U.S. Department of Transportation
Federal Highway Administration

QUESTIONS AND ANSWERS

Load Rating of Specialized Hauling Vehicles

Office of Bridges and Structures
Resource Center
Federal Highway Administration

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*The purpose of this document is to provide answers to some of the common questions received from FHWA Division Offices and States prior to and after the release of FHWA's Memorandum on Load Rating of Specialized Hauling Vehicles dated November 15, 2013 (**the Memorandum**).*

LIST OF QUESTIONS AND ANSWERS

16. After reviewing State law, it is concluded that SHVs, within or exceeding the Federal Bridge Weight limits, are not allowed. Do we need to rate and post our bridges for SHVs?
17. After reviewing State law, it is found that SHVs exceeding the Federal Bridge Weight limits are not allowed. In addition, State law explicitly precludes the use of certain types of SHVs, such as SHVs with 5 or more axles. Do we need to rate and post our bridges for those SHVs precluded in our State law?
18. After reviewing State law, it is concluded that no legal loads exceeding the Federal Bridge Weight limits are allowed, but no provisions exist to preclude the use of SHVs meeting Federal Bridge Weights. Do we need to rate and post our bridges for SHVs?
19. After reviewing State law, it is found that SHVs exceeding the Federal Bridge Weight limits are allowed. What do we need to do next?
20. After comparing the load effects from a state-specific SHV load model to those created by the AASHTO SHV load models, it is concluded that our state-specific SHV load model envelopes all of the AASHTO SHV load models. Do we need to rate and post our bridges for the AASHTO SHVs, i.e. SU4 to SU7?
21. How do we compare SHVs?
22. SHV vehicles with 5 thru 7 axles do not operate in our State due to economic considerations. Therefore, SU5 thru SU7 vehicles are not operating in our State at a frequency worthy of consideration as a legal load vehicle. WIM data supports this conclusion. The problem is the SHVs are not prohibited to operate in our State by statute. Do we need to include SU5 to SU7 in our load rating?
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27. Our triple-axle tandem dump truck can encompass the AASHTO SHVs. We will continue to post for a single tonnage for Single Units based on this triple-axle dump truck and a single tonnage for Combination Unit vehicles. Is this approach appropriate?
28. In our State Code we have restricted the Bridge Formula on secondary highways by limiting vehicle gross weight. With these restrictions, the SHVs are limited to lower

GVWs than AASHTO SU4 to SU7 in the AASHTO MBE. Can we reduce the GVWs of SU4 to SU7 to the lower GVWs according to the State Code?

29. My State meets Condition A of the Memorandum. Do we need to take any actions?
30. My State meets Condition B of the Memorandum. Do we need to take any actions?
31. SHVs are not legal in my State. Single unit vehicles with more than 4 axles are not allowed in the State by law, and the 4-axle single unit vehicles that are allowed by State law exceed the load effects of the 4-axle SHVs as defined in the AASHTO MBE. Do we need to take any actions?
32. My State's legal rating vehicles produce a greater load effect than the AASHTO SHV load models for all spans greater than 20'. Do we need to take any actions?
33. We ran a compilation of typical structures in the State comparing the AASHTO SHVs to our 37.5 Ton tri-axle dump truck of various material types having simple and continuous span configurations at various lengths. The tri-axle dump truck controlled with a lower rating factor than all the AASHTO SHVs (SU4, SU5, SU6, and SU7) for all structures. We believe Condition B applies to us since the tri-axle enveloped all the SHVs. Do we need to take any actions?
34. Is it acceptable to use other criteria to categorize Groups 1 and 2 of the Memorandum?
35. My State includes the AASHTO SHVs in State's bridge load rating guide. AASHTO SU4 to SU7 load models have been considered in bridge load rating and posting. Do we need to take any action?
36. What are the timelines for load rating for the AASHTO SHVs?
37. Who do we contact for assistance?

QUESTIONS AND ANSWERS

Load Rating of Specialized Hauling Vehicles

1. What is the purpose of the Memorandum?

In accordance with the National Bridge Inspection Standards (NBIS), all highway bridges on public roads must be rated and posted, if required, for all legal loads and unrestricted routine permit loads. The Memorandum reminds States that the Specialized Hauling Vehicles (SHVs) must be considered in bridge load rating and posting if such vehicles are legally allowed to cross the bridge.

2. What are SHVs?

The SHVs, referred to in the Memorandum and the American Association of State Highway and Transportation Officials (AASHTO) Manual for Bridge Evaluation (MBE), are closely-spaced multi-axle single unit trucks introduced by the trucking industry in the last decade. Examples include dump trucks, construction vehicles, solid waste trucks and other hauling trucks. Some SHVs are equipped with lift/drop axles. The SHVs typically have 4 to 7 axles.

3. Where can I find more information on SHVs?

The National Cooperative Highway Research Program (NCHRP) Project 12-63 studied the developments in truck configurations and State legal loads. The findings of that research were documented in NCHRP Report 575 (published in 2007) on Legal Truck Loads and AASHTO Legal Loads for Posting (http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_575.pdf). The recommendations have been adopted by the AASHTO Subcommittee of Bridges and Structures (SCOBS) into the AASHTO MBE. You can find more information in that report and Articles C6A.4.4.2.1b and C6B.7.2 of the AASHTO MBE.

4. What are the Federal Truck Size and Weight limits?

In accordance with 23 CFR 658.17, the weight and configuration of trucks on Interstate and Defense Highways must meet four limits:

1) Single Axle Weight less than or equal to 20,000 lbs;
2) Tandem Axle Weight less than or equal to 34,000 lbs;
3) GVW less than or equal to 80,000 lbs; and
4) Federal Bridge Formula B.

23 CFR 658 also allows exemptions of vehicles exceeding the limits (grandfathered provisions). The pamphlet Bridge Formula Weights (August 2006), FHWA HOP-06-105, provides a summary of the Federal Bridge Formula B.

More information can be found at the web site of FHWA Office of Operations:

http://ops.fhwa.dot.gov/Freight/sw/index.htm

5. Why is it important that SHVs be included in bridge load rating and posting?

NCHRP Project 12-63 studied the developments in truck configurations and State legal loads and found that AASHTO Type 3, 3S2 and 3-3 legal loads are not representative of all legal loads, specifically SHVs. It was found that SHV trucks weighing up to 80,000 lbs and meeting the requirement of Federal Bridge Formula B, due to closely-spaced axles, may cause load effects that exceed the stresses induced by the HS-20 loading by up to 22 percent and by the Type 3, 3S2, or 3-3 loads by over 50 percent. SHVs that exceed the four limits set in 23 CRF 658.17 (See Question #4) may create load effects even greater. Where SHVs are legal to travel in a State, load rating and posting bridges for the Types 3, 3S2, and 3-3 is insufficient to ensure the safe operation and compliance with the NBIS.

6. What are the *applicable* SHVs referred to in the Memorandum that must be considered in load rating and posting?

SHVs that are legally operated in a State are considered ***applicable,*** and must be included in bridge load rating and posting.

Some SHVs may meet the four weight limits set in 23 CFR 658.17 (See Question #4), and others may exceed one or more limits.

The SHVs that meet the four limits are considered legal in the State, if the State's law does not explicitly exclude the use of such vehicles. The SHVs exceeding the limits are typically state-specific.

The Memorandum focuses on the need to rate and post bridges for the SHVs that meet the four limits. For state-specific legal loads exceeding the weight limits, States should have included those state-specific loads in bridge rating and posting.

7. What are load models for in bridge load rating and posting?

It is impossible to rate and post, if required, bridges for all physical vehicles that are allowed by laws to use bridges, thus load models are developed to represent those vehicles. For example, AASHTO Types 3, 3S2 and 3-3 included in the AASHTO MBE are load models that represent the routine commercial vehicles of 3-axle single trucks, 5-axle tractor semi-trailers (18 wheelers), and 6-axle tractor trailers. These three load models envelope and represent

those vehicles most commonly found on the nation's highway system that meet the four limits set in 23 CFR 658.17 (See Question #4).

8. What are AASHTO SHV load models?

AASHTO SHV load models provided in the AASHTO MBE represent the SHVs that meet the four limits set in 23 CFR 658.17 (See Question #4). The AASHTO SHV load models include a Notional Rating Load (NRL), and 4 single unit load models for 4 to 7 axle SHVs denoted by SU4, SU5, SU6, and SU7. The NRL envelopes the four single unit load models and primarily serves as a screening load. If the load rating factor for the NRL is greater than 1.0, the load rating factors for SU4 to SU7 will be greater than 1.0 at the same load rating level.

9. Do AASHTO SHV load models comply with Federal Truck Size and Weight limits?

The AASHTO SHV load models comply with the limits set in 23 CFR 658.17 (See Question #4), except the weight limit of three axle groups with a distance of exactly 8 ft between two exterior axles.

In accordance with Federal Bridge Formula B, the computed weight limit of a three axle group is 42,000 lbs, if the distance of two exterior axles is equal to 8 ft. However, if the distance is slightly greater than 8 ft by a fraction of an inch, the weight limit for a three axle group is allowed up to 42,000 lbs. It should be noted that the AASHTO SHV load models are not actual vehicles, but models that envelope and represent the actual SHVs meeting the four limits, including the SHVs having a 3 axle group weighing up to 42,000 lbs with an axle distance between two exterior axles slightly greater than 8 ft.

In other words, the AASHTO SHV load models are models for SHVs that for all practical purposes meet the four limits set in 23 CFR 658.17 (See Question #4).

10. What are state-specific SHV load models?

Load limits set in 23 CFR 658.17 apply to Interstate and Defense Highways. Interstate Highways in States with grandfathered exemptions, and other highways and roads owned by States or local agencies may allow vehicles including SHVs that exceed the four limits (See Question #4). State-specific legal load models are developed by a State to represent the vehicles specific to the State. State-specific SHV load models, if any, represent the SHVs exceeding one or more of the four limits, operating legally in the State.

11. Do all States need to have state-specific legal load models?

No, a State does not need to develop state-specific legal load models, if the State's law limits vehicle size and weight to the federal bridge weights (the four limits, See Question #4) without grandfathered exemptions. The legal load models in the AASHTO MBE, including Types 3,

3S2, 3-3, SU4 to SU7, are generally sufficient to represent the vehicles in the State. Otherwise, a State may develop state-specific legal load models for those loads exceeding federal bridge weights (the four limits, See Question #4) and include those models in bridge rating and posting. A State may also use the actual vehicle configurations in bridge load rating and posting to account for the state-specific legal loads. Again, all highway bridges on public roads must be rated and posted, if required, for all legal loads and unrestricted routine permit loads in accordance with the NBIS to ensure bridge safety.

12. Where can I find information about the weight and size limits of a State's legal loads?

State's motor vehicle code is the state law that governs the truck size and weight limits in a State. Local agencies may have their own truck size and weight limits for local-owned roads in their jurisdiction. State's load rating manuals may include state-specific load models representing the state-specific legal loads. For example,

> Code of Alabama, Title 32, Chapter 9, Trucks, Trailers, and Semi-Trailers, http://alisondb.legislature.state.al.us/acas/ACASLoginMac.asp
>
> Delaware Code, Title 21, Motor Vehicles Operation and Equipment, Chapter 45, Size and Weight of Vehicles and Loads, http://delcode.delaware.gov/title21/
>
> Georgia Code, Title 32, Chapter 6, Article 2. Dimensions and Weight of Vehicles and Loads, http://www.lexisnexis.com/hottopics/gacode/Default.asp

13. If the load rating factor for the AASHTO NRL is greater than or equal to 1.0, do I need to rate the four AASHTO single unit SHV loads, i.e. SU4, SU5, SU6 and SU7?

No, the AASHTO NRL is a screening load for the AASHTO SHV loads. It envelopes the four single unit SHV loads, i.e. SU4 to SU7. If the rating factor for the NRL is greater than or equal to 1.0 at either the inventory rating level or operating rating (legal load rating in LRFR) level, the rating factors for SU4 to SU7 will be greater than 1.0 at the same rating level. A rating factor of 1.0 or greater at the operating rating (legal load rating in LRFR) level means that a bridge has a sufficient capacity to take the rating load, and load posting for this load is not required.

Even though the single unit loads SU4 –SU7 are not required in this case, benefits of including those single unit loads in load rating now can be found later when re-rating is required and load posting is found necessary.

14. Is it appropriate and acceptable to ignore the AASHTO NRL, but include SU4, SU5, SU6 and SU7 in bridge load rating analysis?

Yes, it is totally appropriate and acceptable. The AASHTO NRL is simply a screening load model and it can be ignored, if the four single unit load models SU4 – SU7 are included in the load rating analysis. This may be more efficient if computer software is to be used.

15. Can we use SU7, instead of the AASHTO NRL, as a screening load for the four single unit loads SU4 to SU7?

Based on the moments and shears in simple spans given in the AASHTO MBE, SU7 creates higher demands than SU4 to SU6. That means SU7 can be used as a screening load for those simple spans. For other structure types or span arrangements, it is more prudent to use the AASHTO NRL as a screening load, if a screening load is to be used.

16. After reviewing State law, it is concluded that SHVs, within or exceeding the Federal Bridge Weight limits, are not allowed. Do we need to rate and post our bridges for SHVs?

Load rating and posting for SHVs is not required where they cannot legally operate.

However, 23 CFR 658 regulates the truck size and weight on Interstate Highways. States have no authority to prohibit vehicles, including SHVs, which meet the four limits set in 23 CFR 658.17, from Interstate Highways.

Accordingly, Condition A of the Memorandum does not apply to bridges on Interstate Highways. The AASHTO SHV load models must be included in the load rating and posting of Interstate Highway bridges.

17. After reviewing State law, it is found that SHVs exceeding the Federal Bridge Weight limits are not allowed. In addition, State law explicitly precludes the use of certain types of SHVs, such as SHVs with 5 or more axles. Do we need to rate and post our bridges for those SHVs precluded in our State law?

It is not required to rate and post for the SHVs explicitly excluded by law from their use. In this example, SU5, SU6 and SU7 do not need to be taken into account in load rating and posting analysis of bridges on the highways that State law applies.

Please note the answer to Question #16. State law does not apply to Interstate Highways. Bridges on Interstate Highways in the State are still required to include the AASHTO SHV load models SU4 to SU7 in load rating and posting.

18. After reviewing State law, it is concluded that no legal loads exceeding the Federal Bridge Weight limits are allowed, but no provisions exist to preclude the use of SHVs meeting Federal Bridge Weights. Do we need to rate and post our bridges for SHVs?

Yes, if State law does not explicitly prohibit the use of SHVs, the SHVs that meet the four weight limits set in 23 CFR 658.17 (See Question #4) are considered legal in all States, and therefore, the AASHTO SHV load models must be included in bridge load rating and posting.

19. After reviewing State law, it is found that SHVs exceeding the Federal Bridge Weight limits are allowed. What do we need to do next?

If SHVs exceeding the Federal Bridge Weight limits are allowed to operate without restrictions (no permits are required to freely move in your jurisdiction), State must evaluate if those SHVs create higher load effects than the AASHTO SHV load models, i.e. SU4 to SU7. States may already have state-specific SHV load models for those vehicles, and can compare the state-specific SHV load models to the SU4 to SU7. If a State does not have state-specific load models, the State may consider developing load models for those vehicles. In all circumstances, highway bridges on public roads must be rated and posted, if required, for all legal loads and unrestricted routine permit loads, including the SHVs within or above the four limits set in 23 CFR 658.17 (See Question #4), in accordance with the NBIS to ensure the bridge safety.

20. After comparing the load effects from a state-specific SHV load model to those created by the AASHTO SHV load models, it is concluded that our state-specific SHV load model envelopes all of the AASHTO SHV load models. Do we need to rate and post our bridges for the AASHTO SHVs, i.e. SU4 to SU7?

The answer to this question includes two parts:

1) For bridges which have sufficient capacity for the state-specific legal load, in other words, load posting is not required for the state-specific SHV load:

   If the state-specific SHV model has been included in the bridge load rating and posting, load rating and posting for the AASHTO SHVs, i.e. SU4 – SU7, is not required.

2) For bridges which are required to be posted for this state-specific SHV load:

   The AASHTO SHV load models SU4 to SU7 need to be included in the load rating and posting so as to determine the appropriate safe posting loads.

21. How do we compare SHVs?

Simply comparing the axle weights, axle spacings, and GVWs between vehicles is typically insufficient.

Comparing load effects, such as moments and shears, created by vehicles is sometimes enough, but insufficient in other circumstances. When a vehicle creates higher load effects than another vehicle and a bridge has sufficient capacity for the first vehicle, this bridge will have sufficient capacity for the second vehicle. However, if this bridge does not have sufficient capacity for the first vehicle, it is not certain whether this bridge has sufficient capacity for the second vehicle. If this bridge is posted on the basis of the rating tonnage of the first vehicle, the posting load may be less conservation or too restrictive for the second vehicle.

To compare different vehicles or loads, load ratings are the values to be compared.

A parametric comparison may be conducted easily for simple cases, such as simple spans with a uniform girder section. In other situations, a parametric evaluation may require additional efforts. The results or conclusions drawn from a parametric study for a specific structural type is usually only applicable to the structure type studied.

Note that a parametric study can narrow down the number of bridges which require rating for the AASHTO SHV loads.

Example:

A State may perform a parametric study on simple spans. The conclusions or results from the study should be only applied to simple spans. Since a large portion of bridge inventory falls into this structural type, a parametric study on simple spans may significantly reduce the number of bridges to be rated for the AASHTO SHV loads.

Maximum live load moments and shears in simple spans resulted from the AASHTO legal loads are available in the AASHTO MBE. The State may have already had the maximum live load moments and shears in simple spans created by a state-specific legal load. A comparison of load ratings between the AASHTO SHV load models and the state-specific legal load can be done as follows:

- Set the rating factor (RF) for the state-specific legal load equal to a series of values, such as RF_1 =1.0, 0.95, 0.90, 0.85, 0.80 etc.
- Compute the load ratings (RT) for the state-specific legal load, $RT_1 = RF_1 \times GVW_1$.
- Compute the corresponding rating factors and load ratings for the AASHTO SHV load models, i.e. SU4 to SU7,

$$RF = RF_1 \times \frac{LL_1}{LL}$$

$$RT = RF \times GVW$$

- Compare the load ratings (RT and RT_1) between the AASHTO SHV legal loads and the state-specific legal load.

22. SHV vehicles with 5 thru 7 axles do not operate in our State due to economic considerations. Therefore, SU5 thru SU7 vehicles are not operating in our State at a frequency worthy of consideration as a legal load vehicle. WIM data supports this conclusion. The problem is the SHVs are not prohibited to operate in our State by statute. Do we need to include SU5 to SU7 in our load rating?

Yes. As stated in the Memorandum, any SHV configurations that State law does not explicitly exclude shall be rated and posted if required.

23. We plan to use a single posting load for the single unit SHVs. Can we just use the AASHTO NRL to rate bridges and determine the posting limits, instead of using SU4 to SU7?

No, the AASHTO NRL is a screening load only and it should not be used to determine the safe posting load. If the rating factor for the AASHTO NRL is lower than 1.0, there are two points to consider:

- Rating factors for SU4 to SU7 may not be lower than 1.0 and no posting is required for the single units that have a rating factor greater than or equal to 1.0; and
- Rating tonnage for the AASHTO NRL is typically higher than the rating tonnage for SU4 to SU7. That means using the rating tonnage of the AASHTO NRL to post bridges for SU4 to SU7 is not conservative.

24. Which load rating methods are acceptable for load rating of the AASHTO SHVs?

The selection of load rating method should comply with FHWA's Policy Memorandum on Bridge Load Ratings for the National Bridge Inventory, dated October 30, 2006.

The memo can be downloaded from FHWA Bridge website:

http://www.fhwa.dot.gov/bridge/nbis/103006.cfm

25. Are Assigned Load Ratings acceptable for load rating of the AASHTO SHVs?

Yes, under certain conditions. Assigned Load Ratings are valid, if the conditions in the Assigned Load Ratings memorandum dated September 29, 2011 are met.

The Assigned Load Ratings memo can be downloaded from FHWA Bridge website:

http://www.fhwa.dot.gov/bridge/110929.cfm

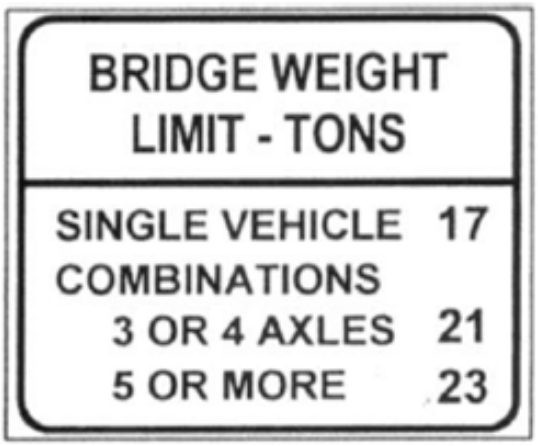
26. What type of load posting signs should be use?

In accordance with the AASHTO MBE, posting signs should conform to the MUTCD requirements. Prior to and after the issuance of the Memorandum, FHWA Office of Bridges

and Structures received a number of inquiries and comments on how to reasonably and appropriately post bridges for the SHVs. Various possible options were reviewed and a conference with the FHWA MUTCD Team in the Office of Operations was conducted in early 2013 to seek input from them. The sign included in the following example is an alternate that complies with the requirements set forth in the MUTCD, assuming appropriate size of characters on the sign is used. If silhouettes, not pre-approved or included in the MUTCD, are to be used, a human factor study must be conducted in order to be MUTCD-compliant.

Posting Sign Example:

It is allowable by the MUTCD for States to modify written posting signs (specifically R12-1 though R12-4) which do not contain silhouettes to meet vehicle configurations. The closest example to this would be the sign used by Illinois (Illinois sign designation R12-I100) shown below. This sign could be modified to include axles for the single vehicle similar to what is used in for combination vehicles.



R12-I100

For single vehicles, it may say something like:

SINGLE VEHICLES

3 OR LESS AXLES	xxT	(This applies to Type 3 or similar.)
4 TO 7 AXLES	xxT	(This applies to SHVs.)

The number of axles on each line would need to be adjusted to each State's vehicle laws and appropriate level in determining the cut-offs for grouping the number of axles together.

Following similar direction, States may come up with other options. However, the sign should not be restrictive to other vehicles except the vehicles that require the restrictions.

An appropriate word sign can also distinguish a single unit vehicle (Type 3, SHV, etc.) and a combination vehicle (Type 3S2, 3-3, etc.), and at the same time not be restrictive to other

vehicle types. Properly signing will ensure the safety of bridges, but will not reduce the mobility of vehicles that should not be restricted.

27. Our triple-axle tandem dump truck can encompass the AASHTO SHVs. We will continue to post for a single tonnage for Single Units based on this triple-axle dump truck and a single tonnage for Combination Unit vehicles. Is this approach appropriate?

As stated in Questions #20 and 21, simply comparing load effects is generally insufficient.

If this triple-axle tandem dump truck has a greater GVW, the rating tonnage for this dump truck may be higher than the rating tonnages for certain AASHTO SHV configurations at the same rating level. If a bridge is posted on the basis of the rating tonnage of this dump truck, the single posting load will be less conservative for certain AASHTO SHV configurations.

If this triple-axle tandem dump truck has a smaller GVW, and if a bridge is posted on the basis of the rating tonnage of this dump truck, the posting load may be too restrictive to certain AASHTO SHV configurations.

It is more appropriate to post bridges by using a sign that can distinguish different single unit vehicle configurations, instead of a single tonnage. For more information, see Question #26.

28. In our State Code we have restricted the Bridge Formula on secondary highways by limiting vehicle gross weight. With these restrictions, the SHVs are limited to lower GVWs than AASHTO SU4 to SU7 in the AASHTO MBE. Can we reduce the GVWs of SU4 to SU7 to the lower GVWs according to the State Code?

Yes. The reduced weight should only be used to rate and post bridges on the secondary highways covered by the State Code. For bridges on other highways, the full AASHTO SHV load models specified in the AASHTO MBE should be utilized.

29. My State meets Condition A of the Memorandum. Do we need to take any actions?

Yes, this assessment should be documented. The FHWA Division Office may review this documentation in the future, with assistance from the Office of Bridges and Structures as needed.

Note that the SHVs meeting the four limits set in 23 CFR 658.17 are legal on all Interstate Highways. Condition A can only be met for State and local highways. Therefore, bridges on Interstate Highways must be rated for the AASHTO SHV loads.

30. My State meets Condition B of the Memorandum. Do we need to take any actions?

Yes, this assessment should be documented. The FHWA Division Office may review this documentation in the future, with assistance from the Office of Bridges and Structures as needed.

31. SHVs are not legal in my State. Single unit vehicles with more than 4 axles are not allowed in the State by law, and the 4-axle single unit vehicles that are allowed by State law exceed the load effects of the 4-axle SHVs as defined in the AASHTO MBE. Do we need to take any actions?

Yes, this assessment should be documented. The FHWA Division Office may review this documentation in the future, with assistance from the Office of Bridges and Structures as needed.

The 4-axle single unit vehicle allowed by State law results in a lower rating factor than the AASHTO SU4, since it creates greater load effects. However, if load posting is required and the State 4-axle single unit vehicle has a GVW greater than SU4, the safe posting load for 4-axle single units must be at most the lesser of the load rating tonnage of either the State 4-axle single unit or SU4.

Note that the SHVs meeting the four limits set in 23 CFR 658.17 are legal on Interstate Highways. Bridges on Interstate Highways should be rated for the AASHTO SHV loads.

32. My State's legal rating vehicles produce a greater load effect than the AASHTO SHV load models for all spans greater than 20'. Do we need to take any actions?

Yes, this assessment should be documented. The FHWA Division Office may review this documentation in the future, with assistance from the Office of Bridges and Structures as needed.

In addition, NBIS length bridges may be comprised of spans shorter than 20'; these shorter spans must be included in the assessment.

Please note the answers to the above questions and Question #21. In certain situations, such as when determining posting limits, a vehicle that results in greater load effects, but has a higher GVW may lead to a less conservative posting load. Simply comparing the load effects may not be sufficient.

33. We ran a compilation of typical structures in the State comparing the AASHTO SHVs to our 37.5 Ton tri-axle dump truck of various material types having simple and continuous span configurations at various lengths. The tri-axle dump truck controlled with a lower rating factor than all the AASHTO SHVs (SU4, SU5, SU6, and SU7) for all structures. We believe Condition B applies to us since the tri-axle enveloped all the SHVs. Do we need to take any actions?

Yes, this assessment should be documented. The FHWA Division Office may review this documentation in the future, with assistance from the Office of Bridges and Structures as needed.

Please note the answers to the above questions and Question #21. In certain situations, such as when determining posting limits, a vehicle that results in greater load effects, but has a higher GVW may lead to a less conservative posting load. Simply comparing the load effects may not be sufficient.

34. Is it acceptable to use other criteria to categorize Groups 1 and 2 of the Memorandum?

Yes. The criteria used to categorize bridges in Group 1 or 2 were established based on the approximate level of posting susceptibility to SHVs. In the Memorandum, following the recommendation from SCOBS T-18, 130% operating ratings of Types 3, 3S2 and 3-3 are used as a threshold for Group 1. A similar level of capacity, such as the operating rating of HS 20 (Allowable Stress Rating or Load Factor Rating), may be utilized. However, as stated in the Memorandum, the approach to be used to group bridges must be reviewed and formally accepted by FHWA.

35. My State includes the AASHTO SHVs in State's bridge load rating guide. AASHTO SU4 to SU7 load models have been considered in bridge load rating and posting. Do we need to take any action?

Yes. The State needs to load rate and post bridges, if required, for the loads by the timelines specified in the Memorandum.

Following the timelines in the Memorandum, the FHWA Division Office may randomly sample bridges to assess if these loads have been included in bridge load rating and posting.

Even though it is not explicitly addressed in the Memorandum, State should evaluate whether SHVs exceeding the four limits set in 23 CFR 658.17 are allowed to operate in the State. If allowed, those state-specific SHV loads should be included in bridge rating and posting.

36. What are the timelines for load rating for the AASHTO SHVs?

As stated in the Memorandum, the completion dates for Groups 1 and 2 are December 31, 2017 and December 31, 2022, respectively. It should be noted that if a re-rating is warranted ahead of the group completion date, due to changes of structural condition, loadings, configuration, or for other reasons, the re-rating should include the AASHTO SHVs.

37. Who do we contact for assistance?

The FHWA Division Bridge Engineer will be your first level of contact. As needed, the Division Bridge Engineer will be assisted by FHWA's Office of Bridges and Structures and Resource Center in providing assistance or further clarifications.

Team Members:

Office of Infrastructure – Bridges and Structures

Barry Brecto, Senior Bridge Safety Engineer
Tom Drda, Senior Bridge Safety Engineer
Lubin Gao, Senior Bridge Engineer – Load Rating
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