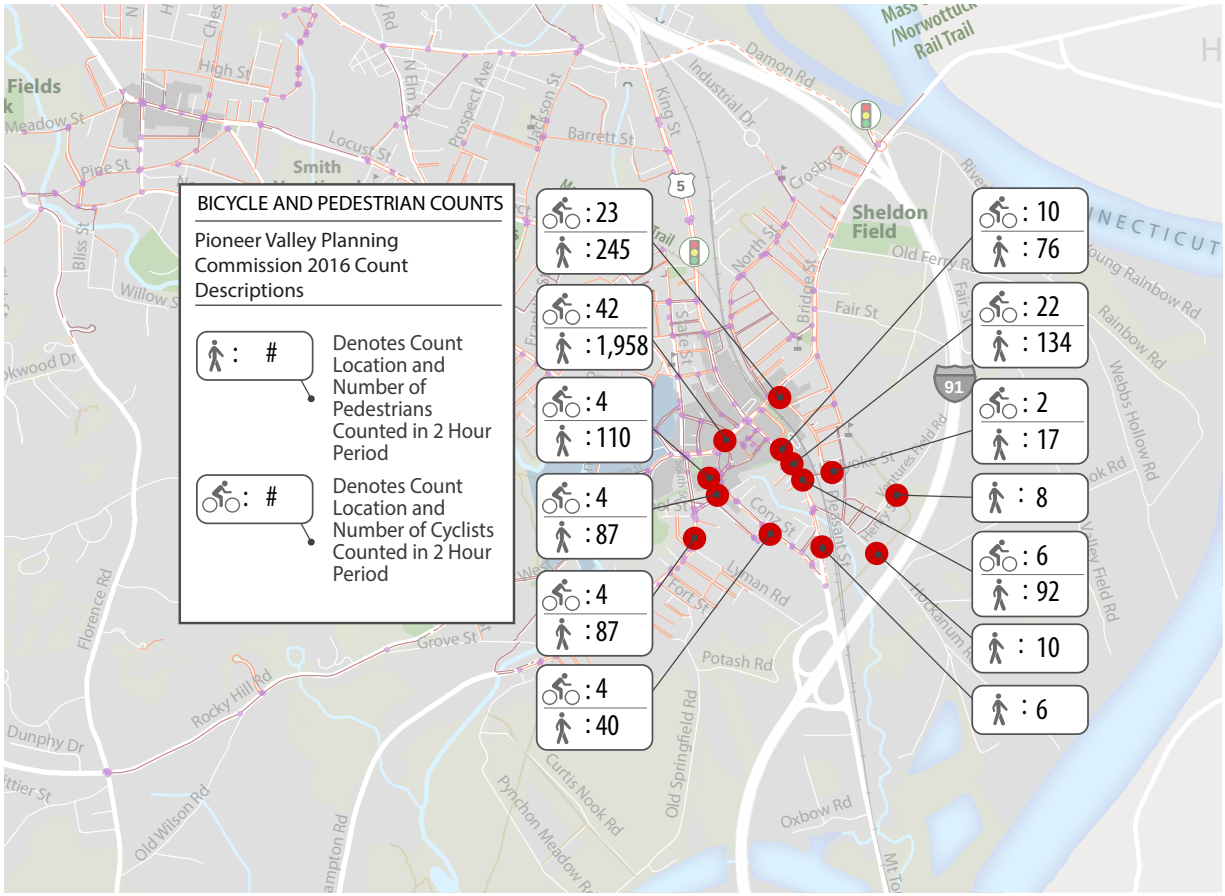
Pedestrian and bicycle counts on other streets and sidewalks on next page.

Trail Counts

The map graphic to the right displays the rail trail count locations described in the table above. The Friends of the Northampton Trails & Greenways conducted five separate manual counts on Tuesdays and Saturdays. The Pioneer Vally Planning Commission utilized automated counters, and recorded a peak number of users in summer and early fall, and as expected, a low of 170 users per day during rain. The Central Transportation Planning Staff utilized both manual counts and automated count deivces, conducting counts across a wide variety of times throughout the day, recording the peak hour for cyclists between 3:00 and 4:00 pm and the peak hour for all trail users between 9:00 and 10:00 am. The City of Northampton will set up a permanent automated counter n the MassCentral Rail Trail for pedestrian and bike traffic, along with a second 24-hour counter on Main Street for pedestrians only.



PVPC 2016 BICYCLE AND PEDESTRIAN COUNTS - DOWNTOWN LOCATIONS



Street and Sidewalk Counts

The map graphic to the left displays the street and sidewalk count locations conducted by the PVPC in 2016. The counts record data over a two hour timeframe, evenly split between mornings and afternoons, and typically on weekdays in February and March. An important statistic present in the data is the 1,958 pedestrians counted over a two-hour span on Main St. just east of Center St.

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4. EXISTING CONDITIONS ANALYSIS

The analysis of existing conditions has been divided into two sections: Current Conditions and System Gap Analysis. Current Conditions includes a graphic description of existing bicycle facilities, transit routes and the sidewalk/crosswalk network, while the System Gap Analysis inventories gaps in the bicycle and pedestrian network and/or missing facilities for bicyclists and walkers.

4.1 Current Conditions

Alta conducted an analysis of current conditions based on field work, comments from City staff and the Project Advisory Committee, online resources, and through the examination of multiple sets of data.

Northampton's bicycle facilities include an extensive rail trail system comprised of four legs:

- The MassCentral / Norwottuck Rail Trail from downtown out to Hadley and extends to Williamsburg and Belchertown. This trail will eventually reach Boston
- The Mass Central Rail Trail from downtown to the city limits
- The New Haven & Northampton Canal Line from downtown Northampton extends to Southampton and will eventually reach New Haven
- Rocky Hill Greenway from Ice Pond Drive to Blackbirch Trail / Rocky Hill Cohousing

Most rail-trails are 10 feet wide and paved. Many have a broken yellow divider line. In most instances, the trail crosses the various intersecting streets at grade, with connecting ramps where the trail passes above or below road grade at Jackson Street, Easthampton Road and over Main Street. In addition to the rail trail network, Northampton has a modest network of on-street bicycle facilities, which include:

- **Main Street / Elm Street / North Elm Street** bike lanes are between State Street and Prospect Avenue, between South Street and Prospect Avenue, and with shared lane markings for a short stretch between Bedford Terrace and Prospect Street
- **Prospect Street** bike lanes from Finn Street to the intersection with North Elm

- Shared lane markings along Main Street in Florence, transitioning to striped bike lanes on North Main Street from Cosmian Avenue to Hayward Road and the Norwottuck Rail Trail to Haydenville Road
- **Bridge Street** bike lanes from the on-ramp access to I-91 southbound to Parsons Street
- **South Street** bike lanes from Old South St. to the Earle St. intersection, with most of the segment including a green striped buffer area for additional width and a rumble strip for vehicular separation
- **West/Chapel/Rocky Hill Road (Route 66)** striped shoulder from Belmont Avenue to the Westhampton City line. (No bike lane markings along this corridor)
- Locust Street bike lanes
- **North Main Street Florence** from North Maple to Haydenville Road

From a pedestrian infrastructure point of view, Northampton's sidewalk network is quite complete downtown, in the adjacent historic neighborhoods and along the radial road network extending away from downtown. Most sidewalks on residential streets are buffered from the adjacent roads by grassy strips, with sidewalks along narrow corridors and downtown separated from the roadway only by a curb. A number of streets in these areas lack a sidewalk on one side, with a handful lacking sidewalks entirely. Downtown, the retail environment and generous sidewalks along Main Street and the adjacent side streets create a strong sense of place that draws shoppers, diners and music lovers from throughout the region.

Inventory of Ped. / Bike Infrastructure

ON-STREET BIKE FACILITY DISTANCES*	
Bike Lanes	8.5 miles
Shared Lane Markings	0.4 miles
ARTERIALS & COLLECTORS*	
Total Length of Northampton Arterials & Collectors	32.4 miles
Bike Lanes on Arterials & Collectors	5.1 miles
Percentage of Bike Lanes on Arterials and Collectors	16%
Bike Lanes on Other Streets	3.4 miles
RAIL TRAILS*	
MassCentral / Norwottuck	1.7 miles
MassCentral Rail Trail	5.1 miles
New Haven & Northampton Canal Line	2.7 miles
Rocky Hill Greenway	.3 miles
Total	9.8 miles
SIDEWALKS	
Total sidewalks	77.8 miles

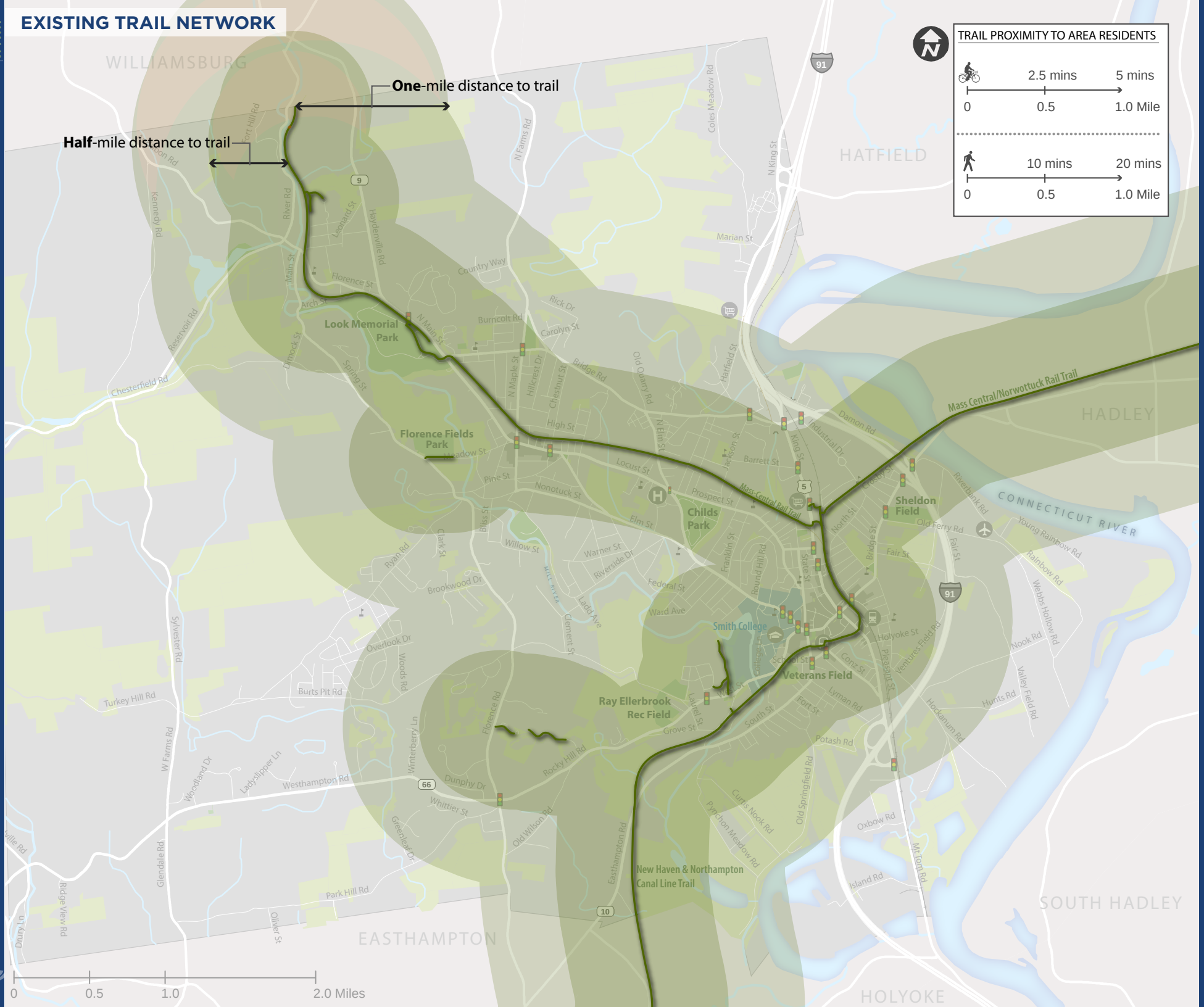
**Per City of Northampton GIS data*

With additional space available, the City striped green buffered bike lanes along South Street to provide a more comfortable environment for bicyclists

Most sidewalks outside of downtown are five feet wide with grass strips between them and the adjacent roadway

Wide sidewalks in the heart of downtown help to create a strong sense of place

EXISTING TRAIL NETWORK



Proximity to Trail Network

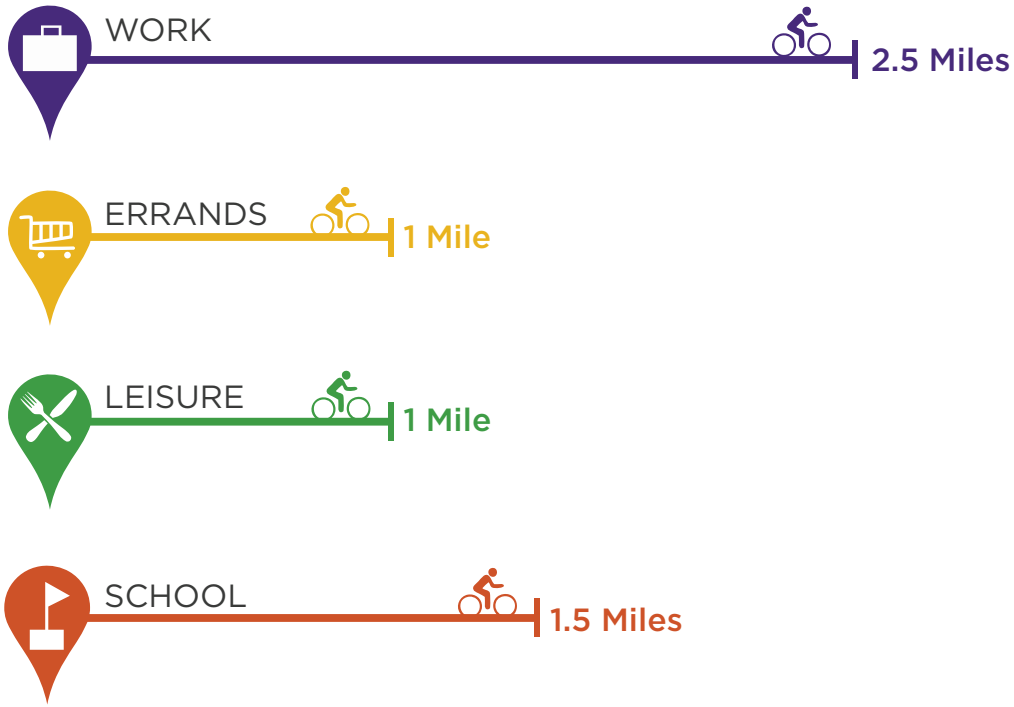
Approximately 26% of Northampton's total area lies within a half mile of a trail.

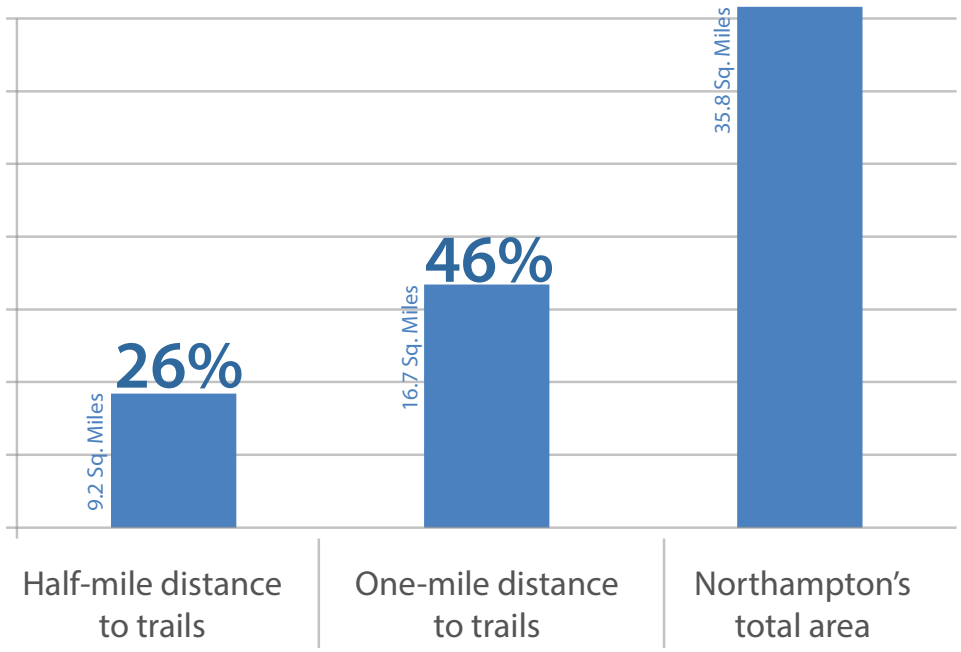
Approximately 46% of Northampton's total area lies within one mile of a trial.

Based on national statistics from NHTS (National Household Travel Survey) data, survey respondents are willing to travel the following distances by bicycle:

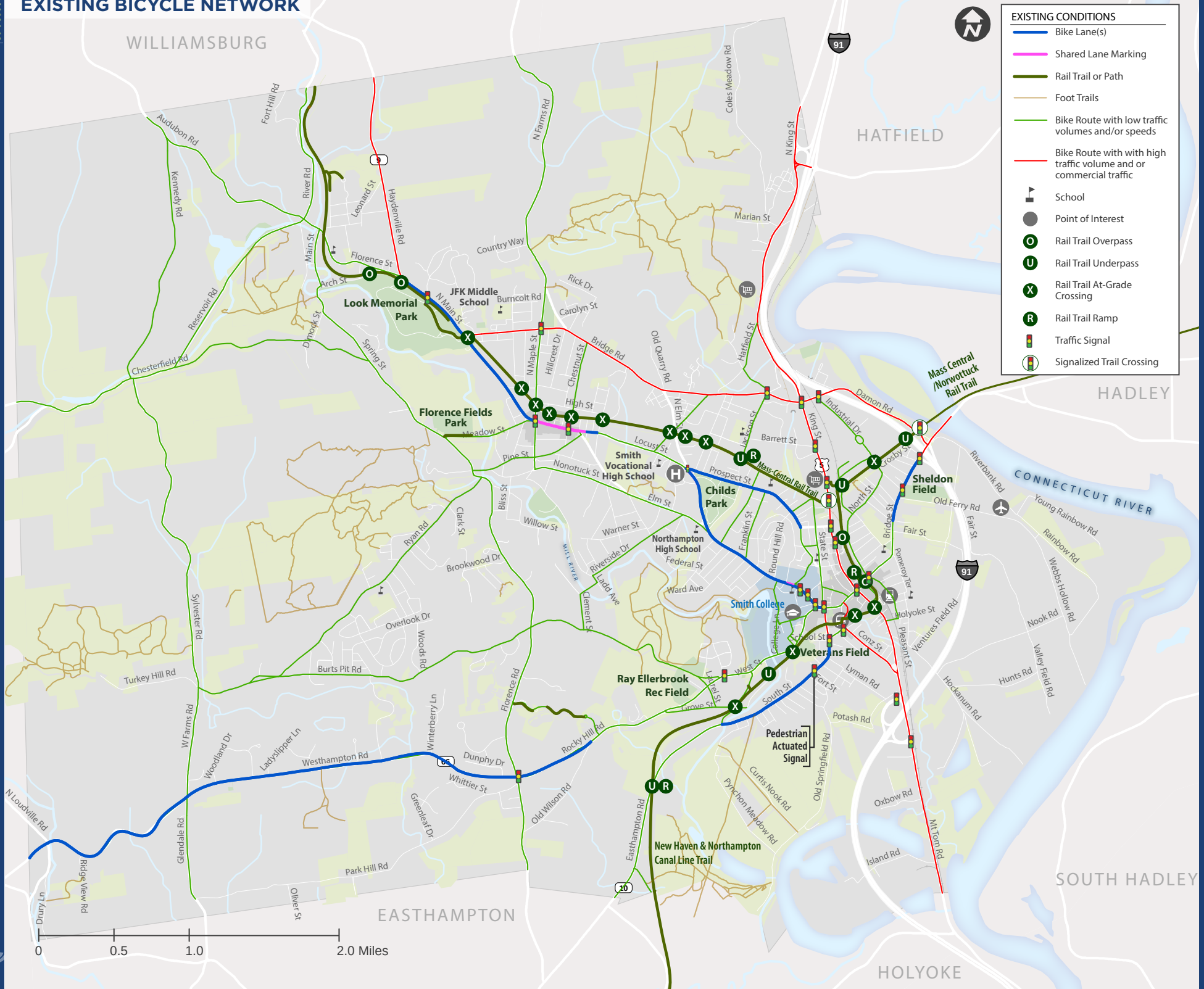
- 2.5 miles to get to work
- 1 mile to run errands
- 1 mile for leisure activities
- 1.5 miles to get to school

This bodes well for Northampton where a large percentage of the population lives within a half-mile of a rail trail, and nearly the entire cities population resident within one mile of a trail.

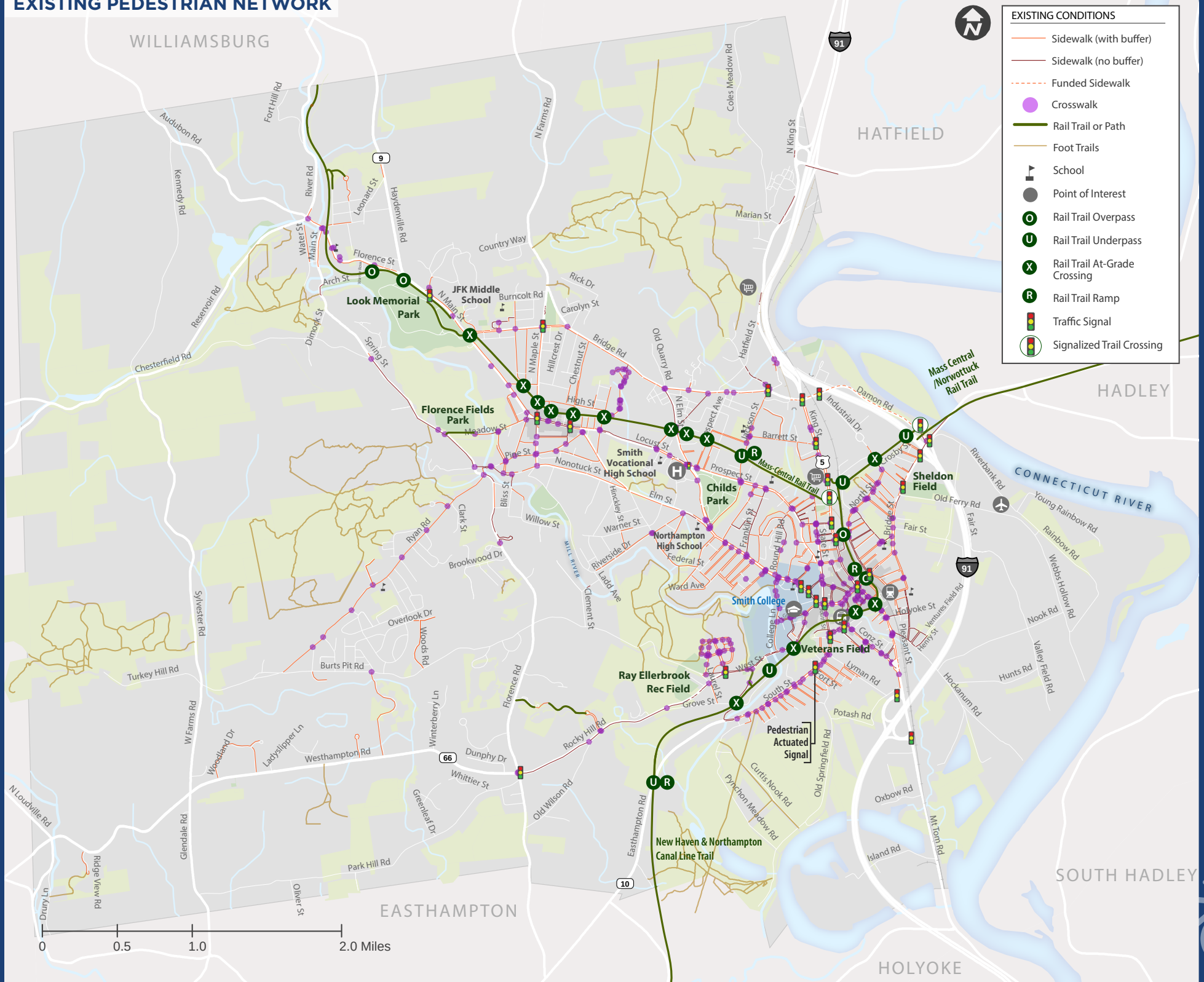




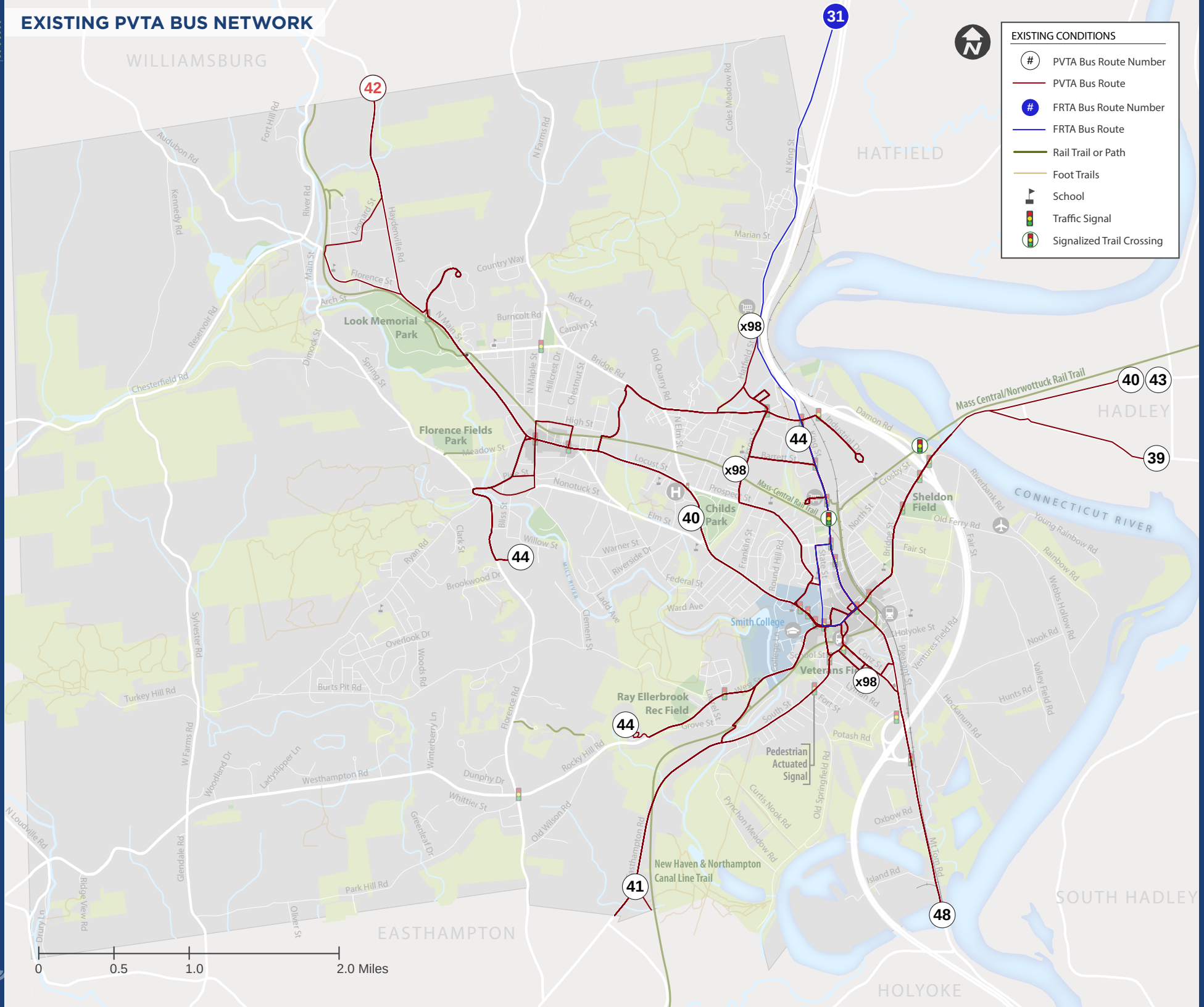
EXISTING BICYCLE NETWORK



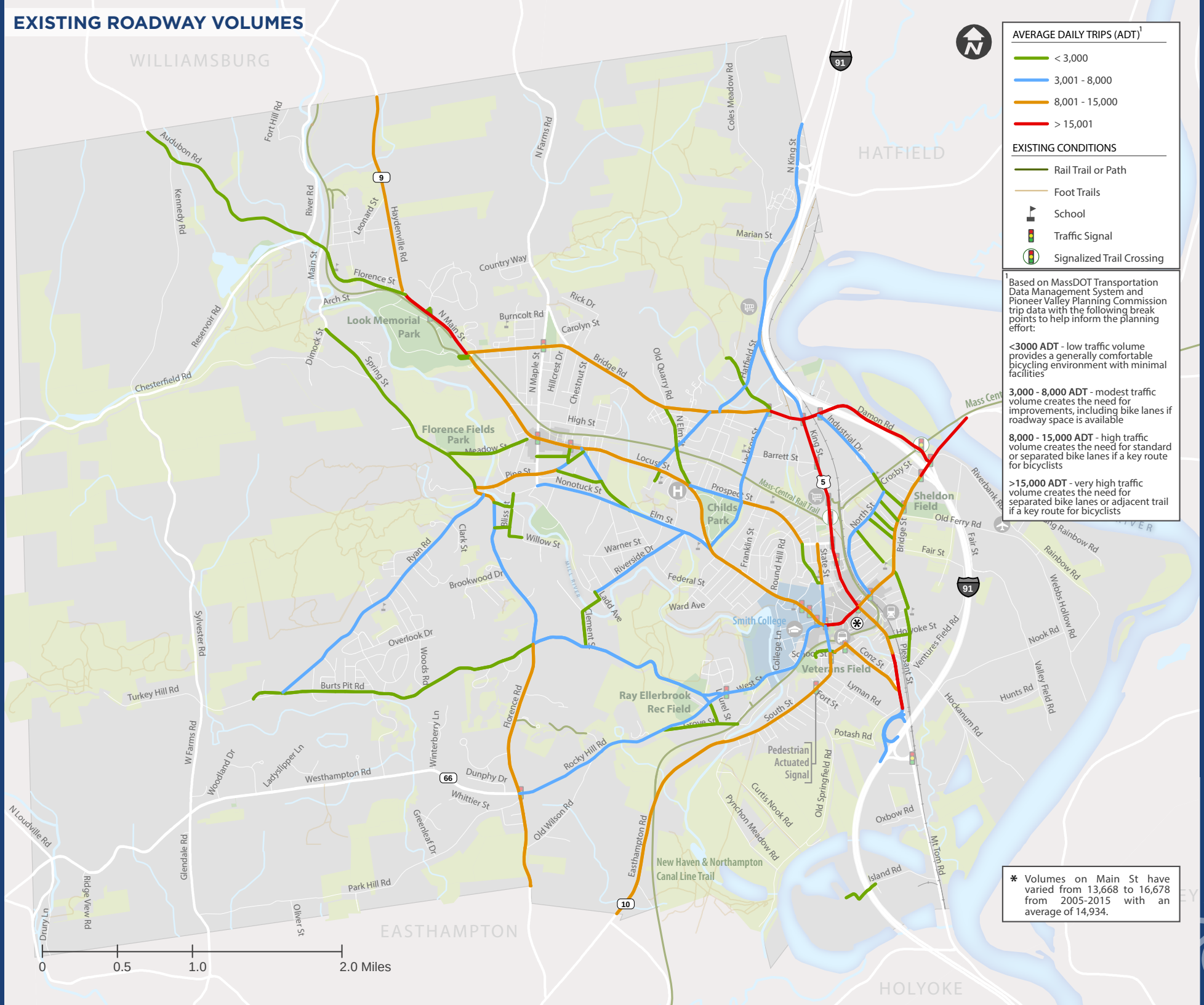
EXISTING PEDESTRIAN NETWORK



EXISTING PVTA BUS NETWORK



EXISTING ROADWAY VOLUMES



AVERAGE DAILY TRIPS (ADT)[1]

- < 3,000
- 3,001 - 8,000
- 8,001 - 15,000
- > 15,001

EXISTING CONDITIONS

- Rail Trail or Path
- Foot Trails
- School
- Traffic Signal
- Signalized Trail Crossing

[1] Based on MassDOT Transportation Data Management System and Pioneer Valley Planning Commission trip data with the following break points to help inform the planning effort:

<3000 ADT - low traffic volume provides a generally comfortable bicycling environment with minimal facilities

3,000 - 8,000 ADT - modest traffic volume creates the need for improvements, including bike lanes if roadway space is available

8,000 - 15,000 ADT - high traffic volume creates the need for standard or separated bike lanes if a key route for bicyclists

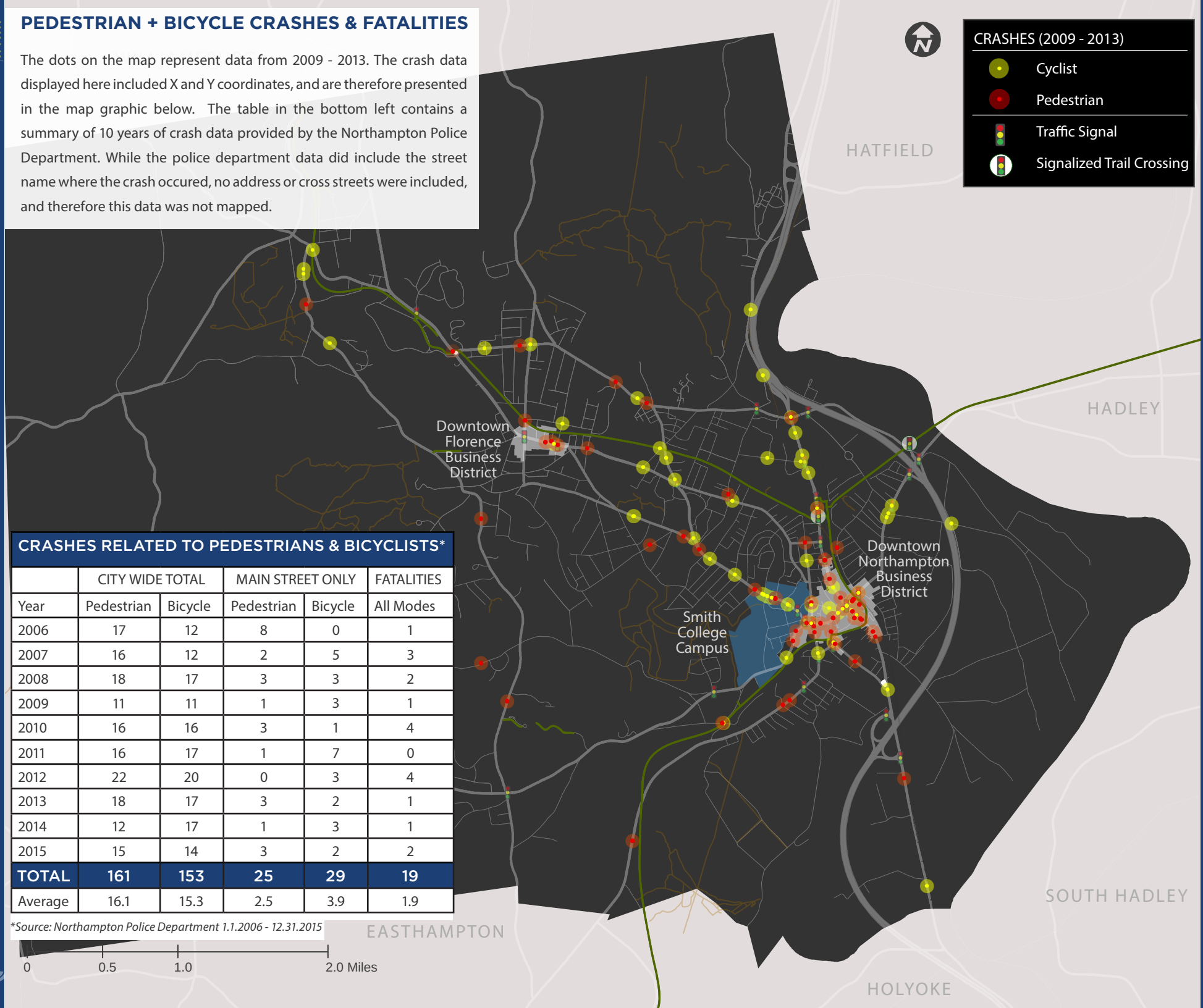
>15,000 ADT - very high traffic volume creates the need for separated bike lanes or adjacent trail if a key route for bicyclists

* Volumes on Main St have varied from 13,668 to 16,678 from 2005-2015 with an average of 14,934.

CRASHES INVOLVING PEDS & BIKES

PEDESTRIAN + BICYCLE CRASHES & FATALITIES

The dots on the map represent data from 2009 - 2013. The crash data displayed here included X and Y coordinates, and are therefore presented in the map graphic below. The table in the bottom left contains a summary of 10 years of crash data provided by the Northampton Police Department. While the police department data did include the street name where the crash occured, no address or cross streets were included, and therefore this data was not mapped.



CRASHES RELATED TO PEDESTRIANS & BICYCLISTS*

	CITY WIDE TOTAL		MAIN STREET ONLY		FATALITIES
Year	Pedestrian	Bicycle	Pedestrian	Bicycle	All Modes
2006	17	12	8	0	1
2007	16	12	2	5	3
2008	18	17	3	3	2
2009	11	11	1	3	1
2010	16	16	3	1	4
2011	16	17	1	7	0
2012	22	20	0	3	4
2013	18	17	3	2	1
2014	12	17	1	3	1
2015	15	14	3	2	2
TOTAL	**161**	**153**	**25**	**29**	**19**
Average	16.1	15.3	2.5	3.9	1.9

Source: Northampton Police Department 1.1.2006 - 12.31.2015

4.2 Gap Analysis

As part of the existing conditions analysis, Alta conducted a qualitative system gap analysis based on field observations, existing planning documents and through the examination of GIS data, aerial imagery, and on-line mapping websites. The analysis includes existing rail trail and on-street networks and features Corridor Gaps, Linear Gaps, Spot Gaps, and intersections that are particularly challenging for bicyclists and pedestrians. In a follow-up contract to this plan, Alta is currently building from this qualitative analysis to develop a more-detailed quantitative gap analysis of the City's didewalk network.

In aggregate, this analysis provides an understanding of which areas have the greatest need for improvements, which areas can benefit most from strategic investment, and which areas pose the greatest challenges to further developing a bicycling and walking network.

Corridor Gaps – These gaps are missing links of significant length, typically a half mile or more, where bicycle/pedestrian facilities are desired but do not exist, or are not adequate based on existing or future demand. They may correspond to a street corridor or a desirable route connecting neighborhoods, popular destinations, or to adjacent communities.

Linear Gaps – These gaps are missing segments in an otherwise connected facility, typically ¼ mile or less. Linear gaps may also be barriers between destinations and routes. Significant linear gaps occur in the sidewalk network in many parts of Northampton, especially the more suburban/rural areas where homes were developed in the 1960's through the first decade of the 21st century. (More-recent housing development is required to have sidewalks, as part of current sub-division regulations.) A key linear gap in the bicycle network include the gap between the bike lanes and shared lane markings in central Florence and the bike lanes along Elm St. and Prospect St. For the sidewalk network, one critical linear gap runs along the west side of State Street from Main Street to Trumbull Road.

Spot Gaps – These gaps are point-specific locations lacking facilities or other treatments to accommodate safe and comfortable travel for walkers and bicyclists. This could range from a lack of crosswalk at a key location to a missing spur connection from a rail trail to an adjacent street of open space. There are various spot gaps within the pedestrian network throughout Northampton: a block lacking a sidewalk, a missing crosswalk at the end of a sidewalk stub, a worn path between a rail trail and adjacent street, and a wide roadway with an unnecessarily long crosswalk. Many streets that dead-end at a rail trail lack proper ADA curb ramps and comfortable connections to the rail trails.

Challenging Intersections – These are intersections that are particularly difficult or unsafe for pedestrians and/or bicyclists. This may be due to wide intersecting roadways, free right turns, large turning radii, confusing geometry, long crossing distances, lack of crosswalks, or inadequate traffic controls. There are challenging intersections sprinkled throughout the city, with some of the most prominent being the West Street/ Elm Street intersection, King Street/Damon Road, Elm Street/North Elm Street and Park Street/Meadow Street/North Main Street.

In aggregate, the various gaps form a key challenge to improving bicycling and walking conditions in Northampton. The following series of maps represent gaps, opportunities and challenges, citywide and within Florence and downtown Northampton.

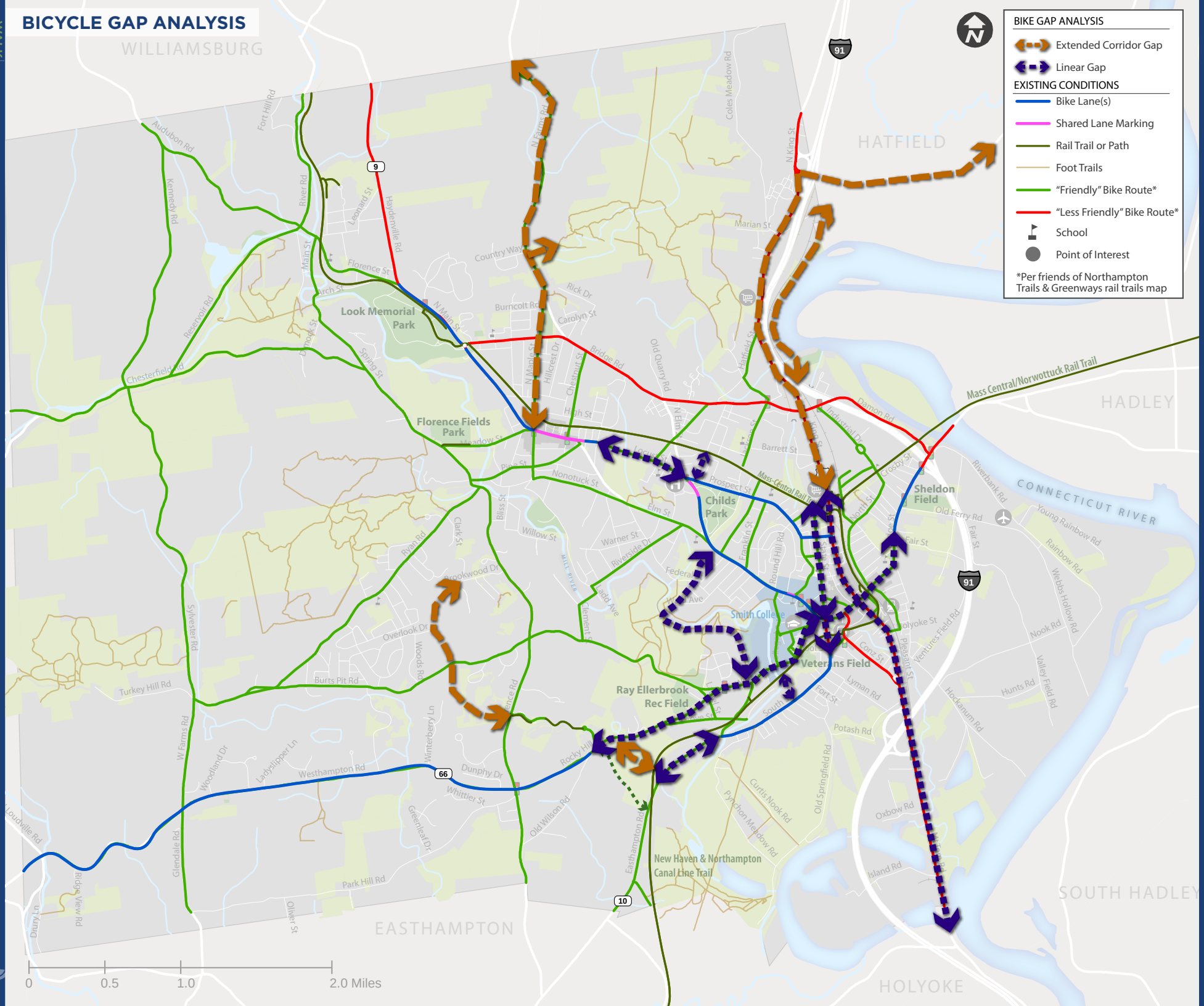
The lack of bicycle facilities and continuous sidewalks along N Maple St. creates a corridor gap between the Mass Central Rail Trail, Arcanum Field and the trails at the Fitzgerald Lake Conservation Area

The west side of State St. is a linear gap in pedestrian connectivity downtown

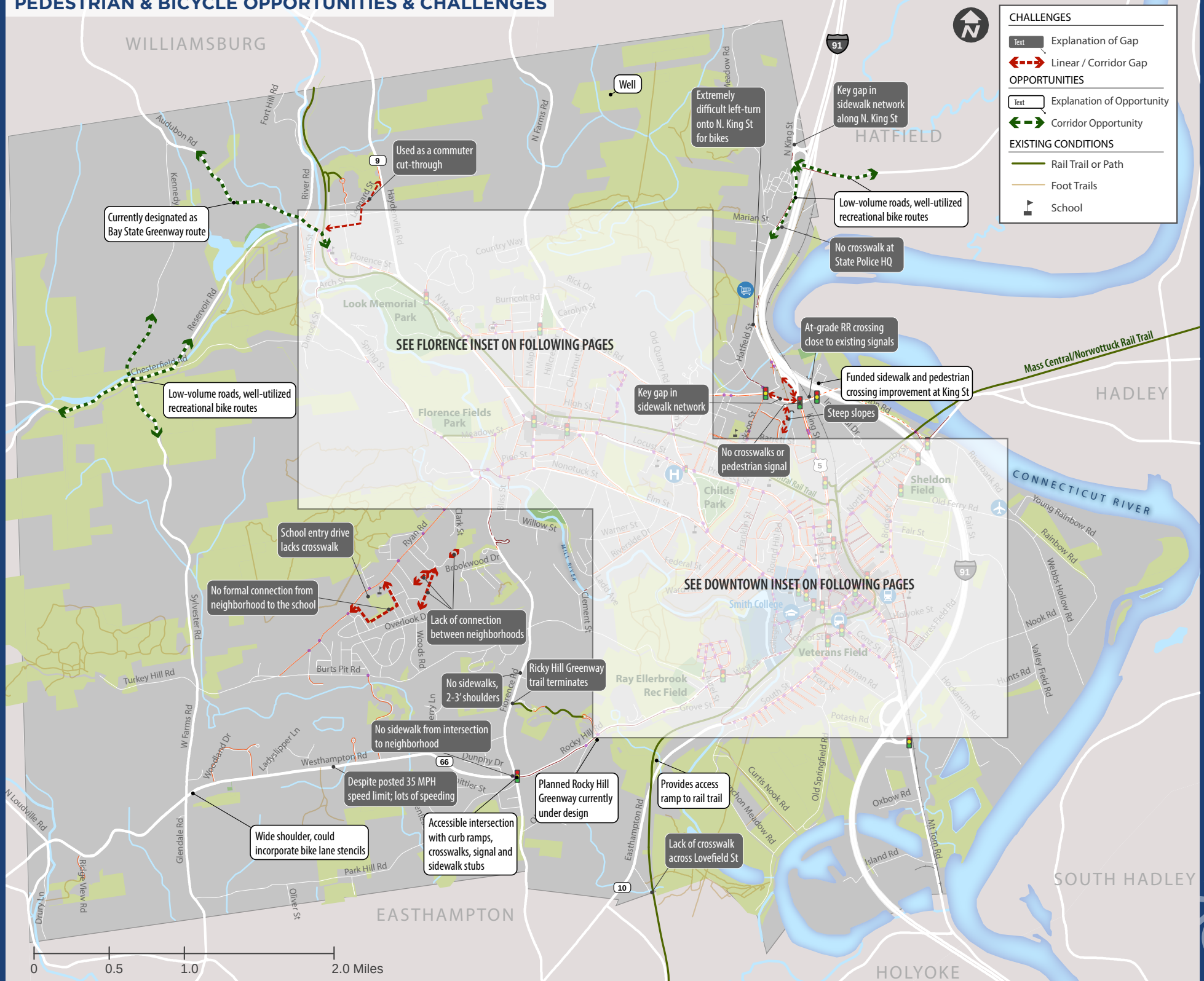
*Along the MassCentral Rail Trail, there are desire lines in spots indicating the need of easement rights across National Grid's utility corridor**

**NOTE: This trail access is designed and planned for 2016 or 2017 construction*

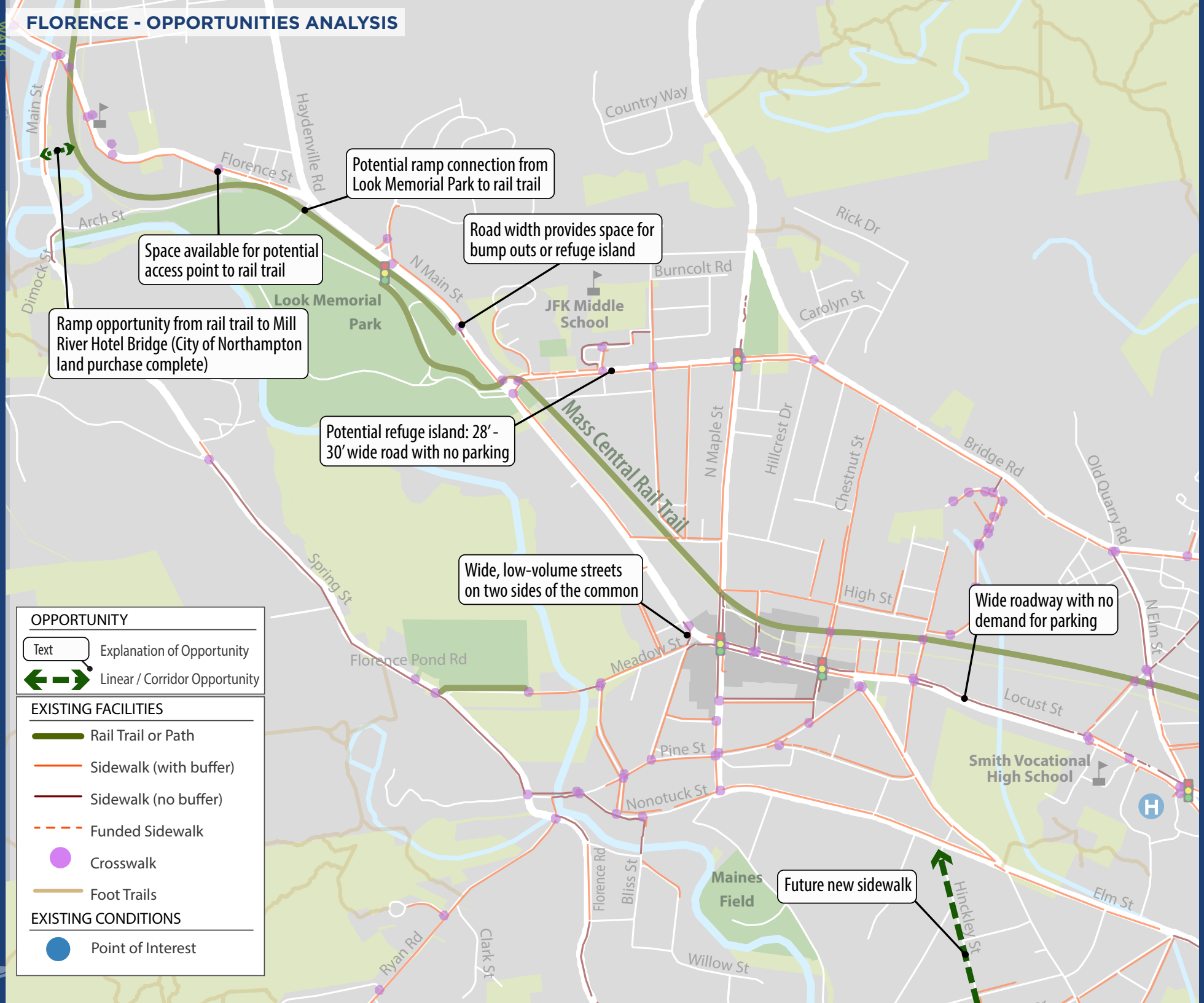
BICYCLE GAP ANALYSIS



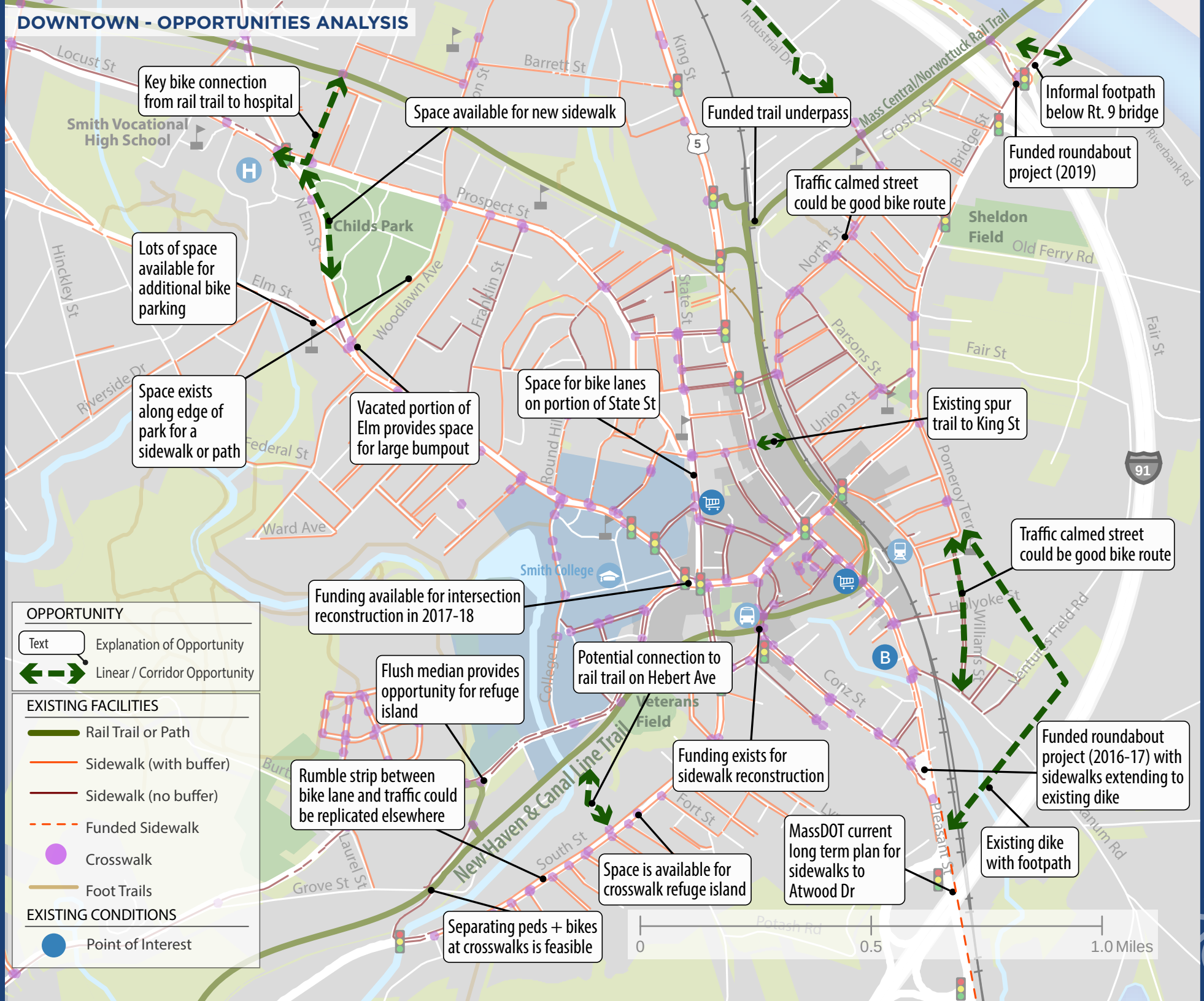
PEDESTRIAN & BICYCLE OPPORTUNITIES & CHALLENGES



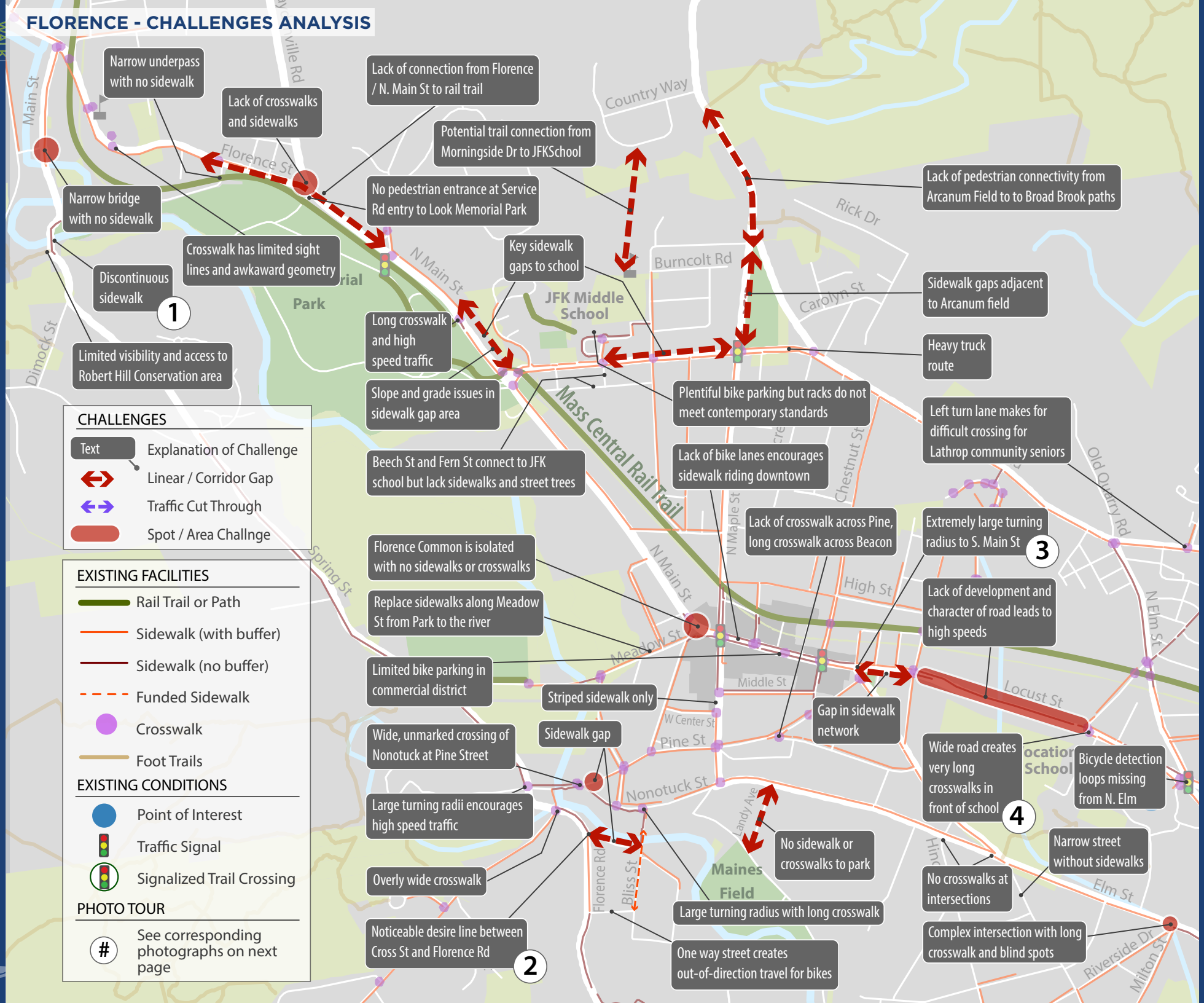
FLORENCE - OPPORTUNITIES ANALYSIS



DOWNTOWN - OPPORTUNITIES ANALYSIS



FLORENCE - CHALLENGES ANALYSIS



CHALLENGES

- Text — Explanation of Challenge
- Linear / Corridor Gap
- Traffic Cut Through
- Spot / Area Challnge

EXISTING FACILITIES

- Rail Trail or Path
- Sidewalk (with buffer)
- Sidewalk (no buffer)
- Funded Sidewalk
- Crosswalk
- Foot Trails

EXISTING CONDITIONS

- Point of Interest
- Traffic Signal
- Signalized Trail Crossing

PHOTO TOUR

- (#) See corresponding photographs on next page

Challenges that exist in the pedestrian and bicycle network in Florence. (See map on previous page.)

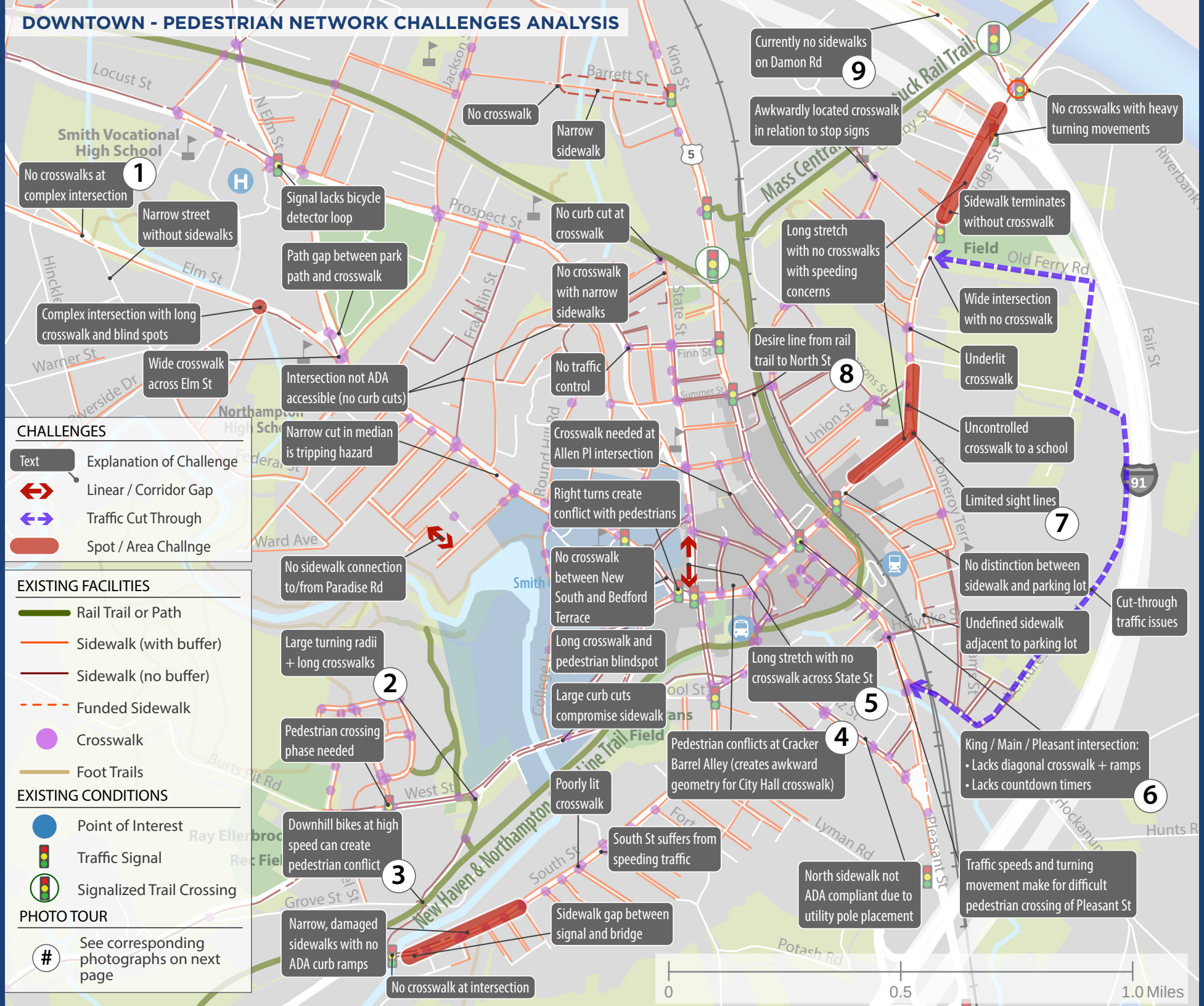
Discontinuous sidewalk.

Noticeable desire line between Cross St and Clorence Rd.

Extremely large turning radius to S Main St from Main St. (aA upper left portion of photo.)

Wide road creates very long crosswalks in front of school.

DOWNTOWN - PEDESTRIAN NETWORK CHALLENGES ANALYSIS



CHALLENGES

- Text — Explanation of Challenge
- Linear / Corridor Gap
- Traffic Cut Through
- Spot / Area Challnge

EXISTING FACILITIES

- Rail Trail or Path
- Sidewalk (with buffer)
- Sidewalk (no buffer)
- Funded Sidewalk
- Crosswalk
- Foot Trails

EXISTING CONDITIONS

- Point of Interest
- Traffic Signal
- Signalized Trail Crossing

PHOTO TOUR

- (#) See corresponding photographs on next page

Challenges that exist in the pedestrian and bicycle network in downtown Northampton. (See map on previous page.)

1 *No crosswalks at complex intersection.*

2 *Large turning radii and long crosswalks.*

3 *Downhill bikes at high speed create pedestrian conflict.*

4 *Pedestrian conflicts at Cracker Barrel Alley.*

5 *Long stretch with no crosswalks across State St.*

6 *Lacks diagonal crosswalks, ramps, and countdown timers.*

7 *Limited sight lines.*

8 *Desire line from rail trail to North St.*

9 *Currently no sidewalks along Damon Rd.*

DOWNTOWN - BICYCLE NETWORK CHALLENGES ANALYSIS

GAP ANALYSIS

- Text — Explanation of Issue
- Linear / Corridor Gap
- Spot / Area Gap
- Traffic Cut Through

EXISTING FACILITIES

- Rail Trail or Path
- Sidewalk (with buffer)
- Sidewalk (no buffer)
- Funded Sidewalk
- Crosswalk
- Foot Trails

EXISTING CONDITIONS

- Point of Interest
- Traffic Signal
- Signalized Trail Crossing

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PART III

RECOMMENDATIONS

5. PUBLIC OUTREACH

Introduction

The Walk/Bike Northampton Comprehensive Plan is a reflection of the community's desire for a more walkable, bikable and accessible city. Through communication with residents, business owners, advocates, stakeholders and other interested groups, the planning team created a long list of projects to support this desire. The public engagement process included a pair of well-attended public forums, two outreach events related to the redesign of Main Street, monthly meetings with the City's Bicycle and Pedestrian Subcommittee and a project website that was able to process public comments. To supplement the Alta team's effort, the Pioneer Valley Planning Commission conducted additional outreach to communities who are less likely to attend evening meetings downtown to ensure input was gathered from a wide variety of sources. In aggregate, the comments and ideas from all facets of the engagement helped to inform many of the project and policy recommendations found throughout this report.

Northampton Mayor David Narkewicz addressing the crowd at the beginning of Public Forum #1.

DRAFT

Pioneer Valley Planning Commission Outreach

Concurrent with Alta's public involvement described in this section, the Pioneer Valley Planning Commission (PVPC) sought perspectives on walking and bicycling by engaging with residents via Casa Latina, the Human Rights Commission and the Housing Authority properties. Generally, they were more interested in specifics for walking--with requests for:

- More sidewalks to assure connectivity, especially to school and parks from residential neighborhoods as well as other important destinations,
- Highlighting the need for sidewalk repair and maintenance, especially for wheel chair accessibility and to avoid elderly falls due to cracks and upwelled surfaces,
- The importance of lighting for safe walking at all hours.

With respect to bicycling, the people engaged did not, for the most part, feel that bicyclists belong within shared lanes with cars, so the need for bike lanes on streets as well as off road bike paths was highlighted. PVPC also understood this as an expression of need for a broad public information and education campaign to inform Northampton residents that a bicycle is a vehicle and as such belongs on the road.

A potential area of conflict surfaced with respect to the City's commitment to prioritize pedestrian infrastructure within a close proximity to the downtown--where services are concentrated--versus the high cost of housing within this same area. The residents PVPC engaged are generally less well-off economically and, not including the people who live in the Housing Authority properties downtown, cannot afford to live close to the city center. These people indicated a desire for new and improved sidewalks in the outlying neighborhoods.

Public Forum #1

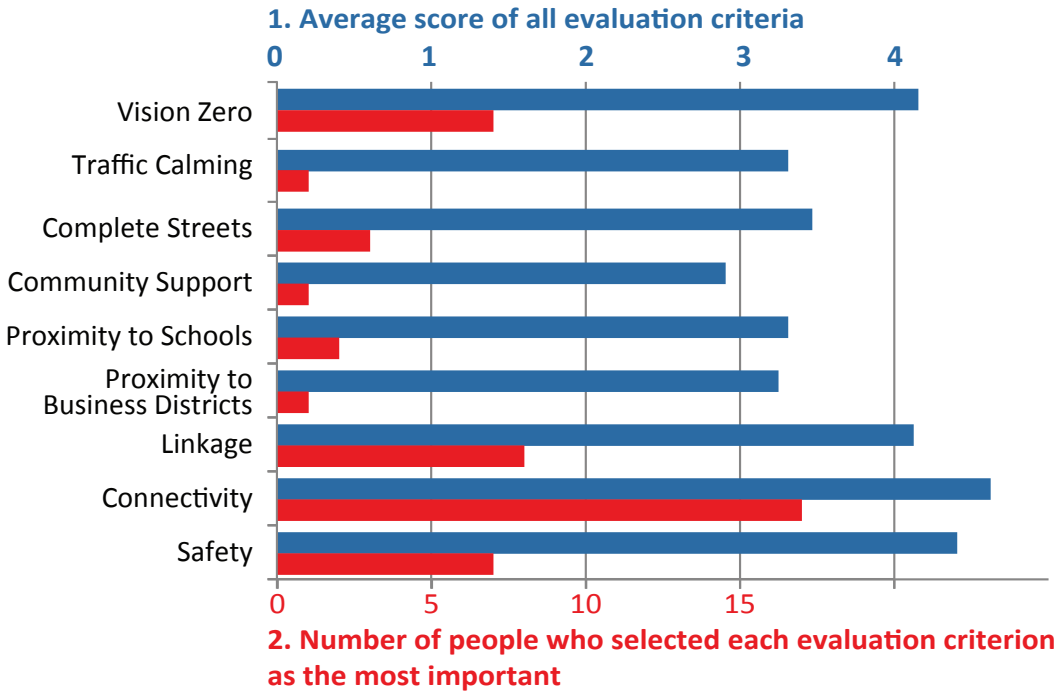
On March 7th, 2016 the consultant team led the first public forum at the Senior Center on Conz Street to introduce our general approach to conducting Northampton's Walk Bike Comprehensive plan and present the existing conditions analysis. The presentation included photos and explanations of pedestrian and bicycle facility-related tools that can be used to create a comfortable cycling and walking environment for everyone. Pieces of the toolkit included rail trails, sidewalks/crosswalks, intersections, and green streets principles. The forum had a strong turnout, with over 120 in attendance. Base maps of the city that showed existing sidewalk locations and conditions, rail trail locations, and on-street bicycle facility locations were utilized to solicit input and feedback from the public. Comments were recorded and digitized in the appendix of this report.

One of the many outreach meetings hosted "on-site" by PVPC included one in April at CasaLatina in Florence.

Public Forum #2

On May 18th, 2016 the consultant team led the second of two public forums at First Churches Sanctuary on Main Street to go over the proposed recommendations to enhance Northampton's bicycle and pedestrian network. Over 40 members of the community attended the event. Project ideas were displayed on large printed maps and digitally during a presentation. The public was encouraged to comment on specific projects and recommend changes to project maps. In an effort to develop a fair and equitable project priority list, a common set of evaluation criteria was circulated and attendees were encouraged to list the criteria on a scale of Very Important to Not Important (right top). 32 surveys were completed. The survey results (right bottom) indicate that improved connectivity to existing networks, improved links to popular destinations, and improved safety were the highest-rated choices. Question 1 answers are displayed in Blue, and Question 2 answers are displayed in red.

Project Priority Evaluation Criteria Survey Responses



The breakout groups invited the public to provide valuable input regarding specific project they'd like to have included in the plan.

Public Forum #1

The Main St workshop engaged attendees with large section print-outs of the Main St corridor.

Main St Workshop*

The crowd at the First Churches Sanctuary just before Public Forum 2 began.

Public Forum #2

The Main St Demonstration Project showcased how excess space within Main Streets right of way could be utilized for safer bicycle facilities and parklets.

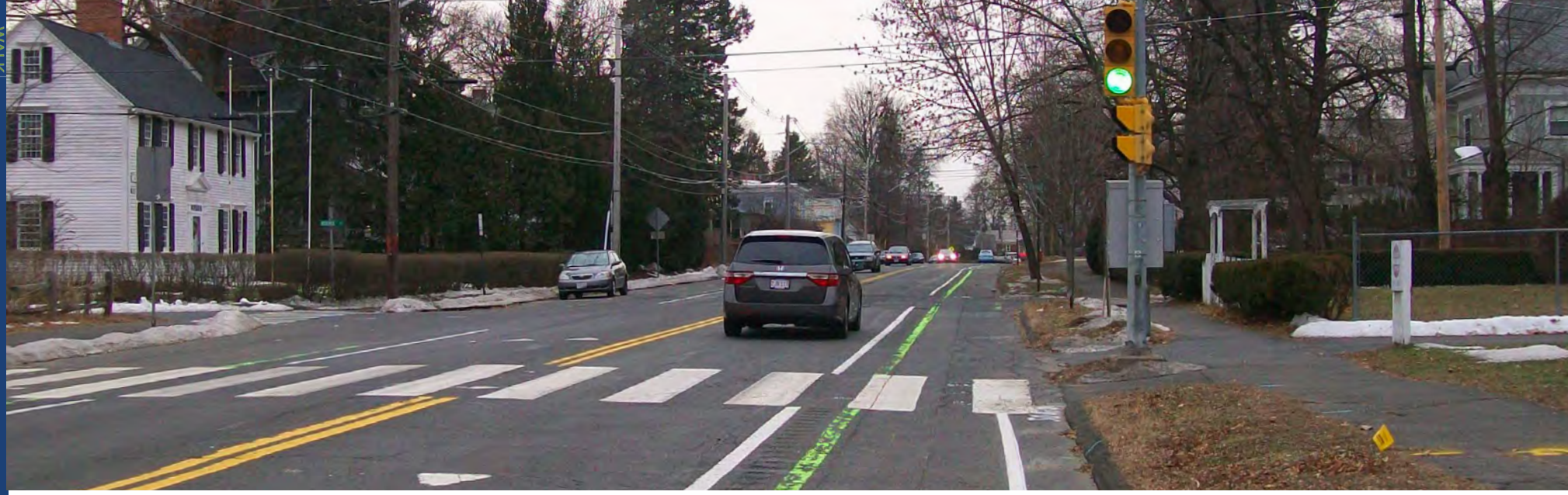
Main St Demonstration Project*

MARCH 2016 — **APRIL** — **MAY** — **JUNE** — **JULY**

PROJECT WEBSITE

PVPC OUTREACH

**See Main St. section for description.*



6. RECOMMENDED NETWORK

Introduction

The nearly 200 project recommendations for the City of Northampton include new crosswalks, sidewalks, bike lanes, traffic calming elements, short connections to rail trails, and entirely new trails. All are conceptual in nature and most will need to be followed up with additional analysis, engineering study and public outreach. The projects are derived from previous city and regional planning studies and reports, consultant team field work and analysis, the public outreach described above, input from City staff and comments from the Bicycle and Pedestrian Subcommittee. All are consistent with Northampton's current Complete Streets ordinance and intended to be eligible for potential funding from the state. In aggregate, the intent of the dozens of miles of network recommendations is to improve safety,connectivity and mobility for people on foot, riding bicycles and for those with disabilities.

With the future implementation of the pedestrian, bicycle and trail projects, Northampton's network of sidewalks will increase from nearly 78 miles today to 88 miles in the future. The City's designated bicycle facilities will grow from today's 8.9 miles to 26.4 miles in the future and the trail network will expand from nearly 9.5 miles today to 14.3 miles. The expansion of active transportation infrastructure will help the City achieve its mode share goals, mitigate increases in traffic congestion and air pollution and reduce its carbon footprint. The new sidewalks, trails and bike lanes will also improve the quality of life for Northampton's residents and help businesses draw customers from a more-diverse range of transportation modes, not just motor vehicle drivers. They will enhance the City's progressive and sustainable "brand" and help attract new residents, businesses and institutions.

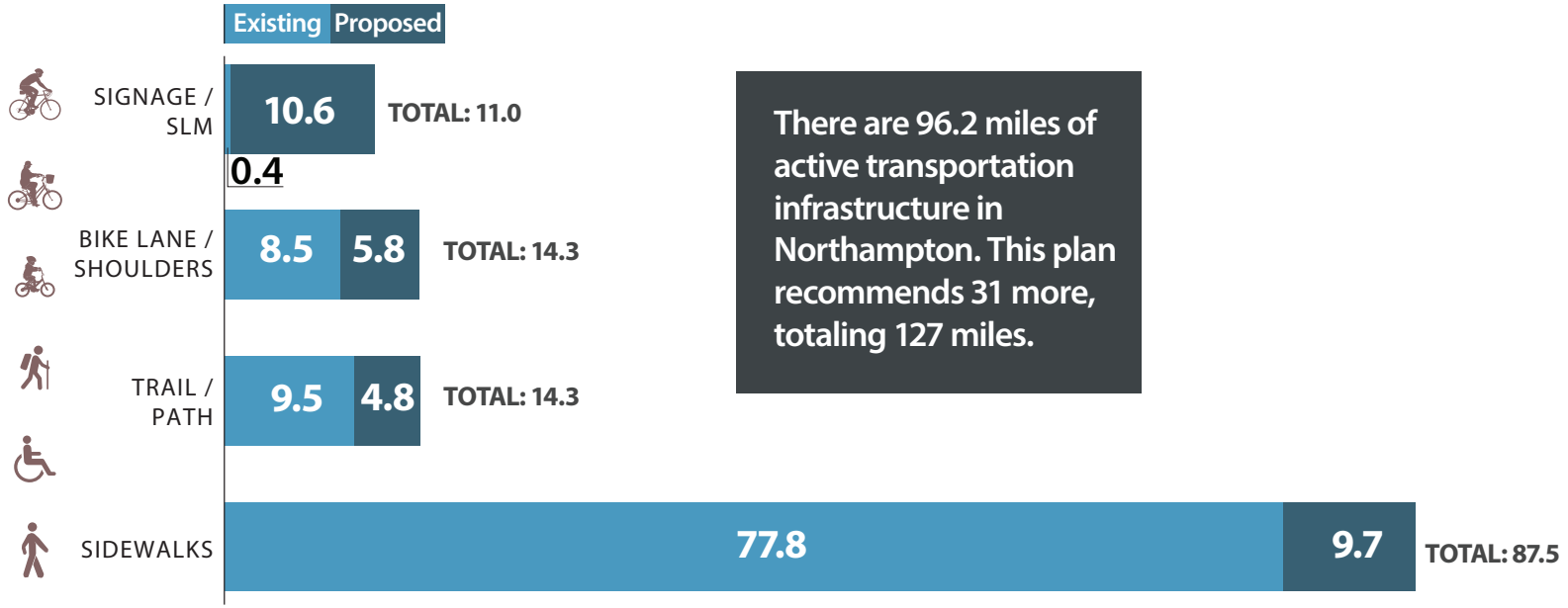
Prioritization

In order to help the City of Northampton prioritize the nearly 200 project recommendations, the plan used 9 criteria to evaluate each project. The scoring was qualitative in nature and should not be interpreted as being inflexible. The final scores should instead be used to inform funding decisions and grant requests in the future.

It should be noted that because safety and connectivity were considered the most critical criteria, both were weighted with a multiplier of 2X when determining the final scores for each recommendation.

Goal	Explanation
G1: Safety	Project provides a significant safety improvement for all users
G2: Connectivity	Project improves connections to existing sidewalks, rail trails and bike lanes
G3: Linkage	Project provides direct links to key civic, open space and cultural destinations
G4: Proximity to Business District	Project lies withinone mile of Downtown Northampton or Florence
G5: Proximity to Schools	Project lies within one mile radius of a school
G6: Community Support	Project is supported by >1 person at a public forum or on web site
G7: Complete Streets	Project is consistent with the City's Complete Streets policy and eligible for MassDOT Complete Streets funding program
G8: DPW Traffic Calming List	Project lies along a roadway currently on the DPW's list of traffic calming projects
G9: Vision Zero	Project is intended to help the city achieve the goal of zero pedestrian and bicyclist deaths

The consultant team collected important data regarding how residents of Northampton want bicycle and pedestrian network projects prioritized in the plan utilizing the above information in a survey presented to attendees of Public Forum #2



There are 96.2 miles of active transportation infrastructure in Northampton. This plan recommends 31 more, totaling 127 miles.

6.1 Design Features Toolkit - Bicycle

Infrastructure that enables the safety of cyclists is a key feature of the recommendations section of this report. The cost and implementation timeline of these upgrades ranges from low to high. Low-cost, context-sensitive retrofits can enable safety improvements to an area pending a more robust or significant future redesign, and can encourage would-be cyclists to try out the new facility. The following design features make up a significant portion of the infrastructure improvement recommendations table in the appendix.

Shared Lane Marking (SLM) A.K.A. Sharrow

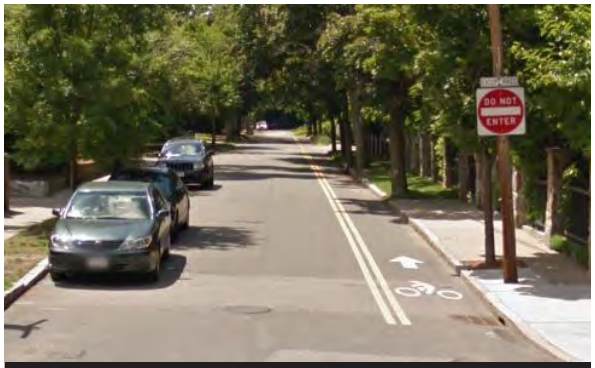
Standard SLM

Enhanced SLM

Shared lane markings are used to mark a designated bike route on roadways signed at 35 MPH or less. They are placed in the travel lane, encouraging cyclists to travel away from the door-zone of parked vehicles. These symbols highlight the fact that the roadway is a shared space, and should be coupled with "Bikes May Use Full Lane" signs (MUTCD R4-11). Enhanced Sharrows provide extra awareness to motorists due to the dashed lane lines.

Greenbacked Sharrow

The addition of green paint on the roadway typically signifies a potential conflict point. Bicycles conflict with motor vehicles at intersections and driveways where a turning movement forces a motor vehicle to cross the path of a bicycle. Although MUTCD allows up to 250 foot (maximum) spacing between sharrows, 150 - 200 feet is ideal.



Contra-Flow Bike Lane

Contra-flow bike lanes are designed to allow bicycles to ride the opposite direction of motor vehicle traffic. This treatment converts a one-way street into a two-way street for bike traffic - connecting neighborhoods via an important link in an overall bike network. Warning signs should be placed at cross streets to warn motor vehicles. SLMs may be inlcuded for cyclists riding with traffic.

Bike Lane

Bike lanes designate an exclusive space for bicycles through the use of pavement markings and signage. Bike lanes are typically located adjacent to motor vehicle traffic and travel in the same direction as motor vehicles.

Separated Bike Lane - Sidewalk Level

Raised separated bicycle lanes are vertically separated from motor vehicle traffic. A furnishing zone between the bicycle lane and curb or motor vehicle traffic is a common feature. At intersections, the raised bicycle lane can be dropped down to the street level.

Separated Bike Lane - Street Level

These bikeways are at street-level and use a variety of methods for physical protection from passing traffic. A parking lane, flexible delineator posts, or flower boxes may provide the physical separation from motor vehicle traffic.

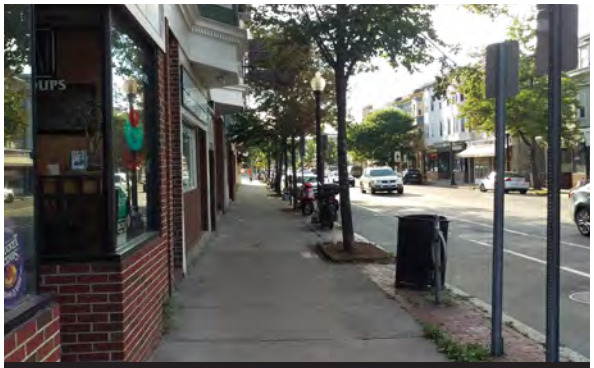
Photo Credit: www.thedartmouth.com

Advisory Bike Lane

Advisory bike lanes are bicycle priority areas delineated by broken white lines, separate from a center one-lane two-way travel area. Motorists may only enter the bicycle zone when no bicycles are present. Motorists must overtake bicyclists with caution due to potential oncoming traffic.

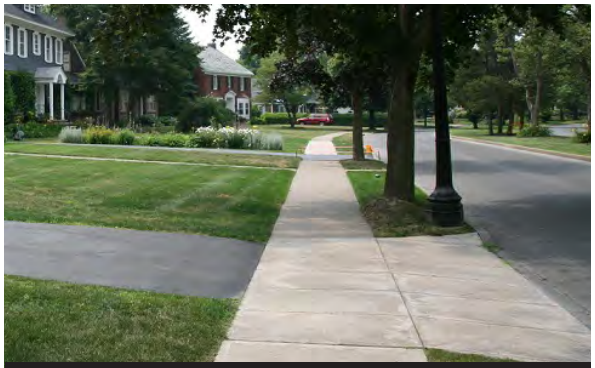
Design Features Toolkit - Pedestrian

Pedestrian design features create a more comfortable and safe environment for pedestrians. Many of these are designed to slow motor vehicle traffic.



Commercial Zone Sidewalk

A sidewalk is a dedicated space for pedestrians adjacent to a street or connecting cul-de-sac neighborhoods. A 5-foot sidewalk is the minimum preferred standard in commercial areas.



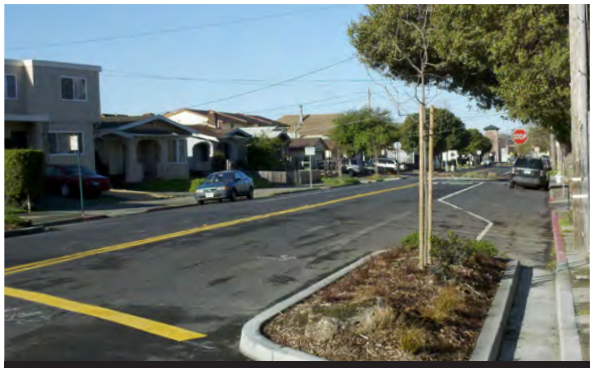
Residential Zone Sidewalk

Residential zone sidewalks are important in providing pedestrians access to schools, businesses, and recreation areas. Four feet is the minimum preferred standard, and a 5-foot sidewalk is common.

Signalized Road Crossing

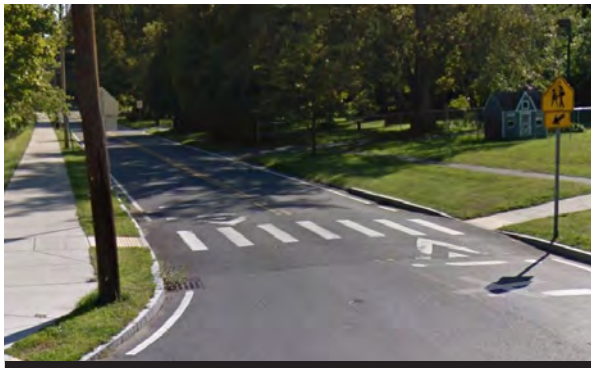
Signalized road crossings are typically locations where rail trails or paths cross roadways with high traffic volumes or or speed and/or connect to schools.

Traffic Calming Measures



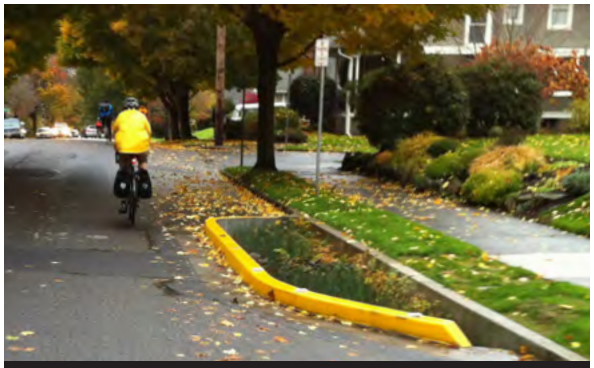
Neck Down

Neck downs are typically aligned at the beginning or entrance to a residential side street. Neck downs may be appropriate along typically low-volume streets that experience a high amount of commuter cut-throughs at peak times.



Raised Crosswalk

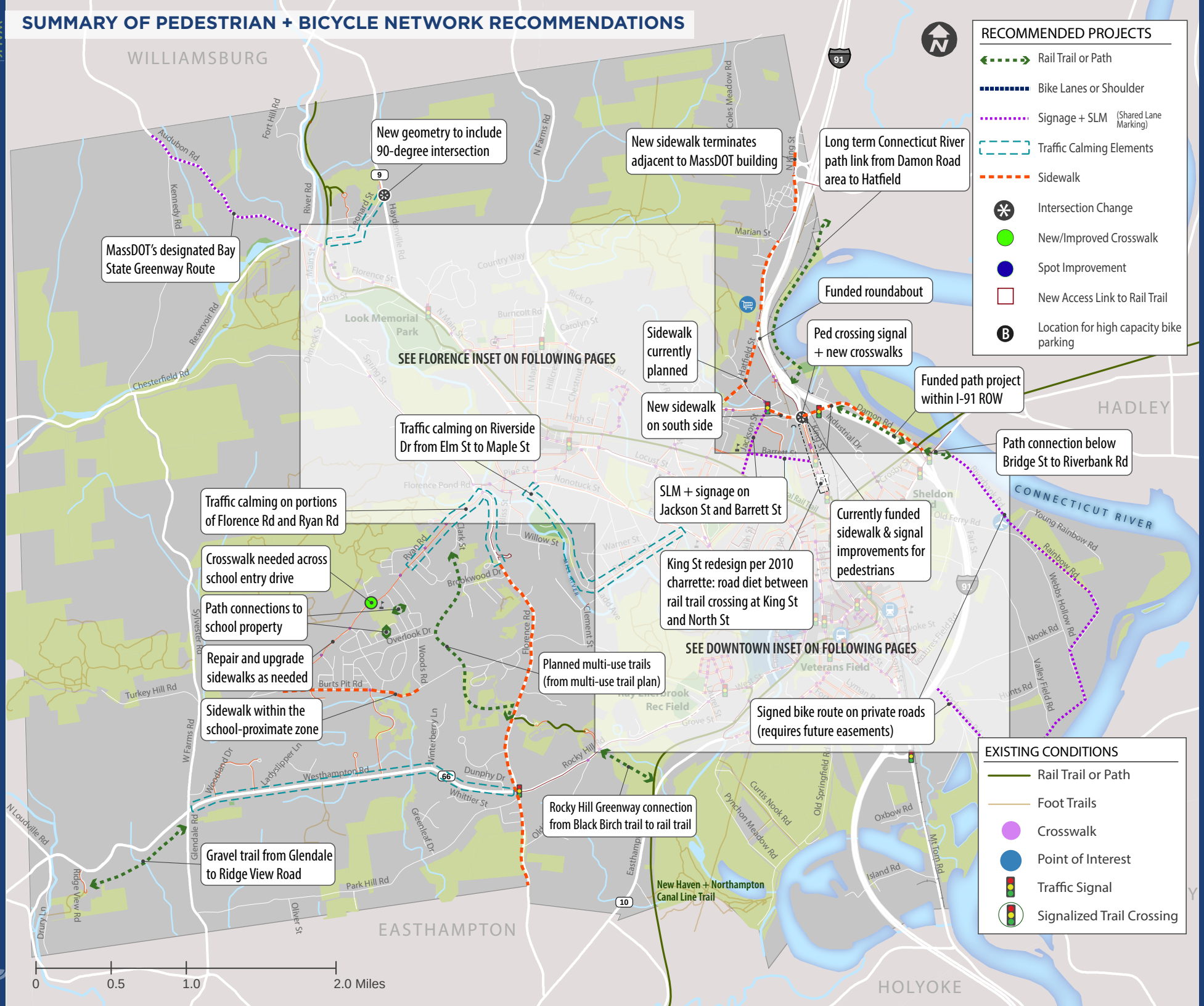
A steeper-pitched raised crosswalk is ideal for some college campus or downtown core locations where significant pedestrian crossings occur regularly or frequently. One result of a steeper crossing is motor vehicle traffic slowed to approximately 10 MPH or less. Mobility-impaired individuals have an easier time crossing as they do not have change in grade.



Chicane

Chicanes deflect vehicles and reduce mid-block speeds by discouraging rapid acceleration.

SUMMARY OF PEDESTRIAN + BICYCLE NETWORK RECOMMENDATIONS

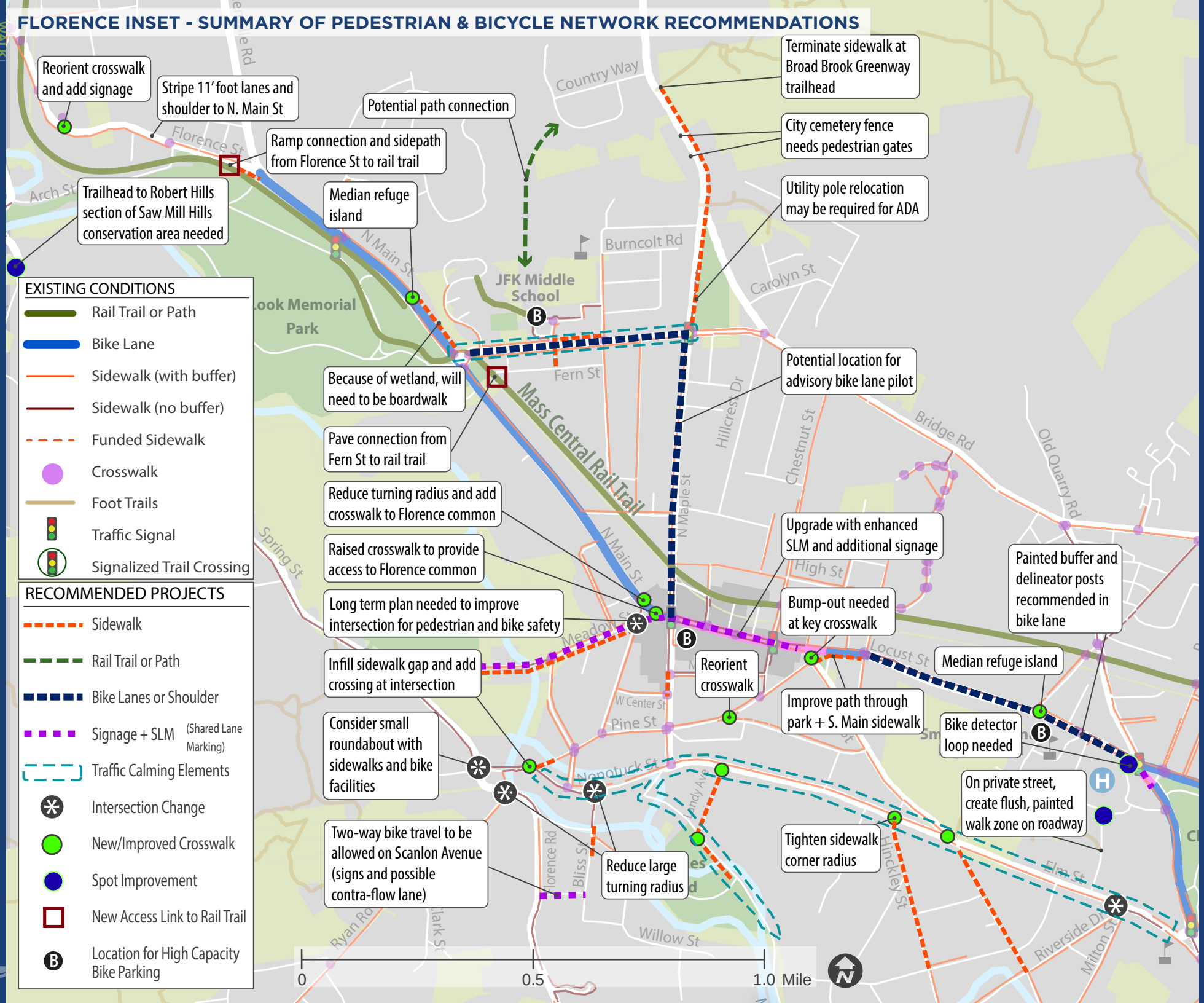


PROJECT DESCRIPTION - CITYWIDE						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
1	Sidewalk	**Bridge Rd**	Between King St and Jackson St	**Install sidewalks**	Key gap in sidewalk network	**32**	**X**	$$$
2	Trail Connection	**Bridge St**	Below Bridge St to Riverbank Rd.	**Create path connection below Bridge St**	To avoid the congestion of the Damon Rd / Bridge St intersection	**24**		$$
3	Sidewalk	**Burts Pit Rd**	From Woods Rd to Ryan Rd	**Install sidewalk in school-proximate zone**		**25**		$$$
4	Trail Connection	**Damon Road area**	along Connecticut River north to Hatfield town line	**Explore feasibility of building off-road trail link along the Connecticut River from Damon Road at Bridge Rd intersection area towards Hatfield**	Long term regional trail connection from Northampton to communities along the river	**27**		$$
5	On-Street Bike Facility	**Florence Rd**		**Stripe bikeable shoulder and 11' travel lanes**	Florence Rd is uncomfortable for cycling	**31**	**X**	$$ - $$$
6	Sidewalk	**Florence Rd**	Between Rocky Hill Rd and Blackbirch Trail	**Install sidewalk along Florence Rd**	Large gap in sidewalk network	**27**		$$$
7	Traffic Calming	**Florence Rd**	from Ryan Rd to Brookwood Dr	**Utilize traffic calming elements on this portion of road, ranked #3 on DPW's Top 5 list of roadways in need of traffic calming**		**25**		$$
8	Trail Connection	**Florence Rd**	at Black Birch Trail	**Extend Rockly Hill Greenway connection from Florence Rd. to Rail Trail**	The existing trail provides a convenient shortcut from residential neighborhoods towards downtown. Expanding this trail would enhance connectivity to the New Haven & Northampton Canal Line Trail	**20**		$$

PROJECT DESCRIPTION - CITYWIDE						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
9	Sidewalk	**Hatfield St**	from Bridge Rd to N King St	**Utilize traffic calming, including installation of ADA compliant curb cuts**	There are curently no sidewalks along Hatfield St and this is a key route for cyclists and pedestrians to access the River Valley Coop and other retailers	**25**		$$$
10	Intersection	**Hatfield St**	at N King St	**Roundabout in planning stage**	Wide intersection geometry creates challenging turn movement for cyclists and chellenging crossing for pedestrians	**23**		$$$
11	Traffic Calming	**Jackson St**	Entire length	**Traffic calming**	Narrow roadway provides uncomfortable feeling for cyclists	**27**		$$
12	Traffic Signal	**King St**	at Bridge Rd	**Install pedestrian crossing signal, countdown timers, and crosswalks**	High pedestrian demand to access nearby grocers	**27**		$$$
13	Sidewalk	**King St**	between River Valley Coop and Big Y	**Install sidewalks**	Key gap in sidewalk network	**24**		$$
14	Sidewalk	**N King St**	From Asbury St to the Northampton / Hatfield line	**Install sidewalks**	This is key gap in the sidewalk network	**22**		$$$
15	Traffic Calming	**Riverside Dr**	from Lexington Ave to Nonotuck	**Utilize traffic calming elements on this portion of road, ranked #5 on DPW's Top 5 list of roadways in need of traffic calming**		**25**		$$
16	Traffic Calming	**Ryan Rd**	from Florence Rd to Pioneer Knolls	**Utilize traffic calming elements on this portion of road, ranked #3 on DPW's Top 5 list of roadways in need of traffic calming**		**25**		$$

PROJECT DESCRIPTION - CITYWIDE						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
17	Sidewalk	**Ryan Rd**	Burts Pit Rd to Florence Rd	**Upgrade / repair / widen sidewalks**	Ryan Rd is uncomfortable for pedestrians: existing sidewalks non ADA compliant	**28**		$$$
18	Intersection	**Ryan Rd**	at RK Finn Ryan Road School	**Install crosswalk**	Students would benefit from a crosswalk at the school entrance / driveway	**24**		$
19	Traffic Calming	**Westhampton Rd**	from Glendale Rd / West Farms Rd to Florence Rd	**Utilize traffic calming elements**	Despite posted 35 MPH signage, many motorists speed here regularly	**19**		$$
20	Trail Connection		at rear of RK Finn Ryan Road school	**Establish trail connection between neighborhood and school on Birchwood Dr on Austin Cir**	There is currently no way for students walking and biking to school from this neighborhood to reach school grounds safely and comfortably without utilizing Ryan Rd	**24**		$$$

FLORENCE INSET - SUMMARY OF PEDESTRIAN & BICYCLE NETWORK RECOMMENDATIONS



PROJECT DESCRIPTION - FLORENCE						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
1	Crosswalk	**Beacon St**	at Pine St	**Reorient crosswalk**	Awkward geometry	**25**		$
2	Sidewalk	**Bliss St**	between Willow St and Mill River bridge	**New sidewalk and crosswalk**	Gap in pedestrian network	**25**		$$
3	On-Street Bike Facility	**Bridge Rd**	From N. Maple St. to Main St.	**Stripe bike lanes**	Important bicycle improvement for JFK Middle school students	**29**	**X**	$$
4	Traffic Calming	**Bridge Rd**	from N Maple to N Main	**Utilize traffic calming elements on this portion of road, ranked #5 on DPW's Top 5 list of roadways in need of traffic calming, includng a new sidewalk**	Proxmity to JFK Middle School	**25**		$$
5	Trail Connection	**Childs Park**	From Prospect St to Elm St / Northampton High School	**Create path inside Childs Park adjacent to Woodlawn Ave**		**28**		$$$
6	Trail Connection	**City Cemetery**	Along N Maple	**Install pedestrian gates at north and south end of existing cemetery fence**		**18**		$$$
7	Sidewalk	**Cooley Dickinson Property**	At north end of Hospital Rd	**Work with Cooley Dickinson to provide better pedestrian access from Hospital Rd to the main hospital entrance**	Lack of sidewalks prohibits pedestrian access the south	**27**		$$
8	Trail Connection	**Dimock St**	at Arch St	**Provide mountain bike and hiker access to conservation land just west of intersection**	Pedestrian demand	**24**		$$
9	Sidewalk	**Fern St**	Entire length	**Install sidewalk along Fern St**	Proximity to JFK Middle School	**28**		$$$
10	Intersection	**Florence Rd**	at Spring St / Pine St	**Consider small roundabout for safety of all users**	Challenging intersection would benefit from a roundabout	**17**		$$
11	Crosswalk	**Florence St**	between Warner Row and Leeds Elementary School	**Re-orient crosswalk and add warning signage**	Limited sight lines at curve in road and motorists speeding makes crosswalk uncomfortable for school children	**27**		$
12	Sidewalk	**Florence St**	at Warner Row	**Install curb-cuts to sidewalk**	Current sidewalks non ADA-compliant	**25**		$$

PROJECT DESCRIPTION - FLORENCE						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
13	Trail Connection	**Florence St**	at N Main St - Leeds	**Connect Florence St to MassCentral Rail Trail with sidepath and ramp up embankment**	Pedestrian / bike demand	**31**	**X**	$$$
14	Traffic Calming	**Front / Leonard St**	Between Florence St and Rt 9	**Utilize traffic calming infrastructure**	Leonard St is used as a commuter cut through from Florence Rd to Haydenville Rd / Route 9	**21**		$$
15	Sidewalk	**Hospital Rd**	From Elm St to Cooley Dickinson Hospital	**Stripe flush painted walkway zone along edge of roadway**	Currently there is no pedestrian access to the Hospital from Elm St	**27**		$$
16	On-Street Bike Facility	**Jackson St**	From Prospect St to Bridge Rd (entire length of Jackson St)	**Stripe Shared Lane Markings**	To create more comfortable road conditions for cyclists	**22**		$$
17	Bike Parking	**JFK Middle School**		**Install APBP-approved bicycle racks**	APBP approved racks are more secure and organize bikes in an aesthetically pleasing fashion	**21**		$
18	Sidewalk	**Landy Ave**	from Nonotuck St to Maines Field	**Install sidewalks on Landy Ave**	Proximity to park	**27**		$$$
19	Intersection	**Leonard St**	At Route 9 / Haydenville Rd	**Rebuild intersection with new geometry to include a 90 degree intersection**	Oblique angle of current intersection encourages high speed turns	**29**	**X**	$$$
20	On-Street Bike Facility	**Locust St**	from N Main St to N Elm St	**Stripe travel lanes / bike lanes, include painted buffer and delineator posts**	No striping or lane desination causes discomfort among cyclists and pedestrians	**31**	**X**	$$$
21	Intersection	**Locust St**	at Hatfield St	**Install refuge island in median area**	This is currently an unnecessarily wide roadway with no shoulder or bike lane striping resulting in long pedestrian crossing distances	**28**		$$
22	Bike Parking	**Locust Street & Bridge Road**	At Smith Vocational School and JFK Middle School	**Install ABPB-approved bicycle parking at these schools**	Lack of bike racks that meet APBP-approved standards	**21**		$ - $$
23	Sidewalk	**Maple St**	from W Center St to Middle St	**Install sidewalk to close this sidewalk gap along the west side of Maple St**		**23**		$$

PROJECT DESCRIPTION - FLORENCE						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
24	Intersection	**Meadow St**	at Park St	**Long term plan to redesign needed**	Wide intersection creates unnecessarily long crossing distances for pedestrians and encourages motorist speeding	**28**		$$
25	Sidewalk	**Meadow St**	From N. Main St to Corticelli St	**Install sidewalk to close this important gap in the sidewalk network**	No pedestrian facility currently along Meadow St	**29**	**X**	$$$
26	Crosswalk	**Meadow St**	near N Main	**Install raised crosswalk to park in Florence Center beyond the path from Spring St to Corticelli St.**	This is an ideal location for a raised crosswalk as motor vehicle traffic approaches a yield sign	**28**		$$
27	On-Street Bike Facility	**Meadow St**	From N Main to existing path on Meadow St at Corticelli St	**Stripe Shared Lane Markings**		**22**		$
28	Sidewalk	**Meadow St**	from Park St/N Main to Spring St	**Replace broken / damaged sidewalks**	Gap in pedestrian network	**26**		$$
29	Trail Connection	**Morningside Dr.**	From Morningside Dr. to JFK Middle School	**Trail connection to improve access to the JFK Middle School**		**26**		$$$
30	Traffic Calming	**Multiple**	At all rail trail crossing	**Include standard signage on approach to all rail trail crossings**	Current roadway crossings lack Trail Crossing / Yield to Peds signage	**29**	**X**	$
31	On-Street Bike Facility	**N Elm St**	From Locust to Prospect Ave.	**Reduce width of travel lanes and flush median to provide space for bike lanes**		**25**		$$
32	Bike Parking	**N Main St**	from N Maple St to Chestnut St	**Install bike parking**	A lack of bike parking in the Florence commercial district may cause fewer bicycle trips to town and increase the number of single-occupant motor vehicle trips	**19**		$
33	On-Street Bike Facility	**N Main St**	from N Maple St to Chestnut St	**Install enhanced Shared Lane Markings or bike lanes**	A lack of bike lanes in the Florence commercial district results in less confident riders cycling on the sidewalk, causing potential coflicts between pedestrians and cyclists	**31**	**X**	$

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Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
34	Crosswalk	**N Main St**	Between Look Memorial Park and JFK Middle School	**Install median refuge island and boardwalk / sidewalk (due to presence of wetlands) on east side of N Main St to Bridge Rd**	Proximity to JFK Middle School	**26**		$$$
35	Sidewalk	**N Maple St**	at Arcanum Field	**Install sidewalk adjacent to Arcanum Field (utility pole relocation may be required for sidewalks to meet ADA standards)**	Major gap in sidewalk network to and from Arcanum jeapordizes pedestrian safety	**29**	**X**	$$
36	On-Street Bike Facility	**N Maple St**	From Bridge Rd to Main St.	**Stripe Shared Lane Markings OR advisory bike lane markings**	Potential location for advisory bike lane pilot	**22**		$
37	Traffic Calming	**Nonotuck St (and Elm St)**	from the southern tip of Childs Park to Pine St	**Utilize traffic calming elements on this portion of road, ranked #4 on DPW's Top 5 list of roadways in need of traffic calming**		**24**		$$$
38	Traffic Calming	**Nonotuck St (and Elm St)**	at Hinckley St	**Tighten turning radius in southwest corner**	Wide geometry creates intersection with high conflicts	**31**	**X**	$$
39	Traffic Calming	**Nonotuck St (and Elm St)**	at S Main St	**Install two crosswalks at this location**	Crosswalks and sidewalks are inadequate at this location	**27**		$
40	Traffic Calming	**Nonotuck St (and Elm St)**	at Bliss St	**Reduce large turning radius and add crosswalk across Bliss St**	Large turning radii encourages high speed traffic and creates unnecessarily long crossings for pedestrians	**24**		$$
41	Intersection	**Park St**	at N Main St	**Reduce turning radius dramatically to slow traffic and provide opportunity to add a crosswalk**	Tightening the turning radius of this intersection will reduce an unnecessarily long crossing distance for pedestrians and discourage speeding	**28**		$$
42	Sidewalk	**Pine St**	Between Nonotuck and Corticelli St	**Install sidewalk on south side and crosswalk at Nonotuck intersection**	There is currently a wide, unmarked crossing	**26**		$$

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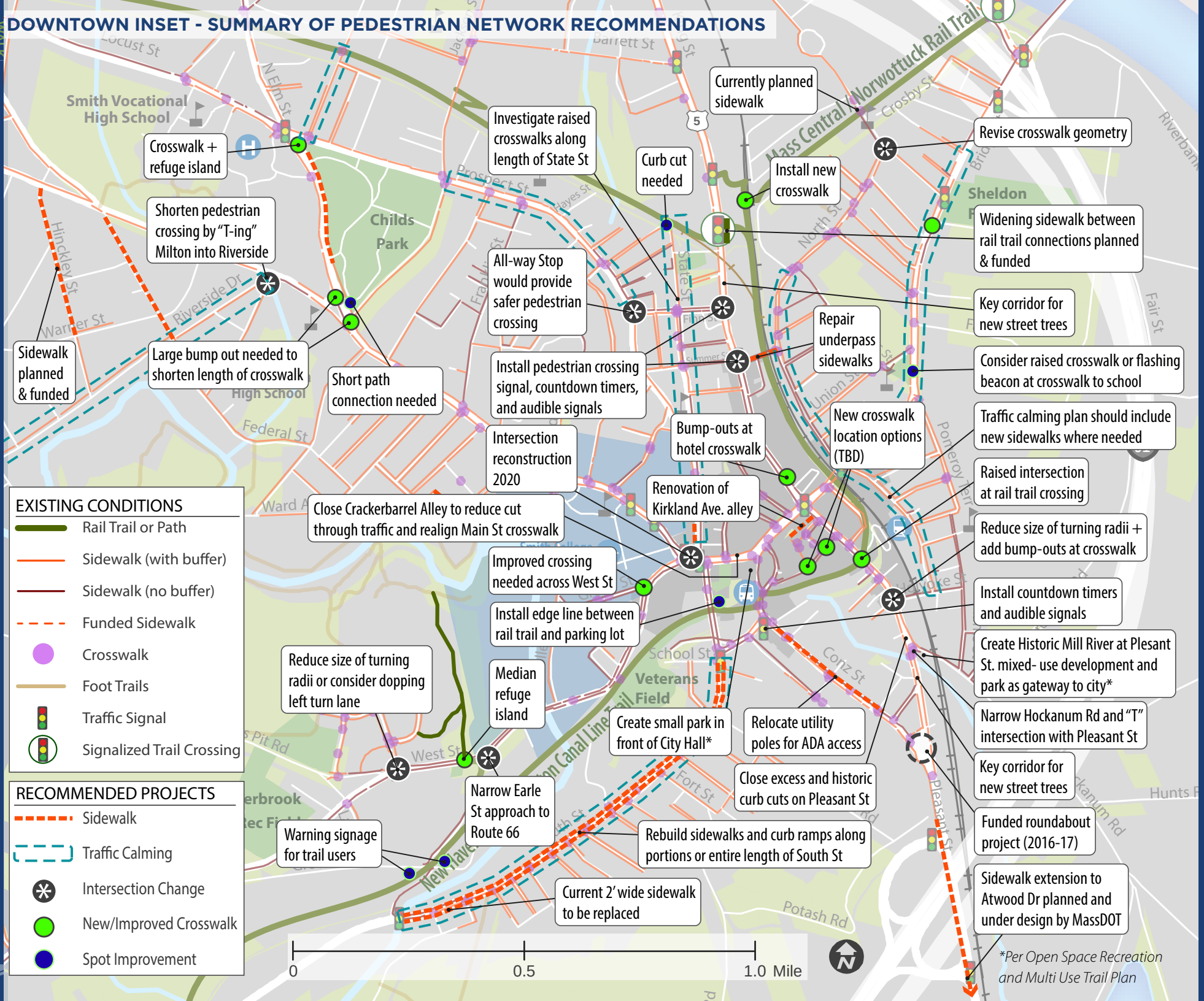
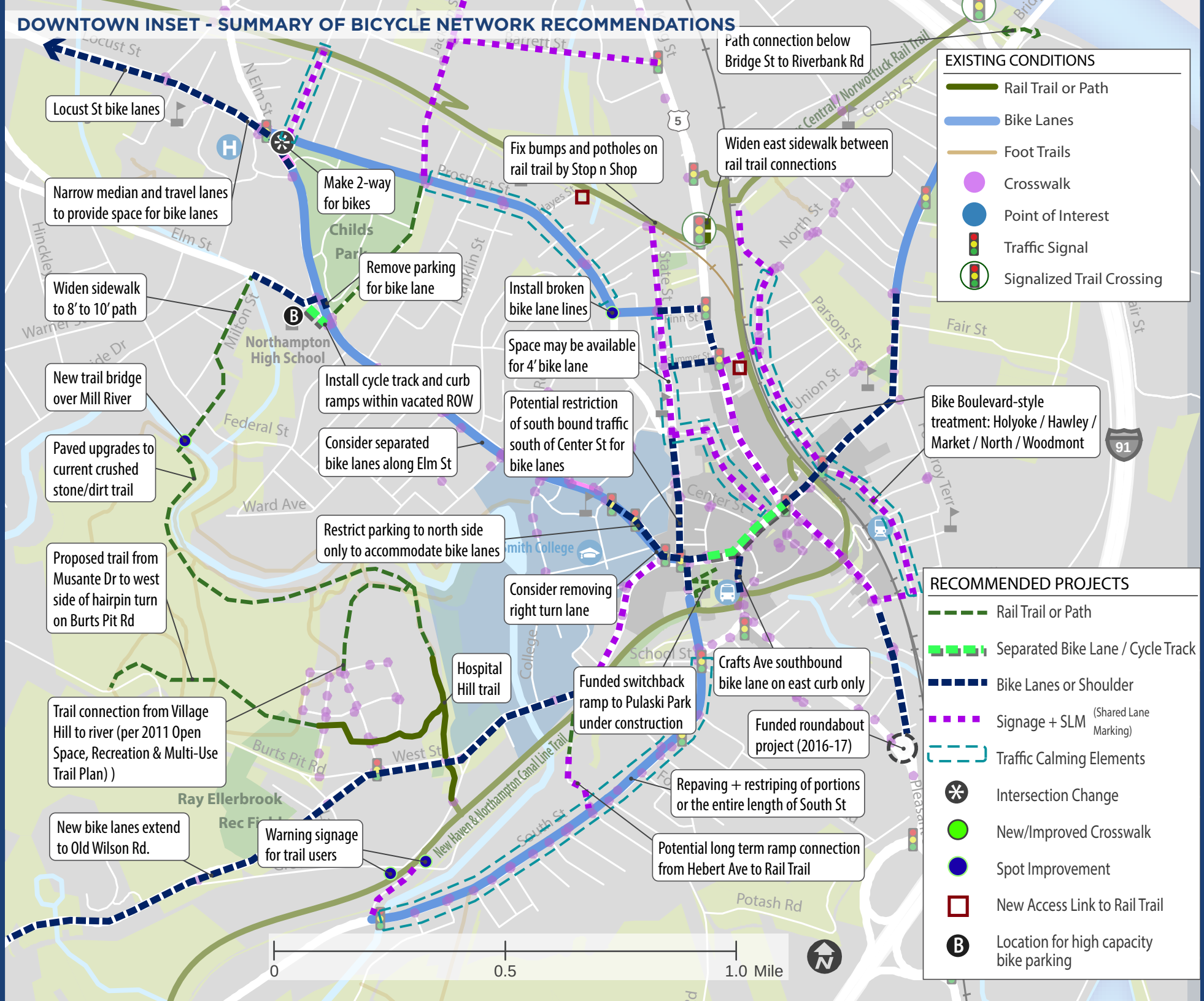
43	Trail Connection	**Prospect Ave**	From rail trail intersection with Prospect Ave along N Elm St to Elm St / Northampton High School	**Install on-street bicycle facility and refuge island**	This is a key connection for Northampton High School students and faculty to use the MassCentral Rail Trail to travel from neighborhoods East, North, and West of this area	**29**	**X**	$$$
44	Sidewalk	**Riverside Dr**	Along edge of Maines Field	**Install sidewalk or path along edge of park**	Proximity to park	**32**	**X**	$$
45	Crosswalk	**S Main St**	at Pine St	**Add curb extension and typical Pedestrian Crossing signage**	This is a key crosswalk that has low visibility for approaching motorists	**25**		$$
46	Sidewalk	**S Main St**	From Pine St to Berkshire Terrace	**Make path through triangle park ADA accessible (minimum five feet) and install sidewalk along south side of South Main St**		**30**	**X**	$$
47	On-Street Bike Facility	**Scanlon Ave**	Florence Ave	**Install "except bicycles" plaque to Do Not Enter sign**	One way street inconvenient for cyslists	**25**		$
48	Sidewalk	**Sheffield Ln**		**Update / repair sidewalks**	Pedestrian demand	**25**		$$
49	Sidewalk	**Willow St**		**New sidewalk and crosswalk**	Gap in pedestrian network	**25**		$$$

DOWNTOWN INSET - SUMMARY OF PEDESTRIAN NETWORK RECOMMENDATIONS



DOWNTOWN INSET - SUMMARY OF BICYCLE NETWORK RECOMMENDATIONS



PROJECT DESCRIPTION - DOWNTOWN						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
1	Crosswalk	**Allen Pl**	at Gothic St	**Install crosswalk**	This is a difficult place for pedestrians to cross	**29**	**X**	$
2	Sidewalk	**Atwood Dr**	Entire length	**Roundabout project on Pleasant Street (under construction) will extend sidewalks to Dike Road and MassDOT has begun the planning for extending sidewalks from there to Atwood Drive.**	This is a difficult place for pedestrians to cross	**22**		$$
3	On-Street Bike Facility	**Barrett St**	From King St to Jackson St	**Add Shared Lane Markings and signage**	This is a key bicycle route through the city and offers direct connections from neighborhoods west to the Jackson Street School	**28**		$
4	Traffic Calming	**Bridge St**	between Orchard St and Lampron Park	**Utilize traffic calming: refuge island / curb extensions / raised-table crossing**	Traffic frequently does not stop at crosswalks	**30**	**X**	$$$
5	Traffic Calming	**Bridge St**	between Fair St and Old Ferry Rd	**Enforce no parking on sidewalk**	Pedestrian demand and safety	**24**		$
6	On-Street Bike Facility	**Bridge St**	From Market St to Orchard St	**Stripe bike lanes**	To create more comfortable road conditions for cyclists	**29**	**X**	$
7	Crosswalk	**Bridge St**	at Parsons St	**Install Rectangular Rapid Flash Beacon or other device to control crosswalk across from school**	Uncontrolled crosswalk across from elementary school is inadequate for young school children who want to bike or walk to school	**30**	**X**	$$
8	Sidewalk	**Conz St**	Between Service center Rd and Wilson Ave	**Relocate utility poles for sidewalk ADA compliance**	Utility pole placement makes sidewalks non ADA compliant	**21**		$$ - $$$
9	Intersection	**Conz St**	at Old South St	**Install countdown timers and audible signals**	Pedestrian safety and comfort.	**28**		$$
10	Intersection	**Cracker Barrel Alley**	at Main St	**Convert Cracker Barrel Alley to pedestrian / bicycle access only, utilize curb extensions on Main Street to signify change**	Low visibility, high crash / conflict area	**29**	**X**	$$

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11	Crosswalk	**Cracker Barrel Alley**	Behind Main Street businesses and at Main St	**Install crosswalk in rear of buildings. Re-align crosswalk extending across Main St from Cracker Barrel Alley to reflect change in Cracker Barrel Alley access**	Current awkward crosswalk geometry will be out of date when Cracker Barrel Alley access changes take place	**26**		$
12	On-Street Bike Facility	**Crafts Ave**	From Main St to Old South	**Install bike lanes on left side of Craft St**	This will relocate bicycles further away from angled parking which may create a potential conflict	**26**		$
13	On-Street Bike Facility	**Earle St**	From South St to Grove St	**Stripe Shared Lane Markings**	To create more comfortable road conditions for cyclists	**21**		$
14	Intersection	**Earle St**	at West St	**Earle St should be narrowed on the approach to West St, consider dopping the turn lane**		**19**		$$$
15	Intersection	**Elm St**	at West St	**Examine intersection for long term redesign including potential removal of right turn lane from Elm St to West St**	Intersection prone to condlicts due to awkward geometry and traffic signal phasing	**27**		$$ - $$$
16	Intersection	**Elm St**	N. Elm and Woodlawn Ave	**Build new curb extensions (may require relocation of fire hydrant)**	Long crosswalks used by High School students	**30**	**X**	$$$
17	Sidewalk	**Elm St**	at N Elm crosswalk	**Path connection from Elm St sidewalk to path within Childs Park**		**26**		$
18	On-Street Bike Facility	**Elm St**	From Child's Park to Prospect St (at John M Greene Hall)	**Swap parking with bike lane to create a protected facility**	Create comfortable riding conditions for a broad range of cyclists	**30**	**X**	$$
19	On-Street Bike Facility	**Elm St**	From Prospect St to Bedford Terrace	**Remove parking on the south side of street to accommodate bike lane (loss of 10 spaces)**	Create comfortable riding conditions for a broad range of cyclists	**26**		$
20	Trail Connection	**Elm St**	In front of Northampton High School, where Elm turns to N Elm back to Elm	**Install cycle track along vacated ROW**	Encouraging cycling to and from school by providing new facilities will encourage bicycle use over single occupancy motor vehicle trips	**29**	**X**	$ - $$

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21	Sidewalk	**Federal St**	between Riverside and Elm	**Install sidewalks east side of street**	This is a narrow street currently without sidewalks, and has close proximity to schools and parks	**29**	**X**	$$
22	On-Street Bike Facility	**Finn St**	Between King St and Prospect	**Where possible, narrow travel lanes to 10' and install bike lane stencils in existing or new shoulder zones**	This defacto bike lane area would benefit from a formal designation as a bike lane by adding traditional bike lane stencils	**26**		$
23	Sidewalk	**Franklin St**	between Bancroft St and Elm St	**Install curb cuts**	Pedestrian demand / current sidewalks non ADA compliant	**24**		$$
24	On-Street Bike Facility	**Gothic and Trumbull St**	Gothic: Entire Length. Trumbull: From Gothic intersection to State St.	**Utilize bike-boulevard style treatments: Install Shared Lane Markings / utilize traffic calming elements**	Provides an alternative to biucycling on State to access Main St	**29**	**X**	$$ - $$$
25	Crosswalk	**Hampton Ave**	At Kirkland Ave OR in front of Hampton Court Apartments	**Install new crosswalk at either location**	A crosswalk is needed to improve pedestrian access across Hampton Ave, either at Kirkland Ave or further east towards Pleasant St at the primary entry to a parking lot which is similar to being located at a cross street.	**21**		$
26	Sidewalk	**Hawley St**	from Holyoke St to Bridge St	**Add 5' sidewalks and ADA curb ramps, make bike boulevard improvements**	Bumpy, deteriorated sidewalks along Hawley St	**31**	**X**	$$$
27	Trail Connection	**Hayes Ave**	at rail trail crossing	**Install spur connection/ramp from Hayes to rail trail**	Clear desire line shows existing path through woods that should be formalized with a paved ramp	**26**		$$$
28	Trail Connection	**Hebert Ave**	From intersection of South St and Hebert Ave (oppositve Olive St) to New Haven and Northampton Canal Line Trail at end of Hebert St	**Establish formal connection by installation of ramp at end of Hebert St and signage along Hebert St and South St directing cyclists and pedestrians towards rail trail**	Important connection opportunity on busy roadway to divert cyclists and pedestrians onto separated trail facility	**28**		$

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29	Intersection	**Hockanum Rd**	at intersection with Pleasant St	**Make intersection a "T" right angle, narrow Hockanum Road at intersection approach**	Wide turn radii creates unnecessarily long crossing for pedestrians and encourages motorist speeding	**26**		$$
30	On-Street Bike Facility	**Holyoke / Hawley / Market / North / Woodmont**	From Pleasant St to Norwottuck Rail Trail	**Bike boulevard style treatments from end to end, using enhanced Shared Lane Markings and signage**	Alternative bike route to Pleasant and Main St	**31**	**X**	$$$
31	Traffic Calming	**Holyoke St**	at Pleasant St	**Utilize traffic calming devices**		**26**		$$
32	Trail Connection	**Hospital Hill Trail**	Frrom Village Hill development to Northampton High School	**Extend and pave existing Hospital Hill path**	This path is currently neglected and in disrepair	**24**		$$$
33	Traffic Calming	**King St**	at Hotel Northampton	**Install curb extensions at this unsignalized crosswalk**		**28**		$$
34	Traffic Calming	**King St**	at Trumbull Rd	**Install curb extensions**		**23**		$$
35	Traffic Signal	**King St**	at Finn St	**Install pedestrian signal heads, count-down timers and audible signals (for both crosswalks)**		**29**	**X**	$$
36	Traffic Signal	**King St**	at Summer St and North St	**Install pedestrian crossing signal, countdown timers and audible signals**	No pedestrian signal exists	**28**		$$$
37	Sidewalk	**King St**	at rail trail crossing	**Install wider sidewalk on east side of King St.**	Existing sidewalk is too narrow	**27**		$$
38	Intersection	**King St**	at Main St / Pleasant St	**Install pedestrian countdown timers on traffic signals downtown**		**30**	**X**	$$
39	Traffic Calming	**King St**	From rail trail crossing at King St to North St	**Implement road diet (per 2010 charrette)**		**22**		$
40	On-Street Bike Facility	**King St**	From Finn to North St	**Stripe bike lanes**	To provide bike facility between Finn St bike lanes and North St connection to rail trail	**28**		$

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41	Alley Repair	**Kirkland Ave. Alley**	Between Pleasant St. and Armory St. lot	**Improve surface materials, lighting, and street furniture within the alley**	Alley is not a comfortable place for pedestrians, though it provides a convenient connection to Pleasant St.	**30**	**X**	$$$
42	Intersection	**Locust St**	At N Elm / Prospect St	**Make intersection two-way for bikes**	Bicyclists traveling from Cooley Dickinson to points north from Propsect Ave are currently forced to make difficult left against traffic on Prospect St	**23**		$$
43	On-Street Bike Facility	**Main St**	From State at South to Hawley at Market	**Install separated bike lane**	Plenty of space exists within existing right of way to create separated bicycle facility.	**30**	**X**	$$$
44	Sidewalk	**Main St**	North side, from Cracker Barrel Alley to Center	**Widen sidewalk**	High pedestrian demand with numerous adjacent eating establishments	**21**		
45	Traffic Calming	**Main St**	All Main St Crosswalks	**Install curb extensions and median islands at all Main St crosswalks**	Main streets width creates unnecessary long crossings for pedestrians	**29**	**X**	$$
46	Trees	**Main St**	Main / State / South to Main / Hawley / Market	**Install new street trees and landscaping**	Bolstering the already established urban tree canopy in this core downtown streetscape will provide a comfortable pedestrian experience on hot summer days.	**23**		$$
47	Crosswalk	**Main St**	at Cracker Barrel Alley	**Re-align crosswalk geometry**		**27**		$
48	Trail Connection	**Main St**	behind Fitzwilly's	**Install signage to Main St at ramp behind Fitzwilly's**	Lack of signage may confuse trail users	**26**		$
49	Trail Connection	**Mill River / Hospital Hill Trail**		**New paved trail from current terminus near Olander Dr to high school**	Need to connect New Haven + Canal Line Trail to High School + Elm St	**27**		$$$
50	Trail Connection	**Musante Dr**	to Burts Pit Rd (north side of road)	**Install trail from Musante Dr to the west side of the hairpin turn on Burts Pit Road, on the north side of the road partially to avoid both the steep grade of the hairpin turn**		**23**		$$$

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41	Alley Repair	**Kirkland Ave. Alley**	Between Pleasant St. and Armory St. lot	**Improve surface materials, lighting, and street furniture within the alley**	Alley is not a comfortable place for pedestrians, though it provides a convenient connection to Pleasant St.	**30**	**X**	$$$
42	Intersection	**Locust St**	At N Elm / Prospect St	**Make intersection two-way for bikes**	Bicyclists traveling from Cooley Dickinson to points north from Propsect Ave are currently forced to make difficult left against traffic on Prospect St	**23**		$$
43	On-Street Bike Facility	**Main St**	From State at South to Hawley at Market	**Install separated bike lane**	Plenty of space exists within existing right of way to create separated bicycle facility.	**30**	**X**	$$$
44	Sidewalk	**Main St**	North side, from Cracker Barrel Alley to Center	**Widen sidewalk**	High pedestrian demand with numerous adjacent eating establishments	**21**		
45	Traffic Calming	**Main St**	All Main St Crosswalks	**Install curb extensions and median islands at all Main St crosswalks**	Main streets width creates unnecessary long crossings for pedestrians	**29**	**X**	$$
46	Trees	**Main St**	Main / State / South to Main / Hawley / Market	**Install new street trees and landscaping**	Bolstering the already established urban tree canopy in this core downtown streetscape will provide a comfortable pedestrian experience on hot summer days.	**23**		$$
47	Crosswalk	**Main St**	at Cracker Barrel Alley	**Re-align crosswalk geometry**		**27**		$
48	Trail Connection	**Main St**	behind Fitzwilly's	**Install signage to Main St at ramp behind Fitzwilly's**	Lack of signage may confuse trail users	**26**		$
49	Trail Connection	**Mill River / Hospital Hill Trail**		**New paved trail from current terminus near Olander Dr to high school**	Need to connect New Haven + Canal Line Trail to High School + Elm St	**27**		$$$
50	Trail Connection	**Musante Dr**	to Burts Pit Rd (north side of road)	**Install trail from Musante Dr to the west side of the hairpin turn on Burts Pit Road, on the north side of the road partially to avoid both the steep grade of the hairpin turn**		**23**		$$$

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51	On-Street Bike Facility	**N Elm St**	Just north of Elm St intersection / just west of the southern tip of Child's Park	**Remove six parking spots for continual bike lane**	Removal of the parking establishes a more complete connection along Elm St's established bike facility in front of the high school	**30**	**X**	$
52	Intersection	**N Elm St**	at Locust St	**Install bicycle loop detector or video**		**21**		$
53	Intersection	**New Haven & Northampton Canal Line**	at Earle St	**Install signage instructing cyclists to approach intersection slowly**	This intersection is at the bottom of a hill and the rail trail approach is on a diagonal path with significant blind spots	**18**		$
54	Crosswalk	**North St**	where North St meets Day Ave / Bates Ave	**Update crosswalk geometry**	Crosswalk is poorly aligned	**30**	**X**	$$
55	Intersection	**North St**	at Rail trail bridge at North St (between Market and King)	**Upgrade underpass**	Sidewalks below underpass are in poor condition	**25**		$$
56	On-Street Bike Facility	**North St**	North St between theKing St and Day Ave	**Install on-street bicycle facility (mix of bike lanes and shared lane markings)**		**25**		$$
57	Trees	**North St**	North St between the intersection of North and Market and the intersection of North and Lincoln	**Install street trees**	Newly widened roadway has many fewer street trees	**20**		$$$
58	Trail Connection	**North St**	At Edwards Square	**Ramp to rail trail from the east end of the parking lot at corner of North and Edwards Sq**	Important desire line currectly used by many walkers and bicyclists	**29**	**X**	$$$
59	Bike Parking	**Northampton High School**	Front entrance	**Replace wheel bender bicycle racks with APBP approved racks**	"Wheel bender" bicycle racks are less secure than APBP approved racks	**18**		$
60	Traffic Calming	**Pleasant St**	New Haven & Northampton Canal Line Trail crossing	**Utilize traffic calming: refuge island / curb extensions / raised-table crossing**	Cars frequently don't stop for crossing cyclists or pedestrians	**29**	**X**	$$$
61	On-Street Bike Facility	**Pleasant St**	between Conz St and Main St	**Install bike lanes from Conz to Holyoke and Shared Lane Markings to Main St**	Bicycle safety and access	**31**	**X**	$$

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62	Intersection	**Pleasant St**	at Holyoke St	**Reduce size of turning radius to slow turning traffic**	This is a tough crossing for pedestrians due to intersection geometry	**29**	**X**	$$
63	Sidewalk	**Pleasant St**		**Close excess and historic curb cuts on Pleasant St**	These redundant curb cuts create unnecessary hazards for pedestrians	**29**	**X**	$$
64	Trees	**Pleasant St / King St**	From new roundabout at Conz St to Finn St.	**Install additional street trees**	This area represents a gap in the established urban tree canopy	**22**		$$$
65	On-Street Bike Facility	**Propsect St**	at Finn St	**Install bike guide lines (dashed lines) through intersection**	White dashed lines will help to continue and define the eastbound bike lane as it passes through the intersection	**25**		$
66	Intersection	**Prospect St**	at Finn St	**All way stop signs needed**	Motorists don't always stop for people crossing Finn St on foot	**20**		$
67	Traffic Calming	**Prospect St**	between Childs Park and Finn St	**Utilize traffic calming: narrow roadway width**	Road is too wide, causes speeding	**25**		$$
68	Trail Connection	**Rail trail at Stop n Shop**	near State St	**Address bumpy conditions and potholes on rail trail at this location**	Bicyclist and skater safety and comfort while using trail.	**20**		$
69	On-Street Bike Facility	**Rainbow Rd / Hockanum Rd**		**Install Shared Lane Markings and/or signage**	To designate this as a bicycle-friendly route around downtown	**19**		$$
70	Intersection	**Riverside Dr**	at Elm St / Milton St	**Improve crosswalk by "T-ing" Milton into Riverside Dr via the existing parking lot or installing a mini-roundabout**	This intersection has an unnecessarily long pedestrian crossing	**30**	**X**	$$$
71	Traffic Calming	**Riverside Dr**	from Elm to Maple	**Utilize traffic calming elements on this portion of road, ranked #2 on DPW's Top 5 list of roadways in need of traffic calming**		**23**		$$
72	Crosswalk	**Roundhill Rd**	at Crescent St	**Install curb cuts**	Current sidewalks non ADA-compliant	**23**		$$

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73	Traffic Calming	**South St**	Between Cedar St and Fort St	**Utilize traffic calming: refuge island / curb extensions / raised-table crossing**	High speeding traffic and tractor trailers, many motorists do not yield to pedestrians waiting in crosswalks	**26**		$$$
74	Traffic Signal	**South St**	at Old South St	**Install additional crosswalk signage**	Long crosswalk geometry	**19**		$
75	On-Street Bike Facility	**South St**	1,000 feet from Main St intersection	**Install bike lane (continue existing bike lane)**	The existing bike lane peters out in a high-traffic volume area along South St	**30**	**X**	$
76	On-Street Bike Facility	**South St**	Between Earle St and Old South St	**Repave South St, continue rumble strip between bike lane and travel lane**	Multiple instances of debris in the bike lane results from deteriorated pavement and sidewalks	**22**		$$$
77	Sidewalk	**South St**	Between Earle St and Dewey Ct	**Update some or all sidewalks and curb cuts along South St corridor**	Existing sidewalks and curb cuts in disrepair, non ADA compliant; no sidewalks between S. Park Terrace and Earle St.	**26**		$$
78	On-Street Bike Facility	**South St**		**Spring sweeping and debris removal of bike lane is critical**		**25**		$
79	On-Street Bike Facility	**South St / Pleasant St / Rt 9**	Entire corridors of all 3 roadways	**Install LED crosswalk lighting**	Difficult lighting at numerous crosswalks	**24**		$$
80	Sidewalk	**State St**	Between Finn St and MassCentral Rail Trail	**Repair and widen sidewalks**	High pedestrian demand area, sidewalks are narrow and in disrepair	**29**	**X**	$$
81	On-Street Bike Facility	**State St**	Between Main St and Finn St	**Utilize traffic calming devices / Stripe bike lanes (requires potential restriction of southbound traffic south of Center St) for bike lanes. State St is ranked #1 on DPW's Top 5 list of roadways in need of traffic calming.**	Currently bikes ride on the sidewalk along this portion of State St causing uncomfortable situations for pedestrians. Investigate opportunity for raised crosswalks along entire length of State St.	**32**	**X**	$$$
82	Sidewalk	**State St**	between Center St and Main St	**Install sidewalk along west side of State St**	This is a high demand pedestrian area with inadequate sidewalks	**33**	**X**	$$$
83	Sidewalk	**State St**	at Stoddard St	**Install curb cuts**	Existing sidewalks do not have curb cuts and therefore are not ADA compliant	**26**		$$

PROJECT DESCRIPTION - DOWNTOWN						EVALUATION & SCORE		COST
Project #	Project Type	Street Name	Extents	Project Description	Reasoning	Evaluation Score: (Max. 33)	High Scoring Projects: (Score above 28)	Range of Cost: ($ = < 20k, $$ = 20k - 50k, $$$ = > 50k)
84	On-Street Bike Facility	**Summer St**	Between King St and State St	**Relocate parking to south side and install west-bound contraflow bike lane**	Bicycle desire line	**29**	**X**	$$
85	Street Furniture	**The parking lot west of Roundhouse Plaza**	Between Roundhouse Pl and the New South overpass	**Install edge lines at the south end of the parking lot**	This will disourage motorists from parking with their bumpers extending into the rail-trail zone	**23**		$
86	Intersection	**Village Hill Rd**	at West St	**Reduce size of all corner radii for slower traffic speeds**	Overly wide intersection invites speeding and creates uncomfortable crossing distance for pedestrians	**23**		$
87	On-Street Bike Facility	**West / Chapel / Rocky Hill Rd.**	between Elm St and Old Wilson Road	**Add shared lane markings and signage from Elm to Belmont and bike lanes from Belmont to Old Wilson Rd**		**27**		$$
88	Intersection	**West St**	at Green St	**Utilize traffic calming: refuge island / curb extensions / raised-table crossing**	Crosswalk is too long, telephone pole restricts sight lines	**31**	**X**	$$$
89	Intersection	**West St**	at Earle St	**Install refuge island in median area**	A refuge island will aid crossing pedestrians at this wide roadway	**22**		$
90	Traffic Signal	**West St**	at Village Hill Rd	**Install pedestrian signal phase at existing traffic signal**		**24**		$
91	Crosswalk	**Woodmont Rd**	At Norwottuck rail trail crossing	**Install new crosswalk**	Existing crosswalk is faded. High cyclist and pedestrian presence.	**28**		$

MAP OF ALL CURRENT AND FUTURE FUNDED PROJECTS

7. CROSSWALK PLANNING + DESIGN

Crosswalk Recommendations

This section describes crosswalk design guidelines, inventories the existing types of crosswalks and their locations in Northampton, and provides a toolkit of design elements for safe crosswalks. More detailed design standards for crosswalks can be found in the appendix. The general guidelines below and the detailed design standards in the appendix are based on the AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities, the MassDOT Project Development & Design Guide (2006), the NACTO Urban Streets Design Guide and Manual of Uniform Traffic Control Devices (MUTCD), including the MA MUTCD Amendments, section 3B.18, Crosswalk Markings.

7.1 General Guidelines

Installation of any new crosswalks should be preceded by an engineering study that will need to consider the number of traffic lanes, the presence of, or potential for, a median, the distance from signalized intersections, pedestrian volumes, roadway geometry, availability of street lighting, traffic volumes and posted and/or 85th percentile speed.

- Crosswalks are not required at all intersections; crosswalks should be considered at street intersections where the primary roadway has volumes of >3,000 vehicles per day, speeds typically exceed 25 MPH or where schools, parks and senior centers are present.
- Land use, crash history, and present and future pedestrian demand to be expected can impact crosswalk design and location.
- Crosswalks shall be supplemented with curb ramps, stop bars, and signage to improve access, pedestrian convenience, and safety. In addition, crosswalks may be supplemented with curb extensions, refuge islands, raised crossings, advanced yield lines, pedestrian crossing bollard signs, and pedestrian signals with countdown timers in locations where pedestrian traffic is heavy, or near schools, parks, and senior centers.
- Compelling reasons should be found to not include crosswalks on all legs of an intersection, e.g. missing sidewalk(s), high turning volume and/or low traffic volume.
- The minimum crosswalk width at side streets with a 5′ sidewalk is 8′, with 12′ preferred. Across busier streets and downtown, the minimum crosswalk width is 12′ or the width of the adjacent sidewalk, whichever is greater.
- While there is no specific guidance from MUTCD on material use, epoxy, thermopastic or similar durable materials should be used; brick or unit paver crosswalks are allowed but not recommended, except at signalized intersections in specific districts.
- Crosswalks should either be located where street lighting is pletiful, or new lighting should be installed concurrently.

Mid-Block Crossings

Because mid-block crosswalks can create a safer and more direct route for pedestrians hoping to avoid significant out-of-direction travel to the nearest signalized intersection, they are recommended. All sites will require an engineering study and approval by the City Engineer and follow these guidelines:

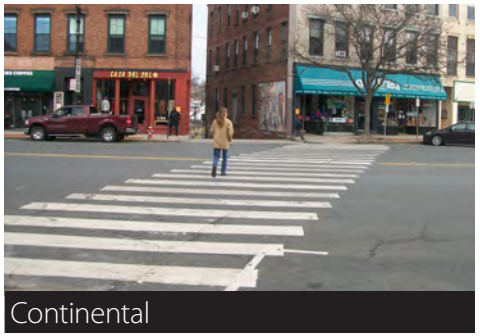
- On low-volume roadways with 85th percentile speeds up to 30 MPH, the City's standard crosswalk design will suffice (see Appendix)
- On 4-lane roads or where 85th percentile speeds exceed 35 MPH, medians, flashing beacons or a pedestrian signage and overhead lighting.
- Any mid-block crossing requires appropriate signage and overhead lighting.
- Per MUTCD, Section 4D.01, mid-block crosswalks should not be signalized if within 300' of the nearest traffic signal, or within 100' of a side street controlled by a stop or yield sign, unless a study indicates the new signal will not restrict progressive movement of traffic

7.2 Existing Crosswalk Typologies

There are a variety of crosswalk typologies within the City of Northampton. Five distinct types of crosswalk are displayed in the photos to the right, along with a synopsis of those that are preferred versus those in need of improvement.

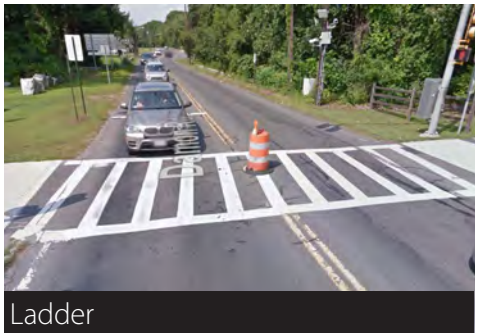
Existing Crosswalks

Crosswalk Type	Quantity
Ladder / Continental Crosswalks	340
Parallel Crosswalks	8
Street Print	23
Zebra-style Crosswalks	1
Total Number of Crosswalks	373



Continental

Main St at Cracker Barrel Alley: *The most dominant style of crosswalk in Northampton, continental style crosswalks are highly visible to motor vehicle traffic. These and ladder crosswalks are the preferred standard.*



Ladder

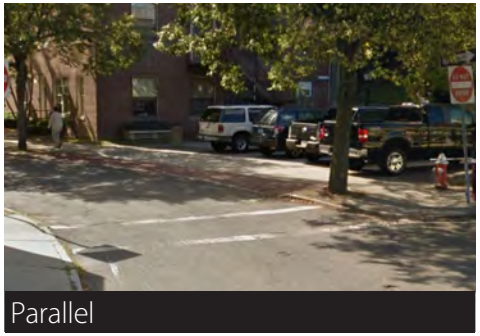
Damon Rd. at Rail Trail Crossing: *There are relatively few ladder crosswalks in Northampton. Ladder and Continental-style are the most preferred due to their high visibility and are recommended as the standard for new crosswalk striping in the future.*

Street Print

Musant Dr. at Moser St: *Throughout the Village Hill Development, more decorative street print duratherm crosswalks are used..*

Zebra

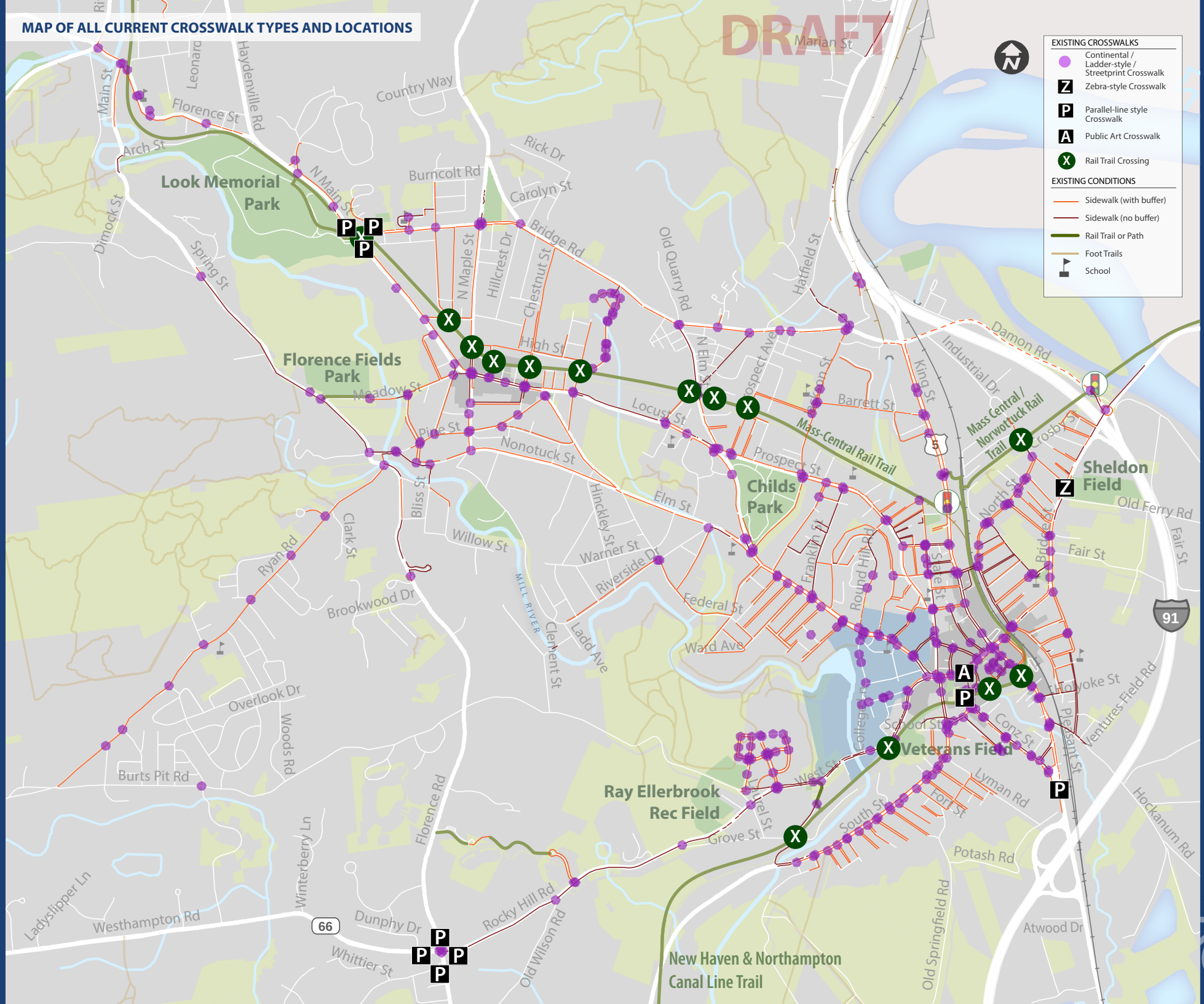
Bridge St at Day St: *There is only one instance of Zebra-style crosswalk in Northampton. This style is out-of-date and should be updated to the preferred standard above.*



Parallel

Crafts Ave at Old South St: *There are only 8 instances of parallel-line style crosswalks in Northampton. These are the least preferred style of crosswalk due to their lower levels of visibility. Due to the inherent design of striping perpendicular to the flow of traffic, these crosswalks wear down faster due to motor vehicle tires. Parallel-style crosswalks should be updated to the preferred standard, except at locations with decorative pavers or brick, in which parallel style will be needed at the edges.*

MAP OF ALL CURRENT CROSSWALK TYPES AND LOCATIONS



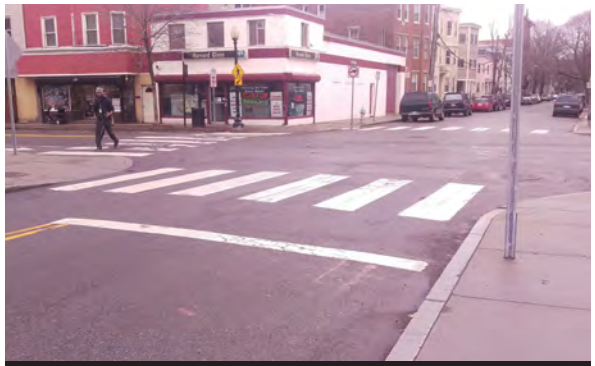
7.3 Recommended Crosswalk Design Features Toolkit

Lower Cost Elements

Pedestrian infrastructure that may not be old enough to require full replacement, or where funding is limited should consider these improvements. Low cost fixes to calm traffic and enhance safety for all users of the road and sidewalk are likely to be adopted and completed sooner than more expensive projects, and can serve as catalysts for long-term change. Additionally, low-cost, context-sensitive retrofits can enable safety improvements to an area pending a more robust or significant future redesign. These are some of the design features illustrated in the crosswalk design standards found in the appendix.

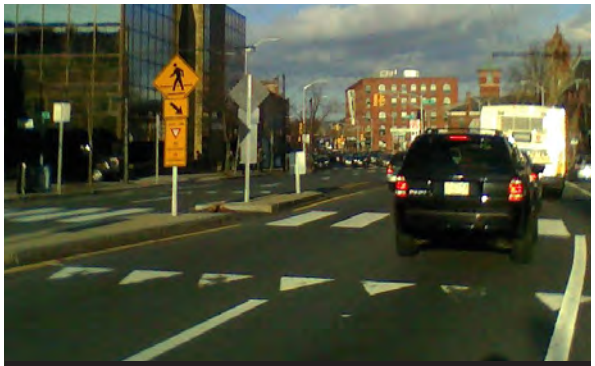
Continental Style Crosswalk

Continental style crosswalks are highly visible to motorists. They are cost-effective by placing gaps in established tire tracks, reducing the level of wear over time. Continental crosswalks are the preferred crosswalk design standard.



Stop Line

Stop lines should be located a minimum of 4 feet (10' preferred) in advance of the crosswalk to reinforce yielding to pedestrians. Stop bars should be perpendicular to the travel lane, not parallel to the adjacent street or crosswalk. Stop lines can be painted where there is a stop sign (MUTCD 3B.16), and at traffic signals.



Advanced Yield Line

(Uncontrolled crossing only) Advanced yield lines placed 20 to 50 feet prior to a crosswalk can reduce likelihood of crashes at un-signalized mid-block crossings. The line encourages drivers to yield far enough away so a pedestrian can see if a second motor vehicle is not stopping a multi-lane roadway.

Crosswalk Signage

Crosswalk signage at unsignalized crossings can alert motorists to the presence of pedestrians at these locations.

Curb Ramps

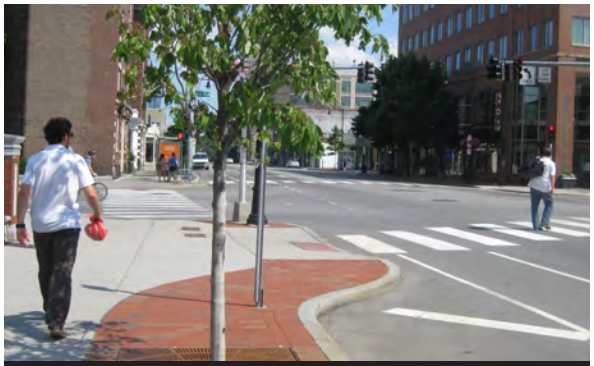
ADA compliant curb ramps contain Pedestrian Warning Strips (truncated domes) to alert mobility impaired individuals utilizing walking canes to the presence of a road crossing.

In-Street Yield to Pedestrian Sign

The in-street yield to pedestrian crosswalk sign provides a reminder to alert motorists at un-signalized intersections to laws concerning yielding or stopping for pedestrians in crosswalks. These signs are also more visible to motorists than signage posted to sign poles.

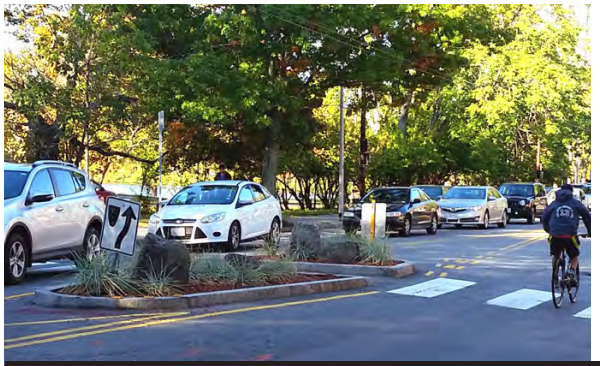
Higher Cost Elements

Pedestrian crossing facilities are higher cost improvements, but generally have higher compliance rates and create a more comfortable environment for pedestrians. They should be installed at locations where there have been crashes involving pedestrians, or where heavy levels of traffic calming is needed. In order to absorb the costs, these improvements can be included in larger capital projects or redevelopment plans. Many of these elements are featured in the crosswalk design standards found in the appendix.



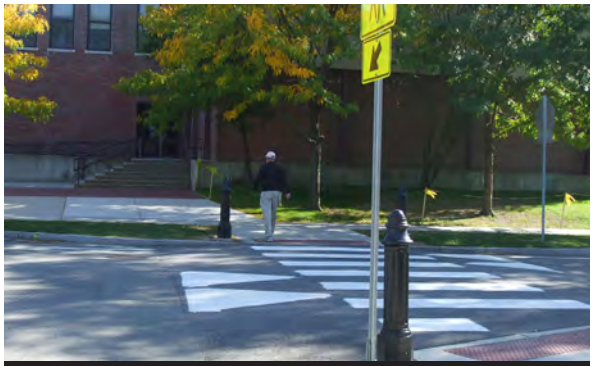
Curb Extension

Curb extensions include both mid-block extensions (known as pinchpoints or chokers) that may include cut-throughs for bicyclists, and intersection curb extensions that align well on streets with parallel parking. Curb extensions shorten crossing distance for pedestrians and increase sight lines for motorists by reducing parked car obstacles near crosswalks.



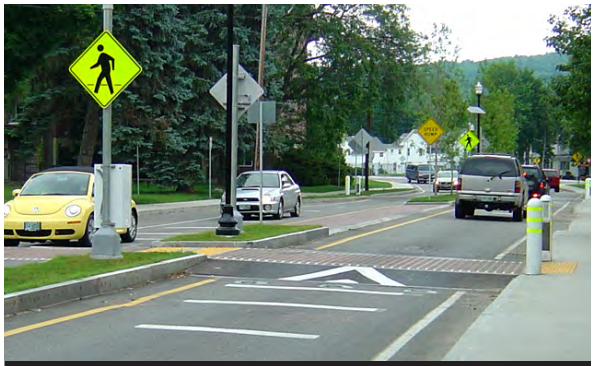
Refuge Island - Raised

Pedestrian refuge islands limit pedestrian exposure in the intersection. They are recommended where a pedestrian must cross more than two lanes of traffic in one direction, locations with high pedestrian-collision rates, and locations where there are high traffic volumes and speeds. Medians or safety islands create a two-stage crossing for pedestrians, which is easier and safer.



Raised Crosswalk - Shallow

Raised crossings calm traffic, increase visibility and yielding behavior, and create a safer pedestrian crossing environment, especially for mobility-impaired individuals. Shallow crossings may have a longer ramp leading to the raised crossing and / or are shorter in height than a steep raised crossing.



Raised Crosswalk - Steep

A steeper crosswalk is ideal for some college campus or downtown core locations where traffic calming goals stem from significant pedestrian crossings occur regularly or frequently. One result of a steeper crossing is motor vehicle traffic slowed to approximately 10 MPH or less. Mobility-impaired individuals have an easier time crossing as they do not have change in grade.

Pedestrian Signal With Countdown Timer

The countdown timer shows how many seconds remain for the clearing phase. The MUTCD requires countdown signals be used at all signalized intersections with pedestrian clearance intervals longer than seven seconds.

8. BIKE SHARE

Introduction

Dozens of cities in North America have recognized the health, environmental, and economic benefits of bike sharing. Northampton is well positioned as a bike friendly city in the Pioneer Valley to develop a successful bike share program with its regional partners in Amherst, Holyoke, Springfield and South Hadley. This regional partnership stems for the Pioneer Valley Regional Bike Share System Pilot report published in April 2016 by the Pioneer Valley Planning Commission (PVPC).

PVPC's report recommends a 26 station, 234 bicycle system in four communities (South Hadley became part of the plan subsequently), in two phases. Northampton was included as part of the first phase launch of the system with 7 stations and 63 bicycles. Based on the City's previously-stated commitment, it has been designated as the Lead Party and Program Administrator and will likely oversee the future operator for the entire regional system.

The program is designed for short trips within the city, though intrepid bicyclists would be allowed to ride between any of the participating cities and towns in the network. Tentatively called "ValleyBike", the PVPC report recommends "smart lock" equipment which is lower in cost than dock based systems (such as Boston's Hubway) and flexible enough for riders to lock their shared bikes anywhere in the service area, not just at designated stations.

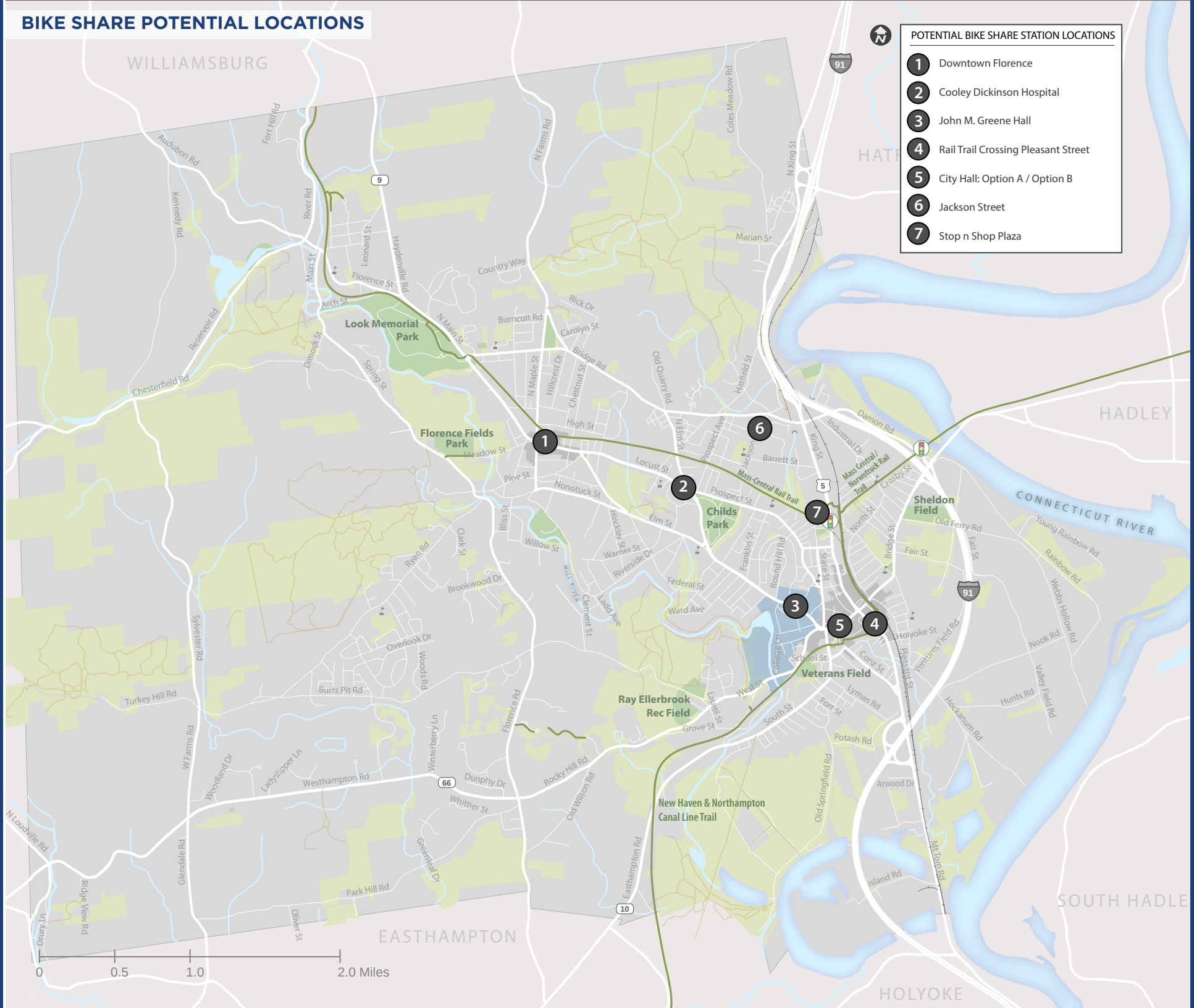
General Guidelines

In Northampton, bike share stations are planned for installation on city streets, sidewalks, plaza spaces and, potentially, on private property of a potential station or system sponsor. The smart lock stations--equipment vendor TBD--require a footprint of roughly 42' in length by 6' in width. This size will accommodate 15-18 bike racks, a transaction kiosk, solar panel and detachable panel to house a system map, access information, a PSA and/or an advertisement. On sidewalks with modest or high foot traffic, a minimum 6' clearance will be required for pedestrian access.

The following pages illustrate the recommended locations for bike share stations in Northampton. The seven sites provide coverage in Downtown Northampton and Florence, Smith College, Cooley Dickinson Hospital, Kingsgate Shopping Plaza and the Jackson Street neighborhood. Significant use is expected to come from:

- Local residents without access to a car or bike wanting to ride into downtown, to the hospital or to shop at Kingsgate
- Cooley Dickinson employees wanting to ride downtown for lunch or for errands
- Amtrak or bus riders looking to access parts of the city beyond walking distance
- Visitors wanting a quick tour of the city or to ride along the rail trail system
- Smith College students wanting to get from campus to other parts of the city

BIKE SHARE POTENTIAL LOCATIONS



Potential Bike Share Station Sites

1. Downtown Florence

Location:

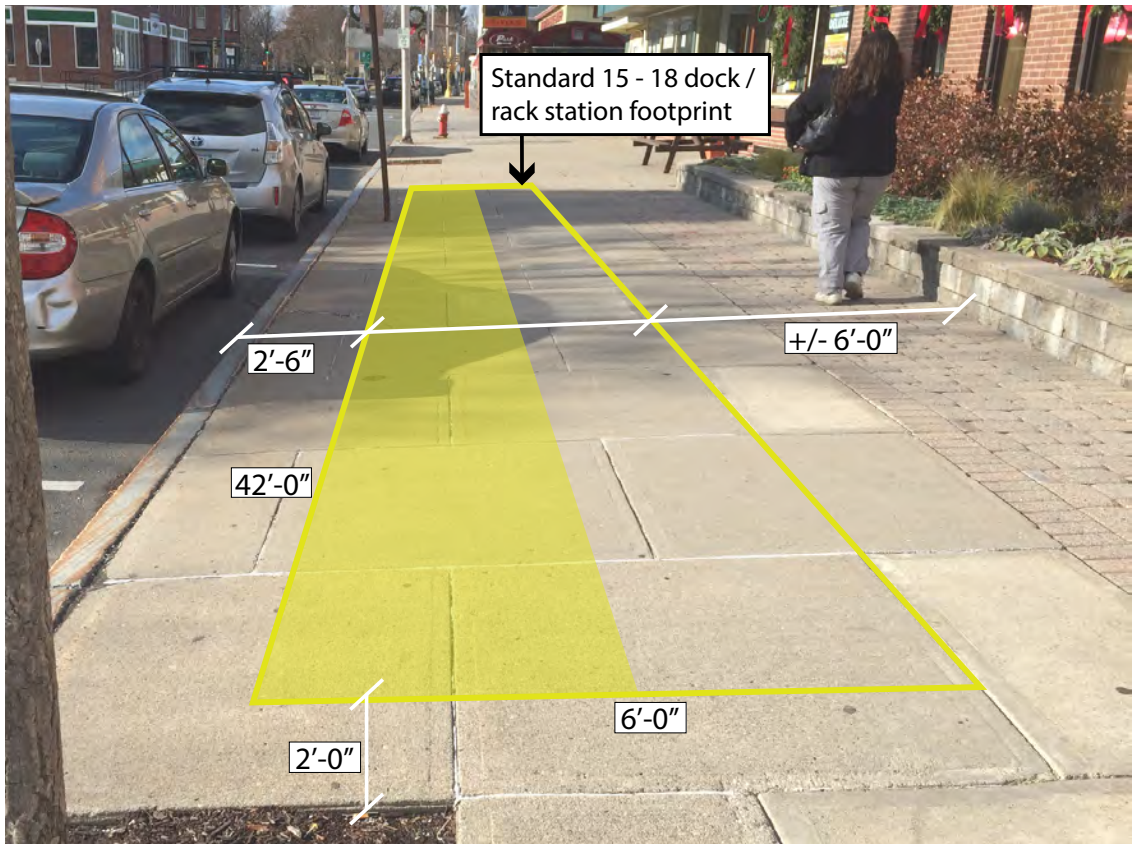
At the intersection of Main St. and Keyes St. in downtown Florence.

Property Owner:

City of Northampton

Station Footprint:

42 ft X 6 ft



Potential station site looking west on Main St.

2. Cooley Dickinson Hospital

Location:

Locust St. at N. Elm St. entrance to Cooley Dickinson Hospital, Northampton.

Property Owner:

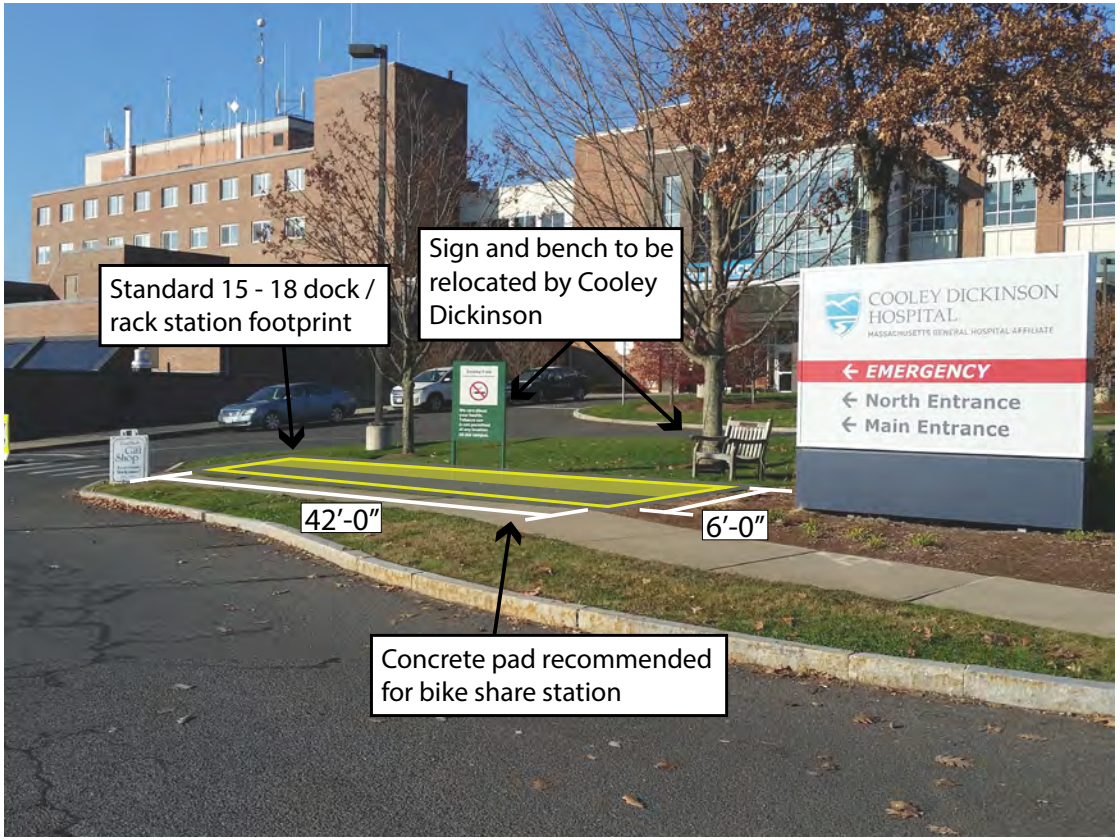
Cooley Dickinson Hospital

Station Footprint:

42 ft X 6 ft

Note:

CMAQ funding requires bike share stations to be located within public land. Cooley Dickinson Hospital must either give the city a license for this bike share station site or the site shall be moved within the public right of way.



Potential station site looking west on Locust St.

3. John M Greene Hall Entrance on Elm Street

Location:

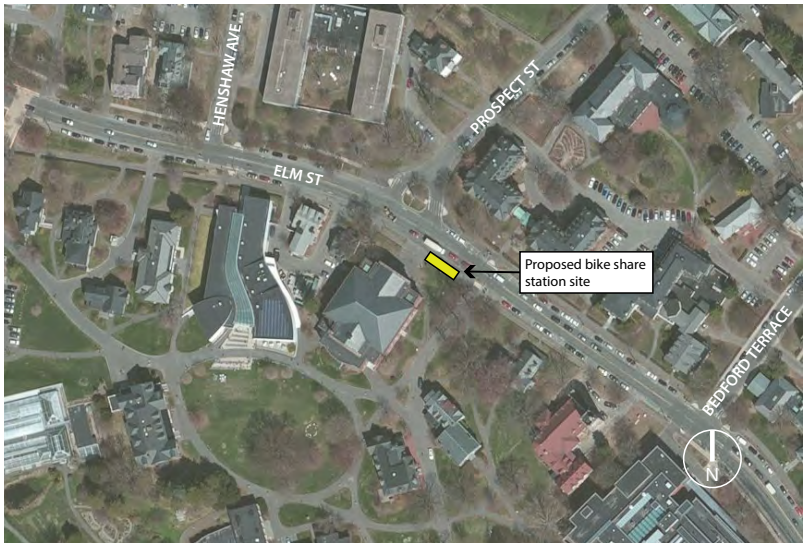
Near the intersection of Prospect St. and Elm St., in front of John M. Greene Hall.

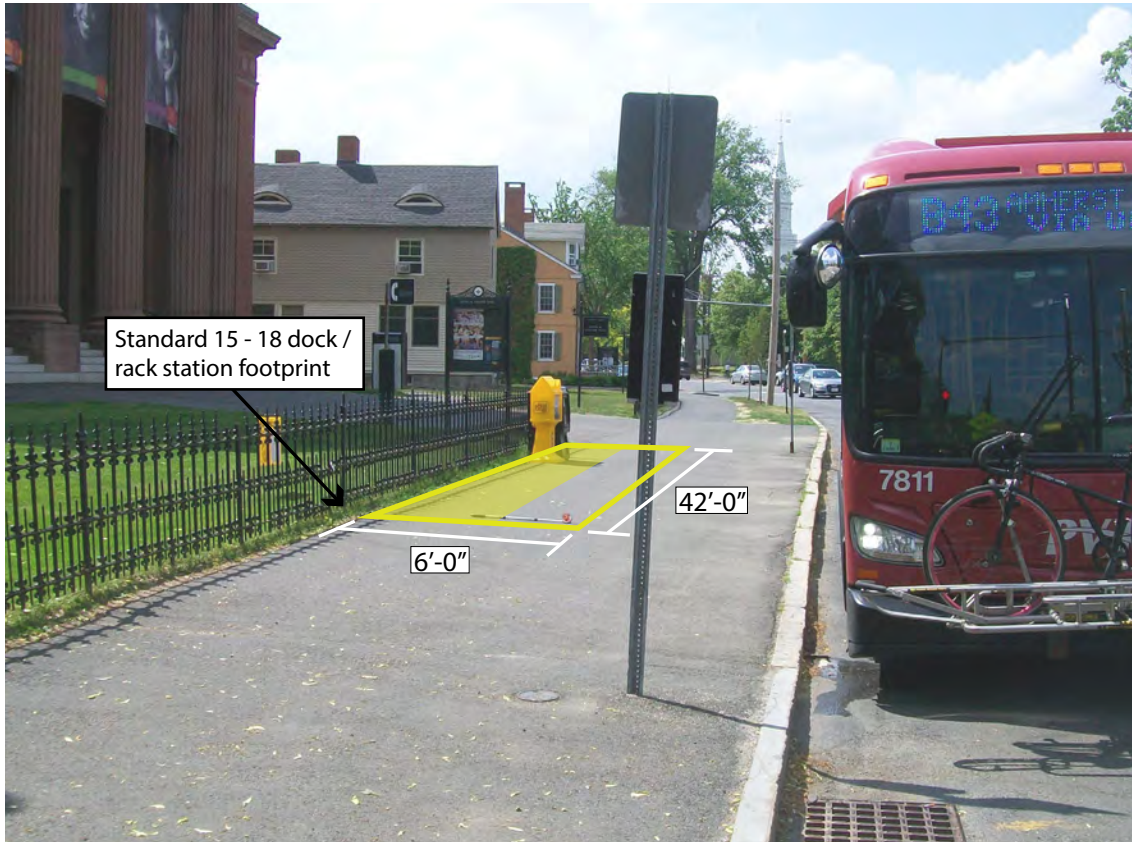
Property Owner:

City of Northampton, adjacent to Smith College

Station Footprint:

42 ft X 6 ft





Potential station site looking northwest on Elm St.

4. Rail Trail Crossing Pleasant Street

Location:

Adjacent to existing rail trail as it crosses Pleasant St.

Property Owner:

City of Northampton

Station Footprint:

42 ft X 6 ft

Potential station site looking southwest towards Pleasant St.

5. Northampton City Hall - Option A

Location:

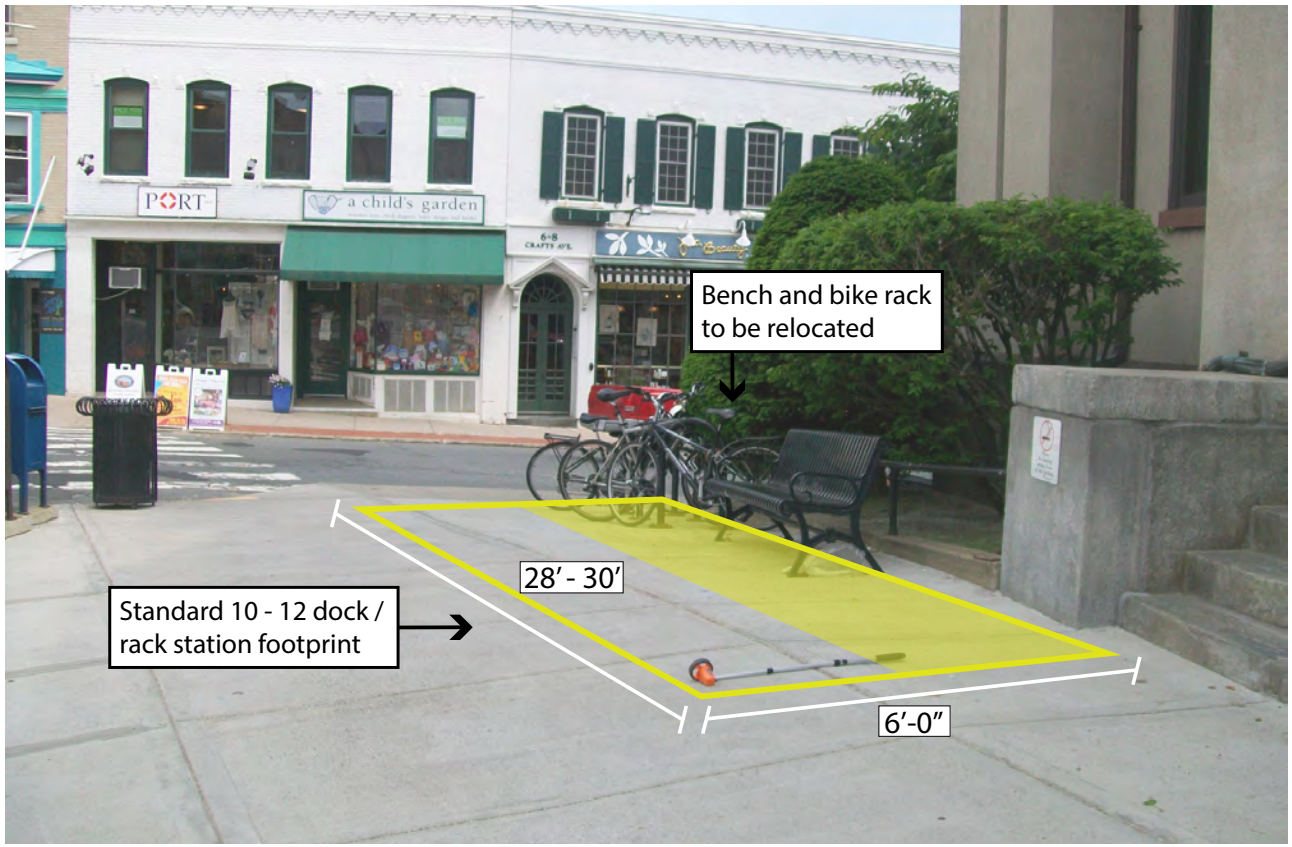
On the sidewalk, at the intersection of Main St. and Crafts Ave.

Property Owner:

City of Northampton

Station Footprint:

30 ft X 6 ft



Potential station site looking east on Main St.

5. Northampton City Hall - Option B

Location:

In the street, along Main St. between Crafts Ave. and Pulaski Park.

Property Owner:

City of Northampton

Station Footprint:

42 ft X 6 ft

Potential station site looking east on Main St.

6. Jackson Street

Location:

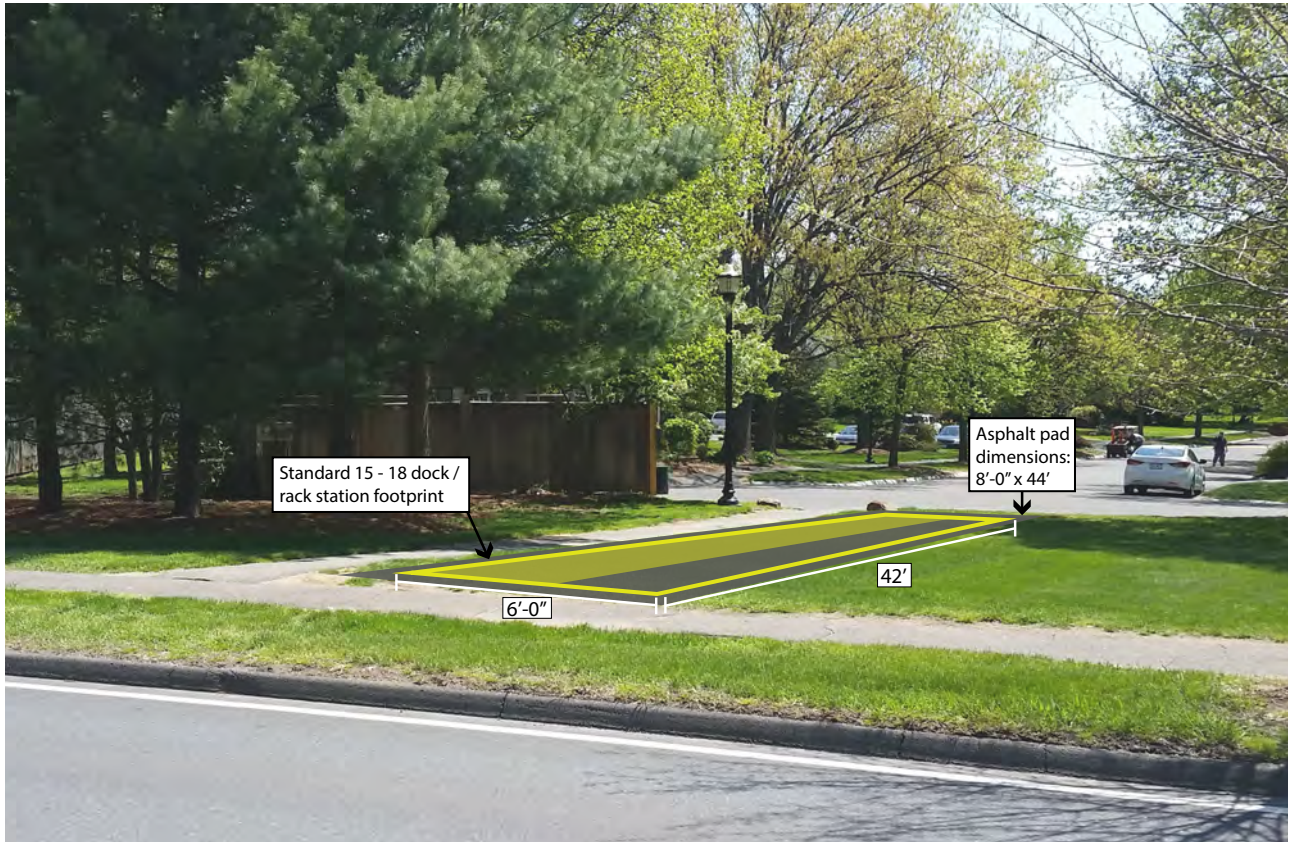
On Jackson St., at the path to Hampton Gardens Drive.

Property Owner:

City of Northampton

Station Footprint:

42 ft X 6 ft



Potential station site looking east on Jackson St.

7. Stop ‘n Shop Plaza

Location:

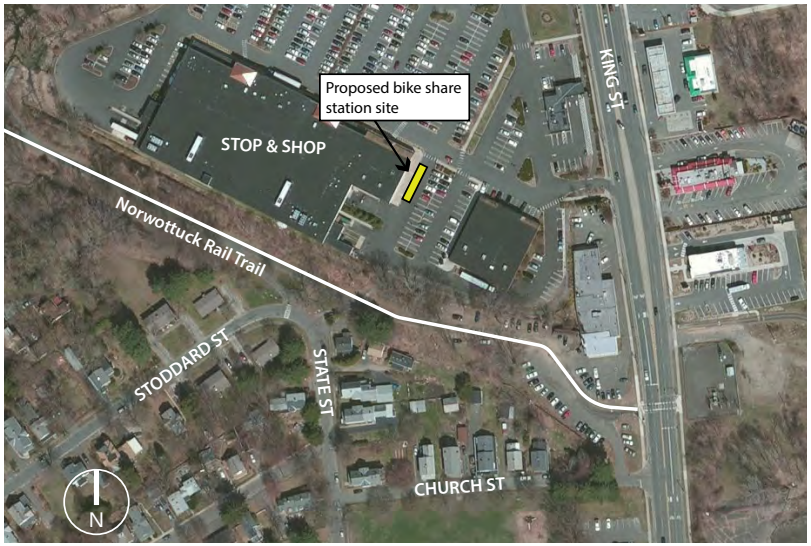
Adjacent to Moe’s Southwest Grill, in the Stop ‘n Shop plaza, on the sidewalk.

Property Owner:

Private.

Station Footprint:

42 ft X 6 ft



Potential station site looking north towards Moe's Southwestern Grill

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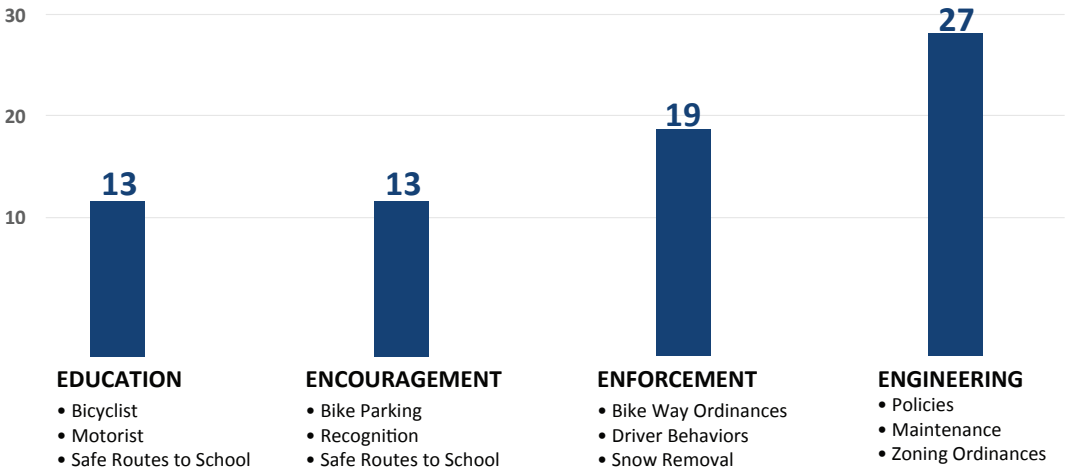
9. POLICY & PROGRAM RECOMMENDATIONS

Introduction

Northampton's commitment to improving bicycling and walking in the community is clearly expressed through existing policies and programs that, on the whole, strongly support access and safety for bicyclists and pedestrians. As part of the process for developing this plan, the project team reviewed and analyzed the existing policies and programs in the areas of Education, Encouragement, Enforcement, Engineering, and Evaluation, including local ordinances regulating bicycling and walking, zoning and site plan review ordinances, subdivision regulations, driver behavior, Safe Routes to School, and more. Input was gathered from the public via meetings and em ail from local officials and published information, and from research into best practices. Gaps in existing policies and programs, and potential additions or improvements, were identified. The following tables contain the policy and program recommendations resulting from this process.

Number of Policy Recommendations by Type



Policy Recommendations: Education & Encouragement

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Education	Bicyclist Behavior	Some bicyclists exhibit unsafe or illegal behavior.	Laws specific to bicyclist behavior are in MGL Chapter 85, Section 11B.	Provide education and public outreach resources on (1) the state laws and local ordinances related to bicycling, and (2) safe bicycling practices. Resources include MassBike, League of American Bicyclists Smart Cycling Program, and CyclingSavvy.	Parks & Recreation Police Schools
Education	Bike/Transit Integration	Integration between bicycling and transit could be better, and could extend range of potential trips.	PVTA has web-based information and video on using bus bike racks.	Promote existing PVTA information resources, and coordinate demonstration events where people can try our bus bike racks.	PVTA
Education	Children's Education	MA Safe Routes to School offers bike and pedestrian safety training free-of-charge to partner schools.	All elementary and middle schools are Safe Routes to School partners, but do not participate in SRTS educational components.	Fully participate in MA Safe Routes to School program each year.	Schools
Education	Children's Education	Many children do not receive adequate education and practical experience about traffic safety, especially interactions among motorists, bicyclists, and pedestrians.	Summer-only Safety Village program.	Create in-school "transportation literacy" program that teaches and repeatedly reinforces traffic safety and safe interactions; extend time period for the Safety Village program.	Parks & Recreation
Education	Driver Behavior	Many motorists, bicyclists, and pedestrians lack basic information about safely interacting as the mix of roadway users evolves; also motorists often fail to yield to pedestrians in crosswalks.	None.	Public outreach, such as mailings and PSAs, to educate all roadway users about safe interactions with each other, but particularly motorist interactions with vulnerable users.	Bicycle & Pedestrian Subcommittee Police
Education	Driver Behavior	Vulnerable road users, particularly bicyclists, are at risk from drivers of buses, large trucks, and other commercial vehicle who do not know how to safely interact with vulnerable road users.	None.	Require training on safe interactions with vulnerable road users, and for all city employees or contractors who operate trucks or other motor vehicles on the job; work with PVTA to enhance training for bus drivers.	Public Works / PVTA Transportation & Parking Committee

Education	Equity	Residents in public housing often lack access to traffic safety information and other information on vulnerable users as described above.	None.	Distribute traffic safety information through Northampton Housing Authority.	Northampton Housing Authority Bicycle and Pedestrian Subcommittee
Education	Infrastructure	Some bicyclists and motorists are confused about what new roadway markings and signage mean, and how to use new types of facilities.	None.	Pictorial and video resources to demonstrate how new bicycle and pedestrian facilities are intended to be used, and pop-up installations for people to try out.	Bicycle & Pedestrian Subcommittee

A fireman teaching students safety tips and tricks at Safety Village.

An elementary school student learns proper stopping techniques at a bike rodeo at her school.

Policy Recommendations: Education & Encouragement

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Education & Encouragement	Nighttime Visibility	Difficult to see pedestrians at night on paths and in crosswalks and bicyclists on paths and roads.	Pedestrians: None. Bicyclists: Bicycle lights and reflectors required at night (MGL Chapter 85, Section 11B).	Education campaign on using lights and reflective gear at night; possible reflective vest giveaways.	Bicycle & Pedestrian Subcommittee Police
Education	Signage	Rail trail users lack information about rules and etiquette, leading to unsafe conditions and user conflict.	City Ordinances: Bikeway regulations (§312-78) include several usage rules, but nothing related to user interactions or etiquette; and bikeway users must keep right (§312-78).	Signage at trail entrances and along trails, emphasizing rules and courtesy.	Parks & Recreation Public Works Bicycle & Pedestrian Subcommittee
Education	Snow removal	Sidewalk snow clearance not done consistently, particularly issue with crosswalks in Central Business District formerly cleared by BID.	Sidewalk snow clearance ordinance (§285-17).	Outreach to residential and commercial building owners to ensure they understand their snow clearance responsibilities.	Public Works Bicycle & Pedestrian Subcommittee
Education	User conflicts	Bicyclists and skateboarders ride on the sidewalk, conflict with pedestrians.	Sidewalk bicycling is legal except on specifically designated streets in the Downtown Business District and the Florence Business District (§285-12.B). Bicyclists legally riding on sidewalks must yield to pedestrians and warn them before passing (MGL Chapter 85, Section 11B).	Outreach and signage to discourage sidewalk bicycling where prohibited and to encourage courteous interactions on sidewalks. (Note that sidewalk bicycling can be an indicator of inadequate bicycle infrastructure.) Consider enforcement in high conflict areas, ideally with education stops and warnings, except where behavior is egregious.	Bicycle & Pedestrian Subcommittee
Education & Encouragement	Bike Parking	More bike parking needed throughout city, particularly popular destinations and nearby trailheads.	City Ordinance: Zoning ordinance requires bike parking for new construction, additions and enlargements (§350-8.11), but no general bike parking requirement.	Add bike parking at key destinations, crowdsource bike parking locations, encourage business sponsorship of bike racks.	Parks & Recreation Public Works Bicycle & Pedestrian Subcommittee

Encouragement	Bike Parking	Improve bike storage in multi-family housing	Zoning ordinance requires bike parking for new construction, additions and enlargements (§350-8.11), but not existing structures.	Provide information about acceptable bike parking (such as Northampton bike parking guide) to multi-unit residential owners. Consider incentives for improving bicycle parking in existing buildings.	Planning Board Bicycle & Pedestrian Subcommittee
Encouragement	Bike Parking	Limited and substandard bike parking at Northampton High School and Smith Voc-Ag. At the same time, vehicle parking is free or extremely low-cost, incentivizing students to drive to school rather than considering biking, walking, or transit.	Vehicle parking permit required for lower lot adjacent to NHS (purchased by $25 "donation" to student group), with violators subject to towing. In practice, no one has ever been towed, but might be asked to move to the athletic field lot. No permit is required to park in the athletic field lot. Vehicle parking is entirely free at Smith Voc-Ag.	Consider raising parking fees (subject to need-based exceptions) at the two high schools to subsidize improved bicycle parking facilities at the schools. Conduct a study of student travel modes and preferences to determine potential for mode shift.	Schools Transportation & Parking Committee Bicycle & Pedestrian Subcommittee

A courtesy reminder on the belt line trail around Atlanta, GA. Trail sign design can be geared towards cyclists and/or pedestrian users.

The bicycle parking racks at Northampton High School are sub-standard and should be replaced with more secure 'Inverted-U' style racks.

Policy Recommendations: Encouragement

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Encouragement	Bikeway Ordinance	Nighttime bikeway closure is inconsistent with transportation needs.	Bikeway is officially closed from dusk to dawn (§312-78).	Consider repealing nighttime bikeway closure, or extend hours to mid-evening, e.g. 9:00 or 10:00 pm	Planning Board Police Bicycle & Pedestrian Subcommittee
Encouragement	Children's Education	Northampton schools do not take advantage of Safe Routes to School educational or encouragement services.	Northampton schools are SRTS partners, but do not actively participate.	Work with MassRIDES to bring bicycling and walking safety training and activities to schools.	Schools Bicycle & Pedestrian Subcommittee
Encouragement	Children's Education	Encouraging children and youth to bike and walk has proven benefits for public health.	Northampton schools are SRTS partners, but do not actively participate.	Use school-based encouragement programs to engage children and youth in biking and walking. Examples: walking school buses and bike trains; targeted encouragement/incentives for high school students; adapt/expand Safety Village bike/ped safety components to in-school curriculum.	Schools Bicycle & Pedestrian Subcommittee
Encouragement	Facilities	People who cannot afford repairs at traditional bike shops or who do not know people to ride with have no place to go.	Smith Bike Kitchen serves this purpose for the Smith College community.	Create a community bike hub (similar to Smith Bike Kitchen) that can provide low-cost or self-service bike repair facilities and a location for organizing rides.	MassBike PV Bicycle & Pedestrian Subcommittee
Encouragement	Facilities	Convenient bike maintenance stands on rail trails and elsewhere.	MassBike PV purchased one bike maintenance station, which was installed.	Install (and maintain) additional publicly-accessible bike maintenance stations and water sources at key trail locations.	Public Works Bicycle & Pedestrian Subcommittee
Encouragement	Facilities	Bicycle use on school grounds and recreational facilities is broadly prohibited and treated the same as motor vehicles.	City Ordinance: Operation of vehicles (§233-1).	Amend §233-1 to allow use on school grounds and recreational facilities to the extent needed for transportation and bike parking.	Parks & Recreation Schools

Encouragement	Open Streets	Open Streets (aka: "ciclovia") or tactical urbanism events engage more people in biking, walking, and other outdoor activities in a safe, social, car-free space, and emphasize that the streets are for everyone by closing busy streets to motorized vehicles.	None.	Pilot an Open Streets event or continue the demonstration project on Main Street on regular intervals, such as monthly from April to October.	Parks & Recreation Bicycle & Pedestrian Subcommittee MassBike PV
Encouragement	Recognition	Goal: Silver (or higher) Bicycle Friendly Community	Bronze Bicycle Friendly Community	Adopt this plan and Implement "Key Steps" in Bicycle Friendly Community Report Card.	Bicycle & Pedestrian Subcommittee PVPC
Encouragement	Recognition	Goal: Silver (or higher) Walk Friendly Community	Bronze Walk Friendly Community	Adopt this plan and use WFC assessment tool feedback to improve the City's standing.	Bicycle & Pedestrian Subcommittee

Publicly accessible bicycle repair stands reduce barriers to riding by providing convenient and free access to tools necessary to keep a bicycle working properly.

Walking School Bus program encourages students to walk to school by banding together in groups similar to a school bus. A parent or teach volunteer often leads the effort.

This Ciclovia in Bogota in 2009 is an example of a successful Open Streets policy. Each Sunday and public holiday from 7:00am to 2:00pm certain main thoroughfares are closed to motor vehicles and opened for any form of non-motorized active transportation.

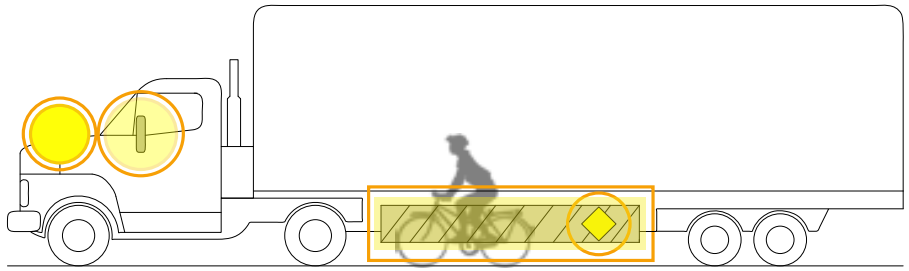
Policy Recommendations: Encouragement

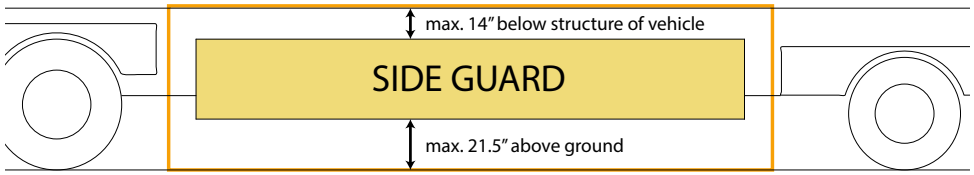
E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Encouragement	Seniors	Bicycling is a viable but under-utilized transportation and recreation option for seniors, with Northampton's compact downtown and trail network.	None.	Provide education and training resources to encourage seniors to bike (or tricycle) for transportation or recreation.	Senior services Bicycle & Pedestrian Subcommittee
Encouragement	Snow Removal	Path network is essential transportation infrastructure, and lack of clarity and consistency with snow removal impacts bicycle and pedestrian transportation in the winter. Snow removal policy for paths is not included in DPW's Snow Removal Procedures document.	The city's objective is to plow the trails from West Street to Florence/Mulberry Streets because these are areas with the highest volumes and serve the village centers, downtown, dense neighborhoods, and schools. The former Business Improvement District used to plow the section from Main Street to State Street.	Restore plowing on rail trail from Main Street to State Street. Formalize and publicize path snow removal policy to inform public and set expectations.	Planning & Sustainability Public Works Bicycle & Pedestrian Subcommittee
Encouragement	Wayfinding	Wayfinding signage assists people to find key destinations, and encourages them to bike or walk.	Bike path kiosks, graphic art sign on rail trail bridge, WalkBoston signage, path mileage markers (planned).	Continue existing wayfinding efforts, and evaluate effectiveness. Consider need for bilingual or multi-lingual signage.	Planning & Sustainability Bicycle & Pedestrian Subcommittee Public Works
Encouragement	Snow Removal	Seniors may be unable to comply with snow removal ordinance due to physical or financial limitations.	City Ordinance: Removal of snow and ice from sidewalks (§285-17)	Provide financial and/or manpower to assist seniors with residential snow removal.	Public Works Senior Services

Policy Recommendations: Enforcement

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Enforcement	Bikeway Ordinance	Unclear which bikeways or paths the bikeway ordinance applies to, as it refers to a singular bikeway.	City Ordinance: Bikeway (§312-78)	Clarify which bikeways and paths this ordinance applies to.	Transportation & Parking Committee Bicycle & Pedestrian Subcommittee
Enforcement	Bikeway Ordinance / E-Bikes	Ban on use of "motorized vehicles" on bikeway prohibits use of electric-assist bicycles (e-bikes).	City Ordinance: Bikeway (§312-78)	Consider whether use of e-bikes should be permitted on bikeways, and how such use would be regulated.	Transportation & Parking Committee Bicycle & Pedestrian Subcommittee Police
Enforcement	Bikeway Ordinance / Motorist Behavior	Bikeway ordinance currently requires all users to yield to vehicles in the road at crossings. This may be inconsistent with MGL Chapter 89, Section 11 that requires vehicles in road to yield to pedestrians at all marked crosswalks.	City Ordinance: Bikeway (§312-78)	Consider amending ordinance to require vehicles on roadway to yield to all bikeway (or trail) users at marked crossings (and all path crossings should be marked).	Transportation & Parking Committee Bicycle & Pedestrian Subcommittee Police
Enforcement	Driver Behavior	Motorists often fail to yield to pedestrians in crosswalks.	Motorists required to yield to pedestrians in crosswalks (MGL Chapter 89, Section 11).	Additional enforcement, educational stops, and decoy operations.	Police
Enforcement	Driver Behavior	Motorists sometimes park in bike lanes, which is prohibited by city ordinance.	City Ordinance: Bike lanes (§312-80)	Additional enforcement, motorist education and outreach.	Police
Enforcement	E-Bikes	Current definition of “motor vehicle” in zoning ordinance could potentially apply to and limit use of electric-assist bicycles (e-bikes).	City Ordinance: Zoning, General (§350-2.1)	Amend zoning ordinance to differentiate e-bike from motor vehicle, consistent with any other policy changes related to e-bikes.	Transportation & Parking Committee Bicycle & Pedestrian Subcommittee Planning Board
Enforcement	Personal Safety	Concerns over personal safety and crime on rail trails, particularly at night.	None.	Consider additional patrols on rail trails.	Police

Enforcement	Police Education	Law enforcement officers may not have the latest information on laws and safety issues relating to bicyclists and pedestrians.	None.	Use available training resources, such as MassBike and WalkBoston training videos, supplemented with information on local ordinances.	Police Bicycle & Pedestrian Subcommittee
Enforcement	Snow Removal	Property owners do not consistently clear snow from the sidewalks in front of their properties, in violation of city ordinance. Crosswalks and curb ramps in Central Business District formerly cleared by BID no longer cleared.	City Ordinance: Removal of snow and ice from sidewalks (§285-17)	Issue citations to non-complying building owners and/or DPW does work and bills owner. DPW should clear crosswalks in CBD.	Police Public Works
Enforcement	Speeding	Speeding by motorists endangers bicyclists and pedestrians, particularly downtown.	City Ordinances: Speed regulation (§312-79) Speed limits (MGL Chapter 90, Section 17)	Identify areas where speeding is most dangerous to bicyclists and pedestrians, and target enforcement.	Police
Enforcement	Truck Safety	Large trucks present a particular hazard for bicyclists and pedestrians, and most trucks lack safety measures designed to protect vulnerable users.	None.	Establish an internal policy requiring side guards, convex mirrors, and cross-over mirrors on all large trucks owned or operated by the City.	Transportation & Parking Committee Police Public Works
Enforcement	Truck Safety	Operation of trucks can be unsafe in areas of high bicycle and pedestrian activity. (eg. Main Street)	None.	Consider a long-term plan for appropriate delivery and loading locations for Main St. businesses.	Transportation & Parking Committee Police





Truck side guard graphic provided by http://www.cityofboston.gov/is/pdfs/TruckSideGuard_handout_VF2.pdf

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Policy Recommendations: Engineering

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Engineering	Bike Lane Ordinance	Existing ordinance does not contemplate a wider range of possible bicycle facilities than striped bike lanes, and specifically does not allow separated bike lanes for exclusive non-motorized use.	City Ordinance: Bike lanes (§312-80)	Amend ordinance to allow the full range of bicycle facilities, including separated bike lanes that are intended for the exclusive use of non-motorized users.	Planning & Sustainability Transportation & Parking Committee Bicycle & Pedestrian Subcommittee
Engineering	Bike Lane Ordinance	Streets with bike lanes are specifically listed in the ordinance, which is unnecessary for designating a bike lane, burdensome to keep up-to-date, and unclear what the legal consequences are if a bike lane is or is not listed.	City Ordinance: Bike lanes (§312-80)	Consider removing specific list of bike lanes from the ordinance.	Planning & Sustainability Transportation & Parking Committee Bicycle & Pedestrian Subcommittee
Engineering	Bike/Transit Integration	Integration between bicycling and transit could be better, and could extend range of potential trips by enabling bike use at beginning and/or end of transit trip.	None	Ensure adequate bike parking exists in proximity to key transit stops, and communicate the locations of integrated bus/bike stops to the public.	Planning & Sustainability Public Works Bicycle & Pedestrian Subcommittee PVTA
Engineering	Funding	The city does not currently designate any Chapter 90 funds specifically for bicycle or pedestrian projects, nor does the state expressly require that Chapter 90 projects comply with Complete Streets standards.* (See note by City Traffic Engineer.)	None	Consider allocating a specific percentage of Chapter 90 funds for bicycle and pedestrian projects, in proportion to mode share or another metric. Apply the city's Complete Streets Policy to all Chapter 90 projects.	Planning & Sustainability Public Works Transportation & Parking Committee Bicycle & Pedestrian Subcommittee
Engineering	Funding	MassDOT offers funding for Complete Streets projects.	Complete Streets Policy adopted.	Continue MassDOT Complete Streets funding process, with the goal of receiving up to $400,000 in project implementation funds.	Planning & Sustainability Public Works Transportation & Parking Committee Bicycle & Pedestrian Subcommittee

**Bicycle and pedestrian access is considered for City projects. Full reconstruction projects consider the addition of sidewalks. Most resurfacing projects require the reconstruction of wheelchair ramps and bike lanes are considered where there is sufficient pavement width.*

Engineering	Grates	Grates are not consistently bicycle-safe in either design or orientation. Ordinance does not include bicycle safety requirements.	City Ordinance: Gratings in streets (§285-24)	Although the DPW does install bike-friendly castings for upgrades and new projects, formalize by amendment to specify bicycle-safe design and orientation of grates on all streets and sidewalks.	Public Works Bicycle & Pedestrian Subcommittee
Engineering	Maintenance	Some crosswalks and bike lanes are faded and hard to see, reducing their safety effectiveness.	Crosswalks repainted annually over the summer by Public Works with bike lanes painted by a contractor	Crosswalk inventory is part of this plan. Bike lanes are listed in the bike lane ordinance, but bicycle facilities should be tracked independent of the ordinance. Ensure maintenance status is tracked as part of inventory.	Public Works
Engineering	Maintenance	Trail cleanup (brush cutting and trash cleanup) is not done consistently throughout the network.	DPW cuts brush twice a year on the Northampton Bikeway, once a year on other paths.	Expand twice-a-year brush cutting beyond the core Northampton Bikeway to other trails. Consider options for regular trash cleanup. Continue to seek "Adopt a Trail" sponsors for additional maintenenance.	Public Works
Engineering	Maintenance	Street maintenance or construction operations can create hazardous conditions or block access for bicyclists, pedestrians, and people with disabilities.	City follows MassDOT guidelines for construction zone management.	Consider adopting a city policy detailing requirements for maintaining safe access through construction zones for bicyclists, pedestrians, and people with disabilities.	Public Works Bicycle & Pedestrian Subcommittee
Engineering	Trails	Consistency of signage at trail crossing of roadways.	Some roadway crossings include W11-2 and W16-7P signs currently.	All crossings should include MUTCD W11-15P signs.	Public Works

Covered bicycle parking racks near key destinations and adjacent to transit stations increase the likelihood of users completing a multi-modal transit journey.

A bicycle-unfriendly sewer grate design in Nashville, TN. These should be avoided at all costs.;

A bicycle-friendly sewer grate in Cambridge, MA. Note the direction of travel and the small opening size.

Policy Recommendations: Engineering

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Engineering	Snow Removal	Rail trail network is essential transportation infrastructure, and lack of clarity and consistency with snow removal impacts bicycle and pedestrian transportation in the winter. Snow removal policy for paths is not included in DPW's Snow Removal Procedures document.	DPW plows the Northampton Bikeway from Stoddard Street to Florence Street in Leeds. The section of the bikeway from King Street to Earle and Grove Streets (Manhan Rail Trail) used to be plowed by the former BID, by is now plowed by the Parking Maintenance Division. Plowing starts after a storm has ended, not during.	Formalize and publicize path snow removal policy to inform public and set expectations. Consider plowing during storms of sustained duration.	Planning & Sustainability Public Works Bicycle & Pedestrian Subcommittee
Engineering	Snow Removal	Previously the work of the downtown BID, snow clearance at crosswalks in Central Business District is inconsistent.	None.	City should include crosswalks and curb ramps in snow removal operations, particularly in the Central Business District.	Public Works
Engineering	Subdivision Regulations	Any point along a street (measured at the center line) must be less than 500 feet away from the nearest connected street; this applies to cul-de-sac or dead-end streets as well.	City Ordinance: Cul-de-sac or dead-end streets (§290-29.B)	Amend regulation to require that in the case of a cul-de-sac or dead-end street, if a non-connected public street that is not a dead-end is within 250 feet, and an alternative bicycle and pedestrian connection to that street is feasible, such connection is required.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee
Engineering	Subdivision Regulations	Bicyclist and pedestrian access and safety not expressly part of Purpose, while motor vehicle safety is emphasized.	City Ordinance: Purpose (§290-2)	Add bicyclist and pedestrian access and safety to Purpose section of subdivision regulations.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee

Engineering	Subdivision Regulations	Bicycle peak-hour and daily trips not included in traffic analysis.	City Ordinance: Additional subdivision submittal requirements (§290-23)	Include bicycle trips in traffic analysis.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee
Engineering	Subdivision Regulations	No existing requirement of interior circulation plan for bicycles.	City Ordinance: Additional subdivision submittal requirements (§290-23)	Require interior bicycle circulation plan.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee
Engineering	Subdivision Regulations	Street design is expressly focused on "safe vehicular travel".	City Ordinance: Location (§290-29.A)	Broaden street design focus from "safe vehicular travel" to "safe travel for all road users."	Planning & Sustainability Planning Board
Engineering	A. Subdivision Regulations B. Zoning Ordinances	Subdivision Regulations and Site Plan Review crtieria does not permit any decrease in roadway Level of Service, limiting potential for biking and walking improvements.	A. City Ordinance: Additional subdivision submittal requirements (§290-23) B. City Ordinance: Approval criteria (§350-11.6)	Adopt more flexible and context-sensitive Level of Service analysis, and require that project reduce (or at least not increase) Bicycling Level of Traffic Stress.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee

Specialized snow removal equipment in Sweden are designed for operation in separated and protected bike lanes.

Policy Recommendations: Engineering

E	Policy Area	Need	Current Policy	Recommendation	Potential Leadership
Engineering	Zoning Ordinances	No requirement to orient new buildings to street frontage, limiting access for non-vehicular users.	City Ordinance: Procedures (§350-11.5), Approval criteria (§350-11.6)	Amend site plan procedures and approval criteria to require new buildings to be oriented to street frontage.	Planning & Sustainability Planning Board
Engineering	Zoning Ordinances	Fixed minimum off-street vehicle parking currently required for all structures, based primarily on square footage (seats for restaurants), with no limit on commercial parking, and reductions only possible through shared parking or payment-in-lieu (for CBD).	City Ordinances: Off-Street parking requirements (§350-8.1), Shared parking (§350-8.6), Special provisions in Central Business District for meeting off-street parking requirements (§350-8.10)	Dynamically set off-street vehicle parking requirements by requiring Transportation Demand Management Plan that maximizes bicycle, pedestrian, and transit trips, and then calculates minimum off-street parking needed (not to exceed statutory minimum). Allow reduction of off-street vehicle parking for exceeding bicycle parking requirements.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee
Engineering	Zoning Ordinances	Crosswalks not expressly required, even when sidewalks are required.	City Ordinances: Procedures (§350-11.5), Approval criteria (§350-11.6), Highway Business District Design Standards attachment	Expressly require crosswalks at intersections, transit stops, building entrances, and other key locations within and adjacent to site, subject to engineering review.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee
Engineering	Zoning Ordinances	Bicycles and pedestrians not included in trip estimates, only vehicles.	City Ordinance: Procedures (§350-11.5	Require bicycle and pedestrian trip estimates, based on anticipated demand assumption and/or nearby ped/bike counts.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee
Engineering	Zoning Ordinances	Bicycles not included in traffic pattern analysis.	City Ordinance: Procedures (§350-11.5)	Expressly add bicycles to traffic pattern analysis.	Planning & Sustainability Planning Board Transportation & Parking Commission Bicycle & Pedestrian Subcommittee

Engineering	Zoning Ordinances	Insufficient bike parking at commercial and residential buildings.	City Ordinances: Bicycle parking (§350-8.11), Chapter 350 Attachment 10, Chapter 350 Attachment 12	Increase bike parking requirements relative to current measures, and require bike parking even when no additional car parking is required. Require bike parking demand analysis.	Planning & Sustainability Planning Board Bicycle & Pedestrian Subcommittee
Engineering	Zoning Ordinances	Lack of end-of-trip facilities (e.g., showers, lockers, changing rooms) in office/commercial buildings is an obstacle to bike commuting.	City Ordinance: Bicycle parking (§350-8.11)	Require end-of-trip facilities for commercial buildings.	Planning & Sustainability Planning Board Bicycle & Pedestrian Subcommittee
Engineering	DPW Policy	Refine the process for public comments for DPW street projects	n/a	The DPW City Engineer or Traffic Engineer should come before the transportation and parking committee on the Pedestrian Bicycle Sub-Committee early enough in the decision process for substantive comments on any new or proposed projects.	Public Works

There is a general lack of bicycle parking in downtown Northampton.

10. MAIN STREET DESIGN

Previous Planning

Past plans undertaken to redesign Main St. in Northampton include the Main Street and King Street Transportation Charrette (March 2011) and the Main Street / State Street / Elm Street / West Street / New South Street Preliminary Intersection Design (July 2010.) Both of these plans by Nelson/Nygaard involved working to identify issues and opportunities along the Main St and King St corridors in Northampton and to analyze the State / Main / New South intersection to develop recommendations for redesigning the intersection to better accommodate traffic flow and pedestrian and bicycle safety. The impetus for these studies was Northampton's desire to enhance the bicycle and pedestrian environments without decreasing the vehicle throughput, as well as preserve or improve access to downtown businesses.

Some of the key findings and recommendations are summarized below:

- Critical issues identified: 1) over-designed 4-lane cross sections, 2) large intersections, 3) inhospitable bicycling environment. An over-designed street is defined as one that is "over-scaled as compared to the needs of traffic volumes and adjacent land uses. The cross-section of these roads is too wide, allowing cars to travel at excessive speeds and creating unsafe conditions for bicyclists and pedestrians."
- Lowering speeds through a road-diet identified as critical solution during charrette
- Studies referenced that show a direct correlation between street width and rate of injury in collisions. "with a very steep upward curve for streets wider than 44 feet."
- Shrinking the intersection size and width with compact design treatments have a number of benefits: "reducing vehicle speeds, particularly at the end of signal phases;

less wasted space, especially where right-turn lanes are poorly utilized today; stretching of vehicle queues away from multiple approach lanes linearly towards mid-block areas, with no additional vehicle delay; far more frequent pedestrian crossing phases, which are also longer in duration; significantly shorter crossing distances that reduce the barrier of intersections like Main & King; and more predictable driver and bicyclists expectations through clearly channelized movements."

- Long street widths and large intersections create "very long crossing distances for pedestrians, putting them in the path of cars for a long period of time."
- Large intersections result in additional time required for each car to pass through, reducing the number of cars that can pass through in each signal cycle.
- Pull-in angled parking spaces on Main St. limit drivers' field of view when backing out
- Additional connections are needed in places where bicycle facilities do exist but are lost at street crossings and intersections
- There is a general lack of quality bicycle parking in Northampton
- Solutions offered include road diets of four lanes to two lanes, shared bicycle boulevard style treatments, reverse angled parking on Main St, raised crossings on slip lanes, a textured crossing plaza in front of City Hall, curb extensions, new sidewalks under rail trail crossing, and widened sidewalks elsewhere

Alternative A:

- Right turn "boulder style" slip lanes
- New NB left-turn lane
- Single EB through lane
- Lengthened storage
- New on-street parking

Alternative B:

- Right turn "Boulder style" slip lanes
- New NB left-turn lane
- Single EB through lane
- Lengthened storage
- New on-street parking
- Two EB receiving lanes retained
- No northwest curb extension on Main St

Alternative C:

- Right turn "Boulder style" slip lanes
- New NB left-turn lane
- Two EB through lanes
- Lengthened storage
- Two EB receiving lanes retained
- No northwest curb extension on Main

After the completion of the three design options the City of Northampton decided to hold back on moving forward with final design due to issues related to truck turning movements and to await the recommendations on the redesign of Main St reetdeveloped during this Walk / Bike Northampton effort.

2016 Public Involvement

On May 10th, the consultant team hosted a Main Street Design Workshop that solicited public input regarding design ideas for Northampton's Main Street. Over 40 attendees engaged with cross sections of Main Street at three locations of varying width to inspire more than one option among the participants. The consultant ream recognized that Northampton's Main Street redesign will likely not be solved by a one-size-fits-all approach, this resulted in the development of an exercise where attendees could lay out Main treet in a manner that they thought best suited everyone's needs. A range of graphics were created including sidewalk extensions, furniture zones, pedestrian through zones, travel lanes for vehicles, transit-only travel lanes, protected bicycle lanes and traditional bicycle lanes. Each section completed by a workshop attendee was photographed and recorded in the appendix of this report. Additionally, a brief synopsis of the results are listed below. This exercise helped to inform the consultant's final Main Street design options and final recommendations.

Specific items the community wanted to see in a Main Street redesign included:

Travel Lanes:

- One travel lane in each direction
- Left turn lane pocket within median

Parking:

- 8' parallel parking
- 18' angled parking

Bicycle Facilities:

- Separated bike lanes (located between sidewalk and parking)

Sidewalks:

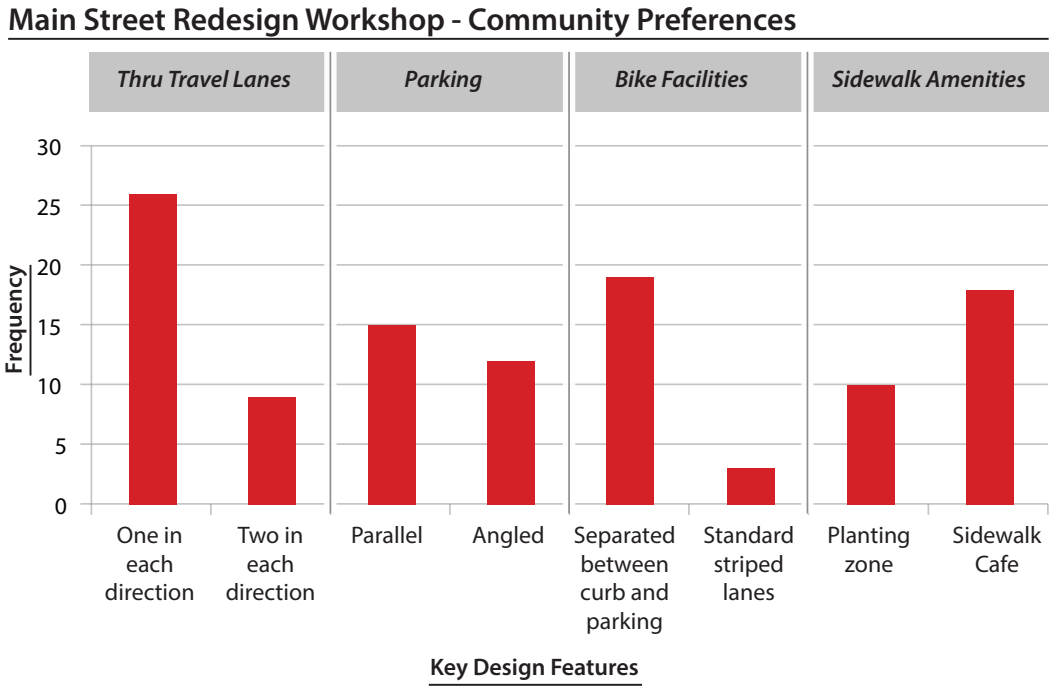
- Generous planting zone
- Sidewalk cafes

Demonstration Project

On June 18th, the consultant team led a demonstration project on Main Street in front of City Hall that involved temporarily striping a separated bicycle lane between the angled parking and the curb. Curb extensions were also temporarily placed in front of City Hall and at Crackerbarrel Alley to reduce the crossing distance, and to create space for land-scaping, cafe tables and seating.

An example cross-section exercise completed by a Main Street Design Workshop attendee

Workshop attendees discuss what they'd like to see built on Northampton's Main Street



10.1 Design Options

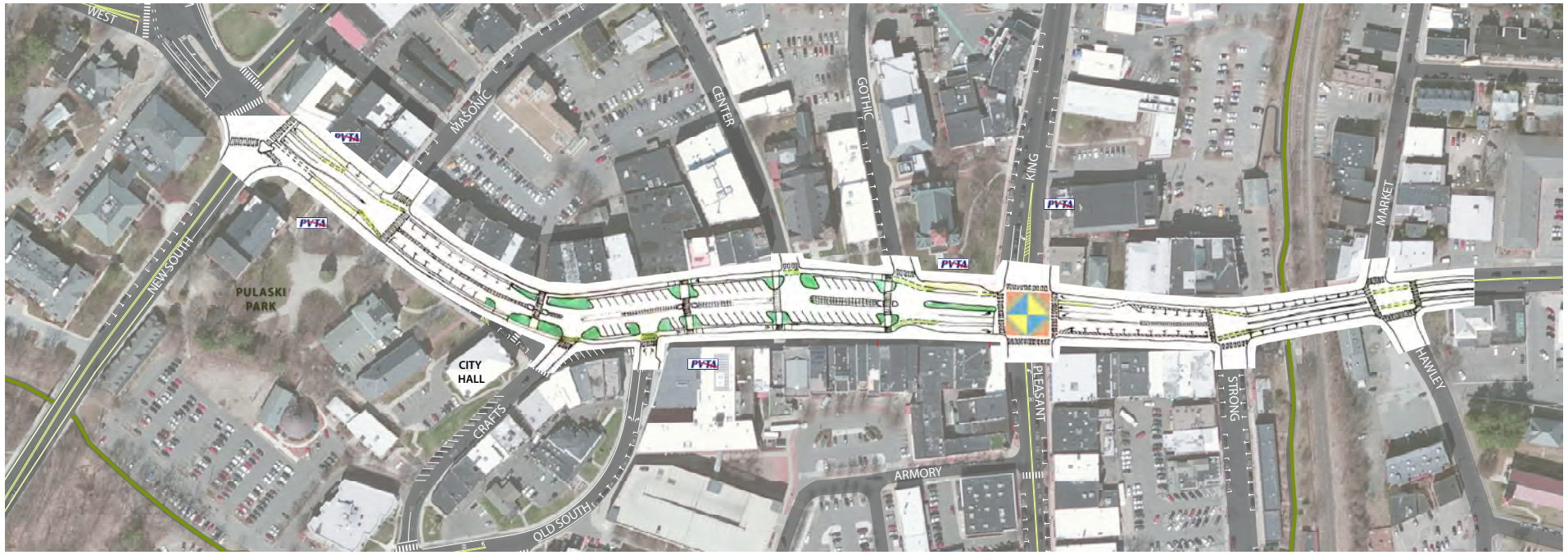
As part of the public involvement and demonstration project effort, the design team created four design options for community evaluation. The four options were based on key design themes that included wider sidewalks, separated bike lanes, transit priority lanes, medians of various widths and a two-way cycle track within the median. Highlights of the design and the Pros and Cons of each option are presented on the following pages.

Views of the demonstration project set up that expanded the sidewalk space in front of City Hall and reduced the length of the crosswalk.

The Main Street demonstration project included large printed maps for the public to view and comment upon

A cyclist takes a video of the temporary separated bicycle lane on Main Street.

People seeking a shady place to have lunch enjoyed the outdoor seating provided during the demonstration project.



Main Street Design Option 1

Wide Sidewalks with Separated Bike Lanes

Option 1 included:

- Parking protected bike lanes on south side of Main from Strong Ave to Pleasant King.
- Sidewalk expansion, curb extensions, and raised crosswalk from Gothic to New South.
- Addition of median refuge islands and turn pockets.

Following community comment and consultant analysis, Option 1 evolved into the concept plan.

PROS

Narrower roadway makes cars less dominant, provides a more welcoming environment for walkers and less pavement that needs plowing

Provides a space for bicyclists separated from moving traffic and parked cars

Textured, flush median provides additional space for cars to pass others who are waiting to park and for enhanced emergency vehicle access

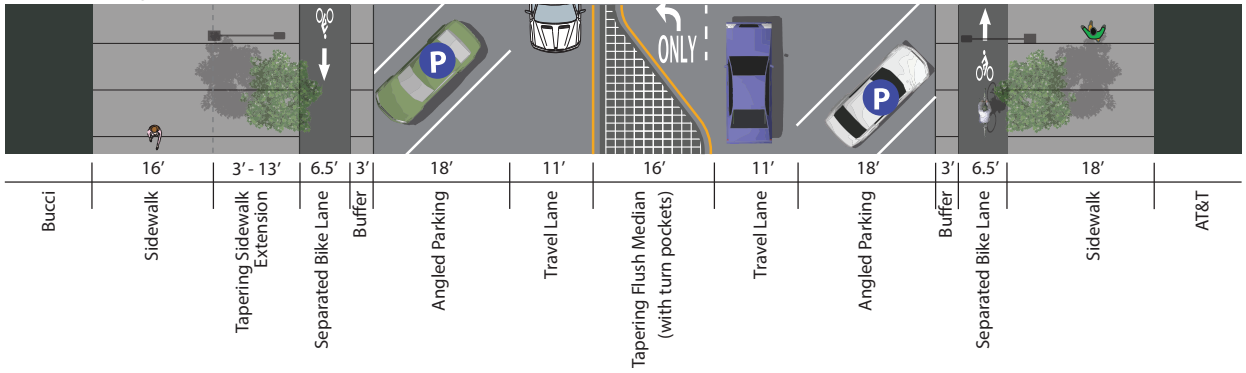
CONS

Separated bike lane takes up more space than standard bike lanes which could otherwise go into wider sidewalks or landscaping

In order to provide appropriate visibility for cyclists on the approach to intersections, some parking spaces may need to be removed

Limited opportunities to add significant landscaping or sustainability features within the median

Detail plan view graphic location between Center St and Old South St



Main Street Design Option 2

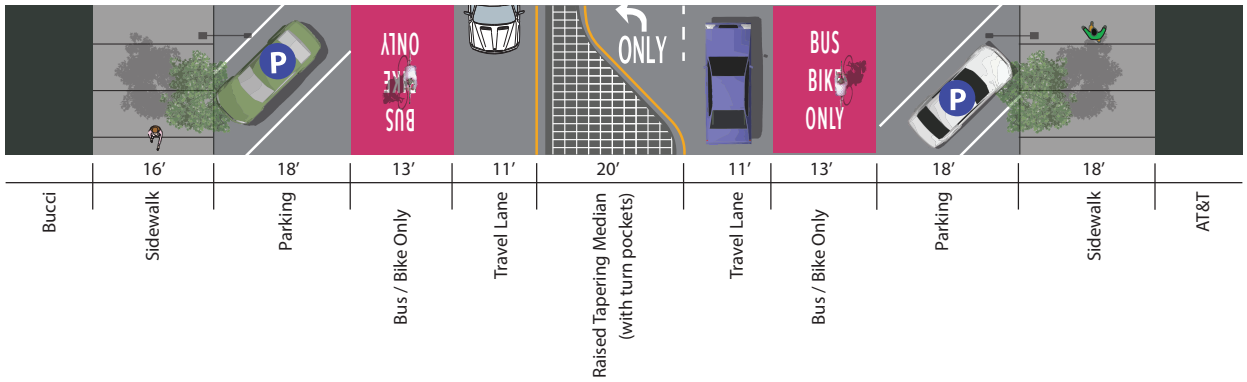
Transit Priority Lanes

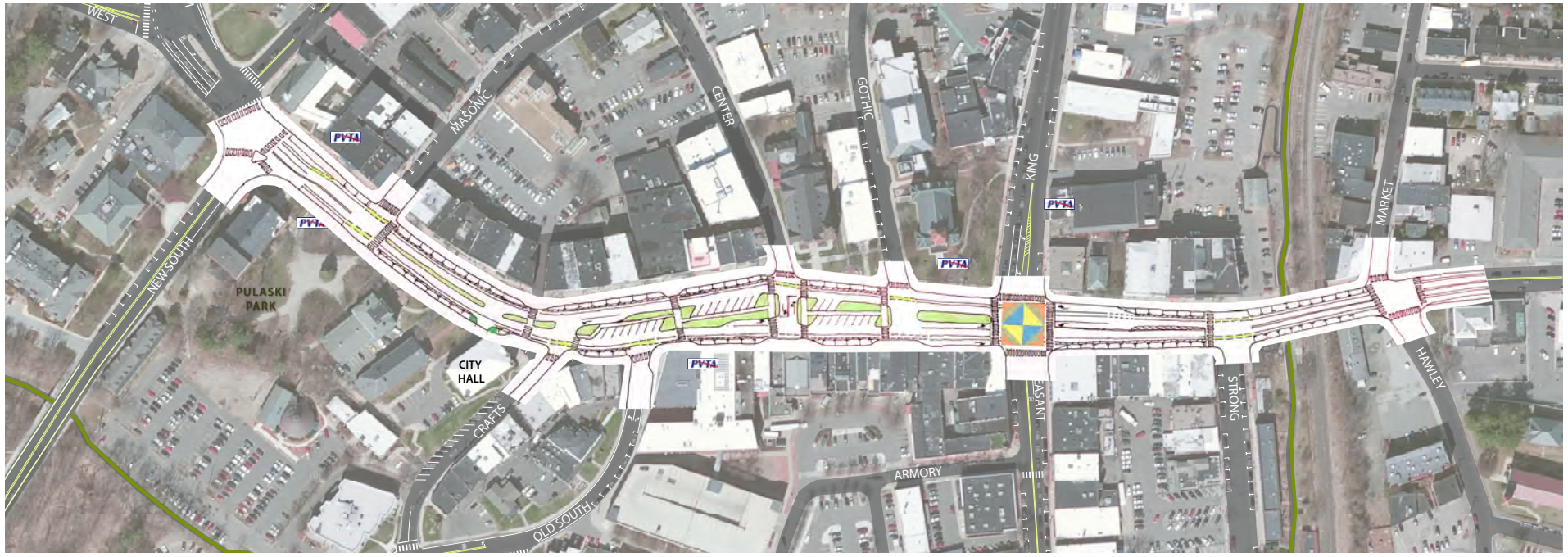
Option 2 included:

- Median refuge islands in front of City Hall, between Center and Gothic, and between King and Gothic
- Narrow width of Main St to one traffic lane in each direction between Center and Gothic
- Curb extensions at 9 locations
- Traditional striped bike lanes outside of transit priority lane area

PROS	CONS
Provides dedicated space for buses to avoid traffic back ups along Main Street, saving transit riders time	Lack of space to maintain bus lanes through signalized intersections minimizes their utility
Lack of space to maintain bus lanes through signalized intersections minimizes their utility	During peak hours especially, many novice bicyclists and/or families riding with children will not feel comfortable sharing space with buses
The shared bus/bike lane provides a lot of dedicated space for bicyclists during off-peak hours when bus traffic is light	Traffic and transit movement continues to be the dominant theme along Main Street
During peak hours especially, many novice bicyclists and/or families riding with children will not feel comfortable sharing space with buses	
Curb to curb width is generally maintained, along with the current number of parking spaces (approximately)	

Detail plan view graphic location between Center St and Old South St





Main Street Design Option 3

Wide Median with Parking

Option 3 was inspired by Keene, NH who redesigned their wide Main St. into a beautiful downtown pedestrian streetscape. Option 3 included:

- Traditional striped bike lanes
- Raised median area with landscaping, crosswalks, angled parking, and a central sidewalk
- Existing angled parking on side of street transitions into a mixture of parallel parking and curb extensions

PROS

Wide median provides much flexibility to provide public space and greenery that not simply associated with the adjacent businesses

Trees within the median will, in time, break down the scale of the widest blocks of Main Street

Parallel parking is a more "urban" aesthetic than angled parking and provides consistent treatment along the edges from end to end

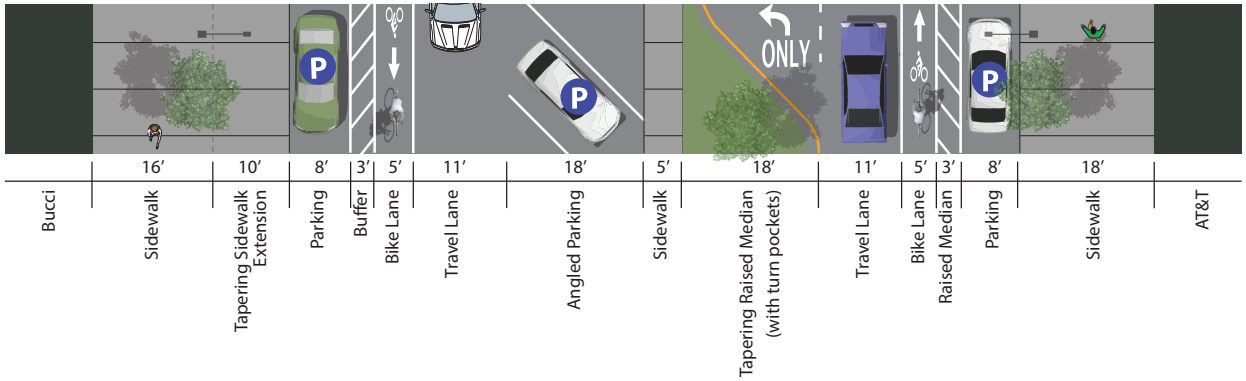
CONS

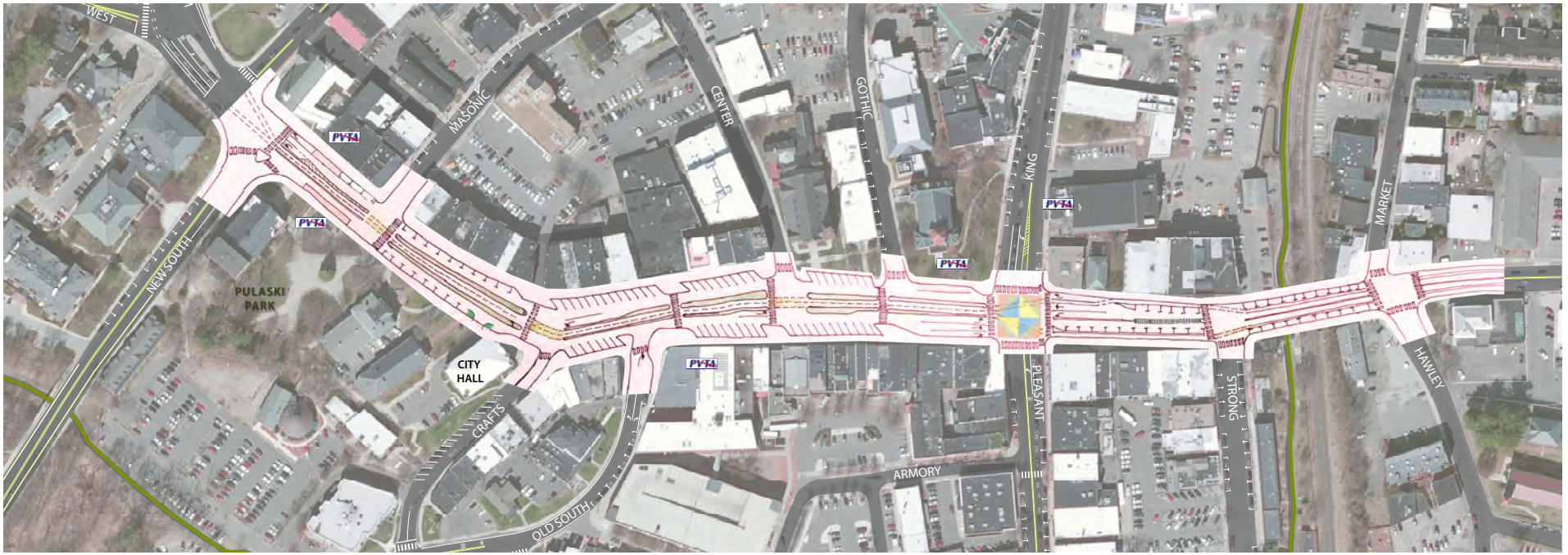
Wide median creates a less flexible street space for parades and large-scale community events

Trees within the median make for a less-conducive space for winter snow storage

The additional angled parking in the median does not make up for the curb-side parallel parking, equating to a 15-20% loss in on-street parking

Detail plan view graphic location between Center St and Old South St





Main Street Design Option 4

Median Cycle Track

Option 4 included:

- Two-way raised cycle track in center of Main Street, protected by landscaping areas and curb in narrower portions
- Curb extensions at approximately 12 locations
- The addition of turn pockets at two locations

PROS

Bicycles within the central median avoid conflicts with parked cars and minimizing cuts in the median reduces intersection conflicts

A median bikeway flanked by landscaping on each side would provide a unique and interesting experience for people riding bicycles

The potential landscaping and bikeway within the median would break down the scale of the overly-wide portions of Main Street

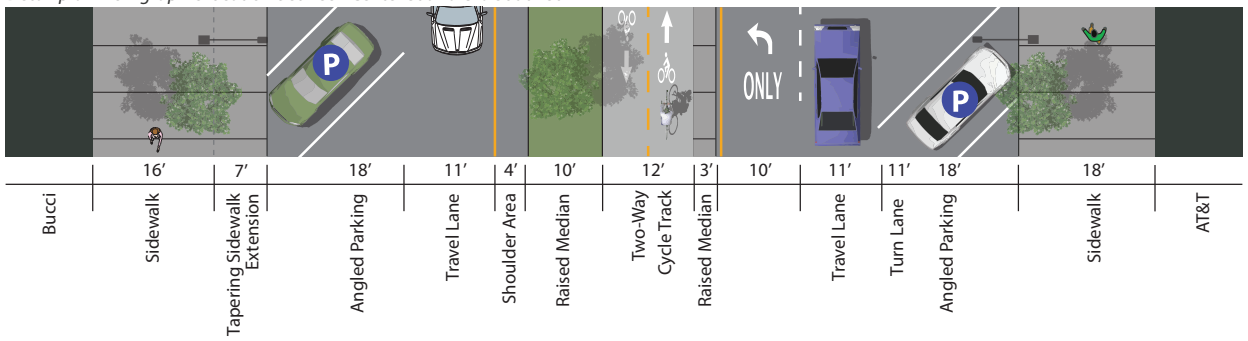
CONS

The transition from the existing bike lanes on Elm and the median bikeway will be awkward and require an exclusive bike crossing phase at the Main/Elm/State and Main/King intersections

There are few precedents for such a configuration, which would make success hard to predict

People bicycling within the median may find it less convenient to access adjacent businesses and side streets

Detail plan view graphic location between Center St and Old South St



10.2 Concept Plan

After receiving feedback from the community and city staff, a recommended concept plan was created. The following synopsis explains each design feature, beginning at the Market / Hawley intersection and ending at the Main / State / New South intersection (from east to west.)

Key Features of the Design

From Market / Hawley to Strong:

- White intersection crossing markings with solid green paint in the middle will be used to highlight to cross traffic on Hawley and Market that bicyclists are crossing the roadway along Main Street.
- Traditional bike lanes carry the cyclists up to the intersection of Strong Avenue.

From Strong to King / Pleasant:

- A curb extension on both sides of Main Street will reduce crossing distances for pedestrians and reduce motor vehicle speeds. The protected bicycle facility begins here on the south side of Main Street, while on the north side of Main Street a traditional bike lane carries cyclists up to the intersection of Pleasant and King. At this intersection the bicycle lane will be between the right turn lane and the through lane, reducing the likelihood of 'right hook' crashes.

From King / Pleasant to Center:

- The separated bike lane begins on the north side of Main Street and continues to Masonic Street.
- The bus stop on the north side of Main Street between King and Gothic will remain. Crosswalk markings shall be used to remind cyclists riding between the sidewalk and the bus stop to yield to transit users entering or exiting the bus waiting area.
- A curb extension on the west side of Gothic Street on both the north and south sides of Main Street will reduce the crossing distance for pedestrians. The curb extension on the south side of Main Street opposite Gothic Street will allow cyclists to transition into a short stretch of standard bike lane between the right turn lane and the though lane to minimize conflicts with turning vehicles.
- The Kind / Pleasant intersection design should consider a special paving pattern or public art to highlight the critical nature of the intersection in the heart of downtown.
- A small additional raised median will act as a traffic calming measure for motorists queueing to make a left from Main onto King Street.
- Raised crossings for both pedestrians and bicyclists at both Gothic and Center Streets will slow turning traffic.

Photo-simulation of sidewalk-level protected bicycle facility, looking east on Main Street in front of Faces and TD Bank.

From Center to Old South:

- The crosswalk across Main Street just west of Center Street will be relocated to just east of Center Street to accommodate a left turn pocket to Center.
- Northampton's rainbow crosswalk will be shortened by curb-extensions on both sides of the street, resulting in a loss of two diagonal spaces on the north side of the street. The curb extension on the south side will be elongated towards the west to accommodate passengers waiting for the bus. The larger area will allow pedestrians, transit riders, and cyclists to have their own dedicated space.

From Old South to New South:

- The existing crossing at Crafts Avenue will be replaced by a raised crossing.
- Space in front of City Hall will be reclaimed to make room for a small urban parklet (per Open Space, Recreation & Multi-Use Trail Plan (2011)) and reduce crossing distances from City Hall to the pedestrianized Crackerbarrel Alley.
- A curb extension on the parklet side of the street will complement the urban park in front of City Hall as well as to reduce crossing distances.
- Parallel parking and a small buffer will separate the protected bicycle facility west from City Hall to Masonic.
- The existing bus stop and PVTA pulse point on the south side of Main Street between Masonic and New South will remain.

New South intersection:

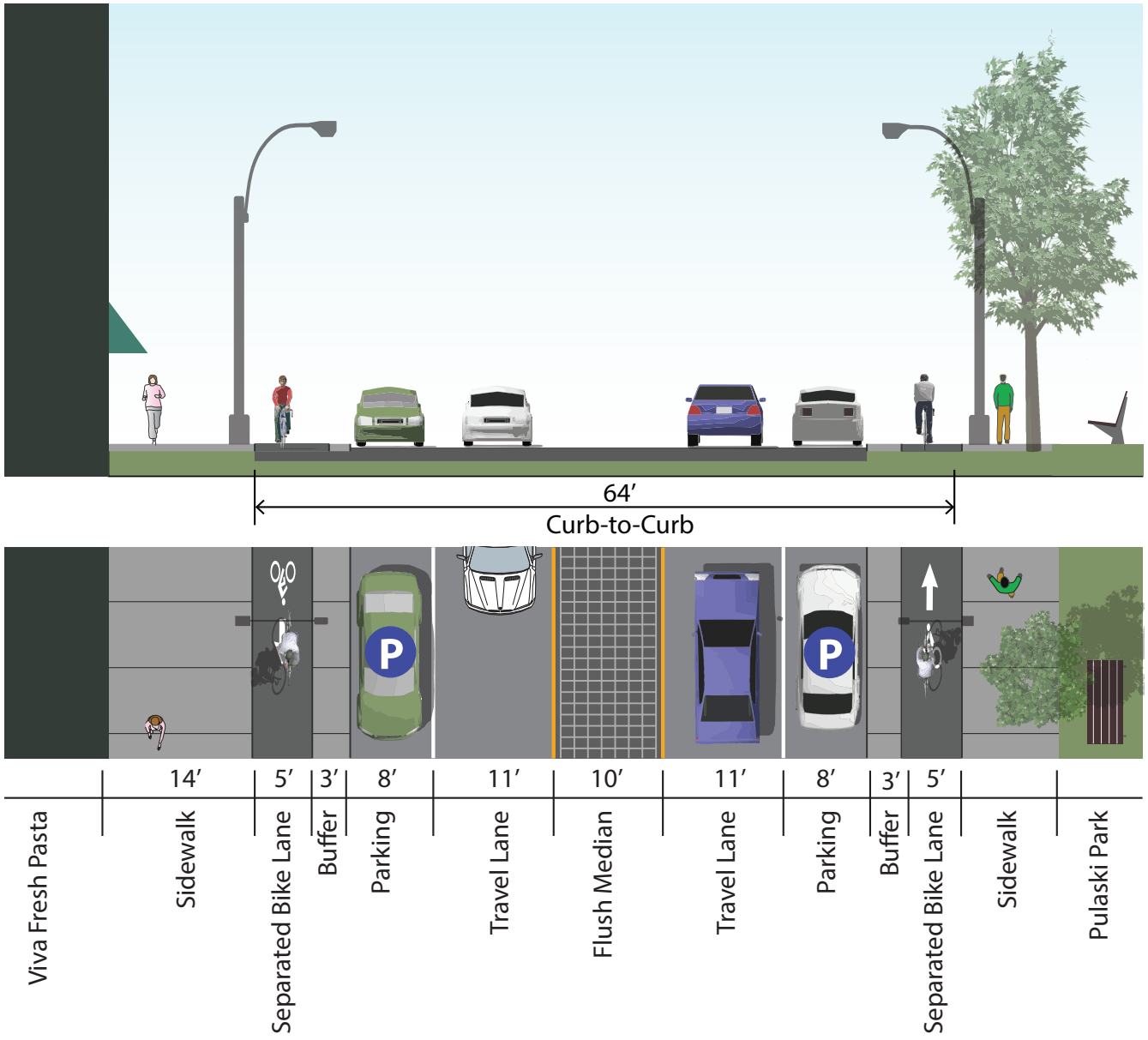
- Refuge island at New South and Main Street will be expanded and relocated slightly to the east. Complimentary pedestrian refuge island with raised crossing will be constructed to the west of the existing island, slowing the turning speed of motor vehicles from Elm St. to New South.
- An additional refuge island will be constructed at the northwestern corner of State and Main Street to slow right-turn movements for motor vehicles.

General:

- The general existing mix of angled and parallel parking types will remain. A small number of parking spaces will be lost to accommodate curb extensions and crosswalks. The few parking spots that will be lost are currently too close to the pedestrian crossings, creating uncomfortably short sight lines.
- Reverse-angled parking should be considered for the corridor. However, the separated bike lane design will mitigate the concerns that typical angled parking create from a bicycle safety point of view.
- Additional engineering analysis and public involvement will be required to move the concept planinto design development and implementation in the near future.

MAIN STREET RECOMMENDATIONS


GOTHIC
KING
MARKET
PLEASANT
STRONG
HAWLEY
ARMORY
PVTA
PVTA
2
2
3
3
4
4



Existing conditions, looking east

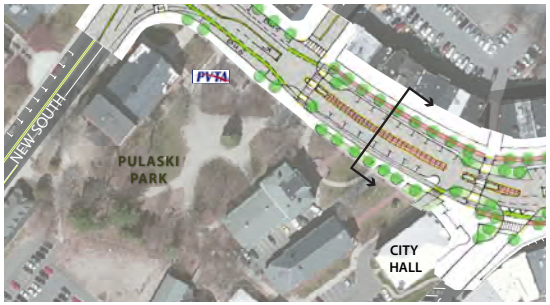
Existing conditions, looking west

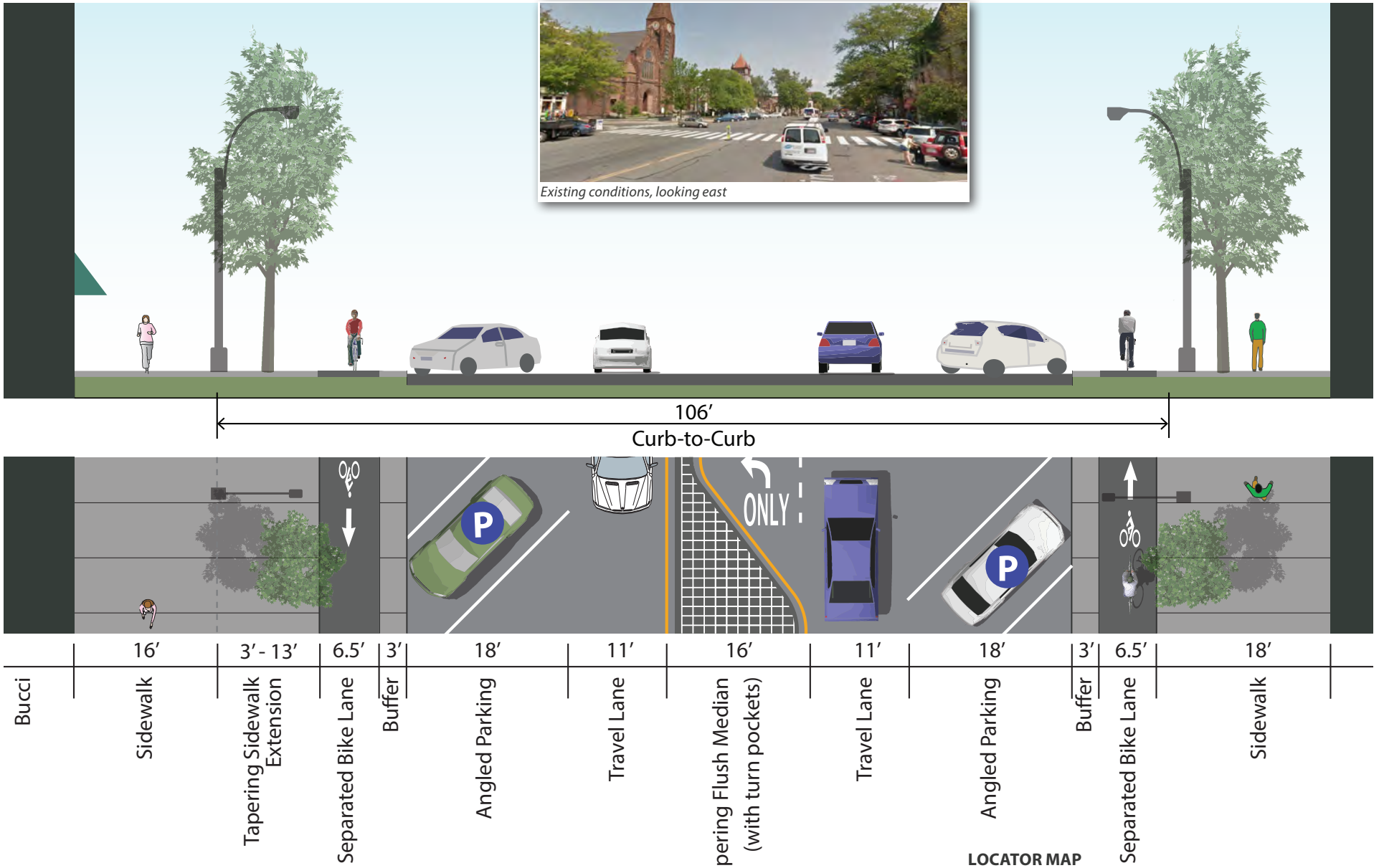
Section 1

Main Street at Masonic Street

Separated bike lanes provide comfortable facilities for cyclists of all ages and abilities. A 3' buffer between the separated bike lane and curb allows space for motor vehicle doors and other potential obstacles entering the bicycle lane to be avoided. The median area remains flush for emergency vehicle passage and potentially for short term delivery vehicle parking.

LOCATOR MAP



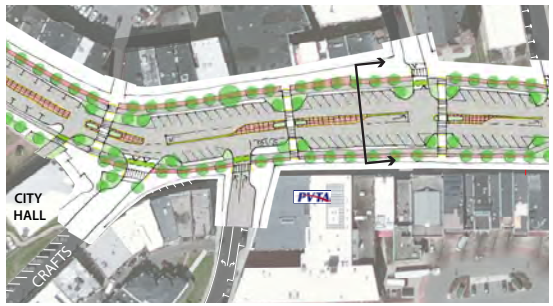


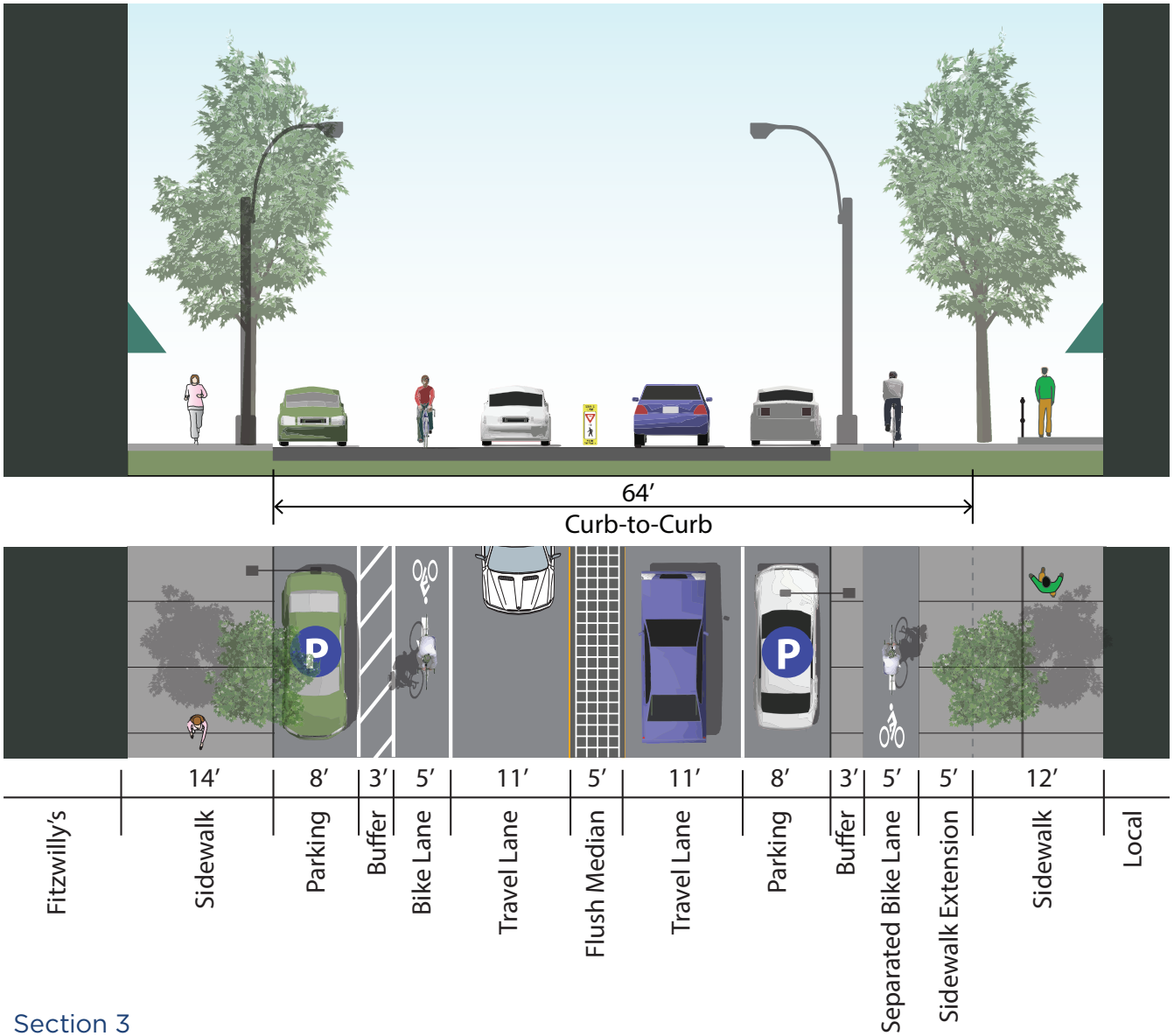
Section 2

Main Street at Center Street

An expanded sidewalk along the north side of Main Street reinforces this area as a lively pedestrian plaza and provides space for future civic events and outdoor seating. In this section the tapering median reflects the need for a left-turn pocket for motorists traveling up Center Street.

LOCATOR MAP





Existing conditions, looking east

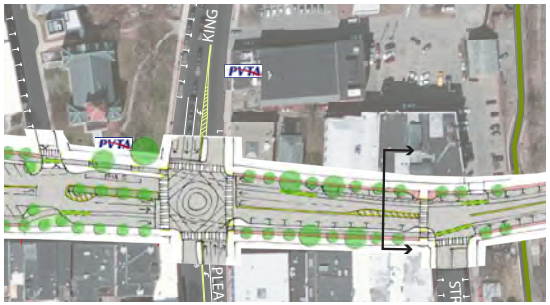
Existing conditions, looking southeast

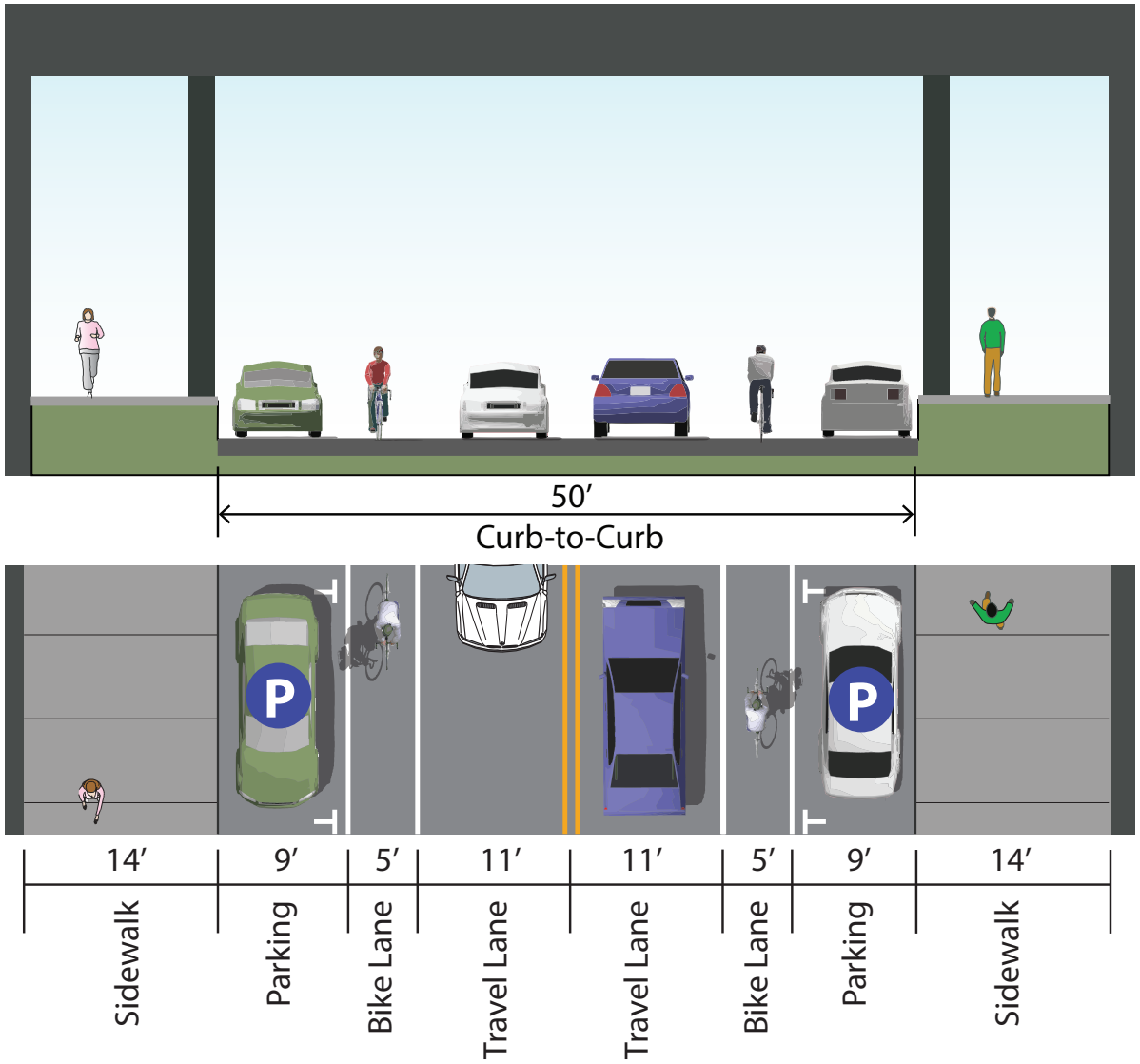
Section 3

Main Street at Strong Avenue

A bicycle lane on the left side of Main Street is separated from parked cars by a painted buffer, preventing the 'dooring' of cyclists by drivers exiting their vehicles. A sidewalk extension on the right side of Main Street allows space for a separated bicycle lane with a 3' buffer. A small flush median retains the one travel lane in each direction prior to the left turn pocket from Main St to Pleasant St.

LOCATOR MAP





Existing conditions, looking west

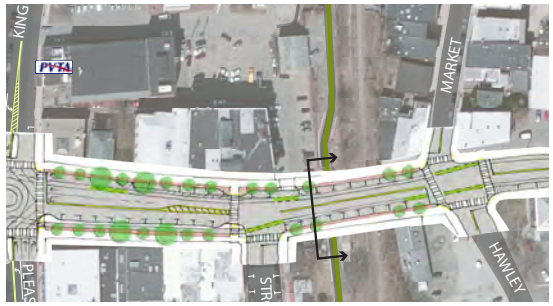
Existing conditions, looking east

Section 4

Main Street at Rail Trail Trestle

Nine foot wide parking lanes provide a small buffer between car doors and the 5' bike lane passing underneath the bridge. The bike lane is accoommodated by narrowing the existing wide travel lane.

LOCATOR MAP



10.3 Main Street Engineering Constructability Review

The design of any streetscape retrofit presents numerous challenges that require careful consideration during design in order to ensure a quality design, regulatory compliance and constructability. During the concept-level design of Main Street, the consultants considered these potential issues and attempted to use all available information to ensure that the final recommendation would be implementable.

Roadway Geometry

The roadway reconfiguration being implemented in this recommendation maintains the existing roadway alignment of Main Street and does not exceed the current ROW or impose any new substandard geometry. A travel lane width of 11 feet was chosen to ensure compliance with the MassDOT Project Development and Design Guide. This lane width will allow adequate space for vehicles without encouraging excessive traffic speeds. The existing roadway consists of a single wide lane in each direction that varies from approximately 24' to 35' in width. Despite being striped as only one lane in each direction, the roadway often operates as two unmarked lanes in each direction. The recommended conceptual design maintains one lane, albeit a much narrower lane than currently exists. The addition of left turn lanes at unsignalized intersections will help to ensure smooth traffic operations despite the narrowed pavement width.

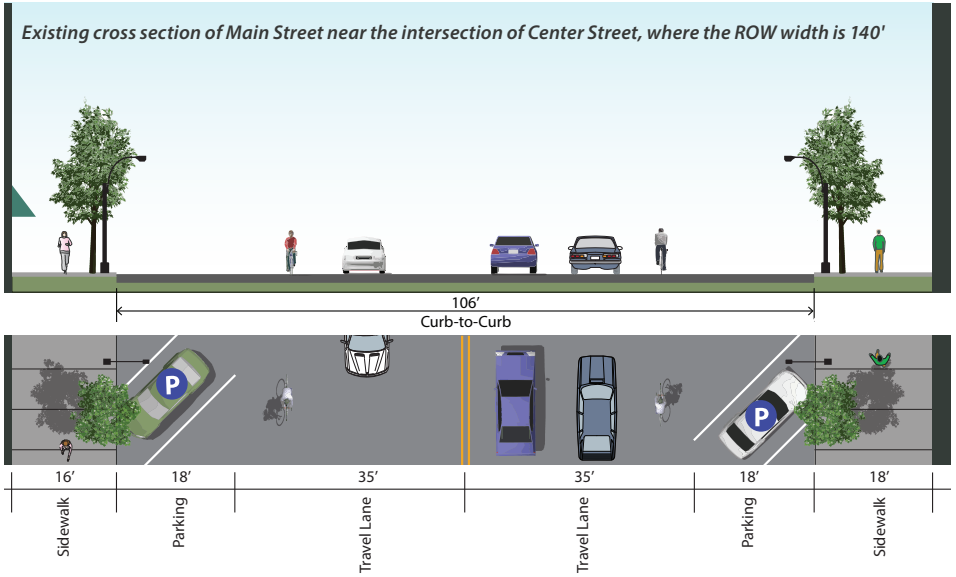
Separated Bike Lane Geometry

The separated bike lanes in the conceptual design recommendation have been designed to comply with the MassDOT Separated Bike Lane Planning & Design Guide. As the project progresses from this conceptual design to contract documents it will be the responsibility of the designer to ensure full compliance with the design guide as the overall design evolves.

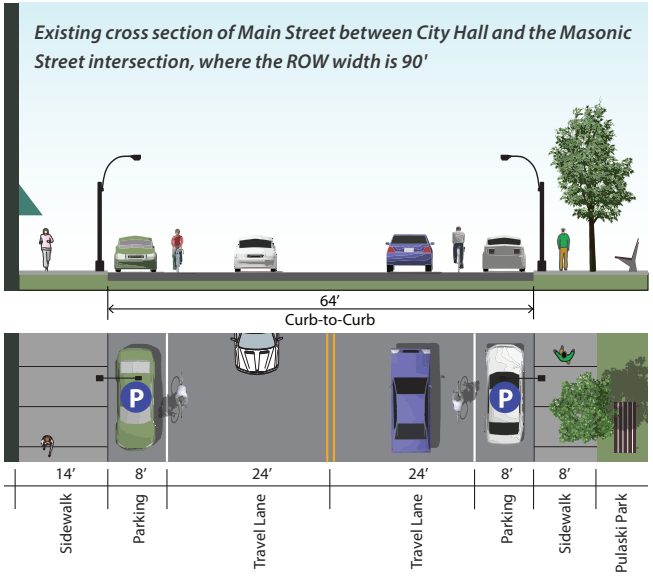
Intersection Geometry and Signalization

There are three signalized intersections present in the corridor:

1. Main Street and New South Street/State Street
    - This intersection will be fully designed under a separate project and will be coordinated with Pedestrian and Bicycle Comprehensive Plan's conceptual design for Main Street to ensure compatibility. The current concept developed by Nelson/Nygaard does not provide adequate accommodation for trucks turning left from Main Street onto New South Street.



Existing cross section of Main Street near the intersection of Center Street, where the ROW width is 140'



Existing cross section of Main Street between City Hall and the Masonic Street intersection, where the ROW width is 90'

The designer will need to explore options to accommodate this movement during the development of contract documents.

2. Main Street and Pleasant Street/King Street /US Route 5/MA Route 10

- The configuration of this intersection will remain largely unchanged. All approaches will be maintained, with one minor exception: the de facto thru/right lane on Main Street's westbound approach to the intersection will be changed to a right-turn only to accommodate safe bicycle connectivity. In the next stage of design, a thorough traffic analysis of this change will be needed to confirm its viability
- Due to the construction of wide sidewalks to accommodate the separated bike lane and curb extensions along Main Street, the crossing of Main Street will be shortened, potentially allowing signal retiming in order to improve traffic operations.
- Vehicles and bicycles will move through the intersection simultaneously; major signal modifications are not anticipated.

3. Bridge Street and Hawley Street/Market Street

- The configuration of the approaches to this intersection will remain unchanged. Traffic operations at this intersection should remain unchanged.
- Vehicles and bicycles will move through the intersection simultaneously; major signal modifications are not anticipated.

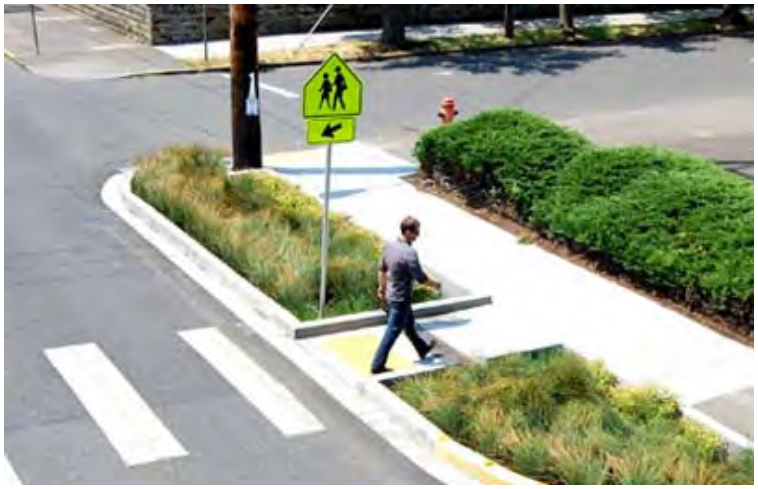
All turn lane lengths and tapers for all intersections (signalized and unsignalized) require further traffic analysis which will occur during preparation of the Functional Design Report, which is beyond the scope of this project.

Drainage and Utilities

Two major components of the conceptual design are sidewalk-level separated bike lanes and curb extensions. Any time that these features are proposed, drainage and utility modifications become a major point to be considered.

By widening the sidewalks to create sidewalk level separated bike lanes, the gutter elevation is raised and drainage must be carefully examined to prevent ponding along the sidewalk and flooding into doorways. In extreme cases, full depth reconstruction and lowering of the roadway may be required in order to ensure positive drainage.

The construction of curb extensions provides great benefit to pedestrians by reducing crossing distances, but by extending the curb line, stormwater runoff is inevitably trapped requiring the installation of new drainage structures.



Future curb extensions on Main Street will need to be carefully designed to ensure good drainage and can potentially include stormwater retention features.

The changes to finished grade and drainage modifications resulting from the proposed improvements must be coordinated with the existing utilities present to minimize conflicts. Any conflicts will need to be resolved, which may include utility relocation. A detailed field survey is required to perform this analysis. Significant utility coordination will likely be required and could be a major component of the design work for this project.

Accessibility

Compliance with Massachusetts Architectural Access Board (AAB) standards will be critical during design and construction of this project. There are numerous wheelchair ramps along the corridor that will require detailed design to ensure that they meet all aspects of the AAB rules and regulations. Implementation of this conceptual design will improve access to pedestrians of all ages and abilities by resolving existing deficiencies including: excessively steep curb ramps, lack of detectable warning panels, and exceptionally long crossing distances.

Loading Zones

Due to the existing pavement width on Main Street, trucks loading and unloading typically park in the roadway since there is ample room for other vehicles to pass. The recommended single through lane design will prevent this from happening. In order to accommodate loading vehicles, additional consideration will need to be given to the implementation of loading zones during the transition from concept to contract documents. Conceptually, deliveries will occur in designated curb-side loading zones (TBD) and informally within extended-length turn lanes and portions of the recommended flush median.

The future redesign of Main Street will ensure full compliance with Massachusetts Architectural Access Board (AAB) standards

Snow Removal

The current excessive width of Main Street allows Public Works staff to plow snow to the center of the roadway and haul off-site after the storm has concluded. The recommended conceptual design will require that the City modify their snow removal plan to ensure that the roadway remains passable during storms due to the minimal space in the center of the roadway to store snow. In order to alleviate some issues with snow removal, Main Street's final design should incorporate features that are easily accessed by forward moving snow plows, since reverse maneuvers slow down the process of snow removal and can be hazardous to users of the roadway, bicycle, and pedestrian facilities. This is of primary concern at the curb extensions, as they present unique snow removal challenges if not designed properly. Two key design components will help aid snow removal efforts:

- Eliminate acute curb line angles since obtuse angles allow easier access by snow plows.
- Utilize a flush median to the maximum extent practical to temporarily store snow during storms.

Proper design of hardscape elements ensures that snow removal will be more efficient and less likely to damage the streetscape.

Transit

The recommended conceptual design shows bus stops along the corridor to encourage transit use. In order to allow buses to stop without impeding traffic flow, designated pull-offs are included. Bus stops located adjacent to the separated bike lane will be designed according to the standards in the MassDOT Separated Bike Lane Planning & Design Guide in order to provide safe access for transit users while maintaining the integrity of the bicycle facility. It will be the responsibility of the designer to coordinate the details of all bus stops with the Pioneer Valley Transit Authority (PVTA) to ensure their concurrence with the design and location.

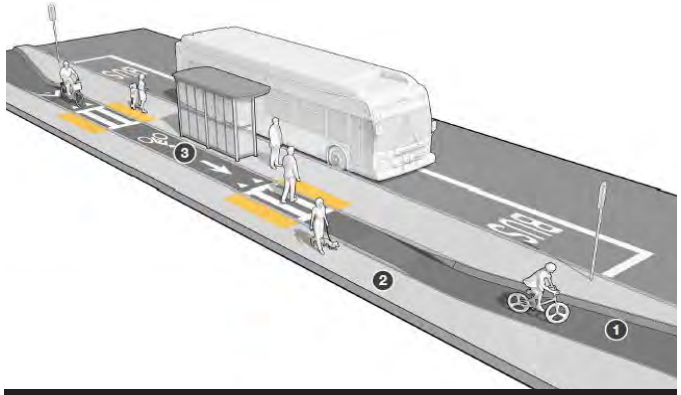
Cost

The cost estimate for the Main Street project based on current unit prices is approximately $5.8 million, which asumes two years of inflation. For a detailed cost estimate, see Appendix 2 in the Annex of this report.

The recommended conceptual design for Main Street includes some stretches on flush median to help accommodate snow storage where Main Street is at its widest

Design Toolkit - Key Features

The following graphics illustrate design-feature precedents for Northampton to consider in the future planning and design of Main Street



Floating Bus Stop - Mid Block

As illustrated in MassDOT's Separated Bike Lane Planning & Design Guide, "floating" bus stops can be incorporated at PVTA stops in order to maintain the integrity of the separated bike lane, while accommodating a comfortable waiting area for transit users.

Wide Sidewalks

Similar to the sidewalks in Central Square Cambridge, the future sidewalks along Main Street can be designed to incorporate a generous walking zone and provide a wide, varied-material furniture zone to accommodate outdoor seating, cafes, bike racks and street trees.

Raised Crossings at Side Streets

In conjunction with a green separated bike lane crossing, raised crosswalks slow turning motorists and emphasize that safe pedestrian and bicycle connections are the higher priority at low-volume cross streets.

Flush Median and Pedestrian Refuge Islands

Along Mass Ave in East Arlington, a flush median articulated in red "streetprint" surface seamlessly gives way to raised island that provides a safe refuge for pedestrians crossing the formerly four-lane roadway

11. PUBLIC REALM DESIGN GUIDE

Introduction

The purpose of this guide is to provide developers, property owners, and City officials with a set of recommended practices regarding the design of the public realm in the City of Northampton's primary commercial areas. The guidelines are designed to establish standards that will unify the visual environment along the major entries to the downtown, create pedestrian spaces that are consistent and inviting, and provide a vocabulary of materials and components that will create uniqueness and consistency to the City.

The guidelines are focused on the following zoning districts:

CB – Central Business:

Primarily along Main and Bridge streets from the Main / State / New South intersection of Main and West streets to the Historic Northampton Museum, and also along King and Pleasant Streets from Summer Street to Holyoke Street;

EB – Entranceway Business:

Along King Street from Summer Street to the MassCentral / Norwottuck Rail Trail;

GB – General Business:

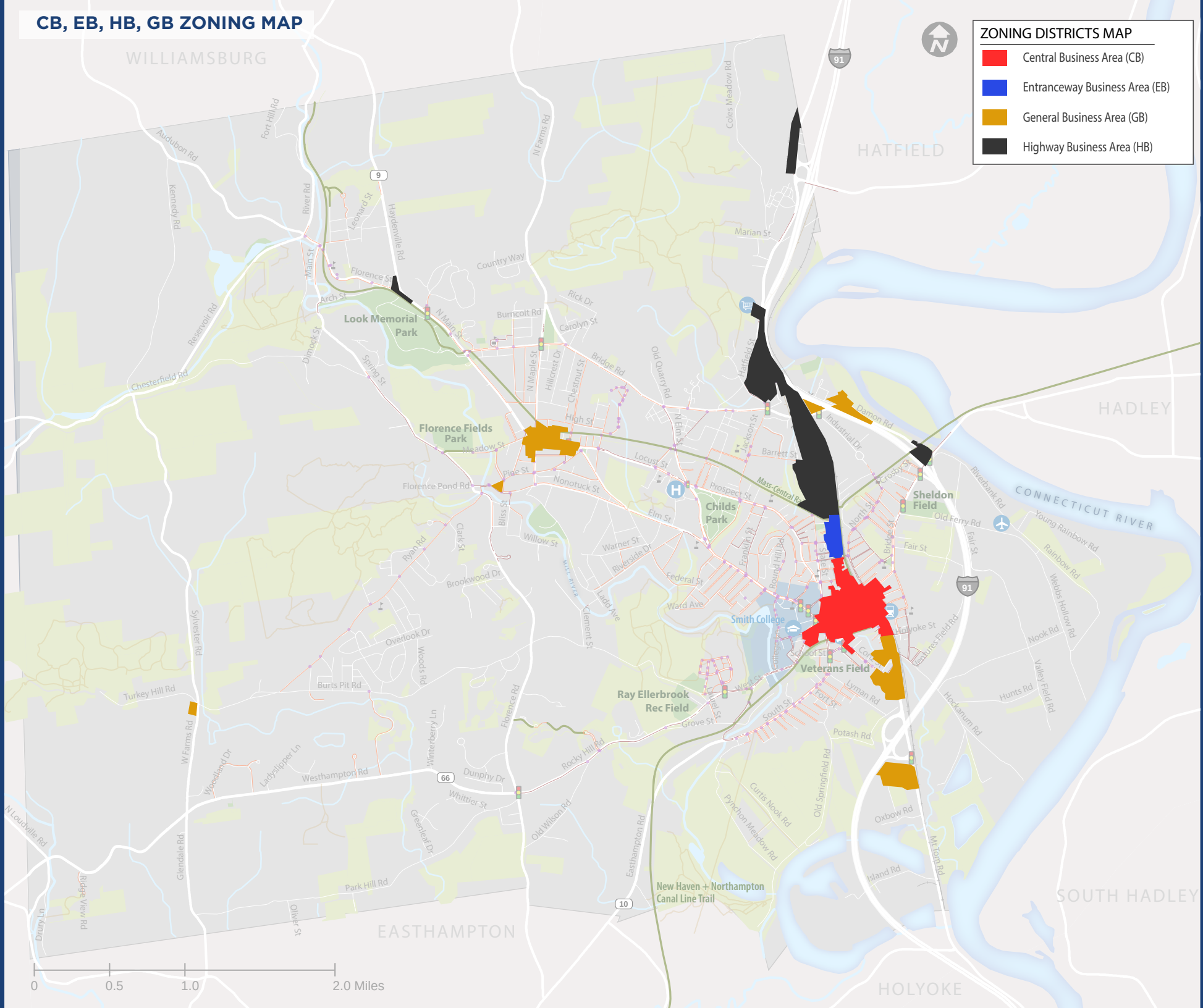
Along Pleasant Street from Holyoke Street to the former dike; and

HB - Highway Business:

Along King Street from the MassCentral Rail Trail to the I-91 interchange.

In general, these zones follow the primary streets identified above, and are typically only the depth of the properties immediately along those streets. The exception to this is the CB zone, which includes several side streets off of Main Street in the downtown, including portions of State, Masonic, Center, New South, Old South, and Pearl streets.

CB, EB, HB, GB ZONING MAP



The GB and HB zones also cover other areas within the City, such as the businesses along Damon Road east of I-91 and in the business district of Florence. While these guidelines may have applicability to these areas, they are primarily written for the core business districts of Northampton.

Description of Zones

While the zones under study in this document generally represent the majority of the commercial districts of the city, they are very different in character based on both the zoning parameters provided in the code and the actual development of the areas. The following table captures some of the key criteria and characteristics of each zone:

The zones under study work as a progression into the center of Northampton from the north and south, increasing in density towards the central business district. Along with the increase of density of buildings, the proximity of structures to the public realm and the presence of parking both decrease, ultimately forming the continuous street wall of Main Street. One outcome of this increasing density is a more prominent presence of pedestrians along the streets, requiring greater attention to the development of an appropriately scaled and furnished sidewalk environment.

The zones also create a framework for the aesthetic approach to these major streets, requiring consistent landscape treatment and building presence which transitions along with the density of development. By establishing guidelines for the public realm design in all of these zones, a consistent and

Business Districts: Comparison of Zoning Parameters

Zone	Allowed Uses	Building Height	Setbacks	Parking	Landscaping
CB: Central Business	Commercial (retail, office), residential (second floor or back of first)	30′ min. 70′ max.	Front: 5′ max. Side: 0′ Rear: 0′	No new parking	--
EB: Entranceway Business	Retail, wholesale, office, residential (above first floor)	20′ min. 65′ max.	Front: 0′ Side: 0′ Rear: 0′	No parking within 10′ of front lot line. One curb cut. Bicycle parking required.	8′ buffer if building does not abut sidewalk; 10′ buffer in front of parking.
GB: Greater Business	Any use	60′ max.	Front: 0′ Side: 0′ Rear: 0′	No parking between building and front lot line	Landscaping, pedestrian malls or plazas required between building and front lot line
HB: Highway Business	Retail, wholesale, office, drive-throughs, residential (above first floor)	20′ min. 65′ max.	Front: 0′ beyond required buffer and sidewalk Side: 0′ Rear: 0′	Quantity and layout by site plan review. Bike parking required.	10′ tree belt plus 6′ sidewalk.

readable framework can be created to bring greater unity and imageability to the city center and its approaches.

Design Intent

The intent of the Public Realm Design Guide is to respond to this increasing intensity of use while also creating a consistent vocabulary of materials and furnishings that is readable and understandable throughout the entire business district. To reinforce the progression and transition from edge to center, the following goals for the streetscape in each zone have been established:

HB – Highway Business:

- Separate pedestrians from traffic
- Provide only modest sidewalk capacity
- Buffer parking and development areas from roadway views
- Establish street trees as dominant street element

GB – General Business:

- Separate pedestrians from traffic
- Provide comfortable sidewalk capacity
- Buffer off-street parking from roadway views
- Bring street trees closer to roadway to reduce scale

EB – Entryway Business:

- Encourage pedestrian use by providing broad, comfortable sidewalks
- Incorporate amenities into sidewalk zones such as seating, tables, area lighting
- Provide variety of materials and colors to enliven pedestrian environment
- Maintain strong street tree presence

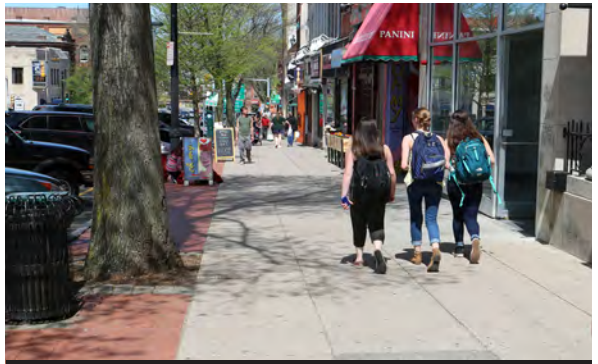
CB – Central Business

- Reinforce existing pedestrian activity with broad, comfortable sidewalks
- Incorporate amenities into sidewalk zones such as seating, tables, lighting, kiosks, clocks, etc.
- Provide a variety of materials and colors to enliven pedestrian environment
- Maintain strong street tree presence; provide understory plantings where appropriate
- Permit access between on-street parking and businesses

The goals can be translated into specific dimensional criteria to establish the framework of the street system. For consistency, the sidewalk is divided into four different components:

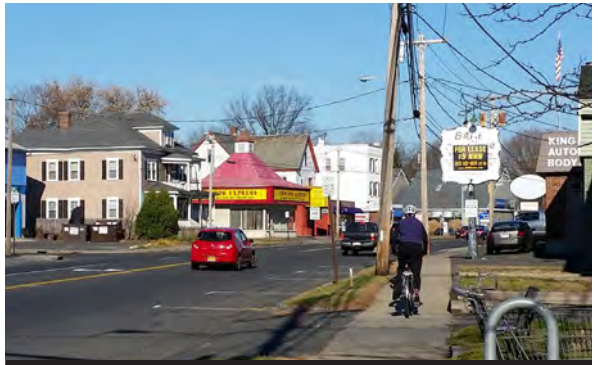
1. Greenscape/Furniture Zone

This is the area of the sidewalk immediately adjacent to the curb. Its primary role is to provide a buffer between vehicles moving in the street or parked at the curb and the pedestrians walking within the sidewalk. In the densely developed zones, this area can be paved and used for activities supporting the adjacent businesses, such as benches and tables, bicycle parking, information kiosks, and other furniture. In the less densely developed districts, where pedestrian traffic across it is minimal, this area becomes a green buffer forming an edge to the roadway and begins to soften the street. In both high and low density areas, the inclusion of street trees is critical to forming an edge to the roadway corridor and creating



Central Business Zone

The Central Business District sidewalks should be broad, comfortable, and well equipped with amenities for shoppers and strollers.



Entranceway Business Zone

Sidewalks in the Entranceway Business District should be attractive and comfortable to encourage pedestrian usage in this emerging area.

readable framework can be created to bring greater unity and imageability to the city center and its approaches.

Design Intent

The intent of the Public Realm Design Guide is to respond to this increasing intensity of use while also creating a consistent vocabulary of materials and furnishings that is readable and understandable throughout the entire business district. To reinforce the progression and transition from edge to center, the following goals for the streetscape in each zone have been established:

HB – Highway Business:

- Separate pedestrians from traffic
- Provide only modest sidewalk capacity
- Buffer parking and development areas from roadway views
- Establish street trees as dominant street element

GB – General Business:

- Separate pedestrians from traffic
- Provide comfortable sidewalk capacity
- Buffer off-street parking from roadway views
- Bring street trees closer to roadway to reduce scale

EB – Entryway Business:

- Encourage pedestrian use by providing broad, comfortable sidewalks
- Incorporate amenities into sidewalk zones such as seating, tables, area lighting
- Provide variety of materials and colors to enliven pedestrian environment
- Maintain strong street tree presence

CB – Central Business

- Reinforce existing pedestrian activity with broad, comfortable sidewalks
- Incorporate amenities into sidewalk zones such as seating, tables, lighting, kiosks, clocks, etc.
- Provide a variety of materials and colors to enliven pedestrian environment
- Maintain strong street tree presence; provide understory plantings where appropriate
- Permit access between on-street parking and businesses

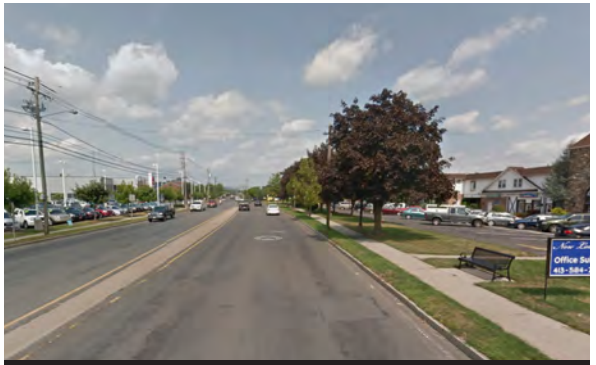
The goals can be translated into specific dimensional criteria to establish the framework of the street system. For consistency, the sidewalk is divided into four different components:

1. Greenscape/Furniture Zone

This is the area of the sidewalk immediately adjacent to the curb. Its primary role is to provide a buffer between vehicles moving in the street or parked at the curb and the pedestrians walking within the sidewalk. In the densely developed zones, this area can be paved and used for activities supporting the adjacent businesses, such as benches and tables, bicycle parking, information kiosks, and other furniture. In the less densely developed districts, where pedestrian traffic across it is minimal, this area becomes a green buffer forming an edge to the roadway and begins to soften the street. In both high and low density areas, the inclusion of street trees is critical to forming an edge to the roadway corridor and creating

General Business Zone

The General Business District should provide adequate buffering of pedestrians from cars, both on the street and in parking lots for businesses.

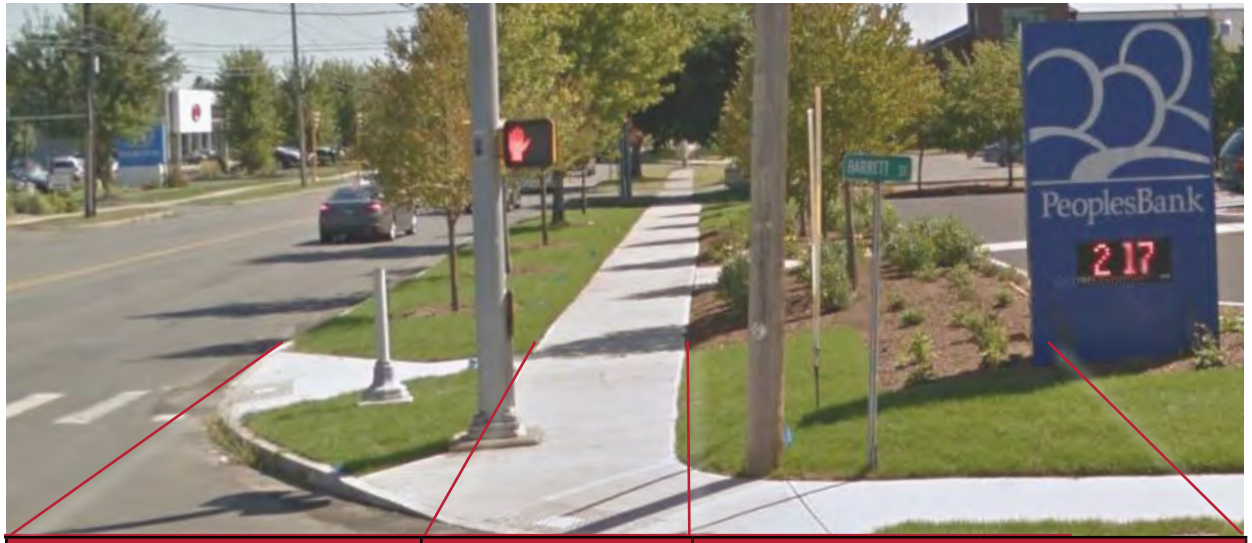


Highway Business Zone

In the Highway Business District, the emphasis is on providing buffering and protection for pedestrians while creating a strong identity for the street through the use of street trees.

		Greenscape / Furniture Zone		Pedestrian Zone		Frontage Zone	
Zone	Street Type	Minimum	Preferred	Minimum	Preferred	Minimum	Maximum
Central Business	Primary	4’	10’	8’	12’	2’	5’
	Secondary	4’*	6’	6’	8’	2’	5’
Entryway Business	Primary	6’	10’	8’	12’	2’	5’
	Secondary	4’	6’	6’	8’	2’	5’
Materials Criteria							
Central Business	All	Street tree planting, permeable pavement (unit pavers, etc.); Infiltration planters. Street furniture including benches, bike racks, trash receptacles, lighting, tables, etc. Must be pedestrian accessible.		Concrete with saw-cut joints for a minimum of 5’ of sidewalk width; ADA-compliant unit pavers (no mortar joints)		Same as pedestrian zone.	
Entryway Business	All	Street tree planting, permeable pavement (unit pavers, etc.); Infiltration planters. Street furniture including benches, bike racks, trash receptacles, lighting, tables, etc. Must be pedestrian accessible		Concrete with saw-cut joints for a minimum of 5’ of sidewalk width; ADA-compliant unit pavers (no mortar joints greater than 1/4”)		Same as pedestrian zone.	

Optional, if sidewalk space is available.



		Greenscape / Furniture Zone		Pedestrian Zone		Buffer	
Zone	Street Type	Minimum	Preferred	Minimum	Preferred	Minimum	Preferred
General Business	Primary	6’	10’	6’	8’	4′	10′
	Secondary	6’	6’	5’	6’	4′	6′
Highway Business	Primary	10’	--	6’	8’	12’	--
	Secondary	10’	--	5’	6’	4’	6′
Materials Criteria							
General Business	All	Street tree planting; lawn or low-maint. shrubs and groundcovers, max. 24” ht. above sidewalk. Infiltration planters are encouraged. Only roadway lighting may be included within this zone; all other street furniture to be placed in the buffer zone.		Concrete with saw-cut joints.		Provide a planted buffer to screen parking. Planting design shall be consistent with the highway business district landscaping standards for the front buffer planting. Street furniture such as benches and bike racks may be included.	
Highway Business	All	Refer to highway business district landscaping standards - tree belt.		Concrete with saw-cut joints.		Refer to highway business district landscaping standards - front buffer.	

pedestrian zone that is inviting and habitable from their shade. Green infrastructure, in the form of infiltration planters that collect runoff from the roadway and infiltrate it back into the groundwater, is an important function that provides both softening and cooling and is an appropriate use of the greenscape zone as well. Other utilities, such as street lights, traffic signals, equipment cabinets, etc., also should be placed in this zone.

2. Pedestrian Zone

The pedestrian zone is the primary travel zone of the sidewalk. The primary criteria for this zone is the width: it must be wide enough to comfortably accommodate the volume of pedestrians expected to use the length of sidewalk in question; at a minimum, it must meet ADA standards. The pedestrian zone must be clear vertically to a comfortable dimension as well – branches, utilities, canopies, and other structures must not protrude into the envelope above the sidewalk; a minimum height of 6′ – 8″ must be kept clear to meet accessibility standards.

3. Frontage Zone

This zone is particular to the CB and EB districts, and essentially provides a clear space in front of stores where merchants can display goods for sale or place outdoor seating for restaurants and cafes. While it is desirable for this zone to be consistent with the adjacent pedestrian zone, it does not necessarily have to be identical: different paving materials and furnishings can distinguish this use area from the circulation function of the pedestrian zone. Where this zone is not populated by uses supporting the adjacent businesses, it provides a shy zone from the building wall, making pedestrian circulation more comfortable.

4. Buffer Zone

For the GB and HB districts, the buffer zone is the equivalent of the frontage zone. While it can be used in manners similar to the frontage zone, the adjacent land uses tend to be less supportive of those types of activities. Its primary function therefore becomes more focused on creating an aesthetically pleasing space in front of the building wall that incorporates the pathway leading to the building entrance. In areas outside buildings, it provides critical screening of parking and other uses beyond the parcel's lot line, contributing to a more consistent and harmonious street environment.

Dimensional Characteristics and Materials

The tables below indicate recommended widths for each zone and also provide guidance on materials and furnishings to be provided within each zone. Guidelines are provided for both primary and secondary streets: The primary streets are the main streets through the zone, as identified above in the introduction to the design guide. The secondary streets are any streets that branch off the primary streets. In most instances, the secondary street standards will apply to a very short length of the street, as the zones are typically only one parcel deep, but in the Central Business zone, there are several side streets that lie entirely within the zone. The reduced dimensional standards recognize that these side streets are typically narrower in right-of-way and cross-section, they typically carry less pedestrian and vehicular traffic, and they must blend back into portions of the street grid that do not have established design standards.

The following section provides some do's and don'ts for proper application of and design for specific streetscape elements:

Street trees:

- Don't plant trees in an area less than 5′ by 5′.
- When planting in areas surrounded by pavement (such as in the Central Business District), use structural soil or a suspended sidewalk to create at least 800 cubic feet of planting soil underneath the pavement.
- Provide irrigation, aeration and underdrainage for all street tree plantings. Automatic irrigation is preferred, but manual irrigation is acceptable if an automatic system is not feasible and a strong commitment to perform the hand watering can be obtained. And remember, more street trees die from drowning than lack of water, so underdrainage and soil design are critical.

12. CONCLUSION: PERFORMANCE MEASURES

Northampton has cemented its place as a leader in bicycle and pedestrian planning and advocacy in Western Massachusetts. Northampton's pedestrian friendly streetscape and world-class rail trails draw users from across the region.

Northampton is becoming a more walkable and bikeable city with the completion of this Comprehensive Plan. Currently, the City is:

- Seeking Tier III Complete Streets funding from MassDOT for 15 priority projects to enhance Northampton's walk / bike infrastructure.
- Requesting state and local funding for a complete redesign of Main Street.
- Engaged in a robust analysis of all sidewalks, curbs, and ramps using digital technology to create an inventory that will be used to prioritize sidewalk and ramp construction and upgrades.

As Northampton looks to the future and begins to benchmark progress, it will be critical to carefully assess performance measures. Performance measures are tools to monitor progress related to building new facilities, expanding ridership, and improving safety for pedestrians and bicyclists. The following list will be helpful to measure success and track progress.

Participation Data

Continue to conduct pedestrian and bicycle counts on sidewalks and streets in addition to existing counts located along rail trails. This count data could inform future funding as increasing use patterns will make it politically easier to bring in federal, state and local funding.

Reported Crashes

Tracking both pedestrian and bicycle involved crashes -- with special attention to patterns in severe or fatal crashes -- should be indexed

and compared to participation rates in walking and bicycling to better understand safety improvements in the City.

Bicycle Theft

Indexed compared to participation in bicycling, based on police reports. Because not all thefts are reported, this metric may be supported by the City actively reaching out to bicycle-related programs at schools and other centers to encourage safe riding and theft reporting.

Implementation of Facilities

The installation of new pedestrian crosswalks and sidewalks, the improvement of existing sidewalks and crosswalks, miles of trails, lane miles of bike lanes, and shared lane markings, should be recorded in order to track progress. These can be tracked as a percentage of the overall roadway network. In addition, major infrastructural upgrades such as bridges and underpasses should be highlighted as significant achievements and advertised as targeted investments to increase the health, safety, and mobility of Northampton residents, workers, and visitors.

Mode Share

One simple way to understand progress on conditions for walking and bicycling in Northampton is to benchmark mode share as a critical performance measure. Using ACS data and other survey information, the City should track the percentage of people walking and bicycling to work. Future goals should establish benchmarks that increase over time, with the 2025 goal of increasing walking by 50% and bicycling by 150% (see table below).

Walk / Bike Friendly Community Status

The Pedestrian and Bicycle Information Center (PBIC) and League of American Bicyclists (LAB) manage Walk Friendly and Bike Friendly Community (BFC) programs, respectively. Northampton is currently designated as a bronze level community in both programs. As the PBIC and LAB provides a robust criteria system to designate participating communities, goals to increase Northampton's designation is seen as a good proxy for overall improvements in the walking and bicycling environment.

		FUTURE GOALS (L.A.B. BFC AVERAGE)		
Aspirational Performance Measures	**2016**	**2019**	**2022**	**2025**
Walk Friendly Community Status	**Bronze**	**Silver**	**Silver**	**Gold**
Walk Mode Share	**11.2%**	**13%**	**15%**	**18%**
Bike Friendly Community Status	**Bronze**	**Silver**	**Silver**	**Gold**
Bike Mode Share	**3.8% (1.2%)**	**6% (3.5%)**	**8% (3.5%)**	**10% (5.5%)**

Properly tracked with regular ped/bike counts and other data gathering efforts, these Performance Measures will complement the Goals established for this Comprehensive Plan. The measures can also help to leverage pedestrian and bicycle infrastructure improvements to enhance the city's livability and economic vitality. Combined with on-going sustainability efforts, neighborhood revitalization and an expanding arts/culture/food scene, a more walkable and bikable Northampton will continue to place the City on a trajectory of being one of the most livable cities in New England.