

TO: All Bridge Inspection Staff
FROM: Roman Peralta *rgp*
DATE: September 18, 2023
SUBJECT: Revisions to WSBIM M 36-64.13, February 2023 Publication

This inspection memorandum summarizes editorial revisions and clarifications to the Washington State Bridge Inspection Manual (WSBIM) M 36-64.13, February 2023 Publication as described in Items A through D.

A. Revise The 11 Note verbiage in Section 3-4.1.C as follows:

11 Note – For state-owned structures, the bridge owner can designate others, such as a load rating engineer, other personnel, or consultant, to maintain this field. This note is used to explain any load posting placed on a bridge. This note is closely associated with the Revise Rating flag (2688), see Section 3-4.1.E. ~~The~~

B. Revise Section 3-4.1.D Operating Level Code (1660) as follows:

Verify that load posting signs are in place at the bridge and in advance of the bridge when practicable. Advance load postings must-should be placed in advance of the nearest intersecting road, ramp or wide point in the road where a driver can detour or turn around. Verify that load posting signs and advance load posting signs match the posting requirements in Note 11 and write a note within BridgeWorks under Operating Level Code (1660) to that effect. Take a photo of any existing posting signs and advance posting signs. Ensure that (1293) (open or closed) is coded appropriately.

If required posting signs are missing or inaccurate, inspectors shall notify the Risk Reduction Engineer for state-owned bridges and the Local Agency Bridge Engineer for locally owned bridges on the date of the inspection. The federally mandated timeframe for remediation is 30 days from the inspection date.

C. Insert Section 5-2.1.A Load Posting Review Period as shown below:

Load rating of a structure can be an iterative process due to the assumptions and simplifications made during the calculation phase. WSDOT has developed a load posting review period to address this concern. Bridges that pose a safety concern and require immediate posting will be exempt from this process.

1. Initial load rating completed, and load posting is recommended. This may be a complete stamped and signed load rating package.
2. Load rating is reviewed by the owner. Assumptions and simplifications in the calculations are considered. Load rater and owner discuss possible mitigations:

- a. Refined calculations, including advanced modeling, or assumptions.
- b. Material testing, field measurements, nondestructive testing, or other techniques to verify material properties or conditions followed by refined calculations.
- c. Third party QC/QA of the load rating or new load rating completed.
- d. No refinements or investigation recommended.
3. If the bridge poses a safety risk while mitigations are explored or if the process will likely take more than 60 days, the bridge shall be posted within 30 days. Each structure will be tracked throughout this process with updates provided to FHWA monthly.
4. Updated or new load rating is reviewed by the owner.
5. If bridge requires posting, FHWA is notified and 30-day timeline to have signage in place begins.
 - a. If repair or strengthening is required, the bridge shall be posted until the work is complete and the load rating is updated.

D. Revise portions of Section 5-2.5 Posting Requirements as follows:

Posting of a structure shall occur when the Operating rating factor for any of the legal loads is less than 1 based on the Load Factor or Allowable Stress Methods or the rating factor for any of the legal loads is less than 1 based on the Load and Resistance Factor Method. Legal loads in the State consist of the three AASHTO legal trucks, Type 3 (Single Unit), Type 3S2 (Truck- Semi Trailer) and Type 3-3 (Truck Trailer), the SUV's (SU4, SU5, SU6 and SU7). Emergency Vehicles EV2 and EV3 are also considered legal loads on the Interstate and within one road mile from the interstate per FHWA Memo dated November 3, 2016.

Agencies generally post a bridge between the Inventory Rating and the Operating Rating using the Load Factor Method and Allowable Stress Methods. The minimum permissible posting value is three tons at inventory or operating levels. Bridges not capable of carrying a minimum gross live load of three tons shall be closed. Follow the MBE for calculating the posting limits.

In general, posting of a structure, when warranted, shall occur as soon as possible but not to exceed 30 days. ~~from the date of the posting memo is sent to the region by the Statewide Program Manager.~~ In instances where the load carrying capacity of a bridge is significantly reduced, such as by impact to the structure, posting or closing of the bridge shall occur as soon as it is determined it is not safe to carry legal vehicular loads.

The procedures for notification of postings for reportable structures to FHWA is as follows:

1. When it is determined that a bridge requires posting, notification as indicated below is required within 5 business days.
 - a. WSDOT Bridge Load Rating Engineer shall notify the WSDOT Bridge Preservation Engineer.
 - b. Local Agencies shall notify the WSDOT Local Programs Bridge Engineer.
2. The WSDOT Bridge Preservation Engineer or WSDOT Local Programs Bridge Engineer will notify the FHWA Division Bridge Engineer within 48 hours of notification as described above.
3. Bridges subject to this notification process will be tracked in a database maintained by WSDOT Bridge Preservation Office for state-owned structures and WSDOT Local Programs for local agency-owned structures.
4. An update will be provided to FHWA Division Bridge Engineer every two weeks.

For State structures, ~~the a~~ posting memo from the Statewide Program Manager would be addressed to the Region Administrator; the Bridge and Structures Engineer, FHWA Bridge Division Engineer, Region Maintenance and Operation Engineer, Region Traffic Engineer, State Traffic

Engineer, and Commercial Vehicle Services ~~would be copied on the memo~~. The posting memos would state that the Restricted List on Commercial Vehicles website will be updated within thirty days from the date the posting memo is sent. It would also request that the region email the Risk Reduction Engineer when posting signs have been placed and include photos of the posting. At the thirty day point, if the region doesn't respond to the memo, the Risk reduction Engineer will contact the region and request a status update and follow up after fifteen days thereafter. After sixty days, if the posting signs haven't been installed, the issue would be elevated to upper management. To track the postings, a spreadsheet shall be developed which shows the bridge Number, Structure Id, Date Load rating was completed, Date memo sent to region, and date the posting was implemented, and it shall be maintained by the Risk reduction group.

When possible, additional tests such as concrete strength or steel yield strength shall be performed to validate the assumption in the load rating analysis, hence mitigate the need for posting or restriction of the bridge. Strengthening or repair of an element should also be considered to eliminate the need for posting or restriction.

Load Posting Signs for structures where needed, shall follow the Manual on Uniform Traffic Control Devices (MUTCD) and WSDOT Sign Fabrication Manual M 55-05. See Exhibit 5-1 through Exhibit 5-3 for additional signage information.

All bridges requiring load posting shall have posting signs at the bridge and additional advance posting signs, when practicable, in advance of the nearest intersecting roads, ramps or a wide point in the road where a driver can detour or turn around.

Background:

FHWA performs annual compliance reviews to assess key areas of the bridge inspection program in accordance with the National Bridge Inspection Standards (NBIS), 23 CFR Part 650. The review determined that WSDOT was in non-compliance, specifically, with Section (c) of 23 CFR 650.313(1)(2) for Inspection Procedures – Post or Restrict Bridges (Metric 14). The revisions above were developed to fulfill action items from an approved Plan of Corrective Action between WSDOT and FHWA. These revisions will also be published within the upcoming 2024 Washington State Bridge Inspection Manual (WSBIM). The intent is to address the areas of non-compliance while still aiding bridge owners with the flexibility in maintaining compliance with Metrics 14 of the NBIS Oversight Program.

Please contact Roman Peralta at (360) 570-2557 or peraltr@wsdot.wa.gov if you have any questions regarding this memorandum.

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