

National Committee on Uniform Traffic Control Devices

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Attachment No. 05
Item No.: 19B-SIG-01

NCUTCD Proposal for Changes to the Manual on Uniform Traffic Control Devices

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TECHNICAL COMMITTEE:	Signals Technical Committee
ITEM NUMBER:	19B-SIG-01
TOPIC:	Use of Straight-Through GREEN ARROW
ORIGIN OF REQUEST:	Signals Technical Committee
AFFECTED SECTIONS OF MUTCD:	Section 4D.05 <u>4F.01</u> Application of Steady <u>and Flashing</u> Signal Indications <u>during Steady (Stop-and-Go) Operation</u>

7 8 DEVELOPMENT HISTORY

- 9 • Approved by Technical Committee: 06/19/2019
- 10 • Approved by NCUTCD Council:

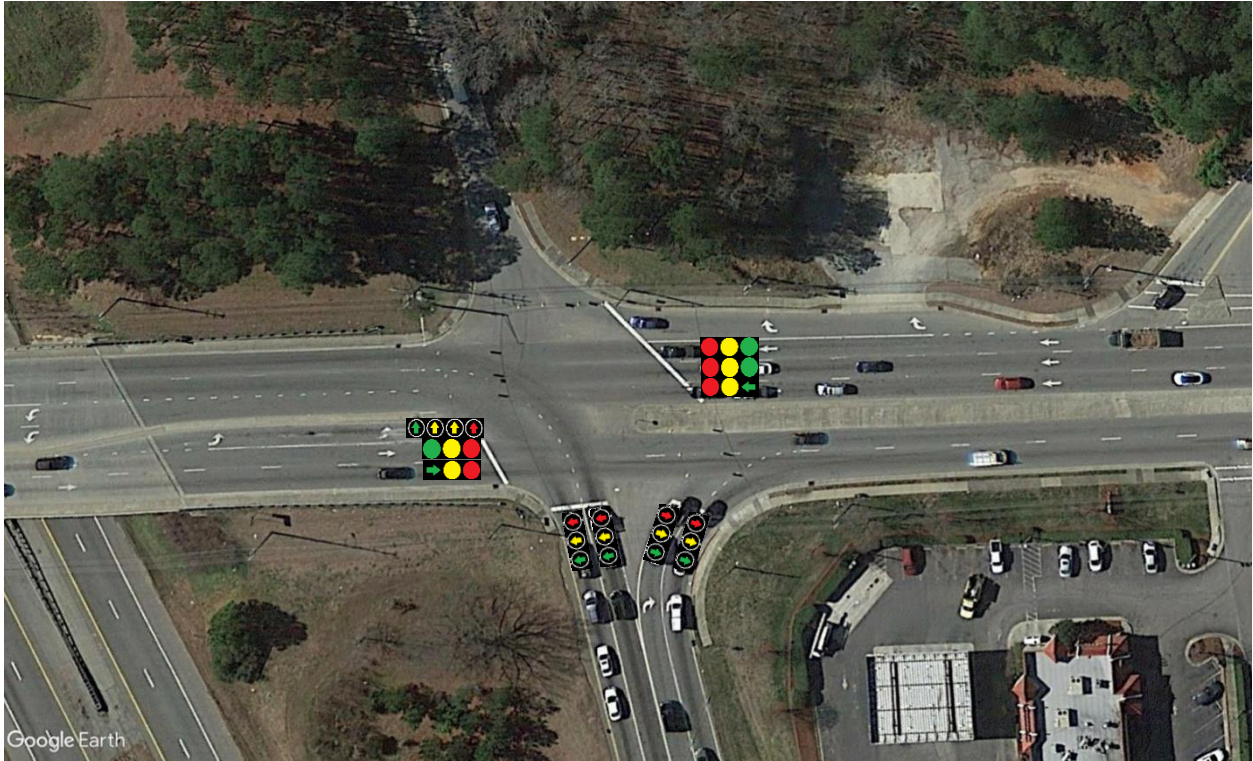
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12 *This is a proposal for recommended changes to the MUTCD that has been developed by*
13 *a technical committee of the NCUTCD. The NCUTCD is distributing it to its sponsoring*
14 *organizations for review and comment. Sponsor comments will be considered in revising*
15 *the proposal prior to NCUTCD Council consideration. This proposal does not represent a*
16 *revision of the MUTCD and does not constitute official MUTCD standards, guidance, or*
17 *options. If approved by the NCUTCD Council, the recommended changes will be*
18 *submitted to FHWA for consideration for inclusion in a future MUTCD revision. The*
19 *MUTCD can be revised only by the FHWA through the federal rulemaking process.*

20 21 SUMMARY

22 Proposal is to allow for the use of a straight-through GREEN ARROW opposed by an approach
23 with a CIRCULAR GREEN or a flashing YELLOW ARROW.

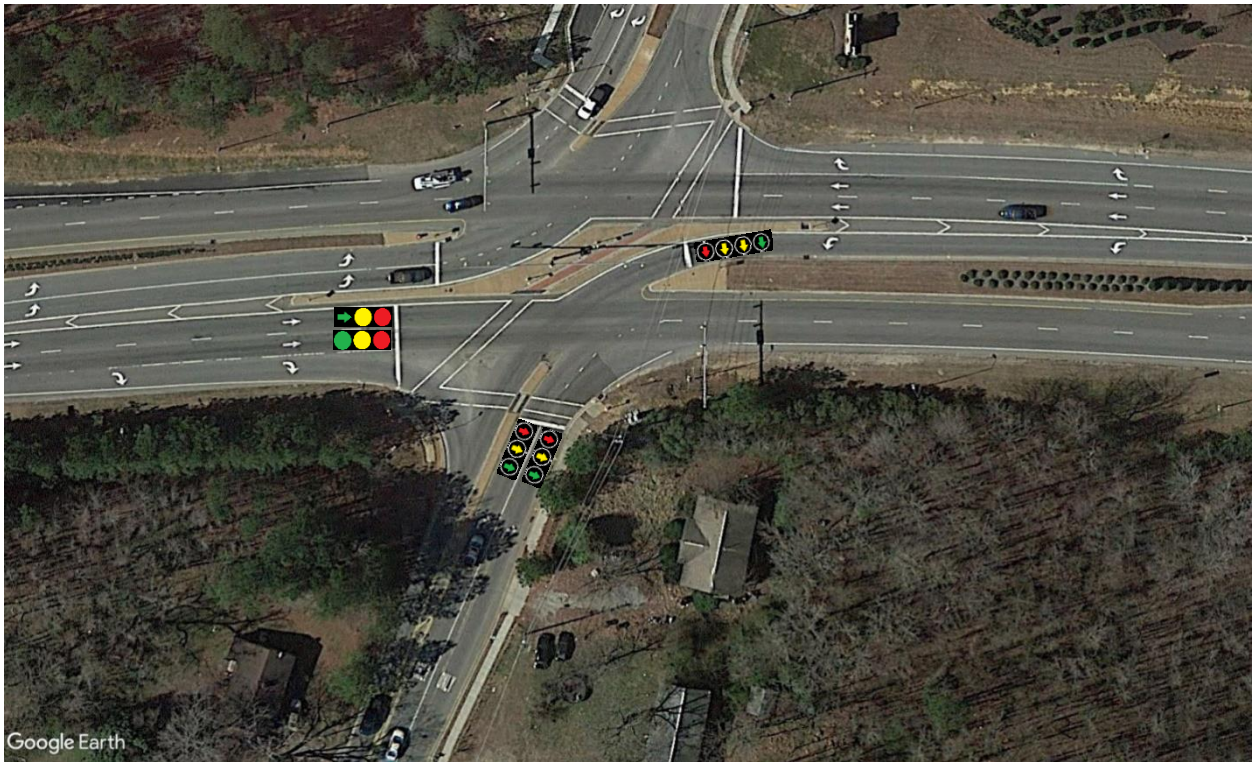
24 25 DISCUSSION

26 The use of a straight-through GREEN ARROW is currently allowed in the MUTCD in locations
27 where there are no movements in conflict. However, in practice, this indication can be used to
28 also indicate to a driver that no turn is allowed in this lane. This indication would be useful in
29 locations where through vehicles cannot make a turn but are opposed by left turn vehicles facing
30 a CIRCULAR GREEN or flashing YELLOW ARROW. This scenario can be seen at diamond
31 interchanges and alternative intersection designs. Examples of the applications are shown below:
32 Diamond Interchange



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Alternative Intersection



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40 **RECOMMENDED MUTCD CHANGES**

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42 The following present the proposed changes to the current MUTCD within the context of the
43 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
44 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
45 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
46 underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background
47 comments may be provided with the MUTCD text. These comments are indicated by [black font
48 in brackets highlighted light blue].

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PART 4. HIGHWAY TRAFFIC SIGNALS

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52 **CHAPTER 4F. STEADY (STOP-AND-GO) OPERATION OF TRAFFIC CONTROL**
53 **SIGNALS** [all green text included was approved June 28, 2014 as part of 14A-STC-01 -
54 Reorganization and Revisions to Part 4]

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56 **Section ~~4D.05~~ 4F.01 Application of Steady and Flashing Signal Indications during Steady**
57 **(Stop-and-Go) Operation**

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Standard:

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01 When a traffic control signal is being operated in a steady (stop-and-go) mode, at least
60 one indication in each signal face shall be displayed at any given time.

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02 A signal face(s) that controls a particular vehicular movement during any interval of a
62 cycle shall control that same movement during all intervals of the cycle.

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03 Steady and flashing signal indications shall be applied as follows:

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A. A steady CIRCULAR RED signal indication:

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1. Shall be displayed when it is intended to prohibit traffic, except pedestrians
66 directed by a pedestrian signal head, from entering the intersection or other
67 controlled area. Turning after stopping is permitted as stated in Item C.1 in
68 Paragraph 3 of Section 4D.04.

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2. Shall be displayed with the appropriate GREEN ARROW signal indications
70 when it is intended to permit traffic to make a specified turn or turns, and to
71 prohibit traffic from proceeding straight ahead through the intersection or other
72 controlled area, except in protected only mode operation (see Sections 4D.19 and
73 4D.23), or in protected/permissive mode operation with separate turn signal
74 faces (see Sections 4D.20 and 4D.24).

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B. A steady CIRCULAR YELLOW signal indication:

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1. Shall be displayed following a CIRCULAR GREEN or straight-through GREEN
77 ARROW signal indication in the same signal face.

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2. Shall not be displayed in conjunction with the change from the CIRCULAR
79 RED signal indication to the CIRCULAR GREEN signal indication.

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3. Shall be followed by a CIRCULAR RED signal indication except that, when
81 entering preemption operation, the return to the previous CIRCULAR GREEN
82 signal indication shall be permitted following a steady CIRCULAR YELLOW
83 signal indication (see Section 4D.27).

- 84 4. Shall not be displayed to an approach from which drivers are turning left
85 permissively or making a U-turn to the left permissively unless one of the
86 following conditions exists:
87 (a) A steady CIRCULAR YELLOW signal indication is also simultaneously
88 being displayed to the opposing approach;
89 (b) An engineering study has determined that, because of unique intersection
90 conditions, the condition described in Item (a) cannot reasonably be
91 implemented without causing significant operational or safety problems and
92 that the volume of impacted left-turning or U-turning traffic is relatively low,
93 and those left-turning or U-turning drivers are advised that a steady
94 CIRCULAR YELLOW signal indication is not simultaneously being
95 displayed to the opposing traffic if this operation occurs continuously by the
96 installation near the left-most signal head of a W25-1 sign (see Section 2C.48)
97 with the legend ONCOMING TRAFFIC HAS EXTENDED GREEN; or
98 (c) Drivers are advised of the operation if it occurs only occasionally, such as
99 during a preemption sequence, by the installation near the left-most signal
100 head of a W25-2 sign (see Section 2C.48) with the legend ONCOMING
101 TRAFFIC MAY HAVE EXTENDED GREEN.
- 102 C. A steady CIRCULAR GREEN signal indication shall be displayed only when it is
103 intended to permit traffic to proceed in any direction that is lawful and practical.
- 104 D. A flashing YELLOW ARROW signal indication shall be displayed as part of a
105 steady (stop-and-go) mode of operation only when it is intended to permit traffic to
106 cautiously enter the intersection to make a turn in the direction indicated by the
107 arrow after yielding to pedestrians, if any, and/or to opposing traffic, if any.
- 108 E. A flashing RED ARROW signal indication shall be displayed as part of a steady
109 (stop-and-go) mode of operation only when it is intended to permit traffic, after
110 coming to a full stop, to cautiously enter the intersection to make a turn in the
111 direction indicated by the arrow after yielding to pedestrians, if any, and/or to
112 opposing traffic, if any.
- 113 F. A steady RED ARROW signal indication shall be displayed when it is intended to
114 prohibit traffic, except pedestrians directed by a pedestrian signal head, from
115 entering the intersection or other controlled area to make the indicated turn.
116 Except as described in Item C.2 in Paragraph 3 of Section 4D.04, turning on a
117 steady RED ARROW signal indication shall not be permitted.
- 118 G. A steady YELLOW ARROW signal indication:
119 1. Shall be displayed in the same direction as a GREEN ARROW signal indication
120 following a GREEN ARROW signal indication in the same signal face, unless:
121 (a) The GREEN ARROW signal indication and a CIRCULAR GREEN (or
122 straight-through GREEN ARROW) signal indication terminate
123 simultaneously in the same signal face, or
124 (b) The green arrow is a straight-through GREEN ARROW (see Item B.1).
125 2. Shall be displayed in the same direction as a flashing YELLOW ARROW signal
126 indication or flashing RED ARROW signal indication following a flashing
127 YELLOW ARROW signal indication or flashing RED ARROW signal
128 indication in the same signal face, when the flashing arrow indication is

- 129 displayed as part of a steady mode operation, if the signal face will subsequently
130 display a steady red signal indication.
- 131 3. Shall not be displayed in conjunction with the change from a steady RED
132 ARROW, flashing RED ARROW, or flashing YELLOW ARROW signal
133 indication to a GREEN ARROW signal indication, except when entering
134 preemption operation as provided in Item 5(a).
- 135 4. Shall not be displayed when any conflicting vehicular movement has a green or
136 yellow signal indication (except for the situation regarding U-turns to the left
137 provided in Paragraph 4) or any conflicting pedestrian movement has a
138 WALKING PERSON (symbolizing WALK) or flashing UPRAISED HAND
139 (symbolizing DONT WALK) signal indication, except that a steady left-turn (or
140 U-turn to the left) YELLOW ARROW signal indication used to terminate a
141 flashing left-turn (or U-turn to the left) YELLOW ARROW or a flashing left-
142 turn (or U-turn to the left) RED ARROW signal indication in a signal face
143 controlling a permissive left-turn (or U-turn to the left) movement as described
144 in Sections 4D.18 and 4D.20 shall be permitted to be displayed when a
145 CIRCULAR YELLOW signal indication is displayed for the opposing through
146 movement. Vehicles departing in the same direction shall not be considered in
147 conflict if, for each turn lane with moving traffic, there is a separate departing
148 departure lane, and pavement markings or raised channelization clearly indicate
149 which departure lane to use.
- 150 5. Shall not be displayed to terminate a flashing arrow signal indication on an
151 approach from which drivers are turning left permissively or making a U-turn
152 to the left permissively unless one of the following conditions exists:
- 153 (a) A steady CIRCULAR YELLOW signal indication is also simultaneously
154 being displayed to the opposing approach;
- 155 (b) An engineering study has determined that, because of unique intersection
156 conditions, the condition described in Item (a) cannot reasonably be
157 implemented without causing significant operational or safety problems and
158 that the volume of impacted left-turning or U-turning traffic is relatively low,
159 and those left-turning or U-turning drivers are advised that a steady
160 CIRCULAR YELLOW signal indication is not simultaneously being
161 displayed to the opposing traffic if this operation occurs continuously by the
162 installation near the left-most signal head of a W25-1 sign (see Section 2C.48)
163 with the legend ONCOMING TRAFFIC HAS EXTENDED GREEN; or
- 164 (c) Drivers are advised of the operation if it occurs only occasionally, such as
165 during a preemption sequence, by the installation near the left-most signal
166 head of a W25-2 sign (see Section 2C.48) with the legend ONCOMING
167 TRAFFIC MAY HAVE EXTENDED GREEN.
- 168 6. Shall be terminated by a RED ARROW signal indication for the same direction
169 or a CIRCULAR RED signal indication except:
- 170 (a) When entering preemption operation, the display of a GREEN ARROW
171 signal indication or a flashing arrow signal indication shall be permitted
172 following a steady YELLOW ARROW signal indication.
- 173 (b) When the movement controlled by the arrow is to continue on a permissive
174 mode basis during an immediately following signal phase, the display of a

CIRCULAR GREEN signal indication or flashing YELLOW ARROW signal indication shall be permitted following a steady YELLOW ARROW signal indication.

H. A steady GREEN ARROW signal indication:

1. Shall be displayed only to allow vehicular movements, in the direction indicated, that are not in conflict with other vehicles moving on a green or yellow signal indication (except for the situations regarding U-turns provided in Paragraph 4 and straight-thru GREEN ARROWS provided in Paragraph 5), even if the other vehicles are required to yield the right-of-way to the traffic moving on the GREEN ARROW signal indication, and are not in conflict with pedestrians crossing in compliance with a WALKING PERSON (symbolizing WALK) or flashing UPRAISED HAND (symbolizing DONT WALK) signal indication. Vehicles departing in the same direction shall not be considered in conflict if, for each turn lane with moving traffic, there is a separate ~~departing~~ departure lane, and pavement markings or raised channelization clearly indicate which departure lane to use.
2. Shall be displayed on a signal face that controls a left-turn movement when said movement is not in conflict with other vehicles moving on a green or yellow signal indication (except for the situation regarding U-turns provided in Paragraph 4) and is not in conflict with pedestrians crossing in compliance with a WALKING PERSON (symbolizing WALK) or flashing UPRAISED HAND (symbolizing DONT WALK) signal indication. Vehicles departing in the same direction shall not be considered in conflict if, for each turn lane with moving traffic, there is a separate ~~departing~~ departure lane, and pavement markings or raised channelization clearly indicate which departure lane to use.
3. Shall not be required on the stem of a T-intersection or for turns from a one-way street.

Option:

04 If U-turns are permitted from the approach and a right-turn GREEN ARROW signal indication is simultaneously being displayed to road users making a right turn from the conflicting approach to the left, road users making a U-turn may be advised of the operation by the installation near the left-turn signal face of a U-TURN YIELD TO RIGHT TURN (R10-16) sign (see Section 2B.53).

05 If not otherwise prohibited, to discourage wrong way turns, a steady straight-through GREEN ARROW signal indication may be used instead of a CIRCULAR GREEN signal indication in a signal face under the following conditions, even if opposed by a simultaneous permissive left-turn movement:

A. on an approach intersecting a one-way street; ~~to discourage wrong way turns.~~

B. on an approach intersecting an interchange ramp; or

C. on an approach with unique geometric design that prohibits turns.

06 If not otherwise prohibited, steady red, yellow, and green turn arrow signal indications may be used instead of steady circular red, yellow, and green signal indications in a signal face on an approach where all traffic is required to turn or where the straight-through movement is not physically possible.

Support:

- 220 07 Section 4D.25 contains information regarding the signalization of approaches that have a
221 ~~shared combined~~ left-turn/right-turn lane and no through movement.
- 222 **Standard:**
- 223 08 **If supplemental signal faces are used, the following limitations shall apply:**
- 224 **A. Left-turn arrows and U-turn arrows to the left shall not be used in near-right signal**
225 **faces.**
- 226 **B. Right-turn arrows and U-turn arrows to the right shall not be used in far-left signal**
227 **faces. A far-side median-mounted signal face shall be considered a far-left signal for**
228 **this application.**
- 229 09 **A straight-through RED ARROW signal indication or a straight-through YELLOW**
230 **ARROW signal indication shall not be displayed on any signal face, either alone or in**
231 **combination with any other signal indication.**
- 232 10 **The following combinations of signal indications shall not be simultaneously displayed**
233 **on any one signal face:**
- 234 **A. CIRCULAR RED with CIRCULAR YELLOW;**
235 **B. CIRCULAR GREEN with CIRCULAR RED; or**
236 **C. Straight-through GREEN ARROW with CIRCULAR RED;**
- 237 11 **Additionally, the above combinations shall not be simultaneously displayed on an**
238 **approach as a result of the combination of displays from multiple signal faces unless the**
239 **display is created by a signal face(s) devoted exclusively to the control of a right-turning**
240 **movement and:**
- 241 **A. The signal face(s) controlling the right-turning movement is visibility-limited from**
242 **the adjacent through movement or positioned to minimize potential confusion to**
243 **approaching road users, or**
- 244 **B. A RIGHT TURN SIGNAL (R10-10) sign (see Sections 4D.21 through 4D.24) is**
245 **mounted adjacent to the signal face(s) controlling the right-turning movement.**
- 246 12 **The following combinations of signal indications shall not be simultaneously displayed**
247 **on any one signal face or as a result of the combination of displays from multiple signal**
248 **faces on an approach:**
- 249 **A. CIRCULAR GREEN with CIRCULAR YELLOW;**
250 **B. Straight-through GREEN ARROW with CIRCULAR YELLOW;**
251 **C. GREEN ARROW with YELLOW ARROW pointing in the same direction;**
252 **D. RED ARROW with YELLOW ARROW pointing in the same direction; or**
253 **E. GREEN ARROW with RED ARROW pointing in the same direction.**
- 254 13 ~~Except as otherwise provided in Sections 4F.03 and 4G.04, the same signal section shall~~
255 ~~not be used to display both a flashing yellow and a steady yellow indication during steady~~
256 ~~mode operation.~~ **Except as otherwise provided in Sections 4D.18, 4D.20, 4D.22, and 4D.24,**
257 **the same signal section shall not be used to display both a flashing red and a steady red**
258 **indication during steady mode operation.**
- 259 *Guidance:*
- 260 14 *No movement that creates an unexpected crossing of pathways of moving vehicles or*
261 *pedestrians should be allowed during any green or yellow interval, except when all three of the*
262 *following conditions are met:*
- 263 **A. The movement involves only slight conflict, and**
264 **B. Serious traffic delays are substantially reduced by permitting the conflicting movement, and**

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266

- C. Drivers and pedestrians subjected to the unexpected conflict are effectively warned thereof by a sign.