

**Alternative 6 – Railroad Spur to Main Street via Harvey Wheeler Community Center**

As with Alternative 1, this Alternative proposes that the BFRT follow the abandoned railroad spur owned by the EOTC in the northern portion of the West Concord commuter railroad station to Commonwealth Avenue. There is an existing vehicle/pedestrian crossing of the active rail line with both vehicular and pedestrian gates on Commonwealth Avenue. The same considerations from Alternative 1 apply to this alternative until the trail reaches Commonwealth Avenue. Please note that the remainder of this alternative is being evaluated without mapping and survey elevations. Once that information becomes available further investigation into this alternative will be necessary to draw concrete conclusions.

Once trail users reach Commonwealth Avenue, they would cross Commonwealth Avenue to the driveway between Concord Teacakes and Twin Seafood. See Figure 11 on the following page.



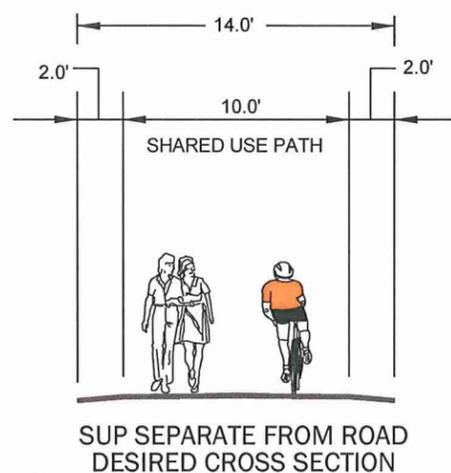
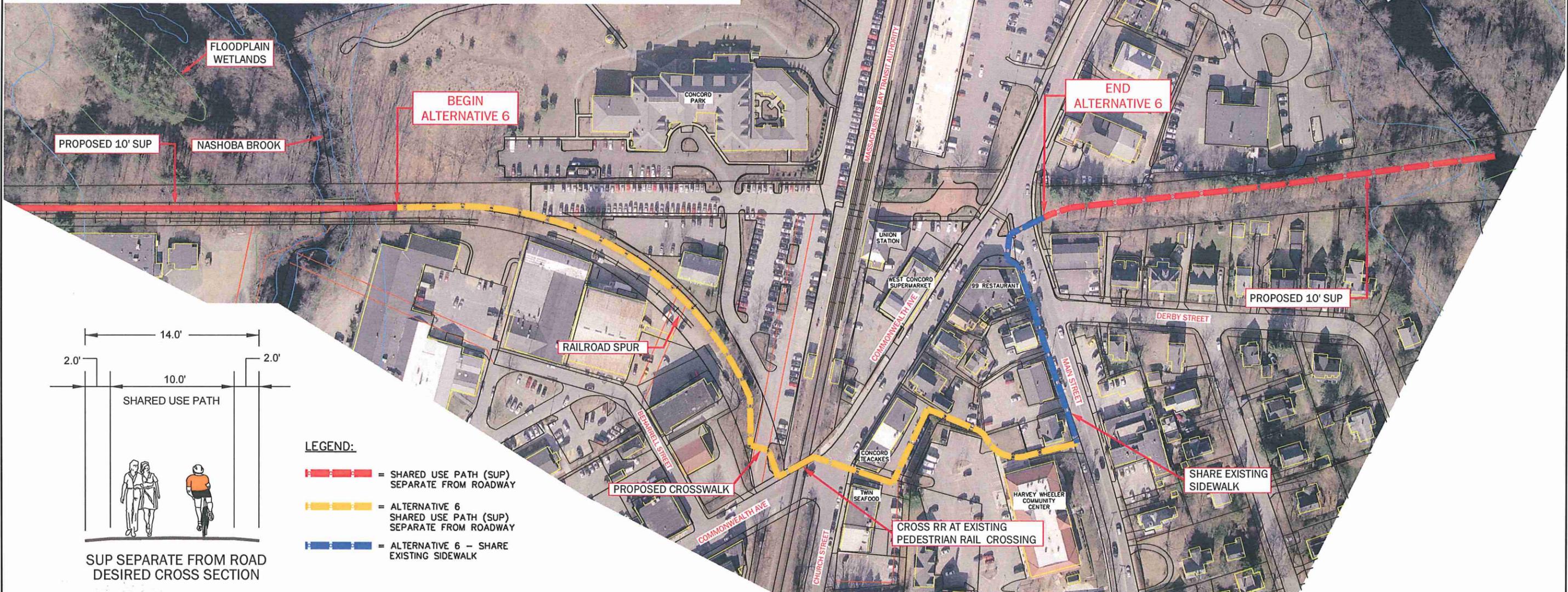
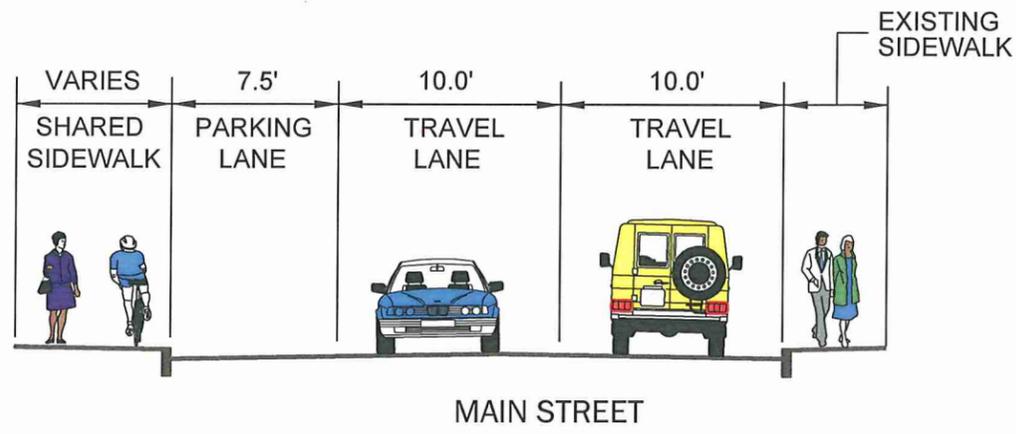
Concord Teacakes has an entrance into the building from the driveway. The driveway continues to the back of the buildings where it turns right to parking spaces behind Twin Seafood and left to angled parking behind Concord Teacakes. According to Concord GIS mapping, this driveway is partially owned by the Town of Concord and partially owned by Vernco Concord LLC. It appears that the Town owns approximately 1/3 of it, and the Concord Teacakes entrance encroaches into this right-of-way. From available mapping, it appears that the driveway is between twenty and

twenty five feet in width. If this driveway was made one-way out, the width should be sufficient to incorporate a twelve foot vehicle travel lane and an eight to ten foot bike path.

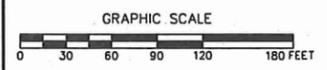


At the end of the driveway, the trail would turn left and run parallel to and behind Concord Teacakes on the Town of Concord property. From Concord GIS mapping, it appears that the paved area behind Concord Teacakes is owned by Vernco Concord LLC and the area south of that parking (the slope) is owned by the Town of Concord. This turn would not meet the minimum radius requirements in the *Guide*. It would be GPI's recommendation to provide curbing and possibly fencing between the parking area and the trail. There are dumpsters and possibly an electrical box that would possibly need relocation in this area.





- LEGEND:**
- = SHARED USE PATH (SUP) SEPARATE FROM ROADWAY
  - = ALTERNATIVE 6 SHARED USE PATH (SUP) SEPARATE FROM ROADWAY
  - = ALTERNATIVE 6 - SHARE EXISTING SIDEWALK



ALTERNATIVE 6 - CONCEPTUAL PLAN  
RR SPUR TO MAIN STREET VIA HARVEY WHEELER COMMUNITY CENTER  
CONCORD, MA

FIGURE 11  
SCALE: 1" = 80'

The available pavement width between the Concord Teacakes building and the slope climbing up to the Harvey Wheeler Community Center property varies, narrowing as it approaches the far eastern end of the building. If 45° degree parking were proposed in this area, the stalls would require sixteen and one half (16 ½) feet with an aisle width of fifteen (15) feet. Although, there may be sufficient pavement width through this area to accommodate the parking and aisle, survey would be required to verify this. Depending on where the actual property line fell, some additional width may be required on property currently belonging to the Town of Concord to accommodate the parking area.



At the eastern edge of the parking lot, the trail would turn in a southerly direction on the Town of Concord property and follow along the edge of the Harvey Wheeler Community Center parking lot. The radius required to make this turn would also not meet the requirements in the *Guide*. Since the elevation difference between the Concord Teacakes parking area and the Harvey Wheeler Community Center parking area appears to be in excess of ten feet, GPI would not recommend climbing the slope to the parking lot. It should be noted however that even though the elevation in the Concord Teacakes parking lot is close to the elevation of Main Street, the trail would still need to slope up to meet the paved walkway at the community center before sloping down to Main Street. This would be

necessary in order to stay on town property and minimize impacts to abutting properties. The slope necessary to do this would be less than 5% and in compliance with ADA regulations. Since the trail would be cutting into the slope, a retaining wall would be necessary. For a portion of the trail, retaining walls would be necessary on both sides of the trail. This could potentially require temporary and/or permanent easements from the property owners at 41/43/45/47 Commonwealth Avenue in order to construct the retaining wall.



The community center parking along the eastern edge of the lot would be lost. However, the existing configuration of the lot could be examined and modified in an attempt to minimize the loss of any parking spaces. The chain link fence and lighting would need to be removed and reset. It would be our recommendation to propose curbing or curb stops along the parking lot edge in the vicinity of the trail. Alternate barrier between the parking lot and the trail could be considered instead of the chain link fencing.

Without survey it is difficult to determine the elevation difference from the top of stairs at the Community Center to Main Street. The stairs would need to be maintained since there is another set of stairs which enters the building at the landing of these stairs and replacing the stairs with a

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## Proposed Bruce Freeman Rail Trail/MBTA Commuter Rail Crossing Alternative Analysis

ramp would result in slopes in excess of what is allowable by ADA without a level landing. It would be our recommendation to propose the trail adjacent to the stairs. The trail could meet the existing paved walkway at the base of the stairs. There is a light pole and a fence that may require relocation; however, it appears that there is sufficient width within the Town right-of-way to accommodate a ten foot wide paved path. The proposed trail would be in close vicinity to the abutting property owned by First Concord Realty Corp. It would be our recommendation to propose fencing between the trail and the abutting property.



Once the trail reached Main Street, it would turn left. It is our understanding that the Town



would like to widen the sidewalk along Main Street and propose that the trail users share the sidewalk for this short stretch. From available mapping it appears that the pavement width on Main Street varies between thirty-four (34) and thirty-six (36) feet, consisting of two travel lanes and one parking lane. Sidewalks exist along both sides of the roadway. The sidewalk along the western side of the roadway varies from four (4) feet at the Harvey Wheeler Community Center to eight (8) feet at the 99 Restaurant. The existing paved roadway width is not sufficient to provide a cross

section meeting the requirements of the *Guide*. The *Guide* would require two eleven (11) foot travel lanes, two four (4) foot shoulders and a seven (7) foot parking lane or, thirty-seven (37) feet. The four foot shoulders are required because a bike cannot be precluded from utilizing the roadway. Ten (10) foot travel lanes or narrower shoulders may be considered; however, a design exception must be submitted and approved. There are also utility poles along the western side of the roadway.

The Main Street right-of-way appears to be approximately fifty (50) feet in width according to Concord GIS mapping. If the entire right-of-way were utilized, it may be possible to widen the sidewalk along the western side of Main Street slightly while providing four (4) foot sharrow lanes along the roadway. The right-of-way would permit two eleven (11) foot travel lanes, two four (4) foot shoulders, one seven (7) foot parking lane, one five and a half (5.5) foot sidewalk and one seven and a half (7.5) foot sidewalk. This would of course require the relocation of the utility poles. It is assumed for the purposes of this report that the utilities will be put underground as part of a different town project. Although, trail users would be instructed to dismount their bikes along the sidewalk, they would also be able to ride along the roadway if they chose to.

At the intersection with Commonwealth Avenue, there are existing crosswalks which could be utilized to route the trail users to and from the existing railroad right-of-way.

## EVALUATION CRITERIA

### Effectiveness

As with Alternative 1, routing the trail along the abandoned railroad spur has both pros and cons. Since human nature is to find the most direct route from Point A to Point B, users may try and

find a more direct route, i.e. through the MBTA parking lot and across the tracks. It would be GPI's recommendation to install fencing at the existing MBTA parking lot and along the spur to prevent trail users from taking that route.

This alternative itself may encourage trail users to find a more direct route to the railroad right of way since it is a fairly long and circuitous route. On the shared sidewalk portion of the trail, trail users will be instructed to dismount and walk their bikes. Although signing can be proposed requiring this, it would be extremely difficult to enforce without constant monitoring, warning and possibly enforcement. If there is a lot of pedestrian traffic on the sidewalk, trail users may opt to travel on the street. Avid trail users may opt to travel on the street regardless of the sidewalk traffic.

From the *AASHTO Guide for the Development of Bicycle Facilities*, "In general, the designated use of sidewalks (as a signed shared facility) for bicycle travel is unsatisfactory". Sidewalks are typically designed for pedestrian speeds and maneuverability and are not safe for higher speed bicycle use. This option presents conflicts between pedestrians and bicyclists as well as bicyclists and parking meters, light poles, sign posts and parked cars. Walkers, joggers, skateboarders and roller skaters can and often change their speed and direction almost instantaneously leaving bicyclists insufficient reaction time to avoid collisions. Pedestrians have a difficult time predicting the direction of oncoming bicyclists. Although a wider sidewalk does provide more space, it does not necessarily add to the safety of sidewalk bicycle travel since wider sidewalks might encourage higher speed bicycle use. AASHTO does note however that sidewalk bikeways should only be considered under certain limited circumstances such as to provide bikeway continuity along heavily traveled roadways having inadequate space for bicyclists.

### **Short-term and Long-term Reliability**

Although not direct, this Alternative does provide a continuous path for the BFRT. However it may not be reliable as far as compliance and use since this alternative would require trail users to dismount and walk their bikes along the sidewalk on Main Street. Although signs would be posted, trail users may not dismount their bikes, thus creating a potentially dangerous situation. As mentioned, trail users may also opt to find a more direct route.

### **Short-term and Long-term Maintenance Costs**

The maintenance costs discussed earlier in this report also apply to this alternative. The annual maintenance cost for a trail is approximately \$1,500/mile. The long-term paving cost would be approximately \$80,000/mile the first time and \$130,000/mile the second time.

It should also be emphasized that the retaining wall structures must be inspected on a recurring basis. Although this inspection should occur yearly, studies have shown the average inspection interval is four years.

### **Difficulty in Implementing**

This alternative would require an easement from EOTC for use of the abandoned railroad spur. The Town would need to work with the abutters along the spur as far as their unauthorized use of the right-of-way and screening mechanisms.

This alternative would likely require an easement from Vernco Concord LLC. The Town would need to work with Concord Teacakes as far as their unauthorized use of Town right-of-way but would also need their cooperation as far as incorporating the proposed trail into the driveway. They would also need to work with Verno Concord LLC and Concord Teacakes as far as the

proposed parking behind the facility. If the existing drive between Concord Teacakes and Twin Seafood is not one-way, making it one way could trigger some opposition.

The Town may need to work with the owners of 41/43/45/47 Commonwealth Avenue (Jack Reader, J. Tyler Spring, Nicholas C. Boynton and Evelyn K. Bennett) regarding an easement for construction of the trail.

Potential loss of parking at the Community Center could also present a problem.

This alternative was not previously discussed with the MBTA or MassDOT. However, it is likely that the MBTA would approve of it.

This alternative may require a Design Exception with MassDOT since it does not meet the design standards required with respect to sight distance and cross section along the Main Street section. This would entail the preparation of a Design Exception Report and approval by the Design Exceptions Committee. It would require discussion and/or meetings with both the AAB/ADA Coordinator and the Bicycle/Pedestrian Accommodation Engineer at MassDOT. At this time, it is unknown whether this option would be approved by MassDOT. In discussions with MassDOT regarding this report, they had indicated that they would need a formal submission in order to evaluate any alternative and make any decisions.

With federal funds being allocated towards the construction of the BFRT, a Categorical Exclusion (CE) Checklist would be required. Since work will be proposed within the Riverfront Area of Nashoba Brook, a Notice of Intent must be filed with the Concord Natural Resources Commission. It is possible that an Environmental Notification Form (ENF) would also be required assuming that this would be constructed as part of the Concord BFRT and not independently. It should be noted that these permits will be required regardless of this alternative.

### **Cost to Design and Implement**

The design cost for Alternative 6 would be between \$150,000.00 and \$200,000.00.

The construction cost of this option could range from \$1 to \$1.5 million.

As noted previously, these costs assume that the utilities along Main Street will be placed underground as part of a different town project.

### **Risk to Public Safety**

This Alternative does provide a dedicated trail for users. It does however place trail users closer to moving vehicles since they will be sharing a lane with them along the driveway between Concord Teacakes and Twin Seafood, potentially along Main Street and at the existing crosswalks at the intersection of Main Street and Commonwealth Avenue. It also increases the potential for trail user/pedestrian conflict since Concord Teacakes has an entrance along the driveway and trail users could potentially be sharing the sidewalk along Main Street.

Since it does propose a very circuitous route to get users to the railroad right-of-way, trail users may not follow the trail and opt to find their own route.

If the volume of trail users is high and trail users are sharing the sidewalk, it could potentially have an impact on the businesses along Main Street. It will make it more difficult for vehicles to enter the parking lots and for patrons to enter and exit the businesses.

This alternative also poses a potential conflict with trail users and opening car doors since right-of-way does not allow for a door zone.

Bicycle crash statistics from the Pedestrian and Bicycling Information Center's website (<http://www.bicyclinginfo.org/> and <http://www.walkinginfo.org/>) at intersections indicate that bicyclists are not safer on the sidewalk because they become almost invisible to the motorist. When a driver turns, either left or right, or into a driveway or alley, they are simply not looking for, or expecting to encounter, a bicyclist. If they do look and see a bicyclist they may still underestimate the speed a rider is traveling on the sidewalk - because it will likely be much faster than a pedestrian. Although there is not a specific crash statistic attributed to bicyclists riding on sidewalks, the fact that the bicyclist was riding on the sidewalk contributed to the crash as can be seen below.

Motorist turns left in front of cyclist	42% of bicyclists are on the sidewalk
Motorist turns left into oncoming cyclist	15% of bicyclists are on the sidewalk
Motorist turns right into bicyclist	31% of bicyclists are on the sidewalk
Motorist drives out of alley/driveway	48% of bicyclists are on the sidewalk
Motorist drives through intersection	15% of bicyclists are on the sidewalk
Bicyclist rode out intersection with signal	24% of bicyclists are on the sidewalk

Furthermore, the quality of the riding surface on most sidewalks is far inferior to the parallel roadway. The vast majority of bicycle crashes that end up with the bicyclist seeking medical attention do not involve a motor vehicle and happen because a rider either falls after hitting an obstacle, slides on gravel or leaves, or loses control. Riding on the sidewalk is fraught with the kind of dangers and obstacles that may increase the chances of that happening.

The 1992 report, *Risk Factors for Bicycle-Motor Vehicle Collisions at Intersections* authored by Alan Wachtel and Diana Lewiston concludes that "*Bicyclists on a sidewalk or bicycle path incur greater risk than those on the roadway (on average 1.8 times as great), most likely because of blind conflicts at intersections. Wrong-way sidewalk bicyclists are at even greater risk, and sidewalk bicycling appears to increase the incidence of wrong-way travel*"

### **Benefits to the Community**

This alternative would provide a continuous dedicated route for the BFRT. The trail will direct users to the businesses in the downtown area and to the MBTA Commuter Rail Line. It will also provide a direct connection to the Harvey Wheeler Community Center.

### **Timeliness to Implement**

This option requires modifications to the existing Main Street cross section, the potential loss of parking spaces at the Harvey Wheeler Community Center and eliminating unauthorized use of the right-of-way along the spur so the public process may delay the design process.

This alternative does not propose any special or time consuming design features, so assuming this would be incorporated into the BFRT Phase 2C design and construction and the abutters are amenable, the design could be completed in approximately 24 to 30 months and the construction could be completed in an additional 30 to 36 months.

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As noted, this assumes that the utilities along Main Street will be placed underground as part of a different town project.

**Context Sensitive Aesthetics**

This alternative does not propose changes along Commonwealth Avenue detracting from the historic setting.

Inclusion of context-sensitive aesthetics such as pavers, colors and planting could be included along sections of the trail.

The retaining walls wall could utilize a block wall retaining system with some form of safety railing.

A solid fence to prevent trail users from entering the MBTA Commuter Rail parking area could negatively impact the visual character and aesthetics of the area.