DCR Parkways

MASTER PLAN

August 2020

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Traffic crashes are complex occurrences that often result from multiple contributing factors. the success of the safety recommendations included in this Plan depend on multiple factors outside of Toole Design Group's control.

ACKNOWLEDGEMENTS

COMMONWEALTH OF MASSACHUSETTS

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DCR MISSION STATEMENT

To protect, promote and enhance our common wealth of natural, cultural and recreational resources for the well-being of all.

CHAPTER 1. INTRODUCTION

Introduction

The Department of Conservation and Recreation (DCR) oversees a network of diverse parkways that serve some of the Boston region's greatest natural assets, from the shores of the Atlantic, to the views from Great Blue Hills, and the woods and trails of the Middlesex Fells. As greenways connecting communities across the region, they are also essential routes for regional travel by every mode. At a time of increasing interest in walking and bicycling for transportation and recreational purposes, improving safety, access, and comfort for these modes on the parkways of metro Boston represents an opportunity to dramatically expand the regional greenway network.

The Plan articulates a vision for an interconnected network of walkways and bikeways throughout metro Boston that provide residents of all ages and abilities with access to recreational destinations and healthy transportation opportunities. Short-term improvements that can be rapidly implemented, long-term capital investments, and policy and design guidance for improving the parkways for all travel modes are the key features of the Plan. By realizing the vision set forth in this Plan, DCR will enhance the legacy of the parkway system by ensuring safe, comfortable access for users of all modes and all ages abilities.

History

The Metropolitan Boston Parkway System began its development in the late 1800s as urban planners and reformers sought to create outdoor recreational opportunities for city dwellers. Parkways were originally intended for recreational travel as access roads within parks, or roads connecting one park to another. Starting in the 1920s, the increase in automobile travel and accelerating pace of suburban development put pressure on parkways to serve as routes for local and regional through traffic. Access for walking and bicycling was diminished as many parkways were widened to serve regional traffic during the highway-building era of the 1950s and 60s.

As a result, the parkway network today represents a wide variety of conditions. Some feature elegant promenades and popular recreational trails, while others are themselves significant barriers to walking and bicycling due to missing or unrepaired or missing sidewalks, infrequent crossings, lack of bicycle facilities, and high-volume, high-speed traffic.

Study Area

This Plan focuses on a group of parkways that span the metropolitan Boston region. Although several parkways in this Plan are part of other ongoing studies, the vast majority have not been subject to detailed planning or analysis in recent years. Many have not been recently worked on or upgraded, and thus represent key opportunities to be modernized to current standards for pedestrian and bicycle accommodations and roadway geometry. Importantly, they all serve key regional destinations for both recreational and transportation purposes. Parkways that are being studied as part of a stand-alone effort and those with existing facilities for nonmotorized users are not included in this Plan.

The following summarizes the study area:

- **115.7** roadway centerline miles in 30 different municipalities
- **741** intersections
- **103** miles of sidewalks
- **18** miles of shared use paths
- **30** municipalities

Demographics

560,200 people live within walking distance[1] of a parkway in the study area.

23% of households in walking distance from a parkway do not own a vehicle.

1,989,605 people live within biking distance[2] for a parkway in the study area.

22% of households in biking distance from a parkway do not own a vehicle.

[1] walking distance is defined as 0.5 miles
[2] biking distance is defined as 3 miles

Municipality	Miles
Boston	25.4
Quincy	11.6
Medford	10.0
Milton	9.8
Revere	9.4
Saugus	5.5
Winchester	4.5
Nahant	4.2
Lynn	3.7
Melrose	3.7
Brookline	3.3
Stoneham	3.3
Everett	3.0
Newton	3.0
Malden	2.2
Watertown	2.1
Weston	1.6
Canton	1.6
Arlington	1.6
Hull	1.5
Chelsea	1.1
Wakefield	1.0
Cambridge	0.7
Dedham	0.6
Somerville	0.4
Waltham	0.3
Swampscott	0.2
Wellesley	0.2
Braintree	0.1
Winthrop	0.1
Grand total	115.7

Table 1-1: Parkway mileage in study area by municipality

Parkways

The following parkways are included in the study area:

Blue Hills Reservation
Blue Hills Parkway
Blue Hill River Road
Hillside Street
Wampatuck Road
Chickatawbut Road
Green Street
Unquity Road

Breakhart Reservation
Hemlock Road
Forest Street
Elm Street

Charles River Reservation
Boulevard Road
Charles River Road
Everett Street
Forest Grove Road
Land Boulevard
Birmingham Parkway
Park Road
Quinobequin Road
North Beacon Street
Norumbega Road
Recreation Road
Soldiers Field Road
Greenough Boulevard

Chestnut Hill Reservation
Chestnut Hill Drive
Saint Thomas Moore Drive

Furnace Brook Reservation
Furnace Brook Parkway

Hammond Pond Reservation
Hammond Pond Parkway

Lynn Shore Reservation
Lynnway
Lynn Shore Drive

Middlesex Fells Reservation
Fellsway
Fellsway East
Fellsway West
Lynn Fells Parkway
East Border Road
Elm Street
Hillcrest Parkway
North Border Road
South Border Road
South Street

Muddy River Reservation
Parkman Drive
Perkins Street
Park Drive
The Fenway

Mystic River Reservation
Mystic Valley Parkway
Mystic River Road

Nahant Beach Reservation
Nahant Rd

Nantasket Beach Reservation
Hull Shore Drive
Nantasket Avenue

Neponset River Reservation
Neponset Avenue
Neponset Valley Parkway
Brush Hill Road

Old Harbor Reservation
Columbia Road
Day Boulevard
Old Colony Avenue

Quincy Shore Reservation
Quincy Shore Drive

Revere Beach
Revere Beach Boulevard
Revere Beach Parkway
Ocean Avenue
Winthrop Parkway

Stony Brook Reservation
Bellevue Hill Road
Dedham Parkway
Enneking Parkway
Smith Field Road
Turtle Pond Parkway
VFW Parkway
West Roxbury Parkway
Centre Street

Figure 1-1: Overview of Study Area

Plan Vision, Goals, & Process

The impetus for the Parkways Master Plan was the desire and need for DCR to develop an updated master plan for its parkway network. This report articulates a modern day, complete streets vision for DCR's network of historic parkways located throughout the Boston metropolitan region. The report will serve several key functions for the DCR and the public. The master planning function is expressed in the overall comprehensive vision for the parkways, and in the proposed Long-Term Modifications & portions of Chapter 5 – Project Recommendations.

Early in the process, DCR convened the Urban Parks & Pathways Committee (UPPC), an advisory committee comprised of stakeholder organizations and community representatives to provide guidance and input for the Plan. Working together with DCR, a vision and set of goals were developed to provide a framework for the Plan:

Vision

- The parkways of the Boston Metropolitan Region provide safe and comfortable access and mobility for people of all ages and abilities.
- The parkways are an integral component of the regional walking and bicycling networks.
- The parkways are improved, planned, designed, operated and maintained to support the Goals listed below.

Goals

- Accessibility
- Safety
- Comfort
- Connectivity
- Health
- Recreation
- Conservation
- Sustainability
- Equity

What This Plan Does:

- Helps DCR set priorities for maintenance activities and capital improvements that most improve accessibility for all users and correct non-ADA compliant conditions.
- Identifies short-term improvements that can be added to either DCR's annual repaving program or placed in DCR's five-year capital plan.
- Identifies opportunities to redesign and reconstruct parkways to meet the Complete Streets standards.
- Provides policy and design guidance for improving the parkways for all travel modes.

The Parkways Master Plan develops short- and long-term recommendations for each parkway in the study area. Short-term improvements include all elements that can be fixed or updated as part of DCR's repaving program (e.g., new bike lanes, crosswalks, ramps), or as a standalone project initiative on the parkways such as a comprehensive curb ramp program, a new crosswalk, re-painting of key markings like bike lanes or crosswalks, updated crossing signals and parkway lighting. Long-term improvements include the opportunities that may exist for each parkway if newly designed for full re-construction to bring the parkway into complete streets and full ADA compliance. Such design plans will often include a road diet (lane reduction), new off road, grade separated bicycle and pedestrian facilities, major improvements to the overall accessibility for all non-motorized users, relocated curbs, new drainage, new lighting and new crossings and signals. These are high-cost, high-profile projects that will take many years to implement fully.

DCR will continue to engage in on-going dialogue with stakeholders and advocates, such as the UPPC and MAPC, affected communities, and the general public. The extensive data collected for each parkway in this Plan and existing regional greenway plans will help guide the dialogue in selecting those projects with the greatest benefit to overall pedestrian/bicycle connectivity, public safety enhancements, and improved accessibility for the general public.

Ongoing Work

DCR has already been working on a program to transform its parkway network to maximize accessibility for all. Parkways that have had full new designs and complete reconstruction in recent years include Nonantum Road (Newton & Brighton), Truman Parkway (Milton & Boston), The Arborway between the Arboretum and Franklin Park (Boston), and Greenough Boulevard (Cambridge & Watertown). MassDOT was a key partner on both the Arborway and Nonantum Road projects. Access to federal funding through MassDOT is a key source of funding for these DCR Parkway initiatives. Reconstruction of these four parkways has transformed accessibility along these roads, providing safe off-road, ADA-compliant access to countless non-motorized parkway users. See Model Projects on page 9.

DCR has also initiated the next key phase of the parkway full reconstruction program. In working closely with stakeholders and advocates such as the UPPC and MAPC as well as communities throughout the region, DCR has selected Hammond Pond Parkway (Newton), Mount Auburn Street (Cambridge), Memorial Drive (Phase 3, Cambridge), and Morrissey Boulevard (Boston) as its next group of parkways in need of full design and partial to full reconstruction. As of Fall 2019, all four of these projects are under design. For more detailed information and opportunities for input in any of these projects, please contact DCR.

Parkways Inventory

The other key function of this report is to provide DCR with detailed inventory data (Chapter 2), so that it can develop a multi-year capital plan for the parkways that will detail how to use annual available funds to make repairs that enhance public accessibility and safety (e.g., restored curb ramps, new curb ramps, new guardrails, new or restored bike lanes, pedestrian improvements such as repaired or new crossing signals, etc.). This level of work is considered short-term enhancements and repairs, as it does not entail full design and reconstruction of a parkway. However, it will still take DCR a number of years to implement all of the short-term improvements.

To help accomplish all the desired improvements, the Parkways Master Plan features a comprehensive inventory of existing conditions for each parkway in the study area. This represents the most extensive database DCR has ever compiled relative to the overall condition of parkway features and amenities, including signals, curb cuts, pedestrian desire lines, signage, crosswalks, accessibility for ADA compliance, illegal crossings, and numerous pedestrian & bicyclist elements. The Existing Conditions Assessment (Chapter 2) is complimented by an extensive database that will provide DCR the information it needs to dramatically improve overall accessibility for pedestrians, cyclists, and those with disabilities for all the parkways in this Plan. DCR is fully committed to provide as many annual access and safety improvements as possible within the confines of approved capital budgets and staffing.

Like the long-term program of full reconstruction, the short-term program is also fully activated at DCR. Over the past five years, DCR has added bike lanes on many parkways as part of its proactive repaving program. Examples include Old Colony Parkway, Nurembega Road (Weston), Charles River Road (Watertown), North Beacon Street (Watertown), Mystic Valley Parkway, Fellsway (Medford and Malden), Fellsway East (Malden), Fenway (Boston), and Highland Ave (Malden). DCR has recently repaired over 300 pedestrian curb ramps bringing them into full compliance with the ADA.

Public Engagement

The primary goal of public engagement in the Plan was to ensure that members of the community were actively, constructively, and meaningfully involved in the public decisions that affect their lives. In October 2015, a public informational meeting was held at the Shriners Hospital for Children in Boston. The meeting was an opportunity for the public to learn about the Plan and provide input. Participants were emphatic that the Plan should focus on creating a well-connected, family friendly network of greenways throughout the region.

Four UPPC meetings were held throughout the course of the development of the Plan. The committee was comprised of representatives regional planning agencies and walking and bicycling advocacy organizations including Metropolitan Area Planning Council, MassBike, WalkBoston, Boston Cyclists Union, and LivableStreets Alliance. In addition, local advocacy groups from communities throughout the study area were represented.

Context & Precedence

This project comes at a time when state and local agencies across Massachusetts are implementing plans to increase walking and bicycling for transportation and recreation. Encouraging these modes—and related forms of active transportation—provides an opportunity to achieve numerous interrelated goals, including improved public health, economic development, enhancing quality of life, and reducing the environmental impact of transportation. Concurrent with these initiatives, many jurisdictions across the U.S. and internationally are stepping up efforts to increase road safety for vulnerable road users—that is, pedestrians and bicyclists—by adopting *Vision Zero* policies. Finally, there is a growing adoption of greater design flexibility among local, regional, and state road agencies across the country in order to better accommodate pedestrians and bicyclists along existing roads. These initiatives provide a context for and complement the proposals outlined in this Plan.

Comfort for all ages and abilities

Safety and comfort for users of all ages and abilities is a crucial goal of this Plan. Comfort is a major determining factor for individuals deciding whether or not to walk or bike for transportation or recreation. Research has shown that approximately 60% of the adult population is interested in bicycling for transportation purposes, but are concerned about operating in close proximity to motor vehicles.[1] This "interested but concerned" demographic would be more likely to bicycle if they had more facilities along their route that offer physical separation from motor vehicle traffic—facilities like shared use paths, separated bike lanes, and low-speed, low-volume local streets. Parents are more likely to encourage their children to walk or bike to school if they know that there are facilities that offer separation from motor vehicle traffic along their route.

When it comes to walking, the presence of "goat paths"—that is, trails worn into the grass alongside roads by people walking, following desire lines —throughout the parkway network is evidence that there is already a demand for sidewalks and crosswalks. Roadways that lack low-stress facilities for walking and biking will be a significant deterrent for these activities. This is especially true in the Boston metropolitan region which generally lacks a gridded street network that in other cities can provide alternative routes for pedestrians and bicyclists. By designing walking and biking facilities for users of all ages and abilities, DCR can ensure comfort for all users and encourage more walking and biking on their parkways.

Vision Zero

Vision Zero is an ambitious road safety policy which sets a long-term goal to eliminate all fatalities and serious injuries within the roadway system. The basic premise of Vision Zero is that roadway fatalities and serious injuries are preventable, rather than inevitable, and uses a systematic approach that integrates roadway design, education, and enforcement efforts. First introduced in Sweden in 1997, the policy has proven successful and is being adopted by an increasing number of cities across the U.S., including Boston and Cambridge. At the federal level, Federal Highway Administration (FHWA) is advancing "zero deaths" approach through is Towards Zero Deaths initiative, which is supported at the state level by Massachusetts Department of Transportation (MassDOT).

Figure 1-2: Speed, Pedestrian Fatality Rate, and Cone of Vision. Graphic: FHWA Achieving Multimodal Networks.

An important principle of Vision Zero is that roads should be designed to minimize the potential for fatal and serious injuries for all users. Because increased traffic speeds are directly related to crash severity, Vision Zero focuses on reducing traffic speeds and decreasing the potential for conflicts between vulnerable road users (i.e., pedestrians and bicyclists) and motor vehicles. A pedestrian struck by a vehicle at 20 mph has a 95% chance of survival, while at 40 mph they have just a 15%

chance of survival (Figure 1-2). Traditionally, roads have been built to be "forgiving" with wide travel lanes, large clear zones, wide turning radii, and longer sight lines. These designs actually encourage drivers to speed and result in decreased safety for all users.[2] Additionally, a driver's ability to see the roadway environment (their "cone of vision" decreases significantly between 20 mph and 40 mph (Figure 1-2). The 2016 Municipal Modernization Act changed Massachusetts law to permit municipalities to reduce speed limits below the statutory speed limit in certain situations and establish 25 mph speed limits on municipal roads in thickly settled areas or business districts.

Vision Zero informs the overall aim of the DCR Parkways Master Plan. By focusing our analysis on crashes that resulted in injuries and fatalities, we can understand where these crashes are occurring most frequently, which crash types are most common, and develop countermeasures to target the most serious crash types. The measures used to increase safety for vulnerable road users—e.g., sidewalks, shared use paths, separated bike lanes, safer crossings, and others—also increase user comfort, thereby advancing the goal of the DCR Parkways Master Plan to ensure safe and comfortable access and mobility for people of all ages and abilities.

Statewide initiatives

At the statewide level, in 2001, the Commonwealth initiated the Historic Parkways Initiative, which laid that groundwork of an integrated and collaborative planning approach to parkway management and preservation. Meanwhile, 70 DCR parkways in the metro Boston area were successfully added to the National Register of Historic Places. The DCR's *Historic Parkway Treatment Guidelines* established guiding principles for parkway planning. An important guiding principle is that "a parkway is not a road, but a park with a road in it."[3] As such, parkways are enjoyed by a diverse array of users and should include multimodal facilities that provide safe and comfortable accommodations for pedestrians and bicyclists of all ages and abilities.

In 2010, the MassDOT released the *GreenDOT Policy Initiative* which set important transportation sustainability goals including tripling the statewide share of walking, bicycling and transit trips by the year 2030. This was followed in 2013 by the *Healthy Transportation Policy Directive* which ensured that new projects be developed with the intention to increase walking and bicycling trips.

Currently, MassDOT is developing separate statewide pedestrian and bicycle master plans that will inform strategies for encouraging walking and biking trips on state roads and provide a resource for municipalities looking to do the same. It is expected that these master plans will complement the strategies outlined in this Plan to encourage more walking and bicycling trips on DCR's metropolitan Boston parkways.

Local & Regional Initiatives

Within the Boston metropolitan region, the Metropolitan Area Planning Council (MAPC) partnered with cities and towns to create bicycle and pedestrian network plans throughout the Boston metropolitan region. These municipalities are eager to work with the DCR on the implementation of their local bicycle plans. Many of these plans identify DCR-owned roadways and parks as important corridors for enhanced multimodal accommodation and network connectivity, including:

- The City of Quincy Bicycle/Pedestrian Network Plan proposes improvements to Quincy Shore Drive and Pope John Paul II Park. In addition, a proposed "Sea to Summit Greenway" would involve improvements to Furnace Brook Parkway, Wampatuck Road, Chickatawbut Road.
- The Dedham and Westwood Bicycle and Pedestrian Network Plan recommends bike lanes on Dedham Boulevard between Milton Street and the Boston City line.
- The Northern Strand Communities Bicycle-Pedestrian Network Plan proposes bicycle improvements for Fellsway East and Highland Street in Malden, Lynn Shore Drive in Lynn, Lynnway in Revere, and Lynn Fells Parkway in Saugus.
- The City of Boston Bicycle Network Plan identifies numerous DCR parkways that would be improved for bicycle access in order to achieve the envisioned network.

The DCR is already partnering with local communities through its paving program. For example, in the Blue Hill Reservation, the DCR successfully created nearly two miles of new bike lanes along Blue Hill Parkway and two miles of widened shoulders on Unquity Road through resurfacing. While there have been successes, there are also challenges. Many of the DCR's parkways have complex and changing geometry and historic alignments

that require site-specific designs with consideration for transitions between treatments that require a detailed design process.

Model Projects

Many of DCR's parkways in metro Boston were reconstructed in the 1950s – 70s, a time when wide travel lanes and vehicle capacity were the top priority. Many were widened in anticipation of traffic volumes that never materialized. In recent years, DCR has completed several successful projects throughout metro Boston that provide a model for how the parkways in the study area can be positively transformed.

DCR strives to utilize these projects as opportunities to restore parkland, enhance multimodal access, and right-size roadway capacity to match actual traffic volumes. The following projects exemplify this approach.

What is a road diet?

Several parkways have received a treatment called a "road diet," in which the number of through travel lanes is reduced to make space for enhanced walking and bicycling facilities and landscaping. Road diets increase safety and efficiency for all users and often do not result in travel delays for motorists when applied to roads below a certain volume threshold.

Greenough Boulevard (Cambridge & Watertown)

(Photo: Google Maps)

Prior to reconstruction, Greenough Boulevard was a four lane, undivided roadway with a narrow asphalt path shared by pedestrians and bicyclists. Running one mile along the north side of the Charles River between the Eliot Bridge and Arsenal Street, the roadway was known for high vehicle speeds and as a barrier to one of the region's greatest recreational assets, the Charles River Basin trail system. Greenough Boulevard was reconstructed as a two-lane roadway with a greatly expanded shared use path separated from the roadway by an elegant, tree lined buffer. A combination of state, local, and private funding was used to complete the project.

Nonantum Road (Boston, Newton & Watertown)

With its four-lane, undivided cross section, Nonantum Road was a safety risk for all users and encouraged speeding. A narrow pathway provided access for pedestrians and bicyclists, but without any roadway buffer. Based on a recommendation identified in the *Charles River Basin Master Plan*, Nonantum Road was reconstructed with two lanes and a widened shared use path featuring a grass buffer and guardrail. Nonantum Road continues to serve regional vehicle traffic while providing a critical link in the Charles River Basin pathway system for recreation and active transportation between Watertown, Cambridge, and Boston.

Truman Parkway (Boston & Milton)

Truman Parkway connects Mattapan Square in Boston's Mattapan neighborhood to Readville in Boston's Hyde Park neighborhood, running through Milton and Hyde Park along the edge of the Neponset River. The parkway features four lanes divided by a tree-lined median strip and sidewalks on both sides. The sidewalk along the riverfront edge was recently upgraded to a 10' asphalt shared use path with a widened grass buffer and guardrail to serve both pedestrians and bicyclists more comfortably. In addition, a bike lane was added in the southbound direction to accommodate faster cyclists. The lane widths of the adjacent southbound roadway were narrowed to accommodate the widened pathway and bike lane.

Charles River Road & North Beacon Street (Watertown)

(Photo: Charles River Basin Master Plan)

(Photo: Google Maps)

Charles River Road and North Beacon Street trace the contour of the northern edge of the Charles River between Greenough Boulevard and Watertown Square. Built as undivided roadways carrying four lanes of traffic, the roads were a hazard for pedestrians to cross, unfriendly for bicyclists, and encouraged drivers to speed. The *Charles River Basin Master Plan* identified these parkways as road diet candidates in order to calm traffic, enhance multimodal access to the river, and reduce excess vehicle capacity. Following this recommendation, the parkways were restriped with two lanes in either direction and bike lanes. This is an example of a rapidly implemented project using low-cost materials.

Plan Organization

The DCR Parkways Master Plan contains the following elements:

- **Chapter 2: Existing Conditions Assessment** summaries the results of the existing conditions assessment and safety analysis conducted to understand challenges and opportunities throughout the study area.
- **Chapter 3: Design Strategies** provides a toolbox of measures to improve safety, comfort, and connectivity for pedestrians and bicyclists, and introduces a reenvisioned set of parkway typologies with a discussion of interim and long-term strategies to improve pedestrian and bicycle access.
- **Chapter 4: Program and Policy Recommendations** presents overarching strategies and policy recommendations to leverage DCR's existing maintenance programs to enhance multimodal access throughout its parkway network; an interim bicycle network utilizing striping and low-cost materials is presented.
- **Chapter 5: Project Recommendations** details existing conditions and recommended short- and long-term projects for the Plan's 68 parkways; the chapter is organized into 19 focus areas.

[1] Dill, J., McNeil, N. (2012). Four Types of Cyclists? Examining a Typology to Better Understand Bicycling Behavior and Potential. Transportation Research Board. Bicycles 2013: Planning, Design, Operations, and Infrastructure, 01514640, 129- 138.

[2] Richter, Elihu D., Tamar Berman, Lee Friedman, and Gerald Ben-David. 2006. "Speed, Road Inury and Public Health." Annual Review of Public Health. 27 (1): 125–52. doi:10.1146/annurev.publhealth.27.021405.102225.

[3] http://www.mass.gov/eea/docs/dcr/pe/historic-parkways/4d72bd01.pdf

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CHAPTER 2. EXISTING CONDITIONS ASSESSMENT

Introduction

This chapter presents the findings of the existing conditions assessment of DCR's parkways in the study area. The primary focus is on understanding safety and connectivity issues for people accessing DCR's parkways and natural resources on foot and by bicycle. An overview and analysis of the condition of DCR's assets found throughout the study area, including sidewalks and shared use paths, crosswalks, curb ramps, bridges, and on-road bicycle facilities, is presented herein. The findings establish the context and need for the recommendations to be presented in Chapters 5 and 6.

What is DCR doing with this data?

As part of the data collection for this Plan, a comprehensive assessment of DCR's assets throughout the study area was conducted. With this data in hand, DCR can deploy remediation of identified deficiencies and prioritize locations for improvement. For more information, see **Chapter 4: Paving Program Recommendations**.

Data Collection and Methodology

The project team conducted a field inventory that included parkway dimensions and elements, intersection traffic controls, maintenance needs, and bridge locations. The inventory began with an assessment of DCR's assets database to understand where to focus data collection efforts. Data collected for the conditions assessment can be used to aid in the prioritization of projects going forward. An extensive field inventory was conducted throughout the study area which assessed the following data points:

- Presence and condition of pedestrian facilities, including sidewalks, curb ramps, and goat paths
- Presence and condition of bicycle facilities
- Accessibility
- Bus stops and transit stations

This safety analysis utilizes crash data (2004-2014) obtained from the online MassDOT Crash Portal.[1] We conducted a high-level analysis of crashes involving all modes and detailed analysis of bicycle and pedestrian crashes. To analyze crash locations and hotspots, crash data were analyzed spatially using geographic information system (GIS) software.

In some cases, it was necessary to recode variables to show the results in an intuitive way. For instance, numerous crashes that involved a vehicle and a pedestrian or bicyclist were coded as "single vehicle crashes," which does not provide any detail about the manner in which the crash occurred. Similarly, there were crashes where a pedestrian or bicyclist was described as being "in roadway" without further detail on whether they were attempting to cross the road, walking or biking parallel to traffic, or taking some other action. These crashes were recoded logically using additional variables such as vehicle action, vehicle location, pedestrian/bicyclist action, and pedestrian/bicyclist location.

Parkways Transferred to MassDOT

Please note that the data collection and analysis in this section occurred while sections of two parkways, Revere Beach Parkway and Charles River Dam Road, that are now maintained by MassDOT were then maintained by DCR. The data from these two segments, which together make up approximately 11 miles, or 9.4% of the approximately 116 miles of parkway centerline in the study area, are included in the following analyses.

Intersections

The study area includes a total of 741 intersections. For a vast majority of these, the traffic control type is either Minor Stop or Uncontrolled. These intersection types are typically found where local streets intersect with a parkway. While minor Stop and Uncontrolled intersections often function similarly, in that vehicles exiting the local street must stop and yield to vehicles on the arterial, the lack of a stop sign can be ambiguous; minor Uncontrolled intersections should therefore be considered deficient.

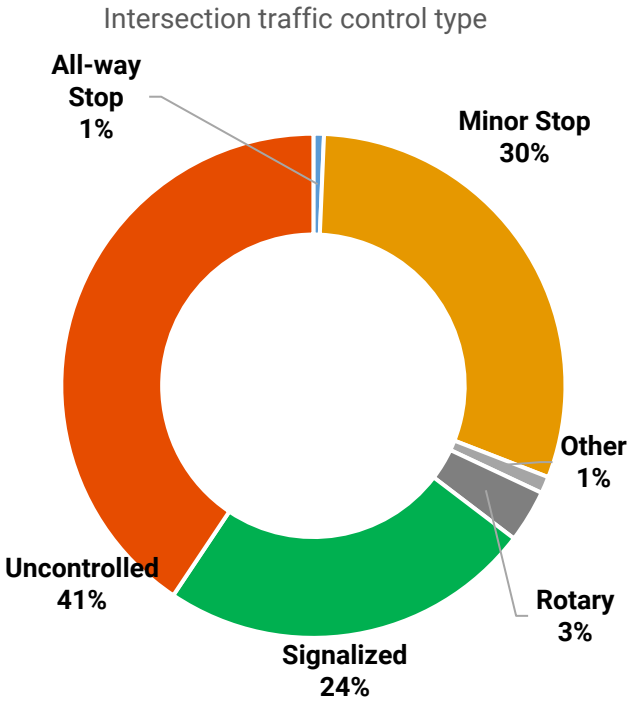


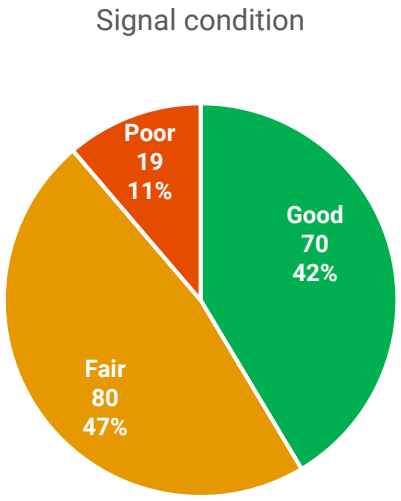
Figure 2-1: Example of a typical uncontrolled intersection. Photo: Google Maps

Signals

Signalized intersections comprise approximately one quarter of all intersections within the study area. One-hundred and five intersections have pedestrian signals at all crossings and 45 have pedestrian signals at some crossings.

What condition is the signal equipment in?

The vast majority of signal equipment is in either good or fair condition.



Does not include intersections with no signal or where signal condition is not available. Includes signalized rotaries.

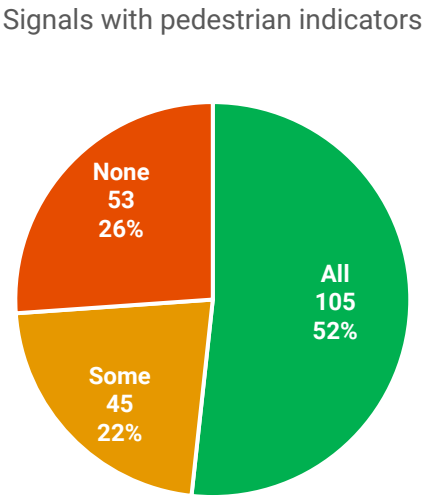
Table 2-1: Criteria used to rate signal condition

Condition	Criteria
Good	Like new
Fair	Normal wear and tear
Poor	Fixtures outdated, malfunctioning, or significantly deteriorated

How many signalized intersections have pedestrian indicators?

Pedestrian indicators—commonly known as "walk signs"—are an integral part of intersection design.

Fifty-three (26%) signalized intersections do not have pedestrian signals. These include intersections without crosswalks and intersections with marked crosswalks where pedestrians are expected to follow the vehicular signals.



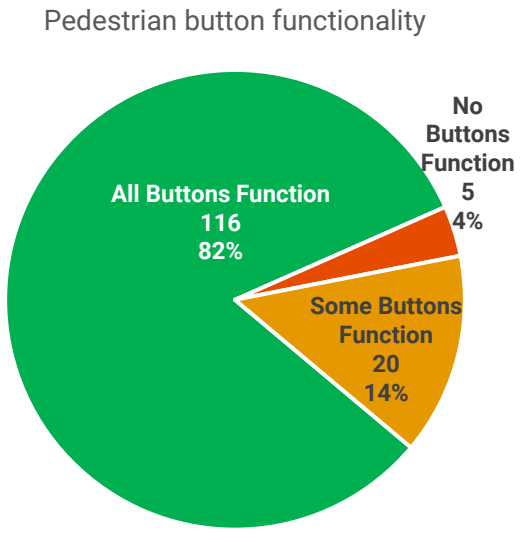
Does not include intersections without pedestrian buttons. Includes signalized rotaries.

(Photo: Google Maps)

Figure 2-2: Example of signalized intersection with crosswalk but no pedestrian indication

Do the pedestrian push buttons work?

At intersections with pedestrian buttons, the vast majority of those buttons are functioning. However, a total of 20 (14%) intersections with pedestrian signals have only some functioning pedestrian buttons, while 5 (6%) have no functioning pedestrian buttons.

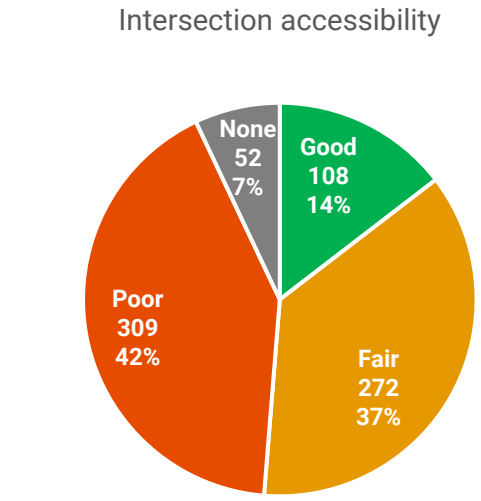


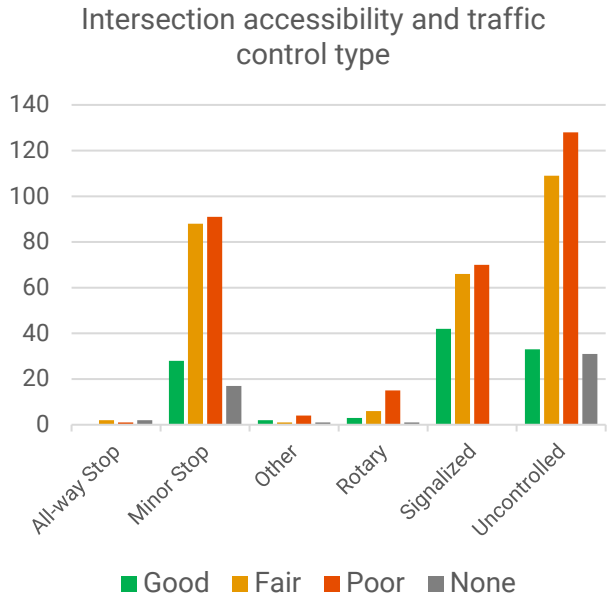
Includes signalized rotaries.

Accessibility

Forty-two percent—309 total—of all intersections received a poor accessibility rating.

The largest share of these are minor stop or uncontrolled intersections, though signalized intersections also made up a significant share. Intersections without curb ramps are a major barrier to pedestrians who require wheeled mobility devices or who are pushing strollers.



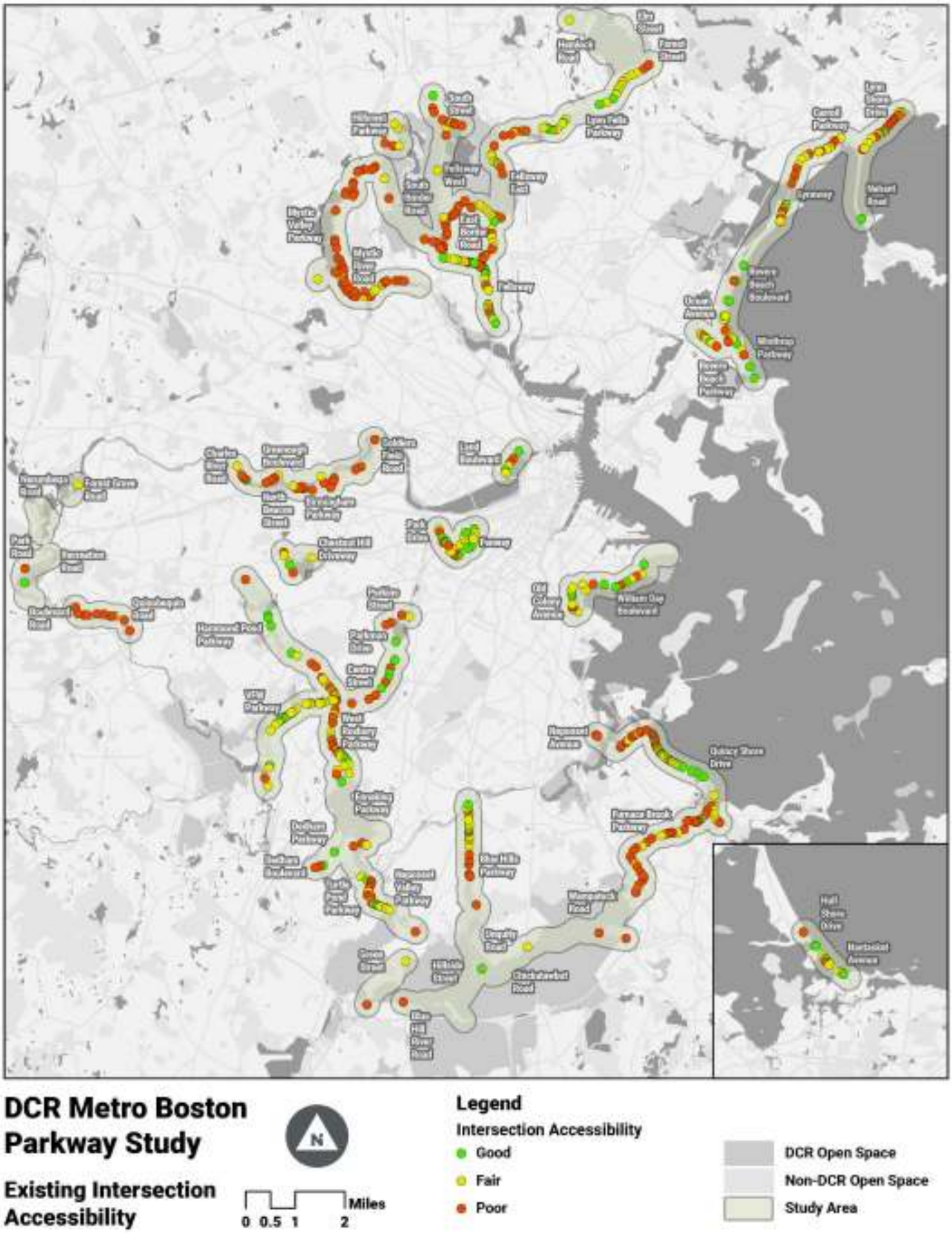


How did we rank intersection accessibility?

Table 2-2: Intersection Accessibility Rating Criteria

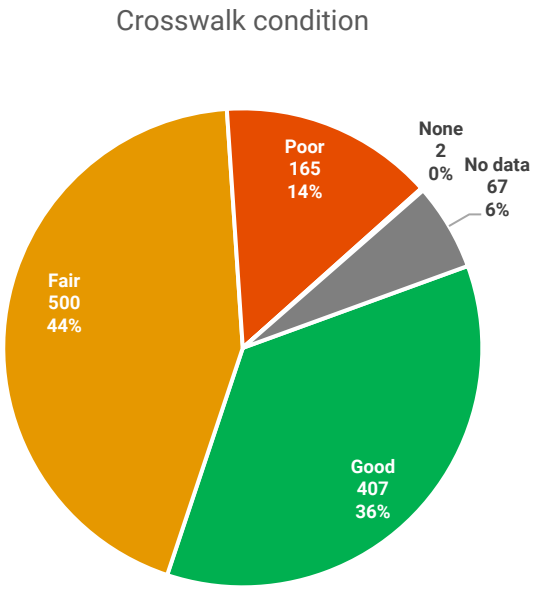
Rating	Criteria
Good	• Curb ramps present • Directional curb ramps • Tactiles present
Fair	• Curb ramps present • Apex ramps on some or all corners • Tactiles missing from some or all ramps
Poor	• Curb ramps missing from some or all ramps • Apex ramps on some or all corners • Tactiles missing from some or all ramps
None	• No connecting paved pedestrian facilities

Twenty-six percent—or 196 total—of intersections in the study area entirely lack curb ramps, while 33 percent—or 247 total—do not have curb ramps at all crossings. While some of these include intersections without pedestrian facilities, many of the intersections with some or no crossings are at local street/parkway intersections where there are no curb ramps connecting the sidewalk parallel to the parkway. The bulk of intersections with some or no curb ramps are minor stop or uncontrolled intersections. While accessibility is varied throughout the study area, certain parkways have a high concentration of poor access.


DCR Metro Boston Parkway Study
Existing Intersection Accessibility
N
0 0.5 1 2
Miles
Legend
Intersection Accessibility
Good
Fair
Poor
DCR Open Space
Non-DCR Open Space
Study Area

Crosswalks

The study area contains 1,141 crosswalks. The largest share is in either good or fair condition; 14 percent are in poor condition. Crosswalks with no condition are locations where the crosswalk was unmarked due to a recent repaving at the time of the field visit by the project team.



Ten signalized intersections in the study area do not have any crosswalks. This includes two intersections that represent major connectivity gaps in the pedestrian network such as Leo Birmingham Parkway at North Beacon Street (Boston) and Leo Birmingham Parkway at Soldiers Field Road (Boston). Other intersections in this category include locations without connecting pedestrian facilities, such as the intersection of Lynn Fells Parkway and the Broadway/Route 1 northbound ramp (Saugus).

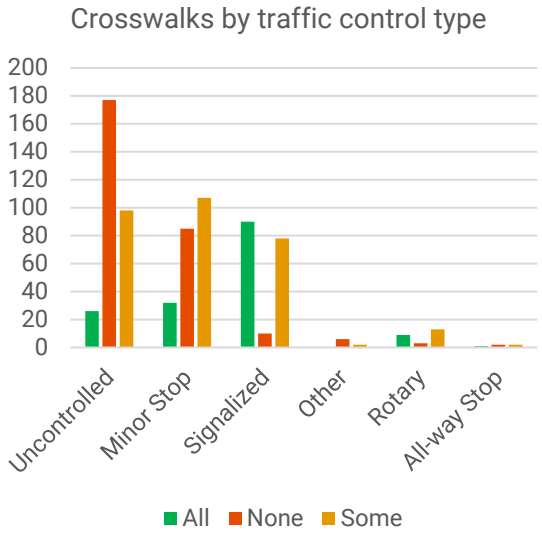


Table 2-3: Criteria used to rate crosswalk condition

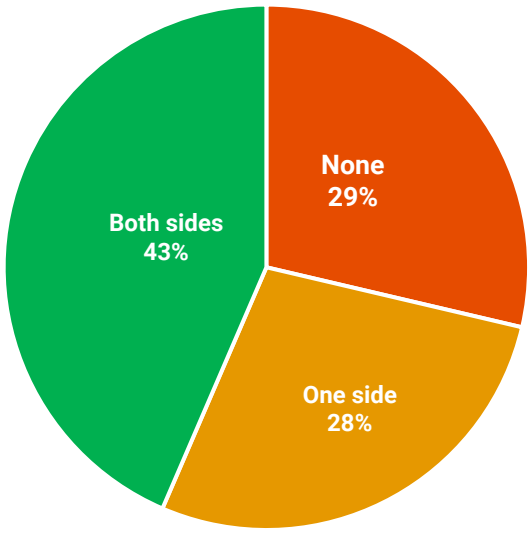
Condition	Criteria
Good	Like new. No major damage or wear and tear.
Fair	Normal wear and tear. Minor degradation may be present, but still performs its primary functions.
Poor	Extreme damage or wear and tear. Major degradation or near disappearance. No longer fulfills its primary functions and is no longer ADA compliant.

Sidewalks & Shared Use Paths

Sidewalks and shared use paths are the primary type of pedestrian facility found throughout the study area. Shared-use paths are differentiated from sidewalks based on width and intended usage. They are typically a minimum of 8' wide and some, but not all, feature signage indicating their intended use by both pedestrians and bicyclists. Shared-use paths in the study area are primarily located along waterfront or parkland reservations and characterized by continuous stretches with few intersections or driveways. Examples include the Harborwalk along William Day Boulevard (Boston), the Paul Dudley White Bike Path along Soldiers Field Road (Boston), North Beacon Street and Charles River Road (Boston and Watertown), and Nahant Road (Lynn and Nahant). There are 18 miles of shared use paths throughout the study area. See Figure 2-9 for a map of shared-use paths.

Seventy-one percent of parkway miles featured pedestrian facilities on at least one side. However, 29 percent of parkway miles do not have any adjacent pedestrian facility.

Pedestrian facility presence



Forty-five percent of sidewalks & shared use paths are in good condition. However, 19 percent are in poor condition.

Sidewalk & Shared Use Path Condition

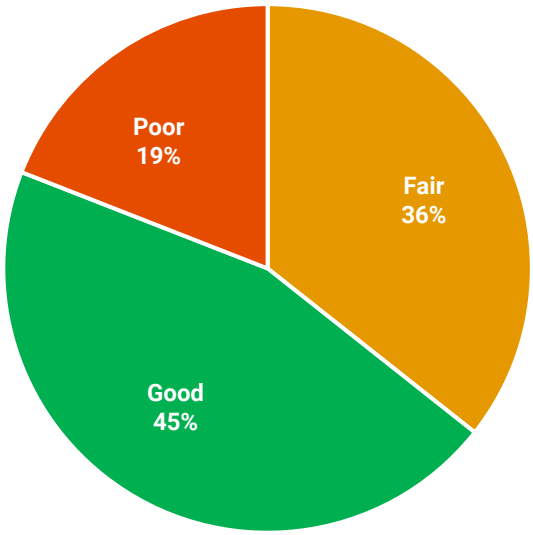


Table 2-4: Criteria used to rate sidewalk and shared use path condition

Condition	Criteria
Good	Like new. No major damage or wear and tear.
Fair	Normal wear and tear. Minor cracks or degradation may be present, but still performs its primary functions.
Poor	Extreme damage or wear and tear. Major cracks or degradation. No longer fulfills its primary functions and is no longer ADA compliant.

Goat Paths

Figure 2-4: A pedestrian walks on a "goat path" parallel to Birmingham Parkway in Brighton

Some parkways exhibit signs of walking demand—dirt pathways along the edge of the road, often called “goat paths,” show where people are currently walking even though there is no sidewalk.

Goat paths were noted in 93 different locations throughout the study area amounting to 8.6 combined linear miles.

Many goat paths are short segments at intersections that indicate where pedestrians are taking the most direct route rather than following the designated path.

Other goat paths follow road segments without sidewalks, such as along the north side of Leo Birmingham Parkway between North Beacon Street and Market Street. Goat paths may also appear alongside shared use paths as a result of runners preferring to run on a softer dirt surface rather than pavement.

Figure 2-5: Sample map of study area showing sidewalk condition and goat paths

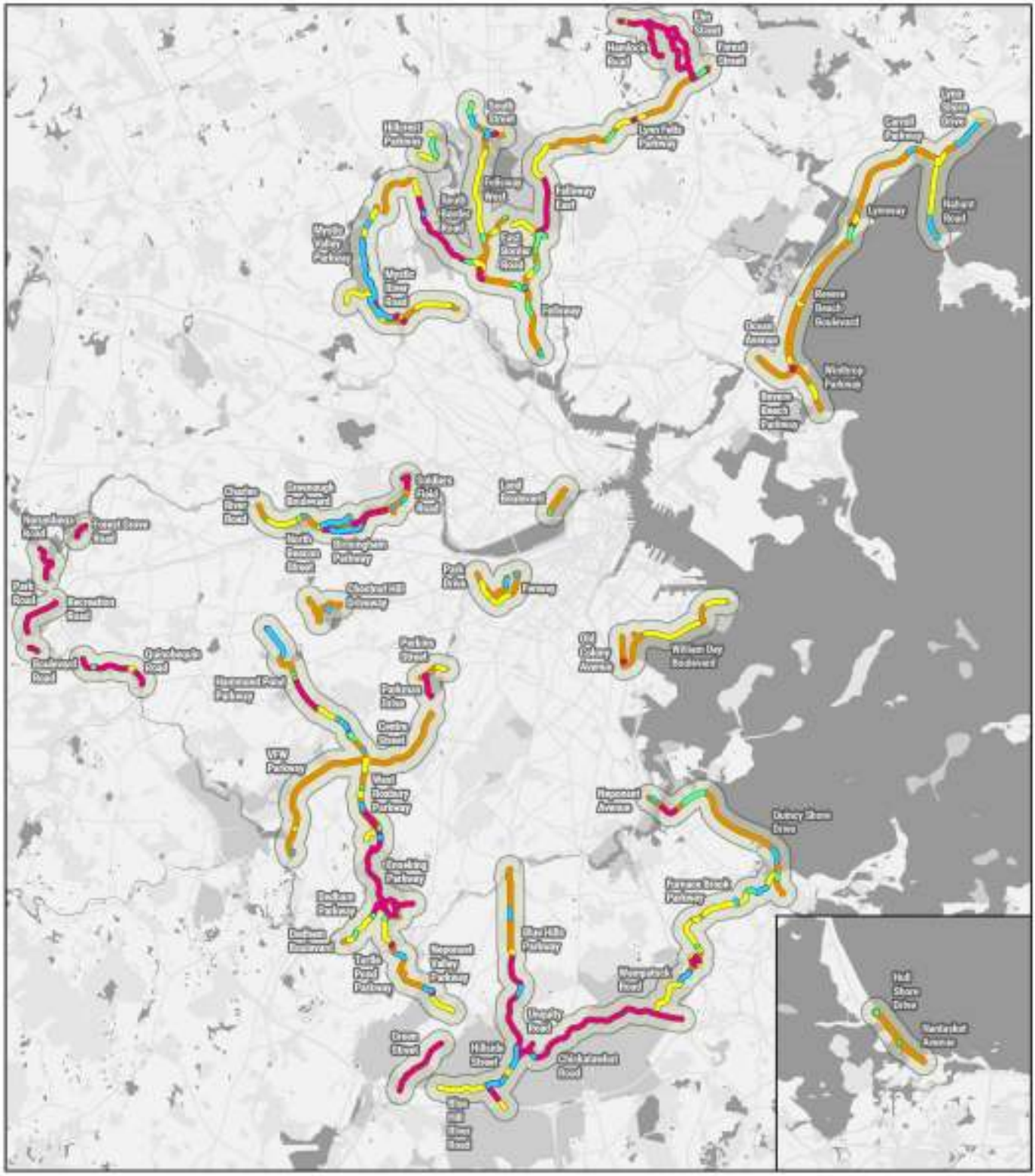
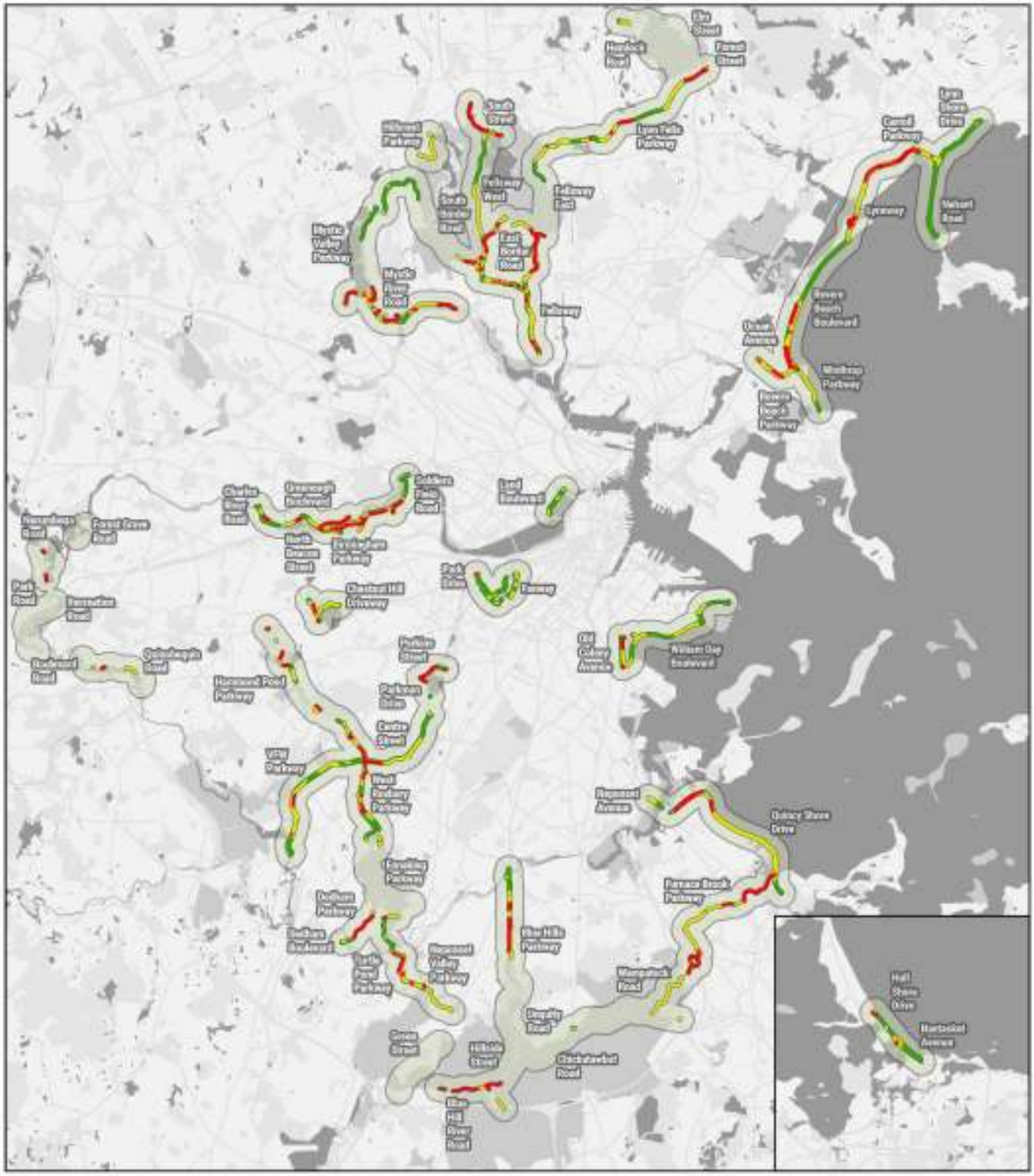

DCR Metro Boston Parkway Study
Existing Pedestrian Facilities
N
0 0.5 1 2
Miles
Legend
Pedestrian Facilities *
None
One Side
Both Sides
Narrow Walkway (< 4')
Goat Path
DCR Open Space
Non-DCR Open Space
Study Area
* includes sidewalks and shared-use paths

Figure 2-7: Existing Pedestrian Facility Condition



On-Street Bicycle Facilities

On-street bicycle facilities on Old Colony Ave (above) and Fellsway (below)

Figure 2-8: Bike lanes installed on Lynn Fells Parkway in Saugus (left) and Old Colony Ave in Boston (right) as an early action step for this Plan

On-street bicycle facilities are differentiated from shared use paths in that they are located within the roadway curb-to-curb width and are designated for exclusive use by bicyclists. These facilities typically consist of standard bike lanes, buffered bike lanes, and shared lane markings. DCR has integrated bicycle facility installation into its routine resurfacing program. See **Chapter 4: Paving Program** Recommendations for further details.

As an early action step for this Plan, bike lanes were installed on Lynn Fells Parkway, Blue Hill River Road, Unquity Road, and Fellsway East, and buffered bike lanes were installed on Old Colony Ave. This work has substantially increased the mileage of on-road bicycle facilities on DCR parkways, but there is more work to be done. The vast majority of roadway mileage does not feature any bicycle facilities.

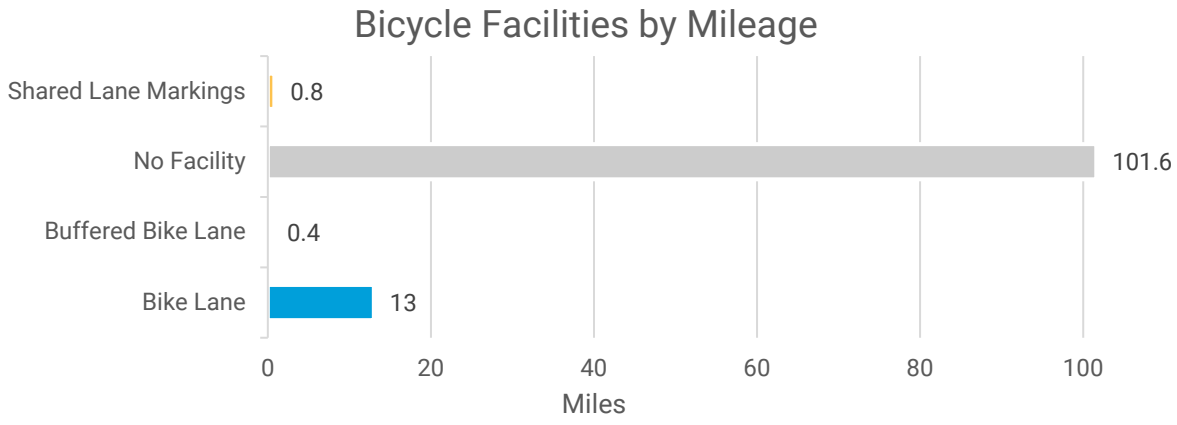
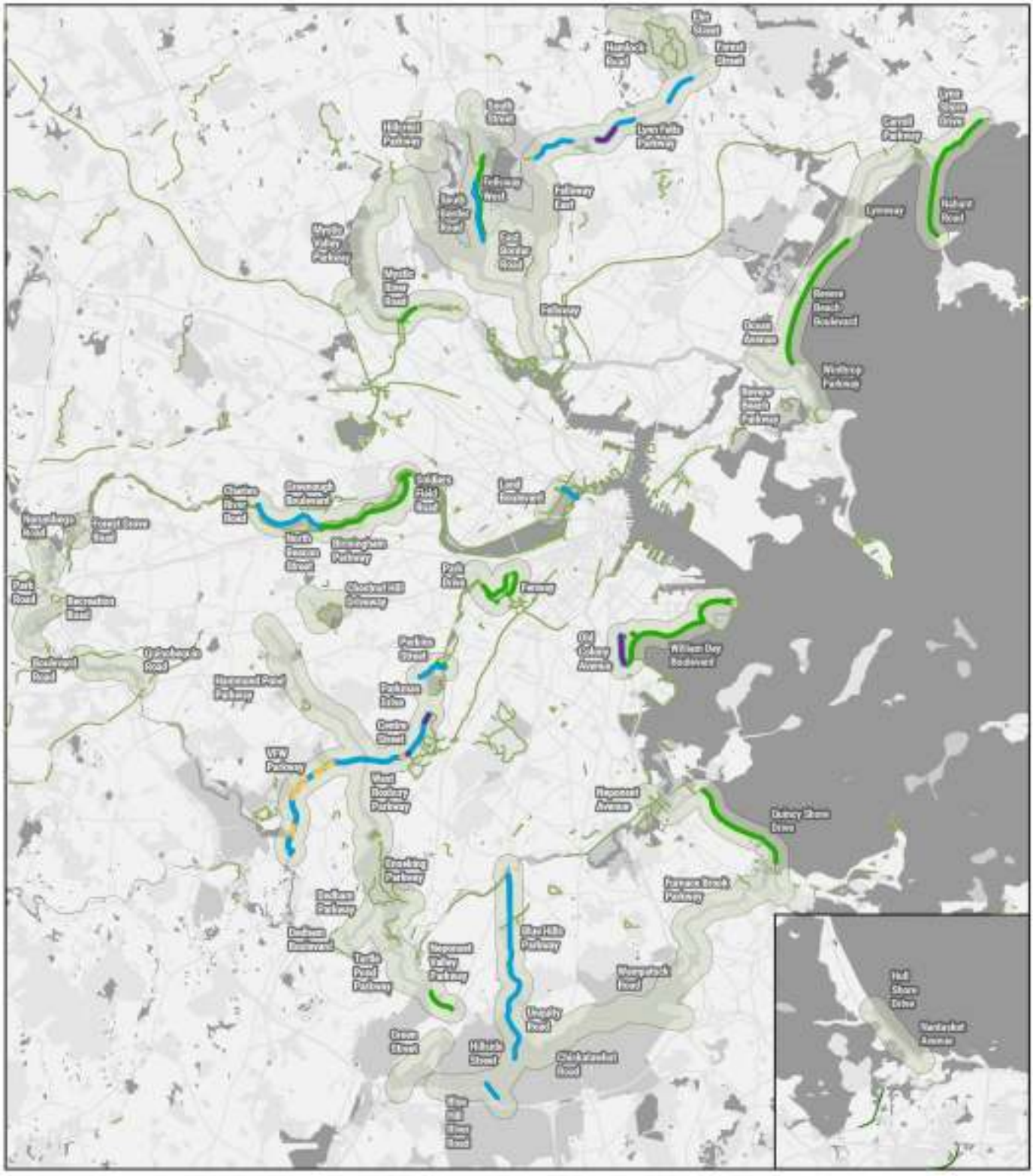


Figure 2-9: Existing Bicycle Facilities
Chapter 2: Existing Conditions Assessment



Bicycle Level of Traffic Stress

Multiple studies have found that roughly 60 percent of the adult population is interested in bicycling but concerned for their safety, particularly as it relates to sharing roadways with motor vehicles.[2] In order to appeal to this "interested but concerned" demographic, a roadway network must provide low-stress connectivity to and from destinations with minimal detour.

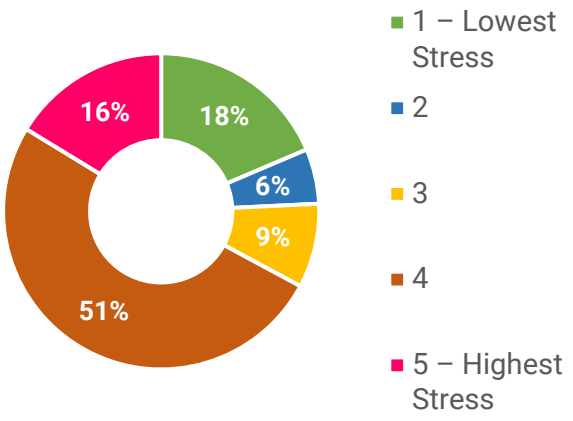
Bicycle Level of Traffic Stress (LTS) is a planning tool used to asses a roadway network based on the level of perceived comfort for people riding bicycles. Each roadway segment receives ranking from LTS 1 (lowest stress) to LTS 5 (highest stress). Scores reflect a range of characteristics of the roadway, including traffic volume and speed, parking, and bicycle facility presence and width. The premise is that as separation from vehicular traffic increases and traffic and speed decrease, one's level of comfort riding a bicycle will increase. An LTS score above 2 is considered to be exceed the stress level that most adults will tolerate.

Figure 2-10: Distribution of adult population by interest in bicycling. Source: MassDOT Separated Bike Lane Planning & Design Guide.

The Plan's parkways were analyzed using a bicycle LTS methodology. Shared use paths parallel to parkways were included in the analysis. However, the analysis didn't account for design standards, paving quality, or user volumes on shared use paths. Figure 2-11 shows the full study area with LTS scores for each parkway.

Increasing the quantity of well-connected low-stress routes will further DCR's goals of increasing multimodal safety and access on its parkways.

Parkway Miles by Bicycle Level of Traffic Stress



What makes a low-stress parkway?

Parkways with a paved shared use path parallel to the roadway such as Lynn Shore Drive (Lynn) and Soldiers Field Road (Boston).

Parkways with a bike lane at least 5 ft. wide that is adjacent to a curb and no more than two travel lanes, such as Lynn Fells Parkway (Melrose & Stoneham).

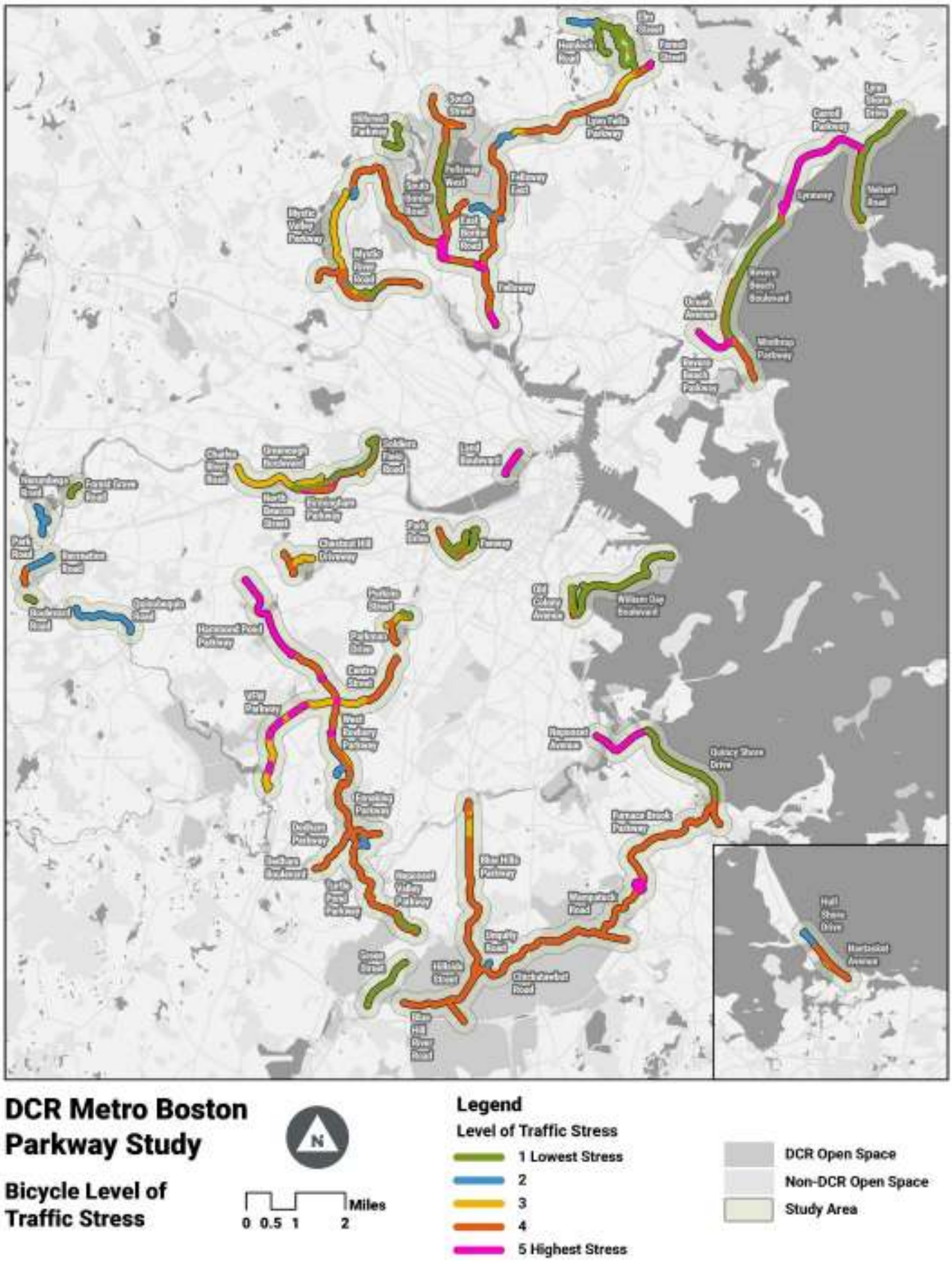
Two-lane roadways, typically without pavement markings, with low traffic volumes and speeds. Examples include Green Street (Milton & Canton), Mystic River Road (Medford), and Hemlock Road (Wakefield).

What makes a low-stress network?

Throughout the study area, there are isolated pockets of low-stress bikeways. In order to increase ridership and safety, low-stress segments must be connected together to form a network. People must be confident that they can get to and from their destinations without having to use a high-stress roadway.

Figure 2-11: Bicycle Level of Traffic Stress

Chapter 2: Existing Conditions Assessment



Safety Analysis

A key goal of the Plan is to ensure safe and comfortable access and mobility for people of all ages and abilities, in particular vulnerable road users such as pedestrians and bicyclists. A safety analysis was conducted to understand baseline conditions and inform recommendations for corridor and intersection improvements to help achieve this vision. Trends and characteristics of crashes occurring within the study area were explored with a focus on pedestrian and bicycle crashes.

This section summarizes key takeaways and trends, provides an in-depth analysis of pedestrian and bicycle crash factors, identifies high-crash "hotspots" in the study area, and outlines countermeasures that can be implemented to achieve increase safety. Overall, these results suggest that safety countermeasures at intersections and mid-block crossing locations will be critical for improving safety for pedestrians and bicyclists on DCR parkways, especially on busier parkways.

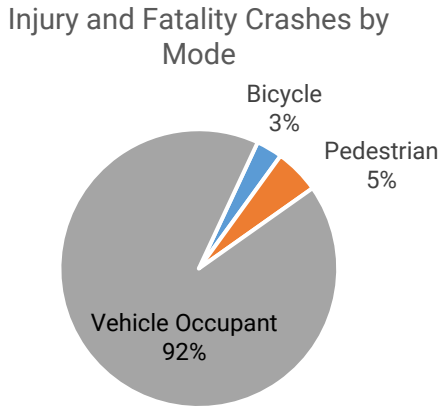
Key Takeaways

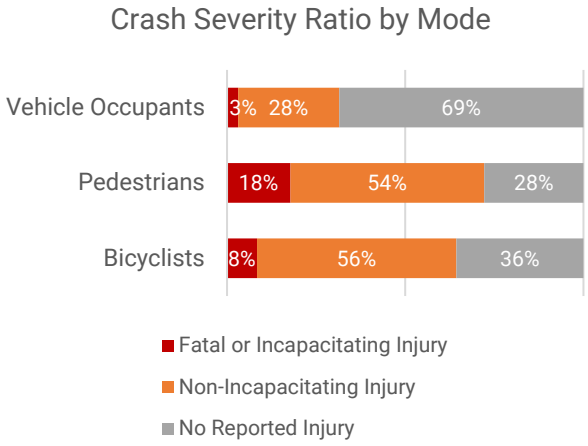
The following are key takeaways from the safety analysis:

In the study area during the period analyzed (2004-2014):

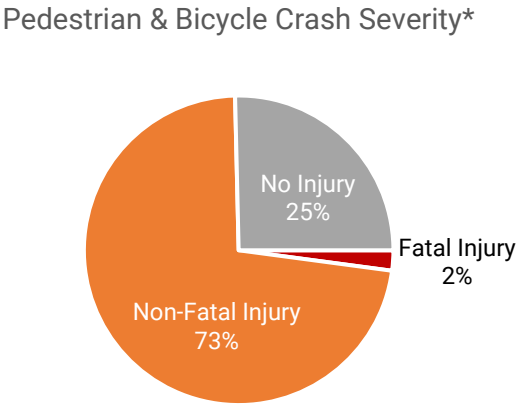
- **35 fatal crashes occurred**, including 9 pedestrians and 1 bicyclist.
- **4,240 injury crashes occurred**, including 214 involving pedestrians and 129 involving bicyclists.
- **12,957 total crashes occurred**, of which 7,557 did not have a reported severity outcome.

While pedestrians and bicyclists comprised a relatively small share of all injury and fatality crashes, they are disproportionately **more likely to be injured or killed compared with motor vehicle occupants**. The combined injury and fatality rate was **72%** for pedestrians, **64%** for bicyclists, and **31%** for motor vehicle occupants.



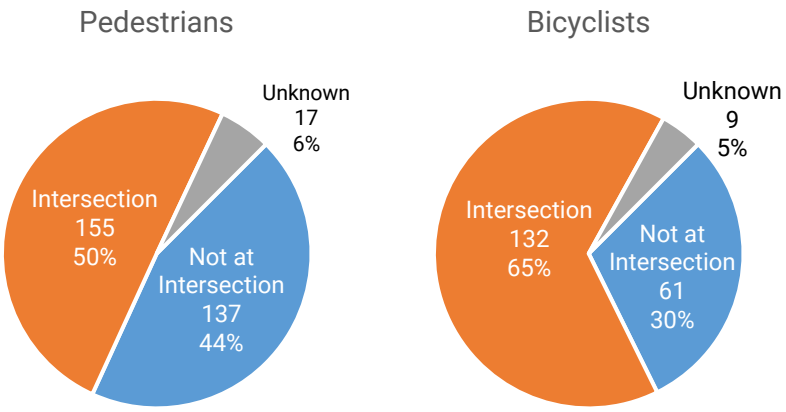


73 percent of pedestrian and bicycle crashes resulted in a non-fatal injury, while **2 percent** resulted in a fatal injury.



* includes only crashes with a reported outcome.

Pedestrian crashes were evenly split between intersection and non-intersection locations, while bicycle crashes occurred **most frequently** at intersections.



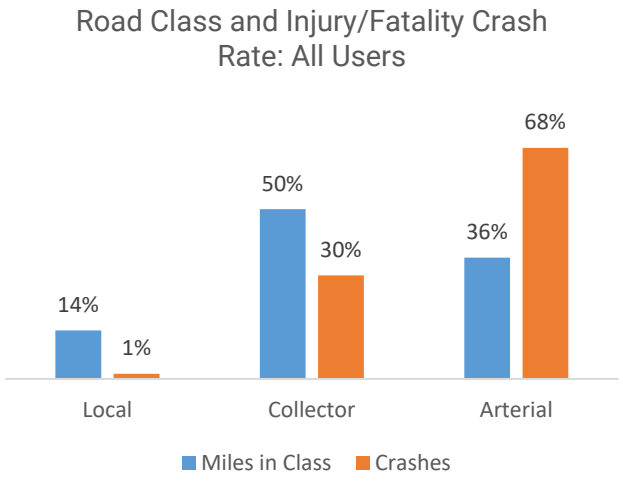
The most frequent cause of a pedestrian crash was a driver **traveling straight ahead**, which accounted for **53%** of all pedestrian crashes. **57%** of crashes in this category resulted in a non-incapacitating injury, and **21%** resulted in an incapacitating injury or fatality.

Other common driver actions were turning left (7%) and turning right (7%).

The most frequent cause of a bicycle crash was a driver **traveling straight ahead**, which accounted for **29%** of all bicycle crashes. **61%** of crashes in this category resulted in a non-incapacitating injury, and **12%** resulted in an incapacitating injury or fatality.

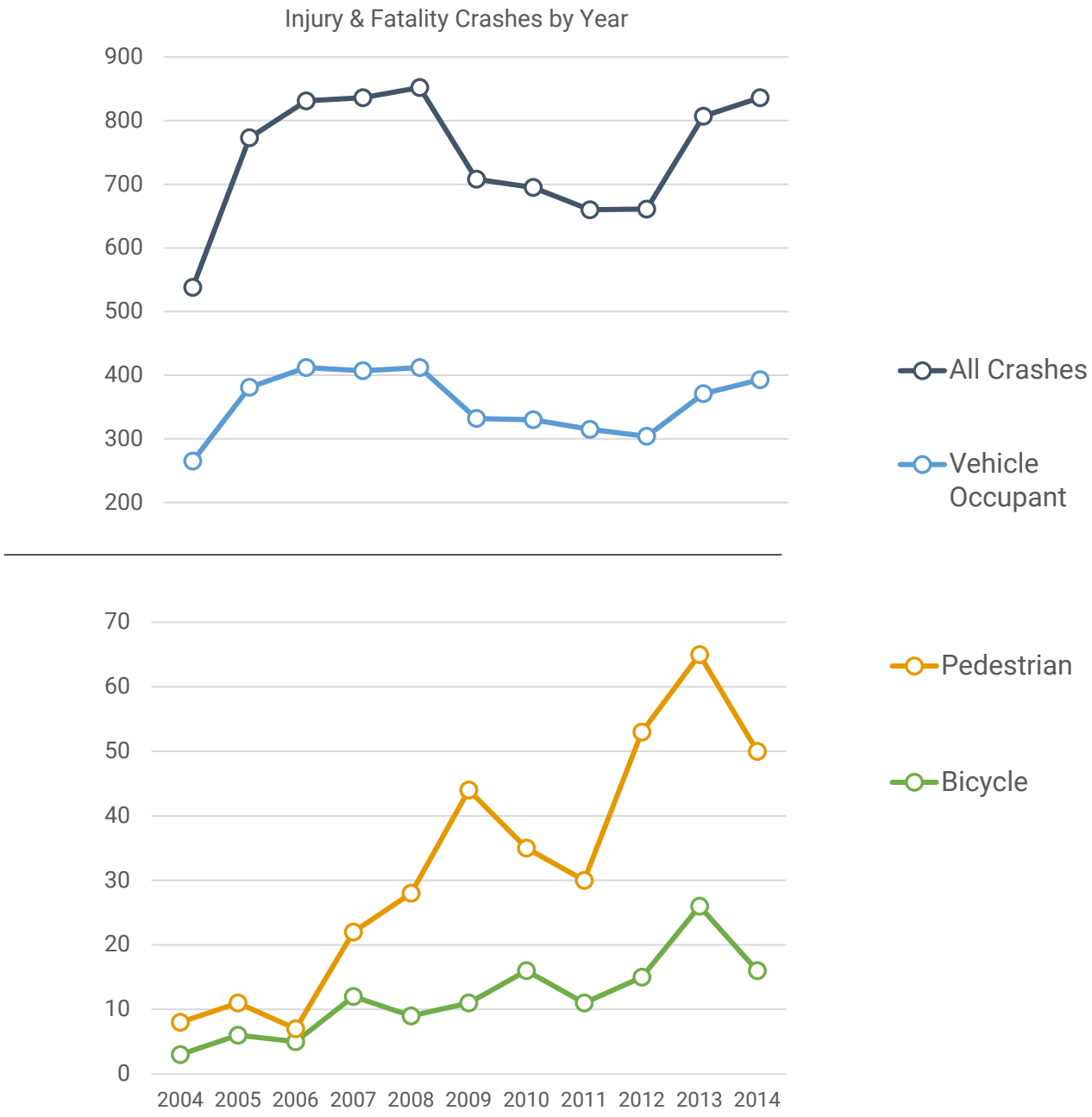
Other common driver actions were turning right, (16%) turning left (10%), and sideswipe, same direction (5%).

Arterial roadways were associated with increased frequency of injury and fatality crashes for all users. While arterials comprise **36%** of the overall roadway mileage in the study area, they accounted for **68%** of the combined injury and fatality crashes.

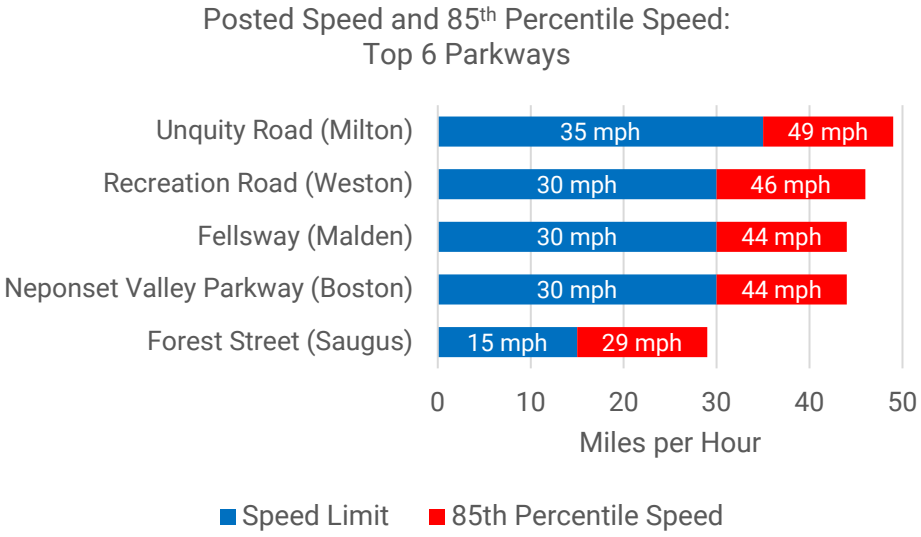


Trends

Injury and fatality pedestrian and bicycle crashes have increased over time while severe motor vehicle crashes have been relatively steady. Unfortunately, pedestrian and bicycle volume data for the same period is not available to confirm if these trends were related to increases in pedestrian and bicycle volumes in the study area.



Available data and anecdotal evidence suggests that speeding vehicles are an issue throughout the study area. While speed data were not available for the entire study area, parkways with available data exhibited 85th percentile speeds well in excess of the speed limit. All of the parkways below serve areas with frequent pedestrian crossings and/or are utilized by bicyclists. Considering that pedestrians and bicyclists face an 85% risk of fatality in collisions with vehicles traveling 40 mph or over, this finding indicates an opportunity to improve safety through better speed management (e.g., traffic calming, enforcement) on parkways in the study area.



Crash Hotspots

Following analysis of contributing factors, an examination was conducted as to where in the study area injury and fatal crashes occurred most frequently. Injury or fatal crash hotspots were mapped for all users. Although crashes occurred throughout the study area, certain corridors and intersections saw the highest share of injurious and fatal crashes.

Several trends are evident. First, the highest crash corridors tend to be multi-lane commercial arterials with frequent driveways and complex intersections like Lynnway and others. Second, high-crash pedestrian corridors tend to be those adjacent to popular oceanfront promenades, such as William Day Boulevard and Lynn Shore Drive. Third, large and complex intersections (particularly traffic circles) have a high concentration of crashes for all users. Finally, pedestrian crashes tend to concentrate near transit stations (Revere Beach MBTA station, Wonderland MBTA station, Readville Commuter Rail station) and near commercial and institutional destinations. The following tables list, in order by user group affected, the high injury and fatality corridors and intersections.

High Injury & Fatality Corridors

Corridor (continued)	Community(ies)	Affected Users
Park Drive	Boston (Fenway)	
Lynnway	Lynn	
Quincy Shore Drive	Quincy	
William Day Boulevard	Boston (South Boston)	
Revere Beach Boulevard	Revere	
Neponset Valley Parkway	Boston (Hyde Park)	
Fenway	Boston (Fenway)	
Lynn Fells Parkway	Melrose, Saugus	
Centre Street	Boston (Jamaica Plain)	

High Injury & Fatality Intersections

Intersection	Community	Affected Users
Ocean Ave near Beach Street	Revere	
Fellsway West at Fellsway	Malden	
Park Drive at Brookline Ave	Boston (Fenway)	
William Day Boulevard at L Street	Boston (South Boston)	
Columbia Road at Old Colony Ave	Boston (South Boston)	
Lynnway at Hanson Street	Lynn	
Charles River Dam Road at Edwin Land Boulevard	Cambridge	
Leverett Circle	Boston (West End)	
Birmingham Parkway at Western Ave	Boston (Brighton)	
Soldiers Field Road at North Beacon Street	Boston (Brighton)	
Horace James Circle	Newton	
Roosevelt Circle	Medford	
Neponset Ave at Morrissey Boulevard	Boston (Dorchester)	
Chickatawbut Road at Route 28	Milton	
Wellington Circle	Medford	
Enneking Parkway at Washington Street	Boston (Roslindale)	

Figure 2-12: Crash frequency on DCR study area parkways 2001-2014. All modes. Fatality or injury only.

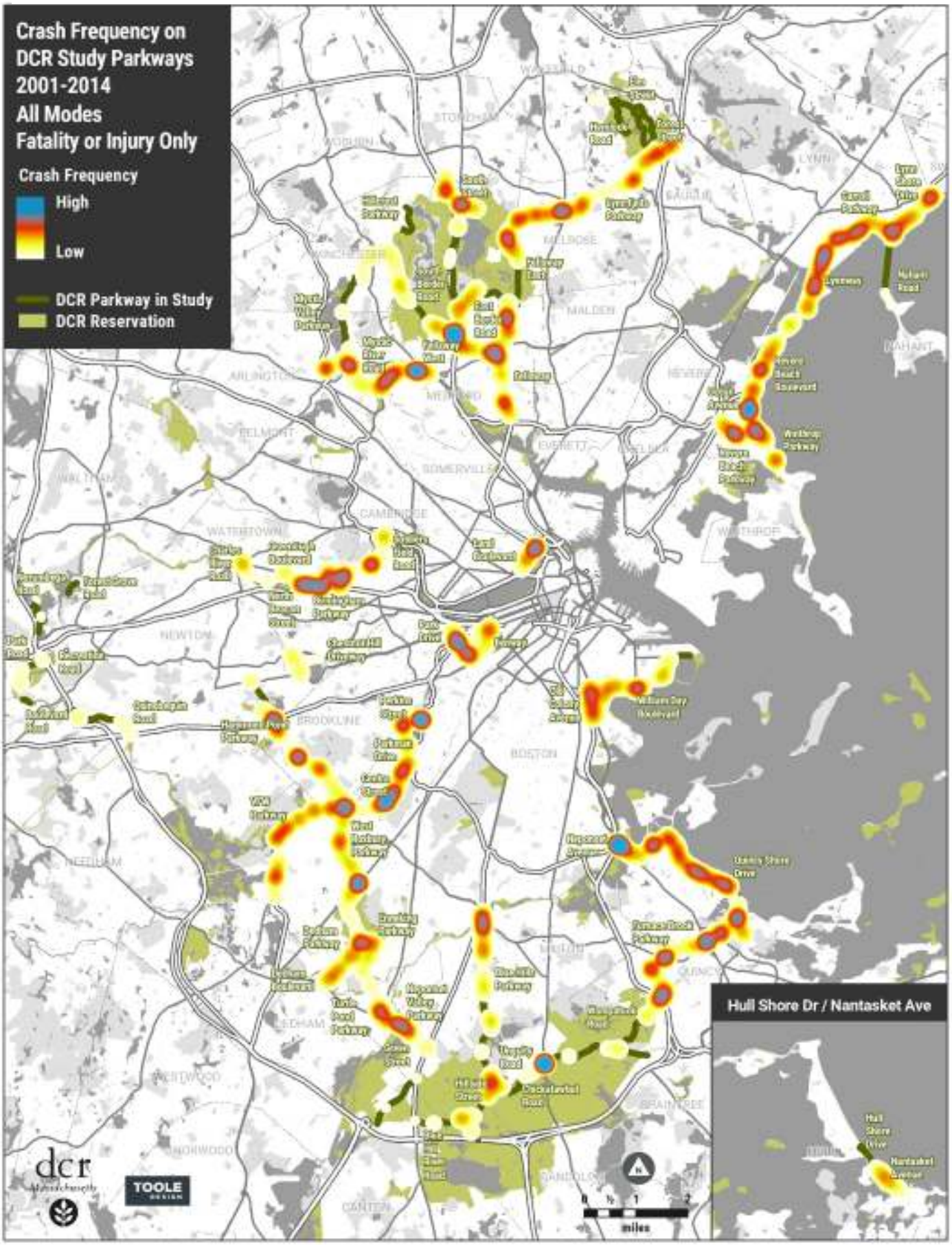


Figure 2-13: Crash frequency on DCR parkways 2001-2014. Pedestrian crashes. Fatality or injury only.

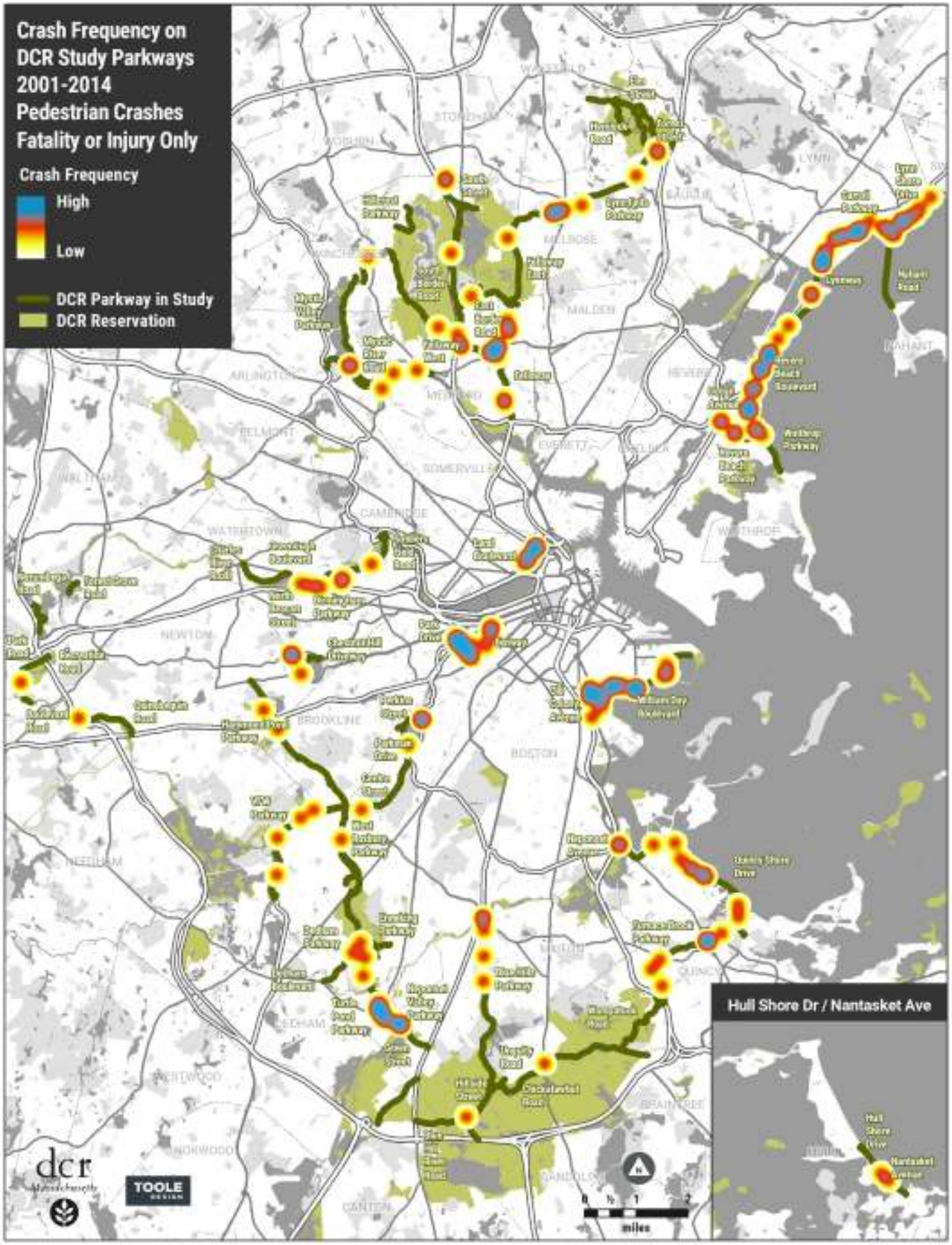
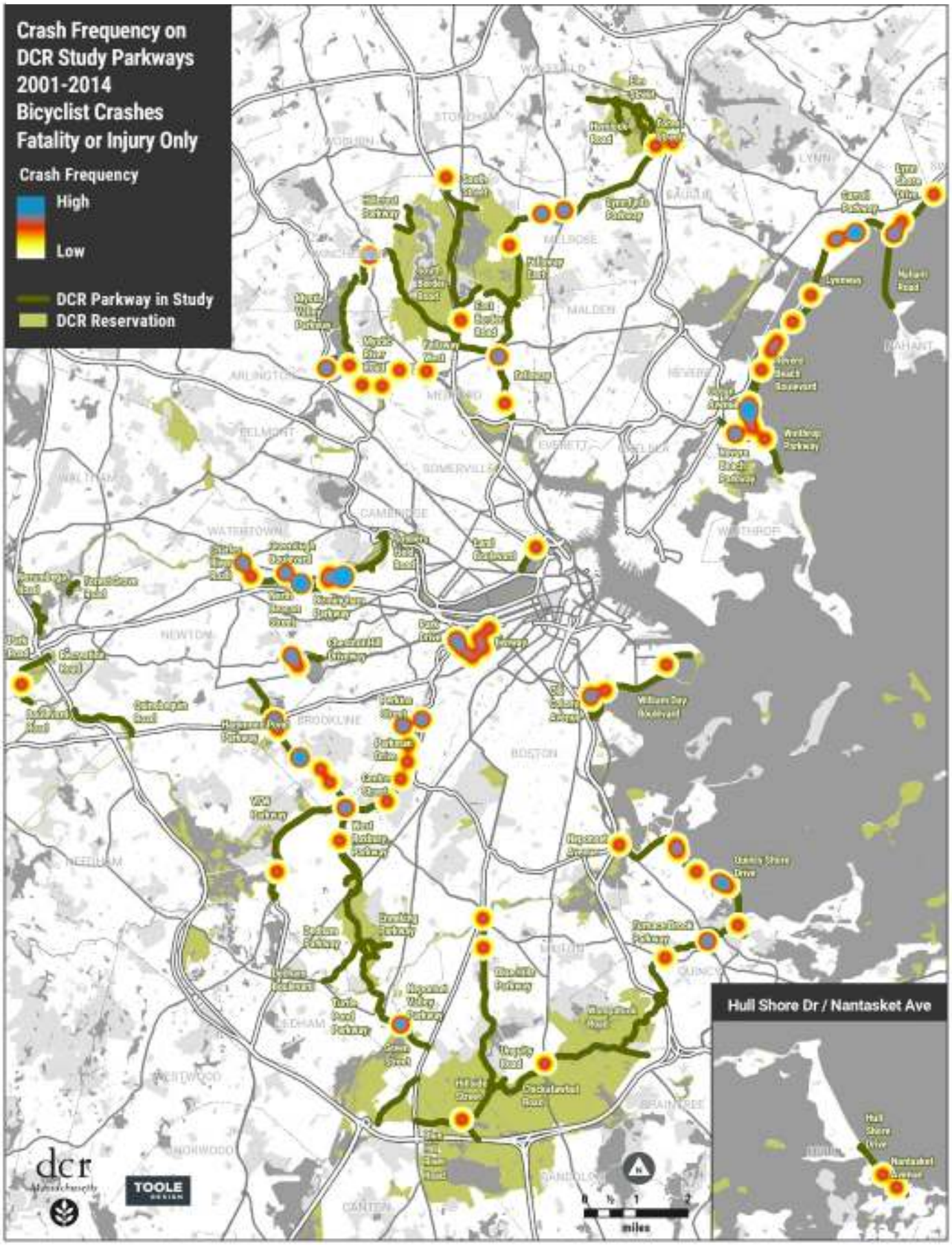


Figure 2-14: Crash frequency on DCR study area parkways 2001-2014. Bicyclist crashes. Fatality or injury only.



[1] "Crash Records Web Reporting." *Massachusetts Department of Transportation*. Accessed November 11, 2016. http://services.massdot.state.ma.us/crashportal/

[2] Dill, J., McNeil, N. *Four Types of Cyclists? Examining a Typology to Better Understand Bicycling Behavior and Potential*. Transportation Research Board. Bicycles 2013: Planning, Design, Operations, and Infrastructure, 01514640, 129-138.

CHAPTER 3. DESIGN STRATEGIES

Introduction

In order to achieve an interconnected network of active transportation corridors throughout the metro Boston region, various types of physical changes to the parkways can be made. "Design Strategies" refers to the application of specific facilities that have proven effective at improving safety, comfort, and convenience for non-motorized users of the parkway network.

Facilities were identified based on an understanding of the unique characteristics of DCR's roadways, their opportunities and challenges, and common crash factors identified in the previous chapter.

This chapter is organized into three sections. **Corridor Measures** describes treatments that can be applied to the cross-section of parkways between intersections. **Intersection & Crossing Measures** include modifications to intersections, crossings, and other specific locations. **Parkway Typologies** illuminates typical applications of corridor and spot measures to the most common roadway configurations found throughout the study area.

Measures in this chapter include geometric and signal changes. While signs, including warning signs and dynamic ones like speed feedback signs, can be effective safety measures, they should be considered in addition to geometric and signal measures.

All designs should adhere to applicable standards and guidelines, including:

- *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD)
- The proposed *Public Rights of Way Access Guide* (PROWAG)
- American Associate of State Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*
- DCR's *Parkways Preservation Treatment Guidelines*
- Massachusetts Department of Transportation's (MassDOT) *Separated Bike Lane Planning & Design Guide*
- Federal Highway Administration's (FHWA) *Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts*
- National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide*
- FHWA's *Small Town and Rural Multimodal Networks*

Additionally, applications not currently approved may require a written request for Interim Approval by FHWA.

Summary

Corridor Measures
Sidewalk
Shared Use Path
Separated Bike Lane
Buffered Bike Lane
Bike Lane
Climbing Lane
Bicycle Boulevard
Contra-Flow Bike Lane
Advisory Bike Lane
Shared Lane Markings
Bicycle and Pedestrian Bridge
Lane Reduction

Intersection & Crossing Measures
Modern Roundabout
Protected Intersection
Crossing Island
Shared Use Crossing
Enhanced Crossing Measures
Signal Timing
Curb Extension
Tightening Curb Radii
Raised Crossing
Two-Stage Queue Box
Bike Lane Intersection Striping
Bike Box
Squared-Off Intersection
Eliminating Slip Lanes

Parkway Typologies
Commercial Connector
Residential Connector
Oceanside Boulevard
Riverside Edge
Reservation Interior
Reservation Edge

Corridor Measures

Sidewalk

Description

Sidewalks provide pedestrians with space to travel within the public right-of-way that is separated from motor vehicles. They should provide a continuous and unobstructed alignment for pedestrians to access street crossings and adjacent amenities.

Application

- Sidewalks are applicable where pedestrian activity exists and/or is being encouraged.
- Sidewalks make walking between destinations an easy choice and create a network for pedestrian travel.
- Sidewalks make access to transit possible since the majority of transit users walk between their destination and transit stops.
- For ease of maintenance and to communicate to pedestrians that this is space designated for their public use, pavement materials should be as uniform as possible.

Considerations

- All new sidewalks and curb ramps should comply with the U.S. Access Board's *Public Right of Way Accessibility Guidelines* (PROWAG).
- A landscaped buffer between the sidewalk and roadway is recommended to enhance pedestrian comfort and safety.
- Sidewalks should meet load–bearing, friction, and other requirements as per relevant standard design specifications and regulations.
- Sidewalks should, as much as possible, keep to the natural path of pedestrian travel parallel to the roadway.
- It may be desirable in some locations for the sidewalk to curve to form a more direct route to an intersecting walkway, to preserve significant trees, or to provide a greater degree of separation between the sidewalk and the roadway.
- When reconstructing sidewalks and relocating utilities, all above ground utility access points should be relocated outside of the pedestrian zone, where feasible.

References: U.S. Access Board's Public Right of Way Accessibility Guidelines. https://www.access-board.gov/attachments/article/743/nprm.pdf.

Shared Use Path

Description

Shared use paths are separated facilities providing two-way travel for walking, bicycling, jogging, skating, and other non-motorized users. They can serve both as corridors to provide connections between origins and destinations, and as destinations in their own right. Shared use paths can be implemented as part of roadway reconstruction projects or as standalone projects if no major changes to the roadway are required.

Application

- Shared use paths are typically recommended on parkways that meet the following criteria:
  - » Reservation or undeveloped land on one or both sides;
  - » Posted speed limit of 30 mph or higher and average annual daily traffic (AADT) of 6,000 or greater;
  - » Infrequent intersections or driveways.
- Separate parallel paths for pedestrians and bicyclists or wider trail widths may be preferred for segments that exceed certain volume and user mix thresholds. Use the FHWA *Shared Use Path Level of Service Calculator* to determine when separation may be appropriate. See Chapter 6: Implications of this Research for Trail Design.

Considerations

- The minimum AASHTO recommended width of a shared use path is 10 ft. but should be wider if expected user volumes will be higher. Paths narrower than 10 ft. should have caution signage.
- Side street and driveway crossings should be raised and properly marked to slow vehicle speeds, encourage vehicles to yield to path users, and avoid frequent elevation changes for path users.
- Signage should communicate that turning vehicles yield to pedestrians and bicyclists and that bicyclists should yield to pedestrians.
- The placement of STOP signs on shared use paths should be carefully considered. An excess of STOP signs can result in a lack of compliance by path users, especially in locations with adequate sight lines and/or infrequent conflicts. As a result, path users may also ignore STOP signs at locations with a higher potential for conflicts. The MUTCD recommends using YIELD signs instead of STOP signs when appropriate to allow users to maintain momentum.
- Provide frequent access points, especially at side street intersections.
- A dashed yellow centerline is recommended on higher-use paths.

References: Federal Highway Administration. Shared-Use Path Level of Service Calculator–A User's Guide. https://www.fhwa.dot.gov/publications/research/safety/pedbike/05138/.

Separated Bike Lane

One-way separated bike lane using low-cost materials

Two-way separated bike lane using low-cost materials

One-way raised separated bike lane with reconstruction

Two-way raised separated bike lane with reconstruction

Description

Separated bike lanes are exclusive bicycle facilities that are physically separated from motor vehicle traffic and distinct from the sidewalk. They improve safety for all users and provide a low-stress experience and attract users of all ages and abilities. Separated bike lanes can operate one-way with traffic or two-ways on one or both sides of a parkway. They can be implemented as part of routine resurfacing projects using low-cost materials, or as part of reconstruction projects using curbing and grade separation.

Application

- Separated bike lanes are typically recommended for parkways that meet the following criteria:
  - » Developed land on both sides of the parkway and/or frequent destinations on both sides;
  - » Posted speed limit of 30 mph or higher and AADT of 6,000 or greater.
- Parkways where a shared use paths is desirable and where the existing or anticipated volume of pedestrians and bicyclists is high. Use the FHWA *Shared Use Path Level of Service Calculator* to determine when separation may be appropriate.

Considerations

- The type of vertical separation used for low-cost and reconstructed separated bike lanes should be determined based on context, cost, drainage, and other considerations.
- On-street parking offers a high-degree of separation.
- Raised buffers provide the greatest level of separation from traffic, but may require road reconstruction.
- With reconstruction, separated bike lanes can be built at sidewalk, intermediate, or street level with a raised permanent buffer, depending on the site context.
- Operational direction (one-way vs. two-way) and placement (which side of the parkway if two-way) should be determined based on context, considering nearby destinations, desire lines, and existing facilities.
- Plan for year-round maintenance needs of separated bike lanes.

References: Federal Highway Administration. Shared-Use Path Level of Service Calculator–A User's Guide. https://www.fhwa.dot.gov/publications/research/safety/pedbike/05138/.

Buffered Bike Lane

Description

Buffered bike lanes are bike lanes with a marked buffer space separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes can be implemented through restriping or as part of paving projects.

Application

- Where cross section width is available, separated bike lanes are preferred over buffered bike lanes.
- Buffered bike lanes should be considered on a road with one or more of the following characteristics:
  - » Posted speed limit: 25 mph.
  - » AADT: 2,000 – 6,000 vehicles per day
  - » Parking turnover: infrequent.

Considerations

- The minimum width of a buffered bike lane adjacent to parking, exclusive of the buffer, is 5 ft. A desirable width is 6 ft.
- The minimum buffer width is 18 inches.
- On lower speed roads or roads with high parking turnover with on-street parking , the buffer may be placed between the parking lane and the bike lane. On higher speed roads or roads with low parking turnover, a buffer is preferable between the bike lane and adjacent travel lane.

Bike Lane

Description

A bike lane is a portion of a street designated for the exclusive use of bicycles and distinguished from traffic lanes by striping, signing and pavement markings. It is used for one-way travel and is normally provided in both directions on two-way streets and/or on one side of a one-way street. Implementation requires roadway restriping.

Application

- Characteristics of streets appropriate for bike lanes include:
  - Posted speed limit: 25 – 30 mph.
  - AADT: 3,000 – 6,000 vehicles per day.
  - Parking turnover: infrequent.

Considerations

- 6.5 ft. is the preferred bike lane width.
- The minimum width of a bike lane adjacent to a curb is 5 ft. exclusive of a gutter. 4 ft. is acceptable in constrained low-speed environments.
- The minimum width of a bike lane adjacent to parking is 5 ft.

Climbing Lane

Description

Climbing lanes are a hybrid bicycle facility that include a bike lane on one side of the roadway in the uphill direction, with a shared lane on the other side of the roadway. Climbing lanes give slower-moving, uphill bicyclists a designated space while allowing vehicles to pass. A bike lane is often not necessary on the downhill side, as bicyclists will generally be traveling closer to the speed of vehicles. For implementation, climbing lanes require roadway restriping and markings.

Application

- Climbing lanes are applicable on parkways that have a slope and are not wide enough for bike lanes in both directions.
- Parkways with a continuous slope are better candidates for climbing lanes than those with varied terrain.
- A hybrid bike lane/sharrow can also be applied to unsloped parkways that are not wide enough for bike lanes in both directions.

Considerations

- Bike lanes on the uphill side should be at least 5 ft wide.
- The shared lane marking's centerline must be at least 4 ft. from the curb or edge of pavement where parking is prohibited.
- The shared lane marking's centerline must be at least 11 ft. from curb where parking is permitted, so that it is outside the door zone of parked vehicles.

Bicycle Boulevard

Bollard diversion and bikeway pavement marking

Bike lane and signage at bicycle boulevard intersection

Description

Bicycle Boulevards are streets designated and designed to give walking and bicycling priority. They include measures to reduce vehicle volumes and speeds in order to create a comfortable environment for pedestrians and bicyclists. Some measures can be implemented with roadway resurfacing and signage, while others require construction.

Application

- Bicycle boulevards can be considered on parkways that meet the following criteria:
  - » Maximum AADT of 2,000 and 75 vehicles or fewer in the peak direction at peak hour
  - » Preferred AADT: up to 1,000
  - » Vehicle speeds up to 20 mph.

Considerations

- Bicycle boulevards can comprise a component of the overall bicycle network, and can also provide access to specific destinations.
- Consider using traffic calming measures such as street trees, chicanes, speed humps, and traffic circles.
- Access management devices such as diverters can redirect cut-through vehicle traffic and reduce traffic volume while still enabling local access to the street.

Contra-Flow Bike Lane

Description

Contra-flow bike lanes allow two-way bicycle access on streets that are designated one-way for motor vehicle traffic. Bicyclists are sensitive to out-of-direction travel, and areas with one-way streets can discourage bicycling by increasing distances between origins and destinations. Contra-flow bike lanes can be a component of bicycle boulevards by linking low-stress streets together. Roadway restriping and signage are required for implementation.

Application

- Contra-flow bike lanes can be considered on parkways with one-way vehicle traffic.
- Use the speed, volume, and width criteria for bike lanes to select the appropriate level of separation.
- Parkways where bicyclists are frequently observed traveling against traffic may be candidates for contraflow bike lanes.

Considerations

- A solid double yellow line should be used to separate motor vehicle traffic from the contraflow bike lane.
- On parkways with higher volumes, consider a separated contra-flow bike lane or shared use path.

Advisory Bike Lane

Description

Advisory bike lanes designate a bicycle operating space on two-way streets that are too narrow for standard bike lanes. They feature dashed bike lanes, a two-way travel lane in the center, and no centerline. Vehicles may pull into the bike lane when encountering oncoming traffic.

Application

- Advisory bike lanes can be considered on parkways that meet the following criteria:
  - » Total traffic lanes: 2 lanes.
  - » Operation: two-ways
  - » Posted speed limit: 25 mph or lower.
  - » AADT: up to 3,000 vehicles per day
- Advisory lanes can also serve pedestrians on parkways that meet the above criteria and also lack a sidewalk.

Considerations

- The preferred advisory bike lane width next to the curb is 6 ft., while 4 ft. is the minimum. Next to parking, the preferred width is 7’ while 5’ is the minimum.
- The two-way travel lane may range from 10 – 18 ft. Avoid travel lanes between 13.5 and 16 ft, as they may result in vehicle conflict.
- Marked a centerline at locations with limited sight distance, including curves and hills.
- Consider a Two-Way Traffic warning sign (W6-3) to reinforce the two-way operation of the street.

Shared Lane Markings

Description

Shared lane markings (or "sharrows") are pavement markings that denote shared bicycle and motor vehicle travel lanes. Shared lane markings can be implemented as part of roadway restriping and resurfacing.

Application

- Not recommended on parkways with a posted speed limit above 25 mph and with more than 3,000 vehicles per day.
- Shared lane markings are typically used on local, collector, or minor arterial streets with low traffic volumes.
- They are commonly used on bicycle boulevards to reinforce the priority for bicyclists.
- They may be used as interim treatments to fill gaps between bike lanes or other dedicated facilities.
- May be used for downhill bicycle travel in conjunction with climbing lanes.

Considerations

- The marking's centerline must be at least 4 ft. from the curb or edge of pavement where parking is prohibited.
- The marking's centerline must be at least 11 ft. from curb where parking is permitted, so that it is outside the door zone of parked vehicles.

Bicycle and Pedestrian Bridge

Description

A bicycle and pedestrian bridge carries a shared use path across a natural or artificial barrier, such as a body of water or highway. Bridges can also be constructed parallel to parkways than run along a waterfront where space is not available for a shared use path.

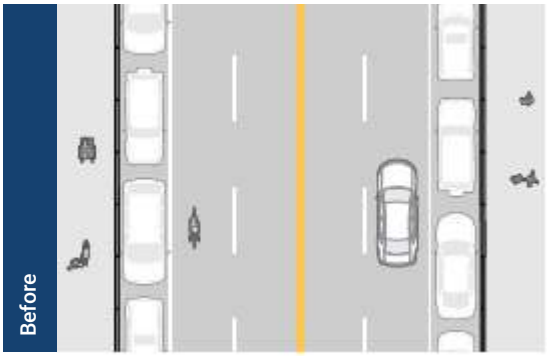
Application

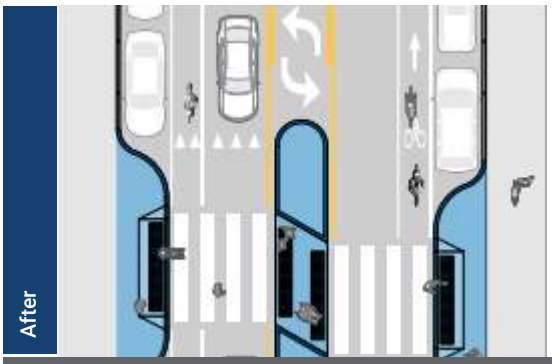
- A bicycle and pedestrian bridge should be constructed where an alignment must remain connected and continuous and cannot remain as such without a bridge to accomodate it.

Considerations

- Pedestrian and bicycle bridges should be mixed use rather than having separate zones for pedestrians and bicyclists.
- Personal safety issues can be a concern on bridges spanning long distances. It may be necessary to install emergency call boxes, suveillance cameras, or other measures to ensure user comfort.
- Connections for bicyclists and pedestrians between the bridge and roadway may require significant ramping in order to make the connection accessible.
- The preferred clear width for bicycle and pedestrian bridges is 14 ft., and the minimum clear width is 12 ft.

Lane Reduction





4-to-3 road diet with pedestrian refuge and bike lanes added

4-to-3 road diet with center, two-way left turn lane (TWLTL)

4-to-3 road diet with center, two-way left turn lane (TWLTL)

Description

Lane reductions, also known as "road diets," reconfigure travel lanes to increase safety, reduce speeds, and/or create space for pedestrian, bicycle, transit, and parking facilities. This is accomplished by reducing the number of travel lanes and/or reducing the width of each travel lane. They can be implemented as part of routine resurfacing projects using low-cost materials, or as part of reconstruction projects using curbing and grade separation.

Application

- Corridors may be selected based on traffic volume, crash history, vehicle speed, and number of left-turning vehicles.
- For a 4-to-2 lane conversion, the threshold is typically:
  - » 20,000 vehicles per day
  - » 1,200 vehicles per hour during peak hour
- Each situation should be evaluated based on its specific site characteristics.

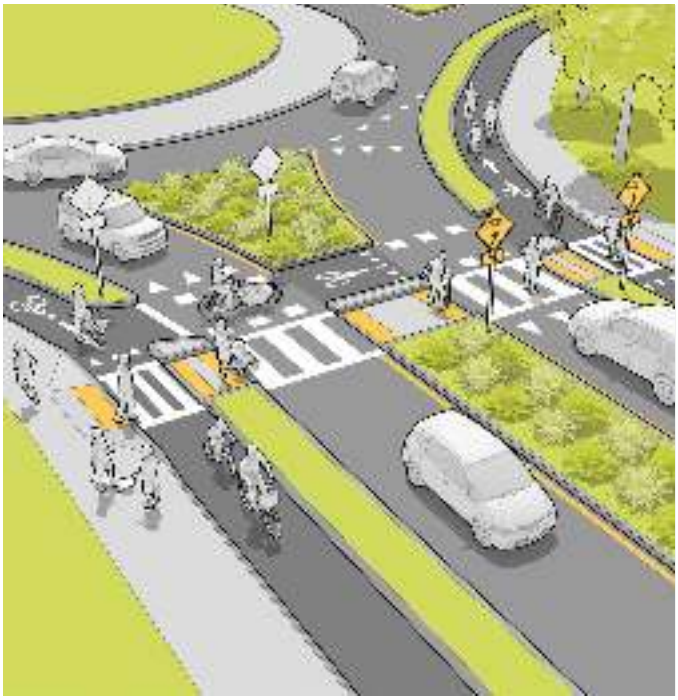
Considerations

- The preferred travel lane width is 10 to 11 ft. Lanes wider than 11 ft. will encourage speeding.
- Narrower travel lanes on urban and suburban arterials have no negative impact on vehicle safety and operations when implemented as part of an integrated and holistic design.
- Some possible roadway reconfigurations are 4-to-5 lane, 2-to-3 lane, 3-to-3 lane, and 5-to-3 lane. See FHWA's Road Diet Informational Guide.
- A center, two-way left turn lane (TWLTL) allows left-turning drivers space to leave their main travel lane and wait for a gap to complete their turn.
- Pedestrian improvements may be in the form of a wider sidewalk, crossing island, curb bumpout, or streetscape additions.
- Bicycle improvements may be the addition of any type of bike lane.
- Transit improvements may include a dedicated bus lane, bus turn out, or bus bulb.

References: Federal Highway Administration. Road Diet Informational Guide. https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/

Intersection & Crossing Measures

Modern Roundabout



Credit: MassDOT *Separated Bike Lane Planning & Design Guide*

Credit: Google Earth

Description

Modern roundabouts are circular intersections that contain features designed to improve safety for all users while maintaining a desired traffic flow. They are different from the traditional rotaries found throughout the DCR parkway network is several key ways. Modern roundabouts use narrower entry and exit radii and horizontal offsets to reduce vehicle speeds, increase yielding to pedestrians, and indicate priority for traffic within the circulating roadway. Pedestrian and bicycle facilities are located around the perimeter of the circulating roadway. Rotaries typically have flared entries and exits that result in high speeds and poor yielding compliance. Modern roundabouts can have significantly smaller circle diameters compared with rotaries. The smaller diameter results in slower vehicle speeds and has the added benefit of reducing space dedicated to the intersection. This can free up land for other uses.

Application

- Existing rotaries in the study area should be considered for being upgraded to a modern roundabout.
- The feasibility of converting a signalized intersection to a modern roundabout can be determined by evaluating traffic volumes and right-of-way available.
- The recommended diameter of the circulating roadway for a single-lane roundabout is 90 – 150 ft. and 140 – 250 ft. for a multi-lane roundabout.

Considerations

- Sidewalks and separated bike lanes should be included in the design to facilitate pedestrian and bicycle travel outside of the circulating roadway. Where space is limited and/or pedestrian and bicycle demand is low, a shared use path can be provided around the perimeter.
- Design measures that maintain vehicle speeds between 10 and 20 mph can accomodate on-road bicycle travel through roundabouts.
- At entry and exit points with more than one lane in the same direction, consider using splitter islands to allow pedestrians and bicyclists to cross in stages and reduce the potential for multiple-threat crashes.

Protected Intersection

Description

Protected intersections are intersections that include design elements to increase safety and comfort for all users. Key design features include horizontally offset bike lanes to the right of vehicle travel lanes leading up to the intersection, and a corner deflection island which slows right-turning vehicles and increases driver awareness of crossing pedestrians and bicyclists. They are the preferred treatment for intersections with separated bike lanes on an approaching roadway.

Well-designed protected intersections are intuitive, promote predictable movements, and allow bicyclists, pedestrians, and motorists to communicate using eye contact. Protected intersections can be implemented as part of roadway reconstruction projects or using low-cost vertical materials during resurfacing projects.

Application

- Protected intersections should be considered at intersections with existing or planned bicycle facilities.
- Intersection approaches with higher right-turning volumes should be considered for protected intersections.
- Protected intersections incorporate many elements and geometry will vary depending on available space.

Considerations

- A corner refuge island allows bike lanes to be physically separated from traffic up to the crossing point and protects bicylists from right-turning vehicles.
- Mountable truck aprons can be considered for corner refuge islands where design vehicles exceed SU-30.
- A forward bicycle queuing area allows bicyclists to wait in front of stopped motorists, increasing visibility of the bicyclists. The queuing area also allows bicyclists to enter the intersection prior to vehicle turning motorists.
- Bicycle and pedestrian crossings should be set back from the vehicle travel way by a distance of 6 – 16.5 ft. This improves motorists' views of bicyclists and pedestrians and keeps approaching traffic from being blocked from the behind.
- Protected intersections should include a pedestrian crossing island at least 6 ft. wide between the street and the separated bike lane.

Crossing Island

Description

Crossing islands are raised islands placed in the center of the street at intersections or mid-block. They allow pedestrians and bicyclists to focus on one direction of traffic at a time as they cross the roadway. Crossing islands can be implemented along with roadway reconstruction projects, or as interim measures using temporary vertical objects. All pedestrians, particularly those with disabilities, older pedestrians, and children benefit from crossing islands.

Application

- Crossing islands should be implemented on busy multi-lane roadways where gaps in traffic are difficult to find or at crossings with a history of pedestrian and/or bicycle crashes.

Considerations

- Crossing islands should be a minimum of 6-feet wide to meet ADA standards and accommodate the typical length of a bicycle.
- Crossing islands can improve safety for vehicles by dividing opposing traffic streams.
- If there is enough width, center crossing islands and curb extensions can be used together as a traffic calming measure.

Shared Use Crossing

Description

Shared use crossings are locations where a shared use path crosses a roadway. Shared use crossings can be located mid-block or at intersections. Shared use crossings are also locations where a bicycle boulevard intersects with an arterial, or where a crossing is provided to allow bicyclists to reverse direction.

Application

- Locations where shared use paths intersect with a roadway or where there is and existing or anticipated bicycle crossing demand
- Shared use crossings may be at mid-block locations or intersections.

Considerations

- The crossing should be as close to 90 degrees as possible to the intersecting road.
- Speed, volume, and cross section of the roadway should be evaluated to determine the appropriate traffic control.
- Consider a raised crossing.
- The width of the crossing and curb ramps should be at least as wide as the approaching shared use path. 10 ft. is the minimum width, though a wider crossing is advisable in higher demand locations.
- Use high-visibility crosswalks.

Enhanced Crossing Measures

Rectangular Rapid Flash Beacon (RRFB)

Pedestrian Hybrid Beacon (PHB)

Description

Enhanced crossing measures involve devices placed at uncontrolled crossings in order to improve motorist yielding behavior and improve bicycle and pedestrian safety. These devices include the Rectangular Rapid Flash Beacon (RRFB) and the Pedestrian Hybrid Beacon (PHB). RRFBs combine a pedestrian crossing sign with a bright flashing beacon that is activated only when a pedestrian is present. PHBs (also known as High-Intensity Activated Crosswalk Beacons, or HAWKs) are a type of hybrid signal that allow pedestrians and bicyclists to stop traffic to cross high-volume arterial streets using a pushbutton.

Application

- Consider RRFBs at existing or planned marked crosswalks with a known pedestrian safety issue where the following criteria are met:
  - » There is no more than one lane in either direction;
  - » The crossing is not YIELD, STOP, or signal controlled;
  - » Approaching sight lines are adequate.
- Consider PHB at existing or planned marked crosswalks with a known pedestrian safety issue where the following criteria are met:
  - » There is more than one lane in either direction;
  - » There is a history of "multiple-threat" pedestrian crashes;
  - » The MUTCD recommends a minimum volume of 20 pedestrians and/or bicyclists an hour at major arterial crossings.
- RRFBs or PHBs can both be applied to arterials.

Considerations

- RRFBs should not be installed in locations with sight distance constraints that limit the driver's ability to see pedestrians on the approach to the crosswalk.
- RRFBs should be reserved for crossings with the greatest need; an over-application may result in reduced compliance.
- RRFBs may also be considered for priority bicycle route crossings or locations where bike facilities cross roads at mid-block locations.
- PHB pushbutton actuators should respond immediately when pressed and be placed in convenient locations for all users. Passive signal activation, such as video or infrared detection, may also be considered.

Signal Timing


Protected signal phase


Pedestrian indicator

Bicycle signal


Leading pedestrian interval

Description

Signal timing is a coordinated system that intends to ensure efficient flow of motor vehicle, bicycle, and pedestrian traffic by allowing crossings at both regular and delayed intervals. Signal timing modifications can be implemented on an as-needed basis or as part of roadway reconstruction projects.

Application

Different signal timing measures outlined below should be implemented based on an evalution of pedestrian and bicycle volumes, vehicle turning traffic volumes and crash history.

Bicycle Signals

- Bicyclists may need specialized accomodations at signalized intersections. When separated bike lanes are present, there may be situations that require leading or protected phases for bicycle traffic.
- Bicyclists can be accomodated by designating a standard traffic signal for bicycle use, either with a sign or by using a signal with a bicycle symbol.

Protected Signal Phase

- A protected signal phase restricts right- or left-turning vehicles during a conflicting pedestrian and/or bicycle movement.
- Consider protected phases at intersections with bicycle facilities where there are higher volumes of turning vehicles and through bicyclists.
- Protected signal phases increase safety by separating conflicting movements, especially where there are contra-flow or two-way bicycle movements.

Pedestrian Signal Timing

- Accessible pedestrian indicators with a countdown should be installed at all signalized crosswalks.
- Pedestrian wait times should be minimized to the greatest extent possible. Requiring pedestrians to wait for extended periods can reduce compliance and lead to the perception that signals are “broken.” Signals may be programmed so that walk cycles automatically appear to further reduce delay.
- Signal timing for pedestrians should focus on providing adequate time for pedestrians to cross. The MUTCD specifies a pedestrian walking speed of 3.5 feet per second to allow enough time for people who walk slower than average to cross the street.

Leading Pedestrian Interval (LPI)

- LPIs can be included in signal cycles at intersections with concurrent vehicle and pedestrian phases.
- A LPI allows pedestrians to begin crossing a leg of an intersection 3 – 7 seconds before the concurrent vehicle movement begins.
- The LPI should be used at intersections with high volumes of pedestrians and conflicting turning vehicles and at locations with a large population of elderly or school children who tend to walk more slowly.
- Leading bicycle intervals (LBI’s) may also be used at intersections where high vehicle turning volumes conflict with bicycle crossings.

Curb Extension

Curb extension restricting parking near an intersection

Description

Extending the curb beyond the sidewalk buffer edge shortens crosswalk length and increases visibility for people walking. They can also be used as traffic calming to narrow streets and tighten intersections or as corner daylighting to restrict parking ahead of an intersection. They can be implemented using paint, signs, and temporary materials as part of roadway resurfacing or restriping projects, or fully built as part of reconstruction as curb extensions.

Application

- Intersection corners with on-street parking.
- Entries to local streets from higher-volume roads.
- Use curb extensions as corner daylighting where parking close to an intersection negatively impacts visibility for motorists and pedestrians.

Considerations

- Keep corner radii as small as possible while accommodating the design vehicle at crawl speed. Use mountable curbs to accommodate larger vehicles.
- Construct to remove parking within 20-25 ft. of the intersection or crossing on streets with 20-30 mph speed limits and within 50’ of the intersection on streets with 35-45 mph speed limits.

Tightening Curb Radii

Curb extension at Arsenal Street and Western Ave intersection

Description

The corner curb radius is the radius of the street corner as defined by two curbs on perpendicular streets as they come together at the corner. Tightening curb radii -- creating a sharper corner -- can shorten crossing distances for pedestrians and reduce vehicle speeds. Also known as a “neckdown,” this can be implemented as part of roadway reconstruction projects or using temporary materials.

Application

- A tighter curb radius should be considered where pedestrian safety and comfort would benefit from reduced vehicle speeds and shorter crossing distances. Shorter crossing distances reduce the time pedestrians are exposed to motor vehicle traffic.

Considerations

- The smallest feasible curb radius should be selected based on the design vehicle’s effective turning radius.
- At locations where accomodation of trucks and buses is required, consider allowing encroachment into other lanes to minimize the curb radius.
- A compound curve can be used in place of a simple curve to slow turns while still accomodating larger vehicles.

Raised Crossing

Description

A raised crossing is a portion of sidewalk that creates an even, continuous walking surface for comfortable pedestrian travel. This measure can be implemented along with roadway reconstruction.

Application

- Where increased visibility, priority, or accessibility for people walking and biking is needed at a crossing.
- Shared use path crossings.
- Raised side street crossings should be implemented where high pedestrian volumes intersect with lower volume side streets.

Considerations

- Ensure raised crossing is at least as wide as the connecting sidewalk or path of travel.
- Continue the pedestrian zone material, width, grade and cross-slope across the side street.
- Design the crossing with a 1% cross slope (no more than 2%) to ensure that wheeled mobility devices can safely cross the sidestreet.
- Include warning pavement markings and signage.
- Provide detectable warning strip at edge of sidewalk.

Two-Stage Queue Box

Description

A two-stage queue box provides a place for a bicyclist to wait for a left turn crossing opportunity while outside of a traffic lane, also known as a two-stage left. It can be implemented as part of roadway resurfacing or restriping.

Application

- A two-stage queue box should be implemented where bicyclists would otherwise have to merge across one or more high-volume traffic lanes to turn left.
- Where there are existing high volumes of left-turning bicyclists.

Considerations

- A minimum width of 10 ft. and a minimum depth of 6.5 ft. is recommended.
- Dashed bike lane extension markings may be used to indicate the path of travel across the intersection.
- NO TURN ON RED (R10-11) restrictions should be used to prevent vehicles from entering the queuing area.
- The use of a supplemental sign instructing bicyclists how to use the box is optional.
- The box should consist of a green box outlined with solid white lines supplemented with a bicycle symbol and a turn arrow to emphasize the crossing direction.

Bike Lane Intersection Striping

Description

Bike lane intersection striping is a painted region of the bike lane that passes through the intersection and improves awareness of through bicyclists for turning motorists. The striping consists of whtie dashed lines outlining the path of travel for people riding bikes. It can be implemented as part of roadway resurfacing or restriping.

Application

- Bike lane intersection striping should be used at any intersection or driveway crossing where there is a desire to improve visibility, alert motorists of bicycle travel, and to reduce conflicts with turning vehicles.

Considerations

- The width of conflict area markings should be as wide as the bike lanes on either side of the intersection.
- A variety of pavement marking symbols can enhance intersection treatments to guide bicyclists and warn of potential conflicts.
- Green pavement markings within the area of the white outside lines are recommended for conflict locations, such as street crossings and at wider driveways.

Bike Box

Description

A bike box is a space between the crosswalk and vehicle stop line where bicyclists can wait at signalized intersections. The bike box improves visibility and motorist awareness. It can be implemented as part of roadway resurfacing or restriping.

Application

- Bike boxes should be used to minimize conflicts between through bicyclists and right-turning motorists.
- Bike boxes can reduce conflicts between motorists and bicyclists at the beginning of the green signal phase.

Considerations

- Bike boxes should be painted green with depth of 10 – 16 ft. and the width of the entire travel lane(s).
- Implementation of a bike box should include appropriate signalization adjustments.
- On roads with multiple through lanes in the same direction, the bike box should only extend across the rightmost through lane and a 2-stage left turn queue box should be provided.
- Where right-turn lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane. If right turns on red are permitted, consider ending the bike box at the edge of the bike lane to allow motor vehicles to make this turning movement.

Squared-Off Intersection

Intersection of Nonantum Road and Maple Street before construction

Intersection of Nonantum Road and Maple Street after construction

Credit: Google Earth

Description

An intersection with skewed geometry can be modified so that the approaching street intersects closer to a 90-degree angle. It can alleviate sight line issues, reduce turning speeds, shorten pedestrian crossings, and increase space for public realm improvements. This measure can be implemented as part of roadway or sidewalk reconstruction projects or using temporary materials.

Application

- Skewed intersections where there is a history of crashes

Considerations

- Squaring-off can reduce vehicle turning speeds and shorten crossing distances.
- Squared-off intersection often increase the amount of space that can be used for sidewalk, landscaping, and/or amenities.

Eliminating Slip Lanes

Intersection of Arsenal Street and Western Ave before construction

Intersection of Arsenal Street and Western Ave after construction

Description

Slip lanes reduce pedestrian and bicycle safety and comfort by allowing drivers to make unimpeded high-speed turns, and they can be difficult for people with vision disabilities to navigate. Intersections can be reconfigured to remove slip lanes while having minimal impact on vehicle capacity. This measure requires reconstruction.

Application

- Elimination of slip lanes should be considered at intersections with high bicycle and pedestrian crossing volumes and high motor vehicle speeds.

Considerations

- Where slip lanes can't be eliminated, they should feature raised crossings and compound curves or "pork chop islands," which slow vehicle speeds and optimize turning drivers' view of oncoming vehicles and pedestrians crossing.

Parkway Typologies

While each parkway in the study area has its own unique qualities, parkways can be grouped into typologies—or categories—based on similar overarching characteristics. Grouping parkways into typologies is a way to understand typical existing conditions and illustrate how corridor and spot measures can be applied to the most commonly found roadway configurations throughout the study area.

These parkway typologies build upon the parkway types identified in DCR's *Historic Parkway Preservation Treatment Guidelines*. The features that define the typologies reflect the original role parkways were intended to serve within the Metropolitan Parkway System, such as connecting reservations to one another, defining the edge between open space and developed land, or providing access within a reservation. Additional defining features include roadway width, functional classification, types of plantings, and various other aesthetic and scenic features.

For each typology, this section describes following key elements:

- Physical characteristics, typical land uses, roadway widths, pedestrian and bicycle facilities, and common challenges and opportunities.
- Short-term modifications that can be applied to improve pedestrian and bicycle safety and access as part of DCR's annual paving program utilizing low-cost materials. This includes a discussion of considerations and a conceptual cost estimate.
- Long-term modifications that can be implemented as part of capital reconstruction projects to create low-stress walking and bicycling facilities suitable for all ages and abilities. This includes a discussion of considerations and a conceptual cost estimate.

Commercial Connector

Commercial Connectors were originally laid out to connect population centers to reservations and to link reservations to one another. As a result of suburban expansion during the mid-20th century, they have taken on the role of arterials. These corridors are primarily defined by the presence of auto-oriented commercial development along both edges. Institutional uses and open space may also intermittently be present along the edges. Grassy medians and formalized tree plantings are present, but the health and condition of the trees varies. Edge plantings are generally not present. The aesthetic quality of Commercial Connectors has been impacted over time by heavy motor vehicle traffic and commercial development. Billboards and shopping plaza signage create visual clutter along the edges.

The roadway has four to six travel lanes and parking is generally not permitted. Sidewalks and vertical curbing are present on both sides. The sidewalks are often narrow, of varying condition, and directly adjacent to travel lanes. In addition, pedestrians must contend with frequent commercial driveways that are often long and see frequent turning vehicles. Bicycle accommodations are not present on Commercial Connectors, though bicyclists often use the corridors by riding on the sidewalk.

Examples:
Lynnway (Lynn)
Ocean Ave (Revere)

Short-term Modifications

1 Install crosswalks and curb ramps at intersections and driveways where they are missing. 2 Restripe the outermost travel lanes as separated bike lanes and narrow the remaining travel lanes, if necessary. A traffic analysis and signal retiming are recommended. Intersections should be designed to prioritize safety and comfort for pedestrians and bicyclists. 3 Use one of various types of physical separation methods in the buffer between bicycle and travel lanes to maximize the safety and comfort of people biking and driving. 4 Add marked bicycle crossings at driveways and intersections to increase motorists' awareness of the bike lane.

These modifications can encourage bicyclists to ride on the roadway in the direction of travel rather than on the sidewalks. For parkways with high-frequency bus routes, consider as an alternative converting the outermost travel lanes to bus/bike only lanes.

Long-Term Modifications

1 Reconstruct sidewalks where needed with a continuous surface treatment. 2 Add raised separated bike lanes with a landscaped roadway buffer. 3 The bike lane can bend towards the sidewalk at intersections and driveways to provide additional deflection. It is best practice to provide separation between the bike lane and adjacent sidewalk, which can be in the form of a landscaping strip (as shown in the graphic), different surface materials, and/or constructing the bike lane at an intermediate level between the sidewalk and roadway level. 4 Partner with abutting business to develop access management strategies to decrease the frequency of driveway entrances while preserving vehicle access.

Due to the complexity of Commercial Connectors, variability in facility type and width based on existing constraints may be necessary. For example, the buffer between the sidewalk and bike lane can be narrowed or eliminated in constrained segments. It may be possible to maintain the existing number of travel lanes by constructing the separated bike lane within the existing sidewalk buffer, though travel lane reductions should always be explored as a first step.

Residential Connector

Residential Connectors feature residential development on both sides of the parkway and were intended to link population centers to reservations. Development consists of single- or multi-family dwellings and occasional neighborhood-oriented commercial uses.

Grassy medians and formalized tree plantings in the median and along the parkway edge are a defining feature. The roadway has three to six travel lanes and parking may or may not be permitted. Parking lanes may or may not be formalized by a solid white line. Sidewalks are typically present on both sides and are separated from the roadway by a grassy strip and vertical curbing. Residential driveways are spaced at frequent intervals. Residential Connectors may feature standard bike lanes or extra wide parking lanes that function as informal bicycle facilities. However, these lanes usually terminate in advance of signalized intersections to accommodate turning lanes. Many Residential Connectors feature travel lanes in excess of 12 ft.

Examples:
Fellsway/Fellsway West (Medford & Malden)
VFW Parkway (Boston)
Blue Hills Parkway (Milton)

Short-Term Modifications

Restripe the roadway with (1) separated bike lanes, (2) floating parking lanes, and (3) narrowed travel lanes. (4) Various types of physical separation methods can be used to delineate parking spaces and maximize the safety and comfort of people biking, driving, and parking. Vertical separation is especially important on parkways where parking utilization is low.

These modifications provide a significantly more comfortable operating space for bicyclists, encourage bicyclists not to ride on the sidewalk, and increase safety for all users by slowing traffic through the use of narrower travel lanes. Vehicle capacity is not impacted, and parking may only minimally be impacted.

Crosswalks and curb ramps can be added as part of short-term modifications at locations where there is a known pedestrian crossing demand, at side street intersections, and/or where there is a crash history. Consider enhanced crossing features, especially where the crosswalk would span more than one lane of traffic in either direction.

Long-Term Modifications

1 Reconstruct the roadway with curb-separated bike lanes and 2 repair any deficient sidewalks. The bike lanes can be at sidewalk level or an intermediate level between the sidewalk and roadway. 3 The buffer between the bike lane and roadway can feature green stormwater infrastructure or other low plantings.

Oceanside Boulevard

Oceanside Boulevards trace the shorelines of some of the region's most popular and iconic beaches. The waterfront edge typically features a wide concrete promenade that may directly border the roadway or follow a meandering path generally parallel to the shoreline. Views of the water or marshland are a defining feature of Oceanside Boulevards. Amenities such as sheltered seating areas, bathhouses, and hardscape plazas are common features. Development on the land side of the parkway typically consists of multi-story residential buildings as well as low-density beach-oriented commercial uses. Formalized plantings are typical along the land side, and sometimes present on the waterfront side.

The roadway consists of two to four lanes and parking is usually permitted on one or both sides. Parking may be parallel or angle. Sidewalks are typically present on both sides, with the waterfront promenade drawing the majority of activity. Crosswalks tend to be frequently spaced. The land side may have residential driveways spaced at frequent intervals. Oceanside Boulevards do not typically feature on-road bicycle facilities, but the promenades are often designated for shared pedestrian and bicycle use. The promenades can become congested at peak times, decreasing the quality of experience for users.

Examples:
Revere Beach Boulevard (Revere)
William Day Boulevard (Boston)
Quincy Shore Drive (Quincy)
Nantasket Ave (Hull)

Short-Term Modifications

1 Restripe the roadway with bike lanes and, if possible, narrower travel lanes to discourage speeding. A traffic study and signal retiming are recommended if the number of vehicle lanes is being reduced. 2 Enhance crosswalk safety by adding median refuge islands through striping.

The addition of bike lanes will encourage bicyclists who wish to ride faster to use the roadway. However, the promenade should remain a shared use facility to provide a low-stress option for less traffic-tolerant bicyclists such as children, older adults, and inexperienced riders. 3 As such, shared use path signage should be added or upgraded.

Long-Term Modifications

Reconstruct the corridor with a wider promenade featuring a (1) two-way separated bike lane parallel to a (2) sidewalk. (3) Pedestrian and bicycle zones are separated by elements such as a furnishing zone featuring seating, trees, and/or stormwater features. This separation can be narrowed in constrained segments, but pedestrian and bicycle spaces should remain visually and functionally distinct through the use of different materials and/or vertical separation. (4) A landscaped buffer between the roadway and bike lane should be at least 2.5 ft., though designers should strive for the separation of at least 5 ft. where feasible through the use of narrower travel lanes and shoulders. (5) High visibility crossings can be used to enhance safety.

Riverside Edge

Riverside Edge parkways follow the course of an inland river parallel to the river bank. Along the river side of the roadway, a combination of formalized parkland and informal riparian growth can be found, sometimes along the course of the same parkway. The inland side typically features single or two-family residential development, though informal forest growth can also be found. The roadway typically contains two to four travel lanes, usually 10 – 12 ft. wide, and narrow shoulders.

Pedestrian pathways are typically found along the water side, ranging from paved asphalt paths to informal “goat paths” worn in by regular use. Sidewalks may or may not be present on the inland side, usually corresponding with the level of development. Crosswalks are typically quite far apart and may be lacking at key access points. Bicycle facilities may include standard bike lanes or shoulders usable by bicyclists. River side paths may be designated as shared use paths, but the facility width and surface quality can be an issue for bicyclists. Where parallel parking is allowed, utilization is typically low. Parking lots are sometimes provided for people using the reservation.

Examples:
Mystic Valley Parkway (Winchester, Arlington, & Medford)
Charles River Road (Watertown)
Greenough Boulevard (Watertown)

Short-Term Modifications

1 Restripe the roadway with buffered bike lanes and narrower travel lanes. Standard bike lanes are acceptable in locations where the existing width does not accommodate buffered bike lanes.

Because of its scenic nature, there can be a high demand for pedestrian access to the river side of the parkway. New crosswalks and curb ramps can be added during short-term modifications. Crosswalks should be sited where there is a known pedestrian desire line, a crash history, and/or where a side street intersects with the parkway.

Long-Term Modifications

1 Construct a paved shared use path along the riverfront side of the parkway to provide a high-comfort walking and bicycling facility. The width of the pathway should be selected to comfortably accommodate all users and based upon existing or anticipate volumes. 2 The roadway buffer can feature stormwater features or a barrier such as a guardrail. 3 Where space permits, provide a stone dust path closer to the river's edge for walking and jogging. 4 Existing crossings should be enhanced and new crossings added at locations with observed or anticipated crossing demand.

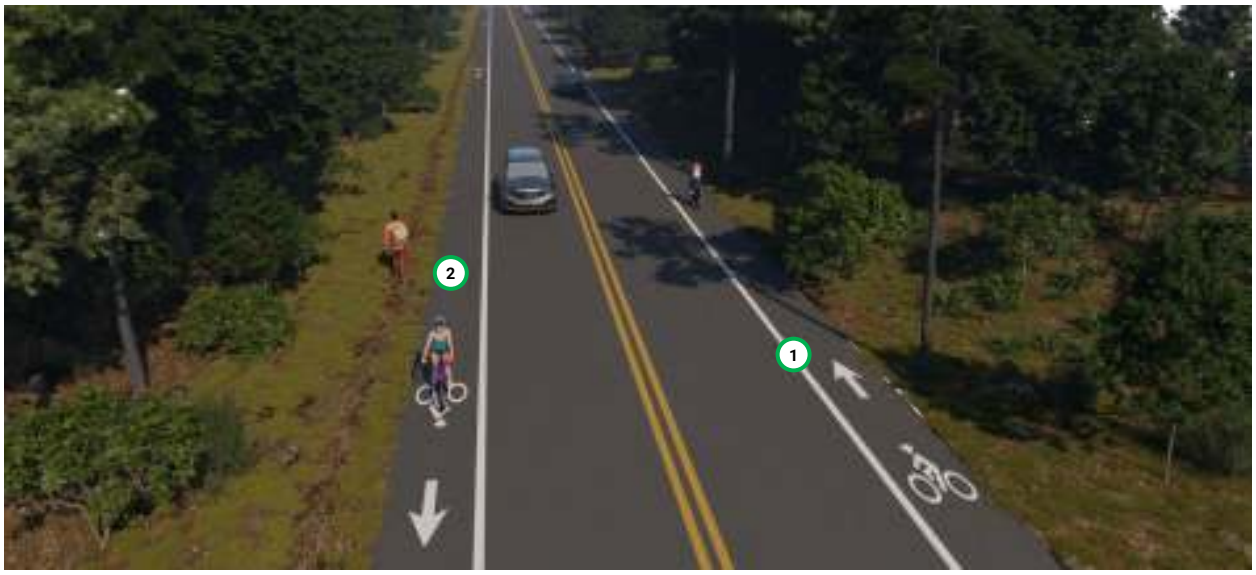
Reservation Interior

Reservation Interior parkways travel through protected open space typically within DCR's larger reservations. The open space is wooded and features informal growth. A curvilinear roadway alignment and gentle inclines are a defining feature. A clear zone free of vertical vegetation is usually maintained along the edges. The roadway contains two travel lanes, usually 11 – 12 ft. wide, and narrow shoulders. Originally intended to carry recreational traffic into the interior of reservations, these parkways have become burdened with through traffic as many provide a cut through for drivers avoiding nearby expressways.

Sidewalks are rarely provided, though informal "goat paths" may be worn in along the edges. Shared-use paths and hiking trails frequently intersect the roadway, though warning signage and crosswalks are typically not provided. Bike lanes are not typical, though some Reservation Interior parkways do feature them. Parking is typically not permitted along the roadway edge, though parking does occur near popular trailheads and destinations, such as Houghton's Pond in the Blue Hills Reservation. Small parking areas are sometimes provided near trailheads and scenic overlooks. Speeding is a common issue, as many Reservation Interior parkways carry through traffic and feature wide travel lanes.

Examples:
South Border Road (Medford)
Fellsway East (Malden)
Unquity Road (Milton)
Chickatawbut Road (Milton & Quincy)

Short-Term Modifications

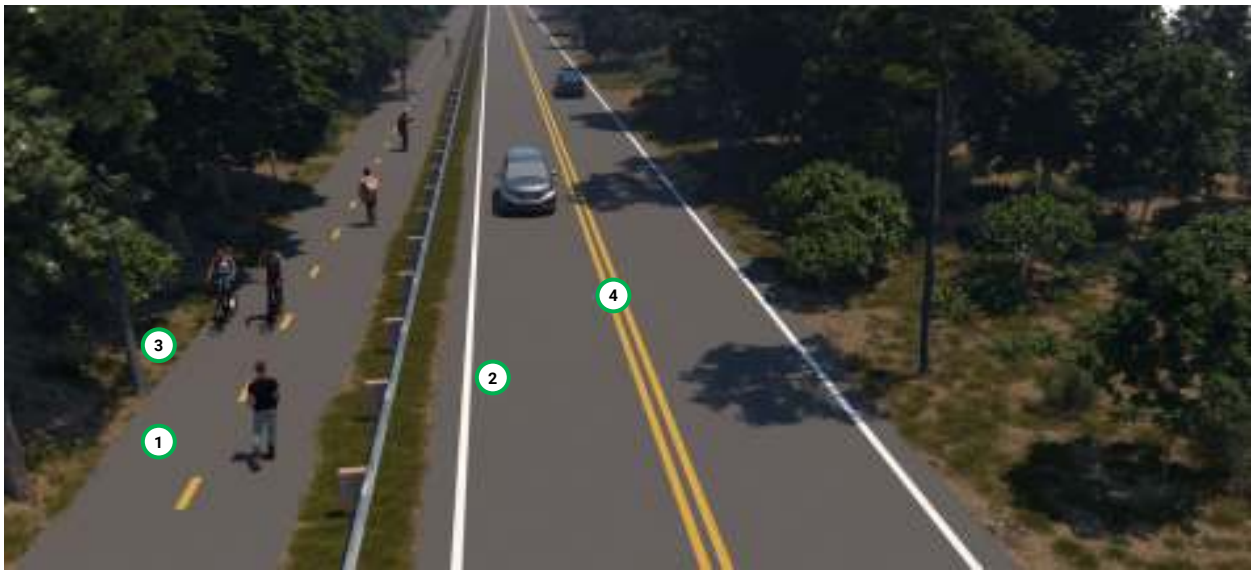


1 Restripe the roadway with bike lanes and narrower travel lanes. The roadway must be at least 28 ft. wide to accommodate minimum widths.

2 If the existing roadway is less than 28 ft. wide, it may be possible to incrementally widen the surface during routine repaving projects in order to achieve the adequate width for bike lanes. Even if the roadway is wide enough for minimum width facilities, widening should still be considered during routine repaving in order to provided 6.5 ft. bike lanes.

Advisory bike lanes may be another option for parkways where there is not enough room for standard bike lanes and travel lanes, provided that the speed, volume and roadway curvature meet certain criteria.

Long-Term Modifications



1 Construct a paved shared use path along one side of the parkway to provide a high-comfort walking and bicycling facility. The recommended minimum width of the path is 10 ft., which may be narrowed to 8 ft. for limited distances through constrained segments. 2 The roadway may be narrowed to accommodate the path. 3 Strategic removal of informal vegetation along the parkway edge may also be necessary, which can be accompanied by new plantings. In locations with topographic or other constraints, the path may meander away from the road edge as necessary.

4 Provide accessible crosswalks and curb ramps at where trails intersect with the parkway.

Where widening the travelway is infeasible due to topographic constraints, a shared roadway design can be implemented to encourage low vehicles speeds and discourage cut-through traffic. Centerline removal is an emerging strategy to calm traffic by increasing driver's awareness of their surroundings. Shared lane markings reinforce the shared nature of the roadway.

Figure 3-1: Example of a shared use path with a narrow fence buffer along the edge of a road through a natural area.

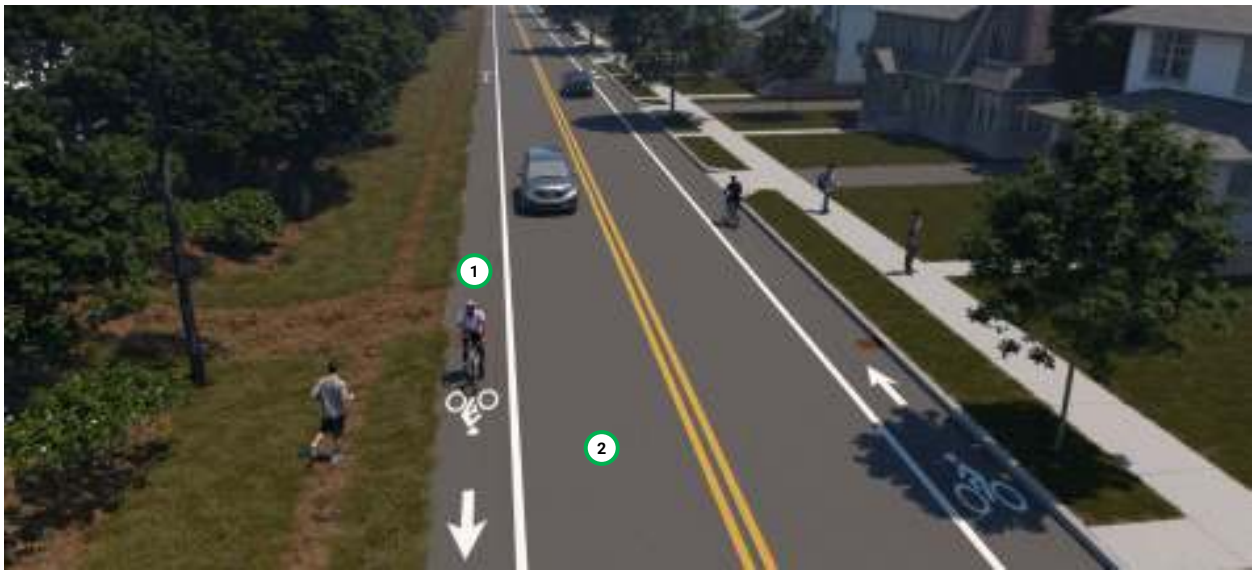
Reservation Edge

Reservation Edge parkways have protected open space on one side and developed land on the other. The open space is typically wooded and features informal growth, while the developed side usually consists of single family residential development. Plantings may be more formalized along the developed side. The roadway contains two travel lanes, usually 12 ft. wide, and narrow shoulders.

A sidewalk may be present along the developed side, as well as curbing and catch basins. Residential driveways are spaced at frequent intervals. Goat paths may be present along the open space side, especially if there are trailheads leading into a reservation. Bike lanes are not typical, though some Reservation Edge parkways do feature them.

Examples:
Quinobequin Rd (Newton)
South Border Road (Winchester)
Lynn Fells Parkway (Stoneham)

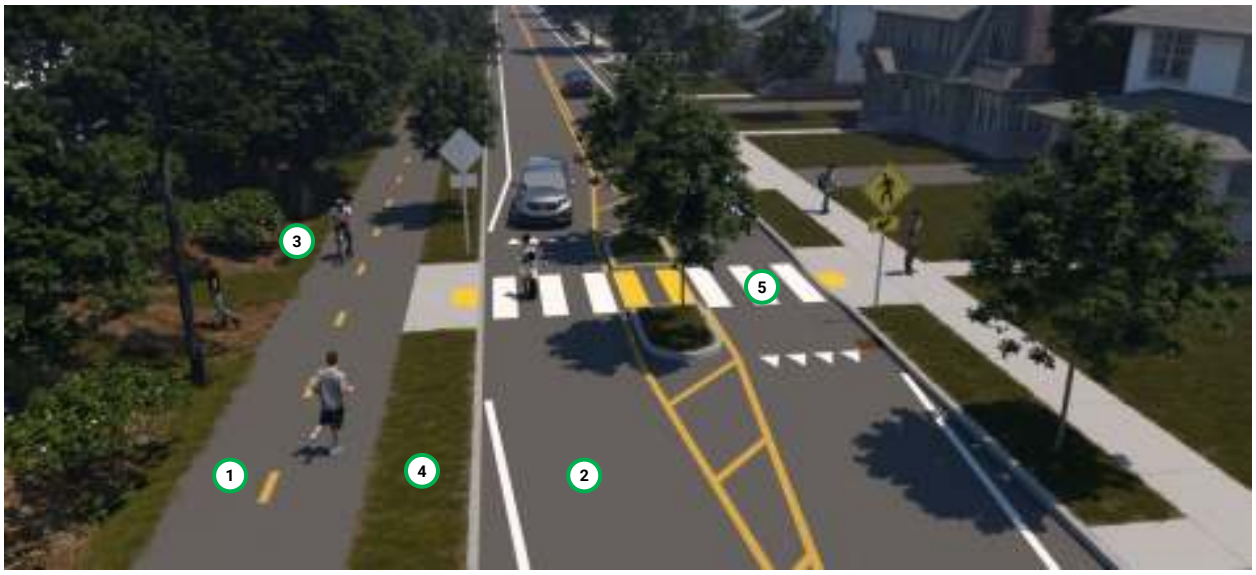
Short-Term Modifications



1 Restripe the roadway with bike lanes and 2 narrower travel lanes. The roadway must be at least 28 ft. wide to accommodate minimum widths.

If the existing roadway is less than 30 ft. wide, it may be possible to incrementally widen the surface along the open space edge during routine repaving projects in order to achieve the adequate width for bike lanes. Even if the roadway is wide enough for minimum width facilities, widening should still be considered during routine repaving in order to provided 6 – 6.5 ft. bike lanes.

Long-Term Modifications



1 Construct a paved shared use path along the open space edge of the parkway to provide a high-comfort walking and bicycling facility. The recommended minimum width of the path is 10 ft., which may be narrowed to 8 ft. for limited distances through constrained segments. In locations with topographic or other constraints, the path may meander away from the road edge as necessary. 2 The roadway may be narrowed to accommodate the path. 3 Strategic removal of informal vegetation along the parkway edge may also be necessary, which can be accompanied by new plantings. 4 The roadway buffer should be at least 5 ft. and would typically not a guardrail to reinforce the intended low speed nature of the roadway. 5 Mid-block crossings should be added at locations with observed or anticipated crossing demand, such as at trailheads.

Figure 3-2: Example of a shared use path with a tree-lined buffer along the edge of a residential road. Pictured: Takoma Ave, Takoma Park, MD.

CHAPTER 4. PROGRAM AND POLICY RECOMMENDATIONS

Introduction

This chapter reviews DCR's current policies, maintenance programs, and project development practices and provides recommendations to further improve multimodal access. Recommendations are focused on two areas:

- Policies and operational procedures to make incremental improvements to pedestrian and bicycle accommodations through routine maintenance activities.
- A recommended network of bicycle facilities that can be implemented through DCR's roadway repaving program.

Why is this important?

The DCR annual paving program provides an opportunity to incorporate Complete Streets improvements to the parkways in a systematic and cost-effective manner.

As part of this assessment, DCR's paving program was reviewed to identify immediate and low-cost updates to maintenance practices. This included meetings with internal DCR staff to gain an understanding of available data and known issues. In addition, the following resources were reviewed to understand current practices related to routine maintenance, project scoping and development, and public process:

- DCR's *Parkways Preservation Treatment Guidelines*[1]
- DCR's Public Outreach webpage[2]

Recommendations to DCR's paving program were formulated based on the assessment of current practices and identified needs.

Current Practices and Policies

Under DCR's current maintenance practices, resurfacing is provided on parkway pavement surfaces as needed with priority given to maintaining safe travel conditions. Resurfacing activities include refilling of potholes and sealing of cracks.[3] For pavement markings, DCR's policy is to inspect and replace faded markings, including crosswalks, during the spring and fall as time and budget allow. Additionally, the agency has a stated policy of reducing pavement markings to a minimum.[4] DCR maintains an annual maintenance schedule for its historic parkways.[4]

For sidewalks and pathways, routine maintenance activities such as snow and debris removal are conducted along major commuter routes. DCR's *Parkways Preservation Treatment Guidelines* identifies the need to develop a systematic replacement schedule for sidewalks and pathways.[1]

Public Process

When undertaking projects, DCR communicates with the public in several different methods depending upon the scale of the project. Routine maintenance that involves in-kind replacement of existing facilities and/or minimal landscape work generally do not entail extensive public involvement. Information and alerts regarding maintenance activities, resurfacing plans, and related road and trail closures are posted on its News & Advisories webpage.[5] At present, DCR does not hold public meetings or request public comment for routine resurfacing projects.

Larger projects and capital projects are subject to a more extensive public outreach process that may include multiple public meetings, online outreach, and occasionally the establishment of an advisory committee

comprised of stakeholders. DCR project teams work with the agency's Office of External Affairs to identify project stakeholders and create public participation plan. DCR posts notices about upcoming public meetings and materials from recent meetings on its Public Meeting Information & Materials webpage.[6] Finally, DCR communicates with the public through press releases and coverage in local news in regards to completed projects, funding awards, and celebrations.

Americans with Disabilities Act (ADA) Compliance

DCR's goal is to ensure seamless travel along and across its parkways for pedestrians of all abilities. As such, DCR has already made it standard practice to upgrade existing pedestrian crossings per current accessibility standards through its routine repaving program. DCR is allocating the necessary resources to complete this work as part of its roadway resurfacing program when possible. The following describes DCR's policy regarding the curb ramp upgrades.

As specified under Title II of the Americans with Disabilities Act (ADA), DCR provides curb ramps during roadway reconstruction, rehabilitation, resurfacing, widening, or other similarly scaled *alteration* whenever:

- A sidewalk or other pedestrian walkway with a prepared surface crosses a curb, elevation or other barrier, or
- Existing ramps do not meet the design standards in place at the time they were newly constructed or last altered.

Curb-to-curb resurfacing triggers this requirement if work performed spans from one intersection to another and involves new roadway surface materials, with or without milling. Crosswalk alteration, however, triggers this requirement regardless of whether curb-to-curb resurfacing is performed.

Adding Bicycle Facilities Through Repaving

DCR has recently implemented a policy to incorporate bicycle facility planning into its annual repaving program. As part of the process, parkways on the annual paving list are reviewed for the feasibility of adding bicycle facilities. If facilities are determined to be feasible, plans are developed and the facilities are implemented as part of the work.

As part of this Plan, all parkways in the study area were reviewed for the feasibility of adding bicycle facilities in the short term. Based on this analysis, recommendations were developed for proposed facility type and cross section for parkways where bike lanes are feasible. With this project list in hand, DCR's planning process for repaving projects can be streamlined. Additionally, parkways can be prioritized for repaving based on the feasibility of adding bicycle facilities.

Design Flexibility

DCR maximizes opportunities for creating space for multimodal accommodations by applying design flexibility. Design flexibility refers to the practice of applying the full range of options available in engineering guidelines in order to maximize space for all users. For example, there are many instances where narrower travel lanes may be used in order to create space within the cross section for bicycle lanes or for the construction of a shared use path. Design flexibility applies to both short-term projects under DCR's maintenance program and to capital reconstruction projects.

The Federal Highway Administration (FHWA) supports design flexibility to achieve multimodal road networks, including the use of minimum lane widths. However, it is important to consider the context of the road, including traffic speeds and volumes, when deciding where to apply minimum travel lane widths.[3] DCR considers following design manuals and guidance when applying design flexibility:

- FHWA *Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts*[7]
- MassDOT *Separated Bike Lane Planning & Design Guide*[8]
- FHWA *Incorporating On-Road Bicycle Networks into Resurfacing Projects*[9]
- NACTO *Urban Bikeway Design Guide*[10]
- NACTO *Urban Street Design Guide*[11]
- AASHTO *Guide for the Development of Bicycle Facilities, 4th Edition*[12]

Pedestrian Recommendations

This section describes the recommended changes to DCR practices and policies that may be implemented to further enhance pedestrian access and safety on its historic parkways in the metropolitan Boston region. These recommendations are geared towards short-term changes under DCR's maintenance and in-kind replacement activities.

Integrate sidewalk and pathway maintenance and replacement within the existing roadway resurfacing program.

When a parkway is being repaved, DCR should assess the condition and accessibility of sidewalk and pathway segments, curb ramps, and crosswalks adjacent to the parkway and determine if maintenance or replacement is necessary. Conditions should be assessed using the data collected for this project and through field visits, as needed. If maintenance or replacement is not feasible at the time of roadway resurfacing, the work should be scheduled to occur at the soonest possible date.

Expand and publicize a policy on winter maintenance and a prioritized list of sidewalks and shared use paths.

DCR already conducts winter maintenance on certain sidewalks and shared use paths throughout its network. This work can be complimented by the development of a ranked list based on specific criteria which could include usage, importance in the regional network, school routes, and other factors. DCR can also develop clear policy to define qualifying snowfall events, expected timeline of maintenance activities during and after an event, and level of service standards. The list and policy should be publicized to help the traveling public understand what conditions they can expect to encounter.

Bicycle Restriping Recommendations

Adding bicycle facilities through ongoing routine repaving and restriping activities is a cost-effective way to expand the on-road bicycle facility network by incorporating it into existing planning, budgeting and maintenance processes. This approach also allows DCR to incrementally install new miles in the bicycle network on an annual basis.

How are parkways evaluated for repaving?

During the winter, agency staff conduct a system-wide inspection to identify needed maintenance and replacement activities. This data is collected into a long-range work plan which includes work ranging in scope from routine and emergency repairs to major capital improvements.

Policy and Programmatic Recommendations

The following recommendations can strengthen DCR's ability to implement bicycle facilities as part of its routine repaving and restriping activities.

Allocate resources to develop striping and signing plans for bicycle facilities.

Adding new bike facilities where they didn't previously exist requires new plans for striping, pavement markings and signage. Having these plans on-hand earlier in the resurfacing process helps to avoid last-minute changes and errors that can occur when contractors install markings on-site without a plan. Plans can be developed in-house or using a contracted designer. Additionally, high-quality plans can be reused for future resurfacing cycles.

Add bicycle-related pavement markings to resurfacing construction bid documents.

When soliciting bids for a new on-call resurfacing contractor, ensure that bicycle-related pavement markings (e.g., bike lane symbols, arrows, shared lane markings) are included in the bid package so that all of the work can be completed by the same contractor in a timely manner.

Extend pavement marking limits beyond resurfacing limits where necessary to connect with existing bikeways.

In cases where the resurfacing limits are close to an existing bikeway (e.g., on-street facilities and shared use paths), extending the limit of new pavement markings to meet the existing facility can help connect the bikeway network more quickly and efficiently than as a separate project.

Adjust street sweeping operations to ensure that debris is cleared from portions of the traveled way were bicyclists are expected.

Debris in the roadway—especially sticks, rocks, and wet leaves—can pose a major safety hazard for bicyclists. This type of debris can accumulate on the edges of the road where bicyclists typically travel. DCR should ensure that the full width of the roadway is cleared during all street sweeping operations regardless of the presence of a designated bicycle facility. Further, maintenance crews should prioritize street sweeping operations for parkways with marked bike lanes.

Revise the existing policy of reducing pavement markings to a minimum to exempt parkways with bicycle facilities.

Bicycle facilities require the addition of pavement markings to demarcate roadway space for general travel lanes and bicycle lanes. These lane markings confer numerous advantages such as reducing confusion about where road users should position themselves and reduced traffic speeds through the use of narrower travel lanes. Concerns about the longevity of pavement markings can be addressed by recessing markings during installation

Short-Term Bicycle Network Recommendations

All parkways in the study area were reviewed for the feasibility of adding bicycle facilities in the short-term using low-cost materials such as striping, pavement

markings, signage, and some types of vertical separation. Recommendations were developed for facility types and cross sections. See Figure 4-1 to Figure 4-6 on the following pages for detailed maps of these recommendations. **Chapter 5: Project Recommendations** provides detailed narrative descriptions of the recommendations by parkway.

The type of facilities that can feasibly be added through routine repaving include:

- Separated bike lanes
- Buffered bike lanes
- Bike lanes
- Bicycle boulevards
- Contraflow bike lanes
- Advisory bike lanes

In addition to these facilities, shared lane markings can be used for bicycle wayfinding on bicycle boulevards and as an interim measure to increase motorists' awareness of bicyclists in a shared roadway environment. To date, this approach has resulted in new bicycle facilities being installed on Lynn Fells Parkway (Melrose & Saugus), Blue Hill River Road (Milton), Unquity Road (Milton), Norumbega Road (Weston), Fellsway East (Melrose), Old Colony Ave (Boston), and Day Blvd (Boston).

What about capital projects like shared use paths and corridor reconstruction?

While adding bicycle facilities through routine repaving is an important step, some parkways need more work to become safe and comfortable places to walk and bike. These types of projects require capital budgeting and are planned over the course of several years. Recommendations for capital projects are described in **Chapter 5: Project Recommendations**.

The table below outlines the methods and processes for creating bicycle facilities during routine repaving projects:

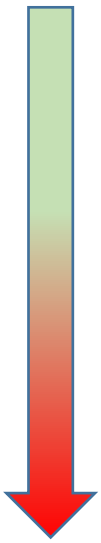
Complexity	Method	Description	Process Recommendation	Application
Lower  Higher	Convert existing shoulder to bike lanes	5' or greater is the preferred width for bike lanes. 4' is acceptable in constrained locations.	No additional public process recommended	Resurfacing. Consider additional separation for capital projects.
	Lane diet	Reduce lane widths to create space for bicycle facility. Lane diets have no impact on capacity and can reduce crash severity.	No additional public process recommended	Resurfacing. Consider additional separation for capital projects.
	Add new shoulder bike lane	Repave roadway with additional shoulder space to be used as a bike lane.	May require impact analysis; additional pubic process may be required	Resurfacing. Consider additional separation for capital projects.
	Parking Restrictions	Convert parking lane(s) to bicycle facility.	Public process may be required; parking study may be recommended	Resurfacing and capital projects
	Road diet	Remove travel lane(s) and convert to bicycle facility. Road diets have safety benefits for all users.[13]	Public process may be required; traffic analysis not recommended for bidirectional parkways with 4+ travel lanes if ADT is below 10,000.	Resurfacing and capital projects

Table 4-1: Methods and processes for creating bicycle facilities during routine repaving projects

Figure 4-1

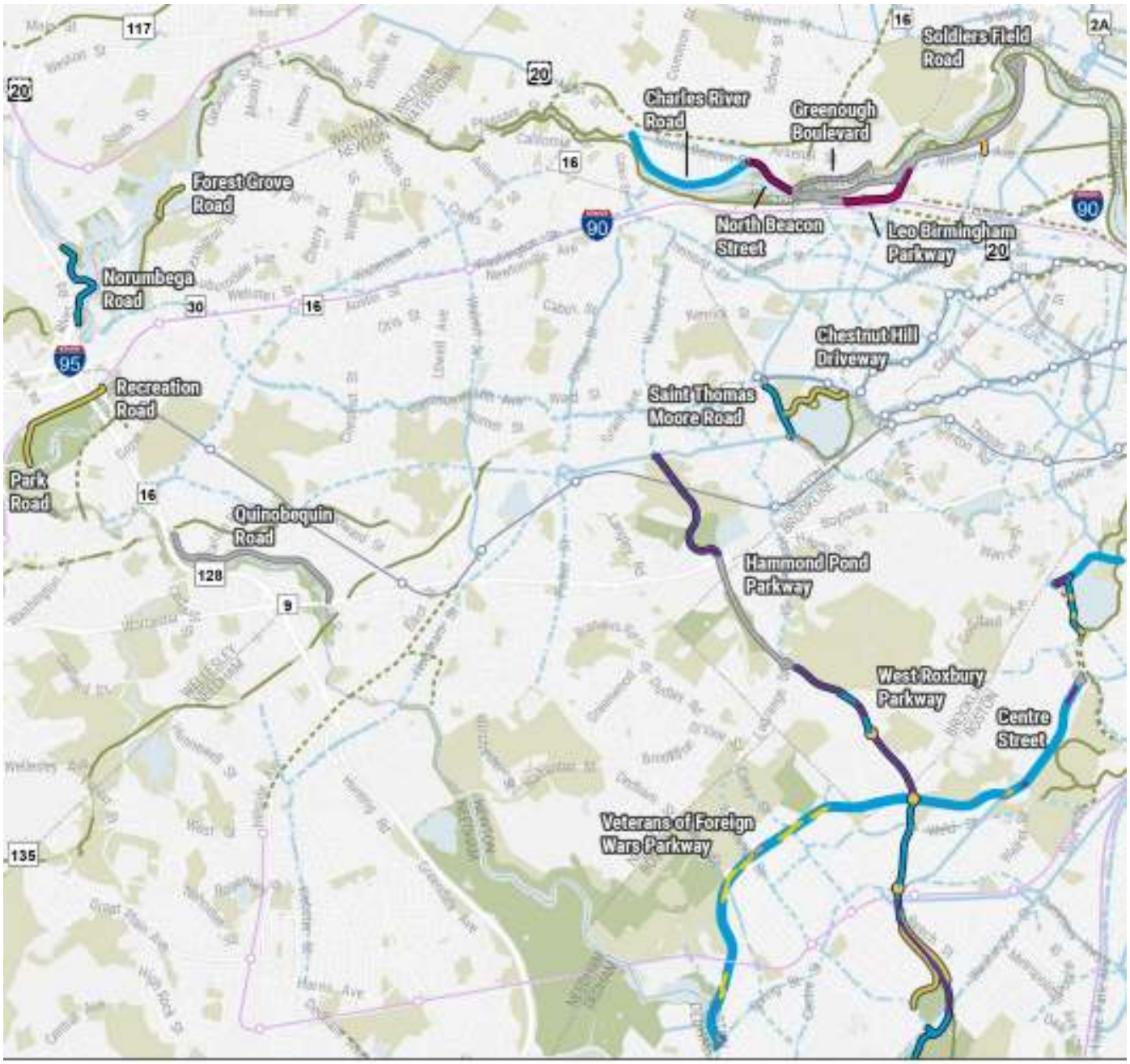

Soldiers Field Road
Charles River Road
Greenough Boulevard
Forest Grove Road
North Beacon Street
Leo Birmingham Parkway
Norumbega Road
Chestnut Hill Driveway
Recreation Road
Saint Thomas Moore Road
Park Road
Quinobequin Road
Hammond Pond Parkway
West Roxbury Parkway
Centre Street
Veterans of Foreign Wars Parkway
Legend
Proposed Facilities
Separated Bike Lane
Buffered Bike Lane
Bike Lane
Contraflow Bike Lane
Hybrid Bike Lane/Shared Lane Markings
Shared Lane Markings
Bicycle Boulevard
No Striping Recommendation
Existing Facilities (DCR)
Buffered Bike Lane
Bike Lane
Shared Lane Markings
Non-DCR
Planned/Proposed Greenway
Existing/Under Construction Greenway
Planned/Proposed On-Street Bike Facility
Existing On-Street Bike Facility
DCR Open Space
Non-DCR Open Space
Beaches
Hydrology
MBTA Rapid Transit
MBTA Commuter Rail
N
0 0.225 0.45 0.9
Miles

Figure 4-2

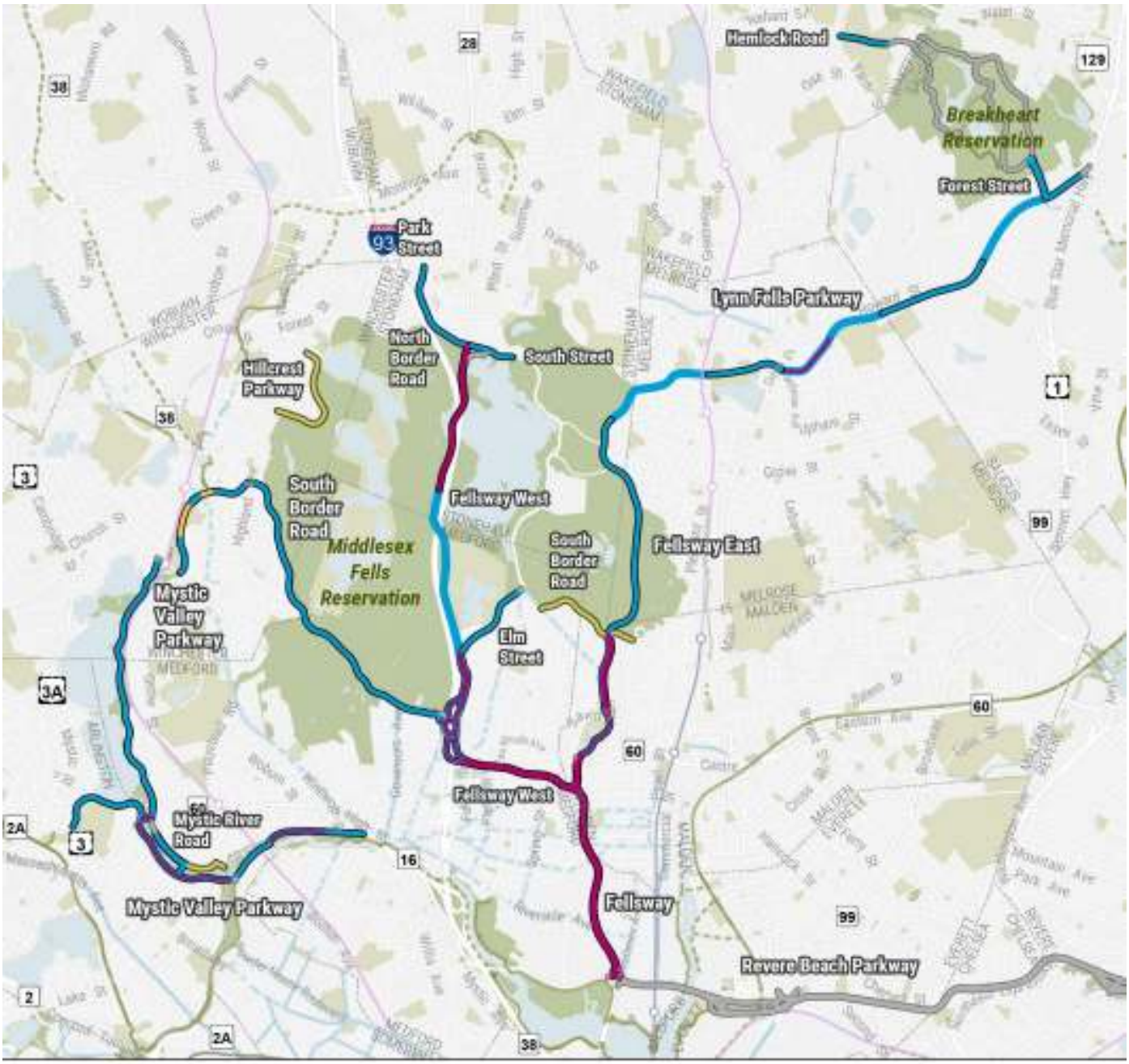
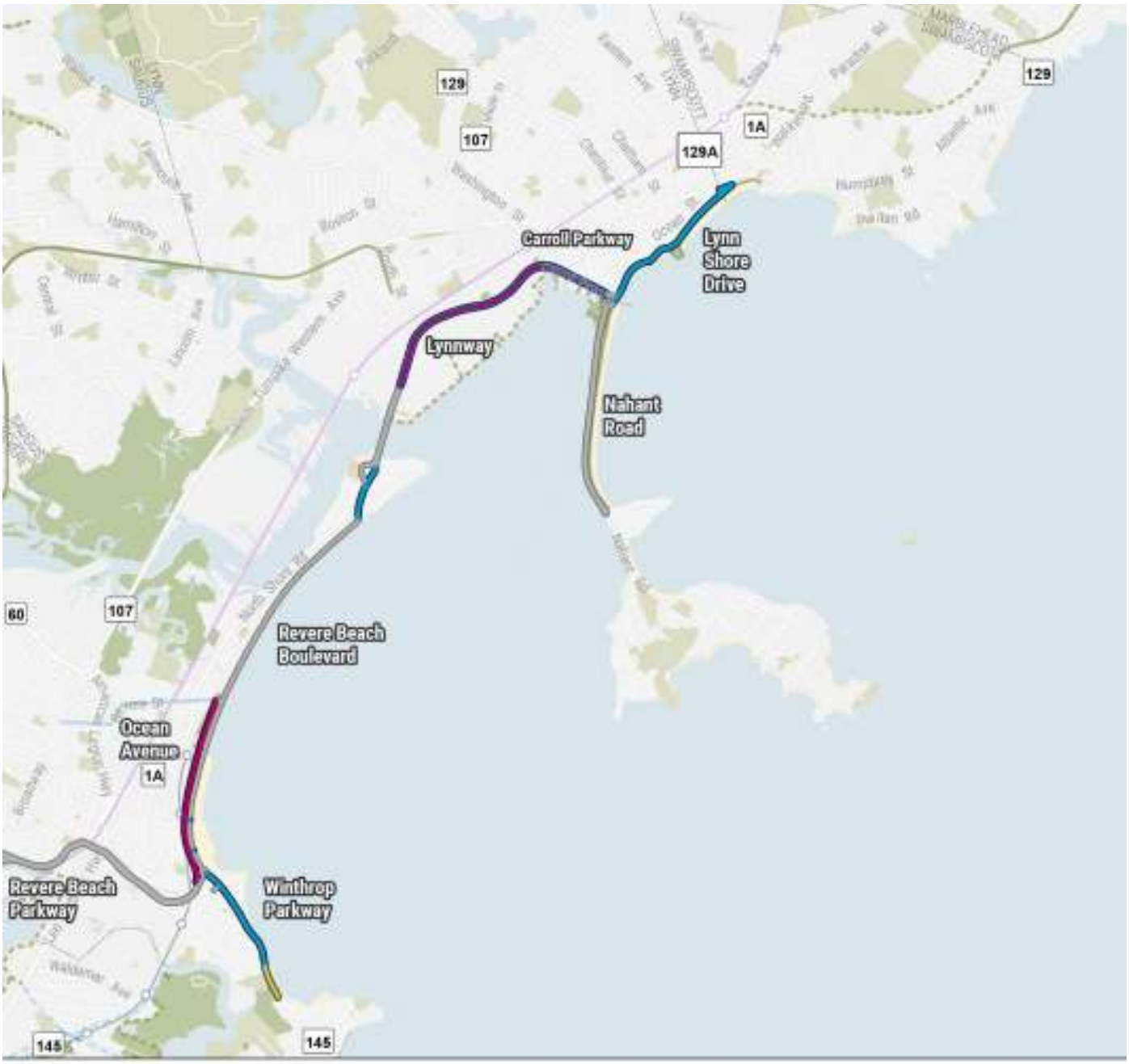

Hemlock Road
Breakheart Reservation
Forest Street
Park Street
Lynn Fells Parkway
North Border Road
South Street
Hillcrest Parkway
South Border Road
Middlesex Fells Reservation
Fellsway West
South Border Road
Fellsway East
Mystic Valley Parkway
Elm Street
Fellsway West
Mystic River Road
Mystic Valley Parkway
Fellsway
Revere Beach Parkway
28
38
129
93
1
3
99
3A
60
2A
16
2
Legend
Proposed Facilities
Separated Bike Lane
Buffered Bike Lane
Bike Lane
Contraflow Bike Lane
Hybrid Bike Lane/Shared Lane Markings
Shared Lane Markings
Bicycle Boulevard
No Striping Recommendation
Existing Facilities (DCR)
Buffered Bike Lane
Bike Lane
Shared Lane Markings
Non-DCR
Planned/Proposed Greenway
Existing/Under Construction Greenway
Planned/Proposed On-Street Bike Facility
Existing On-Street Bike Facility
DCR Open Space
Non-DCR Open Space
Beaches
Hydrology
MBTA Rapid Transit
MBTA Commuter Rail
N
0 0.2 0.4 0.8
Miles

Figure 4-3



Legend

Proposed Facilities
- Separated Bike Lane
- Buffered Bike Lane
- Bike Lane
- Contraflow Bike Lane
- Hybrid Bike Lane/Shared Lane Markings
- Shared Lane Markings
- Bicycle Boulevard
- No Striping Recommendation

Existing Facilities (DCR)
- Buffered Bike Lane
- Bike Lane
- Shared Lane Markings

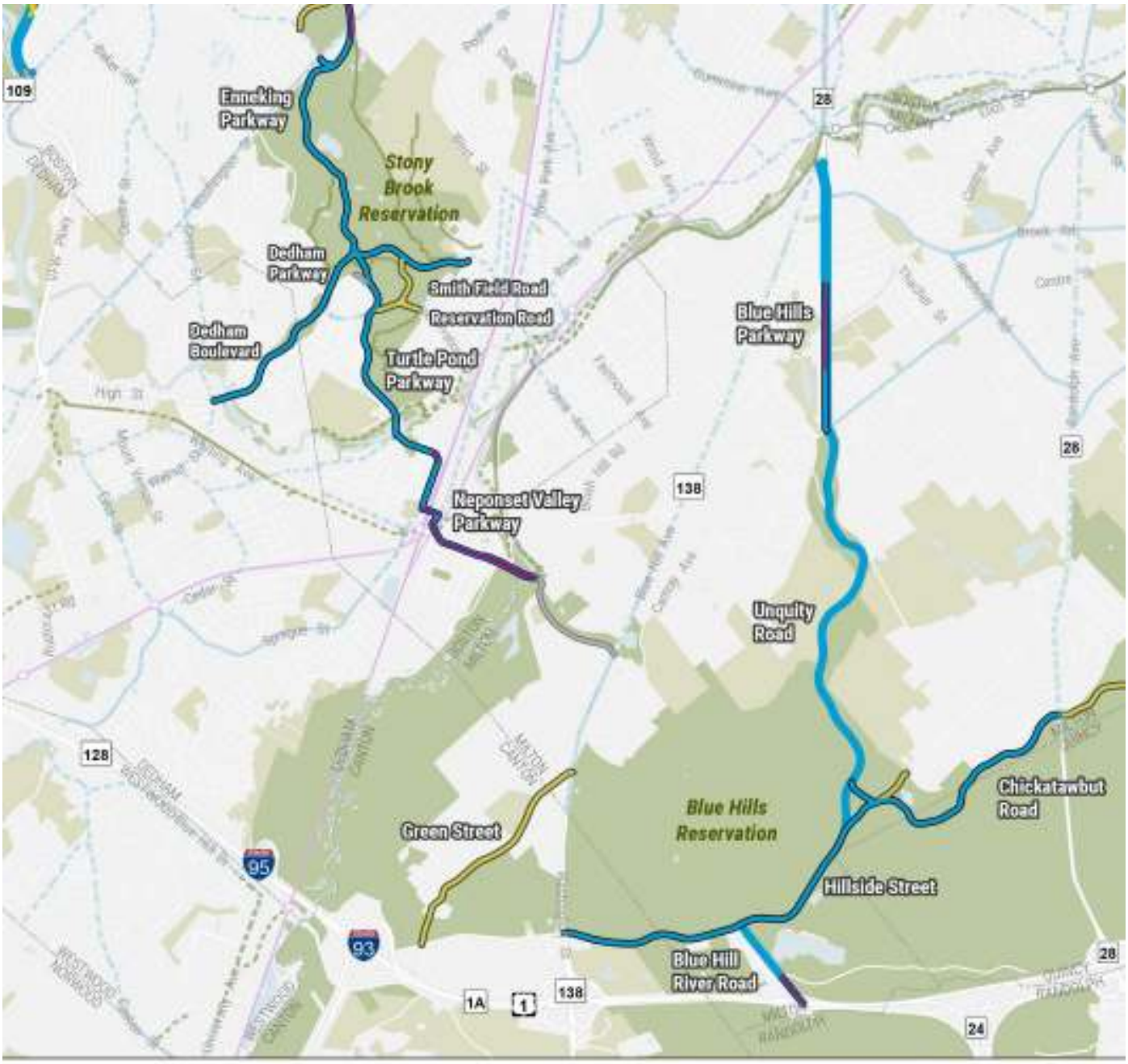
Non-DCR
- Planned/Proposed Greenway
- Existing/Under Construction Greenway
- Planned/Proposed On-Street Bike Facility
- Existing On-Street Bike Facility

- DCR Open Space
- Non-DCR Open Space
- Beaches
- Hydrology
- MBTA Rapid Transit
- MBTA Commuter Rail

N

0 0.2 0.4 0.8 Miles

Figure 4-4



Legend

Proposed Facilities

- Separated Bike Lane
- Buffered Bike Lane
- Bike Lane
- Contraflow Bike Lane
- Hybrid Bike Lane/Shared Lane Markings
- Shared Lane Markings
- Bicycle Boulevard
- No Striping Recommendation

Existing Facilities (DCR)

- Buffered Bike Lane
- Bike Lane
- Shared Lane Markings

Non-DCR

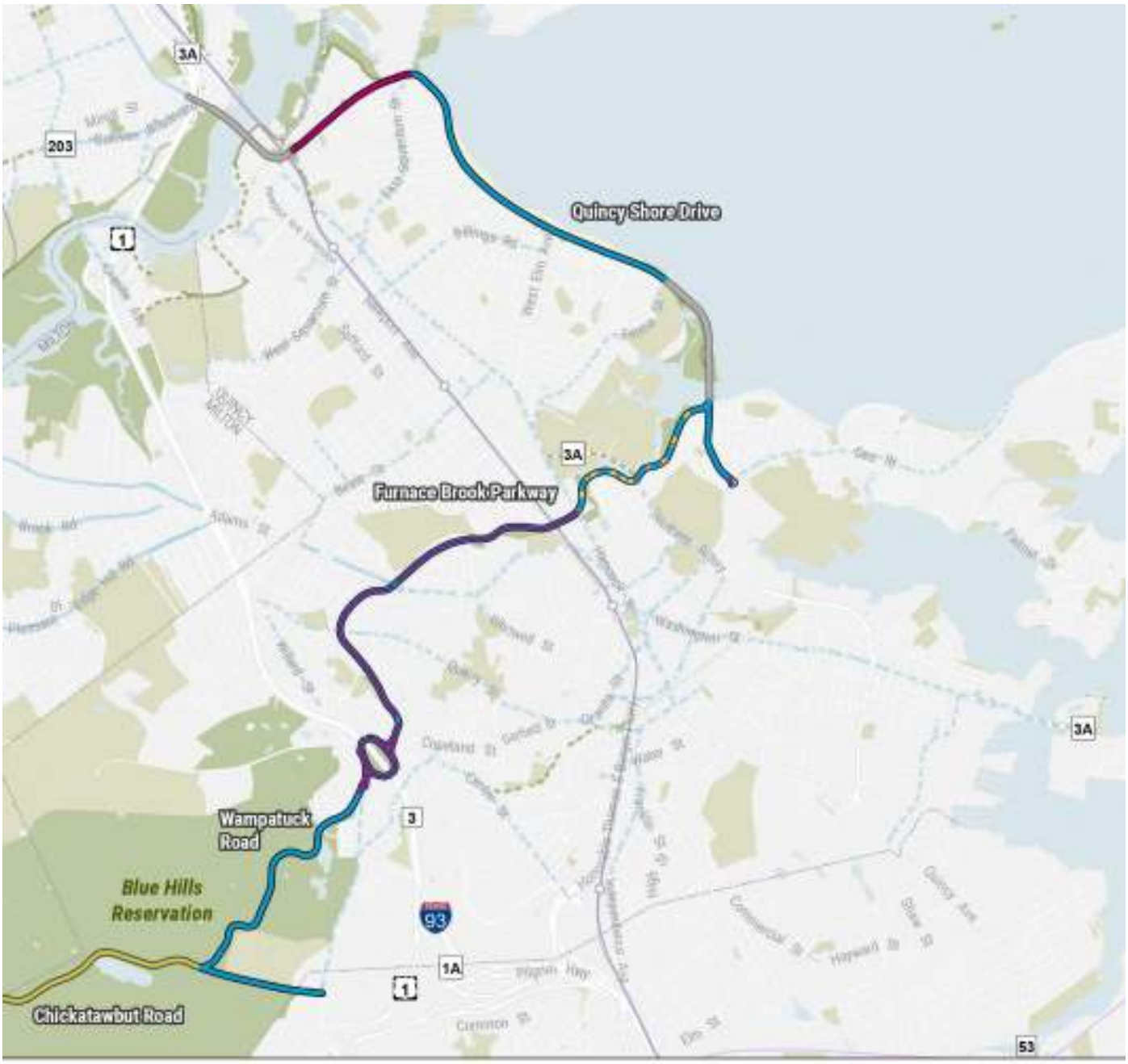
- Planned/Proposed Greenway
- Existing/Under Construction Greenway
- Planned/Proposed On-Street Bike Facility
- Existing On-Street Bike Facility

- DCR Open Space
- Non-DCR Open Space
- Beaches
- Hydrology
- MBTA Rapid Transit
- MBTA Commuter Rail

N

0 0.15 0.3 0.6 Miles

Figure 4-5



Legend

Proposed Facilities

- Separated Bike Lane
- Buffered Bike Lane
- Bike Lane
- Contraflow Bike Lane
- Hybrid Bike Lane/Shared Lane Markings
- Shared Lane Markings
- Bicycle Boulevard
- No Striping Recommendation

Existing Facilities (DCR)

- Buffered Bike Lane
- Bike Lane
- Shared Lane Markings

Non-DCR

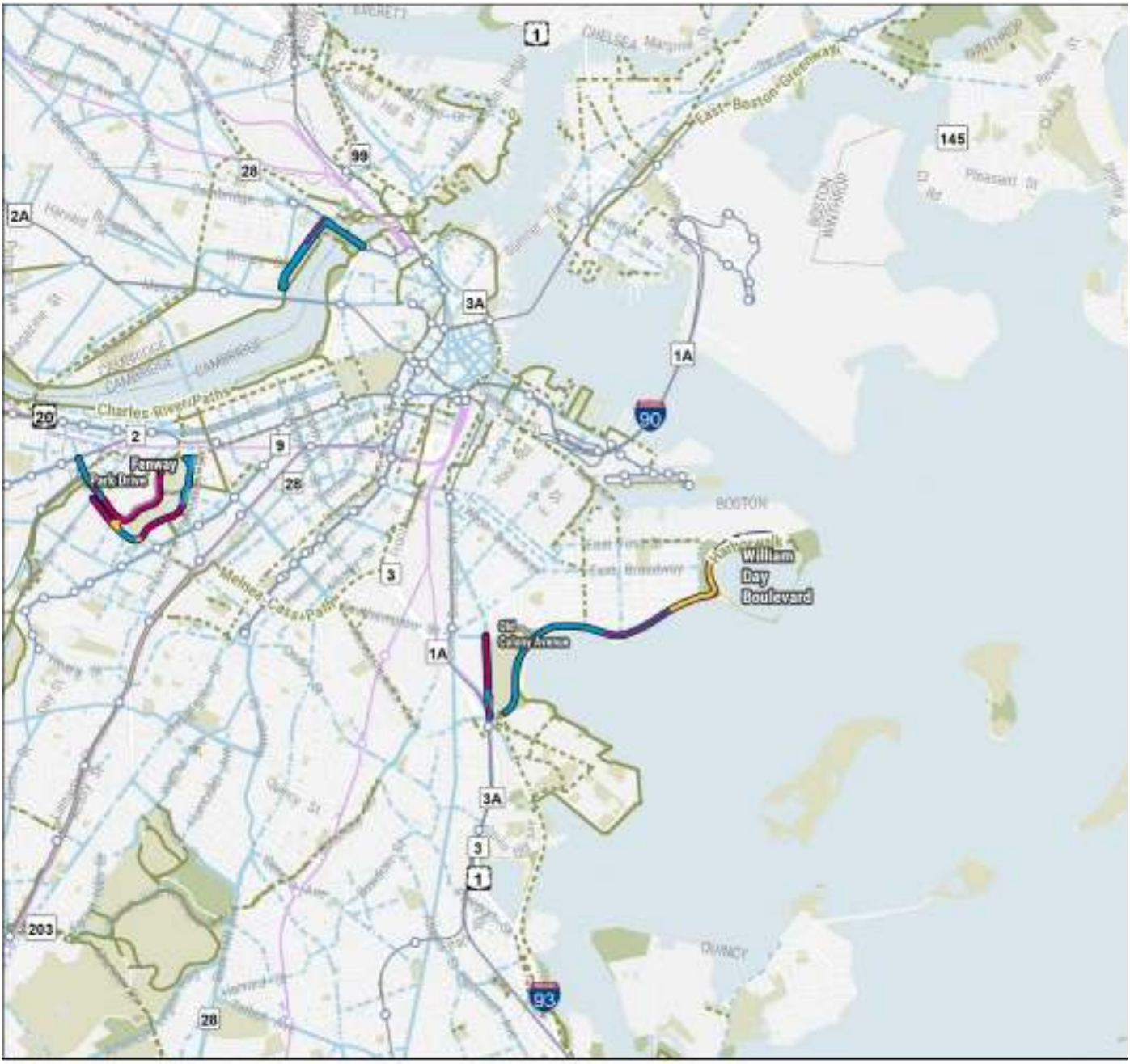
- Planned/Proposed Greenway
- Existing/Under Construction Greenway
- Planned/Proposed On-Street Bike Facility
- Existing On-Street Bike Facility

- DCR Open Space
- Non-DCR Open Space
- Beaches
- Hydrology
- MBTA Rapid Transit
- MBTA Commuter Rail

N

0 0.125 0.25 0.5 Miles

Figure 4-6



Legend

Proposed Facilities

- Separated Bike Lane
- Buffered Bike Lane
- Bike Lane
- Contraflow Bike Lane
- Hybrid Bike Lane/Shared Lane Markings
- Shared Lane Markings
- Bicycle Boulevard
- No Striping Recommendation

Existing Facilities (DCR)

- Buffered Bike Lane
- Bike Lane
- Shared Lane Markings

Non-DCR

- Planned/Proposed Greenway
- Existing/Under Construction Greenway
- Planned/Proposed On-Street Bike Facility
- Existing On-Street Bike Facility

- DCR Open Space
- Non-DCR Open Space
- Beaches
- Hydrology
- MBTA Rapid Transit
- MBTA Commuter Rail

N

0 0.2 0.4 0.8 Miles

[1] *Parkways Preservation Treatment Guidelines*. Massachusetts Department of Conservation and Recreation. Boston: 2006. http://www.mass.gov/eea/agencies/dcr/massparks/parkways/

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[7] Federal Highway Administration. *Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts.* Federal Highway Administration. August 2016. FHWA-HEP-16-055. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/

[8] Massachusetts Department of Transportation. *Separated Bike Lane Planning and Design Guide*. 2015. https://www.mass.gov/lists/separated-bike-lane-planning-design-guide/

[9] Federal Highway Administration. *Incorporating On-Road Bicycle Networks into Resurfacing Projects*. March 2016. FHWA-HEP-16-025. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf

[10] National Association of City Transportation Officials. *Urban Bikeway Design Guide*. April 2011. https://nacto.org/publication/urban-bikeway-design-guide/

[11] National Association of City Transportation Officials. *Urban Street Design Guide*. October 2013. http://nacto.org/publication/urban-street-design-guide/

[12] American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities*. 2012. https://store.transportation.org/item/collectiondetail/116

[13] Federal Highway Administration. *Road Diet Informational Guide.* November 2014. FHWA-SA-14-028. http://safety.fhwa.dot.gov/road_diets/info_guide/

CHAPTER 5. PROJECT RECOMMENDATIONS

Introduction

This chapter presents recommendations for DCR's parkways. These recommendations were developed in accordance with best practice in pedestrian and bicycle facility design and network connectivity. They respond to the findings of the **Chapter 2: Existing Conditions Assessment** and utilize designs described in **Chapter 3: Design Strategies**. Local and regional pedestrian and bicycle master plans and projects currently under development were reviewed to provide context for the recommendations.

The parkways are grouped into Focus Areas based on geographic proximity to DCR reservations. Each Focus Area provides an overview of existing conditions and describes specific recommendations for the parkways, as well as maps that illustrate the recommendations. Cross sections and detail maps are provided in cases where additional analysis is warranted.

Recommendations provided within this chapter are broadly defined to be either **short-term** or **long-term**. For the purposes of this Plan, **short-term** recommendations include modifications that can be made with low cost materials including striping, pavement markings, signage, vertical separation alternatives, and temporary materials. Short-term recommendations also include new crosswalks and curb ramps that don't require major changes to roadway geometry, as well as enhanced crossing features such as rapid response flashing beacons and pedestrian hybrid beacons.

Long-term recommendations include projects that will require capital funding to implement such as intersection or corridor reconstructions, major signal equipment upgrades, and modifications to roadway cross section

DCR distinguishes different project thresholds in order to determine the level of planning, staffing resources, and public involvement needed. Maintenance and in-kind replacement work, including resurfacing, restriping, catch basin reconstruction, signage replacement, sidewalk repair, and minor landscaping work, are routine activities that do not require extensive planning. Larger projects require a comprehensive planning process outlined as in Chapter 2 of *the Parkways Preservation Treatment Guidelines*.[1] Projects that fall under this category include one or more activities:

- Alterations to the current function of a parkway (speed, capacity, or safety),
- Introduction of new elements such as signage systems, traffic control measures, grade separation, incompatible landscape features, lighting systems or signals,
- Change in the balance among users (bicyclists, pedestrians and vehicles) and
- Removal, rehabilitation or reconstruction of a significant historic feature, such as a bridge, lighting or landscape features.[1]

Focus Area List

Focus Area 1: Revere Beach and Lynn Shore
Lynn Shore Drive
Nahant Road
Carroll Parkway
Lynnway
Revere Beach Boulevard
Ocean Parkway
Winthrop Parkway
Revere Beach Parkway

Focus Area 2: Middlesex Fells
Fellsway
Fellsway West
South Border Road
Elm Street
South Street
North Border Road
Park Street
Hillcrest Parkway
Fellsway East
East Border Road

Focus Area 3: Lynn Fells & Breakheart
Lynn Fells Parkway
Hemlock Road
Forest Street

Focus Area 4: Mystic Valley
Mystic Valley Parkway
Mystic River Road

Focus Area 5: Upper Charles
Forest Grove Road
Norumbega Road
Recreation Road
Park Road
Boulevard Road
Quinobequin Road

Focus Area 6: Charles River Basin West
Charles River Road
North Beacon Street
Birmingham Parkway
Soldiers Field Road
Greenough Boulevard
Everett Street

Focus Area 7: Charles River Basin East
Land Boulevard

Focus Area 8: Old Harbor
William Day Boulevard
Old Colony Avenue
Babe Ruth Park Drive

Focus Area 9: Back Bay Fens
Fenway
Park Drive

Focus Area 10: Chestnut Hill
Chestnut Hill Driveway
Saint Thomas More Road

Focus Area 11: Jamaica Pond
Perkins Street
Parkman Drive

Focus Area 12: VFW Parkway and Centre Street
Veterans of Foreign Wars Parkway
Centre Street

Focus Area 13: Hammond Pond Parkway
Hammond Pond Parkway

Focus Area 14: West Roxbury
West Roxbury Parkway
Bellevue Hill Road

Focus Area 15: Stony Brook and Neponset
Neponset Valley Parkway
Turtle Pond Parkway
Dedham Parkway
Dedham Boulevard
Smithfield Road
Enneking Parkway

Focus Area 16: Blue Hills
Wampatuck Road
Chickatawbut Road
Hillside Street
Blue Hill River Road
Unquity Road
Blue Hills Parkway
Green Street

Focus Area 17: South Shore
Neponset Avenue
Quincy Shore Drive
Furnace Brook Parkway

Focus Area 18: Nantasket
Nantasket Avenue
Hull Shore Drive

[1] "Chapter 2: Parkway Planning and Project Development." Massachusetts Department of Conservation and Recreation. *Parkways Preservation Treatment Guidelines*. Boston, MA, 2006. http://www.mass.gov/eea/docs/dcr/pe/historic-parkways/22aa0d01.pdf

Focus Area 1: Revere Beach and Lynn Shore

Parkways

- Lynn Shore Drive
- Nahant Road
- Carroll Parkway
- Lynnway
- Revere Beach Boulevard
- Ocean Parkway
- Winthrop Parkway
- Revere Beach Parkway

Communities

- Lynn
- Nahant
- Revere

Existing Conditions

Overview

Situated along Boston's North Shore, these parkways connect and provide access to the coastal areas of Revere, Lynn, Nahant, and Swampscott and to miles of beaches including Nahant Beach, Revere Beach, Short Beach, and King's Beach. Medium- to high-density residential and beach-oriented commercial development is typical throughout the area, with industrial and auto-oriented retail predominating on Lynnway between Market Street and General Edwards Bridge. Protected wetlands nearby include the Belle Isle Marsh and Rumney Marsh reservations.

Beginning at the north and moving south, Lynn Shore Drive is a bidirectional roadway that terminates at Nahant Circle where it meets Lynnway, Carroll Parkway, and Nahant Road. Nahant Road is the single access road for the peninsular town of Nahant.

Between Nahant Circle and the General Edwards Bridge across the Western Channel, Lynnway is a six-lane, divided, bidirectional state designated highway (Route 1A). Carroll Parkway is the name of the westbound roadway parallel to Lynnway from Nahant Circle to Market Street. Upon crossing the channel, Lynnway diverges from Route 1A and becomes a two-lane, roadway providing local access to the Point of Pines neighborhood of Revere.

Lynnway merges into Revere Beach Boulevard at Carey Circle, which continues for just under three miles along the edge of Revere Beach. North of Revere Street, Revere Beach Boulevard is a two-lane bidirectional roadway. South of Revere Street, Revere Beach Parkway becomes a two-lane, one-way corridor carrying traffic northbound.

Ocean Avenue, which runs parallel to Revere Beach Boulevard between Revere Street and Eliot Circle. Both Ocean Avenue and Revere Beach Boulevard terminate at Eliot Circle, where they meet Winthrop Parkway and Revere Beach Parkway. The southernmost corridor in this cluster of parkways, Winthrop Parkway runs between

Eliot Circle and Upland Road for approximately one mile and provides one lane in each direction.

Pedestrian

The promenades along Revere Beach in Revere, Kings Beach in Lynn, and Nahant Beach in Nahant are popular destinations for walking and jogging. Sidewalks are provided along one or both sides of all the parkways, but many crossings at larger intersections and traffic circles can be difficult for pedestrians. Lynn Shore Drive and Revere Beach Boulevard offer an ample number of crosswalks for pedestrians to access the beachfront promenades. On Lynnway, the sidewalk quality between Nahant Circle and General Edwards Bridge is poor. Other pedestrian issues on the Lynnway include long driveway entrances and infrequent opportunities to cross the parkway especially at bus stops.

Bicycle

Lynn Shore Drive, Revere Beach Boulevard, and Nahant Road feature oceanfront promenades used by bicyclists. The Lynn Shore Drive promenade is signed as a shared use path. However, due to the popularity of these facilities and the relatively narrow width, they can become congested and reduce the quality of experience for all users.

None of the parkways feature on-road bicycle facilities. Bicycling on the Lynnway is particularly challenging due to high traffic speeds and volumes.Ocean Avenue and Winthrop Parkway are lower-volume roadways, but the presence of on-street parking and necessity for bicyclists to mix with traffic creates an uncomfortable place for bicyclists to travel.

Transit Access

MBTA Blue Line rapid transit stations Revere Beach and Wonderland are located one block from Ocean Ave and Revere Beach Boulevard. MBTA Commuter Rail service is provided at Central—Square Lynn located 1,200 ft. from Lynnway. Between Bickford Ave (Revere) and Market Street, Lynnway carries MBTA bus routes 439, 441, 442, 448, and 449.

Recommendations

Lynn Shore Drive

Location	Issue(s)	Recommendation	Additional Info
Lynn Shore Drive from Humphrey Street and Nahant Circle	• Narrow width of promenade increases potential conflicts between pedestrians and bicyclists. • No accessible access to parallel parking on ocean side.	As a short-term measure, install shared lane markings on Lynn Shore Drive. Long-term, build a shared-use path on the beach side of the parkway to improve bicycle access to Lynn Shore Reservation, reduce pedestrian/bicycle conflicts, and provide access to parked vehicles.	Consider as part of a strategy to encourage people to access the beach by walking and biking. The shared use path would utilize the existing roadway cross section.
Intersection of Lynn Shore Drive, Ocean Street, Eastern Ave, and Humphrey Street	• High crash location • Confusing roadway geometry • Parkland bisected by roadways.	Reconfigure the intersection to simplify the geometry, shorten crossing distances, improve bicycle connectivity, reduce conflicts, and restore parkland. Alternatives include converting the intersection to a modern roundabout or squaring off the intersection.	
Nahant Street, Wave Street, Atlantic Terrace, and Kimball Road	• Pedestrian crash history • Accessibility • Crosswalk visibility • Long crossing distances	Improve pedestrian access at these locations based on site-specific issues.	
Greystone Park	• Missing crosswalk at access point to promenade and beach	Add a crosswalk between southwest corner of Greystone Park and existing access point.	May require short sidewalk segment on the east side of Lynn Shore Drive starting at the access point and extending southward roughly 26 ft.

Nahant Road

Location	Issue(s)	Recommendation	Additional Info
Nahant Circle	• High crash location • Poor pedestrian and bicycle connectivity between promenade, playing fields, and adjacent neighborhoods. • Parkland bisected by roadways.	Reconstruct Nahant Circle as a modern roundabout or signalized intersection featuring pedestrian and bicycle crossings on all approaches.	Reducing the roadway footprint restores parkland.

Lynnway/Carroll Parkway

Figure 5-1

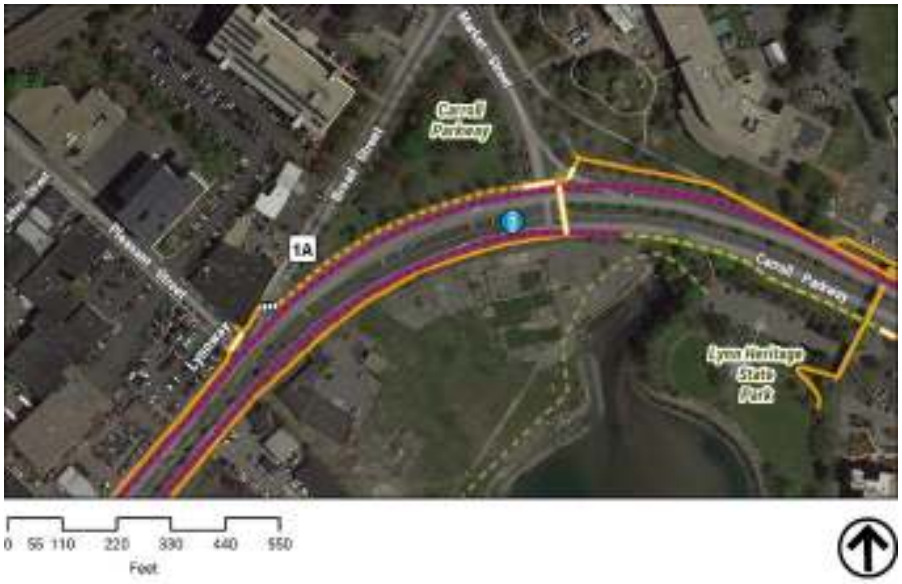


Figure 5-2[1]

[1] The General Edwards Bridge falls under MassDOT jurisdiction.

Location	Issue(s)	Recommendation	Additional Info
Lynnway/Carroll Parkway between Nahant Circle and Market Street	• Accessibility • Wide intersections with long pedestrian crossing distances	Upgrade all crossings to current accessibility standards. Narrow the entrance to Newhall Street and square off the intersections of Tudor Street and Washington Street. Consider enhanced crossing treatments.	
	• No bicycle accommodations	As a short-term measure, install a bike lane. Long-term, construct a one-way separated bike lane in the westbound direction. In the eastbound, construct a shared use path along the waterfront side by widening the existing sidewalk into the existing right travel lane. As a short-term measure, a buffered bike lane can be striped within the existing right travel lane.	Parking on the westbound side would need to be restricted. A parking survey is recommended to determine area parking demand and feasibility of redistributing parking to side streets. Traffic analysis is recommended to determine feasibility of removing one eastbound lane.
Intersection of Lynnway and Market Street	• Long crossing distances • Parkland bisected by roadways	Consider reconstructing the intersection of Lynnway and Market Street as a modern roundabout or smaller signalized intersection.	
Lynnway between Market Street and Broad Street	• Goat path	Construct a sidewalk on the north side of Lynnway to address the pedestrian desire line indicated by the presence of a goat path	See Figure 5-1 for an illustration.
Intersection of Lynnway and Broad Street	• Skewed intersection geometry	Square-off the Broad Street approach to Lynnway. Consider a new pedestrian crossing across Lynnway in conjunction with future waterfront redevelopment.	
Lynnway from Market Street to General Edwards Bridge	• Limited opportunities to cross Lynnway • Bus stops without a crosswalk across Lynnway	Add new crosswalks, improve existing crosswalks, and improve bus stop access at locations indicated in Figure 5-4.	

Location	Issue(s)	Recommendation	Additional Info
Lynnway from Market Street to General Edwards Bridge (cont'd)	• No bicycle accommodations	Construct one-way separated bike lanes on either side of Lynnway. As a short-term measure, convert the right travel lane to a buffered bike lane.	Traffic analysis recommended to determine feasibility of removing one lane in either direction.
General Edwards Bridge	• No pedestrian access on upstream side of bridge • Poor sidewalk conditions on downstream side of bridge • No bicycle accommodations	General Edwards Bridge may need reconstruction in the coming years. As part of bridge reconstruction, add a shared use path at least 12 ft. wide on east side of bridge and sidewalk on the west side of the bridge.	Coordinate with MassDOT to implement this recommendation. See Figure 5-1 for an illustration.
Lynnway from General Edwards Bridge to Carey Circle	• Certain sidewalk segments may be too narrow to meet accessibility standards	Widen sidewalks where they are not of adequate width.	
	• No bicycle accommodations	Build raised one-way separated bike lanes on both sides of roadway. As a short-term measure, stripe bike lanes.	Parking on west side would need to be restricted. Residential driveways and side streets could likely accommodate existing parking demand.
Point of Pines bus stop at Bickford Ave	• Bus stop is not accessible	Upgrade bus stop to full accessibility including new curb ramps and crosswalks.	

Revere Beach Boulevard/Ocean Ave

Location	Issue(s)	Recommendation	Additional Info
Revere Beach Boulevard from Carey Circle to Eliot Circle	• Potential for pedestrian bicycle conflicts on promenade • No dedicated bicycle accommodations	Reconstruct the oceanfront promenade along Revere Beach Boulevard to include separate pedestrian and bicycle pathways. Include a 3-ft. buffer zone, 8 ft. two-way separated bike lane, and 7 ft. pedestrian walkway. Consider using vertical separation between the bike lane and walkway to promote compliance.	
Ocean Ave from Revere Street to Revere Beach Parkway	• Poor sidewalk conditions • No bicycle accommodations	As a short-term measure, separated bike lanes can be added through restriping and adding vertical separation. As part of roadway reconstruction, rebuild deficient sidewalks and construct separated bike lanes and floating bus stop islands.	

Location	Issue(s)	Recommendation	Additional Info
Eliot Circle and intersection of Ocean Ave and Revere Beach Parkway	• Poor crosswalk accessibility • Confusing roadway geometry • No crosswalks or curb ramps to access sidewalk on north side of Revere Beach Parkway • Parkland bisected by roadways	Consider reconstructing the intersection of Ocean Ave and Revere Beach Parkway as a modern roundabout; adjacent Eliot Circle would be reconstructed as a modern roundabout as well.	The primary focus should be creating a gateway into the Revere Beach Reservation from Revere Beach Parkway. This proposal would simplify traffic operations, improve safety, and restore parkland.

Reimagining Revere Beach Boulevard and Ocean Avenue

It is recommended that DCR work with City of Revere and relevant stakeholders to explore potential changes to Revere Beach Boulevard and Ocean Avenue between Revere Street and Eliot Circle. It is likely that the combined vehicle capacity of both parkways exceeds current traffic volumes. There may be opportunities to improve multimodal access, restore parkland, reduce impervious surfaces, introduce climate mitigation, and enhance development opportunities by modifying the roadway layout. For example, Revere Beach Boulevard could potentially be designed to eliminate through traffic while still providing access to beach parking, and Ocean Avenue could be modified to carry north-south through traffic. Alternatives should be developed with community input and consider existing and anticipated volumes.

Winthrop Parkway

Location	Issue(s)	Recommendation	Additional Info
Broadsound Ave and Wave Ave	• No pedestrian crossing • Skewed intersection geometry	Close the Broadsound Ave approach to Winthrop Parkway and consolidate access at Wave Ave. Add a new crosswalk across Winthrop Parkway	
Intersection of Endicott Ave, Winthrop Ave, and Crescent Ave	• Skewed intersections	Simplify the intersection geometry. Consider closing the Winthrop Ave and Endicott Ave approaches and consolidate neighborhood access via Crescent Ave. Add wayfinding and traffic calming to the Winthrop Ave south of this intersection to facilitate bicycle access. Coordinate implementation with the Town of Winthrop.	
From Eliot Circle to Winthrop City line	• No bicycle accommodations	Install standard bike lanes between Eliot Circle and Endicott Ave. South of Endicott Ave, direct bicycle traffic to the side road west of Winthrop Parkway using pavement markings and signage.	

Revere Beach Parkway Parkway/Winthrop Ave

Location	Issue(s)	Recommendation	Additional Info
From Eliot Circle (Revere) to Lee Burbank Hwy/Route 1A (Revere)	No bicycle accommodations	As a short-term measure, install one-way separated bike lanes on both sides using striping and vertical separation. Long-term, add a one-way separated bike lane along the westbound side and a two-way separated bike lane along the eastbound side.	Requires converting one travel lane in either direction into a bike lane. Traffic analysis is recommended.

Figure 5-3


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0
500
1,000
Feet
129A
1A
129
Lynn Shore Drive
Lynn/Nahant Beach Recreation Trail
Nahant Road

Figure 5-4


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0 500 1,000
Feet
129
1A
107
Lynn
Lynnway
Northern Strand Trail
River Works

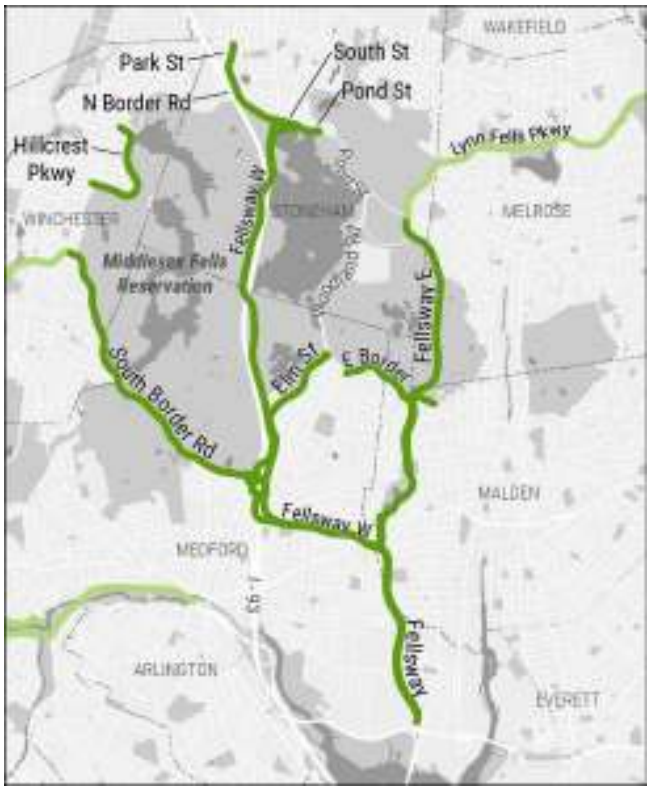
Figure 5-5


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0
900
1,800
Feet
1A
Revere Beach Boulevard
Wonderland
60
Ocean Avenue
Revere Beach

Figure 5-6


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
Feet
60
16
1A
145
Revere Beach
Revere Beach Boulevard
Ocean Avenue
Revere Beach Parkway
Beachmont
Winthrop Parkway
Suffolk Downs
Belle Isle Marsh Reservation

Focus Area 2: Middlesex Fells



Parkways

- Fellsway
- Fellsway West
- South Border Road
- Elm Street
- South Street
- North Border Road
- Park Street
- Hillcrest Parkway
- Fellsway East
- East Border Road

Communities

- Medford
- Malden
- Melrose
- Stoneham
- Winchester

Existing Conditions

Overview

An interconnected network of parkways provide access to, around, and through the 2,575-acre Middlesex Fells Reservation, a major recreational destination featuring miles of hiking, equestrian, and mountain bike trails in the Middlesex Fells Reservation. A significant portion of the reservation is protected under historical designations, including a large area surrounding Spot Pond on the eastern side of the reservation. The Stone Zoo is situated in the northeastern corner of the reservation. Medium- to high-density streetcar suburbs are found south and east of the reservation; to the north and west, medium- to low-density post-war suburbs are typical. The town centers of Stoneham, Winchester, Medford, Malden, and Melrose are nearby commercial nodes.

Fellsway provides access to the reservation from the south and connects the Middlesex Fells to the Mystic River Reservation. Approximately two miles north of Route 16, Fellsway splits into Fellsway East and Fellsway West, both of which continue northerly.

Traveling northwesterly from the split, Fellsway West approaches Roosevelt Circle, a large traffic circle with on and off-ramps to I-93. An onramp to I-93 south is provided near the Sheepfold driveway entrance to Middlesex Fells, and 0.6 miles north is an off-ramp from I-93 north. Fellsway West ends at the intersection of North Border Road/South Street.

The northern boundary of the Middlesex Fells Reservation is enclosed by Park Street, North Border Road, South Street, and Pond Street, which merge into one another and connect the towns of Melrose, Stoneham, and Winchester.

Elm Street is a 0.7-mile corridor that runs between Fellsway West and Highland Avenue providing access to the parking lot for Wrights Pond and trail heads for the reservation.

Fellsway East travels northward from Fellsway through residential neighborhoods. North of East Border Road, Fellsway East enters the Middlesex Fells Reservation and features parkland on both sides. Fellsway East terminates at West Wyoming Ave in Stoneham, where users can continue straight onto Lynn Fells Parkway.

East Border Road provides east/west access between Las Casas Street and Highland Avenue, meeting Highland Avenue in the vicinity of Elm Street.

On the southwestern side of the reservation, South Border Road runs for approximately two miles between Roosevelt Circle and Highland Ave in Winchester and provides a direct connection to Mystic Valley Parkway. Finally, on the northwestern side of the reservation, Hillcrest Parkway provides a 0.8-mile, circuitous path along the western edge of the parkland.

Pedestrian

Sidewalks are provided along one or both sides of most of the corridors, with the exception of South Border Road and a portion of Fellsway East.

While sidewalks are present along much of the parkway mileage throughout the reservation, sidewalk conditions vary widely, with significant portions of the pedestrian paths requiring reconstruction.

Crossing opportunities are limited throughout all the parkways.

Bicycle

Fellsway and Fellsway West between Revere Beach Parkway and Fulton Street feature a wide parking lane that functions as a bike lane, but converts to a right-turn only lane at signalized intersections.

Between Parkway Road and the Sheepfold driveway, Fellsway West features standard bike lanes and a parallel shared use path. The shared use path does not feature any roadway buffer and the paving quality is degraded in some sections.

Some of the smaller, low-volume parkways, such as East Border Road and Hillcrest Parkway, provide a comfortable biking environment despite a lack of formal bicycle facilities.

Roosevelt Circle is a major barrier for both pedestrians and bicyclists. Although sidewalks and crosswalks are provided around the edge of the circle, the speed and volume of traffic creates a significant impediment for pedestrians attempting to cross. Traffic speed and volume, and lack of physically separated facilities, also creates a barrier bicyclists travelling through the circle.

Transit

- MBTA Orange Line rapid transit service at Wellington Station at the very southern limit of the focus area
- MBTA bus route 100 travels between Wellington Station at Elm Street along Fellsway and Fellsway West.
- MBTA bus route 108, 134, and 710 travel on Fellsway between Riverside Ave and Wellington Station.
- MBTA bus route 132 travels along South Street for a short duration before turning northward on State Route 28.

Recommendations

Fellsway

Between Wellington Circle and Fulton Street, Fellsway and Fellsway West have the same typical cross section. Therefore, the following cross sections apply to both corridors.

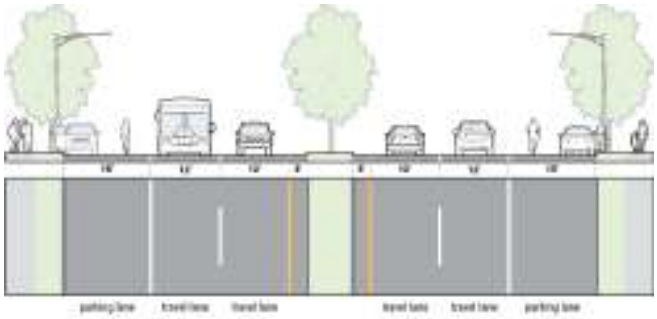


Figure 5-7: Existing Typical Cross Section

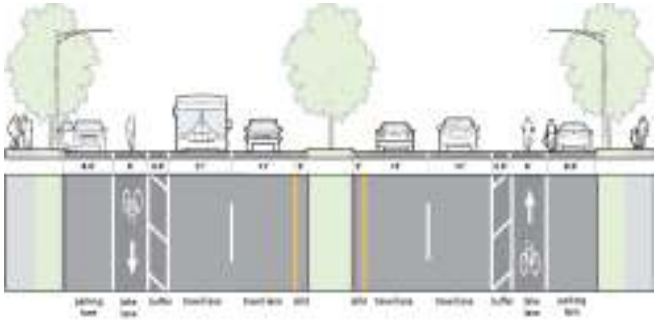


Figure 5-8: Proposed Short-Term Typical Cross Section

Figure 5-9: Proposed Long-Term Typical Cross Section

Location	Issue(s)	Recommendation	Additional Info
From Wellington Circle to Fellsway West	• No bicycle accommodations	As a short-term measure, install buffered bike lanes. With construction, consider adding floating bus stops and raising the bike lane to sidewalk level to enhance visibility at driveways and minor side streets. Reconstruct all signalized intersections at protected intersections.	This recommended facility would extend northward onto Fellsway West as far as Fulton Street, which has the same typical cross section as Fellsway. See Figure 5-7 -- Figure 5-9 for proposed typical cross sections.
Wellington Circle	• Long pedestrian crossing distances and wait times • No bicycle accommodations	Conduct a comprehensive pedestrian and bicycle access study for the Wellington Circle Area.	
Intersection of Wellington Road	• Skewed intersection	Tighten curb radius to slow vehicle speeds exiting Fellsway onto Wellington Road.	
Intersection of Riverside Avenue	• No bicycle or pedestrian accommodations	In the short-term, implement a protected intersection using vertical separation alternatives and striping. In the long term, make changes permanent through reconstruction.	
Intersection of Central Avenue/Medford Street	• Accessibility • No bicycle accommodations • Opportunity to improve wayfinding and connectivity to/from Northern Strand Trail	Upgrade accessibility, close the driveway entrance at the northeast corner of the intersection, and make additional modifications to improve pedestrian and bicycle safety. Consider strategies to provide wayfinding for bicyclists to/from the Northern Strand Trail.	
Intersection of Fellsway/Fellsway West/Fellsway East	• Opportunity to improve existing pedestrian facilities • No bicycle accommodations • Skewed intersection	As a short-term measure, add striping in conjunction with corridor recommendations to mitigate conflicts between bicyclists and turning vehicles. Consider the desirability and feasibility of reconstructing the intersection as a modern roundabout. As an alternative, reconstruct with narrower intersection geometry, separated bike lanes, and shorter pedestrian crossing distances.	

Fellsway West

Figure 5-10[2]

Figure 5-11

[2] Roosevelt Circle falls under MassDOT jurisdiction.

Figure 5-12


28
Fellsway
Fairview Rd
Upland Rd
Lucy St
South Street
Middlesex Fells Reservation
New South Street
0 55 110 220 330 440 550
Feet
Legend
Existing Crossing
Proposed Crossing
Upgrade Crossing
Remove Crossing
Existing Signalized Crossing
Existing Sidewalk
Proposed Sidewalk
Existing Shared Use Path
Proposed or Upgraded Shared Use Path
Proposed Separated Bike Lane
Planned/Proposed Shared Use Path Outside Study Area
Existing/Under Construction Shared Use Path Outside Study Area
Walking Trail
Existing Buffered Bike Lane

Location	Issue(s)	Recommendation	Additional Info
From Fellsway to Fulton Street	• No bicycle accommodations	As a short-term measure, install one-way separated bike lanes on both sides using striping and vertical separation. With construction, consider adding floating bus stops and raising the bike lane to sidewalk level to enhance visibility at driveways and minor side streets. Reconstruct all signalized intersections at protected intersections.	This recommended facility would extend southward onto Fellsway as far as Wellington Circle, which has the same typical cross section as Fellsway West. See Figure 5-10 – Figure 5-12.
Intersection of Fulton Street	• Long crossing distances	Reconstruct as a protected intersection. Provide clear and legible connection from westbound separated bike lane on Fellsway West to the proposed two-way separated bike lane approach to Valley Street.	
	• Opportunity to improve bicycle connectivity	Construct two-way separated bike lane on southern side of Fellsway West extending westward from Fulton Street to connect with proposed contraflow bike lane on Valley Street.	Connection to proposed Valley Street contraflow bike lane requires coordination with the City of Medford. The need for this connection is identified in the Town of *Medford Bicycle Infrastructure Master Plan*.
From Fulton Street to Roosevelt Circle	• No bicycle accommodations	Construct a two-way separated bike lane along eastern edge of northbound Fellsway West. Transition to a shared use path north of Ridgeway Rd.	
Roosevelt Circle	• Sidewalk improvements needed • No bicycle accommodations • High-crash location	As a short-term measure, install lane striping, advanced yield lines and signage. Consider the desirability and feasibility of including bicycle facilities with restriping. Long-term, upgrade the existing sidewalks around Roosevelt Circle to shared use path standards. Consider modifications to slow vehicle entry/exit speeds and reduce crashes.	

Location	Issue(s)	Recommendation	Additional Info
From Roosevelt Circle to Elm Street	• No bicycle accommodations	As a short-term measure, install bike lanes in the northbound direction and buffered bike lanes in the southbound direction. With construction, build a shared use path.	The shared use path could follow the alignment identified in Figure 5-10 and Figure 5-11.
Intersection of Elm Street	• Opportunity to improve pedestrian facilities • No bicycle accommodations • Potential for high-speed collisions.	As a short-term measure, add pavement markings and vertical separation to Fellsway West approaching Elm Street in the northbound direction to: • slow vehicles turning right onto Elm Street, • designate a path for northbound bicyclists through the intersection, and • provide a through lane and a right turn lane. Consider the desirability and feasibility of reconstructing the intersection as a modern roundabout. As an alternative, tighten geometry and consider signalization.	
From Elm Street to Sheepfold Driveway	• Opportunity to improve existing bicycle facilities • Opportunity to restore parkland • Excessive vehicle speeds	Consider the following alternatives exist for long-term improvements to this segment of Fellsway West: 1. Widen the existing shared use path and add a buffer from the roadway. Narrow the roadway and add intermittent traffic calming devices, either raised or horizontal deflection, to keep traffic speeds low. 2. Consider the desirability and feasibility of closing the segment between Parkway Road (Medford) and the Sheepfold Driveway to vehicle traffic. The roadway would become a vernacular-style road open to walking and bicycling.	Alternative 2 may be feasible considering that Interstate 93, which runs parallel to Fellsway West, can provide an alternative vehicle route. Trial closures, coupled with an open streets-type event, could be used to measure the impact of a permanent closure. The road could become a new focal point for the Middlesex Fells and enhance connectivity between the eastern and western portions of the reservation.
From Sheepfold Driveway to South Street (Stoneham)	• Opportunity to improve pedestrian facilities • No bicycle accommodations	As a short-term measure, install buffered bike lanes.	

Location	Issue(s)	Recommendation	Additional Info
From Sheepfold Driveway to South Street (Stoneham) (cont'd)		With construction, upgrade the existing sidewalk on the west side of Fellsway West to a shared use path with green buffer.	
	• Opportunity to clarify vehicle movements	Add a left turn lane from Fellsway West southbound to I-93 South.	
Intersection of New South Street	• Traffic from northbound Fellsway West utilizes parking access road as a cut through to South Street eastbound	Tighten intersection geometry and consider reversing the direction of New South Street to eliminate cut through traffic, functioning only as access for the reservation parking.	
Intersection of South Street	• Missing pedestrian crosswalks • Pedestrian desire line indicated by goat paths	Add a crosswalk across the eastern approach to the intersection. Consider adding a sidewalk extending from the southeast corner of the intersection southward to New South Street.	See Figure 5-12.

South Border Road

Location	Issue(s)	Recommendation	Additional Info
From Roosevelt Circle to Mystic Valley Parkway	• No bicycle accommodations	As a short-term measure, install bike lanes. With construction, study the feasibility of constructing a shared use path along the northeast side of the roadway. Alternatively, build one-way raised separated bike lanes with mountable curbs along both sides.	Several topographical pinch points exist along the corridor which may limit the feasibility of bike lanes on the entire length of the corridor. If there is room for a bike lane in only one direction, priority should be given to providing a bike lane in the uphill direction.
Governors Avenue, Jeremiah Circle, Cross Fells Trail, South Dam Road, and Leslie Road	• No pedestrian crossing opportunities	Construct new crosswalks connecting to trail system on east side of the roadway at these locations.	
Intersection of Mystic Valley Parkway, Mt. Vernon Street, and Highland Ave (Winchester)	• Vehicle channelization needed • No bicycle accommodations • Proposed bicycle facility transition point	In the short-term, add striping with proposed bike lanes and consider vehicle left turning lanes.	

Location	Issue(s)	Recommendation	Additional Info
Intersection of Mystic Valley Parkway, Mt. Vernon Street, and Highland Ave (Winchester) (cont'd)		With construction, consider how bicyclists transition between proposed shared use path and proposed separated bike lanes west of Highland Avenue.	

Elm Street

Location	Issue(s)	Recommendation	Additional Info
Intersection of Haines Street	• Accessibility • No crosswalk • Long crossing distance • Skewed intersection	Tighten intersection geometry, add crosswalk along parkway. Consider closing Haines St entrance.	
Baxter Street and Aquavia Road (southern end)	• No pedestrian crossing opportunities	Construct new crosswalks	
Intersection of Woodland Road/Highland Avenue	• Opportunity to improve existing pedestrian facilities • No bicycle accommodations • Opportunity to restore parkland	Reconstruct existing rotary as a modern roundabout with a smaller footprint. Replace the existing sidewalks and include separated bike lanes.	

South Street

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• No bicycle accommodations	As a short-term measure, install bike lanes. Coordinate future planning and reconstruction efforts for Pond Street/Woodland Road.	
New South Street and Pond Street	• Skewed intersection geometry • No pedestrian crossing opportunity • Long crossing distances	Add new crosswalks across South Street to provide park access at these cross streets.	

North Border Road and Park Street

Location	Issue(s)	Recommendation	Additional Info
From Fellsway West to Fallon Road	• Opportunity to improve pedestrian access • No bicycle accommodations	As a short-term measure, install bike lanes. With construction, consider a shared use path on the south side of North Border Road to connect with the proposed shared use paths on Fellsway West and Pond Street. Transition to bike lanes at Fallon Road extending northward. Construct a shared use path spur underneath Interstate 93 between North Border Road and the Bear Hill Trail.	
From Fallon Road to Marble Street	• No bicycle accommodations	Install bike lanes.	"No Parking" signage may be necessary.

Fellsway East

Figure 5-13

Location	Issue(s)	Recommendation	Additional Info
From Fellsway (Medford) to East Border Road (Malden)	• No bicycles accommodations	As a short-term measure, install bicycle facilities with striping. A variation of standard bike lanes, buffered bike lanes, and separated bike lanes are feasible depending on the variable roadway cross-section. With construction, build separated bike lanes. Consider a sidewalk level bike lane to enhance visibility at driveways.	A road diet is required between Savin Street and East Border Road. Minor parking modifications may be needed.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Pleasant Street	• Accessibility • Long crossing distances • No bicycle accommodations	Upgrade intersection to current accessibility standards and add pavement markings and vertical separation to mitigate conflicts between vehicles and bicyclists. With construction, shorten pedestrian crossing distances and protected intersection elements.	
Intersection of Highland Ave	• Additional intersection control needed • High crash location	As a short-term measure, add striping to guide bicyclists through the intersection and advanced yield markings. Study the feasibility of signalization or geometric improvements.	
Intersection of East Border Road	• Long crossing distances • Vehicle slip lanes • Opportunity to improve trail access • No bicycle accommodations	Reconstruct with tighter geometry, remove slip lanes, and add left turn lanes. Add a crosswalk to the trailhead on the western side. Consider how bicyclists transition from proposed separated bike lanes to proposed shared use path.	
From East Border Road to West Wyoming Avenue	• No bicycle or pedestrian accommodations	As a short-term measure, install bike lanes. With construction, study the feasibility of constructing a shared use path along the west side of the roadway.	Several topographical pinch points exist along the corridor which may limit the feasibility of bike lanes on the entire length of the corridor. If there is room for a bike lane in only one direction, priority should be given to providing a bike lane in the uphill direction. Extending northward from East Border Road, there are topographical constraints as the roadway climbs a hill. Consider paving Jerry Jingle Road as an alternative route to a shared use path directly parallel to the roadway on this segment. See Figure 5-15 for alternative shared use path routings.
	• Unmarked trail crossings	Add marked crosswalks at key trail crossing locations indicated in Figure 5-15.	

Location	Issue(s)	Recommendation	Additional Info
Intersection of Washington Street	• High crash location	Make short-term striping modifications to address crash hotspot. Consider: 1. Adding a southbound left turn lane onto Washington Street, narrowing the northbound travel lane approaching the intersection, or 2. Restricting southbound left turns onto Washington Street.	
Intersection of Lynn Fells Parkway	• Opportunity to improve access to trails • Additional crosswalks needed • No bicycle accommodations	Install new crosswalks and curb ramps at all approaches to the intersection. Remove the unsignalized crosswalk 150 ft. north of the intersection, which will be replaced by a signalized crosswalk at the intersection. Add pedestrian connection to the trailhead at the southwest corner. Add a new shared use path connection to the existing shared use path parallel to Pond Street. Consider removing southbound right turn slip lane.	See Figure 5-13.

East Border Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Opportunity to strengthen low-speed, low-volume character of parkway	Implement traffic calming and consider full/partial closures to slow speeds and reduce volumes. Consider centerline removal and advisory bike lanes.	
Intersection of Blomerth Street	• Accessibility • Long crossing distances • No pedestrian crossing provided	Upgrade intersection to current accessibility standards. Extend curbs to tighten intersection geometry.	
Intersection of Woodland Road	• Accessibility • Opportunity to strengthen access to reservation	Add a crosswalk across East Border Road and across the Woodland Road approach.	

Figure 5-14


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0 500 1,000
Feet
Fellsway
Malden Center
Malden Center
60
Mystic River Reservation
Torbert Macdonald Park Bike Path
Wellington
Mystic River Reservation Bike Path
93
38

Figure 5-15

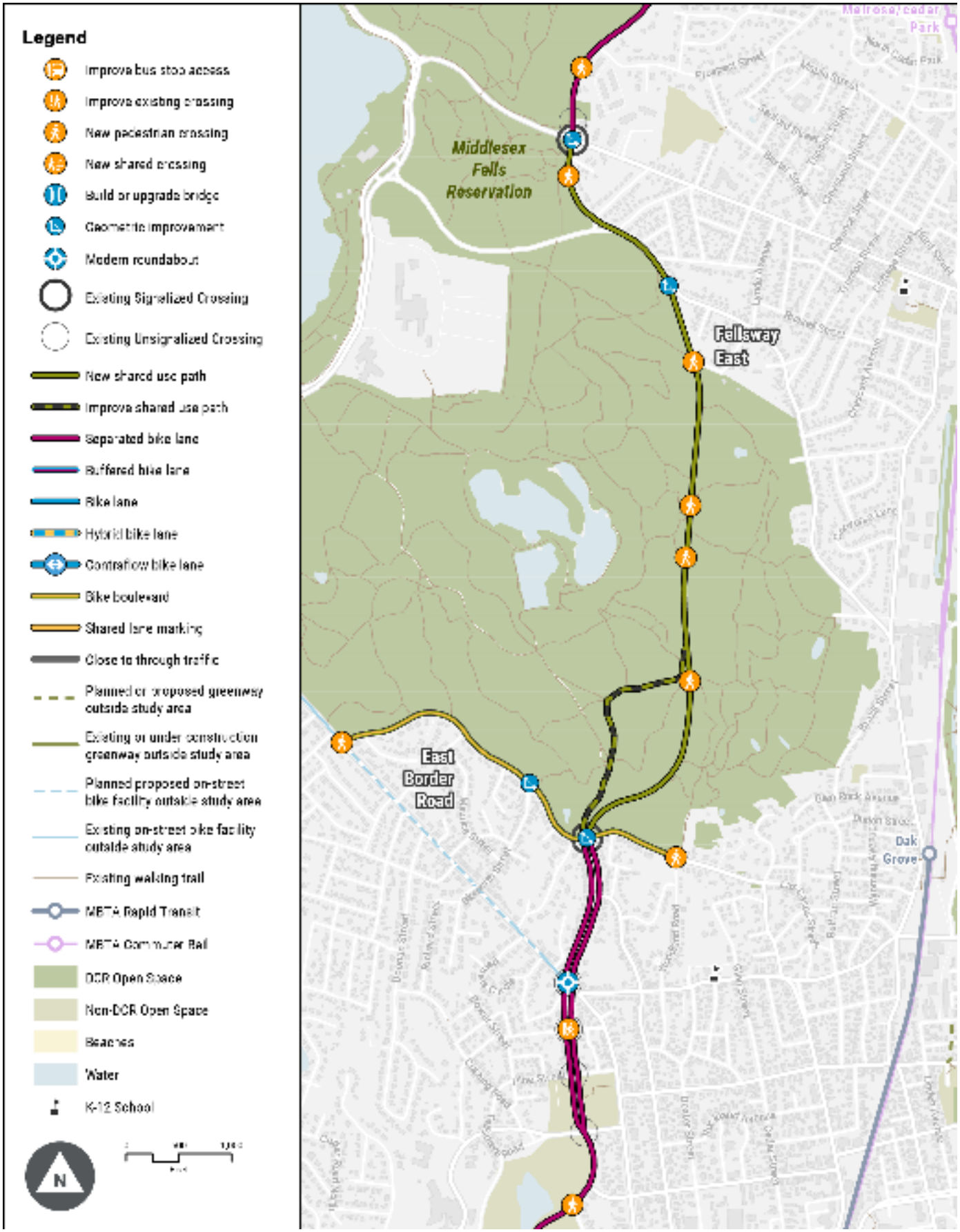

Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
Middlesex Fells Reservation
Fellsway East
East Border Road
Oak Grove
Melrose/Cedar Park

Figure 5-16


Middlesex Fells Reservation
Elm Street
Fellsway West
South Border Road
38
93
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
0 500 1,000
Feet
N
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water

Figure 5-17


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
93
28
North Border Road
Fellsway
Stone Zoo
Middlesex Fells Reservation
Fellsway West

Figure 5-18


93
Tri-Community Bikeway
Hillcrest Parkway
Middlesex Fells Reservation
Horn Pond Bikeway
38
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
N
0
500
1,000
Feet

Focus Area 3: Lynn Fells & Breakheart Reservation

Parkways

- Lynn Fells Parkway
- Hemlock Road
- Forest Street

Communities

- Stoneham
- Melrose
- Saugus
- Wakefield

Existing Conditions

Overview

Lynn Fells Parkway provides a direct link between DCR's Middlesex Fells Reservation and the 640-acre Breakheart Reservation which features paved pathways, hiking trails, and swimming. The parkway extends northeasterly through the municipalities of Stoneham, Melrose, and Saugus. The Middlesex Fells Reservation is situated at the western end of the focus area. At its southern end, Lynn Fells Parkway feeds onto Fellsway East.

At its northeastern end, the Lynn Fells Parkway terminates at Route 1. Forest Street is a park access road for Breakheart Reservation that begins at Lynn Fells Parkway and terminates at a parking lot in the southwest corner of the reservation. Hemlock Road, a two-lane bidirectional undivided roadway, provides access to the northwest corner of Breakheart Reservation starting at Farm Street in Wakefield.

Additional natural resources in the area include Sewall Woods Park and Ell Pond. Primarily residential in character, the focus area features primarily low-density detached houses. Small commercial nodes are found at Main Street, Melrose, and Main Street, Saugus. The eastern end of the parkway at Route 1 features many large-scale suburban retail destinations.

Pedestrian

Sidewalks are provided on one or both sides of the corridor for most of its length. There is a gap in the sidewalk starting at Rivers Lane in Melrose extending 300 ft. westward.

East of Forest Street in Saugus, the parkway becomes difficult to navigate on foot. A sidewalk extends eastward along the north side, but no crosswalks or curb ramps are provided across the parking lot entrance serving the shopping center north of the parkway. East of the parking lot entrance, the sidewalk is intermittent and encroached upon by a guardrail. The is no sidewalk on the south side east of Forest Street to provide access to the shopping center south of the parkway.

Bicycle

Bike lanes and buffered bike lanes have been installed on Lynn Fells Parkway as part of DCR's annual repaving program. Bicycling along the parkway is a generally low-stress experience, though the bike lanes terminate in the vicinity of the Main Street (Melrose) and Maine Street (Saugus) intersections, creating a high-stress merge into general travel lanes. Forest Street and Hemlock Road do not feature designated bicycle facilities but nonetheless provide a low-stress experience due to the lack of through vehicle traffic.

Transit Access

No transit routes run on Lynn Fells Parkway itself. Several MBTA bus routes intersect with the parkway at various points, including Route 132 at Pond Street, Routes 106, 131, 136, and 137 at Main Street (Melrose), and Route 428 at Main Street (Saugus). The Melrose/Cedar Park Commuter Rail station is 0.25 miles south of Lynn Fells Parkway in Melrose.

Recommendations

Lynn Fells Parkway Segment 1 – Fellsway East (Stoneham) to Melrose/Saugus Town Line

Figure 5-19

Figure 5-20

Location	Issue(s)	Recommendation	Additional Info
From Warwick Road to the Middlesex Fells trail entrance to the south	• Pedestrian access to trailhead needs improvement	Construct a short sidewalk segment along the north side of parkway and a crosswalk with a RRFB to enhance visibility at the trailhead.	See Figure 5-19.
Intersection of West Emerson Street and Holland Road	• Accessibility • Discontinuous sidewalk • Skewed intersection	Consider closing the southbound approach to West Emerson Street and consolidating vehicle movements to and from West Emerson Street to the Holland Road intersection. Add a continuous sidewalk along the eastern edge of the parkway.	See Figure 5-19.
From Fellsway East (Stoneham) to Vinton Street (Melrose)	• Existing bicycle facility needs improvement • Wide vehicle travel lanes may encourage speeding	This segment currently features standard bike lanes. Several alternatives exist to address the identified issues: 1. Restripe the parkway with wider bike lanes or buffered bike lanes, narrowing the travel lanes. 2. Construct raised separated bike lanes. 3. Restripe the parkway with a median strip/two-way center turn lane.	Alternatives 1 and 3 could be implemented with restriping. Alternative 3 would provide space for pedestrian refuge islands at proposed crosswalks and for vehicles to queue when turning left into driveways or onto side streets. However, it would not necessarily provide a wider bike lane. The frequency of residential driveways is an important consideration with Alternative 2. An intermediate-level separated bike lane with mountable curbs could limit the need for the bike lane to change elevation at driveways.
From Vinton Street (Melrose) to Melrose Street (Melrose)	• No bicycle accommodations	Consider alternatives to provide a continuous bicycle facility along this segment: 1. Install standard bike lanes 2. Construct raised separated bike lanes 3. Widen the asphalt path on the south side of the parkway to a shared use path.	Alternative 1 requires restricting parking on one side and Alternative 2 requires restricting parking on both sides. Alternative 3 would require moving fences adjacent to the playing fields, and would also require considering how bicyclists transition into and out of the facility.
From Melrose Street (Melrose) to Green Street (Melrose)	• No bicycle accommodations	Install continuous bike lanes and add left-turn lanes at intersections. Consider the feasibility of separated bike lanes.	Requires a road diet. Traffic analysis is recommended to further evaluate the feasibility of implementing this recommendation.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Bellevue Ave	• Potential for vehicles to make high-speed right turns from Lynn Fells Parkway eastbound to Bellevue Ave southbound, increasing risk to pedestrians	Consider the following modifications to enhance pedestrian safety: • Construct a curb extension on the southwest corner • Add a raised crossing across the western approach to Bellevue Ave • Make the western approach one-way southbound and the eastern approach one-way northbound • Restrict left turns from Lynn Fells Parkway westbound to Bellevue Ave southbound • Install a crosswalk across Lynn Fells Parkway to the east of Bellevue Ave.	
From Green Street (Melrose) to Melrose/Saugus town line	• Existing bicycle facilities can be improved	DCR recently installed bike lanes and buffered bike lanes on this segment. Long-term, explore the feasibility of installing separated bike lanes.	
Intersection of Linden Road, Elm Street, and Burrell Street	• Accessibility • Discontinuous sidewalk along south side of Lynn Fells Parkway • Long crossing distances • Crosswalk needed across Lynn Fells Parkway	Consider geometric modifications to shorten pedestrian crossing distances and improve sidewalk continuity on both sides of the parkway. Traffic calming features may be desirable. As part of this project, add a crosswalk across Lynn Fells Parkway and consider including a pedestrian refuge island.	
Intersection of Lincoln Street and Nelson Road	• Skewed intersection • Opportunity to improve pedestrian safety	New crosswalks and curb ramps were recently installed at this intersection, including a crosswalk across Lynn Fells Parkway. Consider relocating the crosswalk across Lynn Fells Parkway to either the east or west side of the intersection and adding a pedestrian refuge island.	
Intersection of Larchmont Road	• Opportunity to provide a crosswalk across Lynn Fells Parkway	Consider a new crosswalk across Lynn Fells Parkway in the vicinity of Larchmont Road.	

Location	Issue(s)	Recommendation	Additional Info
Near intersection of Rivers Lane	• Approximately 320 ft. gap in sidewalk from 802 Lynn Fells Parkway (Melrose) to 1 Lynn Fells Parkway (Saugus)	Construct short sidewalk segment eastward from the current terminus on the north side. Add a new crossing east of Rivers Lane to connect to existing sidewalk on south side.	See Figure 5-20.

Lynn Fells Parkway Segment 2 – Melrose/Saugus Town Line to Route 1/Broadway (Saugus)

Figure 5-21[3]

[3] Ramps onto US 1 fall under MassDOT jurisdiction.

Location	• Issue(s)	Recommendation	Additional Info
From Saugus Town Line to Main Street (Saugus)	• Existing bicycle facility needs improvement	The striped shoulder on this segment is usable as a bicycle facility. Consider restriping the roadway with 10 ft. travel lanes and 5 ft. bike lanes. Long-term, consider the feasibility of constructing separated bike lanes.	
Intersection of Main Street (Saugus)	• Existing pedestrian facilities need improvement • Existing bike lanes end before the intersection	As a short-term measure, explore opportunities to provide a continuous bicycle facility through the intersection through restriping. Reconstruct the intersection with wider sidewalks, directional curb ramps on all corners, continuous bicycle facilities, and narrower curb radii.	
From Forest Street to Route 1/Broadway	• Pedestrian connectivity gap • No bicycle facilities	Extend the bike lanes northward from Forest Street. Construct a continuous sidewalk along the northern side of the parkway and evaluate the feasibility of constructing a sidewalk along the southern side of the parkway.	

Connecting Breakheart Reservation to Lynn Woods Reservation

Breakheart Reservation, a DCR-owned facility, and Lynn Woods Reservation, a 2,200-acre recreational area owned by the City of Lynn, are two major natural assets in the northern metropolitan Boston region. The two reservations are just a half-mile apart, yet despite this proximity it can be very challenging to travel between them on foot or by bicycle. Route 1/Broadway, which divides the two reservations, is a major barrier for access to the reservation.

Connecting the two reservations via off-street pathways provides would expand recreational access to thousands of residents on either side of Route 1. Businesses located along Route 1 would also benefit from expanded multimodal access. Efforts to realize this connection would involve coordination between DCR, MassDOT, municipal partners, community members, and local landowners.

Two alternatives exist for crossing Route 1. One alternative would be to construct a shared use path along the southern side of the existing bridge over Route 1 at the end of Lynn Fells Parkway. Another alternative would be to build a new pedestrian and bicycle bridge in the vicinity of Thomas Street. From there, existing pathways along the Saugus River could be improved to provide the connection to Lynn Woods Reservation. Figure 5-23 depicts these potential routings.

Hemlock Road

Location	Issue(s)	Recommendation	Additional Info
From Farm Street to Outer Loop Trail	• Discontinuous sidewalk • No bicycle accommodations	Reconstruct the sidewalk along the south side of the road as a shared use path connecting to the Outer Loop Trail at the Wakefield entrance to the Reservation.	
Intersection of Farm Street	• Long pedestrian crossing across entrance to Hemlock Road	Make geometrical changes to the intersection for improved pedestrian access, including addition of crosswalks and narrowing of curb radii.	Coordinate with the Town of Wakefield.

Forest Street

Location	Issue(s)	Recommendation	Additional Info
From Lynn Fells Parkway to parking lot	• No sidewalk • No bicycle accommodations	Install striped shoulders that can function as a pedestrian and bicycle lane. Add traffic calming measures to reinforce the low-speed nature of the road.	
Intersection Lynn Fells Parkway	• Pedestrian connectivity	Provide a crosswalk along the southern leg of the intersection in conjunction with the proposed sidewalk extension to the adjacent shopping center.	

Figure 5-22


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
Lynn Fells Parkway
Melrose Highlands
Melrose/Cedar Park
Middlesex Fells Reservation

Figure 5-23


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
Lynn Woods Reservation
1
Forest Street
Breakheart Reservation
Lynn Fells Parkway

Figure 5-24


129
Elm Street
Hemlock Road
Forest Street
Breakheart Reservation
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
0 500 1,000
Feet
N

Focus Area 4: Mystic Valley

Parkways

- Mystic Valley Parkway
- Mystic River Road

Communities

- Winchester
- Arlington
- Medford

Existing Conditions

Overview

Extending southward from the intersection of South Border Road and Highland Ave, Mystic Valley Parkway follows the winding Mystic River Reservation for nearly 10 miles. The curvilinear riverfront reservation is a major recreational attraction, and the Mystic Lakes are a destination for swimming, boating and hiking. Directly south of the study area lies the Alewife Brook Reservation, with walking and biking trails. The Tri-Community Bikeway, a pathway system currently under construction, intersects the parkway at its northern end near Winchester Center.

Near the Wedgemere Commuter Rail station, the parkway is discontinuous; the northern segment terminates at Bacon Street, with the southern segment continuing 850 feet to the west. A western spur of the parkway starts at Medford Street in Arlington and continues along the southern edge of Mystic Lakes to Mystic Street in Arlington. Mystic Valley Parkway reaches the edge of the study area at a signalized crosswalk just west of the Main Street overpass.

Mystic River Road is a low-volume access road along the north side of the Mystic River between Mystic Valley Parkway Arlington Street in Medford. Medium to high-density residential use is characteristic of the developed land adjacent to the parkway.

Transit

MBTA Commuter Rail service on the Lowell Branch at West Medford, Wedgemere, and Winchester.

Pedestrian

Sidewalks are provided along one or both sides of Mystic Valley Parkway for most of its length. An exception is the middle portion adjacent to the Mystic Lakes, which features a narrow natural surface path along the waterfront side. The two traffic circles at Medford Street (Arlington) and High Street (Medford) have crosswalks on some approaches but not all, creating a pedestrian connectivity gap. Mystic River Road is a low-volume street without sidewalks on either side.

Bicycle

DCR recently constructed a shared use path along the southern edge of Mystic Valley Parkway from Auburn Street to Winthrop Street.

Mystic Valley Parkway between High Street in Medford and Bacon Street in Winchester is a popular recreational cycling route. While formal bike lanes are not provided on the segment, the existing shoulder is used by bicyclists. As the parkway approaches Winchester Center north of Mystic Lakes, the shoulder is utilized for parking and bicyclists must share the travel lane with motor vehicles.

Starting just west of the bridge across Alewife Brook, a shared use path extends eastward along the north side of the parkway to Auburn Street. The path narrows to 5 feet where the parkway crosses under the MBTA Lowell/Haverhill Line Commuter Rail tracks.

Mystic River Road is a low-volume, one-way street that is comfortable for bicyclists, however due to the one-way restriction, provides a formal bicycle connection in the northbound direction only. Despite this, bicyclists often ride contra-flow along Mystic River Road.

The traffic circle where Mystic Valley Parkway and Alewife Brook Parkway intersect is a connectivity gap for pedestrians and bicyclists. There are no crosswalks across either parkway to provide access to the residential neighborhood to the east. Path users continuing from Alewife Brook Parkway onto Mystic River Parkway eastbound must make 950-foot diversion to the crosswalk just west of Alewife Brook to cross.

Previous Studies

DCR's *Mystic River Master Plan* (2009) provides comprehensive recommendations to enhance the river's recreational and scenic qualities, strengthen access between the reservation and adjacent neighborhoods, and restore and manage the river's ecological health. The study area for the plan overlaps with the Focus Area between River Street (Arlington) and the crossing near the Medford Square Footbridge (Medford). A key element of the *Mystic River Master Plan* is the provision of a continuous primary and secondary path network along the banks of the Mystic River. A notable outcome of the plan is the recent construction of a paved shared use path from the Auburn Street Bridge to Winthrop Street in Medford.

This plan supports the *Mystic River Master Plan* by adding further detail and alternatives analysis to its recommendations for pedestrian and bicycle connectivity.

Recommendations

Mystic Valley Parkway Segment 1 – Highland Ave (Winchester) to Bacon Street (Winchester)

Figure 5-25

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• No bicycle accommodations	Consider alternatives to provide a continuous bicycle facility along the length of the corridor.	Given that the parkway shoulder is used for parking, further analysis is recommended to understand the demand for parking in the area. From Washington Street to Highland Ave and from Mystic Ave to Bacon Street, parking demand may be accommodated by residential driveways.
Intersection of Washington Street (Winchester)	• Connection to the Tri-Community Bikeway can be strengthened	Modify geometry in conjunction with Tri-Community Bikeway construction. Consider wayfinding and geometric changes to help bicyclists navigate through the intersection.	
Intersection of Main Street (Winchester)	• Crash cluster • Long crossing distances	Consider modifications to address bicycle crash history and shorten pedestrian crossing distances.	
Intersection of Waterfield Avenue (Winchester)	• Long crossing distances • Roadway capacity may exceed demand • Excessive impervious surface near waterway	Make geometric changes to narrow the intersection and shorten pedestrian crossing distance, thereby reducing impervious surface and restoring parkland.	

Mystic Valley Parkway Segment 2 – Bacon Street (Winchester) to High Street (Medford)

Location	Issue(s)	Recommendation	Additional Info
From Bacon Street to bridge over Aberjona RIver	• No bicycle accommodations	As a short-term measure, formalize the shoulder as a bike lane. Long-term, build a two-way separated bike lane on west side of parkway between Aberjona Bridge and Beacon St. Transition a shared use path south of Aberjona Bridge.	A separated bike lane parallel to the sidewalk is recommended in this location due to the presence of residences.
From bridge over Aberjona River to High Street	• No bicycle accommodation	As a short-term measure, formalize the shoulder as a bike lane. Long-term, build a shared use path along west side of parkway. Retain and stabilize existing dirt path as walking/jogging route.	A wide path is recommended where feasible to accommodate demand. The roadway should be narrowed to encourage lower vehicle speeds.
Pine Ridge Road, Ravine Road, and Arlington Street	• No pedestrian crossing opportunities	Construct new crosswalks across the parkway connecting local side streets and residential area to the east with the parkland along Mystic Lakes.	
Traffic circle at High Street (Medford) and Mystic River Road	• Accessibility • Pedestrian access to parkland needs improvement • Unclear vehicle yielding priority	As a short-term measure, add pavement markings to channelize vehicle movements and clarify yielding priority. Include bike lanes and pavement markings to guide bicyclists through the intersection. Add crosswalks and curb ramps across west and north side of intersection and upgrade existing crosswalks and ramps. Evaluate the intersection for additional geometric modifications to improve safety for all users. Consider converting the northernmost 125 ft. of Mystic River Road approaching the intersection to parkland. See page 12 for more information.	Converting the intersection to a modern roundabout may require expanding the footprint into parkland and/or right-of-way. Coordinate as needed with the City of Medford.

Mystic Valley Parkway Segment 3 – Medford Street (Arlington) to Mystic Street (Arlington)

Location	Issue(s)	Recommendation	Additional Info
From High Street to Mystic Street	• No bicycle accommodations • Opportunity to improve views of the Mystic Lakes	As a short-term measure, install bike lanes. Long-term, build a shared use path along the waterfront edge of the road. Narrow the existing travel lanes and incorporate existing path into the proposed shared use path. Consider strategic clearing of uncontrolled greenery along water's edge to enhance view from the path.	
Intersection of Mystic Street	• Driveway opens directly onto the intersection, increasing pedestrian risk exposure • Pedestrian and bicycle connectivity improvements needed	In conjunction with the previous recommendation, reconstruct the intersection to provide crosswalks on all approaches, close the driveway entrance facing onto the intersection, and provide bicycle facilities. Work with local partners to explore enhanced connections to the Minuteman Bikeway.	Requires coordination with the Town of Arlington. An exclusive pedestrian phase may be desirable to transition users to and from the proposed shared use path.

Mystic Valley Parkway Segment 4 – Medford Street (Arlington) to Alewife Brook Parkway (Somerville)

Location	Issue(s)	Recommendation	Additional Info
Traffic circle at Medford Street/High Street	• Pedestrian connectivity gap; there is no way to cross from the north to south side of the parkway on foot • No bicycle accommodations	DCR recently installed crosswalks, curb ramps and vehicle yield lines. Additional enhancements should include: • Installing a pedestrian refuge island in the crosswalk on the north side of the roundabout • Ensuring accessible sidewalks and crosswalks around the entire perimeter of the circle. This would include adding crosswalks across the east and west (Medford Street) approaches to the circle. Future work should consider connectivity for proposed pedestrian and bicycle facilities extending north and south from the intersection.	Coordinate with the Town of Arlington on adding a crosswalk across the Medford Street approach.
High Street bridge over Mystic River	• No bicycle accommodations • Narrow sidewalks • Sidewalk condition	As a short-term measure, install buffered bike lanes on the bridge. Reconstruct the sidewalks and consider widening them as part of the project. The widened sidewalks could function as shared use paths providing connectivity to proposed shared use paths on both sides of the bridge.	

Location	Issue(s)	Recommendation	Additional Info
From Medford Street/High Street traffic circle to Alewife Brook Parkway	• No bicycle accommodations • Wide vehicle lanes may encourage speeding	As a short-term measure, install buffered bike lanes. Narrow existing travel lanes to encourage lower vehicle speeds. Long-term, consider alternatives to provide a continuous low-stress bike facility along the length of the corridor. Alternatives include: 1. Raised one-way separated bike lanes within the existing curb-to-curb width. 2. A raised two-way separated bike lane along the riverside edge within the existing curb-to-curb width. 3. A paved shared use path within the parkland along the river edge.	For long-term alternatives, frequent crosswalks should be provided to provide access from intersecting side streets. Alternatives 1 and 2 provide better access to side streets, while Alternative 3 improves access to the riverfront parkland. Alternatives 1 and 2 do not add impervious surface area, while Alternative 3 does.
Intersection of Park Street	• No pedestrian crossing opportunities	Add a new pedestrian crossing to the riverfront parkland. Consider closing Park Street access to parkway and consolidate vehicle access at Beacon St.	
Intersection of River Street	• Accessibility • Driveway opens directly onto the intersection, increasing pedestrian risk exposure	Upgrade accessibility and eliminate gas station entrance facing onto intersection.	Intersection should be designed to accommodate the preferred bicycle facility alternative.

Mystic Valley Parkway Segment 5 – Alewife Brook Parkway (Somerville) to the crossing near the Medford Square Footbridge (Medford)

Figure 5-26

Figure 5-27

Location	Issue(s)	Recommendation	Additional Info
Intersection of Alewife Brook Parkway	• Pedestrian and bicycle connectivity gap	Upgrade the existing circle to a modern roundabout and include shared use crossing on all approaches.	
From Boston Ave to Auburn Street	• MBTA Haverhill/Lowell Line commuter rail overpass creates a pinch point on the shared use path on the north side of Alewife Brook Parkway.	Consider options to provide a wider shared use path through the commuter rail overpass. Alternatives include: 1. Removing one travel lane from the parkway to provide a wider shared use path. 2. Constructing a new box or arch culvert through the railroad embankment north of the parkway to provide a shared use path bypass.	A traffic analysis is recommended to determine the feasibility of Alternative 1.
Auburn Street Bridge	• Accessibility upgrades needed • Vehicle slip lanes • Long signal phases • No bicycle accommodations	At the intersection on the south side of the river, remove eastbound right turn slip lane and widen the crosswalks and curb ramps to accommodate pedestrians and bicyclists. At the intersection on the north side of the river, consider closing vehicle access to/from Auburn Street on the in order to shorten signal length and improve safety. Consider removing a travel lane in the westbound direction going over the bridge to make space for a bicycle facility.	
From Auburn Street to the crossing near the Medford Square Footbridge	• No bicycle accommodations • Wide vehicle lanes	As a short-term measure, install buffered bike lanes. With reconstruction, build separated bike lanes using the same cross section.	Ensure that the facility connects with existing and planned facilities at the crossing near the Medford Square Footbridge.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Winthrop Street	• Shared use path connectivity needs improvement • Accessibility upgrades needed	Continue the shared use path from its current terminus at the southwest corner of the intersection to connect with the Mystic River Path west of the pedestrian bridge over Meetinghouse Brook. In conjunction, upgrade intersection accessibility, signal equipment, and geometry. Alternative alignments are: 1. Along the east side of the community garden to connect with the existing path just west of the pedestrian bridge 2. Along the eastern side of Winthrop Street to connect with the existing path terminus at the southwest corner of the community garden.	

Mystic River Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• No bicycle accommodations • No sidewalks	Retain the low-speed, informal nature of the street. As a short-term measure, consider advisory bike lanes. Between Arlington Street and Harvard Ave, add a southbound contra-flow bike lane with shared lane markings in northbound direction. Allow parking on northbound side. Consider additional traffic calming features.	
Intersection of High Street and Mystic Valley Parkway	• Parkland bisected by roadways	Consider closing the northernmost 125 ft. of Mystic River Road to traffic and restoring it as parkland. This change would simplify operations and reduce potential conflicts. A bicycle bypass should be provided.	Access to residences on the street would be provided via other streets in the network.
Intersection of Arlington Street	• Skewed Intersection	Square off intersection. This can be achieved with low-cost interim materials.	
Intersection of Fairfield Street	• Poor crosswalk condition and visibility adjacent to playground	Reconstruct crosswalks and consider other traffic calming to improve playground access.	

Figure 5-28

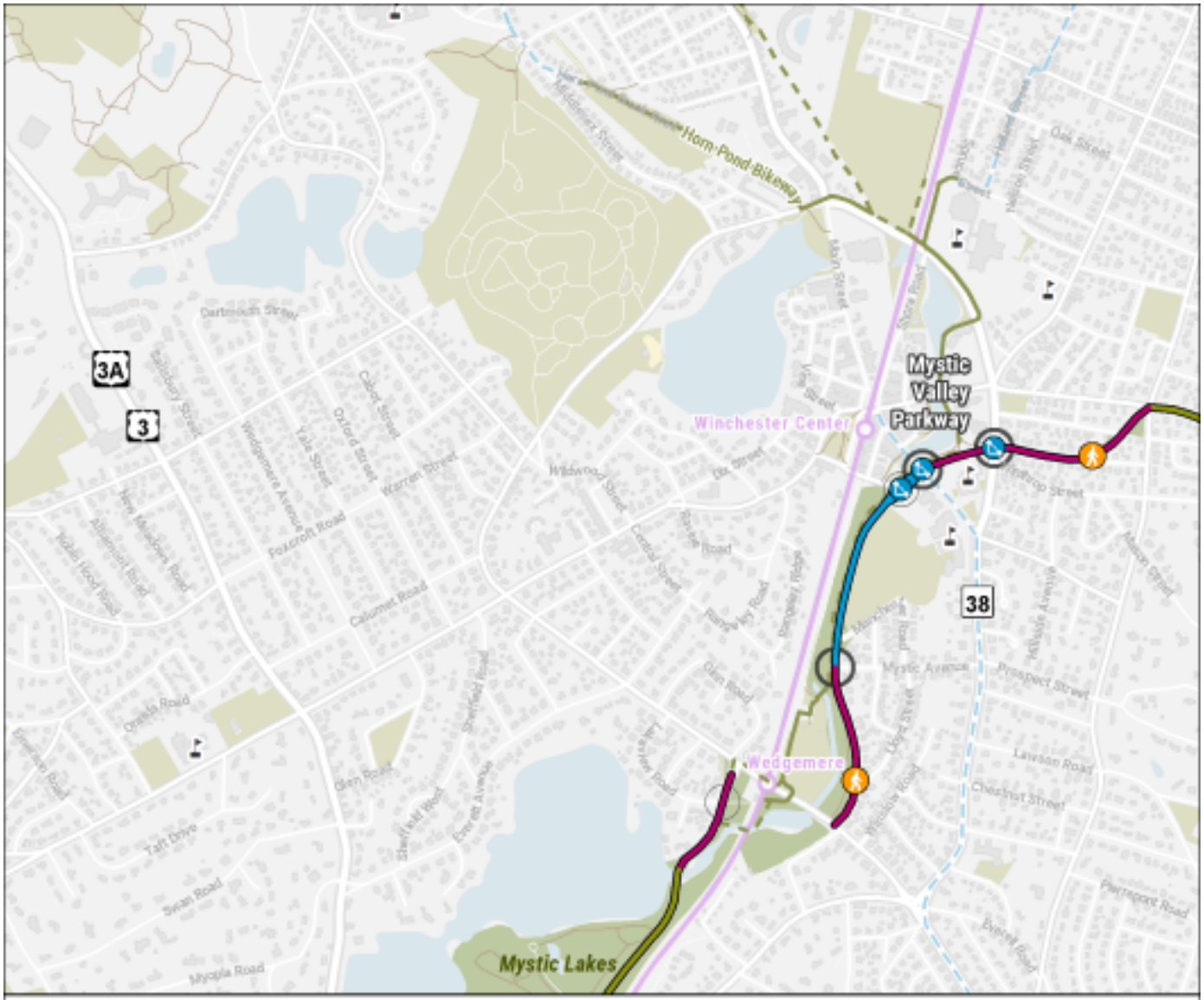

Horn Pond Bikeway
Mystic Valley Parkway
Winchester Center
Wedgemere
Mystic Lakes
3A
3
38
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
0
500
1,000
Feet
N

Figure 5-29


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0 500 1,000
Feet
38
3A
Mystic Valley Parkway
Mystic Lakes
60
3
2A
3A
Mystic River Road

Figure 5-30


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0
500
1,000
Feet
N
Mystic River Reservation
Mystic Valley Parkway
Alewife Brook Reservation
Alewife Greenway
93
16
38
60
West Medford

Focus Area 5: Upper Charles

Parkways

- Forest Grove Road
- Norumbega Road
- Recreation Road
- Park Road
- Boulevard Road
- Quinobequin Road

Communities

- Newton
- Weston
- Waltham

Existing Conditions

Overview

The Upper Charles area includes parkways located along the banks of the meandering Charles River. The parkways all border the river and are disconnected from one another. Park Road, Recreation Road, and Quinobequin Road serve higher volumes of traffic, while Forest Grove Road, Norumbega Road, and Boulevard Road are low-volume park access roads.

Recreation Road and Park Road bisect the Leo Martin Memorial Golf Course, a DCR property. Interstate 95/Route 128 runs north/south through the area, bisecting the reservation. Interstate 90 runs east/west. The interchange between the two interstates is a large feature of the area. Low-density residential uses characterize the area around the parkways.

Pedestrian

Several of the parkways provide access to formal and informal walking trails throughout along the Charles River. Except for a few small segments, no sidewalks are provided. Walking paths are present in several areas of the reservation, but river crossings are relatively infrequent.

Bicycle

Forest Grove Road, Norumbega Road, and Boulevard Road are low-stress roads for bicycling, but the parkways are disconnected and do not form a network. Park Road, Recreation Road, and Quinobequin Road see higher volumes of cut through traffic and lack bike facilities or shoulders.

Transit

MBTA Green Line rapid transit service stops at Riverside station near Recreation Road, but non-motorized access between the station and the reservation is limited. Quinobequin Road can be accessed from the Waban station on the Green Line.

Recommendations

Forest Grove Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Opportunity to improve connectivity along the Blue Heron Trail	Lower the speed limit to 20 mph and add additional signage and pavement markings. Add shared lane markings and wayfinding to formally sign the route as part of the Blue Heron Trail	

Norumbega Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Opportunity to improve pedestrian and bicycle access	Construct a shared use path along the east side of the roadway starting at the Newton Historic Boathouse Public Parking lot and extending to River Road. Convert vehicle operations to one-way only; northbound is the preferred direction.	Requires converting Norumbega Road to one-way traffic. This recommendation could be implemented using of lower-cost treatments such as bollards or jersey barriers for the proposed shared use path.

Recreation Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Opportunity to improve pedestrian and bicycle access	Extend the shared use path within the golf course eastward from its current terminus, routing it through the woods to avoid the fairway.	The extended path would funnel onto the sidewalk on the bridge spanning I-95/Route 128.

Park Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Pedestrian crossings	Implement a 20-mph slow zone with traffic calming features. Add wayfinding to direct pedestrians and bicyclists to the pathway parallel to the road inside golf course.	
Intersection of Recreation Road	• Skewed intersection geometry	Square off the intersection of Park Road and Recreation Road.	

Boulevard Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Connectivity along the Blue Heron Trail	Retain the low-volume, low-speed residential character of the roadway while considering options to strengthen connections southward to the Blue Heron Trail and northward to the Leo Martin Golf Course.	

Quinobequin Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Opportunity to improve pedestrian and bicycle access	Consider the feasibility of constructing a new shared use path along the northern bank of the Charles River along Quinobequin Road between the Cochituate Aqueduct and Boylston Street.	This recommendation would open up recreational access to the riverfront and provide pedestrian accommodations along the length of Quinobequin Road.

Figure 5-31

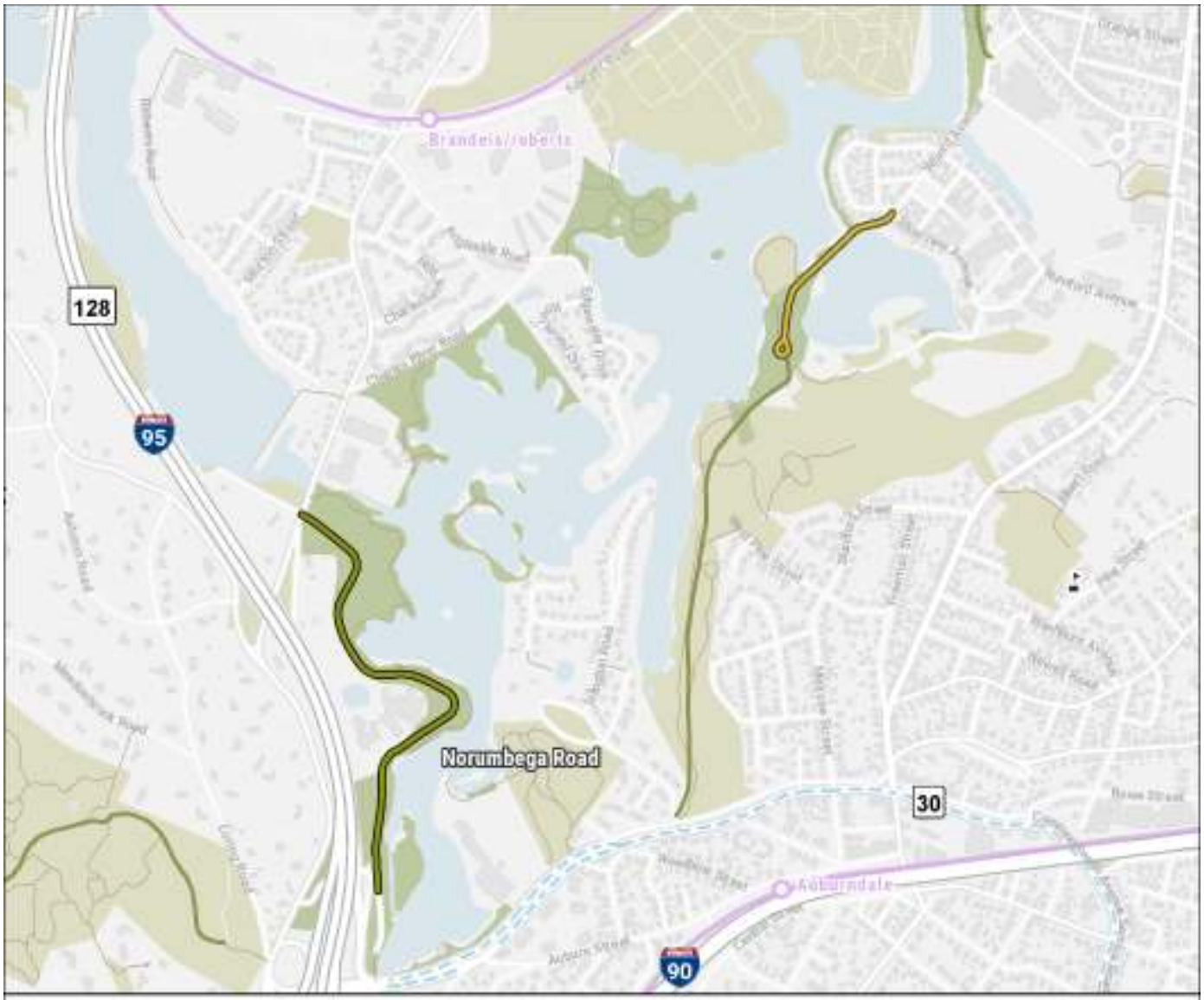

128
95
Norumbega Road
30
90
Auburndale
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
0
500
1,000
Feet
N

Figure 5-32


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0 500 1,000
Feet
30
128
90
95
Recreation Road
Charles River Reservation
Wellesley Farms
16
9

Figure 5-33


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
Eliot
Waban
Quinobequin Road
Sudbury Aqueduct
Cochituate Aqueduct
9
128
95
16

Focus Area 6: Charles River Basin West

Parkways

- Charles River Road
- North Beacon Street
- Birmingham Parkway
- Soldiers Field Road
- Greenough Boulevard
- Everett Street

Communities

- Allston/Brighton (Boston)
- Watertown

Existing Conditions

Overview

Following the Charles River through Allston/Brighton and into Watertown, this area includes parkways on both the north and south side of the river. These parkways are directly adjacent to some of the most popular parkland in Boston and Watertown. Used for recreation and transportation alike, the extensive network of trails and paths that run along the banks of the Charles River are an invaluable resource connecting the cities and towns directly north and west of Boston to the heart of the city via the Paul Dudley White Bike Path. The parkways in this area are generally larger thoroughfares with multiple lanes in both directions divided by a median. Exceptions to this include Charles River Road, North Beacon Street north of the river, Everett Street, and Greenough Boulevard, which each contain one lane running in each direction with no median.

The traffic circle where Soldiers Field Road, North Beacon Street, and Nonantum Road intersect is a connectivity gap for pedestrians and bicyclists. Currently, the only bicycle and pedestrian access point between the

residential neighborhoods situated to the south and the riverfront park and trail system is at Brooks Street on the far western end of the traffic circle. Bicyclists traveling north on Brooks Street do not have an intuitive way to cross Nonantum Road to access the trail system. Pedestrians and bicyclists approaching the traffic circle from the east do not have any access point.

Pedestrian

The pathways and sidewalks along the river edge are popular destinations for walkers and joggers. However, these assets can be challenging to access on foot from the residential neighborhoods to the south. A footbridge located at Telford Street provides access to the parkland across Soldiers Field Road. Recently completed modifications to the intersection of Western Ave, Arsenal Street and Leo Birmingham Parkway have improved pedestrian and bicycle access to the Paul Dudley White Bike Path. However, other streets that intersect with the parkways are lacking crosswalks for pedestrians and bicyclists to access the riverfront paths.

Sidewalks or shared use paths on both or one side of the roadway are provided along Charles River Road, Greenough Boulevard, Soldiers Field Road, and portions of North Beacon Street. Leo Birmingham Parkway is a critical gap for pedestrians. Sidewalks are not present on the parkway between Market Street and North Beacon Street. The presence of a goat path on this segment indicates the demand for a sidewalk or path.

Bicycle

Many of the parkways within this area are paired with a shared use path that provides a low-stress bicycle route. Specifically, the Paul Dudley White Bike path runs parallel to Soldiers Field Road and Greenough Boulevard on the north and south banks of the river. Moving west onto North Beacon Street and Charles River Road, an on-street bike lane is provided.

Recommendations

Charles River Road

Figure 5-34

Location	Issue(s)	Recommendation	Additional Info
From Watertown Square to North Beacon Street	• Narrow shared use path • Bike lane needs improvement	As a short-term measure, consider alternatives to widen the existing bike lanes. Long-term, upgrade the existing sidewalk to a wide shared use path (10 to 12 ft. in width).	The parking lane along the riverfront edge sees very low utilization, especially near the middle part of the parkway. Portions of the parking lane could be reallocated to wider bicycle facilities. Long-term, the roadway can be narrowed and the width of the existing on-road bike lanes can be applied to a wider shared use path and buffer.
From Beechwood Ave to North Beacon Street	• Pedestrian connectivity gap	Construct a continuous sidewalk along the northern side of the parkway. Provide new crosswalks at Pequossette Street and Palmer Street.	See Figure 5-34. A crosswalk is not recommended at Beechwood Ave due to sight distance issues caused by an incline on Charles River Road.
Intersection of North Beacon Street	• Long crossing distances • Bicycle navigation and wayfinding • Narrow shared use path	Improve intersection geometry to better accommodate pedestrians and bicyclists. Consider installing a protected intersection to improve safety for bicyclists traveling through the intersection.	The intersection design should improve connectivity for users traveling along the Paul Dudley White Bike Path and also provide clear connections to/from nearby employment, residential, and retail destinations. Coordinate with MassDOT, the Town of Watertown and other relevant stakeholders.
Watertown Square	• High crash location • Pedestrian and bicycle connectivity • Narrow shared use path	Modify the Watertown Square intersection in conjunction with the Charles River Road/Riverside Street realignment proposed by AthenaHealth.	Coordinate with the Town of Watertown and other relevant partners.

Reimagining Charles River Road

It is recommended that DCR consider the feasibility of closing Charles River Road to through traffic to restore the river edge parkland as passive recreational space. Removing through traffic would allow for the expansion of valuable riverfront parkland and an enhanced recreational and transportation corridor for non-motorized users. Maintaining vehicle access to parking areas (including the Watertown Riverfront Park and Braille Trail), residences, and institutional destinations would be an important part of such a project. From the east, vehicle access could be maintained up to at least Beechwood Ave. On the western end, access could be maintained at least between Irving Street and Wheeler Lane. Access to the Perkins School for the Blind parking lot would be provided from either the east or west side. With through traffic removed, the remaining portions of Charles River Road would be reimagined as a quieter, narrower roadway.

North Beacon Street

Figure 5-35

Location	Issue(s)	Recommendation	Additional Info
From Charles River Road to Greenough Boulevard	• Lack of regional trail connectivity • Existing bicycle facilities need improvement • Wide travel lanes	As a short-term measure, install one-way separated bike lanes on both sides. Consider the following longer-term alternatives to improve pedestrian and bicycle facilities: 1. Build a two-way separated bike lane and parallel sidewalk along the river side of the parkway. Additionally, provide a westbound bicycle facility on the north side of the parkway for bicyclists continuing west on North Beacon Street past School Street. 2. Construct one-way separated bike lanes on both sides of the parkway.	Interim recommendation can be implemented as part of routine repaving and restriping.
Intersection of Greenough Boulevard	• Long crossing distances • Potential node in regional trail network with the proposed connection to the Watertown Greenway via Talcott Ave	Modify the intersection to improve safety and connectivity for all users. Consider signalization and the addition the of pedestrian crossing islands.	Existing and future bicycle desire lines should be considered in the design of the intersection.
North Beacon Street Bridge (over Charles River)	• No bicycle accommodations	As a short-term measure, install bike lanes. Long-term, consider the feasibility of widening the sidewalks on both sides to accommodate pedestrians and two-way bicycle operations.	Bike lanes can be installed in both directions by narrowing the existing travel lanes. However, the feasibility of a road diet should be considered. Designing the sidewalks as bidirectional shared use paths is advantageous because two-way bicycle desire lines exist on both sides of the river.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Soldiers Field Road and Nonantum Road	• Paul Dudley White Bike Path crossing at North Beacon Street needs improvement • No pedestrian and bicycle access from North Beacon Street bridge to south side of North Beacon Street • Accessibility • Narrow paths approaching intersection	Consider the following modifications to the intersection: • Taper the westbound approach to the bridge to one travel lane and consider providing a signal or beacon to encourage vehicle yielding to path users. In conjunction, widen the approaching path segment and buffer and extend the curb at the corner. • Add a new shared use crossing between the northwest corner of the intersection and the DCR-owned swimming pool building on the south side of North Beacon Street. • Explore opportunities to widen the path approaching North Beacon Street from the west.	See Figure 5-35.
Intersection of Parsons Street	• No pedestrian and bicycle access route from Parsons Street to the Paul Dudley White Bike Path • Accessibility	Add a shared use crossing between the southeast corner of and the Paul Dudley White Bike Path along the eastern edge of the intersection.	See Figure 5-35. The crossings across North Beacon Street and Soldiers Field Road eastbound could be integrated with existing signal operations. Consider enhanced crossing treatments at Soldiers Field Road westbound.
Soldiers Field Road to Leo Birmingham Parkway	• Sidewalk connectivity gap on the south side east of Parsons Street • No bicycle accommodations	As a short-term measure, extend the sidewalk eastward from Parsons Street to Leo Birmingham Parkway. Along the southern edge of North Beacon Street, consider constructing a shared use path as part of longer term reconstruction.	See Figure 5-35.

Birmingham Parkway

Figure 5-36

Figure 5-37

Legend

- Existing Crossing
- Proposed Crossing
- Upgrade Crossing
- Remove Crossing
- Existing Signalized Crossing
- Existing Sidewalk
- Proposed Sidewalk
- Existing Shared Use Path
- Proposed or Upgraded Shared Use Path
- Proposed Separated Bike Lane
- Planned/Proposed Shared Use Path Outside Study Area
- Existing/Under Construction Shared Use Path Outside Study Area
- Walking Trail
- Existing Buffered Bike Lane

Location	Issue(s)	Recommendation	Additional Info
Intersection of North Beacon Street	• Crash hotspot • No pedestrian crossings • No bicycle accommodations • Opportunity to improve access to riverfront park system from residential neighborhoods south of Interstate 90	Modify the intersection geometry to address common crash types, and add crosswalks, sidewalks, and bicycle facilities.	The location of sidewalks and bicycle facilities should consider connections to proposed and existing facilities.
North Beacon Street to Market Street	• Sidewalk connectivity gap • No bicycle accommodations	As a short-term measure, install buffered bike lanes on both sides and remove a travel lane on both sides. Build a sidewalk along the northern side of the parkway Longer-term, consider consolidating all vehicle traffic to one side of the median and convert the other side to a shared use path.	For the longer-term alternative, consider connectivity to existing, planned and proposed facilities when determining which side the shared use path should be placed.
Intersection of Market Street and Lincoln Street	• Long crossing distances • Additional crosswalks needed • No bicycle accommodations	Reduce corner radii and provide crosswalks across all intersection approaches. Consider all design changes in conjunction with the proposed Birmingham Parkway road diet west of the intersection and the proposed Lincoln Street bikeway (People's Pike Path).	
Market Street to Western Ave	• No bicycle accommodations • Pedestrian and bicycle access between riverfront park system and nearby neighborhoods needs improvement	Construct one-way separated bike lanes on Birmingham Parkway between Western Avenue and Lincoln Street.	
Intersection of Lothrop Street	• Pedestrian and bicycle access across parkway needs improvement	Provide a shared use crossing across Birmingham Parkway at Lothrop Street.	See Figure 5-37.
Intersection of Western Avenue and Arsenal Street	• Recent improvements made at approach to Arsenal Street Bridge include a widened crossing, curb extensions, and new signals. • Pedestrian and bicycle access to Paul Dudley White Bike Path from Leo Birmingham Parkway needs additional improvement	As a short-term measure, add sidewalks and crosswalks along the southern side of Western Avenue. Consider pavement markings to guide bicyclists through the intersection. Longer-term, consider comprehensive changes to reduce the overall intersection footprint, shorten crossing distances, and reduce pedestrian and bicycle delay.	

Reimagining Leo Birmingham Parkway

Between North Beacon Street and Market Street, existing traffic volumes are relatively low, while currently no formal pedestrian and bicycle accommodations are provided. Regional traffic demand is served by adjacent corridors, including Soldiers Field Road, North Beacon Street, and Interstate 90. It is recommended that DCR consider the feasibility of closing this segment of Birmingham Parkway to vehicle traffic. The parkway can be restored to parkland with through access for non-motorized users. Recreational facilities could be added, such as playing fields, skate park, or an open-air restaurant. At its eastern end, the parkway could connect the greenway along Lincoln Street envisioned by community residents.

Soldiers Field Road

Figure 5-38

Location	Issue(s)	Recommendation	Additional Info
Eliot Bridge to Western Ave	• Wide travel lanes	Restripe Soldiers Field Road with narrower travel lanes (10.5 to 11 feet recommended).	
North Beacon Street to Birmingham Parkway	• Pedestrian and bicycle access along the south side of the Soldiers Field Road needs improvement • Existing path is narrow	Widen the Paul Dudley White Bike Path to 12 to 15 feet where feasible. On the south side of Soldiers Field Road, consider reconstructing the existing sidewalk as a shared use path to provide access to existing retail destinations. The path would extend along the eastbound ramp to Birmingham Parkway where a crossing would be provided to Lothrop Street. Consider additional safety measures, such as a road diet and or the addition of a median.	
Intersection at Eliot Bridge	• Parkland bisected by roadways	Consider reconstructing the intersection of Soldiers Field Road and the Eliot Bridge as a modern roundabout. Alternatively, consider reconstructing the intersection with a significantly smaller footprint.	A modern roundabout could be constructed with a smaller footprint than the current intersection, which would allow for the restoration of parkland.
Intersection of Everett Street	• Pedestrian and bicycle access to Herter Park needs improvement	Add crosswalks across Soldiers Field Road to improve pedestrian access to/from Everett Street.	See Figure 5-38. Consider use of a leading pedestrian interval or exclusive pedestrian phase.
Intersection of Telford Street	• Pedestrian and bicycle access to Herter Park needs improvement	Reconstruct the existing pedestrian bridge over Soldier's Field Road or remove bridge and replace with a new, at-grade crossing.	See Figure 5-38.
Near 1120 Soldiers Field Road	• Pedestrian access between Herter Park and Smith Field needs improvement	Consider the desirability of adding a new crossing in the vicinity of this location.	See Figure 5-38.

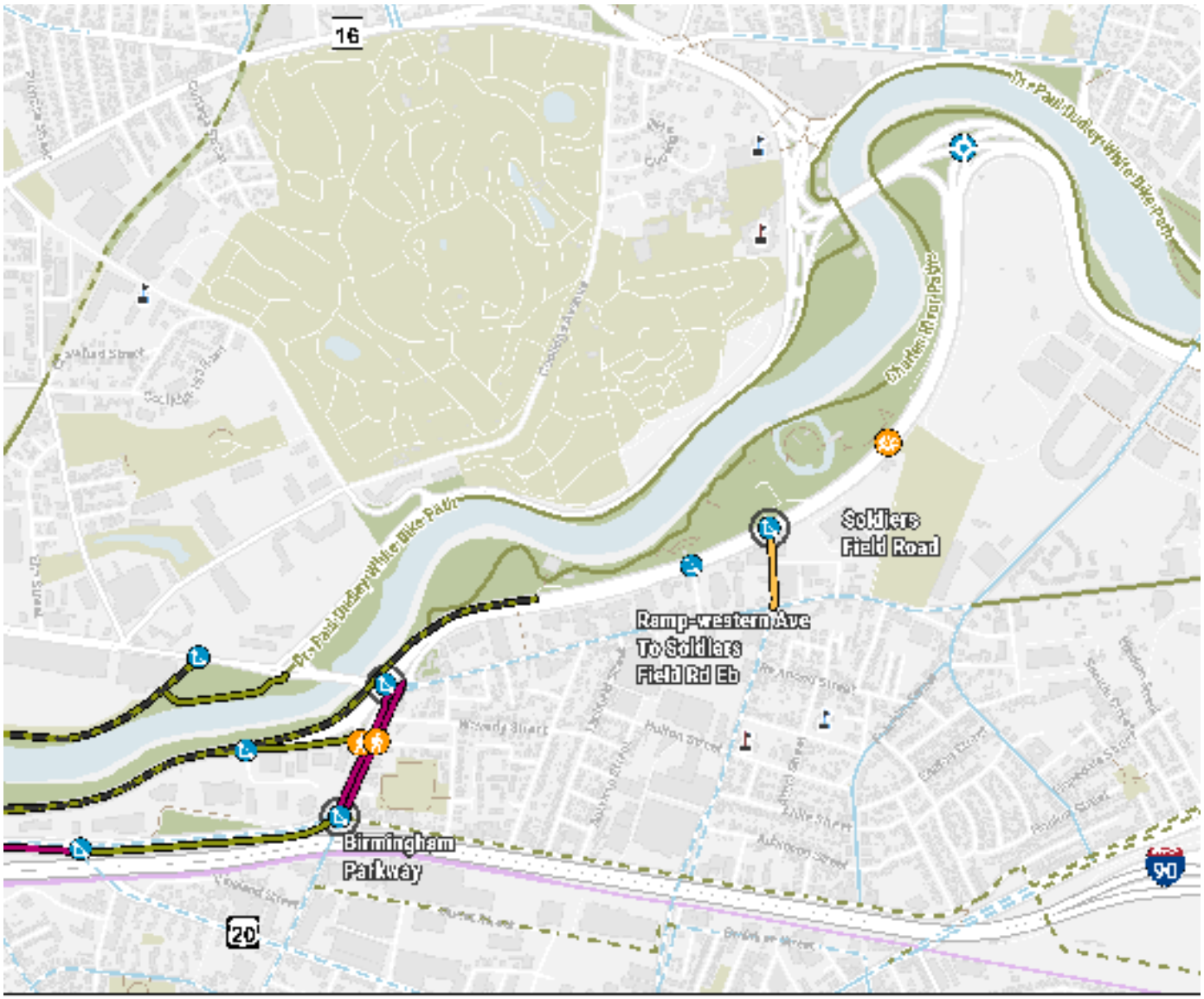
Greenough Boulevard

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Existing shared use path needs improvement • Regional path connectivity needs improvement • Strength connection to existing Greenough Boulevard path north of Arsenal Street	Upgrade the existing path along the river to a wide shared use path (10 to 12 ft. in width). Near the Arsenal Street intersection, route the path along the edge of the river following the existing natural surface path. This routing would connect the existing path on Greenough Boulevard north of Arsenal Street.	
Intersection of Arsenal Street	• Crash history • Pedestrian and bicycle connectivity gap	Consider alternatives to reduce conflicts between vehicles turning left from Arsenal Street westbound to Greenough Boulevard and left turning vehicles exiting Greenough Boulevard turning left onto Arsenal Street. Alternatives include: • Restricting all left turns by installing a median. • Adding a left turn lane on Arsenal Street westbound and restricting left turns out of Greenough Boulevard. • Adding a signal.	

Figure 5-39


16
20
90
Watertown Branch
Charles River Road
North Beacon Street
Dr. Paul Dudley White Bike Path
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
0
500
1,000
Feet
N

Figure 5-40


16
Dr. Paul Dudley White Bike Path
Soldiers Field Road
Ramp-western Ave To Soldiers Field Rd Eb
Birmingham Parkway
20
90
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
N

Focus Area 7: Charles River Basin East

Parkways

- Land Boulevard

Communities

- Cambridge

Existing Conditions

Overview

Located near downtown Boston and Cambridge, Edwin Land Boulevard provide access across and along the banks of the Charles River. Together, the two parkways comprise the easternmost node in the Charles River pathway system that extends westward to Watertown and beyond. Given their proximity to major employment, residential, and recreational centers, the parkways are important corridors for all modes of travel.

Commercial, institutional, and recreational uses are typical throughout the focus area, North Point Park, Nashua Park, Lederman Park, and the Cambridge Galleria Mall.

Pedestrian

The parkways are very popular with pedestrians due to the proximity of nearby cultural attractions. The sidewalk on the west side of Charles River Dam Road sees a high volume of pedestrians and can become congested due to its relative narrow width given the demand. Sidewalks are provided along both sides of both Land Boulevard and are generally in good condition.

Bicycle

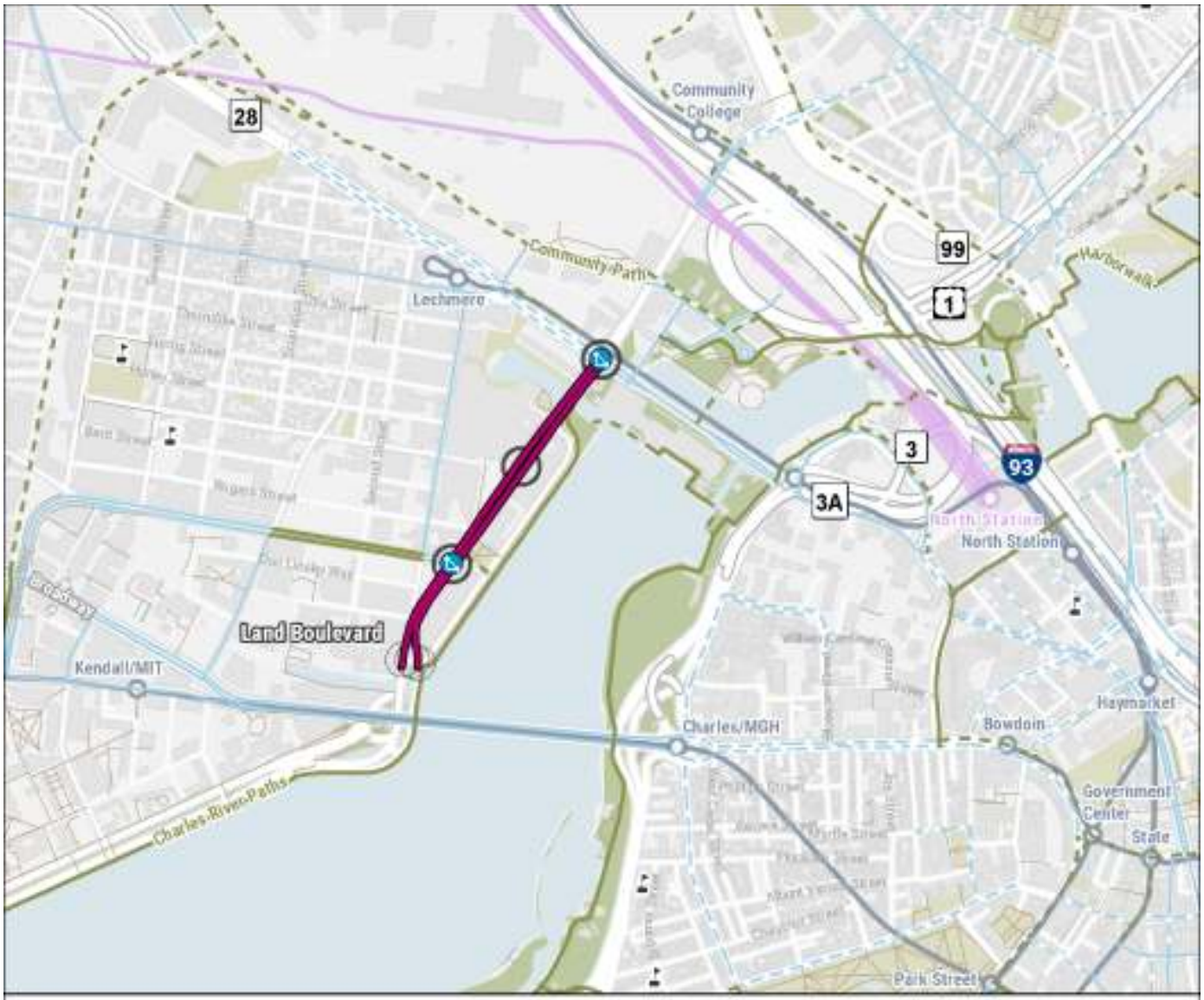
Charles River Basin East is a major node for people riding bikes, with several regional routes converging on the area. Commuters between Charlestown and Kendall Square use Edwin Land Boulevard. However, the parkway does not have dedicated bicycle facilities; bicyclists riding in the roadway must share travel lanes with high speed, high volume vehicle traffic. Many bicyclists choose to ride on the sidewalks in this area because of the high-stress nature of the roadways.

Recommendations

Edwin Land Boulevard

Location	Issue(s)	Recommendation	Additional Info
From eastern terminus of Binney Street to Cambridge Parkway	Opportunity to provide a bicycle connection from east end of Binney Street to Cambridge Parkway	Provide a new connection across Charles Park between the Cambridge Parkway Path and Binney Street.	Follows recommendation in *Charles River Basin Pedestrian and Bicycle Connectivity Study*. Requires coordination with City of Cambridge and other relevant landowners.
Length of corridor	No bicycle accommodations	As a short-term measure, evaluate the desirability of installing bike lanes through restriping. Bike lanes are feasible along the corridor by narrowing the existing travel lanes. When the road is reconstructed, include one-way raised separated bike lanes on both sides of the parkway.	Long-term recommendation may require modifications to the number of travel lanes, median width, signal equipment, curbs, and tree placement.
Intersection of Charles River Dam Road	Pedestrian and bicycle crash cluster No bicycle accommodations	Modify the intersection to provide bicycle facilities and address the pedestrian and bicycle crash cluster.	Requires some construction and may require modifications to travel lanes and signal equipment.

Figure 5-41


28
Community College
99
1
Community Path
Lechmere
Harborwalk
3
93
3A
North Station
Land Boulevard
Kendall/MIT
Charles/MGH
Bowdoin
Haymarket
Government Center
State
Charles River Paths
Park Street
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
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Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water
0 500 1,000
Feet
N

Focus Area 8: Old Harbor

Parkways

- William Day Boulevard
- Old Colony Avenue
- Babe Ruth Park Drive

Communities

- Dorchester and South Boston (Boston)

Existing Conditions

Overview

The Old Harbor Reservation traces the shorelines of Old Harbor and Pleasure Bay adjacent to the South Boston and Dorchester neighborhoods of Boston. William Day Boulevard is a four-lane, undivided, bidirectional roadway that follows the waterfront from Kosciuszko Circle to Castle Island. The roadway provides direct access to beaches and recreational facilities, including Joe Moakley Park, which has numerous playing fields and athletic facilities. On-street parking is provided at the eastern end of the corridor along the northern edge of Pleasure Bay. On the western side of Joe Moakley Park, Old Colony Avenue is a four-lane, divided, bidirectional roadway with parallel on-street parking on both sides. Babe Ruth Park Drive is a short connecting road between William Day Boulevard and Columbia Road.

Land Use & Natural Resources

High-density residential uses and recreational open space are characteristic along the corridor. Stunning ocean-side views can be seen from William Day Boulevard and the adjacent beaches. In addition to the residential neighborhoods to the north and east of the reservation, the University of Massachusetts Boston campus is situated directly south of the reservation.

Pedestrian

Pedestrian connectivity along the length of the corridors is generally good with sidewalks provided along one or both sides of the majority of the parkways. Pedestrian crossings are provided on both William Day Boulevard and Old Colony Avenue in between the parking areas and the recreational facilities within Joe Moakley Park. Paths are provided within Joe Moakley Park providing through access between the two parkways.

Pedestrian safety is a noted issue throughout the focus area. In recent years, pedestrian crashes resulting in injury or fatality have occurred on both William Day Boulevard and Old Colony Ave at crosswalks. The factors associated with these crashes suggests that safety could be improved by implementing measures at crosswalks to reduce vehicle speeds, decrease the number of lanes pedestrians must cross, provide crossing islands, and increase the visibility of crossings.

Bicycle

With the exception of Kosciuszko Circle, bicyclists have a comfortable experience along the parkways. The existing Harborwalk along William Day Boulevard serves as a shared use path and carries bicycle traffic at sidewalk level, separated from traffic. Popular with walkers, runners, and bicyclists, the shared use path along William Day Boulevard, can become congested, increasing the potential for conflicts between users and decreasing the quality of experience.

On Old Colony Avenue, buffered bike lanes were installed between Kosciuszko Circle and Preble Circle as part of routine repaving and restriping.

Transit

The JFK/UMass MBTA Red Line and Commuter Rail station is accessed from Old Colony Avenue directly southwest of the reservation.

Recommendations

William Day Boulevard Segment 1 – Kosciuszko Circle to G Street

Extending northward from Kosciuszko Circle, William Day Boulevard follows the edge of Carson Beach on the east side and Moakley Park on the west. The cross section features four lanes and a wide sidewalk on the west side. The Harborwalk shared use path is located on the waterfront side. Crosswalks are located at frequent intervals along the segment.

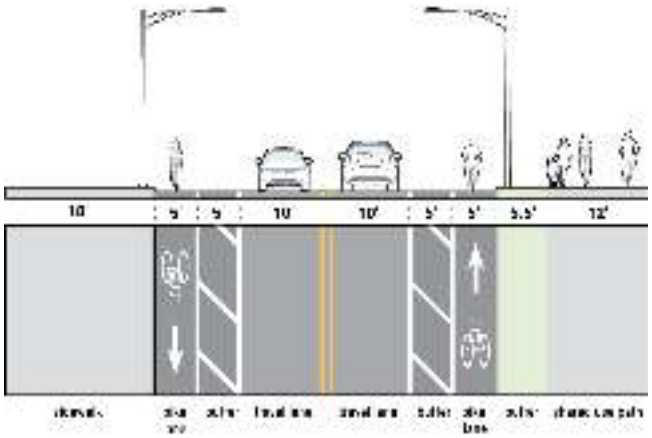


Figure 5-42: William Day Boulevard Segment 1 Existing Typical Cross Section

Figure 5-42 shows the Short-Term modifications that have already been implemented as part of the Parkways Master Plan effort. Buffered bike lanes provide space for people to ride bicycles separated from both vehicles in the roadway and pedestrians on the shared use path. The smaller roadway also addresses the pedestrian and vehicle crash history.

Long-term, it is recommended that the shared use path be repaved with asphalt or saw-cut concrete to provide a smooth riding surface for wheeled users, as shown in Figure 5-43. Pedestrian crossing islands are also recommended.

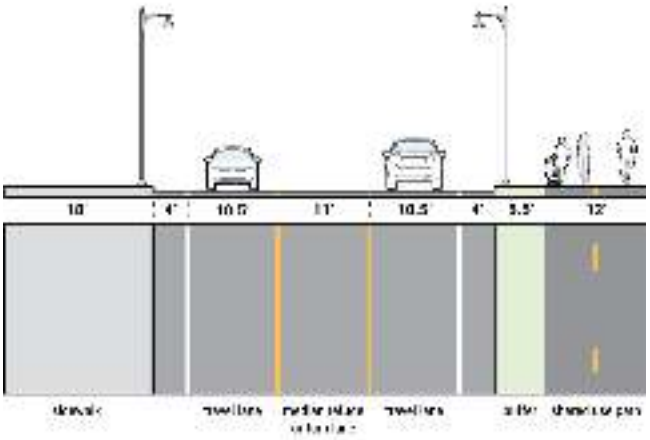


Figure 5-43: William Day Boulevard Segment 1 Proposed Long-Term Cross Section

William Day Boulevard Segment 2 – G Street to I Street

East of G Street, the buffer between the Harborwalk and the roadway narrows and the inland side of the roadway features a grassy lawn with intermittent mature trees.

The short-term modifications from Segment 1 are continued here. This segment also features buffered bike lanes and a road diet to address bicycle, pedestrian, and vehicle safety issues as shown in Figure 5-44.

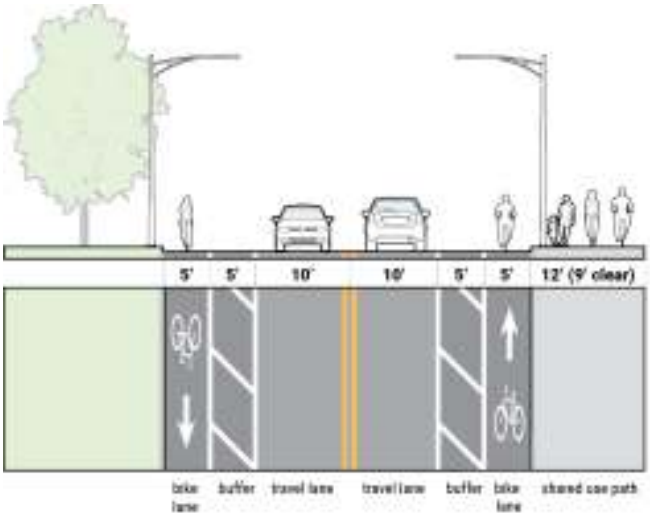


Figure 5-44: William Day Boulevard Segment 2 Existing Typical Cross Section

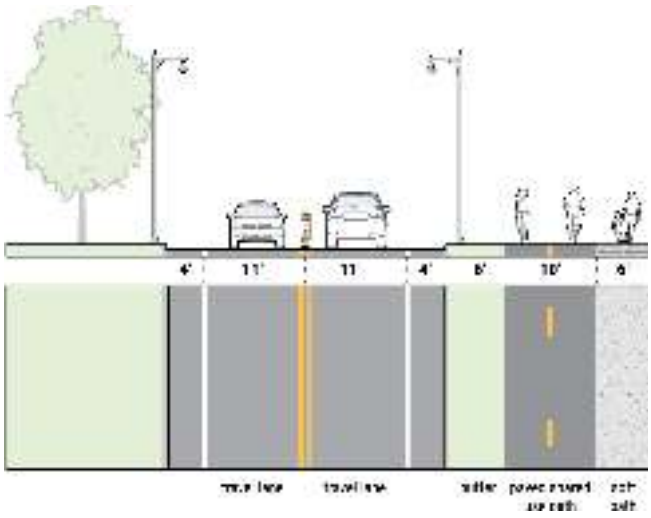


Figure 5-45: William Day Boulevard Segment 2 Proposed Long-Term Cross Section

As shown in Figure 5-45, it is recommended that the shared use path and buffer along the waterfront side be widened. In conjunction, the roadway would be narrowed. The buffer would provide space for additional plantings and stormwater mitigation features.

The construction recommendations on this and following segments focus on providing separate parallel facilities for bicyclists and pedestrians.

William Day Boulevard Segment 3 – I Street to O Street

From I Street to O Street, the shared use path width varies from 11 ft. up to 18 ft. There is one travel lane in each direction with parking permitted on both sides of the parkway.

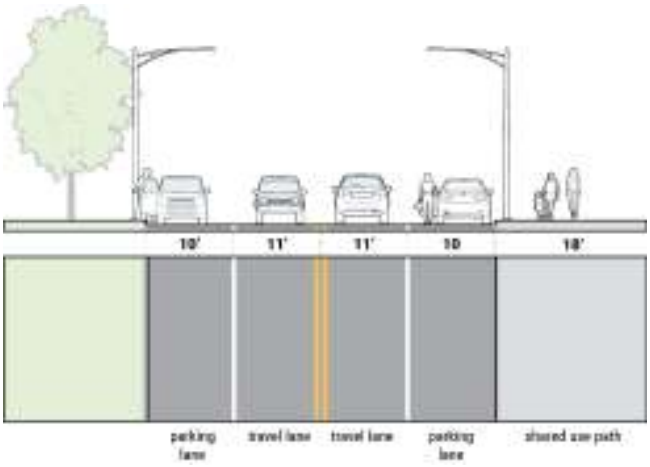


Figure 5-46: William Day Boulevard Segment Existing Typical Cross Section

Figure 5-46 shows the Short-Term modification, which were implemented as part of the Parkways Master Plan process. This segment is a continuation of Short-Term modification for the other segments, with one lane in each direction throughout.

Long-term, a parallel separated bike lane and sidewalk would be provided (see Figure 5-47). The width of the facilities may need to vary depending on the available cross section width. The use of grade separation between the bike lane and sidewalk should be considered in order to encourage compliance and reduce potential conflict between users.

The intersection of L Street and William Day Boulevard should be modified to address the crash history at that location.

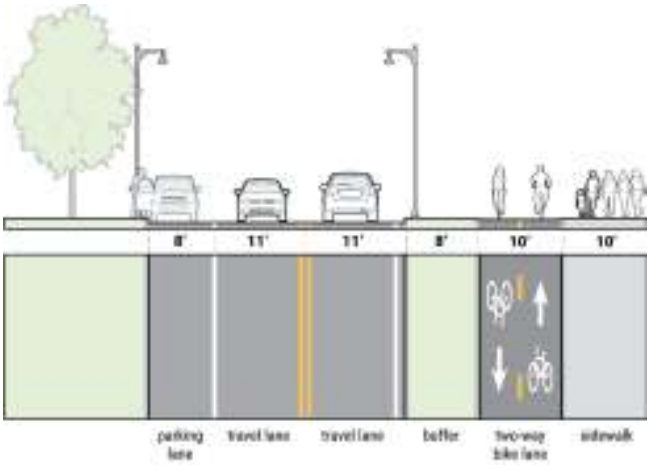


Figure 5-47: William Day Boulevard Segment 3 Proposed Long-Term Cross Section

William Day Boulevard Segment 4 – O Street to Farragut Road

This segment retains a similar cross section with Segment 3. Parking is permitted on both sides of the parkway, thereby reducing the number of travel lanes to two.

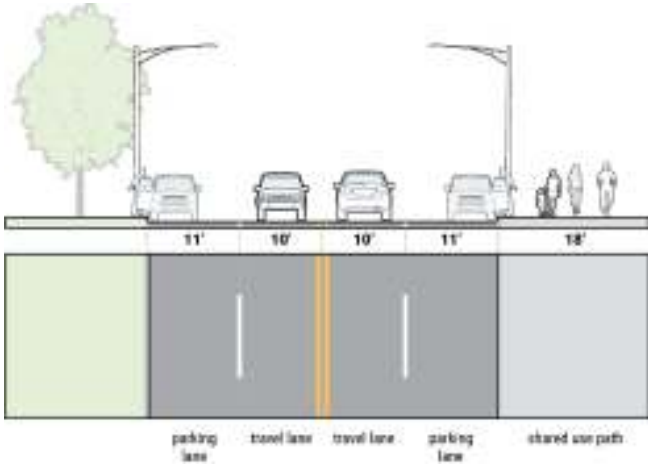


Figure 5-48: William Day Boulevard Segment 4 Existing Typical Cross Section

As a short-term measure, pavement markings to indicate a shared roadway are recommended. Alternative 1 (see Figure 5-49) involves shared lane markings and a 2-ft. striped buffer at the edge of the parking lane to encourage bicyclists to position themselves outside of the "door zone".

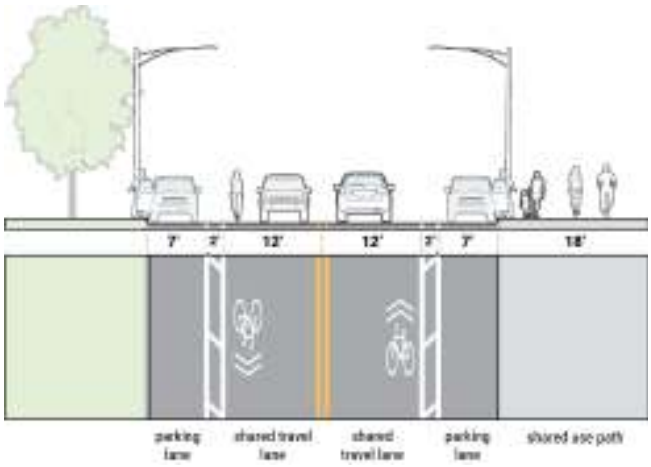


Figure 5-49: William Day Boulevard Segment 4 Proposed Short-Term Cross Section Alternative 1

Alternative 2 (see Figure 5-50) proposes advisory bike lanes, an experimental treatment that provides a shared center lane; vehicles are allowed to drive bike lane when encountering oncoming vehicles. The preferred volume threshold for advisory bike lanes is 3,000 ADT and operating speeds at or below 25 mph. However, up to 6,000 ADT and speeds up to 35 mph may be acceptable. Volume and speed analysis is recommended if this alternative is to be considered.

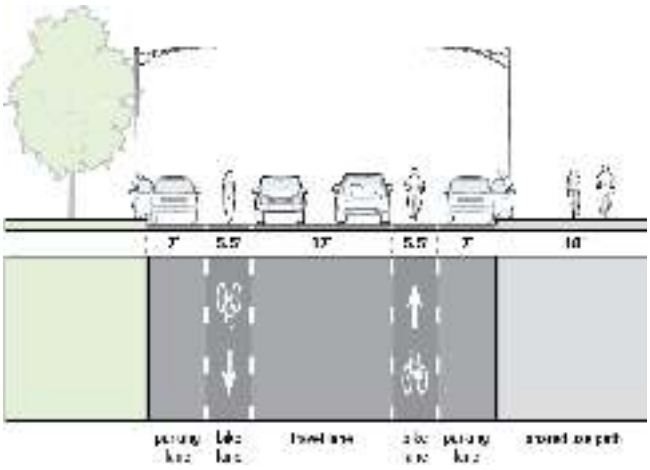


Figure 5-50: William Day Boulevard Segment 4 Proposed Short-Term Cross Section Alternative 2

Long-term, the parallel bike lane and sidewalks along the waterfront side of the parkway would be continued eastward towards. Narrower widths may be necessary to retain parking on both sides (see Figure 5-51).

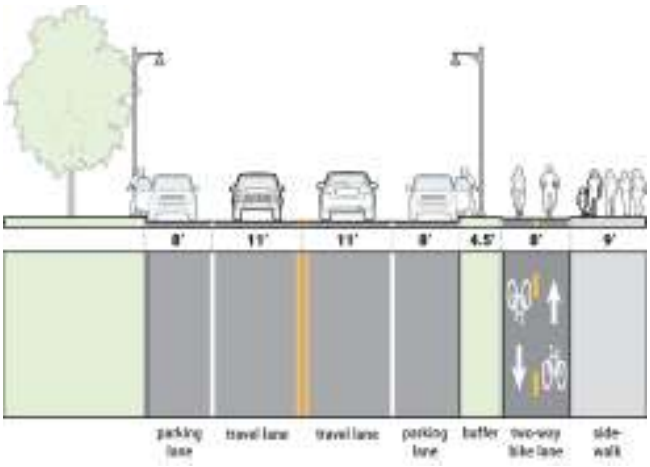


Figure 5-51: William Day Boulevard Segment 4 Proposed Long-Term Cross Section

William Day Boulevard Spot Recommendations

Location	Issue(s)	Recommendation	Additional Info
Intersection of East Broadway	• Confusing roadway geometry • Unclear yielding priority	Make the intersection function as a roundabout by routing vehicle movements around the Admiral Farragut statue. Alternatively, add YIELD or STOP line markings on the East Broadway approach to Day Boulevard.	Can be implemented using striping and signage.
Intersection of Farragut Road	• Multiple threat crash potential • Long pedestrian crossing distances	Shorten pedestrian crossing distances and modify the curb geometry to reduce vehicle speeds and create a gateway to Castle Island.	
Babe Ruth Park Drive	• Skewed intersection geometry • Parkland bisected by roadways	Consider closing Babe Ruth Park Drive to restore additional parkland.	
Intersection of G Street	• Crash history • Skewed intersection geometry	Consider alternatives to improve intersection for all users including reconstruction as a single-lane modern roundabout or squaring off.	

Old Colony Avenue

Location	Issue(s)	Recommendation	Additional Info
Intersection of Kosciuszko Circle bypass road approximately 575 ft. north of the circle	• Long pedestrian crossing distances • Skewed intersection geometry	Realign crosswalks to shorten pedestrian crossing distance across Old Colony Ave.	
Preble Circle	• High crash location • Long pedestrian crossing distances • No bicycle accommodations • Opportunity to restore parkland	Reconstruct the rotary as a modern roundabout to improve safety and reduce the intersection footprint to restore additional parkland. Include separated bike lanes and sidewalks around the perimeter. In the short-term, add lane striping to channelize vehicles.	

Figure 5-52


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0
500
1,000
Feet
N
William Day Boulevard
Old Colony Avenue
Andrew
1A
93
1
3A
3

Reimagining Old Harbor Reservation

Old Harbor Reservation—specifically the southern section adjacent to Joseph Moakley Park—has great potential to be reimagined as a space for passive recreational uses. By reducing the overall roadway footprint, parkland can be restored to enhance the natural and scenic qualities of the reservation. Figure 5-53 shows a conceptual “starter idea” for the transformation of the roadways encircling Moakley Park.

The concept envisions through traffic routed away from the shoreline onto Old Colony Ave and Columbia Road. The removal of through traffic restores the shorefront area as passive recreational space. Extending north from Kosciuszko Circle, William Day Boulevard is converted to access only road to serve the Carson Beach parking lot and other abutting driveways. Between the Carson Beach parking lot and G Street, the Day Boulevard roadway is converted to a narrower shared use path. Both Preble Circle and Kosciuszko Circle are converted to modern roundabouts with smaller footprints and improved pedestrian and bicycle circulation. Old Colony Ave is reconfigured so that through traffic utilizes the current northbound roadway adjacent to Moakley Park. The current southbound roadway is converted to service road for parking and access to the housing development on the west side of Old Colony Ave.

Figure 5-53: Reimagining Old Colony Reservation

Focus Area 9: Back Bay Fens

Parkways

- Fenway
- Park Drive

Communities

- Boston

Existing Conditions

Overview

A key link in the iconic Emerald Necklace, the Back Bay Fens follows the contour of the Muddy River from the Charles River southwesterly through the Fenway neighborhood and Brookline. Two parkways, Fenway and Park Drive, form a circumferential ring road around the parkland. At the eastern end of the Fens, Fenway and Park Drive meet Boylston Street, which provides access to downtown Boston and Storrow Drive via the Bowker Overpass. At the west end of the area, Fenway and Park Drive meet at the Sears Rotary, a complex node where several major roadways intersect including Fenway, Park Drive, Boylston Street, Brookline Avenue, and the Riverway.

Land Use & Natural Resources

High-density residential and commercial uses are characteristic along the parkways. A heavy institutional presence also surrounds the Back Bay Fens, with several museums, colleges, and hospital complexes adjacent to

the parkland. The Back Bay Fens connect to the Commonwealth Mall to the north and the Riverway to the south, forming a critical link in the Emerald Necklace system. Significant development is occurring throughout the area.

Pedestrian

Pedestrian connectivity through the Back Bay Fens is generally good, with sidewalks or shared use paths provided along one or both sides of the parkways. Areas of concern include the two ends of the parkways where complex intersections complicate pedestrian crossings. A set of paths are provided across the Fens providing pedestrian connections between Fenway and Park Drive.

Bicycle

Within the parkland, shared use paths are provided parallel to a significant portion of the parkways. Portions of the paths are paved, while several segments are a stone dust surface. No on-road bicycle facilities are provided on any of the parkways.

Recommendations

Park Drive Segment 1 – Boylston Street to Higginson Circle bridge

Implemented Short-Term Modification

Along the Back Bay Fens, Park Drive is a one-way street, with vehicle operations in the westbound direction with a carriage road along one side separated from the roadway by a landscaped median. Crosswalks are provided at intersecting streets and at some mid-block locations.

This section was modified in the short-term from a two-lane roadway to a one-way vehicle travel lane with a buffered bike lane with the direction of vehicle traffic.

A shared use path runs parallel to the main roadway within the parkland. The path can become congested during peak times, as it is a major desire line for bicyclists traveling between the Longwood Medical Area and points east. Bicyclists traveling west can use the bike lane while eastbound bicyclists use the existing shared use path.

The short-term modification was integrated into existing traffic operations and minimal construction was required. However, eastbound bicyclists still share the path with pedestrians. Westbound bicyclists traveling towards Ave Louis Pasteur still need additional consideration in the Higginson Circle area.

Long-Term Recommendation

Long-term, a two-way separated bike lane is recommended along the park side edge of the roadway implemented using striping and vertical separation. General travel lanes are reduced from two to one. Pedestrians and bicyclists benefit from having their own separate spaces.

The intersections of Boylston Street and Higginson Circle would require some construction. At a minimum, curb ramps could be provided to transition bicyclists onto existing shared use paths. However, additional reconstruction is recommended to provide separate pedestrian and bicycle spaces up to and through intersections. Two-way bicycle operations could be extended north from Higginson Circle to Brookline Ave.

Park Drive Segment 2 – Higginson Circle bridge to Brookline Ave

Implemented Short-Term Modification

North of Higginson Circle, Park Drive is a two-lane road with multi-story apartment buildings along its east side. On its west side is the Muddy River, which recently underwent a large restoration project to daylight portions of the river and improve flood control. The project has enhanced the river's scenic qualities. Traffic flows one-way in the northbound direction towards Brookline Ave. North of Peterborough Street, the road widens to feature additional turning lanes approaching Brookline Ave. No bicycle accommodations are provided in the roadway. Crosswalks are provided at intersecting streets.

On the west side of the roadway, there is a stone dust path providing pedestrian access to the riverfront. This segment of Park Drive is a major north-south desire line for bicyclists.

Short-term modifications were implemented as part of the Parkways Master Plan process with a standard bike lane in the direction of travel. There are no accommodations for southbound bicycle travel.

Long-Term Recommendation

A two-way separated bike lane is feasible along the park side edge of the roadway implemented using striping and vertical separation. This would be a continuation of the long-term recommendation for Segment 1. General travel lanes are reduced from two to one. Bicyclists have the benefit of being able to travel in both directions, which helps reduce out-of-direction travel that can be a disincentive to bicycling.

Construction would be required at the intersection of Brookline Ave. At a minimum, curb ramps could be provided to transition bicyclists onto the existing pathway on the west side of Park Drive. However, additional reconstruction is recommended to provide separate pedestrian and bicycle spaces up to and through intersections and accommodate turning movements for bicyclists.

Park Drive Segment 3 – Riverway to Beacon Street

The northernmost segment of Park Drive features four lanes of bidirectional traffic. Parking is permitted on both sides of the parkway. Multi-story apartment buildings are characteristic along the segment.

Short-Term Recommendation

On-road bicycle facilities can be accommodated by reducing the general travel lanes from four to three. Traffic analysis is recommended to understand the impact of lane reconfiguration. Option A proposes standard bike lanes while Option B proposes separated bike lanes using minimum travel lane and buffer widths.

Fenway Segment 1 – Brookline Ave to Higginson Circle

Fenway traces the western and southern boundary of the Back Bay Fens. On this segment, Fenway is a three-lane roadway with traffic flowing in the southbound direction forming a couplet with Park Drive. On the western side of the parkway, institutional buildings are situated. On the eastern side is the Muddy River. A pathway is located on the eastern side adjacent to the river. DCR recently paved the path with an asphalt surface.

Short-Term Recommendation

Install a separated bike lane in the southbound direction using striping and vertical separation. Add a dashed yellow centerline to the shared use path. There are two lanes entering this segment of Fenway from the north at Brookline Ave, which suggests that one lane could be removed with minimal impact. Further analysis of vehicle traffic is recommended. This recommendation can be integrated into existing signal equipment and traffic operations.

Long-Term Recommendation

Long-term, a two-way separated bike lane is recommended on the eastern side of the roadway utilizing the left travel lane. This facility would accommodate bidirectional bicycle traffic. As in the short-term recommendation, additional traffic analysis is recommended. Some curb construction at Brookline Ave would be required. A new crossing and signal is recommended on the eastern side of the Brookline Ave intersection to connect users to the existing shared use path on the northern side of the intersection. Construction would also be required in the Higginson Circle to transition the separated bike lane through the intersection and connect it with existing and proposed facilities.

Fenway Segment 2 – Higginson Circle to Louis Prang Street

South of Higginson Circle, Fenway features bidirectional traffic. Parking is permitted on the western edge while a standard bike lane is situated on the eastern edge. Institutional users are situated on the western side, while the Back Bay Fens and Muddy River on the eastern side. A stone dust shared use path is located parallel to the roadway on the eastern side.

Implemented Short-Term Modifications

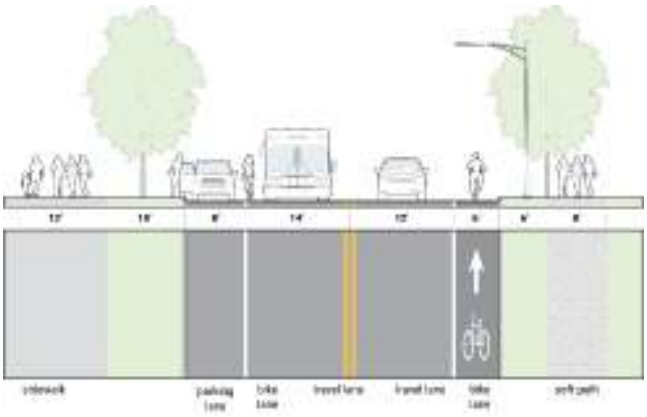


Figure 5-54: Fenway Segment 2 Existing Typical Cross Section

As a short-term measure, standard bike lanes were installed as part of the Parkways Master Plan process. Previous vehicle capacity and current traffic operations were maintained.

Long-Term Recommendation

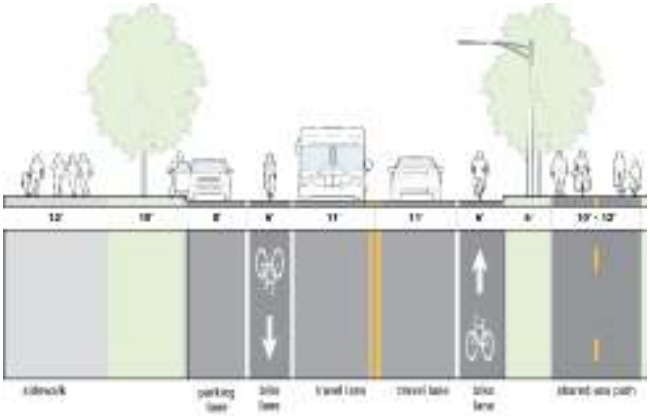


Figure 5-55: Fenway Segment 2 Proposed Long-Term Typical Cross Section Option A

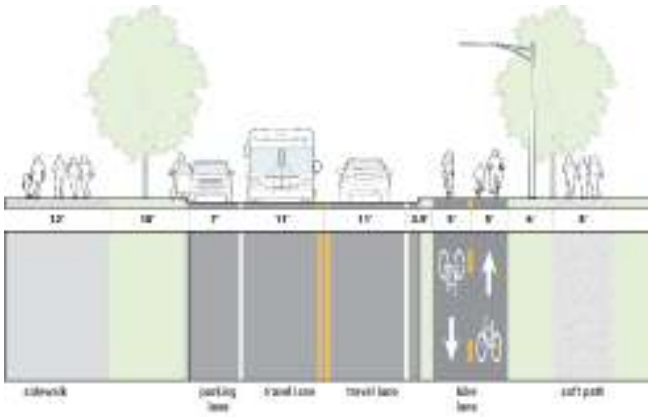


Figure 5-56: Fenway Segment 2 Proposed Long-Term Typical Cross Section Option B

It is recommended that a paved two-way path be provided on the park-side of Fenway. This would be a link in the proposed paved pathway along the interior perimeter of the park. Two options were developed to achieve this objective:

Option A: Pave the existing soft path parallel to the roadway (see Figure 5-55). A width of 12 ft. is recommended to provide adequate space for pedestrians and bicyclists. Bike lanes would be retained on the roadway.

Option B: Build a raised two-way separated bike lane on the west side of the roadway (see Figure 5-56). The soft path is retained and upgraded to address drainage issues. This option provides separated spaces for pedestrians and bicyclists in a location that sees high walking and bicycling demand due to nearby colleges and institutional destinations.

Fenway Segment 3 – Louis Prang Street to Westland Gate

East of Louis Prang Street, Fenway carries two lanes of one-way traffic in the northeast direction. A wide sidewalk is located on the south/east side. A shared use path, which alternates between a stone dust and concrete surface, is located on the north/west side. Multi-story apartment buildings and institutional uses are typical along the south/east side. The Back Bay Fens park is located on the north/west side. Crosswalks are located to connect pedestrian routes, particularly at two bridges that cross the Muddy River. Speeding is a noted issue on this segment; a recent speed study observed 85th percentile speeds at 38 mph, which is above the posted speed of 30 mph. Recent traffic data shows an AADT of 7,600 – 9,300.

Short-Term Recommendation

Three alternative cross sections were identified for implementation using low-cost materials:

Option A: Install a separated bike lane on the south/east side of the parkway using striping and vertical separation. Travel lanes would be reduced from two to one. Existing traffic volumes suggest that this change may be feasible. This cross section would also encourage reduced speeds and enhance pedestrian safety at crossings. Bicyclists would have a separate operating space away from moving traffic and parking vehicles. For these reasons, this is the preferred alternative.

Option B: Install a buffered bike lane. Safety benefits and feasibility considerations are similar to Option A. However, it does not confer the same safety and comfort benefits for bicyclists.

Option C: A standard bike lane can be installed while retaining two travel lanes. It is recommended that Options A and B be considered first for the potential safety and comfort improvements they offer. Two travel lanes may be desirable to retain for queuing at the signalized intersection at Westland Ave.

Long-Term Recommendation

Longer-term alternatives focus on providing a continuous two-way shared use path around the interior perimeter of the Back Bay Fens.

Option A: Pave the existing shared use path with an asphalt surface and a preferred width of at least 12 ft. to accommodate pedestrian and bicycle demand. This option has the advantage of not requiring any modifications to the roadway curbing.

Option B: Build a two-way separated bike lane within the cross section of the existing roadway. Segments of the shared use path that are stone dust can remain as-is, and segments that are currently concrete can be converted to a stone dust surface. This alternative reduces impervious surfaces along the corridor while providing separation between pedestrians and bicyclists.

Fenway Segment 4 – Westland Gate to Boylston Street

North of Westland Ave, Fenway is a four-lane bidirectional roadway. Residential and institution uses are typical on the east side, while the Back Bay Fens parkland lies to the west. A shared use path is located adjacent to the roadway on the west side.

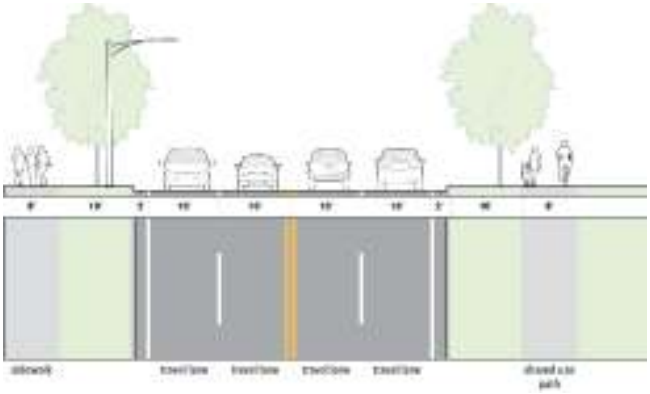


Figure 5-57: Fenway Segment 4 Existing Typical Cross Section

Long-Term Recommendation

Figure 5-58: Fenway Segment 4 Proposed Typical Cross Section

It is recommended that DCR rebuild the existing shared use path with a preferred width of 11 – 14 ft. to accommodate high volumes of pedestrians and bicyclists. The improved path would be a link in the proposed continuous path around the interior perimeter of the Back Bay Fens, and would provide a link to the envisioned connection between the Charles River paths and Back Bay Fens via the Bowker Overpass and Charlesgate. An on-road bicycle facility was not determined to be feasible on this segment.

Sears Rotary

The intersection where the Riverway, Fenway, Park Drive, Brookline Ave, and Boylston Street converge—known as Sears Rotary—is an important node in the Emerald Necklace. The Muddy River Bike Path, which follows the Muddy River southwesterly towards Jamaica Pond and points beyond, terminates at the intersection. The area sees high pedestrian and bicycle activity due to its importance as a node as well as its close proximity to major retail, entertainment, institutional, and residential uses.

The recently completed Muddy River Restoration Project daylighted the river and has significantly enhanced the scenic qualities of the area. As part of the project, a new shared use path was constructed around the interior perimeter of the intersection except along the southern portion parallel to Brookline Ave. While the aesthetics of the area have been vastly improved, pedestrians and bicyclists still face challenges navigating the intersection. Several crossings have significant delay for pedestrians, and as a result pedestrian compliance with signals was low due to the long wait times and the fact that there are significant gaps in traffic during green phases. The shared use paths are also too narrow to accommodate the volume of pedestrians and bicyclists comfortably, and several utility boxes placed on the shared use path reduce its usable width.

Bicycle volumes are high in the area, yet no dedicated bicycle facilities exist. During field visits, bicyclists were observed improvising routes through the intersection. The lack of bicycle crossings at certain high demand locations results in bicyclists riding on sidewalks and traveling in the wrong direction on certain segments.

It is recommended that DCR implement the following modifications to improve pedestrian and bicycle access in the Sears Rotary area:

- At the northern end of the intersection where Riverway and Park Drive converge, retime the signals to reduce pedestrian delay and allow for a two- or one-stage crossing. Consider the feasibility of installing a dedicated north-south bicycle crossing. This crossing provides access to the Muddy River Bike Path.
- Add a dashed yellow centerline to the asphalt path along the inner edge of the rotary to indicate its designation as a shared use path.
- Riverway southbound at Brookline Ave: consider the feasibility of adding a new shared use crossing across the eastern leg of the intersection to connect the newly paved shared use path on the east side of Fenway with the path on the east side of the Riverway.
- Park Drive between Brookline Ave and Riverway: consider alternatives to provide bicycle accommodations on this segment of Park Drive. Various options are possible depending on the level of construction and feasibility of reconfiguring vehicle lanes and turning movements.
- Northeast corner of Brookline Ave and Park Drive: modify the curb radius to reduce turning vehicle speeds and consider curb extensions on both sides to provide a shorter pedestrian crossing distance. Pedestrians crossing Park Drive have a concurrent signal with vehicles turning right from Brookline Ave onto Park Drive; the curb radius allows drivers to make the turn at a high speed, which decreases yielding compliance and overall pedestrian safety. Additionally, there are two lanes feeding into Park Drive at this location, suggesting the feasibility of curb extensions.

Figure 5-59: Reimaging the Back Bay Fens

Focus Area 10: Chestnut Hill

Parkways

- Chestnut Hill Driveway
- Saint Thomas More Road

Communities

- Brighton (Boston)
- Newton

Existing Conditions

Overview

The Chestnut Hill Reservation is nestled within the dense Cleveland Circle area of Boston. The reservation provides a network of walking paths connecting to points north and east of the reservoir on Chestnut Hill Avenue and Commonwealth Avenue. Two parkways run through the reservation: St. Thomas More Road, which runs north/south through the area, and Chestnut Hill Driveway, which connects St. Thomas More Road to Commonwealth Avenue. Both parkways are two-lane, undivided, bidirectional roadways. Located near a number of densely populated areas, the reservation is popular for walkers and runners.

Pedestrian

Pedestrian connectivity is generally good throughout the reservation. Sidewalks are provided on both sides of St. Thomas More Road and Chestnut Hill Driveway. In addition, the walking path around the Chestnut Hill Reservoir provides an alternative route for travel to Chestnut Hill Driveway and the southern portion of St. Thomas More Road. The pathway around the perimeter of the Chestnut Hill Reservoir is a popular jogging and strolling route.

Bicycle

No bicycle facilities are provided on either of the parkways in the reservation. Bicycling is permitted on the pathway around the perimeter of the Chestnut Hill Reservoir.

Transit Access

The reservation is near five transit stations, including the Chestnut Hill, South Street, and Boston College stops on the Green Line B Branch, the Cleveland Circle stop on the Green Line C Branch, and the Reservoir stop on the Green Line D Branch.

Recommendations

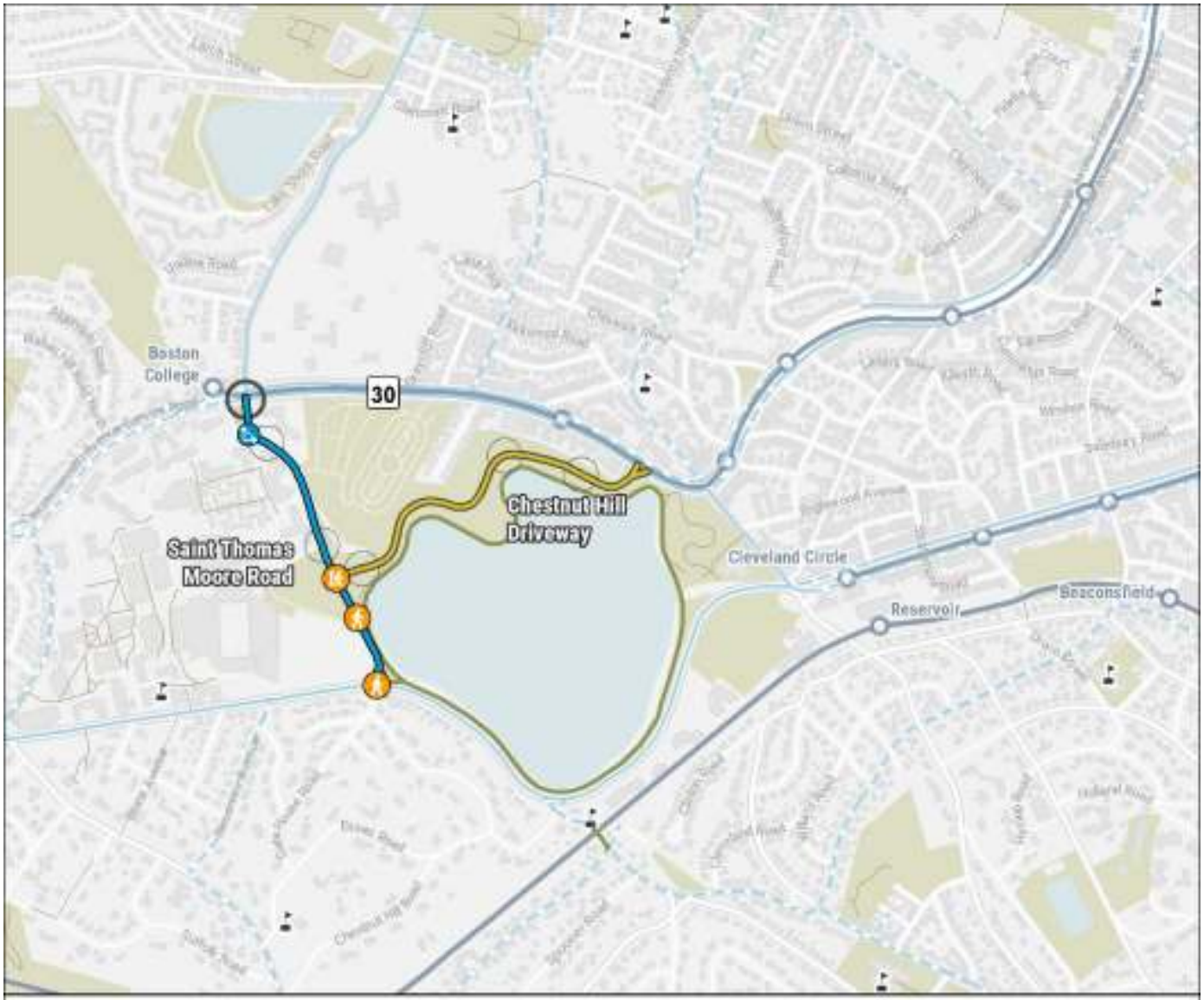
Chestnut Hill Driveway

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• No bicycle accommodations • Cut through traffic • Parkland bisected by roadways	As a short-term measure, lower the speed limit to 20 mph and consider adding traffic calming measures. Consider implementing advisory bike lanes. As a long-term strategy, consider the desirability and feasibility of closing Chestnut Hill Driveway to through vehicle traffic. Access could be maintained from either end up to the parking area.	

St. Thomas More Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• No bicycle accommodations • Cut through traffic	Install bicycle facilities. Standard bike lanes are feasible. Consider implementing advisory bike lanes.	Curb-to-curb width narrows south of Chestnut Hill Driveway, requiring minimum lane widths if standard bike lanes are selected.
	• Infrequent opportunities to cross parkway	Enhance existing crosswalks and add new crosswalks at locations indicated in Figure 5-60.	
Intersection of Canpanella Way (north)	• Long crossing distances • Accessibility	Tighten intersection geometry, shorten pedestrian crossing distances, and provide accessible crossings.	

Figure 5-60


Boston College
30
Chestnut Hill Driveway
Saint Thomas Moore Road
Cleveland Circle
Reservoir
Beaconsfield
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
0 500 1,000
Feet
N
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water

Focus Area 11: Jamaica Pond

Parkways

- Perkins Street
- Parkman Drive

Communities

- Jamaica Plain (Boston)

Existing Conditions

Overview

Jamaica Pond is a prominent node in the Emerald Necklace park system popular for jogging, strolling, and boating. Perkins Street and Parkman Drive form the northern and western edge of the pond, respectively. Both are undivided, bidirectional roadways. Several residential driveways are located on Perkins Street. Parkman Drive is located entirely within parkland.

Pedestrian

A popular pathway for walkers and joggers is provided around the circumference of Jamaica Pond. The pathway parallels both Perkins Street and Parkman Drive. Perkins Street features a narrow sidewalk on the northern side; currently, there are no crosswalks to provide access to the sidewalk. Parkman Drive does not have sidewalks, but pedestrians are accommodated on the parallel Jamaica Pond pathway.

The intersection of Perkins Street and Parkman Drive is a noted pedestrian gap. The lack of crosswalks limits access to Jamaica Pond from points west and limits access to Parkman Memorial Park from Jamaica Pond. A project to add crosswalks to this intersection has been recently completed by DCR.

Bicycle

A marked bike lane is provided along Perkins Street in both directions. Parkman Drive does not have any bicycle facilities. Bicycling is not allowed on the circumferential path around Jamaica Pond with the exception of the eastern segment between Perkins Street and Parkman Drive. As a result, the western side of Jamaica Pond parallel to Parkman Drive is a bicycle connectivity gap.

Transit Access

No transit routes travel directly on or near the parkways in this focus area.

Recommendations

Perkins Street

Location	Issue(s)	Recommendation	Additional Info
From Prince Street to Jamaicaway	• Existing bike facility needs improvement • High vehicle speeds	As an interim measure, restripe the road with a buffered bike lane and narrower travel lanes to encourage lower vehicle speeds. With reconstruction, build raised separated bike lanes. • Between Jamaicaway and Chestnut Street, build separated bike lanes within the existing curb-to-curb width; reconstruct the shared use path on the north side. • Between Chestnut Street and Cabot Estates Driveway, the width of the sidewalk on the north side may be reallocated to the bike lane given the lack of destinations along the north side. • Between Prince Street and Parkman Drive, remove the median to provide more width in the cross section for bike facilities.	
Intersection of Jamaicaway	• Accessibility • Large curb radii	With reconstruction, implement the following changes: • Convert apex curb ramps to directional curb ramps. • Narrow curb radii to the narrowest extent feasible to encourage slow turning speeds. • Widen curb ramps on west side at least 10 ft. wide to accommodate bicyclists traveling through on the Jamaicaway bike path. • Consider additional landscaping features to enhance the aesthetic qualities of the gateway to Olmsted Park.	

Location	Issue(s)	Recommendation	Additional Info
Intersection of Prince Street	• Pedestrian connectivity gap • Wide intersection • Bicycle connectivity gap	As an interim measure, use striping and vertical separation to accomplish the following objectives: • Channelize westbound vehicle traffic into a single narrow lane approaching Cottage Street. • Provide a jughandle for bicyclists to turn left from Perkins Street westbound to Prince Street southbound. • Tighten the curb radius from Cottage Street eastbound onto Prince Street southbound. With reconstruction, add curbing to make these changes permanent. Additionally, reconstruct the sidewalk along the southern edge of Perkins Street and add a crosswalk across the entrance to Prince Street.	Coordinate with the City of Boston.
Intersection of Chestnut Street	• Missing crosswalk along the western edge of intersection • Opportunity to improve bicycle facilities and wayfinding	Reconstruct intersection to improve pedestrian and bicycle access to and from Jamaica Pond and connecting facilities. The design should address the following: • Consider replacing the signalized intersection with a modern roundabout. • Provide a crosswalk from the sidewalk along the west side of Chestnut Street to Jamaica Pond. • Eliminate vehicle slip lanes. • Provide a way for bicyclists traveling eastbound on Perkins Street to turn left onto Chestnut Street.	Coordinate with the City of Boston.

Parkman Drive

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• No bicycle accommodations • Pedestrian access provided via parallel pathway on west side of Jamaica Pond.	As an interim measure, install hybrid bike lane/shared lane markings with a bike lane in the northbound direction. Provide signage on Perkins Street to direct southbound bicyclists to use Prince Street, a parallel roadway with low vehicle volumes. Long-term, consider the following: • Upgrade the existing path along the west side of Jamaica Pond to shared use path standards to accommodate bicycle traffic parallel to Parkman Drive. • Encourage the inclusion of two-way bicycle access and pedestrian access along Prince Street in conjunction with potential development of Hellenic Hill Park to provide an alternative pedestrian and bicycle route to Parkman Drive.	Coordinate with the City of Boston on long-term recommendations.
Intersection of Perkins Street	• Pedestrian connectivity	Reconstruct intersection per the Jamaica Pond Access Enhancements project currently under development.	
Kelley Circle	• Opportunity to improve existing pedestrian and bicycle facilities	Reconstruct Kelley Circle area per the Arborway project currently under development.	

Figure 5-61


9
Heath Street
Olmsted Park Bike Paths
Perkins Street
Parkman Drive
Green Street
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
0 500 1,000
Feet
N
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water

Focus Area 12: VFW Parkway & Centre Street

Parkways

- Veterans of Foreign Wars Parkway
- Centre Street

Communities

- Jamaica Plain and West Roxbury (Boston)
- Brookline

Existing Conditions

Overview

Extending from Murray Circle in Jamaica Plain southwesterly for approximately five miles, Centre Street and the Veterans of Foreign Wars (VFW) Parkway are significant thoroughfares connecting the communities of Dedham, West Roxbury, and Jamaica Plain. The majority of mileage along the parkways contain four lanes providing bidirectional travel divided by a landscaped median featuring a row of mature trees. Additional turning lanes are provided at some intersection approaches. Several significant intersections exist along the corridor including two rotaries.

Medium to high-density residential development is characteristic along the parkway, with several small commercial nodes. In addition, the corridor provides access to several medical complexes, including the Boston Veterans Affairs Hospital and Faulkner Hospital. Toward the southern end of the corridor, VFW Parkway generally follows the curves of the Charles River as it approaches Dedham.

Pedestrian

Sidewalks are provided on both sides of the corridor providing generally good connectivity for pedestrians. Areas of concern include the two traffic circles along the corridors, as vehicles enter and exit the parkway at high speeds.

Bicycle

Bicycle facilities along the corridor alternate between dedicated marked bike lanes and shared lane markings. Along the portions of the corridor where a bike lane is provided, the facility ends at several intersections in order to provide vehicle left-turn lanes, requiring bicyclists to merge with high-speed, high-volume traffic. These intersections include Allandale Street, Centre Street/VFW Parkway, Independence Drive, Corey Street, Lagrange Street, and Baker Street.

Transit Access

MBTA bus route 38 travels along the length of Centre Street within the focus area. MBTA bus route 51 travels on a short segment of VFW Parkway between Corey Street and Independence Drive. MBTA bus route 36 travels on a short segment of VFW Parkway between Spring Street and Rivermoor Industrial Park.

Recommendations

Centre Street

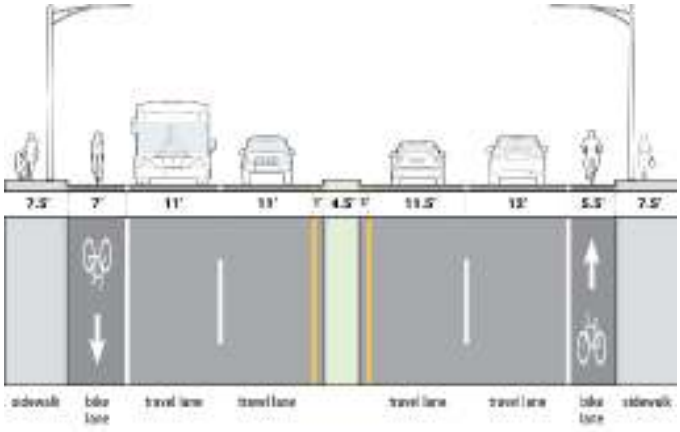


Figure 5-62: Centre Street Existing Typical Cross Section Looking North

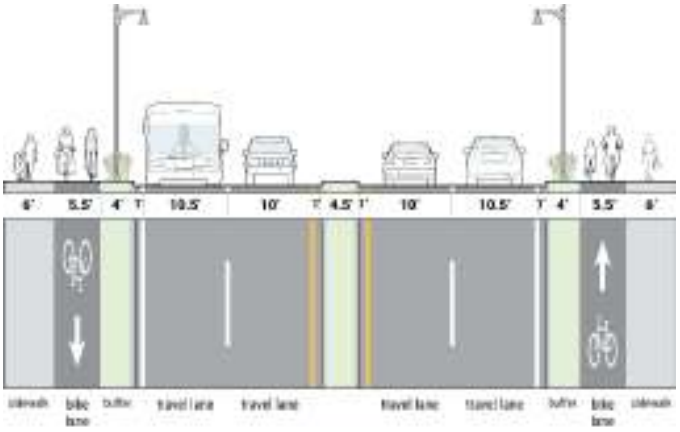


Figure 5-63: Centre Street Proposed Long-Term Typical Cross Section Looking North

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Opportunity to improve existing bicycle facilities • Sidewalk repair needed	As a short-term measure, implement a wider bike lane on the northbound side in conjunction narrower travel lanes. Long-term, construct separated bike lanes and reconstruct sidewalks.	Figure 5-62 existing typical cross section and Figure 5-63 for proposed typical cross section.
Intersection of Allandale Street	• Bike lane is not continuous • High-stress merge	Consider options to provide a continuous bike facility through the intersection in both directions. Alternatives include: 1. Remove the median 200 ft. from the intersection in both directions and install continuous bike lanes, or 2. In the northbound direction, provide a ramp for bicyclists to transition to the sidewalk 325 ft. before the intersection; remove the median 200 ft. north of the intersection and continue existing southbound bike lane up to the intersection.	Implement as a standalone project or as part of a larger corridor reconstruction project.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Walter Street	• Large curb radii • No crosswalks • Opportunity to improve existing bicycle facility	As part of future reconstruction, ensure that separated bike lanes are provided and that pedestrians have a way to cross Centre Street and Walter Street.	Implement as a standalone project or as part of a larger corridor reconstruction project.

VFW Parkway

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Current bike lanes end at multiple signalized intersections, forcing bicyclist to merge with high speed traffic. • Opportunity to improve existing bicycle facility.	Consider options to provide a low-stress route for bicyclists through all intersections where the bike lane currently merges with right travel lane. Consider providing ramps and pavement markings to give bicyclists the option to transition to the sidewalk in advance of the intersection.	Sidewalk segments that would be shared with bicyclists should be widened; however, the feasibility of widening may be limited in some locations by the presence of mature trees.
Intersection of Centre Street	• Skewed intersection geometry • Bicycle facility conflict points	Reconstruct intersection to improve operations and safety for all users. Ensure a separated bike facility up to the intersection with signal separation between bicyclists continuing west on Centre Street and vehicles turning right onto VFW Parkway. The feasibility of a modern roundabout at this location should be evaluated.	
Intersection of Vincent Road	• Large curb radius • Long crossing distance	Tighten the existing curb radius. Short-term, low-cost materials should be used to tighten the intersection and slow vehicle turning speeds.	

Location	Issue(s)	Recommendation	Additional Info
West Roxbury Parkway/VFW Parkway Rotary	• High crash location • High entry/exit speeds • Entering drivers do not yield to traffic in rotary • No bicycle accommodations	As a short-term measure, install lane striping, advanced yield lines and signage. Long-term, reconstruct the circle as a modern roundabout with separated bike lanes.	

	• Confusing signal indications for vehicles and pedestrians at the western approach to/from VFW Parkway:
	  ○ Pedestrians crossing the westbound exit roadway of VFW Parkway receive a WALK indication without a corresponding RED to stop conflicting vehicle movements.
	  ○ Drivers approaching the circle traveling eastbound on VFW Parkway see a GREEN indicator for the pedestrian crosswalk while also having to yield to rotary traffic
		Pedestrian crossings and signal equipment should be upgraded to mitigate existing conflicts that occur when both pedestrians and vehicles receive indications that they have the right of way. Conversion of the signal to either a High-Intensity Activated Crosswalk (HAWK) or Rectangular Rapid Flashing Beacon (RRFB) should be considered.	

Intersection of Farmington Road, Manthorne Road	• Skewed intersection geometry • Poor sight lines • Potential for high exit speeds • Long crossing distances	As a short-term measure, shorten the pedestrian crossing distance at the intersection to slow vehicles exiting VFW Parkway eastbound onto the side streets.. Long-term, square off the intersection or restrict vehicle movements along Manthorne Road and Farmington Road to one-way only in the northbound direction.	Changes to traffic direction on Farmington Road and Manthorne Street require coordination with the City of Boston.
Glenham Street approach to VFW Parkway/Baker Street intersection	• Skewed intersection geometry • Poor sight lines • Complex vehicle movements	Consider closing the approach to VFW Parkway from Glenham Road to reduce conflict points and shorten the signal cycle.	Traffic analysis recommended to determine impact of closure on nearby streets. Additional mitigation may be required.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Spring Street	• Poor bicycle and pedestrian accessibility • High vehicle speeds • Long crossing distances • Slip lanes	Long-term, consider the following changes: 1. Provide wider pedestrian pathways through islands for accessibility. Align pathways to be in line with goat paths. 2. Provide a pedestrian refuge island in the Spring Street approach. 3. Evaluate the feasibility of reconstructing as a protected intersection. In lieu of a full protected intersection, implement elements of a protected intersection with feasible and desirable to maintain separated bike lanes up to the intersection.	Requires coordination with MassDOT and City of Boston.

Figure 5-64

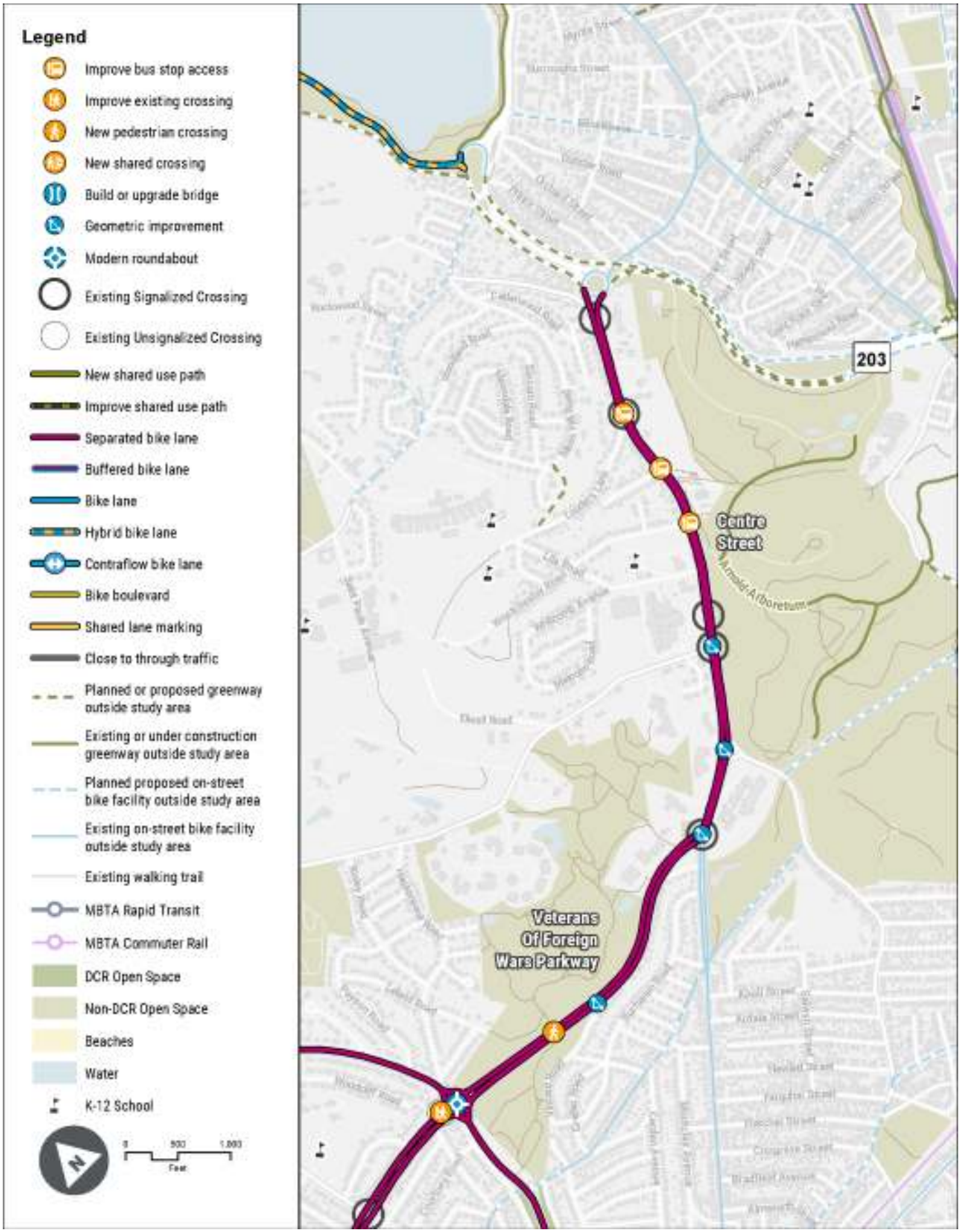

Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
203
Centre Street
Arnold Arboretum
Veterans Of Foreign Wars Parkway

Figure 5-65


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
Hancock Woods
Veterans Of Foreign Wars Parkway
Brook Farm
Havey Beach
Cutler Park Reservation
109

Focus Area 13: Hammond Pond Parkway

Parkways

- Hammond Pond Parkway

Communities

- Newton
- Brookline

Existing Conditions

Overview

Hammond Pond Parkway is an approximately two-mile long corridor extending from Beacon Street at the northern end to Horace James Circle at the southern end. The parkway alternates between a three and four-lane, bidirectional roadway.

The parkway is uniquely situated to provide access to acres of conservation area in the midst of the heavily developed Chestnut Hill area. The northern segment bisects a popular conservation area including DCR's Hammond Pond Reservation and the Webster Conservation Area. The area around Route 9 is a major commercial node. South of Route 9, the parkway alignment is adjacent to the Lost Pond Conservation Area and Skyline Park.

Pedestrian

Pedestrian access is relatively limited except in the vicinity of Route 9. North of Route 9, a sidewalk extends up to the driveway to Shops at Chestnut Hill. Goat paths on both sides of the parkway extending northwards towards Beacon Street indicate pedestrian demand. Several trails cross the parkway in this area. South of Route 9, sidewalks extend as far as Heath Street. Between Heath Street and Horace James Circle, there are no sidewalks on either side.

Bicycle

Hammond Pond Parkway does not feature any bicycle facilities or a shoulder that is usable by bicyclists. The high volume and speed of traffic is a significant deterrent to bicycling.

Recommendations

Hammond Pond Parkway Segment 1—Beacon Street to Route 9

Segment 1 of Hammond Pond Parkway is divided into two sub-segments.

Segment 1A, which extends from Beacon Street south to the Shops at Chestnut Hill Driveway, features a four-lane, undivided bidirectional roadway (see Figure 5-66).

Segment 1B, which extends from the Shops at Chestnut Hill Driveway, features three with one lane in the northbound direction and two going southbound (see Figure 5-67).

Along the entirety of Segment 1, curbing is present on both edges of the roadway, with grassy shoulders extending 6 – 7 ft. on both sides. The roadway has a typical width of 44 ft. A sidewalk is present on the west side starting near the driveway to 300 Hammond Pond Parkway.

The average daily traffic between Beacon Street and Route 9 is 19,000 vehicles, which suggests that four-lane to two-lane road diet may be feasible.

Existing

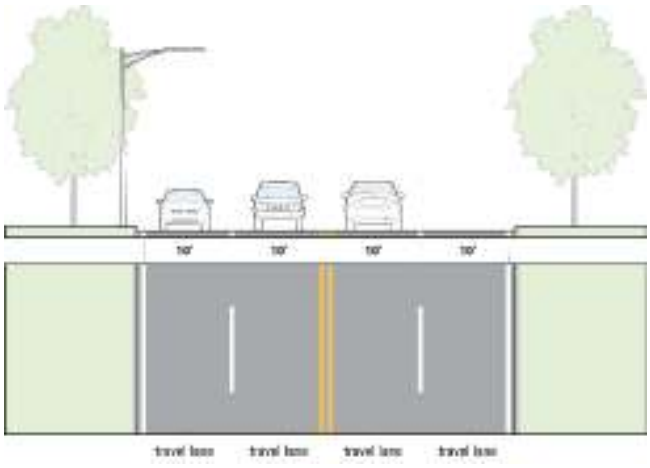


Figure 5-66: Hammond Pond Parkway Segment 1A Existing Typical Cross Section

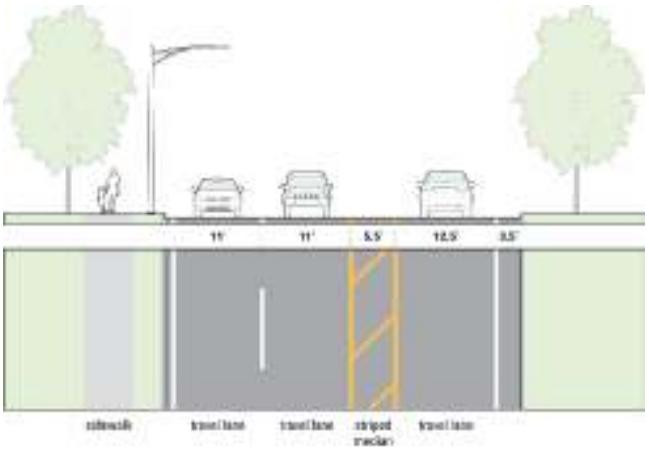


Figure 5-67: Hammond Pond Parkway Segment 1B Existing Typical Cross Section

Short-Term Recommendation

Short-term, bike lanes can be installed through restriping only and could be implemented as a stand-alone project or as part of repaving. Segment 1A features two travel lanes and buffered bike lanes in both directions. Segment 1B retains the existing number of lanes and provide standard bike lanes.

A crosswalk at the Shops at Chestnut Hill driveway is recommended to connect the two existing sidewalk segments. Extending the sidewalk northward to Beacon Street from its current terminus should be considered. Finally, crosswalks should be considered at the locations indicated in Figure 5-76 to provide a location for trail users to cross the parkway.

A new crosswalk at the Shops at Chestnut Hill Driveway would necessitate the addition of curb ramps and pedestrian indicators at that location. No other curb modifications or physical alterations would to signal equipment would be necessary.

With a corridor reconstruction project, new curbing could be added to create separated bike lanes within the same typical cross section.

Long-Term Recommendation

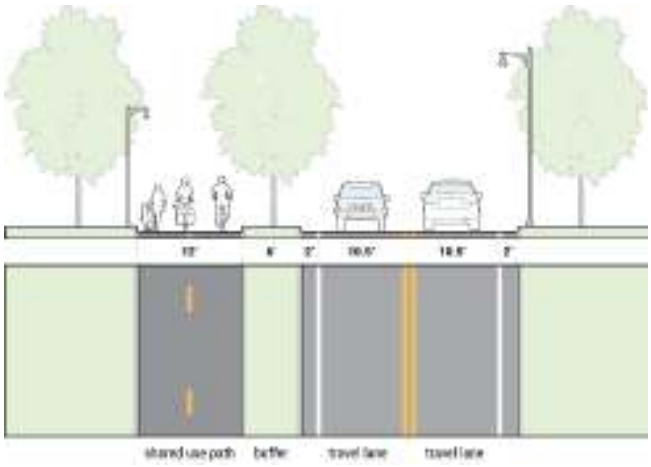


Figure 5-68: Hammond Pond Parkway Segment 1A Long-term Typical Cross Section

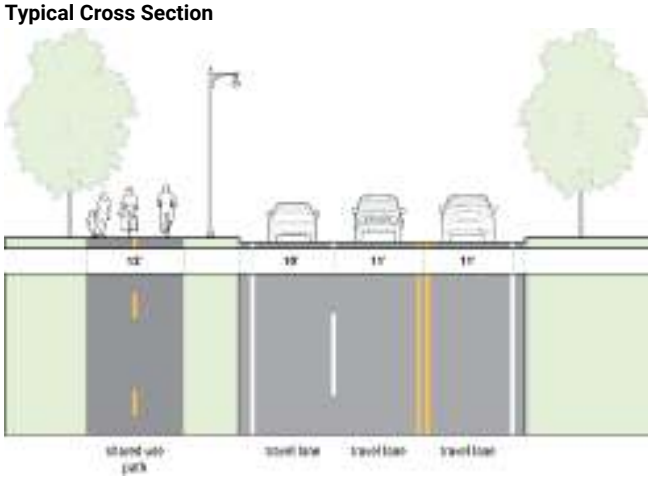


Figure 5-69: Hammond Pond Parkway Segment 1B Long-term Typical Cross Section

Long-term, a shared use path is proposed to provide improved pedestrian and bicycle accommodations. The west side of the parkway is the preferred location of the shared use path to align with the existing sidewalk segment. Segment 1A features a 12 ft. wide shared use path separated from the roadway by a 6 ft. buffer, which features formal plantings (see Figure 5-68). Modifications to the curbs are not required, as the proposed cross section is within the existing roadway width.

Segment 1B provides a continuation of the shared use path, which could feasibly be extended south to the signalized crossing at the Route 9 westbound onramp (see Figure 5-69). The existing number of travel lanes are retained. Construction of the shared use path and buffer requires narrowing the existing roadway. Starting near the Street at Chestnut Hill driveway and extending northward, a large sloped retaining wall is present along the edge of the sidewalk. There is enough width between the existing guardrail and the retaining wall to provide a shared use path, though it would require some removal of informal vegetation along the edge.

Reconstruction of the intersections at the Shops at Chestnut Hill driveway and at Beacon Street, including potential impacts to existing signal equipment. The signalized intersections at the Street at Chestnut Hill driveway and at Route 9 would likely not need modifications.

Hammond Pond Parkway Segment 2 – Route 9 to Heath Street

Between Route 9 and Heath Street, the parkway widens to a divided roadway with four through lanes and additional turning lanes at intersections. Route 9 crosses over the parkway on a historic stone arch bridge. A 6-ft. wide sidewalk is provided on both sides featuring a variable width landscaped buffer. Residential apartment buildings are located on both sides of the parkway. Recent retail development in the area has increased pedestrian and bicycle activity; during field observations, bicyclists were observed using the sidewalks and crosswalks to traverse the area. Since sidewalks are already present, the discussion for this segment focuses on alternatives for providing bicycle facilities.

Short-Term Recommendation

While the Route 9 bridge presents a physical constraint, it is feasible to install bike lanes in both directions by narrowing the existing travel lanes. Moving south towards Heath Street, the roadway becomes increasingly constrained. Bike lanes could be extended south to Heath Street by removing a travel lane in one direction. The feasibility of removing a travel lane requires further evaluation.

Long-Term Recommendation

The Route 9 bridge presents a constraint for continuing a path southward along the west side. It may be feasible to provide a shared use path under the bridge by moving the curb on the right side of the southbound roadway, narrowing the travel lanes. The path would likely be of

minimum width and lack a buffer with the roadway. Curb ramps at the Route 9 onramp and offramp on the west side would need to be widened to accommodate path users.

South of the Route 9 eastbound offramp, DCR's right-of-way is wide enough to extend the shared use path to Heath Street along the west side of the parkway. The path would follow the alignment of the existing sidewalk. Some modifications to landscaping and plantings may be needed.

Hammond Pond Parkway Segment 3 – Heath Street to Horace James Circle

Continuing southward from Heath Street, the parkway consists of a four-lane undivided roadway with a typical width of 42 ft. (see Figure 5-70). Unlike Segment 1, there is no curbing on either side. Soft shoulders are present on both sides that are clear of vegetation. Goat paths along the shoulders indicate walking demand. Conservation areas and wetlands abut the parkway on both sides, with residential development present at the far ends. There are several topographical constraints along this segment. First, the road bed on which the roadway was built through the wetlands extends roughly 12 – 15 ft. away from the road edge on either side, though at some points it narrows on the east side. Second, approximately 1,800 ft. north of Horace James Circle, the parkway cuts through a small natural mound, resulting in a vertical rise starting 6 ft. from the roadway edge on either side. The ADT of this segment is approximately 29,000 vehicles.

Existing

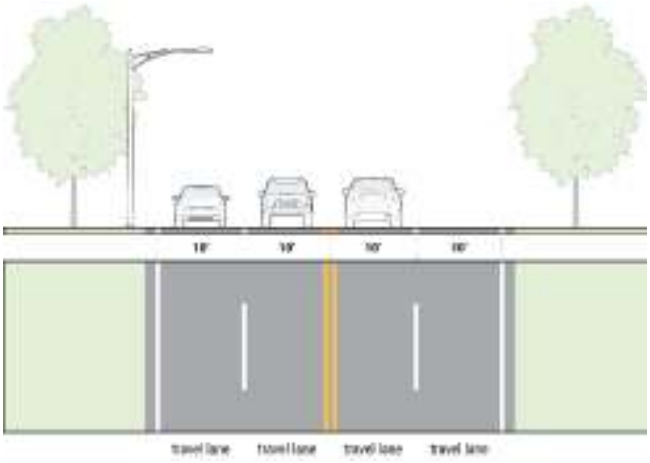


Figure 5-70: Hammond Pond Parkway Segment 3 Existing Typical Cross Section

Short- and long-term alternatives were developed for providing pedestrian and bicycle facilities along this portion of Hammond Pond Parkway.

Short-Term Recommendation

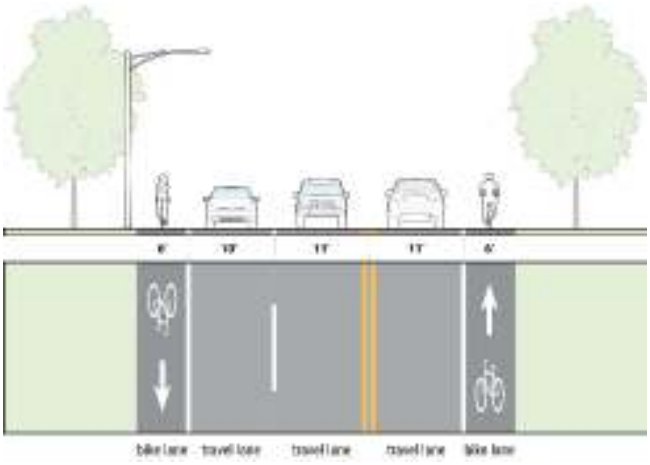


Figure 5-71: Hammond Pond Parkway Segment 3 Short-Term Typical Cross Section

Short-term, standard bike lanes are recommended in both directions, with the number of travel lanes reduced to three. It is recommended that the feasibility of a two lane (one lane in either direction) and a three lane (two lanes in one direction and one lane in the other direction) cross section be evaluated.

Pedestrian accommodations should also be considered on this segment. The desirability of constructing a new

sidewalk on one or both sides of the parkway should be weighed against the long-term recommendation, which would provide a shared use path for pedestrians and bicyclists.

Long-Term Recommendation

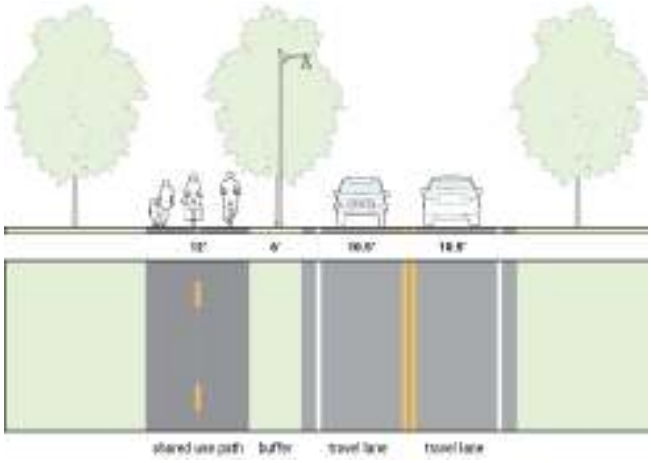


Figure 5-72: Hammond Pond Parkway Segment 3 Long-term with Two Lane Cross Section

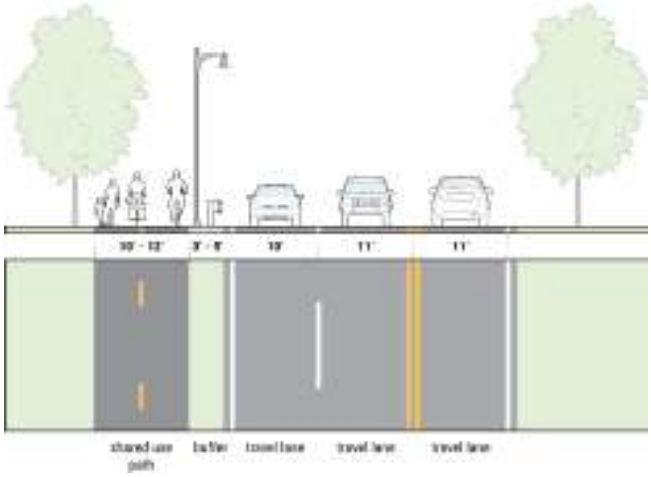


Figure 5-73: Hammond Pond Parkway Segment 3 Long-term with Three Lane Cross Section

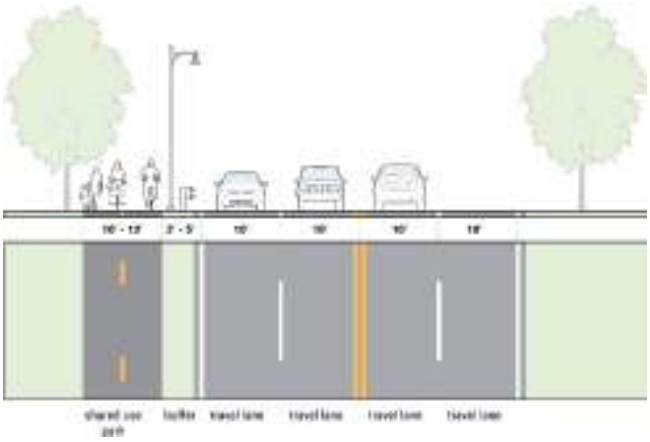


Figure 5-74: Hammond Pond Parkway Segment 3 Long-term with Four Lane Cross Section

Continuing south from Heath Street, a 10 ft. – 12 ft. shared use path would be constructed along the west side of the parkway. The feasibility of a road diet should be evaluated. A two-lane cross section would be preferred to provide a wider buffer with new plantings and to reduce impervious surface (see Figure 5-72). With three lanes, a narrower buffer would be used (see Figure 5-73). A four-lane cross section could be retained if necessary; growth along the edge would be cleared to provide width for the path (see Figure 5-74). Where the parkway cuts through a small natural mound 1,800 ft. north of Horace James Circle, there an existing earthwork embankment on the west side of the mound which that path could follow (see Figure 5-75). The presence of concrete marking posts at both ends of the embankment, as well as drainage structures, suggest that it was built to carry a path.

Figure 5-75: Approximate Location of Pathway Embankment on Hammond Pond Parkway

Figure 5-76


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
30
9
Hammond Pond Parkway
Hammond Pond Reservation
Lost Pond Reservation
Chestnut Hill

Focus Area 14: West Roxbury

Parkways

- West Roxbury Parkway
- Bellevue Hill Road

Communities

- Brookline
- West Roxbury (Boston)

Existing Conditions

Overview

West Roxbury Parkway is a three-mile long corridor connecting Horace James Circle to Enneking Parkway. It is a two-lane, undivided, bidirectional roadway except for the segment north of Newton Street, which is a two-lane one-way roadway that forms a couplet with Newton Street.

Medium density residential development is characteristic along the parkway, with commercial nodes at Putterham Circle, Centre Street, and Washington Street. The parkway reservation widens south of VFW Parkway. South of Beech Street, the reservation widens further, with two service roads providing access to adjoining streets. Bellevue Hill Road forms the western edge of the reservation south of Orange Street, which leads to Bellevue Hill Park, the northernmost portion of the Stony Brook Reservation.

Pedestrian

Pedestrian connectivity is generally adequate along the corridor, although there are several areas of concern. First, between South Street and Putterham Circle in Brookline, there is an approximately 460 ft. sidewalk gap. Second, between Beech Street and Washington Street, there are no opportunities to cross the parkway despite dense residential neighborhoods and destinations on either side.

Bellevue Hill Park is a neighborhood focal point for walking and jogging. There is opportunity to strengthen connections between Bellevue Hill Park, the northern entrance to the Stony Brook Reservation trail system, and residential neighborhoods to the north and west.

Bicycle

There are no bicycle facilities on West Roxbury Parkway or Bellevue Hill Road, nor any shared use paths. On West Roxbury Parkway, there is a striped shoulder that is intermittently used for parking near Putterham Circle and

Centre Street, requiring bicyclists to share a travel lane with motor vehicles. South of Beech Street, traffic speeds on the mainline roadway increase. The service roads provide lower-stress alternative route, but southbound bicyclists encounter a significant uphill slope approaching Bellevue Hill, whereas the mainline roadway has a more even grade in the uphill direction.

Transit Access

MBTA bus route 51 intersections West Roxbury Parkway at Putterham Circle and at Weld Street. MBTA bus route 38 travels on West Roxbury Parkway for a short segment between Centre Street and Beech Street. Washington Street, which intersects West Roxbury Parkway at the southern end of the focus area, is a high frequency bus corridor with MBTA routes 40, 34, and 34E.

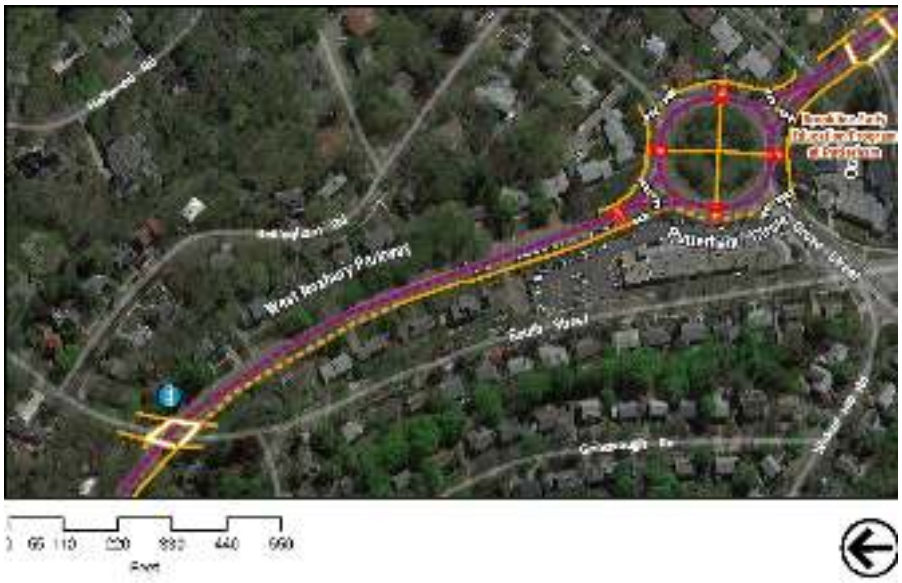
Recommendations

West Roxbury Parkway Segment 1 – Horace James Circle to Newton Street

Location	Issue(s)	Recommendation	Additional Info
Length of segment	• Opportunity to improve pedestrian connectivity • No bicycle accommodations	As a short-term measure, install a bike lane. Consider alternatives for providing a low-stress walking and biking facility along this segment. Alternatives include: 1. A shared use path along the edge of the golf course. 2. Raised separated bike lanes on the upper and lower roadway. 3. Consolidate through traffic to the lower roadway adjacent to the golf course (West Roxbury Parkway); the upper roadway becomes a pedestrian/bicycle priority road with vehicle access control at either end.	Alternatives 1 and 3 require a road diet. Alternatives 2 and 3 would require close coordination with the Town of Brookline, which owns the upper roadway.
Intersection of Newton Street	• High crash location • Skewed intersection geometry • No pedestrian crossings • No bicycle accommodations • Large curb radii	Consider geometric modifications to tighten the intersection and improve bicycle and pedestrian access. Options include: 1. Narrow the intersection, retaining existing traffic control 2. A modern roundabout 3. A signalized intersection As a short-term measure, install lane striping and vehicle channelization lines to clarify movements.	

West Roxbury Parkway Segment 2 – Newton Street to Centre Street

Figure 5-77



Location	Issue(s)	Recommendation	Additional Info
From Newton Street to Centre Street	• No bicycle accommodations • Wide travel lanes	As a short-term measure, install bike lanes and buffered bike lanes. Long-term, one-way, raised separated bike lanes are recommended along both sides of the roadway. Where parking demand exists, one or both sides can transition to a standard bike lane.	Requires modification to parking near Putterham Circle and Centre Street. Parking demand may be accommodated by allowing parking on one side and/or parking on side streets.
Puddingstone Road, Intervale Road, Baker Circle, and Church Street	• Deficient or missing crosswalks • Long distances between crosswalks	Upgrade existing crosswalks or add new crosswalks at specified locations.	

Location	Issue(s)	Recommendation	Additional Info
Intersection of South Street	• Skewed intersection geometry • Accessibility	Upgrade intersection accessibility with directional curb ramps and signal equipment.	
From South Street to Putterham Circle	• Approximately 470 ft. gap in sidewalk along west side of roadway	Continue the sidewalk north form its current terminus to provide a continuous pedestrian route.	
Putterham Circle	• Crosswalks located across circulating roadway rather than at entry/exit points • Parking permitted within rotary circulating roadway • No bicycle accommodations	Reconstruct intersection as a modern roundabout with pedestrian crossings relocated to the roundabout entry/exit points. Include bicycle facilities in roundabout design. As a short-term measure, add vehicle channelization to rotary to clarify lane designations and reevaluate access to paths inside circle.	Requires parking restrictions.
Intersection of Crehore Road	• Long crossing distance • Wide curb radii	Improve pedestrian crossing by narrowing the Crehore Road entrance or by adding a crossing island.	
West Roxbury Parkway/VFW Parkway Rotary			See Page 200 in the VFW Parkway Focus Area section.
Intersection of Weld Street	• Vehicle slip lanes • Parkland bisected by roadways	Upon reconstruction, eliminate the northbound right turn slip lane.	
Centre Street Rotary	• Parking permitted within rotary circulating roadway • High-speed entry/exit points • No bicycle accommodations	Reconstruct intersection as a modern roundabout. Include bicycle facilities in roundabout design. Make the following safety improvements as a short-term measure: 1. Add vehicle channelization to rotary to clarify lane designations. 2. Improve crosswalk visibility by restricting parking at least 20 ft. in advance of each crosswalk. Implement this using striping and temporary vertical objects such as planters or flexposts and signage.	Requires parking restrictions. Interim recommendations may require traffic analysis to determine appropriate vehicle lane designations.

Location	Issue(s)	Recommendation	Additional Info
Centre Street Rotary (cont'd)		3. Add advance yield lines at all crosswalks.	

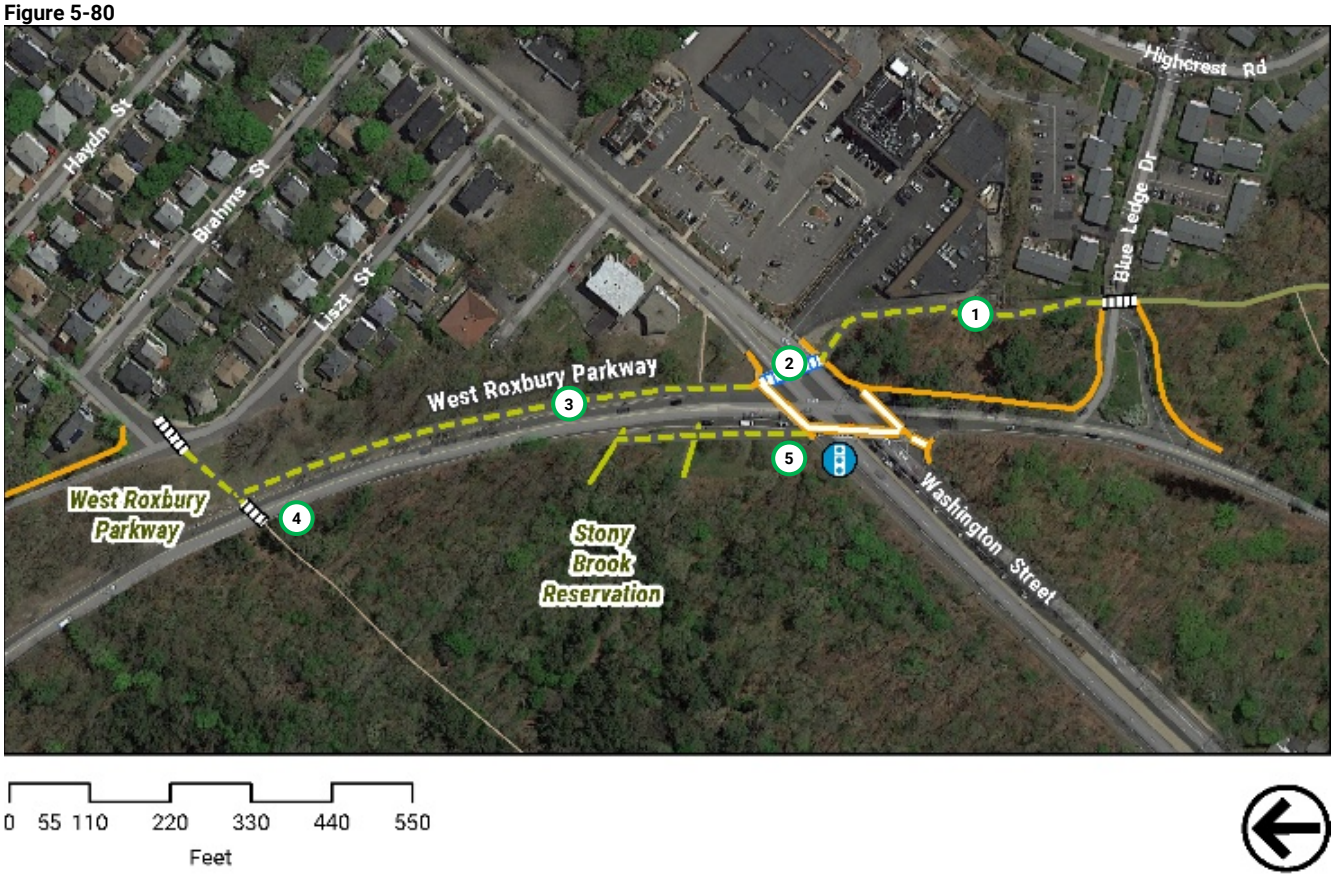
West Roxbury Parkway Segment 3 – Centre Street to Washington Street

Figure 5-78

Figure 5-79


West Roxbury Parkway
West Roxbury Parkway
Beech Street
Morse School
Stanford St
0 55 110 220 330 440 550
Feet
Legend
Existing Crossing
Proposed Crossing
Upgrade Crossing
Remove Crossing
Existing Signalized Crossing
Existing Sidewalk
Proposed Sidewalk
Existing Shared Use Path
Proposed or Upgraded Shared Use Path
Proposed Separated Bike Lane
Planned/Proposed Shared Use Path Outside Study Area
Existing/Under Construction Shared Use Path Outside Study Area
Walking Trail
Existing Buffered Bike Lane

Figure 5-80



1 Between Blue Ledge Drive and Washington Street, the path follows the edge of DCR land adjacent to 4640 Washington Street.

2 The path crosses Washington Street at an enhanced shared use crossing. This location is an opportunity for trail wayside amenities and informational signage.

3 From Washington Street to Nikisch Avenue, the path continues within the DCR reservation parallel to the parkway.

4 New crossings provide access between residential neighborhood and trailhead.

5 A new path on the west side of the parkway provides a connection to existing paths within Bellevue Hill Park.

Location	Issue(s)	Recommendation	Additional Info
From Centre Street to Beech Street	• No bicycle accommodations • Narrow road width	As a short-term measure, install bike lanes and add left turn lanes at intersections. Long-term, build raised separated bike lanes.	Wide lanes are currently used as two lanes at Belgrade Ave; further analysis recommended to determine appropriate design.
From Beach Street to Washington Street	• No bicycle accommodations • High vehicle speeds	As a short-term measure, install buffered bike lanes and utilize narrow travel lanes to calm traffic. Long-term, consider the following alternatives: 1. Build a shared use path parallel to the roadway on the east side offset by a landscaped buffer. 2. Build raised separated bike lanes in both directions.	Dedicated bicycle accommodations are preferred on the mainline roadway because the uphill grade traveling southbound is significantly more gradual than on the east and west carriage roads. Alternative 1 would provide better connectivity the proposed Stony Brook Reservation connector path (see Figure 5-80) but would require consideration at Beech Street to transition to the proposed bike lanes.
	• Three turnouts exist connecting the mainline road to the carriage road. The current design allows vehicles to exit the mainline at high speeds.	Consolidate to a single turnout designed to slow exiting vehicle speed. Provide a left turn lane for approaching vehicles.	
Intersection of Beech Street, Anawan Avenue	• Skewed intersection geometry •	Consider the desirability and feasibility of simplifying the intersection by closing one or more approaches.	Coordinate with the City of Boston. Requires traffic analysis to select which approaches could be closed. Fewer approaches could have the benefit of reducing the overall signal length.
Pathway from Beech Street to Pelton Street	• Narrow pathway	On the western side of the parkway, upgrade and widen the existing footpath to be a formal shared use path providing access to the carriage road.	

Location	Issue(s)	Recommendation	Additional Info
East and west carriage roads	• No bicycle accommodations • High vehicle speeds	Designate carriage roads as a low-stress bicycle route with access management and traffic calming measures. Consider advisory bike lanes, removing the centerline, or adding shared lane markings.	
From Nikisch Avenue to Blue Ledge Drive	• No bicycle or pedestrian accommodations • Opportunity to improve connectivity between Stony Brook Reservation and Bellevue Hill Park • Opportunity to improve connectivity between Roslindale and Stony Brook Reservation	Construct a new shared use path connection from the entrance to Stony Brook Reservation at Blue Ledge Drive to Nikisch Avenue.	See Figure 5-80. Requires coordination with the City of Boston. The design should be integrated with the long-term recommendations for the remainder of West Roxbury Parkway north of Nikisch Avenue.
Pelton Street, Colberg Ave and Westbourne Street	• No designated pedestrian/bicycle crossing between Beech Street and Washington Street	Consider the desirability and feasibility of new shared use crossings at specified locations and short path connections across the median.	Consider crosswalk enhancements such as RRFBs and/or raised crosswalks. See Figure 5-78 and Figure 5-79 for an illustration of proposed locations.
Bellevue Hill Park	• No marked crossings • Lack of crossing opportunities • Missing sidewalks • Unstriped bike lane	Improve access to Bellevue Hill Park by providing pedestrian crossings of the parkway mainline, sidewalks along Enneking Parkway leading to the park, and striping of a northbound bike lane through the Stony Brook Commons entrance toward the park.	

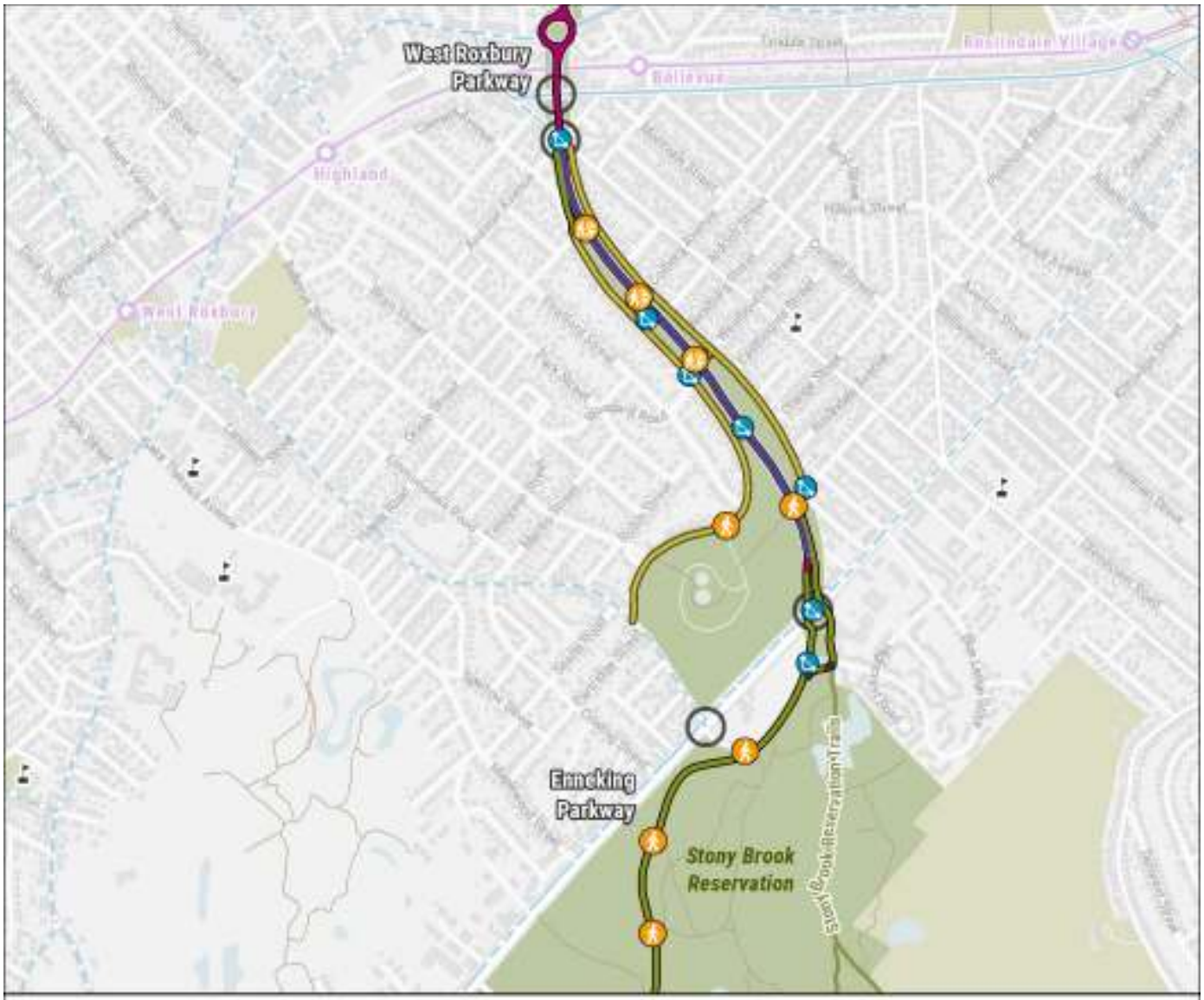
Bellevue Hill Road

Location	Issue(s)	Recommendation	Additional Info
From West Roxbury Parkway to La Grange Street	• High vehicle speeds • Large lane widths	Continue the pedestrian/bicycle priority treatment from the West Roxbury Parkway carriage road.	
Bellevue Hill Park entrance	• Opportunity to improve pedestrian access to Bellevue Hill Park	Provide a pedestrian crossing from the north side of Bellevue Hill Road to the walking path at Bellevue Hill Park.	

Figure 5-81


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
West Roxbury Parkway
Hancock Woods
Veterans Of Foreign Wars Parkway
Bellevue
Highland

Figure 5-82


West Roxbury Parkway
Bellevue
Roslindale Village
Highland
West Roxbury
Ennecking Parkway
Stony Brook Reservation
Stony Brook Reservation Trails
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
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Feet
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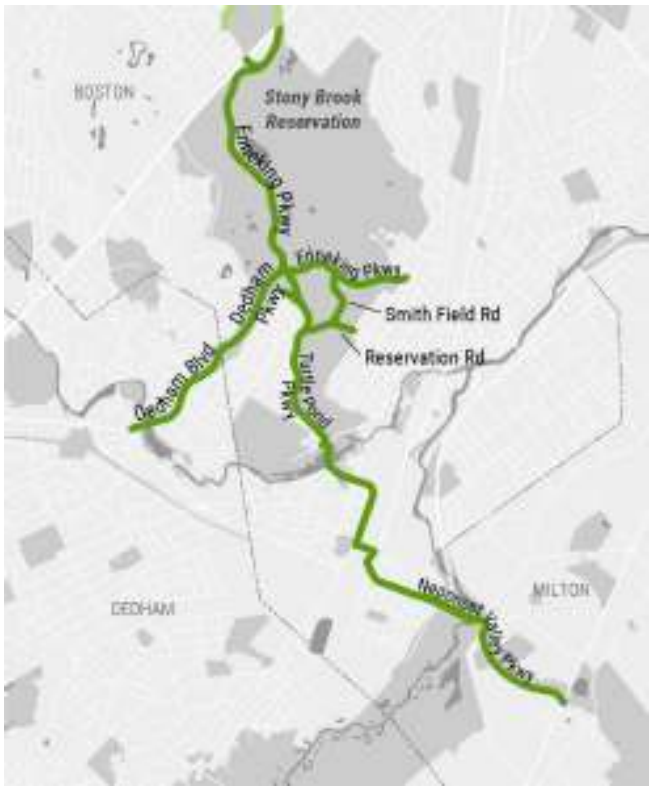
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water

Focus Area 15: Stony Brook & Neponset



Parkways

- Neponset Valley Parkway
- Turtle Pond Parkway
- Dedham Parkway
- Dedham Boulevard
- Smithfield Road
- Enneking Parkway

Communities

- Hyde Park (Boston)
- Roslindale (Boston)
- Milton

Existing Conditions

Overview

The Neponset River and Stony Brook Reservations consist of a collection of parkland and parkways located within the Roslindale and Hyde Park neighborhoods of Boston, as well as the municipalities of Dedham and Milton. Together, the Neponset River and Stony Brook Reservations provide hundreds of acres of parkland with a wide variety of recreational amenities. The parkways that wind through the reservations all maintain a similar roadway configuration consisting of two-way, undivided, bidirectional corridors.

The area is largely characterized by recreational open space with a medium-density residential neighborhood located in the southern portion of the area. The Neponset River runs along the southeastern edge of the study area, while the Mother Brook runs along the southwestern edge. Several smaller playgrounds can be found along the course of the parkways in this area. The Readville MBTA Commuter Rail station is located near the midpoint of Neponset Valley Parkway, providing a direct transit connection to downtown Boston.

Pedestrian

Sidewalks are provided along one or both sides of Dedham Boulevard, Turtle Pond Parkway, and Neponset River Parkway, though they are in need of repair on several segments. Sidewalks are not provided along either side of Enneking Parkway, Reservation Road, or Smithfield Road. Sidewalks are generally present where there is residential development or recreational facilities along a parkway. The Stony Brook Reservation and Neponset River Reservation both feature a network of walking trails. The trails cross the parkways in several locations, though marked crosswalks are not provided. It can be challenging to access the path system from adjacent neighborhoods on foot due to a lack of pedestrian routes to and from trailheads.

Bicycle

The Stony Brook Reservation features a network of paved trails designated for use by pedestrians and bicyclists. Portions of Enneking Parkway, Dedham Parkway, and Turtle Pond Parkway have striped shoulders that are usable as bike lanes but the shoulder widths are not consistent along the corridors.

No bicycle facilities are provided along the corridors within the area.

Transit Access

MBTA bus route 33 travels along Smithfield Road, Enneking Parkway and Turtle Pond Parkway. MBTA bus route 40 travels along Dedham Parkway and Turtle Pond Parkway. Several MBTA Commuter Rail trains stop at Readville station near the southern end of the focus area.

Recommendations

Enneking Parkway

Figure 5-83

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Location	Issue(s)	Recommendation	Additional Info
Rev. Paul A. Phinn Way	• Opportunity to improve pedestrian access to Stony Brook Reservation trail system	Construct a sidewalk segment between Washington Street and the trailhead at the intersection with Enneking Parkway. Additionally, modify the geometry of the intersection with Enneking Parkway to reduce vehicle speeds.	The north side is likely the most feasible location for the sidewalk due to topography.
From Washington Street to intersection of Enneking Parkway/Dedham Parkway/Turtle Pond Parkway	• No bicycle accommodations	As a short-term measure, bike lanes should be installed in conjunction with widening the shoulders. Consider the feasibility of constructing a shared use path parallel to the roadway. One-way, raised separated bike lanes with mountable curbs may be used as an alternative if a shared use path is determined to be infeasible.	A shared use path requires a minimum cross section of 34 ft. Use of minimum width travel lanes is recommended, if necessary, to accommodate the shared use path. Recommendation may be implementable in conjunction with MWRA water main project. Recommendations for the Washington Street/Enneking Parkway intersection can be found on Page 220.
Length of corridor	• Opportunity to improve pedestrian crossings at trailheads	Add new crossings at significant trail crossings and viewing areas. Crossings should be designed to accommodate bicyclists where the crossing would connect existing shared use paths.	Short sidewalk segments may be needed where trailheads do not directly align. See Figure 5-89 for proposed crossing locations.
Intersection of Enneking Parkway/Dedham Parkway/Turtle Pond Parkway	• High crash location	Consider reconstructing intersection as a modern roundabout with accessible bus stops and crossings for proposed pedestrian and bicycle facilities.	
From Gordon Ave to Smithfield Road	• No bicycle accommodations • Feasibility of widening parkway is limited by adjacent wetlands. • Accessing Stony Brook Reservation from nearby neighborhoods currently requires a circuitous route	Construct new shared use path connections between neighborhood and trailheads depicted in Figure 5-84.	See Figure 5-84 for a map of recommendations. Requires coordination with the City of Boston.

Figure 5-84

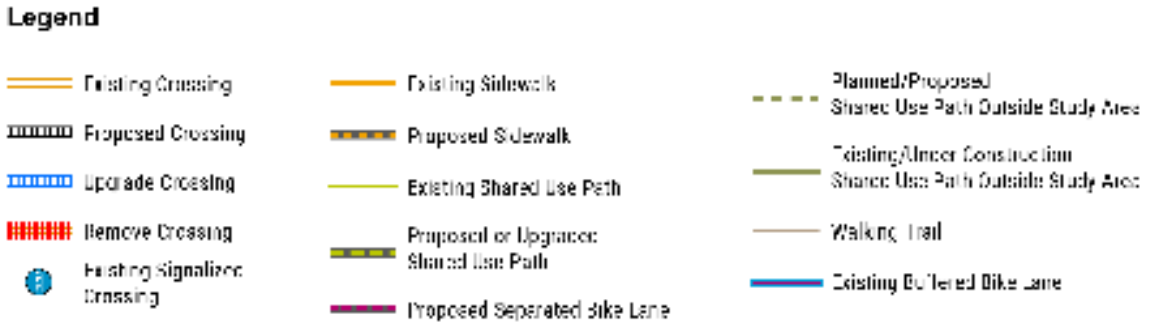

Figure 5-84 shows a new shared use path connection between Cleveland Street and Stony Brook Reservation trail system. Consider the following three shared use path segments, new crossings, and an on-street routes to strengthen multimodal access between Hyde Park and the Stony Brook Reservation trail system. Numbers refer to Figure 5-84:

1. Formalize the existing dirt path between the end of Beaver Street and Gordon Ave into a paved shared use path.
2. Add wayfinding along Beaver Street and Cleveland Street to direct users towards. Coordinate with the City of Boston.
3. Build a new paved shared use path between Cleveland Street and the corner of Smithfield Road and Enneking Parkway running along the edge of the baseball diamonds.
4. Build a new paved shared use path to connect the existing paved path that ends at Smithfield Road and the path that ends at the parking lot on the north side of Enneking Parkway. Add new shared use crossings as part of construction.

Smithfield Road

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• High vehicle speeds • Cut-through traffic	Encourage slower vehicle speeds by adding traffic calming treatments. Consider additional access management strategies.	
From Reservation Road to Enneking Parkway	• Opportunity to improve pedestrian access to Stony Brook Reservation trail system and playing fields	Constructing a sidewalk along Smithfield Road between Reservation Road and Enneking Parkway	Sidewalk alignment would likely be along the eastern side of Smithfield Road. A new crosswalk at Reservation Road in recommended.
Intersection of Reservation Road	• Skewed intersection geometry • No clear crossing locations for pedestrians or bicyclists • High-speed vehicle turning movements where roads split	Square off intersection or reconstruct as a modern roundabout.	

Dedham Parkway/Dedham Boulevard

Figure 5-85

Location	Issue(s)	Recommendation	Additional Info
From Enneking Parkway to Oakland Street	• Opportunity to improve pedestrian access • Opportunity to expand bicycle network	Study the feasibility of constructing a shared use path parallel to the roadway. One-way, raised separated bike lanes with mountable curbs may be used as an alternative if a shared use path is determined to be infeasible. As a short-term measure, bike lanes should be installed in conjunction with widening the shoulders.	A shared use path requires a minimum cross section of 34 ft. Use of minimum width travel lanes is recommended, if necessary, to accommodate the shared use path.
From Alwin Street to Georgetowne Drive	• Opportunity to improve pedestrian access to MBTA bus stop • No bus stop on east side of Dedham Parkway at Georgetowne Drive	Add pedestrian accommodations to provide access to bus stop at Georgetowne Drive. Add accessible bus stops and crossing across Dedham Parkway. Alternatives for pedestrian accommodations include a sidewalk or a shared use path that would eventually be extended as part of the previous recommendation.	See Figure 5-85.
From Oakland Street to Milton Street	• No bicycle accommodations on bridge across Mother Brook	Add bike lanes along each side of the bridge at the southern end of the boulevard. At Oakland Ave, consider how bicyclists will transition to proposed facility extending eastward.	

Turtle Pond Parkway/River Street

Figure 5-86

Location	Issue(s)	Recommendation	Additional Info
From Enneking Parkway to River Street	• No bicycle accommodations • No pedestrian facilities adjacent to roadway	As a short-term measure, install bike lanes. Long-term, consider the following alternatives: 1. Construct a shared use path along the east side of the parkway. 2. Build separated bike lanes; mountable curbs may be preferred.	A shared use path requires a minimum cross section of 34 ft. Use of minimum width travel lanes is recommended, if necessary, to accommodate the shared use path.
From Alwin Street to West Boundary Road	• No sidewalk	Add a new sidewalk extending northward from Alwin Street along the west side of the parkway.	See Figure 5-86.
Intersection of West Boundary Road	• No bus stop access • Inaccessible bus stop; bus currently stops on shoulder	Construct a new accessible bus stop with a crosswalk.	See Figure 5-86.
Intersection of Alwin Street	• Skewed intersection geometry	Consider reconstructing the intersection as a modern roundabout. Alternatively, square off the intersection to reduce conflict points.	
Intersection of Smithfield Road	• Skewed intersection geometry • Opportunity to add pedestrian crossings	Square off the Smithfield Road approach to Turtle Pond Parkway. Add new crosswalks at locations shown in Figure 5-86.	
Intersection of River Street	• No pedestrian or bicycle accommodations • Poor sight lines • High vehicle speeds	Consider alternatives to improve geometry for all users. The preferred alternative is to reconstruct the intersection as a modern roundabout. As an alternative, the intersection may be squared off and pedestrian crossings across River Street provided.	The design should provide clear connectivity between existing and proposed pedestrian and bicycle facilities.
River Street between Turtle Pond Parkway and Neponset Valley Parkway	• No bicycle accommodations	Install bike lanes on the bridge across Mother Brook	

Neponset Valley Parkway

Figure 5-87

Figure 5-88

Legend

- Existing Crossing
- Proposed Crossing
- Upgrade Crossing
- Remove Crossing
- Existing Signalized Crossing
- Existing Sidewalk
- Proposed Sidewalk
- Existing Shared Use Path
- Proposed or Upgraded Shared Use Path
- Proposed Separated Bike Lane
- Planned/Proposed Shared Use Path Outside Study Area
- Existing/Under Construction Shared Use Path Outside Study Area
- Walking Trail
- Existing Buffered Bike Lane

Location	Issue(s)	Recommendation	Additional Info
Intersection of River Street	• Long crossing distances • Poor bicycle and pedestrian access	Study alternatives to reduce the intersection footprint and improve bicycle and pedestrian access. Consider closing the Readville Street entrance. A modern roundabout may be feasible as an alternative.	Consider full signalization of the intersection.
From River Street to Milton Street	• No bicycle accommodations • Narrow sidewalk between Chesterfield Street and Milton Street	As a short-term measure, install bike lanes between Milton Street and Waterloo Street. Construct a new shared use path following the route shown in Figure 5-87. The path can utilize segments of existing pathway in the area. Wayfinding should be provided to guide users along the route.	Existing utility poles create a significant constraint between Chesterfield Street and Milton Street. From Milton Street to Waterloo Street, the east side sidewalk can be removed to shift roadway east and consolidate width into the proposed shared use path. Removing the sidewalk is feasible due to the lack of destinations on the east side on this segment.
From Milton Street to Wolcott Square	• No bicycle accommodations	Install one-way separated bike lanes on both sides. As a short-term measure, install buffered bike lanes.	
Wolcott Square	• Skewed intersection geometry • Inadequate pedestrian accessibility • Long crossing distances	Add curb extensions to Wolcott Square approach. Eliminate large slip lane from the Wolcott Court approach and close commercial driveway entrance at northwest corner. Upgrade accessibility throughout the intersection.	Requires coordination with City of Boston.
From Truman Parkway to Brush Hill Road	• No connectivity from existing shared-use path along Truman Parkway • Goat paths	Construct a shared-use path along the south side of the parkway to connect to the existing shared used path along Truman Parkway. Construct a sidewalk along the north side.	See Figure 5-88.
From Brush Hill Road to Route 138	• No bicycle accommodations • Narrow pathway	Upgrade the existing path along the north side of Neponset Valley Parkway to shared use path standards.	

Location	Issue(s)	Recommendation	Additional Info
Intersection of Truman Parkway	• Long crossing distances • High vehicle volumes and speeds • Accessibility	Reconstruct the intersection as a protected intersection with crosswalks provided on all sides. Eliminate the southbound slip lane on the Truman Parkway approach and tighten the existing curb radius for the westbound Neponset Valley Parkway approach to Truman Parkway.	See Figure 5-88.
Intersection of Milton Street, Intersection of Brush Hill Road	• High crash location • Skewed intersection geometry • No marked crossings	Consider making geometric modifications to address crash history and improve pedestrian and bicycle safety and access.	
Intersection of Route 138	• No bicycle accommodations	Provide a left turn lane from Route 138 northbound onto Neponset Valley Parkway westbound and provide a continuous bike facility along Route 138, even if it requires minimum widths.	Consider full signalization of the intersection. Requires coordination with MassDOT.

Figure 5-89

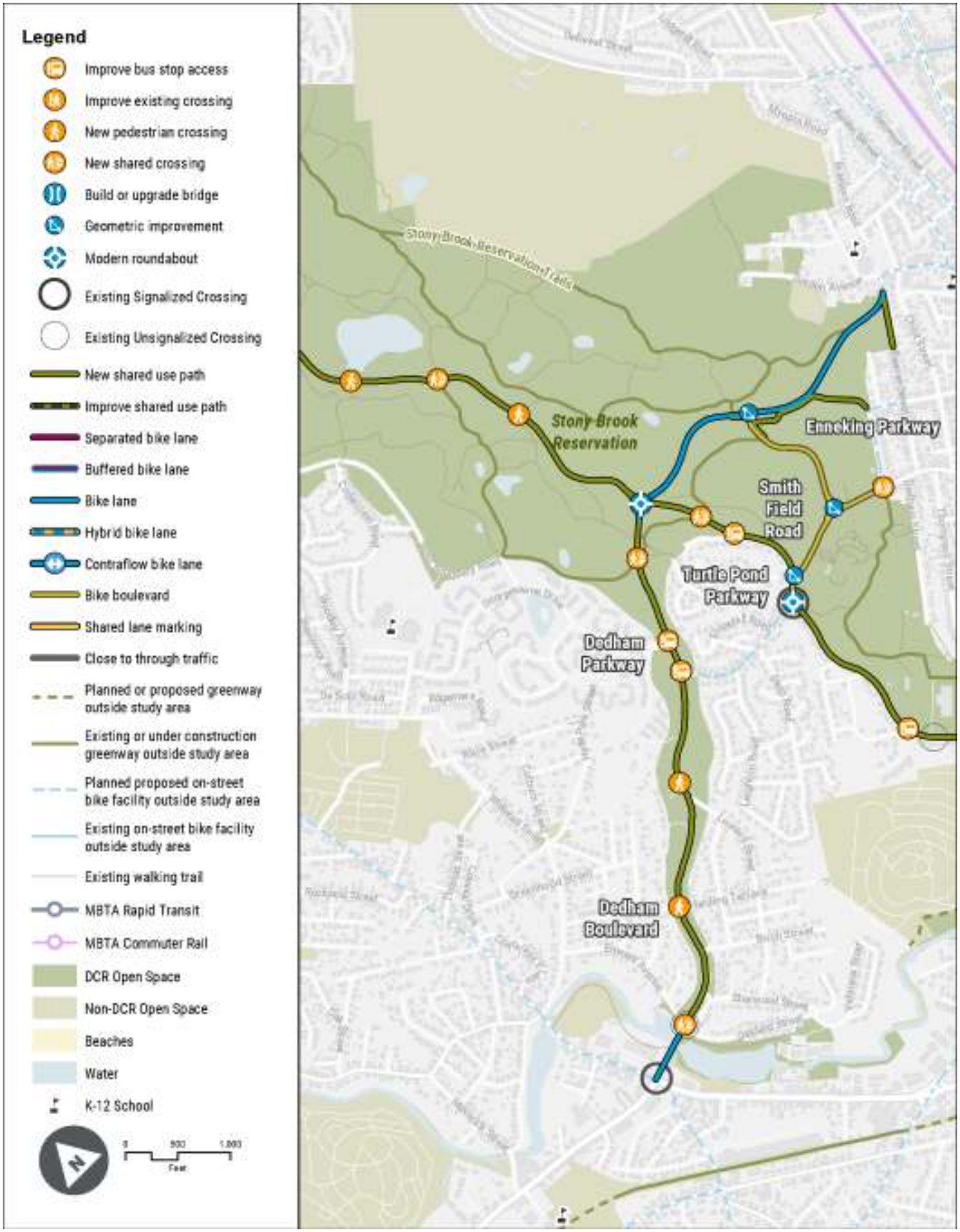
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
Stony Brook Reservation
Ennecking Parkway
Smith Field Road
Turtle Pond Parkway
Dedham Parkway
Dedham Boulevard

Figure 5-90


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0 500 1,000
Feet
Readville
Neponset Valley Parkway
Neponset River Reservation
138

Focus Area 16: Blue Hills

Parkways

- Wampatuck Road
- Chickatawbut Road
- Hillside Street
- Blue Hill River Road
- Unquity Road
- Blue Hills Parkway
- Green Street

Communities

- Milton
- Canton
- Quincy

Existing Conditions

Overview

The Blue Hills Reservation comprises 7,000 acres of parkland containing miles of recreational hiking, walking, and mountain biking trails, a ski slope, swimming, fishing, and a variety of other year-round outdoor activities. A number of parkways run through the reservation that carry regional vehicular traffic between Boston and communities south of the city.

The majority of parkways within the reservation are two-lane, undivided, bidirectional roadways with the exception of Blue Hills Parkway and Green Street. Blue Hills Parkway, which runs north/south between the reservation and Mattapan Square in Boston, is an elegant boulevard with a tree-lined median. Houghton's Pond is a major activity node, being a destination itself as well as a starting point for hikers using the reservation trail system. Green Street is a relatively narrow, two-way, undivided roadway with no lane markings.

Pedestrian

Pedestrian connectivity varies along the parkways within the reservation. A natural-surface path is provided along one side of a portion of Hillside Street and Blue Hill River Road. Some segments of the parkways within the reservation, including segments of Blue Hills River Road and Wampatuck Road, provide sidewalks on one side. Blue Hills Parkway, excluding the southernmost portion of the parkway, provides sidewalks on both sides of the road with marked crosswalks spread intermittently along the corridor.

The majority of parkways inside the reservation, including Unquity Road, Chickatawbut Road, Hillside Street, and Green Street, provide no sidewalks on either side of the roadway. With a dense network of hiking trails throughout the reservation, there are many trails that cross the parkways. However, very few marked crosswalks are provided.

Bicycle

Painted bike lanes are provided on Blue Hills Parkway and Unquity Road; however no other bicycle facilities are provided along any of the other parkways within the reservation. Green Street is a low-volume, low-speed roadway that provides a comfortable bicycling experience for riders of all abilities.

In terms of regional greenways, the Neponset Valley Trail intersects Blue Hills Parkway at the far northern end near Mattapan Square. The proposed Summit to Sea Greenway, envisioned in the *City of Quincy Bicycle Network Plan*, would begin near the northern end of Wampatuck Road and extend to the Quincy Shore Reservation.

Transit Access

Mattapan Square, located at the northern end of the study area, is the terminal station for many MBTA bus routes and the MBTA Red Line Mattapan Trolley. No bus routes travel directly on the parkways in this focus area. Several bus routes cross the parkways at the following locations:

- MBTA route 240 and Brockton Area Transit buses stop on Route 28 at Chickatawbut Road
- MBTA route 716 stops on Route 138 at Blue Hill River Road.

Recommendations

Blue Hills Parkway

Location	Issue(s)	Recommendation	Additional Info
Intersection of Blue Hills Parkway, Canton Avenue, and Unquity Road	• Permissive left turns from Canton Avenue	Install left turn signal from Canton Avenue to Blue Hill Avenue and Unquity Road with protected turn phase.	
Length of corridor	• Opportunity to improve bicycle facilities	Long-term, construct raised one-way separated bike lanes on both sides. Sidewalks should be reconstructed as part of this project.	May require impacts to parking and/or travel lanes.
Pine Tree Brook Path crossing	• No marked crossing for trail • Crossing utilized by pedestrians and bicyclists	Construct a new shared use crossing across Blue Hills Parkway to improve the continuity of Pine Tree Brook Path.	Consider enhanced treatments such as an RRFB or PHB.
Milton High School driveway	• No marked crossing	Construct a new shared use crossing across Blue Hills Parkway to facilitate access to/from the west side of Blue Hills Parkway at Milton High School driveway.	Consider enhanced treatments such as an RRFB or PHB.
Intersection of Brook Road	• Confusing intersection geometry • High volume traffic lanes that bicyclists would have to merge across	Add a two-stage left turn queue box to facilitate bicyclists turning left from southbound Blue Hills Parkway to eastbound Brook Road.	
Kahler Avenue, Dyer Avenue, Houston Avenue, Warren Avenue	• Long distanced between marked crosswalks	Consider new pedestrian crossings at each of these cross streets.	Consider enhanced treatments such as an RRFB or PHB.

Unquity Road

Location	Issue(s)	Recommendation	Additional Info
From Blue Hill River Road to Canton Avenue	• Opportunity to improve existing bicycle facility	Study the feasibility of constructing a shared use path parallel to Unquity Road. One-way, raised separated bike lanes with mountable curbs may be used as an alternative if a shared use path is determined to be infeasible.	A shared us path requires a minimum cross section of 34 ft. Use of minimum width travel lanes is recommended, if necessary, to accommodate the shared use path.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Harland Street	• Skewed intersection geometry • High crash location • High traffic speeds	Study alternatives to address the crash cluster at this location, including geometric modifications, addition of a southbound left turn lane, restricting southbound left turns, or signalization of the intersection.	
Length of corridor	• Lack of pedestrian crossing locations	Provide additional pedestrian crossing opportunities, especially at significant trail crossings.	

Hillside Street

Location	Issue(s)	Recommendation	Additional Info
From Chickatawbut Road to Unquity Road	• No bicycle accommodations	Provide a striped on-street bike lane on Hillside Street.	
Intersection of Unquity Road	• High crash location • Skewed intersection geometry • High traffic speeds	Consider the following alternatives: 1. Square off the Hillside Street approach from the northeast 2. Restrict vehicular access entirely and consolidate traffic to the nearby Unquity Road/Chickatawbut Road intersection.	
Length of corridor	• No bicycle accommodations • High walking and bicycling demand	As a short-term measure, install bike lanes. Long-term, extend the proposed shared use path from Unquity Road southward along Hillside Street. The preferred alignment of the path is along the east side of the roadway where there is an existing natural surface path. As an alternative to the shared use path, one-way, raised separated bike lanes with mountable curbs may be considered.	Between Houghton's Pond parking lot and Hillside Street, separate bicycle and pedestrian paths are recommended considering the high user volumes in the area.
Length of corridor	• Pedestrian crossings needed	Provide new marked pedestrian crossings and signage at significant trail crossings. See Figure 5-91 and Figure 5-92 for proposed crossing locations.	

Reimagining the Unquity Road/Hillside Street/Chickatawbut Road Triangle

Hillside Street, Chickatawbut Road, and Unquity Road form a triangle directly north of DCR's Blue Hills Operations facility. This area is an important gateway to the Blue Hills Reservation for many visitors; several parking lots are located in the area and it is at the confluence of several popular trails. Chickatawbut Road also provides a northerly bypass of Interstate 93, and as a result the area sees competition for space between park users and cut-through traffic. During busy park days, people walking, biking and driving share the roadway with parked vehicles along Hillside Street and the southern end of Unquity Road. Further, the intersection of Unquity Road and Hillside Street is a high crash location due to skewed intersection geometry, high speeds, and poor sightlines. For these reasons, this area warrants further consideration to balance these uses and address safety concerns. Considering the recreational focus of the area and the availability of Interstate 93 and Route 28 as vehicle routes, priority should be given to recreational users while encouraging traffic not bound for the reservation to use alternative routes.

Designs that slow vehicle traffic, communicate pedestrian and bicycle priority, and discourage cut through traffic should be considered. The may include gateway treatments, reduced speed limit, advisory bike lanes, and potentially closing redundant roadways such as Hillside Street between Chickatawbut Road and Unquity Road.

Chickatawbut Road

Location	Issue(s)	Recommendation	Additional Info
Intersection of Hillside Street	• Skewed intersection geometry • High traffic speeds • Long crossing distances	Narrow the intersection geometry and consider additional traffic control measures.	
From Hillside Street to Route 28 (Randolph Avenue)	• No bicycle accommodations	Install bike lanes. Utilize narrower travel lane widths to discourage speeding.	
From Route 28 (Randolph Ave) to Wampatuck Road	• No bicycle accommodations	Install bike lanes by widening the shoulder where feasible during repaving. Where the width only exists for one bike lane, provide a bike lane in the uphill direction. Where the width does not exist for any bike lane, consider advisory bike lanes.	
From Wampatuck Road to Granite Street	• No pedestrian/bicycle accommodations	Study the feasibility of constructing a shared use path on the north side of the parkway. As an alternative, install bike lanes.	Use of minimum width travel lanes is recommended, if necessary, to accommodate the shared use path.
Intersection of Wampatuck Road	• Skewed intersection geometry • No crossing to trailhead	Narrow the intersection geometry to slow the high-speed turn from Chickatawbut Road onto Wampatuck Road. Consider additional traffic control and traffic calming. Provide a crosswalk to the trailhead at the intersection.	Squaring-off intersection will decrease crossing distance across Wampatuck for better access to trailhead.

Location	Issue(s)	Recommendation	Additional Info
Length of corridor	• Lack of adequate crossing locations	Provide new marked pedestrian crossings and signage at significant trail crossings. See Figure 5-91 and Figure 5-93 for proposed crossing locations.	

Wampatuck Road

Location	Issue(s)	Recommendation	Additional Info
From Chickatawbut Road to Bunker Hill Lane	• Narrow path • Wide travel lanes encourage speeding	Upgrade the existing path on the east side of Wampatuck Road to a shared use path.	Consider narrowing the roadway to a consistent width and widen the buffer where feasible. The buffer provides an opportunity for new plantings.
Length of corridor	• Lack of adequate crossing locations	Provide new marked pedestrian crossings and signage at significant trail crossings. See Figure 5-93 for proposed crossing locations.	

Blue Hill River Road

Location	Issue(s)	Recommendation	Additional Info
From Hillside Street to Ponkapoag Trail	• Opportunity to improve existing bicycle facilities	Construct shared use path along the west side of the road	Require the burying of existing overhead utilities.
Intersection of Ponkapoag Trail and I-93	• Accessibility • Long crossing distance	Provide curb ramps and crosswalks across the interstate southbound ramp.	
From Hillside Street to Route 138	• No bicycle accommodations • Infrequent pedestrian crossing locations • High traffic speeds and volumes	Provide on-street bicycle lanes. Narrow vehicle travel lanes and add traffic calming devices to slow vehicles through this high-pedestrian activity area. Install pedestrian crossings at trail crossings indicated in Figure 5-92.	
Intersection of Route 138/Royall Street	• Long crossing distances • Pedestrian and bicycle connectivity	Consider alternatives to improve bicycle and pedestrian access and shorten crossing distances. Treatments may include tightening curb radii, restricting right turns on red, and providing two-stage left turn queue boxes.	Coordinate with MassDOT.

Green Street

Location	Issue(s)	Recommendation	Additional Info
Royall Street and Blue Hill Ave	• Opportunity to improve bicycle network connectivity	Add "Except Bikes" to time-based "Do Not Enter" restriction signs.	
Length of corridor	• High traffic speeds	Consider the desirability of lowering speed limit to 20 mph and installing traffic calming treatments.	

Figure 5-91


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
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Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
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Feet
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Mattapan
Capen Street
28
138
Blue Hills Parkway

Figure 5-92


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
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Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
N
0
500
1,000
Feet
Unquity Road
Blue Hills Reservation
Hillside Street
Chickatawbut Road

Figure 5-93


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
0
500
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Feet
N
Blue Hills Reservation
Hillside Street
Blue Hill River Road
24
1
93
1A
138

Figure 5-94


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
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Wampatuck Road
Blue Hills Reservation
Chickatawbut Road
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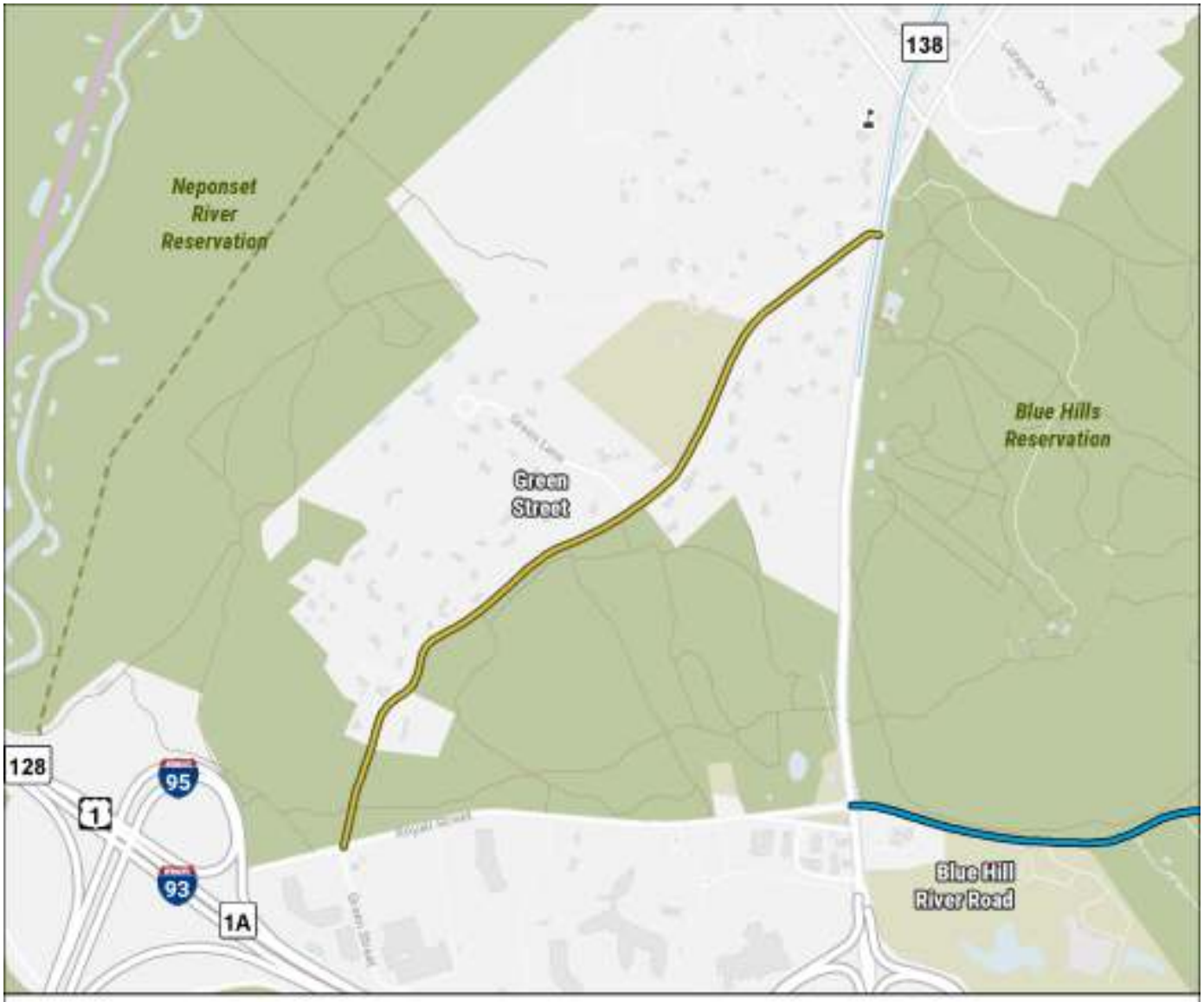
Figure 5-95


138
Neponset River Reservation
Blue Hills Reservation
Green Street
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Blue Hill River Road
Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
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New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
K-12 School
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
NON-DCR Open Space
Beaches
Water

Focus Area 17: South Shore

Parkways

- Neponset Avenue
- Quincy Shore Drive
- Furnace Brook Parkway

Communities

- Boston
- Quincy

Existing Conditions

Overview

Beginning at the southeastern tip of Boston in Dorchester's Pork Norfolk neighborhood and continuing south and west through Quincy, Neponset Avenue, Quincy Shore Drive, and Furnace Brook Parkway provide approximately six miles of parkway that connect Boston and Quincy Bay to the Blue Hills Reservation.

Starting at Neponset Circle, Neponset Ave carries pedestrian, bicycle and vehicle traffic across the Neponset River and bends eastward to meet Quincy Shore Drive. Moving eastward, Quincy Shore Drive starts as a residential connector, then transitions to an oceanside boulevard at East Squantum Street as it traces the shoreline of Wollaston Beach. Approximately two miles south, Quincy Shore Drive meets Furnace Brook Parkway, which extends westward to meet Wampatuck Road at the entrance to the Blue Hills Reservation.

The parkways cover a large area and meander through medium to high-density residential neighborhoods. Neponset Avenue connects points north and south of the Neponset River. At the northern end, Neponset Avenue provides access to the extensive networks of shared use paths along the Neponset Greenway.

Pedestrian

Sidewalks are provided along both sides of Quincy Shore Drive and Neponset Avenue. A sidewalk is provided along at least one side of Furnace Brook Parkway for its entire length, but some segments are discontinuous. Sidewalks are provided around both edges of the Furnace Brook Rotary where the parkway intersects with the Southeast Expressway. However, there are no crosswalks or curb ramps at the expressway on/off-ramps.

Bicycle

The promenade on Quincy Shore Drive along Wollaston Beach between East Squantum Street and Furnace Brook Parkway is signed as a shared use path. Similar to other oceanfront promenades in the study area, bicycle and pedestrian traffic is mixed and can become congested

on popular days. Neponset Avenue features shared use paths on both sides of the bridge; bicyclists are not permitted to use the roadway crossing the bridge. Furnace Brook Parkway west of Newport Ave features wide shoulders that are usable by bicyclists.

An opportunity exists to connect the shared use paths on Neponset Bridge to Wollaston Beach along Quincy Shore Drive to enhance beach access. This new connection would connect to the recently extended Neponset River Trail and proposed separated bike lanes as part of the upcoming reconstruction of Morrissey Boulevard.

Transit Access

No bus routes travel directly on the parkways in this focus area. Several MBTA bus routes cross the parkways at the following locations:

- MBTA 210 and 212 on Hancock Street at Furnace Brook Parkway
- MBTA 245 at Adams Street at Furnace Brook Parkway
- MBTA 215 on Copeland Street at Furnace Brook Parkway
- MBTA 211 on East Squantum Street at Quincy Shore Drive

Recommendations

Neponset Avenue

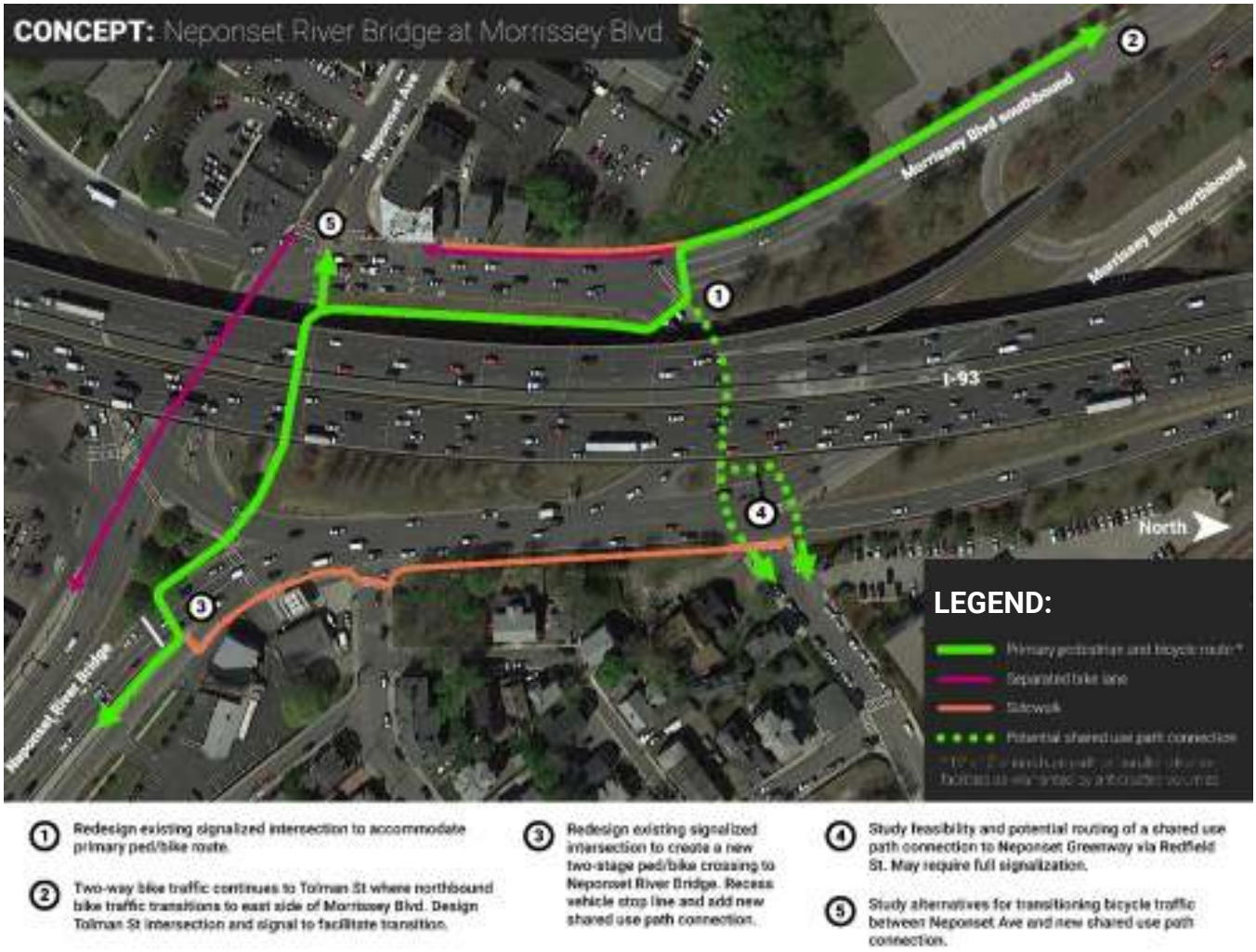


Figure 5-96: Neponset Circle Pedestrian and Bicycle Connectiviy Recommendations

Location	Issue(s)	Recommendation	Additional Info
Neponset Circle	• Missing sidewalk • Accessibility • High vehicle turning speeds	Upgrade crosswalk accessibility and make other improvements to the pedestrian realm. Narrow the existing curb cut access to the Neponset Circle Car Wash located on southwestern corner of the intersection and provide a sidewalk across the entrance.	
	• No bicycle accommodations • Poor pedestrian connectivity	As part of the Morrissey Boulevard reconstruction project, construct a shared use path connection between the proposed separated bike lanes on Morrissey Boulevard and the existing shared use paths on the Neponset Bridge.	See Figure 5-96 for the proposed routing of the new connection.

Quincy Shore Drive Segment 1 – Neponset Ave to East Squantum Street

Along this segment, Quincy Shore Drive is a six-lane residential connector with a tree-lined median and edges. At its eastern end, the parkway connects to the Neponset Bridge. The areas around both ends of the Neponset Bridge are emerging recreational destinations, with the recently extended Neponset Greenway on the north side and the Quincy Riverwalk on the south side. There is an opportunity to connect these destinations to nearby Wollaston Beach via Quincy Shore Drive. No bicycle accommodations are provided on that parkway, and sidewalk conditions are degraded due to root damage.

Existing

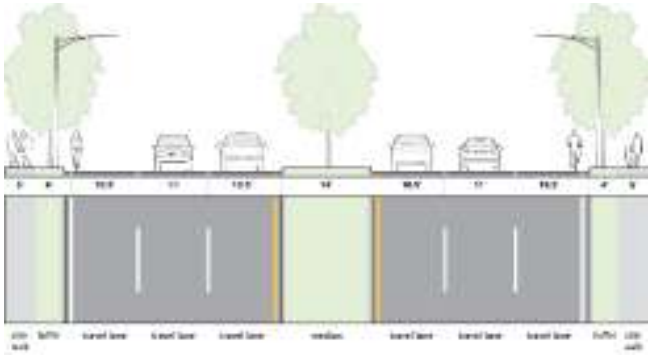


Figure 5-97: Segment 1 Existing Typical Cross Section

Alternative cross sections were developed to provide a bicycle facility between Neponset Ave and East Squantum Street. Under both alternatives, it is recommended that the sidewalks on both sides be reconstructed using concrete, and that new crossings be constructed at Ditmar Street and at the Commander Shea Boulevard on/off ramp on the westbound roadway. Additionally, the intersection of Airport Road should be modified with a curb extension to shorten the crossing distance.

Alternative 1

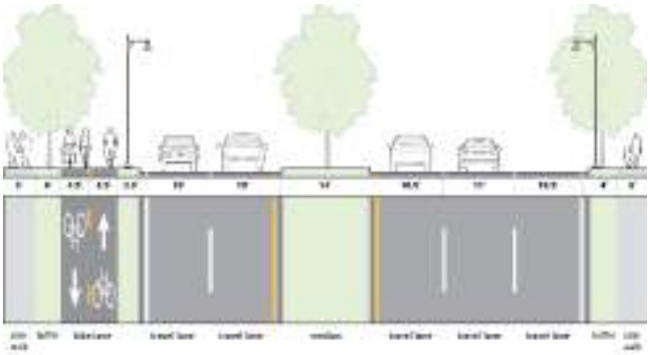


Figure 5-98: Segment 1 Alternative 1 Long-Term Recommendation

Alternative 1 proposes a quick-build two-way separated bike lane on the north side of Quincy Shore Drive in the short term. The right travel lane in the westbound direction is removed. Quincy Shore Drive is four lanes on either side of this segment, which suggests that a road diet may be feasible. Long-term a raised facility can be built to provide greater separation and comfort for bicyclists (see Figure 5-98).

This alternative would require construction at either end to provide a transition onto existing facilities. On the western end, two routing options exist:

1. At the Commander Shea Boulevard on/off ramp, the facility bends northward and continues along the east side of the ramp (see Option 1 in Figure 5-99). It then crosses Commander Shea Boulevard and bends westward along the north side of the roadway to meet the existing Quincy Riverwalk. From there, users can access the Neponset Bridge.
2. At the Commander Shea Boulevard on/off ramp, a ramp is provided to allow users to transition onto the sidewalk on the north side of the Quincy Shore Drive ramp to Hancock Street (see Option 2 in Figure 5-99). A consideration with this alternative is that the sidewalk narrows considerably in front of the Neponset Landing Apartments, presenting a challenge for bicycle access. The feasibility of widening the sidewalk and narrowing the driveway entrances needs further evaluation.

Both options require coordination with other agencies to extend the facility on facilities not owned by DCR. Wayfinding should also be provided as part of either option.

At the eastern end, the crosswalks and curb ramps along the north side of the intersection with East Squantum Road would be widened to transition bicyclists onto the existing shared use path along Wollaston Beach.

Figure 5-99: Alternative 1 Routing Options between Quincy Shore Drive and Neponset Bridge

Alternative 2

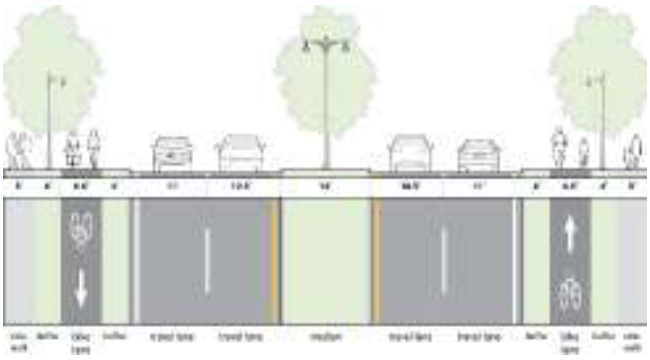


Figure 5-100: Segment 1 Alternative 2 Long-Term Recommendation

Alternative 2 proposes one-way separated bike lanes on the either side of Quincy Shore Drive (see Figure 5-100). General travel lanes are reduced from six to four. Quincy Shore Drive is four lanes on either side of this segment, which suggests that a road diet may be feasible.

At the western end, either of the bicycle routing options under Alternative 1 are feasible provided that a new crossing at the Commander Shea Boulevard on/off ramp is constructed to allow eastbound bicyclists to access the southern roadway. A new crossing at this location would be a benefit to people walking, who currently must utilize a circuitous route to access the Quincy Riverwalk from the south side of Quincy Shore Drive.

Additionally, a short-term routing option for eastbound bicyclists is available: follow the Quincy Riverwalk south to Commander Shea Boulevard, turn right and continue southbound under the Quincy Shore Drive overpass, turn left at the Billings Street ramp, then right onto Quincy Shore Drive. Commander Shea Boulevard and Billing Street should be retrofitted with bike lanes and wayfinding provided along the route (see Figure 5-101).

Figure 5-101: Alternative 2 Routing Options between Quincy Shore Drive and Neponset Bridge

At the eastern end, two stage left turn queue boxes could be provided to transition bicyclists onto the existing shared use path along Wollaston Beach. Alternatively, the bike lanes could be extended southward, as described in Segment 2 Alternative 2.

Quincy Shore Drive Segment 2 – East Squantum Street to Fenno Street

South of East Squantum Street, Quincy Shore Drive narrows to a four-lane, undivided roadway with a sidewalk on the west side and a concrete shared use path on the east side. Wollaston Beach is situated along the eastern edge of the parkway, while single-family residential development and beach-oriented retail is typical along the west side. Crosswalks are provided at signalized intersections. South of Billings Street, angle-parking bays are provided along the beachfront side.

Existing

Alternative cross sections were developed to provide dedicated bicycle facilities. Under both alternatives, it is recommended that the sidewalks on the west side be reconstructed and that new crossings be at locations indicated in Figure 5-106 and Figure 5-107. Both alternatives propose reducing the number of through lanes from four to two to provide a bicycle facility. This supports recommendation for Quincy Shore Drive identified in the *City of Quincy Bicycle Network Plan*.

Alternative 1

Alternative 1 would be a continuation of Alternative 1 on Segment 1. A two-way separated bike lane is proposed along the eastern side of the parkway with new landscaped buffers to offset the roadway on both sides. The feasibility of installing a two-way facility using striping and vertical separation was evaluated. However, the existing angle-parking bays and curb extensions would pose a challenge for installing such a facility as a retrofit. Therefore, this alternative would require capital reconstruction. A two-way left turn lane is shown in the cross section. It is recommended that traffic analysis be conducted to determine the necessity of the lane; without it, additional width can be allocated to the sidewalk and landscaped buffers. The center lane can be used for pedestrian refuge islands at crosswalks.

Along the segments with parking bays, it is recommended that back-in angle parking be introduced. This alternative could be selected as an extension of Segment 1 Alternative 1.

Alternative 2

Under Alternative 2, one-way separated bike lanes would be installed as a retrofit using striping and vertical separation. A two-way left turn lane is shown in the cross section. The center lane can be used for pedestrian refuge islands at crosswalks and additional unsignalized crosswalks could be provided. Because of the reduce risk of multiple threat crashes, it may also be possible to convert some existing signals to rapid response flashing beacons, which may have a benefit for vehicle traffic flow.

Along the segments with parking bays, back-in angle parking should be introduced to improve visibility of bicyclists for drivers pulling out of parking spaces. This alternative could be selected as an extension of Segment 1 Alternative 2.

Quincy Shore Drive Segment 3 – Fenno Street to Furnace Brook Parkway

South of Fenno Street, Quincy Shore Drive becomes a four-lane roadway divided by a 10 ft.-wide median. On the eastern side is a seawall with a 10 ft.-wide sidewalk and no roadway buffer. The western side features a 6 ft.-wide asphalt path separated from the road by a variable width tree-lined buffer. Further to the west lies the Black's Creek marsh area and Caddy Memorial Park. Two parking areas are located on the west side along this segment with signalized crosswalks across Quincy Shore Drive. Two alternatives were developed for this segment.

The following recommendations apply regardless of which alternative is selected:

- Construct an accessible path of travel in the vicinity of the Caddy Memorial Park parking lot exit so pedestrians can travel between the seawall and Caddy Memorial Park.
- Modify the intersection of Quincy Shore Drive and Furnace Brook Parkway to provide shorter pedestrian crossing distances, increase parkland, aid bicyclists with navigation, and reduce vehicle turning speeds.

Alternative 1

Rebuild the asphalt path along the west side as a 10 – 12 ft.-wide shared use path. If this alternative is selected in conjunction with Alternative 1 for Segments 1 and 2, then the Fenno Street intersection would be a logical point for the path to transition between the east and west side of Quincy Shore Drive. At Furnace Brook Parkway, the path would bend westward onto the proposed shared use path along Blacks Creek.

Alternative 2

Install one-way separated bike lanes in both directions on Quincy Shore Drive using striping and vertical separation. This would be a continuation of Alternative 2 in Segments 1 and 2. Traffic analysis is recommended to understand the impact of removing a travel lane in either direction. Long-term, the bike lanes could be raised to sidewalk or intermediate level.

Quincy Shore Drive Segment 4 – Furnace Brook Parkway to Sea Street

Quincy Shore Drive narrows south of Furnace Brook Parkway to a two-lane undivided roadway with a striped median in the center. Detached single-family houses line the parkway on both sides. The following recommendations were developed for this segment:

- Install separated bike lanes or bike lanes. Long-term, the feasibility of raised separated bike lanes should be evaluated.
- At the intersection of Sea Street, work with the City of Quincy to install a crosswalk across Sea Street. The right-turn slip lanes should be eliminated or reduced in size, and the intersection upgraded to accessibility standards.

Furnace Brook Parkway

Figure 5-102

Figure 5-103

Legend

Existing Crossing
Proposed Crossing
Upgrade Crossing
Remove Crossing
Existing Signalized Crossing
Existing Sidewalk
Proposed Sidewalk
Existing Shared Use Path
Proposed or Upgraded Shared Use Path
Proposed Separated Bike Lane
Planned/Proposed Shared Use Path Outside Study Area
Existing/Under Construction Shared Use Path Outside Study Area
Walking Trail
Existing Buffered Bike Lane

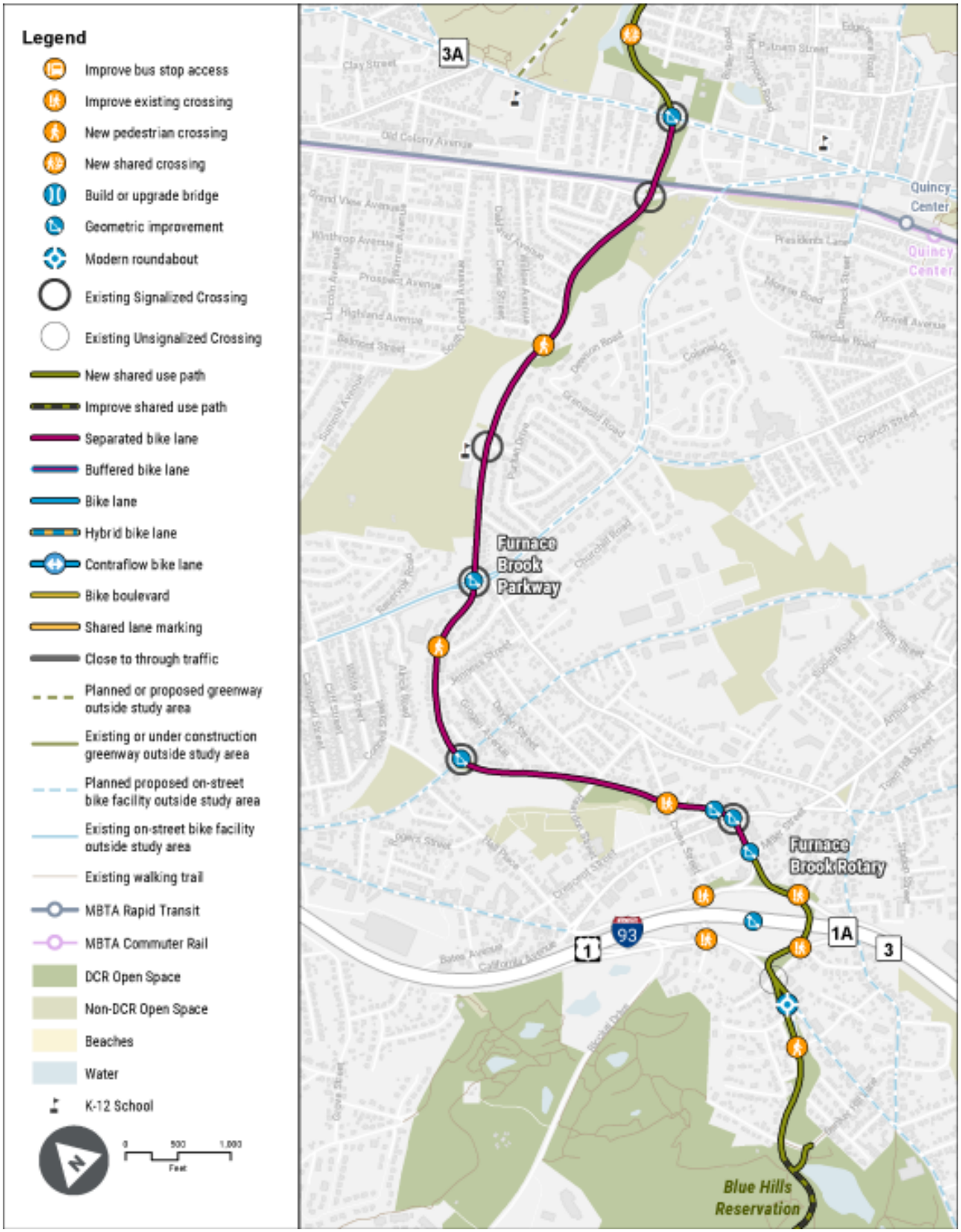
Figure 5-104

Location	Issue(s)	Recommendation	Additional Info
From Quincy Shore Drive to Hancock Street	• No bicycle accommodations • Narrow sidewalk • Limited access to Blacks Creek waterfront • Goat path	Study the feasibility of constructing a shared use path along waterfront side of the parkway between Quincy Shore Drive and Hancock Street.	Based on available cross section width, this recommendation may require constructing a boardwalk-style facility along the river edge outside of the existing road right-of-way.
Intersection of Merrymount Road	• Skewed intersection geometry	Narrow existing curb radius by adding a curb extension.	
Intersection of Park Lane	• Accessibility • Missing crosswalks	Upgrade curb ramps and add a crosswalk across the Park Lane approach. Consider truncating Park Lane where it meets Bailey Street.	Truncating Park Lane could allow for allocation of additional open space.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Merrymount Parkway	• Curb ramps not aligned with crossings • Missing sidewalks • Poor accessibility	Upgrade intersection accessibility with directional curb ramps. Eliminate the existing driveway entrance into intersection on the southwest corner and parking encroachment along the southwest sidewalk.	
Intersection of Hancock Street	• Accessibility • Proposed bicycle facility transition point	Upgrade intersection accessibility with directional curb ramps.	Consider how bicyclists will transition from the proposed bike lanes west of Hancock Street onto the proposed shared use path east of Hancock Street. An exclusive pedestrian phase could be utilized to allow for all ped/bike movements in a single phase.
From Willow Ave to Brae Road	• Missing sidewalk	Add a new sidewalk along the south side of the roadway and a new crosswalk just east of Willow Ave.	See Figure 5-102 for an illustration.
From Hancock Street to Copeland Street	• No bicycle accommodations	As a short-term measure, install buffered bike lanes. Long-term, construct one-way raised separated bike lanes along both sides of the parkway with mountable curbs.	
Intersection of Adams Street	• Confusing intersection geometry • Slip lanes	Reconstruct as a protected intersection. Remove vehicle slip lanes within the intersection.	
From Jenness Street to Quarry Street	• Missing sidewalk	Add a new sidewalk along the west side of the roadway.	See Figure 5-103 for an illustration.
Intersection of Quarry Street	• Accessibility	Upgrade intersection accessibility including provision of directional curb ramps.	
From Cross Street to Copeland Street	• Missing sidewalk	Add a new sidewalk along the south side of the roadway.	See Figure 5-104 for an illustration.
Intersection of Crescent Street	• Skewed intersection	Square off the Crescent Street approach to Furnace Brook Parkway.	
Intersection of Copeland Street	• Accessibility • Long pedestrian crossing distances	Upgrade intersection accessibility, narrow curb radii, and shorten pedestrian crossing distances.	Consider back-in angle parking at the northern leg of the intersection where nose-in angle parking currently exists.

Location	Issue(s)	Recommendation	Additional Info
Intersection of Miller Street	• Poor accessibility • Bicycle facility transition point	Upgrade intersection accessibility and provide a clear transition to the proposed shared use path south of the intersection from the proposed separated bike lanes north of the intersection.	
Furnace Brook Rotary	• Barrier for pedestrians and bicyclists • High vehicle speeds • Poor accessibility	Reconstruct the rotary to provide a shared use path along the southern side of the circle, with narrowed approach lanes and tightened exit radii. Provide sidewalks and curb ramps along the northern portion of the rotary. In the interim condition, provide striping and vehicle channelization to guide traffic movements.	Requires coordination with MassDOT
From Willard Street to Bunker Hill Lane	• No bicycle accommodations	Continue shared use path along the south side of Furnace Brook Parkway.	
Intersection of Willard Street	• Skewed intersection	Consider reconstructing the intersection of Furnace Brook Parkway and Willard Street as a modern roundabout.	
Bunker Hill Lane to Wampatuck Road	• Pedestrian and bicycle connectivity	Construct a short shared use path to connect Bunker Hill Lane to Wampatuck Road.	This connection would be a link in the “Summit to Sea” greenway proposed in the *City of Quincy Bicycle Network Plan*. See Figure 5-105 for an illustration.

Figure 5-105


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
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Quincy Center
Quincy Center
Furnace Brook Parkway
Furnace Brook Rotary
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Blue Hills Reservation

Figure 5-106


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
Existing or under construction greenway outside study area
Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
Beaches
Water
K-12 School
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Feet
Furnace Brook Parkway
Quincy Shore Drive
3A

Figure 5-107


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
Hybrid bike lane
Contraflow bike lane
Bike boulevard
Shared lane marking
Close to through traffic
Planned or proposed greenway outside study area
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Planned proposed on-street bike facility outside study area
Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
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Squantum Point Park
Neponset River Reservation
Quincy Shore Drive
North Quincy

Focus Area 18: Nantasket

Parkways

- Nantasket Avenue
- Hull Shore Drive

Communities

- Hull

Existing Conditions

Overview

Nantasket Avenue and Hull Shore Drive extend approximately 1.5 miles along the shoreline of Nantasket Beach, a major attraction directly adjacent to the parkways. Northwest of George Washington Boulevard, Hull Shore Drive and Nantasket Ave form a one-way couplet that provides the main access to the peninsula on which the Town of Hull is situated. Between Water Street and George Washington Boulevard, Nantasket Ave is under the jurisdiction of the Town of Hull. Several parking lots and angle street parking are provided on Hull Shore Drive between Wharf Street and Water Street. Northeast of Water Street, Hull Shore Drive provides parking access for Nantasket Beach.

Area along the parkways is characterized by low-density beach-oriented commercial uses and recreational open space. The corridors run along a thin slice of land providing access to the Hull peninsula, with the Hingham Bay along the west side of the peninsula and the open waters of Massachusetts Bay to the east. Medium density residential neighborhoods are located directly north and south of the corridors.

Pedestrian

Pedestrian connectivity along the corridors is decent, with pedestrian pathways provided along both sides of the corridors. Frequent unsignalized crosswalks often cross multilane roads that pose a pedestrian crash risk.

Bicycle

No on-street bicycle facilities are provided on Nantasket Avenue or Hull Shore Drive. The waterfront promenade is too narrow to facilitate bicycle usage.

Transit

MBTA Bus Route 714 travels north/south along Nantasket Ave and Hull Shore Dr starting at Wharf St.

Recommendations

Two planning studies have been conducted in recent years that provide a framework for future improvements to Nantasket Ave and Hull Shore Drive. In 2005, DCR released the *Nantasket Beach Reservation Master Plan* which included recommendations to enhance recreational and retail amenities and improve beach access. The *Nantasket Beach Revitalization Plan* was released in 2015 by the Hull Redevelopment Authority in conjunction with DCR, focusing on development opportunities in parcels owned by the Hull Redevelopment Authority at the northwest end of the study area.

This Plan supports the following key recommendations of the previous two studies:

- Construct a two-way separated bike lane along the length of Nantasket Beach from Phipps Street and State Park Road. Separate footways and bike lanes ensure safety and ease of movement for all users. (Nantasket Beach Reservation Master Plan)
- Convert Hull Shore Drive and Nantasket Ave to two-way operation north of George Washington Boulevard to improve circulation and facilitate economic development (Nantasket Beach Revitalization Plan)

The recommendations described in the tables below can be implemented immediately or as part of a larger reconstruction effort.

Nantasket Avenue

Location	Issue(s)	Recommendation	Additional Info
From State Park Road to George Washington Boulevard	• No bicycle accommodations • Long pedestrian crossing distances • Multiple threat crash risk	Install on-street bike lanes and improve crosswalk safety by adding tactical pedestrian refuge islands and curb extensions. Changes can be made permanent through eventual construction.	Requires a road diet. Therefore, a traffic study is recommended. A road diet for this segment of Nantasket Ave has already been proposed in the *Nantasket Beach Reservation Master Plan*.
Intersection of Bay Street	• High vehicle turning speeds	Tighten the intersection geometry by reducing corner radii to control vehicle turning movements.	
Wharf Avenue and George Washington Boulevard	• Poor visibility of crossings • Long crossing distances	Provide new shared bicycle/pedestrian crossings.	May require grade separation to increase visibility and geometry modification to reduce crossing distances.

Hull Shore Drive

Location	Issue(s)	Recommendation	Additional Info
From State Park Road to Phipps Street	• Poor bicycle connectivity along Nantasket Beach	Construct a new two-way separated bike lane and promenade along the edge of Nantasket Beach between Phipps Street and State Park Road.	Recommended in the *Nantasket Beach Reservation Master Plan*
George Washington Boulevard	• High vehicle turning speeds • Confusing roadway geometry	Tighten the curb radii where George Washington Boulevard splits and provides northbound access to Hull Shore Drive.	

Figure 5-108


Legend
Improve bus stop access
Improve existing crossing
New pedestrian crossing
New shared crossing
Build or upgrade bridge
Geometric improvement
Modern roundabout
Existing Signalized Crossing
Existing Unsignalized Crossing
New shared use path
Improve shared use path
Separated bike lane
Buffered bike lane
Bike lane
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Existing on-street bike facility outside study area
Existing walking trail
MBTA Rapid Transit
MBTA Commuter Rail
DCR Open Space
Non-DCR Open Space
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Nantasket Avenue
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CHAPTER 6. CONCLUSION

The DCR Parkways have been evolving since the first were planned in the late 1880s. This Plan represents a continuation of this evolution, serving as a guide to ensure the over-100 miles of parkways will be a safe, comfortable, and connected network of walkways and bikeways for people of all ages and abilities to access recreational destinations and healthy transportation options.

The recommendations in this Plan identify the opportunities for DCR to focus on in order to allow its parkways to meet this vision. Short-term recommendations identify improvements that can be added to repaving activities or placed in the five-year capital plan. Opportunities to redesign and reconstruct parkways to meet the Complete Streets standards are found in long-term recommendations. Maintenance, policy, and design recommendations provide guidance for all parkways to improve conditions for users of all mode types, ages, and abilities.

DCR will continue working with stakeholders, advocates, affected communities, and the general public as it implements the recommendations in the DCR Parkways Master Plan.