

# PBIC Livable Communities Webinar Series

## **Impact of the New MUTCD on Pedestrians and Bicyclists**

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**FHWA MUTCD Team**



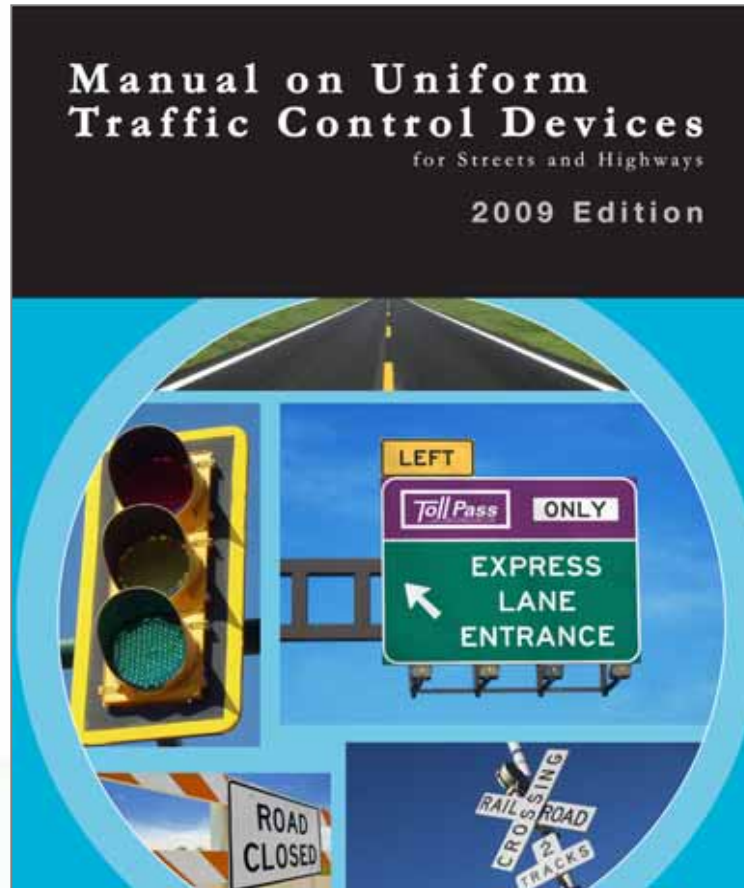
Pedestrian and Bicycle Information Center



# Development of the 2009 MUTCD

- **NPA published in the Federal Register on January 2, 2008**
- **Received 1,840 individual letters with over 15,000 comments**
- **Final Rule published in the Federal Register on December 16, 2009**
- **Effective date = January 15, 2010**

# 2009 MUTCD – overriding themes



# Uniformity



# “Complete street” concept – all road users



## Aging population





## Successful (?) innovation

# 2009 MUTCD

## Revisions to Part 2



# Variant of “Yield Here to Pedestrians” signs for State laws requiring full stop



R1-5



R1-5a



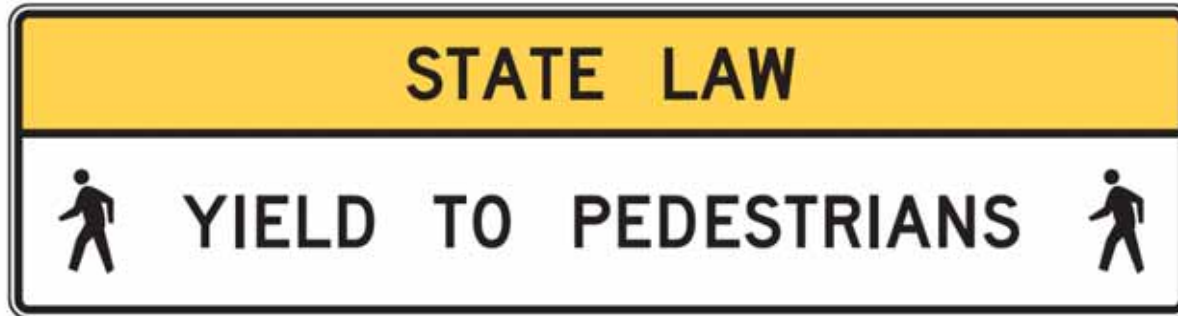
R1-5b



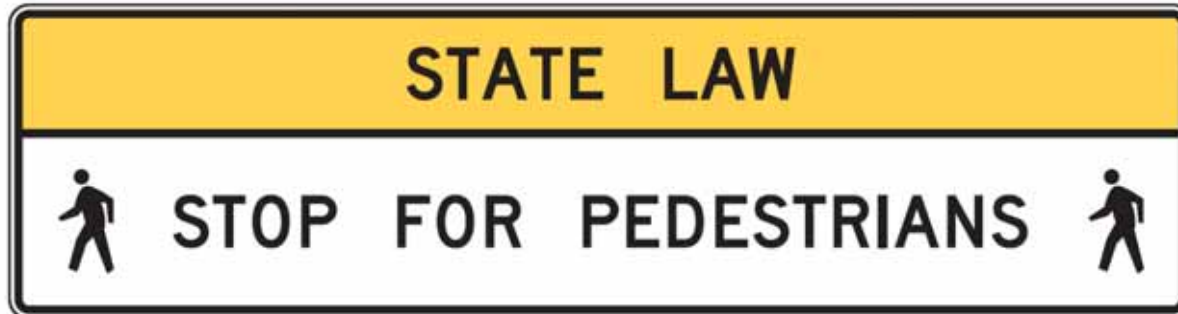
R1-5c



# Overhead pedestrian crossing signs



R1-9



R1-9a

# In-street pedestrian crossing signs

- Placement locations
- Background may be fluorescent yellow or fluorescent yellow-green



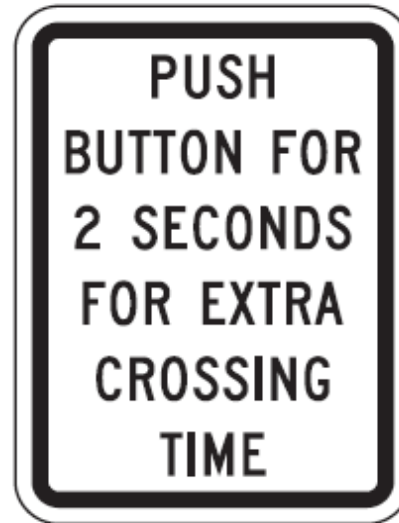


**Supports for in-street pedestrian crossing signs must be designed to bend over and bounce back when struck**

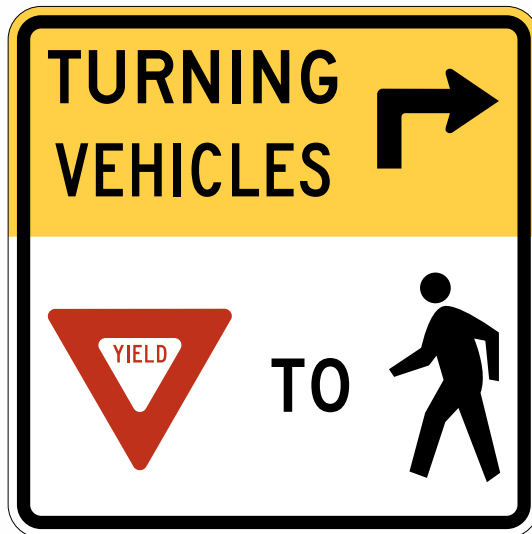
# Symbol added to pedestrian pushbutton signs



# New special-purpose pushbutton signs







R10-15



**New symbolic design  
for the R10-15 sign**

# Fluorescent yellow-green color

Required for school and school bus signs



Optional for pedestrian, bike, and playground signs



# New sign and plaque for combined pedestrian/bicycle crossing



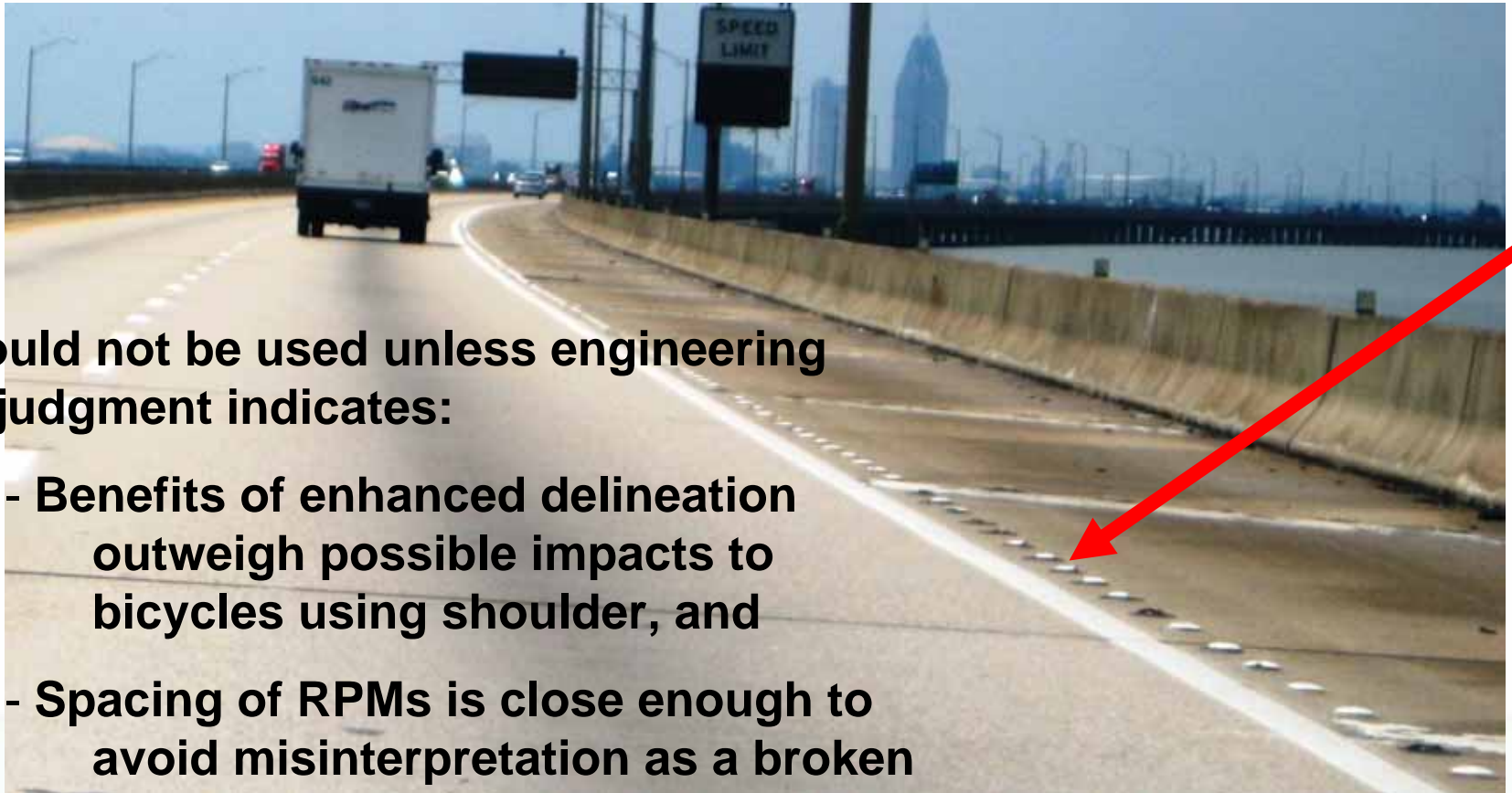
# 2009 MUTCD

## Revisions to Part 3





# Sections 3B.13 and 3B.14 – Guidance against use of RPMs with right-hand edge lines softened for some conditions



Should not be used unless engineering judgment indicates:

- Benefits of enhanced delineation outweigh possible impacts to bicycles using shoulder, and
- Spacing of RPMs is close enough to avoid misinterpretation as a broken line on wet night



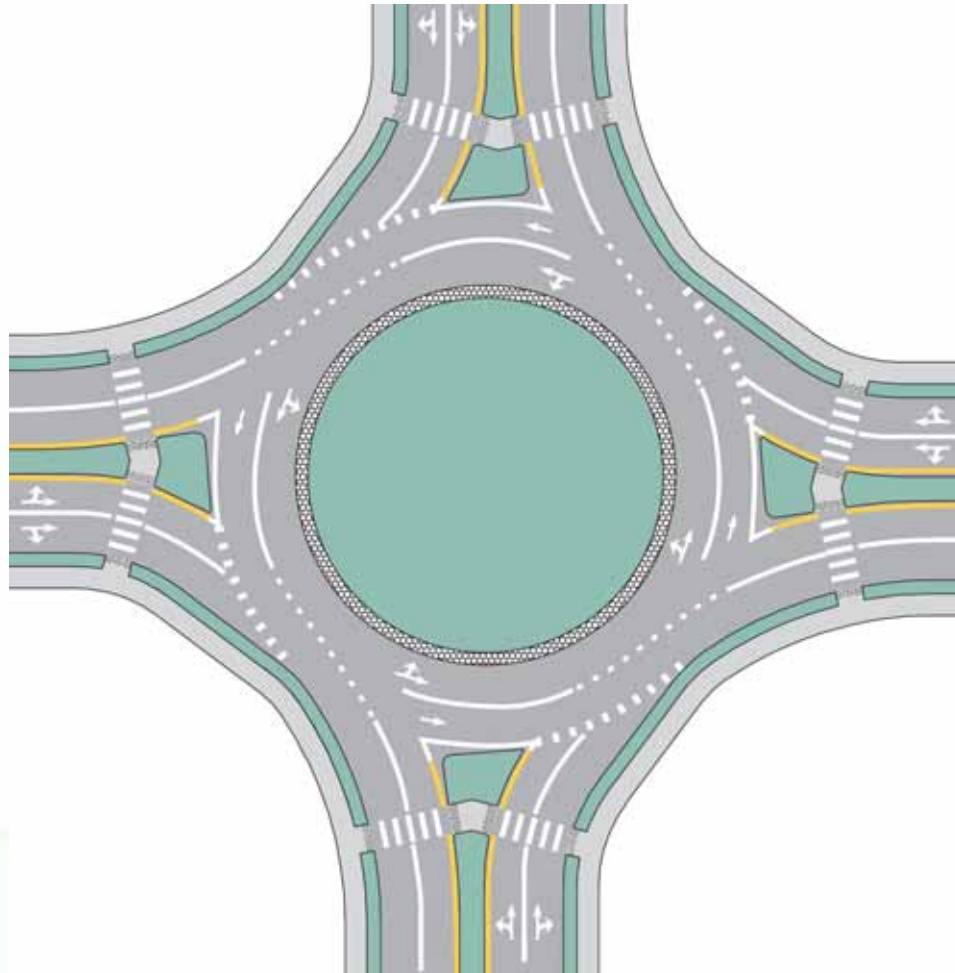
# Revised guidance for provision of marked crosswalks

**New marked crosswalks alone, without other substantial measures to reduce speeds, shorten crossing distance, enhance driver awareness of crossing, and/or provide active warning of ped presence should not be installed across uncontrolled roadways with:**



- $\geq 4$  travel lanes, and
- Speed limit  $> 40$  mph, and
- ADT  $\geq 12,000$  without raised median or ped refuge, or  $\geq 15,000$  with raised median or ped refuge

# New Chapter 3C – Pavement markings at roundabouts



# Section 3G.01 – Colored pavements

Non-retroreflective, for aesthetics only, not to communicate a message  
= not a TCD



Retroreflective or intended to communicate a regulatory, warning, or guidance message = **TRAFFIC CONTROL DEVICE**  
(shall comply with color code and other provisions for markings)

# 2009 MUTCD

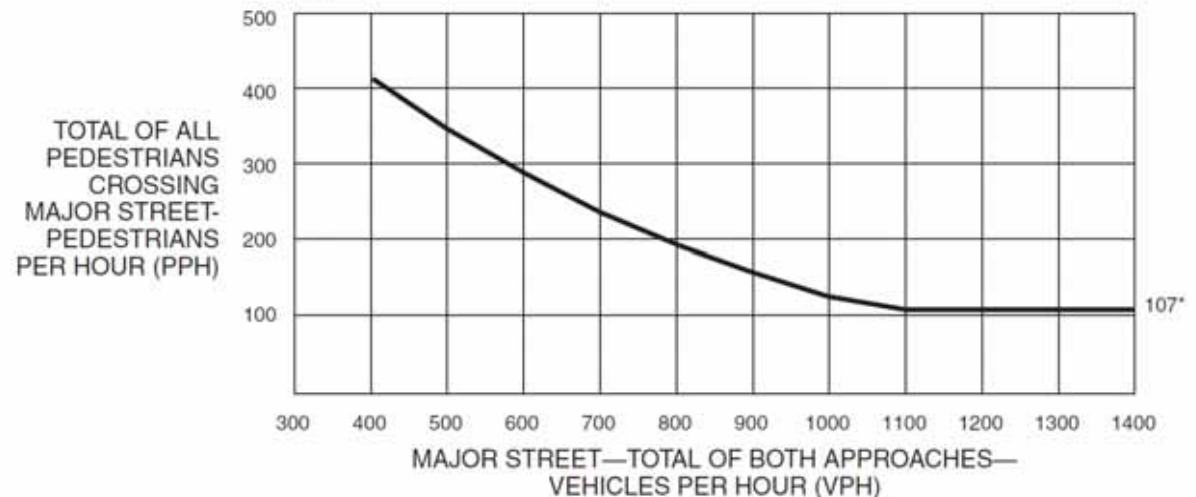
## Revisions to Part 4



# Signal warrants – revisions to Warrant 4 (Pedestrian Volume)

More  
comparable to  
vehicular  
volume  
warrants

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



\*Note: 107 pph applies as the lower threshold volume.



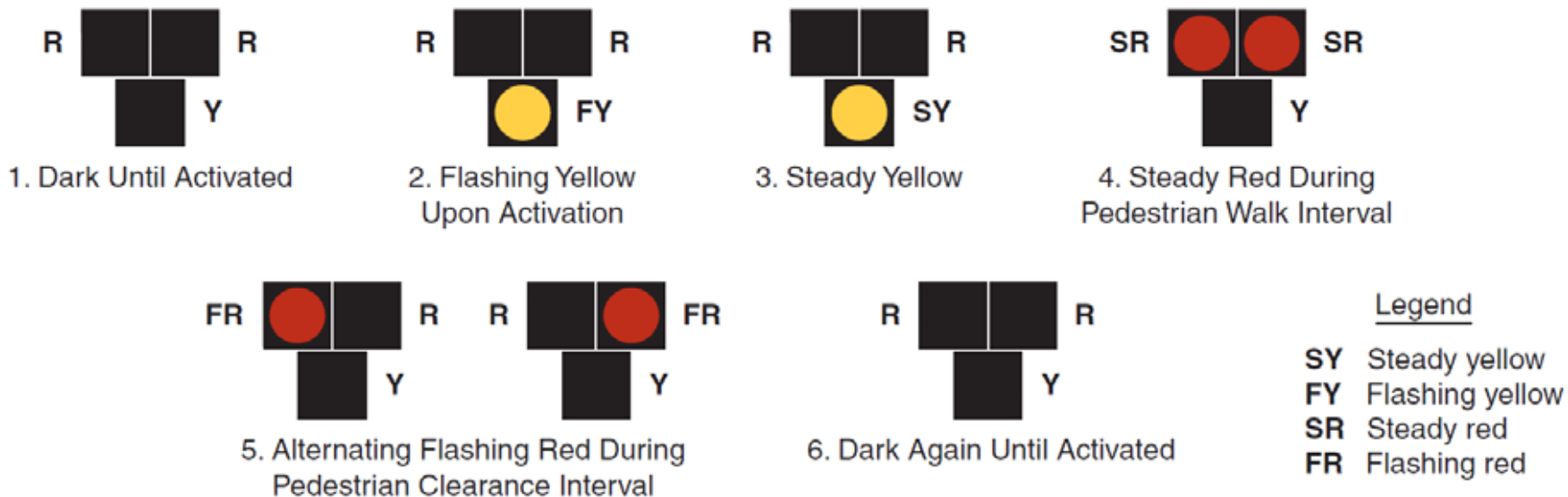
**Signals based only on Warrant 4 (Ped Volume) or Warrant 5 (School Crossing) should also control the minor street or driveway**

**No “half-signals”**



# Chapter 4F – new pedestrian hybrid beacon

Figure 4F-3. Sequence for a Pedestrian Hybrid Beacon



**Should not be installed at or within 100 feet of an  
intersection**

**If signal timing provides only enough time for pedestrians to cross to the median – ped signals, pushbuttons (if actuated), and signs are required in the median**



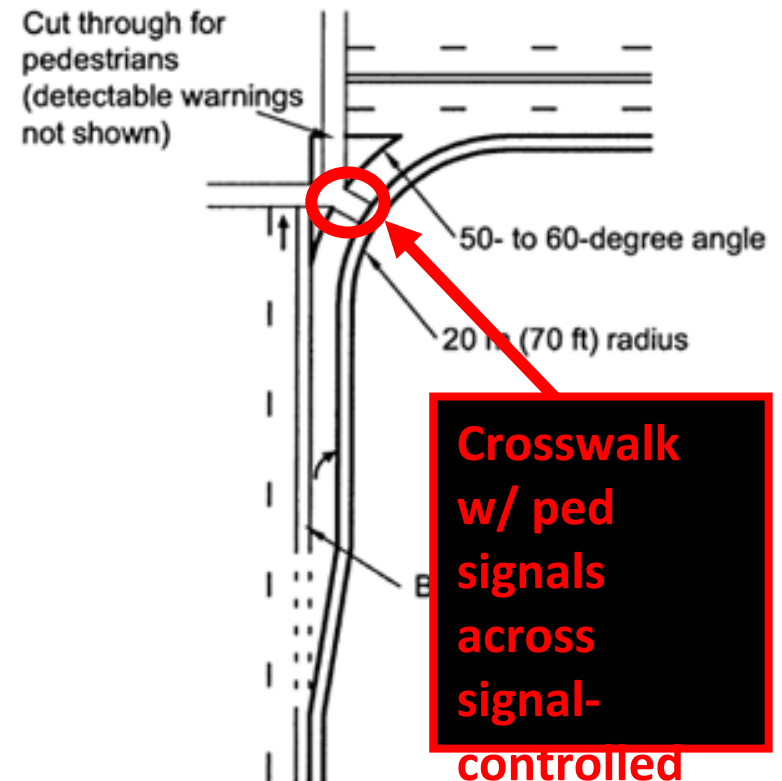
# New meaning of flashing upraised hand when pedestrian countdown signals are present was NOT ADOPTED



~~Ped may enter the intersection on the flashing upraised hand when a countdown pedestrian signal indication is present if they are able to travel to the far side of the traveled way by the time conflicting traffic receives a green signal~~

# Section 4E.06 – Pedestrian intervals and signal phases

- If a walking person or a flashing upraised hand is displayed...
  - A steady red or flashing red must be displayed to any conflicting vehicular movement that is perpendicular or nearly perpendicular to the crosswalk





# Slower walking speed for calculating ped clearance time (guidance)

~~4 feet per second~~

**Pedestrian Clearance  
Time based on 3.5 feet  
per second**

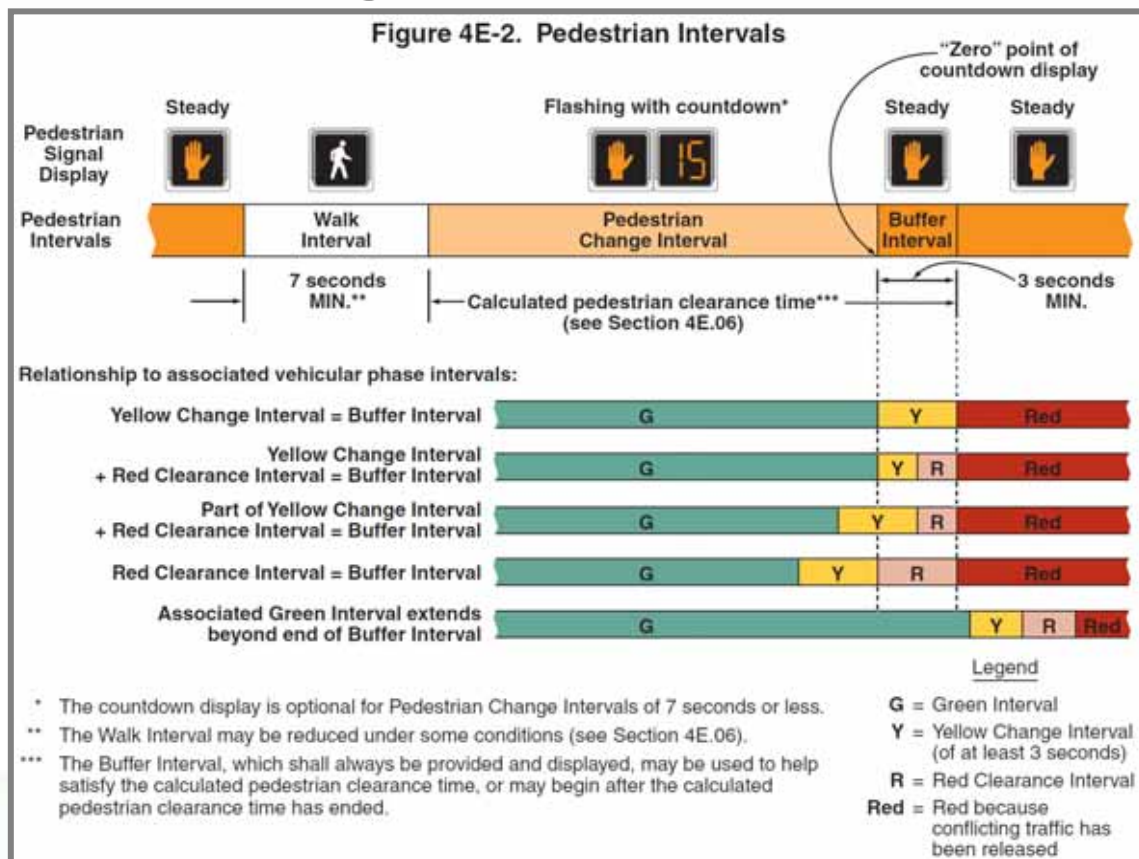
[Exception allows 4 ft/sec if extended button press or passive ped detection allows slower peds to request additional crossing time]

Sum of Walk time + Ped Clearance Time based on **3** ft/sec for distance from pedestrian detector to far side

# Ped change interval (FDW) shall end at least 3 seconds (“buffer”) before release of conflicting traffic

Buffer shall not begin later than the start of the red clearance interval, if used

Compliance date 12/31/2014 or when timing adjustments are made (whichever occurs first)



Slower walk  
pedestrian

~~4 feet per  
second~~

[Exception allows  
ped detection a



Sum of Walk time  
distan



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(nce)

ne  
sec

assive  
nal

sec for



# Optional leading pedestrian interval



# Countdown pedestrian displays

- **Required** for all ped signals where ped change interval is more than 7 seconds
- No specific compliance date for retrofitting existing ped signals (can remain w/o countdown until ped heads replaced)
- May be used even if ped change interval is 7 seconds or less

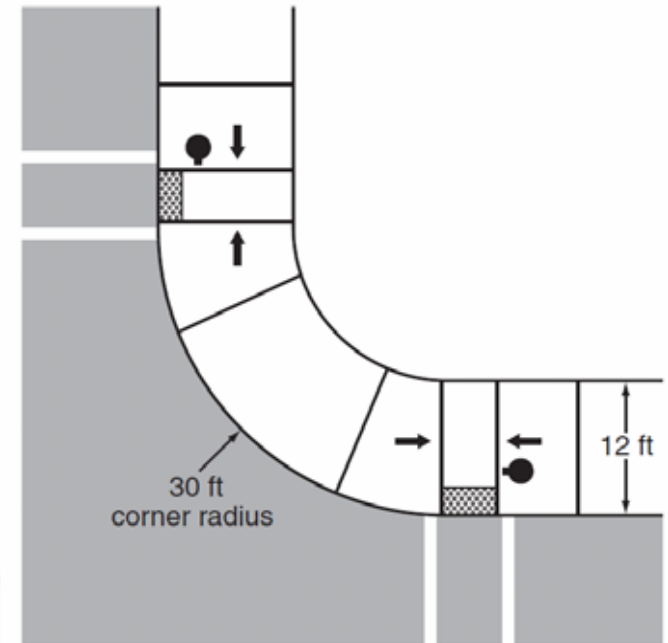




# New guidance and figures for locations of pedestrian pushbuttons for a variety of conditions (APS compatible)

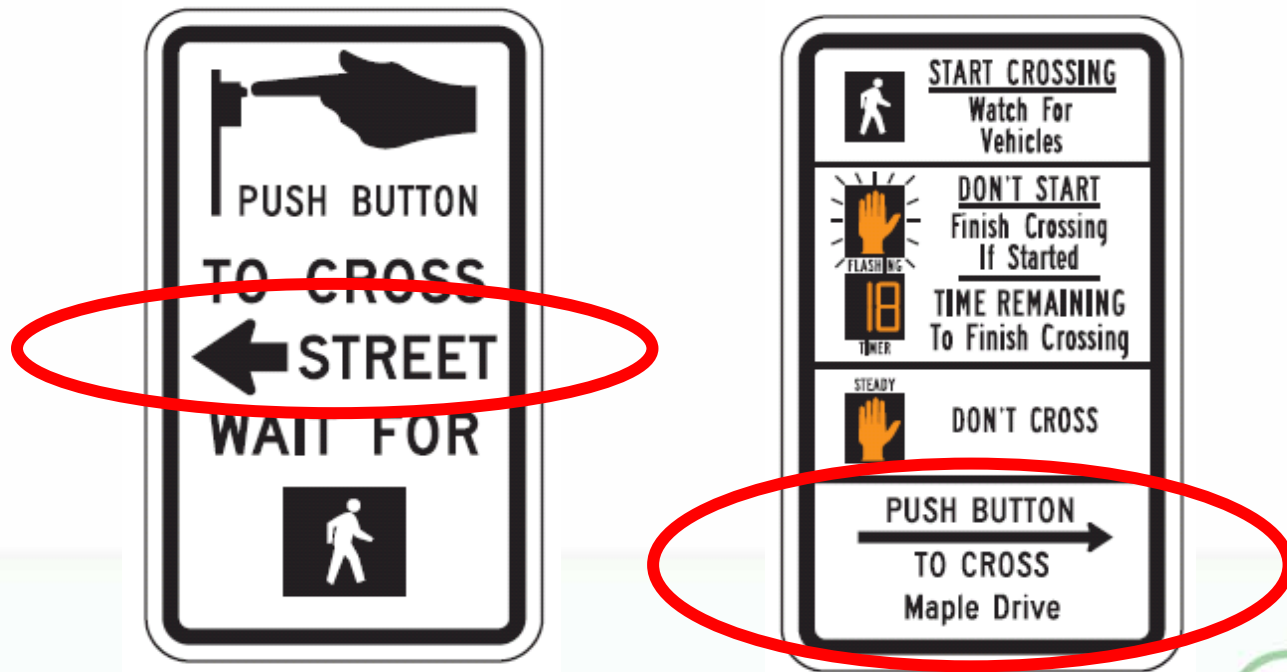


A - Parallel ramps with wide sidewalk





# Positioning of pedestrian pushbuttons and legends on pushbutton signs shall clearly indicate which crosswalk signal is activated by which pushbutton





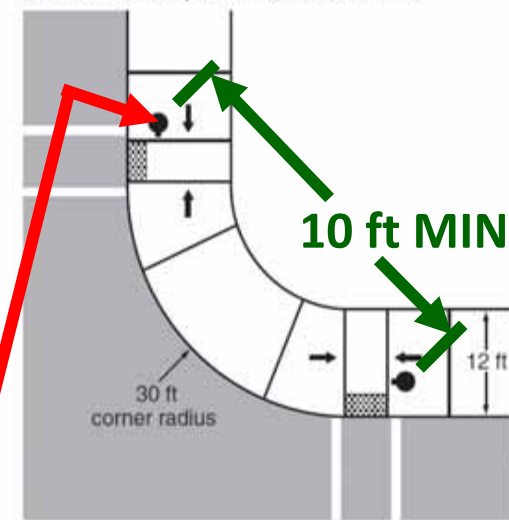
# Accessible pedestrian signals (APS) and accessible detectors – combined and reorganized into five new sections

- 4E.09 – General
- 4E.10 – Location
- 4E.11 – Walk indications
- 4E.12 – Tactile arrows and locator tones
- 4E.13 – Extended press button features

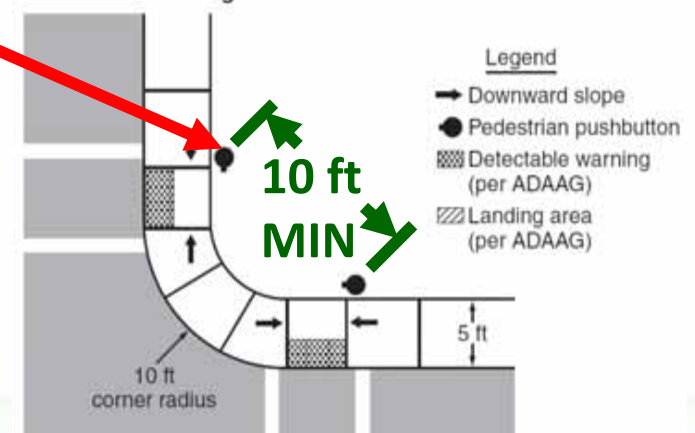
# APS pushbutton locations

- APS pushbutton locations similar to 2003 edition now apply to non-APS pushbutton also (Section 4E.08)
- As close as possible to the crosswalk line furthest from center of intersection, and as close as possible to the curb ramp
- If 2 buttons on same corner, separate them by at least 10 ft. (unless physical constraints make impractical)

A - Parallel ramps with wide sidewalk



C - Parallel ramps with narrow sidewalk and tight corner radius



# APS WALK indications

- Shall provide both in both audible & vibrotactile form
  - Same duration as WALK interval
- Audible:
  - Percussive tone (8 to 10 ticks/sec), except:
    - If 2 buttons < 10 ft apart or on same pole, shall use speech WALK message rather than audible tone
      - “(Street Name). Walk sign is on to cross (Street Name).”
- Vibrotactile – vibrating tactile arrow



## • Tactile arrows

- Shall be located on each pushbutton
- Shall be aligned parallel to the direction of travel on the associated crosswalk



## • Locator tone

- Shall be incorporated into each APS pushbutton
- Shall operate during intervals other than the WALK interval





# Special APS features via extended pushbutton press

- May be actuated by button press of 1 second or more:
  - Longer crossing time
  - Speech information message
  - Audible beaconing



# Speech information messages

- Actuated only during intervals other than WALK
- Required if two ACCESSIBLE PEDESTRIAN SIGNAL pushbuttons on same corner < 10 ft apart or on same pole (optional otherwise)
- Message format:  
“Wait. Wait to cross (Street Name 1) at (Street Name 2)”  
  
Unusual geometry, phasing may also be described



# 2009 MUTCD

## Revisions to Part 7





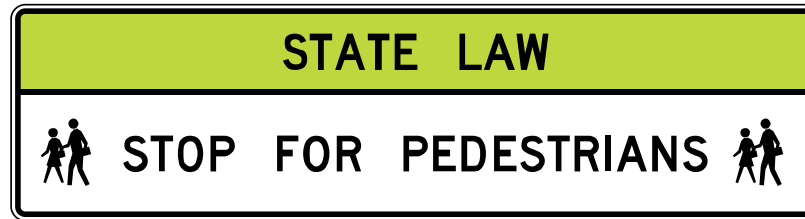
R1-6b

OR



R1-6c

**Schoolchildren  
symbol may be  
used on  
in-street signs at  
school crossings**



**Overhead pedestrian crossing signs with schoolchildren symbols may be used at unsignalized school crossings**



# Operating procedures for adult crossing guards changed from recommended to required

- Shall not direct traffic in the usual law enforcement regulatory sense
- Shall pick opportune times to create a sufficient gap in traffic flow
- Shall stand in roadway
- Shall use a STOP paddle

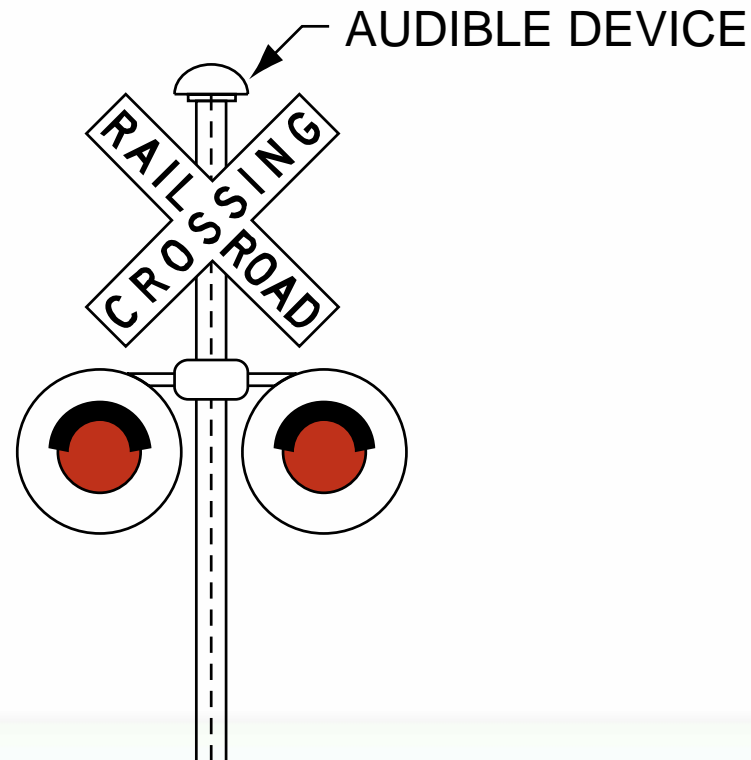
- **Adult school crossing guards and law enforcement personnel performing school crossing supervision must wear Class 2 high-visibility apparel (compliance date is 12/31/2011)**
- **Provisions in former Chapter 7E regarding school-age crossing guards were deleted**

# 2009 MUTCD

## Revisions to Part 8



# Audible devices are required at active LRT grade crossings used by pedestrians



# New Chapter 8D on pathway grade crossings





# 2009 MUTCD

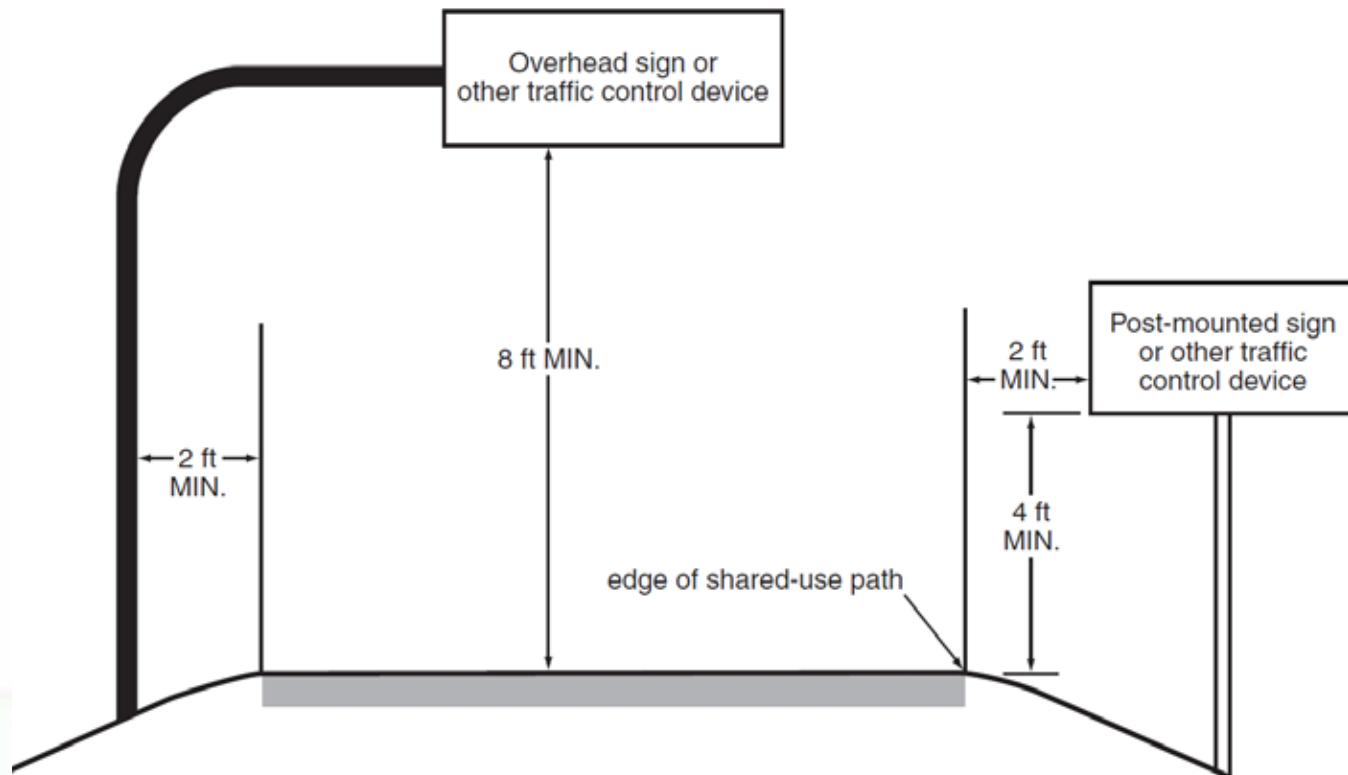
## Revisions to Part 9





**Interesting, but  
not included in  
2009 MUTCD**

# Lateral offset and mounting height requirements for traffic control devices on shared-use paths



# Bicycle lane regulatory signs are no longer required



**New sign for lanes  
that are too narrow  
for bicyclists and  
motorists to  
operate side-by-  
side**



R4-11

# New selective exclusion signs for modes other than bikes and pedestrians



R9-13



R9-14



# Three new pushbutton signs including two that include a bicycle symbol



R10-24



R10-25



R10-26

# Revised legend on W5-4a sign



W5-4a

# New sign and plaque for combined pedestrian/bicycle crossing



W11-15



W11-15P



# Type 3 object markers for use on shared-use paths



OM3-L



OM3-C



OM3-R

# New bicycle destination guide signs



D1-3c



D11-1c

# Reference location signs for use on shared-use paths

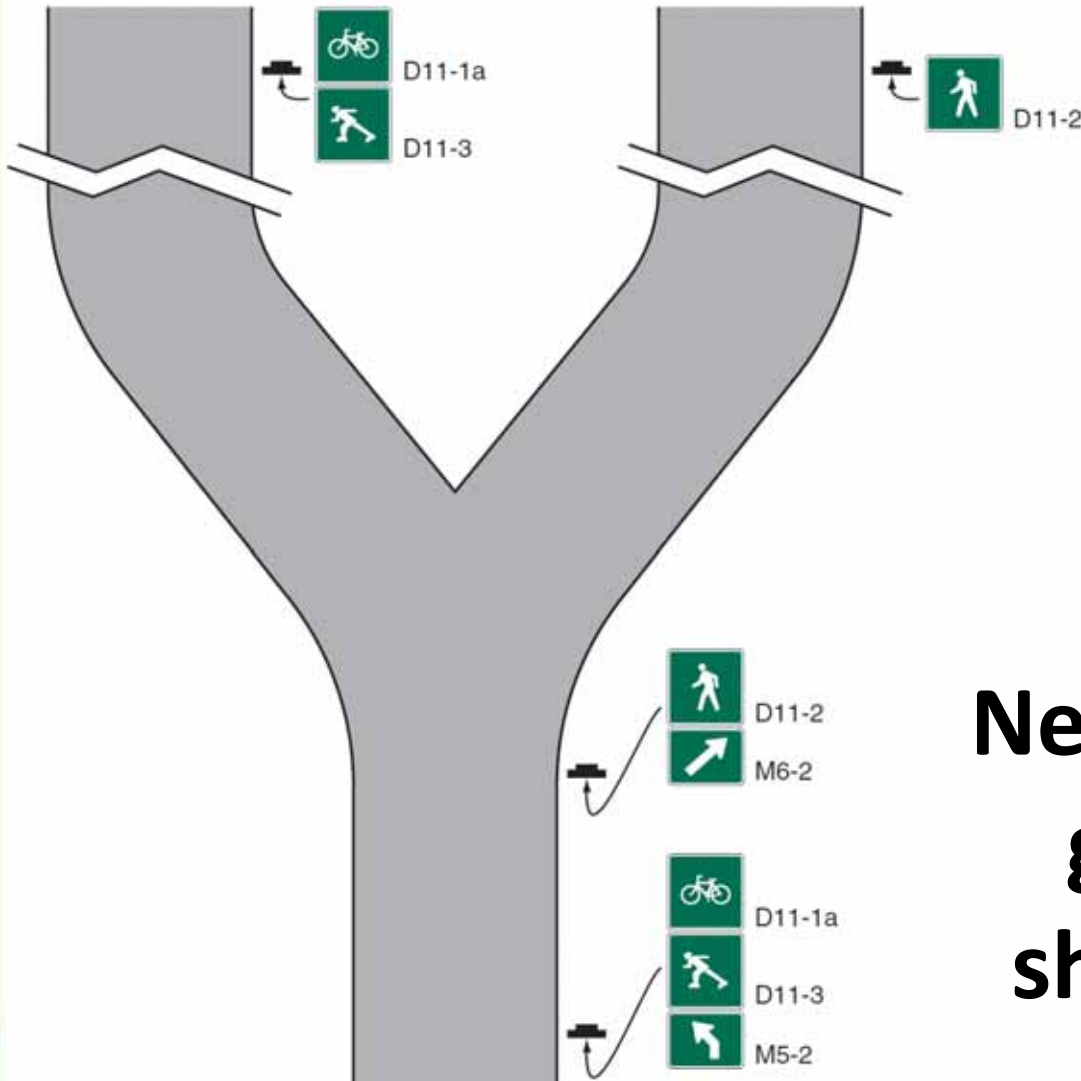


D10-2



D10-2a





D11-1a



D11-2



D11-3



D11-4

# New mode-specific guide signs for shared-use paths

# New Bicycle Route sign that provides a place for a pictograph

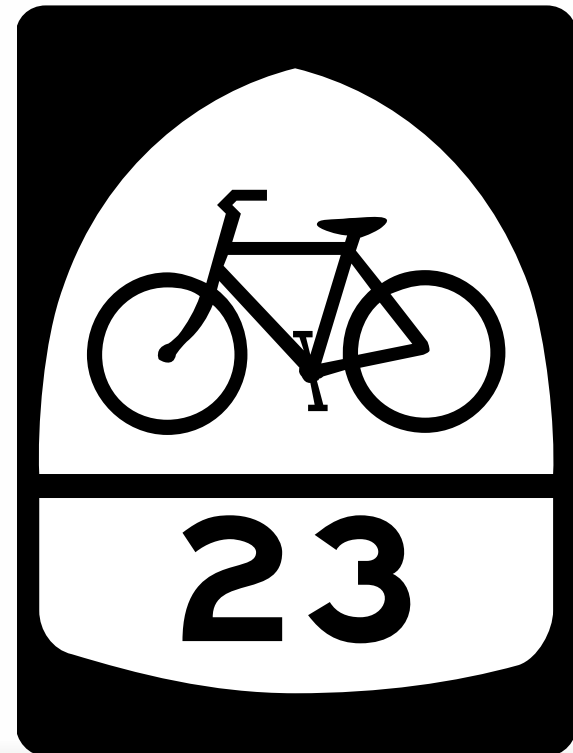


M1-8



M1-8a

# Revised design of the U.S. Bicycle Route sign



M1-9

# Changes in design and sizes of auxiliary signs used with Bicycle Route signs

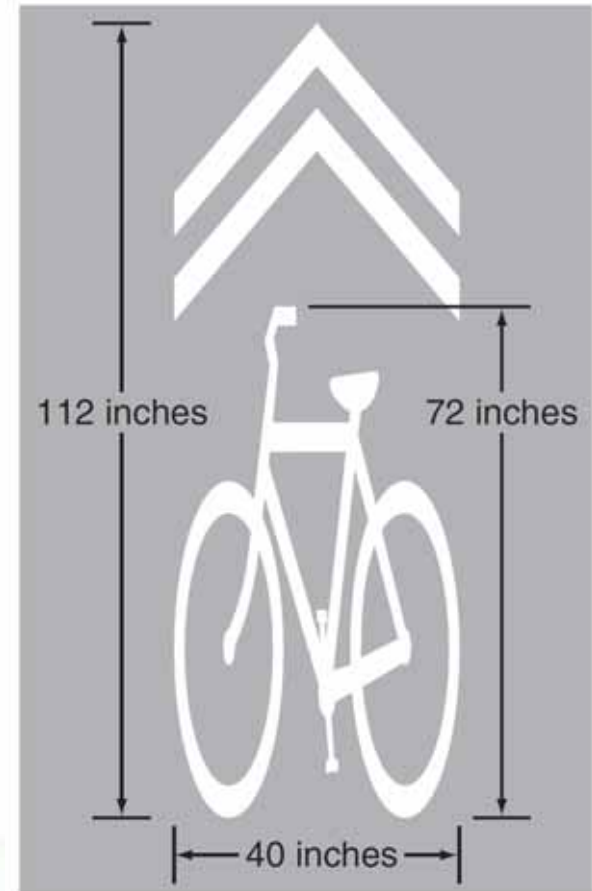


M4-14



M4-5

# New shared lane pavement marking





# Questions??

