

Massachusetts Department of Transportation

# Longfellow Bridge Rehabilitation Task Force Final Recommendations

Submitted October 29, 2010



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To be added when pagination is finalized.

# **Massachusetts Department of Transportation Highway Division**

## **Longfellow Bridge Rehabilitation Task Force**

### **Executive Summary**

Owned, operated and maintained by the Massachusetts Department of Transportation, the Longfellow Bridge is a historic structure completed in 1908 and carries State Route 3, consisting of Cambridge Street in Boston and Main Street in Cambridge, over the Charles River. The Bridge spans 2,135 feet between the cities with a deck width of 105 feet. On an average day, 90,000 passengers on the MBTA Red Line, 28,000 automobiles and trucks and over one thousand pedestrians and bicyclists cross on the bridge's travel lanes, bike lanes and sidewalks and tracks. The bridge consists of eleven steel arch spans, two steel stringer spans, is founded on large granite block and concrete piers and abutments, and has eight decorative masonry towers. Ownership of the Longfellow Bridge was recently transferred to the Department of Transportation from the Department of Conservation and Recreation (DCR). Prior to DCR, the bridge was owned by its predecessor agencies the Metropolitan District Commission and the Metropolitan Parks Commission. This prior ownership meant that the surrounding Charles River parkland system and the bridge were managed by a single entity. These historic and parklands roots require additional planning and permitting approvals for the rehabilitation work.

Over the decades the condition of the bridge has deteriorated and MassDOT has determined that its rehabilitation and restoration should be included in the Massachusetts Accelerated Bridge Program. Approximately \$255 million has been allocated to its repair and rehabilitation. MassDOT's goals are to restore the beautiful and historic structure in a manner that is sensitive to its original construction by improving its structural condition; to provide safe travel for transit, bicycle, pedestrian and vehicular travel, and to preserve an essential element of the Charles River Basin. In the spring of 2010, MassDOT withdrew a previously submitted Environmental Assessment for the Longfellow Bridge Project from the Federal Highway Administration in order to provide an opportunity for further public participation as it relates to the final configuration of the bridge. For these purposes, in June 2010, Massachusetts Department of Transportation Highway Division Administrator Luisa Paiewonsky convened the Longfellow Bridge Rehabilitation Task Force. The Task Force members were drawn from a diverse set of stakeholder groups who represent interests directly impacted by the Longfellow Bridge rehabilitation.

MassDOT engaged the Massachusetts Office of Public Collaboration at the University of Massachusetts Boston to act as a neutral forum and facilitate the Task Force process to ensure that the collaborative structures and processes were developed and conducted in an unbiased environment suitable for discussion and deliberation.

The purpose in forming the Task Force was to ensure that a wide range of views were represented in arriving at these recommendations. The Task Force process was structured to provide stakeholders with data about the bridge, the proposed rehabilitation, traffic, State and Federal design guidelines, and other parameters that could influence the design. The Task Force provided the conveners with feedback on assumptions, the scope of the project, and suggestions for design guidelines. All meetings were open to the public to observe, with time allocated for non-Task Force members to express their points of view. In addition, all information related to the work of the Task Force, including meeting notices, agendas, summaries, presentations and working documents were posted on MassDOT's website for public viewing. A dedicated Google Group and e-mail address were also created to provide the public the opportunity to follow the work of the Task-Force and to provide feedback and comments. The Task Force struggled with the difficult issue of attempting to address both the significant needs and the potential for improvement in a very

limited space. These recommendations reflect considerable effort and significant agreement arrived at through open dialogue.

These recommendations include ~~five alternatives each~~ three families of alternatives for the Inbound towards Boston cross-section design of the bridge and ~~three~~ two families of alternatives for the Outbound towards Cambridge cross-section design of the bridge. These cross-section design alternatives depict the allocation of space among vehicles, cyclists and pedestrians over the bridge. All alternatives maintain the existing MBTA Red Line Reservation at its current width of 27 feet. These alternatives are recommended for analysis in the Environmental Assessment to be submitted to the Federal Highway Administration. The Task Force held a public information session at which draft recommendations were presented and the public was offered an opportunity to comment on the draft recommendations both verbally and in writing.

The Outbound and Inbound alternative configurations are summarized in the table below. Graphic depictions and narrative descriptions are contained within the body of the recommendations.

<u>OUTBOUND CROSS SECTION ALTERNATIVES</u>						
	<u>Alt.</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Shoulder At Curb</u>	<u>Roadway</u>	<u>Shoulder At MBTA</u>
<u>1 LANE</u>	<u>A1</u>	<u>15'-0"</u>	<u>8'-6"</u>	<u>0'-0"</u>	<u>10'-6"</u>	<u>3'-0"</u>
	<u>A2</u>	<u>14'-0"</u>	<u>8'-0"</u>	<u>0'-0"</u>	<u>11'-0"</u>	<u>4'-0"</u>
	<u>A3</u>	<u>14'-0"</u>	<u>11'-6"</u>	<u>0'-0"</u>	<u>10'-6"</u>	<u>1'-0"</u>
<u>2 LANE</u>	<u>B</u>	<u>8'-0"</u>	<u>7'-0"</u>	<u>0'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>

<u>INBOUND CROSS SECTION ALTERNATIVES</u>						
	<u>Alt.</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Shoulder At Curb</u>	<u>Roadway</u>	<u>Shoulder At MBTA</u>
<u>1 LANE</u>	<u>A1</u>	<u>13'-0"</u>	<u>12'-0"</u>	<u>0'-0"</u>	<u>11'-0"</u>	<u>1'-0"</u>
	<u>A2</u>	<u>10'-0"</u>	<u>11'-0"</u>	<u>0'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>
	<u>A3</u>	<u>14'-0"</u>	<u>11'-6"</u>	<u>0'-0"</u>	<u>10'-6"</u>	<u>1'-0"</u>
<u>2 LANE</u>	<u>B1</u>	<u>8'-0"</u>	<u>7'-0"</u>	<u>0'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>
	<u>B2</u>	<u>9'-0"</u>	<u>6'-0"</u>	<u>0'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>
	<u>B3</u>	<u>8'-0"</u>	<u>6'-0"</u>	<u>1'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>
<u>VARIABLE</u>	<u>C</u>	<u>13'-0"</u>	<u>8'-0"</u>	<u>0'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>
		<u>8'-0"</u>	<u>6'-0"</u>	<u>0'-0"</u>	<u>22'-0"</u>	<u>1'-0"</u>

All alternatives include a 1'-6" vehicle barrier. Outbound C shows the minimum and maximum dimension as the widths vary crossing the bridge.

For both the Inbound and Outbound configurations there are areas known as "pinch points" where the available area narrows due to physical constraints. This primarily impacts pedestrian and bicycle users and is of significant concern

to many Task Force members. The amount of narrowing and the length of it vary depending on the configuration. The pinch points are listed in tables later in the recommendations and the length of the pinch points are shown in the associated depictions.

In addition, the Task Force concluded that an integral part of the project are the bridge approaches to Cambridge and Boston and the connections to the parklands for pedestrians and cyclists. In Cambridge this includes extending bike and cycle paths, improving walkways, crosswalks, adding walk signals and adjusting the geometry of vehicle turns to enhance safety. In Boston this includes a new pedestrian bridge to the Esplanade, extending the bike lane through Charles Circle to Cambridge Street, relocating or adjusting exit and entrance ramps to Storrow Drive, enhancing pedestrian and bike access to the bridge, examining adjustments to traffic signals, and analyzing opportunities to divert traffic away from Charles Circle to Blossom Street, among other improvements.

These recommendations are depicted graphically below, as are narratives of the assumptions, agreements and other work of the Longfellow Bridge Rehabilitation Task Force.

## Background

The Longfellow Bridge is a historic structure completed in 1908 and carries State Route 3, consisting of Cambridge Street in Boston and Main Street in Cambridge, over the Charles River. Route 3, over the Longfellow Bridge, is part of the National Highway System and is an officially designated evacuation route for both cities. The Longfellow Bridge is a state-owned structure, maintained and operated by the Massachusetts Department of Transportation. The Longfellow Bridge spans 2,135 feet between the cities with a deck width of 105 feet. It serves many modes of travel. On an average day, 90,000 passengers on the MBTA Red Line, 28,000 automobiles and trucks and over one thousand pedestrians and bicyclists cross on the bridge's travel lanes, bike lanes and sidewalks and tracks. The bridge consists of eleven steel arch spans, two steel stringer spans, is founded on large granite block and concrete piers and abutments, and has eight decorative masonry towers. Ownership of the Longfellow Bridge was recently transferred to the Department of Transportation from the Department of Conservation and Recreation (DCR). Prior to DCR, the bridge was owned by its predecessor agencies the Metropolitan District Commission and the Metropolitan Parks Commission. This prior ownership meant that the surrounding Charles River parkland system and the bridge were managed by a single entity.

These historic and parklands roots require additional planning and permitting approvals for the rehabilitation work. The rehabilitation must meet the Secretary of the Interior's Standards for Treatment of Historic Properties and the National Historic Preservation Act (often called "Section 106") which includes review by the Massachusetts State Historic Preservation Officer and others such as the Boston Landmarks Commission and Cambridge Historical Commission. Section 4(f) of the Department of Transportation Act requires that parkland not be converted to transportation uses unless there is no feasible and prudent alternative to doing so and that all planning has been conducted to minimize harm to parkland resources.

Over the decades the condition of the bridge has deteriorated and MassDOT has determined that its rehabilitation and restoration should be included in the Massachusetts Accelerated Bridge Program. Approximately \$255 million has been allocated to its repair and rehabilitation. MassDOT's goals are to restore the beautiful and historic structure in a manner that is sensitive to its original construction by improving its structural condition; to provide safe travel for transit, bicycle, pedestrian and vehicular travel, and to preserve an essential element of the Charles River Basin. In the spring of 2010, MassDOT withdrew a previously submitted Environmental Assessment (EA) for the Longfellow Bridge Project from the Federal Highway Administration in order to provide an opportunity for further public participation as it relates to the final configuration of the bridge. For these purposes, in June 2010, Massachusetts Department of Transportation Highway Division Administrator Luisa Paiewonsky convened the Longfellow Bridge Rehabilitation Task Force.

The Task Force members were drawn from a diverse set of stakeholder groups who represent interests directly impacted by the Longfellow Bridge rehabilitation. The categories of stakeholders include:

- Local Businesses
- Business Associations
- Interest groups (bicycle, pedestrian, environment, parks)
- Colleges/Universities
- Federal Officials
- Hospitals
- Municipal Officials
- Neighborhood/Civic Associations

- State Officials
- Elected Officials
- Planning/Development Organizations
- Transportation Management Associations

The purpose in forming the Task Force was to ensure that a wide range of views were represented and 36 members were appointed.<sup>1</sup> The Task Force met 9 times between June and October 2010, offered an opportunity to submit written feedback on the draft recommendations and held a public information session on October 6, 2010 to receive input from the general public on the draft recommendations<sup>2</sup>. All meetings were open for the public to observe, with time allocated for non-Task Force members to express their points of view. In addition, ~~all~~ information related to the work of the Task Force, including meeting notices, agendas, summaries, presentations and working documents were posted on MassDOT's website ~~for public viewing or on a~~—A dedicated Google Group ~~created for the Task Force for public viewing. An~~ and e-mail address ~~were was~~ also created to provide the public the opportunity to follow the work of the Task-Force and to provide feedback and comments.

The Task Force process was structured to provide stakeholders with data about the bridge, the proposed rehabilitation, traffic, state and federal design guidelines, and other parameters that could influence the design. The Task Force provided the conveners with feedback on assumptions, the scope of the project, and suggestions for design guidelines. Task Force received presentations on:

- Traffic Data
- Accessibility, Capacity Allocation, and Traffic Analysis Summary
- Compilation of the alternative cross-section options & pedestrian and bicycle approach connections incorporating input from Task Force large & small group discussions, bridge tours and other public input
- Design, operational and traffic issues associated with Charles Circle/Blossom Street/Pinch Point
- 4(f) Parkland Considerations – potential adjustments to improve Longfellow Bridge approach
- Review of criteria that guide MassDOT when evaluating alternatives within the EA to make a recommendation for a preferred alternative
- Several Task Force members made presentations on specific suggestions including
  - Esplanade Association Suggestions for Parkland Access
  - Walk Boston and others' suggested a three phased approach intended to test one alternative during the construction phase
    - MassDOT made a brief response concerning the environmental permitting implications of this phased approach

## Interests of the Members

The Longfellow Bridge is an iconic and historic structure, as well as a key route in the regional transportation system. The proposed rehabilitation of the bridge provides a unique opportunity to link the parklands and urban areas on both sides of the Charles River, as well as to improve or address the needs of its multiple user groups, including pedestrians, bicyclists, transit passengers and truck and automobile drivers. The existing bridge width is 105 feet and

<sup>1</sup> See Appendix 1 for a list of members appointed by the Highway Administrator. Please note that for some meetings members asked alternates to serve due to schedule conflicts.

<sup>2</sup> Information on the Longfellow Bridge Project and Task Force may be found on the MassDOT project website (<http://www.massdot.state.ma.us/Highway/abp/longfellow.aspx>) and a GoogleGroup established by the Task Force (<http://groups.google.com/group/LongfellowTaskForce>).

because it has been classified as eligible for listing in the National Register of Historic Places and is part of the Charles River Historic District, the width cannot be increased over the full length of the structure. Thus the Task Force faced the difficult question of how to accommodate and improve the user experience, especially for bicyclists and pedestrians, within the limited space. In doing so, the group saw an essential part of the rehabilitation as enhancing the approaches at either end of the bridge and significantly improving the connections to the parklands. The Task Force members believe that improving the pedestrian and bicycles connections in connection with the unique historic character of the bridge not only provides for a better experience for regular and casual users from the surrounding area but are essential to maintaining the reputation of the greater Boston area as a world class destination. The approaches were not initially within the charge of the Task Force but, through dialogue about the aforementioned issues, came to be seen as essential to effective improvements on the cross-section by both the members and MassDOT.

Throughout the discussions the Task Force sought ways to integrate the need of all modes of travel. In doing so they worked to meet the interests of all users. Among the interests articulated by various Task Force members were:

- Safety for all users– Pedestrians, Bicyclists, Transit Passengers, Drivers, Boaters
- Preservation of historic nature of Bridge
- Equity – All stakeholder groups treated in similar manner
- Accessibility – Access to Esplanade, Parks,
- Environmental Protection– Storm water runoff issues
- Efficiency – On schedule/on budget
- Openness and Transparency- public kept informed
- Congestion for egress/ingress to bridge on both sides, creating access for communities in close proximity to the bridge
- Visionary – build for the future
- Green DOT standard maintained
- Healthy/environmentally friendly
- Transportation alternatives during construction phase

There was substantial discussion among the Task Force members as to what the primary purpose of the project should be. Some felt the cross section should be designed to favor bicycle and pedestrian travel, and suggested that increasing congestion for automobiles and trucks would be acceptable as a means to encourage mode shift to transit, walking and biking. Others favored a flexible approach, creating additional bicycle and pedestrian capacity but retaining existing capacity for automobiles and trucks during peak periods. Still others suggested designs that would change the lane configuration over the length of the bridge or at different time periods. All agreed that the experience of pedestrian and bicycle users could and should be substantially improved.

Over the course of the summer and early fall, the Task Force considered more than a dozen design alternatives in four major “families,” often mixing and matching design elements to create a balanced alternative that met the needs and concerns of all members. To support the Task Force in its deliberations, MassDOT developed at least eight alternatives based both on prior alternatives for the cross section design and on the suggestions of Task Force members. Several Task Force members or coalitions of members suggested additional alternatives. Elements of alternatives also provided opportunities for discussion and variations. A variety of operational improvements to the Boston and Cambridge approaches and enhancements to Charles Circle and exits from Storrow Drive were



discussed as possible measures to help alleviate the user demands of the bridge. These discussions were based on input from members' suggestions as well as from MassDOT and its consultants.

These recommendations reflect the work of the Task Force and are delivered to MassDOT in the sincere hope that they will be included in the submission of the Environmental Assessment to the Federal Highway Administration. A number of the recommendations are displayed graphically below.

## General Areas of Agreement

The Task Force wishes MassDOT to recognize that these recommendations are based on the underlying interests and goals of the members. In performing the analysis for the EA and selecting a preferred alternative, the Task Force hopes that if a specific element of the recommendations cannot be incorporated, the Department will look to the underlying principles and use its best efforts to find alternative ways to accomplish the underlying principles.

Some elements are common across all alternatives or should be included in any design proposed by MassDOT. In some instances these general agreements do not necessarily preclude a more expansive allocation, such as a wider sidewalk or bicycle lane.

1. The Task Force assumes that the following will be met in any design:

- Compliance with the Americans with Disabilities Act
- Create safe accessibility for all users regardless of their ability level or mode of travel that is well connected to the surrounding parklands and adjoining neighborhoods
- Compliance with all environmental regulations and requirements, and with historic preservation requirements
- Consistency with Massachusetts Project Development and Design Guide
- Improved safety for all users
- Improved structural integrity of the bridge
- Maintenance of existing utility services currently carried by the bridge and allow for future expansion of utilities
- Restore pedestrian and bicycle connectivity between Boston and Cambridge on the four quadrants

2. Longfellow Bridge Cross-Section – General Areas of Agreement

- The design will provide the flexibility and sustainability to allow accommodation of changes in conditions and opportunities and mode use in the coming decades without significant or costly reconstruction. The design should be maximized for normal use while maintaining the capacity to handle emergency use – at the level of the MBTA buses or as an evacuation route for example. Task Force members see the placement of the crash barrier dividing the paved vehicle surface from a raised sidewalk or sidewalk/cycle track as a controlling decision that impacts how the bridge will be used for the next 75 years, and the extent to which it enhances the experience for non-vehicle users and the ability to adjust to mode shifts over time. The placement of the barrier impacts the width of the pedestrian sidewalk and its potential use as a promenade. It also, depending on the number of vehicle lanes, allows for a bike lane with a single lane of travel or a shared area with the sidewalk for a cycle track.
- MBTA Reservation should remain at 27 feet in width.
  - Through dialogue with the MBTA, the Task Force understands that this dimension allows for safe evacuation and maintenance. The MBTA informed the Task Force that the additional space required to enhance margins for safety would require at least an additional 7 feet plus “safe

havens" in the barriers every 15 feet which would significantly degrade the other modes, including needs of the MBTA for buses during service interruptions to the Red Line. The Task Force explored the viability of shifting the Red Line tracks to create additional asymmetric space but learned that the bridge's load bearing characteristics undermined the viability of this option.

- Comfortable and inviting pedestrian and bicycle facilities and connections which increase their use thereby influencing a mode shift to those uses.
  - Wherever possible wider pedestrian sidewalks of at least 8 feet in total width should be provided on each side of the bridge. This width makes it easier for two groups to pass each other comfortably. (Pedestrian advocates feel that a 10 foot sidewalk is the appropriate width for two groups each with two people to pass comfortably in opposite directions, especially those with strollers, and strongly prefer alternatives with at least this sidewalk width.)- Where a narrower width may be necessary, such as at the "pinch points" on the Boston Inbound approach the modes should share in reducing space allocation. However, the Task Force feels that this is an unattractive option and that MassDOT should strive to provide at least 6 feet clear for pedestrians at the narrowest areas approaching to Charles Circle. Alternatively, this may be relieved by the construction of appropriate connections to the Esplanade as described below. Many members acknowledged that, with wider pedestrian sidewalks, some younger or inexperienced cyclist may nonetheless ride on the sidewalks although cycle lanes are available.
  - Bicycle lanes of at least 5 feet in width plus buffers. Methods to physically and psychologically separate cyclists from vehicles should be fully explored and analyzed. Many Task Force members expressed strong interest in "candlestick bollards". Other methods discussed included soft curbs and small berms. The goal is to both enhance actual safety and to create a sense of security that will make the bike facility more attractive to less experienced users, especially those who might otherwise choose to ride on sidewalks. These separation methods can also be used to separate pedestrians and cyclists in adjoining spaces.<sup>3</sup>
- A paved width of 22 - 24 feet to ensure that the evacuation route is maintained, emergency service vehicles can be accommodated and, when necessary, accommodate MBTA busing needs during Red Line service interruptions. This also allows closure of a lane for maintenance or due to accident while a permitting passage in the remaining paved area<sup>4</sup>. [Note: some members feel that these goals might be met with a narrower paved width. MassDOT has expressed the opinion that 24 feet is the necessary width.]
- If and where two vehicle travel lanes are required, that a design exception be sought to further reduce the lane widths to 10 foot 6 inches. Unless some other allocation of space adequately addresses the needs of cyclists, pedestrians and the MBTA. Some members who manage transportation or whose customers and visitors arrive in buses expressed reservations about lane widths narrower than 11 feet feeling that this width is necessary for the combined width of the vehicle body plus mirrors.
- Almost all members of the Task Force support a plan for outbound automobile travel lanes being reduced from two to one to provide additional capacity for bicycle and pedestrian travel.
- For safety of other non-automobile or truck users, the roadway should continue to be posted and enforced at a maximum of 30 mph, preferably lower, and the design of the configuration should encourage these lower travel speeds. In addition, enforcement mechanisms should be thoroughly explored and pursued including police enforcement, camera monitoring and enforcement and other automated methods.

<sup>3</sup> Some members expressed concern that the methods not create operational problems for plowing or drainage.

<sup>4</sup> Some members feel that these goals might be met with a narrower paved width. MassDOT has expressed the opinion that 24 feet is the necessary width.]

- If streetlights are placed at the outbound edges of the paved surface a non-traditional design approach allowing the streetlights and crash barriers to be combined into a single line.
- There should be enhancements to improve user experience and the public impression of the bridge. Paving, planting, signage, banners, benches or other furniture should be part of the infrastructure meeting both contemporary needs and reflective of the historic structure. (For example interpretive panels and plaques are being proposed on the Boston Esplanade and Cambridge approaches that communicate the history of the bridge, man, and Charles River basin.)
- The design should accommodate the needs and enhance the experience of special user groups such as:
  - Tourists desiring to view the skyline and take photographs.
  - Special events and programs – holidays, regattas, etc.

### 3. Approaches

The Task Force is recommending improvements to the bridge approaches and connections to the parklands on both sides of the river. The group strongly encourages MassDOT to explore and expedite the identification of funds and initiate the permitting associated process for these improvements as the acceptance of elements of the cross-section design are integral to the approach and parkland treatments. The support of the Task Force for the cross-section alternatives is directly related to and contingent upon improvements to the Boston and Cambridge approaches with connections to the parklands.

A number of the specific elements of improvements to the approaches and parklands connections need significant further analysis which should be done in the EA relative to traffic volumes for all modes of travel, signals, timing, pedestrian crossing widths and markings, cycle track, bike lane and bike box locations and vehicle turning movements.

#### A. Boston Approach/Charles Circle/Storrow Drive

The Task Force discussed issues related to the Bridge's approach into Boston at Charles Circle. This is seen as a significantly limiting factor with traffic queuing on the bridge before navigating Charles Circle. Several years ago a significant redesign of Charles Circle was undertaken in conjunction with improvements to the Charles Street Red Line station. The Task Force considered additional adjustments that would assist improving the function of Charles Circle, the bridge approach and the entrance and exit ramps from Storrow drive and Blossom Street. The Task Force recommends the following:

- Additional analysis of the signal timing of Charles Circle to improve movement off of the Longfellow through Charles Circle in a manner that will not degrade the other vehicle access points to Charles Circle.
- Creation of marked bike lanes between the Longfellow, Charles Circle and Cambridge Street in both directions. This should be done in conjunction with clear lane assignment markings. At the Inbound intersection this could include a "bike box" for cyclists to queue across 2 lanes. (A bike box is an area at the front of the traffic at a traffic light. When the light is red, bicyclists can, then overtake waiting motor vehicles and come to the front of the traffic line. This type of installation provides a protected area when there is heavy bicycle traffic, and sometimes a way to allow bicyclists to get closer to the center of the street to wait to make a left turn ahead of moving vehicles. Bicyclists may go straight across or turn left when the signal changes to green.) The graphics in these recommendations represent the placement of the bike lane as between the right and center lane in a three lane release to Charles Circle. The bike box location relative to

the cross walk should also be analyzed. The Task Force recommends that the exact location of the bike lane and bike box be fully analyzed to determine the safest configuration to avoid conflicts with motorized vehicles and pedestrians if a three lane release is deemed necessary. In configurations with a cycle track on the same plane with a sidewalk any transitions to grade with vehicle traffic should not have cyclists merge with traffic. Rather they should transition into a bike lane.

- Adding walk signals and reducing the entrance width to the west bound entrance of Storrow Drive.
- Relocation of the Storrow Drive eastbound exit ramp away from the bridge onto Mugar Way ramp location. This recommendation creates additional attractive parklands.
- Evaluate installation of a traffic light at Blossom Street on the east-bound portion of Storrow Drive and add a turning lane to divert traffic to and from the hospital area away from Charles Circle.

Task Force members reviewed options which included both a two lane release and a three lane release into Charles Circle. ~~For the two lane release no reconfiguration of the abutment wall is necessary. For a three lane release, reconfiguration of the abutment wall is necessary, to accommodate ADA accessible sidewalks.~~ Most Task Force members feel that the moving of the abutment wall in combination with other improvements described as part of the improvements to the Cambridge approach and Esplanade connections better accommodate pedestrians and cyclists. Some members have expressed concern about whether the necessary approvals will be received<sup>5</sup>. Some Task Force members expressed a strong preference for moving the abutment wall and having a two lane release into Charles Circle. They feel this configuration would allow for wider sidewalks alleviating which could alleviate the pinch points, making a more orderly turning process at Charles Circle and creating a safer and narrower crosswalk for pedestrians. Most members felt that a critical element in the ultimate design was not only the width at a particular pinch point but the length of the pinch which should be kept as short as possible. All recognize that moving the abutment wall allows for meeting ADA minimum standards but the additional spatial restrictions hinder meeting the needs of all users at their desired level and in creating access which is as inviting and comfortable to all user groups. The attractiveness to pedestrians was a concern many who sought to create conditions where small groups, such as families with strollers and toddlers, could comfortably cross the full length of the bridge.

This diversity of opinion reflects the complexity and interrelated issues associated with the Boston approach. The Task Force feels that a significant number of elements are in play on the Boston side of the bridge, particularly around the inbound pinch point and the release into Charles Circle. The Task Force believes that an evaluation of alternative designs for the inbound sections of the bridge from the pinch point to Charles Circle (and to some extent for the outbound side) requires analyzing many possible combinations of these elements. The depictions shown in these recommendations, and as presented by MassDOT, assume movement of the abutment wall 12 feet. As these alternatives are fully analyzed, MassDOT should examine the possibility of moving the portion of the wall nearest Charles Circle further out than the 12 feet currently proposed, creating a new pedestrian bridge, consolidating the existing exit ramp from east-bound Storrow Drive and the existing Mugar Way (currently closed to traffic) and locating the new exit ramp further away from the bridge. This will improve the parkland, make a new pedestrian and bicycle connections possible and more inviting. The Task Force also suggests improving the signage for cars coming into Charles Circle, slowing down cars as they go over the bridge, and other features which manage traffic but focus on

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<sup>5</sup> MassDOT has expressed a preference for relocating the abutment walls to accommodate a three lane release into Charles Circle, an ADA compliant sidewalk, and a dedicated bike lane. Furthermore, MassDOT has expressed strong confidence that it would receive all necessary approvals relating to parklands changes [often referred to as the Section 4(f) process] and has already received a "No Adverse Affect" finding relating to historic preservation [often referred to as the Section 106 process].  
MassDOT

creating inviting and attractive pedestrian and bicycle facilities that will enhance the parkland and which will be sufficient to meet future increases in demand.

In addition, while the Task Force is unanimously in favor of expanding the bridge, at least from the pinch point to Charles Circle, the members feel that it is vital that a full 4(f) and 106 review of the impact of that action when integrated with the various other elements included in the potential solutions be conducted to identify and commit to the full range of needed mitigations in the broadest possible area around the bridge -- including as "far away" as the Blossom Street intersection. They recognize that this is not an easy hurdle.

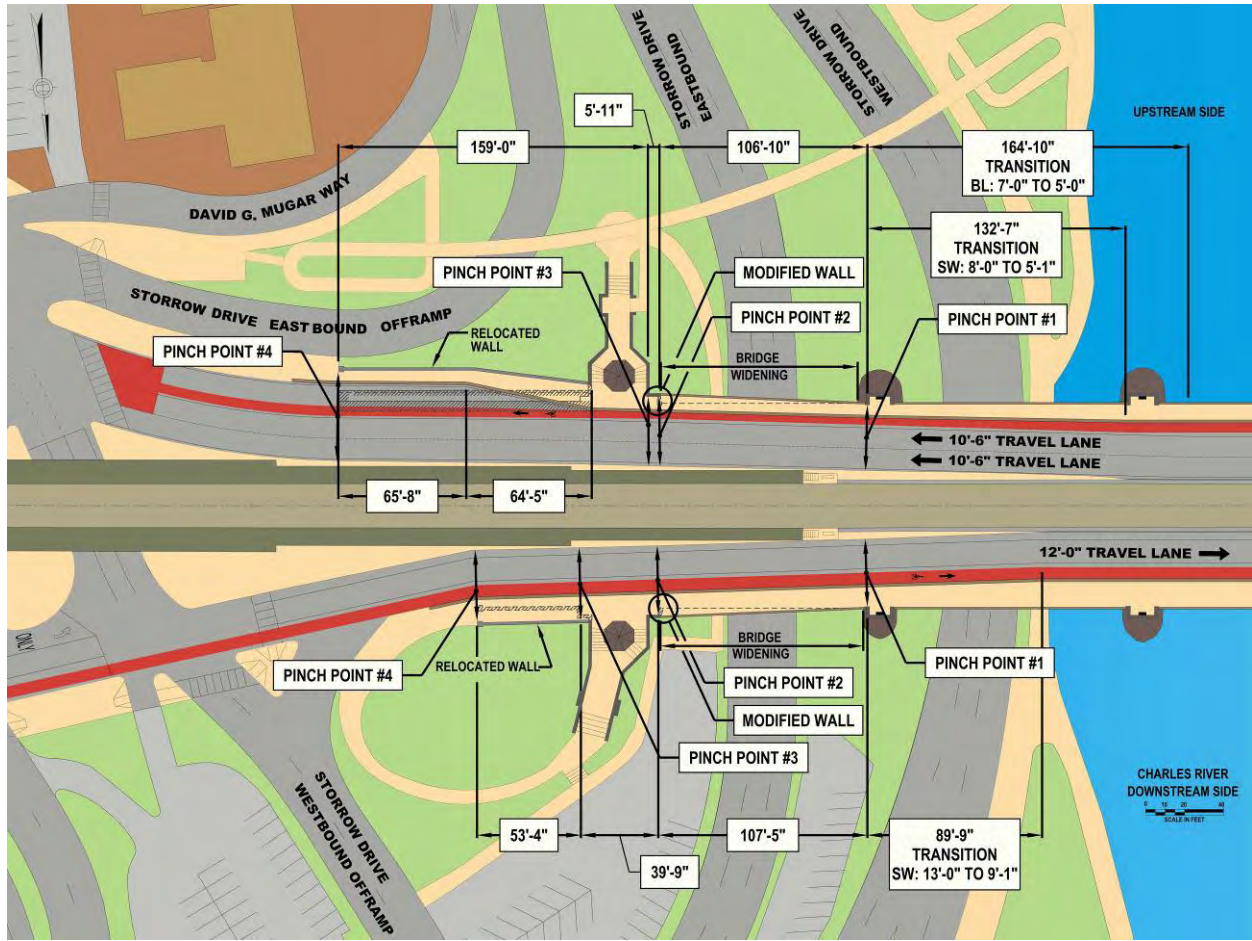
These configurations are depicted below with the pinch point dimensions noted for each mode and the possible location of a bike box if that element is selected. The configurations show both two and three lane releases into Charles Circle with a two lane cross section configuration and a two lane release with a one lane configuration.

Because of the complexity and number of variables the depictions show the existing condition with respect to the Storrow Drive eastbound off ramp, Mugar Way and pedestrian bridge. However, the Task Force predicates support of the cross section alternatives and approach configurations for analysis on support for the enhanced parkland connections and other adjustments to the approaches. Appendix 2 contains graphic depictions of a two and three lane release without moving the abutment wall. The Task Force feels that the significant limitations on the pedestrian and bike experience would devalue other potential enhancements from changes in the cross section design and therefore are strong evidence of the need to move the abutment wall.

~~Two lane release into Charles Circle with no change in the abutment wall configuration: (Moved to Appendix)~~

~~Three lane release into Charles Circle with no change in the abutment wall configuration: Moved to appendix~~

Three lane release into Charles Circle moving the abutment wall:



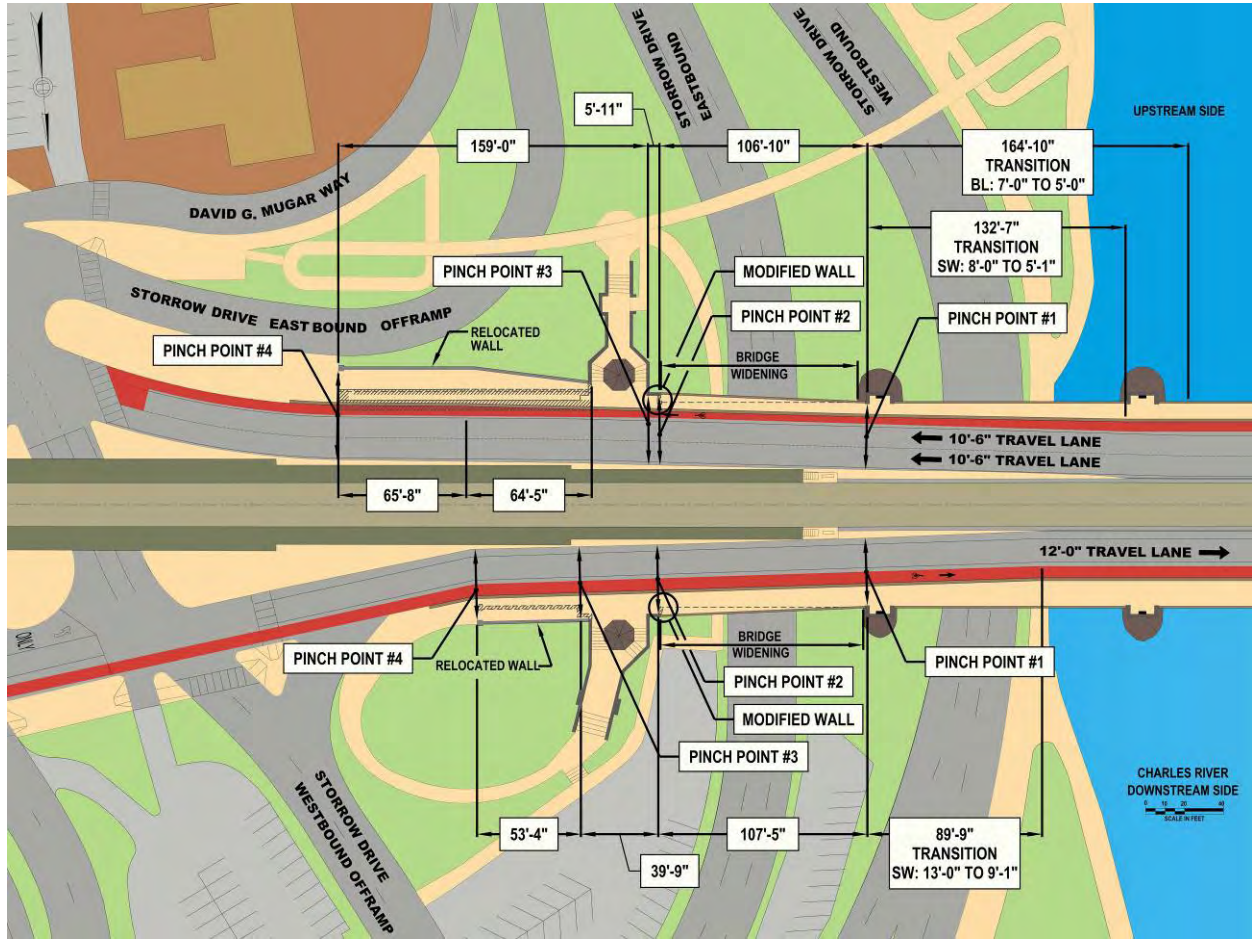
<u>INBOUND PINCH POINTS</u>						<u>OUTBOUND PINCH POINTS</u>					
<u>#</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Roadway</u>	<u>Shoulder</u>	<u>Total</u>	<u>#</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Roadway</u>	<u>Shoulder</u>	<u>Total</u>
<u>1</u>	<u>5'-1"</u>	<u>5'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>33'-7"</u>	<u>1</u>	<u>9'-1"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>34'-7"</u>
<u>2</u>	<u>6'-6"</u>	<u>5'-8"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>35'-8"</u>	<u>2</u>	<u>10'-0"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>35'-6"</u>
<u>3</u>	<u>6'-4"</u>	<u>5'-8"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>35'-6"</u>	<u>3</u>	<u>11'-8"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>37'-2"</u>
<u>4</u>	<u>4'-6"</u>	<u>6'-0"</u>	<u>32'-6"</u>	<u>1'-0"</u>	<u>45'-6"</u>	<u>4</u>	<u>10'-11"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>36'-5"</u>

Total dimensions include 1'-6" for vehicle barrier.

In this configuration the Task Force feels that the EA should evaluate whether the cycle lane should carry forward as shown in the drawing to allow direct travel through Charles Circle or placed to the right of all traffic in a similar fashion to that shown in the previous two graphics. **[Facilitator note:** If the bike/buffer lane narrows to 5 feet in total at the

transition point/pinch points on the inbound side this would allow for the narrowest pinch point to be wider than 5 feet clear. As depicted in this diagram.]

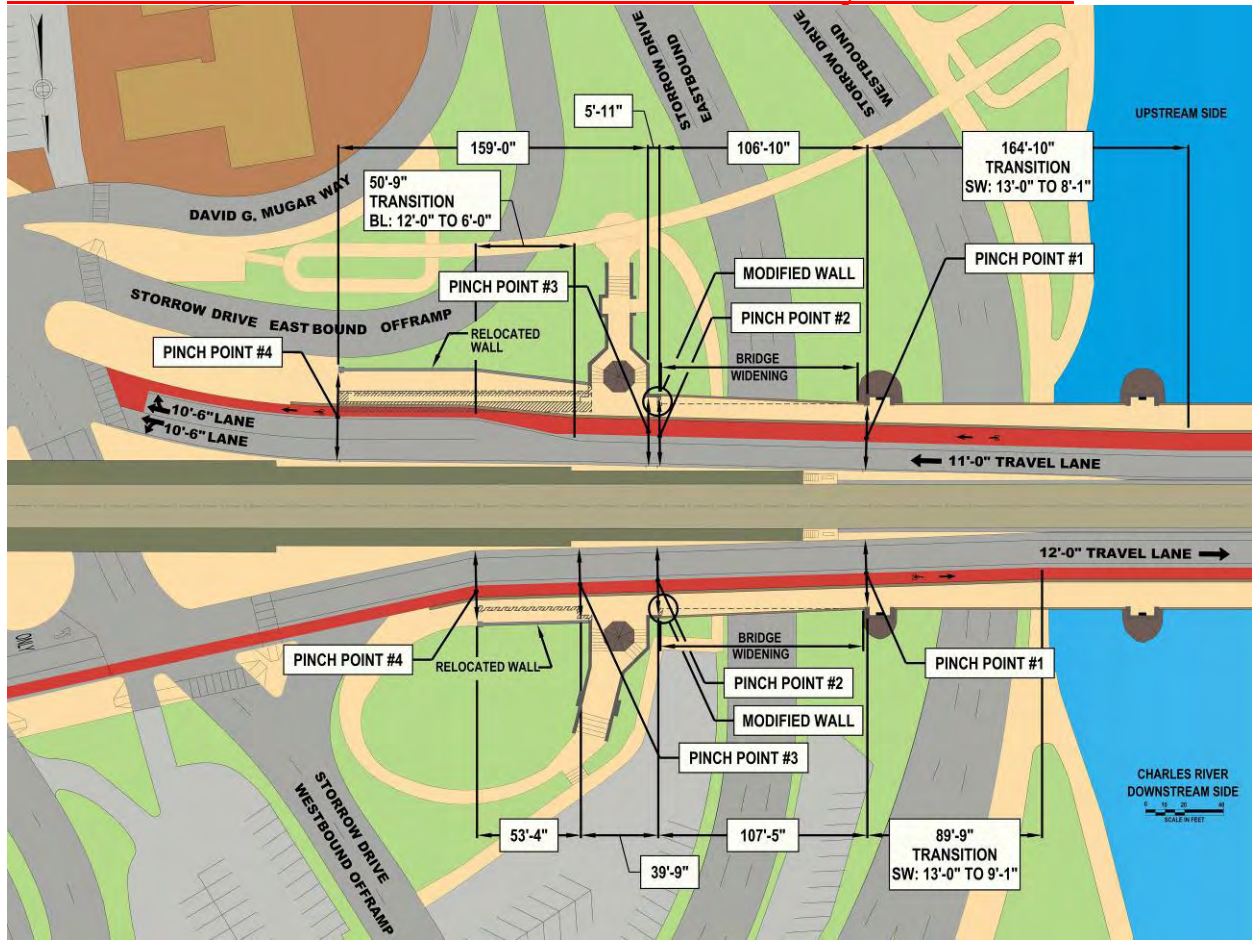
Two lane release into Charles Circle moving the abutment wall:



<u>INBOUND PINCH POINTS</u>						<u>OUTBOUND PINCH POINTS</u>					
#	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Roadway</u>	<u>Shoulder</u>	<u>Total</u>	#	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Roadway</u>	<u>Shoulder</u>	<u>Total</u>
1	5'-1"	5'-0"	21'-0"	1'-0"	33'-7"	1	9'-1"	8'-0"	12'-0"	4'-0"	34'-7"
2	6'-6"	5'-8"	21'-0"	1'-0"	35'-8"	2	10'-0"	8'-0"	12'-0"	4'-0"	35'-6"
3	6'-4"	5'-8"	21'-0"	1'-0"	35'-6"	3	11'-8"	8'-0"	12'-0"	4'-0"	37'-2"
4	16'-0"	6'-0"	21'-0"	1'-0"	45'-6"	4	10'-11"	8'-0"	12'-0"	4'-0"	36'-5"

Total dimensions include 1'-6" for vehicle barrier.

One lane inbound with a two lane release into Charles Circle and moving the abutment wall:



<u>INBOUND PINCH POINTS</u>						<u>OUTBOUND PINCH POINTS</u>					
#	Sidewalk	Bike Lane & Buffer	Roadway	Shoulder	Total	#	Sidewalk	Bike Lane & Buffer	Roadway	Shoulder	Total
<u>1</u>	<u>8'-1"</u>	<u>12'-0"</u>	<u>11'-0"</u>	<u>1'-0"</u>	<u>33'-7"</u>	<u>1</u>	<u>9'-1"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>34'-7"</u>
<u>2</u>	<u>10'-1"</u>	<u>12'-0"</u>	<u>11'-0"</u>	<u>1'-0"</u>	<u>35'-8"</u>	<u>2</u>	<u>10'-0"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>35'-6"</u>
<u>3</u>	<u>10'-0"</u>	<u>12'-0"</u>	<u>11'-0"</u>	<u>1'-0"</u>	<u>35'-6"</u>	<u>3</u>	<u>11'-8"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>37'-2"</u>
<u>4</u>	<u>16'-0"</u>	<u>6'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>45'-6"</u>	<u>4</u>	<u>10'-11"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>36'-5"</u>

Total dimensions include 1'-6" for vehicle barrier.

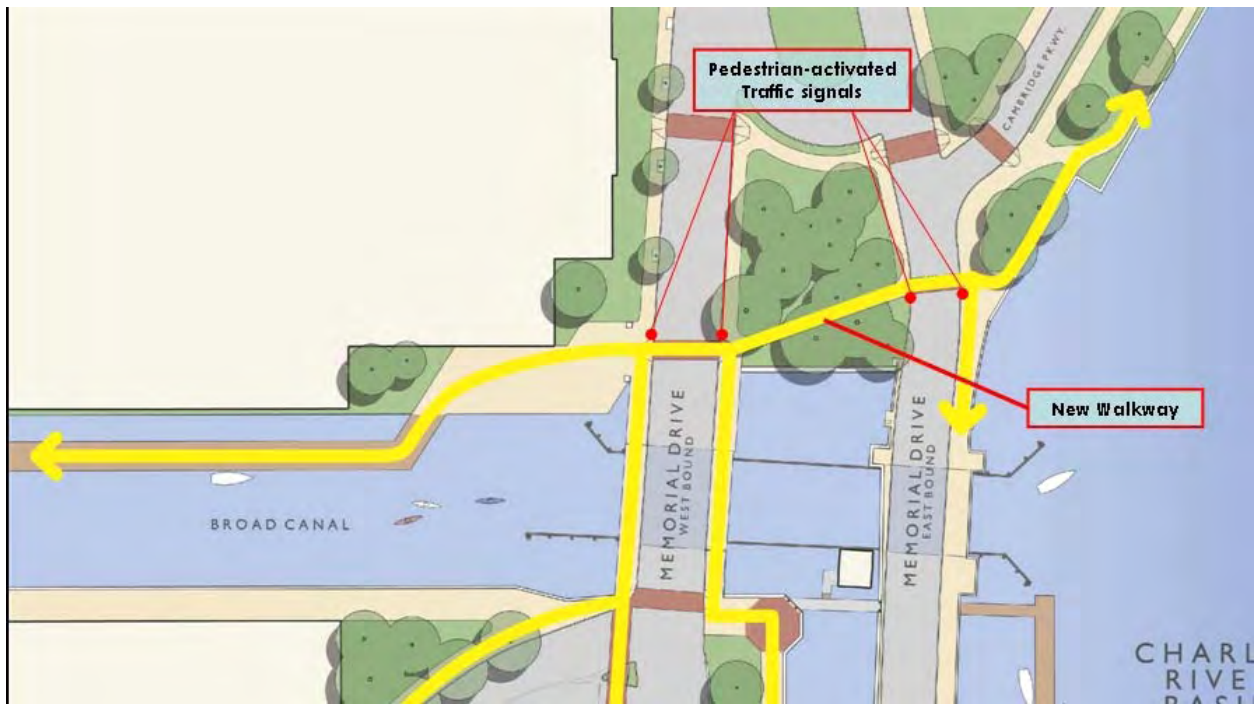


## B. Cambridge Approach

A number of improvements were identified for the Cambridge approach and adjacent areas that will significantly improve the pedestrian and bicyclist experience and safety. Members felt that thorough analyses and volume counts could be enhanced through video capture to assess how people are actually using the crossings. [The Task Force makes the following specific recommendations for analysis in the EA:](#)

- The section of riverbank path running alongside the water under the Longfellow (the “missing 500 feet”) be widened and finished along Cambridge Parkway.
- Improve the pedestrian routes from the Cambridge-bound side of Longfellow at the Bridge exit to Memorial Drive, the steps, the east Cambridge pedestrian crossing to the river bank and the pedestrian underpasses in both directions be upgraded and as appropriate painting and signaling of crosswalks. This includes renovation of the existing stairs to which MassDOT has committed.
- Narrow and tighten the turn off of the Cambridge-bound side of Longfellow on to Memorial Drive and the portion of the ramp leading from west-bound Memorial Drive on to Main Street.
- Narrow and tighten the curve leading from Boston-bound Main Street on to Memorial Drive west-bound, as well as the adjacent road leading from Memorial Drive west-bound on to the Boston-bound Longfellow Bridge.
- The narrowed ramps should reduce the pedestrian crosswalks to 25 feet to enhance safety in making crossings.
- If supported by study and analysis, remove the north most crossing and install linked traffic and crosswalk signals on the Cambridge Parkway extension.





### 3. Connections to the Esplanade

All Task Force members felt that significantly improved connections to the Esplanade would improve the experience of all users of the bridge and abutting neighbors restoring parkland, and possibly alleviate crowding at the approach to Charles Circle. The Task Force was presented with a proposed design<sup>6</sup> reflecting their input at meetings and individual meetings of the designer and a number of interested stakeholders. The group recommends the design concept be fully developed and implemented as an integral part of the Longfellow Bridge Rehabilitation project. The goals behind the concept are to build ADA compliant pedestrian and bike access directly between the bridge, Charles Circle and the Esplanade and to connect the upstream and downstream paths and bridge access points thereby improving the overall circulation and attractiveness. This solution also enhances the parklands abutting the bridge on the upstream side. Because of its location it is believed that, the existing pedestrian connection can be maintained during the construction period. Some members felt that the height of the pedestrian bridge as presented to them should be lowered to reduce the excessive lengths of the ramps leading to the Esplanade.

Aerial of proposed circulation for pedestrian bridge Connection to the Esplanade.



<sup>6</sup> This concept design was presented by Miguel Rosales.



#### 4. Issues for further consideration

The Task Force did not address all issues related to the restoration of the bridge. However, a number of members expressed concern that some items should be addressed to ensure adequate consideration. The Task Force encourages MassDOT, as appropriate, either conduct a full analysis in the EA and/or to engage the public and key stakeholders going forward with respect to:

- Providing detailed measurements for the typical configurations and key areas such as pinch points and approaches.
- Analyze the impacts of the alternatives on each mode of travel and assess the latent demand for sidewalks and bike lanes.
- Investigate innovative approaches to a crash barrier narrower than 2 feet thereby freeing additional space for use by cyclists and pedestrians.
- Evaluate the potential for future adaptations for cycle tracks in conjunction with wider sidewalks and the implications connections on and off the bridge for cyclists. This may include phased or staged configuration which can adjust to accommodate changes in demand. In one stage there would be a wide sidewalk with a cycle track and two lanes of traffic. In another stage a wide sidewalk promenade and a single lane of traffic with a wide bike lane. Modifying from one stage to the other can be accomplished without significant construction or movement of crash barriers. Task Force members differed as to which should be implemented first.
- Analyze opportunities for use of HOV lanes in two lane alternatives and lane conversions during non-peak times, weekends, holidays and events.

- Model regional traffic impacts related to the alternatives in the long term and for construction closures and assess the ability to use this period to encourage additional mode shift away from auto travel to other modes<sup>7</sup>.
- Providing additional traffic analysis used in evaluation of the alternatives.
- Informing and educating stakeholders concerning project costs.
- Mitigation of traffic impacts during the construction phase.
- Regional modeling of traffic impacts and efforts at a policy and operational level to encourage mode shift away from automobile travel.
- Impacts of various alternatives on air and water quality, as well as other environmental impacts.
- How will an ongoing dialogue of the public and stakeholders with MassDOT throughout project construction and thereafter be conducted? Are there governance or advisory structures which can formalize or regularize this through an ongoing process?

### Specific Cross Section Alternatives to be Included.

The Task Force identified several additional alternatives for consideration. All agreed that the available width is insufficient to fully accommodate the needs as the desired widths for vehicles, bicycles and pedestrians. Members felt that the alternatives need to be analyzed and modeled for traffic impacts on the various modes. Most felt that anecdotal evidence supported the viability of single vehicle lane alternatives outbound and expressed a preference for this. For inbound alternatives they felt that there was insufficient data and analysis to express a strong opinion. Many felt that if the analysis supported a single vehicle lane alternative this should be implemented and that this should be the long-term goal. Many believe that addressing the restrictions created by Charles Circle ~~would remove~~ could relieve the queuing issues on the bridge which create the pressure for two vehicle lanes on the bridge. The Task Force considered Outbound and Inbound Alternatives independently. These are described below and are described as one lane and two lane variations. The Task Force felt strongly that the cross section design need not be symmetrical and that the preferred alternative has the flexibility to accommodate mode shift and adapt in a way that would enhance rather than degrade the experience of a particular user group.

As noted above, the placement of the crash barrier is seen as an essential determining factor by Task Force members. The use of the space, e.g., sidewalk with cycle track v. pedestrian promenade with a cycle lane shifted to the road surface, could change over time or conversion from two vehicle lanes and narrow bike lane to a single vehicle lane and wide bike lane. This allows for variations on the alternative which are depicted below.

Not shown in the depictions are the methods of creating physical separation between bicycles and vehicles or pedestrians as appropriate. In viewing the alternatives the reader should assume that a preferred physical separation method is selected for that alternative and placed in the appropriate location, e.g., candlestick bollards in bike buffer area or within a wide bike lane.

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<sup>7</sup> Several members felt that the construction period or a post construction period should be used as an opportunity to test the alternatives; especially those with one vehicle lane inbound. Others felt this would have unnecessary negative impacts on users if this configuration were not supported by the analysis and modeling as a first stage. Those suggesting the test felt it should be included in the EA as a phased approach. MassDOT expressed serious reservations that this could be seen as inappropriately segmenting the EA process.

<u>OUTBOUND CROSS SECTION ALTERNATIVES</u>						
	<u>Alt.</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Shoulder At Curb</u>	<u>Roadway</u>	<u>Shoulder At MBTA</u>
<u>1 LANE</u>	<u>A1</u>	<u>15'-0"</u>	<u>8'-6"</u>	<u>0'-0"</u>	<u>10'-6"</u>	<u>3'-0"</u>
	<u>A2</u>	<u>14'-0"</u>	<u>8'-0"</u>	<u>0'-0"</u>	<u>11'-0"</u>	<u>4'-0"</u>
	<u>A3</u>	<u>14'-0"</u>	<u>11'-6"</u>	<u>0'-0"</u>	<u>10'-6"</u>	<u>1'-0"</u>
<u>2 LANE</u>	<u>B</u>	<u>8'-0"</u>	<u>7'-0"</u>	<u>0'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>

<u>INBOUND CROSS SECTION ALTERNATIVES</u>						
	<u>Alt.</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Shoulder At Curb</u>	<u>Roadway</u>	<u>Shoulder At MBTA</u>
<u>1 LANE</u>	<u>A1</u>	<u>13'-0"</u>	<u>12'-0"</u>	<u>0'-0"</u>	<u>11'-0"</u>	<u>1'-0"</u>
	<u>A2</u>	<u>10'-0"</u>	<u>11'-0"</u>	<u>0'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>
	<u>A3</u>	<u>14'-0"</u>	<u>11'-6"</u>	<u>0'-0"</u>	<u>10'-6"</u>	<u>1'-0"</u>
<u>2 LANE</u>	<u>B1</u>	<u>8'-0"</u>	<u>7'-0"</u>	<u>0'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>
	<u>B2</u>	<u>9'-0"</u>	<u>6'-0"</u>	<u>0'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>
	<u>B3</u>	<u>8'-0"</u>	<u>6'-0"</u>	<u>1'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>
<u>VARIABLE</u>	<u>C</u>	<u>13'-0"</u> <u>8'-0"</u>	<u>8'-0"</u> <u>6'-0"</u>	<u>0'-0"</u> <u>0'-0"</u>	<u>12'-0"</u> <u>22'-0"</u>	<u>4'-0"</u> <u>1'-0"</u>

All alternatives include a 1'-6" vehicle barrier.

In arriving at these alternatives a number of others were considered and were supported by some members and that they should be analyzed under some circumstances, many had strong objections and felt they should be but discarded. The major objections to the elements of these discarded alternatives which proved problematic included:

- A flexible travel lane by time of day in which the type of use would change through restriction to bicycles at certain hours and shared by cyclists and other vehicles at other hours. The signage required over the short span, concerns about enforcement difficulties and prevention of unauthorized use by autos at busy but disallowed periods, degradation to the cycle experience and safety during the "shared" period, problems relating to bike/vehicle conflicts to the transition into Charles Circle at the right turn lane.
- Creation of an inbound promenade with a widening of the sidewalk and crash barrier, and narrowing below a 24 foot paved width, was discarded for a number of reasons. These include limitations on future flexibility for modes shifts to or away from automobiles because the crash barrier is tied into the structure of the bridge making renovations expensive; snow removal and maintenance issues and limitations on emergency access at peak periods.
- Contraflow bike lane adjacent to the MBTA reservation on the Outbound side of the bridge was discarded because its narrowness for passing cyclists, difficulty in accessing Memorial drive bikeways, reduction in outbound pavement width, snow removal difficulties, and non-traditional bicycle movements.

- A bi-directional bike lane on the outbound configuration with a single vehicle travel lane.
- ~~Cycle tracks (similar to bike lanes but usually segregated to a greater degree by way of a change in elevation or soft curb) associated with pedestrian walkways were generally not favored by most members due to narrowness for passing, snow removal and potential mixing of pedestrians and cyclists.~~



## Outbound Alternatives

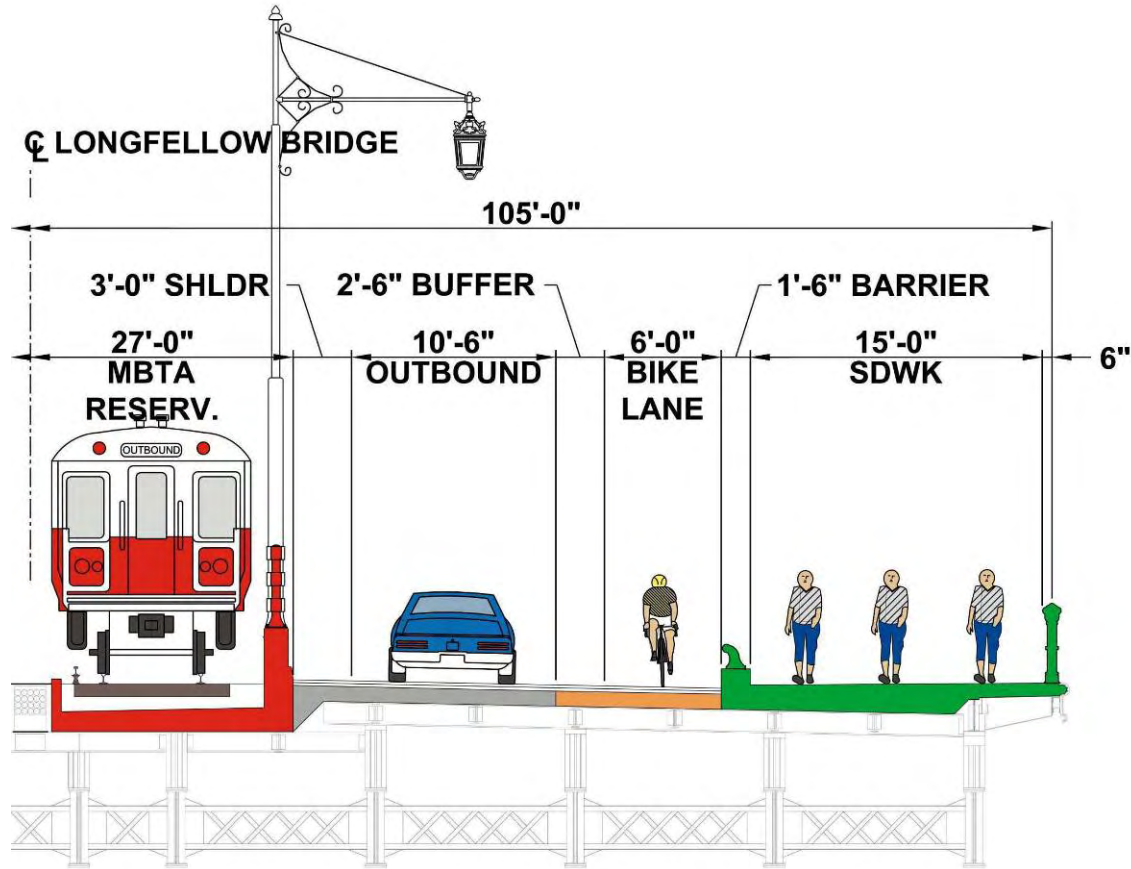
The outbound alternatives address the down river side of the bridge with traffic moving from Boston to Cambridge. Please note that the cross-section descriptions and graphics below describe widths in the central sections of the bridge. In some areas near the Boston approaches, ~~referred to as "the~~ pinch points", some elements such as sidewalks may be narrower. This narrowing varies depending on the pinch point and the chosen configuration and exactly how far the abutment wall is moved. These dimensions are displayed graphically above in the depictions of the Boston approach earlier in the recommendations. Task Force members, especially those supporting pedestrian interests, felt strongly that these pinch points need to be alleviated and that the narrowest points of sidewalks in many ways defined the overall experience of pedestrian users. In no instances should these areas be reduced below the 5 foot ADA minimum width and every opportunity should be taken to increase the width. The single lane alternatives are group in the "A" family.

### One Lane Outbound Alternatives:

The three single lane outbound alternatives are variations on a theme. The differences rest with allocations between the shoulder at the MBTA reservation and width of the buffer associated with the bike lane. The selection among these relies on the analysis with the determining factors being which alternative induces vehicles to slower speeds and creates the safest conditions for cyclists. With respect to Outbound Alternative A1, A2, and A3, the Task Force recommends an analysis of widening to two lanes briefly before the exit onto Cambridge Parkway to create safer turning movements and reduce conflicts between cyclists, pedestrians and vehicles.

### **Outbound Alternative A1**

From the MBTA reservation this alternative has a 3 foot shoulder, a 10 foot 6 inch vehicle travel lane, a 2 foot 6 inch buffer, a 6 foot bike lane, 1 foot 6 inch crash barrier, a 15 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing. ~~The cycling community would like to see additional space allocated from the interior shoulder to the bike lane and buffer.~~

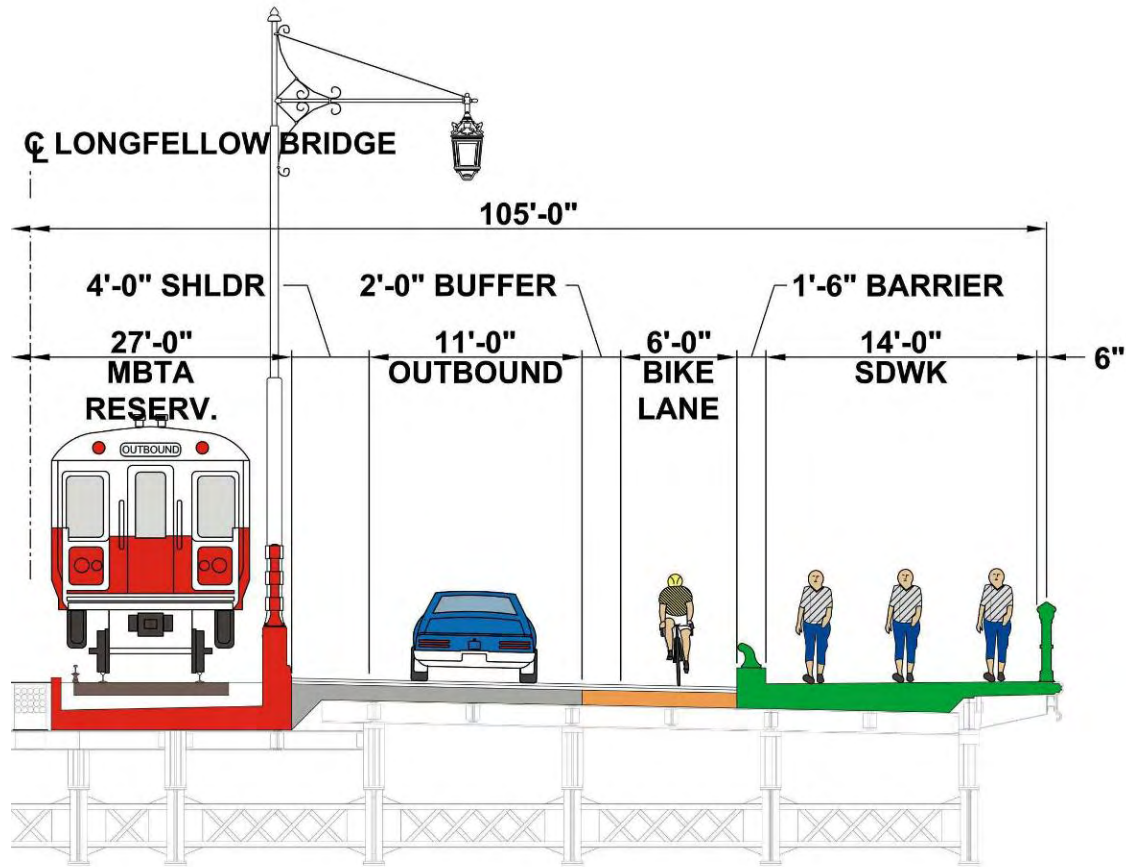


Outbound Alternative A1

**Outbound Alternative A2**

From the MBTA reservation this alternative has a 4 foot shoulder, an 11 foot vehicle travel lane, a 2 foot buffer, a 6 foot bike lane, 1 foot 6 inch crash barrier, a 14 foot sidewalk, and 6 inches for the interior portion of the ornamental pedestrian railing.

~~Task Force members left it to the EA analysis to determine whether a narrower travel lane would induce slower speeds and the possible reallocation of space from the wider shoulder to the buffer or bike lane.~~

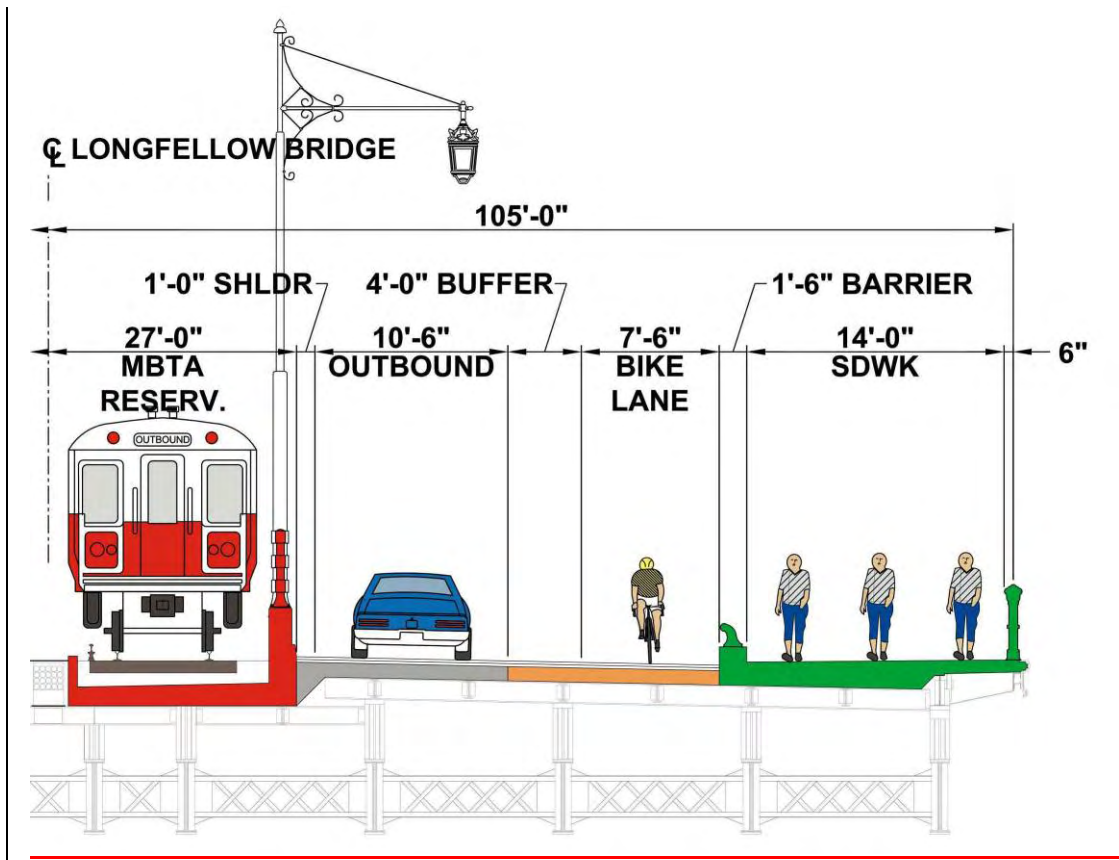


Outbound Alternative A2

~~With respect to both Outbound Alternative A1 and Alternative A2, the Task Force recommends an analysis of widening to two lanes briefly before the exit onto Cambridge Parkway to create safer turning movements and reduce conflicts between cyclists, pedestrians and vehicles.~~

**Outbound Alternative A3**

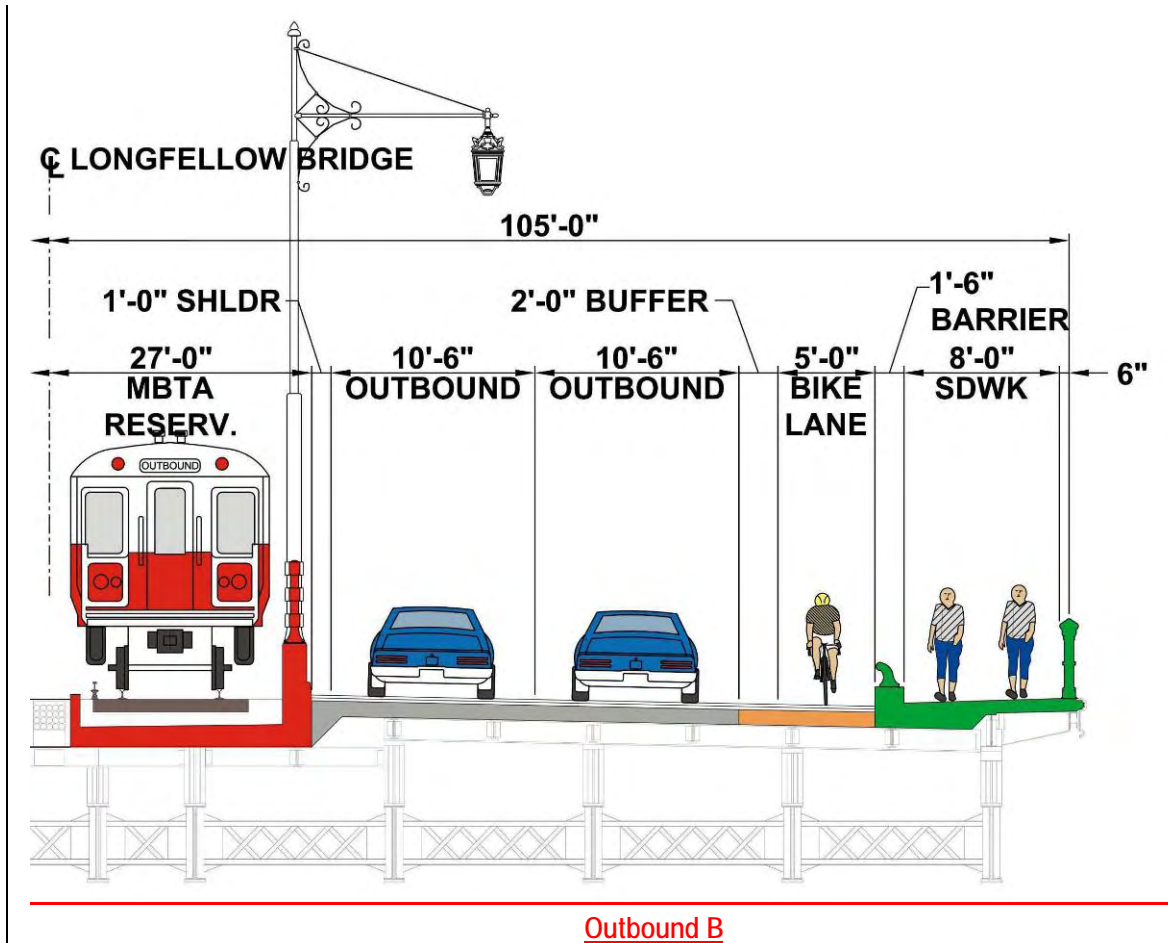
From the MBTA reservation this alternative has a 1 foot shoulder, a 10 foot 6 inch vehicle travel lane, a 4 foot buffer, a 7 foot 6 inch bike lane, 1 foot 6 inch crash barrier, a 14 foot sidewalk, and 6 inches for the interior portion of the ornamental pedestrian railing.



Inbound Alternative A3

Outbound Alternative B

From the MBTA reservation this alternative has a 1 foot shoulder, two 10 foot 6 inch vehicle travel lanes, a 2 foot buffer, a 5 foot bike lane, 1 foot 6 inch crash barrier, an 8 foot sidewalk, and 6 inches for the interior portion of the ornamental pedestrian railing. The sidewalk width in this alternative maintains the width of the existing sidewalk.



## Inbound Alternatives

The inbound alternatives address the up river side of the bridge with traffic moving from Cambridge to Boston. Please note that the cross-section descriptions and graphics below describe widths in the central sections of the bridge. In some areas near the Boston approaches, the pinch points, some elements such as sidewalks may be narrower. This narrowing varies depending on the pinch point and the chosen configuration. These dimensions are displayed graphically above in the depictions of the Boston approach earlier in the recommendations. As noted above with respect to the outbound configurations, many members see these pinch points as a crucial factor. On the inbound side the space limitations, and therefore the potential pinch points, are more severe and therefore of grave concern to members. The Task Force strongly encourages MassDOT to continue to explore configurations and movement of the abutment walls which relieve the pinch points to enhance the pedestrian and cycle experience to the maximum extent possible. The inbound configurations are divided into three "families". The "A" family shows one lane configurations, the "B" family two lane configurations and the "C" configuration has variable lanes and sidewalk/promenade widths. The C configuration came to be known as the "wineglass" alternative because it is narrow vehicle area at the Cambridge approach and flares out at several points before Charles Circle. The placement of the crash barrier varies within the A and B alternatives.

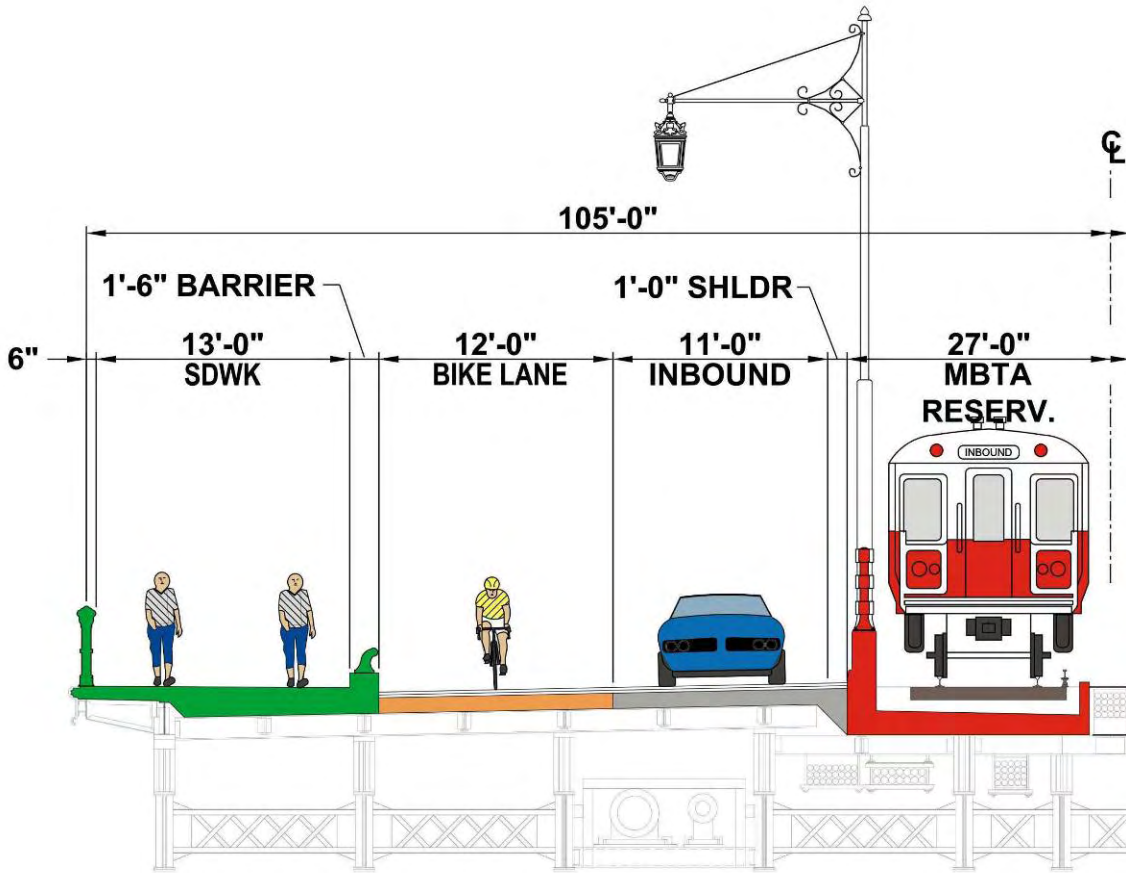
As noted earlier several of these alternatives have the potential to work as stages through changes in configuration to accommodate changes in demand mode without resulting in significant construction alterations. For example, many members felt that Inbound B3 could be the first stage and as a mode shift occurs it could be converted to Inbound A3. The thinking behind this is that B3 accommodates both bicycle and pedestrian needs should analysis support the need for 2 lanes of vehicle travel but that conversion to A3 would enhance both the pedestrian and bicycle experiences through larger accommodations. Those supporting this flexible approach felt that if the crash barrier is built for a sidewalk that cannot function as a "promenade" it will be a lost opportunity because this could only be reconfigured at significant expense. All felt that if this flexible approach is taken where pedestrians and cyclist share space which separated from vehicles by a crash barrier that a sense of physical separation through soft shoulders, candlestick bollards, painting or surface treatments is important. In addition, clear markings and enforcement of bicycle travel in one direction towards Boston is important for the safety of all users. Similarly, Inbound B1 or B2 are interchangeable with A2 if the sidewalk is narrowed to 9 feet.

### **Inbound Alternative A Family of Alternatives with One Vehicle Lane**

~~The inbound A alternatives allow for restriping without construction should mode shifts or conditions change over time to inbound alternative B2. This allows for flexibility in mode allocations.~~

#### **Inbound Alternative A1**

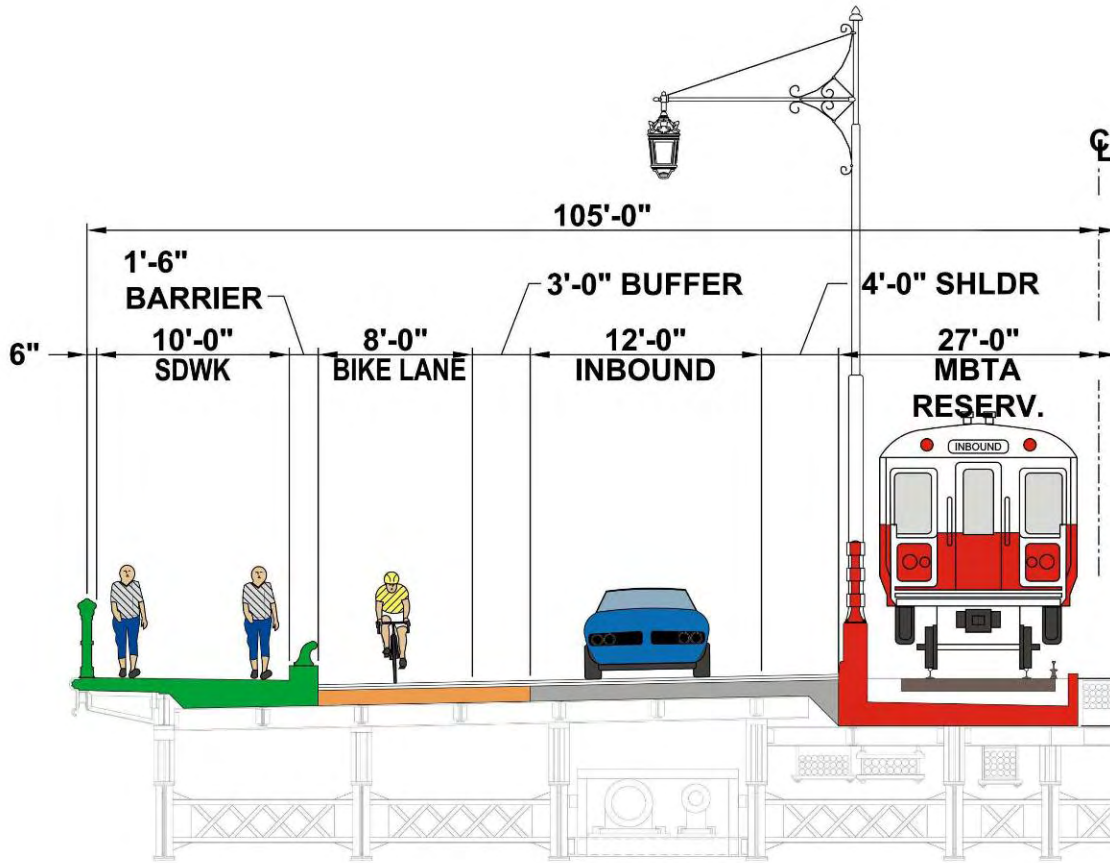
From the MBTA reservation this alternative has a 1 foot shoulder, an 11 foot vehicle travel lane, a 12 foot bike lane, a 1 foot 6 inch crash barrier and a 13 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing.



Inbound A1

Inbound A2

From the MBTA reservation this alternative has a 4 foot shoulder, a 12 foot vehicle travel lane, a 3 foot buffer, an 8 foot bike lane, a 1 foot 6 inch crash barrier and an 8 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing.

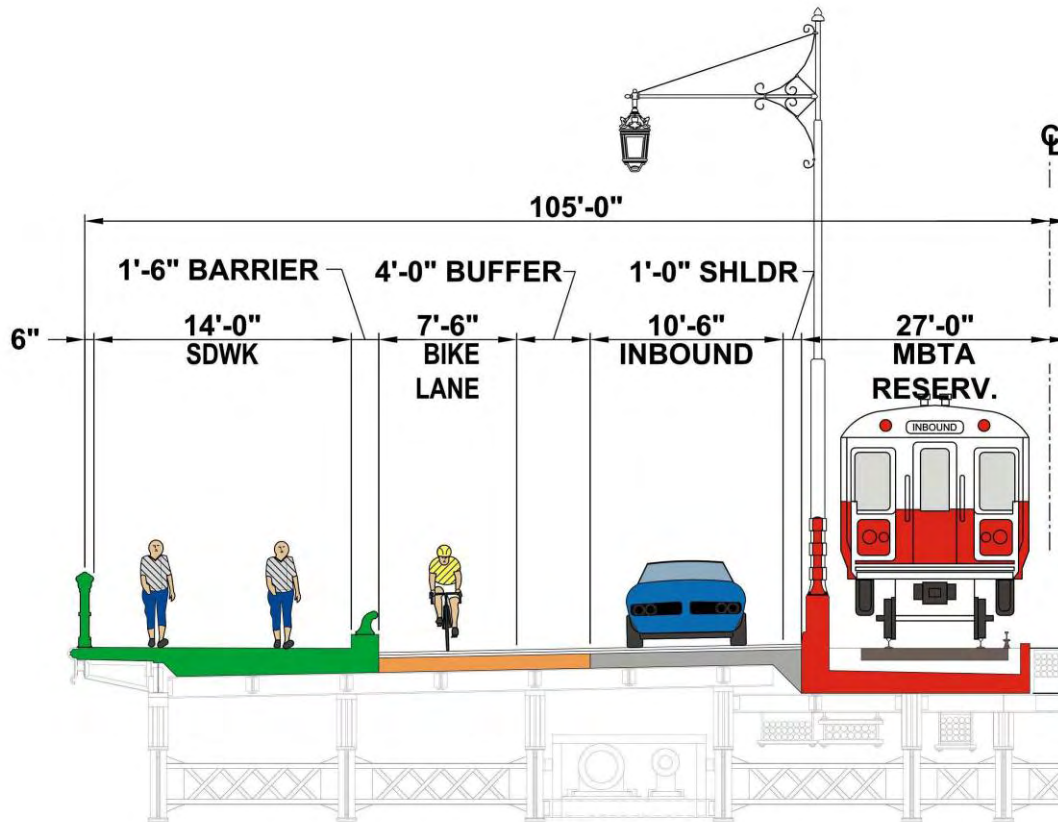


Inbound Alternative A2

Inbound Alternative A3

From the MBTA reservation this alternative has a 1 foot shoulder, a 10 foot 6 inch vehicle travel lane, a 4 foot buffer, a 7 foot 6 inch bike lane, a 1 foot 6 inch crash barrier and a 14 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing. This configuration is convertible to B3 with two vehicle lanes.





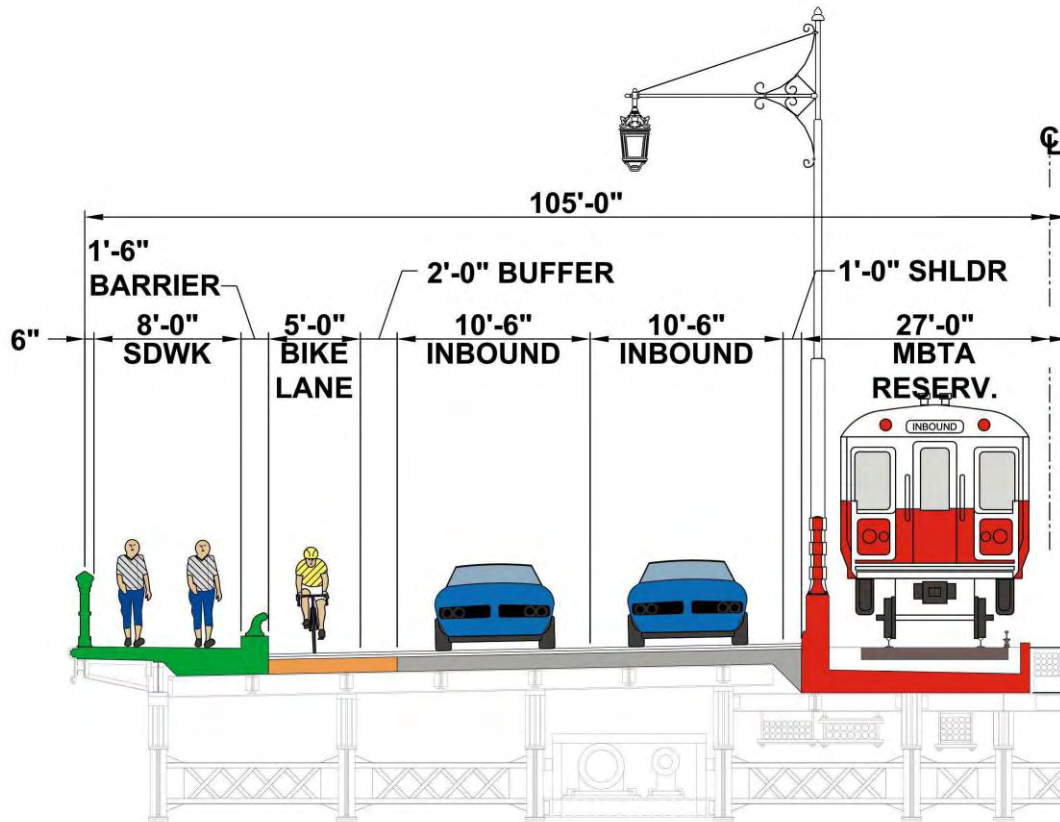
**Inbound Alternative A3**

**Inbound Alternative B Family of Alternatives with Two Vehicle Lanes**

The difference between Inbound Alternatives B1 and B2 is the allocation of 1 foot to either the bike buffer or the sidewalk.

**Inbound Alternative B1**

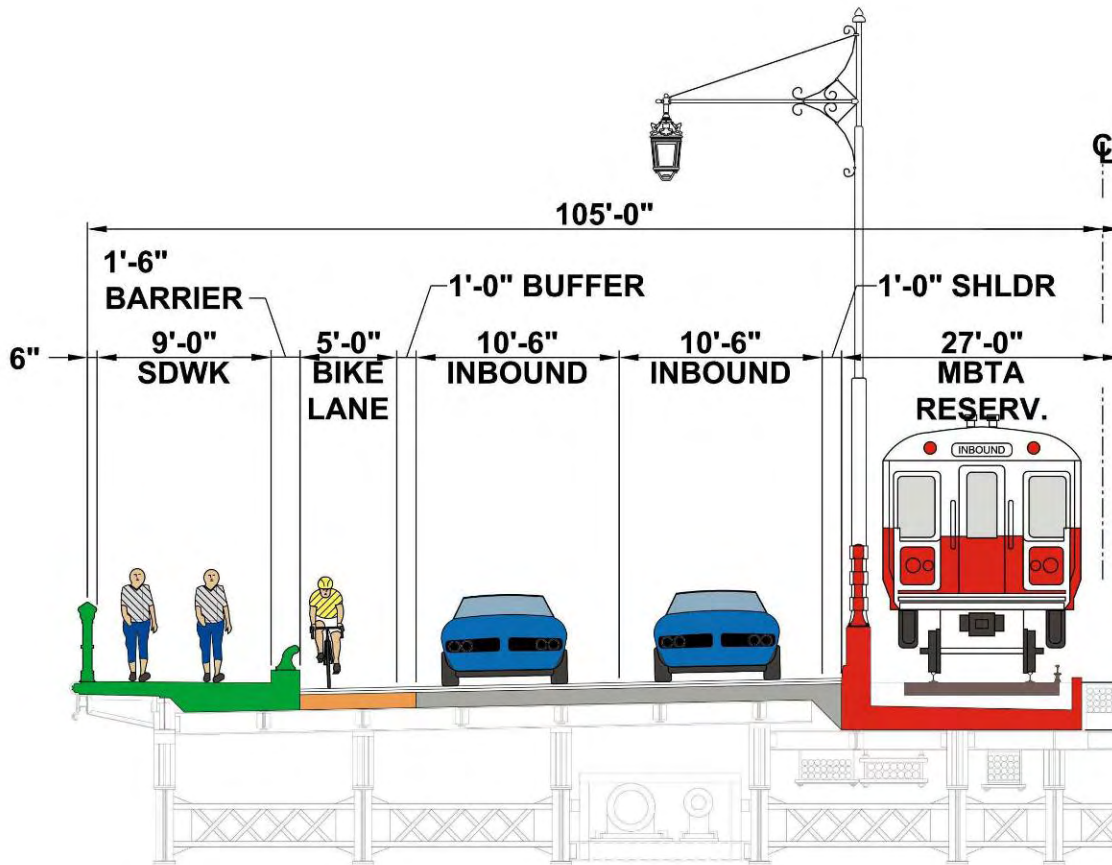
From the MBTA reservation this alternative has a 1 foot shoulder, two 10 foot 6 inch vehicle travel lanes, a 2 foot buffer, a 5 foot bike lane, a 1 foot 6 inch crash barrier, an 8 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing.



Inbound Alternative B1

Inbound Alternative B2

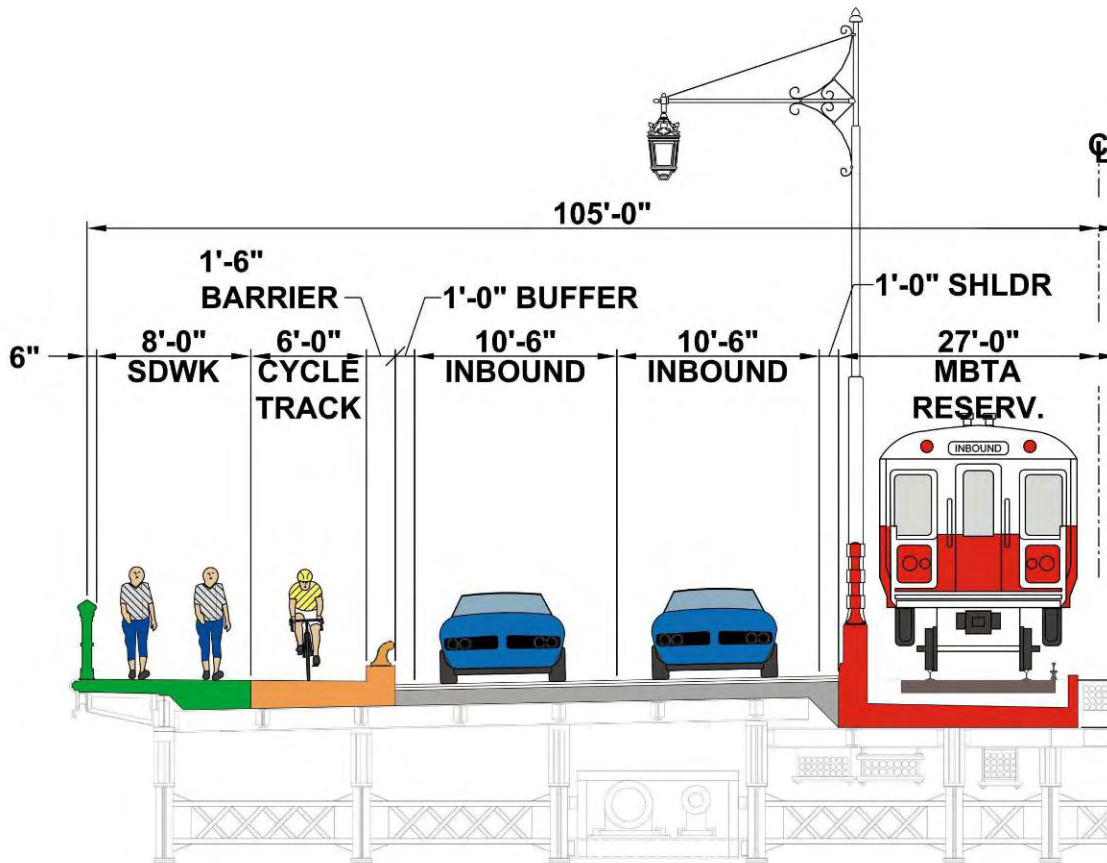
From the MBTA reservation this alternative has a 1 foot shoulder, two 10 foot 6 inch vehicle travel lanes, a 1 foot buffer, a 5 foot bike lane, a 1 foot 6 inch crash barrier, a 9 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing.



**Inbound Alternative B2**

**Inbound Alternative B 3**

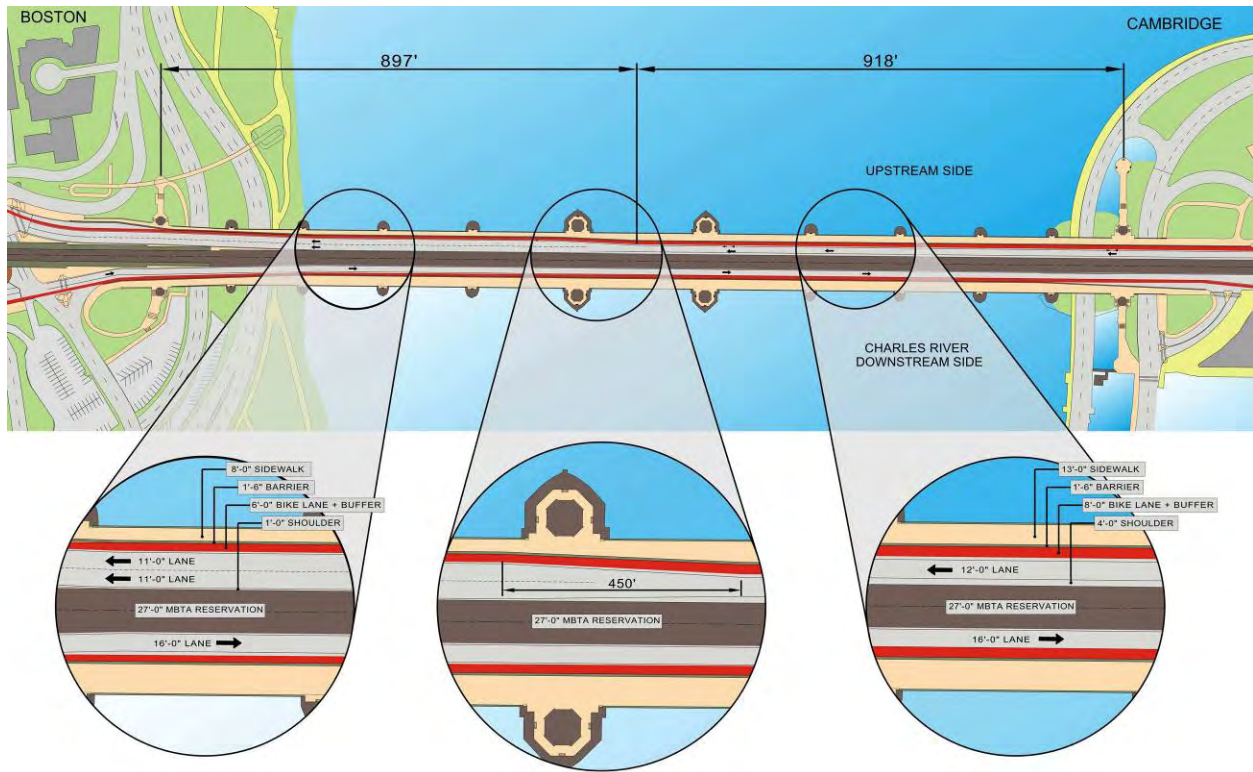
From the MBTA reservation this alternative has a 1 foot shoulder, two 10 foot 6 inch vehicle travel lanes, a 1 foot buffer, a 1 foot 6 inch crash barrier, a 5 foot bike lane, an 8 foot sidewalk and 6 inches for the interior portion of the ornamental pedestrian railing. This configuration is convertible to A3 with one vehicle lane.



Inbound Alternative B3

**Inbound Alternative C – Variable Width**

This alternative has a varying allocation of space distributed between the sidewalk and roadway, commonly referred to as the "HourglassWineglass" configuration. The "HourglassWineglass" configuration allocates bridge width according to the current vehicular demands for using the bridge, with a single lane carried onto the bridge from Cambridge, and widening to two lanes near the midpoint of the bridge, and finally widening further to three lanes at the entrance to Charles Circle in Boston. This alternative has two different distinct configurations, with a transitional zone located near the midpoint of the bridge. The allocation of space from the MBTA reservation is as follows: 1) for the portion of the bridge coming from Cambridge, this alternative has a 4 foot shoulder, a 12 foot vehicle travel lane, a 2 foot buffer, a 6 foot bike lane, a 1 foot 6 inch crash barrier, a 13 foot sidewalk, and 6 inches for the interior portion of the ornamental pedestrian railing ; 2) for the portion of the bridge on the Boston side of the bridge midpoint, this alternative has a 1 foot shoulder, two 11 foot vehicle travel lanes, a 2 foot buffer, a 5 foot bike lane, a 1 foot 6 inch crash barrier an 8 foot sidewalk, and 6 inches for the interior portion of the ornamental pedestrian railing.



### Inbound Alternative C

#### Next Steps

The Task Force recognizes that MassDOT has significant work in completing the EA, filing it with the Federal Highway Administration, receiving permitting and other approvals, finalizing design, contracting and construction and addressing significant mitigation issues during construction on the Longfellow and other Charles River Basin bridges. Some of the above processes have formal opportunities for public involvement. Public involvement may include informing the public of decisions and events, receiving public comment before decisions are finalized and engaging the public and/or representative stakeholders in a dialogue about upcoming decisions and implementation and seeking input into how decisions are made. The latter may include task forces, friends groups, community advisory groups and other representative structures.

Each of these methods may be appropriate at various points in the rehabilitation process. They may also be appropriate in the long term for operational issues concerning the bridge. Some members felt that the Task Force, or an iteration of it, could be useful to MassDOT going forward during the final design and construction phase.

The Task Force recommends that MassDOT go well beyond the obligatory public processes and conduct robust processes that give members of the public an opportunity for their concerns and values to be heard, considered and addressed or incorporated throughout the planning and implementation of the rehabilitation of the Longfellow Bridge. MassDOT should continue to enlist a broad cross section of the public to ensure the full range of views are represented in its decisions. This engagement and the transparency it involves will engender trust in decisions and improve the quality, as well as the public understanding, of those decisions. To the extent that these are proactive

approaches to engaging the public it will reduce conflict while raising trust, take advantage of public knowledge and expertise, cultivate civic capacity and engagement, and lead to successful implementation of decisions. MassDOT should attempt to create clear timelines for the project with identified opportunities and goals for public involvement at various stages of the project.

## CONCLUSION

After careful deliberation the Longfellow Bridge Rehabilitation Task Force arrived at the above recommendations concerning the approaches to Boston and Cambridge, connections to the parklands, ~~three outbound design configurations and five inbound~~ one lane, two lane and variable width design configurations. The relationship and intergration of the approaches, parklands connections and design alternatives are essential to a successful bridge and are of whole rather than separable parts.

The Task Force struggled with the allocation of limited space on this historic structure and how to use this moment and the rehabilitation process to have a bridge which, decades from now, will be regarded as not only meeting the needs of its users but also be seen as iconic and an essential part of the beauty and history of the greater Boston area. It is the sincere hope of the Task Force that as MassDOT conducts analysis for the Environmental Assessment that it will refine these recommendations, address underlying data and modeling needs and look to both the specifics and spirit of these recommendations in arriving at a Preferred Alternative.







Appendix 1

Organization/Affiliation	Task Force Member
A Better City	Richard A. Dimino, President & CEO
Beacon Hill Civic Association	Steve Young
Boston Preservation Alliance	Sarah D. Kelly, Executive Director
Boston Redevelopment Authority	Tad Read, Senior Planner
Boston Transportation Department	Jim Gillooly, Deputy Commissioner/Tom Tinlin Commissioner
Cambridge - Traffic, Parking and Transportation	Susan Clippinger, Director/Susanne Rasmussen
Cambridge Redevelopment Authority	Joseph Tulimieri, Executive Director
Charles River Conservancy	Renata von Tscharnner, President
Charles River Transportation Management Association	Jim Gascoigne, Executive Director
Charles River Watershed Association	Margaret Van Duesen, Deputy Director and General Counsel
Community Boating	Adam Gorlovsky-Schepp
Department of Conservation and Recreation	Jack Murray, Deputy Commissioner/Joe Orfant
Downtown North Association	Robert O'Brien, Executive Director
East Cambridge Planning Team	Barbara Broussard
Esplanade Association	Herb Nolan, Board Member
Executive Office of Environmental Affairs	Maeve Valley-Bartlett, Assistant Secretary
Federal Highway Administration, Region One	Damaris Santiago, Environmental Engineer
Institute for Human Centered Design	Chris Hart, Director of Urban and Transportation Projects
Kendall Square Association	Christopher Linssen
Livable Streets	Steve Miller, Executive Director

MASCO	Tom Yardley, Senior Planner
Mass Bike	David Watson, Executive Director/Shane Jordan
Mass Eye and Ear	Robert Biggio, Vice President Support Services and Real Estate
Massachusetts General Hospital	John Messervy, Director of Capital and Facility Planning
Massachusetts Historic Commission	Brandee Loughlin
Massachusetts House of Representatives	Rep. Martha M. Walz
Massachusetts Institute of Technology	Kelley Brown, Senior Campus Planner
Massachusetts Motor Transportation Association	Anne Lynch, Executive Director
MBTA	Richard Davey, General Manager
Metropolitan Area Planning Council	David Loutzenheiser, Transportation Planner
Museum of Science	Anne Cademenos, Director, Corporate, Foundation and Government Relations
Riverside Boat Club	Kate Sullivan
TD Garden	Brian Hayes
The Engineering Center	Abbie Goodman, CEO Task Force Chair
Walk Boston	Wendy Landman, Executive Director
West End Civic Association	Louise Thomas
<b>MassDOT Task Force Conveners</b>	
Luisa Paiewonsky	MassDOT Highway Administrator
Tom DiPaolo	Assistant Chief Engineer
Frank Tramontozzi	Chief Engineer
<b><u>Facilitation Team from the Massachusetts Office of Public Collaboration (MODR)</u></b>	
<u>William Logue</u>	<u>Senior Affiliate Practitioner</u>
<u>Loraine Della Porta</u>	<u>Deputy Director</u>
<u>Don Greenstein</u>	<u>Affiliate Practitioner</u>

Technical support was provided to the Task Force by:

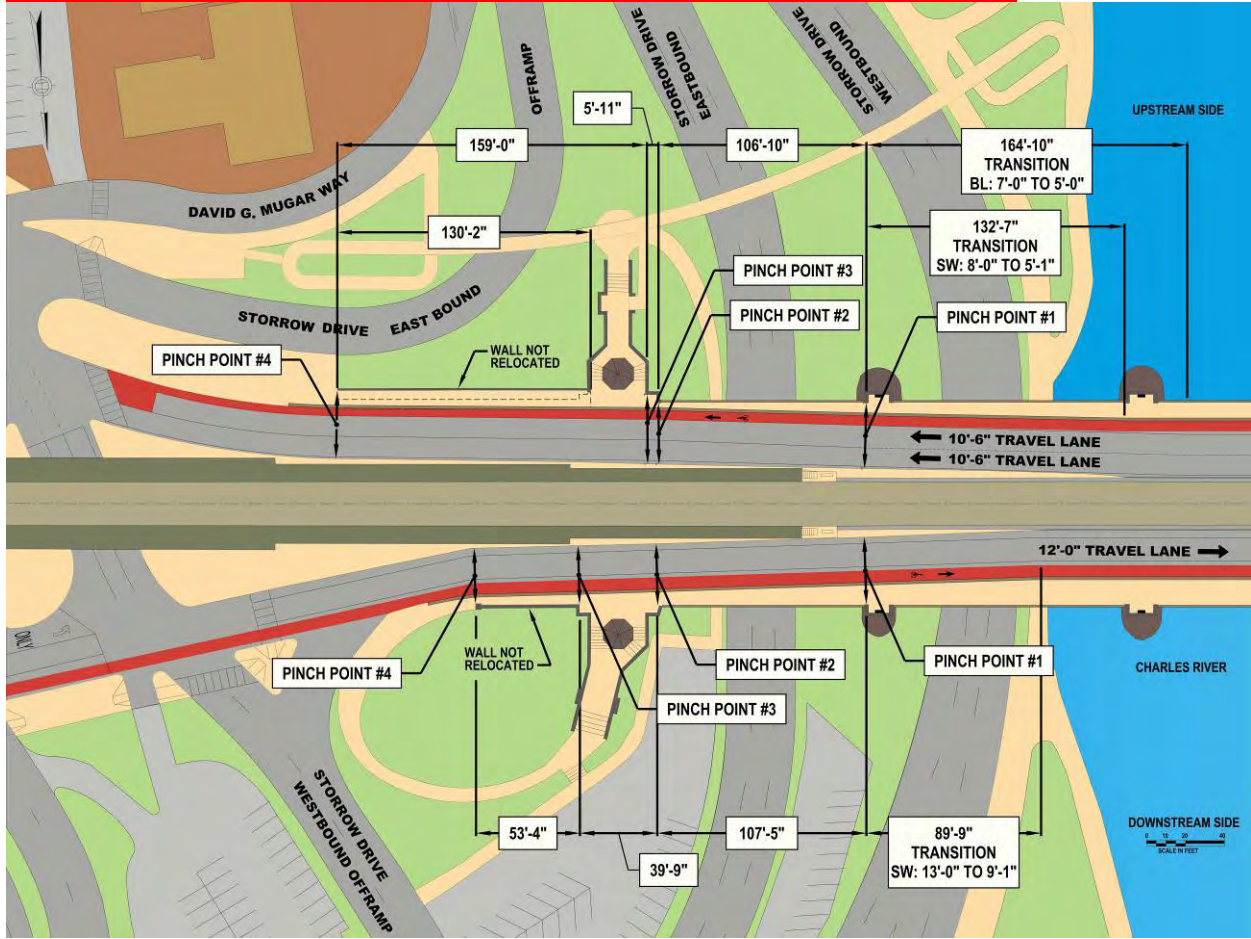
MassDOT Staff: Stephanie Boundy, Darren Conboy, Tom Donald, Shoukry Elmahal, Amy Getchell, Jonathan Gulliver, Mike O'Dowd, Joe Pavao, Stephen Roper, Maura Sullivan, Kevin Walsh.

Jacobs Engineering team and subconsultants: Meredith deCarbonnel, Rod emery, Anne McKinnon, Miguel Rosales, Erik Stoothoff.

## Appendix 2

These depictions show the two and three lane releases at the Boston approach if the abutment wall is not moved. The Task Force believes that these configurations do not sufficiently meet the needs of pedestrians and cyclists, especially given the time and expense associated with other improvements recommended by the Task Force.

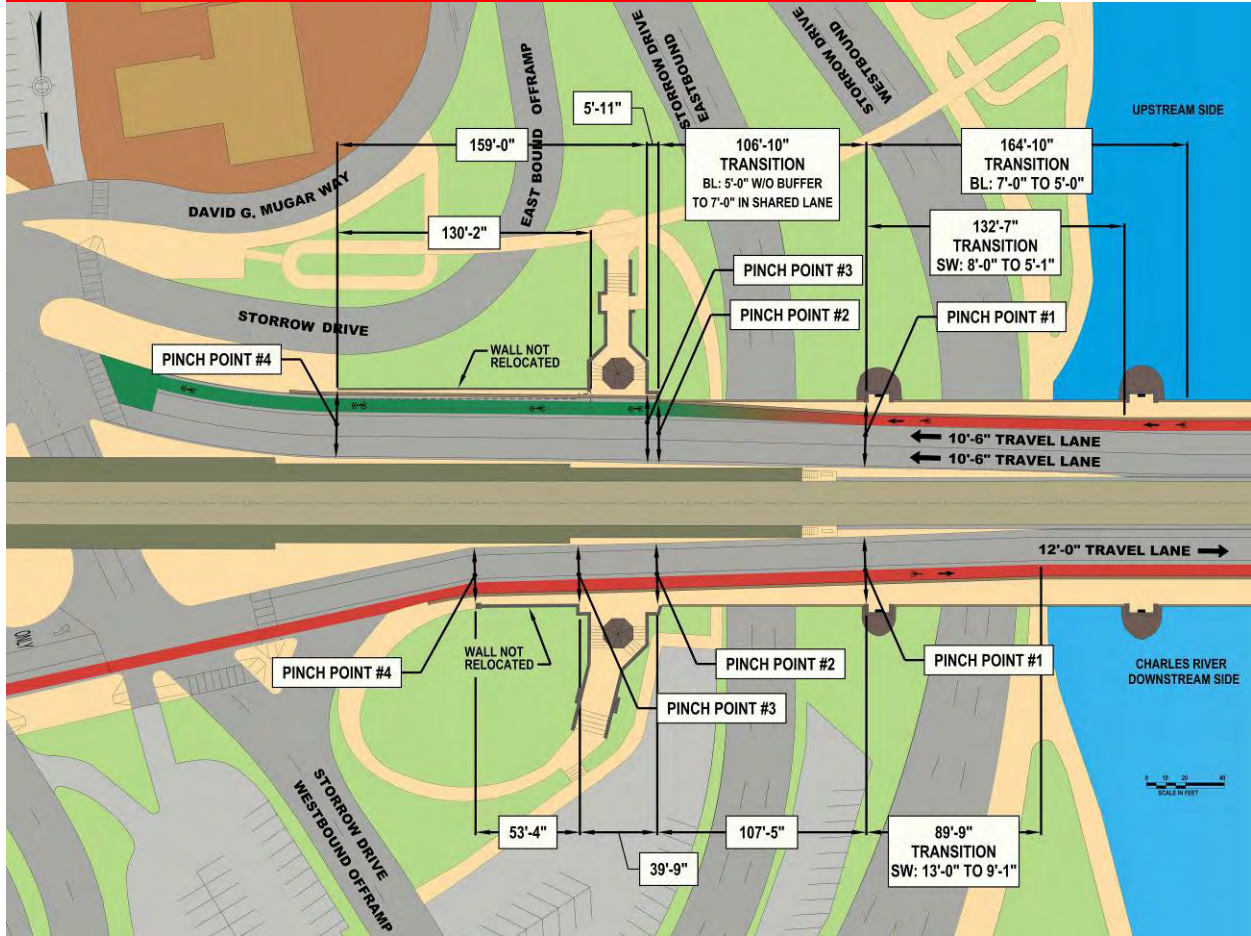
Two lane release into Charles Circle with no change in the abutment wall configuration:



<u>INBOUND PINCH POINTS</u>						<u>OUTBOUND PINCH POINTS</u>					
<u>#</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Roadway</u>	<u>Shoulder</u>	<u>Total</u>	<u>#</u>	<u>Sidewalk</u>	<u>Bike Lane &amp; Buffer</u>	<u>Roadway</u>	<u>Shoulder</u>	<u>Total</u>
<u>1</u>	<u>5'-1"</u>	<u>5'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>33'-7"</u>	<u>1</u>	<u>9'-1"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>34'-7"</u>
<u>2</u>	<u>2'-2"</u>	<u>4'-10"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>30'-6"</u>	<u>2</u>	<u>6'-4"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>31'-10"</u>
<u>3</u>	<u>7'-3"</u>	<u>4'-9"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>35'-6"</u>	<u>3</u>	<u>4'-8"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>30'-2"</u>
<u>4</u>	<u>7'-6"</u>	<u>4'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>35'-0"</u>	<u>4</u>	<u>3'-3"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>28'-9"</u>

Total dimensions include 1'-6" for vehicle barrier.

Three lane release into Charles Circle with no change in the abutment wall configuration:



<u>INBOUND PINCH POINTS</u>						<u>OUTBOUND PINCH POINTS</u>					
#	Sidewalk	Bike Lane & Buffer	Roadway	Shoulder	Total	#	Sidewalk	Bike Lane & Buffer	Roadway	Shoulder	Total
<u>1</u>	<u>5'-1"</u>	<u>5'-0"</u>	<u>21'-0"</u>	<u>1'-0"</u>	<u>33'-7"</u>	<u>1</u>	<u>9'-1"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>34'-7"</u>
<u>2</u>	<u>0'-0"</u>	<u>Shared</u>	<u>29'-6"</u>	<u>1'-0"</u>	<u>30'-6"</u>	<u>2</u>	<u>6'-4"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>31'-10"</u>
<u>3</u>	<u>2'-8"</u>	<u>Shared</u>	<u>30'-4"</u>	<u>1'-0"</u>	<u>35'-6"</u>	<u>3</u>	<u>4'-8"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>30'-2"</u>
<u>4</u>	<u>1'-0"</u>	<u>Shared</u>	<u>31'-6"</u>	<u>1'-0"</u>	<u>35'-0"</u>	<u>4</u>	<u>3'-3"</u>	<u>8'-0"</u>	<u>12'-0"</u>	<u>4'-0"</u>	<u>28'-9"</u>

Total dimensions include 1'-6" for vehicle barrier.