

December 30, 2024

Mary Vittoria-Bertrand. P.E.
Managing Engineer
Bridge Engineering
Rhode Island Department of Transportation
Two Capitol Hill, Room 346
Providence, Rhode Island, 02903

RE: 020001 Inspection Report

Dear Mary,

The 2024 inspection report and associated files for bridge 020001 was shared with AI Engineers to review for new findings as they pertain to the current load rating (performed April 2024). AIE has reviewed the inspection report, and the files shared and has compared the current report with prior reports. We've also reviewed the current load rating files and believe at this time an updated load rating is not needed. Based on the 2024 analysis and 2024 inspection findings, we don't feel there were significant changes in the bridge's condition that would warrant an updated analysis.

The 2024 load rating already modeled and considers the current use-case for each bound – 3 lanes in each direction, along with the temporary barrier loads. From a loading/demand standpoint, the analysis is current and up to date. The approach taken in the 2024 analysis already investigated the full suite of RI analysis vehicles including design loads, legal loads, and permit vehicles. Given the existing posting/restriction of 48 tons (96,000 lbs) on the bridge, we feel the existing analysis is adequate in terms of vehicles analyzed. As WIM data is collected, however, we recommend that additional loads be considered from a load rating standpoint if it's discovered that the existing posting is being disregarded.

Superstructure:

The 2024 inspection findings have updated several quantities for the steel beams (element 107). There are minor changes in corrosion (16 LF of new CS3 corrosion) but these are localized and, in general, appear in the bottom of the web near splices (span 13 girder A, span 14 girder A). These locations are noted as “up to” 4” high and 1/8” deep which would contribute insignificantly to the overall section modulus of the beams in these regions. While including these losses would be routine practice in a future load rating update, we believe they will not have a meaningful effect on the load ratings and don't need to be incorporated at this time.

Additionally, the 2024 inspection also calls out ‘uneven bottom flanges’ (defect 1900 – distortion) and identifies 20 LF of locations (photos 79, 80, 87, 101, 102, 105) but these are classified as CS2 and by definition don't warrant an updated analysis. Additionally, the distortion is located in tensile regions of the bottom flange except for photo 87. These findings should be monitored for change in future inspections but don't appear significant from a capacity standpoint at this time. It's likely these are construction-related deficiencies that are not ‘new’ but are newly added to the report. The same is also true for the camber noted in Girders A and J in Spans 4 and 5 and Girders A, B and C in Span 11. While these members don't exhibit positive camber (relative to the adjacent girders) this is not a new finding and there has been no change since the previous inspection (which predates the traffic shift).

Substructure:

The 2024 inspection report identified 3 total concrete pier columns (out of 39) were adjusted downward from CS1 to CS2 for cracking, but the cracking is classified as CS2 and by definition doesn't warrant an updated analysis. Additionally, the specific cracking noted (Column A at pier 10, Column A at pier 12, and Column B at pier 12) is hairline in width and shows no signs of bleeding rust, rust stain, or any other quality that would indicate more significant concerns at this time.

The concrete pier caps also had 214 LF moved to CS2 and 1 LF moved to CS3. The 1 LF of CS3 was due to a spall with no exposed rebar (based on photos 179, 182, 187). This CS3 spall is not a concern from a load rating standpoint. The additional CS2 cracking noted in the pier caps is noted as "hairline" in width and classified as CS2 – it is not a concern for the existing load rating but warrants monitoring at future inspections.

Based on the findings noted in the 2024 inspection, we don't believe the new findings identified warrant an update load rating analysis at this time.

Thank you,

AI Engineers, Inc.



Aslam Siddiqui, PE
Project Manager

