



National Committee on Uniform Traffic Control Devices

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National Committee on Uniform Traffic Control Devices (NCUTCD) Recommended Changes to Proposed Text for 11th Edition of the MUTCD Docket Number: FHWA-2020-0001

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Federal Register Item Number: 403-404 (see listing below)

NPA MUTCD Section Number: Chapter 4E

Legend: Base text shown in proposal is the NPA “clean” proposed text.

- [NCUTCD recommendation for text to be added in final rule.](#)
- ~~NCUTCD recommendation for text to be deleted in final rule.~~
- [NCUTCD recommendation for text to be moved/relocated in final rule.](#)
- NPA text that was not previously approved by NCUTCD but is now approved.
- Explanatory note: [\[Note that explains purpose of recommended change.\]](#)

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The following pages present NCUTCD recommendations for changes to the MUTCD NPA proposed text, tables, and figures for Chapter 4E. Below is a short summary of the NCUTCD position for each section of this chapter. A more detailed summary is provided at the beginning of each section.

- NPA #403, Section 4E.01: Changes recommended based on Council action in spring 2021.
- NPA #404, Section 4E.02: NCUTCD agrees with NPA content.
- NPA #NA, Section 4E.03: Changes recommended based on Council action in spring 2021.
- NPA #NA, Section 4E.04: NCUTCD agrees with NPA content.
- NPA #NA, Section 4E.05: Changes recommended based on Council action in spring 2021.

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Section 4E.01 Comments: NCUTCD recommends revising 4E.01 as follows:

- add “bicycle” in reference to flashing signal indications
- use “distinctive indications for emergency vehicle preemption” in place of “flashing preemption confirmation lights” for flashing preemption confirmation lights in order to be consistent with the term in Section 4F.19.

NCUTCD agrees with allowing a dual-arrow section capable of displaying a GREEN ARROW and FYA for protected/permissive operation and variable mode operation as currently allowed in the 2009 MUTCD.

Section 4E.01 Signal Indications – Design, Illumination, Color, and Shape Standard:

The illuminated part of each signal indication shall be circular or arrow, except those used for bicycle symbol signal indications, pedestrian signal heads, and lane-use control signals.

Letters or numbers (including those associated with countdown displays) shall not be displayed as part of a vehicular signal indication.

42 Strobes shall not be used within or adjacent to any signal indication.

43 Except for the flashing vehicular, bicycle and pedestrian signal indications and the
44 distinctive indications for emergency vehicle preemption that are expressly allowed by the
45 provisions of this Part, flashing displays shall not be used within or adjacent to any signal
46 indications. (change the text to be consistent with the wording of “distinctive indications” as
47 referenced in Section 4F.19)

48 Each circular signal indication shall emit a single color: red, yellow, or green.

49 Except as provided in Paragraph 7, each arrow signal indication shall emit a single
50 color: red, yellow, or green.

51 A dual-arrow signal section that is capable of alternating between the display of a
52 GREEN ARROW signal indication and the display of a YELLOW ARROW signal
53 indication, both pointing in the same direction, shall be permitted provided that both colors
54 are never displayed simultaneously.

55 The arrow, which shall show only one direction, shall be the only illuminated part of an
56 arrow signal indication.

57 Arrows shall be pointed:

- 58 A. Vertically upward to indicate a straight-through movement, or
- 59 B. Horizontally in the direction of the turn to indicate a turn at approximately or more
60 than a right angle, or
- 61 C. Upward with a slope at an angle approximately equal to that of the turn if the angle
62 of the turn is substantially less than a right angle, or
- 63 D. In a manner that directs the driver through the turn if a U-turn arrow is used (see
64 Figure 4E-1).

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67 **Figure 4E-1 Comments: NCUTCD agrees with Figure 4E-1 as presented in the NPA.**

68 **Figure 4E-1. Example of U-Turn Signal Face**



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72 Except as provided in Paragraph 11, the requirements of Chapters 1 and 2 of the
73 publication entitled “Equipment and Materials Standards of the Institute of
74 Transportation Engineers” (see Section 1A.05) that pertain to the aspects of the signal head
75 design that affect the display of the signal indications shall be met for signal optical units
76 that use incandescent lamps within optical assemblies that include lenses. Except as
77 provided in Paragraph 11, the requirements of the publications entitled “Vehicle Traffic
78 Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement” and
79 “Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Vehicle Arrow Traffic
80 Signal Supplement” (see Section 1A.05) that pertain to the aspects of the signal head design

81 **that affect the display of the signal indications shall be met for light emitting diode (LED)**
82 **traffic signal modules.**

83 *Guidance:*

84 *The intensity and distribution of light from each illuminated signal lens or LED signal*
85 *module should comply with the publications specified in Paragraph 10, as appropriate.*

86 *Support:*

87 References to signal lenses in this section are not intended to limit signal optical units to
88 incandescent lamps within optical assemblies that include lenses. Research has resulted in signal
89 optical units that are not lenses, such as, but not limited to, light emitting diode (LED) traffic
90 signal modules. Some units are practical for all signal indications, and some are practical for
91 specific types such as visibility-limited signal indications.

92 *Guidance:*

93 *If a signal indication is so bright that it causes excessive glare during nighttime conditions,*
94 *some form of automatic dimming should be used to reduce the brilliance of the signal indication.*

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97 **Section 4E.02 Comments: NCUTCD agrees with 4E.02 as presented in the NPA.**

98 **Section 4E.02 Size of Vehicular Signal Indications**

99 **Standard:**

100 **There shall be two nominal diameter sizes for vehicular signal indications: 8 inches and**
101 **12 inches.**

102 **Twelve-inch signal indications shall be used for all arrow signal indications.**

103 **Except as provided in the next paragraph, 12-inch signal indications shall be used for**
104 **all circular signal indications in all new signal faces.**

105 *Option:*

106 Eight-inch circular signal indications may be used in new signal faces only for:

- 107 A. The green or flashing yellow signal indications in an emergency-vehicle traffic control
108 signal (see Section 4N.02);
- 109 B. The circular indications in signal faces controlling the approach to the downstream
110 location where two adjacent signalized locations are close to each other and it is not
111 practical because of factors such as high approach speeds, horizontal or vertical curves,
112 or other geometric factors to install visibility-limited signal faces for the downstream
113 approach;
- 114 C. The circular indications in a signal face that is located less than 120 feet from the stop
115 line on a roadway with a posted or statutory speed limit or operating speed of 30 mph or
116 less;
- 117 D. The circular indications in a supplemental near-side signal face;
- 118 E. The circular indications in a supplemental signal face installed for the sole purpose of
119 controlling pedestrian movements (see Section 4D.02) rather than vehicular movements;
- 120 F. The circular indications in a signal face installed for the sole purpose of controlling a
121 bikeway or a bicycle movement; and
- 122 G. The circular indications in a flashing beacon (see Chapter 4S).

123 Existing 8-inch circular signal indications that are not included in Items A through G in the
124 previous paragraph may be retained for the remainder of their useful service life.

125 Different sizes of signal indications may be used in the same signal face or signal head,
126 provided that the signal face or signal head complies with the requirements contained in
127 Paragraphs 2 through 4.
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130 **Section 4E.03 Comments:** NCUTCD generally agrees with 4E.03 as presented in the NPA, but
131 recommends the addition of Option language to allow vertically adjacent sections in a vertical
132 signal face as shown in the third illustration of Drawing A in Figure 4E-2.

133 **Section 4E.03 Positions of Signal Indications Within a Signal Face – General**

134 Support:

135 Standardization of the number and arrangements of signal sections in vehicular traffic control
136 signal faces enables road users who are color vision deficient to identify the illuminated color by
137 its position relative to other signal sections.

138 **Standard:**

139 **Unless otherwise provided in this Manual for a particular application, each signal face**
140 **at a signalized location shall have three, four, or five signal sections. Unless otherwise**
141 **provided in this Manual for a particular application, if a vertical signal face includes a**
142 **cluster (see Section 4E.04), the signal face shall have at least three vertical positions.**

143 **A single-section signal face shall be permitted at a traffic control signal if it consists of a**
144 **continuously-displayed GREEN ARROW signal indication that is being used to indicate a**
145 **continuous movement.**

146 **The signal sections in a signal face shall be arranged in a vertical or horizontal straight**
147 **line, except as otherwise provided in Section 4E.04.**

148 **The arrangement of adjacent signal sections in a signal face shall follow the relative**
149 **positions listed in Sections 4E.04 or 4E.05, as applicable.**

150 **If a signal section that displays a CIRCULAR YELLOW signal indication is used, it**
151 **shall be located between the signal section that displays the red signal indication and all**
152 **other signal sections.**

153 **If a U-turn arrow signal section is used in a signal face for a U-turn to the left, its**
154 **position in the signal face shall be the same as stated in Sections 4E.04 and 4E.05 for a left-**
155 **turn arrow signal section of the same color. If a U-turn arrow signal section is used in a**
156 **signal face for a U-turn to the right, its position in the signal face shall be the same as stated**
157 **in Sections 4E.04 and 4E.05 for a right-turn arrow signal section of the same color.**

158 **A U-turn arrow signal indication pointing to the left shall not be used in a signal face**
159 **that also contains a left-turn arrow signal indication. A U-turn arrow signal indication**
160 **pointing to the right shall not be used in a signal face that also contains a right-turn arrow**
161 **signal indication.**

162 Option:

163 Within a signal face, two identical CIRCULAR RED or RED ARROW signal indications
164 may be displayed immediately horizontally adjacent or immediately vertically adjacent to each
165 other in a vertical signal face (see Drawing A in Figure 4E-2) or immediately horizontally
166 adjacent to each other in a horizontal signal face (see Drawing B in Figure 4E-2) for emphasis.

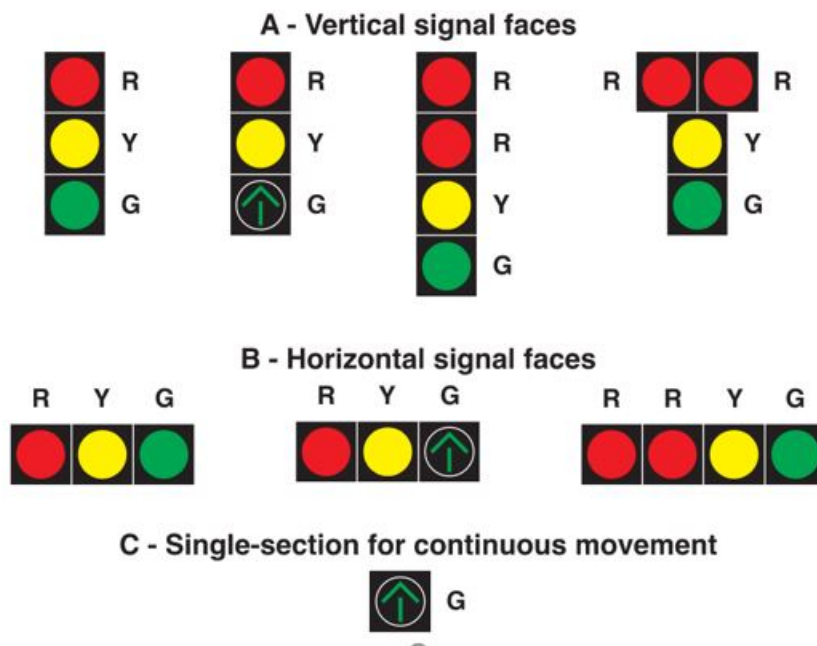
167 **(allow vertically adjacent sections in a vertical signal)**

168 Horizontally-arranged and vertically-arranged signal faces may be used on the same
169 approach provided they are separated to meet the lateral separation spacing required in Section
170 4D.06.

171 Support:

172 Figure 4E-2 illustrates some of the typical arrangements of signal sections in signal faces that
173 do not control separate turning movements. Figures 4F-1 through 4F-7 illustrate the typical
174 arrangements of signal sections in left-turn signal faces. Figures 4F-8 through 4F-14 illustrate
175 the typical arrangements of signal sections in right-turn signal faces.
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179 **Figure 4E-2 Comments: NCUTCD agrees with Figure 4E-2 as presented in the NPA.**
180 **Figure 4E-2 Typical Arrangements of Signal Sections in Signal Faces That Do Not Control**
181 **Turning Movements**
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186 **Section 4E.04 Comments: NCUTCD agrees with 4E.04 as presented in the NPA, with minor**
187 **editorial changes.**

188 **Section 4E.04 Positions of Signal Indications Within a Vertical Signal Face**

189 **Standard:**

190 **In each vertically-arranged signal face, all signal sections that display red signal**
191 **indications shall be located above all signal sections that display yellow and green signal**
192 **indications.**

193 **In vertically-arranged signal faces, each signal section that displays a YELLOW**
194 **ARROW signal indication shall be located above the signal section that displays the**
195 **GREEN ARROW signal indication to which it applies.**

196 The relative positions of signal sections in a vertically-arranged signal face, from top to
197 bottom, shall be as follows:

- 198 CIRCULAR RED
- 199 Steady and/or flashing left-turn RED ARROW
- 200 Steady and/or flashing right-turn RED ARROW
- 201 CIRCULAR YELLOW
- 202 CIRCULAR GREEN
- 203 Straight-through GREEN ARROW
- 204 Steady left-turn YELLOW ARROW
- 205 Flashing left-turn YELLOW ARROW
- 206 Left-turn GREEN ARROW
- 207 Steady right-turn YELLOW ARROW
- 208 Flashing right-turn YELLOW ARROW
- 209 Right-turn GREEN ARROW

210 If a dual-arrow signal section (see Section 4E.01) is used in a vertically-arranged signal
211 face, the dual-arrow signal section shall occupy the same position relative to the other
212 sections as the signal section that displays the GREEN ARROW signal indication in a
213 vertically-arranged signal face would occupy.

214 Option:

215 In a vertically-arranged signal face, signal sections that display signal indications of the same
216 color may be arranged horizontally adjacent to each other at right angles to the basic straight line
217 arrangement to form a clustered signal face (see Figures 4E-2, 4F-4, 4F-6, 4F-11, 4F-13, and 4F-
218 15).

219 **Standard:**

220 Such clusters shall be limited to the following:

- 221 A. Two identical signal sections,
- 222 B. Two or three different signal sections that display signal indications of the same
223 color, or
- 224 C. For only the specific case described in Section 4F.16 (see Drawing B of Figure 4F-
225 15), two signal sections, one of which displays a GREEN ARROW signal indication
226 and the other of which displays a flashing YELLOW ARROW signal indication.

227 Except as otherwise provided in Sections 4F.04, 4F.08, 4F.11, and 4F.15 for a three-
228 section separate turn signal face with a flashing YELLOW ARROW signal indication, the
229 signal section that displays a flashing yellow signal indication during steady mode

230 operation:

- 231 A. Shall not be placed in the same vertical position as the signal section that displays a
232 steady yellow signal indication, and
- 233 B. Shall be placed below the signal section that displays a steady yellow signal
234 indication.

235 Support:

236 Sections 4J.02 and 4N.02 contain exceptions to the provisions of this Section that are
237 applicable to hybrid beacons.

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240 **Section 4E.05 Comments:** NCUTCD recommends revising 4E.05 to restore the 2009 MUTCD
241 language on position of flashing yellow signal indications, with appropriate exceptions cited.

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Section 4E.05 Positions of Signal Indications Within a Horizontal Signal Face

Standard:

In each horizontally-arranged signal face, all signal sections that display red signal indications shall be located to the left of all signal sections that display yellow and green signal indications.

In horizontally-arranged signal faces, each signal section that displays a YELLOW ARROW signal indication shall be located to the left of the signal section that displays the GREEN ARROW signal indication to which it applies.

The relative positions of signal sections in a horizontally-arranged signal face, from left to right, shall be as follows:

- CIRCULAR RED**
- Steady and/or flashing left-turn RED ARROW**
- Steady and/or flashing right-turn RED ARROW**
- CIRCULAR YELLOW**
- Steady left-turn YELLOW ARROW**
- Flashing left-turn YELLOW ARROW**
- Left-turn GREEN ARROW**
- CIRCULAR GREEN**
- Straight-through GREEN ARROW**
- Steady right-turn YELLOW ARROW**
- Flashing right-turn YELLOW ARROW**
- Right-turn GREEN ARROW**

If a dual-arrow signal section (see Section 4E.01) is used in a horizontally-arranged signal face, the signal section that displays the dual left-turn arrow signal indication shall be located immediately to the right of the signal section that displays the CIRCULAR YELLOW signal indication, the signal section that displays the straight-through GREEN ARROW signal indication shall be located immediately to the right of the signal section that displays the CIRCULAR GREEN signal indication, and the signal section that displays the dual right-turn arrow signal indication shall be located to the right of all other signal sections.

Except as otherwise provided in Sections 4F.04, 4F.08, 4F.11, and 4F.15 for a three-section separate turn signal face with a flashing YELLOW ARROW signal indication, the signal section that displays a flashing yellow signal indication during steady mode operation:

- A. Shall not be placed in the same horizontal position as the signal section that displays a steady yellow signal indication, and**
- B. Shall be placed to the right of the signal section that displays a steady yellow signal indication.**

(restore 2009 MUTCD language with new exceptions)