

**FORE RIVER BRIDGE REPLACEMENT PROJECT  
QUINCY-WEYMOUTH, MASSACHUSETTS  
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION COMMITMENTS**

An Environmental Assessment (EA) for the Fore River Bridge Replacement Project in Quincy and Weymouth, Massachusetts, was released by FHWA for public review on December 13, 2010. During the 45-day public comment period on the Environmental Assessment which ended on January 26, 2011, a public meeting was held on January 13, 2011 to present the project and its impacts. Notice of this meeting was published in local newspapers and sent to state, federal and local agencies and officials. A total of 50 organizations or individuals commented on the Environmental Assessment during the public comment period, including five public agencies, seven elected or local officials, two business organizations, six community organizations and 30 private citizens. Responses to Comments on the Environmental Assessment were prepared, as well as a Clarification of Major Issues.

The project provides a permanent replacement for the 1936 Fore River Bridge/Route 3A over the Weymouth Fore River between Quincy and Weymouth. In the late 1990's, the 1936 Fore River Bridge was found to be seriously deteriorating and was demolished in 2004. A temporary bridge with a 15-year life span replaced the bridge in 2002 and will be removed when the permanent bridge is constructed. The goals for the permanent bridge are to provide a reliable movable bridge that meets navigational needs, reduces the number of bridge openings, and includes acceptable bicycle and pedestrian accommodations.

The new bridge includes two 12-foot travel lanes in each direction, a five-foot wide bicycle accommodating shoulder in each direction, and a minimum 6.5-foot wide sidewalk in each direction. Construction of the new bridge will require modifications and improvements to the 1936 approach structures. The new bridge will have three spans of approach structure on either side of the movable span, and will rest on deep piles capped with concrete. The original concrete retaining wall portions of the 1936 Fore River Bridge will be retrofitted and reconstructed with a raised profile. For the most part, the proposed bridge will be located within the MassDOT and City of Quincy layout. Temporary and permanent easements and/or takings may be required in the water to accommodate the bridge towers, fender system, and dolphins and on land to accommodate proposed stormwater improvements. No complete takings of residential or commercial properties are anticipated. Acquisitions of all real property and easements will be completed in accordance with applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. The project is proposed for the Design-Build method of project delivery.

**Project Setting**

Route 3A carries approximately 32,000 vehicles per day and is a major commuting route connecting Boston and Quincy with South Shore communities. Land use along the Fore River waterfront on both sides of the bridge is primarily industrial, with some commercial uses concentrated along Route 3A. The Weymouth Fore River area in Quincy and Weymouth is classified as a Designated Port Area (DPA) by the Massachusetts Office of Coastal Zone Management (CZM), which means that the proposed replacement bridge cannot hinder the present use or future development of marine-dependent facilities upstream. Residential areas are located outside the Designated Port Area along Route 3A.

From Boston Harbor, the 300 foot wide Fore River Channel approaches the bridge location in a southwesterly heading along the Hough's Neck and Germantown sections of Quincy. Once past Germantown, the channel turns about 130 degrees to an almost southerly heading and narrows to 175 feet wide under the existing temporary bridge (same channel width as the 1936 bridge), becomes 450 feet just upstream of the bridge and continues on almost the same headway 400 feet wide to the Citgo Petroleum site in Braintree. Both the channel width restriction and bend in the channel direction present difficulties for tankers transiting the bridge area, resulting in allisions.

**Alternatives Evaluated**

The EA assessed a bascule bridge with a 225-foot navigable opening and a vertical lift bridge with a 250-foot navigable opening; the latter was identified as the Preferred Alternative in the EA. During preliminary design development prior to preparation of the EA, a bridge alternative with a 200-foot navigable opening width was evaluated but dismissed from further consideration due to multiple challenges. Compared with the Preferred Alternative, a bridge with a 200-foot wide

navigable opening would: present greater conflicts with the remaining 1936 bridge foundations and the temporary bridge foundations (resulting in additional impacts for removal); either impact the submarine cables or extend into the Federal Navigation Channel; present greater potential for bridge allisions due to the narrower channel width and continued inability for side tug boat support; and inadequately accommodate potentially larger future vessel classes.

Compared with the 250-foot navigable opening vertical lift Preferred Alternative, the bascule bridge with a 225-foot navigable opening width presents a greater potential for vessel allisions when the bridge is in the open position, since the bottom of the bascule leaves could be hit by the deck of the Panamax design vessel, due to the latter's inverted bell shape. The 225-foot navigable opening width bascule would require a span length (trunnion-to-trunnion) of 315 feet, larger than most bascule designs. The bascule would need larger components to meet new AASHTO Load and Resistance Factor Design (LRFD) requirements, resulting in larger piers (and a narrower channel opening as a result), fabrication complexities, procurement issues, and increased lifecycle costs. Compared with the Preferred Alternative, and due to the shape of the bascule bridge leaves in the closed position, the bascule bridge would have 17 feet less vertical clearance (42 feet for the bascule vs. 59 feet for the vertical lift) in the closed position over Mean High Water (MHW). Consequently, the annual number of bridge openings for the bascule is estimated to be 158 more than for the Preferred Alternative, which would result in increased traffic congestion, travel delays and community disruption.

Potential impacts to natural and social environmental resources in the project area, such as impacts to water resources, fisheries, air quality, noise, and traffic due to construction activities were examined and minimized to the extent practicable. The vertical lift bridge was selected as the Preferred Alternative because it is the only alternative that meets the Purpose and Need, providing the greatest net benefits while minimizing and mitigating environmental effects.

## **PROJECT IMPACTS AND MITIGATION**

MassDOT will obtain all necessary permits and will comply with all permit conditions and mitigation commitments. This document and all permits with their conditions will be included in the Design-Build Contractor's specifications.

### **Wetland and Water Resources**

To reduce impacts on water quality in the Weymouth Fore River, the replacement bridge will have a closed deck to eliminate direct discharge of stormwater to the river. Improvements to water quality in the Weymouth Fore River will result from the construction of a stormwater management system in compliance with the DEP Stormwater Handbook, as will be required by the Section 401 Water Quality Certificate, and in compliance with the National Pollutant Discharge Elimination System (NPDES) requirements. The stormwater management system will include deep sump catch basins installed in the approach roadways, along with an extended detention basin and dry water quality swale installed prior to discharge to the Weymouth Fore River via existing stormwater outlet pipes through the sea walls. Another improvement will result when large debris encountered in areas above the mudline within the limits of the navigation channel dredging will be removed by the contractor.

The project will result in a minimal permanent change in the wetland habitats in the Weymouth Fore River, due to the changes in the placement of the in-water structures, compared with the 1936 and temporary bridges. The bridge replacement in-water pier foundation elements will have a smaller footprint than the 1936 bridge foundations and the temporary bridge in-water structures, such as the foundation piles, dolphins, and fender system, will be removed to at least six feet below the mudline, allowing the substrate to restore itself naturally.

Construction of the replacement bridge will result in silt production during in-water construction and dredging activities, which will temporarily affect water quality. Dredging associated with bridge construction and the temporary channel for the Massachusetts Bay Transportation Authority (MBTA) commuter boat is estimated to be approximately 17,000 cubic yards in open water areas, not affecting vegetated or freshwater wetlands.

Construction methods that limit silt production employed by the contractor, such as drilled shafts in lieu of driven piles for the tower foundations, will help limit the suspension of solids and siltation that could migrate from the work area. Major silt-producing activities such as channel dredging, removal of buried cables in the channel, removal of select remnants of the 1936 bridge foundations, and installation of submarine cables, will take place outside of fish spawning and migratory periods. MassDOT has established a Time of Year restriction with the Massachusetts Division of Marine Fisheries, which

does not allow major silt producing activities between February 15<sup>th</sup> and September 15<sup>th</sup>. Other in-water work activities such as installation of drilled shafts, cofferdams, and sheet piling are expected to result in minor silt production and can occur at anytime; however, between February 15<sup>th</sup> and June 30<sup>th</sup>, silt curtains will be used for these activities.

In accordance with expected conditions in the yet-to-be issued Section 401 Water Quality Certificate (WQC), water quality monitoring will occur, with turbidity thresholds that will require the contractor to change his operations, or if the maximum turbidity threshold is exceeded, to stop work. WQC conditions will also govern the dewatering, interim storage, transport, and disposal of dredged material. Some temporary and localized increases in suspended sediments cannot be avoided during dredging activities; however, the recent sediment sampling efforts show that the existing contaminants in the sediment are at low concentrations that should not have bioaccumulation effects. Mobilized contaminants will resettle as chemicals adsorb to suspended sediment particles. The contractor will be required to characterize and properly dispose of all dredge material in accordance with state and federal laws.

### **Wildlife, Fisheries, and Aquatic Habitats**

No federally listed or proposed threatened or endangered species or critical habitats are known to occur in the highly urbanized project area. Bridge construction will likely cause temporary avoidance behavior by birds and mammals.

The Weymouth Fore River serves as migratory and spawning habitat for several species of anadromous and estuarine-spawning finfish and some diadromous fish. Temporary impacts to fisheries may include direct contact by construction equipment with food resources, sedimentation and water turbidity in the immediate vicinity of the construction work area, and the potential for minor introduction of pollutants from construction operations. Only a temporary impact on the benthic community in the immediate area of the bridge replacement will be anticipated. Recovery of the benthic community post-construction will occur, as substrate and habitat conditions will be similar to both pre-construction conditions and to conditions in the general area.

Mitigation measures will be implemented to reduce impacts to fisheries and aquatic habitat during construction. Construction methods that limit silt production will be employed by the contractor, as outlined in the previous section. These restrictions cover a large part of the seasonal timeframe for the Atlantic sturgeon, winter flounder, and other sensitive species, and represent a suitable action to limit the potential for adverse effects. Visual observation of the local waters will occur during construction to ascertain if fish mortality is occurring. If so, work will cease until the cause of the fish kill is discovered and remedied. A Spill Prevention, Control and Countermeasure (SPCC) Plan will also be implemented to minimize and mitigate for potential spills within aquatic habitats.

### **Air Quality**

Temporary impacts to air quality from dust generation will occur during construction. The project design minimizes dust generation by retaining and retrofitting the existing concrete retaining walls for the bridge approaches. This reduces the need for demolition and the potential dust generation associated with that activity.

Mitigation measures will be implemented to reduce air quality impacts during construction. Air quality specifications will be incorporated into contract documents to ensure compliance with applicable provisions of Massachusetts General Laws and Massachusetts Department of Environmental Protection (MassDEP) regulations, such as prohibiting trucks from idling more than 5 minutes; notifying MassDEP prior to the start of construction; and filing necessary forms such as BWP AQ 06, "Notification Prior to Construction or Demolition" with the Bureau of Waste Prevention.

The contractor will be required to develop and submit a Dust Control Plan to MassDOT that will include but not be limited to the following: construction will not result in excessive particulate matter emissions, nuisance dust conditions, or PM<sub>10</sub> (particulate) concentrations exceeding national and Massachusetts ambient air quality standards; use of watering trucks to minimize dust; covers for dust-producing materials (e.g. dirt) when hauling; stabilization of the surface of dirt piles if not removed immediately; cover truck contents when transferring materials; and use of approved dust suppressants on traveled paths that are not paved.

In addition, all diesel-powered non-road construction equipment and vehicles greater than 50 brake horsepower will have engines that meet either the Environmental Protection Agency (EPA) particulate matter emission standards or emission control technology verified by the EPA or the California Air Resources Board (CARB); or emission control technology

certified by manufacturers to meet or exceed emission reductions verified by EPA or CARB. Emission control devices, such as diesel oxidation catalysts or diesel particulate filters, will be installed on the exhaust system side of the diesel combustion engine equipment.

### **Noise**

The noise assessment conducted in accordance with FHWA and MassDOT Type I Noise Abatement Policy and Regulations determined that noise levels at four residences near Route 3A currently exceed the FHWA noise criterion of 67 dBA due to existing and proposed traffic volumes. Noise abatement was considered for this location but was determined infeasible due to the need to maintain driveway access to the four properties which would eliminate any acoustical benefit from a barrier.

The new bridge will have a beneficial impact on noise, since noise from traffic crossing the new bridge with its smooth concrete deck is predicted to be lower than that from the existing steel plate deck on the temporary bridge or the open-grid deck on the 1936 bridge.

During construction, residential neighborhoods in proximity of the bridge may experience temporary noise impacts from the demolition and operation of heavy equipment during the four year construction period. Because of the different phases of construction and the large project area, no single location would be anticipated to experience construction noise impacts for the entire duration of the project. To minimize noise from the construction of the bridge piers, MassDOT is recommending the use of drilled shafts instead of driven piles for the pier foundations to avoid potential noise exceedances.

The contractor will employ an acoustical engineer and will develop for MassDOT review and approval a Noise Control Plan which will include mitigation measures to control noise impacts during construction. The plan will require the contractor to establish standard work hours between the hours of 7 AM and 10 PM and to notify MassDOT and coordinate with the City of Quincy and the Town of Weymouth for any exceptions to the standard work hours, such as the use of impact devices (pile drivers, jack hammers, etc.) which would be prohibited during the nighttime hours of 10 PM to 7 AM unless allowed as an exception by MassDOT with sufficient mitigation and justification.

The EA presented recommended construction noise limits for various equipment types, which will be included in the Noise Control Plan. The Design-Build contractor will be required to comply with the construction noise limits for the daytime, evening and nighttime hours, except where noise limit exceedances occur when utilizing mitigation in accordance with the Noise Control Plan. Typical noise control mitigation that the contractor might be required to use would be mufflers, shrouds or other kinds of enclosures or barriers, or restrict usage. The contractor will be required to utilize construction equipment fitted with exhaust systems and mufflers that have the lowest associated noise whenever those features are available. In addition, the contractor will be required to submit a staging plan for review and approval by MassDOT that establishes equipment and material staging areas away from sensitive receptors.

To address potential noise issues arising during construction, the contractor will establish a point of contact to address noise complaints addressed to the contractor by the project liaison in each community. The contractor's acoustical engineer will be notified if needed, as well as MassDOT's Resident Engineer, to ensure resolution of community noise issues.

### **Traffic**

The new bridge will provide, at a minimum, the functional equivalent of the 1936 bridge in vehicular and pedestrian capacity. Therefore, there are no long-term traffic impacts associated with the replacement of the existing temporary bridge.

The temporary bridge will allow the majority of the replacement bridge to be constructed on the 1936 alignment without interfering with the 32,000 vehicles per day traversing the bridge allowing, for the most part, two travel lanes in each direction to be available during the peak hours (6:00 to 9:00 AM and 4:00 to 7:00 PM). Travel will be restricted at times to one lane of travel in each direction, however, for a limited duration (approximately 4 months) during the construction of the

abutments, traffic volumes during the morning peak period and evening peak period for this time period would exceed capacity limits and congestion would occur.

Mitigation measures will be implemented to reduce traffic congestion during the reduced bridge capacity period. The contractor will prepare a Traffic Management Plan (TMP). This plan will be coordinated with the elected, engineering, planning, and public safety officials in the three municipalities of Quincy, Weymouth and Braintree. Measures in the plan will include: identification of a construction truck route; establishment of employee parking areas away from residences; communication of construction information by electronic variable message signs suggesting alternate routes; potential traffic signal changes on Route 3A or alternate routes as needed; reducing roadway construction activities during high traffic volume periods; using the Fore River Railroad or barges for equipment and material deliveries; and the possible utilization of alternate work schedules to reduce traffic impacts, but only if noise control parameters can be met. To limit impacts on adjacent community facilities and businesses, MassDOT and the contractor will assess measures to facilitate egress from the fire station at 615 Washington Street (Route 3A) in Quincy; and provide adequate notice and assistance as needed to maintain access to the Fore River Station and MWRA facilities, including the Fore River Railroad, as well as local businesses along Route 3A.

### **Navigation**

The shipping channel will remain open to marine traffic during the construction period, except for temporary short closures for the certain operations on the movable span, such as: floating the proposed lift span into place; demolishing the temporary bridge foundations; and installing the submarine cable. The United States Coast Guard will be kept informed of all construction activity potentially affecting marine traffic, which will be done in compliance with the conditions of the USCG Bridge Permit and any other direction, such as in establishing safety zones and channel closures. The Design-Build contractor will closely coordinate with USCG Sector Boston, the Town of Weymouth Harbormaster, and City of Quincy Police Marine Unit throughout the in-water construction and demolition processes.

Mitigation for marine traffic will include the dredging of a side channel along the Quincy-side sea wall to allow the MBTA commuter boat to travel unimpeded during construction when the main navigation channel is closed.

### **Visual**

The EA and subsequent Clarification of Major Issues showed that, although the two towers of the proposed vertical lift bridge will extend 217 feet above the roadway level, and will be approximately 60 feet higher than the temporary bridge, the vertical lift bridge height is within the limits of other vertical structures within the view shed, such as the 270-foot exhaust stack of the Fore River Station, the 272-foot stack of the Twin Rivers facility and the high tension electrical towers extending to the south. The new bridge will not introduce new visual elements that would strongly contrast or be incompatible with the character of the existing landscape or key views. The shade and shadow cast by the bridge is predicted to fall primarily on the river itself or adjacent industrial properties, and not on residential land uses, nor would it result in a noticeable increase in light or glare. Thus, the new bridge will not result in a visual impact.

### **Cultural Resources**

In 1985, the 1936 Fore River Bridge was determined to be eligible for listing in the National Register of Historic Places. The bridge was demolished in 2004 due to the advanced and irreversible deterioration of the bridge piers, resulting in an unavoidable adverse impact under Section 106 of the National Historic Preservation Act. A Memorandum of Agreement (MOA) was executed in 2004 that stipulates mitigation under Section 106, including historic recordation of the former bridge and preparation of informational brochures and interpretive signage, which are being implemented. The third stipulation of the MOA specified that the bronze plaques and eagles on the 1936 Fore River Bridge would be reused on the new bridge, but they were lost or stolen during demolition. MassDOT notified the signatories about the loss and committed to designing and installing replacement plaques that will not be replicas of the originals but will be appropriate for the design of the new bridge.

### **Hazardous Waste**

Mitigation measures will be implemented to reduce hazardous waste impacts during construction. The contractor will develop and implement a soil and groundwater management plan during construction, and will be required to comply with

MassDOT's standard provisions for handling and disposal of contaminated soil and groundwater. All hazardous materials will be handled and disposed of in accordance with state and federal laws, including the Massachusetts Contingency Plan.

### **Continued Coordination and Public Involvement**

The project team will continue to work closely with the City of Quincy, the Towns of Weymouth and Braintree, abutting businesses, and all other stakeholders during construction, including the fishing community, if advisable. Public informational meetings and information distribution will continue to be an important part of the project development process. The selected design-build contractor will be required to hold quarterly public information meetings throughout construction to keep the public informed and to solicit feedback on construction activities and hours of work. MassDOT will post project design and construction updates on the Fore River Bridge Replacement Project web site: [www.mass.gov/massdot/foreriverbridge](http://www.mass.gov/massdot/foreriverbridge).

The City of Quincy and the Towns of Weymouth and Braintree will designate points of contact to address community concerns during construction, who will have the opportunity to attend regularly scheduled contractor coordination meetings with the MassDOT resident engineer who has the authority to negotiate resolutions to issues.