

CSX RIGHT OF WAY Multi-Use Path Feasibility/ Conceptual Design Study Chelsea, MA

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City of Chelsea, MA

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Executive Summary

Background

The City of Chelsea received a Gateway Cities Park Grant from the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) to conduct a feasibility/conceptual design study for a multi-use path located on the former CSX Grand Junction Secondary Track right of way within Chelsea (“the CSX ROW”). The multi-use path concept grew out of local planning efforts which focused in part on formulating a vision around the need for bicycle, pedestrian, and green space connections in Chelsea’s Box District neighborhood. In February 2011, the City, through its Department of Planning and Development (P&D), and Massachusetts EEA partnered with the firms of Brown, Richardson & Rowe (BRR) and Fay, Spofford & Thorndike (FST) to study the feasibility of constructing a multi-use path along the entire CSX ROW from the Chelsea Street Bridge at the Chelsea River west to the Everett border near Third Street.

The concept for incorporating the CSX ROW into a multi-use path originated locally. However, other agencies outside of Chelsea have been planning to incorporate portions of the CSX ROW into a regional transportation facility for many years. The result of those efforts is known as the Urban Ring. As discussed in Part II, Chapter 4 of this study, the Urban Ring is envisioned as a bus rapid transit (BRT) corridor connecting six communities, including Chelsea. In anticipation of the Urban Ring project, the Massachusetts Department of Transportation (MassDOT) purchased the ROW from CSX with a release deed in June 2010. This purchase essentially “land-banked” the corridor for future transportation uses but did not extinguish an easement that CSX retained along the ROW. The Commonwealth has begun the work required to complete the coordination with CSX in order to extinguish this easement and ultimately permit future multi-modal use of this corridor.

Study Process

Understanding the Urban Ring’s concept as this feasibility/conceptual design study began, it was anticipated that the multi-use path in Chelsea would need to coexist with the proposed Urban Ring BRT. However, as work advanced with this study, it became apparent that the multi-use path could not fully share the Ring’s alignment throughout the entire corridor due to physical limitations, legal issues, and policy constraints.

Rather than derail this study, this realization created an unanticipated opportunity for the City to diverge the route of the multi-use path from the urban ring project for those segments of the ROW where physical, legal and policy constraints restrict the siting of both facilities. By uncoupling the two transportation projects, Chelsea now has the opportunity to advance a multi-use path on an alignment that is only minimally influenced by CSX’s current easement along the ROW.

Understanding this new reality, the City and its project team coordinated with MassDOT, Massachusetts Bay Transportation Authority (MBTA), key stakeholders along the ROW, and a local working group comprised of representatives from City boards and nonprofit organizations. Based on these conversations and a review of corridor conditions and legal circumstances surrounding the CSX ROW and Urban Ring, a conceptual design for the proposed multi-use path was developed.

Major Study Goals

The overarching goal for the project is to create a linear multi-use path through Chelsea, from the Chelsea River to Everett, and in so doing connect to MBTA commuter rail and bus stations. This multi-use path will also reconnect neighborhoods currently separated by the railroad, increase Chelsea’s very limited public open space, and afford an opportunity for residents to gather and engage in outdoor recreational activities. Achieving these connections will also support the economic vitality of the City by improving connections from residential areas and major employment sites to Chelsea’s central business district. Attaining these goals involves legal and financial commitments along with strong community support. However, at the end of the day, achieving these goals requires a sensitive and flexible design that responds to existing constraints to form the desired link in a way that allows the multi-use path to successfully serve as a transportation alternative and recreational facility.

Conceptual Design

The ROW segment from the Chelsea River to the Box District offers the strongest opportunity for the City to develop a multi-use path with recreational amenities, as the Urban Ring BRT is not proposed along this section and there is ample ROW width. The conceptual design along this segment includes gateway entrances at roadway crossings and neighborhood connection points, a boardwalk over a potential wetland area, and creation of an outdoor fitness area. This segment typifies Chelsea’s goals to reconnect neighborhoods separated by the formerly active railroad line, create a bicycle and pedestrian friendly transportation corridor, and design outside spaces where residents can gather in a natural setting.

From the Box District to Downtown Chelsea, the ROW can accommodate both the Urban Ring BRT and a multi-use path. This design will require that the City work with the abutting property owners to ensure that the location of the Urban Ring BRT and multi-use path are incorporated into current and future private sector site planning activities. The conceptual design along this segment includes the creation of an elevated multi-use path segment that will vertically separate the path from the active MBTA rail lines and provide improved access to key transit, commercial, and municipal facilities.

From Downtown Chelsea to the Mystic Mall Area, bicyclists and pedestrians will need to be accommodated along and parallel to local roadways, as there is insufficient CSX ROW width and other physical constraints to be able to accommodate the Urban Ring BRT and a parallel multi-use path. The conceptual design along this segment includes the installation of bike route signage and pavement markings along local roadways, accessibility upgrades to existing sidewalks, intersection improvements at Fay Square, and a multi-use path along Everett Avenue.

Major Elements of Completed Multi-Use Path

- A 4,200-foot-long multi-use path from the Chelsea River to Downtown
- A 2,800-foot-long on-road bike route and walking route between Downtown and Everett Avenue
- A 700-foot-long multi-use path adjacent to Everett Avenue to connect to the Mystic Mall
- The initial three (of six) phases of the multi-use path will be within one-half a mile of 16,000 people
- Improved bicycle and pedestrian connections to the MBTA's commuter rail and bus stations
- Designation of 4 acres of a former active railroad line to public open space, an 8% increase in Chelsea's total public open space
- Entrance gateways along the multi-use path alignment to connect to neighborhoods and business areas

Next Steps

Recognizing that there are legal and policy issues associated with the CSX ROW that still need to be addressed, a phasing strategy was developed to allow portions of the project to proceed in the interim while the other outstanding issues are being resolved. The intent is that as each phase comes on line, the vision for the entire multi-use path becomes more clear and momentum increases as its intended benefits become a reality.

This study discusses the sequential steps needed to eventually attain full implementation of the multi-use path's six phases discussed in Part I, Chapter 4. Within the major listing of steps, the following three are perhaps the most important to the multi-use path's full implementation.

- Expand beyond the focused public involvement effort completed for this study to attain additional support for the multi-use path either as described in this study or as modified in response to additional community input
- Resolve the single outstanding issue with the CSX's remaining easement rights along the ROW
- Obtain funding for each phase of the multi-use path project

The CSX ROW is an invaluable resource to the City. The utilization of this currently abandoned ROW is critical to advancing Chelsea's future as a strong, vibrant and healthy place to live. The City and its project partners are committed to promoting biking and walking in the community through the development of a multi-use path and on-road facility network. Proper planning, effective advocacy, and an inclusive partnership strategy are critical to the success of this project.

PART I – The Vision

1 Introduction

Like many urbanized communities on the edge of a major city, Chelsea has been bisected by regionally significant transportation corridors that locally act as barriers between neighborhoods rather than as corridors of connection. As illustrated in Figure 1, US Route 1 and the CSX/MBTA rail corridors transect Chelsea on a north to south and east to west basis. In a community as dense as Chelsea, the resultant neighborhoods are relatively small and, due to these physical divisions, have become isolated from each other. What is needed is a multi-modal transportation facility that connects the City's edges and simultaneously unifies its interior neighborhoods. In addition, a method is needed to reclaim some of Chelsea's built environment for open space.

Chelsea is one of the most densely populated communities in Metropolitan Boston, with some sections of the City home to 200 people per acre. With a land area of 1.8 square miles, and a population estimated by the US Census for 2008 of 41,577, or 23,098 people per square mile, land was allocated long ago to service residential, retail, commercial, transportation, and other uses. Housing and supporting the needs of a large population in such a limited area leaves little of Chelsea's 1,152 available acres for use as public open space.



Consequently, of Chelsea's 1.8 square miles of land area, only 44.56 acres, or 3.9 percent, are classified as public open space that is protected in perpetuity according to the City's 2010-2016 Open Space and Recreation Plan. Being able to reclassify any amount of land from non-open space to open space would be an improvement to the quality of life for all of Chelsea's residents. Most importantly, for the 26 percent of the City's population who are under the age of 17 (according to the American Community Survey), increasing the amount of open space is vital to supporting a healthier Chelsea. Creating open areas for recreation, both organized and ad hoc, allows young people a respite from spending free time on street corners or indoors.

The City and the Commonwealth currently have the opportunity to simultaneously unify portions of Chelsea divided by a major transportation corridor and reclaim the use of up to potentially 178,000 square feet (approximately 4 acres) from an underutilized, private transportation use to an effective public transportation resource. This opportunity is possible if the CSX ROW can be removed from its long-

standing (although no longer active) railroad use and be transferred to Chelsea and the Commonwealth for use as public open space and multi-modal transportation.

This process has begun, with the Commonwealth having acquired ownership of the ROW. However, the finalization of the Commonwealth's coordination with CSX regarding the railroad's remaining operational rights to the ROW has yet to be completed.

Once this has occurred, this new public corridor can be programmed for a number of different and non-precluding uses. Prime among these uses is a corridor that reconnects many of Chelsea's neighborhoods. As this former CSX ROW is already established as a transportation corridor, an obvious use would be to maintain its transportation function as a multi-use path. Converting this land to a public use while increasing Chelsea's open space by over 8 percent directly addresses the existing rail corridor's negative impact as a dividing line separating one part of Chelsea from another. Incorporating portions of this former rail corridor into a public multi-use path would create a unifying element that is connective from the Chelsea River to the Mystic Mall.

Figure 21 in Part I, Chapter 4 illustrates Phases 1, 2 and 3 of the multi-use path project. These three phases are located within one-half mile of 16,000 Chelsea residents, almost 38 percent of the City's total population. This level of proximity suggests a high user rate for this important connective corridor.

Equally as important, the locations of Phases 1, 2 and 3 of the path create the previously mentioned north/south connection between the Chelsea River and the Mystic Mall. Creating this destination-to-destination connection would thoroughly advance the concept of Chelsea as a community connected by a logical linear path. Rather than the CSX ROW acting as a dividing line between Chelsea neighborhoods, it would now function as a unifying agent for all users.

These first three phases of Chelsea's evolution towards becoming a community linked to a waterfront park, the East Boston Greenway, and other regional multi-use paths in future phases.

Within the City itself, the multi-use path would provide Chelsea residents the opportunity to connect with the MBTA's commuter rail station, the centrally located MBTA bus stations at Broadway and Hawthorn Street, schools, employment, retail and other land uses, while simultaneously enjoying an outdoor experience.

Once converted to a multi-use path, the corridor will allow residents to take advantage of a major benefit of living inside of 1.8 square miles; that is, the ability to reach nearby destinations without having to utilize an automobile. Additionally, this space can act as a recreational resource and a gathering place for residents.



Figure 1: Project Locus Map

To summarize, creating a multi-use path:

- Eliminates a major east/west division between Chelsea neighborhoods
- Creates a direct linear link between the Chelsea River, Mystic Mall, and abutting neighborhoods
- Provides a multi-use path and recreational facility located within one half mile of 38% of Chelsea's population
- Enhances Chelsea's economic development goals
- Provides a combination of on- and off-road connections between this population base and the MBTA's commuter rail station and the central MBTA bus facilities
- Connects Chelsea to the riverfront along the Chelsea River
- Connects Chelsea with existing and future multi-use paths in East Boston and Everett

To achieve this vision of reconnecting neighborhoods and increasing open space through the creation of a multi-use path, the City of Chelsea applied for and received a Gateway Cities Park Grant from the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) to conduct a feasibility/conceptual design study for a multi-use path located on the former CSX Grand Junction Secondary Track Right-of-Way within Chelsea ("the CSX ROW"). Locally, the concept to increase Chelsea's limited amounts of open space by incorporating the CSX ROW into a public amenity grew out of the Gerrish Avenue / Bellingham Street Neighborhood Action Plan prepared in 2007 and the North Bellingham Hill Revitalization Plan prepared in 2009 by Chelsea Neighborhood Developers, a major nonprofit working to help redevelop the community. These plans focused in part on formulating a vision around the need for public bicycle, pedestrian, and green space connections in the neighborhood.

In February 2011, the City, through its Department of Planning and Development (P&D), and Massachusetts EEA partnered with the firms of Brown, Richardson & Rowe (BRR) and Fay, Spofford & Thorndike (FST) to study the feasibility of constructing a multi-use path along the CSX ROW. The study area is defined as the CSX ROW from the Chelsea Street Bridge at the Chelsea River west to the Everett border near Third Street (Figure 1).

Part I of this study illustrates the proposed multi-use path that resulted from this study. Part II of this study documents the existing environment of the project as it relates to the corridor conditions and legal circumstances surrounding the CSX ROW and the proposed Urban Ring project.

2 Community Opportunity

The CSX ROW forms an east to west spine through Chelsea from the Chelsea River waterfront to the Everett border, as shown on Figure 1. The section of CSX ROW between the Chelsea River and Broadway essentially forms a spur line off the main railroad corridor that bisects Chelsea. The vacant spur line divides the urbanized area and does not fulfill any community interests in its existing blighted and overgrown condition.

Reclaiming this underutilized ROW for a pathway would provide Chelsea with an opportunity to not only connect neighborhoods, local business districts, and employment centers, but also to enhance neighborhood redevelopment and economic development efforts. Pathway development would also support the need for improved bicycle and pedestrian connections to the residential and commercial areas located west of Broadway.

The conceptual design goal is to develop a pathway that will accommodate a variety of users and skill levels for transportation and recreational purposes along an east/west corridor within, and generally parallel to, the CSX ROW within Chelsea.

The City believes it is timely, appropriate, and necessary to identify a conceptual design and phasing strategy for this pathway in order to accomplish the following goals:

Goal 1: Incorporate the neglected landscape into the City

The CSX ROW presents an opportunity to convert this formerly neglected corridor into a new public space that functions as a transportation alternative, recreational facility, and community-gathering space.

Goal 2: Connect residential neighborhoods, local business and employment areas, civic facilities, social services, open space / recreation areas, and other points of interest

The CSX ROW connects residential areas to the north and south with downtown Chelsea and the commercial/industrial areas to the east and west. Developing a multi-use path along and generally parallel to the ROW will provide improved bicycle and pedestrian access to key destinations within Chelsea. These destinations include open space and recreational areas (Figure 2), municipal services and facilities (Figure 2), and business and employment centers (Figure 3).

Goal 3: Support economic growth and revitalization of adjacent properties

Converting the CSX ROW into a multi-use path will support economic growth and revitalization of adjacent residential and commercial properties. Incorporation of the facility into the site redevelopment plans will make these properties more attractive places to live or work. Figure 4 shows development and infrastructure improvement projects proximate to the CSX ROW that are currently in the planning, design, bidding, and/or construction phases.

Goal 4: Enhance the overall quality of life and livability of the community

A multi-use path along the CSX ROW will enhance the overall quality of life and livability of the community by promoting healthy activities, offering additional choices for transportation and recreation, and providing environmental and aesthetic benefits. The multi-use path will also provide a universally accessible facility for users of all ages and abilities.

Goal 5: Improve bicycle and pedestrian access to public transit in Chelsea

Developing a pathway system within and generally parallel to the CSX ROW will improve bicycle and pedestrian access to the existing and planned public transit facilities in Chelsea. These facilities include the existing MBTA Commuter Rail Station, and MBTA bus routes and the proposed Urban Ring Bus Rapid Transit (BRT) facilities.

Goal 6: Provide connections to other existing and planned regional path systems

As envisioned, the multi-use path will one day connect to other regional path systems including the existing East Boston Greenway and the planned Northern Strand Community Trail through Everett, Malden, Saugus, Revere, and Lynn (Figure 5).

The preceding goals and the City's overall vision for the multi-use path project are consistent with local and Statewide plans. As discussed in Chapter 1, the proposed project was identified within the Gerrish Avenue/Bellingham Street Neighborhood Action Plan (October 2007), North Bellingham Hill Revitalization Plan (2009), and 2010-2016 Open Space and Recreation Plan (August 2010). In all plans, the development of a multi-use path along the CSX ROW was seen as an opportunity to enhance the livability of local neighborhoods, facilitate connections, and encourage biking and walking for transportation and fitness. Likewise, at the State level, the proposed project is consistent with the MassDOT's GreenDOT initiative and Healthy Transportation Compact for sustainable transportation. A multi-use path in Chelsea will help reduce greenhouse gas (GHG) emissions, promote healthy transportation options of walking, bicycling, and public transit, and support smart growth development.



Figure 2: Key Destinations



Figure 3: Business and Employment Centers



Figure 4: Development and Infrastructure Improvement Projects



Figure 5: Regional Path Connections

3 Conceptual Design

As part of this study effort, various multi-use path design concepts were considered based on a review of existing conditions, future development and infrastructure improvement projects along and adjacent to the CSX ROW, the proposed design for the Urban Ring BRT, and other key design and constructability related issues. These issues are discussed in more detail in Part II of this study.

Based on this review, a conceptual design (Figure 6) was developed that successfully meets the project goals and can be implemented in phases within a reasonable timeframe. The ability to implement this project will also require commitment from key project partners and securing the necessary design and construction funding.

The conceptual design has been organized into four project segments for discussion purposes:

- Segment 1 – Waterfront to Box District
- Segment 2 – Box District to Downtown Chelsea
- Segment 3 – Downtown Chelsea to Everett Avenue
- Segment 4 – Mystic Mall Area

Segment 1 offers the strongest opportunity for the City to develop a multi-use path with recreational amenities, as the Urban Ring BRT is not proposed along this section of ROW and there is ample CSX ROW width.

Segment 2 can accommodate shared use of the CSX ROW by the Urban Ring BRT and a multi-use path. This design will require that the City work with the abutting property owners to ensure that the location of the Urban Ring BRT and multi-use path are incorporated into current and future site planning activities.

Segments 3 and 4 require bicyclists and pedestrians to be accommodated along and parallel to local roadways, as there is insufficient CSX ROW width and other physical constraints to be able to accommodate the Urban Ring BRT and a parallel multi-use path.

Plans, representative cross sections, and renderings are included on the following pages to illustrate the conceptual design vision along each project segment.

Journey Times

One of the project goals is to provide a viable and attractive transportation alternative for residents and workers. In order to encourage a modal shift from cars to bicycling and walking, particularly for short journeys, the facility must provide a convenient route to desired destinations.

Table 1 identifies the estimated time required to bike or walk between key destinations in the City along the conceptual design route. These estimates are based on an urban biking speed of 10 miles per hour and a leisurely walking speed of 3.5 feet per second.

Table 1: Estimated Journey Times

Destination	Distance (Feet)	Bike Time (Minutes)	Walk Time (Minutes)
Waterfront to Box District (Multi-use path along CSX ROW)	2,300	3	11
Box District to Downtown Chelsea (Multi-use path along CSX ROW)	1,900	2	9
Downtown Chelsea to Mystic Mall (On-road bike route along local roadways and multi-use path segment along Everett Avenue)	3,500	4	17

The time required to bike or walk between these destinations is very reasonable. For example, an MWRA employee could walk from Griffin Way (Box District) to downtown Chelsea in 9 minutes to buy lunch or connect to public transit, and in the process attain the health benefits of a ¾ mile roundtrip walk. A Box District resident who needs to buy a few grocery items could bike to Market Basket at the Mystic Mall in less than 10 minutes, or walk there in under 30 minutes each way.

The conceptual design discussed in this chapter outlines the infrastructure improvements needed to support bicycling and walking. However, it is equally important for the City and its project partners to continue education and outreach programs to encourage more people to bike and walk as part of a healthy lifestyle, and as a transportation choice.



Figure 6: Conceptual Design Plan

Segment 1 – Waterfront to Box District

Segment 1 extends from the Chelsea River to Library Street, a distance of approximately 2,200 linear feet. The Urban Ring BRT is not proposed along this corridor segment and therefore there is ample ROW width to develop a multi-use path with recreational amenities. The proposed improvements along this segment include the following:

Waterfront Park: Beginning at the Chelsea River, a new waterfront park along the CSX ROW would serve as a destination for users travelling from the west and as a starting point for users travelling from the east. At the time this study was being prepared, the 40-foot wide by approximately 50-foot long ROW between the River and Eastern Avenue was being used as a temporary construction staging area for the Chelsea Street Bridge replacement project. The City has also indicated that there are a number of easements on the ROW in this location. Another possibility would be to locate a waterfront park on the Department of Conservation and Recreation (DCR) owned land on the south side of the Chelsea Street bridge. As envisioned, a waterfront park in either location would include overlooks, seating, and bike racks. Informational kiosks would include maps showing users how to reach destinations within Chelsea and the East Boston Greenway.

Gateway Entrances: Along the length of the corridor, the 10-foot-wide multi-use path will cross or connect to a number of local roadways at-grade. In these locations, there is an opportunity to create a gateway entrance that will improve user and motorist awareness of the crossing and help create a cohesive core identity for the pathway. The proposed gateway locations are shown on Figure 6. Figure 8 shows the location of the gateway entrance at Cottage Street.

50 Eastern Avenue: Between Eastern Avenue and Cottage Street, the abutting property owner is currently using the CSX ROW for truck access and has also constructed a 16-foot-wide portion of a building into the ROW. Based on discussions with MassDOT/Transit Reality Associates (TRA), this use was not previously authorized. Due to the 60-foot width of the CSX ROW in this location, there is an opportunity to construct the multi-use path with a vegetative buffer and allow the business to maintain a 20-foot-wide one-way access drive as shown in Figure 7. This shared use of the CSX ROW would be subject to review and approval by MassDOT (ROW owner) and the City.

Boardwalk: As discussed in Part II, Chapter 3, there is a potential wetland resource area between Cottage Street and a point west of the Bellingham Street overpass, a distance of approximately 400 feet. Pending confirmation that this area is a jurisdictional wetland, it is recommended that the multi-use path be elevated on a 12-foot-wide wooden boardwalk with railings that is supported by helical screws to minimize environmental impacts. The boardwalk would also provide an opportunity to restore the wetland system and create an outdoor learning/classroom area. It is not anticipated that the boardwalk will need to be designed to support vehicle loading as there are nearby emergency access points at Cottage Street, Library Street, and Griffin Way. A concept for the boardwalk is shown in Figure 8.

Fitness Area: Just north of the Bellingham Street overpass, the CSX ROW widens to approximately 150 feet. In this location, it is recommended that an outdoor fitness area with durable equipment, also known as a vita course, be created. A rendering of this area is shown in Figure 9. This facility will also provide a new amenity for Chelsea residents and support ongoing public health initiatives in the community.

Landscaping: The City also envisions introducing ornamental plantings and screening along this corridor segment to strengthen visual connections and enhance the overall appearance of the multi-use path. It is recommended that new, self-sustaining native species be introduced to reinforce the path entry points, enhance and support desirable views, and introduce seasonal color, beauty, and shade for pathway users. There are also locations where plantings could be strategically located to buffer unwanted views, such as the rear of commercial/industrial buildings, without comprising safety/security.

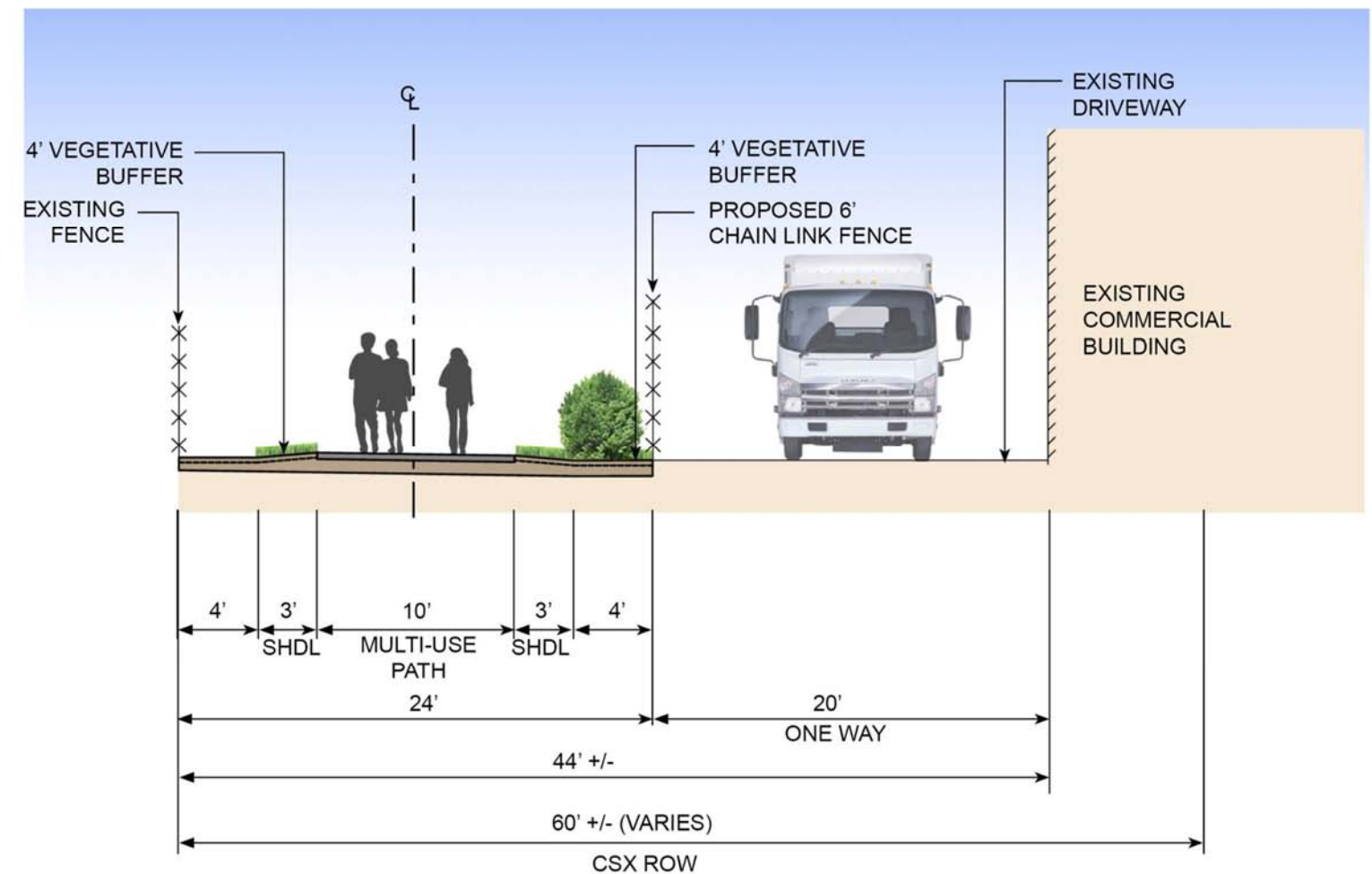


Figure 7: Segment 1 – Cross Section A

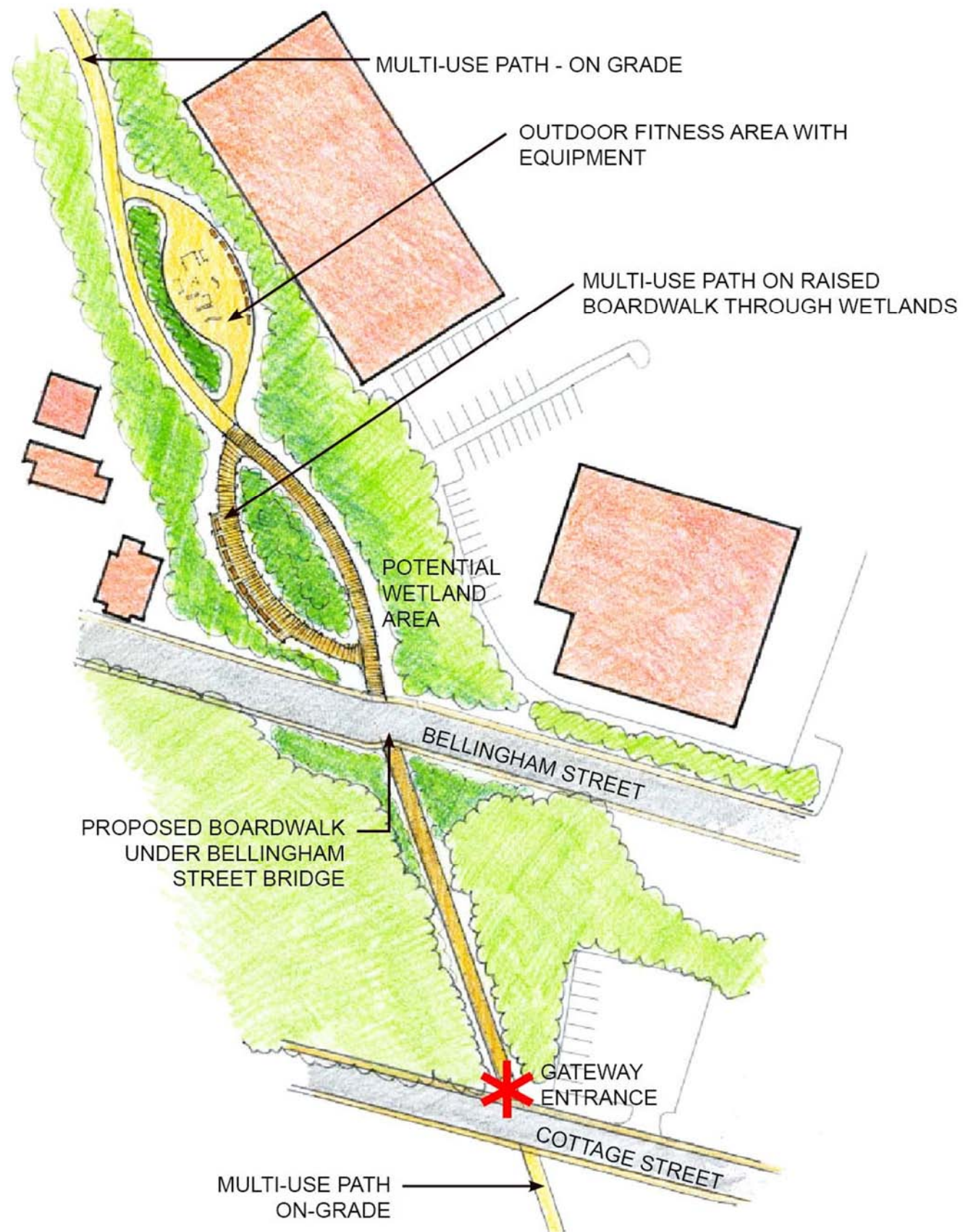


Figure 8: Segment 1 - Plan View of Fitness Area and Boardwalk



Design Precedent - Boardwalk



Design Precedent – Helical Screw Anchor Foundations



Figure 9: Segment 1 - Fitness Area and Boardwalk West of Bellingham Street Bridge

Segment 2 – Box District to Downtown Chelsea

Segment 2 extends from Library Street to Chestnut Street, a distance of approximately 1,900 linear feet. The Urban Ring BRT is proposed along this corridor segment and the multi-use path will be located parallel and adjacent to this facility within, and abutting the CSX ROW. The proposed improvements along this segment include the following:

Gateway Entrance: From east to west along this segment, the proposed gateway entrances are located at Library Street, Highland Street, Broadway, and Chestnut Street, as shown on Figure 12. A conceptual gateway design at Library Street is shown in Figure 10.

Atlas Lofts: The Atlas Lofts building is located within 5 to 7 feet of the edge of CSX ROW. Due to the 60-foot width of the CSX ROW in this location, the multi-use path can be constructed adjacent to the Urban Ring BRT, within the ROW, as shown in Figure 11. Unfortunately, the construction of this multi-modal facility will require the removal of the mature trees in this area. It is recommended that plantings in this location consist of low-to-mid height vegetation between the path and the building to improve resident privacy and vines at the base of the concrete barrier and chain link fence to further screen the Urban BRT from the path and residences. The design of the multi-modal facility will also need to avoid impacts to the resident parking spaces abutting the ROW at the end of Highland Street.

Standard Box Housing Development: As part of this study, the City met with Mitchell Properties LLC, the developers of the Standard Box Housing Development at 22-28 Gerrish Avenue and 44 Gerrish Avenue, to discuss the proposed multi-use path project. The rear portion of the 22-28 Gerrish Avenue development is located on land that was previously sold by the railroad and on which CSX still retains a freight easement, as discussed in more detail in Part II, Chapter 2. The developer indicated that he is willing to re-evaluate the site plan for this property to accommodate the multi-use path, as he recognizes the value of this facility to the Box District and Chelsea. The vision for this location is to elevate the multi-use path along the rear of the property at the same level as the housing, and accommodate the Urban Ring BRT at track level as shown on Figure 13. Agreements would also need to be reached with the abutting property owners to the west so that the elevated multi-use path could continue to Broadway. If conditions changed and the property owners were not willing to allow multi-use path construction on their property, then the path would need to transition to an on-road facility at Highland Street and travel along Gerrish Avenue to reach Broadway.

Broadway: By elevating the multi-use path on the eastern approach to Broadway, the proposed path will cross Broadway, at grade, via a new mid-block crosswalk proximate to the bridge over the railroad. In order to improve the visibility of this crossing, it is recommended that curb extensions and a flush textured crosswalk be installed. This treatment will also define the on-street parking limits proximate to the crosswalk. This crossing treatment is shown on Figure 12.

Broadway to Chestnut Street: After crossing Broadway, the multi-use path would continue along an elevated section along the rear of the St. Rose Church / Elementary School, to connect to the end of Chestnut Street. The CSX ROW in this location varies between 60 to 88 feet in width. Therefore, as shown in Figure 14, the Urban Ring BRT and multi-use path can be accommodated within the existing ROW. As the bus and active rail facilities will be grade separated from the multi-use path, it is hoped that the safety concerns expressed by MassDOT and the MBTA regarding “rail with trail” facilities will be alleviated. This arrangement is similar to the Southwest Corridor Park in Jamaica Plain, which is elevated above the MBTA’s Orange Line, and the High Line in New York City. The elevation difference between Broadway and Chestnut Street would either require the path to be sloped or require the construction of an additional retaining wall abutting St. Rose’s property. In addition, it is anticipated that the existing overhead utility poles would need to be relocated to accommodate multi-use path construction. This ‘high-line’ connection could also be designed in a way that would not preclude the City’s interest in constructing a bicycle/pedestrian bridge or decked ceiling over the railroad corridor between Chestnut Street and the City-owned land on Crescent Avenue.

Chestnut Street to Washington Avenue: Extending the elevated multi-use path to Washington Avenue was also evaluated. However, the CSX ROW narrows from approximately 60 feet to 46 feet between Chestnut Street and Washington Avenue. Therefore, in order to accommodate the multi-use path and Urban Ring BRT and avoid land takings and building impacts, the multi-use path would need to be elevated above the BRT facility. The idea of decking the entire railroad ROW between Broadway and Washington Avenue is a concept that the City is interested in further exploring. The City envisions that an elevated corridor between these two major roadways would create a focal point that would connect the pathway, downtown, and neighborhoods to the north and south. This design concept requires additional study and further coordination between the City and its project partners, MassDOT, and the MBTA.



Figure 10: Segment 2 – Library Street Gateway

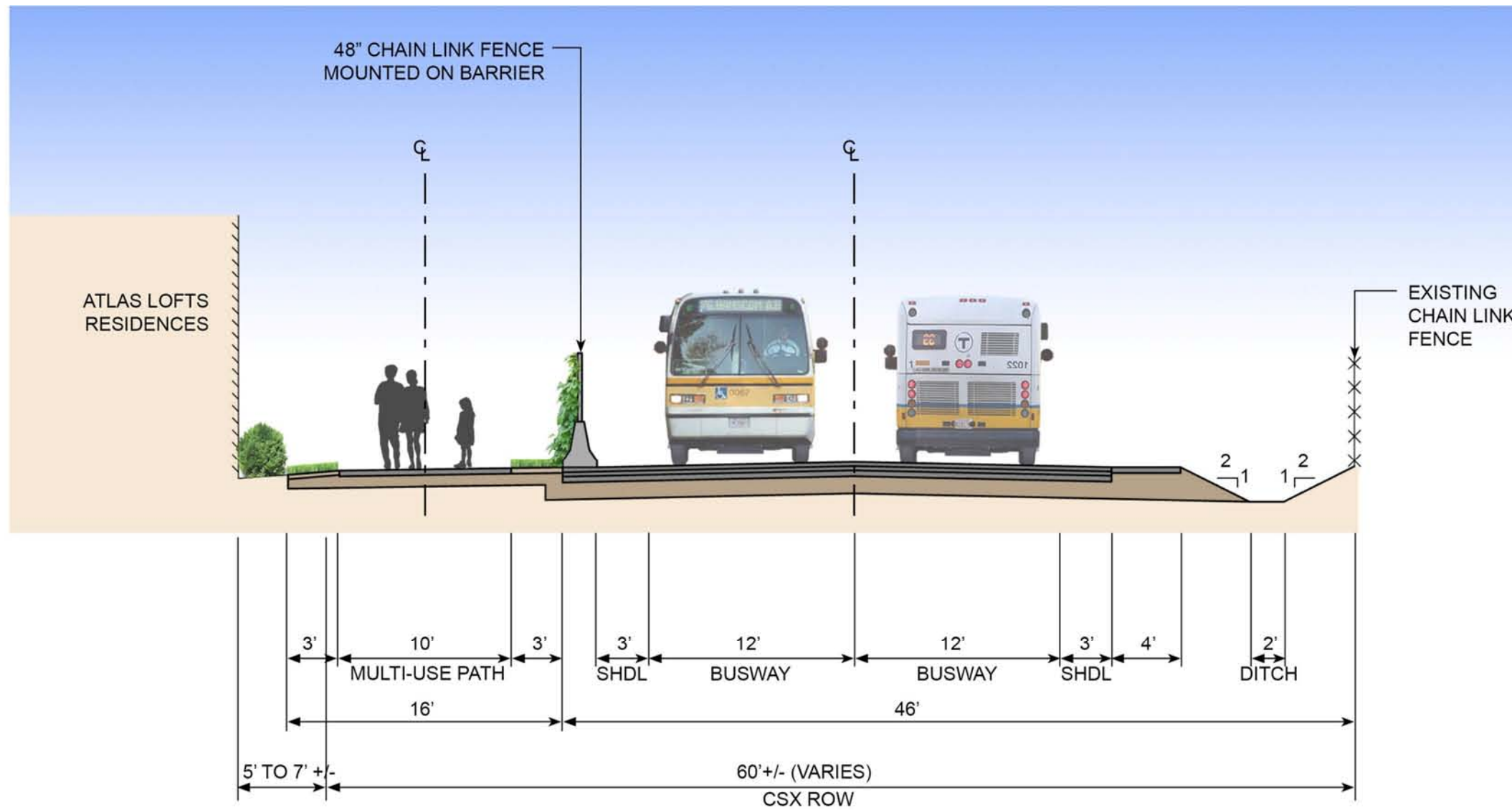


Figure 11: Segment 2 – Cross Section B

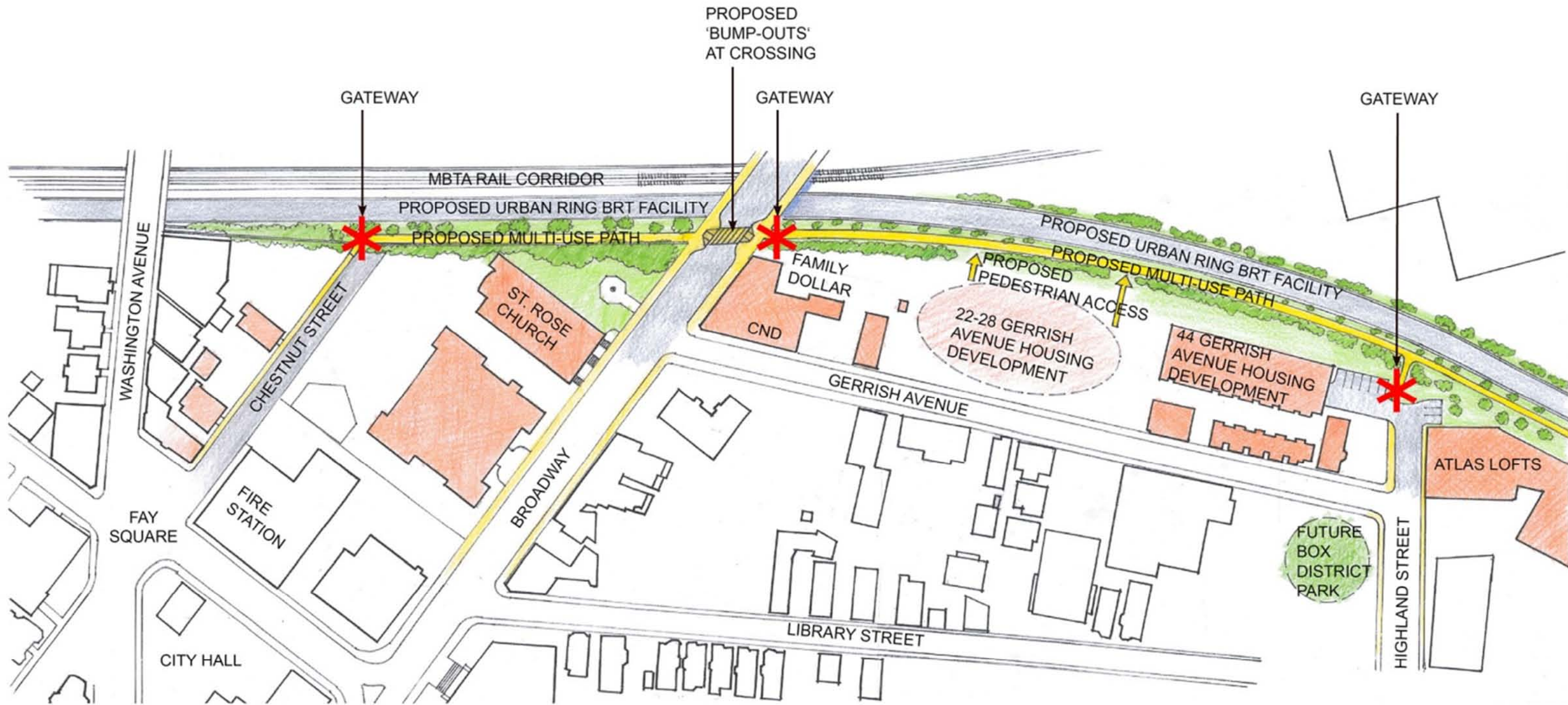


Figure 12: Segment 2 –Plan View from Highland Street to Chestnut Street



Figure 13: Segment 2 –Multi-Use Path Along Rear of 22-28 Gerrish Avenue Housing Development

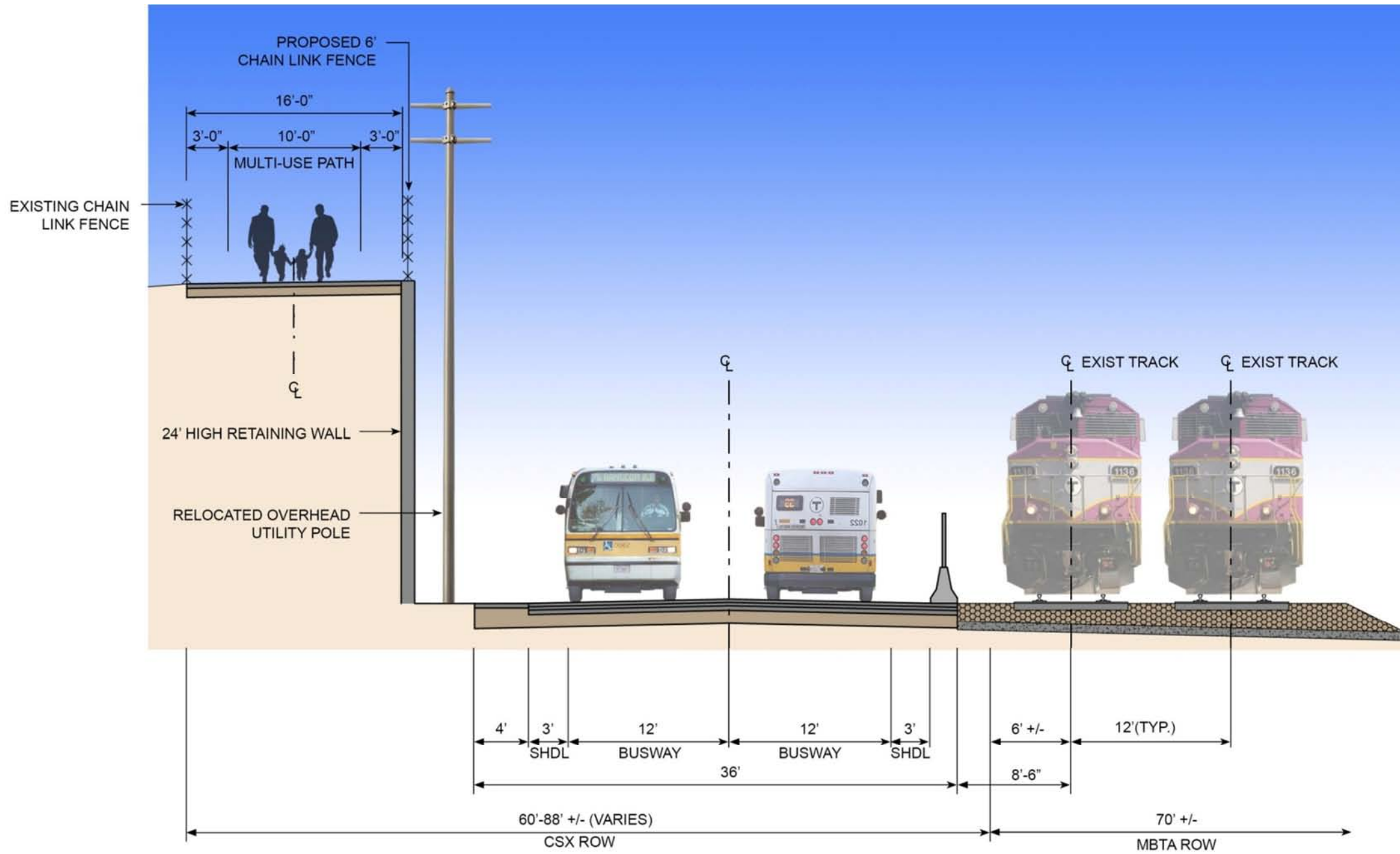


Figure 14: Segment 2 – Cross Section C



Design Precedent – High Line



Design Precedent – High Line

Segment 3 – Downtown Chelsea to Everett Avenue

Segment 3 extends from Chestnut Street to Everett Avenue. The original conceptual design goal was to align the proposed multi-use path within the CSX ROW along this length, a distance of approximately 2,300 linear feet. However, as discussed further in Part II of this study, there is insufficient ROW width to be able to accommodate a multi-use path and the Urban Ring BRT within the CSX ROW in Segment 3. Therefore, the multi-use path would need to either be located on private property or transition to an on-road facility along local roadways. Due to the anticipated impacts required to construct the multi-use path on private property (i.e., loss of parking, building demolition), it is recommended that bicycles and pedestrians be directed along local roadways to travel between downtown Chelsea and Everett Avenue. The proposed improvements along this segment include the following:

On-Road Facility: Each of the roadways within the study area was evaluated to determine their suitability to accommodate bicyclists. This evaluation included a field visit and review of available information including traffic volumes, MassDOT pedestrian and bicycle accident history, speeds, roadway width, presence of shoulders, and on-street parking. This evaluation also took into account the one-way directionality of many of the roadways in downtown Chelsea, thereby necessitating the selection of eastbound and westbound routes.

Based on a review of the existing pavements widths within the study area, there is not enough available width to provide a dedicated bike lane on the majority of the area roadways without eliminating on-street parking. Therefore, the recommended on-road facility type is a bike route. A bicycle route refers to use of normal roadway travel lanes by both motor vehicles and bicyclists. These facilities are also referred to as shared lanes or a shared roadway. “Share the Road” warning signs or “Bike Route” directional signage is typically installed along these facilities. In addition, shared lane markings (sharrows) can also be provided to identify the route and to indicate how far from the roadway edge or parked cars bicyclists should ride. A detail of a shared lane marking is shown to the right (Figure 15). Bicyclists traveling along these local roadways follow the same rules of the road as vehicles and therefore cannot ride the wrong way on a one-way roadway.

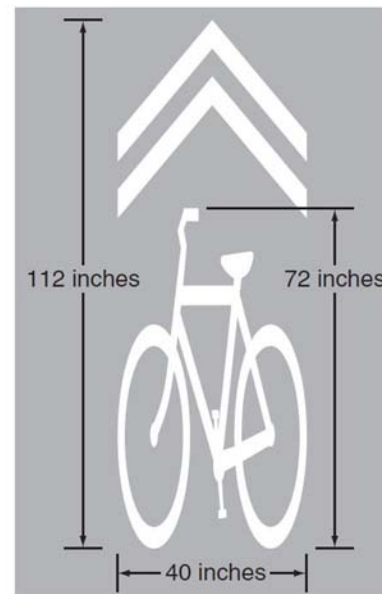


Figure 15: Shared Lane Marking

Recommended Bike Route: At the end of Segment 2, the eastern portion of the path would ramp up to intersect with Chestnut Street and connect to the local roadway system at Chestnut Street behind the St. Rose Church / Elementary School.

In the westbound direction, bicyclists would exit the path and follow Chestnut Street to Fay Square. At Fay Square, users would travel across the intersection to the extension of Chestnut Street (one-way), then take a right onto Fifth Street (one way). Bicyclists wishing to connect to the MBTA Commuter Rail Station

would turn right onto Arlington Street. Bicyclists continuing to the Mystic Mall area would instead turn left onto Walnut Street (one-way), traveling by the Eugene Wright and Joseph A. Browne Schools before turning right onto Fourth Street or conversely turn left onto Arlington Street in front of the Department of Revenue building to connect to Fourth Street. At the end of Fourth Street, bicyclists would find themselves at an unsignalized intersection with Everett Avenue. The improvements recommended along Everett Avenue are discussed further in Segment 4. Due to the high traffic volumes on Everett Avenue, an off-road facility is preferred. The design of this facility needs to be coordinated with the proposed Everett Avenue Roadway Improvement Project proposed by the Mystic Mall developers (RMD/DSM) and the City. The length of the westbound route is approximately 2,800 linear feet.

In the eastbound direction, bicyclists would travel along Fourth Street then turn left onto Arlington Street near the Eugene Wright and Joseph A. Browne Schools. Bicyclists would turn right onto Sixth Street near the MBTA Commuter Rail Station. This route would not require bicyclists to cross the at-grade rail crossing. Bicyclists would follow Sixth Street (one-way) to Fay Square. Bicyclists would then cross Fay Square to the two-way portion of Chestnut Street. Bicyclists would follow Chestnut Street to connect to the multi-use path. The length of the eastbound route is approximately 2,700 linear feet.

The westbound and eastbound routes are shown on Figure 16. This proposed bike route connects to the following destinations:

- Downtown Chelsea
- MBTA Commuter Rail Station
- Kayem Park
- Eugene Wright and Joseph A. Browne Schools

Bike Route Alternatives: A number of bike route alternatives were also considered on the north side of the railroad ROW including alignments along Crescent Avenue and Heard Street. Many of these local roadways are also one-way and therefore the eastbound and westbound routes would vary. These route alternatives were eliminated from further consideration as part of this study based on the desire to eliminate the need for bicyclists to cross the active MBTA tracks at-grade. Although there are currently safety measures in place in the form of gates and flashers, MassDOT and the MBTA expressed concern about encouraging more people to cross the tracks as part of a designated bike route.

Walking Route: Unlike bicyclists following a bike route, pedestrians utilizing existing sidewalks are not restricted by the one-way directionality of local roadways. Therefore, as shown on Figure 17, pedestrians have many route options when travelling between the multi-use path connection at Chestnut Street to Everett Avenue, and destinations in between. It is recommended that the City and its project partners conduct a walkability audit of each walking route to ensure the sidewalks meet the Rules & Regulations of the Massachusetts Architectural Access Board (AAB) (521 CMR). Following this audit and any necessary upgrades, color-coded directional signage could be posted along the walking routes to clearly define the recommended path of travel.

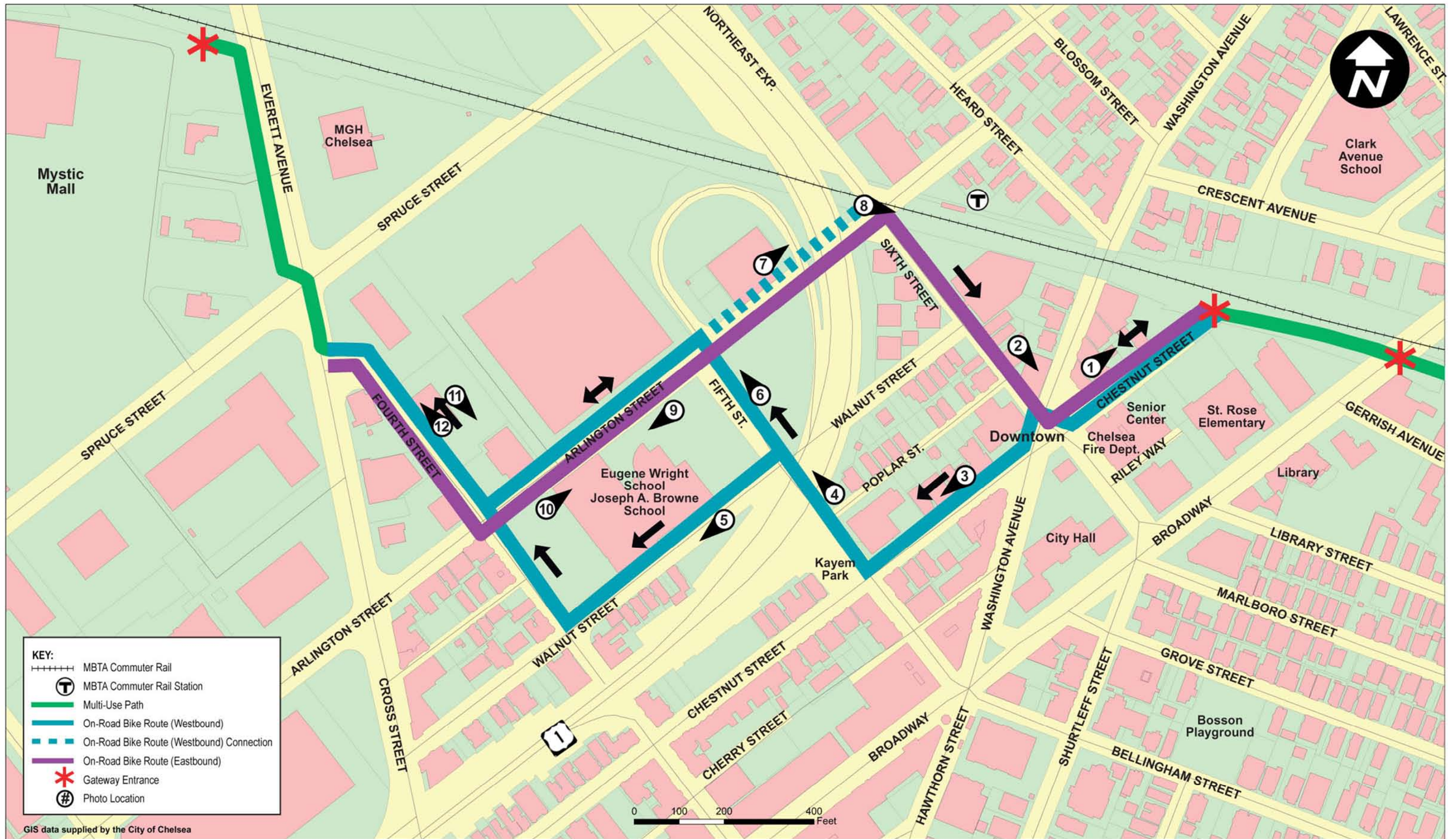


Figure 16: Segment 3 – On-Road Bike Routes



Photo 1: Chestnut Street



Photo 2: Sixth Street



Photo 3: Chestnut Street



Photo 4: Fifth Street



Photo 5: Walnut Street



Photo 6: Fifth Street



Photo 7: Arlington Street



Photo 8: Arlington Street at Sixth Street



Photo 9: Arlington Street



Photo 10: Arlington Street



Photo 11: Fourth Street



Photo 12: Fourth Street

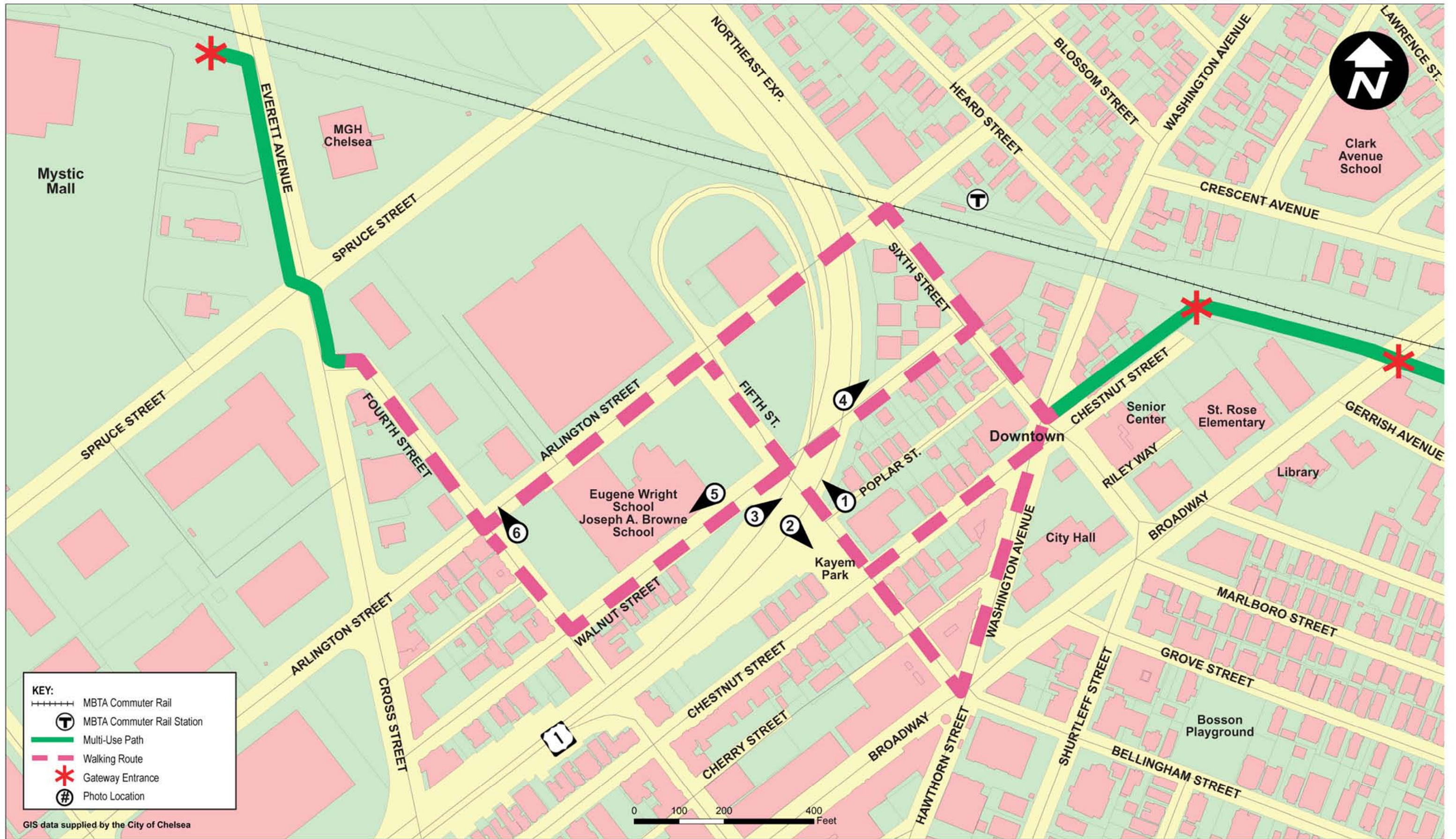


Figure 17: Segment 3 – Walking Routes



Photo 1: Fifth Street Sidewalk



Photo 2: Fifth Street Sidewalk



Photo 3: Walnut Street at Fifth Street



Photo 4: Walnut Street Walkway



School Sidewalk Art Along Fifth Street



Kayem Park

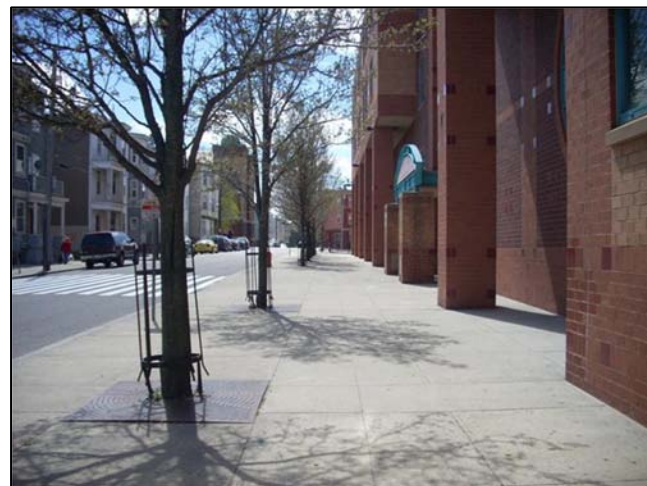


Photo 5: Walnut Street in Front of School



Photo 6: Fourth Street at Arlington Street



Pocket Park Along Walnut Street

Fay Square Improvements: The proposed bike and walking route will pass through the highly active Fay Square intersection, which consists of Washington Avenue, City Hall Avenue, Chestnut Street, and Sixth Street. This intersection is very wide with poorly defined travel paths for vehicles, bicycles, and pedestrians. Currently, Washington Avenue and Chestnut Street north of the intersection are both two-way roadways. South of the intersection, Washington Avenue and Chestnut Street are both one-way departing the intersection. Sixth Street and City Hall Avenue are both one-way entering the intersection. Due to the angle of Chestnut Street and the location of the Fire Station, excessive pavement is provided at the intersection with little control. To improve vehicular, bicycle, and pedestrian operations and safety at this location, two conceptual-level alternatives have been developed, as shown on Figure 18. In addition to providing access for vehicles, both options were developed considering the fire station operations. However, neither alternative has been reviewed by the Chelsea Fire Department, Police Department, or Department of Public Works as part of this study. Therefore, further coordination with these Departments is required.

- *Alternative A* tightens the geometry at the intersection while maintaining a similar right of way configuration. A raised island is proposed on the north side of the intersection to better clarify traffic movements. This area of the intersection is currently used by fire trucks responding to emergencies and for backing into the fire station. Therefore, the area would need to continue to be traversable by a fire truck and should be constructed of a textured surface such as brick pavers or some other form of mountable surface. It is recommended that this island only be raised by two inches using sloped granite curbing to enable fire vehicles to drive over the area. The use of the existing street corner for fire vehicle parking would be eliminated by the placement of the raised island. The north section of Chestnut Street would intersect with City Hall Avenue and would function as a right-in/right-out due to the one-way configuration of City Hall Avenue. Due to the geometric changes proposed under Alternative A, bicyclists would need to dismount and walk their bikes across the raised island on the north side of the intersection in order to connect to the multi-use path entrance at the end of Chestnut Street. Additional modifications would be made to the southern side of the intersection to slow turning vehicles and to shorten the length of pedestrian crosswalks.
- *Alternative B* replaces the existing intersection configuration with a roundabout option. This roundabout would have a total of 5 legs. The Washington Avenue and Chestnut Street northern legs would be two way, the Sixth Street and City Hall Avenue would remain one-way approaching the intersection and the southern leg of Washington Avenue would be one-way exiting the intersection. From a geometric standpoint, the roundabout can be accommodated within the existing roadway layout (right of way) based on a review of the City’s GIS parcel lines. However, recent traffic volume information is not available to assess the capacity of the roundabout option.

Therefore, further analysis and design is required to determine the operational effectiveness of this option.



Photo 1a: Sixth Street



Photo 1b: Sixth Street



Photo 2a: City Hall Avenue



Photo 2b: Chestnut Street



Photo 3a: Chestnut Street



Photo 3b: City Hall Avenue

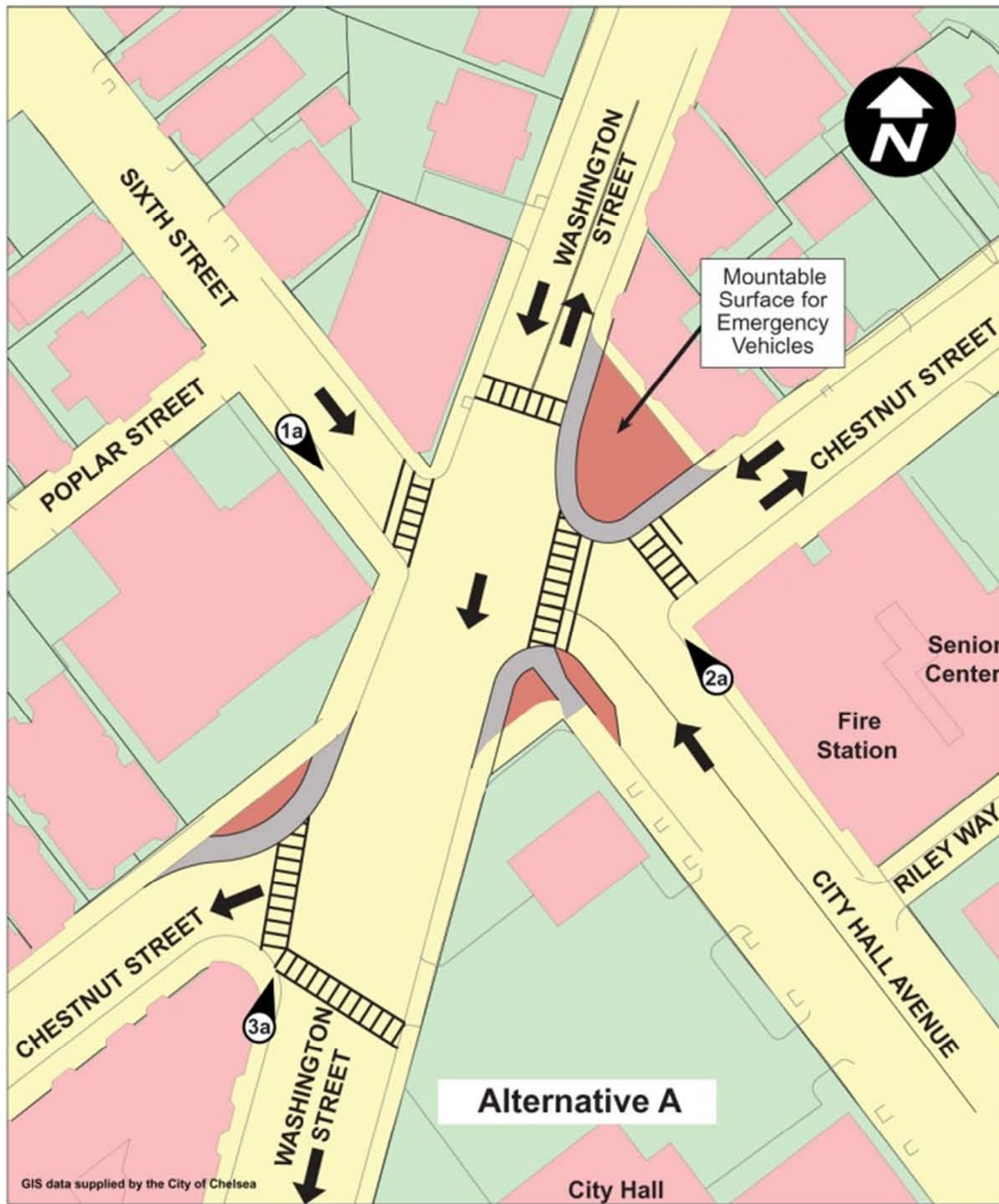


Figure 18: Segment 3 – Fay Square Conceptual Improvement Alternatives

Segment 4 – Mystic Mall Area

Segment 4 connects to the on-road route at Fourth Street and extends along Everett Avenue to the Mystic Mall. The proposed pathway will improve bicycling and pedestrian access to the Mystic Mall, which will hopefully encourage more people to choose to bike/walk rather than drive. The proposed improvements along this segment include the following:

Multi-Use Path Along Everett Avenue: At the end of Segment 3, bicyclists would find themselves at the unsignalized intersection of Fourth Street and Everett Avenue. Under existing conditions, bicyclists could either travel in the shoulder along Everett Avenue or walk their bikes along the 8-foot-wide sidewalk from Fourth Street to the signalized Spruce Street intersection. Upon reaching the Spruce Street and Everett Avenue intersection, bicyclists would either cross the intersection as a vehicle, or dismount and push the pedestrian push button.

Due to the high traffic volumes on Everett Avenue, an off-road facility is preferred. Therefore, It is recommended that the City and its project partners work with RMD/DSM (Mystic Mall developers) and their engineers to see if they will consider widening this sidewalk on the east side of Everett Avenue (Fourth Street to Spruce Street) to 10 feet to serve as a multi-use path segment as part of the Everett Avenue Roadway Improvement Project. While this widening will require a property agreement with the abutting property owner (Mystic Office Park Condominiums), it is not anticipated that the widening will impact the parking lot. A widened sidewalk in this area will allow inexperienced bicyclists to use the multi-use path rather than ride with traffic along the busy Everett Avenue. After crossing the intersection, bicyclists would then travel along a proposed multi-use path along the Mystic Mall frontage on the west side of Everett Avenue to a point north of the Century Bank near the CSX ROW. The City met with RMD/DSM as part of this study, and they agreed to work with the City to provide a 10-foot-wide multi-use path in this location. The proposed multi-use path typical section proximate to the Burger King parking lot is shown in Figure 19. This typical section takes into account the proposed widening of Everett Avenue. As shown in the section, it is recommended that a minimum of 5 feet of separation be maintained from the proposed Everett Avenue curb line and the edge of the multi-use path.

Gateway Entrance: It is recommended that a gateway entrance with benches and bike racks be created on the Mystic Mall property. This gateway entrance would provide path users with a place to rest, meet up with friends, or lock their bike to go grab a bite to eat or drink from one of the nearby food establishments. Two potential gateway locations are shown on Figure 20.

Future Extension: It is recommended that the City and its project partners continue to explore opportunities to extend the path west into Everett and ultimately connect to the proposed Northern Strand Community Trail as shown on Figure 5. At a regional level, improved bicycle/pedestrian connections will allow users with improved access to areas of cultural, economic, social, and natural significance and afford commuters with an alternative transportation choice to motorized travel.

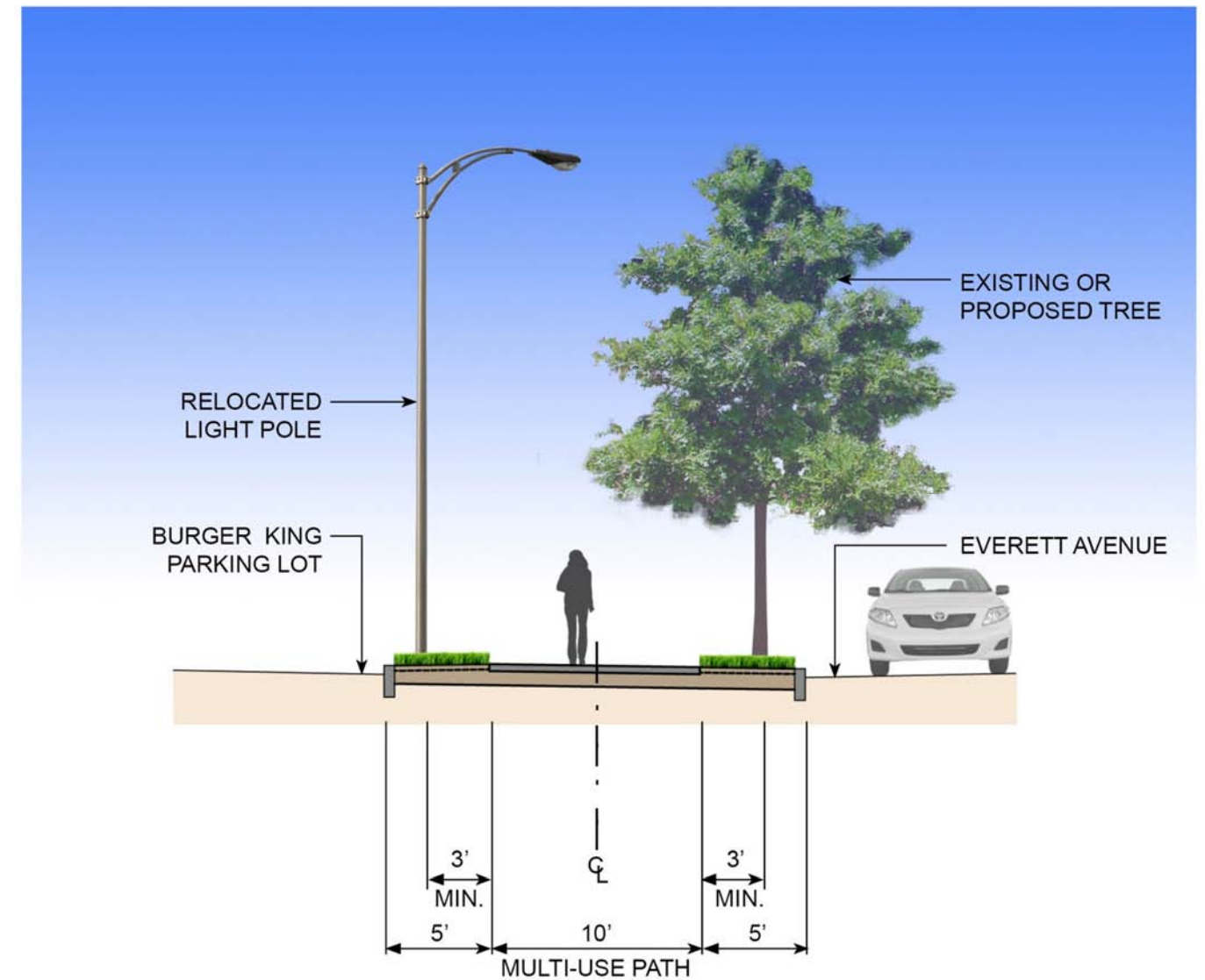


Figure 19: Segment 4 – Cross Section D



Figure 20: Segment 4 – Multi-Use Path Along Everett Avenue and Mystic Mall Connections

4 Implementation Plan

Attempting to tackle the project in its entirety would prove burdensome and cost prohibitive. In addition, there are legal issues that need to be addressed in order to allow certain portions of the project to be advanced. Therefore, it is recommended that the project follow a phased approach that would allow time to secure the necessary permits/approvals and apply for project funding.

The three major factors influencing project implementation are as follows:

1. CSX needs to abandon the existing freight easement along the Grand Junction Secondary Track ROW within the Chelsea limits. The abandonment may require MassDOT to perform confirmatory takings to clear any title issues. These factors are discussed further in Part II, Chapter 2 of this study. The City and its project partners should advocate for MassDOT to pursue CSX to abandon the easement.
2. MassDOT needs to grant the City a permanent easement, deed transfer, or a long-term (99-year) lease for the purposes of multi-use path design, construction, and maintenance along a portion of the ROW. MassDOT cannot grant such property rights until after CSX has abandoned the freight rail easement. In the interim, the City should review example agreements that MassDOT has signed with other municipalities to better understand the typical terms and conditions.
3. The City and its project partners need to work closely with private property owners to ensure the multi-use path project is included in proposed site development and roadway improvements projects. Current projects still in the planning/design phase include the housing development at 22-28 Gerrish Avenue and the roadway improvements along Everett Avenue.

In addition, as discussed more in Chapter 7, it is critical that the City and its current partners continue to form new partnerships at the local, regional, and State level to make this project a priority for many different parties. Such partnerships will help the City advance the project from the study phase, secure the necessary approvals and resources, and ensure the project's success.

Phasing Strategy

The tasks under each phase have been organized based on their potential to serve users in the near term while helping to advance the larger project over the long-term. Further, many of these phases can be pursued concurrently so they can be advanced as soon as CSX abandons the existing freight easement and MassDOT can grant the City a long term property agreement to allow the multi-use path project to proceed.

The recommended phasing strategy is illustrated on Table 2 and Figure 21.

Table 2: Project Phasing Strategy*

Phase	Activity / Task	Requires CSX Abandonment / MassDOT Property Agreement
1A	Install on-road bike route and directional signage and pavement markings from the Box District to Everett Avenue and MBTA Station <ul style="list-style-type: none"> • Westbound route = 2,800 feet • Eastbound route = 2,700 feet 	No
1B	Conduct a walkability audit, perform any necessary ADA accessibility upgrades, and install signage for designated walking route from the Box District to the Mystic Mall and MBTA Station	No
1C	Design and construct a multi-use path between Fourth Street and the CSX ROW as part of the Everett Avenue Roadway Improvement Project <ul style="list-style-type: none"> • Fourth Street to Mystic Mall = 700 feet 	No
2A	Design and construct a multi-use path between Eastern Avenue and Library Street <ul style="list-style-type: none"> • Eastern Avenue to Library Street = 1,700 feet 	Yes
2B	Design and construct a multi-use path between Library Street and Broadway <ul style="list-style-type: none"> • Library Street to Broadway = 1,450 feet 	Yes
3A	Design and construct elevated 'high-line' multi-use path between Broadway and Chestnut Street <ul style="list-style-type: none"> • Broadway to Chestnut Street = 450 feet 	Yes
3B	Explore 'high-line' concept of decking railroad corridor between Broadway and Washington Avenue	Yes
4A	Design and construct a waterfront park at Chelsea River	Yes
4B	Explore connections to the East Boston Greenway	No
5	Design and construct intersection improvements at Fay Square	No
6	Explore connections to the Northern Strand Community Trail in Everett	No

* See Figure 21 for phasing strategy.

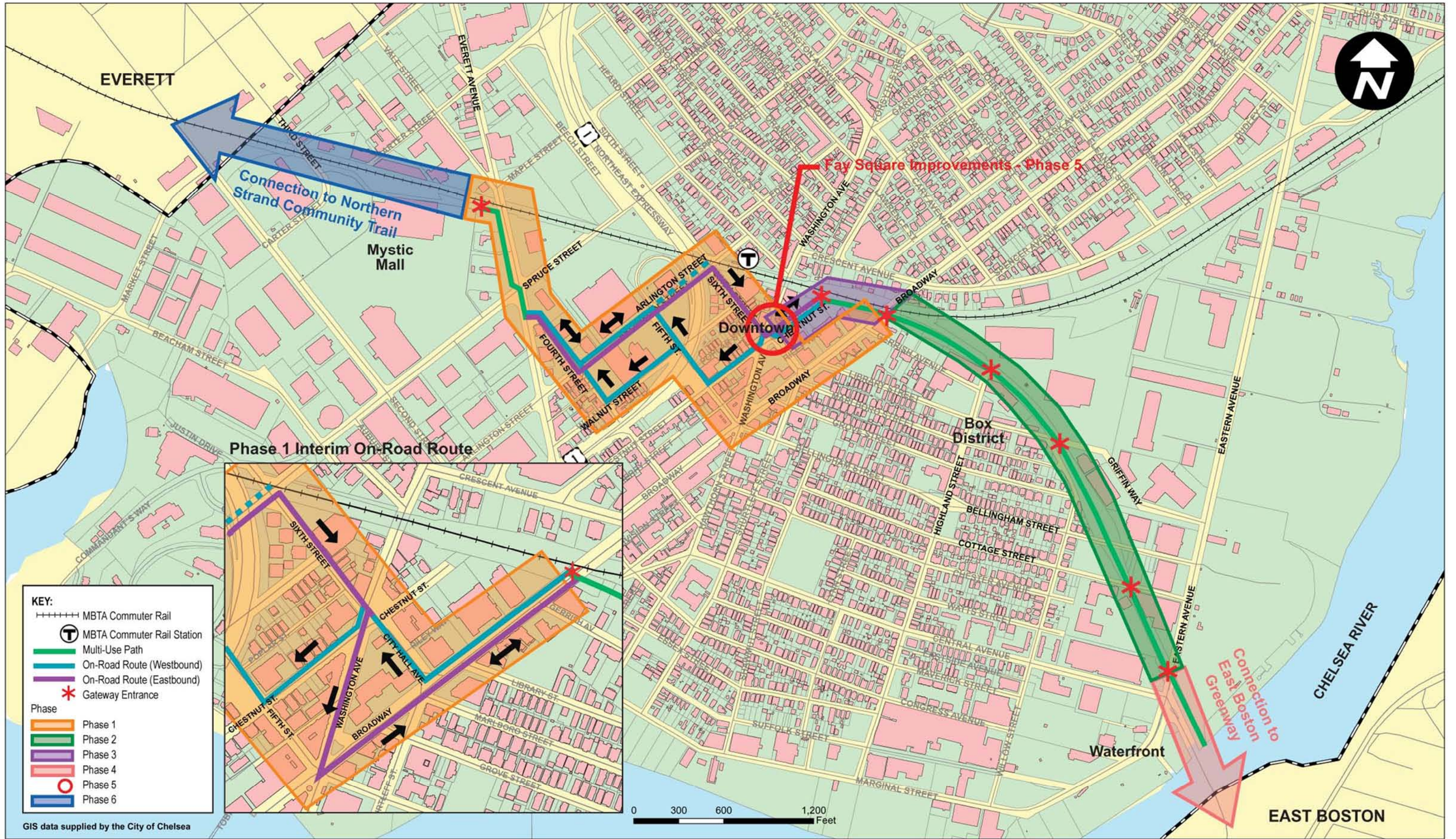


Figure 21: Phasing Strategy

Phase 1

Phase 1 does not require the City to obtain a property agreement from MassDOT and therefore can proceed in advance of CSX abandoning its rights to the railroad ROW. The key components of this phase are as follows:

- **Bike Route:** The City could install bike routes along local roadways between the Box District and Mystic Mall area. The installation would consist of bike route signage and shared lane markings (sharrows) along the westbound and eastbound routes discussed under Segment 3 in Part I, Chapter 3. Installing bike route signage and pavement markings is a low-cost improvement that will encourage people to walk/bike more in the near term while helping to build user demand for future project phases. As the multi-use path connection to Chestnut Street along the CSX ROW is not included as part of Phase 1, an interim bike route along Washington Avenue and Broadway will be needed to connect users to the Box District. This interim bike route is shown on Figure 21.
- **Walking Route:** Likewise, signage along a designated walking route between the Box District and Mystic Mall area could also be installed. It is recommended that the City and its project partners conduct a walkability audit and perform any necessary ADA accessibility upgrades along the routes discussed under Segment 3 in Part I, Chapter 3. When this study was being prepared, the City was informed that they were the recipient of a WalkBoston grant that will be used for similar purposes citywide.
- **Multi-Use Path Along Everett Avenue:** The City and its project partners should work with RMD/DSM (Mystic Mall developers) and their engineers to incorporate a multi-use path into the proposed Everett Avenue Roadway Improvement Project. It is recommended that the sidewalk on the east side of Everett Avenue from Fourth Street to Spruce Street be widened to 10 feet. In addition, it is recommended that a multi-use path be included along the west side of Everett Avenue from Spruce Street to a point north of the Century Bank near the CSX ROW. It is important that the roadway improvement plans be amended to include these multi-use path segments so that the required design changes can be included in future funding applications and the necessary ROW can be acquired.

Phase 2

Phase 2 requires MassDOT to grant the City with a long term property agreement for multi-use path design, construction, and maintenance within a portion of the CSX ROW. The City and its project partners should advocate obtaining rights to the ROW from the Chelsea River to Chestnut Street. However, in the interest of advancing the project, the agreement could also be structured in phases if there is resistance from MassDOT due to uncertainty around the Urban Ring BRT project or the “rail with trail or BRT” concept. These phases could include Chelsea River to Library Street/Griffin Way (Segment 1), Library Street/Griffin Way to Broadway and Broadway to Chestnut Street.

Once a property agreement is executed with MassDOT, and the necessary funding is secured, it is recommended that the City and its project partners advance the design and construction of the multi-use path segment from Eastern Avenue to Broadway. Between Eastern Avenue and Library Street/Griffin Way, the multi-use path design can be developed independent of the Urban Ring BRT. From Library Street/Griffin Way to Broadway, the multi-use path should be sited within the ROW or on abutting property so as not to preclude the Urban Ring BRT. The latter section will require close coordination with the developer of 22-28 Gerrish Avenue (Mitchell Properties LLC) and abutting property owners to the west.

As part of the preliminary design phase, it is recommended that a wetland scientist be hired to determine if the potential wetland area proximate to the Bellingham Street overpass is subject to jurisdiction under State and Federal wetland statutes. In addition, a Licensed Site Professional (LSP) should be hired to perform soil testing and evaluation to further assess reuse risks and costs related to potential contamination along the ROW. These two items are discussed in more detail in the Existing Conditions chapter in Part II of this study.

Phase 3

Phase 3 also requires a property agreement with MassDOT for use of the ROW. Phase 3 includes the design and construction of the elevated “high-line” multi-use path between Broadway and Chestnut Street. This portion of the project will also require coordination with the MBTA due to the adjacent commuter rail line and the utility company, as the poles supporting the overhead utility lines may need to be relocated.

At the time this phase is being pursued, the City and its project partners should also decide whether to advance the other visions for this ROW segment. These visions include a bicycle/pedestrian bridge over the railroad corridor between Chestnut Street and the City-owned land on Crescent Avenue or the larger design concept of decking the entire railroad ROW between Broadway and Washington Avenue.

Phase 4

Phase 4 includes the design and construction of a waterfront park along the Chelsea River. If the proposed park is located within the CSX ROW, then a property agreement with MassDOT will be required. Another possibility would be to locate a waterfront park on the DCR-owned land on the south side of the Chelsea Street bridge. It is anticipated that local and State environmental permits will be required for park construction.

Also, as part of this phase or in advance of this phase, it is recommended that the City and its project partners work with the City of Boston and its partners (Friends of the East Boston Greenway, and Boston Natural Areas Network, Trustees of Reservations) to further explore how to connect the Chelsea multi-use path to the East Boston Greenway.

Phase 5

Phase 5 includes the design and construction of intersection improvements at Fay Square. As previously discussed, the two intersection improvement alternatives presented as part of this study have not been reviewed by the Chelsea Fire Department, Police Department, or Department of Public Works. Therefore, further coordination with these Departments is required in follow-up to this study. Project funding for any improvements at Fay Square will likely come from a different funding source than the multi-use path project.

Phase 6

Phase 6 includes a future connection to the Northern Strand Community Trail in Everett. It is recommended that the City and its project partners work with the City of Everett to explore how to connect the Chelsea pathway to the Northern Strand Community Trail. In Everett, the CSX ROW is actively used for freight rail. The active MBTA commuter rail line extends from Chelsea station through Everett to ultimately connect to North Station. The Urban Ring BRT is also proposed to extend along the active railroad corridor to Sweetser Circle and Santilli Circle at Revere Beach Parkway (Route 16) in Everett. Therefore, there are a number of competing interests for use of the railroad corridor within Everett. Providing a connection between the two pathway systems will require a review of the railroad ROW, abutting land uses, and potential on-road connections.

5 Project Development Costs

The purpose of this chapter is to provide a budgetary estimate of anticipated construction costs by project phase. In addition, the City and its project partners also need to take into account the engineering design and operation and maintenance costs associated with the multi-use path's development.

Construction Cost Estimates

For the purposes of this study, the cost estimate for each phase does not include the cost of:

- Land acquisition (permanent or temporary easements or takings)
- Utility relocations (force accounts)
- Site amenities (benches, picnic tables, bike racks, fitness equipment)
- Landscaping or fencing
- Hazardous materials handling or disposal
- Planning or design phase services

These specific items of work will be determined during the preliminary design phase.

The costs associated with the major items of work include the following:

- Bike route sign on steel post = \$200/sign
- 'Sharrow' pavement marking = \$150/each
- Clearing and grubbing = \$15,000/acre
- Excavation = \$30/cubic yard
- Gravel borrow (8") for multi-use path shoulders or backfill material = \$30/cubic yard
- Loam borrow (4") and seeding for multi-use path shoulders = \$1/square foot
- Multi-use path paved surface (4") with subbase material (8") = \$5/square foot
- Wooden boardwalk supported on helical screws = \$100/square foot
- Retaining wall system including structural backfill = \$100/square foot (wall face)

When applying for funding, the City or project proponent should include a 20% contingency markup to account for specific items of work that will be determined during the preliminary design phase and the cost of any other proposed enhancements such as site amenities, landscaping, or fencing. Also, the estimated cost should be escalated using a flat inflation rate (4%) and compounded annually to estimate for expected increases in the cost of construction.

Table 3: Estimated Construction Costs by Project Phase

Phase	Activity / Task	Estimated Construction Cost
1A	Install on-road bike route and directional signage and pavement markings from the Box District to Everett Avenue and MBTA Station <ul style="list-style-type: none"> • Westbound route = 2,800 feet • Eastbound route = 2,700 feet 	\$10,000
1B	Conduct a walkability audit, perform any necessary ADA accessibility upgrades, and install signage for designated walking route from the Box District to the Mystic Mall and MBTA Station	Requires further study
1C	Design and construct a multi-use path between Fourth Street and the CSX ROW as part of the Everett Avenue Roadway Improvement Project <ul style="list-style-type: none"> • Fourth Street to Mystic Mall = 700 feet (Does not include roadway reconstruction costs) 	\$65,000
2A	Design and construct a multi-use path between Eastern Avenue and Library Street <ul style="list-style-type: none"> • Eastern Avenue to Library Street = 1,700 feet (includes 400-foot-long by 12-foot-wide boardwalk) 	\$700,000
2B	Design and construct a multi-use path between Library Street and Broadway <ul style="list-style-type: none"> • Library Street to Broadway = 1,450 feet (includes 800-foot-long retaining wall system from Highland Street to Broadway) 	\$1.3 million
3A	Design and construct elevated 'high-line' multi-use path between Broadway and Chestnut Street <ul style="list-style-type: none"> • Broadway to Chestnut Street = 450 feet (includes 450-foot-long retaining wall system) 	\$1.4 million
3B	Explore 'high-line' concept of decking railroad corridor between Broadway and Washington Avenue	Requires further study
4A	Design and construct a waterfront park at Chelsea River	Requires further study
4B	Explore connections to the East Boston Greenway	Requires further study
5	Design and construct intersection improvements at Fay Square	\$150,000 - \$350,000
6	Explore connections to the Northern Strand Community Trail in Everett	Requires further study

Design Cost Estimates

The engineering design cost is typically between 10% and 20% of the construction cost, with the variation being attributed to the complexity of design issues along a corridor, number of structures, and extent of required permitting.

If a MassDOT design process is followed, a 25% Design (preliminary design) is typically 40% of the total design cost. The 25% Design phase, according to the Project Development & Design Guide, includes a complete topographic survey including delineation of environmental resource areas, and preparation of preliminary alignment plans, profiles, and typical cross sections for the multi-use path. Based on this information, it is possible to determine the extent of actual impacts, if any, that a path would have upon adjacent resource areas and properties. During the 25% Design phase, the designer will determine which permits and approvals will be required for the project, and will initiate early coordination with those local and State agencies. After the 25% Design is completed and approved by MassDOT, a Design Public Hearing is held in the community. The project can then advance to the final design phases (75% Design, 100% Design, and Final Plans, Specifications & Estimates). All necessary permits are secured before the project is put out to bid for construction.

The engineering design cost would be slightly reduced if the project were to follow a two-step design process (preliminary and final submissions).

Operation and Maintenance Costs

As the multi-use path will be a public facility, the City or another party will be responsible for maintenance to keep the trail in a safe, usable condition. There may be an opportunity to engage local volunteers in the maintenance and oversight of the path. The use of volunteer labor and/or resources will help reduce the costs to the City.

Many publicly owned and managed paths incur trail maintenance costs as part of their annual public works or parks & recreation operations. These entities typically do not keep a separate cost and activity record of the maintenance and management of the trail. Therefore, it is difficult to identify the costs related to as-needed, seasonal, and long-term maintenance activities.

The Rails-to-Trails Conservancy (RTC) Northeast Regional Office completed a study of various path/trail maintenance and operations issues for more than 100 open rail-trails in the northeast region of the United States. Their findings have been compiled in a publication entitled *"Rail-Trail Maintenance & Operation: Ensuring the Future of Your Trail - A Survey of 100 Rail-Trails."* This publication is available on RTC's website [<http://www.railtrails.org/>]. The City and its project partners should consult this publication for valuable information on budgetary issues, staffing, equipment, and various other needs related to the operation and maintenance of a multi-use path.

6 Project Funding

There are a number of potential State/Federal, nonprofit and private funding sources that the City and its project partners could apply for to help advance the project from the study phase through design and construction to offset some of the project development costs to the City. As each of these potential funding programs is highly competitive, the City and partners will need to undertake a comprehensive grant writing and project marketing effort.

Potential funding sources include, but are not limited to, those listed in Table 4.

Table 4: Potential Funding Sources

	Funding Program	Administering Agency	Funding Range
1	Transportation Enhancement (TE) Program	MassDOT	Varies
2	Congestion Mitigation and Air Quality (CMAQ) Improvement Program	MassDOT	Varies
3	MassWorks Infrastructure Program	MassDOT	Varies
4	Recreational Trails Program (RTP)	DCR	\$2,000 to \$50,000
5	Gateway Cities Parks Program	EOEEA	\$175,000 average
6	Parkland Acquisitions and Renovations for Communities (PARC)	EOEEA	\$50,000 to \$500,000
7	Bikes Belong Coalition	Bikes Belong	Up to \$10,000
8	WalkBoston	WalkBoston	Varies
9	Safe Routes to School Program	MassDOT/MassRIDES	Less than \$500,000
10	Fields Pond Foundation	Fields Pond Foundation	\$2,000 to \$10,000
11	New England Grassroots Environment Fund (NEGEF)	NEGEF	\$500 to \$10,000
12	Kodak American Pathways Grant Program	Kodak	\$500 to \$1,000
13	Private Sources	Varies	Varies

The following three programs – Transportation Enhancement Program, Congestion Mitigation and Air Quality Improvement Program, and MassWorks Infrastructure Program – are administered by MassDOT and fund infrastructure projects of varying scope. These programs are typically used for multi-use path design and construction.

The two most commonly used funding programs for bicycle and pedestrian projects are the Transportation Enhancement (TE) Program and Congestion Mitigation and Air Quality (CMAQ) Improvement Program. Both programs were originally funded through the Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and continued via the Transportation Equity Act for the 21st Century (TEA-21). These programs are included in the current reauthorization of the Act, entitled The Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003 (SAFETEA). The availability of State and Federal funding will dictate whether a multi-use path project will proceed through the TE or CMAQ Program.

Under both programs, the City or project proponent must demonstrate the project's feasibility to MassDOT. The first step is to complete a Project Need Form (PNF) and submit it to (in Chelsea's case) the MassDOT District 6 Office in Boston. This form should also be forwarded to the MAPC for their files. This study should be attached to the PNF to provide additional information. The PNF can be prepared with or without the help of a consultant. MassDOT will review the PNF and evaluate the merits and readiness of the project. They will also provide the City or project proponent, with advice on how to proceed, both in terms of the design process and available funding sources. Pending approval of the PNF, the next step is to prepare a Project Initiation Form (PIF).

1. Transportation Enhancement (TE) Program

In order for a project to be considered for the TE Program, Chelsea needs to submit a funding application to the Metropolitan Area Planning Council (MAPC). The MAPC is responsible for selecting which regional projects are eligible for consideration as TE Program funded projects. Selected projects are reviewed for eligibility and preparedness for implementation before a project is forwarded to MassDOT and the State Transportation Enhancement Steering Committee. Under this program, the City or project proponent (applicant) is responsible for 10% of the project cost. Municipalities typically do one of the following to meet this requirement:

- Fund 10% of the design cost plus 10% of the construction cost; or
- Fund the entire design (which is typically between 10-20% of the construction cost depending upon project complexity)

Under the first option, the applicant is responsible for 10% of the design cost and then the State will reimburse the applicant the difference to complete the design. The applicant's 10% match for the construction is included in the final construction cost estimate as a list of "non-participating"

items (which are items not funded by MassDOT under the specific contract). The applicant will be responsible for paying for the "non-participating" items in order to achieve their 10% requirement. This approach equates to the same dollar figure as saying the applicant is responsible for funding 10% of the design plus the construction cost.

Under the second option, the applicant funds the entire design which is often slightly more than the 10%. This option seems to be more widely used and demonstrates the applicant's commitment to help advance the project through the design phase. The applicant is responsible for administering the design contract through a MassDOT design and review process. The applicant does not provide any funding toward the construction phase of the project under this option. MassDOT would be responsible for project construction.

2. Congestion Mitigation and Air Quality (CMAQ) Improvement Program

A multi-use path project often fits the eligibility requirements for both the TE Program and the Congestion Mitigation and Air Quality (CMAQ) Improvement Program of SAFETEA. CMAQ is a transportation air quality improvement program that provides funding for both bike and pedestrian facilities that serve to reduce automobile travel. The City or project proponent (applicant) must complete a CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Projects to document a quantifiable reduction in auto emissions and/or congestion to be eligible under this program. Under this program, the project cost is funded 80% Federal and 20% State or local match. The applicant must be prepared to provide a local funding commitment comprised of a cash match in the amount of 10% under the same scenarios described under the TE Program.

3. MassWorks Infrastructure Program

The MassWorks Infrastructure Program is administered by the Executive Office of Housing and Economic Development, in cooperation with MassDOT and Executive Office for Administration and Finance. The Program provides a one-stop shop for municipalities and other eligible public entities seeking public infrastructure funding to support four different project types:

- Housing development at density of at least 4 units to the acre (both market and affordable units)
- Transportation improvements to enhance safety in small, rural communities
- Community revitalization and sustainable development
- Economic development and job creation and retention

The MassWorks Infrastructure Program provides grant funding for the construction, reconstruction and expansion of publicly owned infrastructure including, but not limited to, sewers, utility extensions, streets, roads, curb-cuts, parking facilities, water treatment systems, and pedestrian and bicycle access. Eligible public infrastructure must be located on public land or on public leasehold, right-of-way, or easement.

The current Administration is committed to implementing the Commonwealth's Sustainable Development Principles by ensuring that State funds used for infrastructure investments are consistent with these principles to the greatest extent possible. To that end, the Administration has developed spending goals for the MassWorks Infrastructure Program portfolio of investments.

Current spending goals for the MassWorks Infrastructure Program are as follows:

- 50% or more of the total funding must be in support of developments in Gateway Cities;
- 67% or more of the total funding must be in support of transit-oriented developments (that is, developments located within one-half mile of a transit station; further, transit station is defined as a subway or rail station, or a bus stop serving as the convergence of two or more bus fixed routes that serve commuters);
- 80% or more of the total funding must be in support of developments that are re-using previously developed sites;
- 50% or more of the total funding must be in support of developments that contain a mix of residential and commercial uses, with a residential unit density of at least four units to the acre;
- 100% of the funding that is committed in support of housing (or mixed use including housing) must be in support of developments with a residential unit density of at least four units to the acre;
- 25% or more of the total funding must be in support of projects of regional significance that are supported by two or more communities.

Communities with a population over 7,000 are eligible to apply for design/engineering costs along with a construction grant. However, no more than 10% of the total grant request may be used for design/engineering. If a project is seeking design/engineering funds as part of an application, the project must still be able to complete design/engineering in a period that allows the project to advance to construction during the upcoming construction season.

More information is available at: www.mass.gov/eohed/infrastructure

The following three programs – Recreational Trails Program, Gateway Cities Parks Program, and Parkland Acquisitions and Renovations for Communities – are all competitive programs administered by agencies under the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) that fund infrastructure projects of varying scope. These programs would be ideal funding sources for multi-use path design and construction and the development of parkland and recreational facilities.

4. Recreational Trails Program (RTP)

The Recreational Trails Program (RTP) provides Federal funding support for a variety of trail development and maintenance projects and is administered on a reimbursement basis by the Massachusetts Department of Conservation and Recreation.

The RTP funds up to 80% of each trail project, with at least 20% of the total project cost funded by other sources. The match can consist of money from other sources such as non-Federal grants, donations, or municipal funds. A “soft match” in the form of materials, labor, and in-kind services is also permitted. “Soft match” contributions include paid labor, volunteer/donated labor, purchased materials and services, and donated labor and materials. Grant amounts, not including the match, may range from \$2,000 to \$50,000, with requests greater than \$50,000 being considered for regional or Statewide projects.

Unlike the projects programmed for inclusion on the TIP or through TE or CMAQ, the RTP requires that projects be primarily recreational in nature, rather than transportation oriented. Priority will be given to projects that create or facilitate physical improvements that seek to protect or enhance the site’s natural and cultural resource values while also satisfying a recreational demand.

Historically, grant applications seeking funds for trail planning and design activities have not been looked at favorably. More information is available at:

<http://www.mass.gov/dcr/stewardship/pathway/regionalGrants.htm>

5. Gateway Cities Parks Program

The Gateway Cities Parks Program is administered by the Massachusetts EEA. This feasibility/conceptual design study is being funded under this program. The program funds the creation and restoration of parks and recreational facilities in underserved urban neighborhoods in designated gateway cities. Chelsea is one of approximately 22 gateway cities. The average grant size is \$175,000.

6. Parkland Acquisitions and Renovations for Communities (PARC)

The Parkland Acquisitions and Renovations for Communities (PARC) Program is also administered by the Massachusetts EEA. The PARC program provides grant assistance to cities and towns to acquire parkland, develop new parks, or renovate existing outdoor public recreation facilities (formerly the Urban Self-Help Program). Municipalities must have a current open space and recreation plan to apply. In addition, all properties for which grant assistance is provided must be

open to the general public for appropriate active recreational use. Also, as the property will become protected open space under Article 97 of the Amendments to the Constitution of the Commonwealth of Massachusetts, the applicant must own the property in fee. Grants range from \$50,000 to \$500,000. More information is available at <http://www.mass.gov/eea/dcs-grants>

The following three programs – Bikes Belong Coalition, WalkBoston, and Safe Routes to School – support planning and small scale infrastructure improvement projects. These programs are typically used for installing bike route signage and pavement markings, conducting bikeability or walkability audits and performing any necessary ADA upgrades, and outreach and educational programs to encourage biking and walking in the community.

7. Bikes Belong Coalition

Bikes Belong Coalition is a nonprofit organization sponsored by members of the American Bicycle Industry. Bikes Belong provides competitive national grants for projects that will “put more people on bicycles more often.” They will not consider projects in which Bikes Belong is the sole funder but will consider proposals where they are initial funder and the project sponsor is looking to leverage the money for other funding programs. In 2011, Bikes Belong Coalition also launched a Community Partnership Grant which will primarily fund the construction or expansion of bicycle facilities such as bike lanes, trails, and paths. The grants committee will also consider advocacy projects that promote bicycling as a safe and accessible mode of transportation. Eligible applicants for this program include nonprofit organizations or a local government entity. Grants range from \$5,000 to \$10,000. More information is available at: <http://www.bikesbelong.org>

8. WalkBoston

WalkBoston is a nonprofit membership organization dedicated to improving walking conditions in cities and towns across Massachusetts. The organization’s mission is to create and preserve safe walking environments that build vital communities. They promote walking for transportation, health, and recreation through education and advocacy. Chelsea recently received a grant to work with WalkBoston to review matters concerning pedestrian safety, including as a minimum, potential safety improvements and a map showing safe routes for walking within Chelsea. More information is available at: <http://www.walkboston.org/>

9. Safe Routes to School (SRTS) Program

The Massachusetts Safe Routes to School (SRTS) program helps to reduce congestion, air pollution, and traffic congestion near schools, while increasing the health, safety, and physical activity of elementary and middle school students. The program is managed by the Massachusetts Department of Transportation (MassDOT) with assistance from MassRIDES. The program is typically initiated by the school administration, parents association or City. In order to be eligible for infrastructure projects targeted to enhancing safe access to schools, a school must partner with MassRIDES on education, encouragement, enforcement, and evaluation activities and take part in

safety training for 1 full year. Currently, a total of 8 schools in Chelsea are partnered with MassRIDES on SRTS initiatives. Two of these schools include the Eugene Wright and Joseph A. Browne Schools, which are located along the on-road bike route and walking route for the proposed project as shown on Figures 16 and 17. The infrastructure upgrades identified in the Chelsea SRTS September 2010 preliminary assessment would also benefit the overall path project. There may also be other opportunities to leverage SRTS infrastructure funds to improve biking and walking conditions for other school neighborhoods along the proposed Chelsea pathway alignment. Grants typically fund projects less than \$500,000. More information is available at: <http://www.commute.com/schools>

The following three programs – Fields Pond Foundation, New England Grassroots Environmental Fund, and Kodak American Pathway Grant Awards Program – are smaller grant programs which focus on enhancing partnerships and building project support in the community. These programs are typically used for newsletters, visioning workshops, and educational programs to encourage biking and walking in the community.

10. Fields Pond Foundation

The primary mission of the Fields Pond Foundation is to provide financial assistance to nature and land conservation organizations that are community-based and that serve to increase environmental awareness by involving local residents in conservation issues. Proposals from municipal government agencies are encouraged. The foundation accepts project grants for trail-making and other enhancement of public access to conservation lands, rivers, coastlines and other natural resources. They look for opportunities where a modest investment of grant funds can help in a significant way to improve public access to, and enjoyment of, natural areas, while maintaining the health and integrity of the environment. Projects in which volunteerism is a significant component are more likely to be funded. The expected range of grants is \$500 to \$25,000, with most falling within the range of \$2,000 to \$10,000. The Foundation is willing to consider multiple-year grants. Proposals may be submitted at any time, since the Directors meet regularly throughout the year. It is recommended that applicants contact them informally before proceeding to prepare a formal application. More information is available at: <http://www.fieldspond.org/>

11. New England Grassroots Environment Fund (NEGEF)

The New England Grassroots Environment Fund (NEGEF) supports a wide range of community organizing activities throughout the region. NEGEF's Boston Grants Initiative provides grants to groups working on environmental justice, environmental health, greenspace and other environmental projects in the neighborhoods of Boston, Chelsea, Somerville and Cambridge, Massachusetts. Prior grants have supported hiring part-time paid project coordinators, tools and resources for community gardens, removing debris to reclaim access to a river and advocating for a

light rail system. Most projects come from small and emerging neighborhood groups, but some may be part of a larger organization where the initiative would not proceed without additional, project-specific funding. Grant applicants must be working at the grassroots level, and must demonstrate a major element of volunteer involvement in their programs. Grants range from \$500 to \$10,000. More information is available at: <http://www.grassrootsfund.org/>

12. Kodak American Pathways Grant Awards Program

The Kodak American Pathways Grant Awards Program is a partnership project of the Eastman Kodak Company, the Conservation Fund, and the National Geographic Society. The program provides small grants to stimulate the planning and design of pathways in communities throughout America. Grants may be used for activities such as: mapping, ecological studies, surveying, conferences, and design activities; developing brochures, interpretative displays, audio-visual productions or public opinion surveys; hiring consultants, incorporating land trusts, building a foot bridge, planning a bike trail, or other creative projects. In general, grants can be used for all appropriate expenses required to complete a pathway project including planning, technical assistance, legal and other costs. Letters of support from associated agencies, public officials, citizen groups, or nonprofit organizations must be included with the application. Eligible applicants include local, regional, or Statewide nonprofit organizations. Although public agencies may also apply, community organizations will receive preference. The maximum grant is \$2,500, however most grants range from \$500 to \$1,000. More information is available at: <http://www.conservationfund.org/>

Lastly, the City and its project partners could reach out to a number of potential private donors both locally and Statewide to seek project support and funding. Such donors could include local corporations or developers, as well as other nonprofit organizations such as the Trustees of Reservations or Trust for Public Land.

13. Private Sources

Many private companies and nonprofits have financial resources that they contribute as part of a community outreach program. For example, Intel Corporation of Hudson, Massachusetts donated funds and assistance, in the form of volunteers, to the Assabet River Trail project through their "Intel in the Community" program. In Salisbury, the Timberland Company, local contractors, town workers and volunteers sponsored a cooperative Earth Day work event to help construct an extension of the Salisbury Point Ghost Trail. Based on the stakeholder outreach conducted as part of this study, there appears to be interest by local developers with a vested interest in Chelsea to provide some financial support towards the project.

7 Partnering Strategy

Multi-use path projects along former railroad corridors often follow an arduous process to fruition. The need to acquire property rights matched with efforts to secure and program the necessary funding can often take several years. Chelsea is aware of these challenges and recognizes the need to build upon the momentum created during this study effort. Therefore, it is critical that Chelsea develop a flexible, proactive, and inclusive strategy to advance this project through to completion.

This study was prepared with a cross section of community input and direction. Members of the City's Office of Planning & Development and the City Manager's Office directed the process. In addition, a Working Group comprised of representatives from City boards and nonprofit organizations helped guide the conceptual design process. Meetings were also held with individual stakeholders along the corridor to provide an overview of the proposed project, discuss their interests and views, and identify any opportunities for further collaboration. Coordination meetings were also held with MassDOT and the MBTA to exchange information and ideas on the future use of the CSX ROW.

Now that a conceptual design and implementation strategy has been developed, it is especially critical that this constituency join forces with other key partners to serve as project champions and garner support at the local, regional and State level. It is important that this project become a priority for many different parties.

Some of the recommended components of this strategy include the following tasks:

Broaden participation in the Working Group

The City and its project partners should seek to broaden participation in the Working Group to include representation from other City departments/boards/committees, the school administration, local public health agencies, and nonprofit organizations. This group could also include participation by other entities such as the MA EEA, National Park Service, Rails to Trails Conservancy, Trust for Public Land, and Trustees of Reservations.

Continue coordination efforts with State agencies

The City and its project partners should continue to work closely with MassDOT, the MBTA, and the EEA to advocate for multi-modal use of this corridor. As currently envisioned, the proposed multi-use path project will not preclude the future use of this corridor for the Urban Ring BRT. Further, as part of a larger goal, it is hoped that MassDOT and the MBTA will come to support opportunities to co-locate bicycle and pedestrian facilities within active rail corridors.

Engage political leadership

The City and its project partners recognizes that political leadership and support is necessary to help advocate for CSX to abandon their easement rights to the corridor and for MassDOT to grant

the City a permanent easement, deed transfer, or a long-term (99-year) lease to allow the multi-use path project to proceed. Political support can also help projects secure the necessary design and construction funding.

Conduct a broader community and neighborhood outreach

It is recommended that the City and its project partners hold a series of interactive discussions / visioning sessions with its residents and other community stakeholders. Broad interactive public participation is needed to further define the conceptual design vision and build the necessary support to carry out this vision.

Form a nonprofit organization

The City should encourage the formation of a nonprofit organization such as a 'Friends of the Chelsea Pathway.' A nonprofit organization would be eligible for additional funding programs and could accept donations from private entities for path design, construction, and maintenance.

Develop a biking and walking campaign

Building upon the success of Massachusetts General Hospital's (MGH) Healthy Chelsea Program, the City's Safe Routes to School Program, and other local health initiatives, the City and its project partners should develop a comprehensive biking and walking campaign.

The City and its project partners are committed to promoting biking and walking in the community through the development of a multi-use path and on-road facility network. Through an effective partnership strategy, this group can work together to make this project a success.

PART II – Project Background

1 Overview

Part II of this study provides an overview of the key design issues, opportunities, and constraints that influenced the conceptual design for the proposed multi-use path. This background review included the railroad right of way, existing site conditions, and the proposed Urban Ring project.

Railroad Right of Way: One of the most useful tools for evaluating a railroad corridor is the valuation records of the Interstate Commerce Commission (ICC). These maps provide information about the railroad facilities existing at a particular location, the land owned by the railroad and how it was acquired, and the land adjacent to railroad property. Most valuation records were created between 1915 and 1920 by the ICC and railroad engineers who undertook a massive project to inventory almost every aspect of the U.S. railroad system for the purpose of determining a net worth for each railroad. As part of this study, the Boston and Albany Railroad Valuation Maps were reviewed. These maps were updated in 1999 to depict the portion of ROW conveyed to CSX, which was subsequently sold to MassDOT in 2010. These plans, when reviewed in conjunction with the associated legal documents (i.e., deed transfer, operating agreements), provided critical information on the limits of the railroad ROW and critical ‘pinch points.’

Existing Conditions: An evaluation of existing conditions within the study area was completed based on a review of existing reports/studies, proposed development plans, available geographic information system (GIS) data and mapping, on-the-ground visual inspection, and local coordination efforts. Reports/studies reviewed included the Gerrish Avenue/Bellingham Street Neighborhood Action Plan (October 2007), the North Bellingham Hill Revitalization Plan (2009), 2010-2016 Open Space and Recreation Plan (August 2010), and Eugene Wright and Joseph A. Brown Schools Safe Routes to School Infrastructure Program Preliminary Assessment (September 2010). Design plans for the Everett Avenue Roadway Improvement Project and Standard Box Housing Developments (22-28 and 44 Gerrish Avenue) were also reviewed. Available mapping also included planimetric and topographic survey developed as part of the Urban Ring Phase 2 project. In addition, on the ground fieldwork performed by FST and BRR was required to gather location-specific information such as potential path connections to adjacent neighborhoods, on-road alternatives, and potential amenity locations. Multiple coordination meetings were held throughout the course of the study during which the project team was able to gather valuable information from the City, Working Group and project stakeholders.

Urban Ring: One of the key design criteria for the re-use of the corridor was the need to set aside the necessary space for the bus rapid transit (BRT) facility discussed in the November 2008 Draft Revised Environmental Impact Report/ Draft Environmental Impact Statement (RDEIR/DEIS) for the Urban Ring Phase 2 project. The proposed design for the Urban Ring BRT and related MassDOT projects along the corridor were reviewed in detail as part of this multi-use path study. This review identified locations where the CSX ROW width could accommodate transit and a parallel multi-use path as well as locations where there were multi-modal design constraints. The review also highlighted where a multi-use path could be developed as a standalone facility along the ROW or where it needed to be routed on-road to avoid significant impacts to abutting properties.

More details on each of these items are included in the following chapters.

2 Railroad Right of Way

Railroad History

The CSX ROW within the Chelsea limits is part of the Grand Junction Secondary Track ROW. The Grand Junction Railroad & Depot Company was chartered in 1847. The original 6-mile line extended from the busy docks of East Boston to the Boston & Maine freight yard in Somerville. An extension was built west through Cambridge to the Boston & Worcester in Allston but was suspended in 1857 due to financial woes. However, the original Grand Junction line continued to serve as a major freight link serving the many industrial factories, shops, and warehouses along its length. Under the New York Central, Penn Central, and Conrail, the Grand Junction remained an important urban belt freight loop. In 1955, the railroad drawbridge over the Chelsea River was taken out of service when the counterweight fell off the bridge. At that time, the remaining freight traffic between Chelsea and East Boston was re-routed along the Boston & Maine East Boston Branch.¹

ROW Ownership

On June 1, 1999, the Grand Junction ROW was conveyed from Conrail to CSX Transportation, Inc. Nearly a decade later, MassDOT purchased the ROW from CSX with a release deed on June 11, 2010.² This release deed covered multiple railroad properties including 6.13 miles of the Grand Junction Secondary Track in three sections. Section 3 includes the Everett, Chelsea, and East Boston portions of the Grand Junction Secondary Track ROW, a distance of approximately 3.24 miles in length.

In this release deed, CSX retained an Easement in Gross in perpetuity for railroad purposes in, over, or on the ROW. The easement can only be extinguished in the event that CSX abandons or terminates its rights to the corridor. Therefore, when MassDOT purchased the ROW through the release deed, this transaction essentially “land-banked” the corridor for future transportation uses but did not absolve the CSX easement.

Also, as part of this release deed, MassDOT inherited over 20 existing agreements (i.e., utility, crossing rights) with outside parties for use of the ROW. However, at a coordination meeting on March 3, 2011, Transit Realty Associates (TRA) indicated that none of the agreements with outside parties would affect the surface use of the corridor.

According to the railroad valuation maps, the approximate edge of the CSX ROW is located approximately 6 feet from the centerline of the outbound MBTA track.

¹ Ronald Dale Karr, *The Rail Lines of Southern New England – A Handbook of Railroad History* (Pepperell, Massachusetts: Branch Line Press, 1995.), 275-276.

² Boston and Albany Railroad Valuation Maps. Grand Junction Branch V.1A/6B, V.1A/7A V.1A/7B, V.1A/8A and V.1A/6A., June 30, 1915. Updated 06/01/99 to reflect property conveyed from Conrail to CSXT.

Freight Rail Reinstatement

The Easement in Gross retained by CSX along the ROW would allow for the reinstatement of freight rail within the Chelsea limits. While only CSX can decide if it is economically feasible to reinstate freight rail traffic along the Chelsea ROW, a return to freight rail service cannot be completely ruled out from a land use perspective. However, there is no suggestion of a current pressing need for the return of freight service. Furthering the idea that CSX may not have future plans or freight rail is the fact that they filed for abandonment of this section of corridor in 2002, as discussed in more detail below.

From a constructability perspective, reinstating freight rail service would require the following:

- Installation of new rail infrastructure (i.e., tracks, ties, switches, etc.);
- Construction of a completely new movable railroad bridge over the Chelsea River;
- Relocation of the MWRA Caruso Pumping Station in East Boston;
- Reconstruction of the existing roadway bridges and adjacent property impacts;
- Modification/installation of warning systems at roadway crossings;
- Relocating the MBTA Commuter Rail Station; and
- Potential acquisition of property rights on abutting tracts of land.

Therefore, based on a planning-level review, it seems highly unlikely that this corridor would prove feasible for freight rail reinstatement. Therefore, this study assumes that freight rail will not be reinstated along the CSX ROW, thereby allowing MassDOT and the City to proceed with plans to redevelop the corridor into a multi-modal facility.

Abandonment

At a coordination meeting on April 22, 2011, MassDOT indicated that they cannot legally grant the City with property rights to the corridor for a multi-use path as CSX still maintains surface rights to the corridor. The only way to release the surface rights would be for CSX to file for abandonment.

In 2002, New York Central Lines, LLC and CSX filed for abandonment of 2.17 miles of track from near Second Street in Everett through Chelsea to Saratoga Street in East Boston. At the time this docket was published by the Surface Transportation Board (STB), the City of Chelsea filed a request to negotiate an interim trail use/railbanking agreement with the railroad companies. The City had filed this request in the interest of preserving the continuity of the ROW for future multi-modal uses including a multi-use path and the Urban Ring project. Between 2002 and 2008, this negotiation period was subsequently extended multiple times to allow the City to continue negotiating with the railroad.³ The last extension was filed on June 5, 2008 at the request of another railroad. Since 2008, the City is unaware of any further movement by CSX on the potential abandonment of this section of track. The City is no longer a party to the abandonment process.

³ Surface Transportation Board Decision. STB Docket No. AB-565 (Sub-No. 7X). New York Central Lines, LLC Abandonment Exemption in Suffolk County. Late Release May 29, 2009.

In the interest of advancing the multi-use path project, the Massachusetts EEA has engaged the assistance of an outside firm to perform title research and a review of conveyance documents and trackage rights agreements for a section of the CSX ROW in Chelsea. The goal of this effort will be to better understand the implications for potential abandonment of the railroad right-of-way; locations where confirmatory takings may be necessary to clear title issues; and next steps in the abandonment / conversion process. This effort will be completed in the Summer of 2011.

ROW Conversion

In order to pursue plans to convert the railroad ROW to a multi-use path, two items need to occur. First, as discussed in the previous section, CSX needs to abandon the existing freight easement along the Grand Junction Secondary Track within the Chelsea limits. Second, the City will need to secure a permanent easement, deed transfer, or a long-term (99-year) lease from MassDOT for the purposes of multi-use path design, construction, and maintenance. These forms of property agreements satisfy the Federal Highway Administration (FHWA) Massachusetts Division policies, thereby making the project eligible for potential State and Federal funding, such as the Transportation Enhancement (TE) or Congestion Mitigation and Air Quality (CMAQ) Improvement Programs, as discussed in more detail in Part I, Chapter 9.

3 Existing Conditions

It is important to evaluate existing conditions along the CSX ROW in order to identify potential opportunities and constraints to converting the former railroad corridor into a multi-use path. The following section discusses existing conditions along the CSX ROW. The evaluation of existing conditions was completed utilizing existing reports/studies and mapping, aerial orthophotographic mapping, City and State geographic information system (GIS) data, and field investigation. Existing conditions are described from east to west along the corridor.

CSX ROW Width

Based on a review of existing bridge plans and the remaining railroad infrastructure along the corridor, the CSX ROW is an independently aligned facility that previously supported two tracks between the Chelsea River and the roadway bridge at Broadway. At Broadway, the CSX ROW and MBTA ROW converge and continue in parallel to the Everett border. Along this length, the MBTA ROW is located on the north side of the railroad corridor and the CSX ROW is located on the south side of the railroad corridor. The edge of the CSX ROW is located approximately 6 feet from the centerline of the southern (outbound) MBTA track. The CSX ROW varies in width along its 1.5-mile length as shown in Table 5.

Table 5: CSX ROW Widths

Corridor Section	Approximate CSX ROW Width (Feet)
Chelsea River to Eastern Avenue	40
Eastern Avenue to Cottage Street	60
Cottage Street to Library Street	70 to 160
Library Street to Highland Street	60
Highland Street to Broadway	10 to 82
Broadway to Washington Avenue	46 to 86
Washington Avenue to Everett Border	28 to 42

There is a severe width restriction on the east side of the Broadway overpass. In this location, a large tract of the CSX ROW was sold to a private entity in the 1970's, leaving only 10 feet of remaining MassDOT-owned ROW based on a review of the Railroad Valuation Maps.

Topography

The profile of the corridor is relatively flat from Chelsea River to the Everett border. However, the adjacent cut and fill slopes vary over the length of the corridor. Certain sections of corridor are relatively level across the width of the ROW whereas, in other areas, the cut and fill sections range from an elevation difference of 3 feet to over 20 feet.

From the Chelsea River to Cottage Street, the corridor is level with the abutting properties. From Cottage Street to Griffin Way, the corridor remains level with the abutting properties to the north while the topography to the south quickly rises to match the grade of Bellingham Street and Willow Street, which are approximately 20 feet higher in elevation than the rail bed. The corridor touches down at grade at Highland Street behind the Atlas Loft residences but then the abutting topography continues to climb in elevation, placing the rail bed in a 20 to 24-foot cut section from this point west to the MBTA Commuter Rail Station at Arlington and Sixth Streets. Heading west from the Station, the corridor is relatively level with abutting properties to the north and south as far as the Everett border.

Vegetation

The majority of the corridor is devoid of vegetation due to the abutting commercial/industrial uses and active MBTA railroad use. Conversely, between Cottage Street and Broadway, the corridor has varying levels of vegetation, from thick grasses to mature woodland vegetation that has established in since the last trains operated in the 1950's. In this section, the vegetation provides some screening between adjacent properties and the corridor, particularly during the spring and summer months.

Abutting Land Use and Development

Between the Chelsea River and Broadway, the CSX ROW abuts residential areas to the south and industrial areas to the north. Heading west from Broadway, the ROW abuts commercial, business, and industrial land uses to the south and the MBTA ROW to the north. Along this length, the CSX ROW also traverses the Downtown Chelsea MBTA Commuter Rail Station. As shown on Figure 4 in Part I of this study, the CSX ROW is located proximate to a number of current and proposed development and infrastructure improvement projects.

Environmental Resources

Based on field observations, it appears that the removal of the railroad ties and ballast has altered the drainage patterns within the ROW corridor from Cottage Street to a point west of the Bellingham Street overpass. Specifically, the topographically flat area in this location appears to retain standing water following precipitation events. In addition, scattered patches of colonizing wetland vegetation were observed. During a field visit on April 21, 2011, the stormwater was flowing easterly to a catch basin on Cottage Street. In order to determine whether this area is jurisdictional under the Federal and State wetland statues, a wetland scientist should be hired to establish the Wetland Resource Area boundaries, if any. For the purposes of this study, this area has been identified as a "potential wetland resource area" pending further investigation.

At-Grade Crossings

There are a total of six at-grade road crossings along the CSX ROW, as follows.

- Eastern Avenue
- Cottage Street
- Arlington Street/Sixth Street
- Spruce Street
- Everett Avenue
- Third Street

Four of these crossings are located along the active MBTA corridor and therefore there are at-grade warning systems in place. The Cottage Street and Eastern Avenue crossings are located along the vacant section of CSX ROW.

Grade-Separated Crossings

There are four grade-separated crossings along the CSX ROW. Each of the following crossings consists of a roadway bridge (or overpass) over the railroad corridor.

- Bellingham Street
- Broadway
- Washington Avenue
- Route 1

Three of these crossings are located along the active MBTA corridor. The Bellingham Street crossing is located along the vacant section of CSX ROW.

Utility Infrastructure

From Broadway to the Everett border, there are high tension overhead wires supported on large steel poles within the CSX ROW. Also, as previously discussed, there are over 20 existing agreements (i.e., utility, crossing rights) with outside parties for use of the ROW. It is anticipated that some of these existing agreements involve public and private surface and subsurface utilities.

Potential Contamination Issues

Contamination along a former rail corridor is typically the result of either residual contamination from railroad operations or contamination associated with adjacent uses along the corridor. The most common contamination found along a rail corridor is residual contamination from railroad operations. According to the Rails-to-Trail Conservancy's study on "Understanding Environmental Contaminants" (October 2004), the most commonly reported contaminants along rail corridors include arsenic, which was used as an herbicide to control weeds, metals, and constituents of oil or fuel (petroleum products), which likely dripped from the rail cars as they passed over the corridor. Coal ash is also considered residual contamination. In addition, any existing railroad ties along a corridor were likely treated with creosote and

therefore need to be removed and transported in accordance with local, State, and Federal hazardous waste disposal requirements. There is also the possibility that historic uses of adjacent properties may have resulted in contamination along the corridor. Such uses could include improper disposal actions along the rail corridor or a release of oil or hazardous material that occurred on an adjacent property and extended into the rail corridor.

A preliminary hazardous waste and contaminated materials screening was conducted for the project corridor. The preliminary screening is a general review to identify properties in close proximity to the project area that could either contain, or be a source of hazardous wastes or contaminated materials. Specifically, this screening included a review of the Massachusetts Department of Environmental Protection (DEP) Bureau of Waste Site Cleanup (BWSC) database to identify sites that might have soil or groundwater contamination issues with the potential to impact the CSX ROW.

The DEP BWSC database lists seventeen properties in Chelsea within or close to the CSX ROW. Of those seventeen properties, nine have potential to impact construction activities. These nine properties are either currently an active site with remedial activities currently occurring, or are closed sites but have residual contamination on-site. The remaining eight sites are closed with either spills containing oil products that were contained and cleaned up, or low levels of soil contamination that required no clean-up activities. A closed designation indicates that the site has been cleaned up to the appropriate applicable standards and presents no significant risk for current site use. However, there were no records in the DEP BWSC database indicating any level of hazardous materials evaluation within the CSX ROW itself.

Although the preliminary review did not indicate any issues that would prohibit reuse of the corridor as a multi-use path, additional evaluation is recommended to further assess reuse risks and costs. The recommended scope would include an additional file review at DEP's regional office and collection and analysis of representative soil samples prior to or as part of a preliminary design phase.

Pending confirmation of contamination levels within the corridor, at a planning level, the issues presented by the potential contamination can be divided into construction-related and reuse-related issues.

Construction-Related Issues: Construction-related issues include handling procedures for contaminated soil and groundwater. The major issue with re-grading or other soil-related activities is the disposal of excess soil, should it be contaminated. If excavation for the multi-use path did require soil to be taken off-site, the soil would have to be tested at an approved laboratory to ensure selection of a proper disposal option and then be transported to a proper disposal facility. As groundwater is a mechanism of transport for contaminant dispersion, contaminated groundwater may have migrated from adjacent sites to underneath the railroad ROW. Special procedures would be required should any construction activities with deeper excavations for lighting fixtures or drainage structures, for example, extend to the depth of the water table.

Reuse-Related Issues: A potential constraint to the reuse of this corridor as a multi-use path would be in the exposure of people to the top few feet of soil if contamination were found. However, at this point, there is no record of contamination within the CSX ROW at concentrations that exceed any applicable remediation standards, although the above scope is recommended to further evaluate this. Should contaminant concentrations be above standards, the design of the multi-use path would need to limit access to the soil to ensure the health and safety of individuals along the path. If contaminated soil were found, it would either need to be transported off-site, or capped with clean soil or asphalt. Asphalt paving represents a more permanent barrier and would likely be recommended over a soil cover such as stone dust.

The use of parts of the corridor as a public park, playground, fitness area / vita course, etc. increases the potential for contact and the intensity of that contact. Consequently, additional efforts to limit exposure are recommended. For instance, use as a public park provides the opportunity for children and adults to have extensive direct contact with soil compared to walking along a multi-use path. While a playground is feasible, removal of the top one to two feet of soil from the playgrounds area might be recommended to remove soil more likely to have remnant contamination concentrations from an urban transportation corridor. It is recommended that further soil evaluations be performed in areas proposed for such uses during the preliminary design phase.

Effect of an AUL on Construction: The Mystic Mall property has an Activity and Use Limitation (AUL) applied to the entire property. The contamination appears to be in shallow soils that have been covered. The AUL prohibits any site activities that might affect this cover and expose these soils, unless these activities are being performed under the direction of an LSP and follow the restrictions outlined in the AUL. The principal requirement for this property is the need for a soil management plan for any site activities that would disturb the existing cover. Therefore, construction of a multi-use path and/or gateway with user amenities on this property would be subject to additional design and construction requirements.

The multi-use path design should follow the DEP's "Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails" to reduce potential user exposure to soil in areas of concern. In addition, provisions should be included in the bid documents to ensure proper handling of contaminated soils and/or groundwater during construction.



Figure 22: Existing Conditions Overview



Photo 1: Eastern Avenue Intersection



Photo 2: ROW Adjacent to 50 Eastern Avenue



Photo 3: Potential Wetland Resource Area



Photo 4: Wide ROW West of Bellingham Street



Photo 5: ROW Adjacent to Atlas Lofts



Photo 6: ROW Approaching Broadway



Photo 7: ROW Between Broadway & Washington Ave.



Photo 8: ROW Approaching Washington Ave.



Photo 9: ROW at MBTA Commuter Rail Station



Photo 10: Chelsea MGH Parking Lot Adjacent to ROW



Photo 11: ROW Adjacent to Market Basket



Photo 12: ROW Adjacent to State Garden

4 Urban Ring

Background

With its initial planning beginning several decades ago, the Urban Ring (Ring) would provide bus rapid transit (BRT) in sections of Boston and six of its surrounding communities. The Ring's 25-mile-long route would connect sections of Boston, Brookline, Cambridge, Chelsea, Everett, Medford, and Somerville. Figure 23 illustrates the Ring's general alignment.

As a BRT operation, the Ring will be serviced with 60-foot articulated buses traveling in on- and off-road sections. In Chelsea, the Ring's alignment is intended to follow the following route:

- Eastern Avenue to Griffin Way in mixed traffic
- BRT in abandoned railroad bed from Griffin Way to MBTA Commuter Rail Station
- BRT in abandoned railroad bed to Mystic Mall

Figures 24 and 25 illustrate the proposed cross-section of the Ring within Chelsea.

As defined in the Ring's November 2008 Draft Revised Environmental Impact Report/ Draft Environmental Impact Statement (RDEIR/DEIS), "The primary purpose of the Urban Ring Phase 2 is to significantly improve transit access, mobility, and capacity for the many residential neighborhoods, commercial centers, major educational and medical institutions, and other important destinations in the Urban Ring corridor, and to enhance their connections to the surrounding region."⁴ In short, the Ring would connect densely populated communities like Chelsea with employment-rich locations including Logan Airport, downtown Boston, the Longwood Medical Area, and Cambridge. Clearly, the Ring provides other important connections (educational and medical), but by simplifying the journey-to-work, the Ring directly connects workers with locations of concentrated employment opportunities.

The current status of the Ring is that near-term implementation is very much in doubt given its \$2.4 billion construction cost as estimated in the 2008 DREIR/DEIS. However, setting this aside, this multi-use path study evaluated three alternative path alignments, two of which are combined with the Ring and/or the existing Commuter rail alignment.

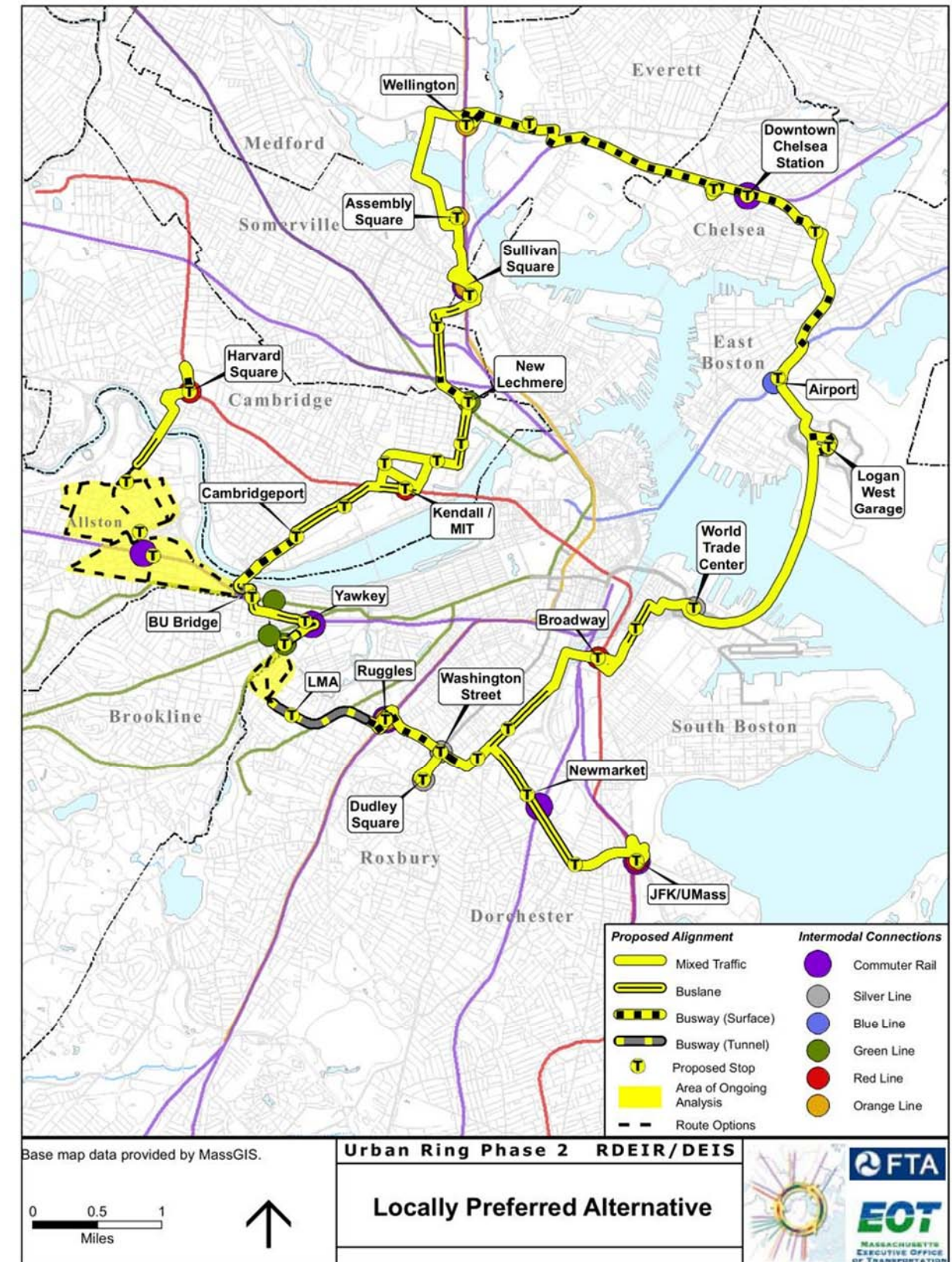


Figure 23: Urban Ring BRT – Locally Preferred Alternative

⁴ Massachusetts Executive Office of Transportation and U.S. Department of Transportation Federal Transit Administration, *Circumferential Transportation Improvements in the Urban Ring Corridor - Urban Ring Phase 2, Revised Draft Environmental Impact Report / Draft Environmental Impact Statement (RDEIR/DEIS)*, EOE #12565 (November 2008).

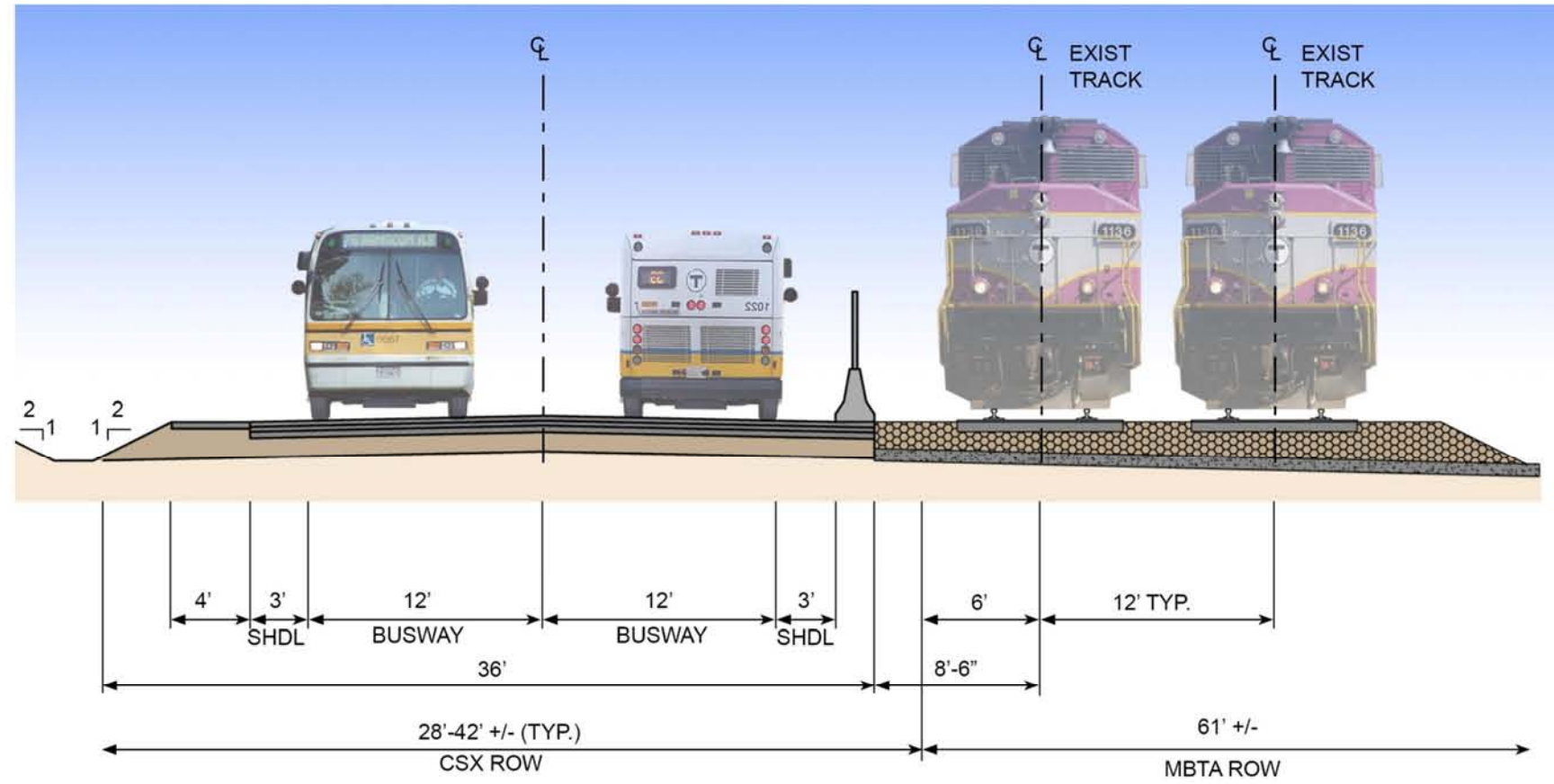


Figure 24: Urban Ring BRT – Typical Section (Broadway to Everett Border)

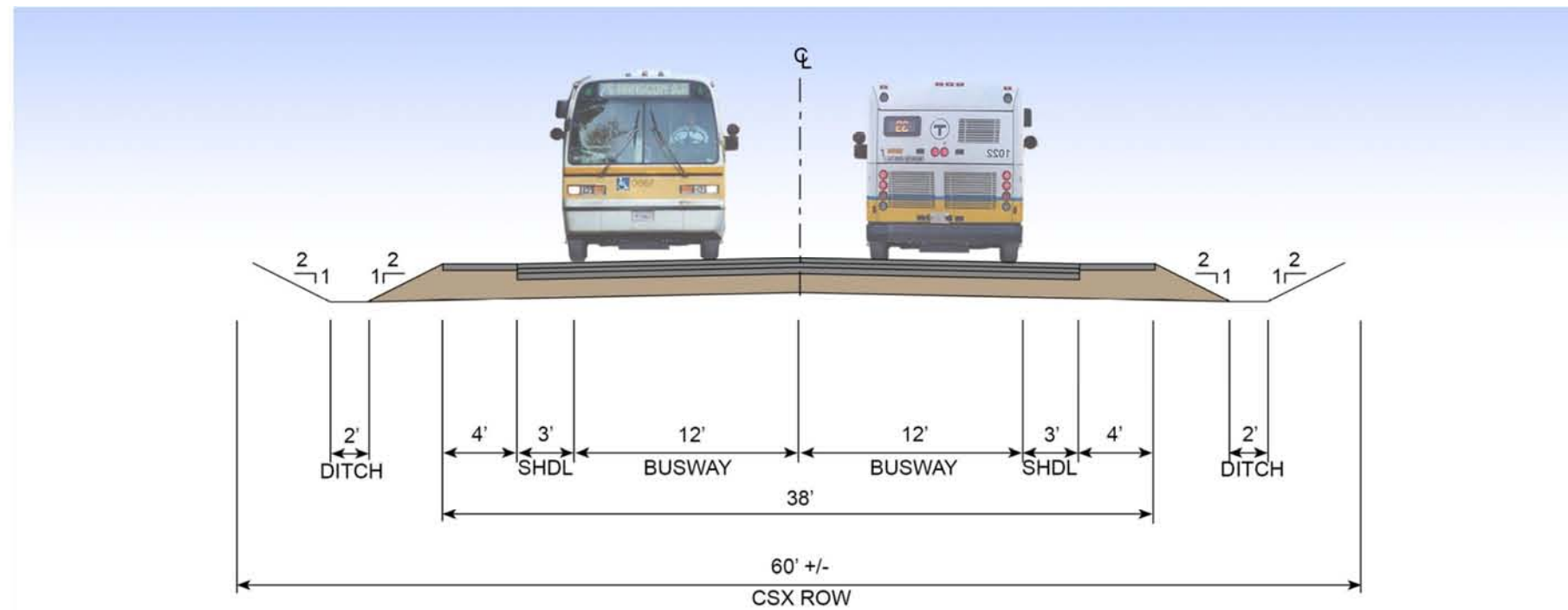


Figure 25: Urban Ring BRT – Typical Section (Griffin Way to Broadway)

Path Configurations Directly Tied to Ring Concept

Recognizing that the Ring provides an excellent opportunity to focus multi-modal travel options into a single corridor which has been acquired by the Commonwealth for the purposes of the Ring, this study's initial concept focused on locating the multi-use path parallel to the Ring within the same corridor. This approach resulted in the following two alternatives.

- Alternative 1: Multi-Modal Facility
 - Multi-Use Path with Ring and Commuter Rail (Broadway to Everett Border)
 - Multi-Use Path with Ring (Griffin Way to Broadway)
- Alternative 2: Multi-Use Path with Commuter Rail ("Rail with Trail")

A typical section of Alternative 1 is shown in Figures 26 and 27. A typical section of Alternative 2, without the Ring, is shown in Figure 28.

However, as previously discussed and described in more detail below, as more of the physical constraints and legal uncertainties associated with locating the multi-use path in the Ring's alignment were understood, these initial alternatives needed to be modified in response to these constraints or dismissed entirely.

Challenges to Implementing a Multi-Use Path Within the Ring's Alignment

As this study began to review the Ring's alignment requirements as detailed in that project's RDEIR/DEIS, two potential major constraints to the Ring's alignment were identified. Figure 29 illustrates two locations in Chelsea where the Ring's needed width of 38 feet ± (as measured from the CSX ROW not including drainage swales) as stated in the Ring's DREIR/DEIS appears to be unavailable.

First, MassDOT has an active project to replace the Washington Avenue bridge. To avoid acquiring and removing a building, the proposed design maintains the building and increases the horizontal clearance from the active MBTA tracks by removing an existing center pier, thereby changing the structure from a two span to a single span bridge. While this action increases the clear width from the MBTA tracks to the face of the south abutment, it is still approximately 15 feet short of the width needed to accommodate the Ring (36-foot width for Ring plus 8-foot 6-inch separation from the centerline of the active MBTA tracks) or the additional 16 feet necessary to accommodate an adjacent multi-use path.

Second, Figure 29 locates a severe property restriction on the CSX ROW in the vicinity of Gerrish Avenue. Here, in the 1970's, the Penn Central railroad sold the land associated with a spur track to abutting landowners. This sale reduced the available width at this location from 60 feet to approximately 10 feet or less, creating a second physical pinch point that appears to preclude the Ring's needed 38-foot cross-section unless the State acquires this property.

These two physical limitations represent major unresolved questions for width of the available ROW in these locations. At this time it cannot be known whether or not there will be sufficient width to

accommodate the Ring itself, even before raising the potential of accommodating the multi-use path as well.

In addition, along the corridor segment west of the Washington Avenue bridge, the ROW varies from approximately 28 feet to 42 feet. Therefore, there are additional locations where property acquisitions will be required to accommodate the Ring's needed width of 38 feet ±. The location of anticipated ROW impacts are shown on Figure 30.

Lastly, from a policy perspective, Massachusetts (unlike many other States) does not support the development of rail with trail facilities. These are walking and biking trails in relatively close proximity and at a similar elevation to active trains. Should a multi-use path be initiated in Chelsea on a parallel alignment to the Ring, this situation would exist along a major stretch of the Ring in Chelsea west of Broadway. Resolution of this issue would require a statewide policy change. Such a change is likely several years away based on recent conversations with MassDOT and MBTA staff. Given this uncertainty regarding rail with trail facilities, Alternative 2 - Multi-Use Path with Commuter Rail ("Rail with Trail") was eliminated from additional evaluation.

Consequently, based on the aforementioned physical constraints, the City of Chelsea decided to avoid entangling the location of the multi-use path with a to-be-decided Ring alignment. This decision resulted in the conceptual design previously shown in Figure 6. As discussed more in Part I, Chapter 3, this conceptual design includes the co-location of the multi-use path with Ring (Alternative 1: Multi-Modal Facility) from Griffin Way to Highland Street. From Highland Street to Broadway, Alternative 1 was modified to vertically elevate (grade separate) the multi-use path from the Ring. In this location, the multi-use path would be located on the private property that previously comprised part of the ROW. From Broadway to Chestnut Street, the multi-use path would also be grade-separated from the Ring and Commuter Rail within the CSX ROW. By elevating the multi-use path, this typical section is a variation of Alternative 1 and would also hopefully alleviate the safety concerns expressed by MassDOT and the MBTA regarding a "rail with trail" facility. West of Chestnut Street, the multi-use path would transition to an on-road bike route and walking route as there is insufficient ROW width to be able to accommodate a multi-use path and the Urban Ring BRT within the CSX ROW.

Finally, regarding the Ring's implementation schedule, on January 22, 2010 the Secretary of MassDOT submitted a letter to the Executive Office of Energy and Environmental Affairs stating "MassDOT cannot proceed with the implementation of the full Project at this time." Consequently, while limited efforts are ongoing to establish portions of the Ring with on-road service, utilization of the CSX ROW in Chelsea appears to be in a protracted holding pattern.

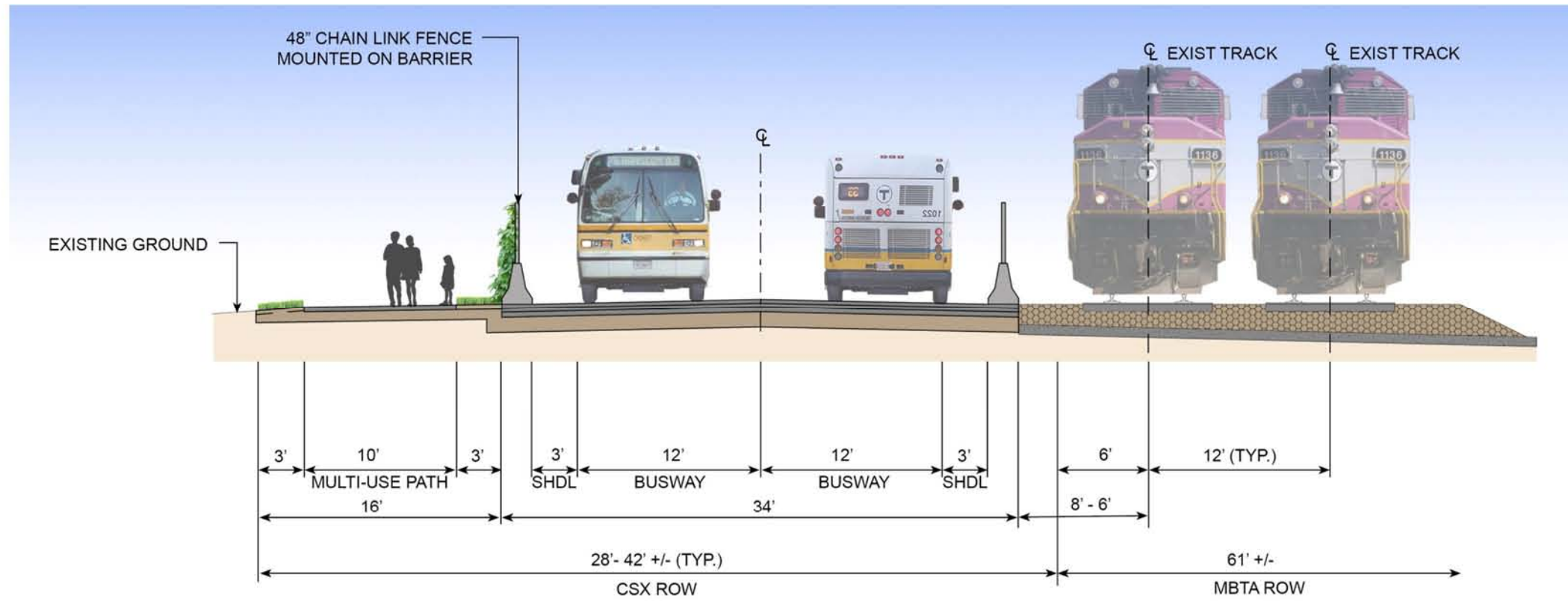


Figure 26: Multi-Modal Facility – Typical Section (Broadway to Everett Border)

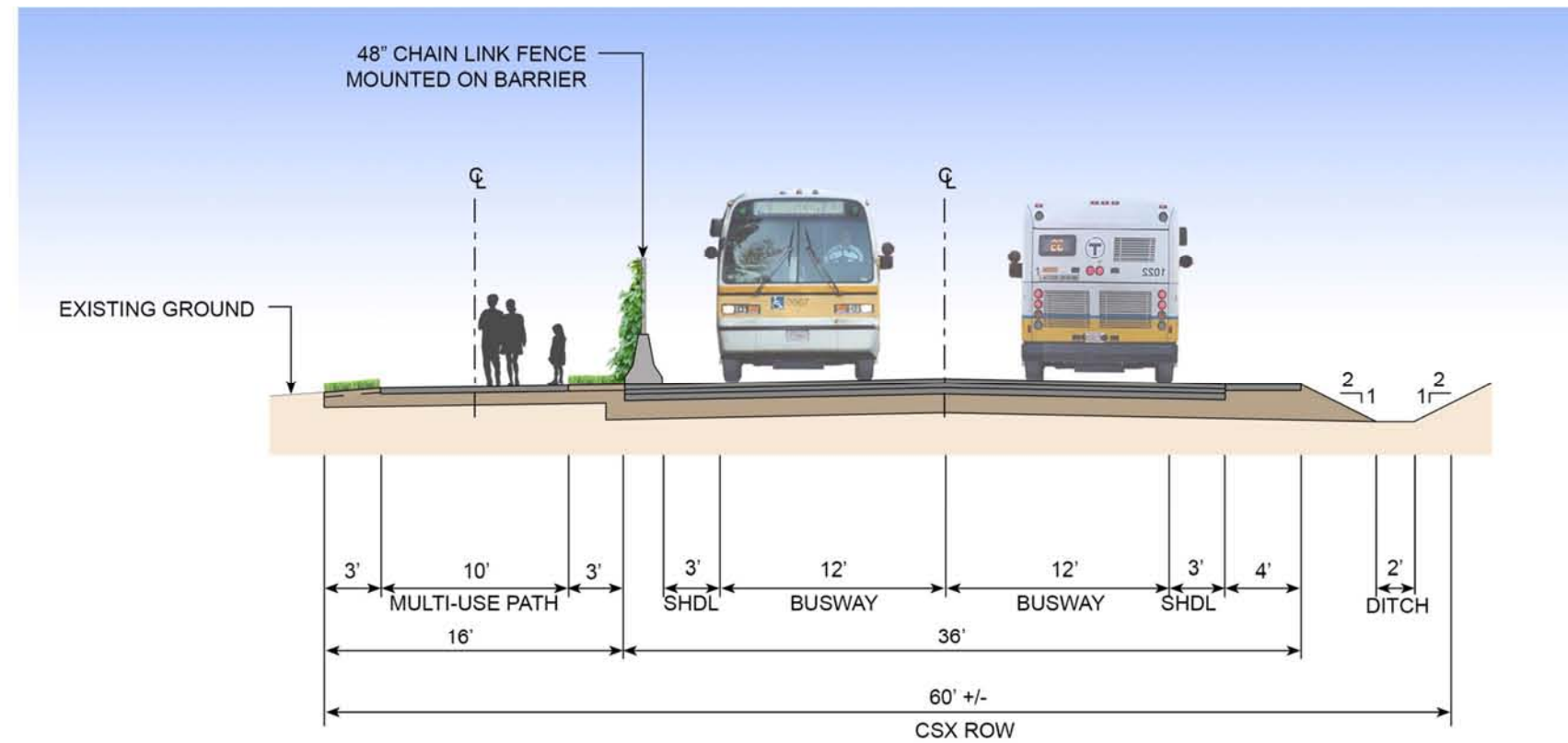


Figure 27: Multi-Modal Facility – Typical Section (Griffin Way to Broadway)

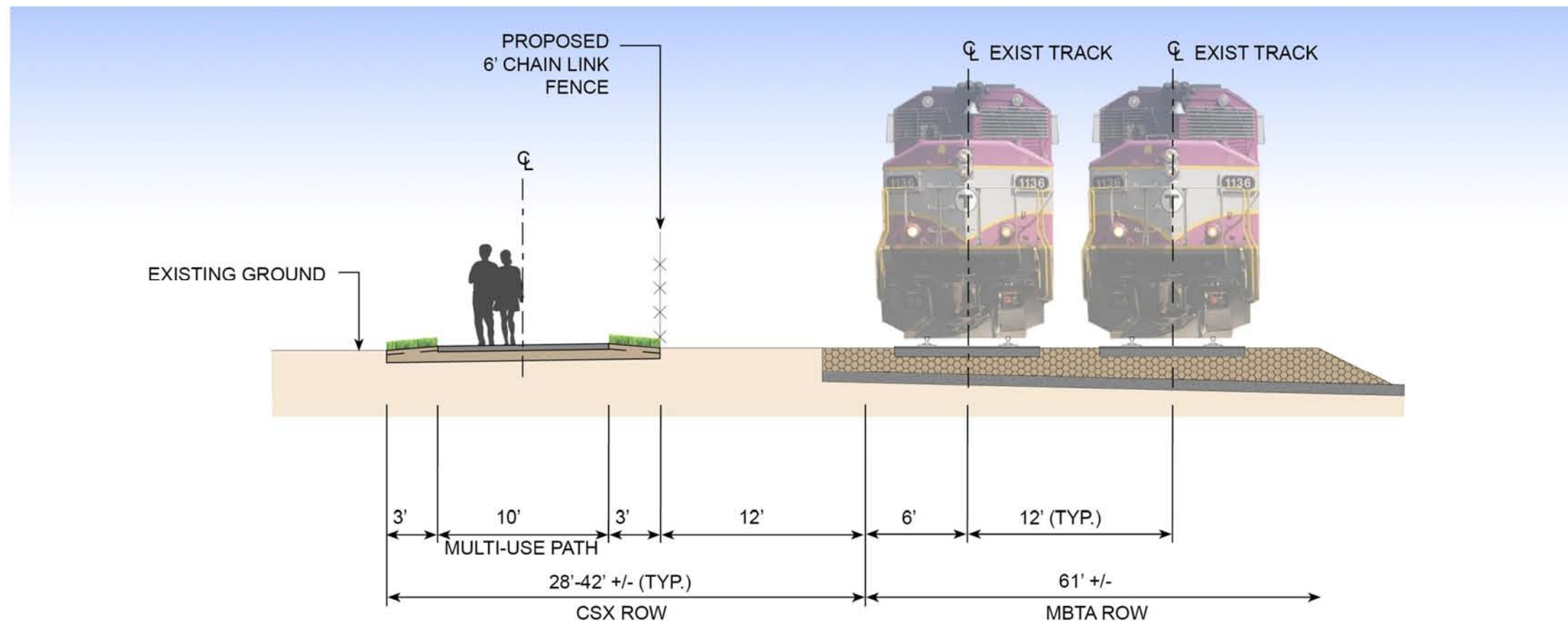


Figure 28: Multi-Use Path with Commuter Rail (“Rail with Trail”) – Typical Section (Broadway to Everett Border)

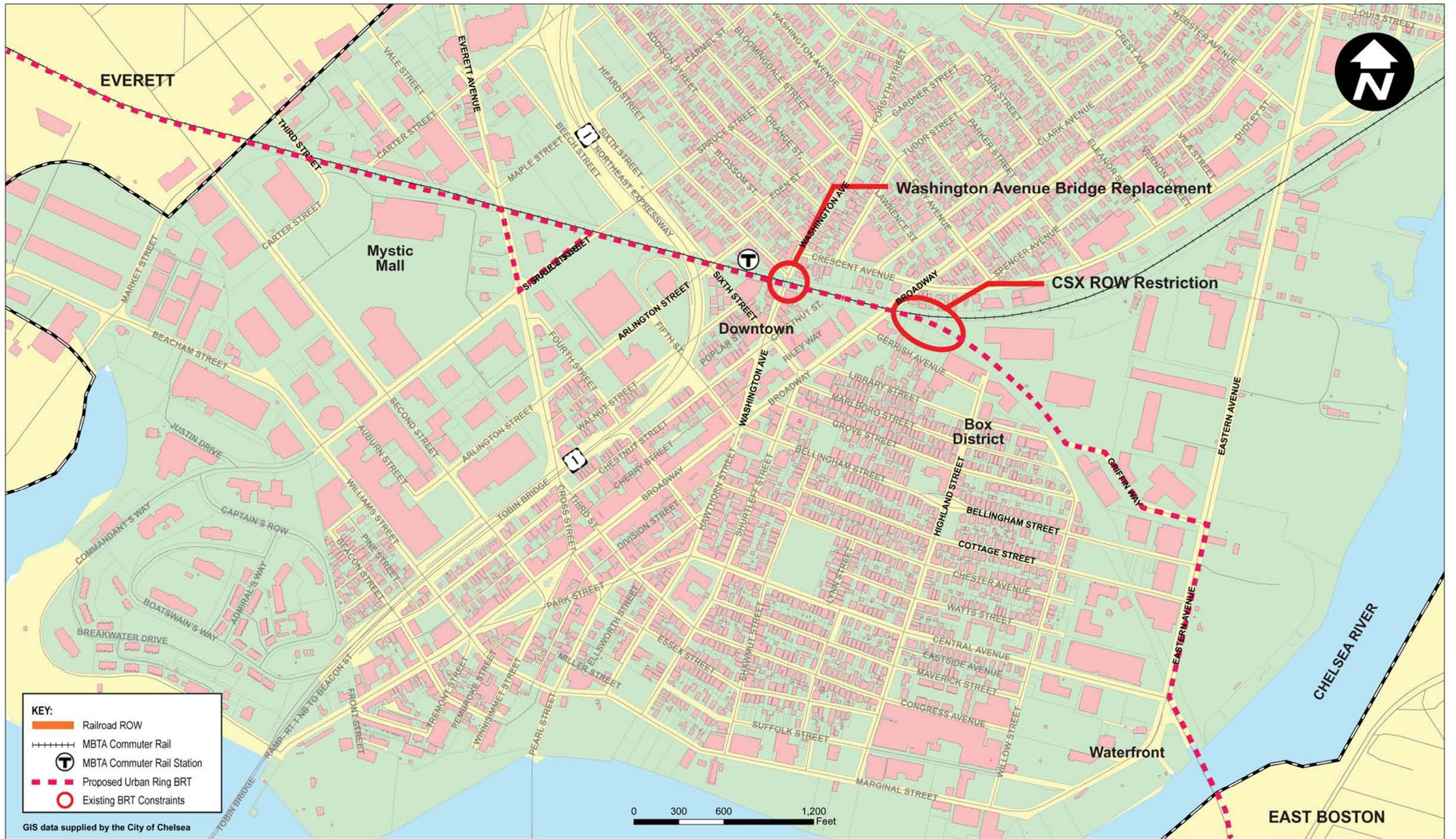
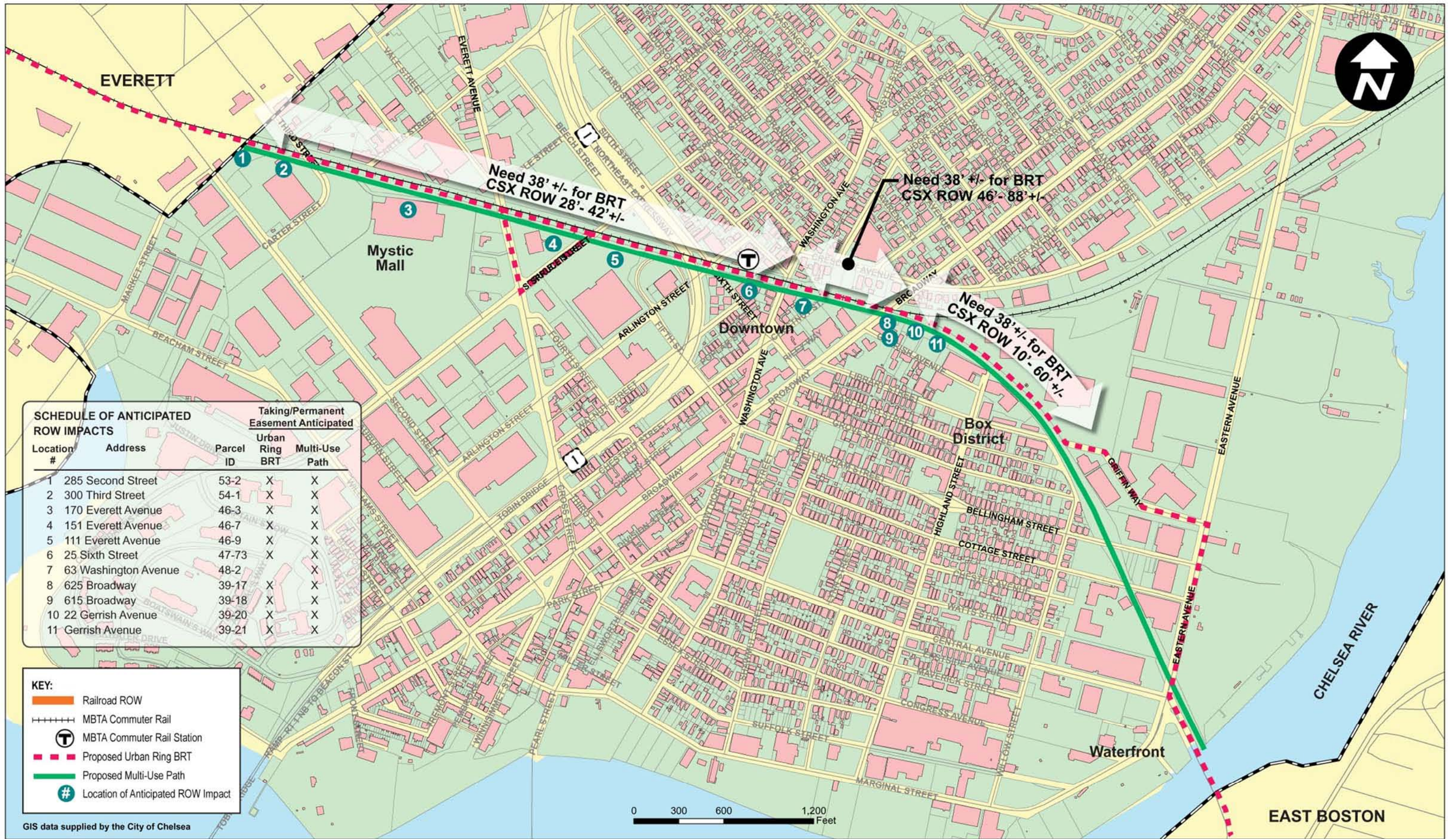


Figure 29: Urban Ring BRT – Major Physical Constraints





SCHEDULE OF ANTICIPATED ROW IMPACTS

Location #	Address	Parcel ID	Taking/Permanent Easement Anticipated	
			Urban Ring BRT	Multi-Use Path
1	285 Second Street	53-2	X	X
2	300 Third Street	54-1	X	X
3	170 Everett Avenue	46-3	X	X
4	151 Everett Avenue	46-7	X	X
5	111 Everett Avenue	46-9	X	X
6	25 Sixth Street	47-73	X	X
7	63 Washington Avenue	48-2	X	X
8	625 Broadway	39-17	X	X
9	615 Broadway	39-18	X	X
10	22 Gerrish Avenue	39-20	X	X
11	Gerrish Avenue	39-21	X	X

KEY:

- Railroad ROW
- MBTA Commuter Rail
- MBTA Commuter Rail Station
- Proposed Urban Ring BRT
- Proposed Multi-Use Path
- Location of Anticipated ROW Impact

GIS data supplied by the City of Chelsea

Figure 30: Multi-Modal Facility Alignment