Load Rating and Posting for Specialized Hauling Vehicles (SHVs)

In November of 2013, the Federal Highway Administration (FHWA) released a memorandum outlining the requirements regarding the load rating and posting of Specialized Hauling Vehicles (SHV) for bridges contained in the National Bridge Inventory. As defined in AASHTO's Manual for Bridge Evaluation (MBE), these vehicles are closely spaced, multi-axle, single unit trucks such as dump trucks, construction vehicles, solid waste trucks, and other hauling trucks that were introduced by the trucking industry during the last decade. There are four SHV trucks defined in the MBE and they include the SU4, SU5, SU6 and SU7 truck respectively.

Guidelines and procedures for load rating and posting of these vehicles are also contained in the MBE, which ensures that bridge owners comply with the requirements of the National Bridge Inspection Standards (NBIS). The intent of the memorandum is to ensure that all bridges are appropriately evaluated to determine their safe live load carrying capacity for these newer vehicles. The analysis for these SHV’s coupled with the existing load ratings for the three original AASHTO legal load trucks (Type 3, Type 3S2 and Type 3-3 respectively), ensures that the structures are safe for the travelling public.

How do I know if my bridges need load ratings for these new vehicles?

In February of 2014, WSDOT Local Programs created a flowchart for local agency bridge owners to assist in further clarifying the necessary timelines and sorting criteria for their structures. The first question determines whether the bridge has been load rated for the Notional Rating Load (NRL). The NRL is a screening load that envelops the four single unit load models.
If the load rating shows that the bridge has the capacity to carry the NRL truck, then there is no need to rate for the SHV’s and no further action is required. However, if the bridge does not have the capacity for the NRL truck, then load ratings must be performed for all four SHV’s. If the bridge did not have the capacity to safely carry the NRL, it probably does not have the capacity to carry one or all of the SHV’s. The load rating will then determine which SHV trucks will be restricted from crossing the bridge and will have to be posted for those vehicles.

**Load Rating Flowchart for Specialized Hauling Vehicles (SHV)**

Based on the November 15, 2013, FHWA Memorandum – Load Rating of Specialized Hauling Vehicles

- **Has the bridge been load rated for the Notional Rating Load (NRL)?**
  - **Yes**
    - Is the NRL rating factor greater than or equal to 1? $RF_{NRL} \geq 1$
      - **Yes**
        - No need to rate for the Specialized Hauling Vehicles, no further action required
      - **No**
        - Perform load ratings for all Specialized Hauling Vehicles (SHV) SU4, SU5, SU6, and SU7
  - **No**
    - GROUP 1: The shortest span of the bridge is not greater than 200 feet and was last rated by:
      - **Allowable Stress Rating (ASR) method or Load Factor Rating (LFR) method**
        - Are any of the existing operating rating tonnages less than those shown below for the following trucks?
          - Type 3 < 33 tons
          - Type 352 < 47 tons
          - Type 3-3 < 52 tons
        - **Yes**
          - Perform load rating for the Notional Rating Load (NRL) after the next NBIS inspection, but no later than 12/31/2017
        - **No**
          - If the rating factors for any of the SHV’s < 1, then the bridge shall be posted for those vehicles
    - GROUP 2: Bridge does not meet the criteria for **GROUP 1**
      - **Load and Resistance Factor Rating (LRFR) method**
        - Are any of the legal load rating factors for trucks Type 3, Type 352, and Type 3-3 less than 1.3?
          - **Yes**
            - Perform load rating for the Notional Rating Load (NRL) no later than 12/31/2022
          - **No**
            - Perform load rating for the Notional Rating Load (NRL) no later than 12/31/2022

**Note:** For either group, if a re-rating is warranted due to changes of structural condition, loadings, or configuration, or other requirements, the re-rating should include the SHV’s.
What if my bridges have not been load rated for the NRL truck?

It is highly unlikely that any bridge built before 2014 was load rated for the NRL truck. Recognizing that it would not feasible to include SHVs in the ratings for the entire inventory at once, FHWA provided the following general timelines and criteria for re-rating of existing bridges for the SHV’s.

FHWA designated Group 1 as bridges with the shortest span not greater than 200 feet should be re-rated after their next NBIS inspection, but no later than December 31, 2017, that were last rated by:

1. either Allowable Stress Rating (ASR) or Load Factor Rating (LFR) method and have an operating rating for the AASHTO Type 3 truck, Type 3S2 truck, or Type 3-3 truck less than 33 tons (English), 47 tons (English), or 52 tons (English) respectively; or
2. Load and Resistance Factor Rating (LRFR) method and have a legal load-rating factor for the AASHTO Type 3 truck, Type 3S2 truck or Type 3-3 truck, less than 1.3.

Bridges within Group 2 (all other structures not in Group 1) are due to be re-rated by December 31, 2022.

It is important to note that for either group, if a re-rating is warranted due to changes of structural condition in the structure, additional loadings added to the bridge, or configuration, or other requirements, the re-rating should also include the NRL and the SHV’s if needed.

Please contact WSDOT Local Programs if you have any questions as we committed to assist in any way to ensure full compliance with FHWA.