



June 27, 2012
June 28, 2012 REVISED

Mr. Alexander Bardow, PE
Director of Bridges and Structures
MassDOT Highway Division
Ten Park Plaza
Boston, MA 02116

Attention: Mr. Joseph A. Pavao, Jr., PE
Accelerated Bridge Program

Subject: **Chatham**– Bridge No. C-07-001 Bridge Street over Mitchell River
Project File No. 603690, Contract No. 57466, Assignment #1
Vessel Collision Load Waiver Request

Dear Mr. Bardow:

URS is preparing sketch plans for the above referenced project. Because this project involves the replacement of an all timber drawbridge determined to be eligible for listing on the National Register of Historic Places, design development has included extensive community involvement geared toward a context-sensitive solution. We are offering this letter to request a waiver from the AASHTO vessel collision load criteria.

We are now at the stage of developing the bridge piers. The bascule span and rest piers will be constructed of reinforced concrete and faced with a stone material to be determined by the consulting parties. For the approach spans, we are proposing to use a single row of steel pipe piles supporting a cap (material type to be determined). The pile bents are intended to provide a design that resembles a timber bridge similar to the existing bridge. Please see the attached draft version of the key plan for the proposed bridge concept.

We would not be able to meet the AASHTO vessel collision loading requirements under the current pier bent design scheme. Our intent is to design only the bascule and rest piers to resist the vessel collision load. As larger commercial navigation traffic cannot pass through the narrow 25-foot channel, the AASHTO vessel collision design is governed by minimum vessel collision force, which consists of an empty hopper barge floating freely during a storm. This produces an equivalent static lateral load of approximately 70 kips on the pile bents. In our judgment, it is not practical to design a pile bent to resist this force with a single line of piles as proposed for the context sensitive design. Also, important to mention are the low traffic volumes over this bridge, average daily traffic volume is 866 with 6% ADTT and design speed of 30 mph. Bridge Street is classified as an urban collector and is not part of the NHS. The area itself is residential to the east and recreational/business to the west of the bridge. The bridge and roadway are not on a critical traffic route.

The bascule span is the major contributor to the overall construction cost for this bridge and the bascule piers and rest piers can be designed to resist the vessel collision load while also providing a context sensitive design. However, if we also design the approach piers to take the vessel load, a second row of

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piles may be necessary. This larger pier would not be consistent with the intent of the Memorandum of Agreement signed by the Consulting Parties. The risk of vessel impact to the bridge is generally low due to the absence of larger commercial navigation traffic in the Mitchell River (i.e. there are no vessels of a size similar to that of the hopper barge used in the AASHTO minimum vessel collision design criteria.) Therefore, we are requesting a waiver to the criteria in AASHTO Section 3.14 – Vessel Collision for the approach span piers only.

If you have any questions or would like to discuss this issue in further detail, please contact me directly at 857-383-3824.

Very truly yours,

URS Corporation

A handwritten signature in black ink that reads "Heather H. Ivester".

Heather H. Ivester, PE
Structural/Bridge Department Manager

HHI/hhi
Attachment

Cc: Mark Shamon (URS)