



National Committee on Uniform Traffic Control Devices

13236 North 7th Street, Suite 4-259, Phoenix, Arizona 85022
Phone/Text: 231-4-NCUTCD (231-462-8823)
E-mail: secretary@ncutcd.org

Item No.: 20B-RW-01

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

TECHNICAL COMMITTEE: Regulatory and Warning Signs Technical Committee

ITEM NUMBER: 20B-RW-01

TOPIC: Vertical Clearance of Large Signs

ORIGIN OF REQUEST: Tom Heydel, WisDOT
Task Force: Robert Weber (Task Force Chair), Marc Lipschultz, Scott Kuznicki, Mike Kimlinger, James Sullivan

AFFECTED SECTIONS OF MUTCD: Section 2A.18, 19

DEVELOPMENT HISTORY: Task force approved 5-18-20

- Approved by Technical Committee: 06/17/2020
- Approved by NCUTCD Council: MM/DD/YYYY

This is a proposal for recommended changes to the MUTCD that has been developed by a technical committee of the NCUTCD. The NCUTCD is distributing it to its sponsoring organizations for review and comment. Sponsor comments will be considered in revising the proposal prior to NCUTCD Council consideration. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, or options. If approved by the NCUTCD Council, the recommended changes will be submitted to FHWA for consideration for inclusion in a future MUTCD revision. The MUTCD can be revised only by the FHWA through the federal rulemaking process.

SUMMARY:

Section 2A.18, Mounting Height, Paragraph 11, requires that large signs having an area exceeding 50 square feet have a clearance from the ground to the bottom of the sign of at least 7 feet. There is a concern that in roads with steep cut slopes this results in excessive sign heights with can be unnecessary and impractical. An additional concern that arose during Task Force discussions is that the MUTCD's lateral placement requirements in Section 2A.19 do not consider deflection distance of longitudinal barrier for signs placed behind the barrier.

DISCUSSION

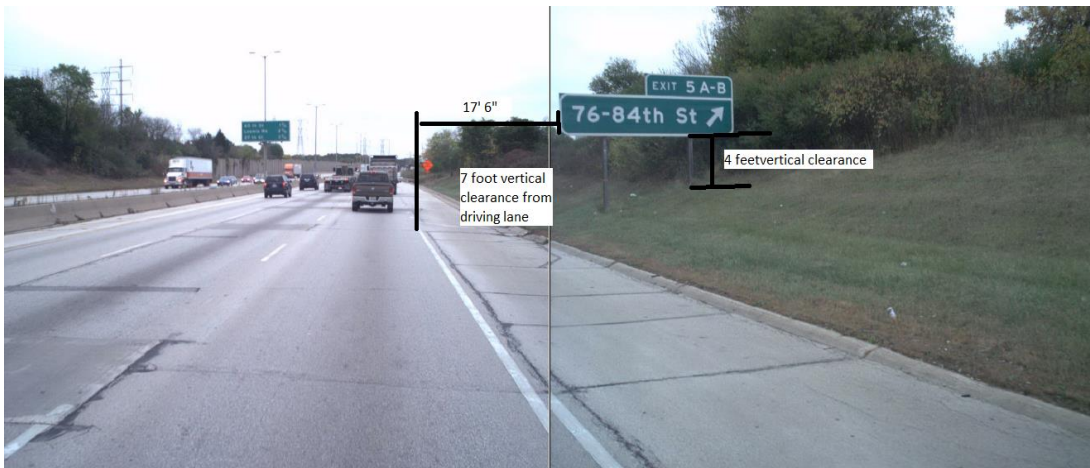
Paragraph 10 of Section 2A.18 requires directional signs on freeways and expressways to have a 7-foot vertical clearance from the near edge of pavement to the bottom of the sign. This

32 mounting height may be reduced to 5 feet if the sign is 30 feet or more from the edge of travel
33 way (see paragraph 09). This is reasonable and prudent.

34
35 Per paragraph 11 of Section 2A.18, for a large sign (defined as exceeding 50 square feet)
36 mounted on multiple posts, it is required that the clearance from the ground to the bottom of the
37 sign be 7-feet, which would include both the left and right corners of the sign. This language is
38 similar to the 2011 AASHTO Roadside Design Guide Section 4.3.2, which states that for “large
39 roadside sign supports” that “*The hinge should be at least 2.1 m [7 ft] above the ground so that*
40 *no portion of the sign or upper section of the support is likely to penetrate the windshield of an*
41 *impacting vehicle.*”

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43 However, there are situations in areas of deep cut (generally urban or mountainous terrain) where
44 the lateral offset may be less than 30 feet due to right of way constraints. This then creates a
45 dilemma in that if the sign were to be placed at 7 foot vertical clearance measured from the
46 bottom of the far right corner (for a typical placement on the right side of the road), the resulting
47 mounting height above road could be 11 feet or more. This would require very long posts, in
48 turn requiring larger foundations to withstand design wind speed. An additional concern is that in
49 certain situations this could lead to the sign being mounted much higher than 7 feet above the
50 road, violating driver expectancy and reducing the reflected headlight retroreflectivity from
51 modern full-cutoff headlights.

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55 The AASHTO Roadside Design Guide and MUTCD requirements are critically important for the
56 portion of the sign within the clear zone, to ensure that signs will properly break away and
57 minimize risk of serious injury to vehicle occupants when struck. However for wider signs, some
58 or all of the sign may be beyond the clear zone as defined by the Roadside Design Guide. Clear
59 zone depends on factors including design speed, ADT, and foreslope/backslope. Objects are also
60 considered to be outside the clear zone if they are properly protected by longitudinal barrier, and
61 outside the deflection distance of the longitudinal barrier.

62

63 Outside the clear zone, the risk of a driver hitting the far right corner of the sign is very low. The
64 only remaining concern is if the bottom right corner is very low to the ground, the sign face
65 could become obscured by tall vegetation.

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67 A related issue that arose during the review of this mounting height issue is the relationship
68 between signs and longitudinal barriers. Longitudinal barriers that have been tested using
69 Manual for Assessing Safety Hardware (MASH) or older NCHRP-350 criteria were not tested
70 with a breakaway sign support within the deflection distance. Ideally the entire portion of the
71 sign should be outside the deflection distance, however this is not always feasible on roads with
72 steep cross slopes, narrow right-of-way, or other site constraints.

73
74 Based on these findings and an informal survey of state practices across the country, the Task
75 Force recommends the followings changes to Sections 2A.18 and 2A.19 of the MUTCD:

76 **RECOMMENDED MUTCD CHANGES**

77
78 The following present the proposed changes to the current MUTCD within the context of the
79 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
80 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
81 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
82 underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background
83 comments may be provided with the MUTCD text. These comments are indicated by [black font
84 in brackets highlighted light blue].

85 **Section 2A.18 Mounting Height**

86 **Standard:**

87 **01 The provisions of this Section shall apply unless specifically stated otherwise for a**
88 **particular sign or object marker elsewhere in this Manual.**

89 Support:

90 **02** The mounting height requirements for object markers are provided in Chapter 2C.

91 **03** In addition to the provisions of this Section, information affecting the minimum mounting
92 height of signs as a function of crash performance can be found in AASHTO's "Roadside Design
93 Guide" (see Section 1A.11).

94 **Standard:**

95 **04 The minimum height, measured vertically from the bottom of the sign to the elevation**
96 **of the near edge of the pavement, of signs installed at the side of the road in rural areas**
97 **shall be 5 feet (see Figure 2A-2).**

98 **05 The minimum height, measured vertically from the bottom of the sign to the top of the**
99 **curb, or in the absence of curb, measured vertically from the bottom of the sign to the**
100 **elevation of the near edge of the traveled way, of signs installed at the side of the road in**
101 **business, commercial, or residential areas where parking or pedestrian movements are**
102 **likely to occur, or where the view of the sign might be obstructed, shall be 7 feet (see Figure**
103 **2A-2).**

104 Option:

105 **06** The height to the bottom of a secondary sign mounted below another sign may be 1 foot less
106 than the height specified in Paragraphs 4 and 5.

107 **Standard:**

108 **07 The minimum height, measured vertically from the bottom of the sign to the sidewalk,**
109 **of signs installed above sidewalks shall be 7 feet.**

112 08 **If the bottom of a secondary sign that is mounted below another sign is mounted lower**
113 **than 7 feet above a pedestrian sidewalk or pathway (see Section 6D.02), the secondary sign**
114 **shall not project more than 4 inches into the pedestrian facility.**

115 Option:

116 09 Signs that are placed 30 feet or more from the edge of the traveled way may be installed
117 with a minimum height of 5 feet, measured vertically from the bottom of the sign to the elevation
118 of the near edge of the pavement.

119 **Standard:**

120 10 **Directional signs on freeways and expressways shall be installed with a minimum**
121 **height of 7 feet, measured vertically from the bottom of the sign to the elevation of the near**
122 **edge of the pavement. All route signs, warning signs, and regulatory signs on freeways and**
123 **expressways shall be installed with a minimum height of 7 feet, measured vertically from**
124 **the bottom of the sign to the elevation of the near edge of the pavement. If a secondary sign**
125 **is mounted below another sign on a freeway or expressway, the major sign shall be**
126 **installed with a minimum height of 8 feet and the secondary sign shall be installed with a**
127 **minimum height of 5 feet, measured vertically from the bottom of the sign to the elevation**
128 **of the near edge of the pavement.**

129 11 **Where large signs having an area exceeding 50 square feet are installed on multiple**
130 **breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7**
131 **feet for the portion of the sign within the clear zone.**

132 Guidance:

133 11a Any portion of a large sign having an area exceeding 50 square feet installed on multiple
134 breakaway posts should be mounted at least 3 feet above the ground, and where the sign has the
135 potential to be obscured by vegetation should be mounted at least 5 feet above the ground.

136 Support:

137 11b In a steep cut section, maintaining a 7-foot mounting height above the ground at the far side
138 of the sign could result in an unreasonable mounting height above the pavement.

139 Option:

140 12 A route sign assembly consisting of a route sign and auxiliary signs (see Section 2D.31) may
141 be treated as a single sign for the purposes of this Section.

142 13 The mounting height may be adjusted when supports are located near the edge of the right-
143 of-way on a steep backslope in order to avoid the sometimes less desirable alternative of placing
144 the sign closer to the roadway.

145 **Standard:**

146 14 **Overhead signs shall provide a vertical clearance of not less than 17 feet to the sign,**
147 **light fixture, or sign bridge over the entire width of the pavement and shoulders except**
148 **where the structure on which the overhead signs are to be mounted or other structures**
149 **along the roadway near the sign structure have a lesser vertical clearance.**

150 Option:

151 15 If the vertical clearance of other structures along the roadway near the sign structure is less
152 than 16 feet, the vertical clearance to an overhead sign structure or support may be as low as 1
153 foot higher than the vertical clearance of the other structures in order to improve the visibility of
154 the overhead signs.

155 16 In special cases it may be necessary to reduce the clearance to overhead signs because of
156 substandard dimensions in tunnels and other major structures such as double-deck bridges.

157

158 Support:
159 17 Figure 2A-2 illustrates some examples of the mounting height requirements contained in this
160 Section.

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162 **Section 2A.19 Lateral Offset**

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164 **Standard:**

165 01 For overhead sign supports, the minimum lateral offset from the edge of the shoulder
166 (or if no shoulder exists, from the edge of the pavement) to the near edge of overhead sign
167 supports (cantilever or sign bridges) shall be 6 feet. Overhead sign supports shall have a
168 barrier or crash cushion to shield them if they are within the clear zone.

169 02 Post-mounted sign and object marker supports shall be crashworthy (breakaway
170 yielding, or shielded with a longitudinal barrier or crash cushion) if within the clear zone.

171 *Guidance:*

172 03 For post-mounted signs, the minimum lateral offset should be 12 feet from the edge of the
173 traveled way. If a shoulder wider than 6 feet exists, the minimum lateral offset for post-mounted
174 signs should be 6 feet from the edge of the shoulder.

175 03a Supports for signs mounted laterally behind a longitudinal barrier should be placed so the
176 near edge of support is located beyond the deflection distance of the longitudinal barrier.

177 Support:

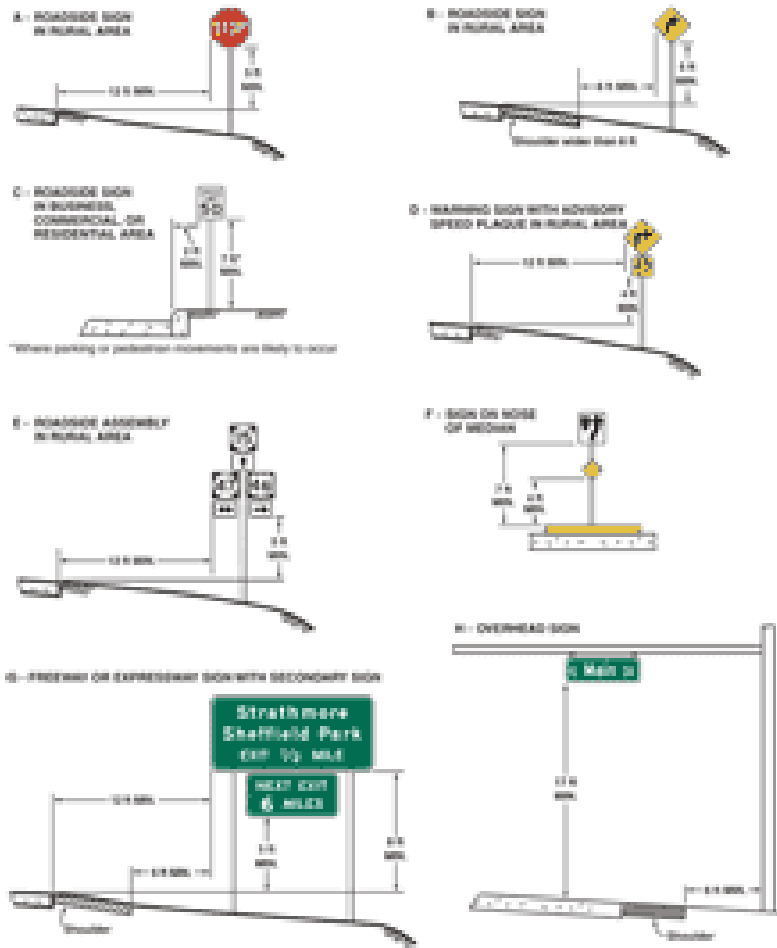
178 04 The minimum lateral offset requirements for object markers are provided in Chapter 2C.

179 05 The minimum lateral offset is intended to keep trucks and cars that use the shoulders from
180 striking the signs or supports.

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183 **Figure 2A-2 Examples of Heights and Lateral Locations of Sign Installations**

Figure 2A-3. Examples of Heights and Lateral Locations of Sign Installations



Note:
 See Section 2A.18 for reduced lateral offset distances that may be used in areas where lateral offsets are limited, and in business, commercial, or residential areas where roadside width is limited or where existing poles are close to the curb.

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