
**Bridge Replacement Newburyport/West Newbury
(Plummer Spring Road over Artichoke Reservoir)**

Partial funding through MassDOT municipal bridge grant

**MassDOT District 4
519 Appleton Street
Arlington, MA 02476
January 11, 2019 @ 1:00 PM**

Attendees: Leonard Aversa, MassDOT, Sandra Sprague, MassDOT Environmental Permitting, Matthew Coogan, Nbpt, Anthony Furnari, Nbpt, Jon-Eric White, Nbpt, Angus Jennings, West Newbury, Wayne Amaral, West Newbury, Peter Reed, BSC, Micah Morrison, BSC

Purpose: Discuss the municipalities' questions regarding the role of MassDOT in municipal bridge design and construction. Have an open discussion of the advancement of the project. Answer questions that MassDOT has about the project.

Items to Discuss

- **Typical bridge design process for municipal owned bridge**
Hydraulic report, geotechnical report, structural design, construction details (bridge rail), and Chapter 85 review.

Because this is a municipal bridge project, MassDOT's only obligation is to perform a Chapter 85 review. MassDOT only to review the bridge submission for structural adequacy and safety. Regarding the roadway, lane widths or issues relative to traffic or pedestrian accommodations, this is up to the municipalities and the designer to decide. MassDOT to strictly perform a structural review only.

Based on MassDOT Chapter 85 review requirements the hydraulic report and geotechnical report are to be in accordance with the MassDOT Bridge Manual, Structural Design in accordance with AASHTO HL-93 Design Loading and the MassDOT Bridge Manual. Construction Details: Due to the roadway classification, relatively low volumes and speeds, BSC will investigate the use of a thrie-beam bridge rail with 42" high pedestrian rail.

- **Bridge types**

Role of hydraulics in selecting a bridge type

When to take borings and their role in selecting bridge type

Pile supported vs Spread Footings

Hydraulics: *It was discussed that the elevation of the reservoir is controlled by the height of the adjacent downstream dam. The available FEMA data shows only minor elevation increases (less than a foot) between the 10- year and 100-year storms. BSC has started a hydraulics model for the existing condition and it appears the existing hydraulic opening is sufficient to handle FEMA's currently stipulated 100-year storm event. However, the hydraulic opening's width is likely to be increased because of bridge type and constructability. Newburyport and West Newbury discussed the elevation of the low chord of the proposed bridge. It was determined that the low chord elevation of the proposed bridge will be the same as the existing low chord elevation. The possibility of lowering the reservoir during construction was mentioned to help during construction but it was determined that this risk should not be pursued.*

Foundations: *Based on past MassDOT projects in the area and the 1890's bridge construction photo that show marshy conditions, it is likely that the existing soil properties are poor, and the proposed foundations may require piles. It was discussed that the existing bridge's stone foundation may have been built on timber cribbing whose decay may have led to the failure of the existing bridge's wingwall/retaining wall. The proposed foundation type will be based on the recommendation of the geotechnical report.*

Borings: *The timing of the borings was discussed with MassDOT. Because this is not a MassDOT project, typical MassDOT protocols regarding at what stage of design and where to take the borings do not need to be strictly adhered to. It was discussed that because the soil properties will have a significant effect on the cost of the bridge types the borings will be taken before a proposed bridge span length is determined. BSC will develop possible bridge types after the borings are completed.*

- **Bridge Cross-Section**

Typical roadway width (discuss 24' vs 22' vs 20') currently 20'

In order to respond to questions about a one lane bridge with alternating traffic, there must be a discussion of the positives and negatives and if it is feasible.

Roadway Width: *MassDOT will review the project for structural adequacy and safety only.*

West Newbury and Newburyport discussed safety and cost associated with 24' vs. 22' vs. 20'. It was concluded that the current width of 20' is a safety concern when two vehicles are passing one another on the bridge. It was determined that BSC will investigate roadway widths of 24' and 22' and estimate the cost difference between the two options.

One Lane Bridge: *The replacement of the existing two-lane bridge with a one-lane bridge was discussed. The feasibility of a one lane bridge with alternating traffic is not part of MassDOT's Chapter 85 review. Newburyport and West Newbury discussed the use of a one lane bridge and concluded that the existing bridge is two lanes and the new bridge should also be two lanes for safety and function for future use.*

- Permitting

General discussion

Does MassDOT have involvement?

MassDOT does not have involvement in the permitting of the project. All required permits must be obtained by the municipalities.

It was discussed that due to the unique nature of the project (drinking reservoir, its location bordering two communities, etc.) the required permits (local, State and Federal) will be extensive. In addition, the permit review time will likely be lengthy and outside of the municipalities and the consultant's control. In order to expedite the permitting process MassDOT has reviewers on staff at various permitting agencies to review MassDOT projects. Unfortunately, MassDOT reviewers are not available to review municipal projects.

- Funding for Construction

Additional grants, etc.

At this time MassDOT is unaware of additional MassDOT bridge or highway funds that would be available to the project. The MassDOT municipal bridge grant is furnished for one project only. West Newbury would be unable to receive a municipal bridge grant for the same bridge that Newburyport received a grant for.

BSC discussed the possibility of getting a letter of support from MassDOT for a MassWorks grant application. MassDOT mentioned providing a letter of support sounded reasonable and likely something that they can provide. (Note: West Newbury would be the municipality apply for a MassWorks infrastructure improvement grant because its population is less than 7,000).