



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 Website: <https://ncutcd.org>

Item No.: 24B-SIG-01

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

COMMITTEE / TASK FORCE: Signals Technical Committee
ITEM NUMBER: 24B-SIG-01
TOPIC: Midblock Pedestrian Signals
ORIGIN OF REQUEST: NCHRP Project 03-141, Report 1030 released February 2023
AFFECTED SECTIONS OF MUTCD: Chapter 1C, 4A, and 4H

DEVELOPMENT HISTORY:

Approved by Signals TC: 06/26/2024
Approved by NCUTCD Council:

This is a proposal for recommended changes to the MUTCD that has been developed by a technical committee or joint task force 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 through the federal rulemaking process.

SUMMARY:

This proposal is to add a new type of traffic control signal for optional use to facilitate pedestrian crossings at midblock crosswalks. The Midblock Pedestrian Signal (MPS) displays flashing red indications to vehicles during the pedestrian change interval to reduce delays to vehicles on the major street, as compared to a regular traffic control signal.

25 **DISCUSSION:**
26 NCHRP research project 3-141 "Guidance on Midblock Pedestrian Signals" found, in general,
27 that the Crash Modification Factors (CMF) for the MPS developed in this study (see Table
28 below) are similar to the CMFs identified for the PHB.

29

Crash Type	MPS Crash Modification Factor, NCHRP 3-141
All crash types, Fatal and Injury (FI)	0.660
Pedestrian crashes, FI	0.554
Rear-end crashes, FI	0.686

38 It is important when comparing the CMFs for the MPS to the PHB is regarding the
39 characteristics of the sites included in each study. The study notes:

40
41 "The MPS sites all have 2-legs (non-intersection or midblock) while only 21 percent of the
42 PHB sites included in the September 2019 Arizona Department of Transportation (ADOT)
43 study had 2-legs. The MPS is appropriate for locations with only 2-legs (non-intersection or
44 midblock) while the PHB is appropriate for locations with 3 or 4-legs. Almost all the MPS
45 sites (93 percent) had 35 mph or less posted speed limits. For the PHB sites in the ADOT
46 study, only 42 percent were on 35 mph or less posted speed limit roads with the majority
47 (57 percent) being on roads with 40 or 45 mph posted speed limits."
48

49 The MPS sites all were at non-intersection or midblock locations. The MPS is appropriate for
50 locations only at non-intersection or midblock locations. The placement and operation of this
51 traffic control device at a side-street STOP-controlled intersection, called a "Half-Signal", was
52 not recommended, and specifically disallowed by FHWA as far back in 1978. The FHWA cited
53 three reasons through a Final Ruling as to why Half-Signals are not permitted in the MUTCD
54 which were:

55
56 *"1. Motorists on the minor road, facing the inability to cross the major stream of traffic, could
57 utilize the pedestrian signal, may not come to a complete stop, and not give adequate attention
58 to pedestrians crossing the street.*

59 *2. Left-turning vehicles from the minor road that enter the intersection because they see
60 that major road traffic is stopped could potentially become trapped in the intersection as the
61 signal changes back to green. In this situation, there would be no clearance interval for the
62 minor road traffic.*

63 *3. Half-Signals violate driver expectancy with vehicles on the minor stop sign controlled leg
64 making left turns in front of drivers who see a green ball from the traffic signal on the major
65 road."*
66

67 4A.08 conflicts with the mandate to not use Half-Signals. In Section 4A.08, there was a need to
68 clarify what "an extremely low potential for conflict exists." Because of the confusion
69 and dangers of Half-Signals, FHWA set the date back in January 1980 that all Half-Signals shall
70 be removed from operation by 12/31/1996. Cities with such operations began to convert to full
71 signals and/or restrict cross and left turn traffic and only allowed right turns out from the minor
72 side street. Thus, we are recommending the changes cited below to 4A.08.
73

74 NCHRP research project 3-141 goes on to note that the PHB is the technique to be used at
75 minor intersections. A new design standard was added to the PHB in the 11th Edition of the
76 MUTCD concerning the design of PHBs based upon the FHWA research.

77
78 Per this proposal in 4H.02, both PHBs and now the proposed MPS have identical flashing RED
79 intervals during the DON'T WALK (UPRAISED HAND) clearance interval and are treated
80 identically.

81
82 Note that, to support this proposal, Midblock and Midblock Pedestrian Signal definition language
83 was drafted, reviewed, and approved by the NCUTCD Edit Committee in June 2023 as shown
84 in Section 1C.02 below.

85
86 **RECOMMENDED MUTCD CHANGES:**
87 The following present the proposed changes to the current MUTCD within the context of the
88 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
89 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
90 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
91 underline for additions and ~~green double strikethrough~~ for deletions. In some cases,
92 background comments may be provided with the MUTCD text. These comments are indicated
93 by bracketed white text in shaded green. Deletions made by a technical committee or task
94 force after initial distribution to sponsoring organizations are shown in ~~highlighted red~~
95 ~~strikethrough and Helvetica text~~. Additions made by a technical committee or task force after
96 initial distribution to sponsoring organizations are shown in underline blue and Helvetica text.

97
98
99 **PART 1. GENERAL**

100
101 **CHAPTER 1C. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS USED IN THIS**
102 **MANUAL**

103
104 **Section 1C.02 Definitions of Words and Phrases Used in this Manual**

105 **Standard:**
106 01 **Unless otherwise defined in this Section, or in other Parts of this Manual, words or phrases**
107 **shall have the meaning(s) as defined in the most recent editions of the “Uniform Vehicle Code,”**
108 **“AASHTO Transportation Glossary (Highway Definitions),” and other appropriate publications.**
109 02 **Where a term that is defined in this Section or elsewhere in this Manual has a different**
110 **definition in another resource or in common use, the definition herein shall govern for purposes of**
111 **the applicability of the provisions of this Manual.**
112 03 **The following words and phrases, when used in this Manual, shall have the following**
113 **meanings:**
114 **XX. Midblock –a location that is between consecutive intersections and neither within nor**
115 **immediately adjacent to an intersection.**
116 **YY. Midblock Pedestrian Signal: A special type of traffic control signal installed at a**
117 **midblock, non-intersection marked crosswalk. The operation features pedestrian signal heads for**
118 **the crossing and flashing red indications for vehicular traffic during all or part of the pedestrian**
119 **change interval. In addition, the operation rests in a CIRCULAR GREEN or straight through**
120 **GREEN ARROW indication until a pedestrian call is served.**

122 PART 4. HIGHWAY TRAFFIC SIGNALS

123 CHAPTER 4A. GENERAL

124
125
126 **Section 4A.08 Use of Signs at Signalized Locations**

127 **Standard:**

128 06 STOP signs shall not be used in conjunction with any highway traffic signal operation, except
129 in **either-of** the following cases:

130 A. If the signal indication for an approach is a flashing red at all times, or

131 B. If a minor street or driveway is located within or adjacent to an area controlled by a traffic
132 control signal, but does not require separate traffic signal control because an extremely low
133 potential for conflict exists, or

134 C. If a crosswalk controlled by a Midblock Pedestrian Signal (see Chapter 4XX) is located within
135 or adjacent to an intersection with a minor street where all traffic from the minor street is
136 prohibited and physically blocked from crossing the major street and from turning left onto the
137 major street.

138
139 **Section 4H.02 Prohibited Uses of Bicycle Signal Faces**

140 **Standard:**

141 01 Bicycle signal faces shall not be used to control conflicting bicyclist movements from
142 perpendicular or nearly perpendicular directions.

143 02 Bicycle signal faces shall not be used for controlling any bicyclist movement that is sharing an
144 approach lane with motor vehicle traffic.

145 03 Bicycle signal faces shall not be used in any manner with respect to the design and operation of
146 a hybrid beacon, or a Midblock Pedestrian Signal.

147
148 **Section 4I.06 Pedestrian Intervals and Signal Phases**

149 **Standard:**

150 01 At intersections equipped with pedestrian signal heads, the pedestrian signal indications shall
151 be displayed except when the vehicular traffic control signal is being operated in the flashing mode.
152 At those times, the pedestrian signal indications shall not be displayed.

153 02 Except as provided in Paragraph 3 of Section 4J.03 and Paragraph 1 of Section 4XX.03, when
154 the pedestrian signal heads associated with a crosswalk are displaying either a steady WALKING
155 PERSON (symbolizing WALK) or a flashing UPRAISED HAND (symbolizing DONT WALK)
156 signal indication, a steady red signal indication shall be shown to any conflicting vehicular
157 movement that is approaching the intersection or midblock location perpendicular or nearly
158 perpendicular to the crosswalk.

160 **CHAPTER 4XX. MIDBLOCK PEDESTRIAN SIGNALS**
161

162 **Section 4XX.01 Application of Midblock Pedestrian Signals**

163 Support:

164 01 A Midblock Pedestrian Signal (MPS) is a special type of traffic control signal that assists pedestrians
165 crossing at a non-intersection marked crosswalk. It is similar to a regular traffic control signal except that
166 it can display a flashing CIRCULAR RED for vehicular traffic when the flashing UPRAISED HAND is
167 displayed to pedestrians. The period of flashing CIRCULAR RED allows vehicles to proceed after
168 stopping whenever pedestrians have completed their crossings, have crossed the lane of waiting vehicles
169 or are so distant from a lane of waiting vehicles that proceeding would not constitute a conflict (see
170 Figure XX-1).

171 02 See Chapter 4K for information on Pedestrian Hybrid Beacons, which are appropriate, when
172 justified, rather than an MPS for a crosswalk at an intersection with a relatively minor street.

173 03 See Section 4A.08 for additional information about locations for MPS.

174 Standard:

175 04 **The MPS shall only be installed at a midblock location.**

176 05 **The MPS shall not be installed where a driveway would be in the area between the stop line**
177 **and controlling MPS signal face(s).**

178 Support:

179 06 A midblock crosswalk is a location that a reasonable road user would view as not related to the
180 adjacent intersections.

181 Option:

182 07 An MPS may be installed to facilitate pedestrian crossings at a midblock location that does not meet
183 traffic signal warrants (see Chapter 4C) or at a midblock location that meets traffic signal warrants under
184 Sections Section 4C.05 or 4C.06 but a decision is made to not install a traffic control signal.

185 Standard:

186 08 **Before an MPS is installed at a particular midblock location an engineering study shall be**
187 **performed.**

188 Guidance:

189 09 Alternatives to an MPS should be evaluated as part of the engineering study

190 10 The engineering study should include an evaluation of the plotted point in Figure 4XX-2 or Figure
191 4XX-3 relative to the applicable curve.

192 Support:

193 11 Figure 4XX-2 is applicable where the 85th percentile speed or posted speed limit is 35 miles per
194 hour or less, while Figure 4XX-3 is applicable where the 85th percentile speed or posted speed limit is
195 more than 35 miles per hour.

196 12 For Figure 4XX-2 and Figure 4XX-3 the horizontal axis represents the hourly traffic volume, the
197 vertical axis represents existing or projected hourly pedestrian crossings and the curves represent
198 crosswalk length.

199 Guidance:

200 13 For crosswalks that have lengths other than those that are specifically shown in Figure 4XX-2 and
201 Figure 4XX-3, the values should be interpolated between the curves.

202 Option:

203 14 The criteria for the pedestrian volume crossing the major street shown in Figures 4XX-2 and 4XX-3
204 may be reduced as much as 50 percent if the 15th-percentile crossing speed of pedestrians is less than 3.5
205 feet per second.

206 15 Where there is a divided street having a median of sufficient width for pedestrians to wait, the
207 criteria for the major-street traffic volume shown in Figures 4XX-2 and 4XX-3 may be applied separately
208 to each direction of vehicular traffic.

209 16 The engineering study may include an evaluation of:

210 A. The proximity of the midblock location to adjacent intersections and driveways.

211 B. The distance of the midblock location to the adjacent traffic control signals.

212 C. Roadside development on each side of the street that might generate a demand for midblock
213 pedestrian crossings.

214 D. Existing or projected midblock pedestrian crossing demand.

215 E. Traffic volumes near the midblock location.

216 F. Traffic speeds near the midblock location.

217 G. The number and size of gaps in traffic at the location.

218 H. The width of the street at the midblock location.

219 Section 4XX.02 Design of Midblock Pedestrian Signals

220 Standard:

221 01 Except as otherwise provided in this Chapter, the MPS shall meet the provisions of Chapters
222 4D through 4E, 4F and 4I.

223 02 For vehicular traffic, an MPS signal face shall consist of three sections, with CIRCULAR RED,
224 CIRCULAR YELLOW, and either a CIRCULAR GREEN or straight-through GREEN ARROW
225 signal indications. For pedestrian traffic, an MPS shall have pedestrian signal heads as discussed in
226 Chapter 4I and in Chapter 4J.01 Accessible Pedestrian Signal and Detectors.

227 03 A stop line shall be installed for each approach.

228 Guidance:

229 04 Prior to activation of a Midblock Pedestrian Signal:

230 A. Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and
231 at least 20 feet beyond the marked crosswalk, or site accommodations should be made through
232 signal faces over the roadway, curb extensions or other techniques to provide adequate sight
233 distance.

234 B. The installation should include suitable standard signs and pavement markings.

235 C. The installation should include preemption if a highway-rail grade crossing is equipped with a
236 flashing-light signal system and is located within 200 feet of Midblock Pedestrian Signal.

237 D. Coordination with the flashing-light signal system, queue detection, or other alternatives should
238 be considered if a highway-rail grade crossing is located farther than 200 feet from a Midblock
239 Pedestrian Signal. (See Section 8C.09.

240 E. If installed within a signal system, the midblock pedestrian signal should be coordinated.

241 05 On approaches having posted or statutory speed limits or 85th-percentile speeds in excess of 35 mph
242 and on approaches having traffic or operating conditions that would tend to obscure visibility of roadside
243 midblock pedestrian signal face locations, both of the minimum of two faces should be installed over the
244 roadway.

245 06 On multi-lane approaches having posted or statutory speed limits or 85th-percentile speeds of 35
246 mph or less, either a midblock pedestrian signal face should be installed on each side of the approach (if
247 a median of sufficient width exists) or at least one of the faces should be installed over the roadway.

248 Option:

249 07 The RED indication may operate in the flashing mode during all or part of the pedestrian clearance
250 interval.

251 **Section 4XX.03 Operation of Midblock Pedestrian Signals**

252 **Standard:**

- 253 01 **Displays at an MPS shall be as follows:**
 254 **A. During the vehicular phase, the signal shall display a CIRCULAR GREEN or straight-**
 255 **through GREEN ARROW for vehicular traffic and a steady UPRAISED HAND for pedestrian**
 256 **traffic.**
 257 **B. When a pedestrian phase is to be served, the CIRCULAR GREEN or straight through**
 258 **GREEN ARROW shall terminate with a steady CIRCULAR YELLOW indication.**
 259 **C. The steady CIRCULAR YELLOW indication shall terminate with a steady CIRCULAR**
 260 **RED indication.**
 261 **D. The steady CIRCULAR RED indication shall be displayed when the WALKING PERSON**
 262 **indication is displayed.**
 263 **E. The flashing CIRCULAR RED indication shall be displayed during all or part of the**
 264 **interval when the flashing UPRAISED HAND is displayed.**

265 **Guidance:**

- 266 02 *The pedestrian phase at an MPS should be actuated.*
 267 03 *The pedestrian phase at an MPS should be served at a time in the signal cycle, if any, based on an*
 268 *evaluation of traffic flows and the location of the MPS relative to a signal system.*

269 **Option:**

- 270 04 **Displays at an MPS may include the following:**
 271 **A. A steady CIRCULAR RED indication may be displayed before the WALKING PERSON indication is**
 272 **displayed.**
 273 **B. A steady CIRCULAR RED indication may be displayed during the beginning part of the interval**
 274 **when the flashing UPRAISED HAND is displayed.**
 275 **C. A flashing CIRCULAR RED indication may be displayed following the display of the flashing**
 276 **UPRAISED HAND.**

277 **Support:**


























- 278 05 **See Figure 4XX-1 for an illustration of the sequence of indications of the MPS.**

279 **Option:**

- 280 06 **An MPS may be operated to serve a pedestrian phase either at a predetermined point in the signal**
 281 **system cycle or shortly after pedestrian actuation if it is operated in a non-coordinated mode.**

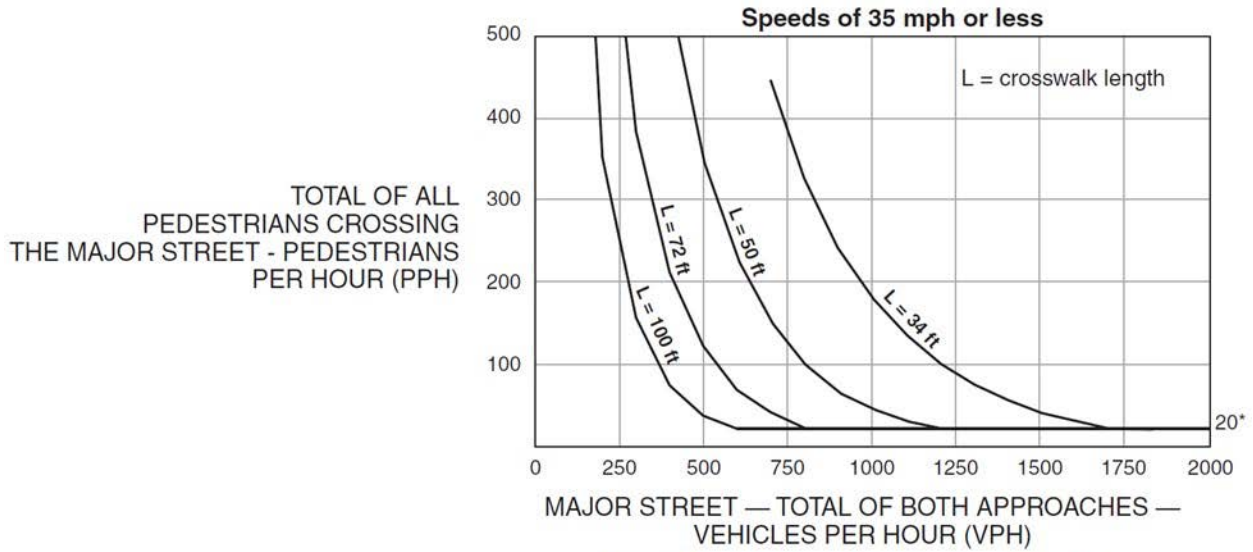
282 **Figure 4XX-1. Sequence for a Midblock Pedestrian Signal**

Vehicle Signal Indication	Vehicle Signal Interval	Vehicle – Description	Pedestrian Signal Indication	Pedestrian Signal Interval	Pedestrian – Description
	1. Vehicular Green	Vehicles moving	Steady 	1. Steady upraised hand indication	Pedestrians wait to cross
	2. Yellow Change	Vehicles warned of change	Steady 	2. Steady upraised hand indication	Pedestrians wait to cross

Vehicle Signal Indication	Vehicle Signal Interval	Vehicle – Description	Pedestrian Signal Indication	Pedestrian Signal Interval	Pedestrian – Description
 SR  Y  G OR GA	3. Optional 1-3 sec. steady red clearance before pedestrian walk indication	Vehicles stopped or finishing clearing crosswalk	Steady 	3. Optional steady upraised hand indication	Pedestrians wait to cross
 SR  Y  G OR GA	4. Steady Red	Vehicles stopped		4. Walking person indication	Pedestrians begin crossing
 SR  Y  G OR GA	5a. Optional 1-3 sec. Steady Red	Vehicles stopped	Flashing with Countdown 	5a. Flashing Upraised hand with countdown indication	Pedestrians complete crossing
 FR  Y  G OR GA	5b. Flashing Red during pedestrian clearance time	Vehicles moving after stopping and yielding to pedestrians	Flashing with Countdown 	5b. Flashing Upraised hand with countdown indication	Pedestrians complete crossing
 FR  Y  G OR GA	6. Optional Flashing Red after pedestrian clearance time	Vehicles moving after stopping and yielding to pedestrians	Steady 	6. Steady upraised hand indication	Pedestrians wait to cross
 R  R  G OR  GA	7. (back to 1) Vehicular Green	Vehicles moving	Steady 	7. (back to 1) Steady upraised hand indication	Pedestrians wait to cross
Legend FR = flashing red G = steady green GA = steady green arrow R = red SR = steady red Y = steady yellow					

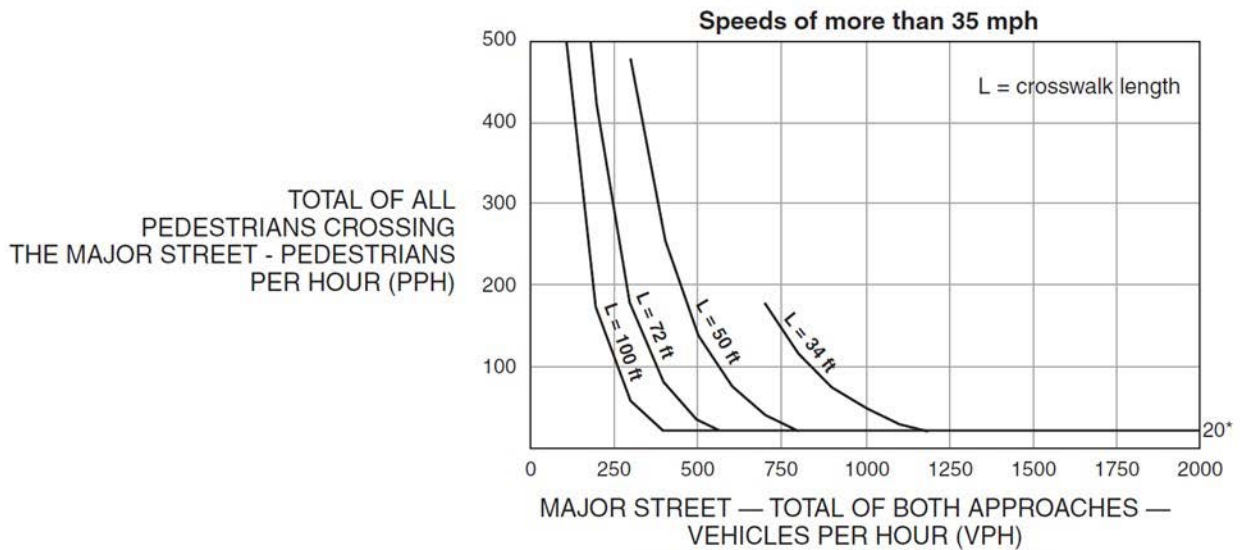
284
285

Figure 4XX-2. Guidelines for the Installation of Midblock Pedestrian Signals on Low-Speed Roadways



286
287
288
289

Figure 4XX-3. Guidelines for the Installation of Midblock Pedestrian Signals on High-Speed Roadways



290