



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: 428-431 (see listing below)

NPA MUTCD Section Number: Chapter 4K

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 4K. 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 #428, Section 4K.01: Changes recommended based on Council action in spring 2021.
- NPA #428, Section 4K.02: Changes recommended based on Council action in spring 2021.
- NPA #429, Section 4K.03: Changes recommended based on Council action in spring 2021.
- NPA #430, Section 4K.04: Changes recommended based on Council action in spring 2021.
- NPA #431, Section 4K.05: Changes recommended based on Council action in spring 2021.

Section 4K.01 Comments: NCUTCD recommends revising the final Standard statement to accommodate passive pedestrian detection.

Section 4K.01 General

Support:

Accessible pedestrian signals and detectors provide information in non-visual formats (such as audible tones, speech messages, and/or vibrating surfaces).

The primary technique that pedestrians who have visual disabilities use to cross streets at signalized locations is to initiate their crossing when they hear the traffic in front of them stop and the traffic alongside them begin to move, which often corresponds to the onset of the green interval. The existing environment is often not sufficient to provide the information that pedestrians who have visual disabilities need to cross a roadway at a signalized location.

Guidance:

If a particular signalized location presents difficulties for pedestrians who have vision disabilities to cross the roadway, an engineering study should be conducted that considers the

40 *needs of pedestrians in general, as well as the information needs of pedestrians with vision*
41 *disabilities. The engineering study should consider the following factors:*

- 42 *A. Potential demand for accessible pedestrian signals;*
- 43 *B. A request for accessible pedestrian signals;*
- 44 *C. Traffic volumes during times when pedestrians might be present, including periods of low*
45 *traffic volumes or high turn-on-red volumes;*
- 46 *D. The complexity of traffic signal phasing (such as split phases, protected turn phases,*
47 *leading pedestrian intervals, and exclusive pedestrian phases); and*
- 48 *E. The complexity of intersection geometry.*

49 **Support:**

50 The factors that make crossing at a signalized location difficult for pedestrians who have
51 visual disabilities include: increasingly quiet cars, right turn on red (which masks the beginning
52 of the through phase), continuous right-turn movements, complex signal operations, traffic
53 circles, and wide streets. Furthermore, low traffic volumes might make it difficult for
54 pedestrians who have visual disabilities to discern signal phase changes.

55 Local organizations, providing support services to pedestrians who have visual and/or
56 hearing disabilities, can often act as important advisors to the traffic engineer when consideration
57 is being given to the installation of devices to assist such pedestrians. Additionally, orientation
58 and mobility specialists or similar staff also might be able to provide a wide range of advice.
59 The U.S. Access Board (www.access-board.gov) provides technical assistance for making
60 pedestrian signal information available to persons with visual disabilities (see Page i for the
61 address for the U.S. Access Board).

62 **Standard:**

63 **When used, accessible pedestrian signals shall be used in combination with pedestrian**
64 **signal timing.**

65 **The information provided by an accessible pedestrian signal shall indicate which**
66 **pedestrian crossing is served by each device.**

67 **Under steady (stop-and-go) operation, accessible pedestrian signals shall not be limited**
68 **in operation by the time of day or day of week.**

69 **Option:**

70 Accessible pedestrian signal detectors may be push buttons or passive detection devices.

71 *Guidance:*

72 *At locations where it is not necessary for pedestrians to push a push button detector to*
73 *receive a WALKING PERSON signal indication, pedestrian push buttons should be used to*
74 *activate the accessible pedestrian signals and to provide information in non-visual formats to*
75 *assist pedestrians with visual disabilities.*

76 **Support:**

77 Accessible pedestrian signals are typically integrated into the pedestrian detector (push
78 button), so the audible tones and/or messages come from the push button housing. They have a
79 push button locator tone and a vibrotactile arrow, and can include audible beaconing and other
80 special features.

81 **Option:**

82 The name of the street to be crossed may also be provided in accessible format, such as
83 Braille or raised print. Tactile maps of crosswalks may also be provided.

84 Support:

85 Specifications regarding the use of Braille or raised print can be found in the U.S.
86 Department of Justice 2010 ADA Standards for Accessible Design, September 15, 2010 and
87 Code of Federal Regulations. Title 28, Parts 35 and 36. Americans with Disabilities Act of 1990
88 (see Section 1A.05).

89 **Standard:**

90 At accessible pedestrian signal locations where pressing the pedestrian push button or
91 passive pedestrian detection, is necessary ~~or passive detection is used~~ to activate the walk
92 interval, pressing the pedestrian push button or passive pedestrian detection shall activate
93 both the walk interval and the accessible pedestrian signals. (revise Standard to
94 accommodate passive pedestrian detection)

97 **Section 4K.02 Comments:** NCUTCD recommends restoring two features in the Standard list
98 (and modifying one) that were in the 2009 MUTCD but deleted in the NPA.

99 **Section 4K.02 Location**

100 Support:

101 Accessible pedestrian signals that are located as close as possible to pedestrians waiting to
102 cross the street provide the clearest and least ambiguous indication of which pedestrian crossing
103 is served by a device.

104 *Guidance:*

105 *Push buttons for accessible pedestrian signals should be located in accordance with the*
106 *provisions of Section 4I.05 and should be located as close as possible to the crosswalk line*
107 *furthest from the center of the intersection and as close as possible to the curb ramp.*

108 **Standard:**

109 Except for the situation regarding simultaneous “Walk” indications for both crosswalks
110 as described in Paragraph 8 of Section 4I.06, if two accessible pedestrian push buttons are
111 placed less than 10 feet apart or on the same pole (see Paragraphs 7 and 8 in Section 4I.06),
112 each accessible pedestrian push button shall be provided with the following features:

113 **A.** A pushbutton locator tone, (restored from 2009 MUTCD)

114 **B.** Vibrotactile walk indication, (restored from 2009 MUTCD but modified for clarity)

115 **AC.** A speech walk message for the WALKING PERSON (symbolizing WALK)
116 indication (see Section 4K.03), and

117 **BD.** A speech push button information message (see Section 4K.05).

118 If the pedestrian clearance time is sufficient only to cross from the curb or shoulder to a
119 median of sufficient width for pedestrians to wait and accessible pedestrian signal detectors
120 are used, an additional accessible pedestrian signal detector shall be provided in the
121 median.

124 **Section 4K.03 Comments:** NCUTCD recommends deleting the proposed NPA Standard
125 statement permitting the vibrotactile arrow to be located on the speaker box, because allowing
126 the vibrotactile arrow on the speaker box will make it less likely for blind pedestrians to find the
127 arrow, as documented in NCHRP 03-62. NCUTCD agrees with changing the Guidance statement
128 on speech walk messages to Standard, as it strengthens and highlights the need for clear
129 communications with blind pedestrians.

130 **Section 4K.03 Walk Indications**

131 Support:

132 Technology that provides different sounds for each non-concurrent signal phase has
133 frequently been found to provide ambiguous information. Research indicates that a rapid
134 percussive tone for each crossing coming from accessible pedestrian signal devices on separated
135 poles located close to each crosswalk provides unambiguous information to pedestrians who are
136 blind or visually impaired. Vibrotactile indications provide information to pedestrians who are
137 blind and deaf and are also used by pedestrians who are blind or who have low vision to confirm
138 the walk signal in noisy situations.

139 **Standard:**

140 **Accessible pedestrian signals shall have both audible and vibrotactile walk indications.**

141 **Vibrotactile walk indications shall be provided by a vibrotactile arrow that is located on**
142 **the push button ~~or on the speaker box~~ (see Paragraph 1 in Section 4K.04). The vibrotactile**
143 **arrow shall vibrate during the walk interval. (delete per NCHRP 03-62)**

144 **Accessible pedestrian signals shall have an audible walk indication during the walk**
145 **interval only.**

146 **The audible walk indication shall be audible at the beginning of the associated**
147 **crosswalk. The accessible walk indication shall have the same duration as the pedestrian**
148 **walk signal except when the pedestrian signal rests in walk.**

149 *Guidance:*

150 *If the pedestrian signal rests in walk, the accessible walk indication should be limited to the*
151 *first 7 seconds of the walk interval. The accessible walk indication should be recalled by a*
152 *button press during the walk interval provided that the crossing time remaining is longer than*
153 *the pedestrian change interval.*

154 **Standard:**

155 **Where two accessible pedestrian signals on one corner, or in a median, that are**
156 **associated with different phases are placed less than 10 feet apart, the audible walk**
157 **indication shall be a speech walk message (see Paragraph 3 in Section 4K.02). In all**
158 **other cases, including at midblock crossings, on corners where only one accessible**
159 **pedestrian signal is present, in a median, and on corners where two accessible**
160 **pedestrian signals are separated by a distance of at least 10 feet, the audible walk**
161 **indication shall be a percussive tone.**

162 **Audible tone walk indications shall repeat at eight to ten ticks per second. Audible**
163 **tones used as walk indications shall consist of multiple frequencies with a dominant**
164 **component at 880 Hz.**

165 *Guidance:*

166 *The volume of audible walk indications and push button locator tones (see Section 4K.04)*
167 *should be set to be a maximum of 5 dBA louder than ambient sound, except when audible*
168 *beaconing is provided in response to an extended push button press.*

169 **Standard:**

170 **Automatic volume adjustment up to a maximum volume of 100 dBA in response to**
171 **ambient traffic sound level shall be provided.**

172 *Guidance:*

173 *The sound level of audible walk indications and push button locator tones should be adjusted*
174 *to be low enough to avoid misleading pedestrians who have visual disabilities when the*
175 *following conditions exist:*

- 176 *A. Where there is an island that allows unsignalized right turns across a crosswalk between*
177 *the island and the sidewalk.*
178 *B. Where multi-leg approaches or complex signal phasing require more than two pedestrian*
179 *phases, such that it might be unclear which crosswalk is served by each audible tone.*
180 *C. At intersections where a diagonal pedestrian crossing is allowed, or where one street*
181 *receives a WALKING PERSON (symbolizing WALK) signal indication simultaneously*
182 *with another street.*

183 **Option:**

184 An alert tone, which is a very brief burst of high-frequency sound at the beginning of the
185 audible walk indication that rapidly decays to the frequency of the walk tone, may be used to
186 alert pedestrians to the beginning of the walk interval.

187 **Support:**

188 An alert tone can be particularly useful if the walk tone is not easily audible in some traffic
189 conditions.

190 Speech walk messages communicate to pedestrians which street has the walk interval. To be
191 a useful system, the words and their meaning need to be correctly understood by all users in the
192 context of the street environment where they are used. Because of this, tones are the preferred
193 means of providing audible walk indications except where two accessible pedestrian signals on
194 one corner are not separated by a distance of at least 10 feet.

195 If speech walk messages are used, pedestrians have to know the names of the streets that they
196 are crossing in order for the speech walk messages to be unambiguous. In getting directions to
197 travel to a new location, pedestrians with visual disabilities do not always get the name of each
198 street to be crossed. Therefore, it is desirable to give users of accessible pedestrian signals the
199 name of the street controlled by the push button. This can be done by means of a speech push
200 button information message (see Section 4K.05) during the flashing or steady UPRAISED
201 HAND intervals, or by raised print and Braille labels on the push button housing.

202 By combining the information from the push button message or Braille label, the vibrotactile
203 arrow aligned in the direction of travel on the relevant crosswalk, and the speech walk message,
204 pedestrians with visual disabilities are able to correctly respond to speech walk messages even if
205 there are two push buttons on the same pole.

206 **Standard:**

207 **If speech walk messages are used to communicate the walk interval, they shall provide a**
208 **clear message that the walk interval is in effect, as well as to which crossing it applies.**
209 **(NCUTCD agrees with and recommends adoption. Changing from Guidance to Standard**
210 **strengthens and highlights the need for clear communications with blind pedestrians.)**

211 *Guidance:*

212 *Speech walk messages that are used at intersections having pedestrian phasing that is*
213 *concurrent with vehicular phasing should be patterned after the model: “Broadway. Walk sign*
214 *is on to cross Broadway.”*

215 *Speech walk messages that are used at intersections having exclusive pedestrian phasing*
216 *should be patterned after the model: “Walk sign is on for all crossings.”*

217 *Speech walk messages should not contain any additional information, except they should*
218 *include designations such as “Street” or “Avenue” where this information is necessary to avoid*
219 *ambiguity at a particular location.*

220 *Speech walk messages should not state or imply a command to the pedestrian, such as*
221 *“Cross Broadway now.” Speech walk messages should not tell pedestrians that it is “safe to*
222 *cross,” because it is always the pedestrian’s responsibility to check actual traffic conditions.*

223 **Standard:**

224 **A speech walk message is not required at times when the walk interval is not timing,**
225 **but, if provided:**

226 **A. It shall begin with the term “wait.”**

227 **B. It need not be repeated for the entire time that the walk interval is not timing.**

228 **If a pilot light (see Section 4I.06) is used at an accessible pedestrian signal location, each**
229 **actuation shall be accompanied by the speech message “wait.”**

230 *Option:*

231 *Accessible pedestrian signals that provide speech walk messages may provide similar*
232 *messages in languages other than English, if needed.*

233 **Standard:**

234 **If used, speech walk messages in a language other than English shall be stated first in**
235 **English, and then repeated in the second language, alternating back and forth while the**
236 **walk interval is timing.**

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239 **Section 4K.04 Comments:** NCUTCD recommends revision to the first Standard statement to
240 require the vibrotactile arrow be located on the pushbutton, and delete the text concerning non-
241 provision of pushbuttons, because pushbuttons are always provided with accessible pedestrian
242 signals.

243 **Section 4K.04 Vibrotactile Arrows and Locator Tones**

244 **Standard:**

245 **To enable pedestrians who have visual disabilities to distinguish and locate the**
246 **appropriate push button at an accessible pedestrian signal location, and to help them align**

247 with the crosswalk, each push button shall clearly indicate by means of a vibrotactile arrow
248 which crosswalk signal is actuated by the push button. Vibrotactile arrows shall be located
249 on the button of the push button assembly ~~or immediately adjacent to the button on the~~
250 ~~same surface of the push button assembly housing,~~ (delete per NCHRP 3-62) shall have high
251 visual contrast (light on dark or dark on light), and shall be aligned parallel to the direction
252 of travel on the associated crosswalk. ~~If a push button is not provided for pedestrian~~
253 ~~detection or to activate the accessible pedestrian signal features, the vibrotactile arrow~~
254 ~~shall be located on the speaker box, and the speaker box shall be located in compliance~~
255 ~~with Section 4I.06.~~ (delete since a push button would always be provided with an APS)

256 A locator tone shall be incorporated into the accessible pedestrian signal equipment to
257 help pedestrians with visual disabilities locate the tactile arrow, and ~~the~~ ~~an~~ associated push
258 button ~~if a push button is provided.~~ (revise, as a push button would always accommodate a
259 locator tone and a tactile arrow)

260 Support:

261 A push button locator tone is a repeating sound that informs approaching pedestrians that a
262 push button to actuate pedestrian timing or receive additional information exists, and that enables
263 pedestrians with visual disabilities to locate the push button.

264 **Standard:**

265 **Push button locator tones shall have a duration of 0.15 seconds or less, and except as**
266 **provided in Paragraph 5, push button locator shall repeat at 1-second intervals at all times**
267 **that the audible walk indication is not active, including during the pedestrian change**
268 **interval and during the time that the pedestrian signal is resting in walk (see Paragraph 6**
269 **in Section 4K.03).**

270 Option:

271 The push button locator tone may default to a deactivated mode during periods when the steady
272 UPRAISED HAND (symbolizing DONT WALK) signal indication is being displayed for the
273 associated crosswalk if a passive pedestrian detection system is implemented that activates the
274 locator tone at all times (other than when the audible walk indication is active) that a pedestrian
275 is present within a 12-foot radius from the push button location. Where pedestrian facilities
276 (such as sidewalks) are present, the passive detection requirement may be reduced such that it
277 only applies to pedestrians who are on the pedestrian facilities within the 12-foot radius from the
278 push button location.

279 **Standard:**

280 **Push button locator tones shall be deactivated when the traffic control signal or**
281 **pedestrian hybrid beacon is operating in a flashing mode. This requirement shall not apply**
282 **to traffic control signals or pedestrian hybrid beacons that are activated from a flashing or**
283 **dark mode to a steady (stop-and-go) mode by pedestrian actuations.**

284 **Push button locator tones shall be intensity responsive to ambient sound.**

285 *Guidance:*
286 *Push button locator tones should be audible 6 to 12 feet from the push button, or to the*
287 *building line, whichever is less.*

288 **Support:**

289 Section 4K.03 contains additional provisions regarding the volume and sound level of push
290 button locator tones.

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293 **Section 4K.05 Comments:** NCUTCD recommends retaining the requirement for the PUSH
294 BUTTON FOR 2 SECONDS FOR EXTRA CROSSING TIME (R10-32P) plaque as included in
295 the 2009 MUTCD. This Section addresses extended button press features and is a logical
296 location for a practitioner to look for this information.

297 **Section 4K.05 Extended Push Button Press Features**

298 **Option:**

299 Pedestrians may be provided with additional features such as increased crossing time, audible
300 beaoning, or a speech push button information message as a result of an extended push button
301 press.

302 **Standard:**

303 **If an extended push button press (see Paragraph 18 in Section 4I.06) is used to provide**
304 **any additional feature(s), a push button press of less than one second shall actuate only the**
305 **pedestrian timing and any associated accessible walk indication, and a push button press of**
306 **one second or more shall actuate the pedestrian timing, any associated accessible walk**
307 **indication, and any additional feature(s).**

308 **If additional crossing time is provided by means of an extended pushbutton press, a**
309 **PUSH BUTTON FOR 2 SECONDS FOR EXTRA CROSSING TIME (R10-32P) plaque**
310 **(see Figure 2B-26) shall be installed.** (retain 2009 MUTCD language on R10-32P)

311 **Support:**

312 Audible beaoning is the use of an audible signal in such a way that pedestrians with visual
313 disabilities can home in on the signal that is located on the far end of the crosswalk as they cross
314 the street.

315 Not all crosswalks at an intersection need audible beaoning. Audible beaoning is not
316 appropriate at locations with channelized turns or split phasing, because of the possibility of
317 confusion.

318 *Guidance:*

319 *Audible beaoning should be considered following an engineering study at:*

- 320 *A. Crosswalks longer than 70 feet, unless those crosswalks are divided by a median that has*
321 *another accessible pedestrian signal with a locator tone;*
- 322 *B. Crosswalks that are skewed;*
- 323 *C. Intersections with irregular geometry, such as more than four legs;*
- 324 *D. Crosswalks where audible beaoning is requested by an individual with visual*
325 *disabilities; or*
- 326 *E. Other locations where a study indicates audible beaoning would be beneficial.*

327 *Guidance:*
328 *If audible beaconing is used, it should be initiated by an extended push button press.*

329 **Standard:**

330 **If audible beaconing is used, the volume of the push button locator tone during the**
331 **pedestrian change interval of the called pedestrian phase shall be increased to a maximum**
332 **of 100 dBA, and shall come from a loudspeaker that is mounted at the far end of the**
333 **crosswalk at a height of 7 to 10 feet above the pavement.**

334 *Guidance:*

335 *The audible beaconing loudspeaker mounted at the far end of the crosswalk should be within*
336 *the width of the crosswalk.* Support:

337 When the locator tone is active during the pedestrian change interval at a traffic control
338 signal or pedestrian hybrid beacon where audible beaconing is used, both the audible beaconing
339 loudspeaker and the accessible pedestrian signal emit the tone.

340 Option:

341 The sound level of the accessible pedestrian signal walk indication and subsequent push
342 button locator tone may be increased by an extended push button press.

343 Speech push button information messages may provide intersection identification, as well as
344 information about unusual intersection signalization and geometry, such as notification regarding
345 exclusive pedestrian phasing, leading pedestrian intervals, split phasing, diagonal crosswalks,
346 and medians or islands.

347 **Standard:**

348 **If speech push button information messages are made available by actuating the**
349 **accessible pedestrian signal detector, they shall only be actuated when the walk interval is**
350 **not timing. They shall begin with the term “Wait,” followed by intersection identification**
351 **information modeled after: “Wait to cross Broadway at Grand.” If information on**
352 **intersection signalization or geometry is also given, it shall follow the intersection**
353 **identification information.**

354 *Guidance:*

355 *Speech push button information messages should not be used to provide landmark*
356 *information or to inform pedestrians with visual disabilities about detours or temporary traffic*
357 *control situations.*

358 Support:

359 Additional information on the structure and wording of speech push button information messages
360 is included in ITE’s “Electronic Toolbox for Making Intersections More Accessible for
361 Pedestrians Who Are Blind or Visually Impaired,” which is available at ITE’s website (see Page
362 i).