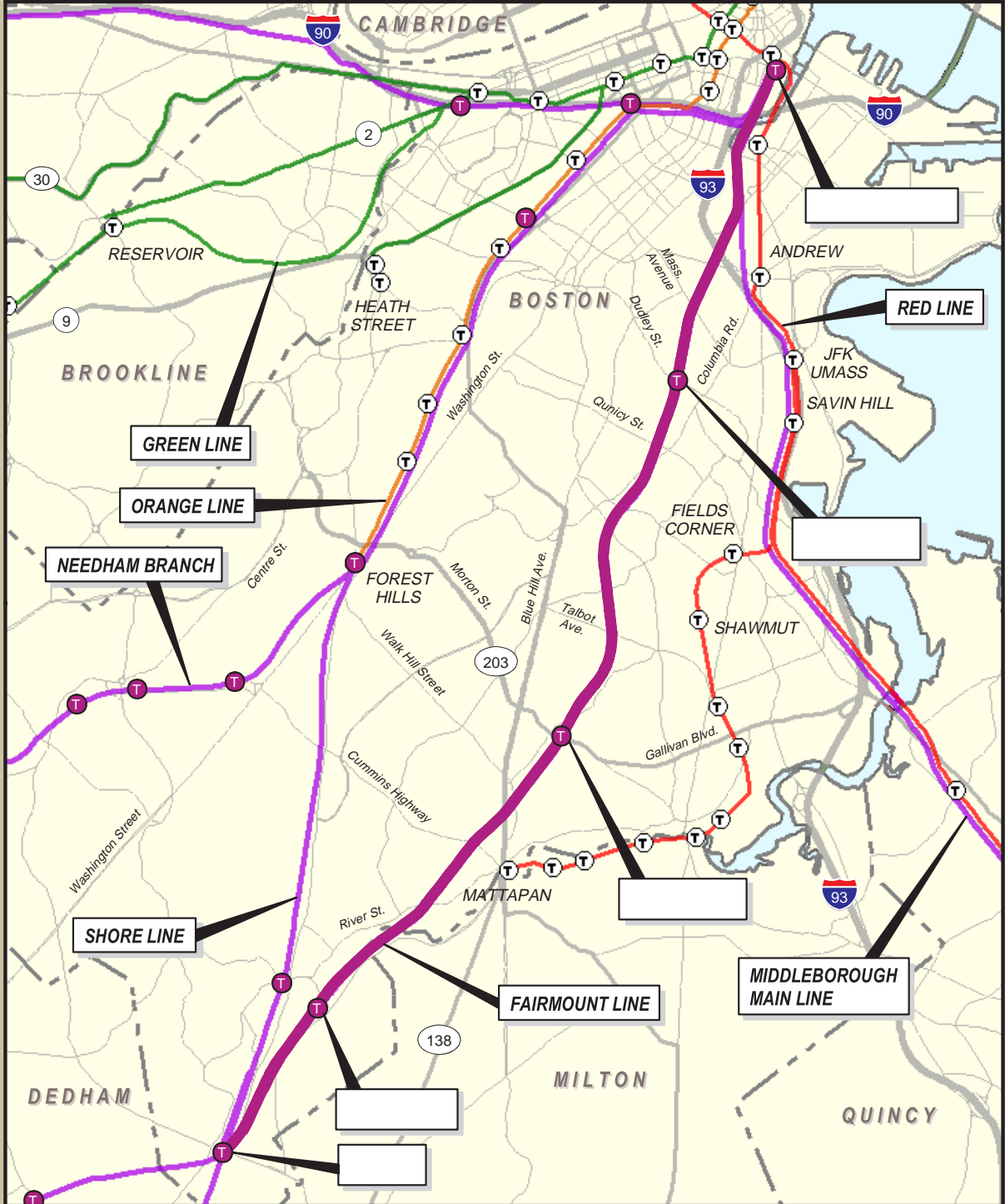


# Fairmount Corridor Improvements Project

## Needs Assessment Executive Summary



Presented to

Massachusetts Bay  
Transportation Authority

Submitted by

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## EXECUTIVE SUMMARY

### Introduction

This Needs Assessment Report describes the existing conditions along the MBTA's Fairmount Commuter Rail Line and proposes a conceptual improvement plan for the Corridor. The Report includes a list of project elements in need of enhancement, rehabilitation and/or upgrade. The Report also prioritizes recommended project improvements and includes preliminary cost estimates for each element.

### Project Need

In October 2002, the MBTA funded a Feasibility Study that identified a combination of upgrades to the existing infrastructure on the Fairmount Line to a *“State of Good Repair”*. These upgrades included rehabilitation of the Uphams Corner and Morton Street Stations, reconstruction of bridges (Columbia Road, Quincy Street, Massachusetts Avenue, Talbot Avenue, Woodrow Avenue and the Neponset River bridge) and construction of a new interlocking and upgraded signal system. The Study also concluded that construction of up to four new Commuter Rail Stations (at Newmarket, Four Corners, Talbot Avenue and Blue Hill Avenue) would significantly increase ridership and revenue on the Fairmount Line.

In addition to the apparent infrastructure improvement needs, the feasibility study also identified a critical element in the MBTA's public transportation system. The existing buses within the project area are overcrowded and, when operating in heavy traffic conditions, can be unreliable and vulnerable to delays. The proposed Fairmount project is expected to relieve the crowded buses that operate in the corridor by diverting trips to the Fairmount Line. These diversions to commuter rail will also create the opportunity to improve the quality of service of these bus lines at a potential cost savings to the MBTA.

The Fairmount improvements project recently received a “high” rating from the Environmental Justice Committee of the Boston MPO. The project will increase transit access and improve service in Dorchester, Roxbury and Mattapan, which are identified as “communities of concern” in the *Regional Transportation Plan 2004-2025 of the Boston Region MPO*. Station rehabilitations and proposed new stations will support neighborhoods that are not directly served by rapid transit. Bridge, signal and track improvements will improve the quality of service for riders from these communities.

### Project Goals

The MBTA is committed to keeping the Fairmount Commuter Rail Line in a state of good repair. Continuous reinvestment in the infrastructure is essential to making certain that the system maintains the safe and efficient movement of persons and provides sufficient capacity to accommodate future ridership growth.

## Project Area

The Fairmount Corridor is approximately 9.2 miles long, and runs generally in a north-south direction from its southern terminus at Readville Station in Hyde Park to South Station. The line is situated between the MBTA's Orange Line and Red Line. In addition to the terminus stations at Readville and South Station, there are intermediate stations located at Fairmount Avenue, Morton Street, and Uphams Corner. The line is double tracked and fully grade separated from beginning to end, and does not share track with any other commuter line from South Station. Figure ES-1 indicates the limits of the Fairmount Corridor.

### *Existing Stations*

As indicated, the Line runs between Readville and South Station with 3 intermediate stations. The current station spacing however, does not take advantage of the high residential and commercial densities along the line. The existing stations have few amenities, and the frequency of service does not meet commuter needs. Potential passengers within the corridor currently use feeder buses to rapid transit lines instead of using the commuter rail service at Fairmount Avenue, Morton Street, and Uphams Corner.

An upgrade of the *Fairmount Avenue Station* has been designed, and construction began in the Spring of 2003. The work includes reconstructing and extending the passenger platforms, adding various station amenities, and improving accessibility.

The *Morton Street Station* is located at Morton Street in Mattapan. The station is below grade with access via metal stairways from the Morton Street bridge. The station is in disrepair and does not meet any of the current ADA or MAAB requirements for accessibility or MBTA commuter rail standards.

The *Uphams Corner Station* is located at Dudley Street in Dorchester. The station is above grade with access via granite stairways from Dudley Street up to the platforms. The station is unsightly and in disrepair, and also does not meet any of the current ADA or MAAB requirements for accessibility or MBTA commuter rail standards.



*Existing Uphams Corner Station*



*Existing Morton Street Station*

### *Existing Rail Operations*

There are a total of 65 passenger trains operating on the Fairmount Line during a typical weekday. Of that total, 45 trains serve stations along the line, 4 are used to relieve congestion on the Southwest Corridor, and 16 are used to access mid-day storage in the Readville Layover. In addition to the 65 passenger trains, CSX Transportation also operates regular freight service on the line.

Commuter rail trains typically run every half hour during the morning and evening peak periods, and every hour during the rest of the day, up until 10:30pm. The trip time from Readville to South Station takes 20 to 23 minutes. There is currently no service during the weekends or holidays. A copy of the current train schedule is included in Section 2.6.

The existing traffic signal control system for the line, which was installed in 1979, was originally designed to provide bi-directional movements on each track. The signal system and traffic circuits however, are outdated and have become unreliable. In addition, there are no interlocking switches (allowing trains to “switch” from one track to the other) within the project area. As a result, reverse running of trains is now avoided, with nearly all southbound trains confined to the outbound track (track 1) and northbound trains confined to the inbound track (track 2). This confinement drastically restricts the flexibility and operations of the line, particularly for regular maintenance operations, infrastructure improvements and construction upgrades.

### *Existing Bridges*

The Fairmount line is fully grade separated with a total of 42 bridges within the 9.2-mile corridor. Of that total, 19 are overhead bridges that carry roadways (14 locations) or pedestrian walkways (5 locations) over the tracks. The remaining 23 are undergrade bridges that carry the railroad over waterway crossings (7 locations) or roadway crossings (16 locations). All of the overhead roadway bridges and 2 of the undergrade bridges are owned by the Massachusetts Highway Department. The 21 remaining undergrade bridges are owned and maintained by the MBTA.

Results of recent inspections and load ratings are summarized in Section 2.7. Based on these results, six of the bridges have been programmed for major repair or replacement. These are the Neponset River (B-16-472), Woodrow Avenue, Talbot Avenue, Columbia Road, Quincy Street and Massachusetts Avenue Bridges. The most critical of these is the Columbia Road bridge where the continued deterioration resulted in the implementation of emergency repairs to, and a 10 MPH speed restriction on, the bridge.

A summary of the existing bridge conditions is included in Section 2.7 and a detailed description of each bridge can be found in **Appendix A.1**.

## Proposed Improvements

### *Existing Stations*

The existing stations at Uphams Corner and Morton Street are unsightly, in disrepair, and do not meet current ADA regulations. In order to bring these stations to current ADA and MBTA commuter rail standards, major renovations are proposed. The proposed renovations will consist of elements typically developed for new commuter rail stations, including full high-level accessible platforms, steel canopies, metal wind screens with wood benches, fiberglass station signing, schedule cases, metal waste bins, controlled sites for newspaper vending machines, accessible walkways, lighting and landscaping.

In addition to providing the necessary physical upgrades, renovations at these two existing stations should result in increased ridership by improving the stations' appearance, visibility, and safety.

### *New Stations*

Although the projected ridership at the upgraded existing stations is good, construction and implementation of new commuter rail stations along the Fairmount Line will attract some fairly significant additional ridership. Many of these riders would be diverted from overcrowded MBTA buses within the corridor to the commuter rail system, where the commute into Boston would be similar to that experienced on a rapid transit line.

The feasibility study identified five new commuter rail stations, located at Newmarket, Four Corners, Talbot Avenue, Blue Hill Avenue and (potentially) Columbia Road. This Needs Assessment has reviewed and concurred with those locations, with the exception of considering a station at Geneva Avenue as an alternative to both the Four Corners and Columbia Road stations. A station at Geneva Avenue would resolve the track curvature issue at Four Corners, and capture some of the projected ridership from Columbia Road.



The renovated and new stations will also include sidewalk improvements in the immediate vicinity of the stations. Particular attention will be paid to creating an accessible route between the inbound and outbound platforms, and a physical link to the adjacent neighborhoods and business districts. It appears that increased ridership could result from creating stronger links with these areas.

### ***Rail Infrastructure***

The rail infrastructure improvements along the Fairmount Corridor include a new universal interlocking and upgrades to the existing signal system. The new interlocking and upgraded signal system, which will allow single-track operations, are not only critical parts of the overall improvements, they must be implemented before proposed bridge work can proceed. These upgrades will also enhance future service, allowing for more flexibility and increased frequency on the line.

Additional upgrades to the signal system include replacing the entire system with a new state-of-the-art system that would be installed entirely underground. Although not required as part of the initial work, implementation of a new signal system at a future date will significantly improve rail operations along the line.

### ***Bridges***

Nearly all of the bridges along the Fairmount line are over 100 years old, and have reached, or are nearing, their useful life. In order to realize the full potential of an expanded Fairmount Line service, major improvements to the bridges will be required. One of the most significant of these improvements is the rehabilitation and/or replacement of several of the undergrade bridges. According to recent in-depth inspections, 15 of the 23 bridges are in poor to serious condition. The critical condition of the Columbia Road Bridge has resulted in a speed restriction. Emergency strengthening was completed in the Summer of 2002 to allow service to continue over the bridge. Of those 15 bridges rated in poor condition, the MBTA has determined that at least 6 will need to be replaced or require major rehabilitation.

As indicated in this report, the Columbia Road and Quincy Street bridges are the most critical, and need to be replaced as soon as possible. Replacement/rehabilitation of the Massachusetts Avenue, Talbot Avenue, Woodrow Avenue and Neponset River bridges are also high priority components of the “*State of Good Repair*” program. Replacement or rehabilitation at most of the remaining bridges on the line is not critical at this time; however, repairs and aesthetic improvements are needed.

## Summary of Recommended Actions

The investment in the Fairmount Corridor Infrastructure will substantially upgrade transit service to some of the City of Boston’s most transit-dependent neighborhoods. By adding new stations that are convenient to local communities, replacing aging bridges, upgrading an unreliable signal system, and making stations accessible for people with disabilities, the MBTA will transform one of its most underutilized assets into an improved service that will provide immediate benefits to residents along the corridor.

Funding constraints may limit the extent of proposed improvements that the MBTA will be able to implement. Currently, the MBTA has committed \$35 million in Capital Funding to be available for the first phase of the project. This funding will enable the MBTA to begin implementation of the “*State of Good Repair*” elements of the project, which consist of the following:

State of Good Repair Elements	Estimated Cost
Upgrades to the Uphams Corner Station	\$ 6,800,000
Upgrades to the Morton Street Station	\$ 7,200,000
New Interlocking and Upgraded Signal System	\$ 9,000,000
Repairs and aesthetic improvements to 4 neighborhood bridges	\$ 1,500,000
Columbia Road Bridge Replacement	\$ 11,000,000
Quincy Street Bridge Replacement	\$ 2,800,000
Massachusetts Avenue Bridge Replacement	\$ 4,200,000
Total Costs	\$ 42,500,000
<i>Note: Estimated Costs include design services, administrative costs, field inspections and contingencies</i>	

As indicated in this report, infrastructure upgrades, including the replacement or rehabilitation of additional bridges are critical and integral elements of the Fairmount Improvements Project. Implementation of these additional work elements will be dictated by the availability of future funding. The additional infrastructure upgrade elements of the project, with estimated construction costs, are listed in order of priority on the following table:

Additional Infrastructure Upgrades	Estimated Cost
Woodrow Avenue Bridge Replacement	\$ 3,400,000
Talbot Avenue Bridge Replacement	\$ 3,800,000
Neponset River Bridge Replacement	\$ 3,800,000
Repairs and aesthetic improvements to the remaining bridges	\$ 1,500,000
Repairs to retaining walls along the right-of-way	\$ 2,500,000
South Bay Interlocking upgrades and replace wayside cable system	\$ 4,000,000
Total Costs	\$ 19,000,000
<i>Note: Estimated Costs include design services, administrative costs, field inspections and contingencies</i>	

As also indicated in this report, the construction of new commuter rail stations will significantly increase ridership along the Line, and provide residents with a more direct and convenient mode of public transportation. Implementation of the new commuter rail stations will also be dictated by the availability of future funding, as listed in the following table:

New Commuter Rail Stations	Estimated Cost
New Commuter Rail Station at Four Corners/Geneva	\$ 9,400,000
New Commuter Rail Station at Talbot Avenue	\$ 9,000,000
New Commuter Rail Station at Newmarket	\$ 6,900,000
New Commuter Rail Station at Blue Hill Avenue	\$ 9,200,000
Total Costs	\$ 34,500,000
<i>Note: Estimated Costs include design services, administrative costs, field inspections and contingencies</i>	

The total cost for the Fairmount Corridor Improvements is **\$96 million** (\$42.5 million for the state of good repair elements, \$19.0 million for the additional infrastructure upgrades and \$34.5 million for new commuter rail stations). As indicated, the additional infrastructure upgrades and new commuter rail stations will be implemented as additional funding becomes available.

The Summary of Recommended Actions are further described in Section 7.

## SECTION 7.0 SUMMARY OF RECOMMENDED ACTIONS

The investment in the Fairmount Corridor Infrastructure will substantially upgrade transit service to some of the City of Boston's most transit-dependent neighborhoods. By adding new stations that are convenient to local communities, replacing aging bridges, upgrading an unreliable signal system, and making stations accessible for people with disabilities, the MBTA will transform one of its most underutilized assets into an improved service that will provide immediate benefits to residents along the corridor.

### 7.1 Project Elements

As indicated in this report, there are a number of project elements needed to bring the Fairmount Line to a "*State of Good Repair*". These include upgrading the existing Uphams Corner and Morton Street Stations, installing a new universal interlocking and upgrading the railroad signal system, and replacing the Columbia Road, Quincy Street and Massachusetts Avenue Bridges. In addition, the construction of new commuter rail stations and replacement or rehabilitation of three additional bridges (Talbot Avenue, Woodrow Avenue and Neponset River) are critical and integral elements of the Fairmount Corridor Improvements Project. Implementation of these additional work elements will be dictated by the availability of future funding.

#### *Stations*

The existing stations at Uphams Corner and Morton Street are unsightly and in disrepair. They do not meet the current ADA regulations or MBTA standards for commuter rail stations. One of the first task orders for the overall Fairmount Project is to renovate these 2 stations. It appears that, in addition to providing the necessary upgrades, renovations at these 2 existing stations will result in increased ridership by improving the stations' appearance, visibility, and safety.

While the ridership increases at the upgraded existing stations is good, construction and implementation of new commuter rail stations along the Fairmount line will attract some fairly significant additional ridership. Some of these riders would be diverted from the overcrowded MBTA busses within the corridor to the commuter rail system, where the commute into Boston would be similar to that experienced on a rapid transit line.

The 2002 Feasibility Study identified up to five new commuter rail stations. This Needs Assessment has reviewed and concurred with those locations, with the exception of considering relocating the Four Corners Station to a tangent section of track near Geneva Avenue, and subsequently deferring development of the Columbia Road Station. Table 7.1-1 lists each of the commuter rail stations along the project corridor, lists the various project factors associated with the new stations, and includes an estimated cost for the stations.

### *Rail Infrastructure*

The rail infrastructure improvements along the Fairmount Right-of-Way include a new universal interlocking and upgrades to the existing signal system. The existing signal system has become unreliable, and reverse running of trains is avoided, restricting operations. The new interlocking and upgraded signal system, which will allow single-track operations, are not only critical parts of the overall improvements, they must be implemented before proposed bridge work can proceed. These upgrades will also enhance future service along the line, allowing for more flexibility and increased frequency on the line.

Additional upgrades to the signal system include replacing the entire system with a new state-of-the-art system that would be installed entirely underground. Although not required as part of the initial work, implementation of a new signal system at a future date will significantly improve rail operations along the line.

### *Bridges*

Nearly all of the bridges along the Fairmount Line are over 100 years old, and have reached, or are nearing, their useful life. The MBTA has recently performed inspections and load ratings on the bridges to identify those which are in need of repair or replacement. The rating analyses resulted in several of the bridges being programmed for replacement or major rehabilitation. First among these is the Columbia Road Bridge. The existing railroad undergrade bridges along the Fairmount Line, with associated ratings, are listed in Section 2.7 and detailed in **Appendix A.1**.

As indicated in this report, the Columbia Road and Quincy Street bridges need to be replaced as soon as possible. The Massachusetts Avenue, Talbot Avenue, Woodrow Avenue and Neponset River bridges are also high on the priority list as needing to be renovated or replaced. Temporary repairs to these bridges will be costly and will only delay the need for replacement by a few years.

Repairs to most of the remaining bridges on the line are necessary, but not critical at this time. Nevertheless, it appears economically feasible and advisable to perform structural repairs and painting to four of the neighborhood bridges (at Norfolk Avenue, East Cottage Street, Dudley Street and Geneva Avenue) in efforts to improve their appearance and extend their useful lives. Repairs to the remaining railroad bridges along the Line should also be programmed for a future phase.

## 7.2 Priorities

Funding constraints may limit the extent of proposed improvements that the MBTA will be able to implement. Currently, the MBTA has committed \$35 million in Capital Funding to be available for the first phase of the Fairmount Corridor Improvements Project. This level of funding will enable the MBTA to begin implementation of the “*State of Good Repair*” elements of the project, which include:

- Upgrades to the Uphams Corner Station
- Upgrades to the Morton Street Station
- New Interlocking and Upgraded Signal System
- Columbia Road Bridge Replacement
- Quincy Street Bridge Replacement
- Massachusetts Avenue Bridge Replacement
- Repairs and Aesthetic Improvements to 4 neighborhood bridges

## 7.3 Recommendations

The following is a summary of recommendations resulting from this Needs Assessment Report:

- Reconstruction of the 6 major bridges will require single-track operations during much of the construction process. It is imperative that the new interlocking and signal system upgrades be implemented in order to facilitate the reconstruction of these bridges.
- The Columbia Road Bridge is the most critical of the proposed bridge replacements. Because of its proximity to Quincy Street, these 2 bridges must be reconstructed simultaneously.
- Because of the potential operating constraints due to single-track operations during bridge reconstruction, it is strongly suggested that the Massachusetts Avenue bridge reconstruction be done at the same time as Columbia Road and Quincy Street.
- For the same reason, it is also highly recommended that the Talbot Avenue and Woodrow Avenue bridges be reconstructed at the same time. In addition to minimizing the constrained single-track operation periods, combining 2 or 3 bridges into a single construction contract should result in lower contractor bids.

- Perform minor bridge repairs and aesthetic improvements to the remaining under-grade bridges in efforts to extend their useful lives. Prioritize this work for the Norfolk Avenue, East Cottage Street, Dudley Street and Geneva Avenue bridges.
- It may be economically feasible to include bridge repair work with adjacent station work, particularly the Dudley Street bridge at the Uphams Corner Station and possibly the Geneva Avenue bridge at a proposed Geneva Station.
- Coordinate with CTPS to perform new ridership projections using updated journey-to-work data and relocating the Four Corners Station to Geneva Avenue. As a part of this analysis, consider reviewing potential ridership at a future station midway between Fairmount Avenue and Blue Hill Avenue.
- Based on the updated ridership projections, and initial feedback from local stakeholders, advance the design of a Four Corners/Geneva Station as the first new station on the Fairmount Line.
- As part of the potential Talbot Avenue Station, review options to rehabilitate the Park Street pedestrian overpass and incorporate into the station design.
- Coordinate with MBTA railroad operations, and MBCR to identify potential improvements to the right-of-way, including any deteriorated retaining walls, fencing or drainage issues.
- Replace the existing Wayside signal system with a new state-of-the-art system, as a future phase. Install portions of the infrastructure (underground conduit) to facilitate this future system under each of the various bridge and station work.
- Develop and begin implementation of the public participation process/policy as soon as possible, prior to advancing the design of any of the new stations.
- Begin the process to acquire future funding for project elements beyond the initial state of good repair in order to realize the full potential of an expanded Fairmount Line service.

Table 7.1-1: Summary of Project Factors for new Commuter Rail Stations

Project Factors	Blue Hill Avenue	Talbot Avenue	Four Corners / Geneva Avenue	Columbia Road	Newmarket
<b>Ridership</b>	Ridership projections are low compared with other stations. However, this station would attract more park and ride commuters than any other station within the project corridor	CTPS estimates 400 riders would use this station. Based on the demographics, the potential for additional ridership is high, especially if the Four Corners/Geneva station moves north of Washington Street	Projected to receive the highest level of transit ridership on the line. CTPS estimates well over 1,300 riders would use a station at this location.	CTPS estimates over 900 riders for this station. This projection may be high however, because of capture area overlaps with the Uphams Corner and Four Corners stations	CTPS estimates 75 weekday boardings, functioning primarily as a destination station to the Newmarket business district and South Bay shopping center
<b>Barrier Free Access</b>	Good pedestrian access from both Blue Hill Ave. and Cummins Highway via sloped walkways, and from proposed parking lot.	Good pedestrian access from Talbot Avenue via new stairways and sloped walkways. Potential to connect to Park Street overpass	Good pedestrian access provided from either Washington Street or Geneva Avenue via stairways and sloped walkways	Pedestrian access from Columbia Road would be poor to fair. Coordination with reconstructed bridge will be difficult	Good pedestrian access from Massachusetts Avenue via stairways and sloped walkways.
<b>Surrounding Character</b>	Located near moderately dense mixed residential and commercial neighborhood	Located adjacent to dense mixed residential and commercial neighborhood	Located within very dense residential neighborhood with nearby retail shops	Located on a major arterial street, near dense residential neighborhood	Located on a major arterial street within a vital commercial and retail district
<b>Urban Design</b>	Focus on providing visual ties to neighborhood, nearby Mattapan Square and bus stops	Focus on providing visual ties to neighborhood and nearby Codman Square	Focus on providing visual ties to neighborhood, retail area and bus stops	Focus on providing visual ties to nearby neighborhoods, commercial activities, and bus stops	Focus on directing commuters to destination points for work, shopping and bus stops
<b>Constructability</b>	Difficulties due to constrained right-of-way. Adjacent parcels with vacant buildings could provide suitable staging areas as well as parking lots.	Also has a constrained right-of-way, but tracks are on a tangent and MBTA owns an adjacent parcel of land. Construction access is fair to good	Difficult due to constrained right-of-way and significant topography changes. Tracks on a 2° curve south of Washington St. will impact ADA compliance on high level platforms	Extremely difficult to construct. Tracks on a 2° curve south of Columbia Rd. New bridge replacement requires raising and spreading tracks and constructing retaining walls.	All stations difficult due to issues of construction adjacent to "live" tracks, but Newmarket has a wider right-of-way with ample room and access for construction
<b>Local Support</b>	The City and local residents have expressed some support. However, there is some concern regarding generation of additional traffic	The City and local neighborhoods have expressed support. Ridership potential confirms a need for improved transit service in this neighborhood	The City of Boston and local neighborhoods have expressed support. High ridership projections confirm a need for improved transit service in this neighborhood	The City and local residents have expressed some support for this station. However, there is some concern regarding generation of additional traffic	City of Boston has expressed support for this station to improve access and provide alternative transportation to the adjacent business district and shopping center.
<b>Site Assessment and Alternatives</b>	The station would be located midway between Blue Hill Avenue and Cummins Highway to take advantage of riders coming from both locations. The site is below both of these streets, but close to the grade of surrounding land	There are 2 other major project elements directly adjacent to this station, the Talbot Avenue bridge replacement and the new railroad interlocking. Initial site assessments have been made to ensure that all 3 elements can be constructed within this area	Alternatives include developing a conceptual plan of a station at Geneva Avenue to resolve the ADA "gap" issue from the curved tracks thru the Washington Street area. A station at Geneva would also capture some ridership projected for the Columbia Road station	Constrained by Columbia Road bridge. Highly undesirable to place station platforms along a bridge. South of bridge, tracks on a 2° curve. North of Columbia, station would be too close to Quincy St. bridge	Location would be between Mass. Ave. and Southampton St. Placing the station closer to Mass. Ave. would allow integration of similar bridge and station elements and better access.
<b>Estimated Costs</b>	\$ 9.2 million	\$ 9.0 million	\$ 9.4 million	\$ 10.0 million	\$ 6.9 million

