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

Federal Register Item Number: 417 (see listing below)
NPA MUTCD Section Number: Chapter 4H
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.]

The following pages present NCUTCD recommendations for changes to the MUTCD NPA proposed text, tables, and figures for Chapter 4H. 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 #417, Section 4H.01: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.02: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.03: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.04: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.05: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.06: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.07: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.08: NCUTCD agrees with NPA content.
- NPA #417, Section 4H.09: NCUTCD agrees with NPA content.
- NPA #417, Section 4H.10: Changes recommended based on Council action in spring 2021.
- NPA #417, Section 4H.11: NCUTCD agrees with NPA content.
- NPA #417, Section 4H.12: NCUTCD agrees with NPA content.

CHAPTER 4H. BICYCLE SIGNALS

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

- Replace "counter-flow" with the more familiar term "contra-flow"
- Delete the first Guidance statement, as the meaning isn't clear and could be misinterpreted
- Insert the adjective "legacy" to refer to bicycle signal faces with circular indications, which would no longer be in compliance

- Revise the Standard in paragraph 5 to explicitly refer to the Option in paragraph 6 as an exception to the Standard
- Add text to the Option statement in paragraph 6 to include an engineering study as an additional condition to justify a conflict between a bicyclist and a vehicular turning movement
- Add a Support statement to identify factors to be considered in an engineering study

Section 4H.01 Use of Bicycle Signal Faces

Option:

A bicycle signal face may be used to provide separate control of a bicycle movement for various situations, including the following:

A. To provide a leading or lagging bicycle interval.
B. To continue a through bicycle lane on the right-hand side of an exclusive right-turn lane (or on the left-hand side of an exclusive left-turn lane) that would otherwise be in non-compliance with Paragraph 1 of Section 9E.02 or Paragraph 7 of Section 9E.06.
C. To provide a bicycle interval for a ~~counter~~contra-flow bicycle facility.
D. To provide for unusual or unexpected arrangements of the bicycle movement through complex intersections, conflict areas, or signal control.
E. Bicyclist non-compliance with the previous traffic control.

(revise to "contra-flow" - this may need changing elsewhere in the MUTCD)

~~*Guidance:*~~

~~*Agencies should exercise consistency with the decision to introduce bicycle signal faces to a roadway or bikeway network and use caution with any non-systematic policy to use bicycle signal faces.*~~ (delete, as it can be misinterpreted to mean that bicycle signals may be required all along a corridor)

Support:

The use of bicycle traffic signal faces containing bicycle symbol indications and legacy bicycle signal faces containing circular indications in the same corridor or jurisdiction could create comprehension issues by the roadway user or violate bicyclist expectation. (add "legacy" to reference older bicycle signal faces that would no longer be in compliance)

Option: **(editorial)**

A bicycle signal face may be used at a mid-block traffic control signal where there are no motor vehicle movements parallel to the bicycle crossing.

Standard:

If used, a bicycle signal face shall only be used to control bicycle movements from a designated bicycle lane or from a separate facility, such as a shared use path.

Except as provided in Paragraph 6, ~~If used,~~ a bicycle signal face shall only be used to control bicycle movements where bicyclists moving on a GREEN BICYCLE or YELLOW BICYCLE signal indication are not in conflict with any simultaneous motor vehicle movement at the signalized location, including right (or left) turns on red from the same approach as the bicycle movement. (add exception reference to Option below)

Option:

A bicycle signal face may be used to control bicycle movements where bicycles moving on a GREEN BICYCLE or YELLOW BICYCLE signal indication are in conflict with a simultaneous permissive vehicle turning movement ~~only~~ if:

A. the bicycle movement is from a one-way bicycle lane in the same direction as the adjacent general purpose lane, a flashing ~~yellow arrow~~ YELLOW ARROW indication is shown to vehicles turning across the bicycle movement, and lane extension markings are provided for the bicycle lane across the intersection~~.~~; or

B. an engineering study has been conducted and concludes that the conflicting simultaneous permissive turning movements are appropriate. (add condition under which a conflicting permissive vehicle turning movement is allowed)

Support:

Factors to consider when determining whether or not to allow conflicting simultaneous permissive turning movements include vehicle, pedestrian and bicycle volumes, conflicts between road users, the use of flashing YELLOW BICYCLE indications, safety, speed, raised crossings, lane extensions, colored pavement, shift in the alignment, relocation of stop lines, leading bicycle intervals, and other measures. (add Support to identify factors to be considered in an engineering study)

Guidance:

If used where motor vehicle traffic can make the same movements as bicyclists, a bicycle signal face should only be used if the bicycle movement controlled by the bicycle signal face is sometimes allowed to proceed or sometimes required to stop at times when motor vehicle traffic, making the same movement and controlled by other vehicular signal faces, is required to stop or allowed to proceed, respectively.

Section 4H.02 Comments: NCUTCD recommends revising the first Standard to apply the prohibition to only conflicting bicycle movements, as there could be unique alignments or geometric conditions where bicycle movements would not be in conflict.

Section 4H.02 Prohibited Uses of Bicycle Signal Faces

Standard:

Bicycle signal faces shall not be used to control simultaneous conflicting bicycle movements from perpendicular or nearly perpendicular directions. (revise Standard so prohibition applies to "conflicting" bicycle movements)

Bicycle signal faces shall not be used for controlling any bicycle movement that is sharing a lane with motor vehicle traffic.

Bicycle signal faces shall not be used in any manner with respect to the design and operation of a hybrid beacon.

Section 4H.03 Comments: NCUTCD recommends deleting the Standard statement and adding a new Support statement referring to warrants for bicycle signal faces.

Section 4H.03 Warrants for Bicycle Signal Faces

~~**Standard:**~~

~~**New designs or installations for any traffic control signal shall be based on an engineering study in accordance with Paragraph 1 of Section 4C.01. For the purposes of an engineering study, the appropriate warrant(s) provided in Chapter 4C shall be followed.**~~

Support:

For information on warrants for the installation of a new traffic control signal, see Chapter 4C. (add Support that refers to Chapter 4C for warrants)

Guidance:

The decision as to whether to incorporate a bicycle signal face(s) into a new traffic control signal design should be made during the engineering study performed in accordance with Paragraph 1 of Section 4C.01.

Engineering judgment should be exercised in determining whether or not it would be advantageous or beneficial to install a bicycle signal face(s) at an existing traffic control signal.

Support:

Retrofitting existing traffic signals with bicycle signal faces is analogous to retrofitting existing traffic signals with pedestrian signals where such a determination is not required through an engineering study.

For the purpose of warrant analyses, provisions for classifying bicycles are provided in Paragraph 15 of Section 4C.01 and Paragraph 2 of Section 9F.01.

Section 4H.04 Comments: NCUTCD recommends revising 4H.04 as follows:

- Add a reference to a new R10-41c bicycle signal sign (see NCUTCD docket comment on Chapter 9B)
- Revise the Standard statement on the use of Bicycle Signal signs to Option and add sign references
- Retain the R10-10b sign from Interim Approval 16, but renumber it as R10-42 since R10-10b is used for a different sign in the NPA
- Delete text on Bicycle Signal sign sizes, as this is addressed in Chapter 9B - see NCUTCD comments on Chapter 9B

Section 4H.04 Bicycle Signal Signs

Support:

The primary purposes of the Bicycle Signal (R10-40, R10-40a, R10-41, R10-41a, R10-41b and R10-41c) signs with arrows (see Section 9B.22) are to inform road users that the signal indications in the bicycle signal face are intended only for bicyclists, and to inform bicyclists which specific bicycle movements are controlled by the bicycle signal face.

NCUTCD recommends adding a new R10-41c sign with combined straight-left arrow (mirror of R10-41 - see Chapter 9B)

Option:~~**Standard:**~~

~~Except as provided in Paragraph 3, a~~An R10-42 Bicycle Signal ~~(R10-40, R10-40a, R10-41, R10-41a, or R10-41b)~~ sign ~~shall~~ may be installed immediately adjacent to (including above or below) ~~every~~ a bicycle signal face where the bicycle signal face controls a through bicycle movement and allows a turn across a crosswalk.

A Bicycle Signal sign with arrows (R10-40, R10-40a, R10-41 , R10-41a, R10-41b, or R10-41c) may be used when it is desired to indicate the allowable movements. (revise Standard to Option and add sign references)

NCUTCD recommends retaining the current R10-10b BICYCLE SIGNAL sign as a R10-42 sign - see Chapter 9B.

~~R10-10b~~

R10-42

Standard:

~~The~~ Bicycle Signal signs R10-40, R10-40a, R10-41, R10-41a, R10-41b, R10-41c and R10-42 shall have a minimum size as listed in Section 9B.22 and Table 9A-1 ~~of 24 inches x 36 inches if it is placed next to an overhead-mounted bicycle signal face and shall have a minimum size of 12 inches x 21 inches if it is placed next to a post-mounted bicycle signal face~~. (delete - sizes addressed in Chapter 9B)

~~Option~~

~~The Bicycle Signal sign may be omitted adjacent to a supplemental near-side bicycle face containing 4-inch indications.~~ (delete - addressed in Chapter 9B)

Section 4H.05 Comments: NCUTCD recommends revising 4H.05 as follows:

- Add text to Standard items A & C to indicate that bicycle signal indications apply specifically to bicycles in a bicycle lane or from a separate facility, such as a shared use path
- Add a reference to Section 4A.05 in Standard item C and delete incorrect sign codes
- Add an Option statement to address the use of a flashing YELLOW BICYCLE signal indication

Section 4H.05 Application of Bicycle Symbol Signal Indications during Steady (Stop-and-Go) Operation

Standard:

Steady bicycle symbol signal indications shall be applied as follows:

A. A steady RED BICYCLE signal indication shall be displayed when it is intended to prohibit bicycle traffic in a designated bicycle lane or from a separate facility such as a shared use path from entering the intersection or other controlled area. Turning after stopping shall be permitted as stated in Item C in Paragraph 1 of Section 4A.05.

B. A steady YELLOW BICYCLE signal indication shall be displayed following a GREEN BICYCLE signal indication in the same bicycle signal face. A YELLOW BICYCLE signal indication shall not be displayed in conjunction with the change from the RED BICYCLE signal indication to a GREEN BICYCLE signal indication. The YELLOW BICYCLE signal indication shall be followed by a RED BICYCLE signal indication.

C. A steady GREEN BICYCLE signal indication shall be displayed only when it is intended to permit bicyclists in a designated bicycle lane or from a separate facility such as a shared use path to enter the intersection as discussed in Section 4A.05. ~~make the movement(s) indicated by the lane-use arrow(s) displayed on the Bicycle Signal (R10-35 or R10-35a) sign that is located immediately adjacent to the bicycle signal face.~~

Option

A flashing YELLOW BICYCLE signal indication may be used to indicate the presence of conflicting turning vehicles and/or of the need to yield to pedestrians in an associated crosswalk.

Section 4H.06 Comments: NCUTCD recommends deleting the Option statement in 4H.06, since the flashing YELLOW BICYCLE indication referenced in that Option is used under steady (stop-and-go) rather than flashing operation and is addressed in Section 4H.05.

Section 4H.06 Application of Bicycle Symbol Signal Indications during Flashing Operation
Standard:

The mode of operation of the bicycle signal faces at a traffic control signal shall be the same as the mode of operation of the other traffic signal faces at the same signalized location. Bicycle signal faces shall operate in the steady (stop-and-go) mode when the other traffic signal faces are operating in the steady (stop-and-go) mode. Bicycle signal faces shall operate in the flashing mode when the other signal faces are operating in the flashing mode. Bicycle signal faces shall not be placed in a dark mode when other vehicular traffic signal faces are operating in the flashing mode.

Guidance:

When a traffic control signal is operated in the flashing mode, bicycle signal faces should display a flashing RED BICYCLE signal indication if the other vehicular signal faces on the same approach are displaying flashing red signal indications or if there are no other vehicular signal faces on the same approach.

When a traffic control signal is operated in the flashing mode, bicycle signal faces should display a flashing YELLOW BICYCLE signal indication if the other vehicular signal faces for the through lanes on the same approach are displaying flashing yellow signal indications unless it is determined by engineering judgment that a flashing RED BICYCLE signal indication would provide a safer operation.

~~Option:~~

~~A flashing YELLOW BICYCLE signal indication may be used to indicate the presence of turning vehicles, which would be operating under a flashing yellow arrow indication, as described in Section 4H.01 paragraph 07.~~ (delete - addressed in Section 4H.05)

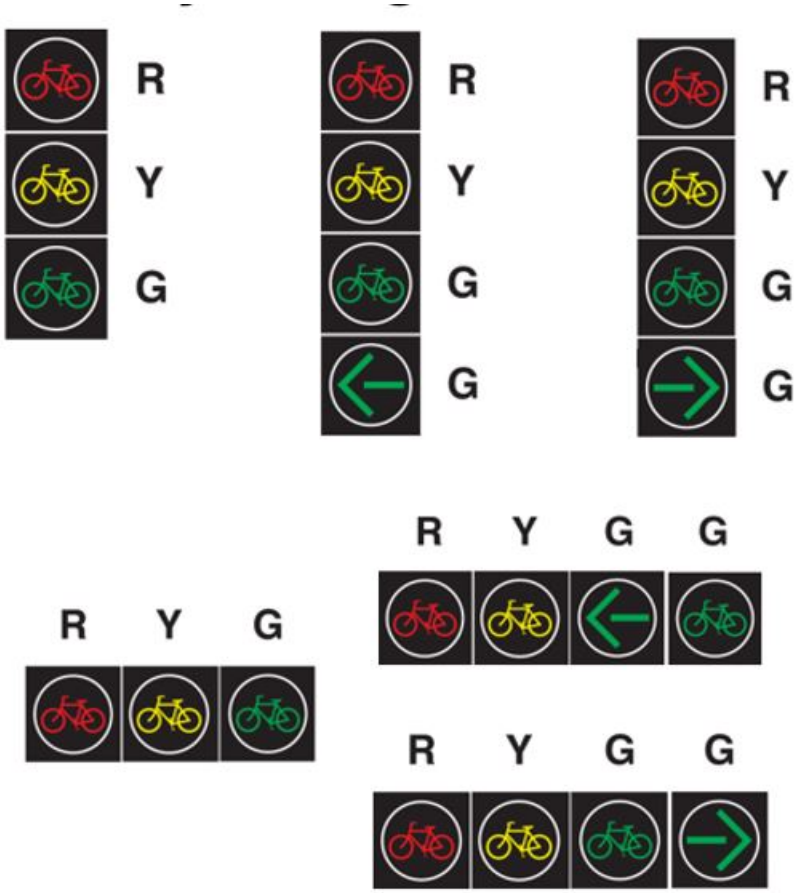
Section 4H.07 Comments: NCUTCD recommends adding Option text to 4H.07 to allow a left-turn or right-turn GREEN ARROW in a bicycle signal face to indicate a protected left-turn or right-turn bicycle movement and adding a Standard statement regarding specific conditions for use of a left-turn or right-turn GREEN ARROW to control a protected bicycle movement.

Section 4H.07 Layout of Bicycle Signal Faces
Standard:

Except as provided in the Paragraph 3), b~~B~~**icycle signal faces shall consist of all bicycle symbol signal indications (see Figure 4H-1). Circular ~~or arrow~~ signal indications shall not be used in a bicycle signal face.**

Figure 4H-1. Examples of Bicycle Signal Faces

Figure 4H-1 Comments: NCUTCD recommends adding examples of 4-section bicycle signal faces in both vertical and horizontal orientations including left-turn or right-turn GREEN ARROW indications to indicate a protected turning movement for bicyclists, and adding an example of a 3-section horizontally oriented bicycle signal face.



Option:

Bicycle signal faces may be oriented vertically or horizontally.

If a bicycle turn movement is not in conflict with any other movement, a four-section bicycle signal face capable of displaying the following signal indications may be used: RED BICYCLE, YELLOW BICYCLE, GREEN BICYCLE, and left-turn or right-turn GREEN ARROW. [add to address bicycle signal indications with arrows]

Standard:

The layouts and arrangements of the bicycle signal face shall be in accordance with the following provisions:

A. Only the bicycle symbol shown on Page 6-7 in the 2004 Standard Highway Signs book shall be used for bicycle symbol signal indications and shall be proportioned to fit within the signal lens. The bicycle symbol shall only be positioned horizontally and shall face to the left.

B. The RED BICYCLE, YELLOW BICYCLE, and GREEN BICYCLE signal indications shall be in the same relative position to each other as specified for the CIRCULAR RED, CIRCULAR YELLOW, and CIRCULAR GREEN signal indications, respectively, in Sections 4E.04 and 4E.05.

C. As a specific exception to Paragraph 5 of Section 4E.04, two YELLOW BICYCLE signal indications or two GREEN BICYCLE signal indications shall not be arranged horizontally adjacent to each other at right angles to the basic straight line arrangement to form a clustered signal face.

Option:

Backplates (see Paragraphs 19 and 20 in Section 4D.05) may be used with bicycle signal faces.

If a bicycle signal face having 4-inch signal indications is used, the accompanying visors may be omitted.

Standard:

If used, a left-turn or right-turn GREEN ARROW signal indication shall only be displayed simultaneously with the steady GREEN BICYCLE signal indication.

If used, a GREEN BICYCLE and left-turn or right-turn GREEN ARROW signal indications shall always begin and terminate together.

If used, a left-turn or right-turn GREEN ARROW signal indication and the GREEN BICYCLE signal indication shall be terminated simultaneously with a steady YELLOW BICYCLE signal indication.

If a bicycle signal face contains a GREEN ARROW indication that would be readily visible to drivers in the adjacent lane(s), a BICYCLE SIGNAL (R10-42) sign shall be installed immediately adjacent to that signal face and/or the bicycle signal face shall be visibility-limited, except as provided in Paragraph 11.

If a left-turn or right-turn GREEN ARROW is used in a bicycle signal face, it shall be the same size as the other indications in that bicycle signal face, 12-inch, 8-inch, or 4-inch.

Option:

For a 4" near-side bicycle signal face, the sign and visibility limiting may be omitted.

[add to address bicycle signal indications with arrows]

Section 4H.08 Comments: NCUTCD agrees with 4H.08 as presented in the NPA.

Section 4H.08 Size of Bicycle Symbol Signal Indications

Standard:

There shall be three nominal diameter sizes for bicycle signal indications: 4 inches, 8 inches, and 12 inches.

All signal indications in a bicycle signal face shall be of the same size.

Four-inch signal indications shall not be used for any bicycle signal face other than a supplemental, post-mounted, near-side bicycle signal face.

Section 4H.09 Comments: NCUTCD agrees with 4H.09 as presented in the NPA.

Section 4H.09 Placement of Bicycle Signal Faces

Standard:

The provisions of Sections 4D.04 through 4D.07 shall apply to the placement of the bicycle signal faces except as follows:

A. As a specific exception to Item A in Paragraph 1 of Section 4D.04, a minimum of one primary bicycle signal face shall be provided to control traffic for the bicycle movement, even if a bicycle through movement exists.

B. The primary bicycle signal face shall have either 8-inch or 12-inch signal indications, even if it is located at the near side of the signal-controlled location.

C. When the primary bicycle signal face is located more than 120 feet beyond the stop line, a supplemental near-side bicycle signal face shall be provided.

Guidance:

When the primary bicycle signal face is located more than 80 feet and up to 120 feet beyond the stop line, a supplemental near-side bicycle signal face should be provided.

A bicycle signal face should be separated horizontally or vertically from the nearest vehicular traffic signal face for the same approach by at least 3 feet measured either horizontally perpendicular to the approach between the centers of the signal faces or vertically from the center of the lowest signal indication of the top signal face to the center of the highest signal indication of the bottom signal face. If horizontally-arranged or clustered signal faces are used, the minimum 3-foot horizontal separation between the two signal faces should be measured from the center of the right-most signal indication in the signal face on the left to the center of the left-most signal indication in the signal face on the right.

Bicycle signal faces should be placed such that visibility is maximized for bicyclists and minimized for adjacent or conflicting vehicle movements not controlled by the bicycle signal face. Consideration should be given to using visibility-limited bicycle signal faces in situations where drivers not controlled by the bicycle signal face might be confused by viewing the bicycle signal indications, such as when the bicycle movement controlled by the bicycle signal face is sometimes allowed to proceed or sometimes required to stop at times when motor vehicle traffic, making the same movement and controlled by other vehicular signal faces, is required to stop or allowed to proceed, respectively.

Section 4H.10 Comments: NCUTCD agrees with 4H.10 as presented in the NPA with minor editorial changes adding text "or shoulder" and correcting sign numbers to reflect current codes.

Section 4H.10 Mounting Height of Bicycle Signal Faces

Standard:

The provisions of Section 4D.08 shall apply to the mounting height of bicycle signal faces except as follows:

A. The bottom of the signal housing (including brackets) of a bicycle signal face that is not located over a roadway or shoulder shall be a minimum of 7 feet above the sidewalk or ground, except where a ~~the~~ Bicycle Signal (R10-40, R10-40a, R10-41, R10-41a, R10-41b, R10-41c or R10-42)~~R10-35 or R10-35a)~~ sign is installed below the bicycle signal face. If a ~~the~~ Bicycle Signal sign is installed below the bicycle signal

face, the minimum mounting height to the bottom of the sign shall be 6 feet. If the bottom of the sign is mounted less than 7 feet above a pedestrian sidewalk or pathway, the sign shall not project more than 4 inches into the pedestrian facility. (edit for consistency and to reflect current sign numbers)

B. If 4-inch signal indications are used in a supplemental, post-mounted, near-side bicycle signal face, the bottom of the signal housing (including brackets) shall be a minimum of 4 feet and a maximum of 8 feet above the sidewalk or ground. Bicycle signal faces with 4-inch signal indications installed above a pedestrian sidewalk or pathway shall not project more than 4 inches into the pedestrian facility.

Section 4H.11 Comments: NCUTCD agrees with 4H.11 as presented in the NPA.

Section 4H.11 Intensity and Light Distribution of Bicycle Signal Faces

Guidance:

Except for the 4-inch nominal size of the lens diameter, the intensity and distribution of light from each illuminated bicycle signal face should be similar to that recommended for vehicular traffic signal faces in accordance with Paragraph 11 of Section 4E.01 to the extent practical.

Section 4H.12 Comments: NCUTCD agrees with 4H.12 as presented in the NPA.

Section 4H.12 Yellow Change and Red Clearance Intervals for Bicycle Signal Faces

Standard:

The provisions of Section 4F.17 shall apply to the duration of the yellow change and the red clearance intervals of a bicycle signal phase except that the minimum duration of the yellow change interval shall be 3 seconds.

Support:

The exclusive function of the yellow change interval is to warn bicyclists approaching a signalized location that their permission to proceed is being terminated after which they will be directed to stop. Providing clearance time for a bicyclist to travel through the intersection or conflict area is the purpose of the red clearance interval rather than the yellow change interval.