Appendix 3.2-B

Bridge Summary

Bridge Summary

1 New Bedford Mainline Bridges

1.1 No Work Bridges

The following is a list of bridge crossings (both undergrade and overhead) that would not require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

- Howland Road (M.P. 43.26) – Overhead
- Route 140 (M.P. 50.66) – Overhead
- Deane Street (M.P. 53.31) – Undergrade
- Sawyer Street (M.P. 53.57) – Undergrade
- Coggeshall (M.P. 53.67) – Undergrade
- Cedar Grove Street (M.P. 53.79) – Undergrade
- I-195 Ramp (M.P. 53.81) – Overhead
- Weld Street/Route 18 Ramp (M.P. 53.95) – Undergrade
- Logan Street (M.P. 54.01) – Undergrade

1.2 Bridges Requiring Rehabilitation or Reconstruction

The following is a list of bridge crossings (both undergrade and overhead) that require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

1.2.1 Taunton River (M.P. 35.56)

The bridge over the Taunton is a four-span structure carrying a single active track. One span consists of a steel plate thru girder structure, while the other three spans consist of steel stringers supporting a timber deck. The three piers are steel bents supported by HP piles.

The bridge requires reconstruction as it does not rate for Cooper E80 loading and cannot accommodate the two tracks as currently proposed. The structure is envisioned to be a two-span, two-bay, ballasted steel plate thru girder superstructure carrying two sets of tracks. There would be three total girders, with two exterior and one common interior girder. New cast-in-place concrete abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to reconnect the stream banks on either side of the bridge. The existing piles would be removed to one foot below grade.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, one bay of the new thru girder superstructure must be constructed adjacent to the existing thru girder structure. This will require that the Track 1 alignment be far enough away from the existing structure to allow construction of the first bay, maintaining horizontal clearance as necessary for erection and safe rail operation. The alignment of the second track would be determined by that of the first, as the two bays share the interior plate girder.

1.2.2 Brickyard Road (M.P. 35.79)

The bridge over Brickyard Road is a single-span, multiple steel stringer structure with an open deck. The west superstructure carries one active track. The east superstructure appears to be older and is not currently in service.

This bridge currently rates for Cooper E80 loading, but reconstruction is recommended to reduce future maintenance costs. The proposed structure is envisioned to be a single-span ballasted precast box girder superstructure carrying two sets of tracks. The existing stacked stone abutments could likely be reused but would require rehabilitation, as well as some geometric modifications to the backwalls and bearing areas.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Alternatives Description Section 4.3). After the eastern superstructure is demolished, a portion of the new precast box girder superstructure must be constructed adjacent to the existing structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the Stage 1 track alignment as well as the final track alignments. The box girders would be transversely post-tensioned after each stage of new construction to ensure adequate distribution of structural live loads.

1.2.3 Route 24 (M.P. 37.69)

The Route 24 Bridge over the railroad right of way is a single-span reinforced concrete rigid frame structure carrying Route 24 Northbound and Southbound as well as a center median. The bridge currently crosses one active track.

The bridge requires reconstruction as it does not provide adequate horizontal clearance to accommodate the two proposed sets of tracks. A type study would be required to determine the preferred structure type. The demolition and construction would require coordinated staging of both Route 24 and the active railroad underneath.

1.2.4 Cotley River (M.P. 38.93)

The bridge over the Cotley River is a single-span steel plate girder structure currently carrying a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying two sets of tracks. New cast-in-place concrete abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to recreate the stream banks on either side of the bridge.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing structure, maintaining horizontal clearance as necessary for erection and safe rail operation. Given the narrow width of the existing structure, this should not require greater track spacing than the minimum 14'-0" at any point during construction.

1.2.5 Cotley River (M.P. 39.46)

The bridge over the Cotley River is a single-span steel plate girder structure currently carrying a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying two sets of tracks. New cast-in-place concrete abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to recreate the stream banks on either side of the bridge.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing structure, maintaining horizontal clearance as necessary for erection and safe rail operation. Given the narrow width of the existing structure, this should not require greater track spacing than the minimum 14'-0" at any point during construction.

1.2.6 Assonet River (Cedar Swamp)(M.P. 42.14)

The bridge over the Cedar Swamp River is a two-span timber girder structure currently carrying a single active track. The abutments and pier are timber bents founded on timber piles.

This bridge was replaced in 2011 with a new timber superstructure, timber pile caps, timber pile posts and back walls. However, the timber piles in the ground are original.

The current bridge rates for Cooper E78 loading. However, replacement can be considered to upgrade the foundation. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. New cast-in-place concrete abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to reconnect the stream banks on either side of the bridge. The existing piles would be removed to one foot below grade.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing timber girder structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

1.2.7 Fall Brook (Freetown Brook)(M.P. 45.43)

The bridge over the Fall Brook is a single-span steel girder structure, currently carrying a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. New cast-in-place concrete abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the brook's

average seasonal high water elevation. The space between the existing and proposed abutments would be graded to recreate the stream banks on either side of the bridge.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing steel girder structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

1.2.8 Route 18 (M.P. 54.17)

The bridge over Route 18 is a two-span thru plate girder structure supporting a ballasted deck. It currently carries a single active track. The abutments and pier are reinforced concrete.

The bridge requires reconstruction due to the proposed track alignment. . The proposed structure is envisioned to be a single-span ballasted steel plate thru girder superstructure carrying a single track. It is anticipated that new cast-in-place concrete abutments and pier would be required to accommodate the new track alignment.

It is assumed that track would be deactivated from Route 18 to the Terminus, allowing unimpeded construction along the segment.

1.2.9 Wamsutta Street (M.P. 54.21)

The bridge over Wamsutta Street and Acushnet Avenue is a three-span steel plate thru girder structure. The structure originally supported four superstructure bays, but the two western bays and half of the eastern interior bay have been removed. The eastern exterior bay, supported by two thru girders, carries the single active track across the bridge.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be single-span ballasted steel thru girder superstructure carrying one track. The existing southern gravity abutment and northern reinforced concrete abutment (shared with the Route 18 crossing) can likely be reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

It is assumed that track would be deactivated from Route 18 to the Terminus, allowing unimpeded construction along the segment.

2 Fall River Secondary Bridges

2.1 No Work Bridges

The following is a list of bridge crossings (both undergrade and overhead) that would not require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

- Route 24/79 (M.P. 45.58) – Undergrade
- South Main Street/Route 79 (M.P. 46.25) – Overhead
- Clark Street (M.P. 48.93) – Overhead
- Canedy's Underpass (M.P. 49.57) – Undergrade
- New Street (M.P. 49.81) – Overhead
- Western Expressway/Route 79 (M.P. 49.96) – Overhead
- Western Expressway Ramps (M.P. 50.06) – Overhead
- Weaver Street (M.P. 50.09) – Overhead
- Cove Street (M.P. 50.43) – Undergrade
- Clinton Street (M.P. 50.49) – Undergrade
- Brightman Street (M.P. 50.69) – Overhead
- Central Street (M.P. 52.05) – Overhead
- NB Ramp (M.P. 52.05) – Overhead
- SB Ramp (M.P. 52.06) – Overhead
- I-195 (M.P. 52.07) – Overhead
- Route 138 / Davol Street (M.P. 52.09) – Overhead
- Western Expressway, NB & SB (M.P. 52.09) – Overhead
- Anawan Street (M.P. 52.19) – Overhead

2.2 Bridges Requiring Rehabilitation or Reconstruction

The following is a list of bridge crossings (both undergrade and overhead) that require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

2.2.1 Cedar Swamp River (M.P. 41.51)

The bridge over the Cedar Swamp River is a three-span steel stringer structure supporting an open deck. The abutments and piers are stone masonry. It currently carries a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span ballasted steel plate thru girder superstructure, supported on pile supported, cast-in-place concrete abutments, carrying a single track. The existing concrete piers would be removed to two feet below the river's mud line elevation. The proposed abutments would be located behind the existing. The existing abutments would be partially removed to an elevation equal to the mean spring high tide, permitting the recreation of river bank on both sides of the bridge.

Due to the surrounding wetland resource areas, it is not feasible to construct a temporary track while the bridge is rebuilt. This would require constructing the proposed bridge within track outage windows. The following paragraphs describe the general construction methods and sequencing that would be used to construct the bridge:

1. Install Erosion Controls and Selective Trimming of Vegetation: Erosion controls (staked, embedded siltation fencing and/or hay bales) would be installed along the river banks at both ends of the bridge. Vegetation within the limit of work would be cleared and tree branches trimmed to prepare the work area. Any remaining ties or rail would be removed and disposed of in accordance with Massachusetts regulations.

2. New Bridge Substructure: The steel h-piles designed to support the bridge substructures would be installed outside the limits of the existing track and stone abutments. The substructure concrete would be installed during a track outage. The abutments would then be backfilled and the existing rail would be reinstalled.

3. New Bridge Thru-girders: The envisioned bridge consists of steel thru-girders, which would be located outside the limits of the existing bridge superstructure. Likewise, these girders would be installed onto the newly constructed bridge abutments without impacts to the existing track.

4. Realignment of Existing Track: The vertical alignment of the existing track would be realigned to match the proposed track profile in the vicinity of the bridge. This construction would occur within periodic track outages. Timber cribbing would be installed onto the existing steel stringers to raise the track profile to match the proposed.

5. New Superstructure Installation: Work associated with the installation of the new deck beams, ballast plate, new ballast and rail would all occur within

periodic track outages. This portion of the construction sequencing would focus on small (approx. 20ft) sections of track at a time. These sections would correspond to the existing bridge's span configuration.

a. Between days of active rail, the newly realigned tracks, ties, cribbing and a portion of the bridge superstructure would be removed. New floor beams would be installed, timber cribbing would be reinstalled onto the new floor beams, and track would be installed and reconnected, all in time for track service to resume. This process would repeat until the entire existing bridge had been removed.

b. Then, the staging process would repeat. In sections, the track and timber cribbing would be removed and new steel ballast plate, membrane waterproofing, and ballast would be installed. New rail would be installed and connected to the existing to allow track service to resume. This process would repeat until the new bridge construction was complete.

2.2.2 Farm Road (M.P. 46.53)

The bridge over Farm Road is a single-span steel stringer structure supporting an open deck. It currently carries a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. The existing stacked stone abutments can likely be reused but must be rehabilitated and widened to accommodate the new, wider superstructure.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing steel stringer structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

2.2.3 Farm Road (M.P. 47.75)

The bridge over Farm Road is a single-span steel stringer structure supporting an open deck. It currently carries a single active track.

The bridge does not rate for Cooper E80 loading. Given that the road spanned by the bridge is abandoned, the bridge can be filled in. The culvert through the south abutment would be maintained / rehabilitated.

2.2.4 Golf Cart Road (M.P. 47.90)

The Golf Cart Road is currently a grade crossing.

The proposed overhead bridge is envisioned to be a single-span concrete deck supported on steel stringers. The bridge would be designed to support only pedestrian traffic as well as emergency vehicles only. The abutments would most likely consist of cast-in-place reinforced concrete.

2.2.5 Golf Club Road (M.P. 48.11)

The Golf Club Road Bridge over the railroad right of way is currently a three-span steel thru girder structure.

The bridge requires reconstruction because the existing piers obstruct the proposed horizontal alignment. The proposed overhead bridge is envisioned to be a single-span steel stringer superstructure supporting a concrete deck. The structure accommodates two 11′-0″ lanes as well as a single 5′-0″ sidewalk. New cast-in-place concrete abutments are likely to be required, due to the current condition of the existing abutments and increased loading due to the proposed longer span.

2.2.6 Miller's Cove Road (M.P. 48.62)

The bridge over Miller's Cove Road is a single-span, ballasted, reinforced concrete slab bridge. It carries one active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. The existing stacked stone abutments with concrete facing are in poor condition. New cast-in-place concrete abutments are likely to be required, due to the current condition of the existing abutments.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing reinforced concrete structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

2.2.7 Collins Road (M.P. 49.06)

The bridge over Collins Road is a single-span thru girder structure with an open deck. The structure originally consisted of two bays, but only the eastern bay remains, carrying a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading and provides inadequate horizontal clearance. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. The existing stacked stone abutments can likely be reused but require rehabilitation and widening to support the wider superstructure.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing thru girder structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

2.2.8 Ashley's Underpass (Ashley Street)(M.P. 49.21)

The bridge over the dirt path near Ashley Street is a single-span, timber stringer structure with an open deck. A timber bent has been added adjacent to the south abutment. It currently carries one active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading and provides inadequate horizontal clearance. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. The existing stacked stone abutments can likely be reused but require rehabilitation and widening to support the wider superstructure.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing timber stringer structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

2.2.9 Brownell Street (M.P. 51.03)

The bridge over Brownell Street is a single-span thru girder structure with an open deck. The structure consists of two bays, but only the west bay currently carries active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading and provides inadequate horizontal clearance. The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying a single track. The existing stone masonry abutments can likely be reused but would require

rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure must be constructed adjacent to the existing thru girder structure, maintaining horizontal clearance as necessary for erection and safe rail operation. This would require that the final superstructure be wide enough to support the stage one track alignment as well as the final track alignment.

2.2.10 President's Avenue (M.P. 51.11)

The bridge over President's Avenue is a two-span thru girder structure with an open deck and steel pier. The structure currently consists of two bays, but only the west bay currently carries active track. A third bay to the west has been removed.

The bridge requires reconstruction as it does not rate for Cooper E80 loading and provides inadequate horizontal clearance. The proposed structure is envisioned to be a single-span ballasted steel plate thru girder superstructure carrying a single track. The existing stone masonry abutments can likely be reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

The construction staging of this bridge would follow the typical sequence for single existing track, single proposed track scenarios (see Alternatives Description Section 4.3). Move the active track to the eastern bay. Demolish the western bay and construct a new thru girder structure. Move the active track to the new structure in the western bay and demolish the eastern bay.

2.2.11 Pearce Street (M.P. 51.20)

The bridge over Pearce Street was recently reconstructed as part of an early action project. The bridge consists of a single-span ballasted steel tub superstructure carrying a single active track. The bridge originally consisted of two bays.

The bridge requires construction as there are currently two sets of tracks proposed over Pearce Street. The existing structure would be widened using the same ballasted steel tub construction as the existing structure. The existing stone masonry abutments were rehabilitated during previous construction, but may have to be modified to accommodate the additional width of the proposed superstructure.

The widening of the superstructure should be able to take place with minimal disturbance to rail traffic.

2.2.12 Turner Street (M.P. 51.40)

The bridge over Turner Street was recently reconstructed as part of an early action project. The bridge consists of a single-span ballasted steel tub superstructure carrying a single active track. The bridge originally consisted of three bays.

The bridge requires construction as there are currently two sets of tracks proposed over Pearce Street. The existing structure would be widened using the same ballasted steel tub construction as the existing structure. The existing stone masonry abutments were rehabilitated during previous construction, but may have to be modified to accommodate the additional width of the proposed superstructure.

The widening of the superstructure should be able to take place with minimal disturbance to rail traffic.

2.2.13 Channel near Battleship Cove (M.P. 52.38)

The bridge over the channel near the proposed Battleship Cove Station is a three-bay single span open deck timber girder structure currently carrying a single in-active track. The east and west bays are abandoned with the rails partially removed.

As this bridge lies just south of the platform at the proposed Battleship Cove Station, it is currently assumed that the bridge would be reconstructed to carry a single track. Further investigation is required to evaluate the preferred structure type as the current structure would be need to be replaced to carry any service.

Construction on this bridge can proceed unimpeded, as there is currently no active rail within the limits of work.

3 Stoughton Line Bridges

3.1 No Work Bridges

The following is a list of bridge crossings (both undergrade and overhead) that would not require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

- Revere Street (M.P. 15.21) – Undergrade
- I-495 (M.P. 30.48) – Overhead
- Summer Street (M.P. 34.80) – Overhead
- High Street (M.P. 35.00) - Overhead

3.2 Bridges Requiring Rehabilitation or Reconstruction

The following is a list of bridge crossings (both undergrade and overhead) that require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

3.2.1 Forge Pond (M.P. 15.79)

The bridge over Forge Pond is a single-span structure consisting of two earth filled arches adjacent to each other. The east arch is constructed of ashlar stone masonry and the west arch is a composite of a concrete ring at the bottom and a stone masonry ring on the top. The structure currently carries one active track.

The existing arch structure appears in relatively good condition, but its load carrying capabilities, especially with the loading of two sets of tracks as proposed, are unknown. The arch structure is historically significant. The proposed structure is envisioned to be a ballasted precast, prestressed concrete superstructure, supported by augered piles or drilled shafts. The intent is to span over the existing arch with the proposed superstructure, preventing loads from being transferred to the arch.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Alternatives Description Section 4.3). The first half of the superstructure would be constructed over the arch at the proposed raised profile grade. After rail traffic has been diverted to the new bridge, the profile can be raised for the remainder of the rail bed and bridge construction can be completed. The superstructure would be transversely post-tensioned after each stage of new construction to ensure adequate distribution of structural live loads.

3.2.2 Bolivar Street (M.P. 16.11)

The bridge over Bolivar Street is a single-span thru girder structure with an open deck. The structure originally supported two sets of tracks, but currently consists of only a single superstructure bay, carrying active rail.

The bridge requires reconstruction as it does not rate for Cooper E80 loading and does not provide adequate vertical clearance over the roadway below. The proposed structure is envisioned to be a ballasted steel tub superstructure carrying two sets of tracks. The existing stacked stone abutments can likely be partially reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track, scenarios (see Alternatives Description Section 4.3). During the first stage, a portion of the new steel tub superstructure would be

constructed adjacent to the existing thru girder structure while providing adequate horizontal clearance for erection and safe rail operation. This would require that the final superstructure be designed wide enough to accommodate the stage one track alignment as well as the final track alignments.

3.2.3 Mill Brook (M.P. 16.56)

The bridge over Mill Brook is a single-span, earth filled, ashlar stone masonry arch structure. The structure currently carries one active track.

The existing arch structure appears in relatively good condition, but its load carrying capabilities, especially with the loading of two sets of tracks as proposed, are unknown. The arch structure is historically significant. The proposed structure is envisioned to be a ballasted precast, prestressed concrete superstructure, supported by augered piles or drilled shafts. The intent is to span over the existing arch with the proposed superstructure, preventing loads from being transferred to the arch.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Alternatives Description Section 4.3). The first half of the superstructure would be constructed over the arch at the proposed raised profile grade. After rail traffic has been diverted to the new bridge, the profile can be raised for the remainder of the rail bed and bridge construction can be completed.

3.2.4 Coal Yard Road (M.P. 19.07)

The bridge over Coal Yard Road is a single-span multiple steel stringer structure with an open deck. The structure originally supported three superstructure bays, but the easternmost bay has been removed. The remaining bays both carry active rail.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a ballasted precast box girder superstructure carrying two sets of tracks. The existing stacked stone abutments can likely be reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

The construction staging of this bridge would follow the typical sequence for two existing track, two proposed track scenarios (see Alternatives Description Section 4.3). The superstructure would be transversely post-tensioned after each stage of new construction to ensure adequate distribution of structural live loads.

3.2.5 Totman Farm Road (M.P. 20.85)

The bridge over Totman Farm Road is no longer in service and had its superstructure removed approximately 15 years ago. Only portions of the existing stacked stone abutments remain.

The proposed structure is envisioned to be a ballasted steel tub superstructure carrying two sets of tracks. New cast-in-place concrete abutments are likely to be required, due to the current condition of the existing abutments.

Construction on this bridge can proceed unimpeded as there is currently no active rail within the limits of work.

3.2.6 Day's Farm Road (M.P. 21.57)

The bridge over Day's Farm Road is a single-span stringer structure with an open deck. The bridge carries a single inactive track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a ballasted steel tub superstructure carrying two sets of tracks. The existing stacked stone abutments can likely be reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

Construction on this bridge can proceed unimpeded as there is currently no active rail within the limits of work.

3.2.7 Cowessett Brook (M.P. 21.75)

The bridge over Cowessett Brook is a single-span steel stringer structure with an open deck. The single bay does not currently carry active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a ballasted steel tub superstructure carrying two sets of tracks. New abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the brook's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to reconnect the stream banks on either side of the bridge.

Construction on this bridge could proceed unimpeded, as there is currently no active rail within the limits of work.

3.2.8 Pond Street (M.P. 22.80)

The bridge over Ames Street is a single-span thru girder structure with an open deck. Two independent and identical superstructures each carry one inactive track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a ballasted steel tub superstructure carrying one track. The existing stacked stone abutments can likely be reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

Construction on this bridge can proceed unimpeded as there is currently no active rail within the limits of work.

3.2.9 Small Creek (M.P. 22.84)

The bridge over Small Creek is a single-span steel stringer structure with an open deck. Two independent superstructures carry one inactive track each and are supported by common, stacked stone, abutments.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a ballasted precast box girder superstructure carrying one track. The existing stacked stone abutments can likely be reused but would require rehabilitation to accommodate the increased loads, as well as some geometric modifications to the backwalls and bearing areas.

Construction on this bridge can proceed unimpeded as there is currently no active rail within the limits of work.

3.2.10 Main Street (M.P. 22.93)

The Main Street Bridge over the railroad right of way has been filled in. The retaining walls in the depressed corridor leading to the bridge were left in place, and it is assumed that the bridge abutments were left in place as well. The bridge is located within the Town of Easton's Historic District.

Given the current existing roadway and railroad profiles, vertical clearances would not be adequate under the bridge. In order to provide adequate vertical clearance, the railroad profile would need to be lowered and the roadway profile would need to be raised. This increase in the roadway profile would be designed to minimize any potential negative impacts to historical resources. It is anticipated that new abutments would be required. They would be located to minimize the bridge's clear span, minimizing the required structure depth. Depending on how deep the railroad profile must be lowered, new retaining walls may need to be constructed in front of the existing walls to achieve the required grades. A type study would be required to

determine the preferred bridge type. The bridge would be a single-span over one track.

3.2.11 Bridge Street (M.P. 23.27)

The Bridge Street bridge over the railroad right of way has been filled in.

A type study would be required to determine a preferred structure type. The construction of the bridge would require staging if traffic is to be maintained on the roadway.

The construction staging of this bridge would follow the typical sequence for roadway bridges (see Alternatives Description Section 4.3).

3.2.12 Hockomock Swamp Trestle (M.P. 26.17)

The Hockomock Swamp trestle would start at approx. STA 1425+00, end at approx. STA 1510+00 and consist of a multi-span, ballasted superstructure supported by deep foundations.

The construction of the proposed trestle through the Hockomock Swamp ACEC is detailed in the Hockomock Swamp Trestle "FEIS/FEIR Technical Report".

3.2.13 Bridge Street (M.P. 30.20)

The Bridge Street bridge over the railroad right of way is a single-span structure of unknown type.

The bridge requires reconstruction as it does not provide the required horizontal clearance to accommodate two sets of tracks underneath, as proposed. A full type study would be required to properly determine a preferred structure type.

3.2.14 Route 138 Grade Separation (M.P. 31.31)

When in service, the intersection at Route 138 was a grade crossing. There is currently no rail through the intersection.

At Route 138, the proposed treatment of the intersection is to create a grade separation, depressing the track profile as required provide adequate vertical clearance under the bridge. This would improve safety and reduce traffic congestion. The lowering of the profile would require construction of retaining walls leading up to the structure on both sides. A full type study would be required to properly determine a preferred structure type. The construction of the bridge would be staged as to maintain traffic and to minimize impacts to abutters.

3.2.15 Thrasher Street (M.P. 33.33)

The Thrasher Street Bridge over the railroad right of way has been filled in. It is unknown whether the existing abutments or any retaining walls remain in place.

A type study would be required to determine the preferred structure type. The construction of the bridge would require staging if traffic is to be maintained on the roadway. The bridge would span over one track.

3.2.16 Construction Sequencing of Taunton River and Mill River Bridges:

The reconstruction of the Taunton River and Mill River bridges are complex in that they are located within an environmentally sensitive area, are not readily accessible by roadway, and are generally long span bridges. It is assumed that the track would be deactivated, as necessary, from Dean Street to Weir Junction, which would allow unimpeded construction along this segment of rail. Access to the bridges on the Taunton River would be accomplished with a combination of rail-mounted and barge-mounted cranes, as well the utilization of roadway access from Dean Street and Summer Street. The following paragraphs describe the general construction methods and sequencing that would be used to construct the bridges:

1. Install Erosion Controls and Selective Trimming of Vegetation: Erosion controls (staked, embedded siltation fencing and/or hay bales) would be installed along the river banks at both ends of the bridges. Vegetation within the limit of work would be cleared and tree branches trimmed to prepare the work areas. Any remaining ties or rail would be removed and disposed of in accordance with Massachusetts regulations.

2. Relocation of Existing Water Main: A 20-inch insulated water main is currently supported on the southern side of the bridges. The water main travels parallel to the existing railroad bed across all three Taunton river bridges and the Mill river bridge as well. This water main would need to be temporarily relocated prior to the demolition of the existing bridges. It is envisioned that the water main would be supported during construction operations by means of temporary utility bridges, located within close proximity to the railroad bridges. This would allow unfettered access to the bridges during construction, while minimizing disturbances to the water supply.

3. Demolition of Existing Bridges: The existing bridge superstructures would be completely removed and the existing steel h-pile foundations would be partially removed to approx. two feet below the river's mud line elevation.

4. New Bridge Substructure: The 2-span bridges are envisioned to be supported by deep foundations, i.e. steel h-piles or drilled shafts.

Installation of the deep foundation system would occur at both abutments and the center pier. It is anticipated that a cofferdam would be required to install the pile foundations and to construct the cast-in-place concrete center pier in the dry. The bridge abutments would be constructed and the existing abutments would be partially removed.

5. New Bridge Superstructure: The bridge superstructures are envisioned to consist of welded steel plate girders, arranged in a thru-girder configuration. The girders would be delivered to the bridge sites via barges and installed onto the bridge foundations. The deck beams and ballast plates wound then be installed.

6. Install New Ballast and Track: After placement of the steel ballast plates, installation of ballast and rail can commence in conjunction with off-bridge rail installation.

7. Relocation of Existing Water Main: In conjunction with the installation of ballast and rail, the existing water main would be relocated onto the new bridge superstructures. At this time, the temporary utility bridges would be permanently removed.

3.2.17 Taunton River (M.P. 34.38)

The bridge over the Taunton River at M.P. 34.38 is an open deck steel trestle structure consisting of one main span with three approach spans to the North and seven approach spans to the South. The main span consists of two steel plate girders. The approach spans consist of timber stringers. The girders and beams are supported on steel bents with HP piles. The bridge carries one active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a two-span, ballasted steel thru girder superstructure carrying a single track. The existing piles would be removed to two feet below grade and a new, pile supported, cast-in-place concrete pier would be constructed in the center of the span. New cast-in-place concrete abutments would be constructed behind the existing timber crib abutments, increasing the span length of the bridge. The existing abutments would then be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be regraded to recreate the river banks on either side of the bridge.

3.2.18 Taunton River (M.P. 34.62)

The bridge over the Taunton River is an open deck trestle structure consisting of one main span with nine approach spans to the North and six approach spans to the South. The main span consists of two steel plate girders. The approach spans consist

of timber stringers. The girders and beams are supported on steel bents with HP piles. The bridge carries one active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a two-span, ballasted steel thru girder superstructure carrying a single track. The pile would be removed to two feet below grade and a cast-in-place concrete pier would be constructed in the center of the span. New cast-in-place concrete abutments would be constructed behind the existing timber crib abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to recreate the stream banks on either side of the bridge.

3.2.19 Taunton River (M.P. 34.73)

The bridge over the Taunton River is an open deck trestle structure consisting of 17 spans spaced variably. The spans consist of two timber stringers supporting a timber deck. The longitudinal beams are supported on steel bents with HP piles. The bridge carries one active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a two-span, ballasted steel thru girder superstructure carrying a single track. The piles would be removed to two feet below grade and a cast-in-place concrete pier would be constructed in the center of the span. New cast-in-place concrete abutments would be constructed behind the existing timber crib abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to recreate the stream banks on either side of the bridge.

3.2.20 Mill River (M.P. 34.90)

The bridge over the Mill River is a single-span steel plate girder structure carrying a single active track.

The bridge requires reconstruction as it does not rate for Cooper E80 loading. The proposed structure is envisioned to be a single-span, ballasted steel tub superstructure carrying a single track. New cast-in-place concrete abutments would be constructed behind the existing abutments, increasing the span length. The existing abutments would be partially removed to an elevation equal to the river's average seasonal high water elevation. The space between the existing and proposed abutments would be graded to reconnect the stream banks on either side of the bridge.

4 Whittenton Branch Bridges

4.1 No Work Bridges

There are no bridges (both undergrade and overhead) that do not require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project:

4.2 Bridges Requiring Rehabilitation or Reconstruction

The following sections describe the bridge crossings (both undergrade and overhead) that require rehabilitation or reconstruction as part of the currently envisioned South Coast Rail project.

4.2.1 King Phillip Street (M.P. 32.16)

The bridge over King Phillip Street is no longer in service and its superstructure was removed at some point in the past. The full height existing granite block masonry abutment and wingwalls are still in place and are set right at the edge of the roadway.

The existing roadway width between the abutments is 20 feet, and there are no sidewalks. The height from the roadway to the existing abutment bridge seat is 11′-0″. This bridge requires complete replacement, because the existing abutment configuration does not provide adequate lateral or vertical clearance.

There are two options for the single track single span superstructure types that are dependent on the selection of the new abutment types.

Option 1: A 47′-7″ span with full height concrete abutments, a ballasted steel tub girder superstructure with 4 - 32″ deep girders and a total structure depth of 5′-4″.

Option 2: A 100′-9″ span with concrete stub abutments, a ballasted steel through girder superstructure with 2 – 7′-6″ deep through girders and a total structure depth of 4′-7″.

The roadway will be widened to meet current standards for local roads and to include a sidewalk, and the clearance will be increased from 11′-0″ to 14′-6″. Construction on this bridge can proceed unimpeded as there is currently no active rail within the limits of work.

4.2.2 Bay Street (31.58)

The bridge carrying Bay Street over the Railroad right-of-way has been removed and filled in. It is unclear whether any substructure remains, although there are no visible signs of existing abutments or retaining walls. The new bridge will maintain the existing lane configuration for Bay Street, with two traffic lanes and two sidewalks over a single track.

It is anticipated that the new rail profile will need to be set from 4 to 5 feet below existing grade in order to achieve a minimum vertical clearance of 18'-6". This will likely require some low retaining walls along the railroad approaches. The MBTA preferred minimum lateral clearance to continuous obstructions is 12'-0". Using a 24'-0" overall lateral clearance, two different span lengths are feasible.

Option 1: A 29'-3" span with full height concrete abutments aligned with the approach retaining walls. The minimum structure depth for this span length would be approximately 2 feet ' for a concrete deck on steel stringers.

Option 2: A 63'-7" span with concrete stub abutments set at the limits of the right-of-way, behind the short railroad retaining walls. The minimum structure depth for this span length would be approximately 3 feet for a concrete deck on steel stringers.

Construction on this bridge can proceed unimpeded as there is currently no active rail within the limits of work. The bridge would be constructed in phases to maintain alternating one way traffic.

4.2.3 Mill River (M.P. 32.16)

The existing bridge is a seven-span concrete slab bridge carrying the Railroad right-of-way over the Mill River. The bridge had been converted to a trail bridge and is currently closed due to severe deterioration of the piers. The existing structure is roughly 100 feet long with a skewed concrete west abutment and square stone east abutment. Some of the concrete piers are severely deteriorated. The structure requires complete replacement due to the condition of the substructure and insufficient load capacity of the superstructure.

The abutments for the proposed structure will be set behind the existing abutments, resulting in a span length of roughly 120 feet. The river banks would be restored in front of the new abutments. As the six existing piers will be removed, it is assumed that a single pier located within the river is acceptable. This would result in a two-span structure with each span length around 60 feet. The existing piers and east abutment are square to the right-of-way at a slight bend in the river. All proposed substructure elements will be skewed at roughly 25 degrees to closely match the alignment of the river at the bridge location. The bottom of proposed structure will match the bottom of existing in order to maintain the hydraulic opening. The

existing structure is approximately 3′-6″ deep on the northern fascia and 4′-10″ deep on the southern fascia due to the curvature of the right-of-way. According to FEMA data, the 100-year flood elevation at this location is around elevation 51.4, approximately 3 feet below the proposed bottom of structure.

Two superstructure types are suitable for the possible span configurations:

Option 1: A 120-foot single span with concrete stub abutments. This span length would require a ballasted deck steel thru girder structure with an approximate top of rail to bottom of structure depth of 5′-5″.

Option 2: Two 60-foot spans with concrete stub abutments and a concrete center pier located within the river. For this alternative, a ballasted deck steel tub girder section could be used with an approximate top of rail to bottom of structure depth of 5′-10″. A steel thru girder structure could be used for this span configuration as well, with an approximate top of rail to bottom of structure depth of 5′-5″. The tub girder structure would be preferable to the thru girder as the thru girders are not structurally redundant and do not allow flexibility to realign the track or widen the bridge in the future.

Demolition of the existing structure and construction of the new railroad bridge can proceed unimpeded as there is currently no active rail within the limits of work.