



MEMORANDUM

To: Bicycle and Pedestrian Task Force
Date: October 8, 2009
From: John O'Neal, CMAP Staff
Re: Proposed Revisions to the MUTCD

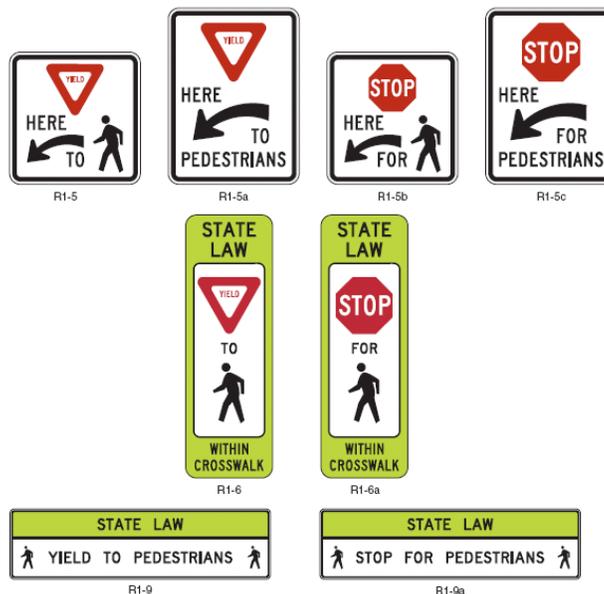
The following summarizes the major changes proposed for the new (2009) edition of the Manual on Uniform Traffic Control Devices (MUTCD), which affecting bicycle and pedestrian travel.

New Standard:

Section 2B.11 Yield-Here-To-Pedestrians Signs and Stop-Here-For-Pedestrians Signs (R1-5 Series)

Standard:

Yield-Here-To- (Stop-Here-For-) Pedestrians (R1-5, R1-5a, R1-5b, or R1-5c) signs (see Figure 2B-2) shall be used if yield (stop) lines are used in advance of a crosswalk that crosses an uncontrolled multi-lane approach.



Target Compliance Date: December 22, 2013.

## **New Guidance and Standard (refer to signs on Page 1):**

### **Section 2B.12 In-Street and Overhead Pedestrian Crossing Signs (R1-6, R1-6a, R1-9, and R1- 9a)**

#### **Guidance:**

In-Street Pedestrian Crossing signs should be used if engineering judgment or an engineering study indicates that one or more of the following conditions exists at an unsignalized location:

- A. There is a need to remind drivers of the normal right-of-way rule that requires them to stop for or yield to pedestrians within the crosswalk;
- B. The application of other measures has not achieved reasonable compliance with the law on the part of drivers; or
- C. The pedestrian volume crossing the roadway at an intersection or midblock location during an average day is 25 or more during any 1 hour.

#### **Standard:**

If used, the In-Street Pedestrian Crossing sign shall be placed in the roadway at the crosswalk location on the center line, on a lane line, or on a median island. The In-Street Pedestrian Crossing sign shall not be post-mounted on the left-hand or right-hand side of the roadway.

If used, the Overhead Pedestrian Crossing sign shall be placed over the roadway at the crosswalk location. An In-Street or Overhead Pedestrian Crossing sign shall be not be placed in advance of the crosswalk to educate road users about the State law prior to reaching the crosswalk, nor shall it be installed as an educational display that is not near any crosswalk.

#### **Standard:**

The In-Street Pedestrian Crossing sign and the Overhead Pedestrian Crossing sign shall not be used at signalized locations.

The STOP FOR legend shall only be used in States where the State law specifically requires that a driver must stop for a pedestrian in a crosswalk.

The In-Street Pedestrian Crossing sign shall have a black legend (except for the red STOP or YIELD sign symbols) and border on a white background, surrounded by an outer fluorescent yellow green background area, as illustrated in Figure 2B-2, or by an outer fluorescent yellow background area. The Overhead Pedestrian Crossing sign shall have a black legend and border on a fluorescent yellow or fluorescent yellow-green background at the top of the sign and a black legend and border on a white background at the bottom of the sign, as illustrated in Figure 2B-2.

Unless the In-Street Pedestrian Crossing sign is placed on a physical island, the sign support shall be designed to bend over and then bounce back to its normal vertical position when struck by a vehicle.

#### **Standard:**

The top of an In-Street Pedestrian Crossing sign shall be no more than 1.2 m (4 ft) above the pavement surface. The top of an In-Street Pedestrian Crossing sign placed in an island shall be no more than 1.2 m (4 ft) above the island surface.

- Target Compliance Dates: - In-street signs' special support requirements: 5 years from the effective date of the Final Rule for the 2009 MUTCD.  
 -Overhead Pedestrian Crossing signs: 10 years from the effective date of the Final Rule for the 2009 MUTCD.

**New Signs and Edited Standards:**

**Sections 2B.58 and 2B.59 Pedestrian Crossing Signs and Traffic Signal Signs (R10-1 through R10-32P)**

**Standard:**

Traffic Signal signs applicable to pedestrian actuation (see Figure 2B-29) or bicyclist actuation (see Figure 9B-2) shall be mounted immediately above or incorporated into the pushbutton detector units (see Section 4E.08).

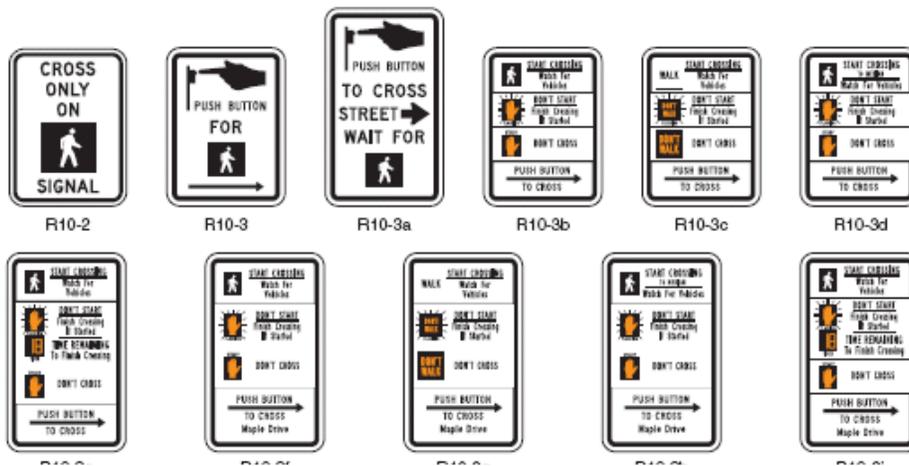
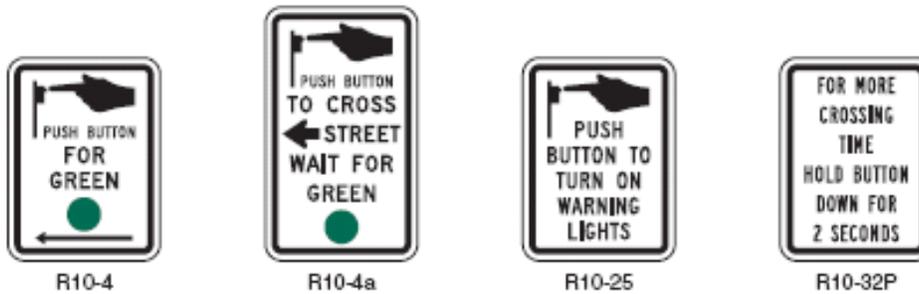


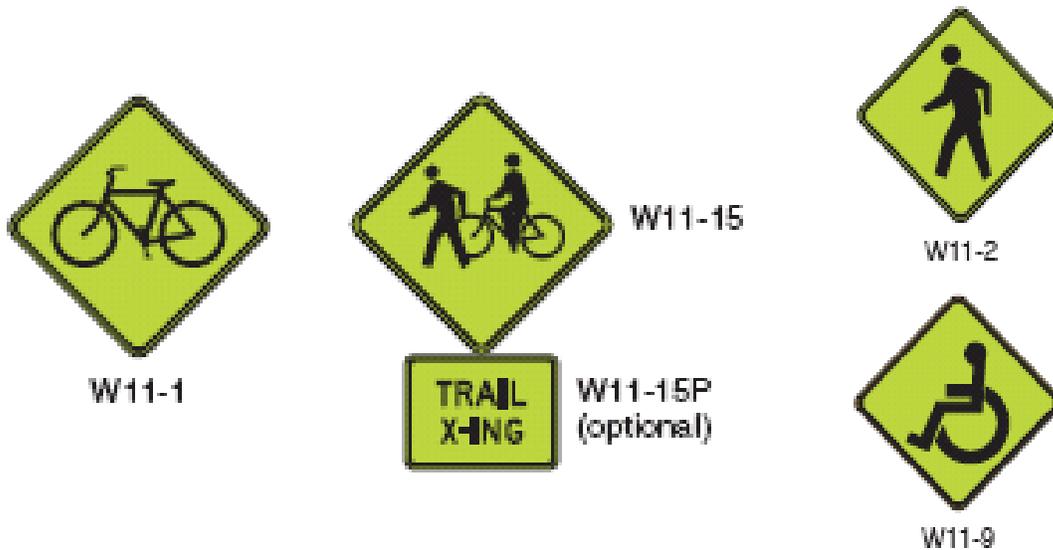
Figure 2B-29. Pedestrian Signs and Plaques (Sheet 2 of 2)



R10-15



R10-23



**New Signs and New Standards:**

**Section 2C.52 Nonvehicular Signs (W11-2, W11-3, W11-4, W11-6, W11-7, W11-9, and W11-16 through W11-22)**

**Standard:**

School signs and their related supplemental plaques shall have a fluorescent yellow-green background with a black legend and border (see Section 7B.07).

Target Compliance Date: 10 years from the effective date of the Final Rule for the 2009 MUTCD.

**New Standard**

**Section 3B.16 Stop and Yield Lines**

**Standard:**

Stop lines shall not be used at locations where drivers are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign or at locations on uncontrolled approaches where drivers are required by State law to yield to pedestrians.

Yield lines shall not be used at locations where drivers are required to stop in compliance with a STOP (R1-1) sign, a Stop Here For Pedestrians (R1-5b or R1-5c) sign, a traffic control signal, or some other traffic control device.

Figure 3B-15. Recommended Yield Line Layouts

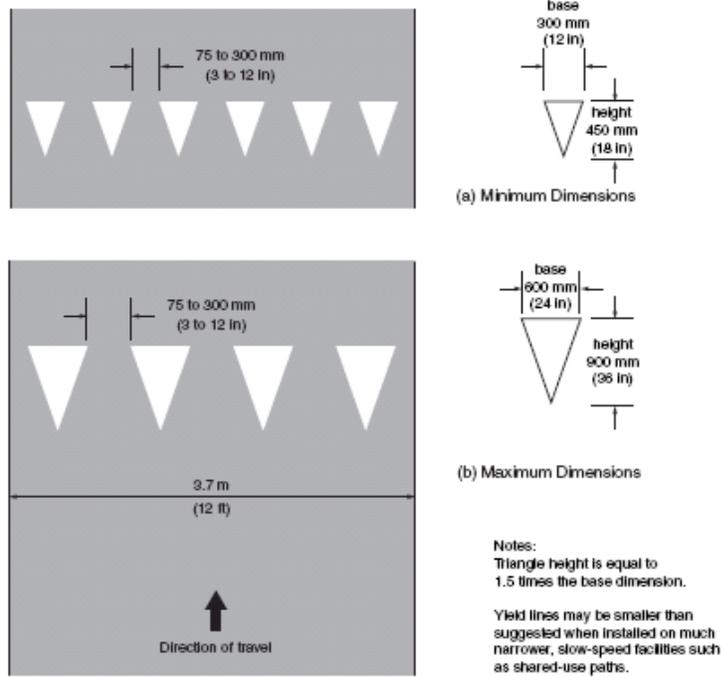
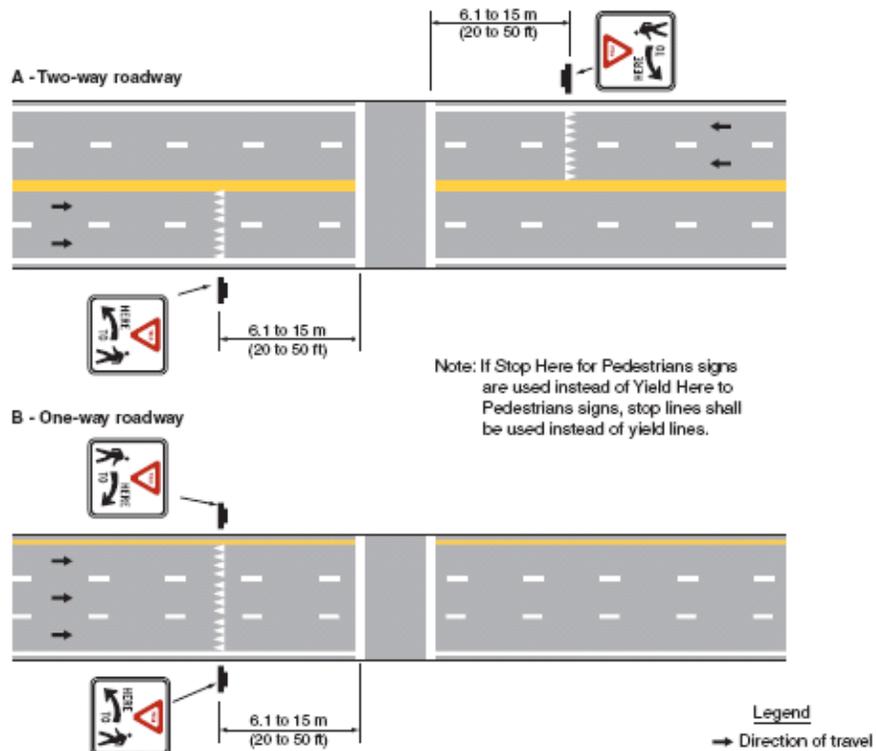


Figure 3B-16. Examples of Yield Lines at Unsignalized Midblock Crosswalks



## **New Guidance and Support**

### **Section 3B.18 Crosswalk Markings**

#### **Guidance:**

Crosswalk lines should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted speed limit, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

Marked crosswalks alone, without other substantial measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where:

- A. The speed limit exceeds 60 km/h (40 mph);
- B. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or
- C. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.

#### **Guidance:**

Crosswalk markings should be located so that the curb ramps are within the extension of the crosswalk markings (see Figure 3B-20).

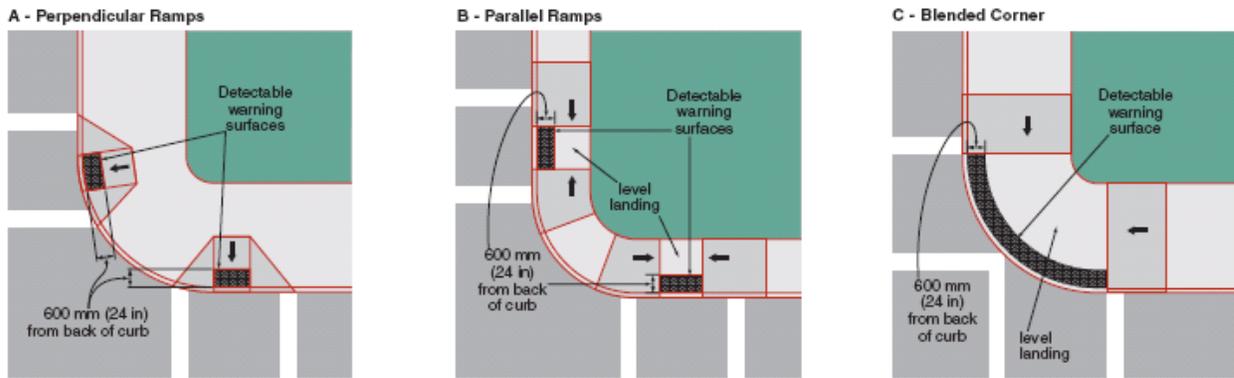
#### **Support:**

Detectable warning surfaces mark boundaries between pedestrian and vehicular ways where there is no raised curb. Detectable warning surfaces are required by 49 CFR, Part 37 and by the Americans with Disabilities Act (ADA) where curb ramps are constructed at the junction of sidewalks and the roadway, for marked and unmarked crosswalks. The surfaces extend from the back of the curb line for a distance of at least 600 mm (24 in) in the pedestrian direction of travel and for the full width of the curb ramp, landing, or blended transition (see Figure 3B-20). The surfaces enable pedestrians who have visual disabilities to detect the warning under foot, by use of a long white cane, or by low vision, and to come to a stop before stepping into the roadway. The surfaces also alert pedestrians who have visual disabilities to the presence of hazards in their line of travel, thus indicating to them that they need to stop and determine the nature of the hazard before proceeding farther.

The “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)” (see Section 1A.11) specifies that detectable warning surfaces consist of truncated domes having a base diameter of 23 to 36 mm (0.9 to 1.4 in), a top diameter of 12 to 23 mm (0.5 to 0.9 in), and a height of 5 mm (0.2 in). The center-to-center spacing of the domes is specified as 41 to 61 mm (1.6 to 2.4 in). The base-to-base spacing of the domes is specified as 16 mm (0.6 in) minimum, measured between the adjacent domes on a square grid.

Detectable warning surfaces contrast visually with adjacent walking surfaces, either light-on-dark, or dark-on-light.

Figure 3B-20. Examples of Detectable Warning Installations at Curb Ramps



**Target Compliance Date: December 22, 2013**

## New Support

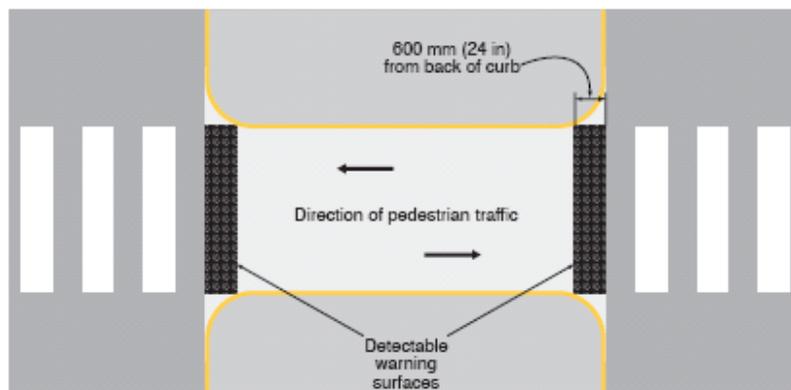
### Support:

Raised islands or medians of sufficient width that are placed in the center area of a street or highway can serve as a place of refuge for pedestrians who are attempting to cross at a midblock or intersection location. Center islands or medians allow pedestrians to find an adequate gap in one direction of traffic at a time, as the pedestrians are able to stop, if necessary, in the center island or median area and wait for an adequate gap in the other direction of traffic before crossing the second half of the street or highway. The minimum widths for refuge islands are specified in the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)” (see Section 1A.11).

Placement of detectable warnings (see Section 3B.18) at the back of the curb line on curb ramps allows placement of the detectable warning behind depressed curbing.

At cut-through islands or medians (see Figure 3G-1), detectable warnings can readily be placed such that they are even with or just behind the face of curb to increase the separation between the detectable warnings at the opposite sides of the island or median to better define the area of refuge. Increased separation also provides clearer information to pedestrians who have visual disabilities.

Figure 3G-1. Examples of Detectable Warnings at an Island Cut-Through



## New Standard

### Section 4C.05 Warrant 4, Pedestrian Volume

#### Standard:

The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that both one of the following criteria are met:

- A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5; or
- B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-6.

Target Compliance Date: 15 years from the effective date of the Final Rule for the 2009 MUTCD.

## New Standard

### Section 4E.06 Accessible Pedestrian Signals

#### Standard:

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

Target Compliance Date: 10 years from the effective date of the Final Rule for the 2009 MUTCD.

## New Standard

### Section 4E.07 Countdown Pedestrian Signals

#### Standard:

Except at crosswalks that are so short that the duration of the pedestrian change interval is 3 seconds or less, all new pedestrian signal heads shall include a pedestrian change interval countdown display in order to inform pedestrians of the number of seconds remaining in the pedestrian change interval. A pedestrian change interval countdown display shall be added to all existing pedestrian signal heads, except those being used for crosswalks that are so short that the duration of the pedestrian change interval is 3 seconds or less, within the 10-year compliance period specified in the Introduction of this Manual.

Countdown pedestrian signals shall consist of Portland orange numbers that are at least 150 mm (6 in) in height on a black opaque background. The countdown pedestrian signal shall be located immediately adjacent to the associated UPRAISED HAND (symbolizing DONT WALK) pedestrian signal head indication.

The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval (flashing UPRAISED HAND). After the countdown displays zero, the display shall remain dark until the beginning of the next countdown.

The countdown pedestrian signal shall display the number of seconds remaining until the termination of the pedestrian change interval (flashing UPRAISED HAND). Countdown displays shall not be used during the walk interval or during the yellow change interval of a concurrent vehicular phase.

Target Compliance Date: December 22, 2013

## New Standard and Guidance

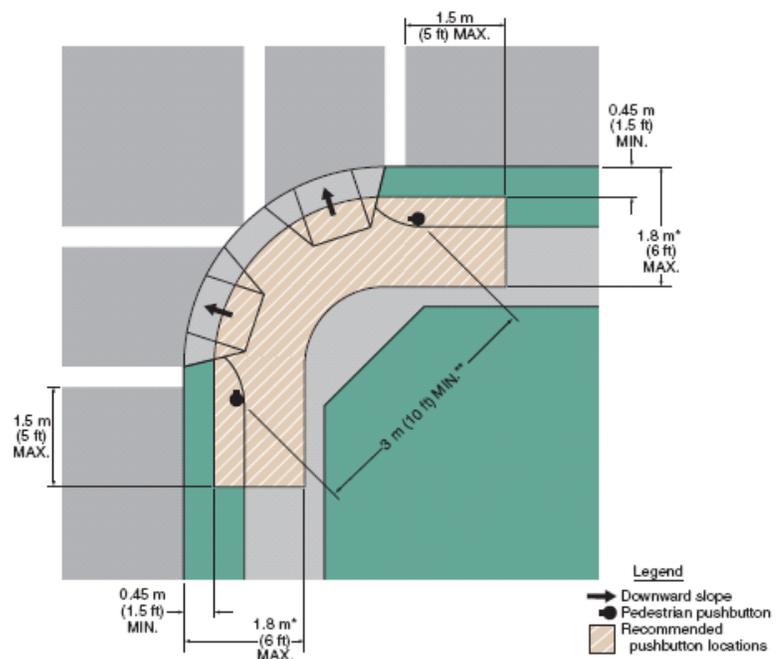
### Section 4E.08 Pedestrian Detectors

#### Standard:

If pedestrian pushbuttons are used, they shall be capable of easy activation and conveniently located near each end of the crosswalks. Except as noted in the Guidance below, pedestrian pushbuttons shall be located to meet all of the following criteria (see Figure 4E-2):

- A. Unobstructed and adjacent to a level all-weather surface to provide access from a wheelchair;
- B. Where there is an all-weather surface, a wheelchair accessible route from the pushbutton to the ramp;
- C. Between the edge of the crosswalk line (extended) farthest from the center of the intersection and the side of a curb ramp (if present), but not greater than 1.5 m (5 ft) from said crosswalk line;
- D. Between 0.45 m (1.5 ft) and 1.8 m (6 ft) from the edge of the curb, shoulder, or pavement;
- F. At a maximum mounting height of 1.2 m (4 ft) above the sidewalk. interval is 3 seconds or less, all new pedestrian signal heads shall include a

Figure 4E-2. Recommended Pushbutton Locations



\* Where there are constraints that make it impractical to place the pedestrian pushbutton between 0.45 m (1.5 ft) and 1.8 m (6 ft) from the edge of the curb, shoulder, or pavement, it should not be further than 3 m (10 ft) from the edge of curb, shoulder, or pavement.

\*\* Where there are constraints on a particular corner that make it impractical to provide the 3 m (10 ft) separation between the two pedestrian pushbuttons, the pushbuttons may be placed closer together or on the same pole.

Guidance:

Figure 4E-3 shows typical pushbutton locations for a variety of situations.

Figure 4E-3. Typical Pushbutton Locations (Sheet 1 of 2)

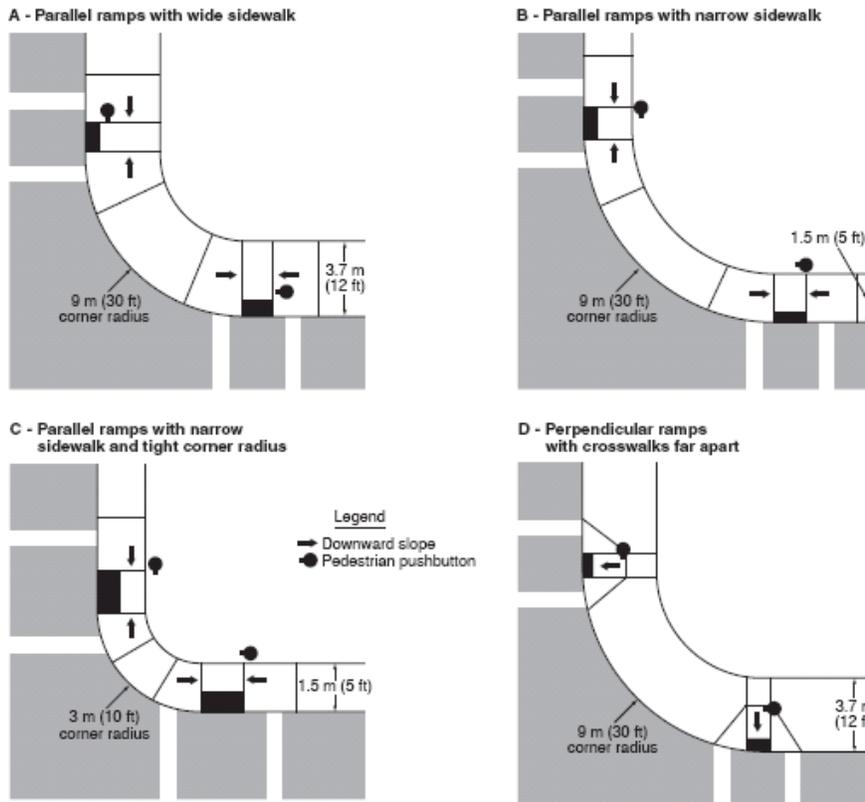
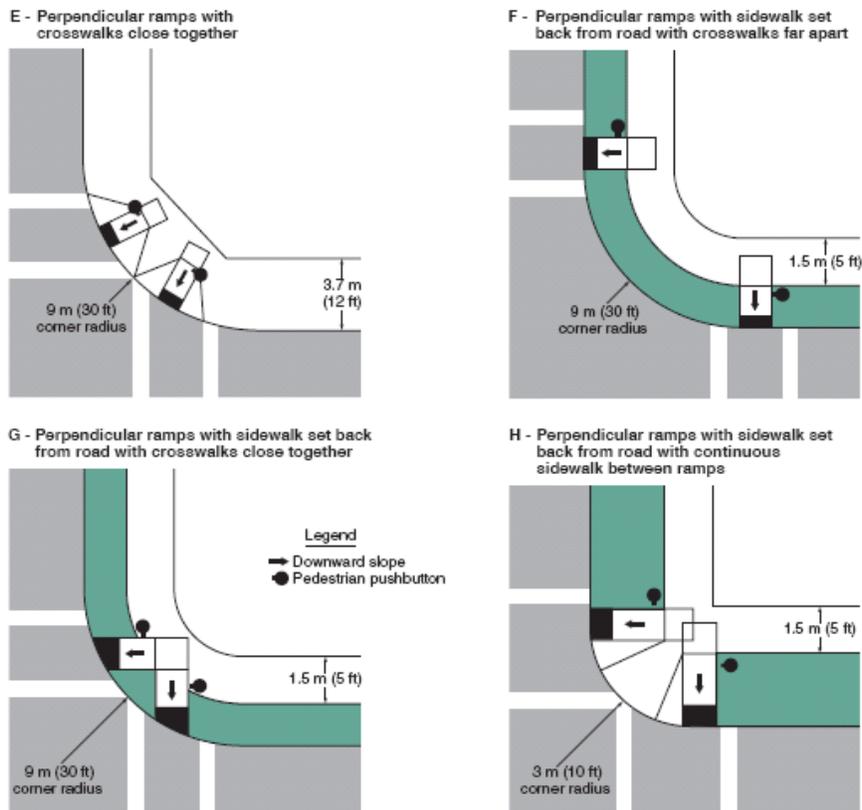


Figure 4E-3. Typical Pushbutton Locations (Sheet 2 of 2)



## **New Guidance**

### **Section 4E.10 Pedestrian Intervals and Signal Phases**

#### **Guidance:**

Except as noted in the Option immediately below, the pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the curb or shoulder at the end of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 1.1 m (3.5 ft) per second to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait.

#### **Guidance:**

Where pedestrians who walk slower than 1.1 m (3.5 ft) per second, or pedestrians who use wheelchairs, routinely use the crosswalk, a walking speed of less than 1.1 m (3.5 ft) per second should be considered in determining the pedestrian clearance time.

#### **Guidance:**

The total of the walk interval and pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the pedestrian detector (or, if no pedestrian detector is present, a location 1.8 m (6 ft) from the face of the curb or from the edge of the pavement) at the beginning of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 0.9 m (3 ft) per second to the far side of the traveled way being crossed. Any additional time that is required to satisfy the conditions of this paragraph should be added to the walk interval.

## **New Chapter**

### **Chapter 4F Pedestrian Hybrid Signals**

#### **Section 4F.01 Application of Pedestrian Hybrid Signals**

#### **Support:**

A pedestrian hybrid signal is a special type of hybrid signal used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk.

#### **Option:**

A pedestrian hybrid signal may be considered for installation at a location that does not meet other traffic signal warrants to facilitate pedestrian crossings.

#### **Standard:**

**If used, pedestrian hybrid signals shall be used in conjunction with signs and pavement markings to warn and control traffic at locations where pedestrians enter or cross a street or highway. A pedestrian hybrid signal shall only be installed at a marked crosswalk.**

#### **Guidance:**

If a location meets the traffic control signal warrants under Sections 4C.05 and/or 4C.06 and a decision is made not to install a traffic control signal, a pedestrian hybrid signal should be considered. If one of the signal warrants of Chapter 4C is met and a traffic control signal is

justified by an engineering study, and if a decision is made to install a traffic control signal, it should be installed based upon the provisions of Chapters 4D and 4E.

If a traffic control signal is not justified under the signal warrants of Chapter 4C and if gaps in traffic are not adequate to permit pedestrians to cross, or if the speed for vehicles approaching on the major street is too high to permit pedestrians to cross, or if pedestrian delay is excessive, the need for a pedestrian hybrid signal should be considered on the basis of an engineering study that considers major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay.

### Section 4F.03 Operation of Pedestrian Hybrid Signals

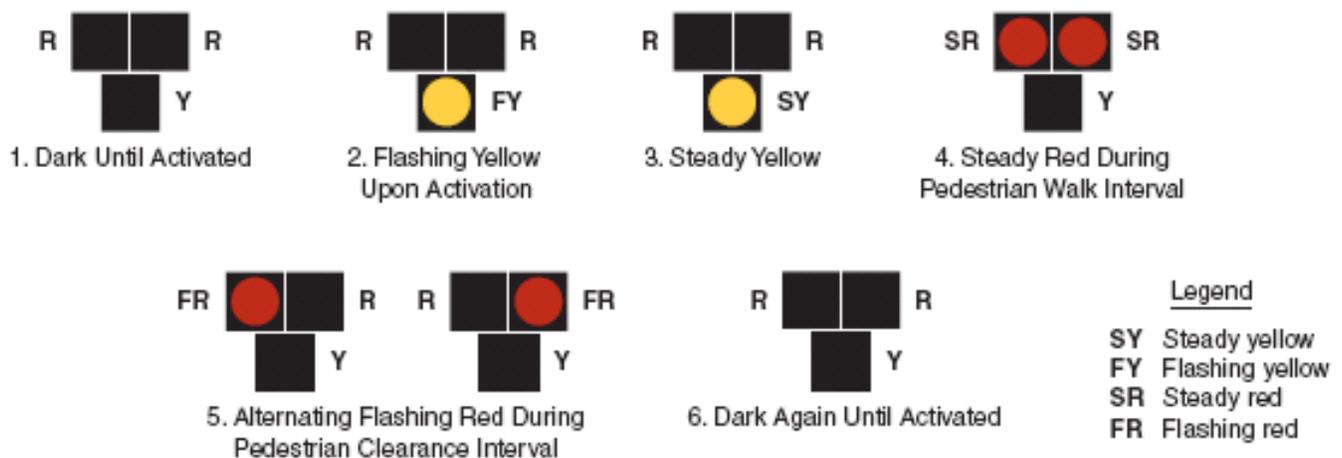
#### Standard:

**Pedestrian hybrid signal indications shall be dark (not illuminated) during periods between actuations.**

Upon actuation by a pedestrian, a pedestrian hybrid signal face shall display a flashing CIRCULAR YELLOW signal indication, followed by a steady CIRCULAR YELLOW signal indication, followed by both steady CIRCULAR RED signal indications during the pedestrian walk interval, followed by alternating flashing CIRCULAR RED signal indications during the pedestrian clearance interval (see Figure 4F-3). Upon termination of the pedestrian clearance interval, the pedestrian hybrid signal faces shall revert to a dark (not illuminated) condition.

Except as noted in the Option below, the pedestrian signal heads shall continue to display a steady UPRAISED HAND (symbolizing DONT WALK) signal indication when the pedestrian hybrid signal faces are either dark or displaying flashing or steady CIRCULAR YELLOW signal indications. The pedestrian signal heads shall display a WALKING PERSON (symbolizing WALK) signal indication when the pedestrian hybrid signal faces are displaying steady CIRCULAR RED signal indications. The pedestrian signal heads shall display a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication when the pedestrian hybrid signal faces are displaying alternating flashing CIRCULAR RED signal indications. Upon termination of the pedestrian clearance interval, the pedestrian signal heads shall revert to a steady UPRAISED HAND (symbolizing DONT WALK) signal indication.

*Figure 4F-3. Sequence for a Pedestrian Hybrid Signal*



**Target Compliance Date: 10 years from the effective date of the Final Rule for the 2009 MUTCD.**

## New Signs and Standard:

### Section 7B.07 Sign Color for School Warning Signs

#### Standard:

School warning signs, including the “SCHOOL” portion of the School Speed Limit (S5-1) sign, and any supplemental plaques used in association with these signs shall have a fluorescent yellow-green background with a black legend and border unless otherwise stated in this Manual for a specific sign.

Figure 7B-5. In-Street Signs in School Areas

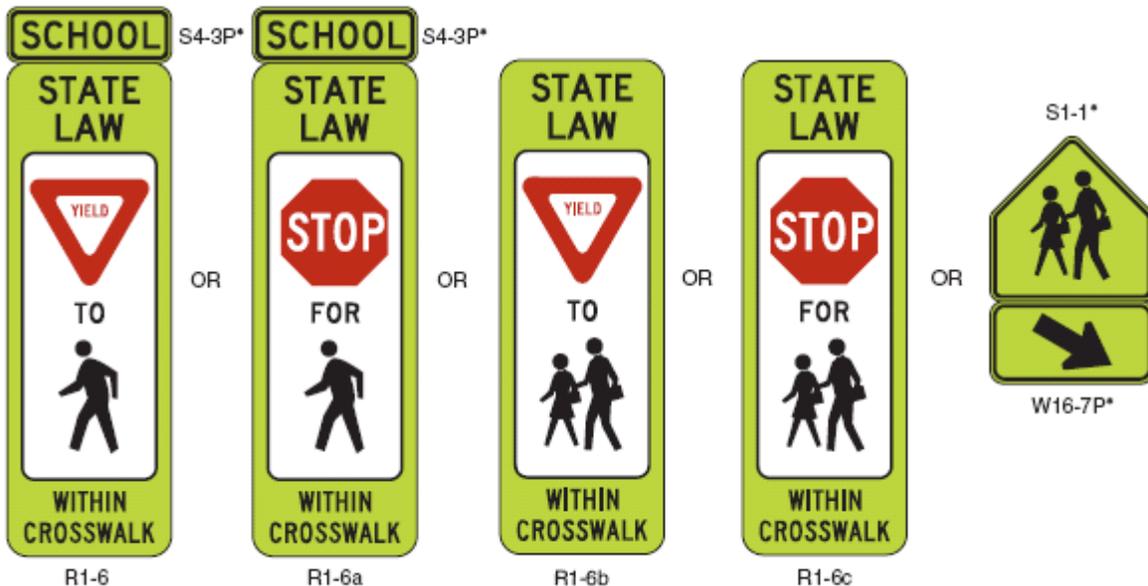
A - In advance of the school crossing



\* Reduced size signs:

S1-1	300 x 300 mm (12 x 12 in)
S4-3P	300 x 100 mm (12 x 4 in)
W16-7P	300 x 150 mm (12 x 6 in)
W16-9P	300 x 150 mm (12 x 6 in)

B - At the school crossing



Note: The use of the SCHOOL plaque above the R1-6 and R1-6a signs is optional.

## New Sign, Support and Option:

### Section 9B.06 Bicycles May Use Full Lane Sign (R4-11)

#### Option:

The Bicycles May Use Full Lane (R4-11) sign (see Figure 9B-2) may be used on roadways where no bicycle lanes or adjacent shoulders usable by bicyclists are present and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side.

The Bicycles May Use Full Lane sign may be used in locations where it is important to inform road users that bicyclists might occupy the travel lane.

Support:

The Uniform Vehicle Code (UVC) defines a “substandard width lane” as a “lane that is too narrow for a bicycle and a vehicle to travel safely side by side within the same lane.”



R4-11

**Target Compliance Date: 10 years from the effective date of the Final Rule for the 2009 MUTCD.**

Figure 9C-3. Example of Bicycle Lane Treatment at a Right Turn Only Lane

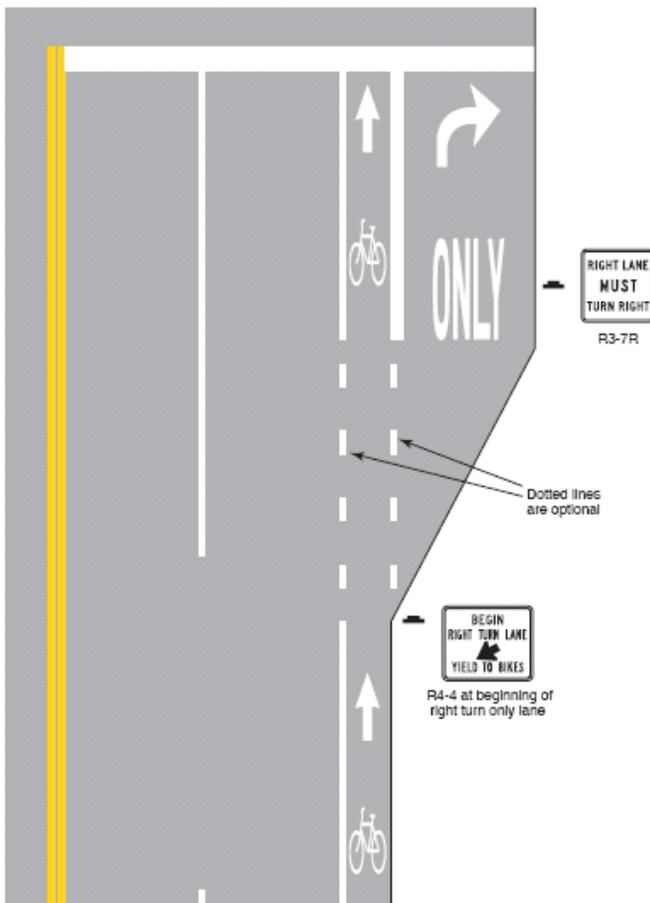
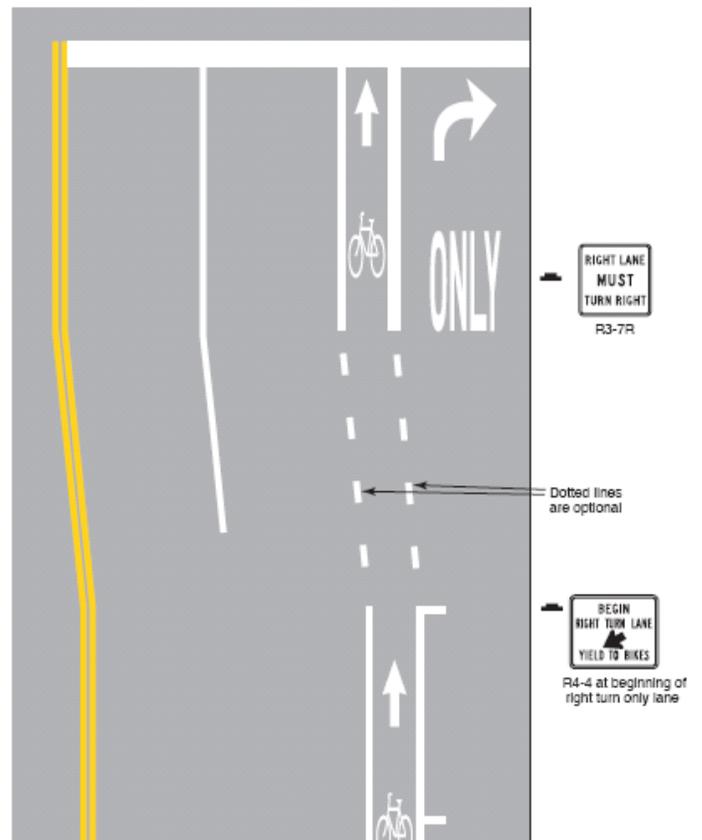


Figure 9C-4. Example of Bicycle Lane Treatment at Parking Lane into a Right Turn Only Lane



## **New Section:**

### **Section 1 9C.07 Shared Lane Marking**

#### **Option:**

The Shared Lane Marking shown in Figure 9C-9 may be used to:

- A. Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle,
- B. Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
- C. Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,
- D. Encourage safe passing of bicyclists by motorists, and
- E. Reduce the incidence of wrong-way bicycling.

#### **Guidance:**

The Shared Lane Marking should not be placed on roadways that have a speed limit above 50 km/h or 35 mph.

#### **Standard:**

**Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.**

**If used in a shared lane with on-street parallel parking, Shared Lane Markings shall be placed so that the centers of the markings are at least 3.4 m (11 ft) from the face of the curb, or from the edge of the pavement where there is no curb.**

#### **Guidance:**

If used on a street without on-street parking that has an outside travel lane that is less than 4.3 m (14 ft) wide, the centers of the Shared Lane Markings should be at least 1.2 m (4 ft) from the face of the curb, or from the edge of the pavement where there is no curb.

If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 75 m (250 ft) thereafter.

Figure 9C-9. Shared Lane Marking

