



Deval L. Patrick, Governor  
Timothy P. Murray, Lt. Governor  
Richard A. Davey, Secretary & CEO  
Frank DePaola, Administrator



March 21, 2013

Pamela S. Stephenson  
Division Administrator  
Federal Highway Administration  
Massachusetts Division  
55 Broadway, 10<sup>th</sup> Floor  
Cambridge, MA 02142

Subject: Bridge Street over Mitchell River, Project #603690

Dear Ms. Stephenson:

MassDOT is writing to inform you of the conclusions resulting from our joint consultation with interested parties as part of Section 106 Consultation.

Since the Keeper's determination in October 2010 that the Mitchell River Bridge is eligible for listing in the National Register of Historic Places, MassDOT has made a good faith effort to design a context sensitive new bridge to replace the existing historic bridge. MassDOT's design will incorporate many features and materials into the design of the new bridge to resemble the existing historic structure while taking into account the project purpose and need. During the past 2 ½ years, MassDOT has continued to update the original 25% plans in order to incorporate context sensitive design as follows:

- Entire superstructure of the approach spans has been changed from steel girders to wood/glulam girders.
- Wearing surface has been changed from concrete to timber decking.
- Timber decking orientation has been changed to match the existing herringbone pattern.
- All sidewalks and railings have been changed to timber.
- Bascule span has been changed from steel and concrete to a steel frame with a timber deck and timber sidewalks.
- Bridge cross section (excluding sidewalks) has been narrowed from 30' down to 26'. Sidewalk width will be 5' on each side of the road.
- The proposed pipe piles will be painted to resemble the existing creosote wood piles.
- Stone cladding will be incorporated on the bascule piers and abutment elevations.

More specifically, consistent with the Section 106 Memorandum of Agreement (MOA), Stipulations – Section II, MassDOT committed to further consultation regarding specific aesthetic elements that may be incorporated into the bridge design. This consultation consisted of providing the Consulting Parties with detailed evaluations and samples for specific treatments that will best incorporate aesthetic elements that are in keeping with the historic character of the Mitchell River Bridge. Since providing the information to the Consulting Parties, MassDOT conducted a meeting on February 12, 2013 in Chatham, specific to the Section 106 MOA stipulations and has evaluated all written comments received from the Consulting

Parties. The following are the outstanding issues that were specific to the MOA and our decisions on how we intend to proceed with Final Design of the Mitchell River Bridge:

### **Pier Cap Material**

MassDOT has evaluated the option of wood versus concrete pier caps and has concluded that concrete pier caps are the more prudent alternative for the Mitchell River Bridge. Our decision is based on the Report prepared by URS dated January 9, 2013 and HDR's independent review dated January 10, 2013. Both reports reaffirm our decision that concrete pier caps are more durable than wood pier caps, are easier to construct and inspect, and can be textured and stained to have the appearance of wood. The concrete pier caps will not only provide a 75 year design life, but based on experience with other concrete pier caps in similar environments throughout the Commonwealth, MassDOT has a reasonable expectation that other than routine inspections, maintenance will be minimal. Therefore, the concrete pier caps will provide the most cost effective and durable solution for the Town of Chatham.

MassDOT has received several comments both verbally and in writing relative to the form liner that will be used to give the appearance of wood to the concrete pier caps. As requested at the Consulting Parties meeting, a sample mock-up of the wood grain texture to be used for the pier caps has been provided to the Town for viewing. MassDOT will develop a specification that will require the contractor to replicate the sample form liner pattern on the poured concrete pier caps. The final color of the textured concrete will consist of a multiple stain application. MassDOT will develop a specification for the stain application and will require the contractor to match the existing wood pier cap color to the extent feasible. MassDOT will also specify that the Contractor provide two (2) concrete stained mock-ups for viewing by the consulting parties and the public prior to final application. Based upon the small number of projects where MassDOT used stained concrete, MassDOT does not anticipate that re-staining will be required throughout the life of the pier cap.

*Therefore, MassDOT has decided that the final design of the bridge will proceed with textured and stained concrete pier caps on concrete filled steel piles.*

### **Steel Pipe Pile Protective Coating**

MassDOT has investigated options for steel pipe pile coatings for the Mitchell River Bridge. Upon receiving recommendations from our Consultants and discussing the most appropriate application for this environment, the recommendation was made to use Coal Tar Epoxy coating for the pipe piles, as the black color would most closely resemble the existing creosote wooden piles. As a result of the comments received at the Consulting Parties meeting relative to the final color, MassDOT convened a site visit at two (2) bridge locations in Marshfield where this coating system was recently used. There was consensus among the attendees that the coating and color *may* be acceptable, however there were some concerns as to how the coating system for the Mitchell River Bridge will weather in appearance over time and provide the desired look. Although the weathered look cannot be guaranteed, the bridges in Marshfield have a similar east-west orientation as the Mitchell River Bridge, which should result in approximately the same amount of sunlight exposure. In addition, both bridges are in similar saltwater and shellfish environments.

Although the same type of coating is being proposed as that used on the Marshfield bridge pipe piles, it should be noted that the application of the coating will be slightly different for the Mitchell River Bridge.

The bridges in Marshfield received only one (1) coat of the coal tar epoxy with no zinc primer and it did not appear that the piles were touched up during installation, leading to some areas of rust. In addition to sacrificial steel thickness as part of the design, the proposed pipe piles will receive a far superior system consisting of a zinc primer followed by two (2) coats of coal tar epoxy. MassDOT is also proposing to install cathodic protection to the pipe piles in order to ensure the maximum life expectancy of the piles. Special provisions requiring that a zinc primer and two coats of coal tar epoxy be applied to the pipe piles in a controlled environment and touched up on-site as directed by the Engineer will be included in the construction contract to ensure the quality of the installed pipe piles. MassDOT believes that this coating system will provide a minimum 75 years design life for the piles with least amount of maintenance for the Town of Chatham.

*Therefore, MassDOT has decided that the final design of the bridge will proceed with concrete filled steel pipe piles coated with a zinc primer, two coats coal tar epoxy and cathodic protection.*

### **Stone Cladding**

As part of the Section 106 consultation, MassDOT has committed to the installation of natural stone veneer on the bascule pier and the abutments. There were several comments relative to the type of stone and color to be used. A request was made to provide mock-ups of the different stone options and color variations. MassDOT has provided four (4) mock-up panels from a local vendor to the Town of Chatham for viewing by the consulting parties. The panels consist of two round stone varieties (Boston Blend Mosaic and Boston Blend Round) and two square stone varieties (Boston Blend Square & Rectangular and Vineyard Granite Ashlar). MassDOT will make a final decision on the stone selection after seeking input from the public during the 75% design public hearing.

It is important to note that the veneer will be natural stone varying from 3"-6" in thickness and will be installed using mortar and tie-back anchors. MassDOT used a similar stone application on the concrete piers and abutments of the Pepperell Wood Covered Bridge completed in 2008. MassDOT believes that this stone veneer will require very little maintenance aside from routine inspections.

*Therefore, MassDOT has decided that the final design of the bridge will proceed with cladding of the bascule pier and abutments using 3"-6" natural stone veneer. As requested at the Consulting Parties meeting, the stone veneer will be installed on all concrete exposed areas of the abutments and wingwalls.*

### **Re-use of the Existing Wood Railings**

MassDOT has committed to investigating the possibility of re-using some of the existing railings on the proposed bridge. Due to the spacing requirements of the posts and the uncertainty of the condition of the existing rails, MassDOT has dismissed the possibility of re-using the railing in its entirety. However, due to requests made at the Consulting Parties meeting to try to re-use some of the railings, MassDOT is working with the designer and FHWA to incorporate a section of the top rail into the project. This final design and the extent of re-use will depend on test results of the existing top rail to determine the integrity of the existing wood top rail, and further consultation with our designer and FHWA. MassDOT will require that the contractor test the section to be re-used prior to installation. In addition, if requested by the Town, MassDOT can provide a few sections of the top rail to stock-pile for future repairs and replacements.

*Therefore, MassDOT has decided that the final design of the bridge will proceed with partial re-use of the top rail and require that the selected contractor test the rail for structural strength and condition prior to installation. Re-use of the top rail will depend on testing results and final acceptance by both MassDOT Bridge Section and FHWA.*

### **Review of 25% Progress Plans**

As part of the further consultation required under Section 106, MassDOT provided 25% progress/sketch plans for review and comment by the interested consulting parties. Several comments were received both verbally and in writing relative to the general design in addition to the aesthetic elements described above. There were several minor design comments relative to open/close cycle times, procedures for notification of opening, manual and automatic back-up systems, fender design details and the addition of a cross walk at one end of the bridge. These design comments will be addressed and incorporated into the design plans and presented at the 75% design public meeting.

*Therefore, MassDOT will address and incorporate these comments to the extent possible and present the results at the 75% design public meeting.*

### **Archival Documentation**

Stipulation III of the Section 106 MOA requires MassDOT to provide photographs of the Mitchell River Bridge and other relevant documentation to the Chatham Historical Commission. One of MassDOT's cultural resources consultants has taken the photographs and has prepared prints as required by the MOA. Those prints will be packaged in an archival quality box and provided to the Chatham Historical Commission for distribution to an appropriate local repository. The MOA also requires MassDOT to include other paper documentation relevant to this project in the archival box along with the photographs. MassDOT will prepare a list of documents relating to the Section 106 consultation process and will submit that list through FHWA to the consulting parties for review and comment. Once the consulting parties have reached consensus on the specific documents to be included, then MassDOT will submit the archival documentation through FHWA to the Chatham Historical Commission, with digital copies submitted to all other consulting parties.

*Therefore, MassDOT has fulfilled all the required stipulations of the MOA.*

### **Functional Classification and Design Speed**

Although not listed as a stipulation within the Section 106 MOA, MassDOT received several verbal and written comments relative to the roadway classification and the design speed of the roadway. MassDOT formally addressed the issue of design speed in a response to a letter dated March 16, 2012 and verbally at Board of Selectman Meetings. We will also be addressing these issues in the responses to comments as part of the NEPA process. Additionally, MassDOT would like to reiterate our basis of the design. The functional classification for this section of roadway has been determined to be an Urban Collector. The functional classification is determined for each roadway by MassDOT Planning Division in conjunction with local Metropolitan Planning Organizations and other local agencies. In addition, a speed study was performed and results indicate that the actual vehicular speed varies between 30-32 miles per hour (mph) depending on the time of day. Therefore, the current design speed of 30 mph is appropriate based on the

functional classification and the actual speeds. This is the minimum design speed that will ensure a safe roadway for the speeds that vehicles are currently traveling. It is important to note that the design speed is *not* the posted speed which is currently posted by the Town as 15 mph. MassDOT is not recommending any changes to the posted speed limit for this section of roadway.

MassDOT has also received comments relative to retaining the current “dip” in the roadway. The controlling criteria for the selected design speed must meet minimum lengths of vertical curves and sight distance requirements. The design of the bridge profile has been designed for the minimum design values in order to maintain the current profile to the extent possible and to provide the required clearances in the Navigation Channel. Meeting these requirements requires raising the east elevation of the bridge slightly which slightly reduces the “pronounced dip” in the roadway. MassDOT does not believe that this will lead to an increase in speeding and will in fact provide for a safer roadway for the users of the bridge.

*Therefore, MassDOT will use the current proposed roadway profile based on a Functional Classification of Urban Collector Roadway and a Design Speed of 30 mph for the final design of the roadway.*

A Public Meeting will be held at the 75% design phase to provide the general public an opportunity to view progress design plans and to solicit additional comments for consideration during the final design phase.

If you have any questions, please feel free to contact Joseph A. Pavao, Jr., P.E., Project Manager at 857-368-9287.

Sincerely,



*for* Thomas F. Broderick, P.E.  
Chief Engineer

Cc: File Copy  
Joseph A. Pavao, Jr., P.E., Project Manager  
Michael Bastoni, Environmental Project Manager  
Jeffrey Shrimpton, Cultural Resources  
Ted Keon, Town of Chatham  
Pam Haznar, Project Dev. Eng., District 5