# Appendix 3.2-G

# 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
- 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 Report Body Section 5.2). 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 Report Body Section 5.2). After the eastern superstructure is demolished, 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. This would require that the final superstructure be wide enough to support the Stage 1 track alignment as well as the final track alignments.

### 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 Report Body Section 5.2). 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 Report Body Section 5.2). 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 Cedar Swamp River (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.

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. 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 Report Body Section 5.2). 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.

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

The bridge over the Freetown 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 Report Body Section 5.2). 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.

### 1.2.8 Deane Street (M.P. 53.31)

The bridge over Deane Street is a three-span steel structure. The western bay has been completely removed and the deck has been removed from the middle bay. The middle span consists of three thru girders supporting the middle and eastern bay. The two approach spans consist of steel stringers. The eastern exterior bay 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 two sets of tracks. The existing cast-in-place concrete gravity abutments can likely be reused but require rehabilitation.

The construction staging of this bridge would follow the typical sequence for single existing track, two proposed track scenarios (see Report Body Section 5.2).

### 1.2.9 Sawyer Street (M.P. 53.57)

The bridge over Sawyer Street is a three-span, four-bay structure. The western exterior bay has been completely removed and the deck has been removed from the west interior bay. The middle span consists of four thru girders supporting the middle bays and eastern exterior bay. The two approach spans consist of steel stringers. The eastern interior bay 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 two sets of tracks. The existing cast-in-place concrete gravity 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, two proposed track scenarios (see Report Body Section 5.2).

### 1.2.10 Coggeshall (M.P. 53.67)

The bridge over Coggeshall Street is a three-span, three-bay structure. The deck has been removed from the western and middle bay. The middle span consists of four thru girders and the two approach spans consist of steel stringers. The eastern bay 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 two sets of tracks. The existing cast-in-place concrete gravity 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, two proposed track scenarios (see Report Body Section 5.2).

### 1.2.11 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.

### 1.2.12 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
- Farm Road (M.P. 47.75) – Undergrade
- 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 Report Body Section 5.2). 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.

### 2.2.3 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 two sets of tracks. 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 Report Body Section 5.2). 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.

### 2.2.7 Collins Road (M.P. 49.06)

The 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 two sets of tracks. 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 Report Body Section 5.2). 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 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 Report Body Section 5.2). 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.

### 2.2.9 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 two sets of tracks. 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, two proposed track scenarios (see Report Body Section 5.2). After the existing eastern bay is demolished, a portion of the new steel tub superstructure must be constructed adjacent to the remaining 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 1 track alignment as well as the final track alignments.

### 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 two sets of tracks. 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, two proposed track scenarios (see Report Body Section 5.2). After the existing eastern bay is demolished, a portion of the new steel tub superstructure must be constructed adjacent to the remaining thru girder structure. This would require that the Track 1 alignment be far enough away from the existing structure to allow construction of the first bay while 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 middle plate girder.

### 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 Quequechan River (M.P. 52.09)

The bridge over the Quequechan River is a single-span steel stringer structure with an open deck. It carries a single track over the channel.

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 one track. New cast-in-place concrete abutments are likely to be required, due to the current condition of the existing timber abutments.

Rail service would likely need to be suspended during the replacement of this bridge. The surrounding conditions would not allow the construction of a temporary bridge and alignment.

### 2.2.14 Channel near Battleship Cove (M.P. 52.38)

The bridge over the channel near the proposed Battleship Cove Station is a three-bay structure of unknown type.

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 would be required to evaluate the substructure and superstructure and to determine a preferred structure type.

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

# 3 Northeast Corridor Bridges

The proposed track is located on the west side of the current tracks on the north end of the alignment (Dedham - MP 219 to Sharon - MP 211.36). On the south end (Sharon – MP 211.35 to Mansfield – MP 200.17); the proposed track is located on the east side until it joins the Attleboro Bypass. Bridges listed below are in order from North to South.

## 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:

- Route 128 Northbound and Southbound (M.P. 217.49 and 217.48) – Overhead
- Spaulding Street Bridge (M.P. 214.22) – Overhead
- Depot Street Bridge (M.P. 211.07) – Overhead
- Wolomolopoag Street Bridge (M.P. 208.20) – Overhead
- Route 140 Northbound and Southbound Bridges (M.P. 203.35 & 203.34) – Overhead
- I-495 Northbound and Southbound Bridges (M.P. 202.97 & 202.95) – Overhead
- Elm Street Bridge (M.P. 201.67) – 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 Neponset River East Branch (M.P. 216.3)

This existing undergrade structure is an old three span timber deck bridge carrying two tracks over the Neponset River East Branch. The substructure consists of granite blocks.

To accommodate the additional track, it is envisioned to construct a new bridge adjacent to this existing structure on the west side. The proposed bridge is envisioned to be a three span ballasted concrete slab superstructure carrying a single set of tracks.

### 3.2.2 Dedham Road Bridge (M.P. 216.18)

This existing three span overhead structure was constructed in 1993 (MHD Bridge No. C-2-24). The continuous steel stringer bridge is approximately 35 feet wide and 150 feet long with a large skew of 57 degrees. The horizontal clearance from centerline of track to edge of the pier pile cap is 22′. The current width can accommodate the proposed third track alignment with modifications to the west pier pile cap. The current minimum vertical clearance is 19′-9″ which exceeds the requirement for train options for an existing structure.

### 3.2.3 I-95 Southbound and Northbound Bridges (M.P. 215.79 & 215.74)

These existing simple span overhead structures (MHD Bridge No. C-2-23) were constructed in 1969. These steel stringer bridges are approximately 56 feet wide and 77 feet long with a large skew of 53 degrees. The current conditions place the centerline of the two tracks 13 feet apart. There is horizontal clearance of 14 feet from centerline of track to face of abutment on the west side and 18 feet on the east side. The current width cannot accommodate the proposed third track alignment. These bridges will require total replacement.

The proposed structures are envisioned to be single span steel superstructure spanning over three sets of tracks. To maintain traffic on the heavy travelled roadways, extensive construction staging with temporary crossovers will be required. The current minimum vertical clearance is approximately 18′-6″. To

increase the vertical clearance, will further increase the complexity and cost of traffic management.

### 3.2.4 Chapman Street Bridge (M.P. 214.35)

This existing single span overhead structure (MHD Bridge No. C-2-9) was constructed in 1987. This steel plate girder bridge is approximately 58 feet wide and 115 feet long with a large skew of 70 degrees. The horizontal clearance between the faces of abutments is 57′-6′. The current minimum vertical clearance is 21′-1″. The current width cannot accommodate the proposed third track alignment on the west side. This bridge and retaining walls will require total replacement.

The proposed bridge is envisioned to be a single span steel superstructure structure spanning over three sets of tracks. Abutments and retaining walls will be supported by ledge. To maintain traffic on this roadway, construction staging will be required.

### 3.2.5 Canton Viaduct/ Neponset Street Bridge (M.P. 213.74)

The existing undergrade structure is 175 years old and is very unique. The Canton Viaduct is one of the two oldest multiple stone arch surviving railroad bridges still in active use in the United States listed in the National Register of Historic Places and is designated a National Historic Civil Engineering Landmark. The structure is 615 feet long, 38 feet wide and is 70 feet above the Canton River.

To accommodate the proposed additional NEC track, a new structure will need to be constructed just west of this existing historic structure. However, the proximity of proposed bridge will greatly diminish the aesthetics of the present structure. Minimizing the visual impact will result in a substantial construction cost for the new independent structure. The additional structure carrying a single set of tracks is envisioned to be constructed similar in detail to the existing structure. The existing viaduct is a stone arch with 21 chambers with six allowing the passage of water.

### 3.2.6 High Street Bridge (M.P. 212.95)

This existing three span overhead structure (MHD Bridge No. C-2-8) were constructed in 2006. This continuous steel girder bridge is approximately 36 feet wide and 205 feet long with a large skew of 35 degrees. The two existing tracks are 12′-5″ apart located under the middle span. The centerline of track 1 is located 19′ from the centerline of west pier. The centerline of track 2 is located 21′-4″ from the centerline of east pier. The current width cannot accommodate the proposed third track alignment. Modifications to this bridge are anticipated to accommodate the proposed NEC third track alignment.

Underpinning the superstructure and moving the pier may be an alternative to total replacement of this recently constructed bridge. To maintain traffic on this street, construction staging is required. The current minimum vertical clearance is 19'-9" which exceeds the requirement for train options for an existing structure.

### 3.2.7 Canton Street Bridge (M.P. 212.02)

This existing small, single span undergrade structure is past its serviceable life. This precast concrete deck supports the existing two tracks. The current span length is too narrow for the roadway below. This bridge will require total replacement with a longer span for the roadway below and wider deck for the additional track.

The proposed bridge is envisioned to be a single span ballasted concrete superstructure. To maintain continuous rail service, construction staging is required.

### 3.2.8 Maskwonicut Road Bridge (M.P. 211.62)

This existing single span overhead structure (MHD Bridge No. S-9-3) was re-constructed in 1997. This timber deck, steel stringer bridge is approximately 30 feet wide and 33 feet long with a small skew. The current width cannot accommodate the proposed third track alignment. The bridge and retaining walls, on both approaches, will require total replacement.

The proposed bridge is envisioned to be a single span structure spanning over three sets of tracks. The abutments and retaining walls will be supported on shallow foundations. To maintain traffic on this street, construction staging is required.

### 3.2.9 South Main Street Bridge (M.P. 209.95)

This existing single span overhead structure (MHD Bridge No. S-9-1) was constructed in 1936. This steel through girder bridge is approximately 44 feet wide and 76 feet long with a large skew of 58 degrees. The horizontal clearance from centerline of track to face of abutment is 22.0'. The current width does not accommodate the proposed third track alignment. This bridge is old and in poor condition. Total bridge replacement is anticipated to accommodate the proposed NEC third track alignment. The current minimum vertical clearance is 19'-2" which exceeds the requirement for train options for an existing structure..

The proposed structure is envisioned to be a single span steel superstructure spanning over three sets of tracks. The abutments and retaining walls will be supported on shallow foundations. To maintain traffic on this street, construction staging is a consideration.

### 3.2.10 Cocassett Street (M.P. 206.42)

The existing undergrade structure is a single span steel through girder bridge. The existing railroad bridge is not wide enough to accommodate the proposed NEC third track.

To accommodate the additional track, it is envisioned to construct a new single span bridge adjacent to the existing structure on the east side. Demolition of portions of the existing retaining walls is required to allow construction of the new adjacent structure carrying one set of tracks.

### 3.2.11 North Main Street (M.P. 204.44)

The existing structure is a single span bridge located just north of the Mansfield Station. The steel through girder bridge is skewed. This bridge supports both the railroad and Mansfield Avenue on the east. The existing railroad bridge is not wide enough to accommodate the proposed NEC third rail. Currently, Mansfield Avenue is a one way road and provides the only car access to the station.

To accommodate the additional track on the east side, it is envisioned to construct a new single span bridges carrying three sets of tracks and Mansfield Avenue. The roadway system will require extensive re-alignment to allow proper access to the station. Traffic management and staged construction is required to maintain access to the station from the east side from North Main Street. The re-alignment of Mansfield Avenue will require demolition of residential and commercial properties along the east side.

### 3.2.12 MA Route 106 (M.P. 204.17)

The existing structure is a two span bridge located just south of the Mansfield Station. The steel through girder bridge is skewed. The existing railroad bridge is not wide enough to accommodate the proposed NEC third rail.

To accommodate the additional track, it is envisioned to construct a new single span bridge adjacent to the existing structure to the east side. Demolition of portions of the existing retaining walls is required to allow construction of the new adjacent structure carrying one set of tracks.

### 3.2.13 Copeland Drive Bridge (M.P. 203.85)

The existing undergrade structure is a single span steel through girder bridge. Adjacent to this bridge, directly on the east side, is a highway bridge supporting George Street over the Copeland Drive. The existing railroad bridge is not wide enough to accommodate the proposed NEC third track on the east side.

To accommodate the additional track, it is envisioned to construct a new single span bridge adjacent to the existing structure on the east side. Demolition of portions of the existing retaining walls is required to allow construction of the new adjacent structure carrying one set of tracks.

### 3.2.14 School Street Bridge (M.P. 202.51)

This existing single span overhead structure (MHD Bridge No. M-3-14) was constructed in 2003. The steel girder bridge is approximately 55 feet wide and 105 feet long with a large skew of 80 degrees. The current minimum vertical clearance is 20′-2″. The horizontal clearance from centerline of track to face of abutment is 18′. The current width cannot accommodate the proposed third track alignment. The bridge will require total replacement.

The proposed structure is envisioned to be a single span steel superstructure spanning over three sets of tracks. The abutments and retaining walls will be supported on shallow foundations. To maintain traffic on this street, construction staging is a consideration.

### 3.2.15 Wading Brook (M.P. 200.55)

This existing undergrade structure is a single span concrete slab deck bridge carrying two tracks over the Neponset River East Branch. To accommodate the additional track on the east side, it is envisioned to construct a new single span bridge carrying one set of tracks adjacent to this existing structure.

### 3.2.16 Gilbert Street Bridge (M.P. 200.49)

This existing bridge is a small, simple span overhead structure (MHD Bridge No. M-3-7). The abutments are granite block construction. The superstructure consists of prestressed concrete beam. The current width cannot accommodate the proposed third track alignment. The bridge will require total replacement.

The proposed structure is envisioned to be a single span concrete beam superstructure spanning over three sets of tracks. To maintain traffic on this street, construction staging is a consideration.

# 4 Attleboro Secondary Bridges

## 4.1 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:

- Taunton Avenue (Route 140) (M.P. 30.09) – Overhead

## 4.2 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:

### 4.2.1 Chartley Pond (M.P. 25.92)

The existing bridge is an open deck timber structure constructed with a single span length of 24 feet over the Chartley Pond. The deck consists of rails anchored directly to railroad ties, 9"x 9" x 9'-0" length, supported by six steel girders. The structural steel has surface rust for the majority of the beam length. The substructure consists of stone abutments with a concrete cap and wingwalls. The concrete cap is heavily cracked and spalled. There are some small voids at ground line, at the west abutment between stringers. The wingwalls are in poor condition. This bridge requires reconstruction as it does note rate for Cooper E80 loading.

The proposed structure is envisioned to be a single-span structural plate arch. This structure type can be completed without a long disruption to rail service and will have less environmental impact. The single track will be support by the backfill placed over the arch.

If rail traffic must be operational at all times along the Attleboro secondary tracks throughout the duration of a bridge rehabilitation construction, construction of a temporary, or "shoo-fly" structure is required on an alternate alignment. The creation of a shoo-fly adjacent to the existing tracks at the bridge site will impact the watercourses and wetlands considerably.

Construction access to this bridge by existing roads is limited. The Chartley Pond Bridge is located in the vicinity of the National Grid services roads between Union Street and Pleasant Street.

### 4.2.2 Goose Branch Brook (M.P. 28.22)

The existing bridge is an open deck timber structure constructed in 1906 with a span length of 16' with a large skew on Goose Brook. The deck consists of rails anchored directly to railroad ties, 9"x 9" x 9'-0" length, supported by two steel girders. The structural steel has surface rust for the majority of the beam length. The substructure consists of stone block with signs of undermining. The wingwalls are in poor condition. This bridge requires reconstruction as it does note rate for Cooper E80 loading.

The proposed structure is envisioned to be a single-span structural plate arch. This structure type can be completed without a long disruption to rail service and will have less environmental impact. The single track will be support by the backfill placed over the arch.

If rail traffic must be operational at all times along the Attleboro secondary tracks throughout the duration of a bridge rehabilitation construction, construction of a temporary, or "shoo-fly" structure are required on an alternate alignment. The creation of a shoo-fly adjacent to the existing tracks at the bridge site will impact the watercourses and wetlands considerably.

Construction access to this bridge by existing roads is limited. Charles Lane, in Norton, provides the closest road access to the Goose Brook Bridge.

### 4.2.3 Taunton Avenue (Route 140) (M.P. 30.09)

This existing simple span overhead structure (MHD Bridge No. N-23-12) was constructed in 1966 with some rehabilitation work in 1997. The bridge is 50'-6" wide and 41'-6" long with a skew of 28 degrees. The superstructure consists of pavement and sidewalk supported by abutted prestressed concrete deck beams (21" depth). The substructure consists of concrete cantilever abutments and wingwalls supported directly on soil.

There is horizontal clearance of 14' from centerline of track to face of abutment on the north side and 18' on the south side. The current minimum vertical clearance is approximately 19'-0".

The recent bridge inspection report indicates the bridge is in good condition. Some deck beams have some random hairline longitudinal cracking. The abutment breastwalls have some moderate cracks.

Modifications to bridge are not anticipated to be necessary to accommodate the proposed electrification of the track. The current vertical clearance is greater than the 18.90 feet required for electric and diesel train options for an existing structure.

### 4.2.4 Three Mile River (M.P. 30.31)

The existing bridge over the Three Mile River was constructed in 1921 with a single span length of 49′-6″. The total deck width is approximately 12′ carrying a single active track. The superstructure consists of a timber deck supported by two built-up steel plate girders spaced 6′-6″ on center. The steel is heavily rusted with section losses. The substructure consists of old stone abutments with concrete backwalls. The wingwalls are in poor condition. The wall at the southwest corner has failed. This bridge requires reconstruction as it does note rate for Cooper E80 loading.

The proposed structure is envisioned to be a multi-span structural plate arch. This structure type can be completed without a long disruption to rail service and will have less environmental impact. The single track will be support by the backfill placed over the arches.

If rail traffic must be operational at all times along the Attleboro secondary tracks throughout the duration of a bridge rehabilitation construction, construction of a temporary, or "shoo-fly" structure is required on an alternate alignment. The creation of a shoo-fly adjacent to the existing tracks at the bridge site will impact the watercourses and wetlands considerably.

Construction access to this bridge by existing roads is limited. Taunton Avenue (Route 140) is the nearest facility to the Three Mile Bridge.

# 5 Whittenton Branch Bridges

## 5.1 No Work Bridges

There are no bridges on the Whittenton Branch that do not require construction.

## 5.2 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:

### 5.2.1 King Phillips Street (M.P. 30.38)

The bridge over King Phillips Street is no longer in service and its superstructure has been removed. The existing stacked stone abutments remain in place.

The proposed structure is envisioned to be a ballasted steel tub superstructure carrying a single track. 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.

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

### 5.2.2 Bay Street (M.P. 30.38)

The Bay Street bridge over the railroad right of way is a single-span concrete tee structure.

It is assumed that the bridge requires reconstruction due to inadequate track clearances below; however, a type study would be required to determine a preferred superstructure type.

The demolition and construction would require roadway staging, assuming that the bridge cannot be closed to traffic during construction operations.

### 5.2.3 Mill River (M.P. 32.16)

The bridge over the Mill River is a five-span concrete slab structure supported on four concrete piers. The abutments and wingwalls are stacked stone.

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 concrete piers would be removed to one foot below grade and a new 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 stacked stone 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.

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

# 6 Stoughton Line Bridges

## 6.1 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

## 6.2 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:

### 6.2.1 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 Report Body Section 5.2). 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.

### 6.2.2 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 Report Body Section 5.2). 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.

### 6.2.3 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 Report Body Section 5.2). 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.

### 6.2.4 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 Report Body Section 5.2).

### 6.2.5 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.

### 6.2.6 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.

### 6.2.7 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.

### 6.2.8 Ames 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.

### 6.2.9 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.

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

### 6.2.11 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 Report Body Section 5.2).

### 6.2.12 Black Brook (M.P. 26.17)

There is currently no structure over the Black Brook. There is evidence that a stacked stone culvert was once located here, but it has since been completely washed out. Due to the existing conditions at the crossing locations, including evidence of heavy scour and erosion, it appears that a bridge structure may be preferred at this location.

The proposed structure is envisioned to be a single-span ballasted steel tub superstructure carrying one track. Cast-in-place concrete abutments would be constructed beyond the banks as to not change the hydrology of the brook or conditions of the surrounding wetlands. The banks in front of the proposed abutments would be protected by large, stacked riprap stones.

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

### 6.2.13 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 would be performed in a manner that minimizes the disturbance to the wetland

resource areas and existing topography. The construction method would be kept consistent throughout the corridor, even in sections where the right-of-way and wetland boundary widens.

Access to the site would be via Purchase Street (MP 10.20), Foundry Street (MP 11.8) and Race Track Crossing (MP 14.10), the site of the proposed Raynham Station.

The construction activities within the Hockomock Swamp for the construction of the trestle and track would be performed within the constraints of a set boundary either side of a working area. This boundary would be defined by the installation of sedimentation and erosion controls along the existing earth embankment that was the railroad bed when the train previously operated through the Hockomock Swamp.

The following paragraphs describe the general construction methods and sequence that would be used to construct the trestle in the Hockomock Swamp:

1. Install Erosion Controls and Selective Trimming of Vegetation: The Limits of Vegetated Wetland and construction site would be clearly delineated. Erosion controls (staked, embedded siltation fencing and/or hay bales) would be installed at the limits of work. 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. Install Trestle Foundations (substructure): The trestle is envisioned to be supported by deep foundations, i.e. steel h-piles or drilled shafts. Installation of deep foundation system would occur starting at the midpoint of the trestle, at approx. STA 1468+00 and work backwards towards both ends. This would allow the utilization of two sets of installation crews. It is anticipated that the deep foundation system would be completed leaving the top portion of the piles exposed. Subsequently, temporary timber cribbing would be installed, as necessary, to allow construction equipment to drive over the exposed pile (shaft) tips.

3. Install Trestle Pier Cap Reinforcement (substructure): The trestle substructure is envisioned to consist of steel reinforced cast-in-place concrete pier caps at each span. Work would begin at the midpoint of the trestle and work backwards towards both ends, allowing the utilization of two sets of construction crews. Work would consist of installation of prefabricated steel reinforcement cages onto the pile (shaft) tips. Formwork would also be installed. It is anticipated that this work would be completed in groups of three or four pier caps at a time. After the completion of each group of pier caps, concrete would be brought onsite and pumped into the forms. The process would repeat, working backwards to both ends of the trestle.

4. Construct Approach Walls: Based on the current vertical alignment, approach walls are required at each end of the proposed trestle to provide the required transition up to the topside of the trestle. It is currently envisioned that retained soil approach walls would be required for approximately 1000ft before, and 2000ft after, the trestle limits. Construction of these approach walls would most likely need to occur at this stage of construction. This would provide easy access to the topside of the trestle structure to facilitate the installation of the superstructure.

5. Install Trestle Box Girders (superstructure): The trestle superstructure is envisioned to consist of precast / prestressed concrete box girders supporting ballasted rail and a cast-in-place concrete walkway. Elastomeric bearing pads would be installed onto the first and second pier caps and the first span of box girders would be dropped into place. Installation of the girders would require equipment that can move the girders from the flatbed and onto the pier caps while staying within the limits of cleared vegetation. This can be accomplished by careful location of the crane, or by the use of a launching system. This process would be repeated for all spans. The box girders would be transversely post-tensioned to ensure adequate distribution of structural live loads.

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

### 6.2.14 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.

### 6.2.15 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.

### 6.2.16 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.

### 6.2.17 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.

### 6.2.18 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.

### 6.2.19 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.

### 6.2.20 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.

### 6.2.21 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.