TranSystems

55 Public Square
Suite 1900
Cleveland, OH 44113
Tel 216-861-1780
Fax 216-861-1028

www.transystems.com

November 16, 2009

Brandon Collett, PE
District Bridge Engineer
Ohio Department of Transportation
District 8
505 South SR 741
Lebanon, OH 45036

PID 79892 – HAM-471-0025

Dear Brandon,

This letter is in response to the comments by ODOT Office of Structural Engineering dated 9/18/09 and from ODOT District 8 dated 10/01/09 in reference to the Load Rating Analysis for the bridges HAM-471-0025. Please see TranSystems (TSC) responses (in blue) below.

Office of Structural Engineering Comments 9/18/09

1. We were unable to verify the deck thickness used in the calculations for dead load. Please show this thickness on the superstructure cross sections supplied in Volume II of your submittal. According to bridge inventory information, a future wearing surface that equals to 1.2" was added in 1999. Dead Load calculations should include the total current thickness.

Email correspondence with District 8 from 10/27/2008 indicated that the deck thickness was 9.5" of normal weight concrete. Further review from District 8 has verified that 9.5" is the actual thickness of the deck on the truss. The first 3 pages of the Dead Load Calculations in Volume II show the calculations used to calculate the deck weight, in which a cross section of the deck is shown and the deck thickness is identified as 9.5" (email correspondence dated 10-20-09).

2. STAAD Modeling Information section in Volume II is showing four lanes for truck placement; please confirm that a reduction factor of 0.75 is being used in the output of all live loads. Additionally, please confirm that three lanes with a 0.90 reduction factor will not control for any of the trusses. There have been cases in the past where three lanes will control over four lanes. After confirming that four lanes will control for this bridge, please make a statement in Volume I regarding the reason why only four lanes were considered in the analysis.

The reduction factors for three or four lane loadings are applied in the rating sheets. A simple lever analysis was performed, and the appropriate multiple lane presence factor was applied for each truss to see if three or four truck lanes controlled. The simple lever analysis clearly showed that for the north and south truss the three truck lane configuration controlled. However for the center truss the results between the two truck lane configurations were not as clear. A STAAD analysis was run with HS-20 truck to test the three truck lane versus four truck lane load cases. The STAAD analysis showed that the four truck lane loading was the governing load case. Therefore the truss analysis will be based upon a four truck lane loading condition for the Center truss members, and a three truck lane loading condition for the North and South truss members.

3. It appears the spreadsheets used to calculate sidewalk and lane loading contain impact, please remove any impact from these loads. Live load at low speed will have minimal impact, so they can be ignored.

The pedestrian impact will be removed from all truck rating sheets. The impact from the HS-20 Lane Load will be removed.

4. Per BDM Section 906, Sidewalk loads should be reduced by 50% if combined with truck loads. This reduction is more real for the actual field conditions.

TSC recognized this item between making the original calculation and inputting the sidewalk loads into the STAAD model. The input sheet incorporated the 50% reduction, and all values used in the rating sheets were found utilizing the correct pedestrian loads. However a note stating this, that a corrective action was taken, was not added to the original calculation sheet. A note describing the appropriate pedestrian loads has been added to the Pedestrian Load calculation sheet

5. In the Excel worksheet named "Dead Load Workbook.xlsx", what is South Pork chop Loads.

The term pork chop is a field inspection term used to describe the cantilevered portion of a floor beam. The term "South Pork Chop Load" is referring to the loads applied to the southern floor beam cantilever.

6. Gusset Plate Drawings section in Volume II, please add plate thickness to all of the plates and identify the plates that have been edge stiffened in the past.

TSC has added gusset plate thicknesses to each page, and provided identification of edges that have been stiffened. However, it should be noted that only a couple gusset plate edges have been stiffened on the entire structure.

7. In Volume I, please quantify and provide recommendations for the joints that did not meet stiffness requirements as per AASHTO 10.16.11.3.

Please see Volume I page 14 for updated recommendations.

District 8 Comments 10/01/09

1. Provide all axial and moment forces for each member in the report so that future deterioration can be modeled. Alternatively, a separate functional spreadsheet can be provided that will analyze a specific member with reduced section properties (for modeling future deterioration) using the axial and moment forces from this analysis.

A spreadsheet has been provided that allows the user to input member properties and loading (all of which can be found in the electronic files in Appendix E). This will allow for a component analysis without re-running the entire workbook. The spreadsheet is titled "Individual Calc Rating Sheet.xls".

If there are any questions or concerns regarding these disposition items, please do not hesitate to call me.

Sincerely,

Wesley R. Weir
Project Manager