



National Committee on Uniform Traffic Control Devices

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Attachment No. 3

Item No.: 17A.RW.03

NCUTCD Proposal for Changes to the Manual on Uniform Traffic Control Devices

TECHNICAL COMMITTEE: Regulatory/Warning Signs Technical Committee
ITEM NUMBER: 17A.RW.03
TOPIC: Section 2B.59, Weight Limit Signs
ORIGIN OF REQUEST: Virginia DOT Request for Review
TASK FORCE: Robert Weber (Chair), Tom Heydel, Herman Hill, Paul Carlson, Mark Bott, James Sullivan
AFFECTED SECTIONS OF MUTCD: Section 2B.59 Weight Limit Signs

DEVELOPMENT HISTORY: Task Force: 4-26-16, revised 1-5-17, revised following sponsor comments 6-5-17, revised 6-28-17

- Approved by Technical Committee: 01/05/2017
- Approved by Technical Committee following sponsor comments: 06/28/2017
- Approved by NCUTCD Council: 06/30/2017

This is a proposal for recommended changes to the MUTCD that has been approved by the NCUTCD Council. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, or options. It will be submitted to FHWA for consideration for inclusion in a future MUTCD revision. The MUTCD can be revised only through the federal rulemaking process.

SUMMARY

In August of 2015 the Virginia Department of Transportation (VDOT) contacted the Regulatory/Warning Signs Technical Committee with a request to review Section 2B.59 for possible inclusion of additional language and/or figures to provide improved guidance regarding the placement of Weight Limit signs.

DISCUSSION

28 On November 15, 2013, the FHWA issued a memorandum on the Load Rating of Specialized
 29 Hauling Vehicles (SHVs) for bridges. SHVs are multi-axle single unit trucks (e.g. dump trucks)
 30 introduced by the trucking industry in recent decades. SHVs generally comply with Bridge
 31 Formula B (in the *National Bridge Inspection Standards*) and are for this reason considered
 32 legal in all States where the State's laws do not explicitly exclude the use of such vehicles. This
 33 mandate will result in many agencies having to post substantial numbers of bridges that did not
 34 require posting based on previous load rating standards.

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 36 FHWA's November 2013 memo mandated that many bridges be re-rated for SHVs by
 37 December 31, 2017, and all remaining bridges be re-rated by December 31, 2022. However
 38 there is currently no standardized way to represent SHVs on Weight Limit signs. There was a
 39 subsequent FHWA recommendation to use all-word signs such as this:

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BRIDGE WEIGHT LIMITS - TONS	
SINGLE VEHICLE	
3 OR LESS AXLES	22
4 TO 7 AXLES	25
COMBINATIONS	
3 OR 4 AXLES	21
5 OR MORE	23



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 42 *(modified version of Illinois DOT R12-I100 sign, as per FHWA recommendation)*

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 44 However, there are many concerns with the ability of truck drivers to comprehend such a sign
 45 from a human factors standpoint.

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 47 Sign designs developed by Virginia, Oregon, Ohio, Delaware, and Kentucky DOTs that
 48 provide weight limits for SHVs are depicted below. All of these signs are large and present a
 49 potential for lack of easy truck driver comprehension.

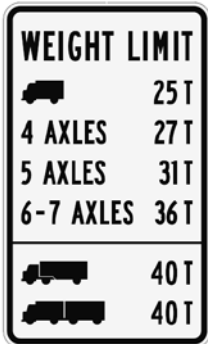
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 51 Virginia DOT is developing a process for bridge engineers to determine what sign is
 52 appropriate, depending on the traffic volume and bridge characteristics. The goal is to limit the
 53 use of the R12-V3 sign to locations where the sign will provide meaningful benefit to the
 54 trucking Industry (reward drivers who drive multi-axle SHVs, thus reducing their impact to
 55 structures). The intent is to avoid using the R12-V3 signs at structures with minimal truck
 56 volumes, and also to avoid its use at structures in sufficiently poor shape that even empty SHVs
 57 would exceed the rating were the R12-V3 sign to be used.

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BRIDGE WEIGHT LIMIT	
AXLES	
2-3	22 T
4-5	25 T
6+	27 T
AXLES	
3+	38 T

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 60 *(Virginia DOT R12-V3 sign)*

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63 (Oregon DOT OR12-5f sign)

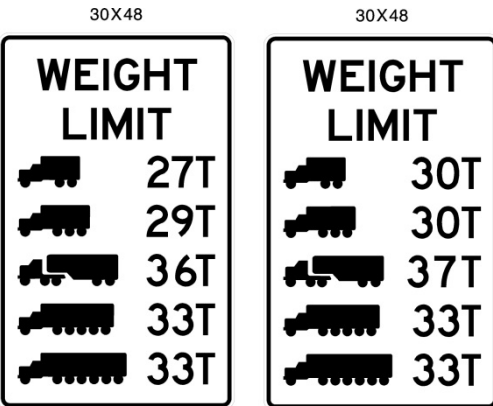
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66 (Ohio DOT R12-H5 sign)

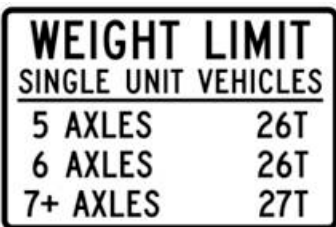
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69 #1 Bridge 1-687 #14 Bridge 1-693

70 (Delaware DOT sign designs)



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72 (Kentucky DOT sign design)

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In addition to the issues surrounding FHWA’s SHV mandate, other concerns with Section 2B.59 of the MUTCD include:

- The wide variety of allowable signs leads to inconsistency in signage between states, and even between different agencies within the same state. This is compounded by the many nonstandard agency-specific signs used, either due to nuances of state/local code or for other reasons. Some states use nonstandard silhouettes on modified R12-5 signs.
- In addition to variability between sign designs in general, there is variability in how weights are measured. Some signs display a gross vehicle weight limit while others display an empty weight limit; some signs use units of Tons while others use units of Pounds; and some signs display total vehicle weight while others establish a weight limit per axle.
- There is some evidence of an enforceability issue in some jurisdictions with the R12-5 sign. Specifically, judges have dismissed citations because the vehicle operator has successfully argued that their vehicle did not “look” like the silhouette in the R12-5 sign.
- Some agencies use signs or combination of signs that result in very large and wordy signs.
- Various agencies use multiple terms such as “tandem”, “triple”, “quad”, “single unit”, “combinations”, “tractor-trailers”, “truck tractor”, “semitrailer”, etc. to refer to different vehicle configurations. The meaning of these terms may not be readily apparent to truck drivers or to judges contemplating contested weight limit citations.

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Technology solutions to provide weight limit and other truck restriction information to truck drivers using in-cab equipment, such as GPS units meant specifically for commercial drivers, are rapidly evolving. These solutions will likely become more common and more useful in future years as truck-specific V2I (vehicle to infrastructure) technology solutions evolve. However, given the critical importance of these signs to minimize risk of a structure failure, it is unlikely that the need for these signs will be lessened anytime soon.

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The December 2015 FAST Act also contained provisions regarding weight limits for emergency vehicles. In November 2016 FWHA issued this memorandum developing policy related to the FAST Act requirements, including a recommendation for emergency vehicle weight signage. NCUTCD is still evaluating that memorandum and such signage may be addressed in a future ballot item.

107 **RECOMMENDATION:**

108 The RWSTC has a number of recommendations:

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1. Clarify that the single-unit truck silhouette shown in the R12-5 sign shall apply to all single unit vehicles, regardless of the number of axles or shape of vehicle. This clarification may aid police and prosecutors enforcing weight limit citations by allowing them to point to FHWA policy regarding the intent of these signs.
2. Similarly, clarify that the tractor-trailer silhouette shown in the R12-5 sign shall apply to all combination vehicles regardless of number of axles or vehicle shape.

- 115 3. Add general language noting that it is not possible to list all possible varieties of truck
116 weight signage, but the MUTCD is being used to show some general sign designs and
117 explain principles/best practices for truck weight signage. (Similar to the language
118 recently adopted by NCUTCD for parking restriction signage.)
- 119 4. Explicitly state that the shapes of the silhouettes in the R12-5 sign may be modified to
120 show an increased number of wheels. However, other vehicles silhouettes (e.g. a
121 silhouette of a concrete mixer truck) shall not be used. Advise against overusing multiple
122 similar silhouettes (e.g. silhouettes that are identical except for number of axles) on the
123 same sign, as the need to count axles on a sign will make comprehension difficult if there
124 are too many options.
- 125 5. Remove the R12-2 and R12-4 signs from the MUTCD.
- 126 6. Issue guidance recommending against weight limits per axle, and instead recommending
127 that weight limits, when posted, should be in terms of gross vehicle weight (and not
128 based on empty vehicle weight or weight per axle).
- 129 7. Delete the R12-3 sign, and add a new “No Thru Trucks” sign to Section 2B.39 as an
130 example sign to use for neighborhood truck restrictions. This new sign is part of separate
131 RWSTC proposal
- 132 8. Clarify that the R12-1 and R12-5 sign lists gross (fully loaded) vehicle weight limit.
- 133 9. Add guidance that weight limits, when posted, should be consistent throughout a region
134 with unit of measurement (avoid mixture of “tons” and “pounds” signs). Tons, when
135 abbreviated, shall be abbreviated with capital “T”.
- 136 10. Add an optional new sign: “Bridge Limited to One Truck At a Time”, for use on low-
137 volume two-lane roads.
- 138 11. Add the Virginia DOT R12-V3 sign to the MUTCD as an option.
- 139 12. Add guidance that the R12-5 and R12-V3 signs should not be used on roads that have
140 minimal truck traffic, nor should they be used where the empty weight of the vehicle
141 would exceed the displayed weight limit on the sign. Instead, the R12-1 or other
142 similarly simple signs should be used in such circumstances.

143 **RECOMMENDED MUTCD CHANGES**

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145 The following present the proposed changes to the current MUTCD within the context of the
146 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
147 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
148 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
149 underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background
150 comments may be provided with the MUTCD text. These comments are indicated by
151 **[highlighted light blue in brackets]**.

153 **Section 2B.59 Weight Limit Signs (R12-1 through R12-5)**

154 Guidance:

155 or Weight limit signs (see Figure 2B-29 for some commonly used examples) should be used where
156 a structure has a vehicle weight restriction.

157 Option:

158 or 02 The Weight Limit (R12-1) sign carrying the legend WEIGHT LIMIT XX TONS may be
159 used to indicate vehicle weight restrictions. ~~including load.~~

160 Guidance:
161 *03 The units shown on any weight limit sign should be consistent within a state or region with*
162 *respect to pounds or tons.*
163 *04 Vehicle weight restrictions should be depicted using gross vehicle weight. Vehicle weight*
164 *restrictions using weight per axle or empty vehicle weight should be avoided unless local laws*
165 *require the signs to depict weight restrictions in that fashion.*
166 ~~02 Where the restriction applies to axle weight rather than gross load, the legend may be AXLE~~
167 ~~WEIGHT LIMIT XX TONS or AXLE WEIGHT LIMIT XX LBS (R12-2).~~
168 ~~03 To restrict trucks of certain sizes by reference to empty weight in residential areas, the legend~~
169 ~~may be NO TRUCKS OVER XX TONS EMPTY WT or NO TRUCKS OVER XX LBS~~
170 ~~EMPTY WT (R12-3).~~
171 ~~04 In areas where multiple regulations of the type described in Paragraphs 1 through 3 are~~
172 ~~applicable, a sign combining the necessary messages on a single sign may be used, such as~~
173 ~~WEIGHT LIMIT XX TONS PER AXLE, XX TONS GROSS (R12-4).~~

174 Guidance:

175 Option:

176 05 Posting of specific load limits may be accomplished by use of the Weight Limit symbol sign
177 (R12-5). A sign containing the legend WEIGHT LIMIT on the top two lines, and showing up to
178 three different truck symbols and their respective weight limits for which restrictions apply may
179 be used, with the weight limits displayed to the right of each symbol as XX T. Alternately, a
180 symbol followed by weight limits for various axle numbers as shown in R12-5a may be used. A
181 bottom line of legend stating GROSS WT may be included if needed for enforcement purposes.

182 Standard:

183 05a The symbols shown on the R12-5 Weight Limit sign shall apply to all trucks of that
184 configuration (single-unit, single-trailer or multi-trailer) regardless of the shape of the
185 vehicle. Other vehicle shapes (e.g. concrete mixer) shall not be used, except for the standard
186 Emergency Vehicle symbol when a special load rating for such vehicles exists.

187 Option:

188 ~~05b The symbols shown in the R12-5 Weight Limit sign may be modified to show additional~~
189 ~~axles. [Preceding moved below Standard Statements below] A symbol followed by weight limits~~
190 ~~for various axle numbers as shown in R12-5a may be used. [Preceding moved above Option~~
191 ~~paragraph 05, above.]~~ The facility type (i.e. "BRIDGE") may be added or omitted if the posting
192 applies to a different facility type.

193 Guidance:

194 *Only trucks and axle configurations with weight limits should be shown.*

195 Standard:

196 05c If the R12-5 sign depicts only one single-unit vehicle symbol, the weight limit associated
197 with that single-unit vehicle symbol shall apply to all single-unit vehicles, regardless of
198 number of axles.

199 05d The weight limit associated with the single-trailer vehicle symbol shall apply to all
200 single-trailer vehicles, regardless of number of axles or vehicle shape.

201 05e The weight limit associated with the multi-trailer vehicle symbol shall apply to all multi-
202 -trailer vehicles with two or more trailers, regardless of number of axles or vehicle shape.

203 Guidance:

204 *05ef The R12-5 Weight Limit sign should not show more than 3 symbols so as to not decrease*
205 *comprehension of the sign by drivers.*

206 [Option:](#)
 207 [The symbols shown in the R12-5 Weight Limit sign may be modified to show additional axles.](#)

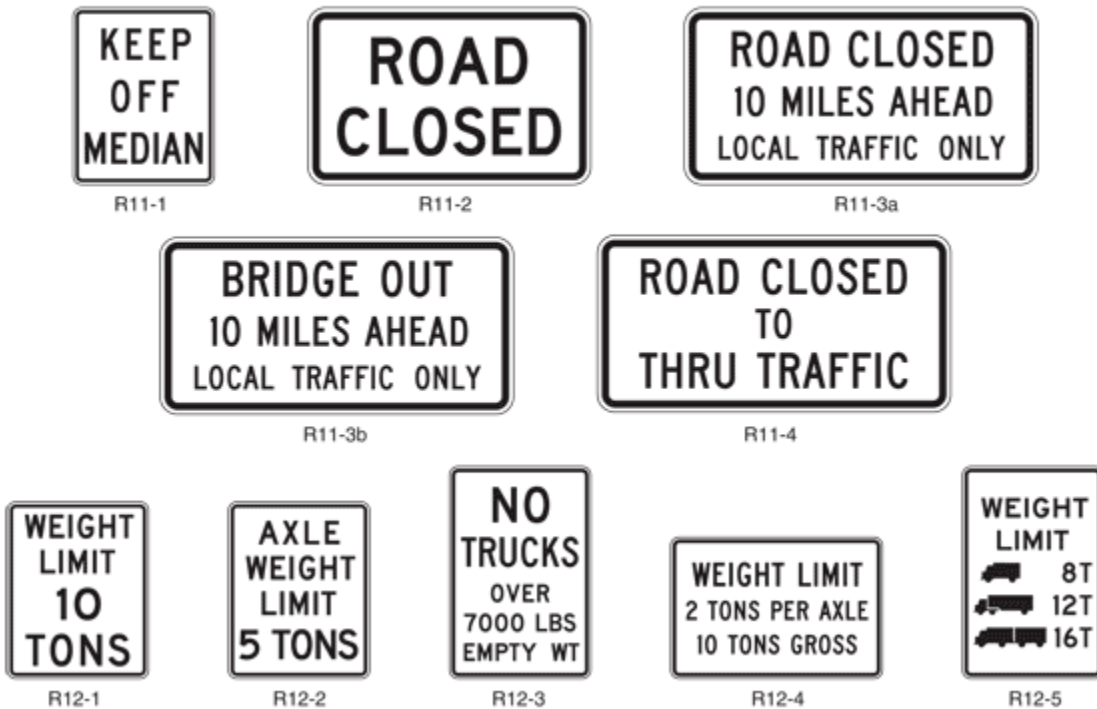
208 **Standard:**

209 06 **If used, the Weight Limit sign (see Figure 2B-29) shall be located in advance of the**
 210 **applicable section of highway or structure.**

211 *Guidance:*

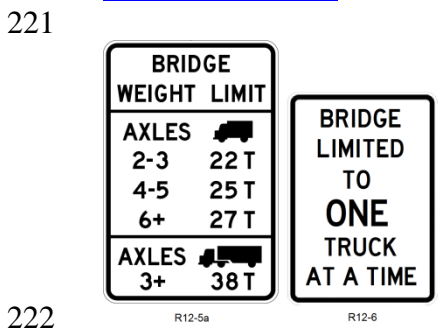
212 07 *If used, the Weight Limit sign with an advisory distance ahead legend should be placed at*
 213 *approach road intersections or other points where prohibited vehicles can detour or turn*
 214 *around.*

Figure 2B-29. Road Closed and Weight Limit Signs



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 216 [Remove signs R12-2, R12-3 and R12-4](#)

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 218 [Option:](#)
 219 07a [The BRIDGE LIMITED TO ONE TRUCK AT A TIME sign \(R12-6\) may be used where](#)
 220 [conditions dictate.](#)



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 224 C:\NCUTCD\June 2017\17A.RW.03 Weight limit signs , Section 2B.03 approved by council 6-30-17