



National Committee on Uniform Traffic Control Devices

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Item No.: 24A-TTC-06

NCUTCD PROPOSAL FOR CHANGES TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

COMMITTEE / TASK FORCE: Temporary Traffic Control TC
ITEM NUMBER: 24A-TTC-06
TOPIC: Temporary and Portable Traffic Control Signals
ORIGIN OF REQUEST: Ken Wood (at the time FHWA MUTCD Team), Dave Krahulec
AFFECTED SECTIONS OF MUTCD: Section 4D.11 Temporary and Portable Traffic Control Signals
Chapter 4O. Traffic Control Signals for One-Lane, Two-Way Facilities
Section 6L.01 Temporary Traffic Control Signals
Notes for Figure 6P-12 (TA-12) Lane Closure on a Two-Lane Road Using Temporary Traffic Control Signals

DEVELOPMENT HISTORY:

Approved by Multi-Committee Task Force: 06/08/2023
Approved by Technical Committee: 06/28/2023
Approved by NCUTCD Council: 06/28/2024

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:

This document details proposed changes regarding portable traffic signals in the MUTCD. These changes, while minimal, will help to create a more comprehensive set of guidelines for the use of portable traffic signals, and more accurately reflect the technologies being used in the industry.

DISCUSSION:

Portable traffic signals as a means of controlling traffic have been in existence for over 60 years. The existing MUTCD guidelines were developed many years ago and at the time appropriately addressed the existing technology. Over the past several decades many technological advancements have been integrated into portable traffic control signals including wireless communication, solar charging systems, LED signal indications, conflict monitoring systems, pre-emption systems, traffic detection modules, pedestrian signals and remote monitoring systems. Advancements in software technology have also been incorporated into the operating systems of portable traffic signals. These advancements have made portable traffic signals a

33 highly reliable and versatile temporary traffic control device used by virtually every state
34 department of transportation in the country.

35
36 Recognizing a need to set minimum standards for the safe operation the portable traffic control
37 signals, the industry began an initiative in 2009 through the National Electrical Manufacturers
38 Association (NEMA) to develop such a standard. In 2017, NEMA published their TS-5 Standard
39 for Portable Traffic Signal Systems (PTSS) which sets minimum standards for the safe
40 operation of portable traffic signals.

41
42 In 2015, Ken Wood of the FHWA identified the need to update portions of the MUTCD related to
43 portable traffic control signals in order to reflect the advancements in this important temporary
44 traffic control tool. Mr. Wood requested that the Temporary Traffic Controls (TTC) Committee of
45 the National Committee on Uniform Traffic Control Devices begin an initiative to review and
46 develop a recommended update to portions of the MUTCD related to portable traffic control
47 signals. The Temporary Traffic Controls Committee formed a Task Force of individuals with
48 expertise in the subject matter to review and develop a recommended update the MUTCD as
49 requested by Mr. Wood.

50
51 As portable traffic control signals are included in both Part 4 and Part 6 of the MUTCD, the TTC
52 Task Force worked with a Signals Technical Committee (STC) Task Force to ensure all portable
53 traffic control signal related standards, guidance, options, and support were consistent
54 throughout the MUTCD.

55
56 The changes to the MUTCD recommended by the Task Forces have been accepted by both
57 Temporary Traffic Controls and Signals Technical Committees and are contained herein.

58

59 **PROPOSED MUTCD CHANGES:**

60 The following present the proposed changes to the current MUTCD within the context of the
61 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
62 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
63 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
64 underline for additions and ~~green double strikethrough~~ for deletions. In some cases,
65 background comments may be provided with the MUTCD text. These comments are indicated
66 by bracketed white text in shaded green.

67

68 **PART 4. HIGHWAY TRAFFIC SIGNALS**

69

70 **CHAPTER 4D. DESIGN FEATURES OF TRAFFIC CONTROL SIGNALS**

71

72 **Section 4D.11 Temporary and Portable Traffic Control Signals**

73

Support:

74 01 A temporary traffic control signal is generally installed using methods that minimize the costs of
75 installation, relocation, and/or removal. Typical temporary traffic control signals are for specific
76 purposes, such as for one-lane, two-way facilities in temporary traffic control zones (see Chapter 4O), for
77 a haul-road intersection, or for access to a site that will have a permanent access point developed at
78 another location in the near future. ~~Portable traffic control signals are temporary traffic control signals.~~

79 02 Because a portable traffic control signals is considered to be a type of temporary traffic control
80 signal, the provisions for temporary traffic control signals are also applicable to portable traffic control
81 signals.

82 02a Portable traffic control signal applications include temporary intersection control, temporary ramp
83 metering, temporary driveway control, in one lane two-way control TTC zones, and as a means to
84 supplement or temporarily replace a malfunctioning or damaged traffic control signal.

85 **Standard:**

86 03 **Advance signing shall be used when employing a temporary traffic control signal.**

87 04 **A temporary traffic control signal shall:**

88 **A. Meet the physical display and operational requirements of a conventional traffic control**
89 **signal;**

90 **B. Be removed when no longer needed; and**

91 **C. Except as provided in Paragraphs 5, 9a and 9b of this section, be placed in the flashing**
92 **mode during periods when it is not desirable to operate the signal in a steady mode, or the**
93 **signal heads shall be covered, turned or taken down to indicate that the signal is not in**
94 **operation.**

95 **Option:**

96 05 If the temporary traffic control signal is capable of being operated in a semi-actuated mode, such that
97 green signal indications are continually shown to major-street traffic except when responding to a minor-
98 street approach vehicle call, it may be operated in a semi-actuated mode instead of being placed in a
99 flashing mode.

100 **Guidance:**

101 06 ~~A temporary traffic control signal should be used only if engineering judgment indicates that~~
102 ~~installing the signal will improve the overall safety and/or operation of the location.~~

103 07 ~~The use of temporary traffic control signals by a work crew on a regular basis in their work area~~
104 ~~should be subject to the approval of the jurisdiction having authority over the roadway.~~

105 08 A temporary traffic control signal should not operate longer than 30 days unless associated with a
106 longer-term temporary traffic control zone project.

107 09 Section 6L.01 contains information about the use of temporary traffic control signals in temporary
108 traffic control zones.

109 **Standard**

110 09a **Except as provided in Paragraph 9b, temporary traffic control signals used for a one-lane, two-**
111 **way facility, shall not be placed in the flashing mode.**

112 **Option:**

113 09b **A temporary portable traffic control signal used within TTC zones on a one-lane, two-way facility**
114 **may be placed in flashing mode when:**

115 **A. traffic is actively controlled by a law enforcement officer, or a flagger**

116 **B. during set-up**

117 **C. TTC zone stage changes,**

118 **D. shutdown, or**

119 **E. when conflicting indications or other malfunction is detected by conflict monitor or Malfunction**
120 **Management System and opposing traffic is visible from both ends of the TTC zone**

121 **Standard:**

122 09c **When used for traffic control within a TTC zone, a temporary traffic control signal shall be**
123 **implemented, installed and operated, or be implemented as approved, by authorized officials**
124 **having jurisdiction over the roadway.**

125 CHAPTER 40. TRAFFIC CONTROL SIGNALS FOR ONE-LANE, TWO-WAY FACILITIES

126

127 **Section 40.01 Application of Traffic Control Signals for One-Lane, Two-Way Facilities**

128 Support:

129 01 A traffic control signal at a narrow bridge, tunnel, [TTC zone \(see Part 6\)](#) or roadway section that is
130 not of sufficient width for two opposing vehicles to pass is a special signal that alternates which direction
131 of [approaching travel](#) ~~vehicles~~ is permitted to proceed.

132 02 Temporary traffic control signals [using fixed or portable signal units](#) (see Sections 4D.11 and ~~6L.01~~
133 [Part 6](#)) are the most frequent application of one-lane, two-way facilities.

134 *Guidance:*

135 03 *Sight distance across or through the one-lane, two-way facility should be considered as well as the*
136 *approach speed and sight distance approaching the facility when determining whether traffic control*
137 *signals should be installed.*

138 Option:

139 04 At a narrow bridge, tunnel, [TTC zone, \(see Part 6\)](#) or roadway section where a traffic control signal
140 is not justified under the conditions of Chapter 4C, a traffic control signal may be used if gaps in
141 opposing traffic do not permit the flow of traffic through the one-lane section of roadway.

142

143 **Section 40.02 Design of Traffic Control Signals for One-Lane, Two-Way Facilities**

144 **Standard:**

145 01 The provisions of Chapters 4D through 4G shall apply to traffic control signals for one-lane,
146 two-way facilities, except that:

147 A. Durations of red clearance intervals shall be adequate to clear the one-lane section of
148 conflicting vehicles.

149 B. Adequate means, such as interconnection, [conflict monitor or Malfunction Management](#)
150 [Systems \(see Part 6\)](#), shall be provided to prevent conflicting signal indications, ~~such as~~
151 ~~green and green at opposite ends of the section~~ [and conflicting internal traffic movements](#).

152

153 **Section 40.03 Operation of Traffic Control Signals for One-Lane, Two-Way Facilities**

154 *Guidance:*

155 01 *Traffic control signals at one-lane, two-way facilities should operate in a manner consistent with*
156 *traffic requirements.*

157 02 *Adequate time should be provided to allow traffic to clear the narrow facility before opposing traffic*
158 *is allowed to move. Engineering judgment should be used to determine the proper timing for the*
159 *signal.*

160 **Standard:**

161 03 **When in the flashing mode, the signal indications shall flash red.**

162 PART 6. TEMPORARY TRAFFIC CONTROL

163 CHAPTER 6L. OTHER TTC ZONE TRAFFIC CONTROL DEVICES

164
165
166 Section 6L.01 Temporary Traffic Control Signals

167
168 **Standard:**

169 01 Temporary traffic control signals (see Section 4D.10) used to control road user movements
170 through TTC zones and in other TTC situations shall comply with the applicable provisions of
171 Part 4.

172 Support:

173 02 Temporary traffic control signals are typically used in TTC zones such as:

174 A. Temporary haul road crossings;

175 B. Temporary one-way operations along a one-lane, two-way highway with or without multiple
176 access points;

177 C. Temporary one-way operations on bridges, reversible lanes, and intersections;

178 D. Temporary ramp metering;

179 E. Residential and commercial driveway control within a one-lane, two-way control TTC zone;

180 F. A temporary access point; and

181 G. A means to supplement or temporarily replace a malfunctioning or damaged traffic control
182 signal.

183 **Option:**

184 02a A temporary traffic control signal may be used in place of flaggers when determined by engineering
185 judgment.

186 **Standard:**

187 03 A temporary traffic control signal that is used to control traffic through a one-lane, two-way
188 section of roadway shall comply with the provisions of Section 4O.02.

189 03a A temporary traffic control signal operated manually shall be done through the use of a
190 handheld module. At no time shall the operator have the ability to add or change the signal
191 program or override the programmed minimum red clearance interval, yellow change interval, and
192 minimum green times.

193 03b When portable traffic control signals are used, malfunction management system providing
194 performance standards typical of traditional traffic control signal operations shall be used to detect
195 and respond to improper and conflicting signals and improper operating voltages.

196 *Guidance*

197 04 ~~When temporary traffic control signals are used, conflict monitors typical of traditional traffic~~
198 ~~control signal operations should be used.~~

199 Support:

200 05 Where pedestrians are detoured to a temporary traffic control signal, an accessible pedestrian signal
201 (see Chapter 4K) provides information in non-visual formats (such as audible tones and/or speech
202 messages, and vibrating surfaces) so that a pedestrian with vision disabilities can know when to cross the
203 street along the alternate route.

204 Option:

205 06 Temporary traffic control signals may be portable or temporarily mounted on fixed supports.

206 *Guidance:*

207 07 ~~Temporary traffic control signals should only be used in situations where temporary traffic control~~
208 ~~signals are preferable to other means of traffic control, such as changing the work staging or work zone~~
209 ~~size to eliminate one-way vehicular traffic movements, using flaggers to control one-way or crossing~~

210 ~~movements, using STOP or YIELD signs, and using warning devices alone.~~ The use of temporary traffic
211 control signals should be based on engineering judgment.

212 Support:

213 08 Factors related to the design and application of temporary traffic control signals include the
214 following:

- 215 A. Safety and road user needs;
- 216 B. Work staging and operations;
- 217 ~~C. The feasibility of using other TTC strategies (for example, flaggers, providing space for two~~
218 ~~lanes, or detouring road users, including bicyclists and pedestrians);~~
- 219 ~~D.C.~~ Sight distance restrictions;
- 220 ~~E.D.~~ Human factors considerations ~~(for example, lack of driver familiarity with temporary traffic~~
221 ~~control signals);~~
- 222 ~~F.E.~~ Road-user volumes including roadway and intersection capacity;
- 223 ~~G.F.~~ Affected side streets and driveways;
- 224 ~~H.G.~~ Vehicle speeds;
- 225 ~~I.H.~~ The placement of other TTC devices;
- 226 ~~J.I.~~ Parking;
- 227 ~~K.J.~~ Turning restrictions;
- 228 ~~L.K.~~ Pedestrians;
- 229 ~~M.L.~~ The nature of adjacent land uses (such as residential or commercial);
- 230 ~~N.M.~~ Legal authority;
- 231 ~~O.N.~~ Signal phasing and timing requirements;
- 232 ~~P.O.~~ Full-time or part-time operation;
- 233 ~~Q.P.~~ Actuated, fixed-time, or manual operation;
- 234 ~~R.Q.~~ Power failures or other emergencies;
- 235 ~~S.R.~~ Inspection and maintenance needs;
- 236 ~~T.S.~~ Need for detailed placement, timing, and operation records; ~~and~~
- 237 ~~U.T.~~ Operation by contractors or by others;
- 238 U. Height and overhead clearance restrictions; and
- 239 V. Adequate space to locate temporary traffic signal hardware.

240 09 ~~Although temporary traffic control signals can be mounted on trailers or lightweight portable~~
241 ~~supports, fixed supports offer superior resistance to displacement or damage by severe weather, vehicle~~
242 ~~impact, and vandalism.~~

243 *Guidance*

244 10 *Other TTC devices should be used to supplement temporary traffic control signals, including*
245 *warning and regulatory signs, pavement markings, and channelizing devices.*

246 11 *Temporary traffic control signals not in use should be covered or removed.*

247 12 *If a temporary traffic control signal is located within 1/2 mile of an adjacent traffic control signal,*
248 *consideration should be given to interconnected operation.*

249 Option:

250 12a When temporary or portable traffic control signals are used for one-lane two-way TTC zone
251 facilities, signs, including portable changeable message signs (see Section 6L.05), may be considered to
252 advise road users of:

253 A. Wait Time

254 B. TTC zone conditions

255 Support:

256 12b Portable changeable message signs used in conjunction with TTC zone portable or temporary traffic
257 control signals are typically used in long TTC zones and/or zones with limited sight distance.

258 **Standard:**

259 13 **Temporary traffic control signals shall not be located within 200 feet of a grade crossing unless**
260 **the temporary traffic control signal is provided with preemption in accordance with Sections 4F.18,**

261 4F.19, and 8D.09, ~~or unless a uniformed officer or flagger is provided at the crossing to prevent~~
262 ~~vehicles from stopping within the crossing.~~

263 CHAPTER 6P. TYPICAL APPLICATIONS

264
265 NOTES FOR FIGURE 6P-12—TYPICAL APPLICATION 12
266 LANE CLOSURE ON A TWO-LANE ROAD USING TEMPORARY TRAFFIC CONTROL
267 SIGNALS
268

269 Standards

- 270 1. Temporary traffic control signals shall be installed and operated in accordance with the
- 271 provisions of Part 4. Temporary traffic control signals shall meet the physical display and
- 272 operational requirements of conventional traffic control signals
- 273 2. Temporary traffic control signal installation and timing shall be established by authorized
- 274 officials. Durations of red clearance intervals shall be adequate to clear the one-lane
- 275 section of conflicting vehicles, [as referenced in Part 4.](#)
- 276 3. When the temporary traffic control signal is changed to the flashing mode, either
- 277 manually or automatically, red signal indications shall be flashed to both approaches, [as](#)
- 278 [referenced in Part 4.](#)
- 279 4. Stop lines shall be installed with temporary traffic control signals for intermediate and
- 280 long-term closures. Existing conflicting pavement markings and raised pavement marker
- 281 reflectors between the activity area and the stop line shall be removed. After the
- 282 temporary traffic control signal is removed, the stop lines and other temporary pavement
- 283 markings shall be removed and the permanent pavement markings restored.
- 284 5. Safeguards shall be incorporated to avoid the possibility of conflicting signal indications
- 285 at each end of the TTC zone, [as referenced in Part 4.](#)

286 Guidance:

- 287 6. *Where no-passing lines are not already in place, they should be added.*
- 288 7. *Adjustments in the location of the advance warning signs should be made as needed to*
- 289 *accommodate the horizontal or vertical alignment of the roadway, recognizing that the*
- 290 *distances shown for sign spacings are minimums. Adjustments in the height of the signal heads*
- 291 *should be made as needed to conform to the vertical alignment.*

292 Option:

- 293 8. Positive protection devices may be used per Section 6M.02.
- 294 9. Flashing warning lights shown on the ROAD WORK AHEAD and the ONE LANE ROAD
- 295 AHEAD signs may be used.
- 296 10. Removable pavement markings may be used.
- 297 [10a. Temporary or portable traffic control signal faces may be located over the roadway and/or be](#)
- 298 [positioned outside the traveled way on both sides of the roadway.](#)

299 Support:

- 300 11. Temporary traffic control signals are preferable to flaggers for long-term projects and other
- 301 activities that would require flagging at night.
- 302 12. The maximum length of activity area for one-way operation under temporary traffic control
- 303 signal control is determined by the capacity required to handle the peak demand.