

## **Scope of Services for Performing Load Rating of Bridges (PID 125422)**

### **Project Overview:**

The required services include:

- Create system models of bridges using the AASHTO Bridge Rating program (BrR) (BrR version to be confirmed by ODOT) under the most current loading conditions; a list of bridges will be provided.
- The services shall also include acquisition and review of all related bridge plans, inventory information and the most current bridge inspection reports.
- The load rating analyses shall be in accordance with State and Federal requirements, ODOT Bridge Design Manual (BDM) and the AASHTO *Manual of Bridge Evaluation, 3<sup>rd</sup> Edition* including all of its interims.

### **Acquisition & Review of Plans & Data Files:**

ODOT will provide access to bridge plans, inventory data, inspection reports and any other bridge load rating information available for each structure.

The consultant shall review ODOT bridge drawings, including design and repair/rehabilitation plans, when available. If the bridge plans are missing or incomplete, the consultant shall obtain the required information from available ODOT resources, such as electronic and paper files, online inventory and inspection data, aperture cards, microfilm/microfiche, archived ODOT Standard Drawings, District Bridge Engineers, etc., and on-site measurements and observations (when authorized).

### **Load Ratings:**

The consultant shall prepare load rating models and perform the load ratings using the AASHTO Load and Resistance Factor Rating (LRFR) method for AASHTO HL93 loading at inventory and operating rating levels and for all Ohio Legal Loads S-2F1, S-3F1, and S-5C1; AASHTO Type 3, 3S2, 3-3, SU4, SU5, SU6 and SU7; and FAST Act Emergency Vehicles EV2 and EV3 at legal load rating level, also permit loads S-PL60T & S-PL65T at permit load level (as given in the ODOT BDM Section 900) as per the AASHTO Manual. For bridges requiring posting under LRFR according to ODOT policy (BDM Section 900), the bridge shall be load rated for both LRFR and LFR (Load Factor Rating using AASHTO Standard Specifications for Bridges) methods to obtain the highest rating factors.

The consultant may be required to review and update the load rating models prepared by ODOT or other consultants. All bridge rating files shall reflect the latest dead load and appraisal conditions before performing the load rating analyses. Rating models must be complete, error free and prepared in accordance with ODOT formatting guidelines and QC/QA policy.

Load rating tasks may include analyses of complex bridges (Level 3 Design Elements) and analyses of structures requiring soil-structure interaction. ODOT's preferred 3D finite element software is Midas; CANDE is preferred for structures requiring soil-structure interaction. Use of either program requires pre-authorization.

If a program other than BrR is used, the load rating submittal must include either:

- an influence-line-based Excel rating tool, or
- a single-line girder BrR model for one or more controlling beamlines, floor system, controlling unit, etc.

to support future ODOT permit evaluations. The consultant project manager shall coordinate with the Office of Structural Engineering (OSE) to determine when such analysis would be needed and which analysis approach would be appropriate.

**Project Deliverables:**

Deliverables will be submitted to the ODOT Office of Structural Engineering as follows:

1. Error-free, working, electronic copies of the database of all created and updated bridge rating files compatible with the ODOT specified version of AASHTO BrR, Midas and CANDE
2. The electronic copy of the bridge modeled in the BrR program shall be exported from BrR in XML format
3. Electronic copies of each structure's final load rating summary in "PDF" format
4. Load rating summary form (BR100) in Excel and PDF formats. The BR100 shall have the names of the load-rater and the reviewer. One of them, currently registered as a Professional Engineer in Ohio, shall sign/seal the BR100. There must be one BR100 form for each bridge number to reflect the overall load rating summary of the bridge
5. All data and dimensions obtained from field work (if field work is performed) along with digital photos of the bridges (if taken)
6. Immediate notification to ODOT OSE for any structure requiring load posting
7. A master Microsoft Excel spreadsheet containing all the information included in the individual summary reports.
8. Electronic (PDF) copies of the bridge plans used in creating bridge data models

The load rating summaries shall comply with the current ODOT version of BR100 and include: Inventory and Operating ratings for AASHTO LRFD HL-93 (or AASHTO LFR HS-20) loading; rating factors for all Ohio Legal Loads (S-2F1, S-3F1, S-5C1, Type 3, 3S2, 3-3, SU4-SU7, EV2, EV3) and permit loads (S-PL60T and S-PL65T) as required by ODOT Bridge Design Manual Section 900; rating factors for all loads at the specified rating levels; and identification of the controlling legal load rating factor

Each load rating summary must be signed and sealed by a licensed Ohio Professional Engineer and shall include the engineer's full name and Ohio PE registration number.