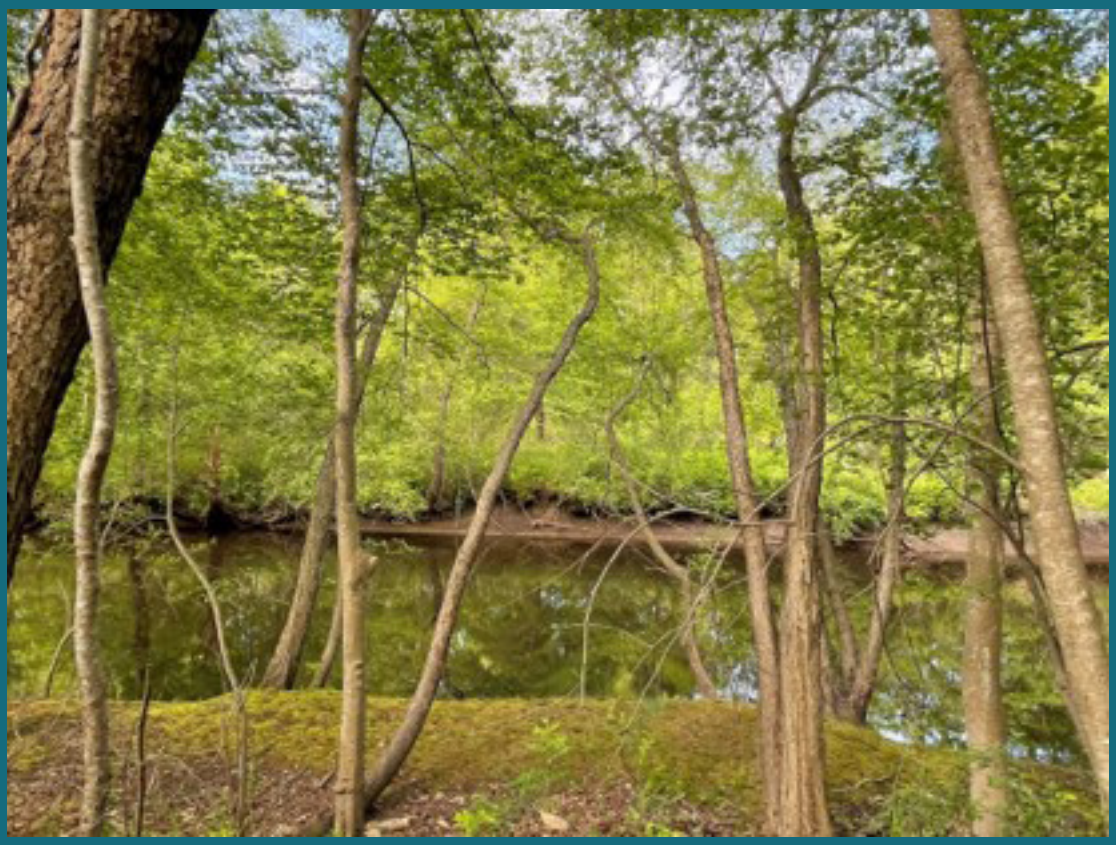
NEPONSET RIVER GREENWAY

March 2024



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1.1 Introduction

The Neponset River Greenway (NRG) serves as an important local and regional connection and recreational amenity for people in a diverse range of communities adjacent to the Greenway and for many who visit the area. Its continual expansion over the past decade has enabled access to the wealth of DCR and locally owned resources near the trail, improving opportunities for recreation, transportation, and community-connectivity for people traveling on foot and by bike. A significant portion of the NRG in Boston—from Tenean Beach to the intersection of Truman Parkway at Neponset Valley Parkway—is complete. Additional segments are in design, including an extension north from Tenean Beach to Morrissey Boulevard in Dorchester and the Edgewater Greenway in Mattapan. However, several crucial links remain to be planned, designed and constructed to provide off-road trail connections to area open spaces for the residents of Mattapan, Dorchester, Milton, Hyde Park and beyond. Chief among these are the connections to the Blue Hills and the Readville Commuter Rail Station.

In line with the vision laid out in the DCR Parkways Masterplan, this project has the potential to open up an unprecedented level of seamless, high-quality regional connectivity in Boston and towns south for active transportation and recreation. The extension of the NRG will serve as a continuous link between the Old Harbor Reservation, the Blue Hills and Readville Commuter Rail Station creating new recreational opportunities, as well as improved access to thousands of job opportunities in Boston for residents south of the city.

The purpose of this project was to inventory DCR-owned parklands in the project area, other public open space, and roadway rights-of-way to identify and evaluate alternative routes to connect pedestrians and bicyclists from the current terminus of the NRG at Truman Parkway to the Blue Hills. During this process, and with input from the public and stakeholders, an additional connection was identified from the intersection of Neponset River Parkway and Truman Parkway west to multiple public transit links at the Readville Commuter Rail Station in Wolcott Square. The project included a feasibility study and conceptual designs for a shared use path (SUP) connection in both directions.

The results of this work, which are summarized herein, include a recommended route for a SUP connection from NRG to Blue Hill Avenue (at which point it will meet a future SUP planned by MassDOT to connect to Blue Hills), recommended cross-sections for a potential SUP to the Readville Commuter Rail Station, and many other broad recommendations to support a variety of community connections with DCR parkways and local and regional destinations. The recommended SUP connections are illustrated on the Preferred Plan and were developed to a conceptual-level plan set - see attachments A and B. Anticipated permitting, an implementation strategy and cost estimates have also been developed for the shared use paths.

Figure 1: Preferred Plan

1.2 Project Goals and Study Overview

A Shared Vision

The feasibility study for a trail connection between the Neponset River Greenway (NRG) and the Blue Hills Reservation first and foremost upholds **Department of Conservation and Recreation's Mission**:

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

Although there are many aspirations for the trail connection, a comprehensive **Project Goal** was developed to guide the study:

Identify and evaluate alternative routes for greater community connections, resulting in a preferred shared-use path alignment connecting between the Neponset River Greenway's southern end at Truman Parkway to the Blue Hills Trailside Museum.

These were the basis of agreed-upon **Objectives** developed with the DCR:

- Enhanced community connectivity
- Improved access to recreation and healthy living for all
- Safety and convenience
- Preservation of natural resources
- Protection of historic and archaeological areas
- Climate resiliency
- Straightforward implementation and maintenance

The following discussion will elaborate on how this Vision guided the identification of the preferred shared-use path that will connect the southern end of the Neponset River Greenway to the Blue Hills Reservation Trailside Museum.

Figure 2: DCR Neponset River Greenway Map

Project Location

The project is located near the southern end of the Neponset River Greenway. The DCR NRG Map above shows the existing greenway from Boston south to Milton, and the red square indicates the general project location.

The Project Area map indicates with red stars the northern extent of the Project Area at the Boston / Milton line on Truman Parkway and the Blue Hills Trailside Museum.

The Project Area is shown as a dashed orange line, the existing Neponset River Greenway as a dotted green line, and the DCR owned land and Open Spaces are indicated by the green areas. The dashed yellow line indicates the Fowl Meadow ACEC which will be discussed in more detail later.

Figure 3: Project Area

Connecting to Readville Commuter Rail Station

The goal of this portion of work is to identify a preferred route for a shared-use path alignment connecting between the Neponset River Greenway's southern end at Truman Parkway to Readville Commuter Rail Station. Community connections will be used along to Neponset Valley Parkway allow safe and clear access to Camp Meigs and other local destinations.

The Study Area map indicates with red stars the eastern extent of the project area at intersection of Neponset Valley Parkway and Truman Parkway, Readville Station, and Camp Meigs.

Shared Use Path

The Project Goal identifies that the Feasibility Study will result in the identification of preferred shared-use path The term "shared use path" is generally understood as a non-motorized path that is independently aligned from a roadway.

It can accommodate a variety of users including walkers, bicyclists, joggers, people with disabilities, skaters, and pets. These users can be on the path for a variety of reasons including recreation, commuting, and local travel.

The image on the following page is an example of a shared use path.

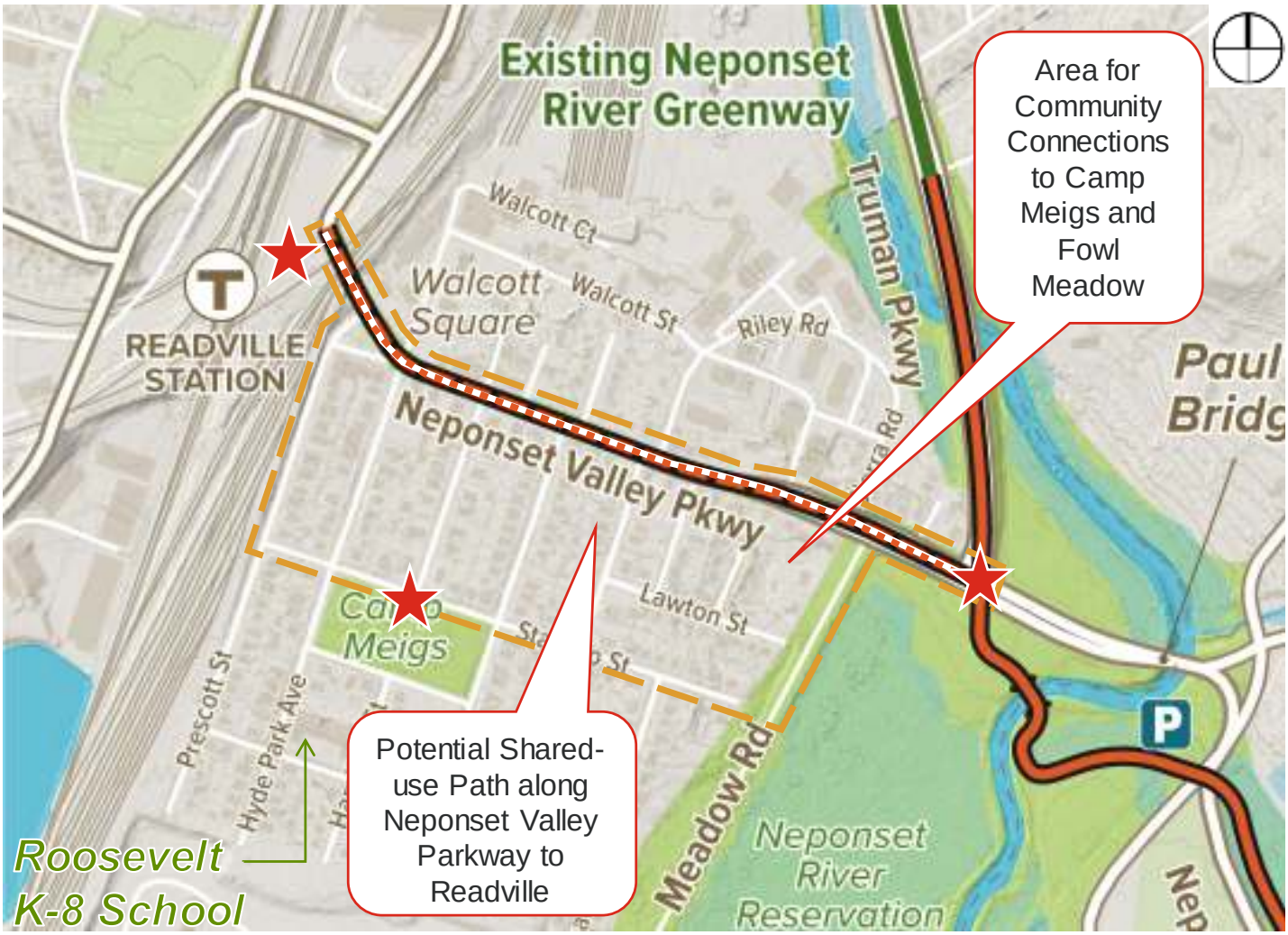


Figure 4: Neponset River Greenway to Readville: Study Area

The Project Goal also emphasizes the importance of this project to identify other opportunities for community connections. This was considered throughout the development of the Feasibility Study. The photos on the right show two of the many community destinations in the project area: the Blue Hills Reservation Trailside Museum and interesting artifacts of the area's history such as the remnants of a highway that didn't get built due to the successful effort of the public to preserve the sensitive environmental of Fowl Meadow and the ACEC. More discussion on community destinations will follow.

Photo: Illustrative example of a shared-use path

Public Engagement

Public input was critical to the development of the feasibility study and the preferred plan. Engagement efforts were held throughout the process in different formats to allow community members and stakeholders to give input and hear about the progress in a manner that worked for them.

Meeting #1

The initial input meeting was held virtually to introduce the project and gather initial feedback on what the public wished to see in the future trail connection between the Neponset River Greenway and Blue Hills Reservation. At this meeting, a public survey was also launched to gather feedback from those who could not attend the meeting. Very few people participated in the survey and, while that input was considered, the results were not statistically significant and are not included herein.

Meeting #2

The second public meeting, also held virtually, covered the feasibility study process and alternative alignment matrix. The matrix included evaluation criteria based on the project objectives. Proposed cross-sections were included to help aid the discussion of the preferred alignment.

Photo: Blue Hills Reservation Trailside Museum

Photo: Remnants of the highway that wasn't built

Meeting #3

A site walk was held to give communities members a chance to view the preferred trail alignment in person with the project team to answer any questions.

Meeting #4

The next public meeting was an open house to reveal the recommended preferred plan for the SUP. Stations were setup to show different segments and allow community members to ask specific questions and give pointed feedback to the project team.

Meeting #5

The final public meeting was a site walk focusing on the Neponset Valley Parkway at Brush Hill Road intersection followed by an informal Q and A session.

Photo: Public site walk

Figure 5: Design standards

Basis of Design/Guidelines

As an extension of the existing shared use path, certain elements of design were replicated along the new extension to maintain a consistent look and feel of the Neponset River Greenway, such as asphalt paving and aesthetic wood guardrails. At a minimum, the preferred path must meet applicable design standards for accessibility and safety. The basic shared-use path design standards used for evaluation were developed based on DCR standards, the 2012 AASHTO Guide for the Development of Bicycle Facilities and the MassDOT Shared Use Path recommended dimensions and knowledge gleaned from similar paths in the Boston area. The dimensional requirements will be further refined in future project phases. The standards used at this phase of the project include:

Path width - Based AASHTO guidelines the preferred path width for a 2-way shared use path is 12-14', with a minimum of 11' recommended where a separate pedestrian facility (sidewalk) is provided.

Buffers – A landscaped street buffer does not only increase safety for users, but is also critical to maintaining a park-like feeling through an urban environment. A preferred buffer width of 10' wherever possible will allow for shade trees to be planted and thrive, as well as providing room for green stormwater infrastructure.

Trail signage – Given the proximity of the trail to historic landmarks and popular destinations, wayfinding signage was deemed to be a must-have by both the project team and the community members. Signage will not only guide trail users to locations such as Camp Meigs, Fowl Meadow, and the Blue Hills Trailside Museum, but it will also narrate the historic and ecological significance of these areas.

2.1 Feasibility Study Summary

The scope of this project includes four parts:

1. An inventory and analysis,
2. A feasibility study of alternative path alignments,
3. The development of the preferred plan, and
4. A final report

A Feasibility Study is the process used to assess the practicability, the pros and cons, and the viability of a proposed plan. It was used to identify a preferred shared-use path alignment. Many factors were considered in this study to ensure that the selected route would be accessible, safe, convenient, and least impactful to natural and cultural resources as possible.

Initial input into the Feasibility Study included several factors. The identification of initial alternative routes to be studied was included in the DCR's Request For Proposals (RFP) and are shown in Figure 6. Initial input also included the DCR's Mission, the Project Goal and the agreed-upon Objectives as described in the previous section. The existing conditions inventory and site analysis, as well as initial input from meeting with the DCR staff and operations personnel, local and state representatives, stakeholders and the general public were all considered.

Figure 6: Potential Alternative Routes from DCR RFP

2.2 Existing Conditions Inventory and Initial Input

During the months of May to June an existing conditions inventory for the Project Area was completed, which included each of the subjects listed below.

- Land Use
- Circulation
- Crash Data
- Significant Landscape Features
- Hydrology
- Protected Areas
- Soils and Soil Conditions
- Archaeological Sensitivity
- Historical Resources
- Other Related Local/Regional Projects

The project team conducted field visits to assess the existing conditions and gathered existing documents and GIS data for mapping. An inventory of environmental resource areas, as well as archaeological and cultural resources was prepared.

Figure 7: Project Area

Below are summary diagrams of only the most significant opportunities & challenges observed in the project area. The full Existing Conditions Inventory and Site Analysis Report can be found in Attachment E.

Community Connections

The primary goal of the project is connectivity - to enhance community connections and the active transportation network.

In and around the project area there are many opportunities to connect to community destinations shown as various icons on Figure 8, such as libraries, schools and colleges, places of worship, museums, and in the village of Readville in Boston there is an MBTA station.

Another important opportunity is for the Greenway to make connections to the Environmental Justice Neighborhoods shown in yellow on Figure 8. These neighborhoods include the following environmental justice populations: Minority and English Isolation, as defined by the Commonwealth.

Additionally, the project considers connections to other related plans and projects as shown in Figure 9. Two DCR projects north of the project area include: The extension of the Neponset River Greenway from Tenean Beach to Morrissey Blvd, which will create a safer route to North Dorchester, South Boston, and Downtown; and the Edgewater Trail project along the NRG in Mattapan.

South of the project area is DCR's Ponkapoag Pond & Fisherman's Cove Master Plan to which the Greenway may connect in the future; and, Canton's Warner Trail Design Study aims to eventually link that historic trail to the Blue Hills Reservation (potentially through the southern part of this Project Area).

LEGEND

- Library
- K- 12 School
- College or University
- Place of Worship
- Museum
- Environmental Justice Neighborhoods

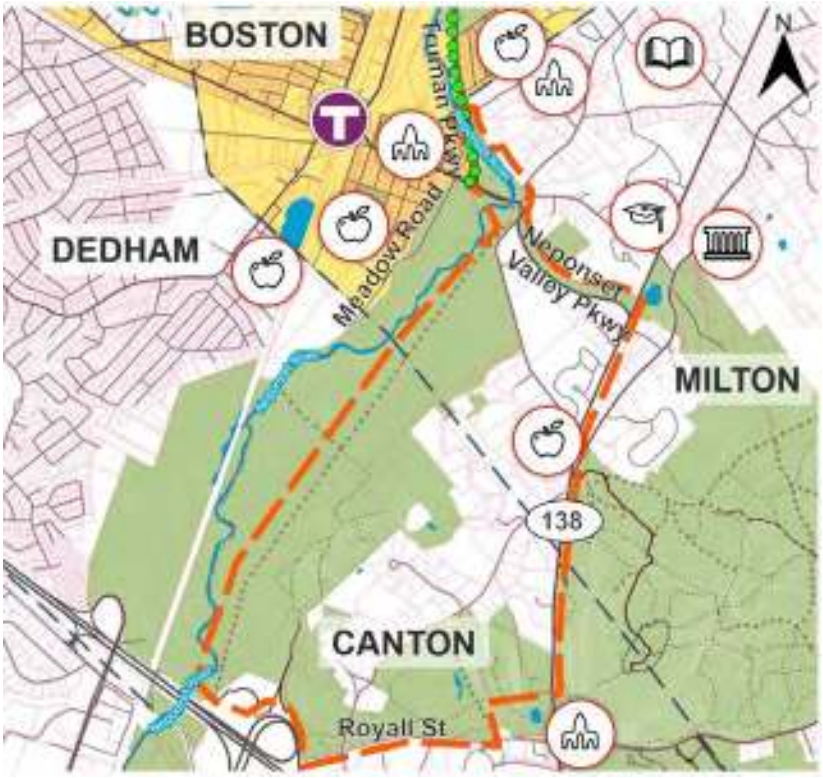


Figure 8: Site Analysis - Community Destinations

MassDOT and the City of Boston are proposing new pedestrian and bicycle facilities along Meadow Road just west of the Project Area which can help close the gap between Fowl Meadow and Camp Meigs Memorial Park.

Within the study area are two ongoing projects: the Neponset Valley Pkwy/ Brush Hill Rd /Milton St Intersection which is being studied by the DCR. The conditions at this intersection are important considerations for the shared-use path alignment.

Finally, the Route 138 Priority Corridor Study being conducted by MassDOT proposes a shared-use path along its eastern side passing the Trailside Museum. That shared-use path will be used as a link in the connections being proposed as part of this project.

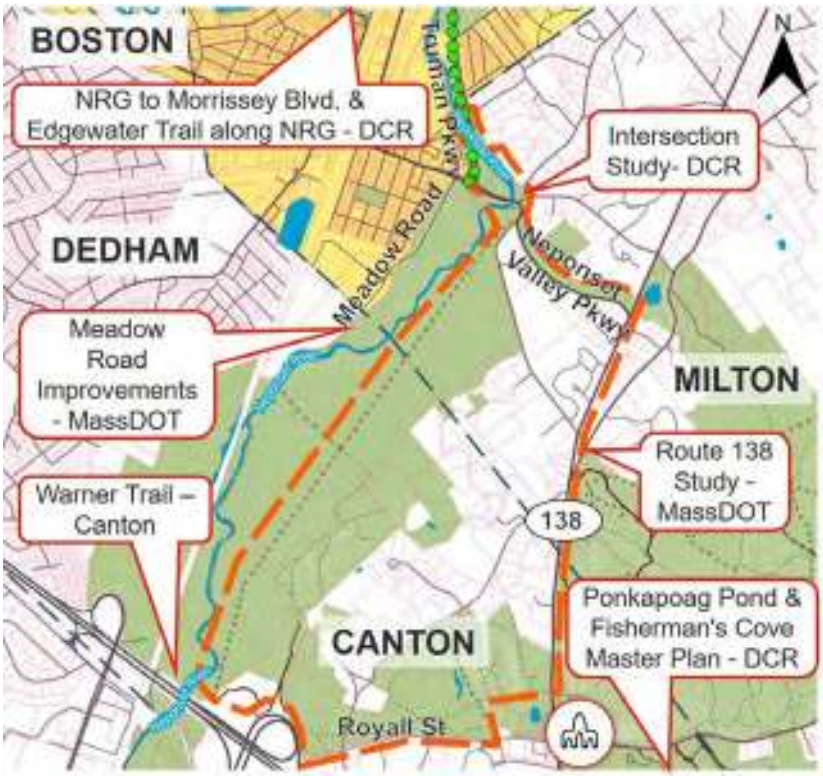


Figure 9: Site Analysis - Summary Diagram of other local/regional projects and plans

Circulation and Safety

The roads within the study area each present unique challenges and opportunities for this project. Major roads include Truman Parkway, Neponset Valley Parkway, Milton Street, Brush Hill Road, and Route 138. Green Street and Royall Street are also included in the study area.

As is common in the Boston area, many of these roadways, or segments of these roadways, have Right-of-Way challenges. A right-of-way indicates how far beyond the pavement or sidewalk ownership or jurisdiction extends. In this project it is further defined as: a right of way is granted or reserved public land for transportation purposes. And as such, it is available as a potential location for a shared-use path.

Neponset Valley Parkway runs over Paul's Bridge and a drainage culvert near the intersection of Milton Street and Brush Hill Road, limiting the available space at those locations.

Route 138 also has portions of limited right of way throughout the entire study area. Brush Hill Road and Green Street both have a very narrow rights-of-way, possibly restricting any type of path.

Traffic safety in this area is a significant factor in this project. Figure 8 shows all fatal and injury crashes that occurred within the study area in the last 3 years. The yellow and red dots being bicycle or pedestrian crashes resulting in injury and/or fatality. The gray and black dots are vehicular crashes.

Crashes resulting in injury occur throughout the study area, with a concentration around the intersections of Truman Parkway at Neponset Valley Parkway, Neponset Valley Parkway at Milton Street/Brush Hill Road, and Route 138 at Royall Street.

Truman Parkway at Neponset Valley Parkway is classified as a crash cluster, indicating that the location falls within the top 5% of high crash locations in the Metropolitan Area Planning Council (MAPC) area.

Neponset Valley Parkway runs underneath a railroad bridge (as Hyde Park Avenue), over Paul's Bridge and a drainage culvert near the intersection of Milton Street and Brush Hill Road, limiting the available space at those locations.

To address circulation and safety from Truman Parkway to Readville Station along Neponset Valley Parkway, several countermeasures can be incorporated. The four lane cross-section of Neponset Valley Parkway can likely be narrowed to two lanes, creating a safer environment for drivers with slower vehicle speeds and the ability to reallocate space to other uses. Curb extensions could be added to the Meadow Road intersection to narrow the crossing distance and slow turning vehicles. The crossing of Forestvale Road is riddled with pot holes and should be repaved to create an accessible pathway. The unsignalized crosswalk at Wolcott Square could be raised to allow people crossing to be more visible to turning vehicles, as

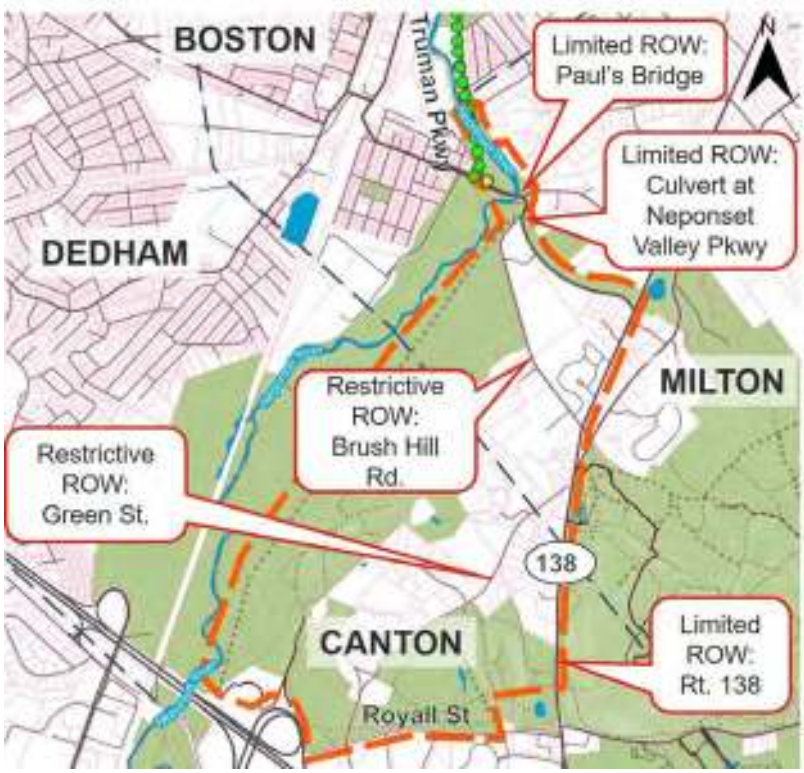


Figure 10: Site Analysis - Circulation Summary Diagram, NRG to Blue Hills

well as create a gateway treatment into the square and the neighborhood, prompting drivers to modify their driving speed with the change in context. Any changes or modifications to the Wolcott Square intersection would be dependent on which side of Neponset Valley Parkway the shared use path is proposed.

While the shared use path is proposed on Neponset Valley Parkway, community connections to create safe and comfortable routes to Camp Meigs and other neighborhood destinations can be utilized. Within the neighborhood, all crosswalks should be striped and all curb ramps should be updated to be ADA compliant as needed to promote walking and rolling for all abilities. Prescott Street was noted to have narrow sidewalks, less than the recommended width for ADA compliance. The sidewalk should be expanded to meet minimum width requirements. Restricting parking to one side of Prescott Street may be necessary to achieve this. Additionally, consider restricting parking on Prescott Street near Wolcott Square to enhance sightlines.

Stanbro Street runs parallel to Neponset Valley Parkway and fronts Camp Meigs. Traffic calming is recommended to ensure the safety and comfort of all roadway users. A shared use path through the woods on the eastern end of Stanbro Street to Meadow Road would create a connection for people walking and biking to the new sidewalks and look out into Fowl Meadow, currently in design by the City of Boston.

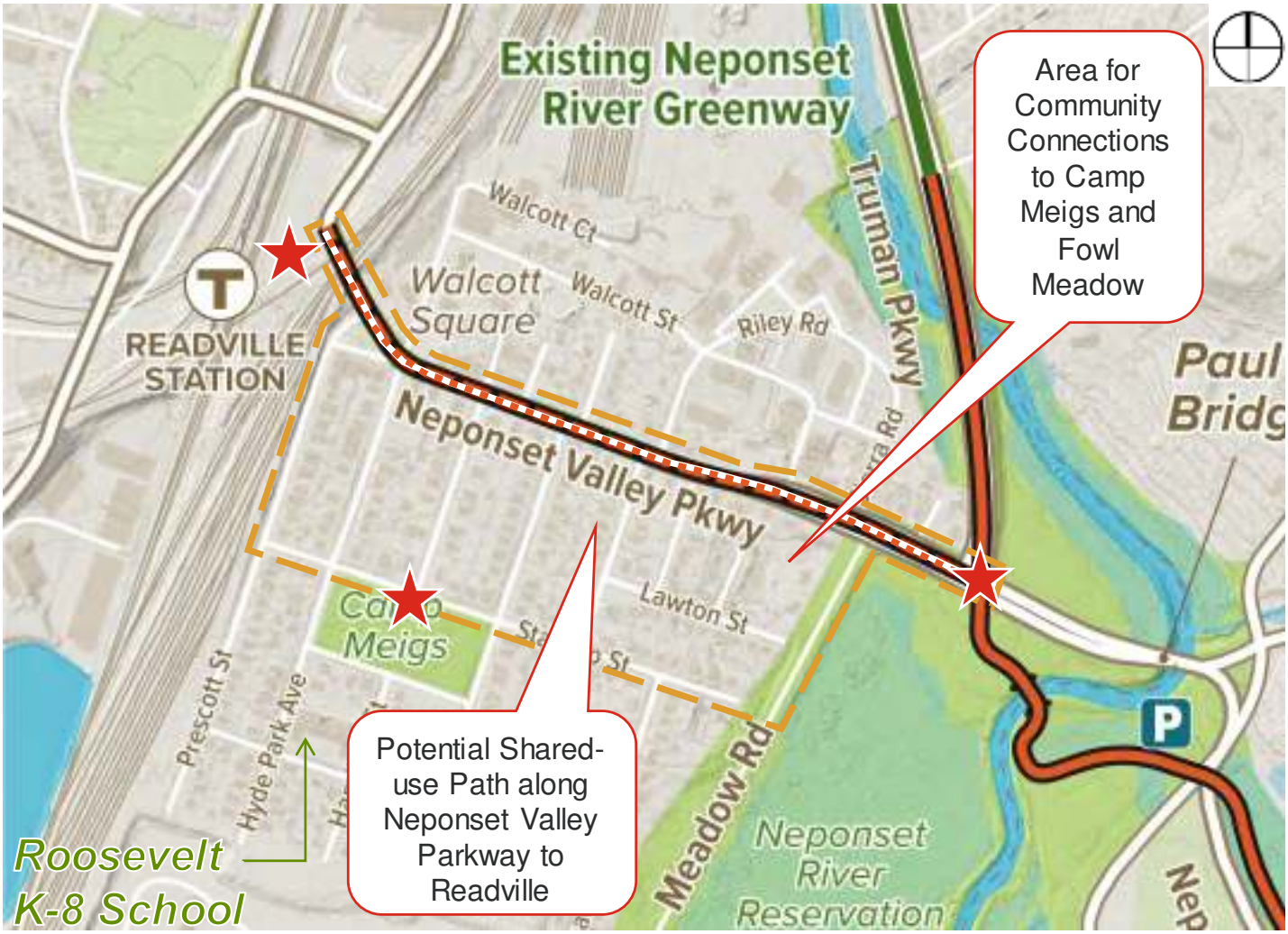


Figure 11: Site Analysis - Circulation Summary Diagram, NRG to Readville

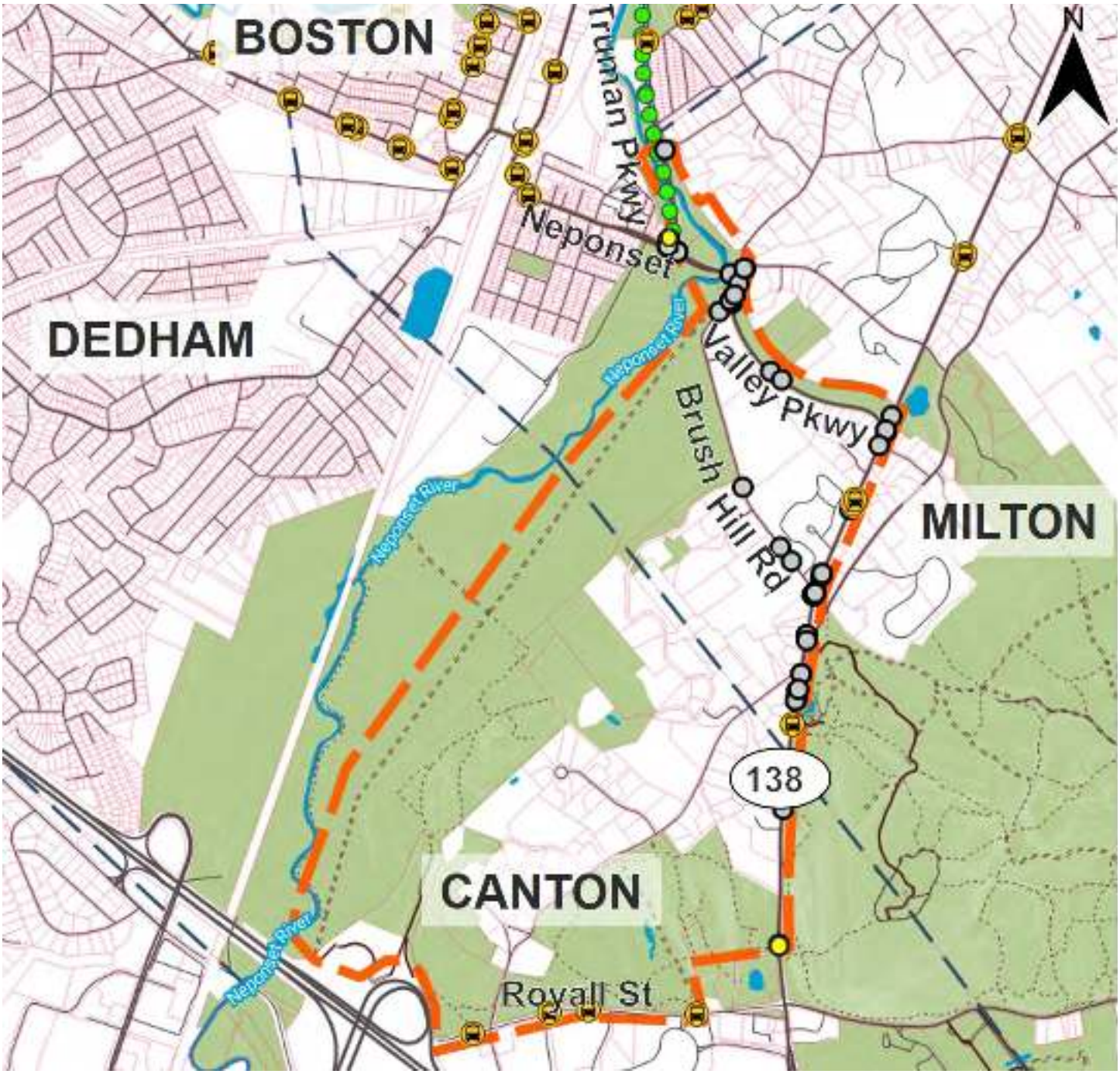


Figure 12: Site Analysis - Safety Summary Diagram

Environmental Resources

The Neponset River Greenway is an opportunity to experience the unique open water of the Neponset River. However, the attributes that make it such a unique experience, are also its greatest challenges. The following is a very brief summary of this challenge illuminated by the findings of the environmental due diligence.

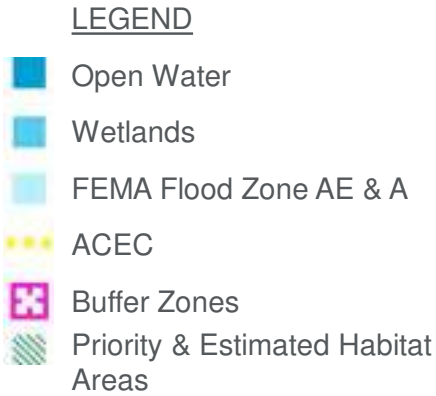
With the exception of the northwestern corner along the Truman Parkway, the majority of the study area is located within the boundaries of the Fowl Meadow and Ponkapoag Bog Area of Critical Environmental Concern (known as an ACEC) for its extensive diverse wetland resources. The ACEC description also notes the area is very important for flood attenuation and storage, aquifer protection, cultural resources, education, recreation and wildlife habitat.

Existing conditions mapping includes all Environmental Resources Areas such as water bodies, wetlands and their various buffer zones which are considered Inland Resource Areas as defined and regulated by the Massachusetts Department of Environmental Protection. It also includes FEMA Flood Zone A/E and Zone A (areas most likely to be flooded), and protected under the Massachusetts Wetland Protection Act and US Army Corps of Engineers Program of the Clean Water Act.

Mapping specifically in the Fowl Meadow area found four Certified Vernal Pools and several Potential Vernal Pools. Most of Fowl Meadow is Priority Habitat of Rare Species, is a Wellhead Protection Area, and the included Neponset River is categorized as Impaired Water requiring restoration.

But what truly speaks to the challenge of routing a new shared use path through the project area are the significant Environmental Protected Areas. All of Fowl Meadow and the Blue Hills Reservation has been identified as one of the most extensive, undeveloped areas of wildlife habitat remaining in the greater Boston Area.

Any project within this ACEC will likely require extensive environmental permitting.



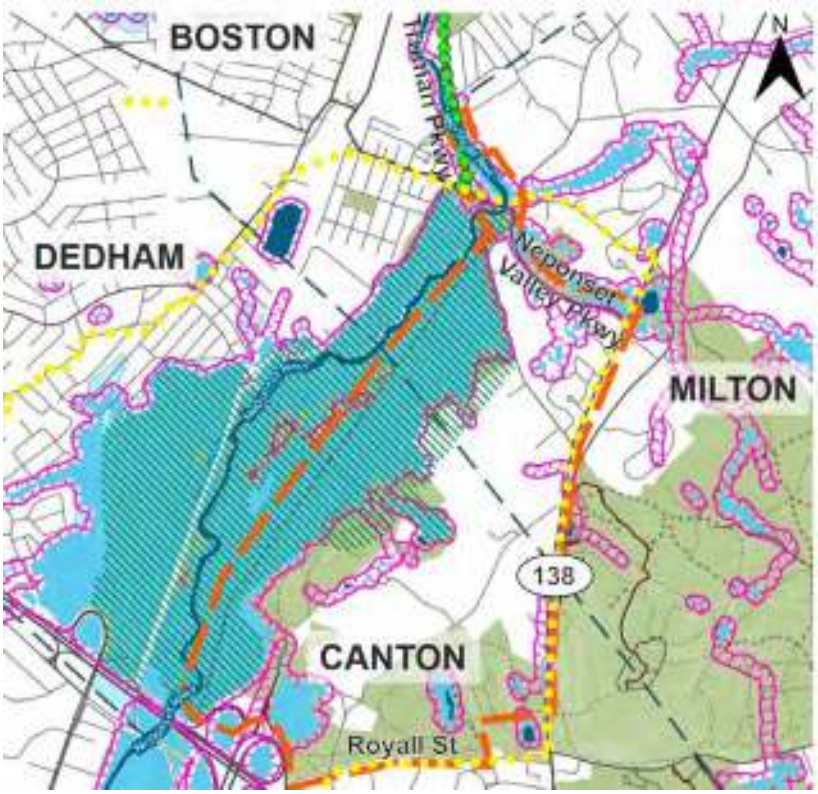


Figure 13: Site Analysis - Environmental Resources Summary Diagram

Archaeological Sensitivity

Cultural resources due diligence, including an archaeological sensitivity assessment and identification of above-ground historic resources was conducted.

The due diligence found that within and in the vicinity of the study area there are six historic districts and individual properties listed in the National Register and four areas and individual properties included in the national inventory.

The archaeological sensitivity assessment found zones of high and moderate sensitivity with the potential to contain unrecorded pre- and post-contact period archaeological sites.

Archival research found 13 pre-contact Native American and six post-contact Euro-American archaeological sites.

Of particular historical significance in the project area is the site of Camp Meigs. Now owned by DCR, it occupies a 139 acre area along the west side of the Neponset River. The camp site was used for training during the Civil War by the Massachusetts 54th Infantry in 1863. This Infantry included some of the first men of African descent mustered into the US Army. They used the Neponset river for cooking and bathing.

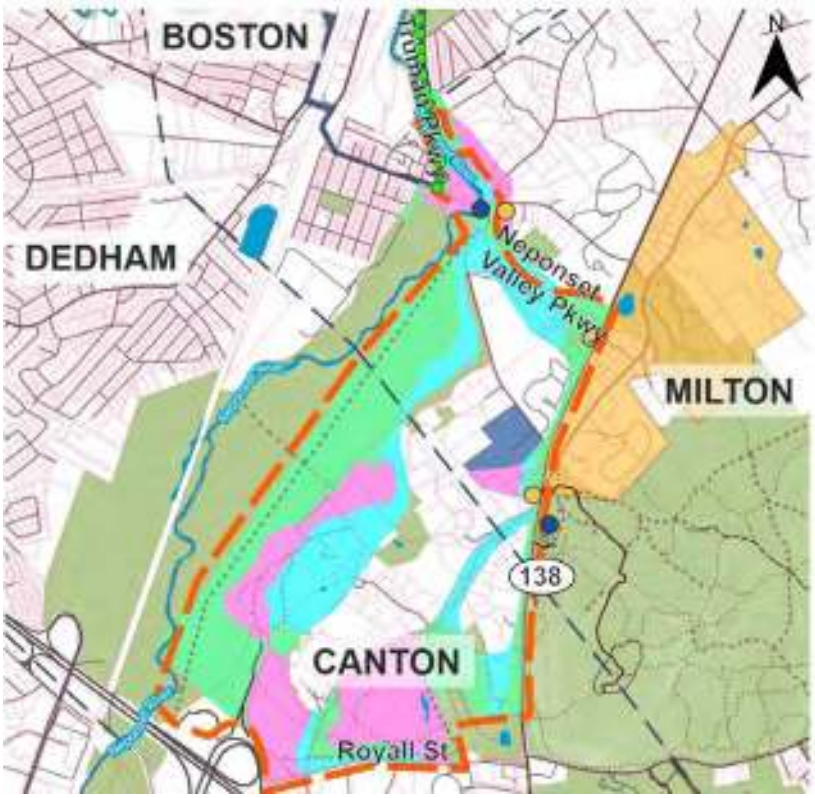


Figure 14: Site Analysis - Archaeological Resources Summary Diagram

2.3 Neponset River Greenway to Blue Hills: Feasibility

NRG to Blue Hills: Evaluation Process

The Evaluation Process considered potential alignments for shared-use path Segments and potential Routes. The evaluation first used accessibility and safety design standards to identify which Segments were viable. The agreed-upon objectives were the basis for the evaluation criteria. The viable Segments were then scored according to the evaluation criteria. The tally of the scores of each Segment were combined for each potential Route. This resulted in the ranking of the Routes and identification of the preferred shared-use path alignment.

Design Standards

The Design Standards were initially used to evaluate the potential Segments included in the RFP (Segments 1 through 8 shown in Figure 16). This initial evaluation showed that Segments 6 (Brush

Figure 15: Evaluation Process

Figure 16: Segments 1 through 8 based on the RFP potential alternative routes

Figure 17: Segments 6, 7 and 8 do not meet the minimum Design Standards

Hill Road), 7 (Green Street), and 8 (Fowl Meadow) could not support a trail that would meet the minimum Design Standards.

Segment 6 along Brush Hill Road and Segment 7 along Green Street could not support the required trail widths, shoulders, or minimum landscape buffer width without the use of property beyond the right-of-way or significantly impacting the character of these residential streets.

Along Segment 8 Burma Road Trail the implementation of a shared-use path meeting the minimum Design Standards would significantly impact the very sensitive context of Fowl Meadow. Other improvements to enhance community connections along these Segments are discussed in Section 2.3 Recommendations.

Objectives

1. Enhanced community connectivity
2. Improved access to recreation and healthy living for all
3. Safety and convenience
4. Preservation of natural resources
5. Protection of historic and archaeological areas
6. Climate resiliency
7. Straightforward implementation and maintenance

Evaluation Criteria

In order to evaluate which Segments may be the best as a shared-use path, the evaluation process outlined above was used. After confirming that the minimum Design Standards can be met for the remaining Segments 1 through 5 as shown in Figure 18, Criteria were developed by which each Objective could be met.

The degree to which the Criteria are met determined the extent to which a path Segment supports the agreed-upon Objectives. The evaluation Criteria for each of the seven Objectives are as follows:

Figure 18: Viable Segments 1 through 5

Whatever the outcome of the evaluation, the shared-use path will be designed to current and applicable dimensional standards for safety and will be universally accessible. It will provide opportunities for enhanced amenities, and be direct and easy to navigate. Because these are requirements, they are not included as evaluation criteria.

Objective 1

Provides connections to community destinations. The quantity of and distance to community destinations the Segment can make by non-motorized means or by public transportation.

Welcomes and serves adjacent Environmental Justice communities. The number of direct connections to Environmental Justice neighborhoods and transit stops.

Object 2

Provides access to existing trails. The number of connections the Segment has to the Neponset River Greenway or to existing trails within the Blue Hills Reservation.

Provides a variety of active transportation opportunities and natural landscape experiences. The degree of variety of active transportation types such as walking, bicycling, and rolling; and the degree variety of natural landscape types such as forested, riverine, or grassland.

Provides a sense of personal comfort. Distance from uncomfortable conditions such as heavy traffic, loud noise, or foul odor.

Objective 3

Provides users with a strong sense of personal security. Distance from a roadway

Minimizes vehicular conflicts and road crossings. The quantity and quality of road and driveway crossings.

Provides easy patrolling and emergency response. Degree of access by emergency responders; the degree of sight-lines to the Segment and seclusion from aid.

Objective 4

Minimizes impacts to vegetated wetlands, perennial streams, vernal pools, FEMA Flood Zones, Areas of Critical Environmental Concern (ACEC), Threatened and Rare species, the quality of drinking water and undeveloped land and riparian zones. Degree of avoidance of or impacts to Environmental Resource Areas and other protected environments.

Protects the quality of drinking water. Degree of avoidance of activities such as fill or excavation along or in areas with Activity and Use Limitations (AUL's) due to hazardous soil conditions.

Objective 5

Minimizes impacts to sensitive archaeological areas. The degree to which a Segment avoids high, medium, and low archaeological sensitive areas.

Preserves historic features. The degree of potential impact to a Historic District or property.

Connects to publicly accessible historic resources. The quantity of connections to historic resources.

Objective 6

Tolerates flood waters. Degree to which path surface material or construction could withstand moving

waters and/or inundation for an extended period.

Minimizes stormwater runoff and includes green infrastructure. The degree to which the Segment will reduce impervious areas and to which the Segment should accommodate green infrastructure to manage stormwater

Preserves existing tree canopy. The degree of impact to existing forested land cover that would need to be cleared for the construction of the segment

Objective 7

Maintains current traffic operations. The degree to which a Segment requires roadway reconfigurations or impacts current traffic operations.

Is easy to construct and maintain. Existing physical challenges or the need for extensive or comp[located construction materials or techniques.

Has reasonable estimated construction costs. Probable construction cost per linear foot relative to the benefit of the Segment

Is easy to permit. The number or complexity of environmental permits necessary

Evaluation Matrix

A matrix was developed for scoring the Segments. Scores between 1 to 5 were given for each Segment for each criteria indicating lesser or greater conformance, respectively, with the criteria. Members of the project team across different areas of expertise evaluated each of the Segments to develop a rating that was well-informed, and considered multiple perspectives. These results will be discussed in section 2.3 Recommendations.

Evaluation Criteria	1	2	3	4a	4b
Objective 1: Enhanced Community Connectivity					
Provides connections to community destinations					
Welcomes and serves adjacent Environmental Justice communities					
Subtotals					
Average					
Objective 2: Improved access to recreation and healthy living for all					
Provides access to existing trails					
Provides a variety of active transportation opportunities and natural landscape experiences					
Provides sense of personal comfort					
Subtotals					
Average					
Objective 3: Safety and Convenience					
Provides users with a strong sense of personal security					
Minimizes vehicle conflicts and road crossings					
Provides easy patrolling and emergency response					
Subtotals					
Average					
Objective 4: Preservation of Natural Resources					
Minimizes impacts to vegetated wetlands					
Minimizes impacts to perennial streams					
Minimizes impacts to vernal pools					
Avoids contaminated soils during construction					
Minimizes impacts to FEMA Flood Zones					
Minimizes impacts to Areas of Critical Environmental Concern (ACEC)					
Minimizes impacts to Threatened and Rare species					
Minimizes impacts to the quality of drinking water					
Minimizes impacts to undeveloped land and riparian zones					
Subtotals					
Average					

Objective 5: Protection of historic and archaeological areas					
Minimizes impacts to sensitive archeological areas					
Preserves historic features					
Provides connections to publicly accessible historic resources					
Subtotals					
Average					
Objective 6: Climate resiliency					
Tolerates flood waters					
Minimizes stormwater runoff and includes green infrastructure					
Preserves existing tree canopy					
Subtotals					
Average					
Objective 7: Straightforward implementation and maintenance					
Maintains current traffic operations					
s easy to construct and maintain					
Has reasonable estimated construction costs					
s easy to permit					
Subtotals					
Average					
TOTALS					
AVERAGED TOTALS					
Segments:	1	2	3	4a	4b

Figure 19: Evaluation Matrix

Feasibility Study Opinions of Probable Construction Costs

To understand the degree to which a Segment met Objective 7, the relative probable construction costs were determined. Below is a summary of the cost estimating process at the Feasibility Study level. The actual Feasibility Study Opinion of Probable Construction Costs are included in Attachment F.

Because there is no existing conditions survey at this point in the project, estimating costs for potential trail alignments was based on several assumptions and generalizations about modifications to the existing environment that would cover a wide range of site conditions. The preliminary cost estimates are as detailed as possible to make them grounded in real-world conditions, and to allow future planning, design, and implementation.

The following section describes the process used for calculating the various trail segments and routes.

Process

Final construction costs will vary based on the ultimate project scope, timing, and economic conditions. The cost estimates are based on itemized unit costs calculated by the linear foot for each identified typical cross-section trail type. The cross-section trail type is then applied to the lengths of the Segments. The estimates do not include future design fees, survey costs, costs associated with building removal or redevelopment of private property, and right-of-way acquisition costs. Refer to the table Cross-Section Trail Type below and typical trail cross-sections on the next page.

Cross-Section Trail Type

Category	Type	Cross-Section Description
Shared-use Path along a road	A	Side path at the existing curb: 8’ landscape buffer (including 2’ shoulder) + 12’ paved path + 2’ landscape buffer
	A-1	Side path with new curb location: New curb line (vertical granite curb, drainage, pavement patch) + 8’ landscape buffer (incl. 2’ shoulder) + 12’ paved path + 2’ landscape buffer
	A-2	Side path with new curb and wall: New 4’ ht retaining wall with 4’ ht chain link fence + 2’ landscape buffer + 12’ paved path + 2’ landscape buffer with wood guardrail + new vertical granite curb
	A-3	Side path narrow: New vertical granite curb + 3’ landscape buffer with wood guardrail + 10’ paved path
	A-4	Side path very narrow: New vertical granite curb + 8’ paved path
Shared Use Path	B	Shared use path on-grade: 5’ re-graded landscape (incl. 2’ shoulder) + 12’ paved path + 5’ re-graded landscape (incl. 2’ shoulder)
	B-1	Share use path on a slope: 15’ re-graded landscape (incl. 2’ shoulder) + 12’ paved path + 15’ re-graded landscape (incl. 2’ shoulder) (assumed balanced cut/fill)
Shared Use Path Boardwalk	C	Shared use on a boardwalk: 16’ wide boardwalk, on helical piers, with 42’ ht. guardrail/handrail on both sides (H20 loading)
	C-1	Shared use path on a boardwalk: 10’ wide boardwalk, on helical piers, with 42’ ht. guardrail/handrail on both sides (H20 loading)
Shared Use Path Soft-Surface	D	Shared use path soft-surface: 2’ landscape shoulder + 10’ stabilized aggregate path + 2’ landscape shoulder

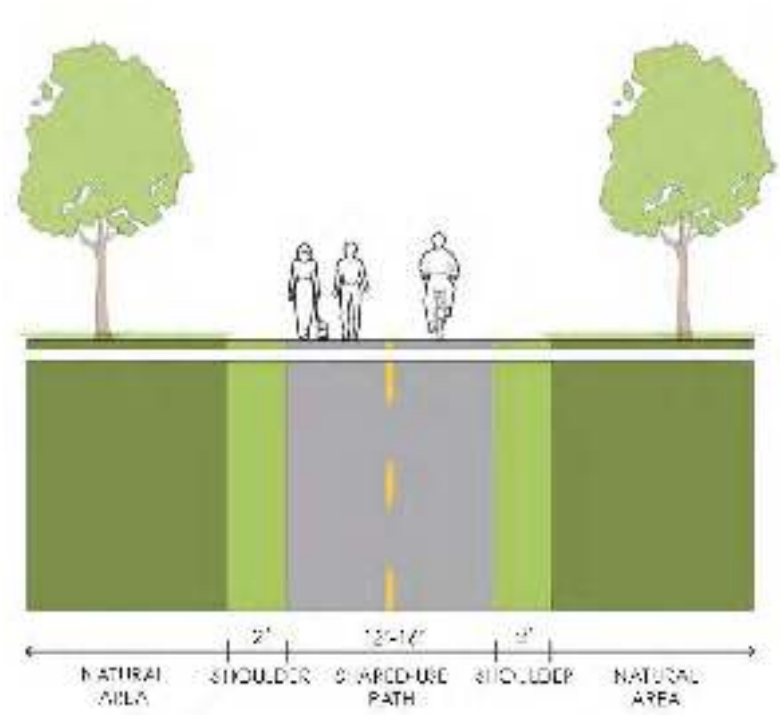
Linear Foot Costs

For each cross-section trail type, itemized and unit costs are based on MassDOT average weighted bid prices, DCR unit prices, unit prices from comparable projects of this magnitude. The sum of the items provided a linear foot subtotal cost for each cross-section trail type.

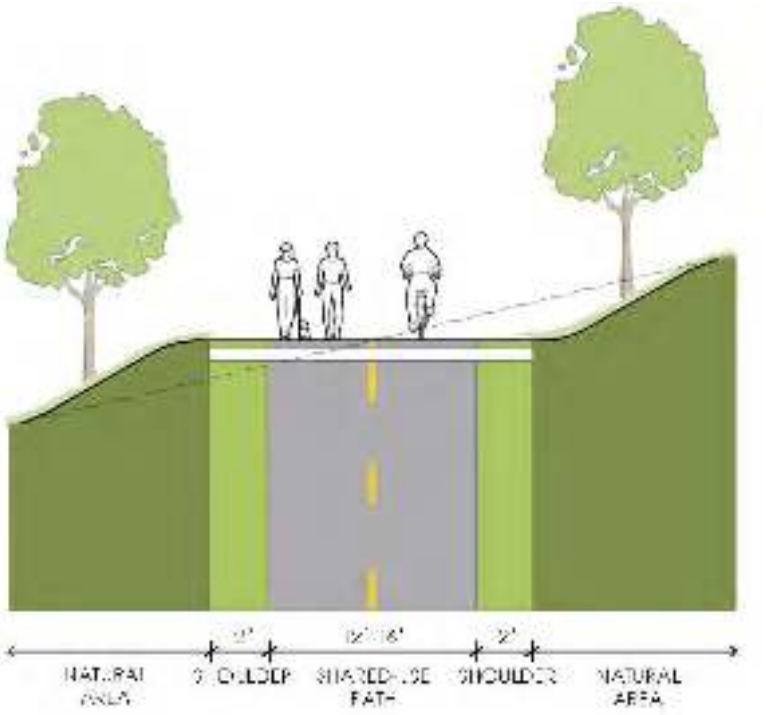
Segment	Cost per LF	Total Cost	LF
1-1	$ 2,062	$ 3,031,489	1,470
1-2	$ 972	$ 1,428,988	1,470
2	$ 939	$ 1,627,057	1,733
3	$ 891	$ 1,100,854	1,235
4a	$ 667	$ 603,399	904
4b	$ 647	$ 1,010,088	1,560
5	$ 718	$ 2,270,009	3,160
6	$ 1,398	$ 6,149,280	4,400
7	$ 521	$ 492,235	944
8	$ 432	$ 7,293,534	16,876
8+9	$ 458	$ 7,460,346	16,298
8+10	$ 546	$ 8,816,848	16,147

Allowances

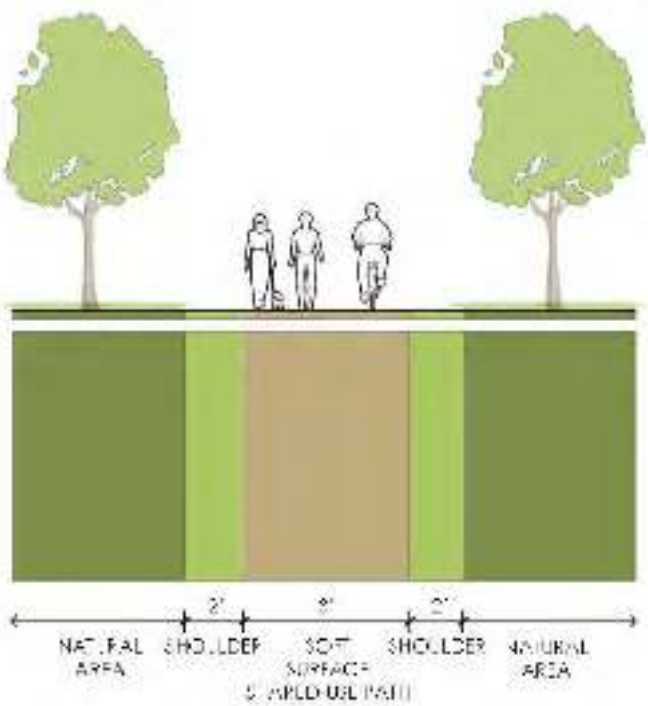
For each cross-section trail type, allowances included items that cannot be accurately estimated at this level of design but are anticipated costs associated with this cross-section trail type. The placeholder percentages calculated vary by cross-section trail type and provide a realistic average budget anticipated for these factors. Totaling the linear foot cost subtotal and adding the allowance percentages to the subtotal of items provide an accurate opinion of probable construction costs for each cross-section trail type that can be applied to each segment at this phase of the project.



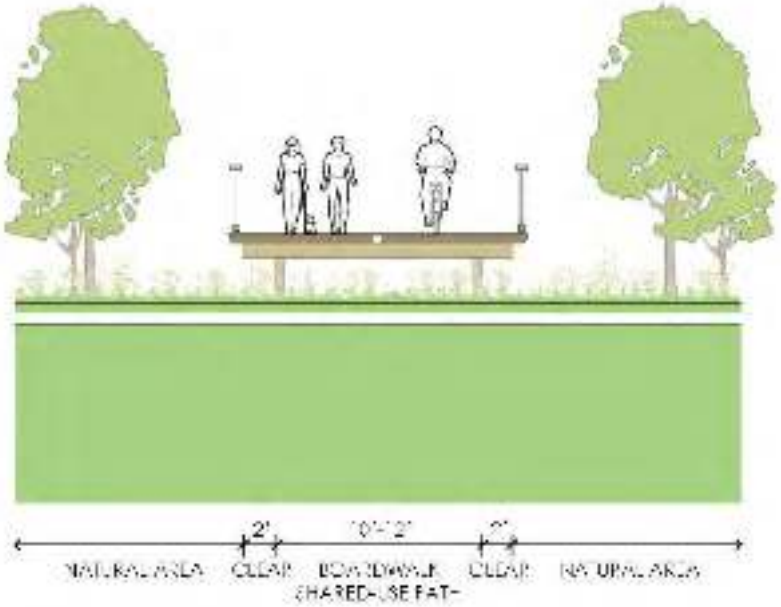
Section - Typical shared-use path at grade



Section - Typical shared-use path on slope



Section - Typical soft-surface shared-use path



Section - Typical shared-use path as boardwalk

NRG to Blue Hills: Shared-use Path Alternatives

Potential Segments

As described in Section 2.1, the initial evaluation based on the minimum Design Standards resulted in five remaining Segments, shown in Figure 20.

Segment 1 runs along Truman Parkway. Segment 2 is to the east of Truman Parkway. Segment 3 runs to the south of the Neponset Valley Parkway. Segments 4a and 4b cross Paul's Bridge along the north and south sides respectively.

Segment 5 runs along Neponset Valley Parkway east of Brush Hill Road. Segment 5 was not evaluated as it is the only remaining Segment that makes the connection to the planned shared-use path along Route 138, thus completing the connection to the Trailside Museum.

The following pages briefly describe each Segment that was evaluated. See Route 138 Priority Corridor Study at the end of this section.

Figure 20: Potential Shared-use Path Segments

Segment 1 – Truman Parkway

Segment 1 along Truman Parkway serves as one option for connecting to the existing Neponset River Greenway at Big Blue Drive.

Photo: Truman Parkway looking south

Photo: Intersection of Truman Parkway & Neponset Valley Parkway

Figure 21: Segment 1 - Truman Parkway

Photo: Neponset River Greenway looking south

The areas adjacent to Truman Parkway include several environmental resource areas and low to high archaeologically sensitive areas (see Figure 22 and Figure 23). However, since shared-use path Segment 1 uses previously disturbed land there should not be any additional impacts to these sensitive areas. See Attachment E for a full description of these sensitive areas.

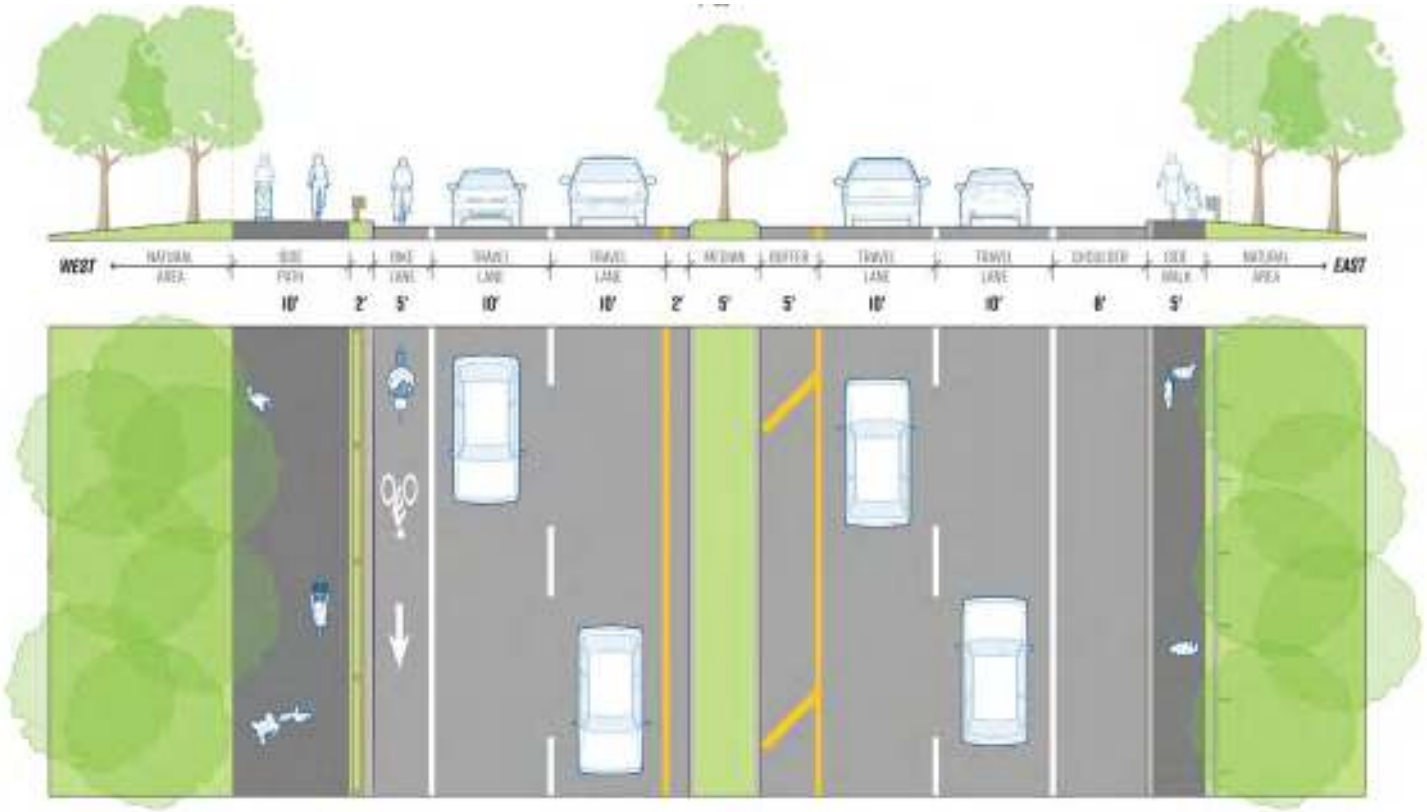
Current bicycle and pedestrian infrastructure along this stretch of Truman Parkway includes a 10' wide shared-use path, 2' buffer with guardrail, a bike lane on the west side, and a 5' sidewalk without buffer from the road on the east side (See Section A-A').

One option for a shared-use path along the east side of the parkway reduces shoulder widths to accommodate a 12' shared-use path with a 6' landscaped buffer with guardrail and shade trees on the east side (see Section A-A'). Additional shared-use path options are discussed later in this section.

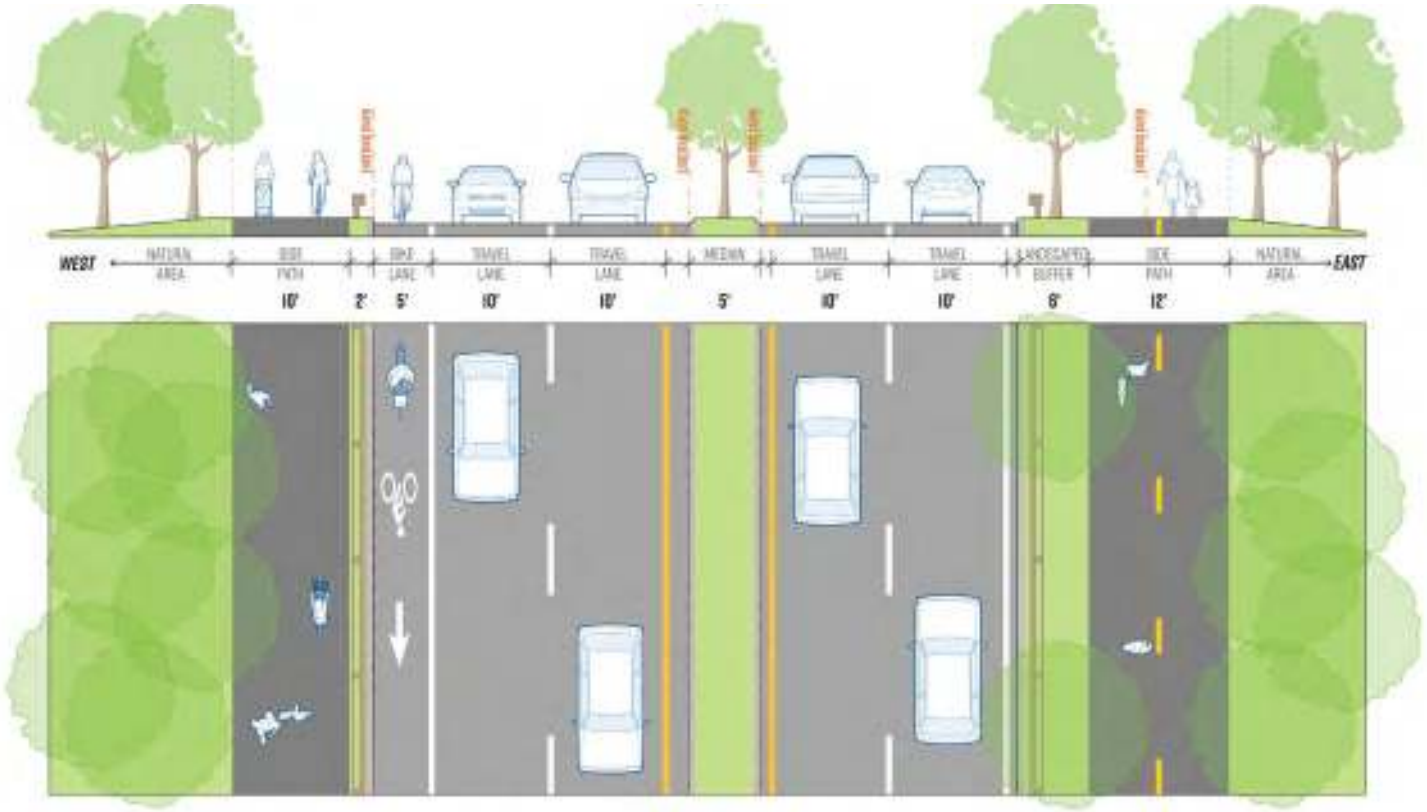
Truman Parkway Sections - Key Plan

Figure 22: Segment 1 - Diagram of Key Environmentally Sensitive Areas

Figure 23: Segment 1 - Diagram of Key Archaeologically Sensitive Areas



Section A-A': Truman Parkway - Existing Conditions



Section A-A': Truman Parkway - Proposed Option for a Shared-use Path

Improvements to the intersection at Truman Parkway and Neponset Valley Parkway include curb extensions, landscaping and tree planting along medians and buffers, median extensions to provide additional protection for crosswalk users, and repositioning of the eastern crosswalk on Neponset Valley Parkway farther east out of traffic flows in the intersection.

Segment 1 - Intersection Key Plan

Intersection B - Potential Configuration at Truman Parkway and Neponset Valley Parkway

Segment 2- East of Truman Parkway

Segment 2 runs to the east of Truman Parkway along the Neponset River. Segment 2 serves as a second option for connecting to the existing Neponset River Greenway at Big Blue Drive.

This area exists in a natural condition with the exception of a short segment of paved driveway that crosses part of this the public land. There are some steep slopes and a culvert that needs to be traversed at Brush Hill Road near Milton Street.

There are several environmentally sensitive areas including, but not limited to the Neponset River, wetlands and flood plain (see Figure 26). See Attachment E for a full description of these sensitive areas. There are also substantial invasive species.

Figure 24: Segment 2 - East of Truman Parkway

Photo: Neponset River east of Truman Pkwy

Photo: Existing drive east of Truman Pkwy

Photo: View of Truman Parkway bridge

Segment 2 passes through areas that have been identified as having low and medium archaeologically sensitive land (see Figure 26). See Attachment E for a full description of these sensitive areas.

Figure 25: Segment 2 - Diagram of Key Environmentally Sensitive Areas

Figure 26: Segment 2 - Diagram of Key Archaeologically Sensitive Areas

Segment 2 begins at the intersection of Truman Parkway and Big Blue Drive. Users of the existing portion of the Neponset River Greenway would need to cross Truman Parkway to access Segment 2. See Intersection C which shows a potential configuration for this intersection.

Segment 2 uses part of an existing paved drive from Truman Parkway and a new 12'-16' shared-use path, both on grade and on slopes (see Section D-D' and Section E-E').

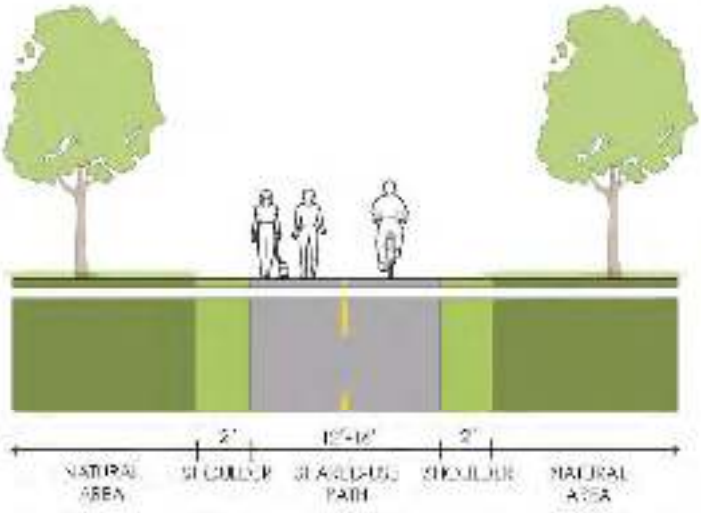
Segment 2 - Sections and Intersection Key Plan

Intersection C - Potential Configuration at Truman Parkway and Big Blue Drive

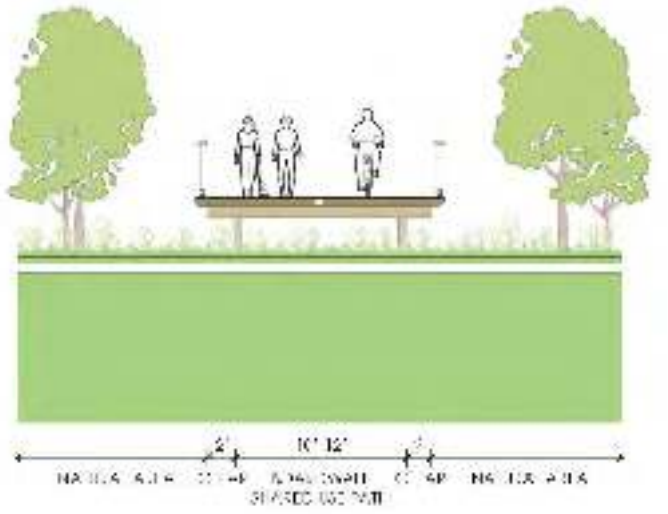
Sections of boardwalk are necessary where the trail would traverse wetlands. A boardwalk must also bridge the culvert at Brush Hill Road (see Section F-F').

Segment 2 routes the trail through the intersection at the convergence of Neponset Valley Parkway, Brush Hill Road, and Milton Street (See Intersection G sketch below).

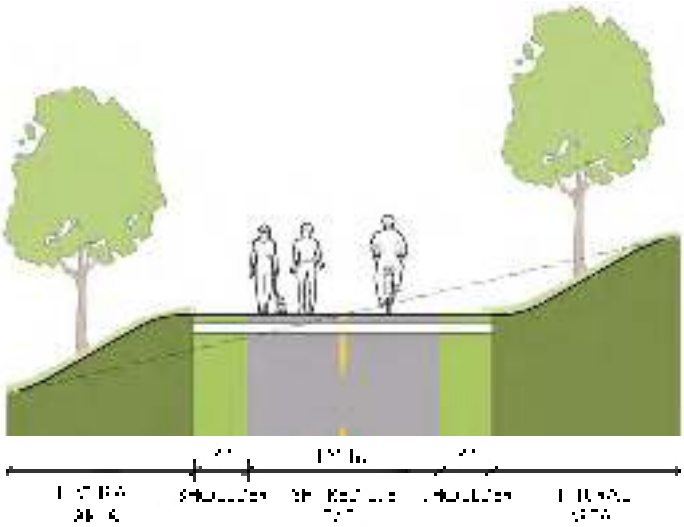
Segment 2 - Section and Intersection Key Plan



Section D-D' - Typical Shared-use Path on grade



Section F-F' - Typical Shared-use Path as Boardwalk



Section E-E' - Typical Shared-use Path on slope

Intersection G - Potential Configuration at Neponset Valley Parkway, Milton Street and Brush Hill Road

Segment 3 - South of Neponset Valley Parkway

Photo: Looking east at the intersection of TP and NVP

Photo: Looking South into Fowl Meadow ACEC

Figure 27: Segment 3 - South of Neponset Valley Parkway

Photo: Looking north at Paul's Bridge

Photo: Looking south to the Burma Parking Area

Segment 3 runs south of Neponset Valley Parkway from the intersection of Truman Parkway and Neponset Valley Parkway to the Burma Road Parking Area.

With the exception of the existing parking area, this Segment passes through undeveloped land of the Fowl Meadow ACEC. As such there are many sensitive environmental resources (see Figure 28). See Attachment D for a full description of these sensitive areas.

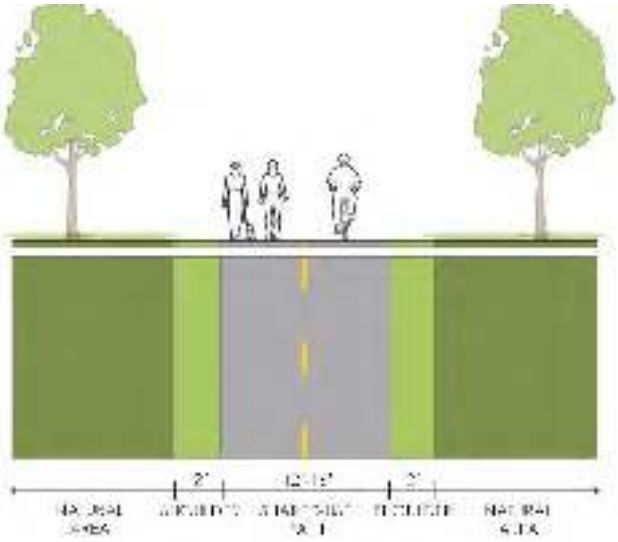
Segment 3 would also cross through areas that have been identified as having high archaeologically sensitive land (see Figure 29). See Attachment D for a full description of these sensitive areas.

Figure 28: Segment 3 - Environmentally Sensitive Areas

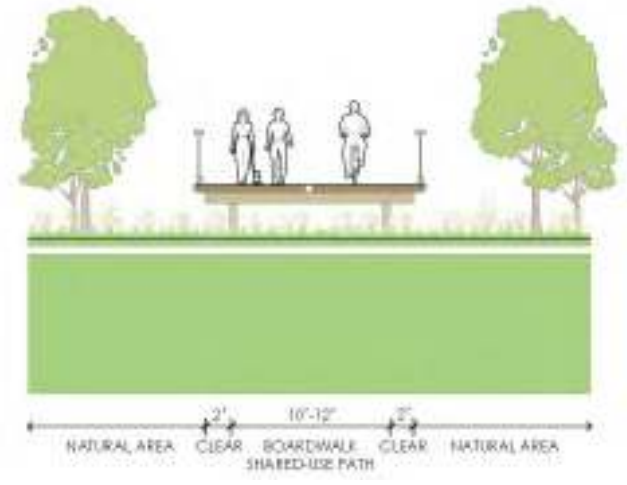
Figure 29: Segment 3 - Archaeologically Sensitive Areas

Segment 3 proposes constructing a 12'-16' shared-use path on-grade with sections of boardwalk through wetlands - only where they cannot be avoided (see Section H-H' and Section I-I'). A bridge would be required to cross the Neponset River (see Bridge Crossing J).

Segment 3 - Sections Key Plan



Section H-H' - Typical Shared-use Path on grade



Section I-I' - Typical Shared-use Path as Boardwalk

The connection between Segment 3 and Segment 5 is an opportunity to greatly improve the intersection of Neponset Valley Parkway and Brush Hill Road. Design options will be developed with the preferred plan for safe shared-use path crossing and safe vehicular movements. See Intersection K sketch for one example.

Segment 3 - Bridge Key Plan

Photo: Bridge Crossing J - Example DCR Harvest River Bridge

Segment 3 - Intersection Key Plan

Photo: Bridge Crossing J - Example DCR Charles River Bike Path Bridges

Intersection K - Example Location at Brush Hill Road and Neponset Valley Parkway

Segment 4a - Paul's Bridge, North

Segment 4a runs east along the north side of Neponset Valley Parkway and Paul's Bridge.

The areas adjacent to Neponset Valley Parkway and Paul's Bridge include several environmentally sensitive areas and high archaeologically sensitive areas. However, since Segment 4a primarily uses previously disturbed land there will be minimal impacts to these sensitive areas (see Figure 30 and Figure 32). See Attachment D for a full description of these sensitive areas.

Figure 30: Segment 4a - Paul's Bridge, North

Photo: Looking north-east

Photo: Looking north-west

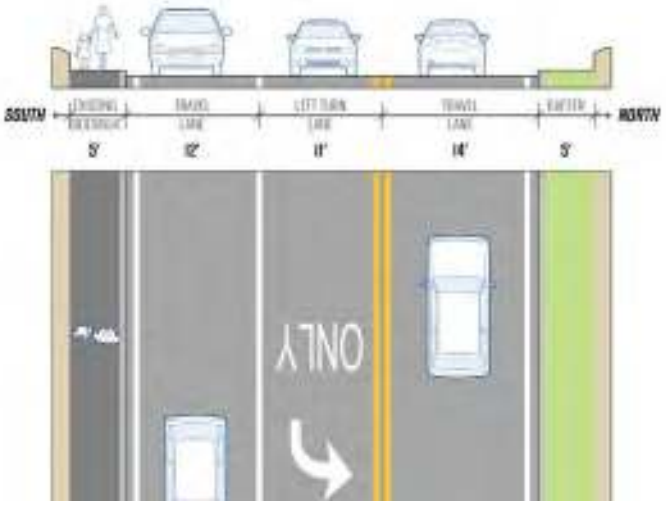
Figure 31: Segment 4a - Diagram of Key Environmentally Sensitive Areas

Figure 32: Segment 4b - Diagram of Key Archaeologically Sensitive Areas

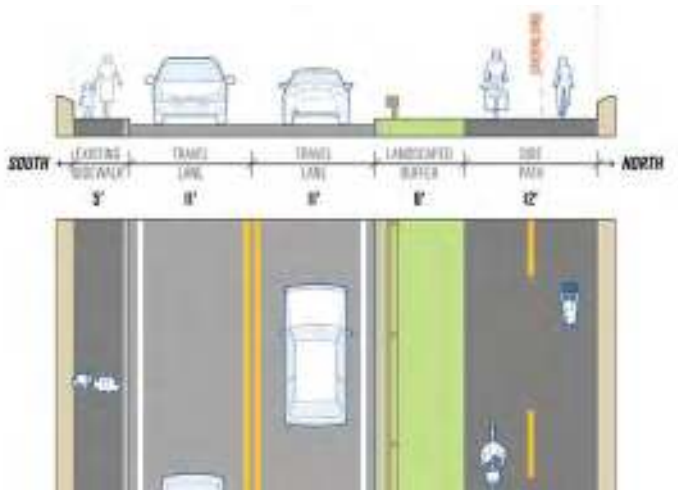
Segment 4a - Sections Key Plan

Currently the north side of Paul's Bridge has a five-foot buffer from the side wall and has recently been paved. The bridge's current configuration includes an eastbound travel lane, an eastbound left turn lane, and a westbound travel lane (see Section L-L').

Segment 4a removes the eastbound left turn lane to accommodate a 12' shared-use path and 8' buffer with guardrail on the north side of the bridge.



Section L-L' - Paul's Bridge Existing Conditions



Section L-L' - Paul's Bridge Proposed Conditions for Segment 4a

To connect with Segment 5, Segment 4a requires additional crosswalks and routing through the intersection of Neponset Valley Parkway, Milton Street, and Brush Hill Road (See Intersection M).

Segment 4a - Intersection Key Plan

Intersection M - Potential Configuration at Neponset Valley Parkway, Milton Street and Brush Hill Road

Segment 4b - Paul's Bridge, South

Segment 4b is another option to connect Segment 1 to the east along Neponset Valley Parkway.

The existing conditions are the same for Segment 4b as for Segment 4a. See Attachment E for a full description of the sensitive areas.

Photo: Looking west on Paul's Bridge

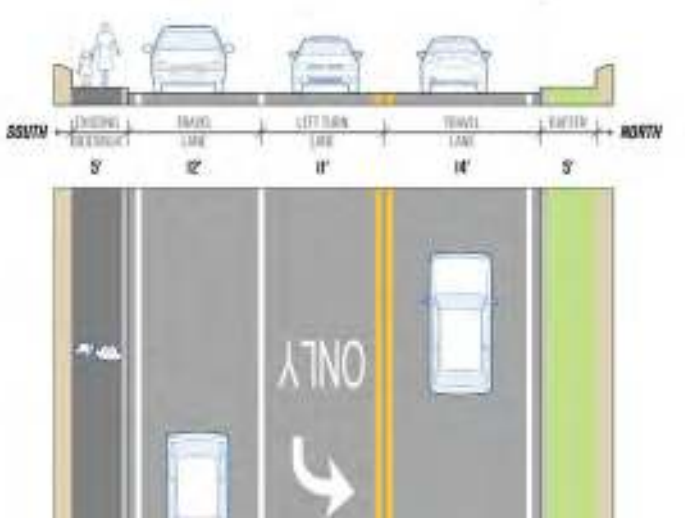
Photo: Looking North towards Paul's Bridge

Figure 33: Segment 4b - Paul's Bridge, South

Segment 4b - Sections Key Plan

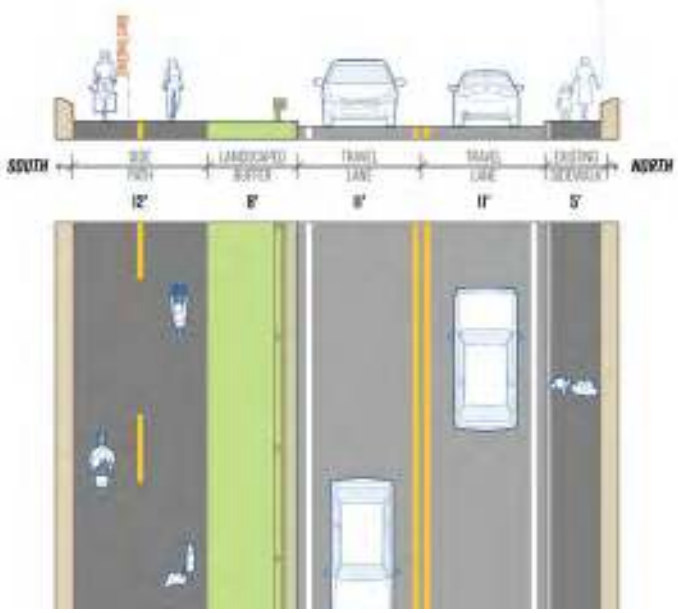
The south side of Paul's Bridge currently has a 5' sidewalk without buffer (see Section L-L'). Like Segment 4a, this alternative removes the eastbound left turn lane. Segment 4b includes a 12' shared-use path and 8' buffer with guardrail on the south side of the bridge (see Section L-L').

Segment 4b also traverses the Neponset Valley Parkway, Milton Street and Brush Hill Road intersection, and it requires an additional crossing to connect with Segment 5. Similar to Segment 3, connecting Segment 4b and Segment 5 is an opportunity to greatly improve the intersection of Neponset Valley Parkway and Brush Hill Road. Design options will be developed with the preferred plan for safe shared-use path crossing and safe vehicular movements (see Intersection M sketch below for one option).



Section L-L' - Paul's Bridge Existing Conditions

Segment 4b - Intersection Key Plan



Section L-L' - Paul's Bridge Proposed Conditions for Segment 4b

Intersection M - Potential Configuration at Neponset Valley Parkway, Milton Street and Brush Hill Road

Segment 5 - Neponset Valley Parkway, Southeast

Segment 5 runs along the north side of Neponset Valley Parkway east of Brush Hill Road. DCR owns not only the parkway but also a large swath of land on the north side of the road. The additional land allows for this Segment to meander and potentially connect to a larger open space to the north-east.

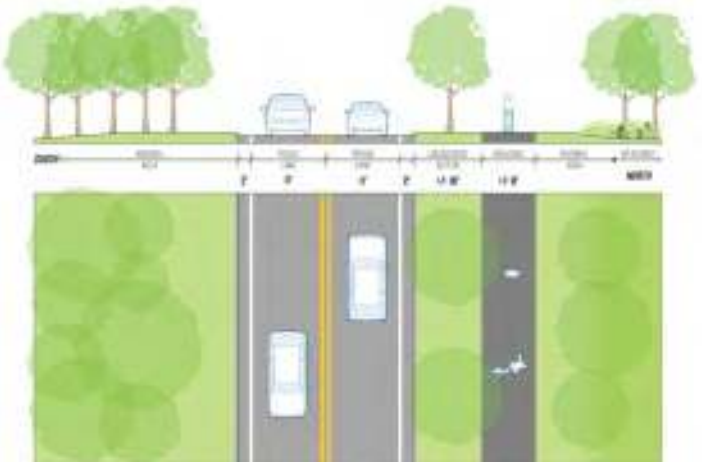
With the exception of the existing walkway, this Segment passes through undeveloped lawn and wooded areas within the ACEC with wetlands and other environmentally sensitive areas. This Segment also passes through some low archaeologically sensitive areas. See Attachment E for a full description of these sensitive areas.

This Segment widens the existing walkway to 12'-16' with an 8' landscaped buffer. It also includes boardwalk in sections that traverse wetlands (See Section N-N'). Route 138 would be used to make the final connection to the Blue Hills Trailside Museum.

Figure 34: Segment 5 - Neponset Valley Parkway, Southeast

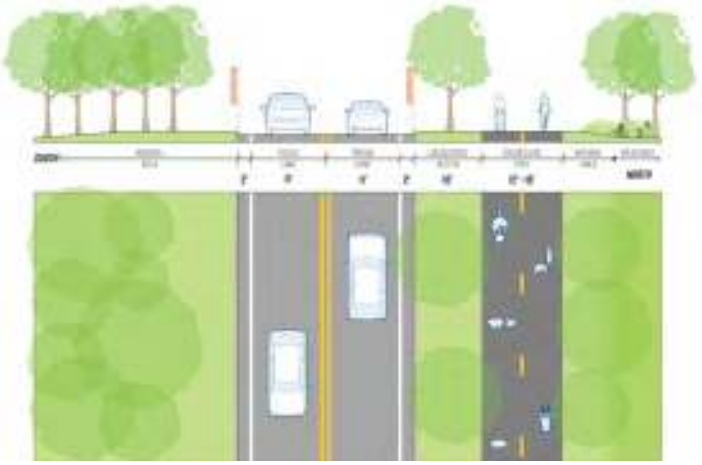
Photo: Looking northwest on Neponset Valley Parkway

Segment 5 - Intersection Key Plan



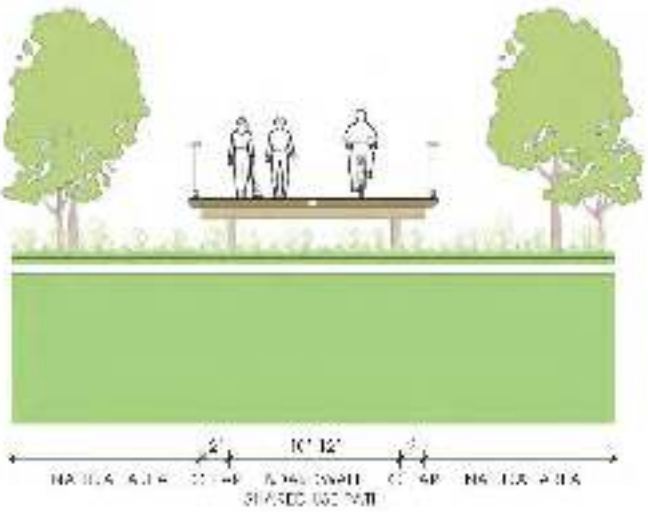
Section N-N' - Neponset Valley Parkway Existing Conditions

Photo: Segment 5 - Neponset Valley Parkway Existing Condition



Section N-N' - Neponset Valley Parkway Proposed Conditions

Photo: Segment 5 - Neponset Valley Parkway Proposed Condition



Section N-N' - Typical Shared-use Path as Boardwalk

Potential Routes

Possible Routes were developed by pairing sequentially located path Segments. Connection with the Existing Neponset River Greenway can be made with either Segment 1: Truman Parkway or Segment 2: East of Truman Parkway. Segment 2 can only be cohesively paired with Segment 5: Neponset Valley Parkway, southeast.

Segment 1: Truman Parkway can be paired with Segment 3: South of Neponset Valley Parkway, Segment 4a: Paul's Bridge North, or Segment 4b: Paul's Bridge South. Each of those can then connect with Segment 5: Neponset Valley Parkway, Southeast.

Altogether, four alternative Routes were identified from the different Segment combinations. The Routes were each given a color to be easily distinguished on the map (see Figure 35).

Orange Route: 1. Truman Parkway + 3. South of Neponset Valley Parkway + 5. Neponset Valley Parkway,Southeast

Yellow Route: 1. Truman Parkway + 4a. Paul's Bridge, North + 5. Neponset Valley Parkway,Southeast

Blue Route: 1. Truman Parkway + 4a. Paul's Bridge, South + 5. Neponset Valley Parkway, Southeast

Green Route: 2. East of Truman Parkway + 5. Neponset Valley Parkway, Southeast

Figure 35: Map of Potential Routes

Evaluation

The project team evaluated each of the Segments 1, 2, 3, 4a and 4b to develop a score that was well-informed, and considered multiple perspectives. Segment 5 was not evaluated as it is the only Segment that makes the connection to the planned shared-use path along Route 138.

Scores between 1 to 5 were given for each Segment for each criteria indicating lesser or greater conformance, respectively, with the Criteria and thereby the Objectives. The table below shows the final scores for each Segment. The scores were averaged for each Objective and then totaled for each Segment. See Figure 36 for the final tallies.

OBJECTIVES	SEGMENT 1 TRUMAN PKWY	SEGMENT 2 EAST OF TRUMAN PKWY	SEGMENT 3 SOUTH OF NEPONSET VALLEY PKWY (WEST)	SEGMENT 4A PAUL'S BRIDGE NORTH	SEGMENT 4B PAUL'S BRIDGE SOUTH
ENHANCED COMMUNITY CONNECTIVITY	3	2.5	3.5	3	3
IMPROVED ACCESS TO RECREATION AND HEALTHY LIVING FOR ALL	2	4	4.7	2	2
SAFETY + CONVENIENCE	3.7	3	3.7	3	3.7
PRESERVATION OF NATURAL RESOURCES	4.1	4.1	2.9	4.1	3.9
PROTECTION OF HISTORIC + ARCHAEOLOGICAL AREAS	2.7	2.3	2.3	3	3
CLIMATE RESILIENCY	4.7	2	2.7	3.3	3
STRAIGHTFORWARD IMPLEMENTATION + MAINTENANCE	3.5	3.5	3.25	2.5	2.5
TOTAL SCORE	23.6	21.4	23	21	21.2

Figure 36: Table of Evaluation Results

Scores

The Segment scores were compared in light of the potential Routes discussed in section 2.2 Potential Routes.

Connections to Neponset River Greenway were compared:

Segment 1 scored 23.6 and Segment 2 scored 21.4.

With Segment 1 having the higher score, connections between Segment 1 and Segment 5 were compared:

Segment 3 scored 23, Segment 4a scored 21, and Segment 4b scored 21.2.

Thus the **Orange Route** was identified as being the alignment that best meets the project Objectives and the Project Goal of providing a route with greater community connections between Neponset River Greenway's southern end and the Blue Hills Trailside Museum.

Pros and Cons

Segment 1: Truman Parkway is direct, uses previously impacted land, reduces impervious pavement, has room for trail amenities, and can easily be patrolled and accessed for maintenance or emergencies. The Segment does have the disadvantage of being along the road, which is a less comfortable condition, and requires two busy road crossings along with roadway reconfiguration.

Segment 3: South of Neponset Valley Parkway has the advantages of room for trail amenities, being located away from road noise and traffic, providing facilities for walkers, joggers, rollers and boaters, and providing a unique opportunity for users to experience up close the diverse environment of the Neponset River. The disadvantages of this Segment include being less direct, somewhat difficult to view and patrol, requiring a bridge over Neponset River, traversing ACEC and archaeological areas, having potential impacts to wetlands, and needing to cross busy Neponset Valley Parkway.

OBJECTIVES	SEGMENT 1 TRUMAN PKWY	SEGMENT 2 EAST OF TRUMAN PKWY	SEGMENT 3 SOUTH OF NEPONSET VALLEY PKWY (WEST)	SEGMENT 4A PAUL'S BRIDGE NORTH	SEGMENT 4B PAUL'S BRIDGE SOUTH
ENHANCED COMMUNITY CONNECTIVITY	3	2.5	3.5	3	3
IMPROVED ACCESS TO RECREATION AND HEALTHY LIVING FOR ALL	2	4	4.7	2	2
SAFETY + CONVENIENCE	3.7	3	3.7	3	3.7
PRESERVATION OF NATURAL RESOURCES	4.1	4.1	2.9	4.1	3.9
PROTECTION OF HISTORIC + ARCHAEOLOGICAL AREAS	2.7	2.3	2.3	3	3
CLIMATE RESILIENCY	4.7	2	2.7	3.3	3
STRAIGHTFORWARD IMPLEMENTATION + MAINTENANCE	3.5	3.5	3.25	2.5	2.5
TOTAL SCORE	23.6	21.4	23	21	21.2

FALLS SHORT → MEETS CRITERIA

Figure 37: Table of Evaluation Results

ROUTE 138 PRIORITY CORRIDOR STUDY

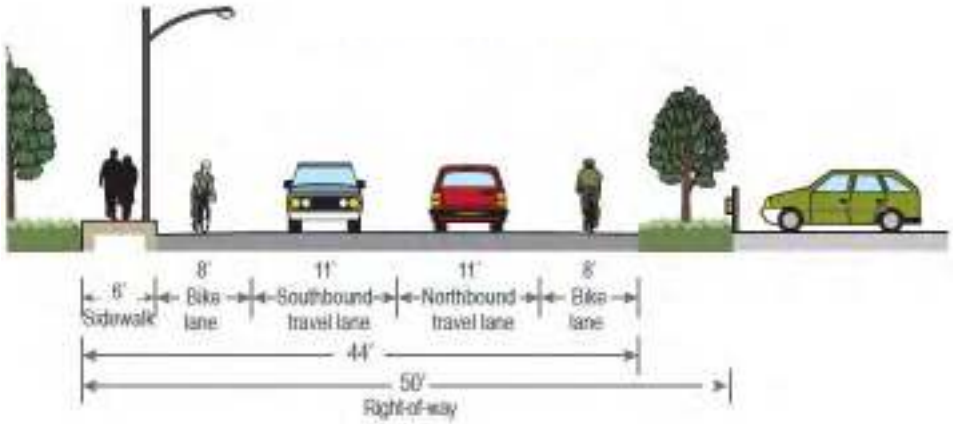
A study by the Boston Region Metropolitan Planning Organization (MPO) selected Route 138 in the Town of Milton to conduct a corridor study identified as part of the Long-range Transportation Plan, regional needs assessment. This corridor was selected based on the following factors: the need to address poor safety conditions and traffic congestion; the desire to enhance multi-modal transportation; the need to maintain regional travel capacity; the interest in ensuring that, over time, corridor studies secure funding, and recommendations from the study can be implemented.

Route 138 in Milton is a two-way, two-lane principal arterial under the jurisdiction of the Massachusetts Department of Transportation (MassDOT). The Town of Milton has jurisdiction of the majority of the crossing streets. The Department of Conservation and Recreation (DCR) has jurisdiction of Green Street and Neponset Valley Parkway; DCR also oversees the Blue Hills Recreational area.

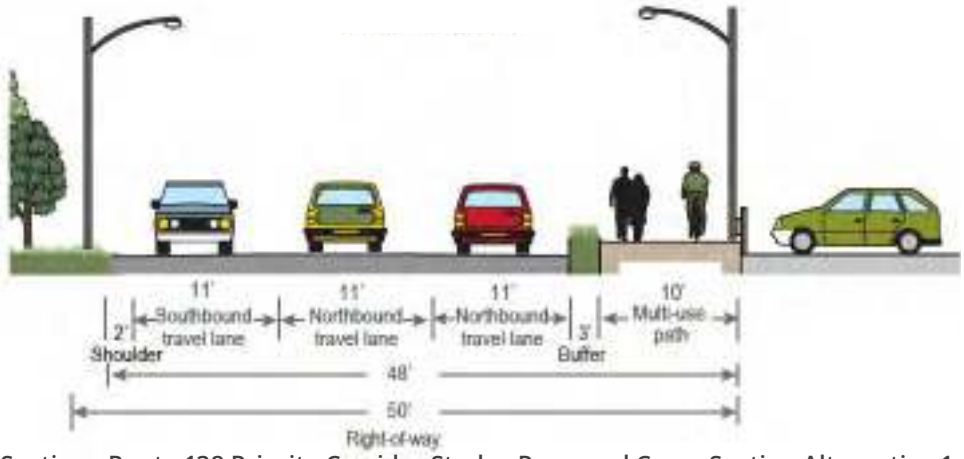
The MassDOT Highway Division, Town of Milton, and Boston Region MPO collected and assembled the data used to assess the existing conditions and identify problems in the corridor, which included vehicular, pedestrian, and bicycle volumes, traffic speeds, crashes, zoning and land uses, and community input data (community survey).

MPO staff, working with an advisory task force (representatives from MassDOT and Town of Milton), developed Complete Streets concepts for the corridor. As part of this study, two alternatives evaluated different roadway cross-sections to improve safety and, operations, and make the roadway more pedestrian and bicycle friendly. The existing 50' right-of-way from west to east includes a 6' sidewalk, an 8' bicycle lane, two 11' travel lanes, an 8' bicycle lane, and a 6' buffer. Alternative 1 re-purposes the existing 6' sidewalk and 8' bicycle lanes within the right-of-way to accommodate a 10' multi-use path on the east side with a 3' buffer. Alternative 1 also includes the addition of an 11' northbound travel lane. Alternative 2 re-purposes the right-of-way to include a 6' sidewalk on the east side and modifies the northbound / southbound bicycle facilities to on-road 5' bicycle lanes with 2' buffers. Refer to Figure X Cross Section Alternatives.

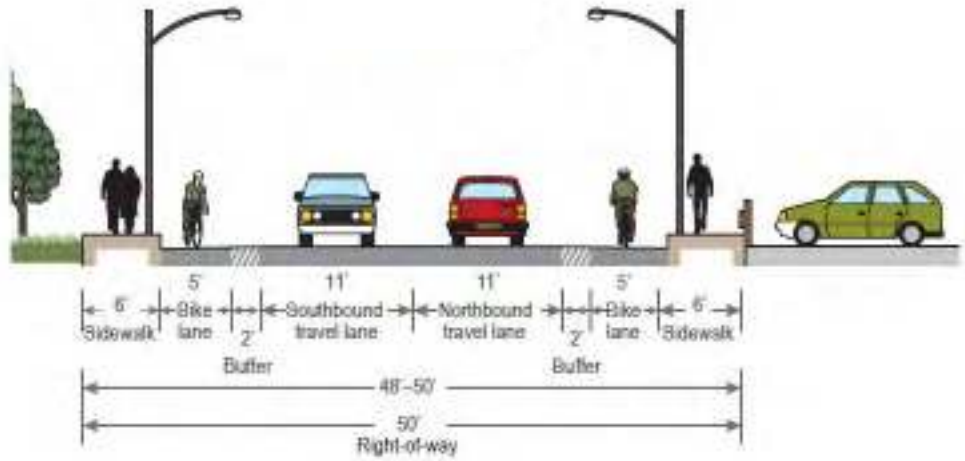
The proposed non-motorized facilities on Route 138 would be used to connect the new shared-use path to the Blue Hills Trailside Museum. A preferred alternative should be identified and will depend on collaboration between MassDOT, DCR, the Town of Milton, and the Boston Region MPO. The planning study provides necessary information for the project proponents to initiate corridor funding with the MPO and begin preliminary design and engineering with the preferred alternative.



Section - Route 138 Priority Corridor Study - Existing Cross-Section at Blue Hills Reservation Parking Lot



Section - Route 138 Priority Corridor Study - Proposed Cross-Section Alternative 1 at Blue Hills Reservation Parking Lot



Section - Route 138 Priority Corridor Study - Proposed Cross-Section Alternative 2 at Blue Hills Reservation Parking Lot

2.4 Neponset River Greenway to Readville: Feasibility

NRG to Readville: Evaluation Process

The Evaluation Process for potential routes to Readville Station followed a similar process as Neponset River Greenway to Blue Hills Museum. At a minimum, the preferred path must meet applicable design standards for accessibility and safety. The standards for this portion of the project include:

Design Standards

At a minimum the preferred path must meet applicable design standards as described in Chapter 1 and outlined in the chart below.

Evaluation Criteria

Criteria were developed to evaluate which Potential Route could best meet each of the stated objectives. The evaluation criteria from described for the Blue Hills connection were used as a starting point, the criteria were then modified to better value alternatives for a path next to a roadway.

Shared-use Path Design Standards:

- Two-way travel
- Meets accessibility guidelines, paved
- 12'-16' wide *
- 2'-3' clear shoulders
- 10' min. overhead clearance

The degree to which the Criteria are met determined the extent to which a path Route supports the agreed-upon Objectives. The evaluation criteria for each of the seven objectives are shown below and on the following page:

Objective 1

Provides relatively easy connections to community destinations. The distant and ease of connecting to community destinations the Route can make by non-motorized means.

Objective 2

Provides a sense of personal comfort. Distance from uncomfortable conditions, such as heavy traffic, as well as separation of modes.

Objective 3

Minimizes vehicular conflicts and road crossings. The quantity and quality of road and driveway crossings.

Objective 4

Minimizes impacts to environmentally sensitive areas. Degree of avoidance of or impacts to Environmental Resource Areas and other protected environments.

Objective 5

Minimizes impacts to archaeologically sensitive areas (except NVP). The degree to which a Route avoids a high, medium, and low archaeological sensitive area.

Provides direct connections to publicly accessible historic resources. The quantity of direct connections to historic resources.

Objective 6

Minimizes stormwater runoff and include green infrastructure. The degree to which the Route will reduce impervious areas and to which the Route should accommodate green infrastructure to manage stormwater.

Preserves existing tree canopy. The degree of impact to existing street trees that would need to be cleared for the construction of the segment.

Objective 7

Maintains current traffic operations. The degree to which a Route requires roadway reconfigurations or impacts current traffic operations.

Is easy to construct and maintain. Existing physical challenges or the need for extensive or complicated construction materials or techniques.

Has reasonable estimated construction costs. Probably construction cost per linear foot relative to the benefit of the Route.

Evaluation Matrix

A matrix was developed for scoring the Routes. Scores between 1 and 5 were given for each Route for each criteria indicating lesser or greater conformance, respectively, with the criteria. The results are described at the end of this Chapter.

Feasibility Study Opinions of Probable Construction Costs

To understand the degree to which a Route met Objective 7, the relative probably construction costs were determined. Below is a summary of the cost estimating process at the Feasibility Study level. The actual Feasibility Study Opinion of Probably Construction Costs are included in Attachment F.

Process

The process for construction costs for the Readville shared-use path was similar to the Neponset River Greenway to Blue Hills process: cost estimates for typical cross-section trail type were developed and then applied to the length of the Route as appropriate. These Cross-Section Trail Types and typical trail cross-sections are provided below.

Cross-Section Trail Type

Category	Type	Section	Route	Cross-Section Description	
Shared-use Path along Neponset Valley Parkway	1.1	A	Green	At existing curb: 7' landscape buffer + 12' paved path + 3' rehabilitated lawn, wood guardrail two sides	Section A West of Truman Green Route
	1.2	A	Orange	At existing curb: new drainage, 10' landscape buffer + 12' paved path, wood guardrail two sides	Section A West of Truman Orange Route
	2.1	B	Orange	New curb line (VGC, drainage, pavement patch), 6' landscape buffer + 12' paved path + 8' rehabilitated lawn, one row of new trees, wood guardrail two sides	Section B East of Riley Orange
	2.2	B	Yellow	New curb line (VGC, drainage, pavement patch), 6' landscape buffer + 12' paved path + 4.5' rehabilitated lawn, one row of new trees, wood guardrail two sides	Section B East of Riley Yellow
	2.3	C	Orange, Yellow	New curb line (VGC, drainage, pavement patch), 6' landscape buffer + 12' paved path + 5' rehabilitated lawn, two rows of new trees, wood guardrail two sides	Section C Fire Station Orange and Yellow Routes
	3.1	A	Blue	New curb line both sides (VGC, drainage, pavement patch), 6' landscape buffer + 12' paved path + 2' rehabilitated lawn, one row of new trees, wood guardrail two sides	Section A West of Truman Blue Route
	3.2	A	Yellow	New curb line both sides (VGC, drainage, pavement patch), + new drainage, 16' of landscape buffers + 12' paved path, one row of new trees, wood guardrail two sides	Section A West of Truman Yellow Route
	3.3	C	Blue	New curb line both sides (VGC, drainage, pavement patch) + 10' of landscape buffers + 12' paved path + 3' rehabilitated lawn, new trees one side, , wood guardrail two sides	Section C Fire Station Blue Route
	3.4	C	Green	New curb line both sides (VGC, drainage, pavement patch) + 2' landscape buffer + 12' paved path + 4' rehabilitated lawn, wood guardrail two sides	Section C Fire Station Green Route
	4.1	D	Orange	New curb line (VGC, drainage, pavement patch) + 10' of paver bands + 12' paved path, wood guardrail two sides, NO LANDSCAPING	Section D Underpass Orange
	4.2	D	Blue	New curb line both sides (VGC, drainage, pavement patch) + 9.5' of paver bands + 14' paved path, wood guardrail two sides, NO LANDSCAPING	Section D Underpass Blue

Linear Foot Costs

Route	Cost per LF	Total Cost	LF
Orange	$ 2,224	$ 5,839,249	2,625
Blue	$ 2,414	$ 6,337,387	2,625
Yellow	$ 2,557	$ 6,712,089	2,625
Green	$ 2,359	$ 6,191,622	2,625

NRG to Readville: Shared Use Path Alternatives

Potential Sections

The potential shared-use path from the Neponset Valley Parkway at Truman Parkway intersection to Readville Station was broken down into four sections to better convey the different alternatives along the corridor. As described in above, the initial evaluation based on the minimum Design Standards results in up to four alternatives for each section.

Section O-O' is a cross-section from west of Truman Parkway where there are four vehicle travel lanes separated by a landscaped median.

Section P-P's is a cross-section from east of Riley Road, where there are two vehicle travel lanes.

Section Q-Q' is a cross-section from outside of the Fire Station, showing the area where the two eastbound travel lanes merge down to one.

Section R-R' is a cross-section from the underpass of the MBTA rail bridge.

Section S-S' is a cross-section from Prescott Street that will further community connections in the neighborhood, further described below.

Figure 38: Neponset River Greenway to Readville: Sections Key Plan

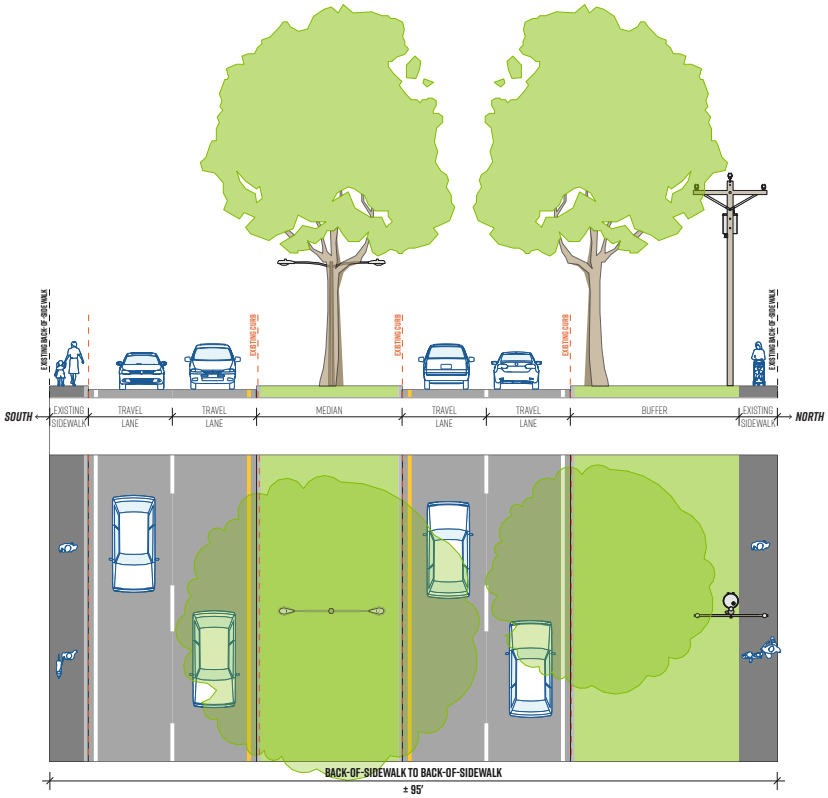
Section O-O' West of Truman

Existing

Section O-O' generally refers to the segment of Neponset Valley Parkway just west of Truman Parkway. This section consists of four vehicle travel lanes divided by a landscaped median, approximately 19 feet wide. Sidewalks are present on both sides of the road, approximately 5 feet wide. The northern sidewalk has a wide landscaped buffer separating it from the travel lanes, however the southern sidewalk has no buffer.

Photo: NVP west of Truman, looking east

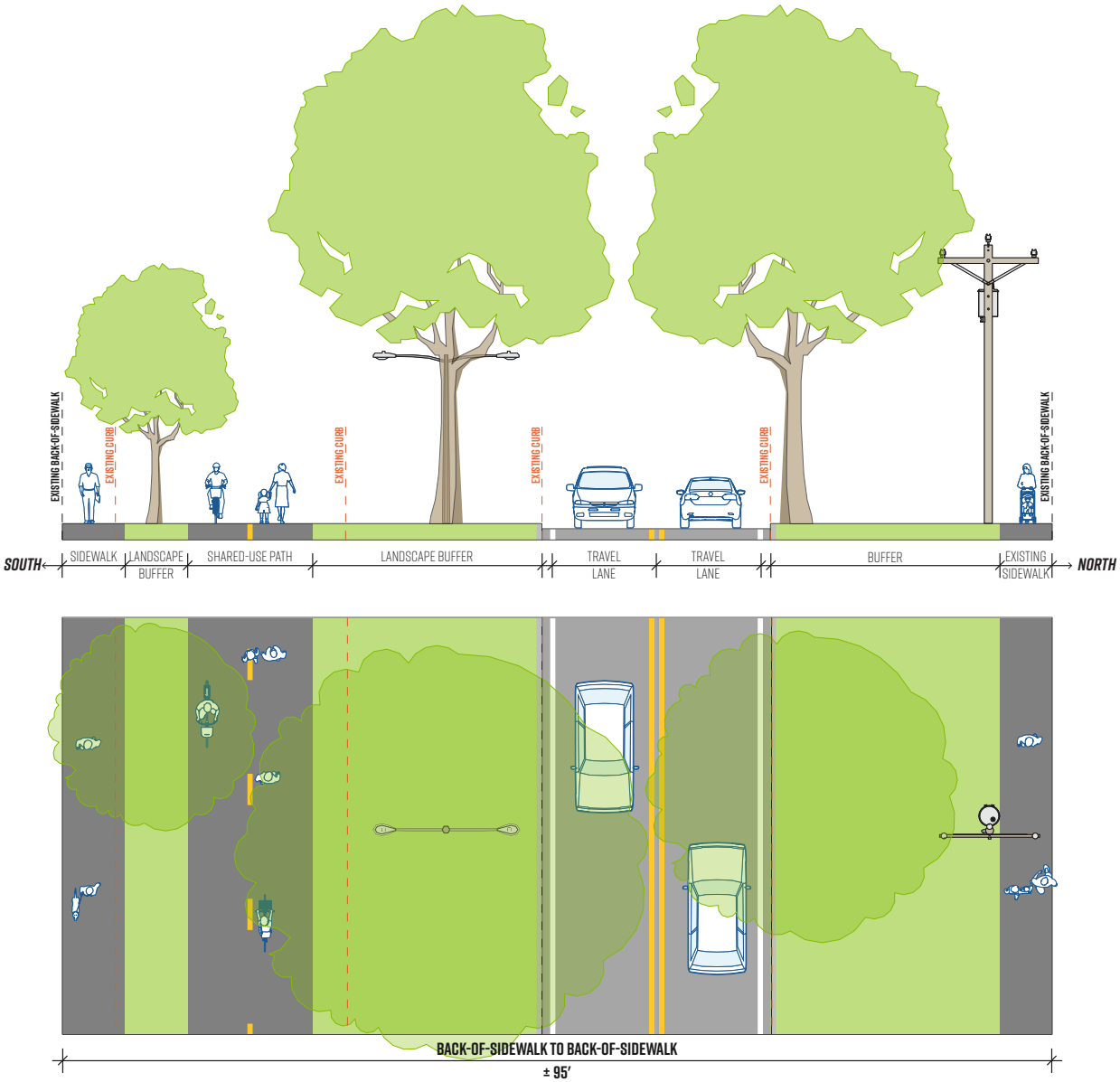
Photo: NVP west of Truman, looking west



Section O-O' - Neponset Valley Parkway West of Truman - Existing Section

Potential Orange Section O-O' West of Truman

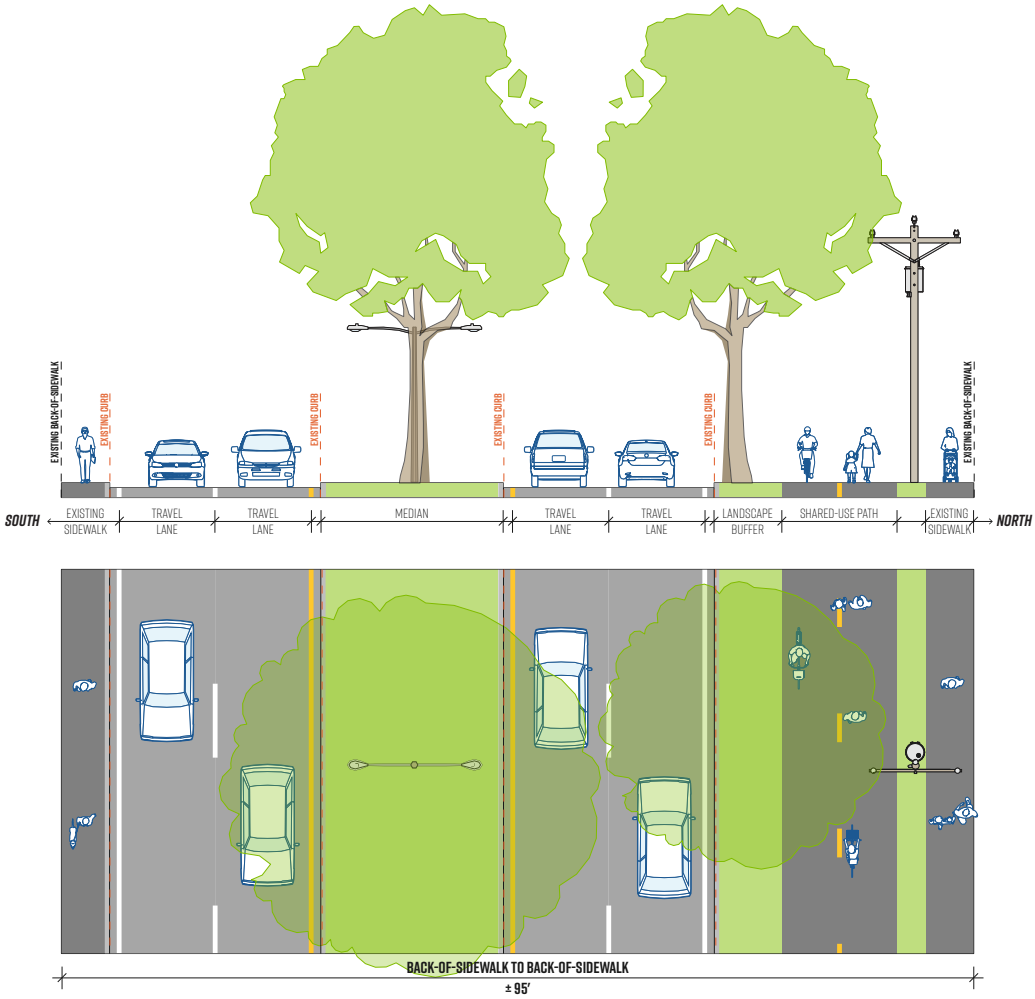
Potential Orange Section O-O' reallocates pavement south of the median for a shared used path, expanded sidewalk, and expanded landscaped buffers. Similar to Truman Parkway, all vehicle traffic would be moved to north of the existing median.



Section O-O' - Neponset Valley Parkway West of Truman- Potential Orange Section

Potential Blue Section O-O' West of Truman

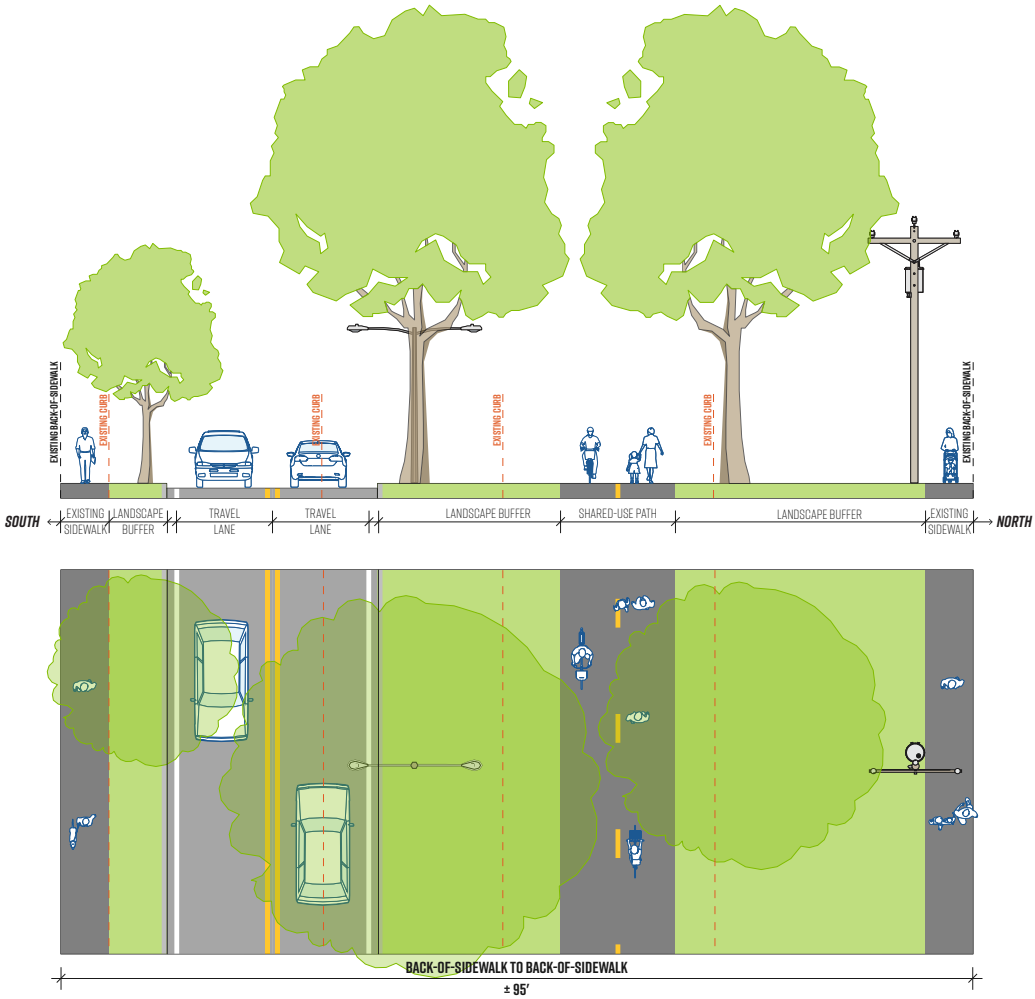
Potential Blue Section O-O' maintains four vehicle travel lanes. To provide a shared use path on the north side of the road, space is reallocated from the existing landscaped buffer to provide a path.



Section O-O' - Neponset Valley Parkway West of Truman - Potential Blue Section

Potential Yellow Section O-O' West of Truman

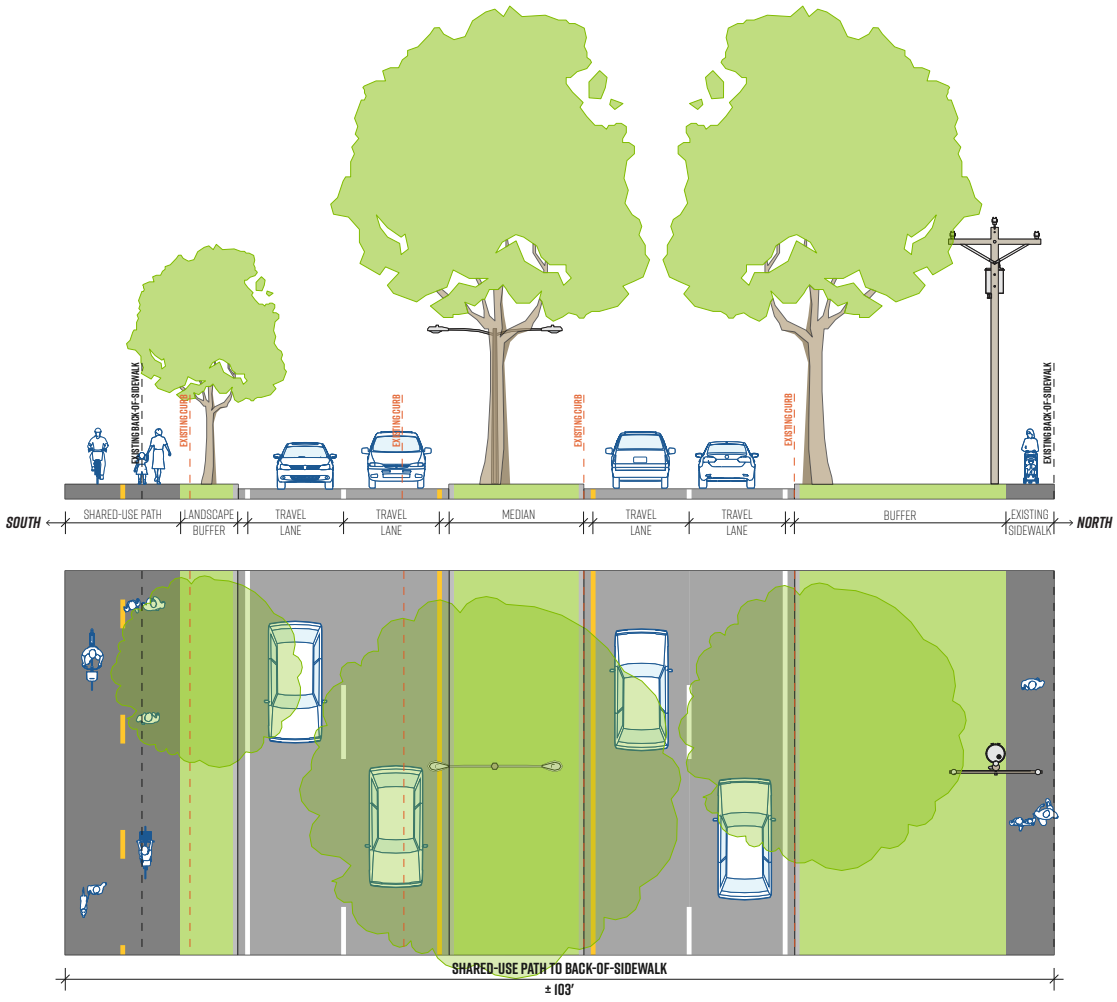
Potential Yellow Section O-O' reallocates pavement north of the median for a shared use path and expanded landscaped buffers. Similar to Truman Parkway, all vehicle traffic would be moved to south of the existing median.



Section O-O' - Neponset Valley Parkway West of Truman - Potential Yellow Section

Potential Green Section O-O' West of Truman

Potential Green Section O-O' maintains four vehicle travel lanes. To provide a shared use path on the south side of the road, space is reallocated from the existing median and sidewalk to provide a path and landscaped median. Additionally, space beyond the back of sidewalk on the south side would be needed to accommodate everything.



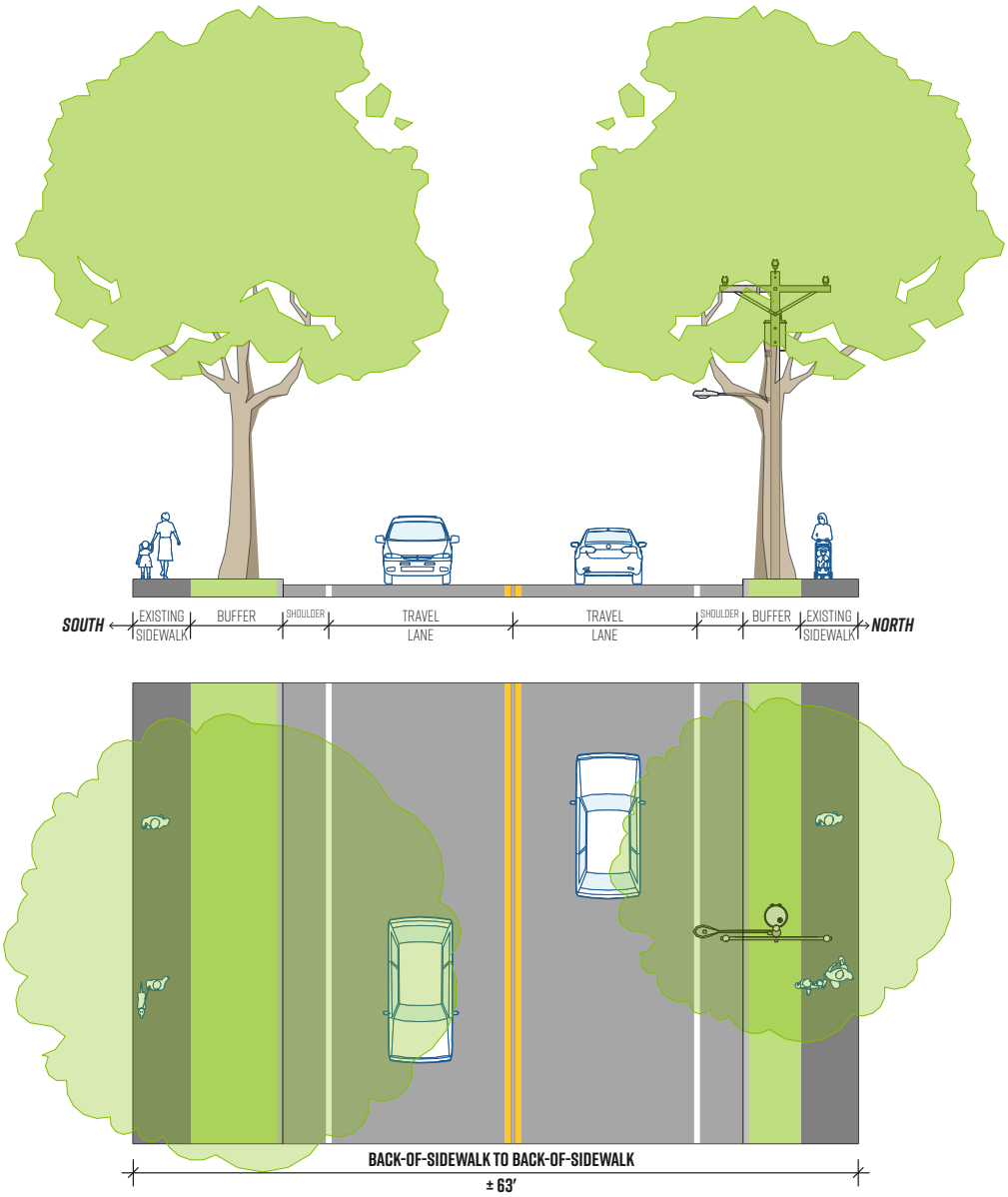
Section O-O' - Neponset Valley Parkway West of Truman - Potential Green Section

Section P-P' East of Riley Road

Existing

Section P-P' generally refers to the segment of Neponset Valley Parkway just east of Riley Road. This section consists of two 16-foot travel lanes and two 4-foot shoulders. Five-foot sidewalks are present on both the north and south side of the street, each with a landscaped buffer of 5 feet and 8 feet, respectively.

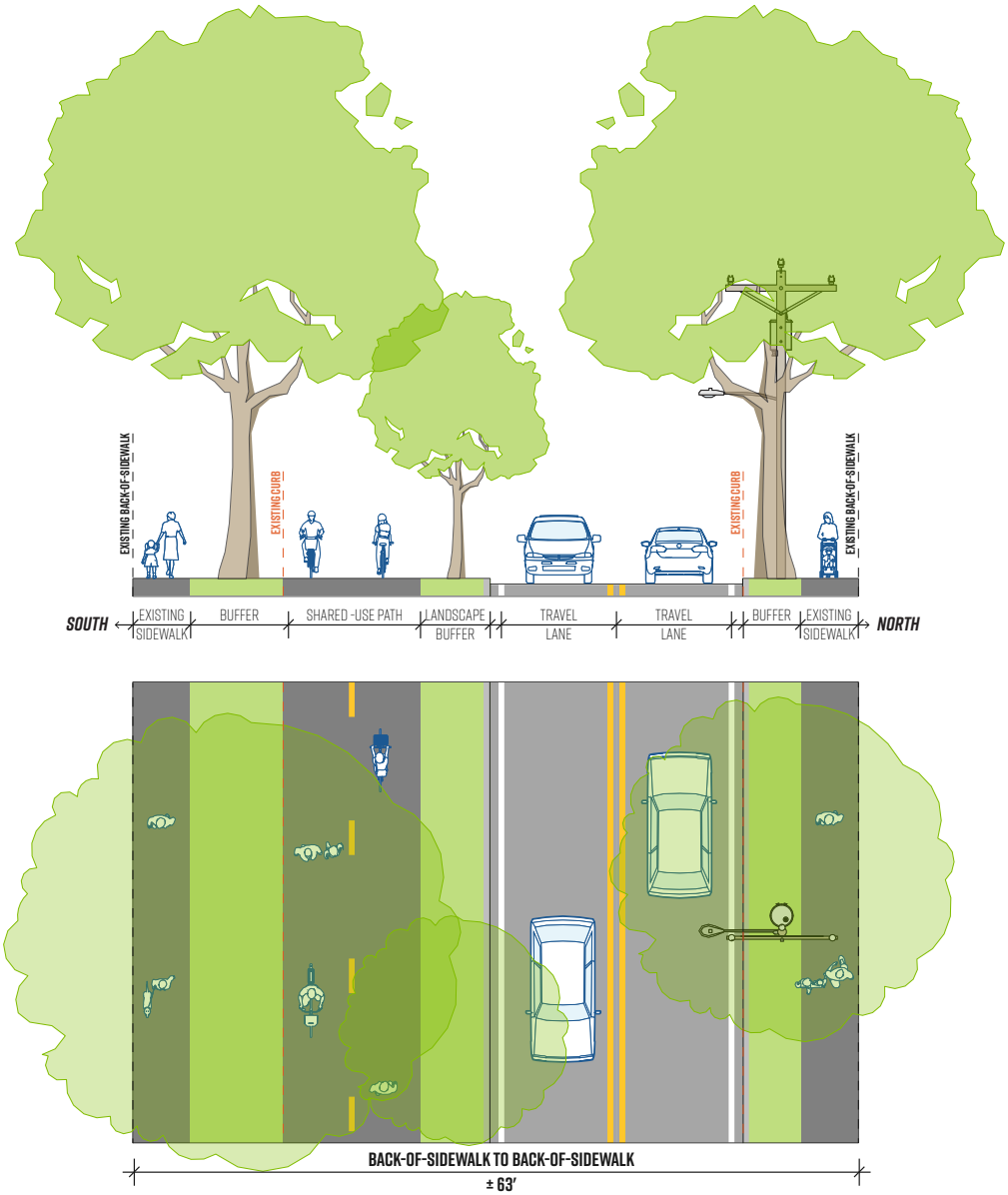
Photo: NVP East of Riley, looking east



Section P-P' - Neponset Valley Parkway East of Riley Road - Existing Section

Potential Orange Section P-P' East of Riley Road

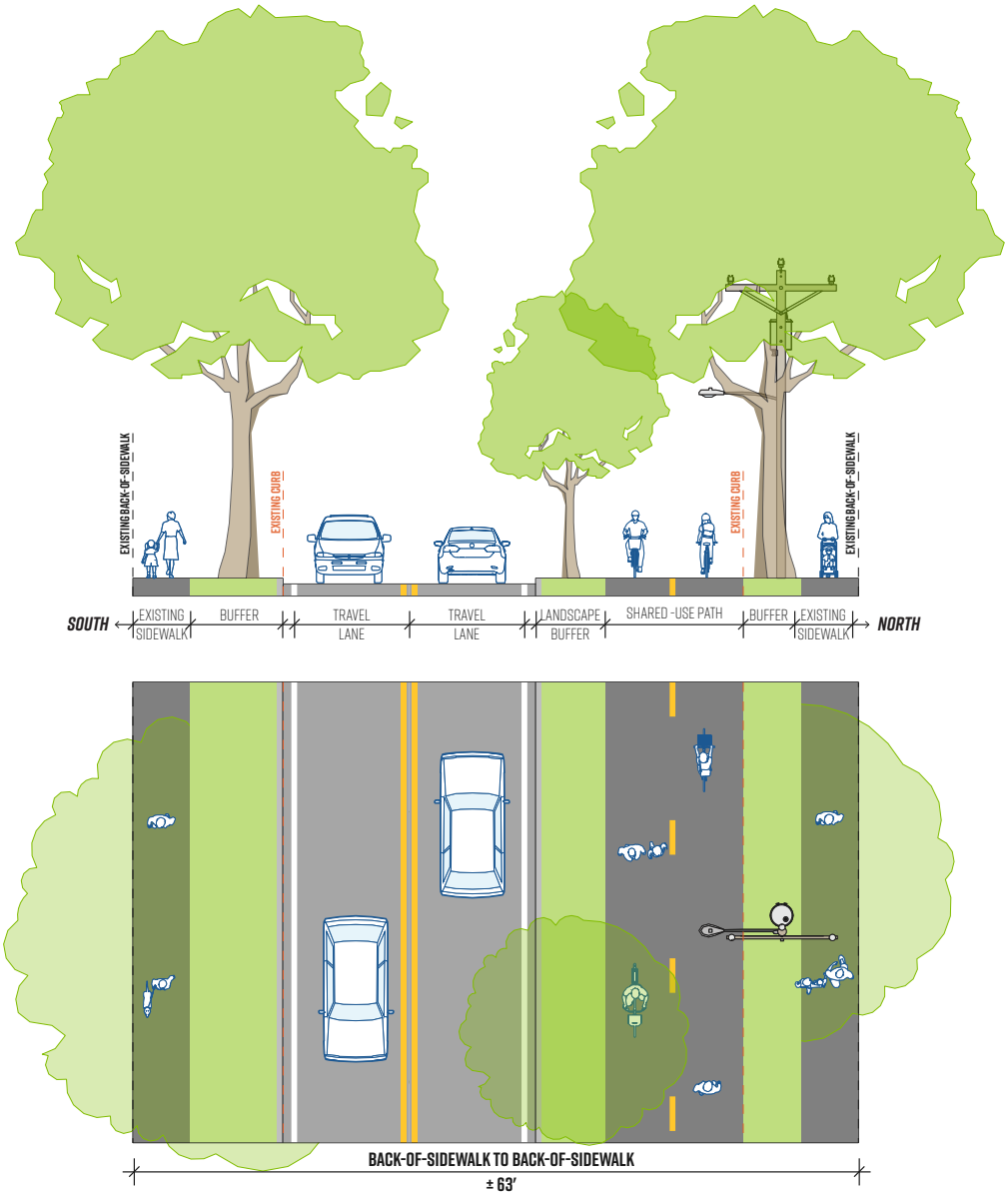
Potential Orange Section P-P' significantly narrows the travel lanes and shoulders to 10-feet and 1-foot, respectively, allowing for the installation of a shared use path on the south side of Neponset Valley Parkway with a 6-foot landscaped buffer.



Section P-P' - Neponset Valley Parkway East of Riley Road - Potential Orange Section

Potential Yellow Section P-P' East of Riley Road

Potential Yellow Section P-P' significantly narrows the travel lanes and shoulders to 10-feet and 1-foot, respectively, allowing for the installation of a shared use path on the north side of Neponset Valley Parkway with a 6-foot landscaped buffer.

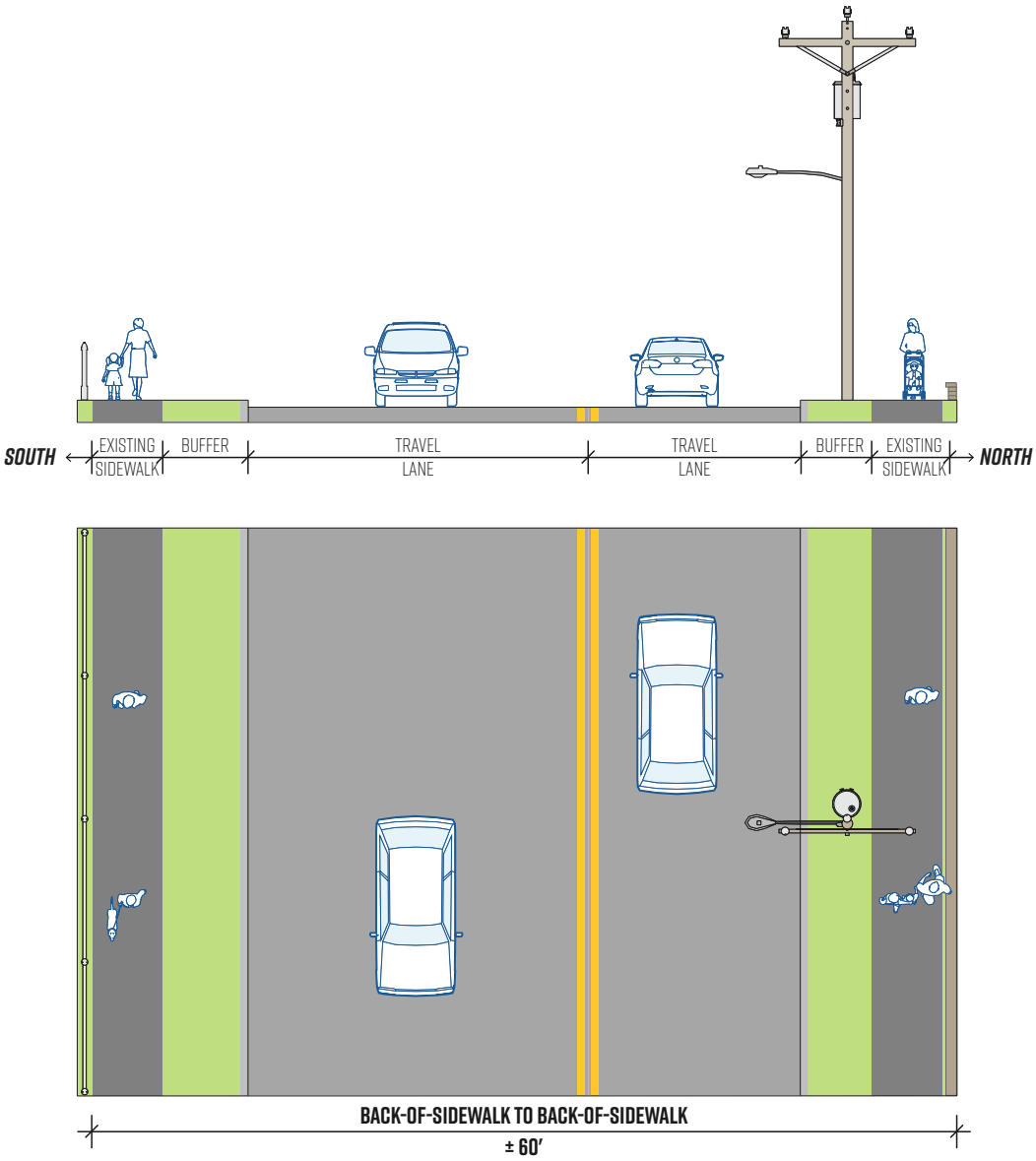


Section P-P' - Neponset Valley Parkway East of Riley Road - Potential Yellow Section

Section Q-Q' At the Fire Station

Existing

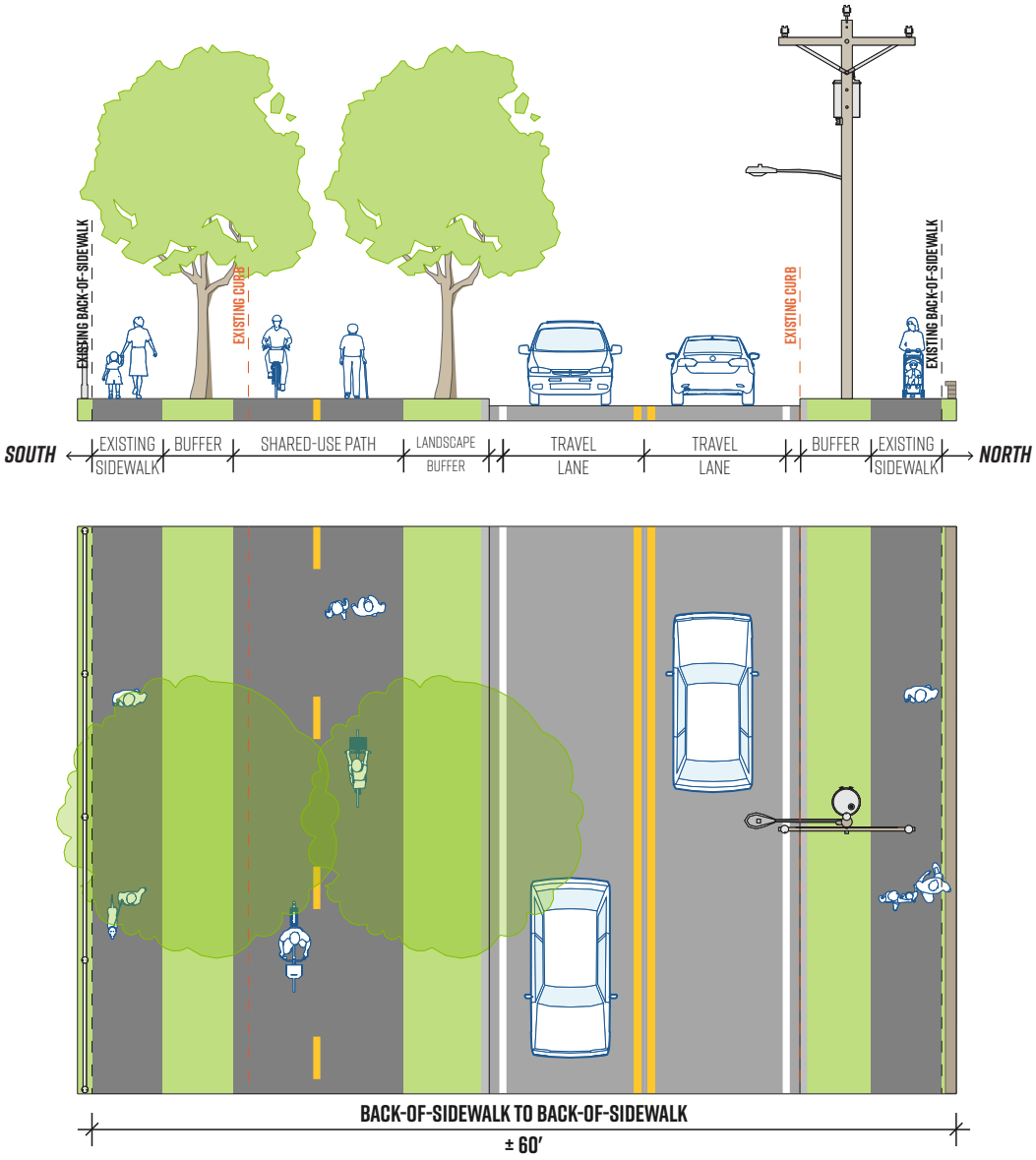
Section Q-Q' generally refers to the segment of Neponset Valley Parkway at the fire station, just after the two eastbound travel lanes merge into one. This section consists of an eastbound travel lane of 24-feet and a westbound travel lane of 15-feet. Five-foot sidewalks are present on both the north and south side of the street, each with a grass buffer of 5 feet and 6 feet, respectively.



Section Q-Q' - Neponset Valley Parkway At the Fire Station- Existing Section

Potential Orange Section Q-Q' At the Fire Station

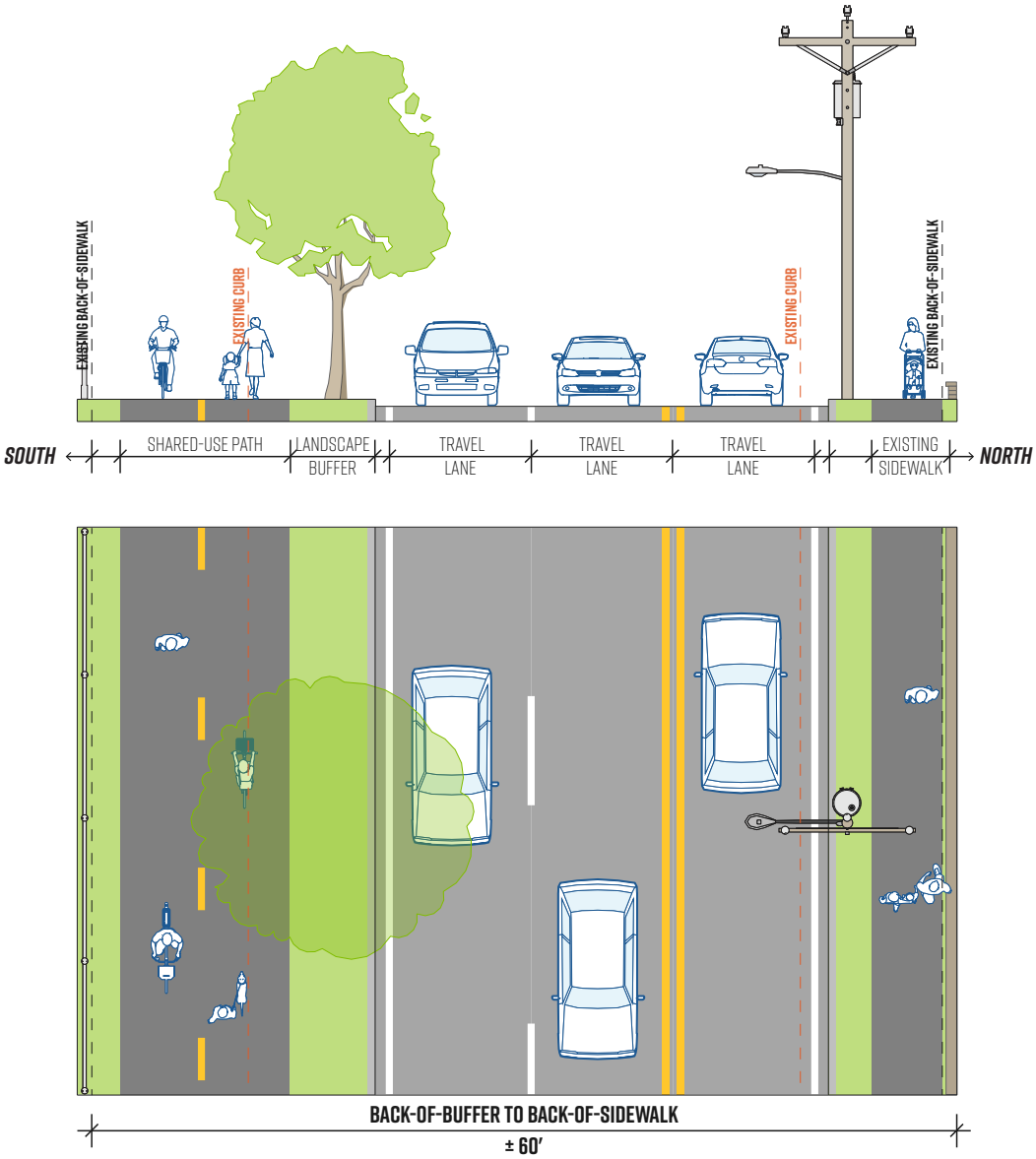
Potential Orange Section Q-Q' significantly narrows the travel lanes and shoulders to 10-feet and 1-foot, respectively, allowing for the installation of a shared use path on the south side of Neponset Valley Parkway with a 6-foot landscaped buffer. One of the existing two eastbound travel lanes on Neponset Valley Parkway would be removed to eliminate the need for the merge area.



Section Q-Q' - Neponset Valley Parkway At the Fire Station- Potential Orange Section

Potential Blue Section Q-Q' At the Fire Station

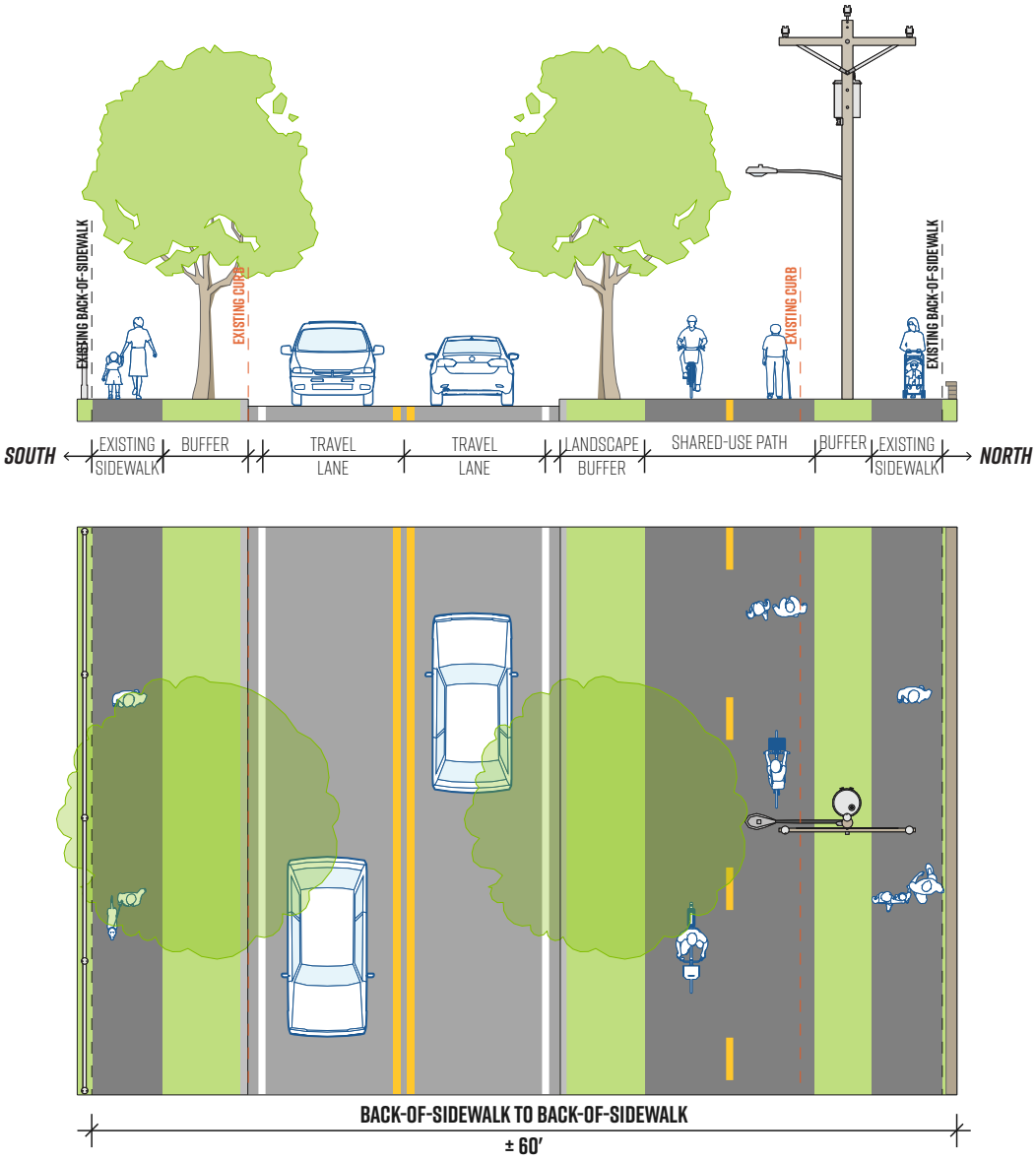
Potential Blue Section Q-Q' would maintain the merge area for the two eastbound travel lanes, but narrow the lanes to a more context appropriate width. This narrowing, along with combining the sidewalk with the shared use path, allows for a path on the southern side for the roadway with a 6-foot landscaped buffer.



Section Q-Q' - Neponset Valley Parkway At the Fire Station - Potential Blue Section

Potential Yellow Section Q-Q' At the Fire Station

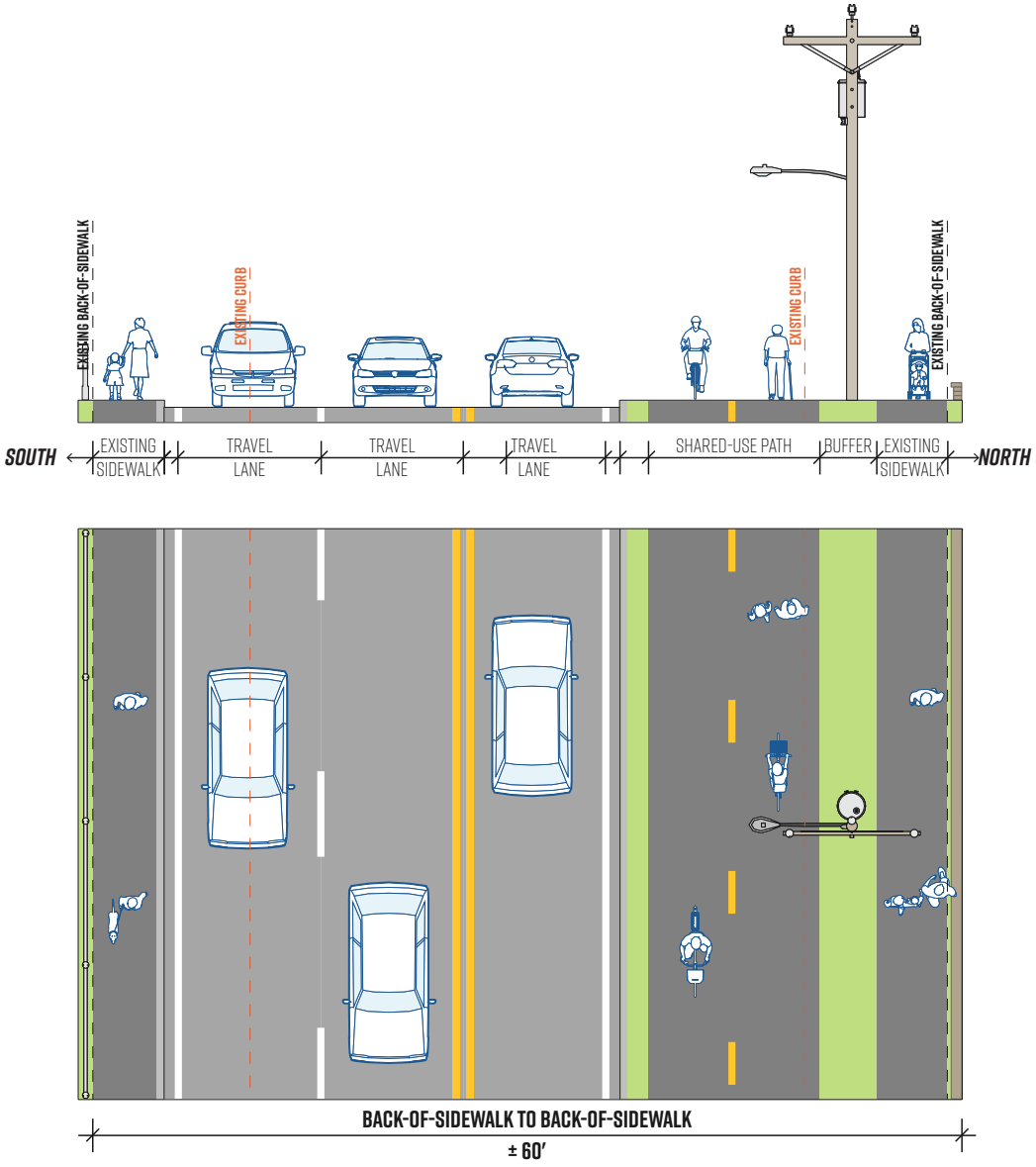
Potential Yellow Section Q-Q' significantly narrows the travel lanes and shoulders to 10-feet and 1-foot, respectively, allowing for the installation of a shared use path on the north side of Neponset Valley Parkway with a 6-foot landscaped buffer. One of the existing two eastbound travel lanes on Neponset Valley Parkway would be removed to eliminate the need for the merge area.



Section Q-Q' - Neponset Valley Parkway At the Fire Station - Potential Yellow Section

Potential Green Section Q-Q' At the Fire Station

Potential Green Section Q-Q' would maintain the merge area for the two eastbound travel lanes, but narrow the lanes to a more context appropriate width. This narrowing, along with removing the buffer between the southern sidewalk and travel lanes, allows for a path on the northern side for the roadway with a 2-foot buffer.



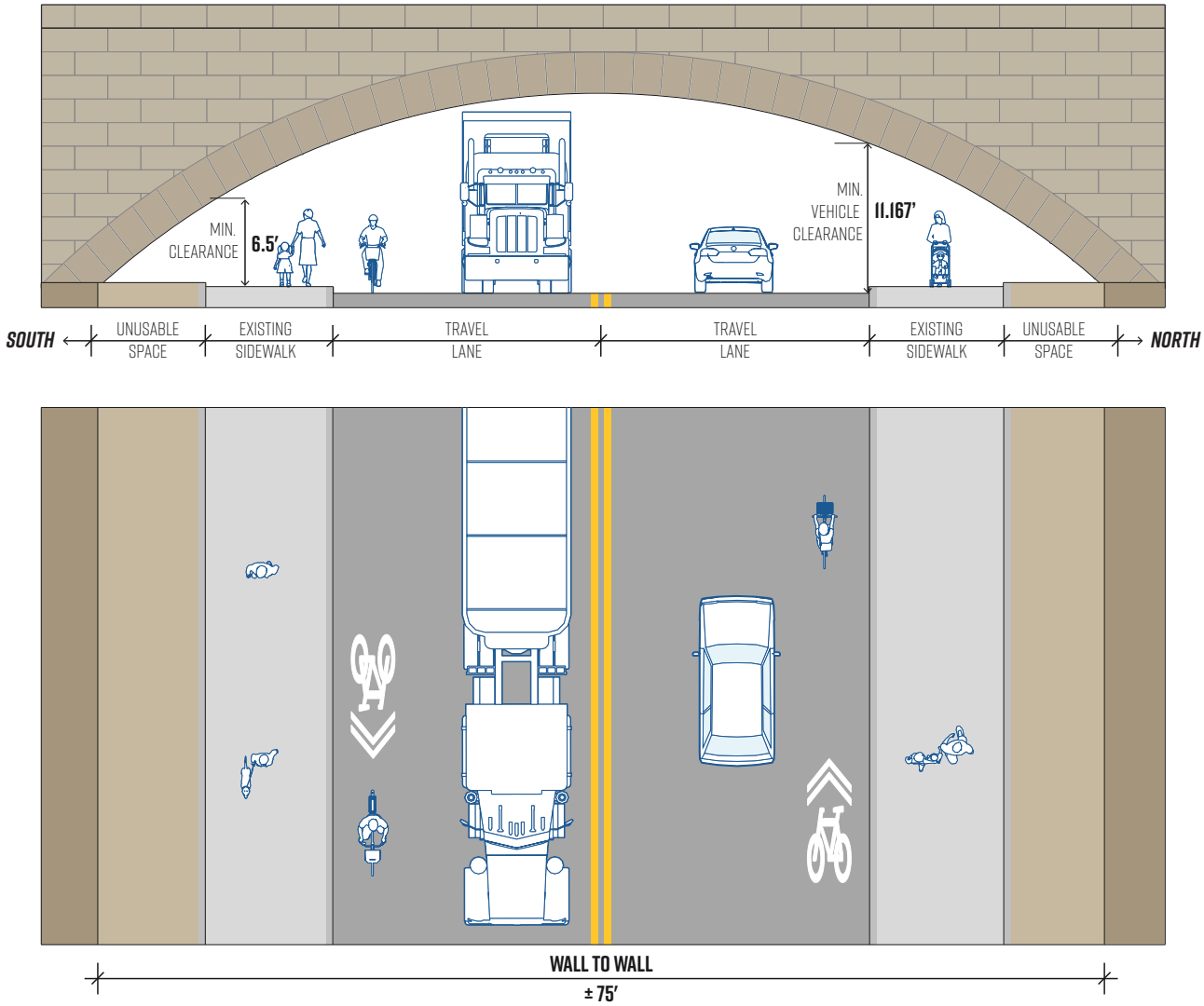
Section Q-Q' - Neponset Valley Parkway At the Fire Station- Potential Green Section

Section R-R' MBTA Rail Underpass

Existing

Section R-R' generally refers to the segment of Hyde Park Avenue under the MBTA railroad bridge. This section consists of two 20-foot travel lanes with sidewalks of 9.5-10-feet on each side of the street. There is approximately 7.5-8-feet of unusable space just past the back of sidewalk on each side of the road. Shared lane markings are present in this section.

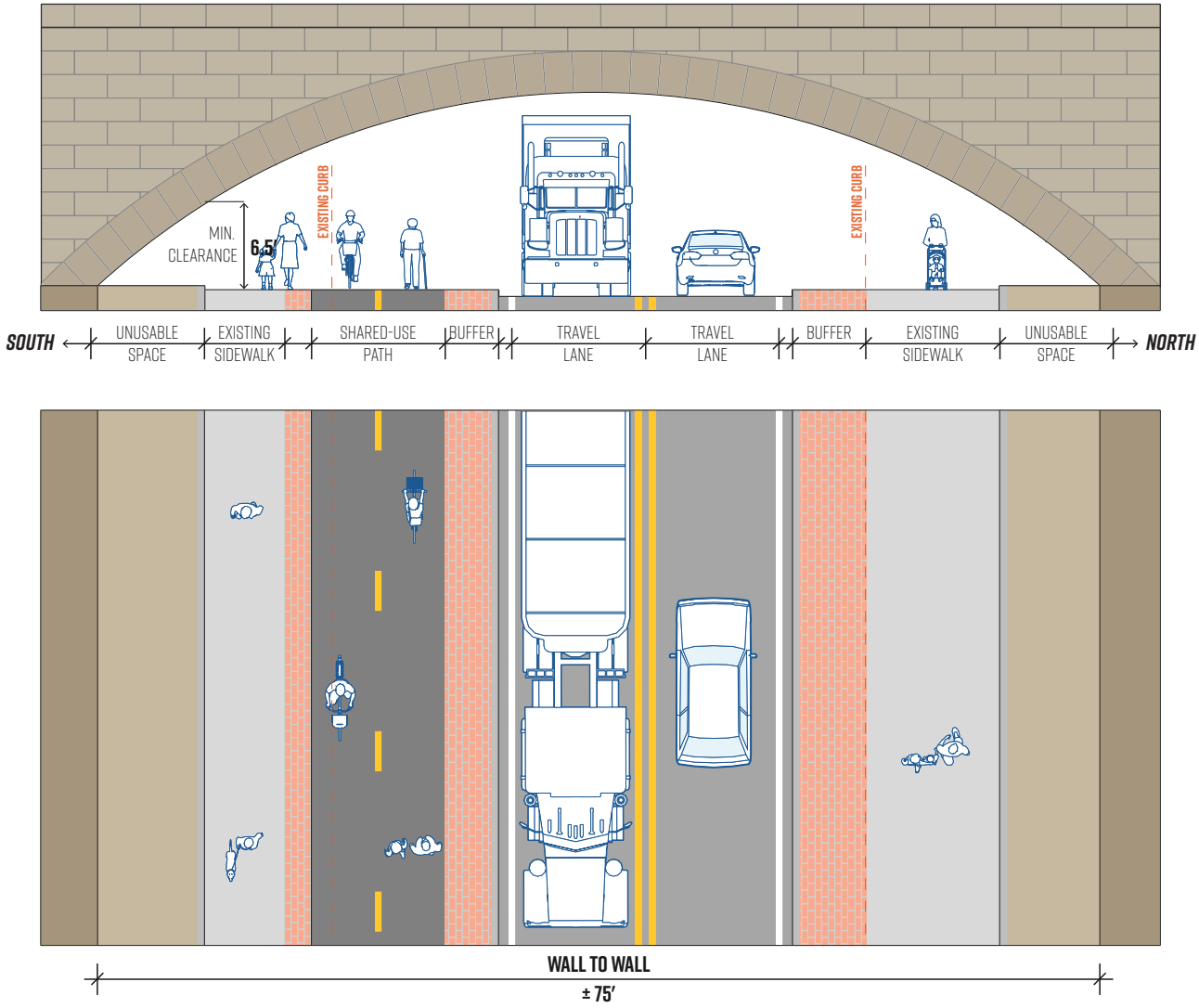
Figure 39: MBTA Rail Underpass



Section R-R' - Neponset Valley Parkway MBTA Rail Underpass- Existing Section

Potential Orange Section R-R' MBTA Rail Underpass

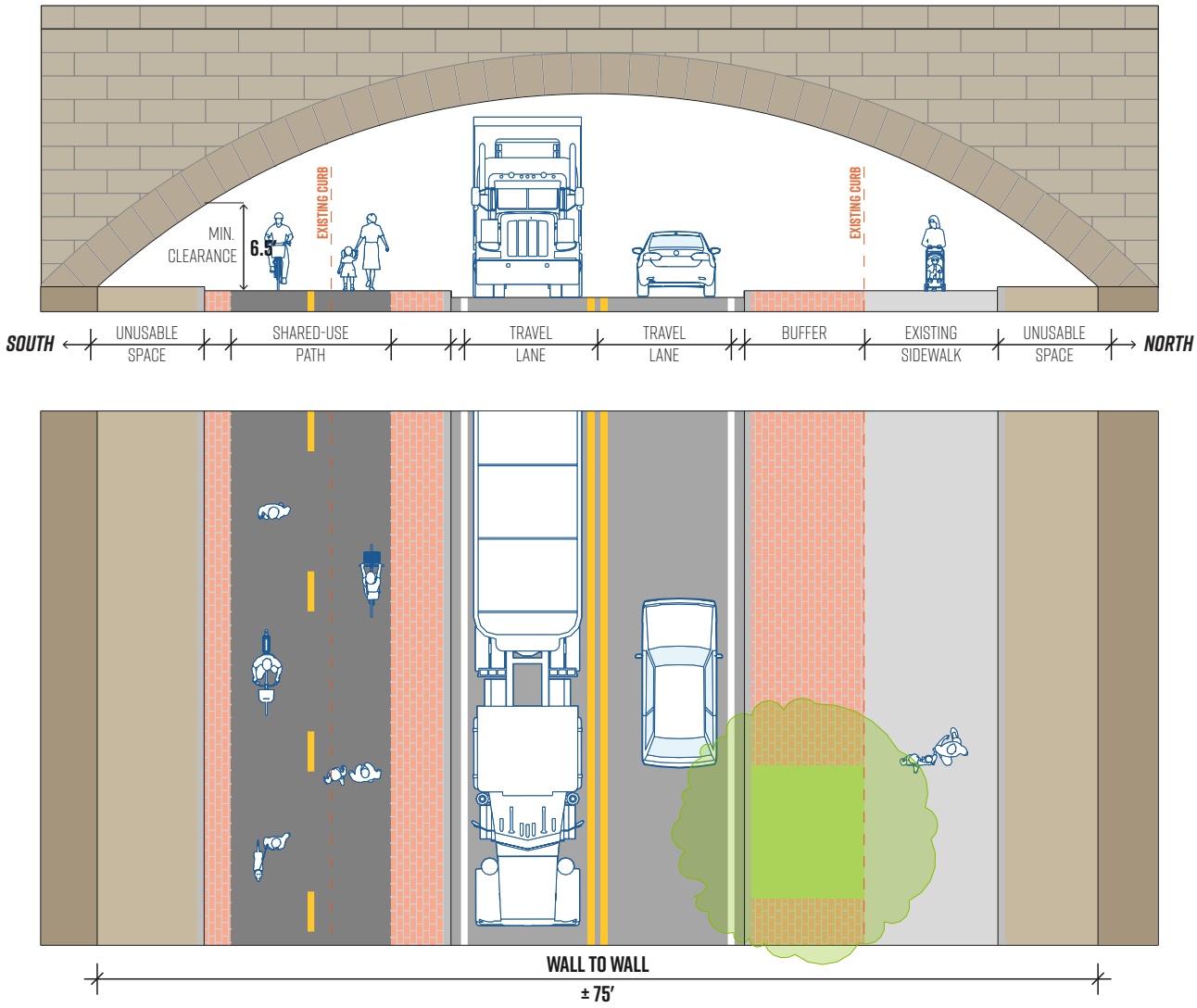
Potential Orange Section R-R' significantly narrows the travel lanes to 10-feet with 1-foot shoulders on each side, reallocating pavement space to a shared use path on the south side of Hyde Park Avenue. A 2-foot buffer between the sidewalk and the shared use path would be added, along with a 6-foot buffer between the travel lanes.



Section R-R' - Neponset Valley Parkway MBTA Rail Underpass- Potential Orange Section

Potential Blue Section R-R' MBTA Rail Underpass

Potential Blue Section R-R' significantly narrows the travel lanes to 12-feet with 2-foot shoulders on each side, reallocating pavement space to a shared use path on the southern side of Hyde Park Avenue. To accommodate the larger travel lanes, the sidewalk is combined with the shared use path, with a buffer next to the travel lanes of 6 feet.



Section R-R' - Neponset Valley Parkway MBTA Rail Underpass- Potential Blue Section

Potential Routes

Route 9

Route 9 consists of all the potential orange sections, culminating in a shared use path on the southern side of Neponset Valley Parkway fully separated from the sidewalk. Neponset Valley Parkway would be a consistent two-lane road, reallocating space for green infrastructure, landscaping, and amenities.

Route 10

Route 10 consists of mainly potential blue sections, culminating in a shared use path on the southern side of Neponset Valley Parkway. The number of existing vehicle travel lanes are maintained, necessitating the shared use path to be combined with the sidewalk in portions.

Route 11

Route 11 consists of all the potential yellow sections, culminating in a shared use path on the northern side of Neponset Valley Parkway fully separated from the sidewalk. Neponset Valley Parkway would be a consistent two-lane road, reallocating space for green infrastructure, landscaping, and amenities.

Route 12

Route 12 consists of a mix of potential green and yellow sections, culminating in a shared use path on the northern side of Neponset Valley Parkway. The number of existing vehicle travel lanes are maintained, necessitating the loss of landscaped buffers in segments.

Figure 40: NVP to Readville Potential Routes

Evaluation

The project team evaluated each of the Routes 9, 10, 11, and 12 to develop a score that was well-informed, and considered multiple perspectives.

Scores

Scores between 1 and 5 were given for each Route for each criteria indicating lesser or greater conformance, respectively, with the Criteria and thereby the Objectives. The table below shows the final scores for each Route. The scores were averaged for each Objective and then totaled for each Route. See Figure 41 for the final tallies.

Route 9, which consists of all Orange Sections, was identified as being the Route that best meets the project Objectives and the Project Goal of providing a route with greater community connections between the Neponset River Greenway and Readville Station.

Pros and Cons

Route 9 will greatly reduce the amount of impervious pavement on Neponset Valley Parkway, provides direct access to Camp Miegs and Fowl Meadow, has room for trail amenities, and allows for a separate sidewalk the entire length. This Route does have the disadvantage of needing to cross Meadow Road and the Fire Station, as well as the need to make modifications to the Wolcott Square intersection.

Objectives	Route 9	Route 10	Route 11	Route 12
Enhanced Community Connectivity	5	5	3	3
Improved access to recreation and healthy living for all	5	2	5	2
Safety and Convenience	3	3	2	2
Preservation of Natural Resources	5	1	5	3
Protection of historic and archaeological areas	4	3	3	3
Climate resiliency	5	3	3.5	2
Straightforward implementation and maintenance	3	3	1.67	3
Total Score	30	20	23.17	18

Figure 41: Table of Evaluation Results

3.1 Preferred Plan Summary

The Preferred Plan illustrates the recommended shared use paths connecting the NRG east to Blue Hill Avenue and west to the Readville Commuter Rail Station as well as expressing the character and amenities proposed (See Attachment A). Briefly, the proposed route start along Truman Parkway where the SUP will meander along the west side of the road which will be converted to an enlarged landscaped area created by having one south-bound and one-north bound lane on the eastern side of the median and removing the pavement on the western side for the SUP. Major changes to the Truman and Neponset Valley Parkways intersection will provide clear and safe crossings and connections leading in two directions, west and east.

East: After crossing the Truman and Neponset Valley Parkway (NVP) intersection, the SUP heading east will meander into Fowl Meadow with a new crossing over the Neponset River and connecting to the DCR Burma Road parking area. After crossing Brush Hill Road, the SUP will continue along the north side of NVP to its end at Blue Hill Avenue.

West: After crossing the Truman and NVP intersection the SUP heading west will run along the south side of NVP. It will first meander through an enlarged landscaped area and then follow the road more closely connecting into Wolcott Square, under the railroad overpass and terminate at the existing Readville Commuter Rail Station parking lot. The following narratives describe these routes in more detail.

Figure 42: Neponset River Greenway to Blue Hill Avenue and Readville Commuter Rail Station

3.2 Neponset River Greenway to Blue Hills: Recommendations

Recommended Shared-use Path

The recommended alignment for the shared-use path between the existing Neponset River Greenway and the Blue Hills Reservation Trailside Museum runs along Truman Parkway, crosses Neponset Valley Parkway to move south through Fowl Meadow and across the Neponset River to the Burma Road Trail Parking Area. Then is crosses the intersection of Brush Hill Road and Neponset Valley Parkway to continue along the Parkway to connect with Route 138.

In order to serve the greater community and important destinations, a shared-use path is also recommended to connect at Truman Parkway and run west along Neponset Valley Parkway to connect to Wolcott Square and the Readville MBTA stations. Below is a summary of the recommended shared-use paths.

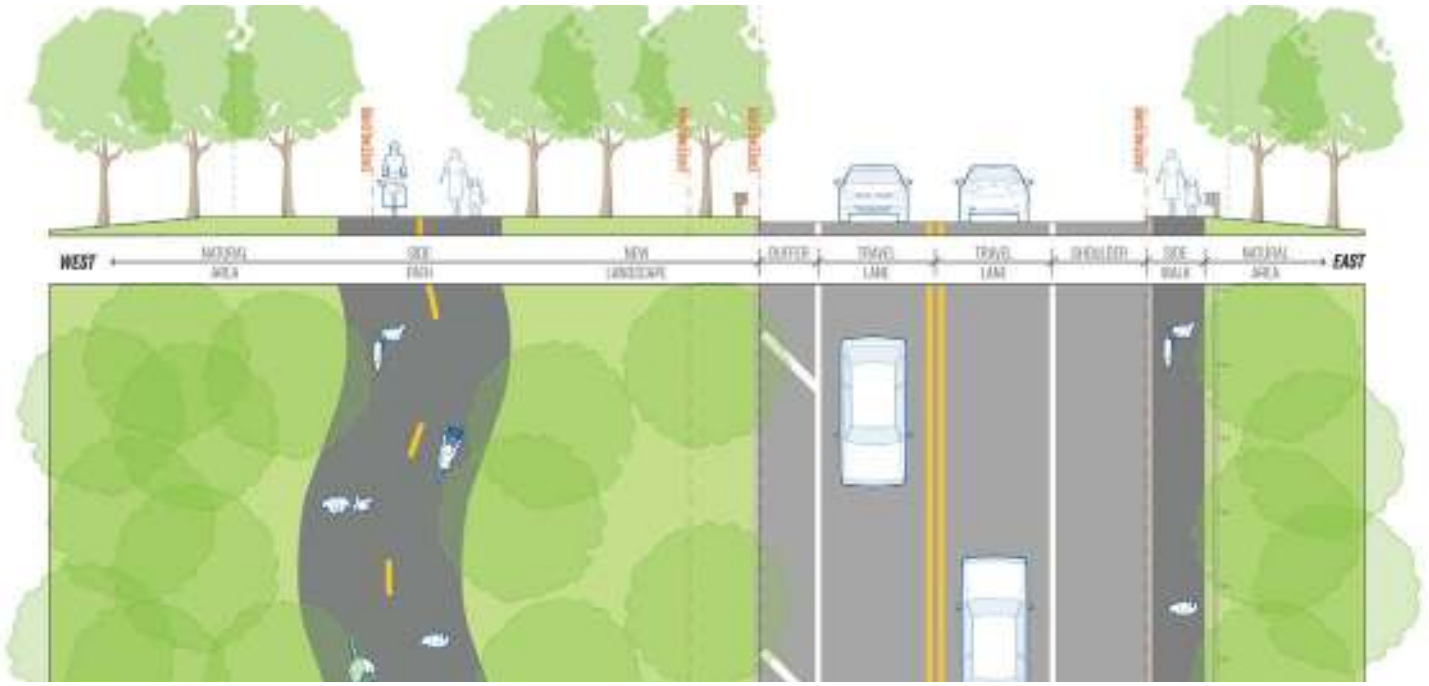
Figure 43: Recommended Shared-use Path Truman Parkway to Blue Hill Avenue

Truman Parkway

There are several options for a shared-use path along Truman Parkway. The existing path can be maintained in it's current condition: 10' wide with no buffer. Another option was described previously: removing pavement in the over-sized road shoulders, adding a 12' shared-use path with an 8' landscape buffer that includes a guard rail, shade trees and potentially green infrastructure to handle stormwater run-off. This option can be located on either the east or west side of Truman Parkway, as shown below.

Section - Truman Parkway - Shared-use Path Option 1

A third option removes all pavement in the area of the two south-bound vehicle travel lanes. The travel lanes on the east side of Truman Parkway become one south-bound and one north-bound lane, maintaining the over-sized shoulders for breakdown lanes and emergency response. The west side of Truman Parkway is a wide landscaped area with a wood guardrail to reinforce a consistent character of the DCR parkways. The shared-use path meanders through the expanded green space, as shown below, with shade trees and amenities such as benches, interpretive signage, water bottle fillers or others. A significant improvement in this area is the reduction of impervious surface which allows for more stormwater infiltration, the integration of green infrastructure and thus an overall improvement of water quality.



Section - Truman Parkway - Shared-use Path Option 2

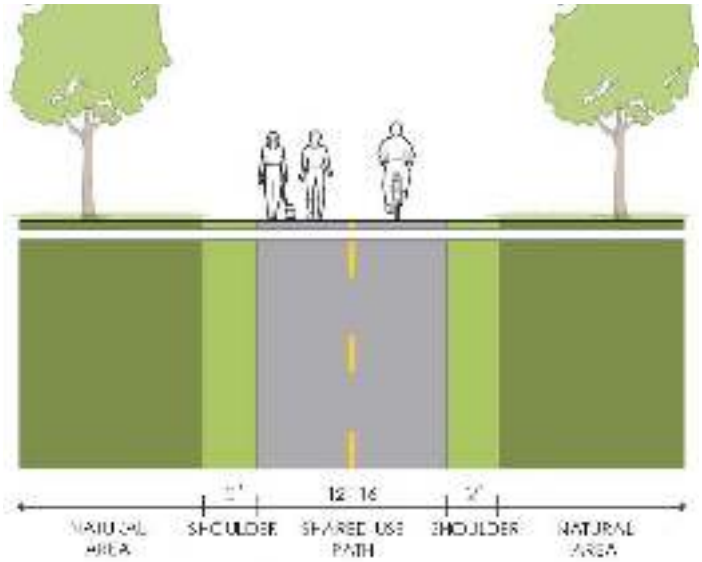
Truman Parkway at Neponset Valley Parkway

For the preferred alignment, the path continues south on Truman Parkway and across Neponset Valley Parkway before entering the wooded area of Fowl Meadow. At the intersection, the channelized right turn lane from Truman Parkway southbound onto Neponset Valley Parkway westbound is removed as a vehicle lane and utilized as expanded sidewalk or path space, allowing for a more comfortable place to wait to cross the street. A crosswalk is added to the western leg of the intersection and the existing crosswalks are realigned to offer a shorter crossing distance. As the intersection is currently signalized with an exclusive pedestrian phase, proposed modifications are not expected to alter vehicle operations.

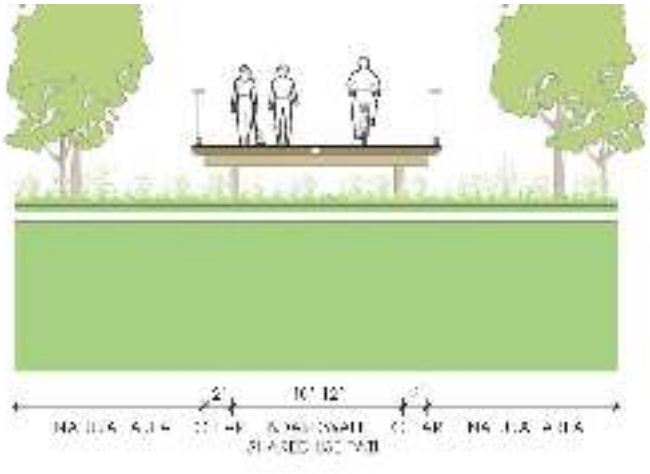
Intersection - Potential Configuration of Truman Parkway at Neponset Valley Parkway

Fowl Meadow

A meandering shared-use path in this area would be sited to avoid environmentally and archaeologically sensitive areas to the greatest extent possible. At the same time, path users will have the unique opportunity to experience this beautiful natural environment and learn about what makes it so. Interpretive signage can capture that knowledge as well as the significant historical context within which it passes.



Section - Segment 2 - Typical Shared-use Path at grade



Section - Segment 2 - Typical Shared-use Path as Boardwalk

As the design develops further, more specific information will be gathered about this area including, but limited to wetland delineation and resource mapping. And an intensive (locational) archaeological survey will be conducted in this area because of the potentially high archaeologically sensitive environment.

Photo: Segment 3 - Example DCR Charles River Bike Path Bridges

Photo: Looking north at Paul's Bridge

Path amenities can be incorporated including shade, seating areas, bicycle parking, and the like. The new bridge is located out of the viewshed from Paul's Bridge and does not interfere with views of Paul's Bridge from other locations. The bridge design is another opportunity to infuse the path with the DCR park character. And it will be sited with consideration of the existing kayak launch site.

There are two options for a welcome trailhead in this area. The first option is where the shared-use path leads to the area of the existing Burma Road Parking and the start of the Burma Road Trail. Wayside and wayfinding elements can be incorporated here, such as an informational kiosk with trail maps, bicycle parking, seating, directional signage, water bottle filler and a bicycle fixing station.

Another option for a welcome trailhead for this area is to move the parking away from the sensitive adjacent wetlands, and relocate it at the intersection of Truman Parkway and Neponset Valley Parkway which is further from existing wetlands. This location can accommodate more clearly defined and safer vehicular movements. There is room for the welcome trailhead amenities and the kayak launch can be moved to the north side of the Neponset River towards the trailhead.

Another advantage of moving the parking area is that it provides more room to reconfigure the intersection of Brush Hill Road and Neponset Valley Parkway for greatly improved vehicular circulation and thereby a safer crossing for the shared-use path.

Neponset Valley Parkway at Brush Hill Road

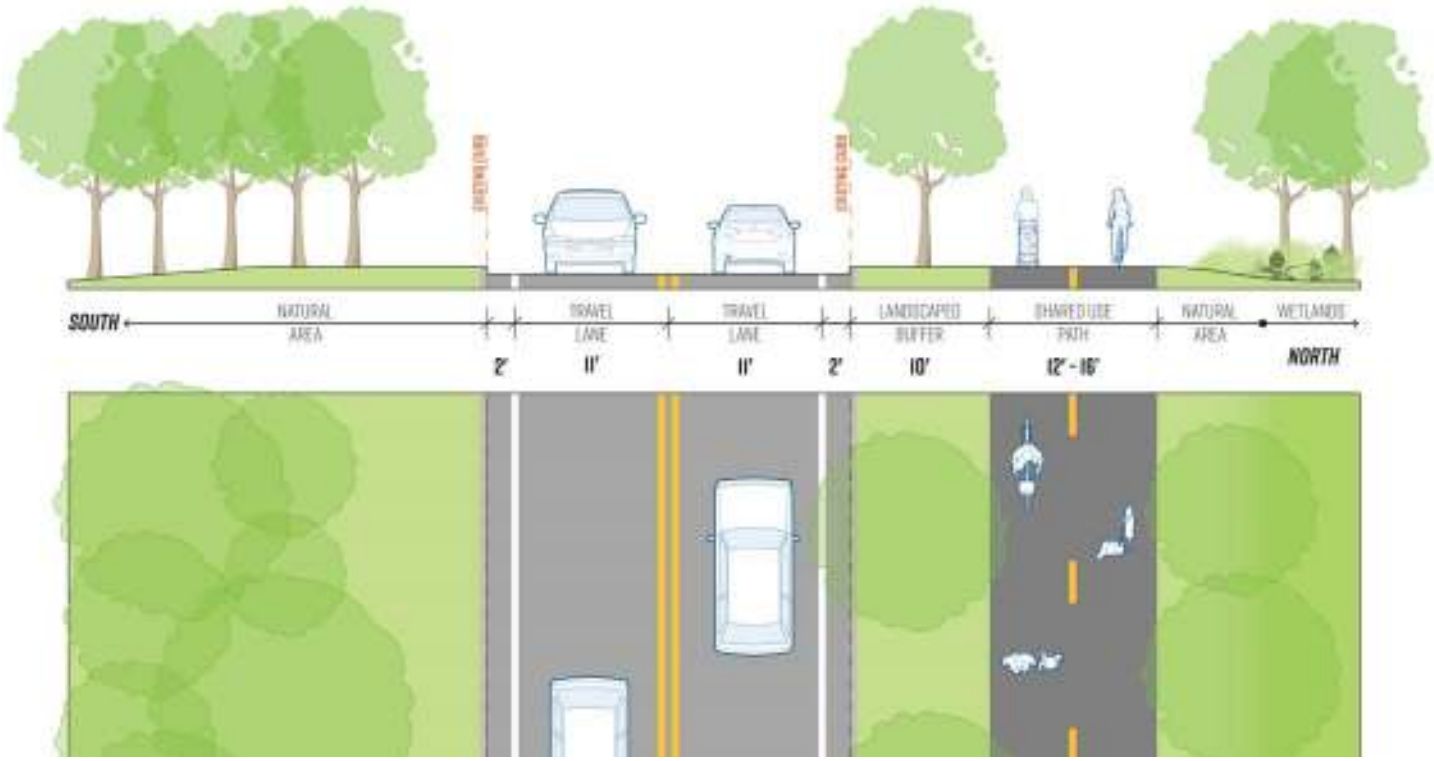
After the path crosses the Neponset River it intersects with Neponset Valley Parkway at Brush Hill Road. Given the volume of vehicles and trucks on Neponset Valley Parking and high speeds, this crossing should include additional safety features, such as high visibility crosswalk markings, increased nighttime lighting levels, crossing warning signs, a rectangular rapid flashing beacon (RRFB), or a crossing island.

As the design progresses in the next phase, several options for this crossing will be developed and evaluated for the best vehicular movements, and a significantly safer crossing for pedestrians and cyclists.

Segment 3 - Example Intersection Location at Brush Hill Road and Neponset Valley Parkway

Neponset Valley Parkway

Since there is an existing walkway along the northern side of this section of Neponset Valley Parkway it will be relatively easy to upgrade the conditions to accommodate a shared-use path. There are several existing shade trees along this stretch to preserve as possible and augment with additional shade trees and a wood guardrail along the roadway to reinforce the DCR parkway character.

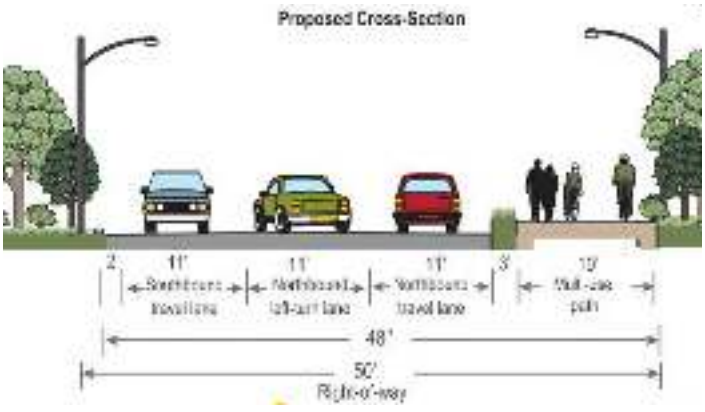


Section - Segment 5 - Neponset Valley Parkway Shared-use Path

Figure 44: Neponset Valley Parkway - Proposed Shared-use Path

Neponset Valley Parkway at Blue Hill Avenue / Route 138

The shared-use path crosses the intersection of Neponset Valley Parkway and Blue Hill Avenue / Route 138. As identified in the (MassDOT) Route 138 Priority Corridor Study conducted in 2018 by the Boston Region Metropolitan Planning Organization, complete streets improvements are planned which will include signalization of this intersection with new crosswalks and curb ramps. At this point the shared-use path of this project meets the proposed shared-use path planned along Blue Hill Avenue /Route 138 (one of two options for the corridor).



Section - MassDOT Proposed Shared-use Path on Route 138 (Alternative 1)

Figure 45: MassDOT Proposed Intersection at Neponset Valley Parkway and Route 138 / Blue Hill Avenue (Alternative 1)

3.3 Neponset River Greenway to Readville: Recommendations

Recommended Shared-use Path

The recommended route for the shared-use path between the existing Neponset River Greenway and Readville Station crosses Neponset Valley parkway at Truman Parkway and runs along the southern side of the roadway, connecting to Wolcott Square and Readville Station.

Truman Parkway at Neponset Valley Parkway

For the preferred Route, all vehicle traffic on Neponset Valley Parkway is moved north of the existing median, similar to Truman Parkway in the preferred alignment to Blue Hills Trailside Museum. This greatly reduces the amount of impervious surface within the study area while creating shorter crossings for trail users and space for trail amenities, green infrastructure, and landscaping. At the intersection, the channelized right turn lanes from Truman Parkway southbound onto Neponset Valley Parkway westbound is removed as a vehicle lane and utilized as expanded sidewalk or path space. A crosswalk is added to the western leg of the intersection and the existing crosswalks are realigned. The current exclusive pedestrian phase will be maintained. Path amenities can be incorporated including seating, bicycle parking, and wayfinding signage. Parking to access Fowl Meadow and Burma Road Trail may be provided in the space south of the existing median.

Orange Section O-O'

With the reallocation of vehicle traffic to north of the existing median, there is ample space to accommodate a shared use path. The existing sidewalk and median will be expanded, preserving all shade trees, while adding an additional landscapes buffer between the sidewalk and the new shared-use path. Wooden guardrails will reinforce the DCR parkway character, with wayfinding signage to connect trail users to Meadow Road and the neighborhood via Stanbro Street. The Meadow Road crossing can be raised to elevate the positioning of path users, making them easier for turning vehicles to see them, while also slowing turning vehicles, creating a safe environment for all roadway users.

Orange Section P-P'

The narrowing of vehicle travel lanes provides space for the path and a landscaped buffer, providing opportunity for additional shade trees. Existing sidewalks and shade trees are preserved.

Orange Section Q-Q'

Similar to the previous section, narrowing vehicle travel lanes and reallocating one eastbound travel lane accommodates a separate shared-use path and landscape buffer. Shade trees and green infrastructure can be provided in the buffer space.

Wolcott Square

The shared-use path would navigate Wolcott Square south of Neponset Valley Parkway, crossing the southern leg of Hyde Park Avenue and the western leg of Wolcott Square. This intersection is signalized with concurrent pedestrian phasing, which can be maintained given the low volume of turning movements onto Hyde Park Avenue and the one-way nature of Wolcott Square.

Figure 46: Wolcott Square

Orange Section R-R'

Between Wolcott Square and Readville Station, the shared-use path is primarily traveling through the underpass of an MBTA railroad bridge. The shared-use path has a buffer between the sidewalk and the vehicle travel lanes. Decorative pavers and wooden guardrails will be utilized to reinforce the DCR parkway character through the final length of trail.

3.4 Intersections

The preferred plan was developed with special attention to how the trail will travel through intersections, based on the proposed cross-sections from the feasibility study, the preferred alignment, public input, traffic volumes at the Triangle (intersection of Neponset Valley Parkway at Milton Street and Brush Hill Road) obtained by others in 2021 for a separate DCR project (see Attachment G for all traffic counts), traffic counts at Wolcott Square obtained as part of this project in 2023 (see attached) and the design guidelines described above. Raised crossings are proposed wherever possible to create a continuous path while improving the safety and visibility of trail users. Additionally, curb radii are tightened to the greatest extent possible to slow vehicle turning movements, making the corridor safer for all roadway users.

Wolcott Square

Wolcott Square is a signalized intersection where Neponset Valley Parkway meets Hyde Park Avenue and Wolcott Court. The preferred plan proposes the greenway extension to run on the southern side of Neponset Valley Parkway, necessitating the crossing of Hyde Park Avenue and Wolcott Square before terminating at the Readville Commuter Rail Station. Upgrades proposed for this intersection include traffic signal retiming, curb extensions, accessible curb ramps, and high visibility crosswalks. Parking is generally to be maintained, as is the ability for buses to layover in Wolcott Square.

Figure 47: Intersection of Hyde Park Avenue and Wolcott Square

Neponset Valley Parkway at Truman Parkway

The preferred plan for this intersection dramatically reduces the amount of impervious surface while still allowing large heavy vehicles to complete all turning movements. The SUP runs on the western side of Truman Parkway, crossing the western leg of Neponset Valley Parkway before turning west towards Readville or south through Fowl Meadow. Upgrades to this already signalized intersection include new mast arms, signal equipment, and signal retiming to account for the changed geometry, as well as ADA compliant curb ramps and high visibility crosswalks.

Figure 48: Truman and Neponset Valley Parkway Intersection

Neponset Valley Parkway at Brush Hill Road

This intersection is adjacent to the Burma Road Trail parking lot and is currently unsignalized, with a STOP sign on the Brush Hill Road approach. The SUP will approach the intersection from Fowl Meadow, cross Neponset Valley Parkway on the northern leg of the intersection, and continue along the northern side of Neponset Valley Parkway entirely with DCR right-of-way. Improvements to this intersection include 'T-ing-up' Brush Hill Road into Neponset Valley Parkway to improve sight lines, rectangular rapid flashing beacons, ADA compliant curb ramps, and high visibility crosswalks.

Figure 49: Neponset Valley Parkway at Brush Hill Road

3.5 Recommendations for Further Community Connectivity

The Feasibility Study proposes several other actions for further connectivity in and around the Project Area.

Increased Mobility

Figure 50, Figure 51, and Figure 52 show increased options for mobility. Transit stops and parking areas (existing and proposed) are indicated where people can transition from motorized transportation to non-motorized transportation. It also shows how both the preferred and the potential shared-use paths increase connectivity for non-motorized transportation options.

Footpaths

Potential new or improved footpaths can provide pedestrians different types of experiences in areas that cannot accommodate a wide paved path, but where there are opportunities for increased accessibility.

Street Network

Area roads lead to several DCR properties such as historic Camp Meigs and the trails at Little Blue Hill. Connections to these additional community assets can be illuminated with enhanced wayfinding with banded direction signs. Improved and new pedestrian road crossings can greatly improve safety for pedestrians trying to connect to other destinations.

Prescott Street (Section S-S')

Existing

Prescott Street runs from Wolcott Square south past Stanbro Street, terminating in a dead end just after Millstone Street. The sidewalk is located on the eastern sidewalk and is in poor condition compared to the sidewalks in the rest of the neighborhood. Prescott Street borders slightly elevated railroad tracks, necessitating a retaining wall and chain link fence.

Proposed

Reconstructed sidewalks on Prescott Street are proposed to meet accessibility requirements. A landscaped buffer with shade trees (appropriate for overhead wires) will be added to provide visual interest and comfort to residents and visitors. Parking on the residential side and both directions of travel will be maintained.

Wayfinding

Similarly navigating DCR trails and the shared-use paths can be improved with wayfinding kiosks and/or maps at welcome trailheads, the use of gateway markers, and trail directional signs.

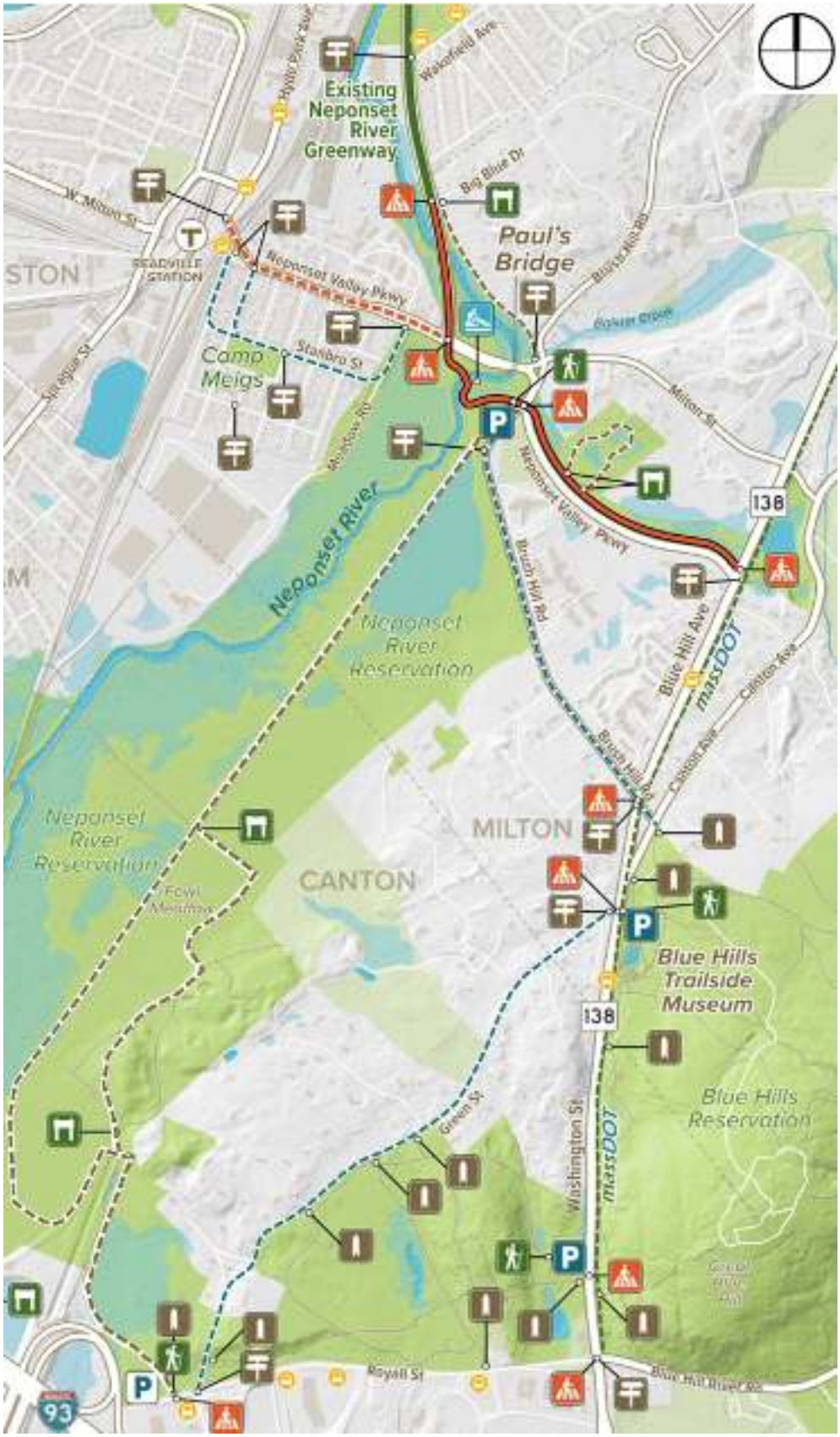


Figure 50: Potential Further Community Connectivity

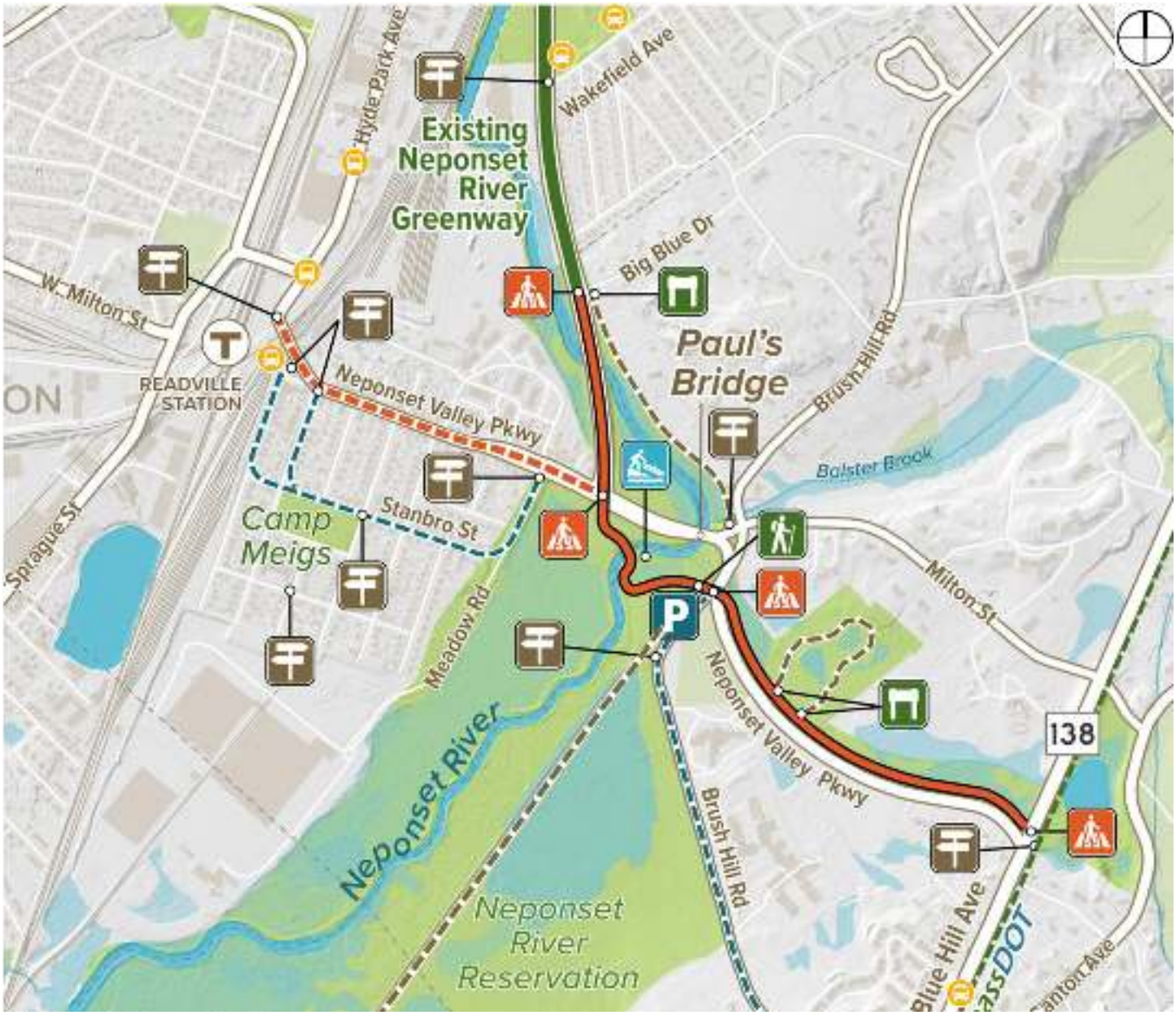


Figure 51: Potential Further Community Connectivity - Northern Project Area

LEGEND

- MBTA Station
- Bus Station
- Exist. Parking
- Canoe Launch
- Preferred SUP Alignment
- Potential SUP
- Potential New or Improved Footpath
- Community Connection
- New/Improved Crossing
- Welcome Trailhead
- Gateway Marker
- Directional Banding Sign
- Trail Directional Sign
- Proposed Parking

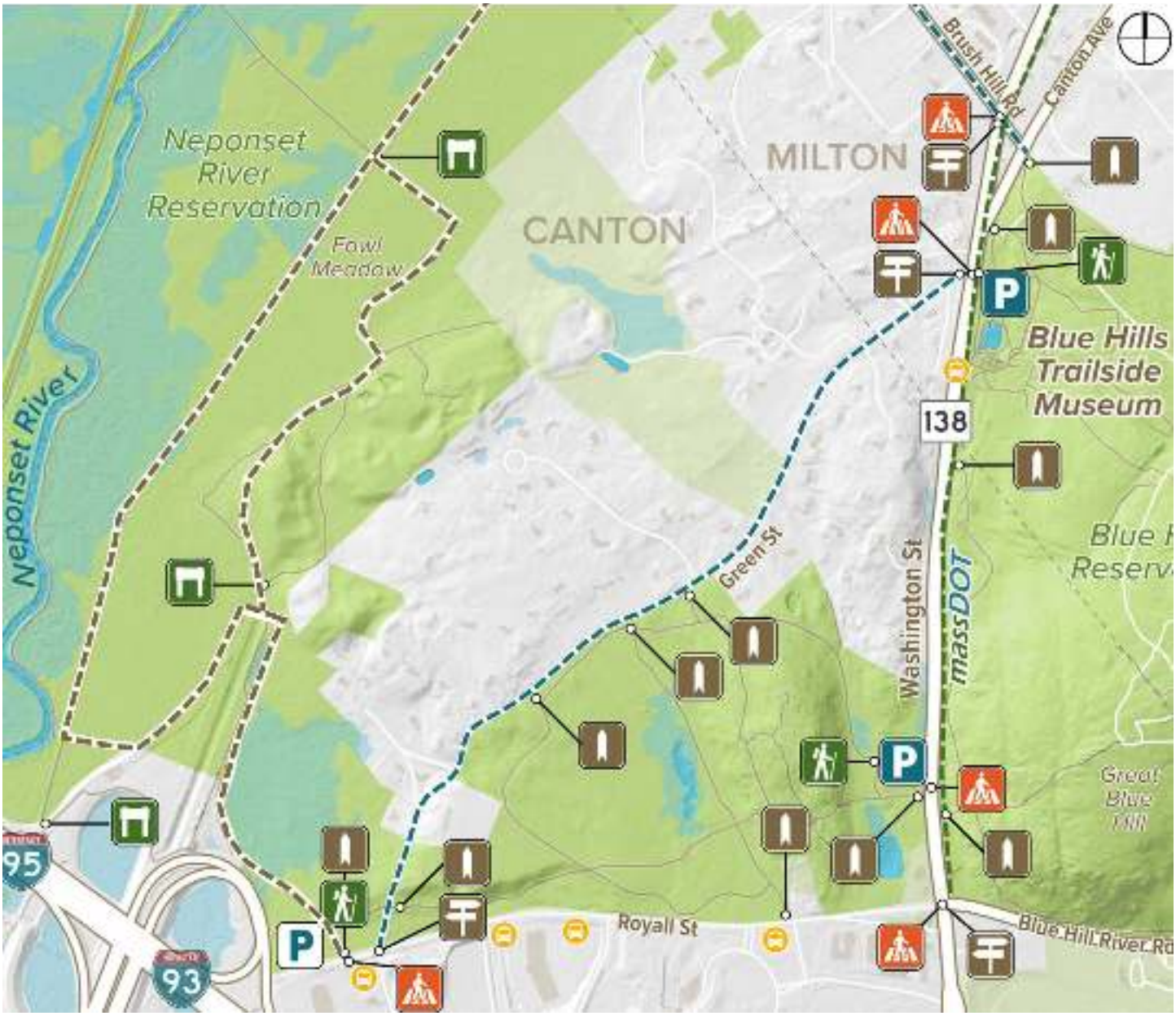


Figure 52: Potential Further Community Connectivity - Southern Project Area

LEGEND

- MBTA Station
- Bus Station
- Exist. Parking
- Canoe Launch
- Preferred SUP Alignment
- Potential SUP
- Potential New or Improved Footpath
- Community Connection
- New/Improved Crossing
- Welcome Trailhead
- Gateway Marker
- Directional Banding Sign
- Trail Directional Sign
- Proposed Parking

4.1 Conceptual Design and Implementation Summary

Conceptual Plans (see Attachment B) and an implementation strategy complete this project. A topographic survey was conducted for the full length of each proposed SUP along with the flagging and surveying of environmental resource areas. This more detailed information allowed for a proof-of-concept plan set to be developed. These plans are considered preliminary and will need further development before proceeding with construction documents. As explained below, portions of the SUP shown on the Conceptual Plans have been vetted to a greater level than others. These differences influenced the recommended potential construction projects and cost breakdowns. The narrative below expands on that breakdown and includes potential impacts, permitting and next steps for each project.

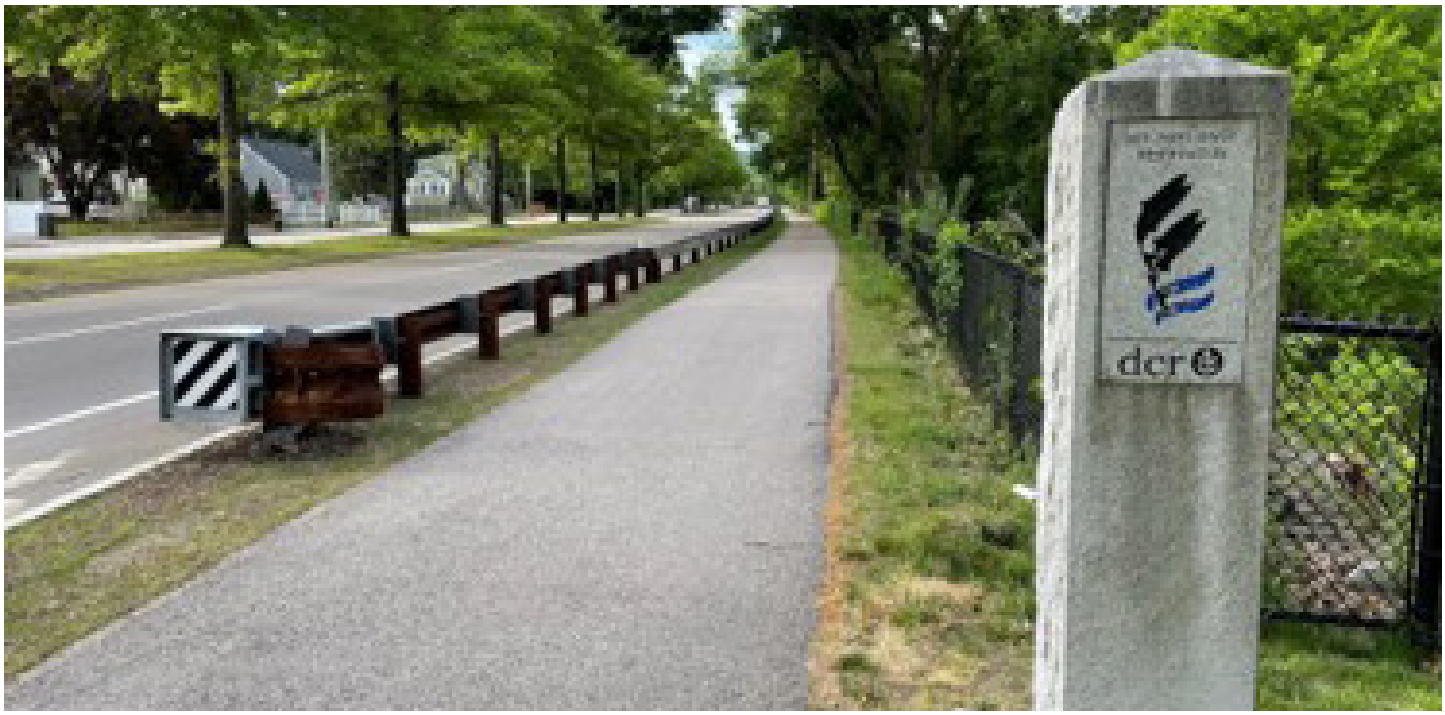


Photo: Existing Neponset River Greenway

Opinion of Probable Construction Costs

Conceptual Level Cost Estimate Process

The opinion of probable construction cost was developed by identifying pay items and establishing quantities based on the current Conceptual Design. The cost estimating process at the Conceptual Design level includes unit quantities and unit costs, as well as allowances to account for the level of design and for the unknown. Because a survey was completed at this point in the process available information was expanded from the Feasibility Level.

The estimate does not include future design fees, additional survey costs, costs associated with right-of-way acquisitions, permitting, wetland mitigation, inspection, construction management, the cost for ongoing maintenance, public outreach, funding planning, or client management services. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost.

Cost

The opinion of probable construction costs for the full length of the project is approximately $17.5 million (see Attachment C).

Allowances

This estimate includes costs that the client should anticipate in executing the project including: a 20% design contingency to cover items that are undefined or are typically unknown prior to final design, a 10% contingency for change orders during construction, 15% construction engineer of record and a 3-year escalation. The attached opinion of probable construction costs includes the assumptions made for its development – some of the more relevant include:

- The Boardwalk price per square foot is an average of recently constructed local projects employing hardwood decking, helical piers, and railings.
- The Bridge price per square foot includes substructure (foundations, columns, abutments, etc.), superstructure (beams, girders, truss, deck slab), wearing surface, and railings, and is based on an average of recently constructed local bridge costs per square footage of the assumed bridge deck.
- The Traffic Signal Modifications lump sum unit price assumes new traffic signal equipment for the reconfigured intersection of Neponset Valley Parkway and Truman Parkway and the new rectangular rapid flashing beacons on the northern leg of the intersection of NVP at Brush Hill Road.

Due to the variability in context, further public engagement needs, and costs for different areas of the project, three Potential Construction Projects have been identified and are summarized below with associated cost estimates.

Photo: Neponset Valley Parkway looking east to Truman Parkway

Potential Impacts and Permitting

Existing Infrastructure

The proposed shared use paths and corresponding roadway changes will impact some existing infrastructure in the project area as summarized below.

Right of Way

The proposed shared use paths fall completely within DCR property and parkways. However, there are changes proposed for some adjacent spaces:

Intersecting Streets

Minor adjustment are proposed for streets intersecting with the DCR parkways that are necessary for smooth transitions back to existing conditions.

MBTA Commuter Rail Parking Lot Entrance

A pedestrian space is proposed in this area which includes bicycle parking, seating, signage and a kiosk to provide information, maps, etc. This space will serve both transit users and those using the shared use path.

Town of Milton Recreation Fields

A small space is proposed in this area for a walkway connection and bicycle parking.

Drainage System

The proposed shared use paths will impact the existing drainage systems on Truman Parkway and Neponset Valley Parkway (west and east) for two types of situations:

- Where existing travel lanes are reclaimed as landscape, the existing patterns of stormwater runoff will change and necessitate new catch basins along both parkways.
- Green stormwater management is proposed along both parkways which will need associated underdrainage and connections, as well as upgrading some catch basins to also serve as inlets to the rain gardens or water quality swales.

Traffic signals

As discussed above, several intersections will be upgraded as part of the proposed paths necessitating changes to the traffic signals at the following locations:

Truman Parkway / Neponset Valley Parkway Intersection

Upgrades to this signalized intersection will include new mast arms, signal equipment, and signal retiming to account for the changed geometry.

Wolcott Square

The new traffic signals in this area will likely need retiming to accommodate the share use path movements.

Photo: Truman and Neponset Valley Parkway Intersection

Neponset Valley Parkway / Brush Hill Road Intersection

Rectangular rapid flashing beacons are proposed on both sides of the shared use path road crossing.

Utility Poles

There are around 5 existing utility poles that the paths intersect. During the next design phases, adjustments to the alignment can be examined to remove these impacts, or new locations for the poles will be identified.

Environmentally Sensitive Areas

As described above in the Existing Conditions section of this report, delineation of jurisdictional wetland resource areas was performed along the selected project alignment site and an environmental permitting assessment was done for the work shown on the Concept Plans. The study area has been evaluated for ecological resources and environmental permitting implications in an attempt to identify the level of effort and permit programs necessary to build the trail alignment. Attachment D presents the existing conditions on the site and then summarizes the ecological/ environmental permitting programs and thresholds expected to be encountered.

In summary, environmental permitting for the construction of the full length of the shared use paths in the project area will require a minimum of:

- A Notice of Intent with the both the Boston and Milton Conservation Commissions (filed jointly with MassDEP).
- A License with the MassDEP Chapter 91 Waterways Program for a new pedestrian/ trail bridge crossing the Neponset River in Fowl Meadow. Reconfiguration of the travel lanes and accommodation of the trail on the existing bridge on the Truman Parkway may be classified as a Minor Modification or exempt maintenance, depending on the extent of any changes to the bridge structure.
- An Environmental Impact Report (EIR) under the Massachusetts Environmental Policy Act (MEPA). As a project undertaken by an agency of the Commonwealth, the Greenway extension meets the initial jurisdiction for the Executive Office of Energy and Environmental Affairs (EEA) for review under MEPA. Any project greater than ½ acre in an Area of Critical Environmental Concern, will be expected to exceed review thresholds and require an Environmental Notification Form (ENF). Recent changes to regulations will require that any ENF filing be elevated to an EIR due to the presence of Environmental Justice communities directly at, or within one mile of the project site.
- A Self Verification Notification Form under the US Army Corps of Engineers (USACE) Section 404 of the Clean Water Act for less than 5,000 square feet of impact to Waters of the United States. This permit application may elevate to a Pre-Construction Notification (PCN) if USACE determines that the Neponset River is a Navigable River under the Section 10 Rivers and Harbors Act, since a new crossing is proposed. Either permit category will be submitted under the Massachusetts General Permit.

Photo: Neoponset River tributary east of Truman Parkway

- Project Review with Massachusetts Natural Heritage and Endangered Species Program (NHESP) under Massachusetts Endangered Species Act (MESA) and implementing regulations (321 CMR 10.00) for activities within mapped Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. This may be streamlined with the NOI submittal under WPA or may elevate to a Conservation and Management Permit with NHESP.
- Federal permits and/or MEPA review will require various consultations including federal endangered species such as the Northern Long-eared bat with US Fish and Wildlife Service, Section 106 and State Chapter 254 Cultural/ Archeological review with Massachusetts Historical Commission (MHC), and Essential Fish Habitat or Time of Year restrictions with MA Division of Marine Fisheries and National Marine Fisheries Service.
- Electronic Notice of Intent (eNOI) Coverage under the EPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) for land disturbance greater than one acre.

Photo: Historic Paul's Bridge Sign

Areas of Archaeological Sensitivity

As described above in the Existing Conditions section of this report, cultural resources due diligence, including an archaeological sensitivity assessment and identification of aboveground historic resources was conducted within the project area as part of a feasibility study of the project. While the full report has been provided to DCR, it is not included herein because it contains confidential information that is not for public distribution. However, summary mapping can be found in Attachment E, Existing Conditions Inventory and Site Analysis Report.

Along the proposed shared use paths, there are zones of high, moderate, and low archaeological sensitivity. As design progresses for each of the potential project areas, consultation with the Massachusetts Historical Commission (MHC) and with local, state, and federally-recognized Native American tribes should be had regarding the potential for these projects to affect both known and unrecorded cultural resources.

Future actions that may or may not be subsequently recommended could include a comprehensive historic architectural and/or archaeological reconnaissance survey to refine the preliminary archaeological sensitivity assessment. A reconnaissance survey and tribal consultations should be conducted in advance of construction activities that involve ground disturbances and in coordination with the DCR's Office of Cultural Resources (OCR).

4.2 Potential Construction Projects

As mentioned above, portions of the SUP shown on the Conceptual Plans have been vetted to a greater level than others. Due to the late inclusion to the project, the shared use path from Meadow/ Truman/NVP intersections west to the Readville Commuter Rail Station has not had as rigorous a public and stakeholder engagement process as the rest of the project. Additionally, the nature of each project is different. For example, the western SUP and the stretch of Greenway along Truman Parkway are, in large part, roadway projects opposed to a trail project, which may better describe the off-road eastern section from Meadow/Truman/NVP intersections to Blue Hill Avenue. These differences influenced the three recommended potential construction projects and cost breakdowns below.

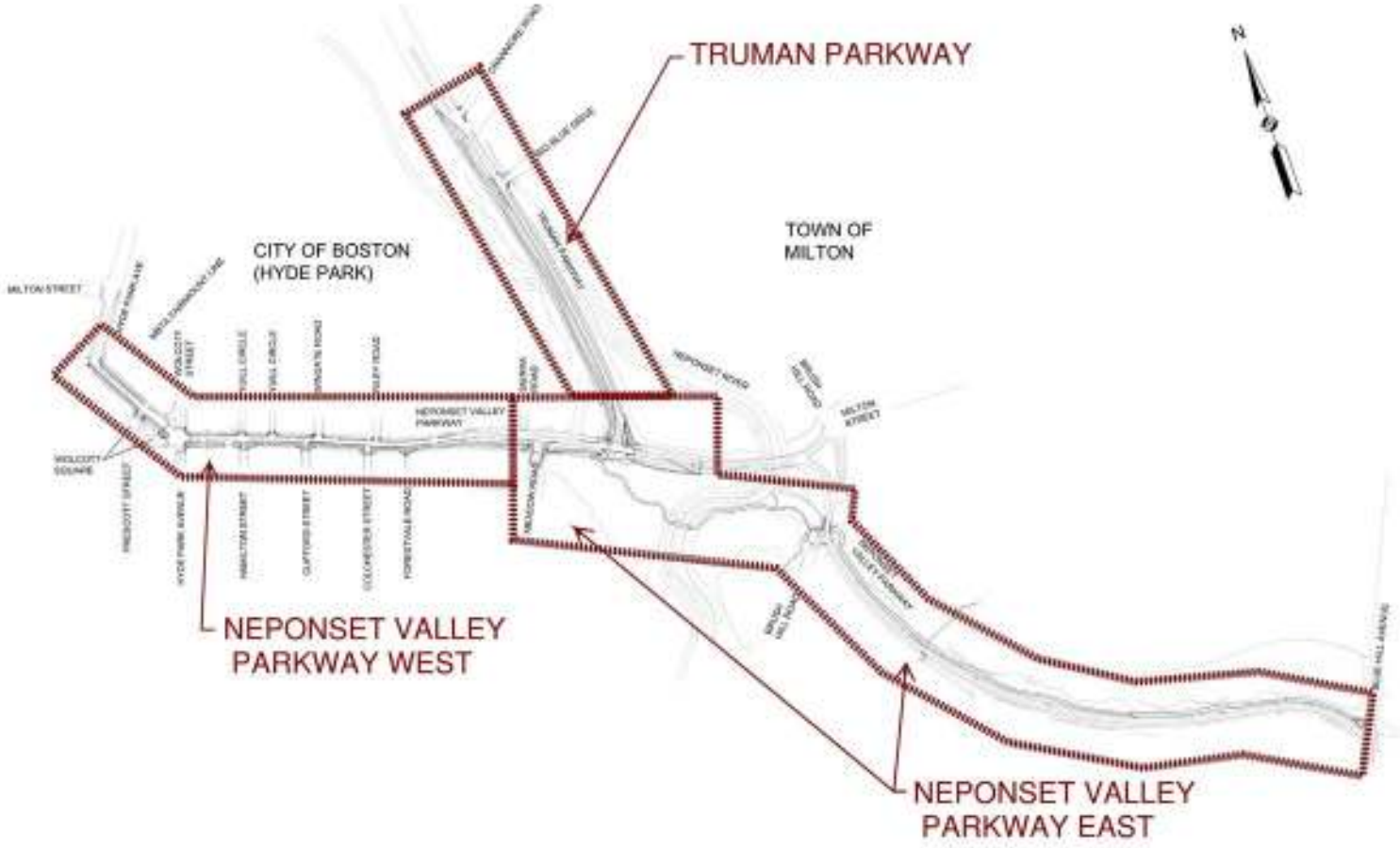


Figure 53: Potential Construction Projects

Neponset Valley Parkway East

This potential project would start at the current terminus of the Neponset River Greenway to the north and Meadow Road to the east, and includes the Truman/NVP intersection, through Fowl Meadow, the NVP intersection at Brush Hill Road and east to Blue Hill Avenue at which point which point it will meet a future SUP planned by MassDOT that will connect to the Blue Hills Visitor Center. This connection received support from the community and stakeholders and was positively vetted with the various DCR departments. It is also a priority connection for the DCR and as such it will likely move forward towards implementation before the other projects. This shared use path is the longest of the three sections with the highest estimated construction costs and the most complicated environmental permitting and various potential impacts, all of which are described below. As such, it is recommended to be constructed in phases (refer to the inset plan).

Phase 1:
Area A Wooded trail and Neponset River crossing
Area B Burma Road Trail parking lot and Brush Hill Road /Neponset Valley Parkway intersection

Phase 2:
Area C Intersection of Truman Parkway and Neponset Valley Parkway
Area D Meadow Road to Truman Parkway

Phase 3:
Area E Neponset Valley Parkway between Brush Hill Road and Blue Hill Avnue

Opinion of Probable Construction Costs

The opinion of probable construction costs for this stretch of SUP is approximately $9.9 million (see Attachment C), with the following breakdown by Phase:

Phase 1 Total: $2,763,800
Area A: $1,773,800
Area B: $ 990,000

Phase 2: $2,937,420
Area C: $2,206,350
Area D: $ 731,070

Phase 3/Area E: $4,219,530

Figure 54: Potential NVP East Project

Environmental Permitting

Several conditions within the project scope influence the need for environmental permitting: the presence of Environmental Justice communities within one mile of the project site; the proposed pedestrian/trail bridge crossing the Neponset River in Fowl Meadow; the project is greater than ½ acre in an Area of Critical Environmental Concern; likely less than 5,000 square feet of impact to Waters of the United States; work within mapped Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife; greater than one acre of land disturbance; and the project will be undertaken by an agency of the Commonwealth. As such, this shared use path project will minimally require the following environmental permitting (see detailed descriptions above):

- A Notice of Intent with the both the Boston and Milton Conservation Commissions (filed jointly with MassDEP).
- A License with the MassDEP Chapter 91 Waterways Program
- An Environmental Impact Report (EIR)
- A Massachusetts General Permit Self Verification Notification Form or Pre-Construction Notification (PCN)
- Project Review (or Management Permit) with Massachusetts Natural Heritage and Endangered Species Program (NHESP)
- Consultations including: federal endangered species such as the Northern Long-eared bat with US Fish and Wildlife Service, Section 106 and State Chapter 254 Cultural/Archeological review with Massachusetts Historical Commission (MHC), and Essential Fish Habitat or Time of Year restrictions with MA Division of Marine Fisheries and National Marine Fisheries Service.
- Electronic Notice of Intent (eNOI) Coverage under the EPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP)

Photo: Neponset Valley Parkway

Truman Parkway

As described above, the Neponset River Greenway will meander along the west side of Truman Parkway which will be converted to an enlarged landscaped area. This change along Truman Parkway was received with strong support from the community and positively vetted with the various DCR departments. With that, this stretch of the shared use path is ready to move into design development towards implementation in a relatively short time span.

Figure 55: Potential Truman Parkway

Photo: Existing Neponset River Greenway along Truman Parkway

Opinion of Probable Construction Costs

The opinion of probable construction costs for this stretch of SUP is $4 million (see Attachment C).

Environmental Permitting

While this project will not fall within the ACEC boundaries, influencing the need for environmental permitting is the reconfiguration of the travel lanes and accommodation of the SUP on the existing bridge on the Truman Parkway, the presence of Environmental Justice communities within one mile of the project site, greater than one acre of land disturbance and the project will be undertaken by an agency of the Commonwealth. As such, this shared use path project will minimally require the following environmental permitting (see detailed descriptions above).

- A Notice of Intent with the both the Boston and Milton Conservation Commissions (filed jointly with MassDEP).
- A License with the MassDEP Chapter 91 Waterways Program
- An Environmental Impact Report (EIR)
- Consultations including federal endangered species such as the Northern Long-eared bat with US Fish and Wildlife Service, Section 106 and State Chapter 254 Cultural/Archeological review with Massachusetts Historical Commission (MHC), and Essential Fish Habitat or Time of Year restrictions with MA Division of Marine Fisheries and National Marine Fisheries Service.

Neponset Valley Parkway West

Due to the late inclusion of this connection to the project, it is the least developed and has had less public input and stakeholder vetting. The study found it feasible to implement a SUP along NVP to the Readville Commuter Rail Station, and the proposed cross-sections and the Conceptual Plan show the recommended approach. However, there are some additional alternatives that should be considered, and public and stakeholder support should be gathered for the project to move forward.

Opinion of Probable Construction Costs

The opinion of probable construction costs for this stretch of SUP is $5.5 million (see Attachment C).

Photo: NVP looking west at Meadow Road

Figure 56: Potential NVP West Project

Environmental Permitting

Influencing the need for environmental permitting is the presence of Environmental Justice communities within one mile of the project site, the project is greater than ½ acre in an Area of Critical Environmental Concern, work within mapped Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife, greater than one acre of land disturbance and the project will be undertaken by an agency of the Commonwealth. As such, this shared use path project will minimally require the following environmental permitting (see detailed descriptions above).

- A Notice of Intent with the Boston Conservation Commission.
- An Environmental Impact Report (EIR)
- Project Review with Massachusetts Natural Heritage and Endangered Species Program (NHESP) under Massachusetts Endangered Species Act (MESA)
- Consultations including: federal endangered species such as the Northern Long-eared bat with US Fish and Wildlife Service, Section 106 and State Chapter 254 Cultural/Archeological review with Massachusetts Historical Commission (MHC), and Essential Fish Habitat or Time of Year restrictions with MA Division of Marine Fisheries and National Marine Fisheries Service.
- Electronic Notice of Intent (eNOI) Coverage under the EPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) for land disturbance greater than one acre.

Photo: Proposed Neponset River Greenway along Neponset Valley Parkway

4.3 Next Steps

This feasibility study and conceptual design was the first step towards implementing an extension of the Neponset River Greenway to the Blue Hills and Readville. Each of the potential construction projects identified above will move forward along separate timelines but should generally move through similar design phases: Design Development, 25% Design, 75%, 100% and BID Construction Documents.

MassDOT Design Process

If one of the potential construction projects is administered through the MassDOT Highways program, phases of design will include a 25% design package with preliminary cost estimate, and a functional design report (FDR) documenting the safety analysis, operational analysis, and design justification for elements such as modified geometry, changes in traffic control, and bicycle and pedestrian accommodations. At that stage in the design, direct abutters are identified and informed of their proximity to the proposed project. An Abutters Meeting may be held separate from the design public hearing as part of a continued public engagement effort. After approval of the 25% design package, the project can advance to final design, with typical milestones being 75% plans, 100% plans, and Plan, Specification, and Estimates (PS&E).

Permitting and Agency Coordination

Environmental permitting and archaeological reconnaissance surveys should be done during the development of the construction documents. The following additional steps are also recommended prior to or during the development of construction documents.

Traffic Counts

As part of a previous DCR project, traffic volumes were obtained by others in 2021 for the 'Triangle' intersection of Neponset Valley Parkway at Milton Street and Brush Hill Road. As part of this project, traffic counts were obtained at Wolcott Square in 2023. As part of the next phase of design, additional current traffic counts should be obtained for the following locations:

- Truman Parkway / Neponset Valley Parkway intersection
- Meadow Road / Neponset Valley Parkway intersection
- Brush Hill Road / Neponset Valley Parkway intersection

Survey

Along the Neponset River additional detailed resource area delineation will be needed suitable for design of the stream crossings to determined impact areas.

Test Pits

Additional borings and/or test pits will be needed in the same areas along the Neponset River as the additional survey mentioned above for a geotechnical analysis for structural design of the proposed bridge. Soil profiles will also be needed in areas proposed for green stormwater management, and traffic signals.

Public Engagement

Input and feedback from elected officials, stakeholders and the public are needed to confirm and further develop the design for the shared use path along Neponset Valley Parkway west from Meadow Road to the Readville Commuter Rail Station. For all projects, additional public engagement should minimally include outreach at the beginning of construction documents and prior to bidding the project.

FIGURES

SECTIONS AND INTERSECTIONS

PHOTOS