



ITS Texas/TexITE Joint Meeting

Summary of Key Changes in the 11th Edition of the National MUTCD

Part 4 - Highway Traffic Signals

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CHAPTER 4A. GENERAL



- Section 4A.05 Meanings of Bicycle Symbol Signal Indications
 - Added meanings except does not include meaning of flashing yellow bicycle signal indication:

A flashing YELLOW BICYCLE signal indication has no meaning and shall not be used.

- FHWA has provided a FAQ item on the MUTCD website noting that a flashing yellow Bicycle Symbol Signal Indication is permitted if used when a traffic control signal is operating in flashing mode, but not if operating in a steady mode



CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES

- In various sections, many Standards for signal warrants changed to Guidance

“**shall be considered** if an engineering study finds...”

to

“**should be considered** if an engineering study finds...”

CHAPTER 4D. DESIGN FEATURES OF TRAFFIC CONTROL SIGNALS



- Section 4D.06 Visibility, Aiming, and Shielding of Signal Faces
 - Legends that identify the purpose of the signal face are prohibited on backplates

- Section 4D.07 Lateral Positioning of Signal Faces
 - Separate turn signal faces over the roadway should be at least 8' from adjacent face for a different movement & Option for 3' for mods to existing heads

- Section 4D.09 Mounting Height of Signal Faces
 - Most Standards related to the maximum height for vehicular signal faces from Standard to Guidance

- Section 4D.10 Lateral Offset (Clearance) of Signal Faces
 - 2' horizontal offset changed from Standard to Guidance

CHAPTER 4E. TRAFFIC CONTROL SIGNAL INDICATIONS

- In various sections, “dual-arrow signal section” changed to “bimodal signal section providing for alternating the display between a –
 - GREEN ARROW and a steady YELLOW ARROW
 - Steady YELLOW ARROW and a flashing YELLOW ARROW
 - GREEN ARROW and a flashing YELLOW ARROW

- Section 4E.02 Size of Vehicular Signal Indications
 - 4” indications added (for bicycle signal faces)

CHAPTER 4F. STEADY (STOP-AND-GO) OPERATION OF TRAFFIC CONTROL SIGNALS



- Section 4F.01 Application of Steady and Flashing Signal Indications during Steady (Stop-and-Go) Operation
 - A new Option allowing a straight through GREEN ARROW in certain cases to discourage wrong-way turns even if opposed by a simultaneous permissive left-turn movement
 - ❖ A. On an approach intersecting a one-way street;
 - ❖ B. On an approach intersecting an interchange exit ramp;
 - ❖ C. On an approach with unique geometric design that prohibits turns; or
 - ❖ D. On an approach with pre-signals and the adjacent lanes are controlled separately

CHAPTER 4F. STEADY (STOP-AND-GO) OPERATION OF TRAFFIC CONTROL SIGNALS



- Section 4F.01(cont.)
 - A new Standard allowing certain combination of indications from multiple signal faces on an approach to a pre-signal or a queue-cutter signal
 - ❖ A. Straight-through GREEN ARROW with CIRCULAR RED,
 - ❖ B. Straight-through GREEN ARROW with CIRCULAR YELLOW, and
 - ❖ C. CIRCULAR YELLOW with CIRCULAR RED.

CHAPTER 4F. STEADY (STOP-AND-GO) OPERATION OF TRAFFIC CONTROL SIGNALS



- Section 4F.02 Signal Indications for Left-Turn Movements – General & Section 4F.09 Signal Indications for Right-Turn Movements – General
 - Prohibition of certain indications when a combined left(right)-turn /through lane exists
 - ❖ A. GREEN ARROW, YELLOW ARROW or flashing RED ARROW for the turning movement with CIRCULAR RED for the through movement, and
 - ❖ B. A RED ARROW for the turning movement with a CIRCULAR GREEN or CIRCULAR YELLOW for the through movement

CHAPTER 4F. STEADY (STOP-AND-GO) OPERATION OF TRAFFIC CONTROL SIGNALS



- Section 4F.16 Signal Indications for Approaches with No Through Movement
 - Two indications not required for the turning movement that is the major movement for a single lane approach
 - CIRCULAR GREEN and CIRCULAR YELLOW signal indications prohibited under certain conditions:
 - A. The posted or statutory speed limit on the approach is 35 mph or higher,
 - B. The one-way roadway that opposes the approach is an exit ramp from a freeway or expressway, or
 - C. The one-way roadway that opposes the approach has a posted or statutory speed limit of 35 mph or higher

CHAPTER 4H. BICYCLE SIGNALS

New Chapter for Bicycle Signals



- Section 4H.01 Use of Bicycle Signal Faces
 - Only used to control movements from a designated bicycle lane or from a separate facility
 - Control a bicyclist movement only when 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

- Section 4H.02 Prohibited Uses of Bicycle Signal Faces
 - Not for use when bicyclists are sharing an approach lane with motor vehicle traffic
 - Not for use at/with a pedestrian hybrid beacon

CHAPTER 4H. BICYCLE SIGNALS

- 4H.03 - Bicycle Signal Signs
 - Signs required with bicycle signal faces



R10-40



R10-40a



R10-41



R10-41a



R10-41b



R10-41c



CHAPTER 4H. BICYCLE SIGNALS

- Section 4H.05 Application of Bicycle Symbol Signal Indications during Flashing Operation
 - Bicycle signal faces operate in the same mode (steady or flashing) as other traffic signal faces at the location
 - Bicycle signal faces cannot be dark when other vehicular traffic signal faces are flashing
 - Bicycle signal faces should flash yellow if the other vehicular signal faces for the through lanes as flashing yellow (unless engineering judgment determines flashing red is safer)

- Section 4H.06 Layout of Bicycle Signal Faces
 - Bicycle signal faces contain only bicycle symbol signal indications, circular or arrow signal indications are not permitted in a bicycle signal face
 - The bicycle symbol in the indication must face to the left



CHAPTER 4H. BICYCLE SIGNALS

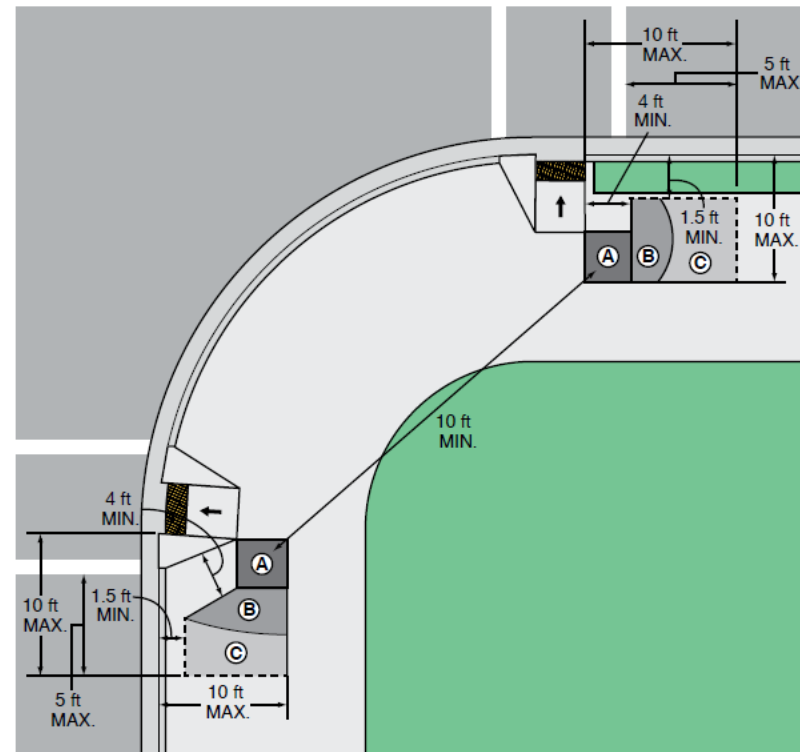
- 4H.07 – Size of Bicycle Symbol Signal Indications
 - 3 sizes – 4”, 8”, & 12”
 - All indications are the same size in a bicycle signal face
 - 4” indications only used for a supplemental, post-mounted, near-side bicycle signal face

- 4H.08 - Placement of Bicycle Signal Faces
 - Only 1 bicycle signal face required
 - Primary face must have 8” or 12” indications
 - Supplemental near-side face required if primary face is more than 120’ past the stop line
 - Should be at least 3’ from nearest vehicular traffic signal face for the same approach

CHAPTER 4I. PEDESTRIAN CONTROL FEATURES

- Section 4I.05 Pedestrian Detectors
 - A sign explaining the purpose and use is required for a pedestrian push button
 - Revised Guidance and figure regarding the recommended location of pedestrian push buttons

Figure 4I-2. Preferred Push Button Location Area





CHAPTER 4I. PEDESTRIAN CONTROL FEATURES

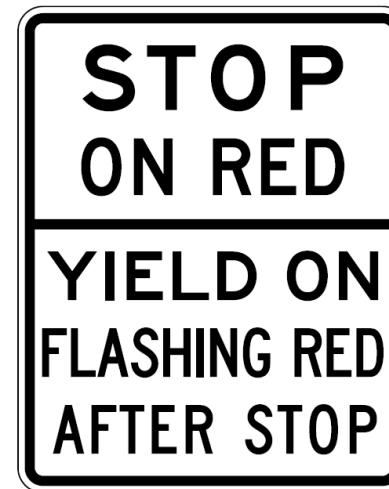
- Section 4I.06 Pedestrian Intervals and Signal Phases
 - Revised Guidance for the duration of a WALKING PERSON indication with a leading pedestrian interval to be:

LPI time plus 7 seconds

- 2009 MUTCD only addressed duration of LPI, not total WALKING PERSON time

CHAPTER 4J. PEDESTRIAN HYBRID BEACONS

- 4J.02 Design of Pedestrian Hybrid Beacons (PHB)
 - STOP sign now required for minor-street approach if PHB installed at intersection with minor street
 - 2009 MUTCD Guidance recommending installation at least 100' from STOP or YIELD controlled side streets or driveways removed
 - Additional legend or optional R10-23 sign



CHAPTER 4J. PEDESTRIAN HYBRID BEACONS



- Section 4J.03 Operation of Pedestrian Hybrid Beacons
 - Must flash CIRCULAR YELLOW indications if flashing due to a conflict monitor or a manual switch (with pedestrian signals dark)

CHAPTER 4L. RECTANGULAR RAPID FLASHING BEACONS

- Section 4L.01 Application of Rectangular Rapid Flashing Beacons
 - Only supplements a post-mounted W11-2 (Pedestrian), S1-1 (School), or W11-15 (Trail) crossing warning sign with a diagonal downward arrow (W16-7P) plaque,



or an overhead-mounted W11-2 , S1-1, or W11-15 crossing warning sign, located at or immediately adjacent to a marked crosswalk (omit W16-7P for overhead mounting)



CHAPTER 4L. RECTANGULAR RAPID FLASHING BEACONS

- Section 4L.01 (cont.)
 - Not used for crosswalks controlled by YIELD signs, STOP signs, traffic control signals, or pedestrian hybrid beacons except crosswalks across the approach to or egress from a roundabout, or crosswalks across free-flow turn lanes separated by a channelizing island
- 4L.02 Design of Rectangular Rapid Flashing Beacons
 - Permitted to be installed between crossing warning sign and the supplemental plaque or above and within 12” of the crossing warning sign
 - At least two crossing warning signs (each with an RRFB unit and a W16-7P plaque) must be installed at the crosswalk, one on the right-hand side and one on the left-hand side of the highway
 - On a divided highway, the left-hand side RRFB assembly should be installed on the median, if practicable, rather than on the far-left side of the highway

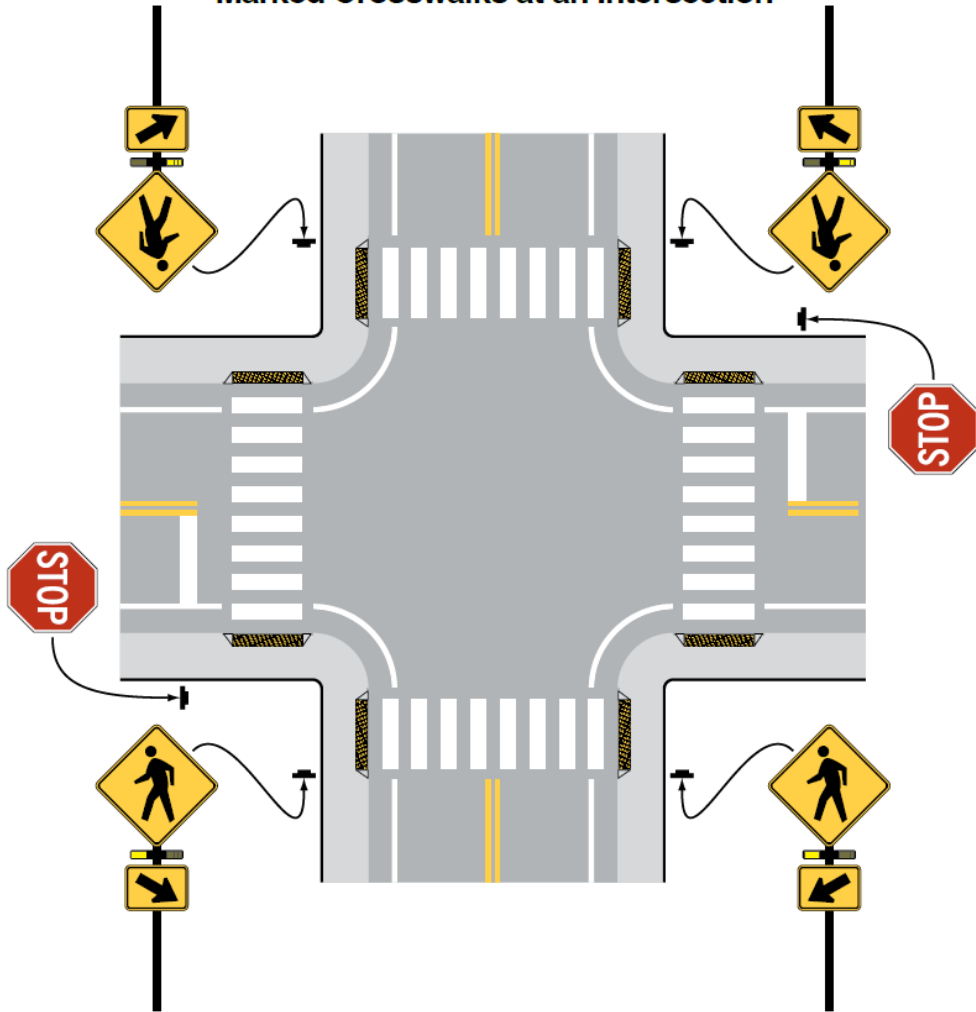


CHAPTER 4L. RECTANGULAR RAPID FLASHING BEACONS

- 4L.02 (cont.)
 - R10-25 PUSH BUTTON TO TURN ON WARNING LIGHTS/AWAIT GAP IN TRAFFIC (R10-25) sign required if pedestrian push button detectors (rather than passive detection) are used to actuate the RRFB indications
- Section 4L.03 Operation of Rectangular Rapid Flashing Beacons
 - If an audible information device is used,
 - ❖ it shall not use vibrotactile indications or percussive indications
 - ❖ the speech message should be, “Warning lights are flashing” and it should be spoken twice

CHAPTER 4L. RECTANGULAR RAPID FLASHING BEACONS

Figure 4L-1. Example of RRFBs at Uncontrolled, Marked Crosswalks at an Intersection



CHAPTER 4L. RECTANGULAR RAPID FLASHING BEACONS

- NOTE: While the R10-25 sign number did not change from the 2009 MUTCD, the sign legend was revised:



R10-25

2009 MUTCD



R10-25

11TH Edition MUTCD

- This R10-25 sign change applies to any use of this sign (RRFB, Warning Beacon, In-Roadway Warning Lights)

CHAPTER 4S. FLASHING BEACONS

- Section 4S.01 General Design and Operation of Flashing Beacons
 - Two sizes – 8” & 12”
 - Beacons shall not be within the boarder of a sign except for the Interchange Exit Direction signs with advisory speed panels (see Sections 2E.25).



Exit Direction sign with E13-2 sign panel
and flashing yellow beacons

CHAPTER 4S. FLASHING BEACONS



- Section 4S.03 Warning Beacon
 - Should use audible information device with pedestrian-actuated Warning Beacons
 - If an audible information device is used,
 - ❖ it shall not use vibrotactile indications or percussive indications
 - ❖ the speech message should be, “Warning lights are flashing” and it should be spoken twice



CHAPTER 4U. IN-ROADWAY WARNING LIGHTS

- Section 4U.02 In-Roadway Warning Lights at Crosswalks
 - Used only at marked crosswalk (with warning signs) which are not controlled by YIELD signs, STOP signs, traffic control signals, or pedestrian hybrid beacons
 - If an audible information device is used,
 - ❖ it shall not use vibrotactile indications or percussive indications
 - ❖ the speech message should be, “Warning lights are flashing” and it should be spoken twice



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QUESTIONS

