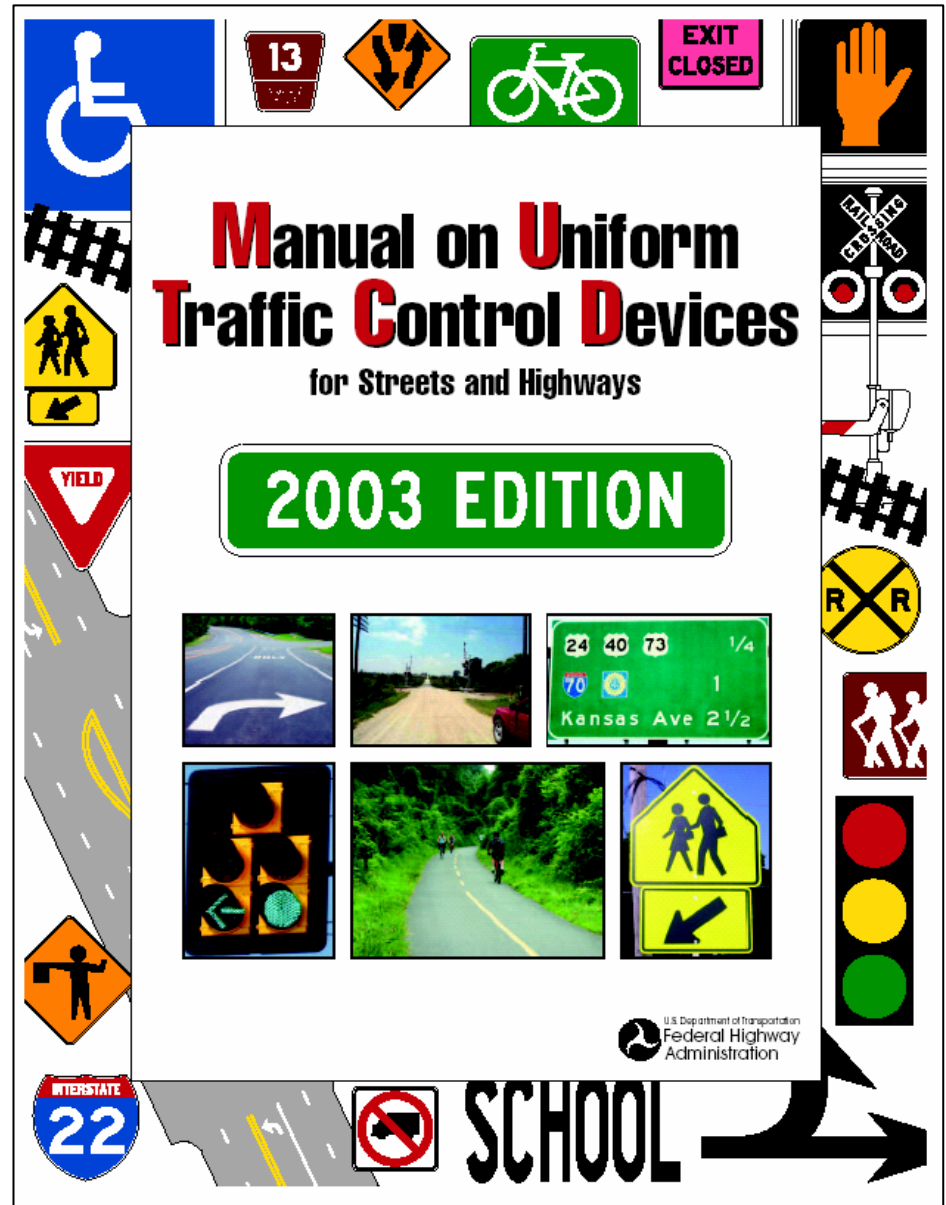


Jan. 2, 2008 Notice of Proposed Amendments to the MUTCD



Presented by the
Federal Highway Administration's
Office of Transportation Operations

MUTCD Team:

Hari Kalla

Scott Wainwright

Kevin Sylvester

Linda Brown

Fred Ranck

Ken Wood



2007 NPA

- Published in the Federal Register on January 2, 2008
- Deadline for comments to docket is July 31, 2008
- View all documents on MUTCD website at <http://mutcd.fhwa.dot.gov>
- Submit any comments to docket electronically at www.regulations.gov



How does this NPA relate to the 12/21/07 Final Rule on Maintaining Sign Retroreflectivity?

- Sign Retroreflectivity Rule modifies existing 2003 MUTCD as Revision 2 of that edition
- Effective date of Rev. 2 is 1/22/08
- NPA does not show the Rev. 2 changes, but...
- When final rule for 2009 MUTCD is published, it will incorporate the Sign Retroreflectivity material already in effect.

Formatting Revisions



Should paragraphs be numbered?



Section 4B.01 General

Standard:

01 **A traffic control signal (traffic signal) shall alternately directed to stop and permitted to p**

02 **Traffic shall be defined as pedestrians, bicycles, and other conveyances either singularly or together**

Support:

03 Words such as pedestrians and bicyclists are sensitive to these elements of “traffic.”

04 Standards for traffic control signals are imposed on a variety of road users, including those who are fatigued or distracted, or who are not expecting t

Section 4B.02 Basis of Installation or Ren

Guidance:

01 The selection and use of traffic control signals and other conditions.

Support:

02 A careful analysis of traffic operations, pedestrian-signalized and unsignalized locations, coupled with warrants, described in Chapter 4C, that define the signals might be justified.

Guidance:

03 Engineering judgment should be applied in t

Revisions to the Introduction



MUTCD application on private property that is “open to public travel”





**Green STOP sign with a pictograph---
endangered species!**

Compliance Dates

- **New dates for new provisions**
- **Dates made specific for provisions associated with 2003 MUTCD**
- **Dates deleted that will have been reached by early 2009**

Revisions to Part 1 -- General



Certain signs and other devices are not considered to be traffic control devices



Traffic control devices for toll plazas, managed lanes, and preferential lanes



New purple color for “electronic toll collection only” signs and pavement markings



Definitions

- **Approximately 30 new definitions are being added**
- **Approximately 20 existing definitions are being revised**

Acronyms and abbreviations

- **The meanings of approximately 30 acronyms and abbreviations are being identified**

Acceptable abbreviations on traffic control devices

- Additions, deletions
- Use on portable changeable message signs vs. use on fixed message signs and large permanent CMS
- Punctuation or characters other than letters or numerals should not be used on any signs



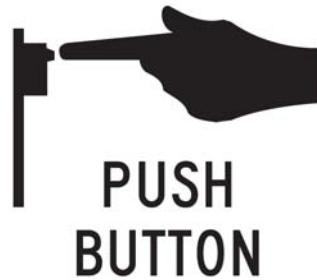
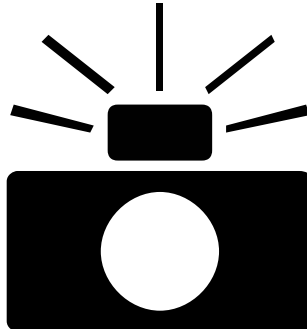
General Revisions to Part 2 – Signs



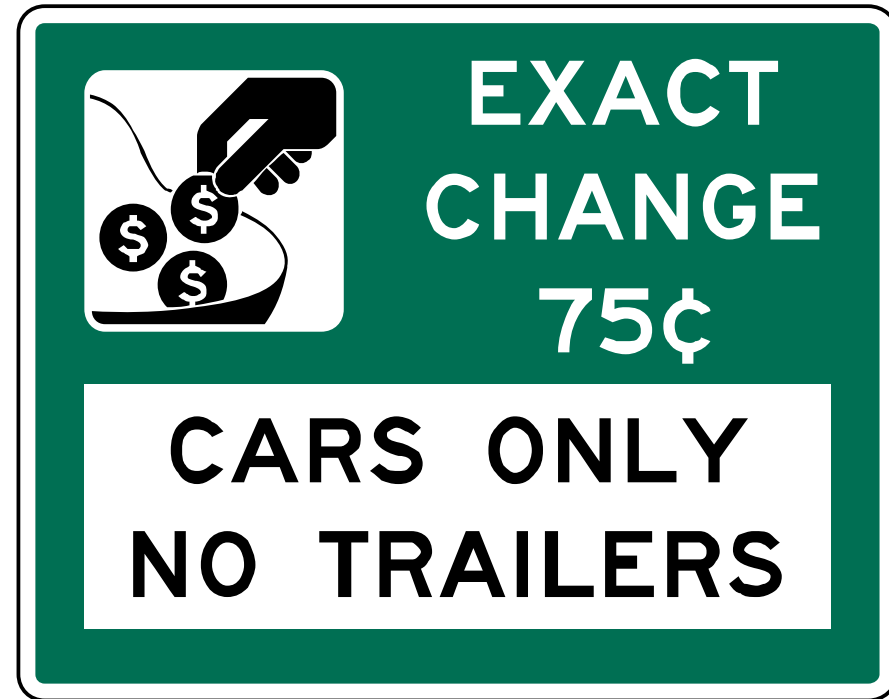
Engineer does not need to be involved in decisions for each sign at each location

- **Removing recommendation from several places in Part 2 that “signs should only be used where justified by engineering studies or engineering judgment”**

Many new symbols



New symbols for toll plaza signing



Symbols from one type of sign shall not be used on a different type of sign



Warning sign symbol -
playground



Cultural/recreational
guide sign symbol -
playground

Size of sign lettering should be based on 1 inch of letter height per 30 feet of legibility distance

- Based on 20/40 vision
- Currently 1 inch per 40 feet

New and revised sign size tables

- Updated/expanded table for regulatory sign sizes
- New detailed sign size tables:
 - Warning signs
 - Conventional road guide signs
 - Freeway/expressway guide signs
 - General service signs
 - General information signs



Minimum sign size may be decreased in alleys





Option to use all upper-case letters for place names and street names is being deleted



New option for the use of fluorescent colors



Fluorescent Yellow

Standard Yellow



New options for sign conspicuity enhancement



Revisions to Chapter 2B – Regulatory Signs



Larger minimum sizes for certain signs on multi-lane roads



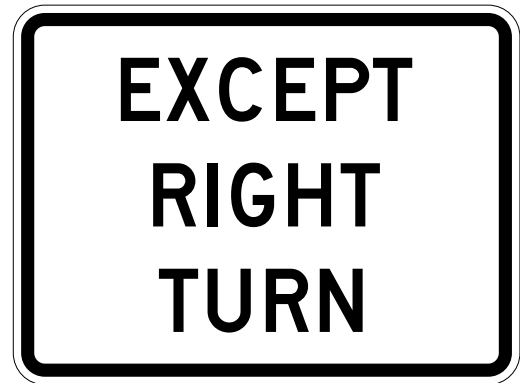
New recommendations on the factors to be considered when establishing STOP or YIELD sign control



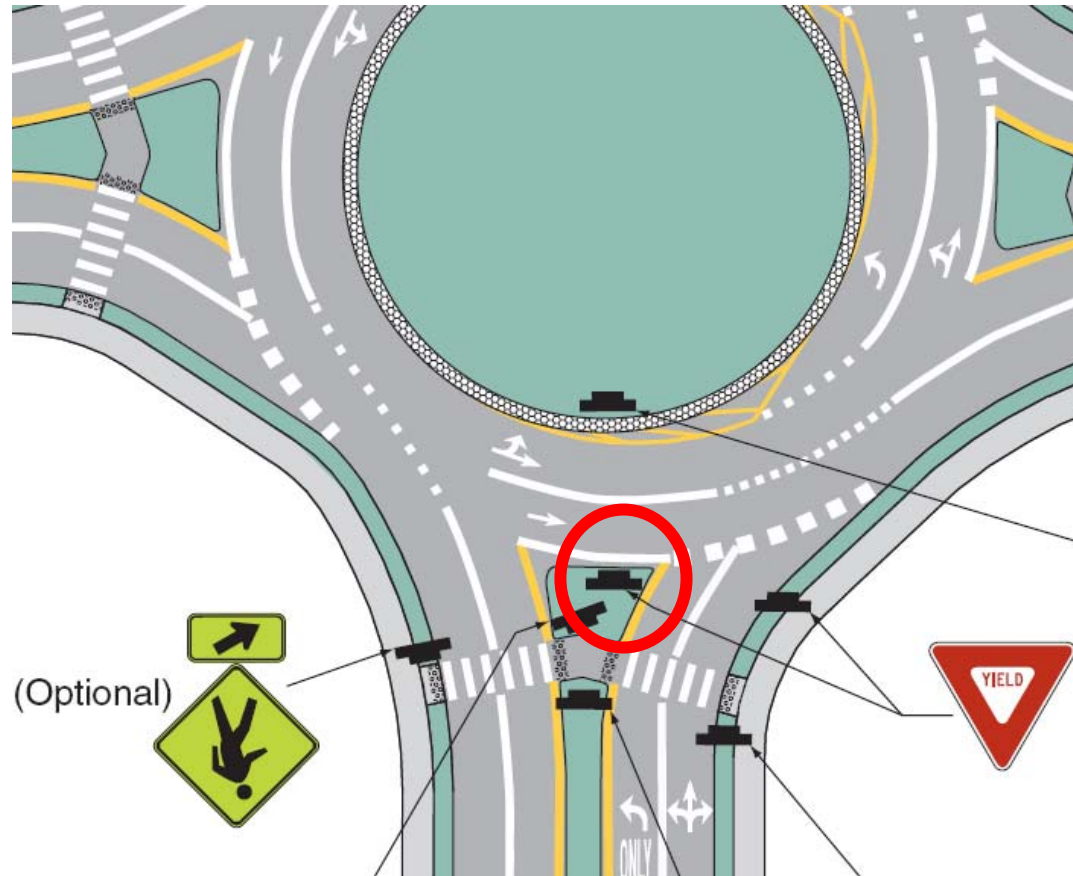
Conditions for allowable use of folding STOP signs for signal power outages



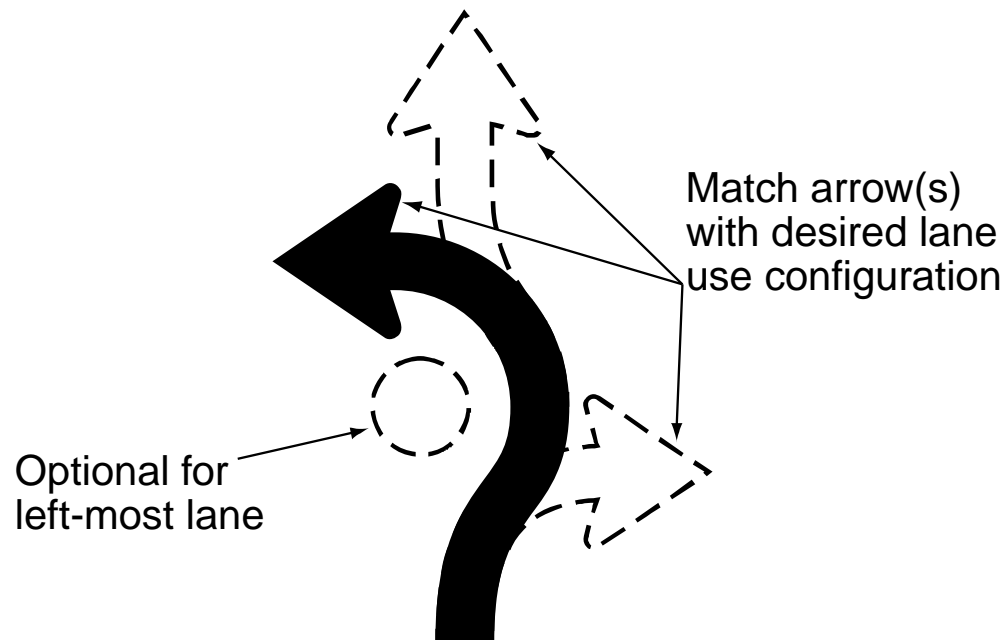
New plaque that may be used with STOP sign in special conditions



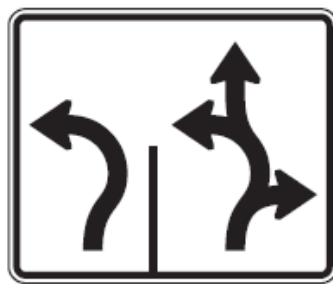
Supplemental YIELD sign on the left-hand side of a multi-lane approach to roundabout --revised from requirement to recommendation



New optional fish-hook arrows for use on lane-use control signs at roundabouts



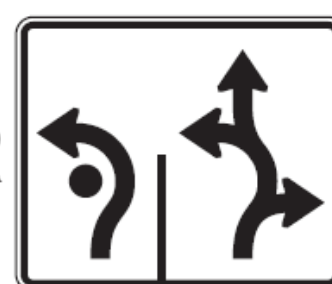
OR



OR



OR





**Use of 2-WAY,
3-WAY, and
4-WAY plaques
is being deleted**

**ALL-WAY plaque
remains as a
“shall” if all
approaches have
STOP sign**

Placing two STOP signs or two YIELD signs on the same post for emphasis will be prohibited



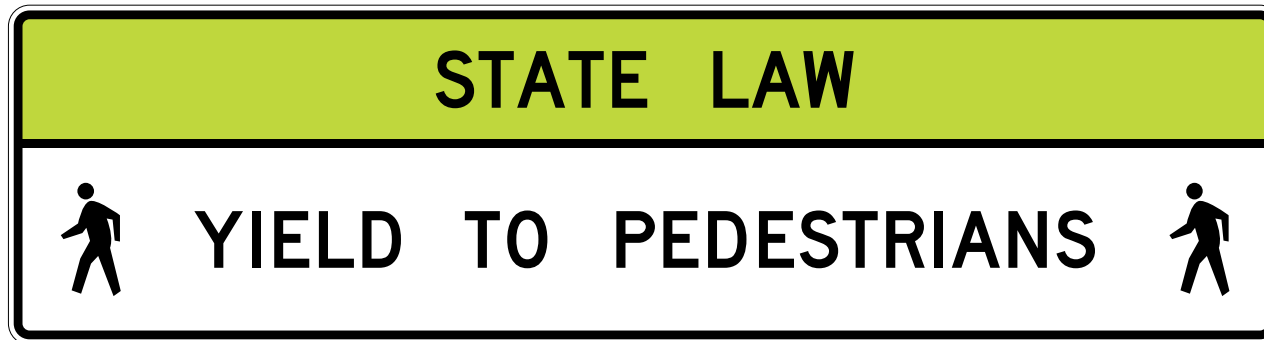
Signs mounted back-to-back with STOP or YIELD signs should stay within the edges



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

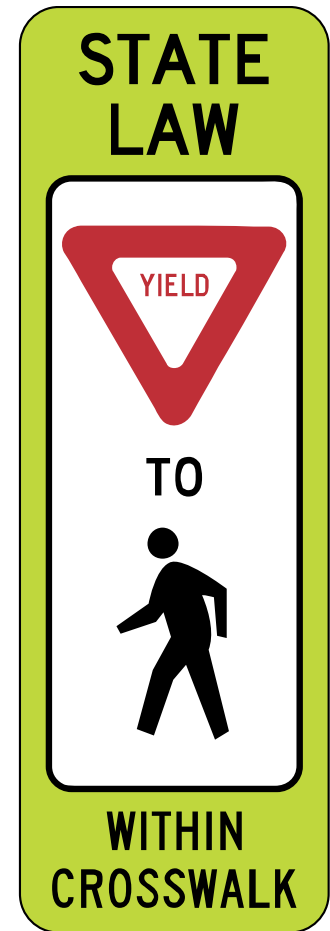


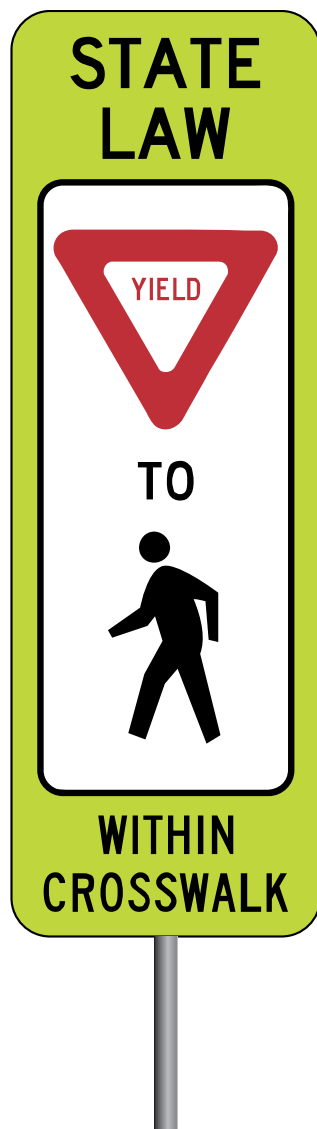
Overhead Pedestrian Crossing signs



In-street pedestrian crossing signs:

- Conditions and criteria for use
- 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

New plaques that may be mounted with Speed Limit signs

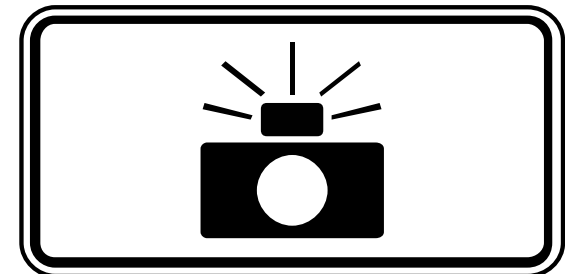
CITYWIDE

NEIGHBORHOOD

RESIDENTIAL

**UNLESS
OTHERWISE
POSTED**

New symbolic photo enforced sign and plaque



New No Straight Through symbol sign

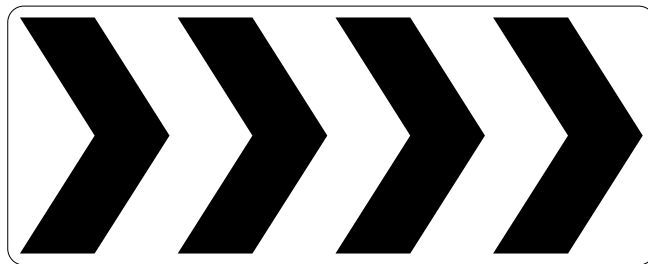
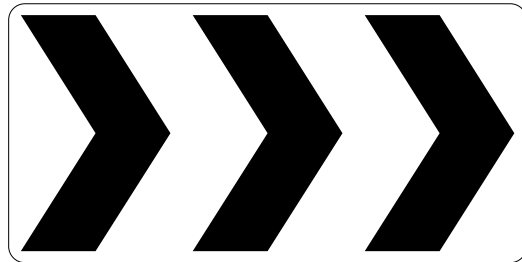
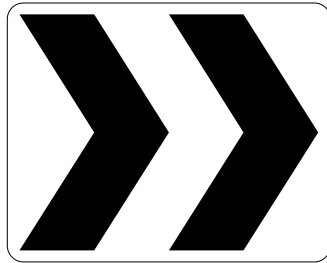


Movement prohibition signs at signalized intersections should be placed adjacent to the appropriate signal face(s).



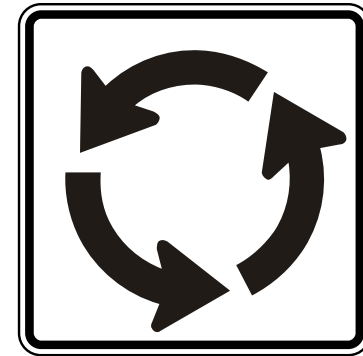
These signs shall not be used at a roundabout to prohibit turning left into the circular roadway





Roundabout Directional
Arrow signs
(on central island)

New regulatory signs for use at roundabouts



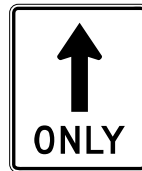
Roundabout Circulation
sign (with YIELD sign at
mini-roundabouts)

Overhead lane-use control signs should be used on signalized approaches for certain conditions



Lane-Use Control Signs for approaches with 3 or more lanes available to thru traffic

Advance Intersection Lane-Use Control signs, if used, shall not be mounted overhead



Mandatory Movement and Optional Movement Lane-Use Control signs, if used, shall be mounted overhead

New optional signs for enforcement of start of turn lanes



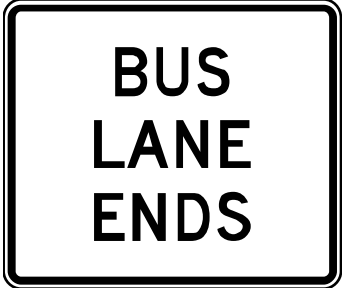
**Freeway lane
drops --
new regulatory
sign to
complement
“Exit Only”
warning panels
on guide signs**



New plaque for preferential lanes



Bus preferential lane signs





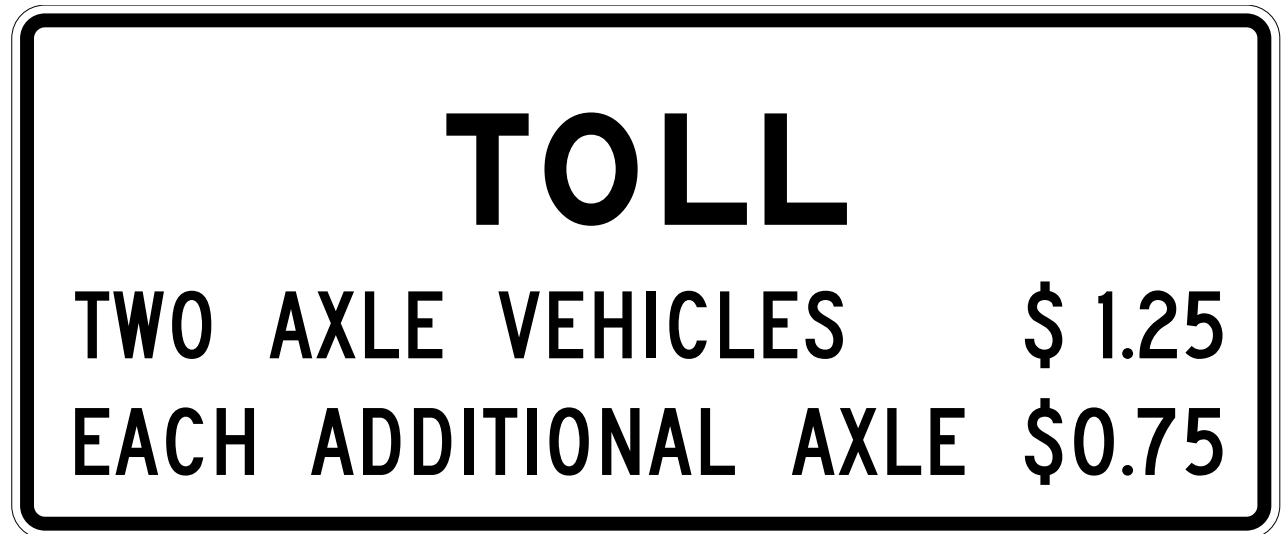
**New signs for
contiguous HOV lanes
that become general
purpose lanes**





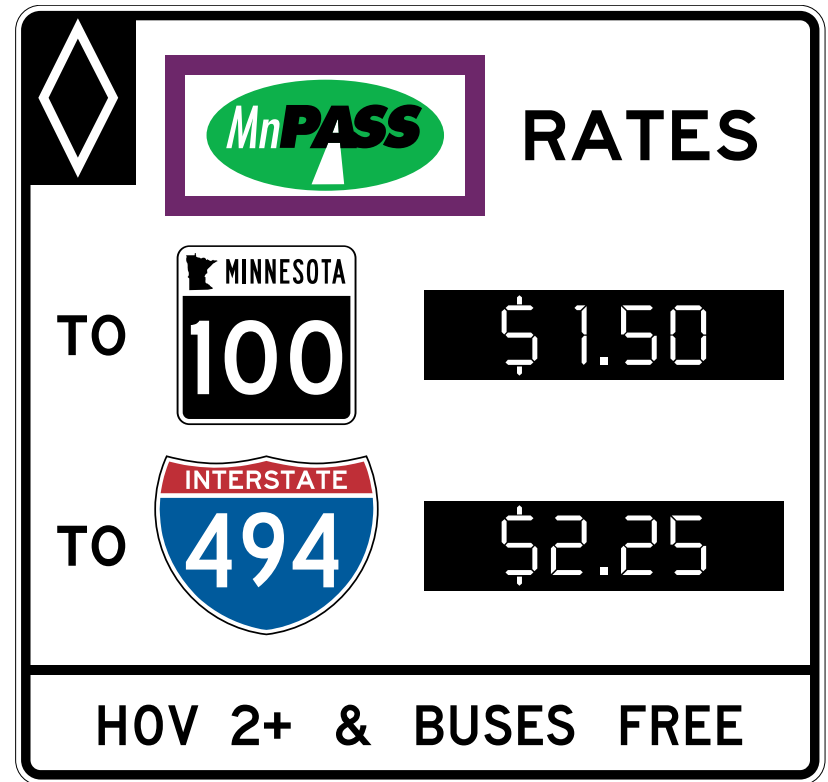
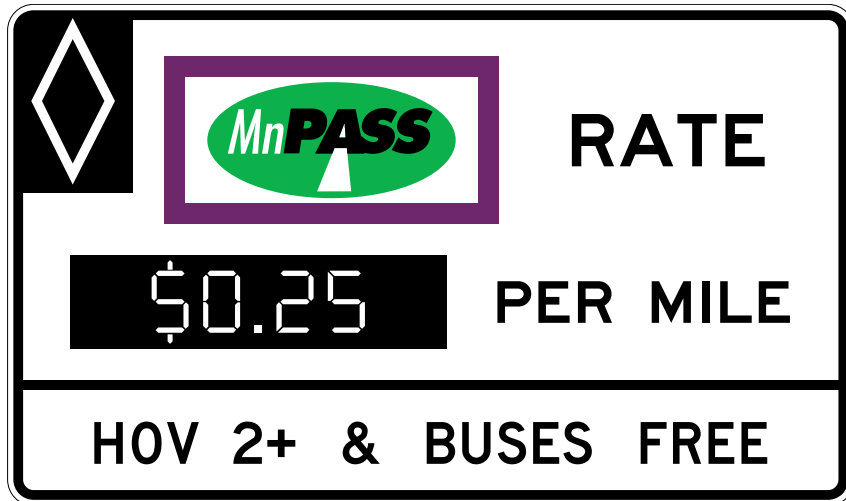
New regulatory signs for lanes restricted to ETC only

New regulatory signs for toll plazas



New signs for managed lanes with variable toll rates

January 2, 2008 Proposed Revisions to the MUTCD



New regulatory signs for jughandles



ALL TURNS
FROM
RIGHT LANE

U TURN
FROM
RIGHT LANE

U TURN ↗

ALL TURNS ↗

↑ U TURN

↑ U AND LEFT
TURNS

U AND LEFT
TURNS ↗

New symbolic design for Do Not Pass sign



New regulatory signs

**DO NOT
PASS WHEN
SOLID LINE
IS ON YOUR
SIDE**

**DO NOT
PASS
ON
SHOULDER**

**DO NOT
DRIVE
ON
SHOULDER**

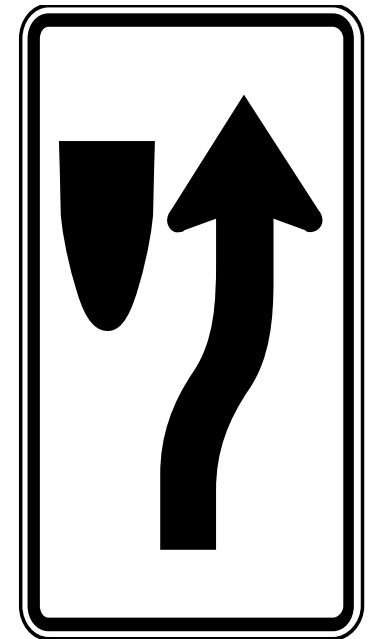
**KEEP
RIGHT
EXCEPT
TO PASS**



This regulatory sign deleted and replaced with a guide sign design



New narrow Keep Right sign for narrow median noses



Slow vehicle turn-out regulatory signs



Option for lower mounting height for Do Not Enter and Wrong Way signs on ramps





**“Excluded”
and
“prohibited”
changed to
“NO”**



Regulatory signs for crossovers

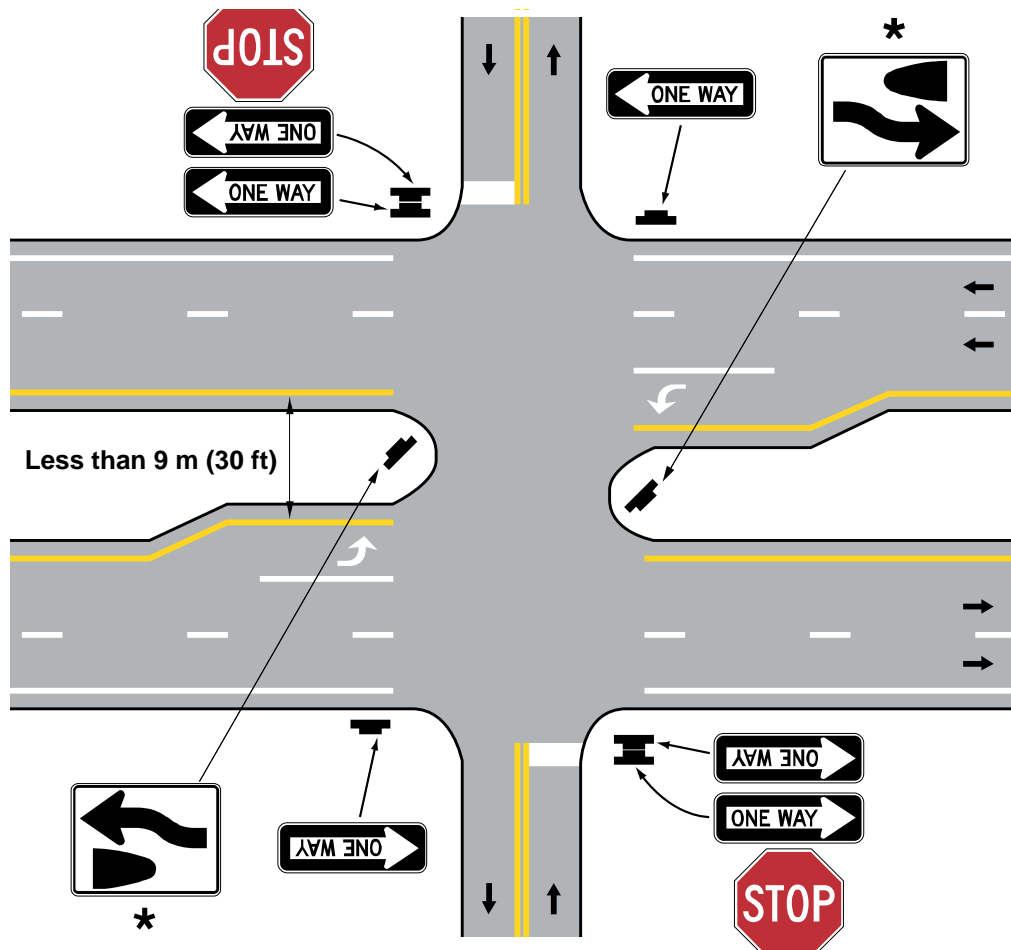


**FOR
OFFICIAL
USE
ONLY**

A rectangular white sign with a black border and rounded corners. The text is in bold, black, uppercase letters, centered on the sign.

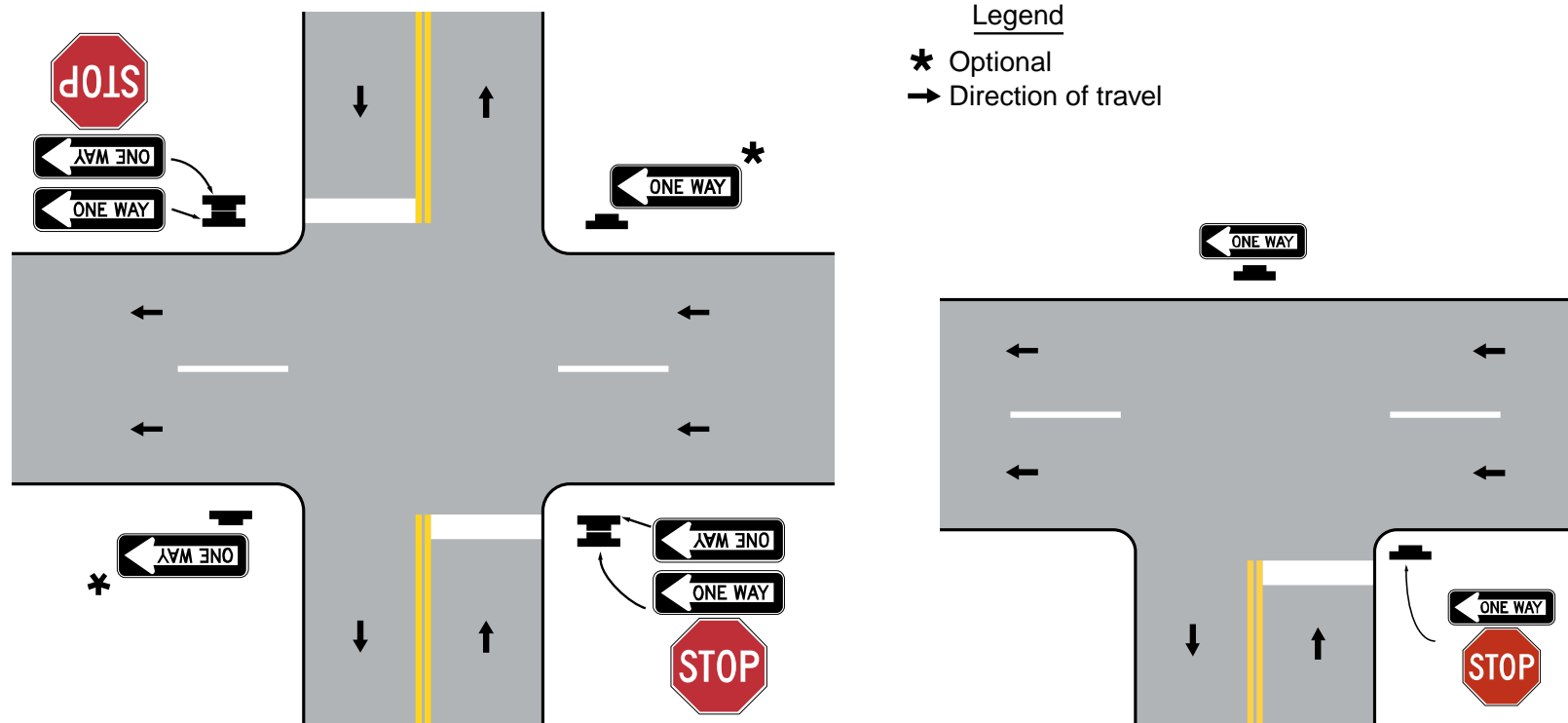
**AUTHORIZED
VEHICLES
ONLY**

A rectangular white sign with a black border and rounded corners. The text is in bold, black, uppercase letters, centered on the sign.



One-way signs required on near right, far left, and far right corners of divided highways

Near side and far side One-way signs required on the minor-street approaches at 4-way and T-intersections

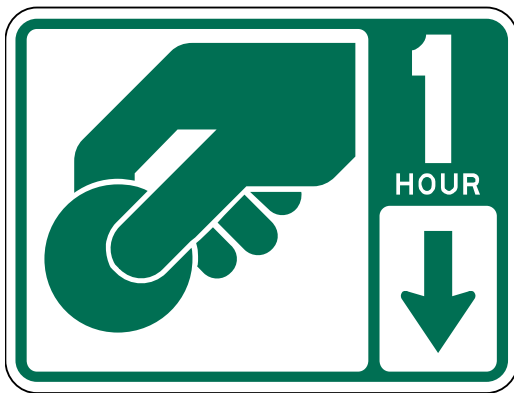




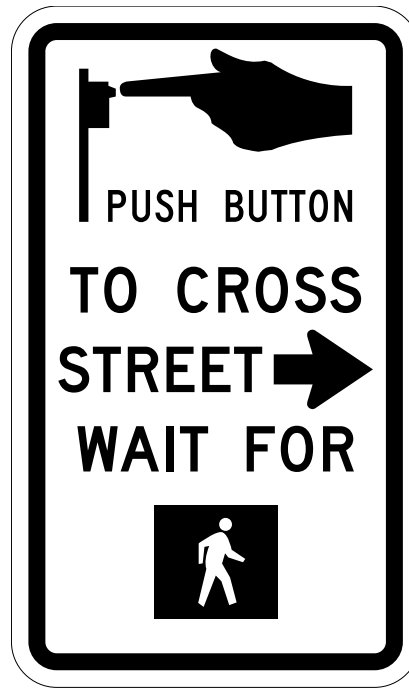
**Divided
Highway
signs shall be
installed on
approaches to
divided
highways**



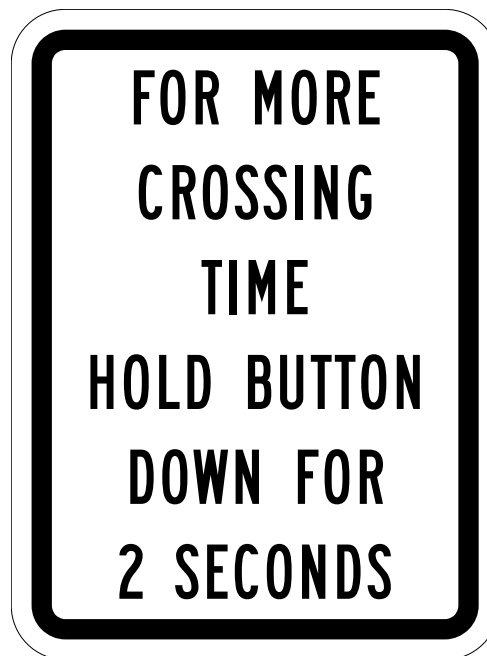
New pay parking and pay station signs



Symbol is being added to pedestrian pushbutton signs



New special purpose pedestrian pushbutton signs



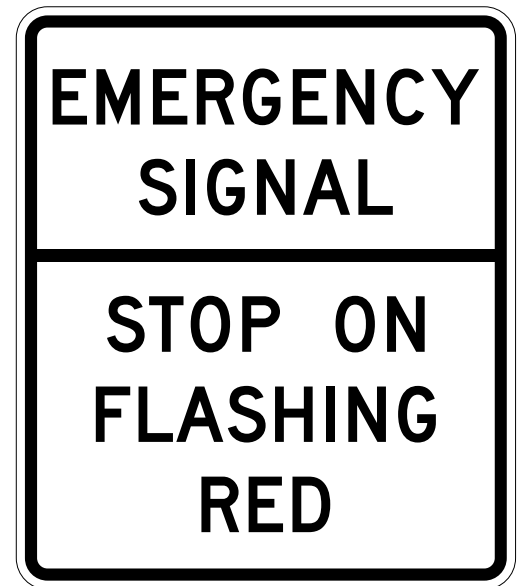
New supplemental plaque for regulatory signs

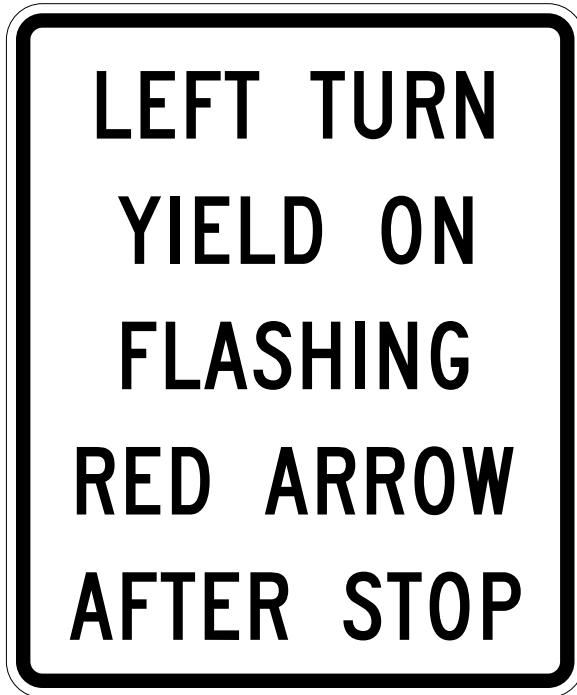




**Required for use with
pedestrian hybrid signals**

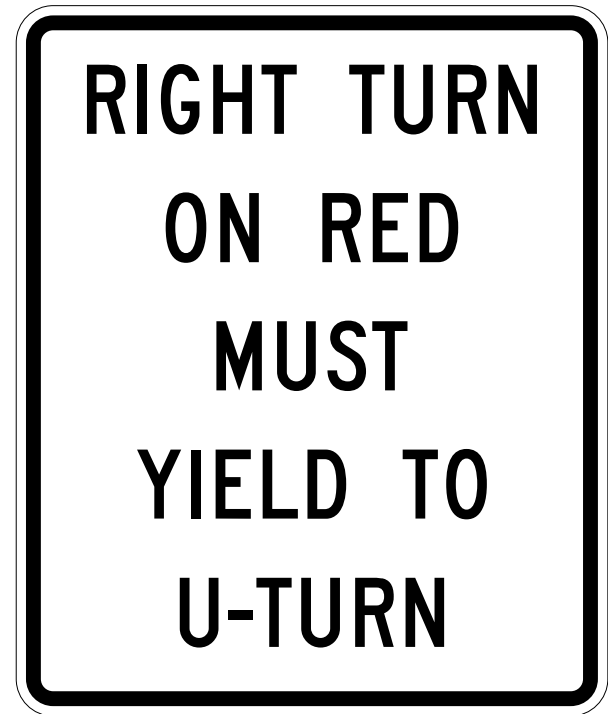
Required for use with emergency-vehicle hybrid signals

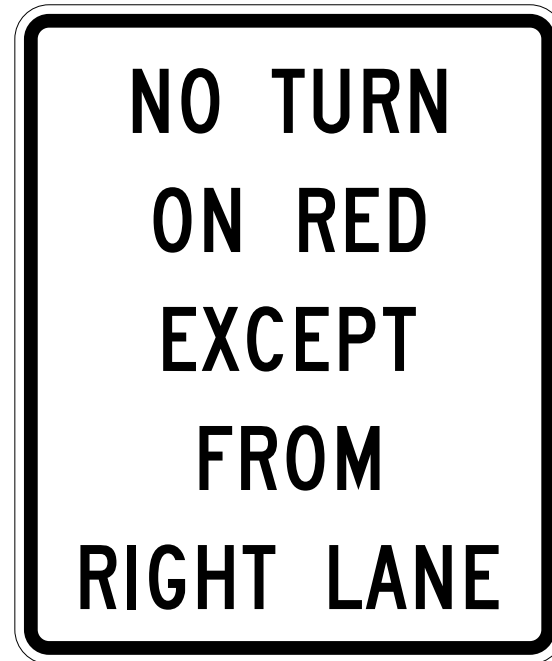




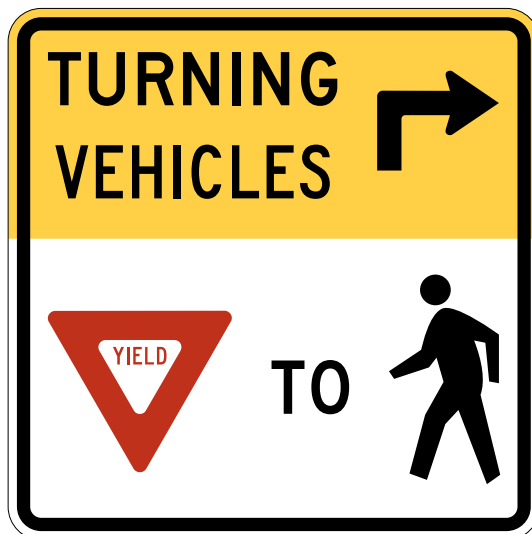
**For optional use
with new flashing
red arrow signal
faces**

New optional sign to remind RTOR drivers to yield to u-turners





For approaches with more than one right-turn lane

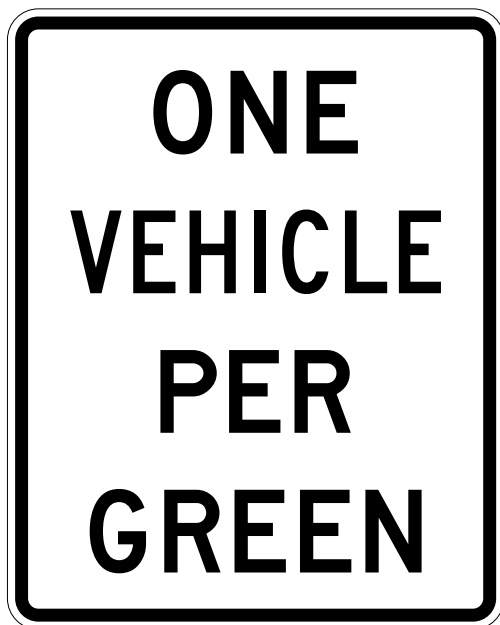


R10-15



New symbolic design for the R10-15 sign

New ramp metering regulatory signs





**Revised
legend for
weigh station
regulatory
sign**

Headlight use signs

LIGHTS
ON
WHEN
RAINING

LIGHTS
ON WHEN
USING
WIPERS

TURN ON HEADLIGHTS
NEXT 15 MILES

TURN ON
HEADLIGHTS

TURN OFF
HEADLIGHTS

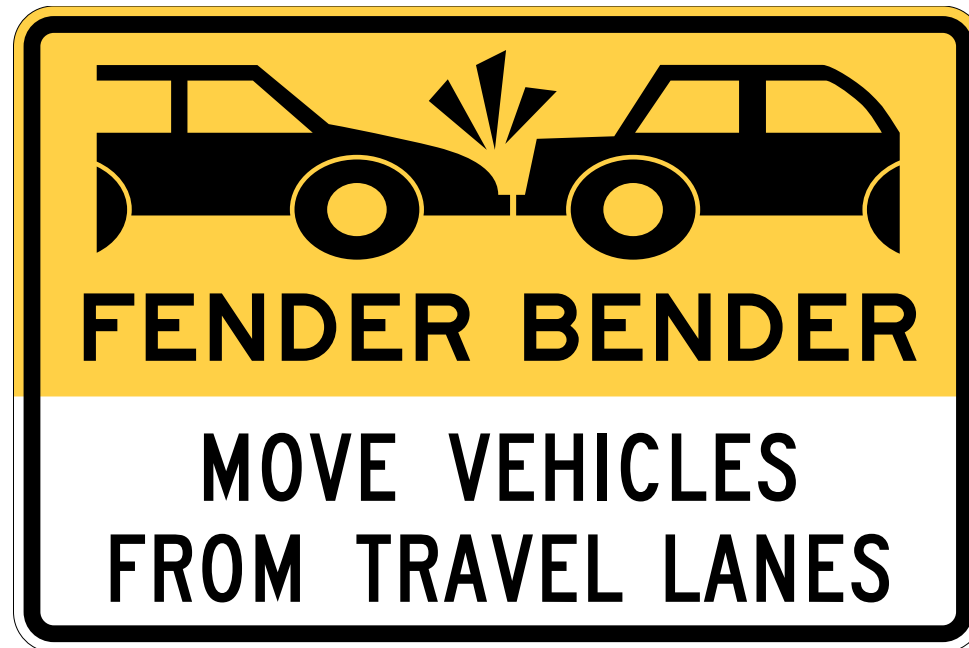
CHECK
HEADLIGHTS

BEGIN DAYTIME
HEADLIGHT SECTION

END DAYTIME
HEADLIGHT SECTION



Incident management “Move-it” law sign



Revisions to Chapter 2C – Warning Signs





Some word message signs are being deleted



Also---STOP AHEAD, YIELD AHEAD, SIGNAL AHEAD

Fluorescent Yellow-Green color

Recommended for pedestrian, bike, and playground signs



Required for school signs



36" x 36" Minimum size for all diamond-shaped warning signs on multi-lane conventional roads



New table for selection of horizontal alignment signs

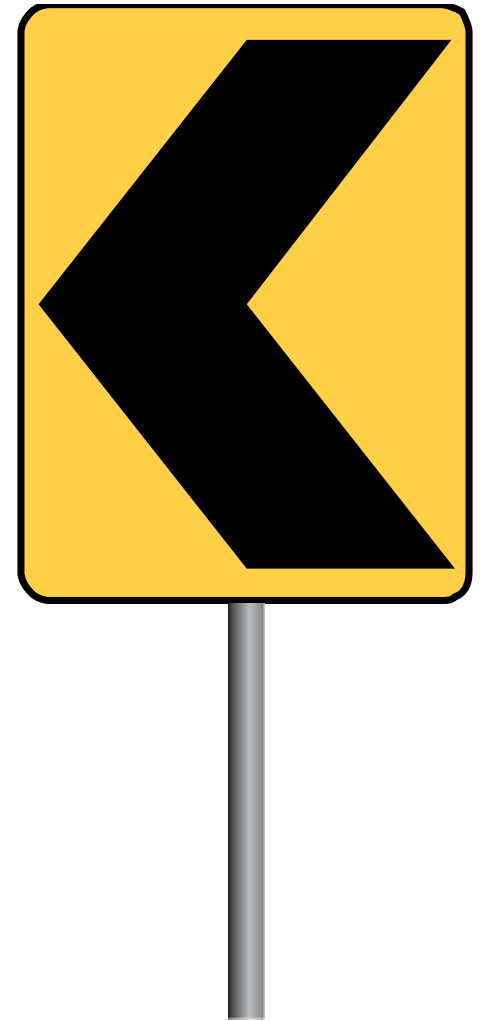
Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 km/h or 10 mph	20 km/h or 15 mph	30 km/h or 20 mph	40 km/h or 25 mph or higher
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), and Winding Road (W1-5) (see Section 2C.07 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required
Combination Horizontal Alignment/Advisory Speed (W1-1a, W1-2a) at beginning of curve	—	—	Optional	Optional	Recommended
Truck Rollover (W1-13) with Advisory Speed Plaque (W13-1P) on exit ramp	—	Optional	Recommended	Required	Required
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	—	Optional	Recommended	Required	Required



New variations of combination horizontal alignment-intersection warning signs



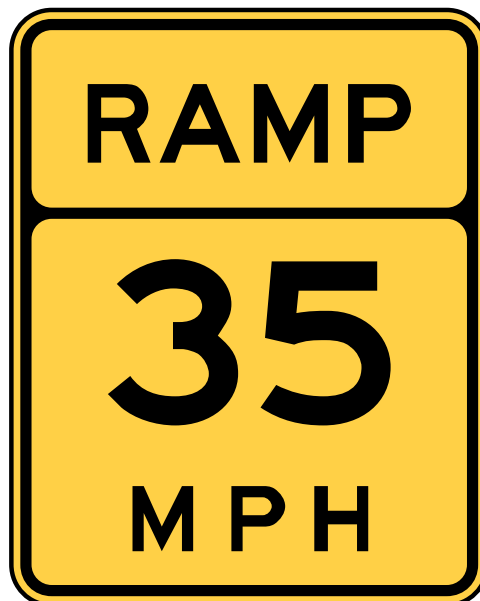
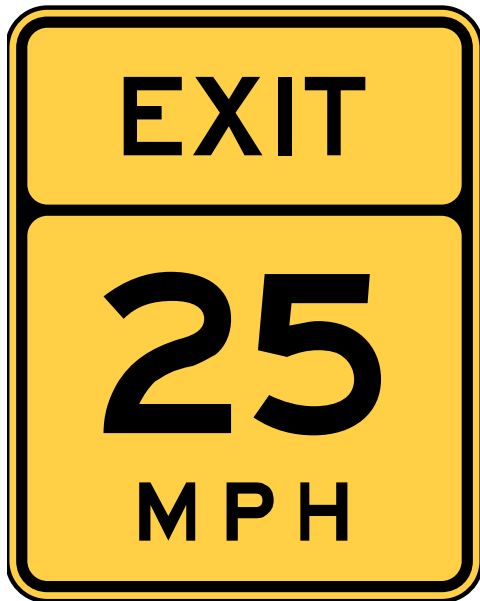
**Chevrons may
be mounted at
4' height**



New table for spacing of Chevron signs

Advisory Speed (mph)	Curve Radius (feet)	Sign Spacing (feet)
15 or less	Less than 200	40
20 to 30	200 to 400	80
35 to 45	401 to 700	120
50 to 60	701 to 1,250	160
More than 60	More than 1,250	200

Curve Speed advisory sign is being deleted



New combination horizontal alignment/advisory exit or ramp speed signs





New Freeway Ends and Expressway Ends signs



New sign for use where a freeway or expressway ends



New Uneven Lanes or Shoulder Drop-Off sign and plaques



**UNEVEN
LANES**

OR

**SHOULDER
DROP-OFF**



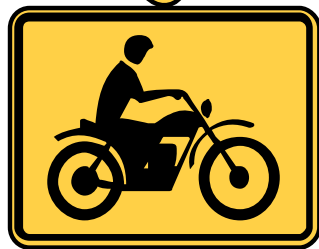
New No Shoulder warning sign



New Falling Rocks sign and plaque



New signs and plaque to warn of conditions that primarily affect motorcyclists



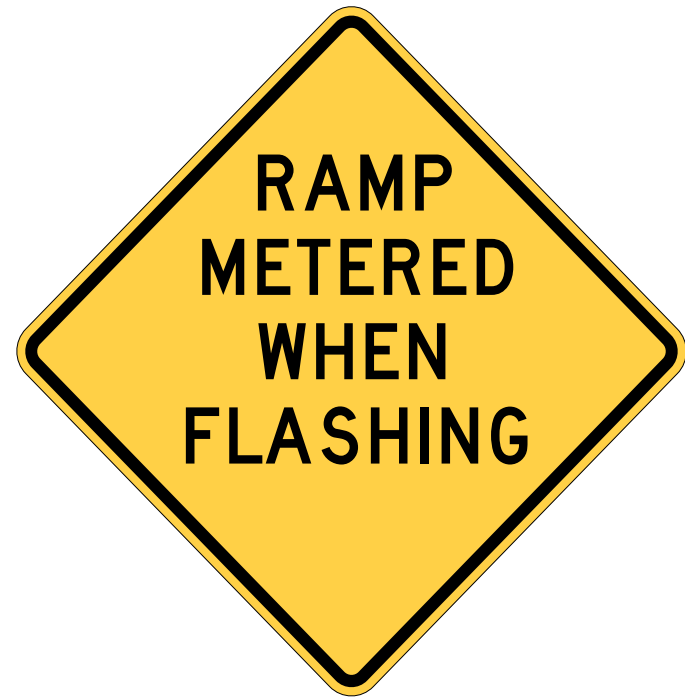
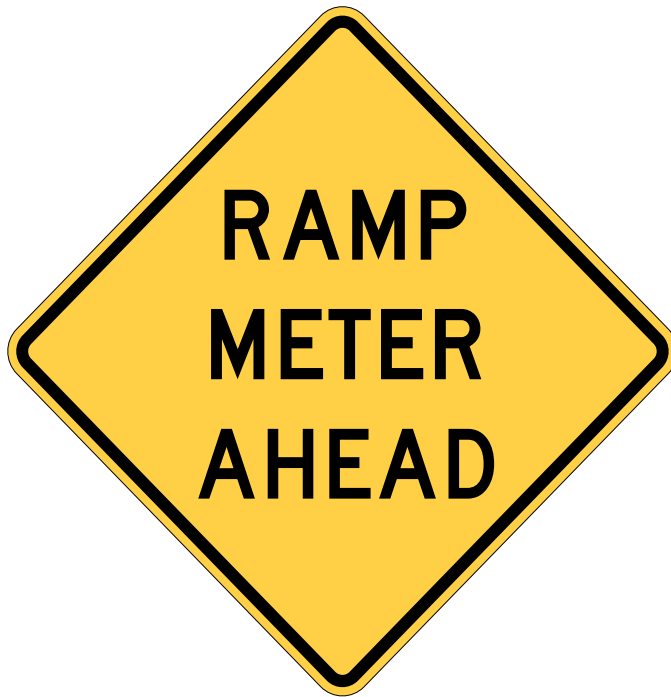
New warnings for adverse weather conditions



New warning signs for road flooding



Warning signs for ramp metering





Speed Reduction sign should be used where the speed limit ahead is being reduced by more than 10 mph

No Merge Area plaque



Freeway lane drop advance warning

**RIGHT LANE
EXIT ONLY
AHEAD**



Warnings of toll road ahead and tollbooth ahead

**TOLL ROAD
BEGINS
1 MILE**

**TOLL ROAD
BEGINS**

**PAY TOLL
1 MILE
CARS 75¢**

**STOP AHEAD
PAY TOLL
CARS 75¢**



New plaques related to toll roads

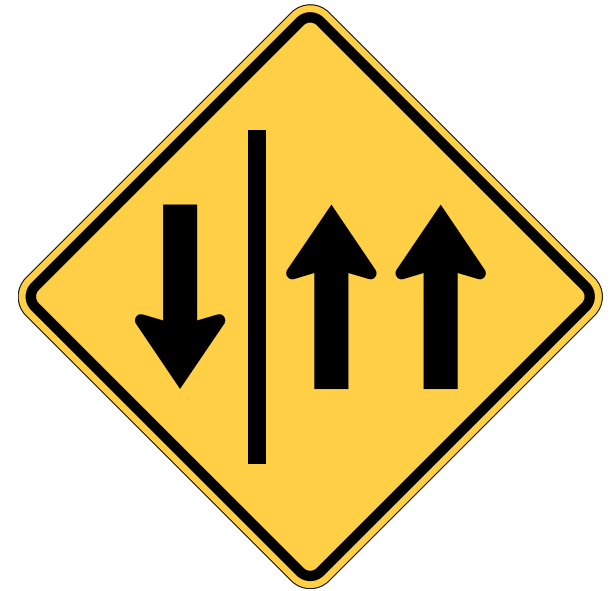
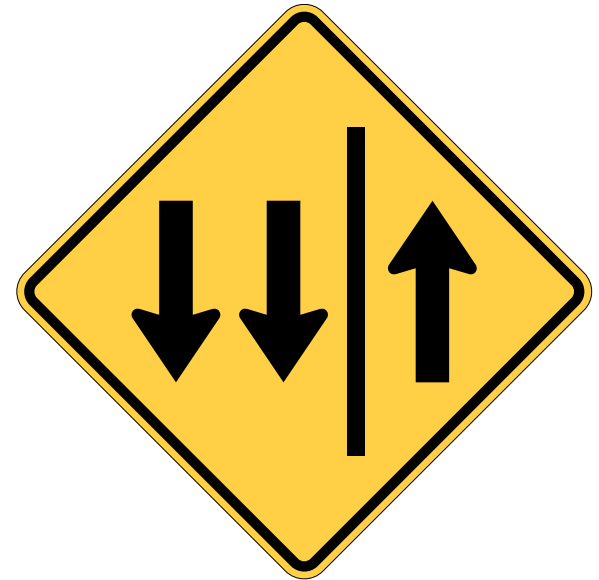
LAST EXIT BEFORE TOLL

PAY TOLL 1 MILE - CARS 75¢

STOP AHEAD - PAY TOLL



Two-Way Traffic warning sign variants for 3-lane roads



New plaque for circular intersection warning



W2-6



W16-12P

OR



W16-17P

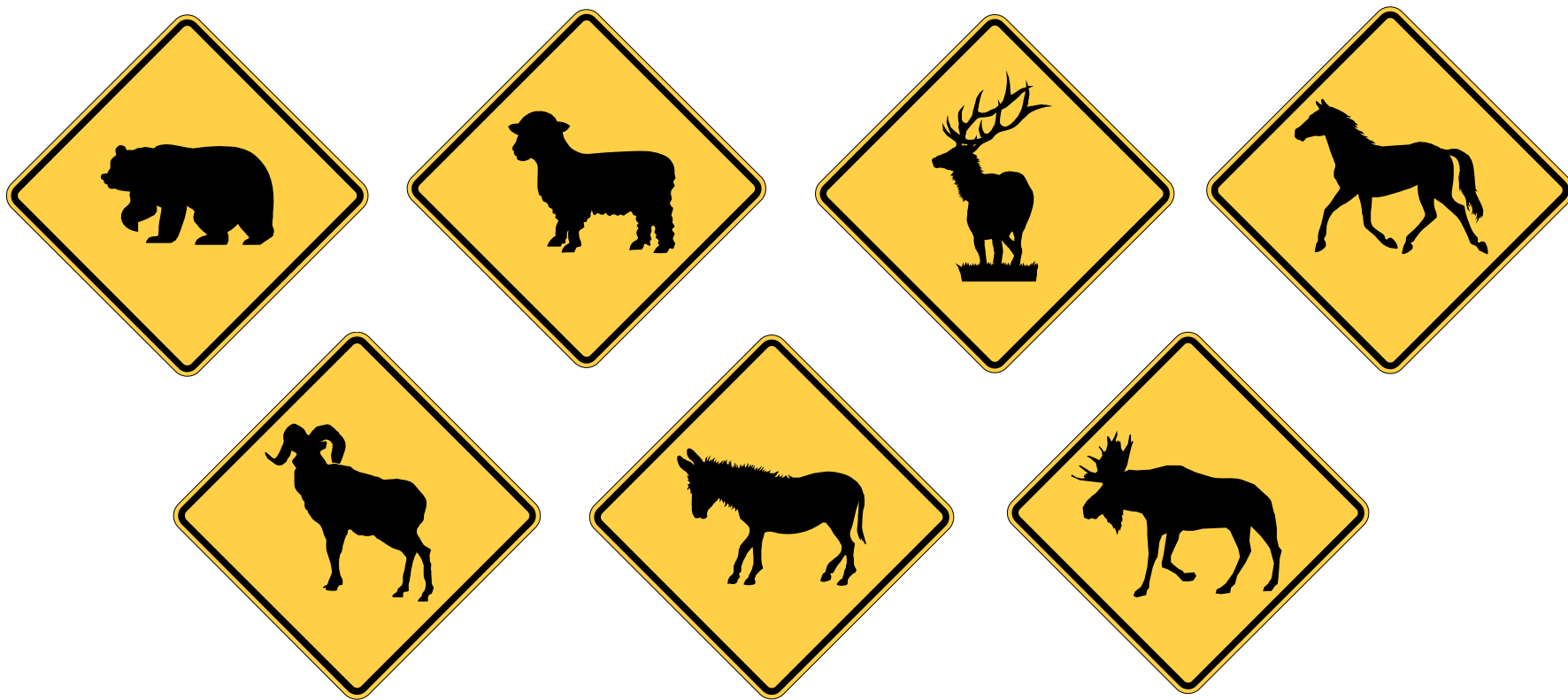
Offset side roads and double side roads



New sign and plaque for combined pedestrian/bicycle crossing



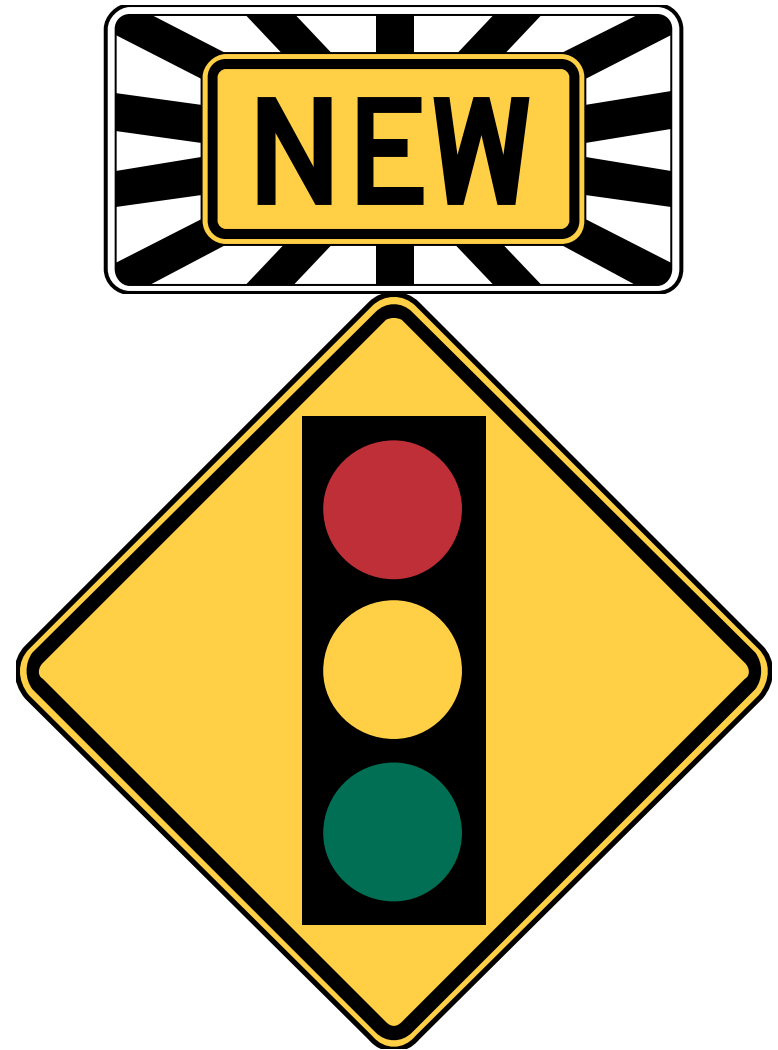
New symbol signs to warn of possible presence of large animals



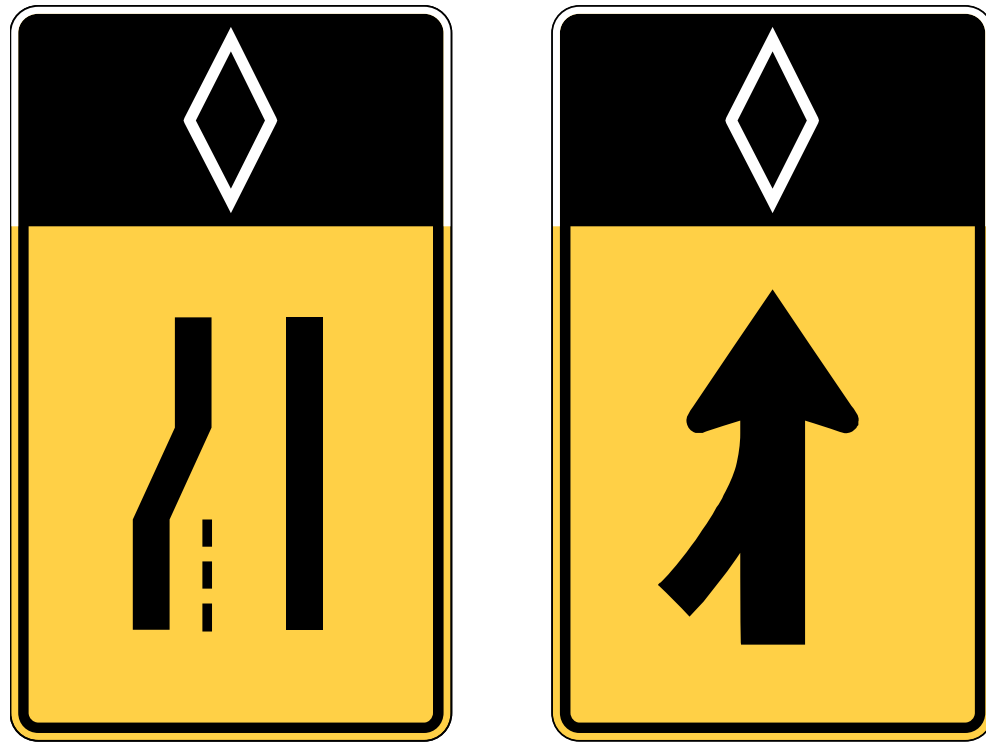
Warning of change in traffic pattern



Plaque for new regulatory sign or advance warning sign of new regulation



Median-barrier mounted preferential lane warning signs



Recommended order of 2 street names on advance street name plaque





Plaques for use when STOP signs control all but one approach to the intersection

Revisions to Chapter 2D – Guide Signs for Conventional Roads

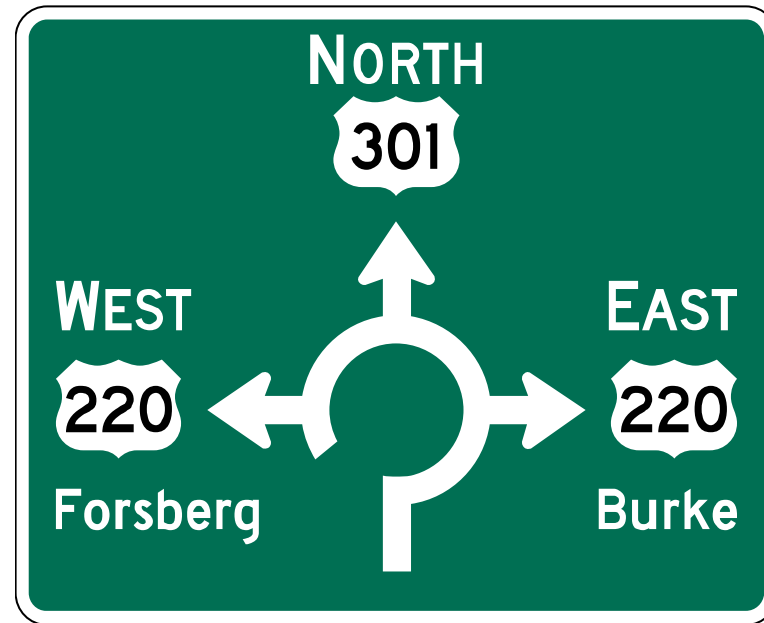




Provisions for use of pictographs on guide signs

Exceeds max size





New guide signs for roundabouts

Route and auxiliary signs combined on a green background



For optional use above confirming route sign at the start of a route



**New TOLL
auxiliary sign** →



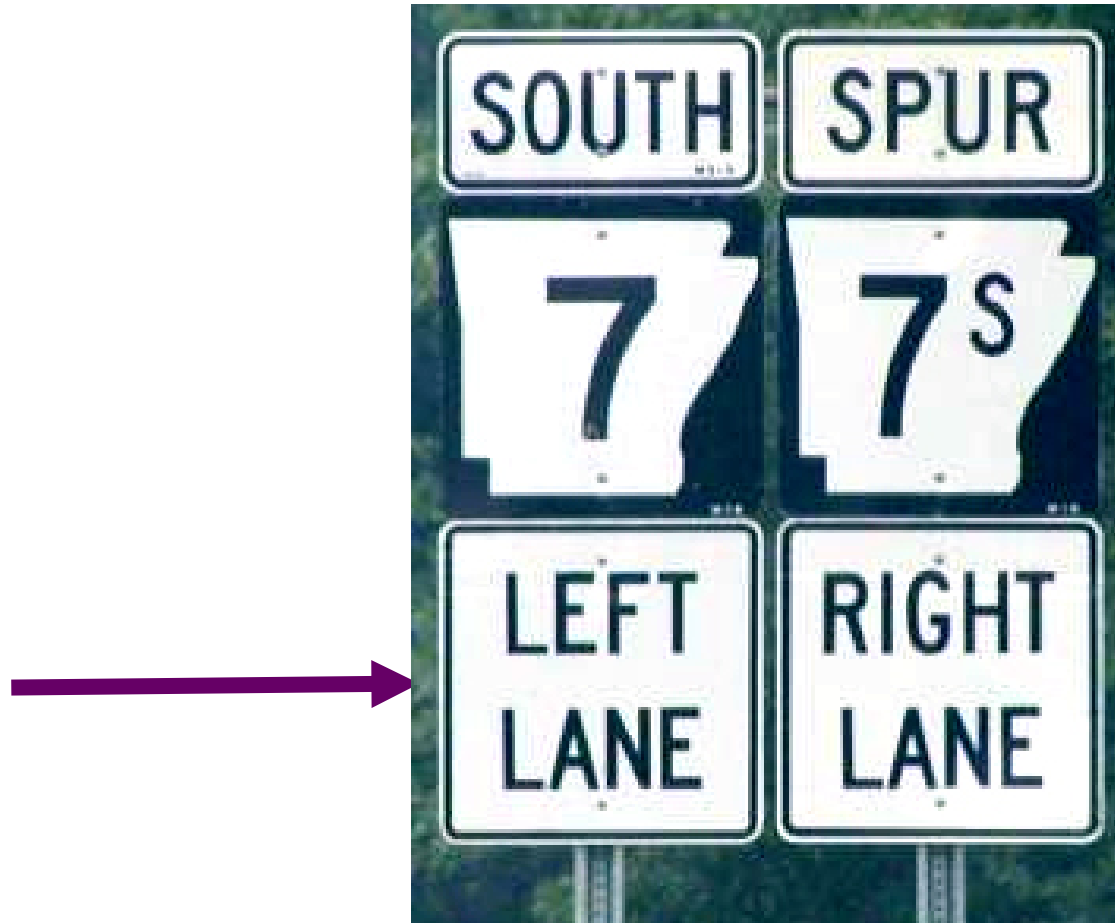
New ETC only auxiliary sign



Shields and trailblazer assemblies for named trails or un-numbered routes



Lane designation auxiliary signs





OR



Combination Lane-Use and Destination Overhead Guide signs



Route shield may be used on a street name sign



New table for letter heights on Street Name signs

Type of Mounting	Type of Street or Highway	Speed Limit	Recommended Minimum Letter Height	
			Initial Upper-case	Lower-case
Overhead	All types	All speed limits	300 mm (12 in)	225 mm (9 in)
Post-mounted	Multi-lane	More than 60 km/h or 40 mph	200 mm (8 in)	150 mm (6 in)
Post-mounted	Multi-lane	60 km/h or 40 mph or less	150 mm (6 in)	113 mm (4.5 in)
Post-mounted	2-lane	All speed limits	150 mm* (6 in)	113 mm* (4.5 in)

* On local 2-lane streets with speed limits of 40 km/h or 25 mph or less, 100 mm (4 in) initial upper-case letters with 75 mm (3 in) lower-case letters may be used.

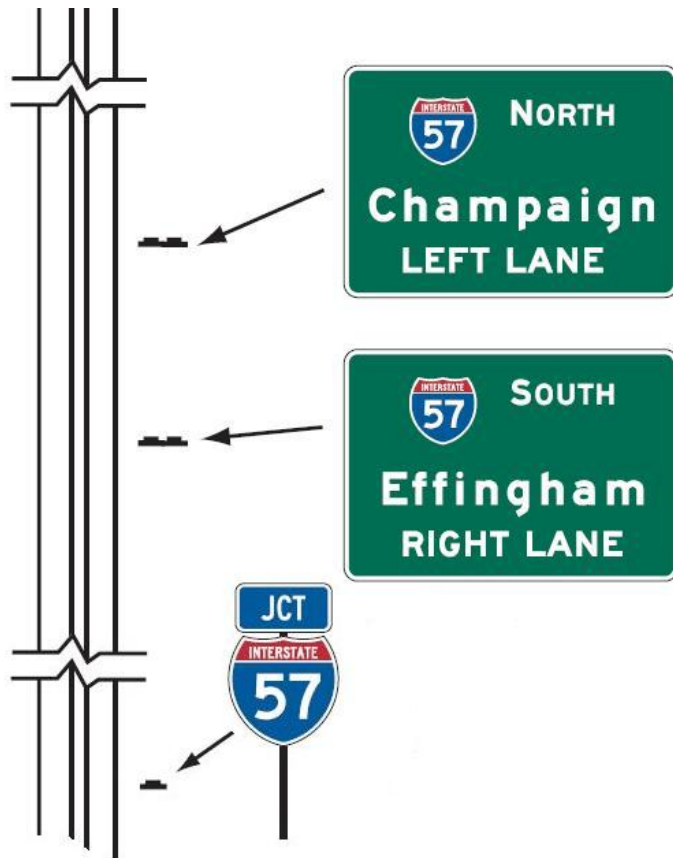


Only alternatives to **green**
Street Name sign background
color will be **blue**, **brown**, or **black**

Recommended order of 2 street names on advance street name sign



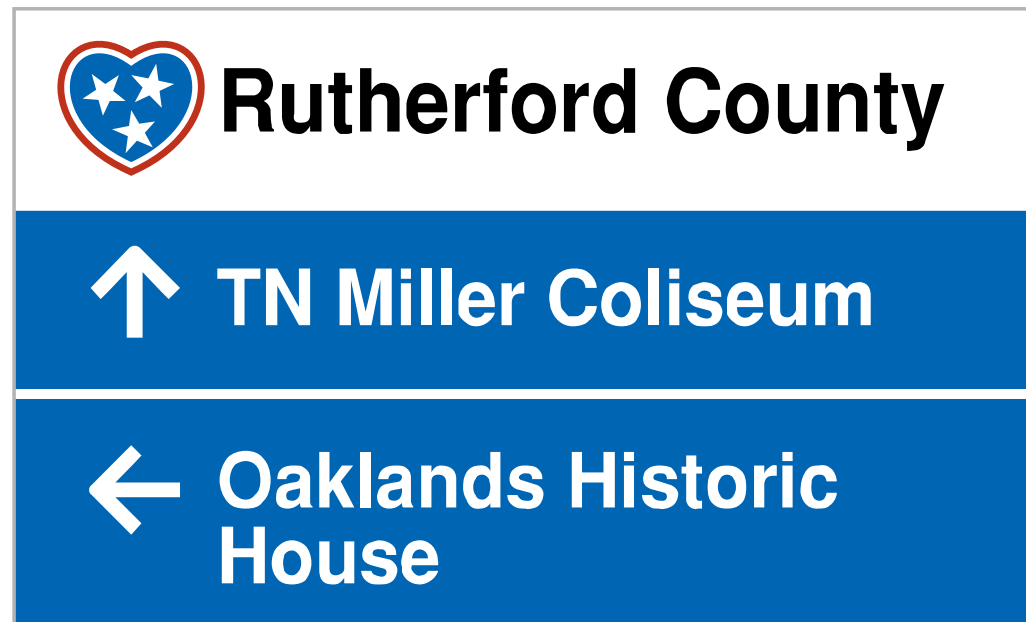
On multi-lane conventional road approaches to interchanges, guide signs identifying the direction of turn or lane to use for each ramp shall be provided



New alternative parking wayfinding sign



New provisions on the design and use of community wayfinding signs





Guide signs for truck lanes, passing lanes, and climbing lanes

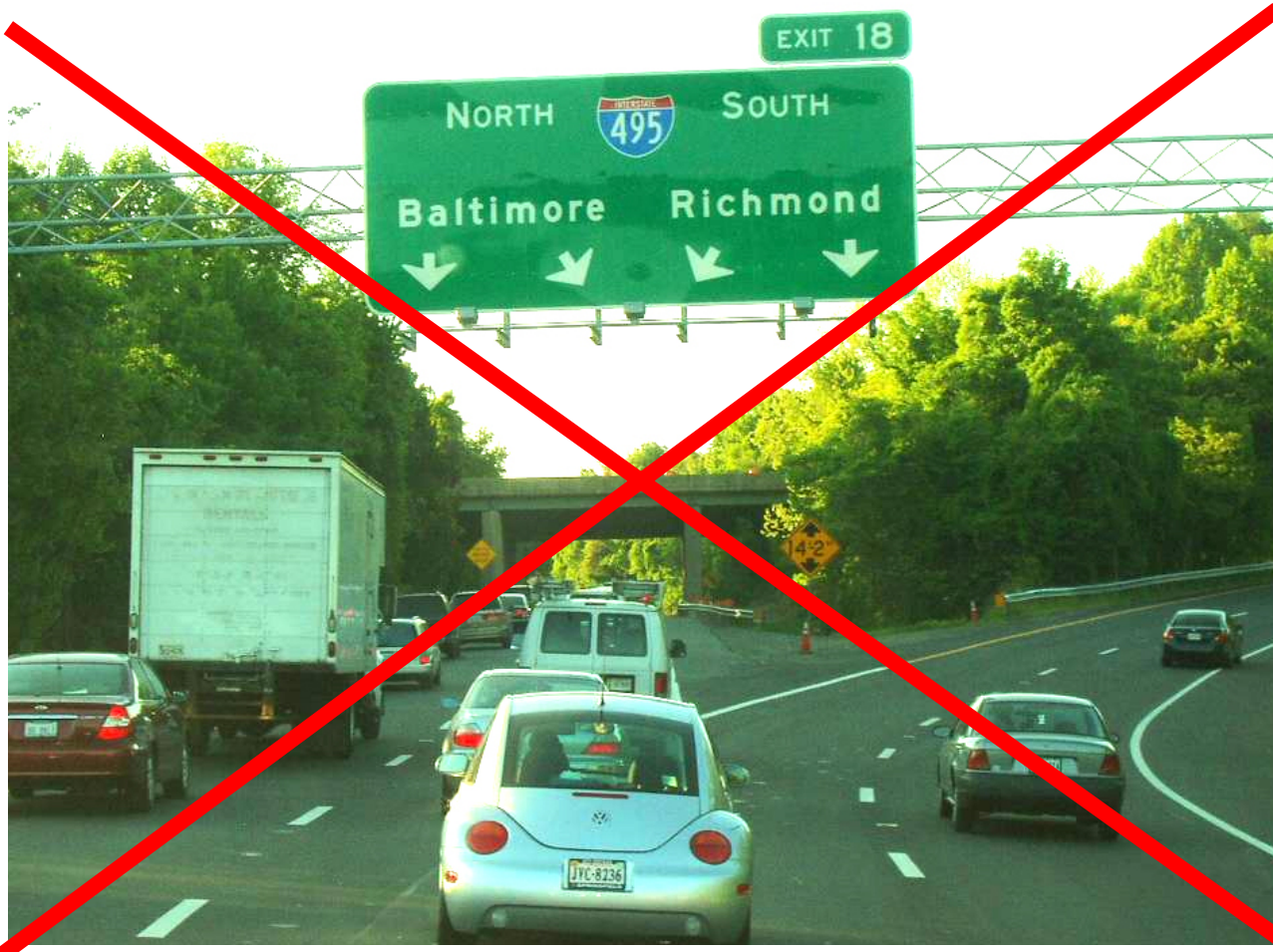
Slow vehicle turn-out advance guide sign

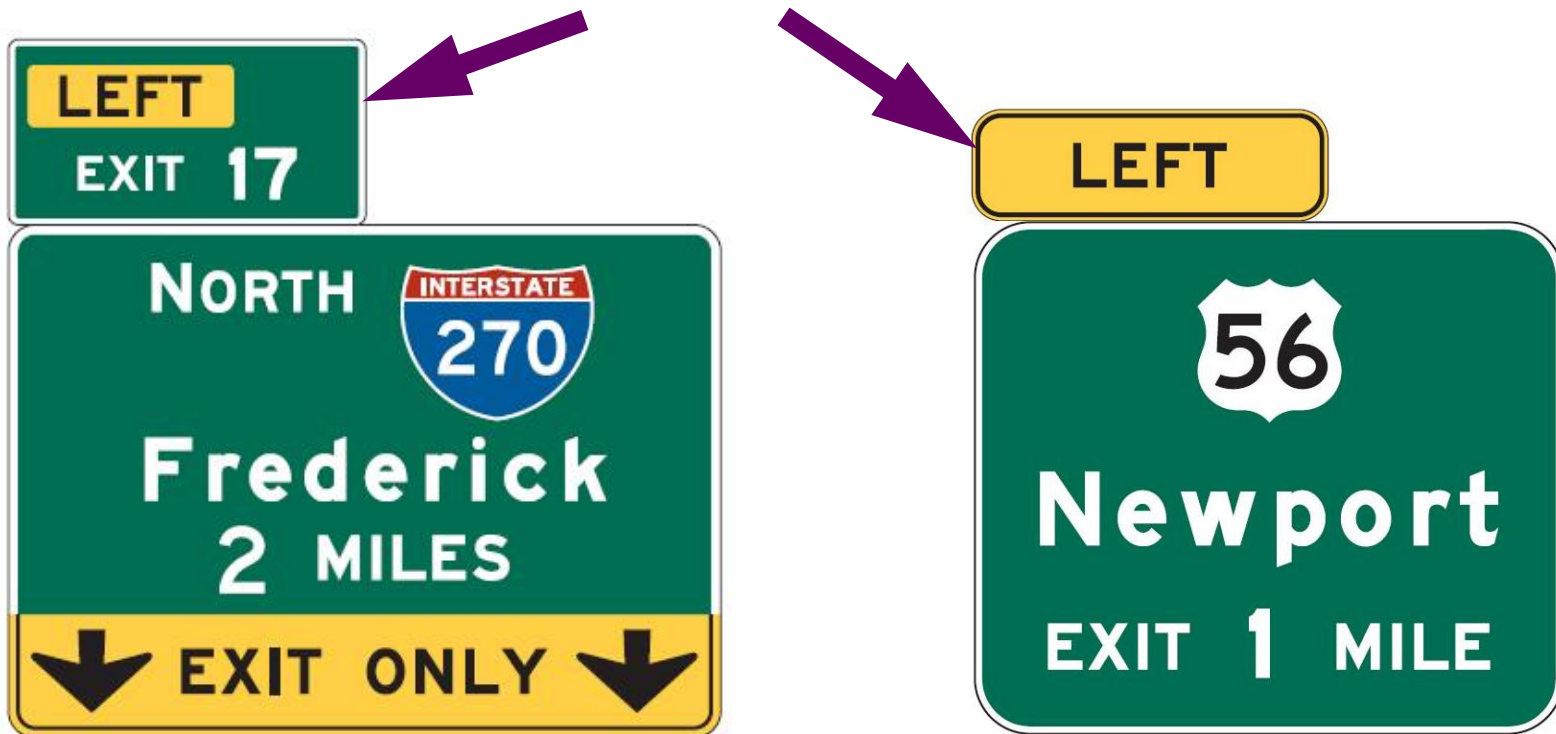


Revisions to Chapter 2E – Guide Signs for Freeways and Expressways



Down arrows shall always be vertical and positioned directly over the approx. center of each applicable lane





LEFT plaques required for
numbered and un-numbered
exits to the left

Significant revisions on diagrammatic sign design and use



Lane lines on arrow shaft
-- too subtle!

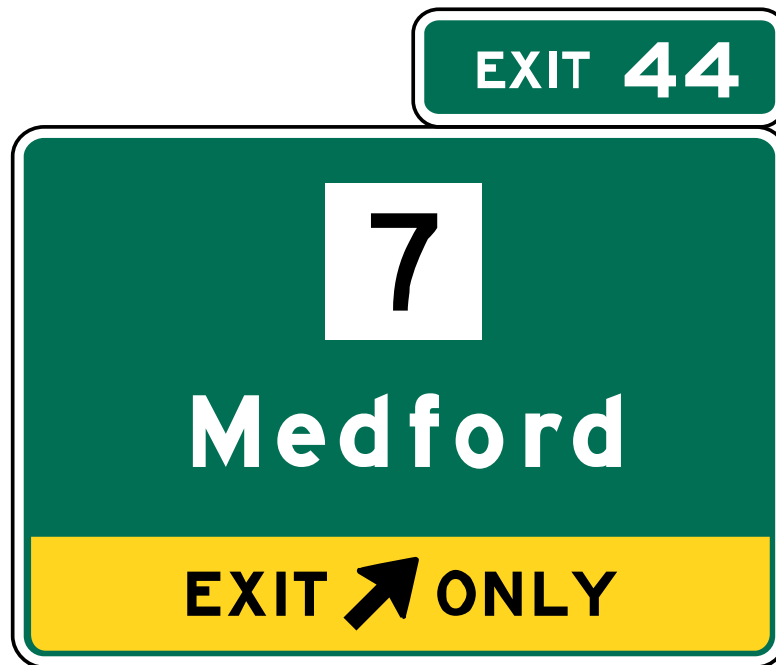


New diagrammatic signs required for “option-lane” exits and splits and will feature an up arrow over each lane



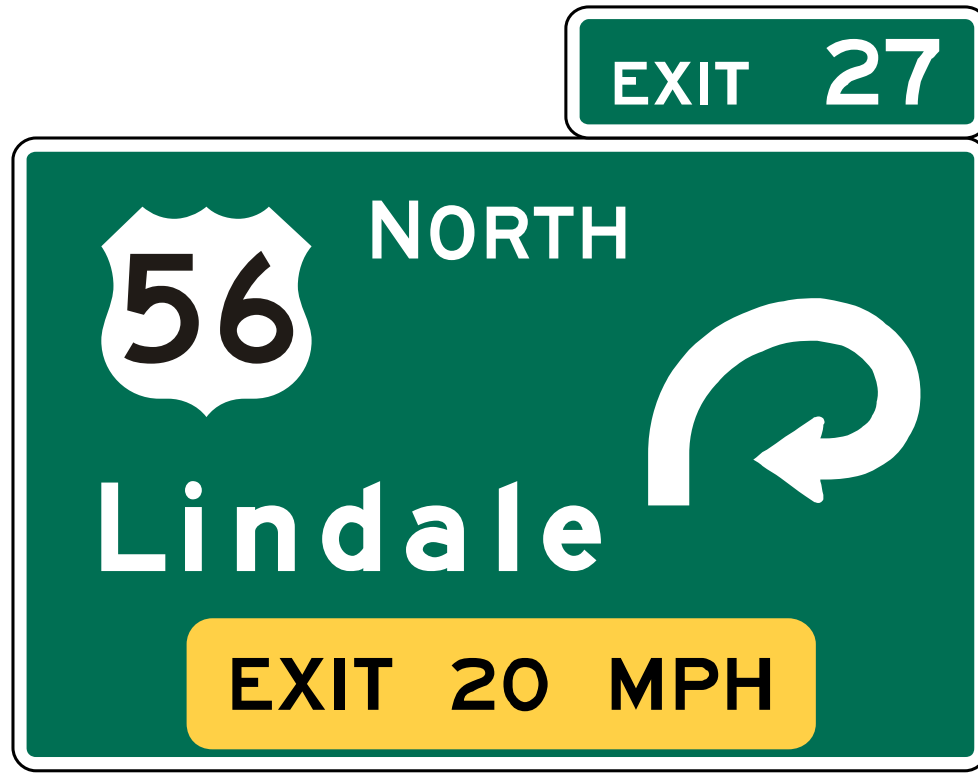


For lane drops without an “option lane”, EXIT ONLY panel with down arrow(s) required on all overhead advance guide signs



**For lane drop without
“option lane”, Exit Direction sign
shall have EXIT ONLY panel with
upward diagonal arrow**

An advisory speed legend may be added to an Exit Direction sign



New requirement for exit numbering by reference location

EXITS 33 A-B

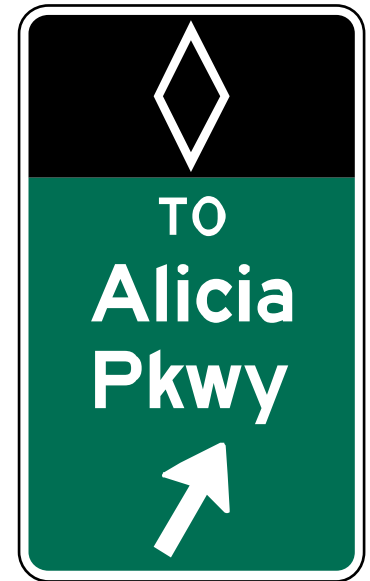
Space required between number and letter



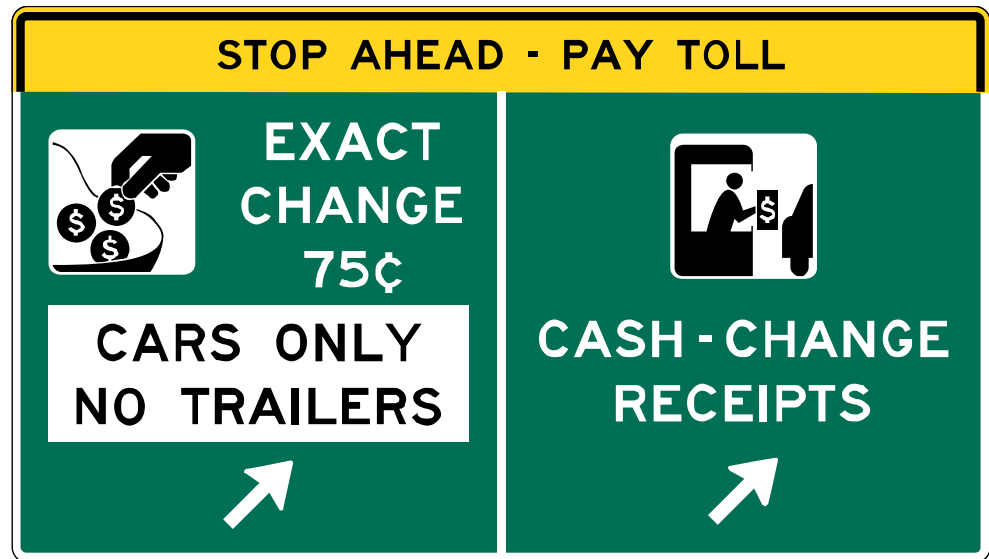
**Type 1
object markers
may be used on
exit gore
sign supports**



New guide signs for preferential lanes



Guide signs for toll plazas and open-road ETC lanes

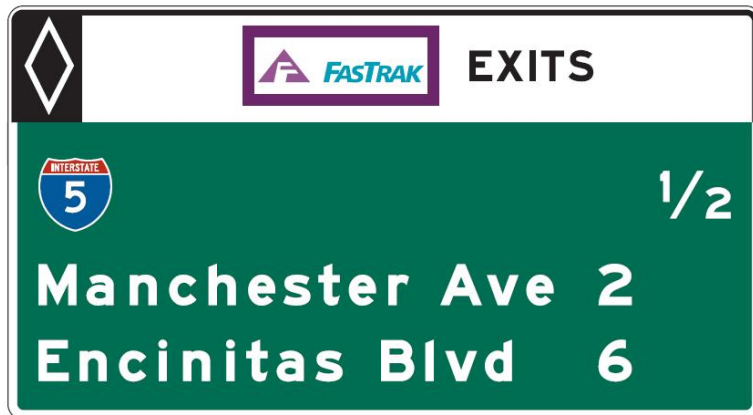




New guide signs and symbols for toll plaza canopies

New symbol identifying nationally interoperable ETC systems, for future use





New guide signs for managed and ETC-only facilities

Revisions to Chapter 2F – General Service Signs (relocated from Chapter 2E)



General Service signs now in separate Chapter



New general service signs

Telecommunic.
device for the
deaf

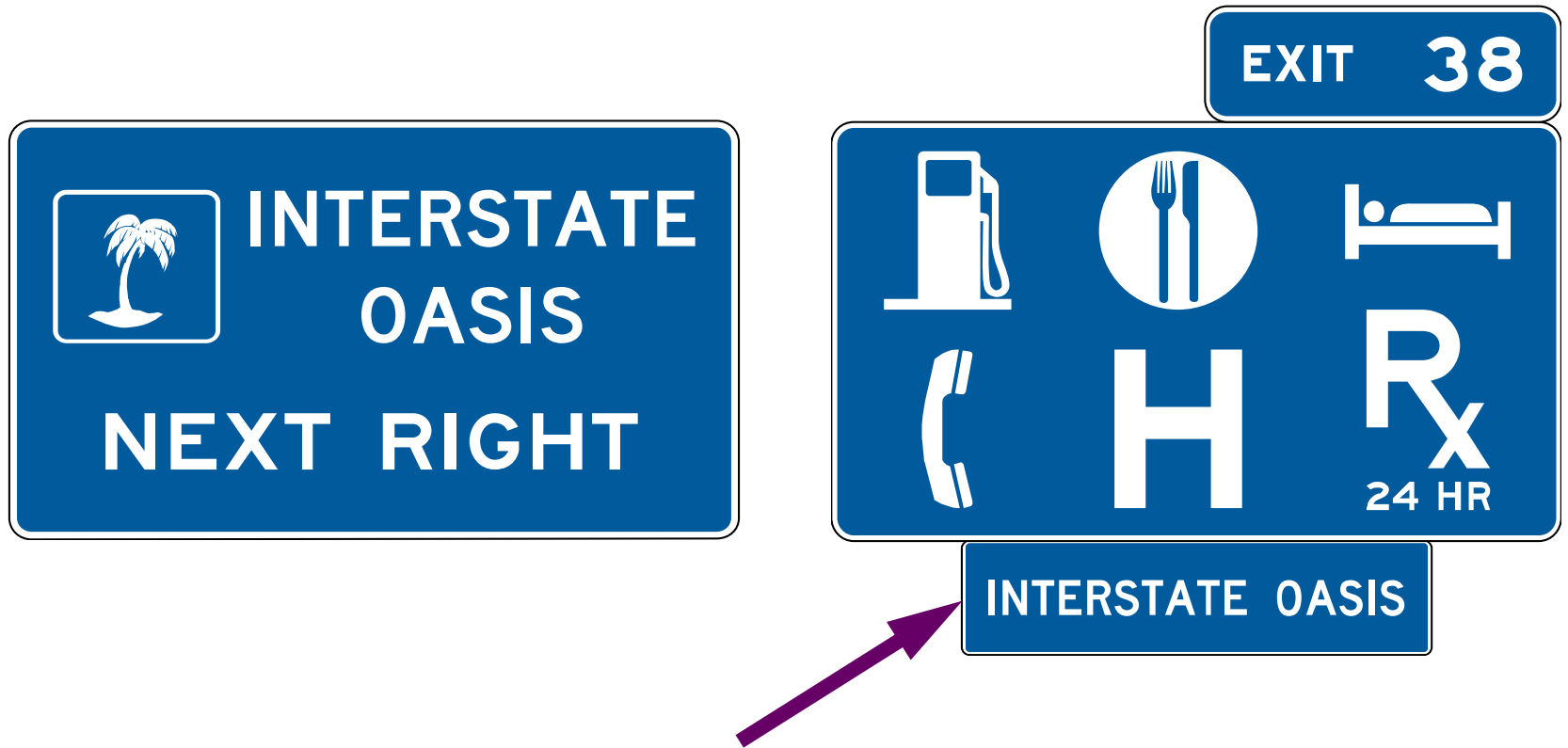


Wireless
internet



Revised
general service
signs

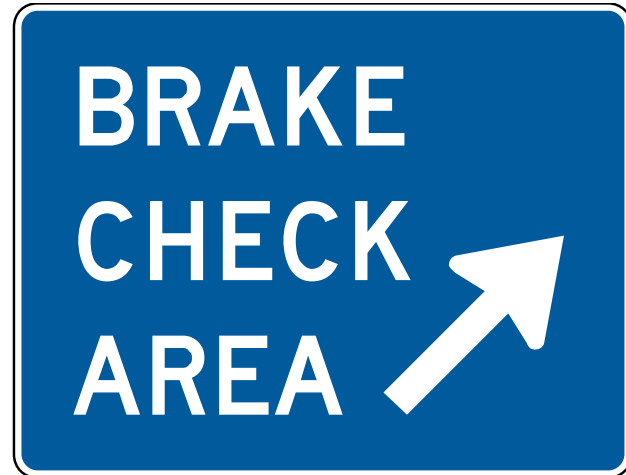
Interstate Oasis signing



“Dial” changed to “Call”



Brake Check Area and Chain-Up Area signs

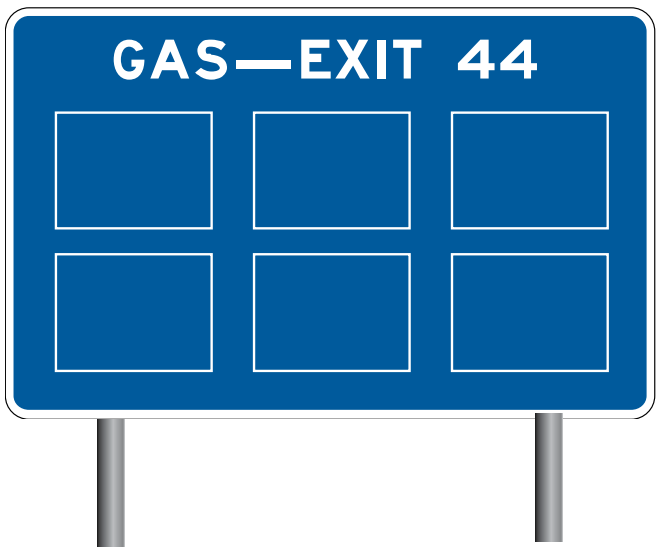
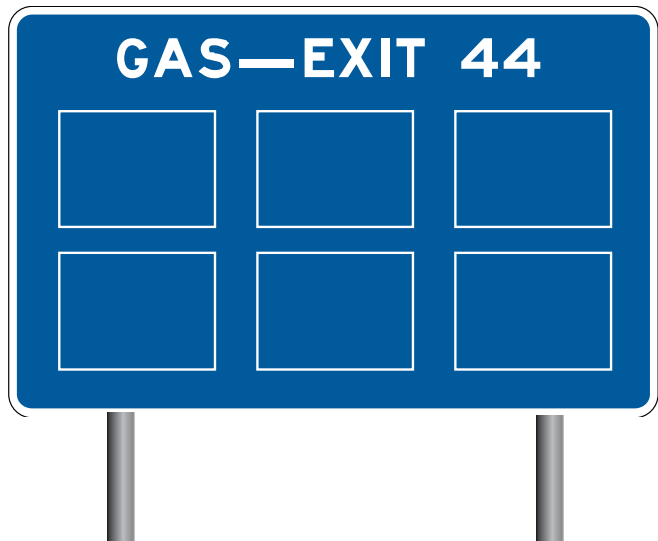


These signs are being changed from warning signs to general service signs

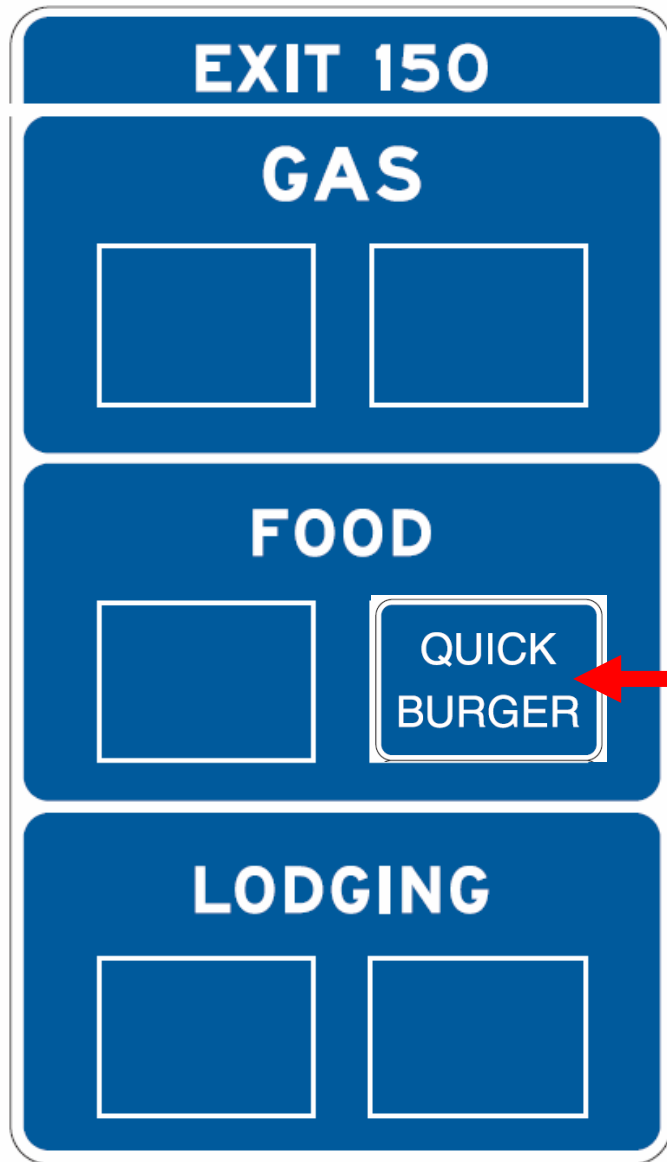


Revisions to Chapter 2G – Specific Service Signs (formerly Chapter 2F)





12 logos on two signs allowed for one service type at an interchange



Recommended minimum letter heights for word-message logo panels

- 8 inch letters for freeways/expressways
- 6 inch letters for ramps and conventional roads

Supplemental messages and new RV-accessible symbol allowed within logo sign panels



Dual-logo sign panels for two businesses in a common facility



Specific service trailblazer signs



**NO Significant Revisions
to
Chapter 2H –
Tourist-Oriented
Directional Signs
(formerly Chapter 2G)**

New Chapter 2I – General Information Signs



New Chapter with sections relocated from Chapters 2D and 2E

- **Reference location signs**
- **Traffic signal speed sign**
- **Other I-series general information signs**
- **Memorial signing**
- **Trail signs**
- **Acknowledgement signs**



**Size of this sign is being increased
from 12" x 18" to 24" x 36"**



**Changeable message element allowed
for varying progression speed**

New Ferry Terminal sign for I-series



New provisions on the design and use of acknowledgement signs



Revisions to Chapter 2J – Recreational and Cultural Area Interest Signs (formerly Chapter 2H)



Updated and expanded set of recreational and cultural symbol signs





Recreational and cultural interest area prohibitory signs

Revisions to Chapter 2K – Emergency Management Signing (formerly Chapter 2I)



Tsunami Evacuation Route sign



New option for fluorescent pink background when EM-6 or EM-7 signs are used in an incident situation



or

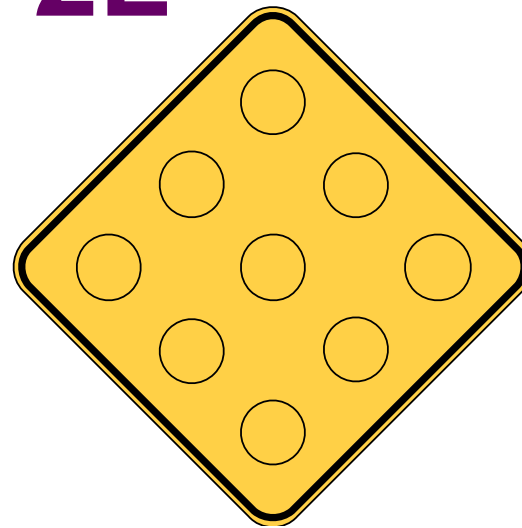
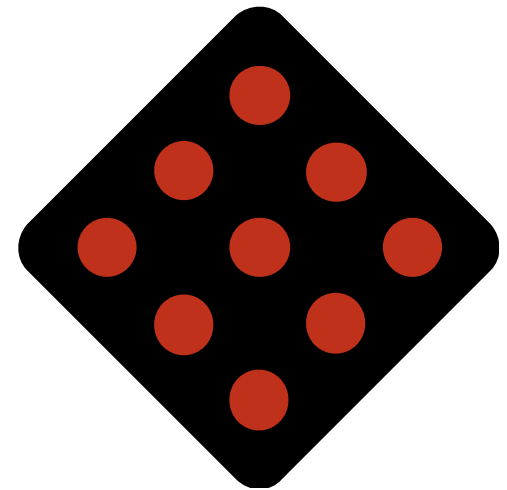


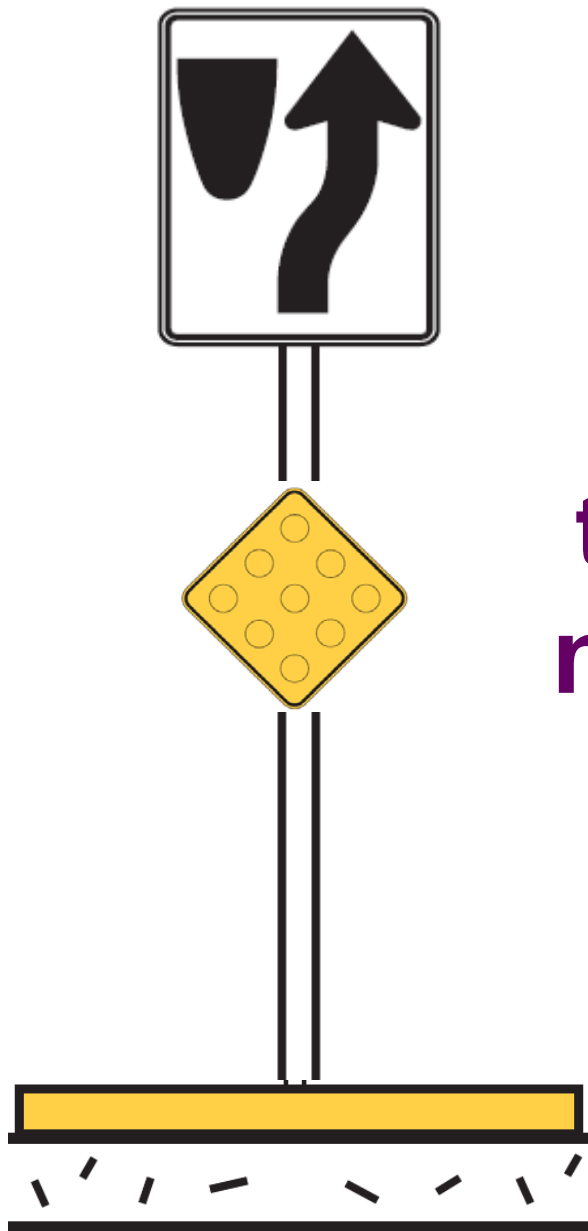
Revisions to Chapter 2L – Object Markers and Barricades

(formerly Chapter 3C and Section 3F.01)



Object markers and barricades are being relocated from Part 3 to new Chapter 2L





Option to use type 1 or type 3 object marker on nose of median island at intersection

New Section on traffic gates



January 2, 2008 Proposed Revisions to the MUTCD



New Chapter 2M – Changeable Message Signs



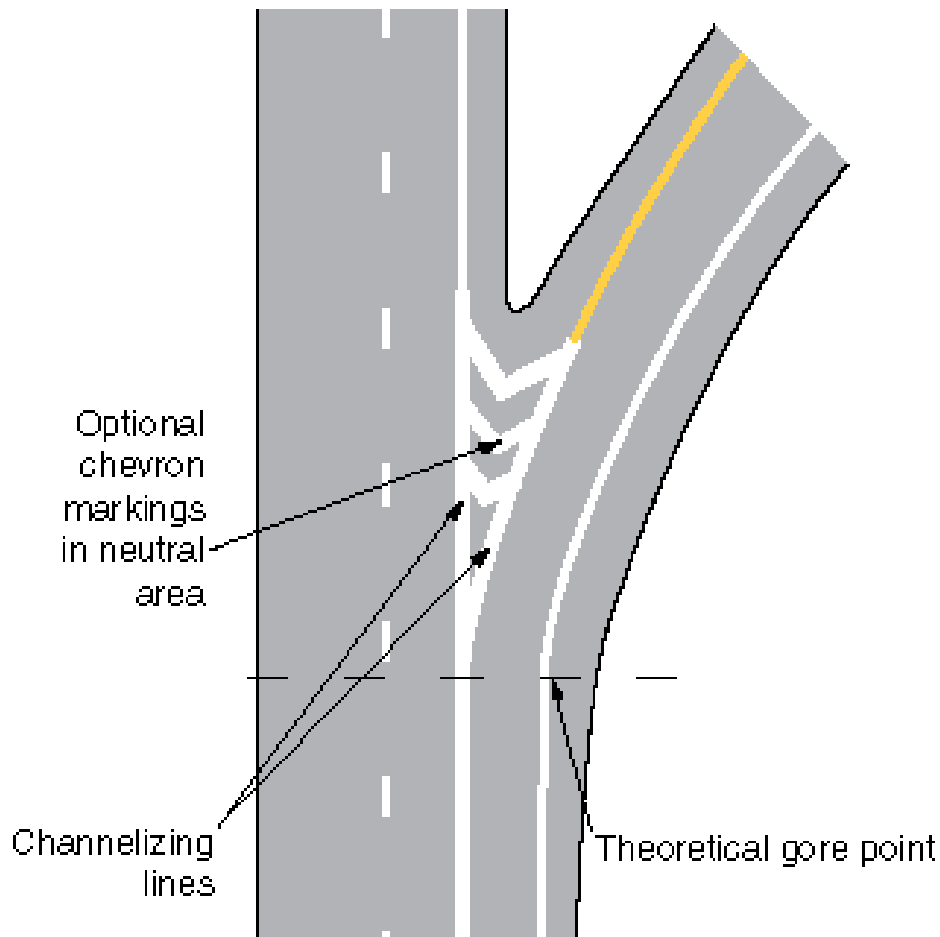
Provisions for Changeable Message Signs

- Legend Height
- Color
- Phases per Cycle
- Display Time



Revisions to Part 3 – Markings





Definitions of neutral area, physical gore, and theoretical gore as applicable to markings

“Splatter markings”



May be used if they meet the agency's other markings requirements

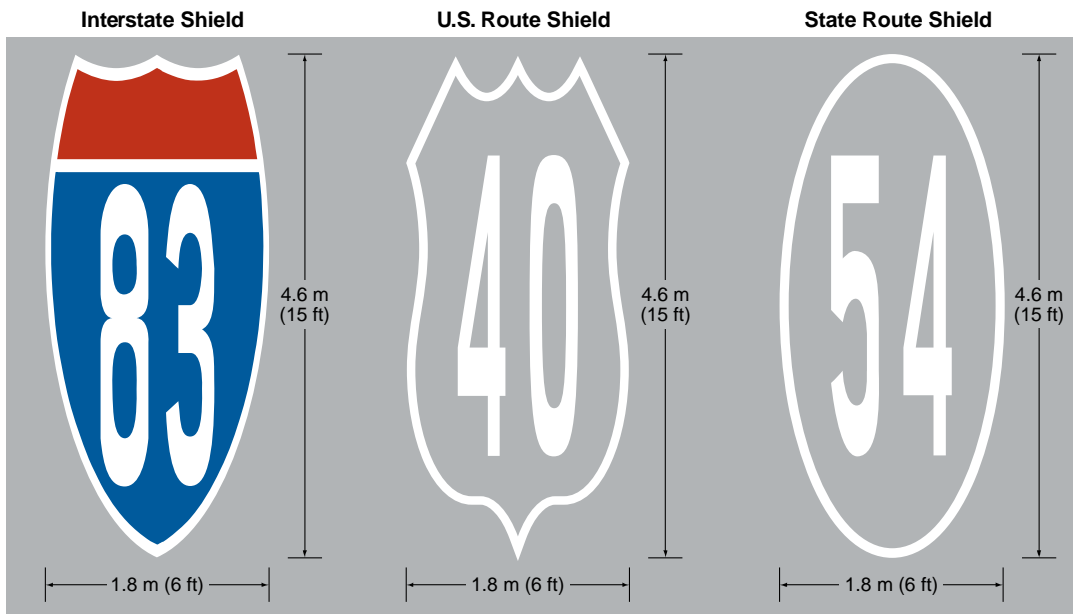


Single yellow centerline marking on 2-way road specifically prohibited





Optional route shield pavement markings



Optional use of RPMs around noses of raised medians, curbs, or islands



Red RPMs not appropriate for undivided highways

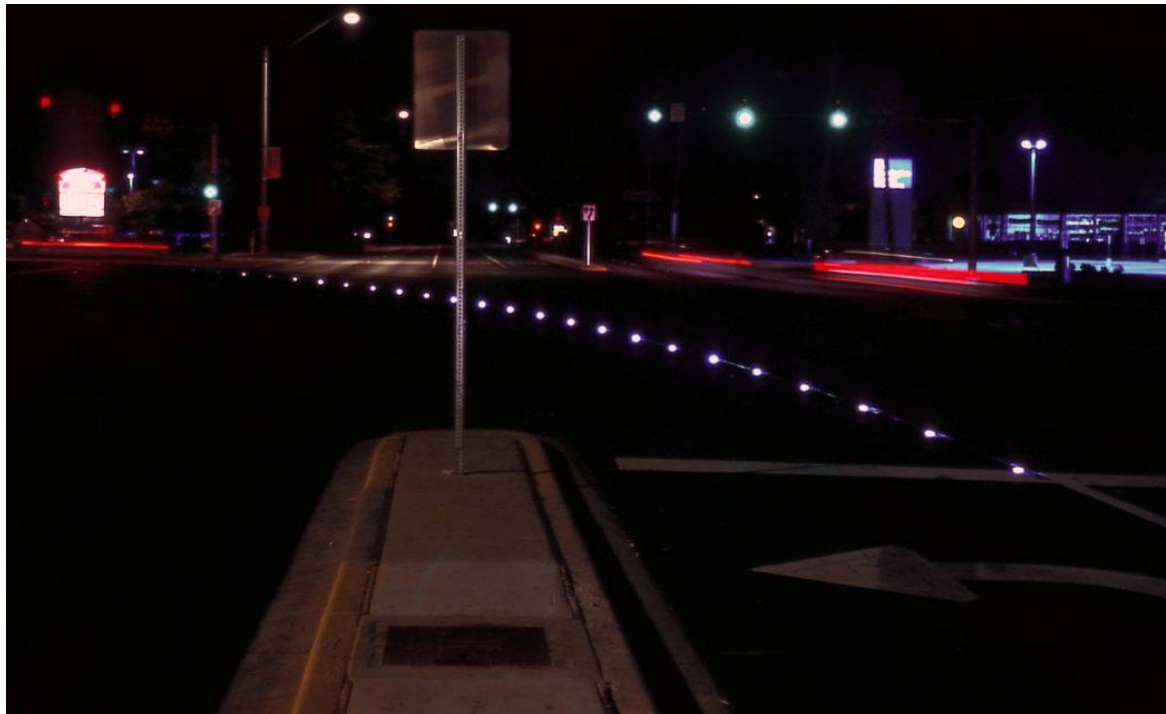


Blue RPMs

- Not a TCD
- Deleted from MUTCD



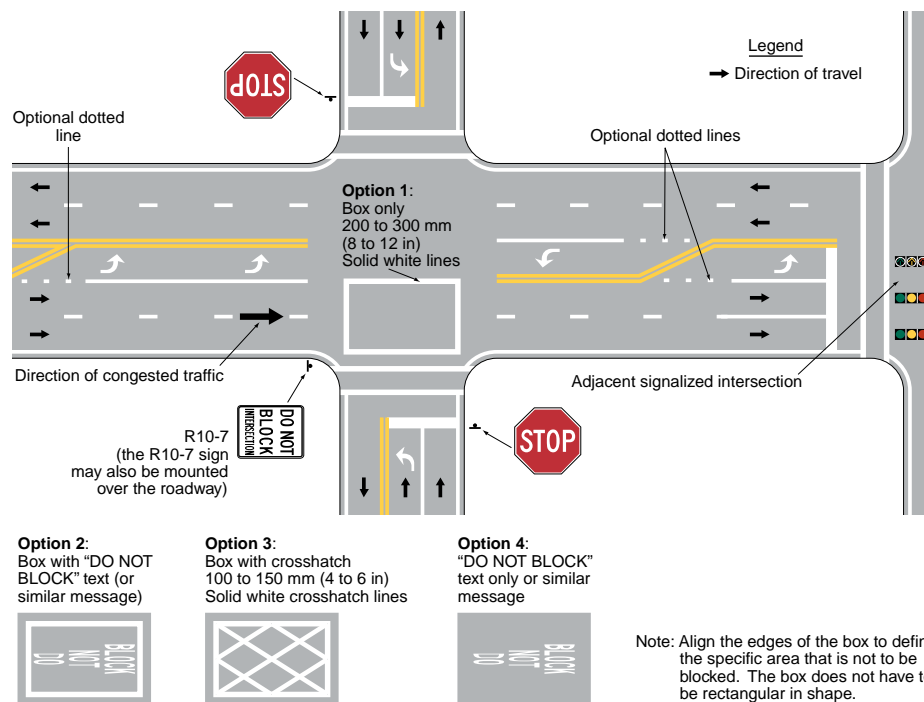
Internally-illuminated RPMs shall be steadily-illuminated (not flashed)



If flashing, they are in-roadway lights and must meet
Chapter 4L requirements

Dotted (not broken) lane lines shall be used for non-continuing lanes – accel, decel, auxiliary, lane drops





Do Not Block Intersection pavement markings

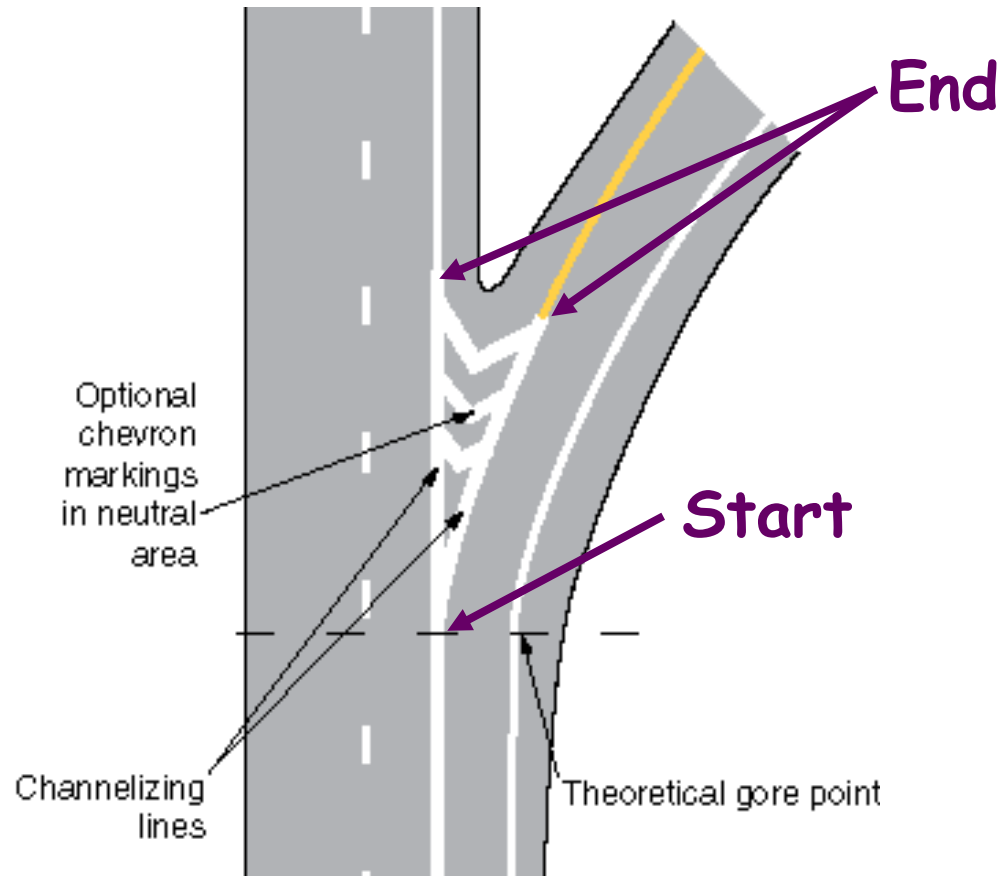


Recommended use of arrows in 2-way left-turn lanes



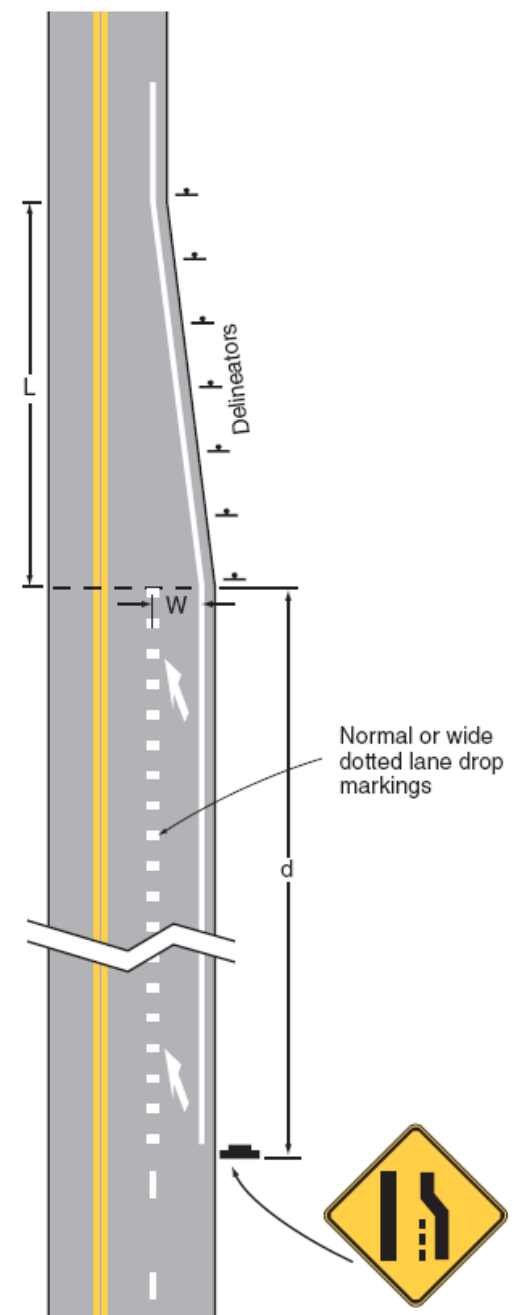
At start of lane and elsewhere along lane as needed

Channelizing lines adjacent to neutral area in gore



Lane reduction markings

- Dotted lane drop markings recommended
- Lane reduction arrows should be used if speed limit is 45 mph or above
- Edge line & delineators in transition may be deleted for low-speed urban locations with curb



Stop lines and yield lines

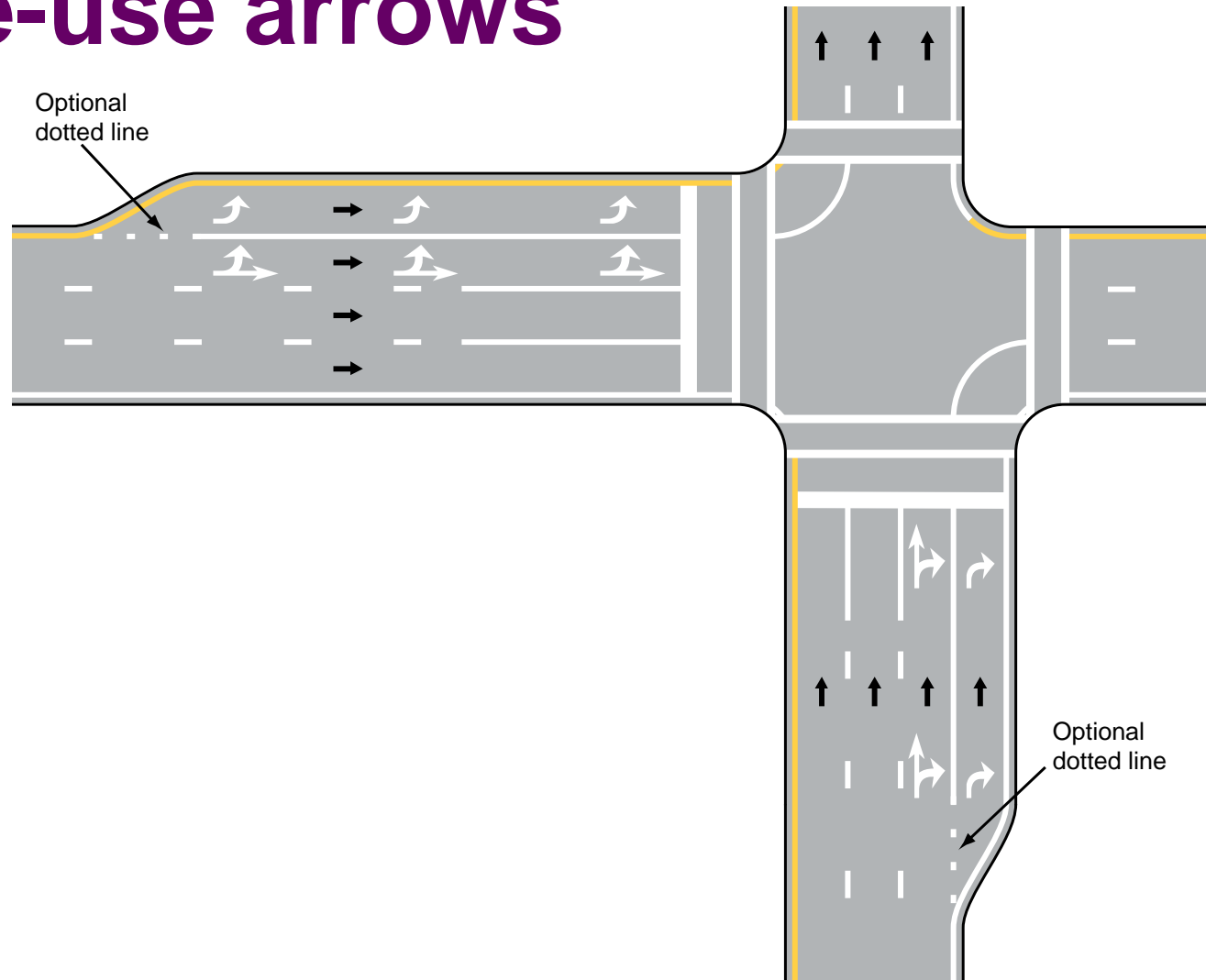
- Stop lines shall not be used where drivers are required by law to yield rather than come to a full stop.
- Yield lines should not be used in advance of crosswalks across a roundabout approach or departure.
- Stop lines and yield lines may be “staggered” on a lane-by-lane basis.



Revised conditions for provision of marked crosswalks

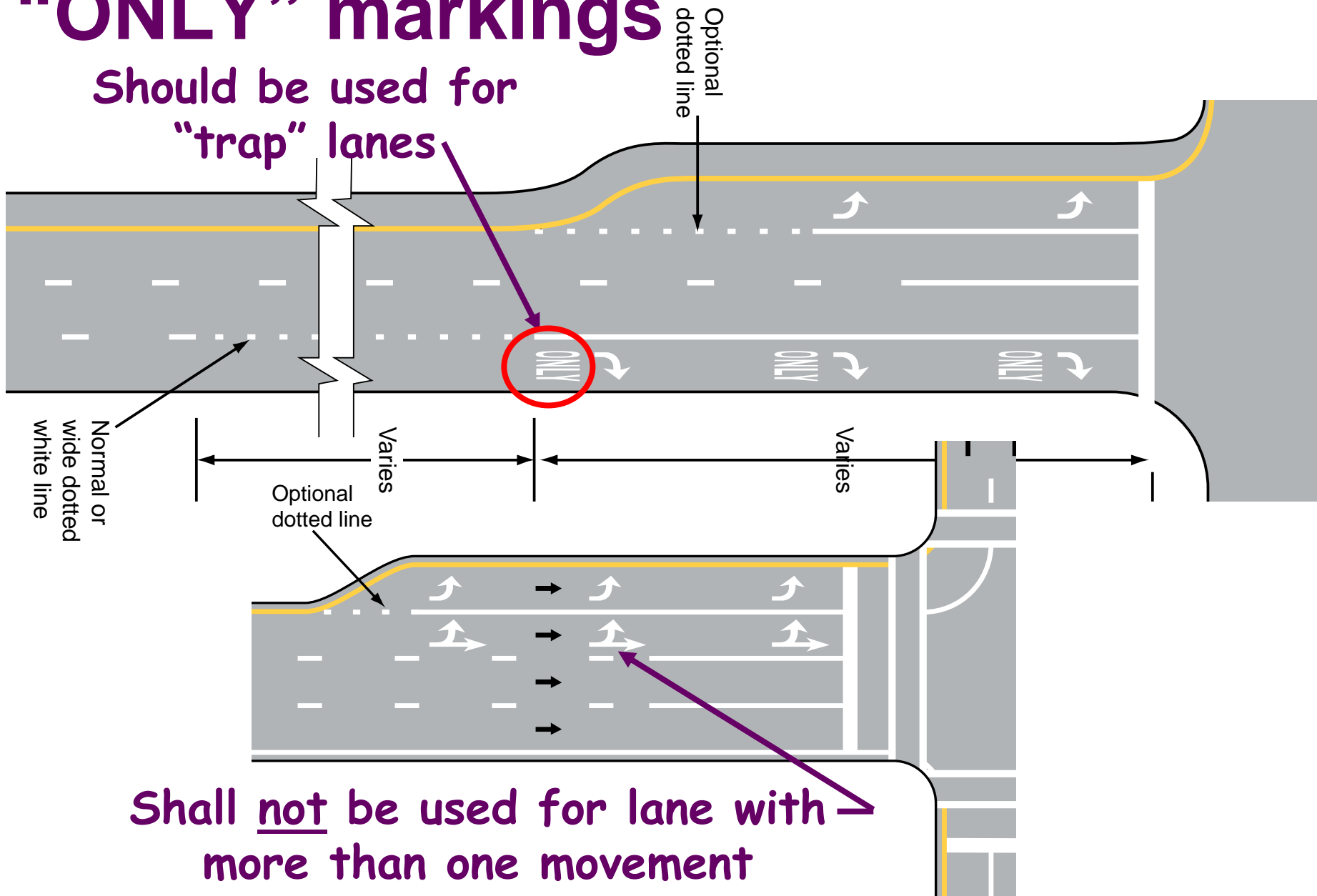


Use and placement of lane-use arrows



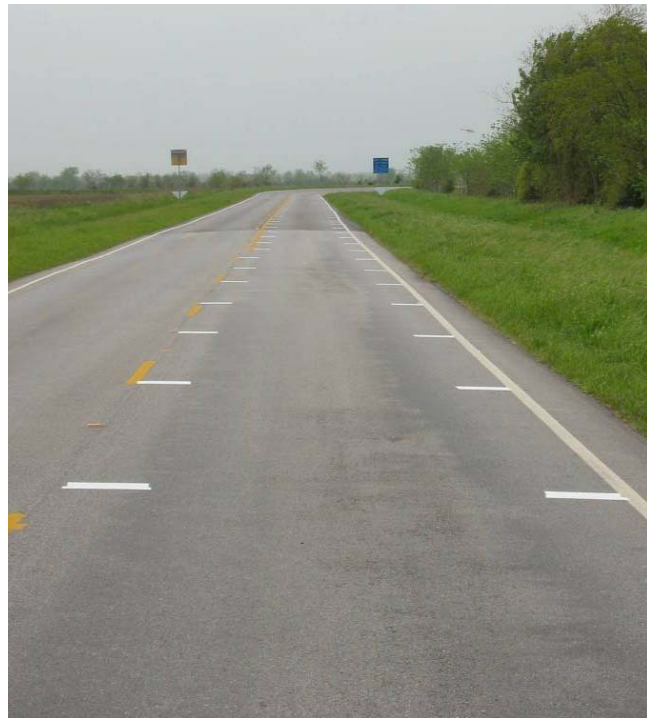
“ONLY” markings

Should be used for “trap” lanes



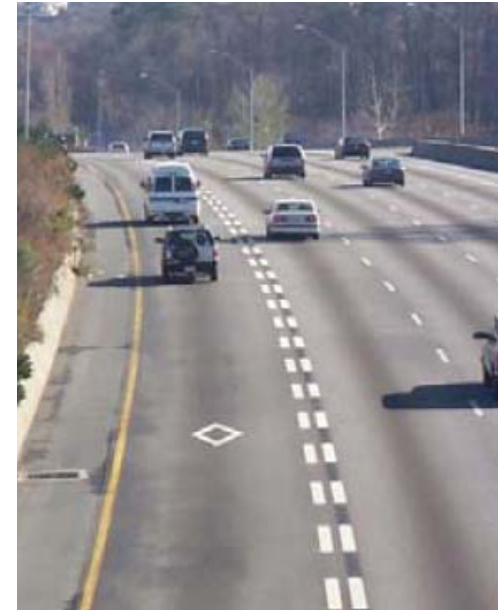
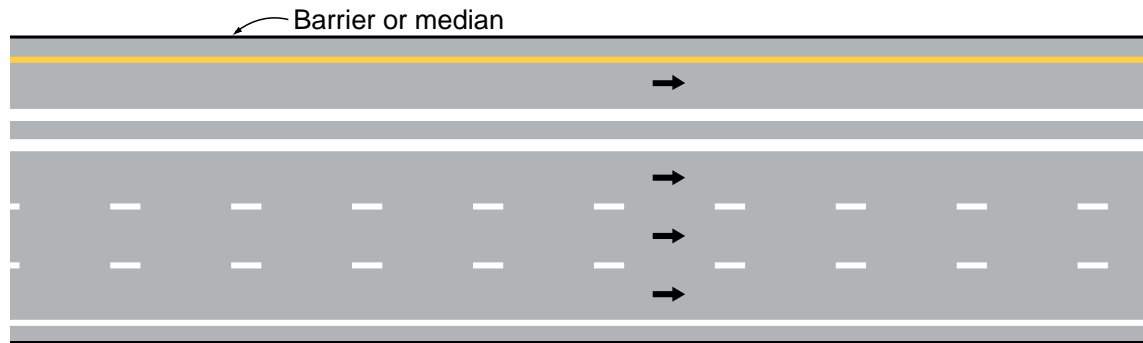
Shall not be used for lane with more than one movement

Speed reduction markings

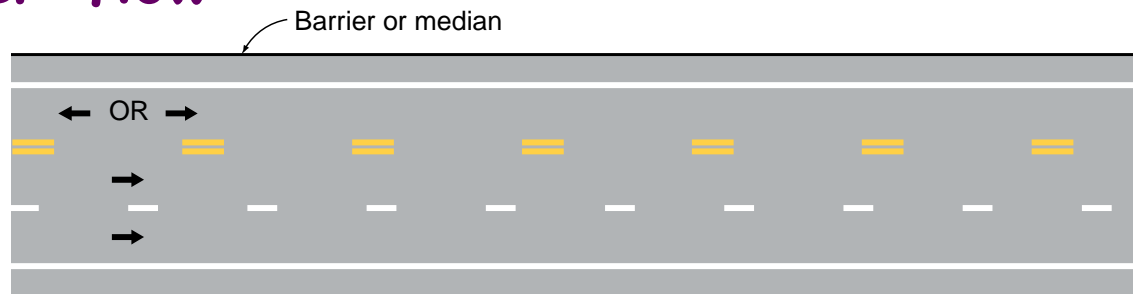


Markings for preferential lanes

Buffer-separated

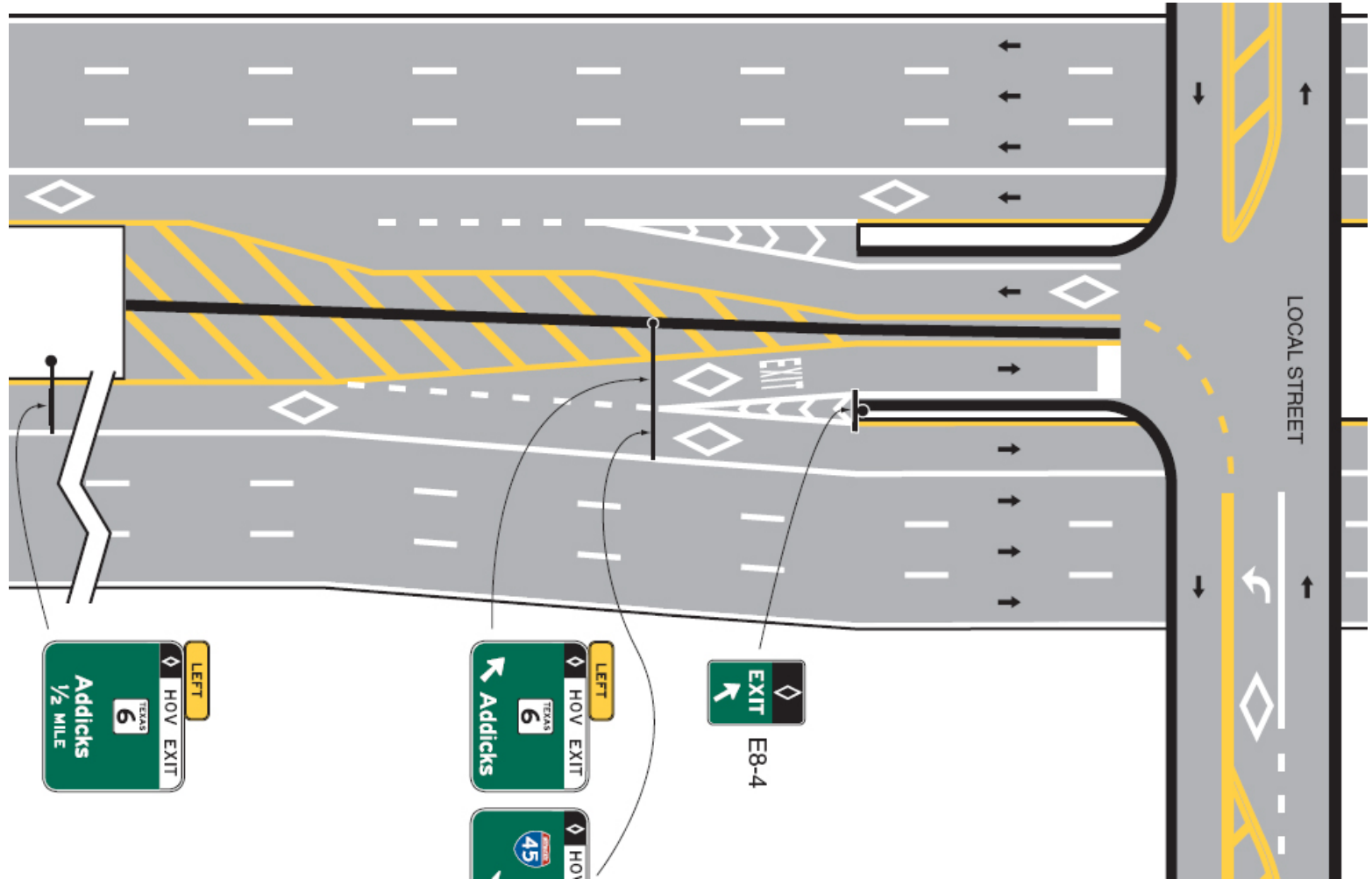


Counter-flow

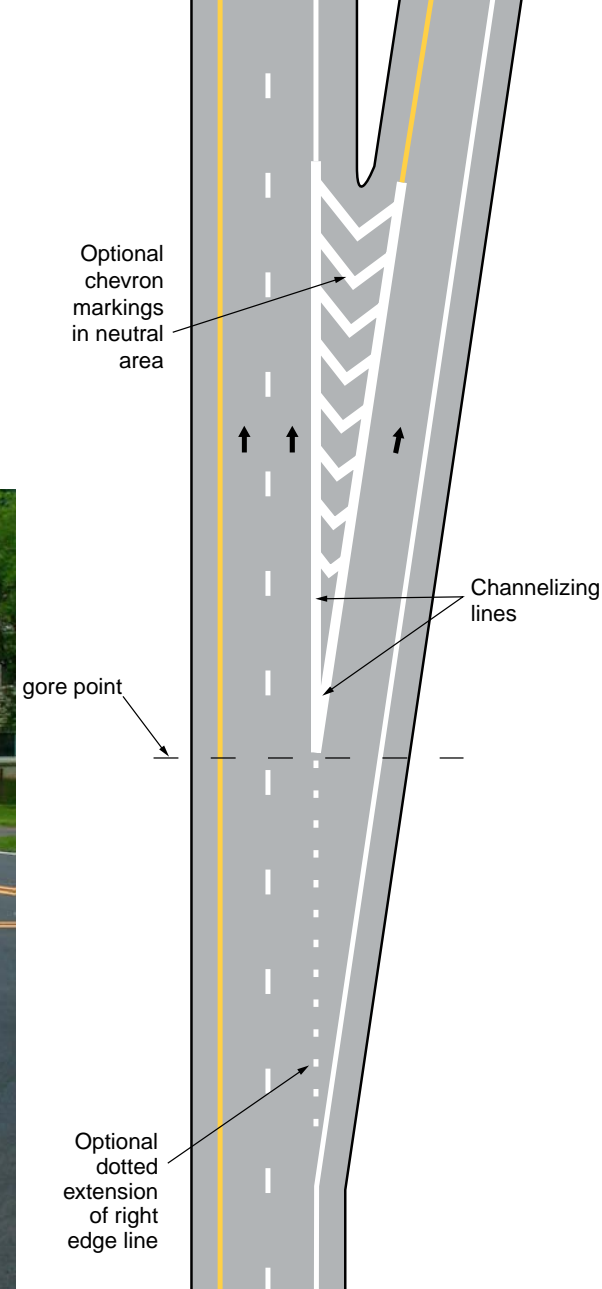


Preferential lane markings

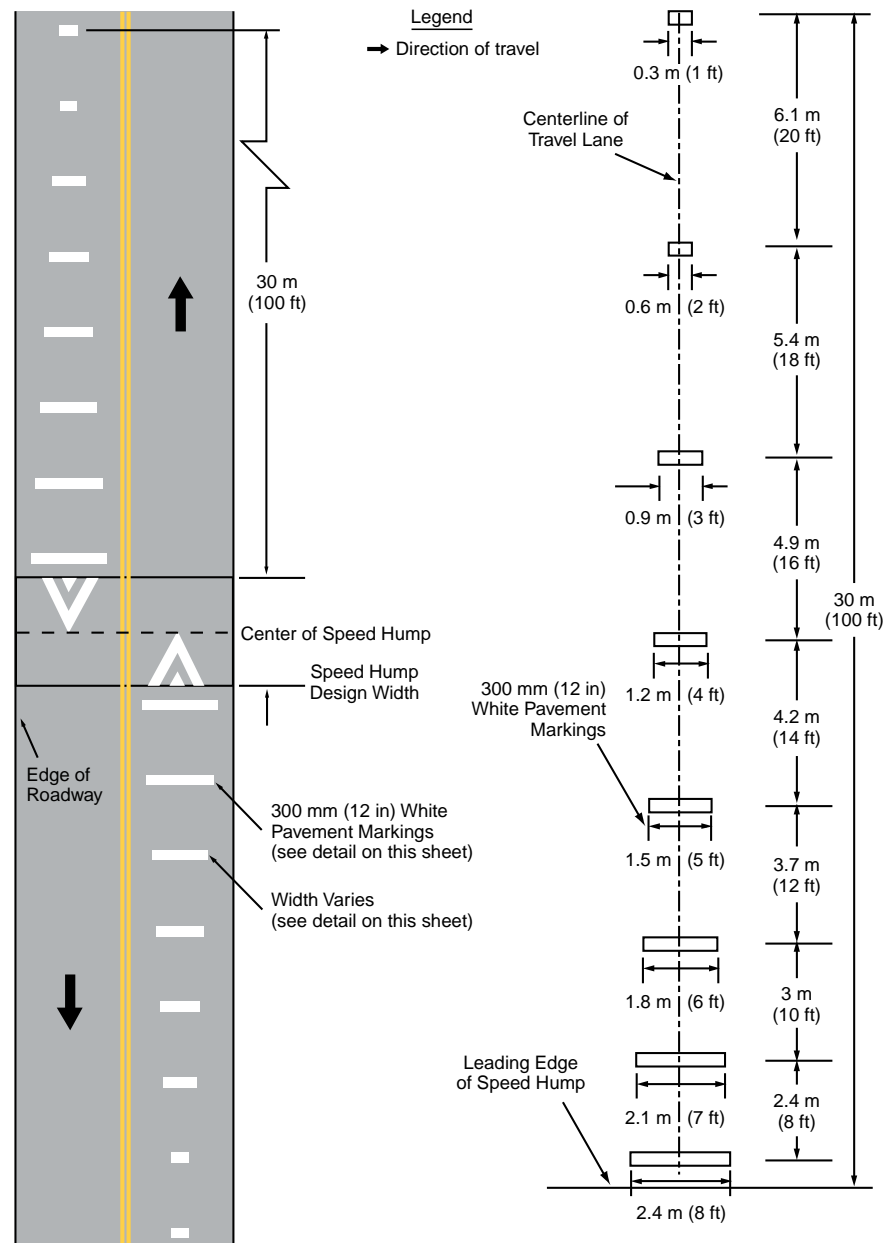
Symbols, words, dotted lines at key decision points



Chevron and diagonal crosshatching markings



If speed hump markings are used, they shall be those shown in the MUTCD



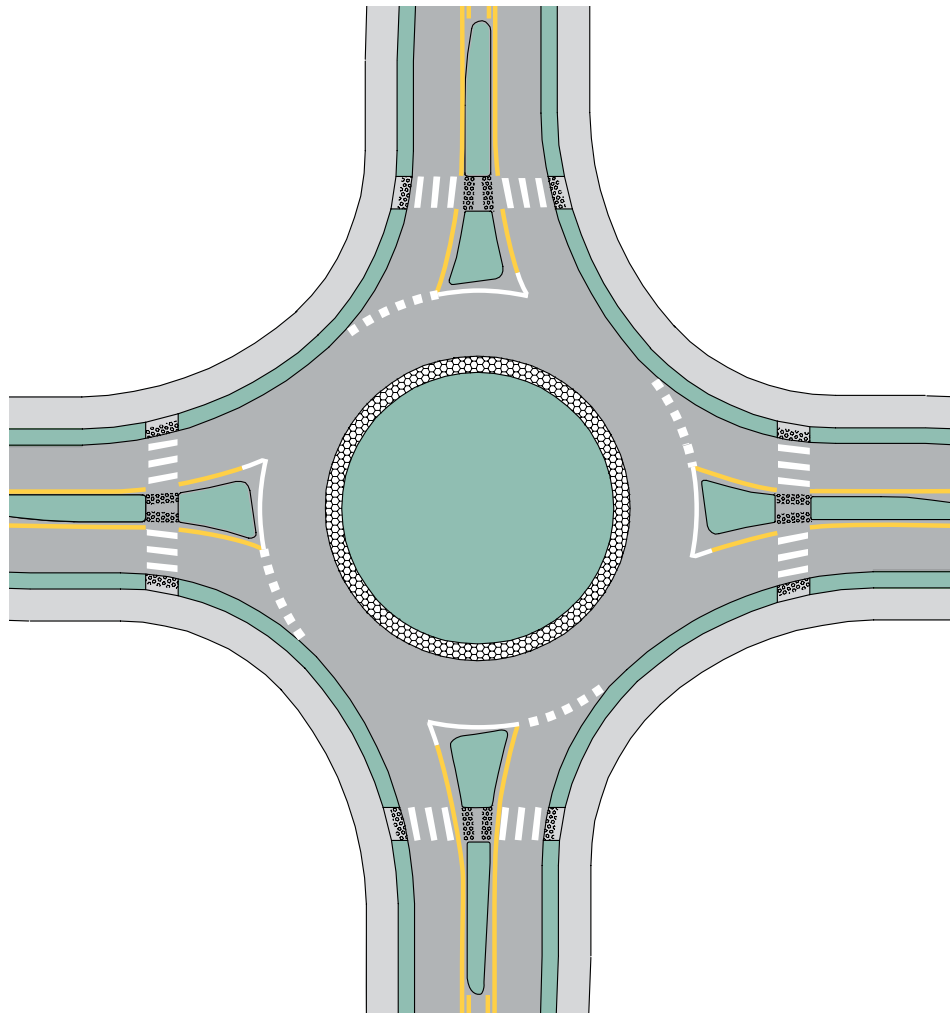
DETAIL—SPEED HUMP ADVANCE WARNING MARKINGS





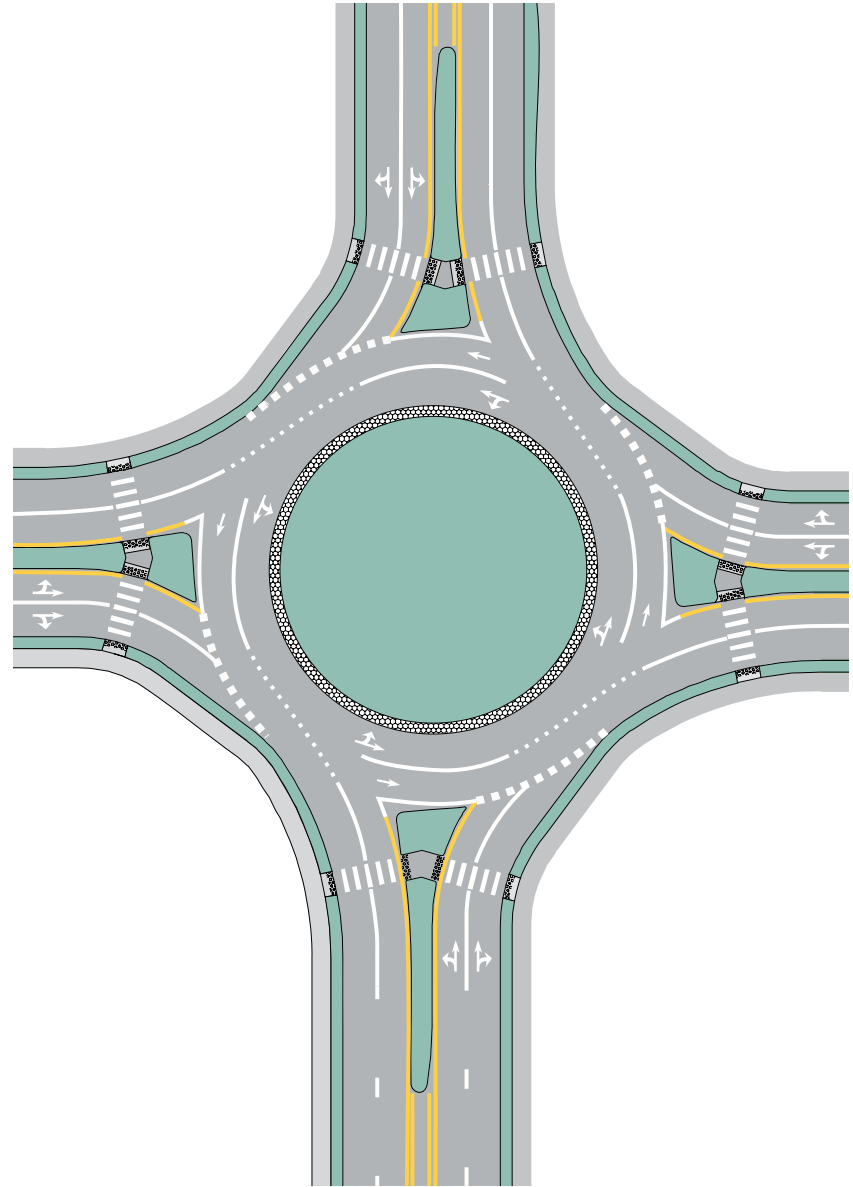
Optional purple markings for ETC-only lanes at toll plazas

[Note: should be reverse
pattern of that shown in
photo - white line with
purple borders]

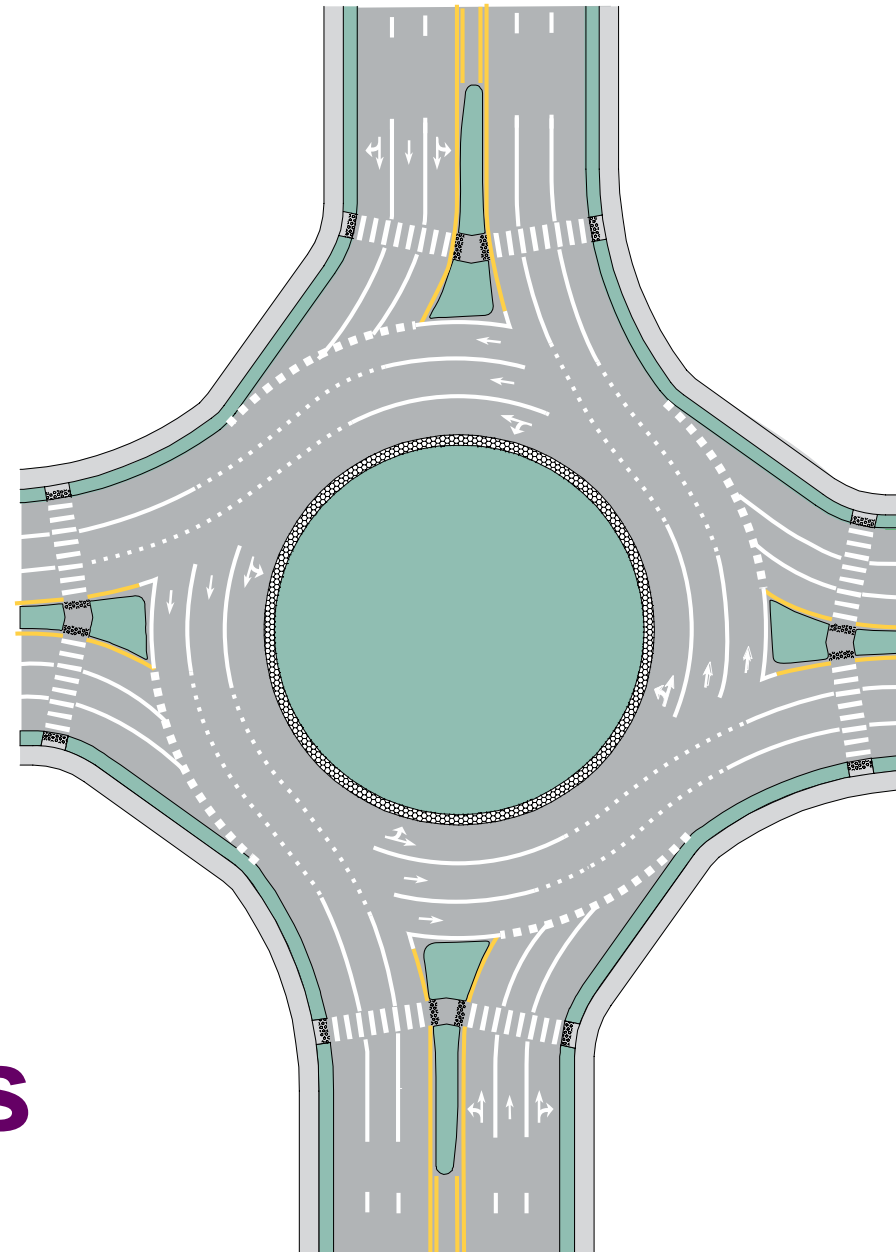


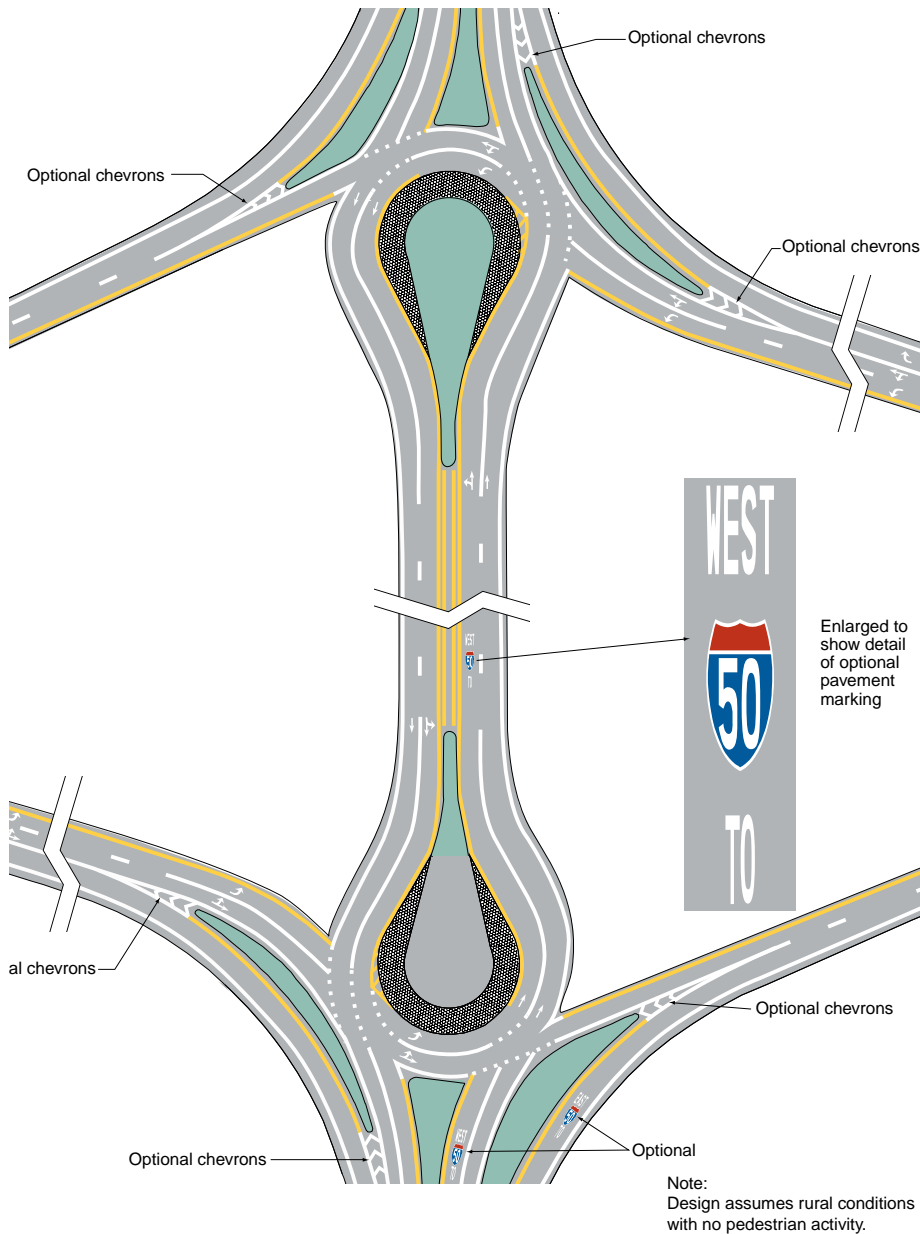
New Chapter 3C - pavement markings at roundabouts

2-lane roundabouts



3-lane roundabouts



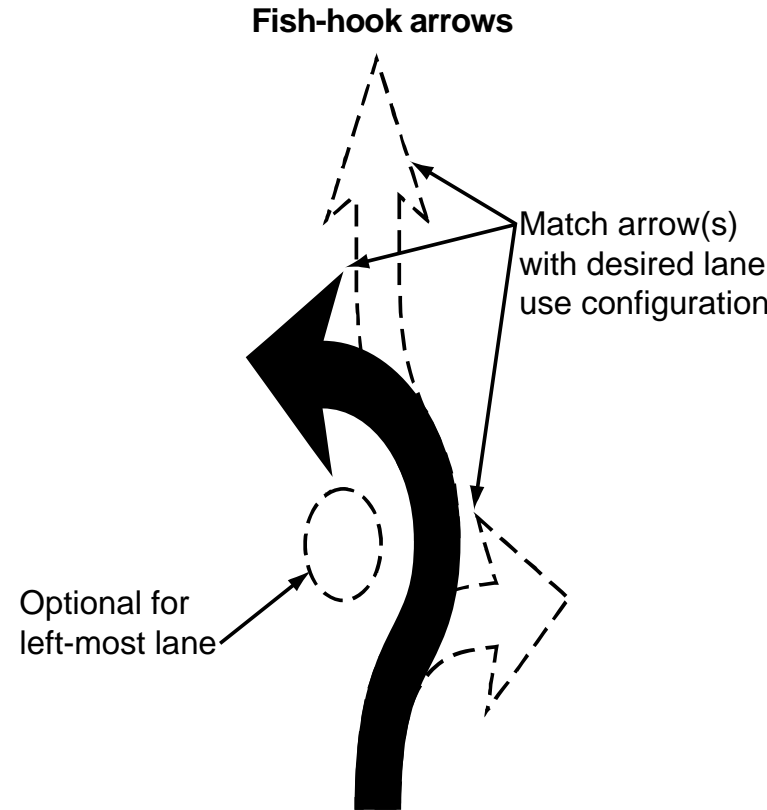


Roundabouts used at interchanges



Optional fish-hook lane-use arrows for approaches to roundabouts

January 2, 2008 Proposed Revisions to the MUTCD



Delineators on left-hand side of 2-way road shall be white

- Match color of edge line



Delineators should be used with guardrails and other barriers



Option for “ribbon” delineation on the face of guardrails or barriers



Colored pavements



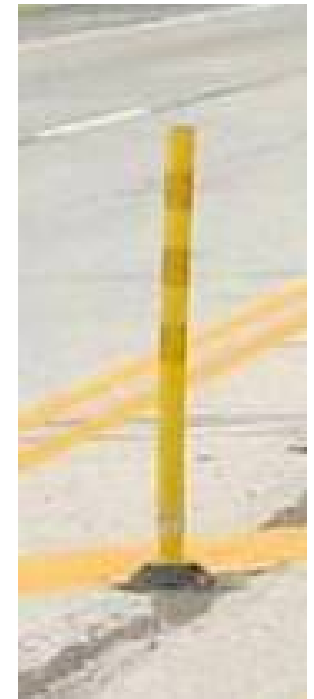
Retroreflective or intended to communicate a regulatory, warning, or guidance message = TCD, must comply with color code & other provisions for markings

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



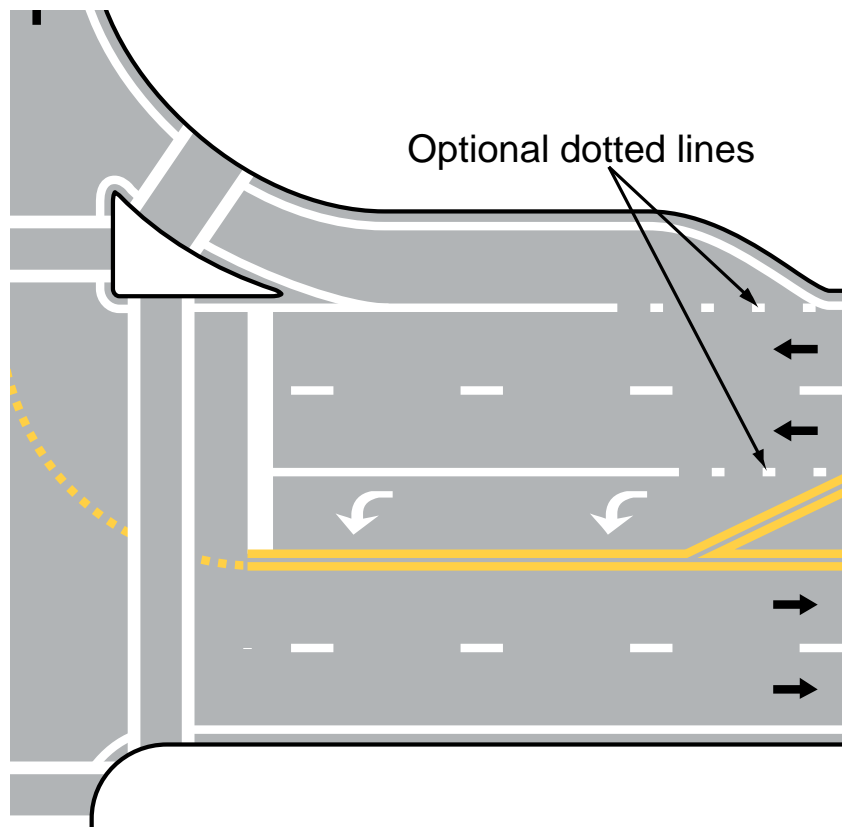
Channelizing Devices

When separating opposing traffic flows, retroreflective bands shall be yellow



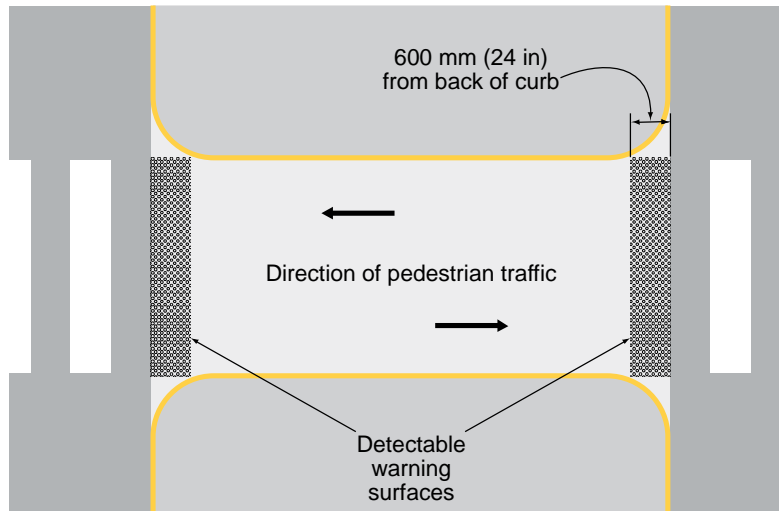
Islands – crosshatching on approach changed from requirement to recommendation

Not always
practical or
necessary for
small porkchop
islands



Pedestrian islands and medians

Detectable warning surfaces to mark the boundary between pedestrian and vehicular areas (ADAAG)



Pavement markings used with rumble strips



Revisions to Part 4 – Highway Traffic Signals

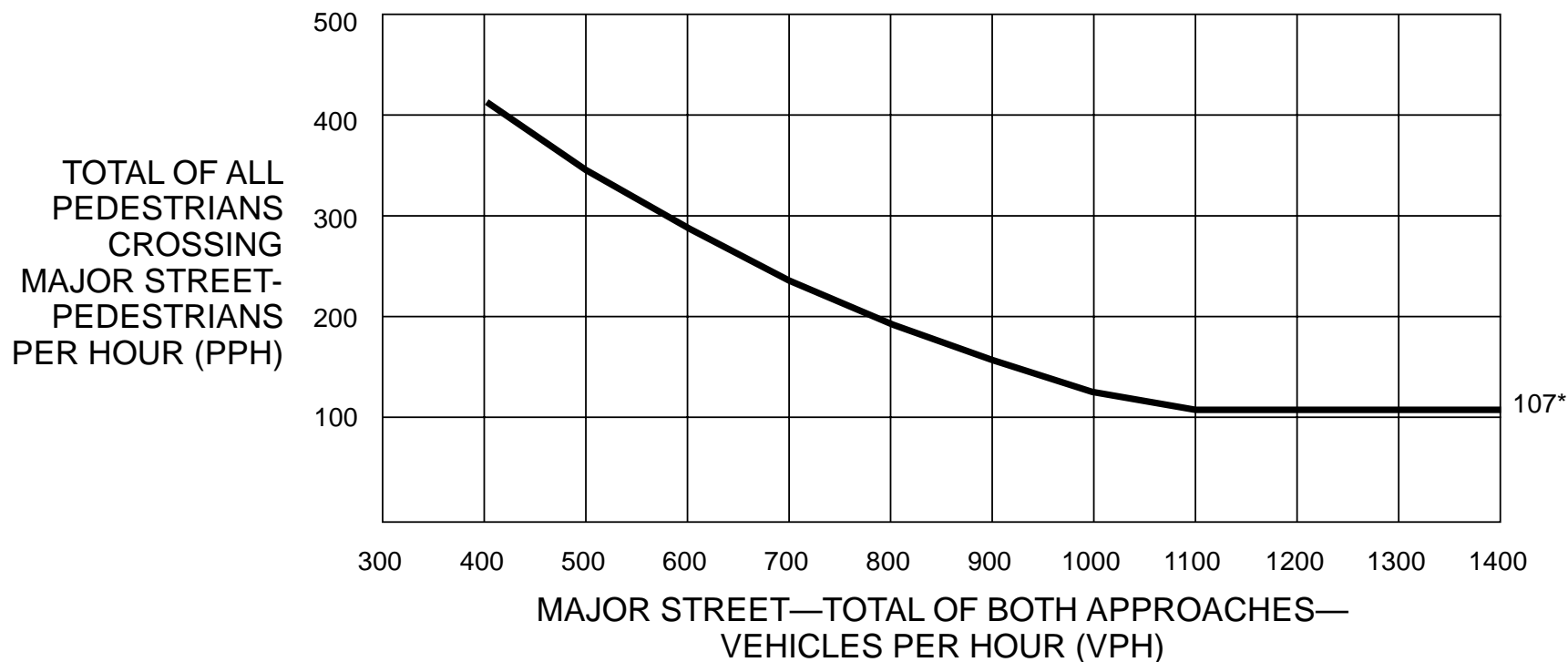


Steps for signal removal changed from options to recommendations



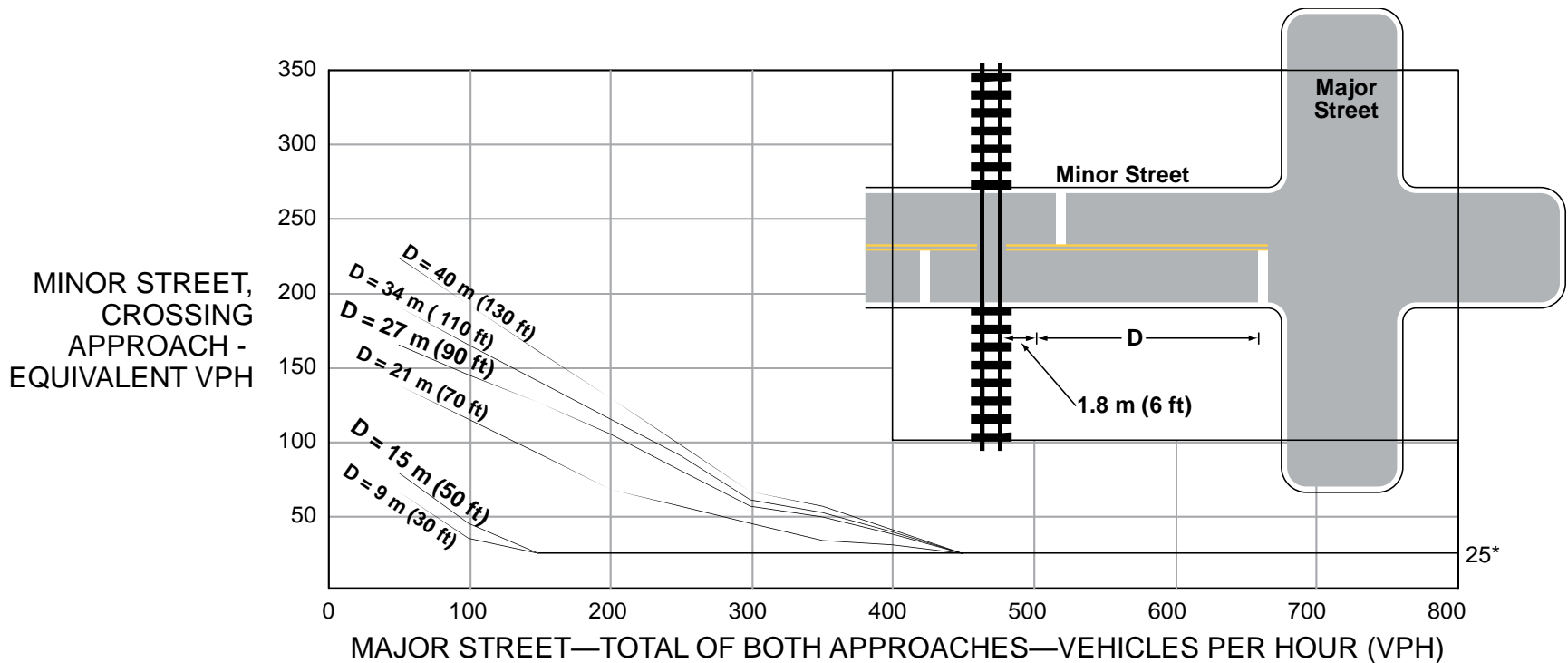
This is only one of
several possible legends
for a sign---
no standard sign legend
or design will be in
MUTCD

Revisions to Warrant 4 – pedestrian volume



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

Warrant 9 added for intersections near grade crossings



* Note: 25 vph applies as the lower threshold volume.

Other signal warrant changes

- Signals installed under Peak Hour Warrant (No. 3) should be traffic-actuated
- Signals based only on Warrant 4 (ped volume) or only on Warrant 5 (school xing) should also control the minor street or driveway



Reorganization of Sections in Chapter 4D

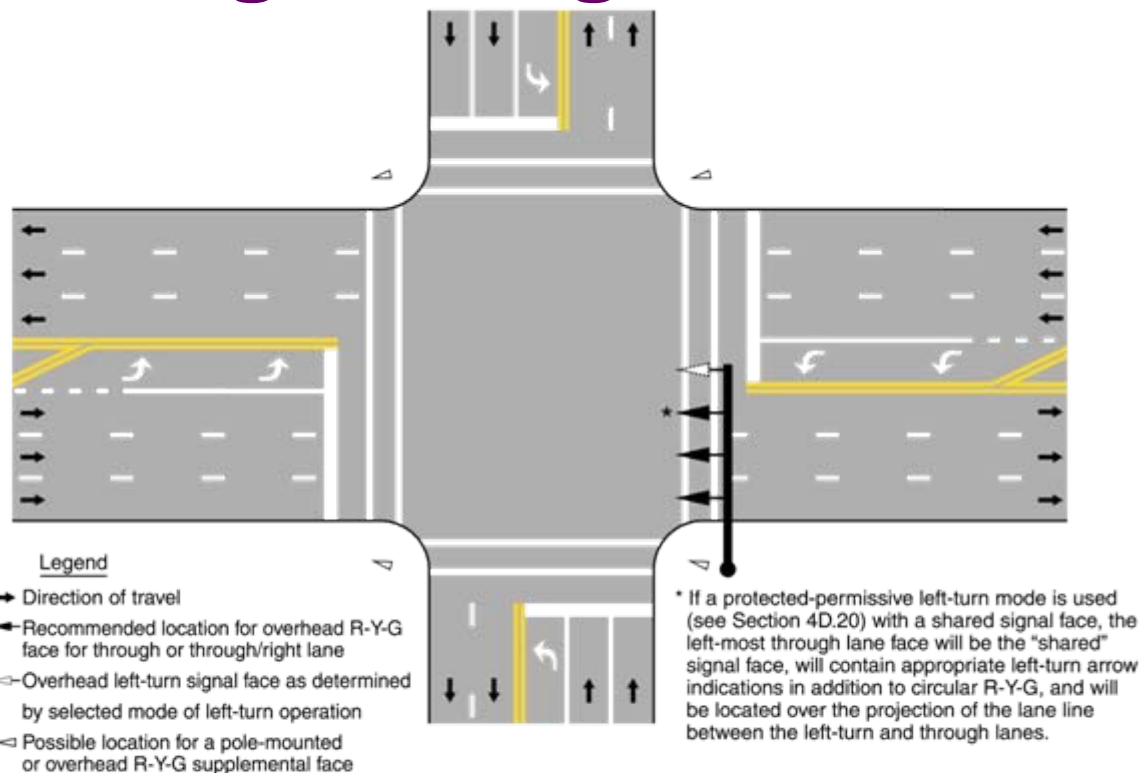
- **Similar subjects grouped together**
 - in adjacent Sections, or
 - combined into a single Section



12-inch indications required for all new traffic control signals



Approaches with speeds > 40 mph: recommended number, location, and design of signal faces



Notes:

1. Signal faces for only one direction and only one possible set of geometrics (number of lanes, etc.) are illustrated.
2. One or more pole-mounted or overhead supplemental faces should be strongly considered, based on the geometrics of the approach, to maximize visibility for approaching traffic.
3. Any left-turn and/or right-turn signal faces, as determined by Sections 4D.17 through 4D.24, should be overhead for each exclusive turn lane.
4. All signal faces should have backplates.

Approaches with speeds > 40 mph: recommended number, location, and design of signal faces



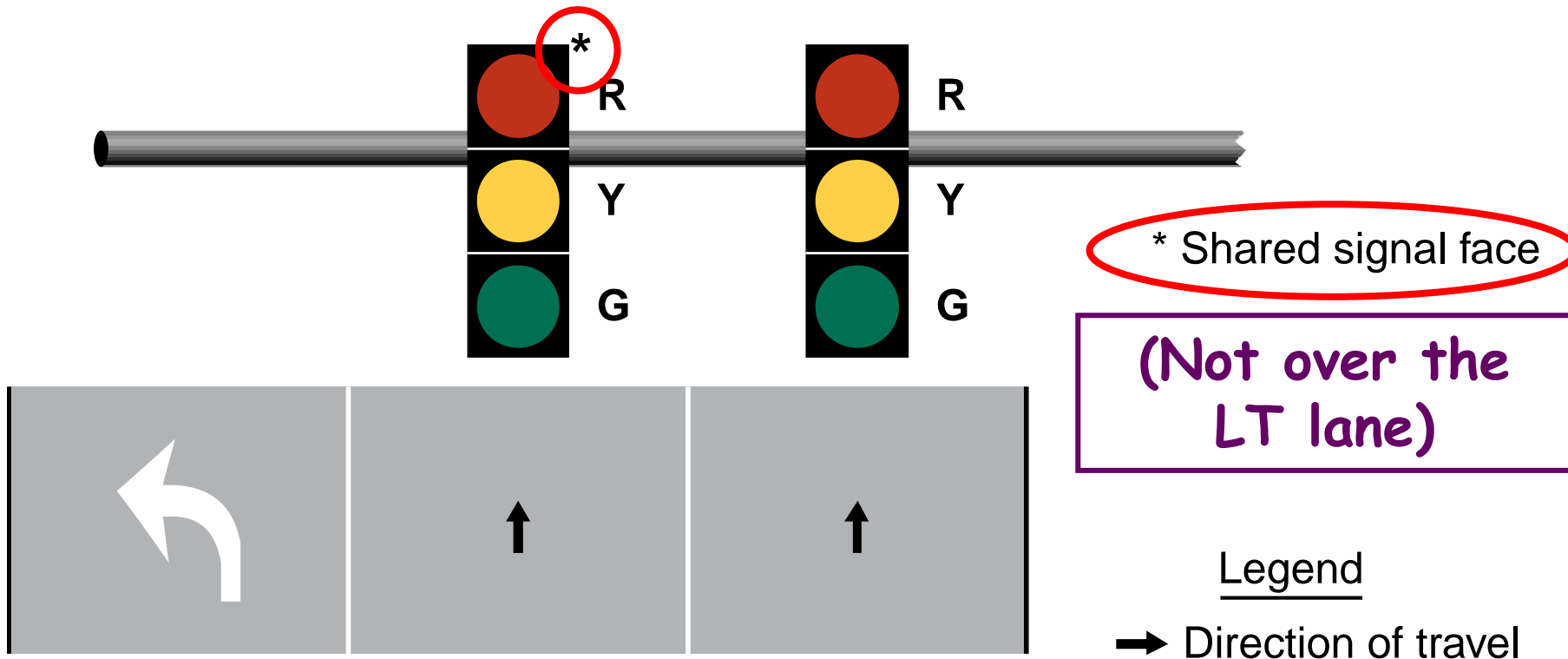
Should be considered also for 40 mph or lower





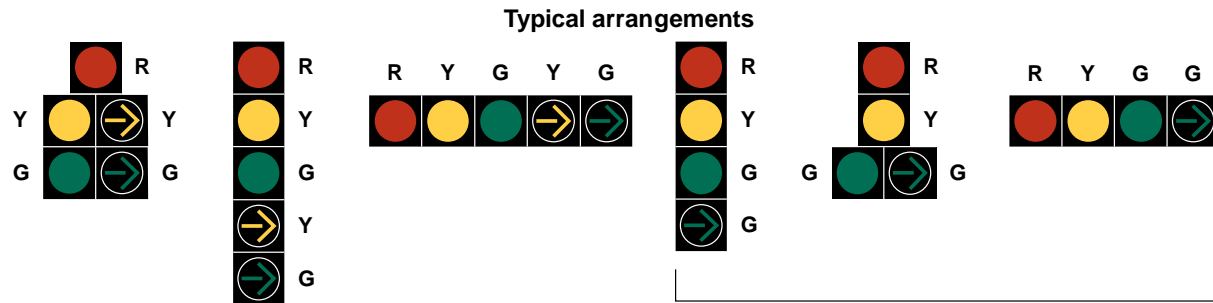
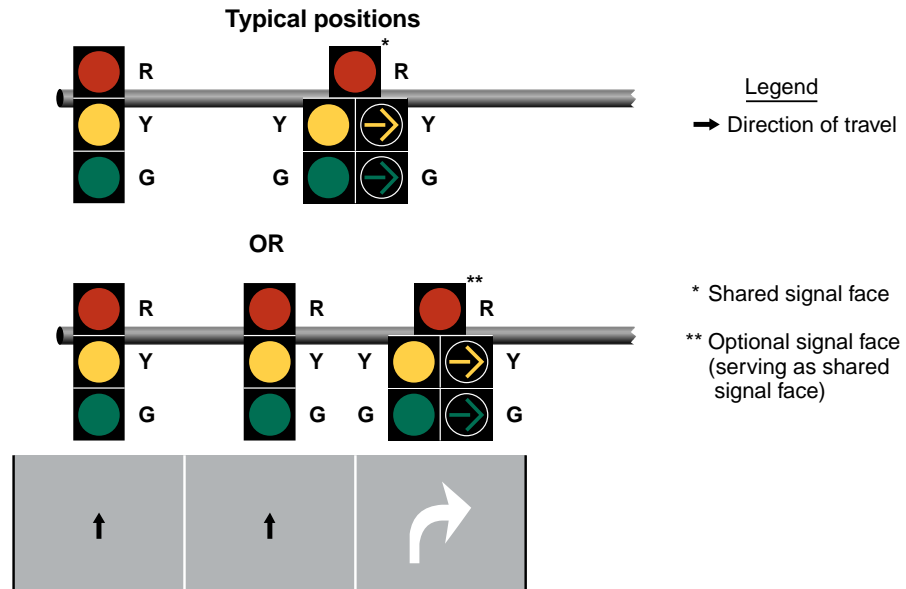
Circular green indications for permissive LTs should not be located over or in front of the LT lane

Shared signal face for permissive-only mode left turns



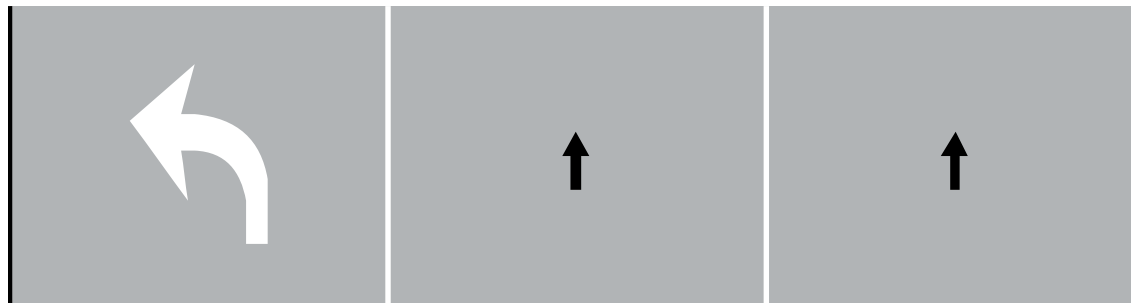
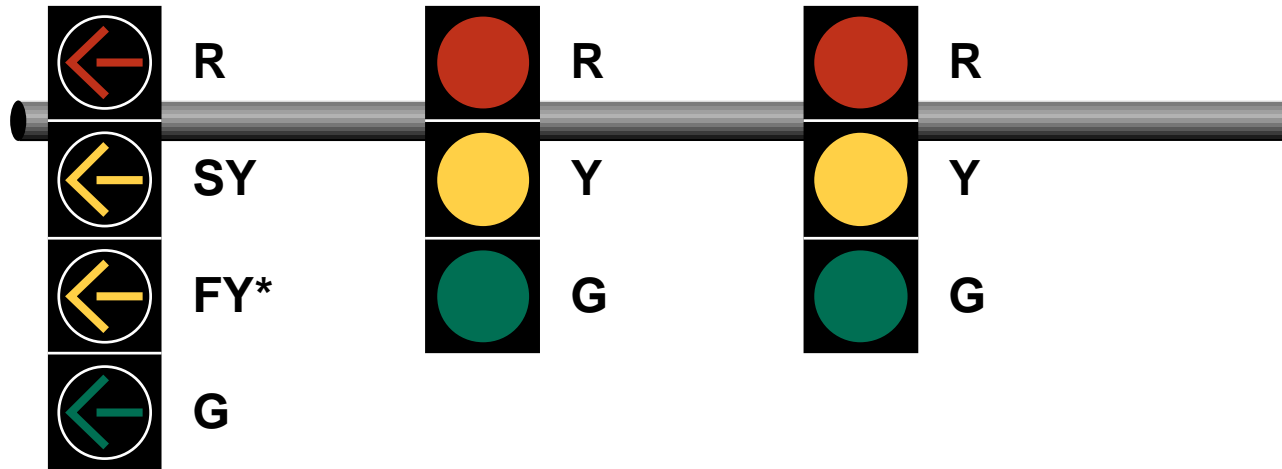
New figures for modes of left-turn and right-turn signal operations


Shared signal face for Protected-Permissive Mode Right Turns



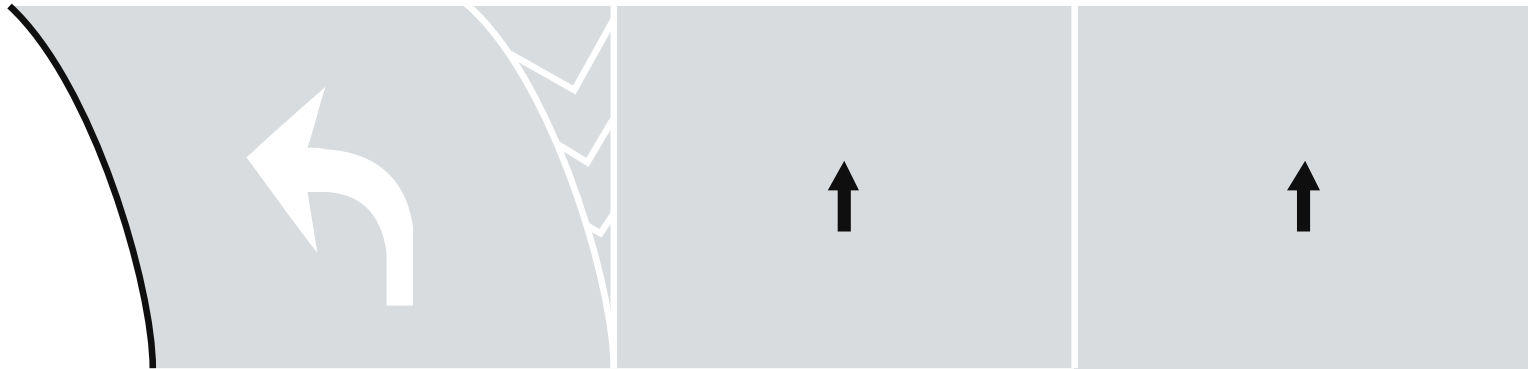
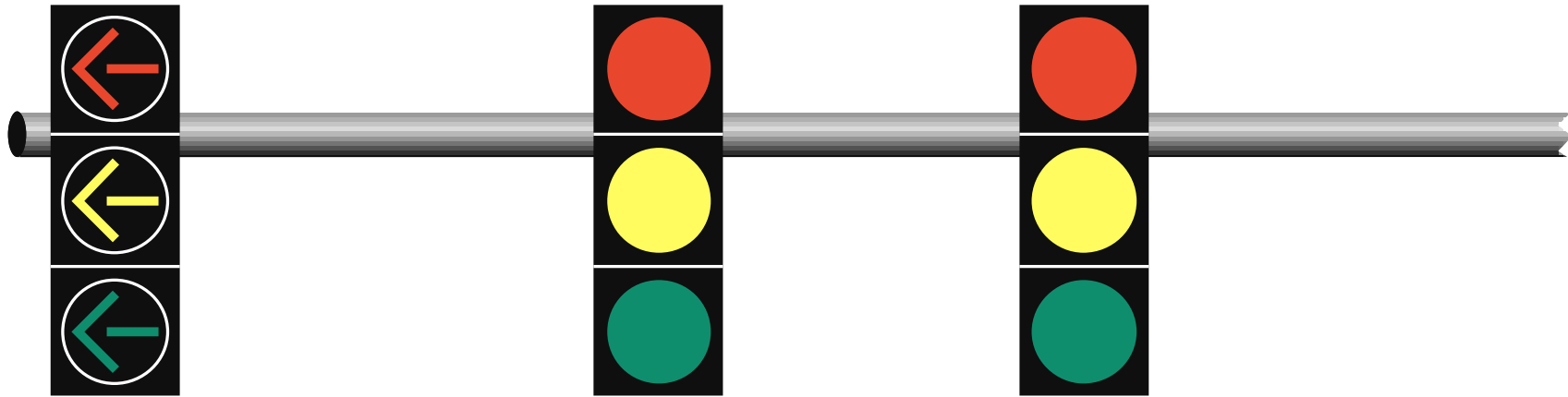
Used only if the green arrow and circular green are always terminated together

Optional use of flashing yellow arrow signal face for permissive turns



- Legend
-  Direction of travel
 - SY** Steady yellow
 - FY** Flashing yellow

Optional use of flashing red arrow signal face for permissive turns



U-turn arrow indications



R



Y



G



Use of No Pedestrian Crossing signs at signalized locations

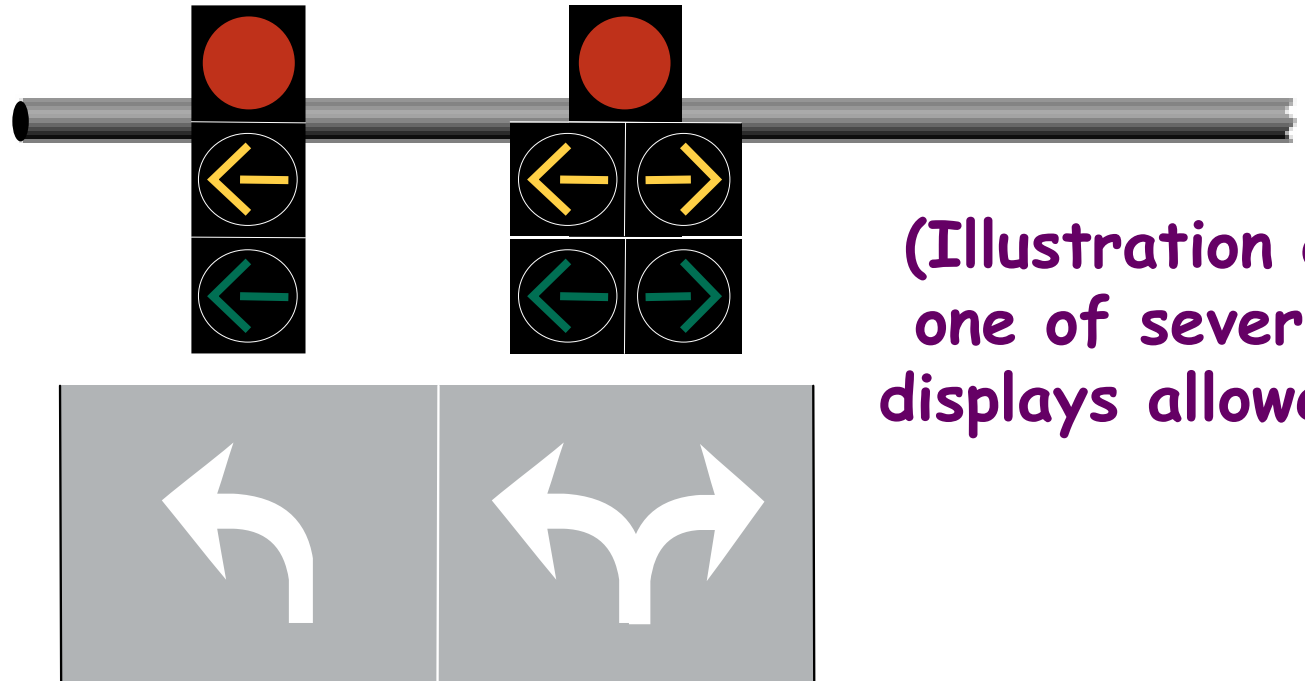


Recommended where it is necessary or desirable to prohibit a pedestrian movement that is not physically prevented by other means

Specific prohibitions of:

- **Flashing green**
- **Vehicular countdown displays**
- **Other similar “pre-yellow” signal displays**
- **Strobes or other flashing displays within or adjacent to red signal indications**

Signal Displays for shared left-turn/right-turn lanes with no through movement



(Illustration of one of several displays allowed)

Min. 2 signal faces required for straight-thru movement if it exists, even if not the major movement on the approach



2nd face
for thru
movement
is
required

Single-section green arrow signal face OK when never a conflicting movement





Optional yellow retroreflective borders around backplates



**If no exclusive turn lane –
protected-only mode shall not be used
unless turn phase always begins and ends
simultaneously with the adjacent thru
movement (“split-phased”)**



Protected-only mode left-turn faces must use red arrow

- Applies to left turn signals but not to right turn signals



Protected-only mode left-turn faces must use red arrow

- Applies to left turn signals but not to right turn signals









Yellow change intervals and red clearance intervals

- Durations should be determined using engineering practices**
- Use of red clearance – changed from option to recommendation when indicated by application of engineering practices**

Back-up power should be provided for signals with railroad preemption



LRT signal indications may be used for exclusive bus or BRT lanes or queue jumper lanes

	Three-Lens Signal	Two-Lens Signal
<p>SINGLE LRT ROUTE</p> 	<p>STOP </p> <p>PREPARE TO STOP  <i>Flashing</i></p> <p>GO </p>	<p> STOP</p> <p>⁽²⁾ GO</p>

Overhead lane-control signs should be used for certain signalized intersections



Lane drops, multiple-lane turns, shared thru-turn lanes,
other unexpected lane-use

Overlaid pedestrian symbols are allowed



OR



One Section

Revised legal meaning of flashing upraised hand

- Legal right to cross entire divided highway without stopping at the median if the signal is timed to provide sufficient time for pedestrians to cross the entire highway
- If signal timing provides only enough time for pedestrians to cross to the median, median-mounted signs, ped signals, and pushbuttons (if actuated) are required.



New meaning of flashing upraised hand when pedestrian countdown signals are present



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

Countdown displays required for all new pedestrian signals



If walking person (Walk) or flashing upraised hand (flashing Don't Walk) is displayed...

- **Any conflicting vehicular movement perpendicular to the crosswalk must be displayed a steady red or flashing red.**



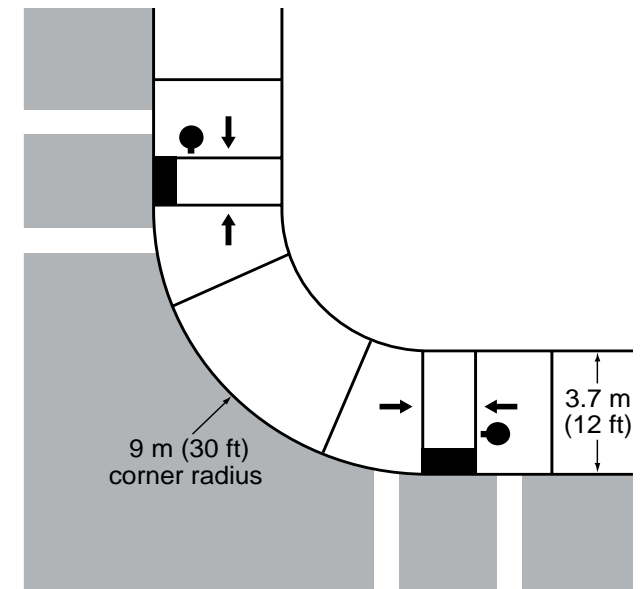
Positioning of pedestrian pushbuttons and legends on pushbutton signs shall clearly indicate which crosswalk signal is activated by which pushbutton.



New figures for locations of pedestrian pushbuttons for a variety of conditions



Parallel ramps with wide sidewalk



Slower walking speed for calculating pedestrian clearance time

Ped. Clearance Time
based on **3.5** feet
per second

~~4.0 feet
per second~~

Sum of Walk time +
Ped. Clearance Time
based on **3.0** feet
per second



Pedestrian Clearance Time Relationship to Vehicular Intervals – Existing MUTCD

← (Parallel Vehicular Phase) → ← (Conflicting Phase) →



← A → ← B →
Sec. Sec.

Calc. Ped. Clear. TIME
(@4 fps etc.) must fit
in either A or A+B



FL



*
STDY



Ped. Change INTERVAL
(FL DW) may be
DISPLAYED in either
sequence, except that



FL



*
is req'd w/ countdown

Pedestrian Clearance Time Relationship to Vehicular Intervals – NEW MUTCD

← (Parallel Vehicular Phase) → ← (Conflicting Phase) →

A
Sec.

B
Sec.

C
Sec.

Calc. Ped. Clear. TIME
(@3.5 fps etc.) must fit
in A, A+B, or A+B+C



FL



STDY



Ped. Change INTERVAL
(FL DW) must be
DISPLAYED only during
the green



Recommended operation of optional leading pedestrian interval



Accessible Pedestrian Signals (APS) – revised provisions

Design features,
extended button presses,
audible beaoning,
special requirements if 2 buttons
must be located on 1 pole.

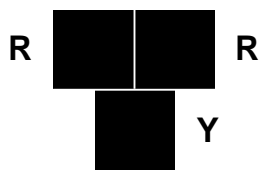


Reorganization of Chapters 4F-4N

- **4F - Pedestrian Hybrid Signals**
- **4G - Traffic Control Signals and Hybrid Signals for Emergency Vehicle Access**
- **4H - Traffic Control Signals for One-Lane, Two-Way Facilities**
- **4I - Traffic Control Signals for Freeway Entrance Ramps**
- **4J - Traffic Control for Movable Bridges**
- **4K - Toll Plaza Traffic Signals**
- **4L - Flashing Beacons**
- **4M - Lane-Use Control Signals**
- **4N - In-Roadway Lights**



New pedestrian hybrid signal



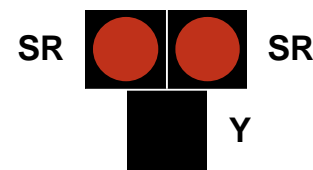
1. Dark Until Activated



2. Flashing Yellow Upon Activation



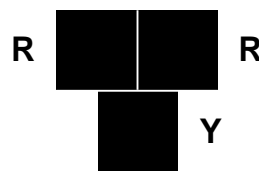
3. Steady Yellow



4. Steady Red During Pedestrian Walk Interval



5. Alternating Flashing Red During Pedestrian Clearance Interval

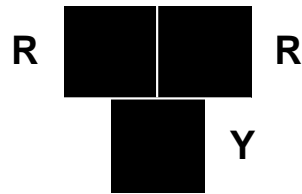


6. Dark Again Until Activated

Legend

- SY** Steady yellow
- FY** Flashing yellow
- SR** Steady red
- FR** Flashing red

New emergency-vehicle hybrid signal



1. Dark Until Activated



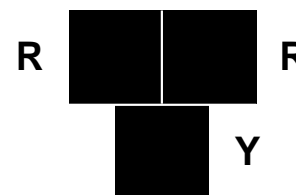
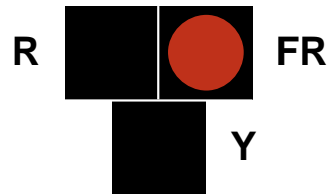
2. Flashing Yellow Upon Activation



3. Steady Yellow



4. Alternating Flashing Red During Egress of the Emergency Vehicle(s)



5. Dark Again Until Activated

Legend

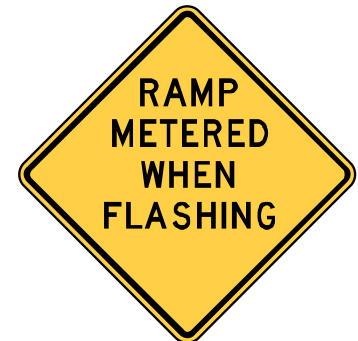
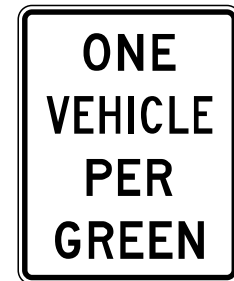
- SY** Steady yellow
- FY** Flashing yellow
- FR** Flashing red

Ramp control signals



Clarified design requirements and options

Recommended regulatory and warning signs



New Chapter 4K – highway traffic signals at toll plazas



Flashing beacons at toll plazas

Beacon emphasizing ETC-only lane should be separate from lane-use control signals



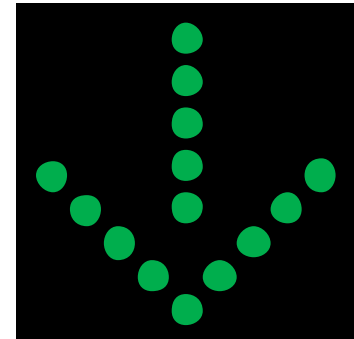
Optional lower mounting height on tollbooth impact attenuators



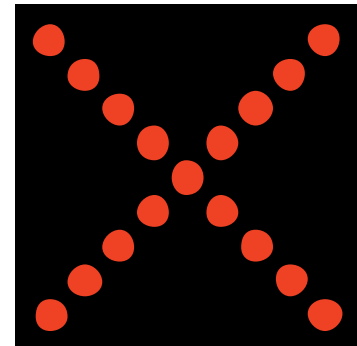
Lane-use control signals at toll plazas



Lane open



Lane closed



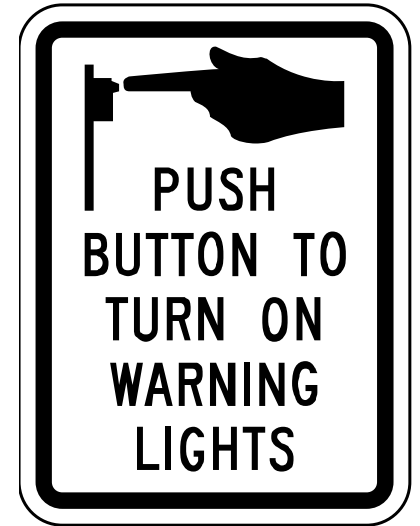
Intersection Control Beacons using 2 red lenses

Horizontally aligned -
flash simultaneously



Vertically aligned -
flash alternately

In-roadway lights

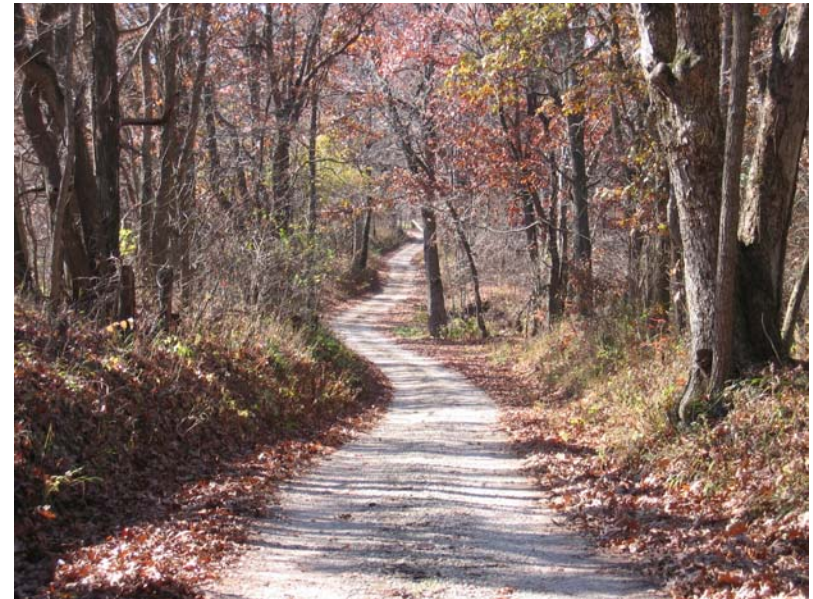


New sign required if lights are actuated by push buttons

Revisions to Part 5 – Traffic Control Devices for Low-Volume Roads

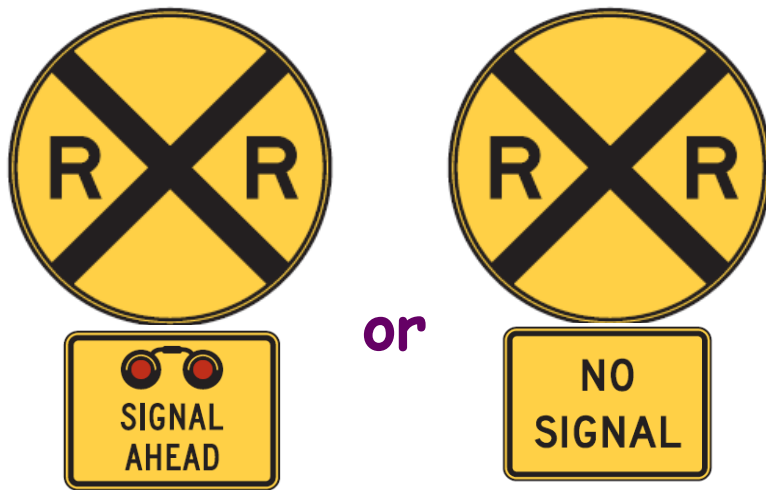


Neighborhood residential streets cannot be classified as low-volume roads for which Part 5 would apply

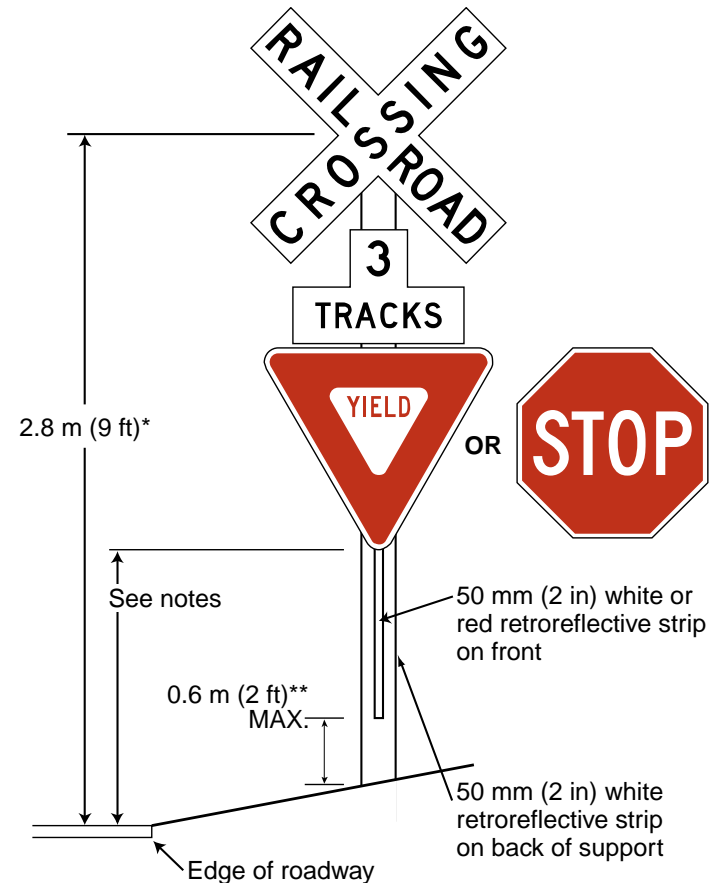


Part 5 applies outside built-up areas of cities,
towns, communities

Changes in Part 5 re: grade crossings to reflect changes in Part 8



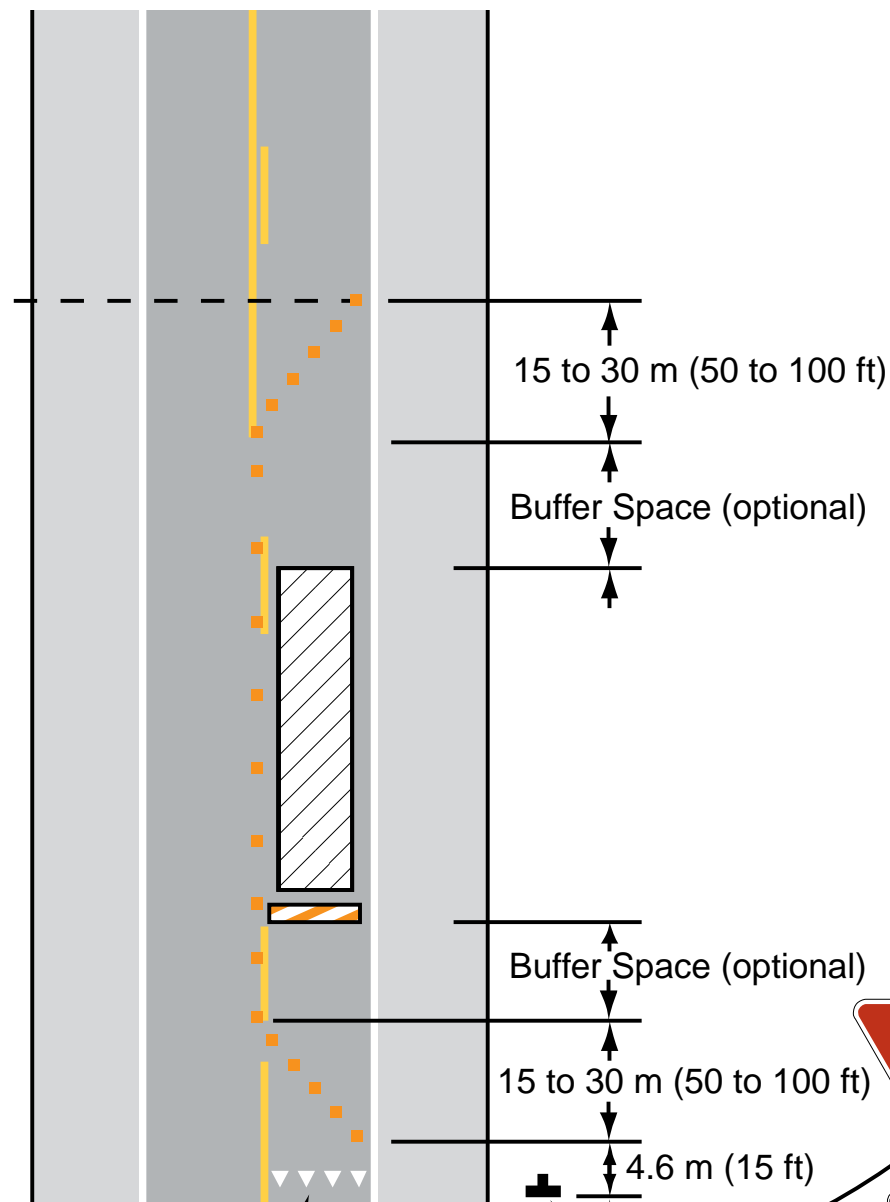
or



Revisions to Part 6 – Temporary Traffic Control



Guidance on lengths of short tapers and downstream tapers



Minimum length for 1-lane, 2-way traffic taper added to Table 6C-3

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	15 m (50 ft) minimum, 30 m (100 ft) maximum
Downstream Taper	30 m (100 ft) per lane



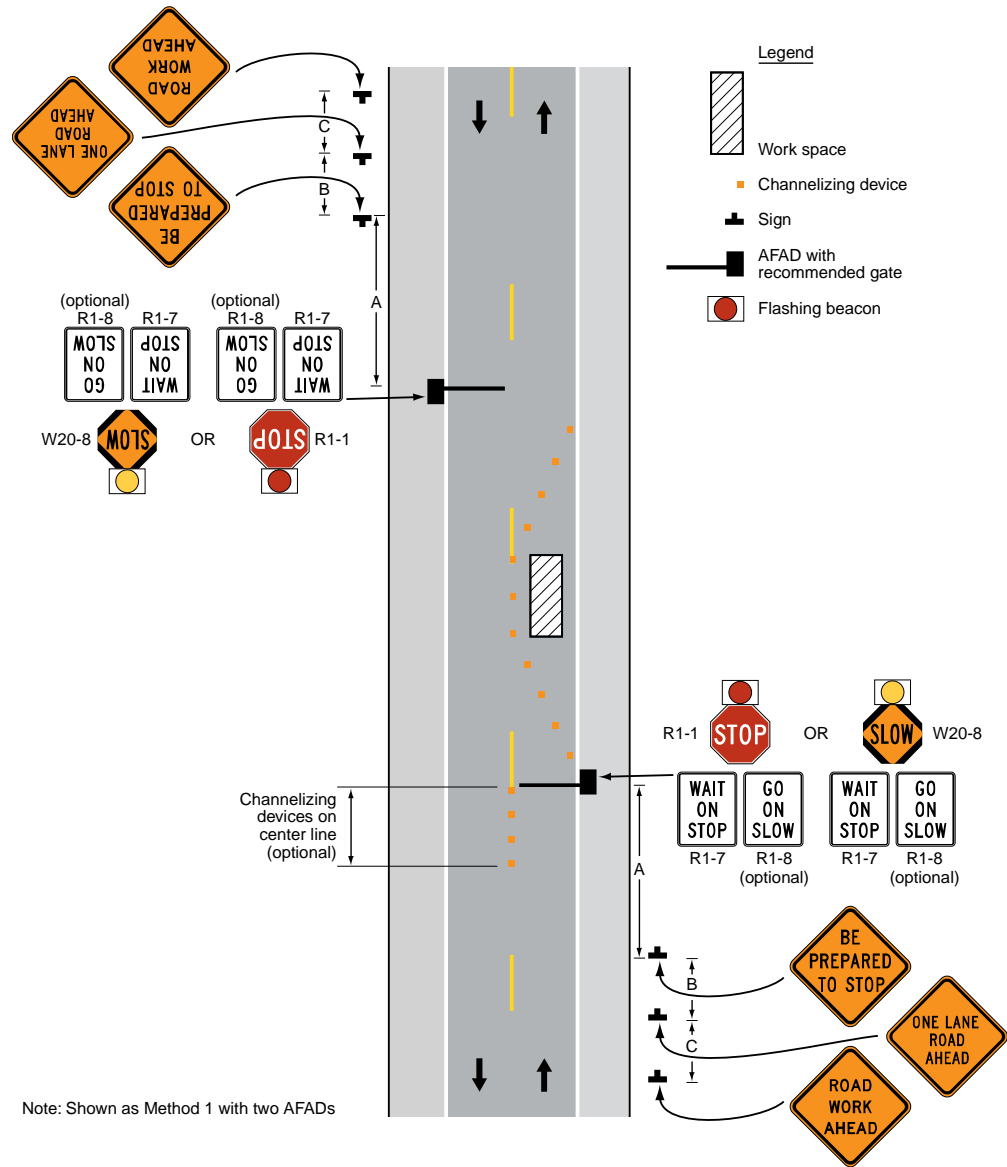


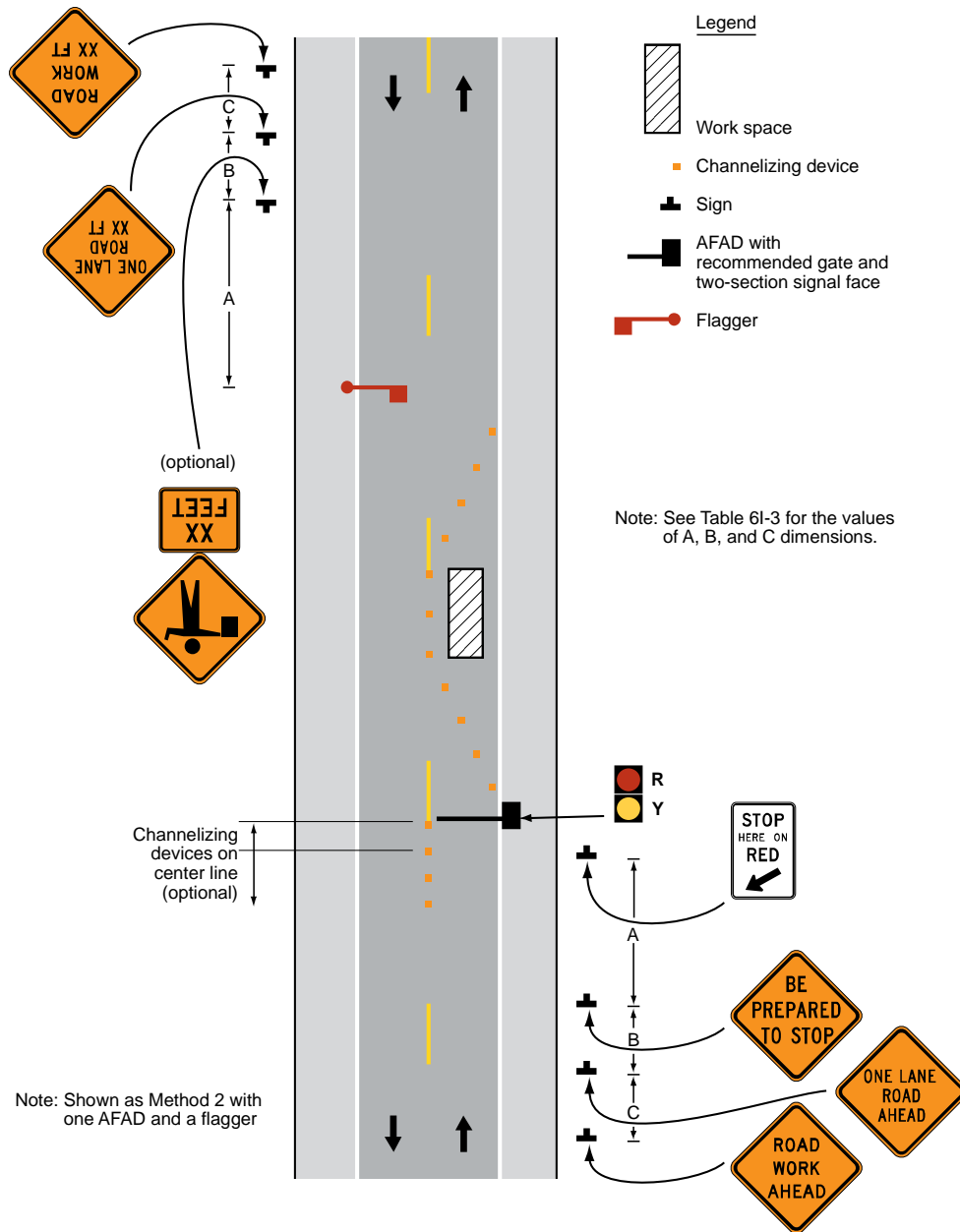
High-visibility safety apparel

- Required for all workers in public right of way
- Applies to all roads, not just on Federal-aid system
- Option for law enforcement and first responders to use new ANSI "public safety vests"

Automated flagger assistance device (AFAD)

STOP/SLOW paddle type

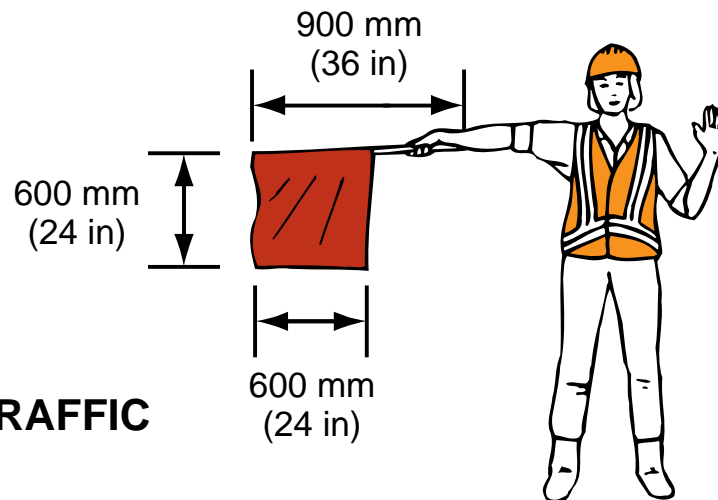




Red/yellow lens AFAD



450 mm (18 in)
MIN.

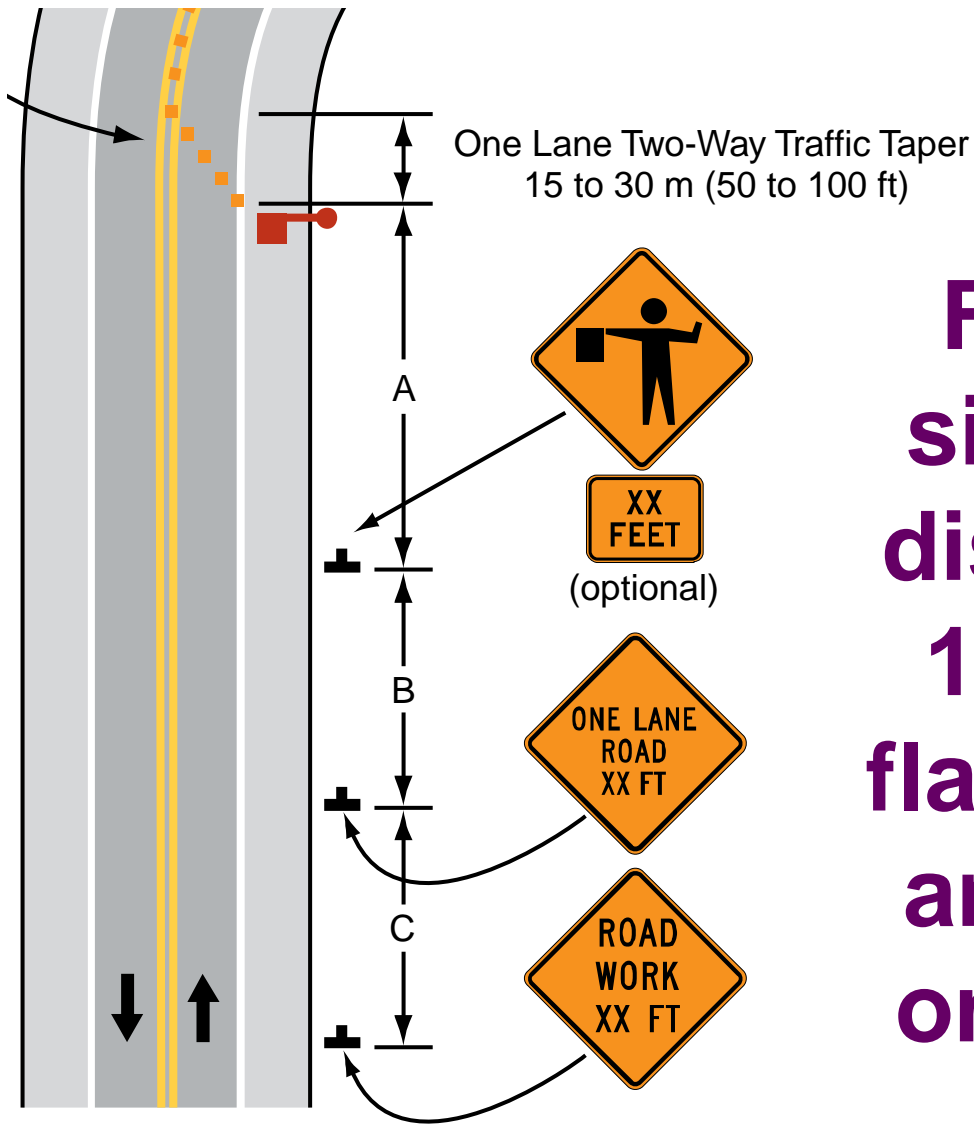


TO STOP TRAFFIC

Flaggers shall use a paddle, flag, or AFAD, not just hand signals

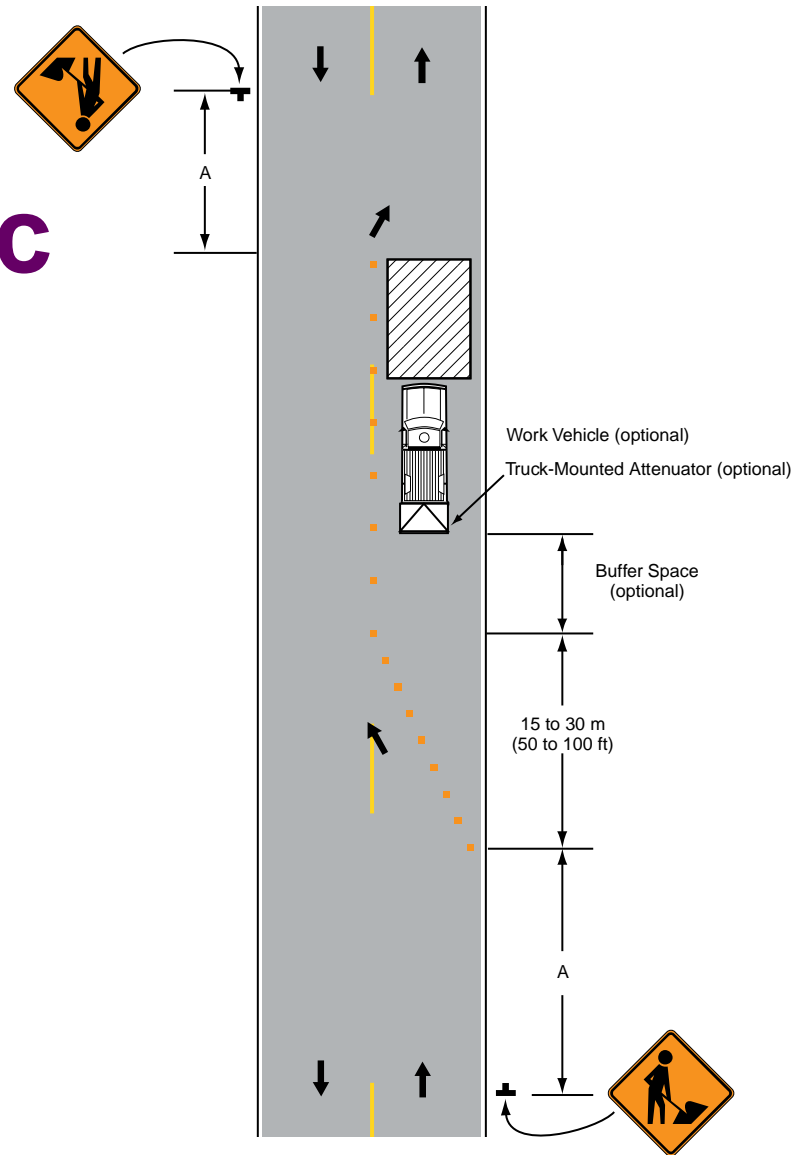
Paddles should be placed on a rigid staff having a minimum length of 7 feet



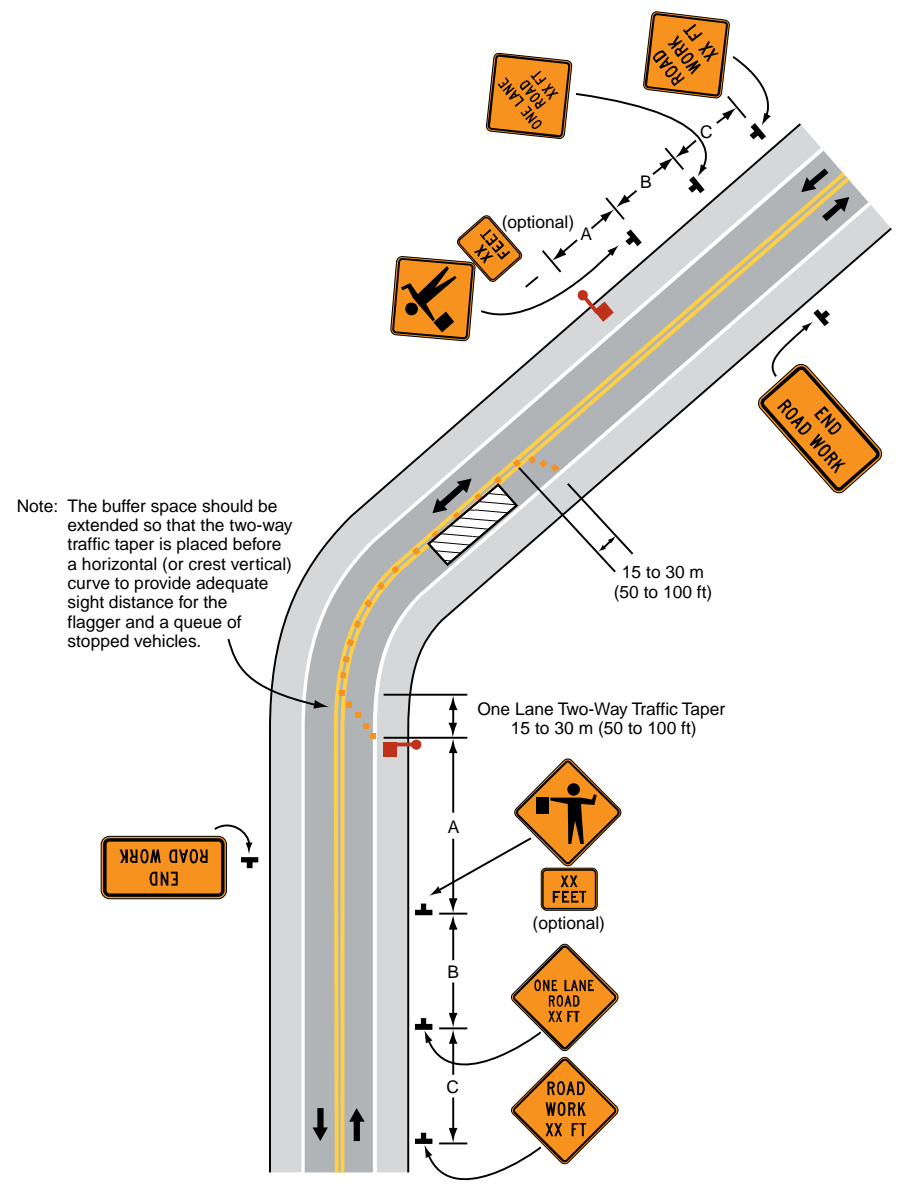


Flagger warning signs may remain displayed for up to 15 minutes when flagging operations are not occurring, only under certain conditions

Option for self-regulating traffic movement through 1-lane, 2-way constriction on low volume street if sight distance is adequate



2 flaggers should be used for 1-lane, 2-way constriction unless TTC zone is short enough for flagger to see from one end to the other



New plaques may accompany Speed Limit signs in TTC zones



NEW TRAFFIC PATTERN AHEAD sign





OR

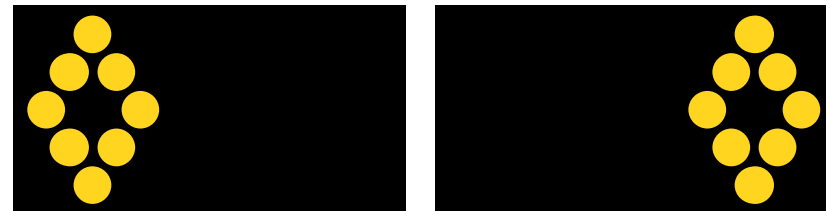


New symbol sign for Uneven Lanes or Shoulder Drop-Off and new supplemental plaques

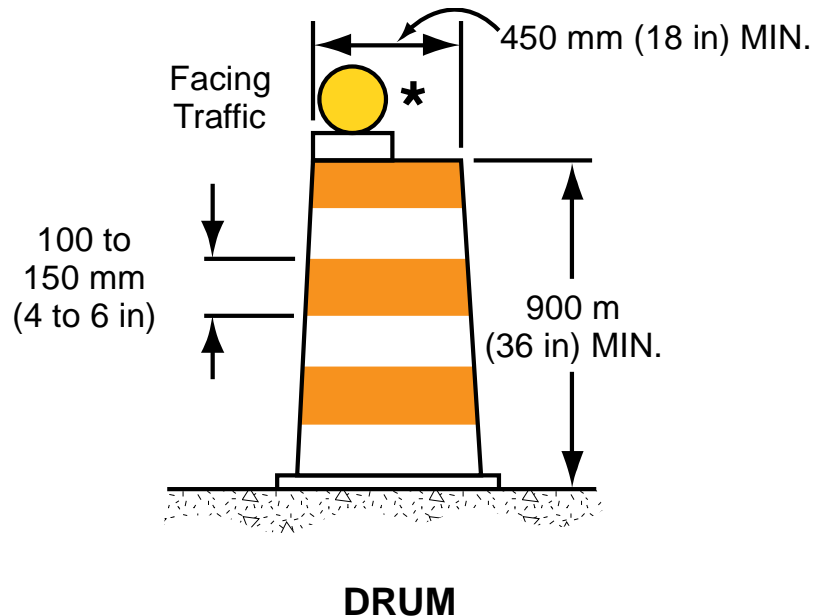
Portable Changeable Message Signs – new provisions

- Number of phases
- Display times per phase
- Number of lines of text
- Placement of messages within each line
- Techniques for message display
- Interaction between PCMSs if more than one sign simultaneously visible

New alternating diamond display to indicate caution on an arrow board



Alternating Diamond Caution



Drums shall not be weighted with sand, water, or other material that would make them hazardous to workers if struck

Temporary Lane Separators and Temporary Raised Islands



Temporary RPMs in TTC zones

- More provisions on color, patterns, and spacing, consistent with Part 3
- Option to use a less expensive pattern of temporary RPMs to substitute for a broken line marking for maximum of 14 days.

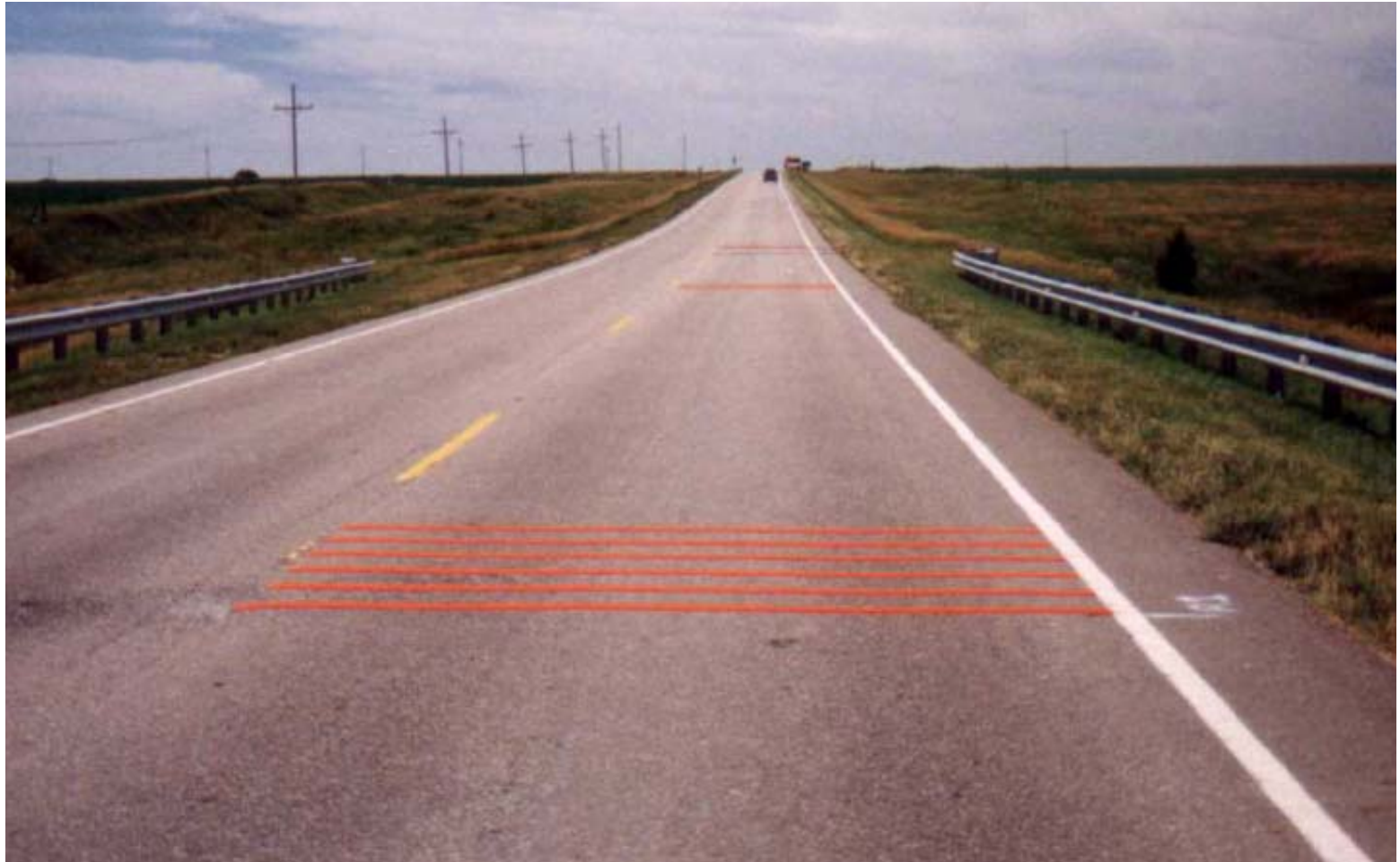
Deletion from MUTCD of:

- **Steady Burn Electric Lamps**
- **Floodlights**
- **Crash Cushions**
- **Vehicle Arresting Systems**
- **Glare Screens**

Preemption of Temporary Traffic Control Signals



Black and orange are acceptable colors for rumble strips in TTC zones



TTC plan should be developed for all planned special events



**Bike
Race**

Traffic Incident Management Provisions

- Incident Command System (ICS) shall be used
- On-scene responders and news media personnel should wear high-visibility apparel
- Light sticks may be used in lieu of flares

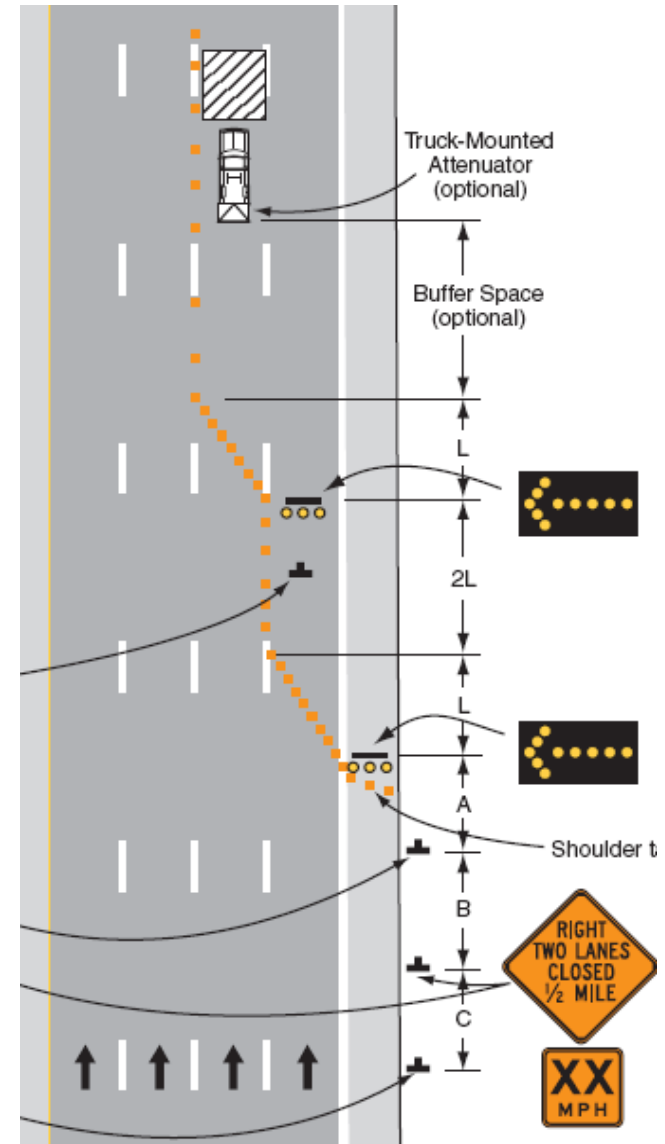


Typical Application Drawings (TA's)

- **Except for the TA “Notes”, information in the TA drawings can generally be regarded as Guidance**
- **TA 4 – stationary signs may be omitted for mobile work**
- **TA 16 – lanes should be minimum 10 feet wide**
- **TA 41 – channelizing devices should be used to physically close the ramp for exit closure**

TA's with freeway lane closures

- (TA 37, 38, 39, 42, 44)
- Arrow panel shall be used for all freeway lane closures
- Separate arrow panel shall be used for each lane for multi-lane closures



Revisions to Part 7 – Traffic Controls for School Areas



Deletion of some material from Part 7

- **Sections 7A.05 through 7A.10**
- **Chapter 7D – Signals**
- **Student Patrols in existing Chapter 7E**
- **Chapter 7F – Grade Separated Crossings**

FYG color required for all school warning signs

School Advance Crossing Assembly



S1-1



W16-9P

OR



W16-2aP

OR



W16-2P

School Crossing Assembly



S1-1



W16-7P

School Area or School Zone Sign



S1-1



S4-3P (optional)

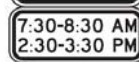
School Speed Limit Assembly



S4-3P



R2-1 OR



S4-1P

OR



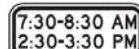
S4-2P

OR



S4-4P

OR



S4-1P



S4-6P



S4-3P



R2-1(M)



S4-1P



S3-1



S3-2

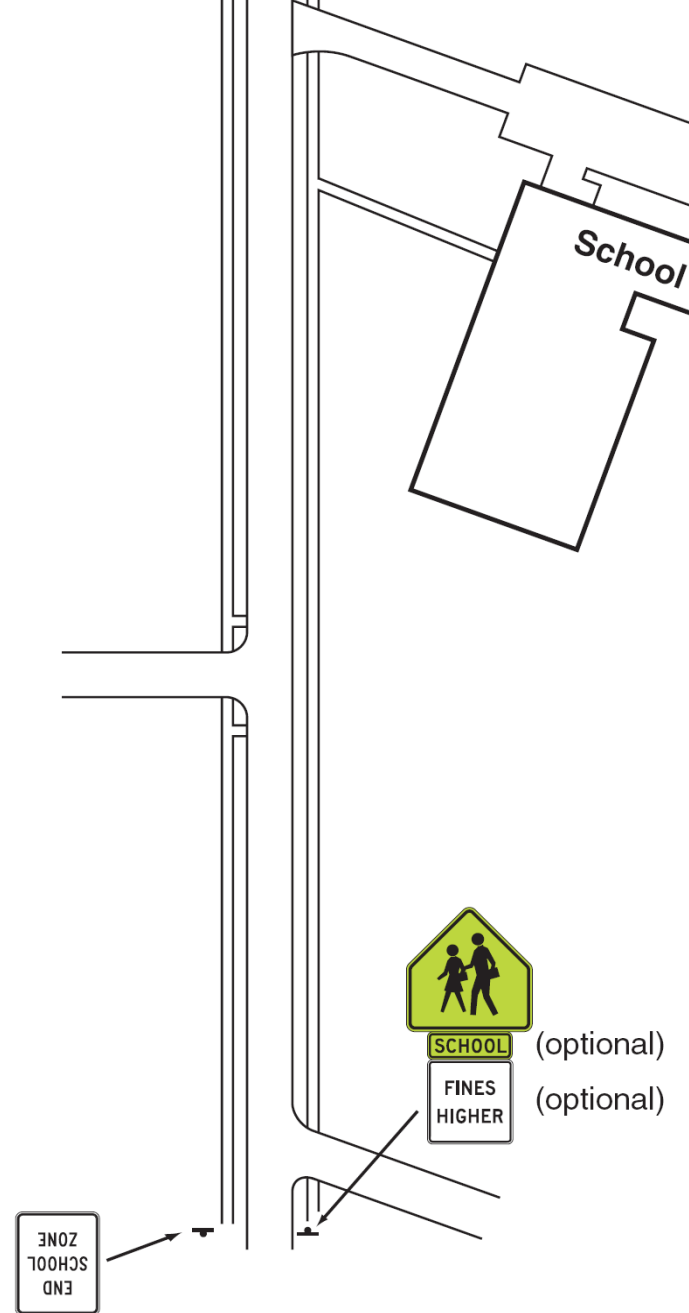


S4-5



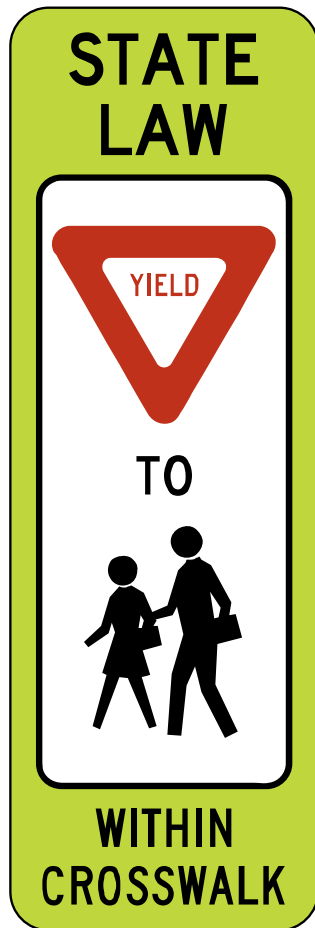
S4-5a

New figure illustrating School sign with Fines Higher plaque

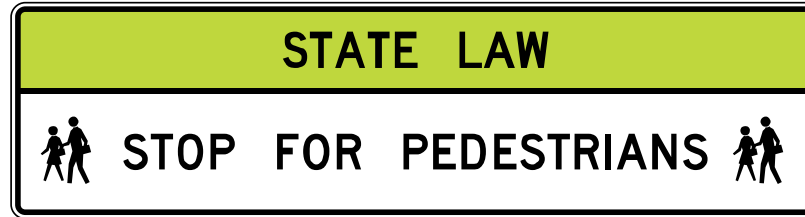


Warning of school zone less than 125 feet away on cross street





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



Overhead pedestrian crossing signs may be used at unsignalized school crossings

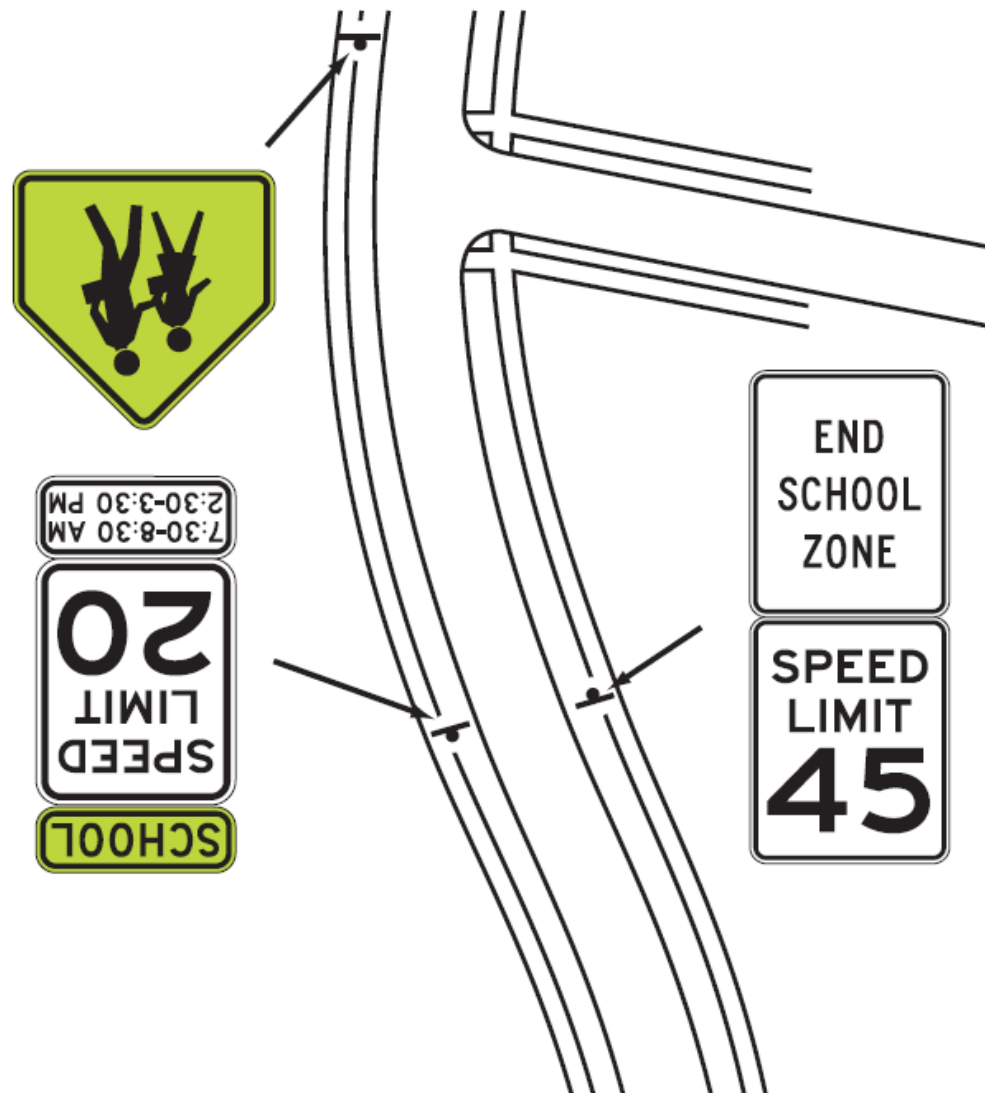
New symbol sign to replace the word message S3-1 sign



New sign to warn of school bus turnaround locations



The end of a school speed zone shall be marked with an **END SCHOOL ZONE** sign



Operating procedures for adult school crossing guards changed from recommendations to requirements

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



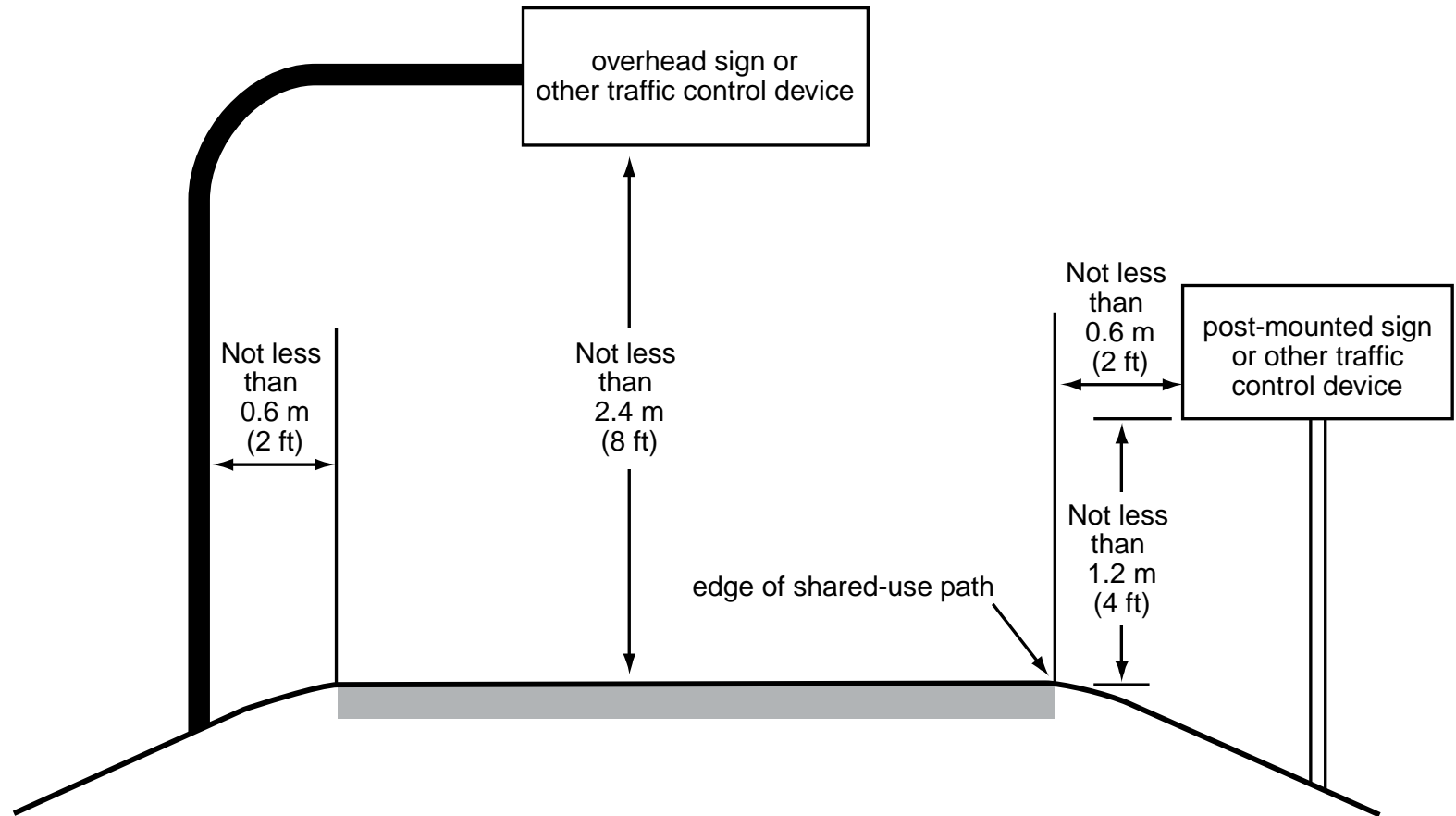
Revisions to Part 9 – Traffic Controls for Bicycle Facilities



Bike lane regulatory signs at start and end of bike lane changed from requirement to recommendation



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



Two new bicycle pushbutton signs that include a bicycle symbol



Revised legend of W5-4a sign



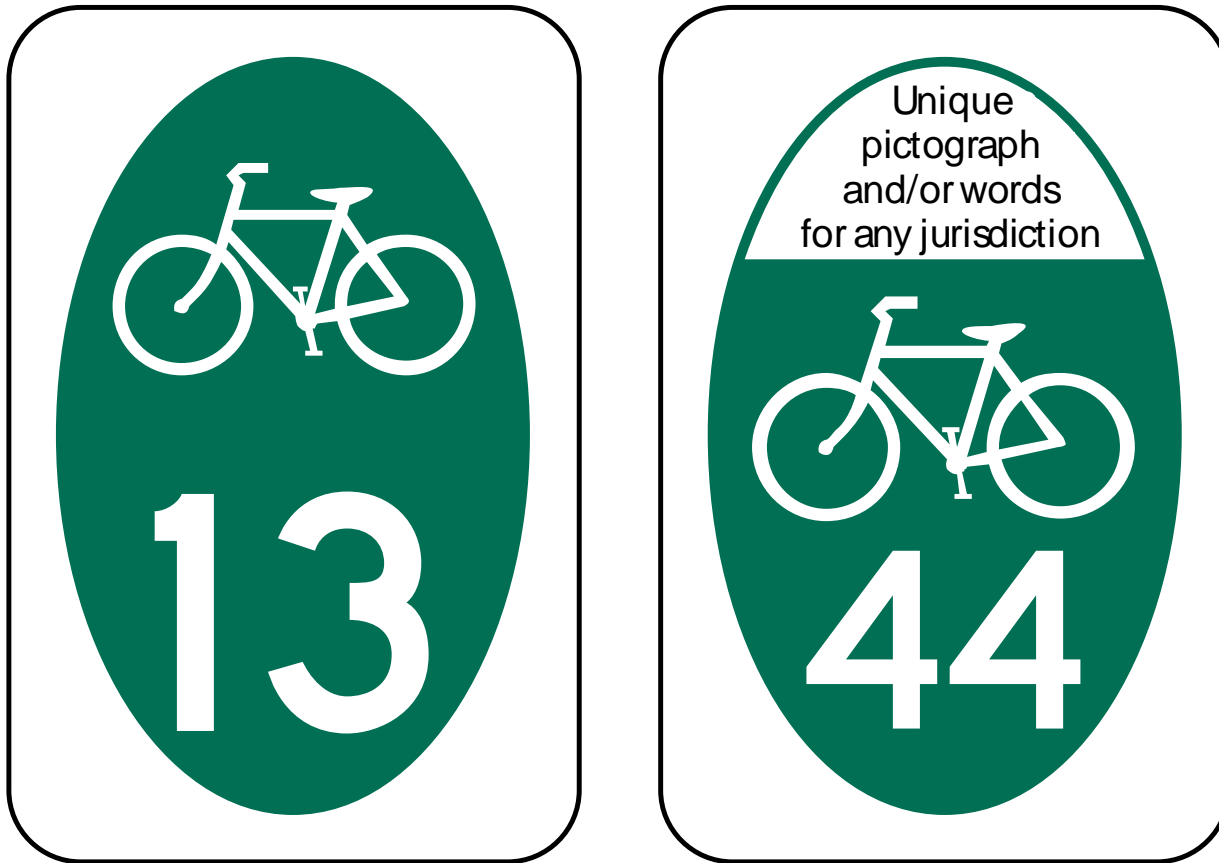
New sign and plaque for combined pedestrian/bicycle crossing



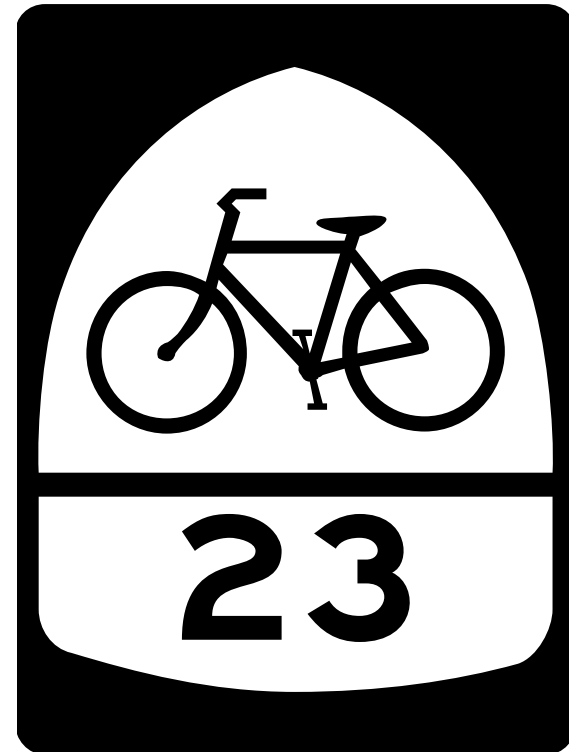
New bicycle destination guide signs



New Bike Route sign that provides a place for a pictograph



Revised design of the U.S. Bike Route sign



Changes in design and sizes of auxiliary signs used with Bike Route signs



Reference location signs for use on shared-use paths



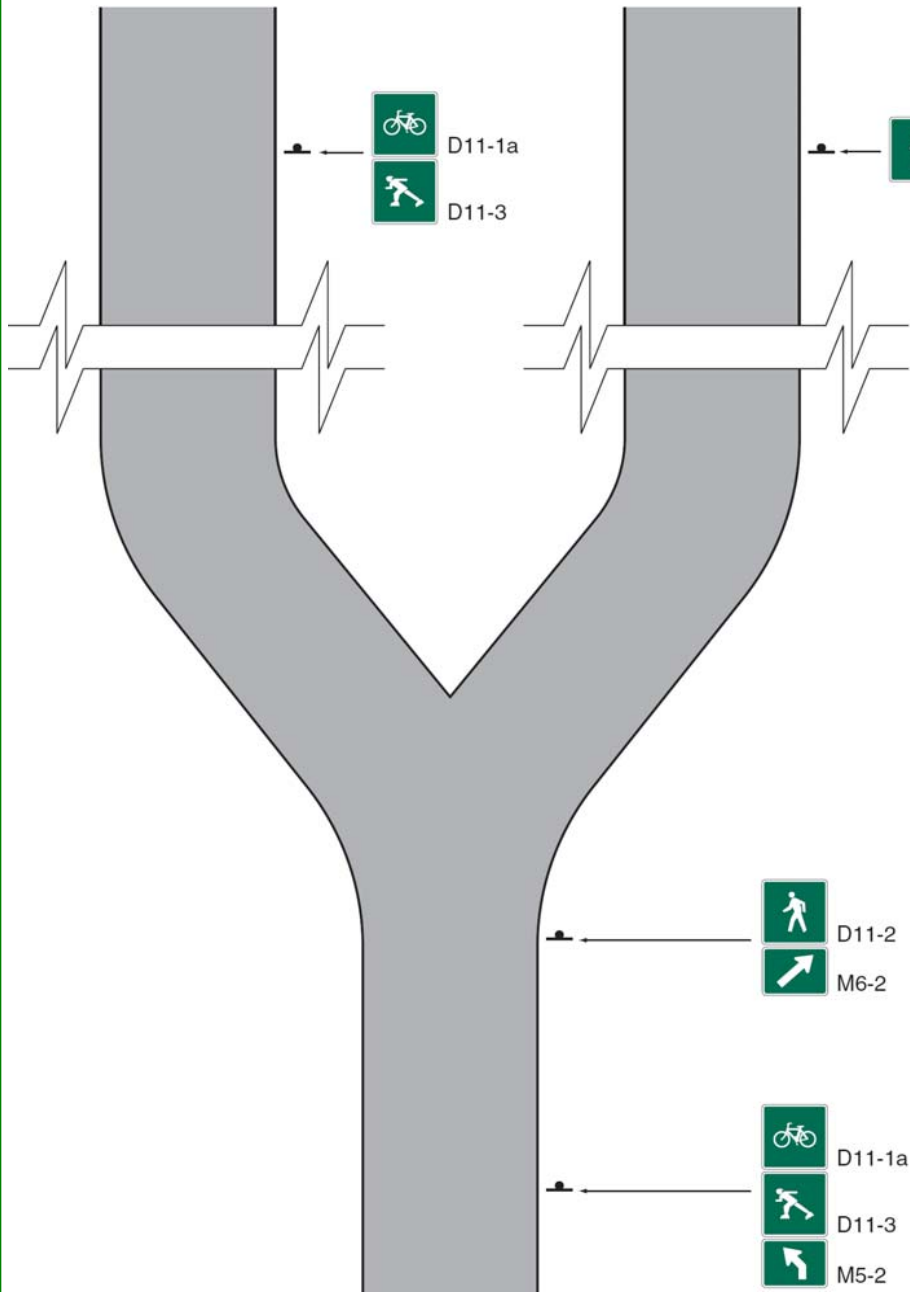
New selective exclusion signs for modes other than bikes and pedestrians



R9-13



R9-14



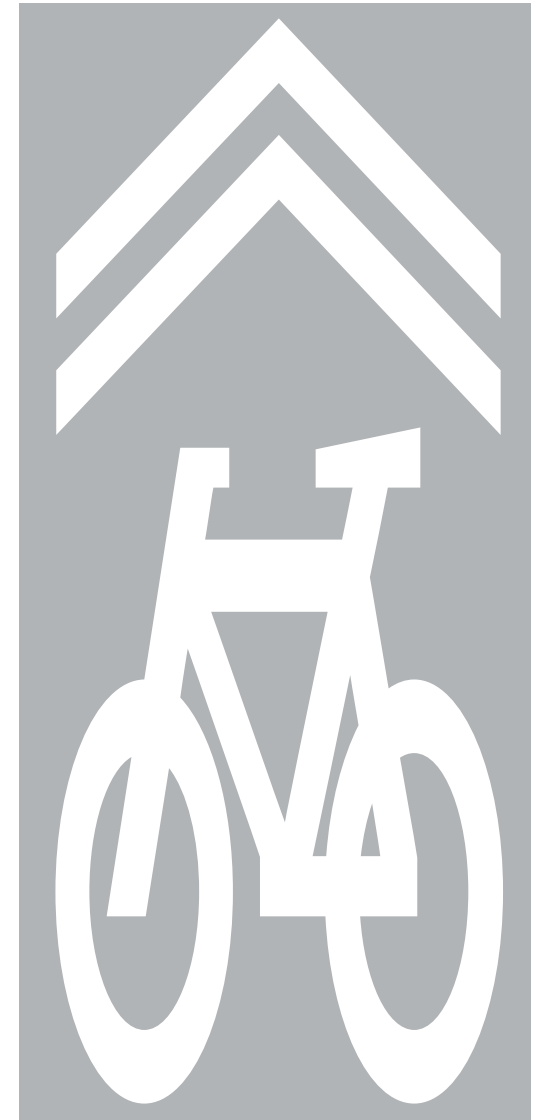
New mode-specific guide signs for use on shared-use paths



**New sign to
inform motorists
that the lane is
too narrow for
bicyclists and
motorists to
operate
side-by-side**



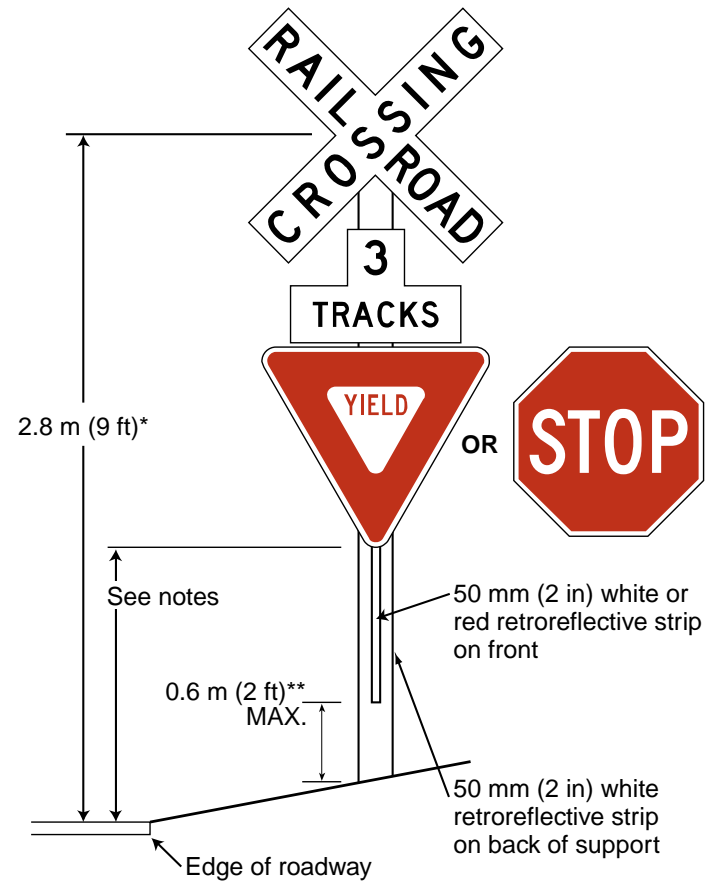
New shared lane pavement marking symbol



Revisions to Both Part 8 and Part 10 – Traffic Controls for Highway-Rail and Highway-LRT Grade Crossings



STOP or YIELD signs shall be posted at all passive grade crossings





**Red
lettering
allowed on
Crossbuck
signs**

Supplemental plaques describing the type of control shall be used with advance warning signs



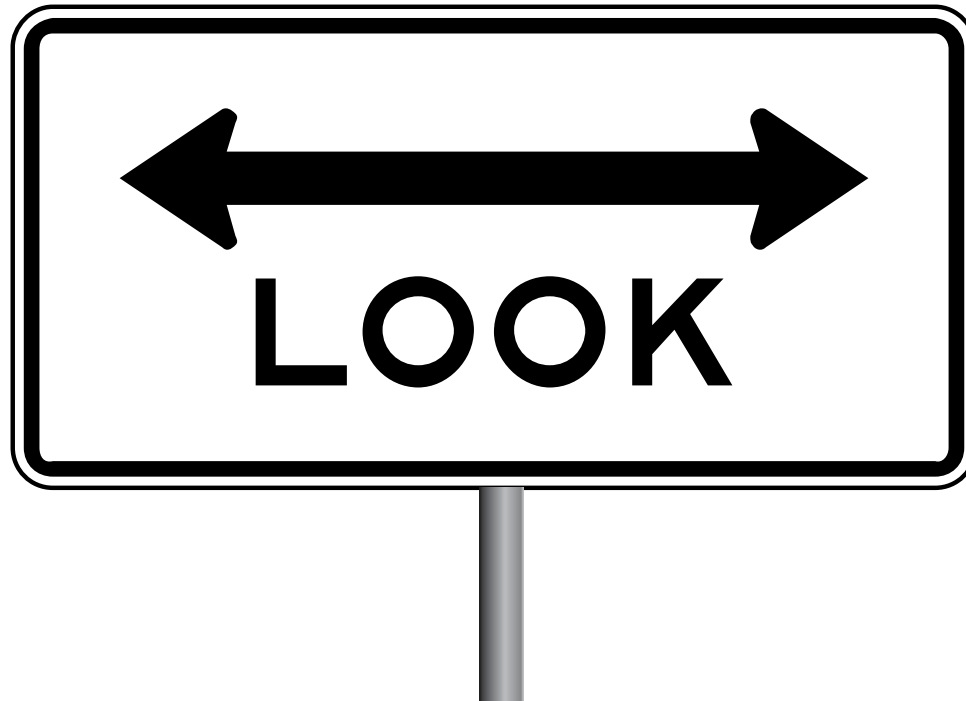
Substantial revisions to the Emergency Notification sign provisions



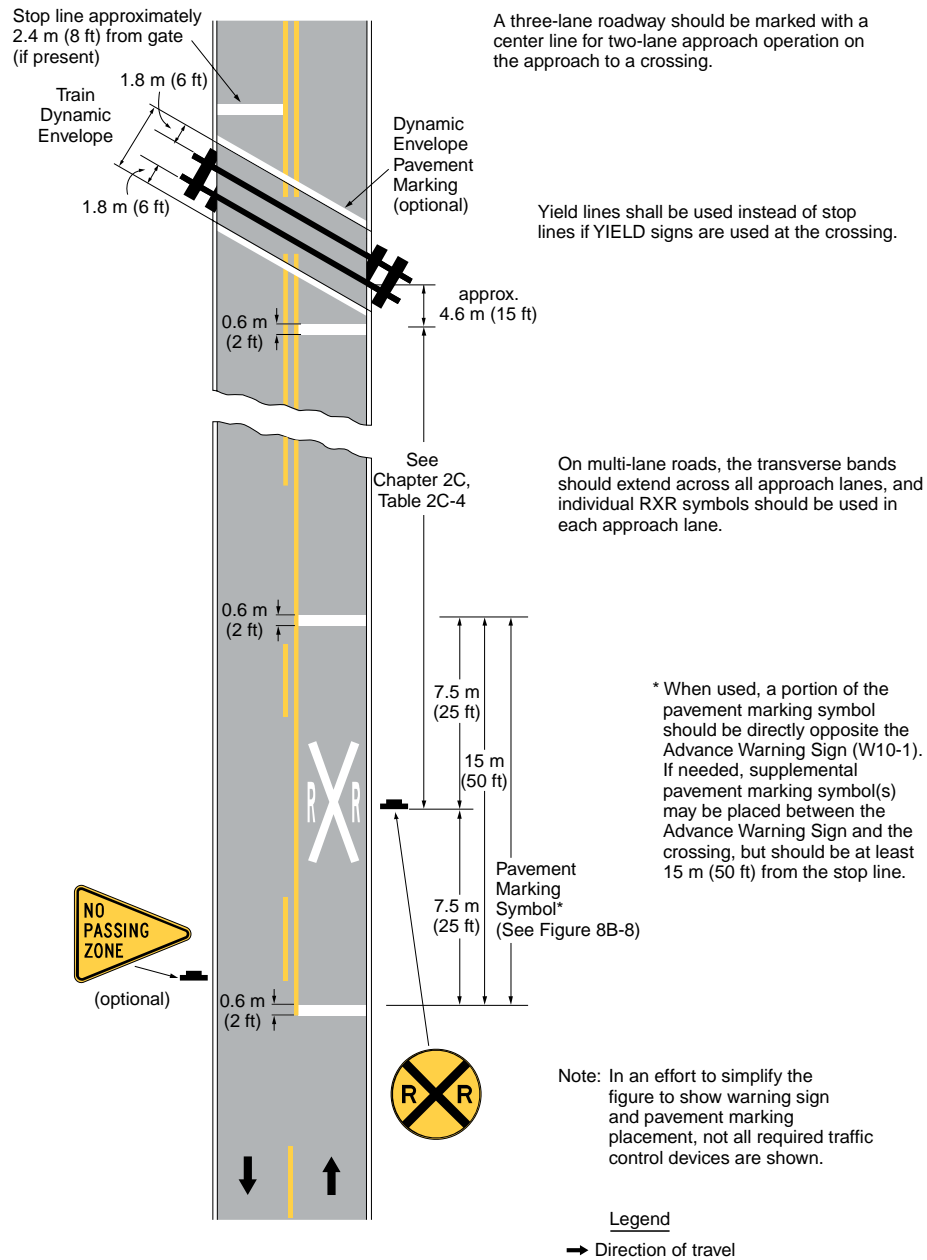
REPORT EMERGENCY
TO 1-800-555-5555
CROSSING #22-620A

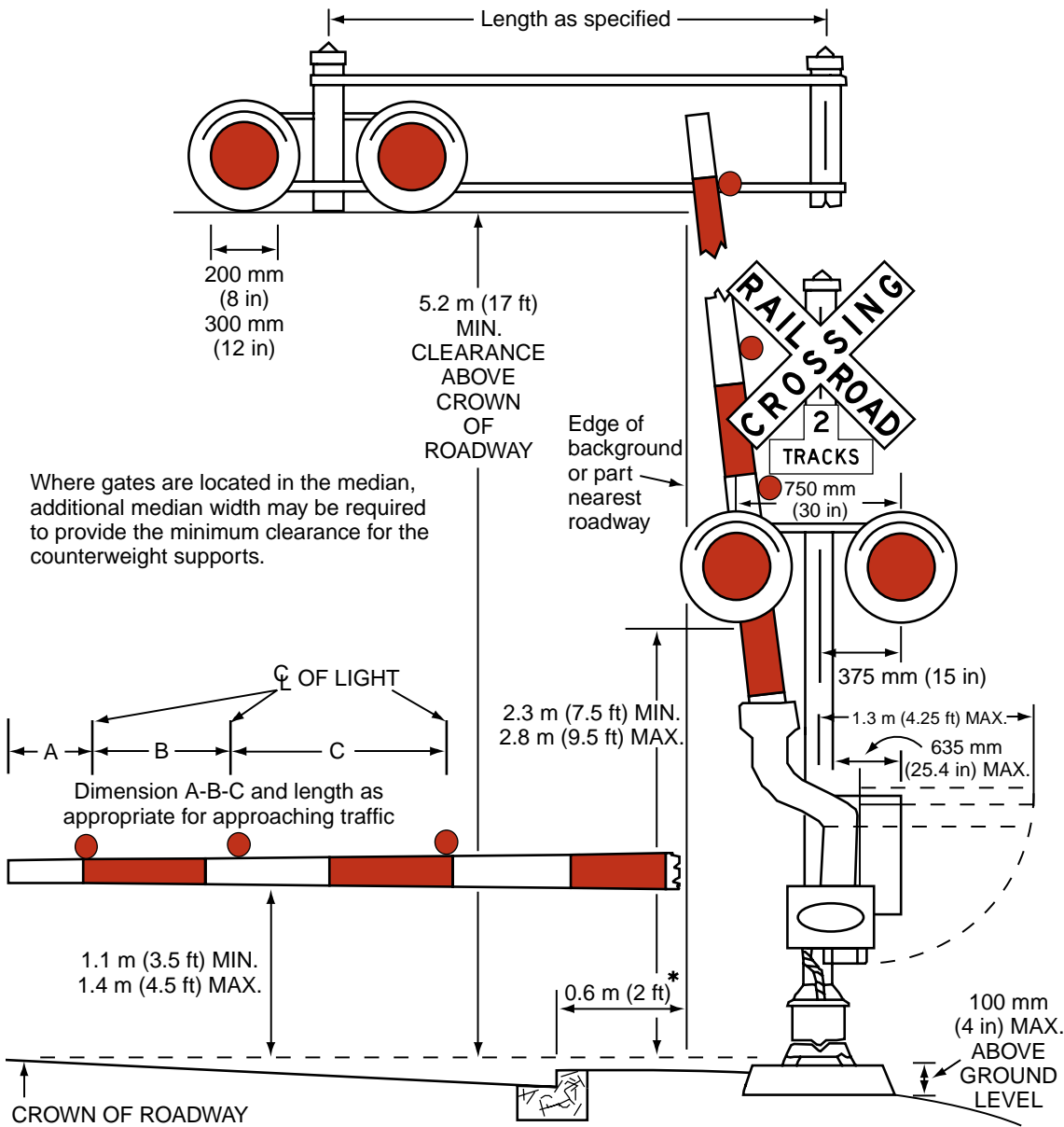


LOOK signs may be mounted on a separate sign post



Stop lines shall be used on paved roadways at crossings controlled by active devices





Stripes on gate arms shall be vertical

* For locating this reference line at other than curb section installation, see Section 8C.01.



Back-up power should be provided for signals with railroad preemption



Grade crossings within or in close proximity to roundabouts, traffic circles, or circular intersections

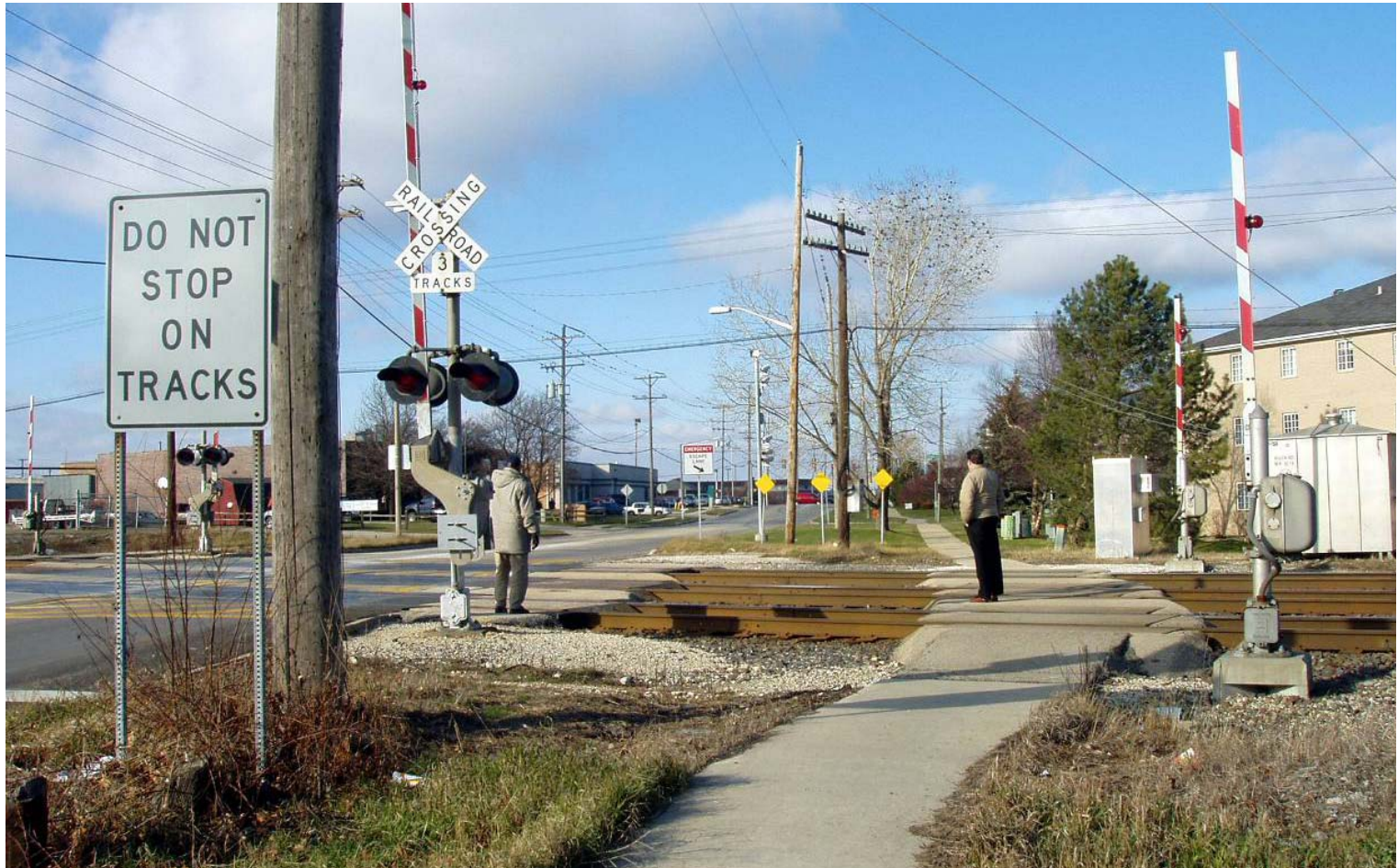
- **Engineering study required to evaluate potential queuing**
- **If queues impact crossing, provisions shall be made to clear highway traffic from the crossing before train arrivals**



Quiet zone treatments

- **Reference to Code of Federal Regulations (49 CFR Part 222) -- quiet zones established in conjunction with restrictions on train horns at certain highway-rail grade crossings**
- **TCDs used as part of a quiet zone shall comply with MUTCD**

New Chapter on pathway-rail grade crossings



Revisions to Part 10 only– Traffic Controls for Highway-LRT Grade Crossings



Revised symbol on W10-7 Light Rail Transit Approaching activated blank-out sign



































W10-7



I-12

If Light Rail Transit signals are used, they shall be as shown in Figure 10D-1

	Three-Lens Signal	Two-Lens Signal
<p>SINGLE LRT ROUTE</p> 	<p>STOP </p> <p>PREPARE TO STOP  <i>Flashing</i></p> <p>GO </p>	<p> STOP</p> <p> ⁽²⁾ GO</p>
<p>TWO LRT ROUTE DIVERSION</p> 	<p></p> <p> <i>Flashing</i></p> <p>  ⁽¹⁾</p>	<p></p> <p>  ^{(1),(2)}</p>
	<p></p> <p><i>Flashing</i> </p> <p>  ⁽¹⁾</p>	<p></p> <p>  ^{(1),(2)}</p>
<p>THREE LRT ROUTE DIVERSION</p> 	<p></p> <p> <i>Flashing</i></p> <p>   ⁽¹⁾</p>	<p></p> <p>   ^{(1),(2)}</p>

Notes:

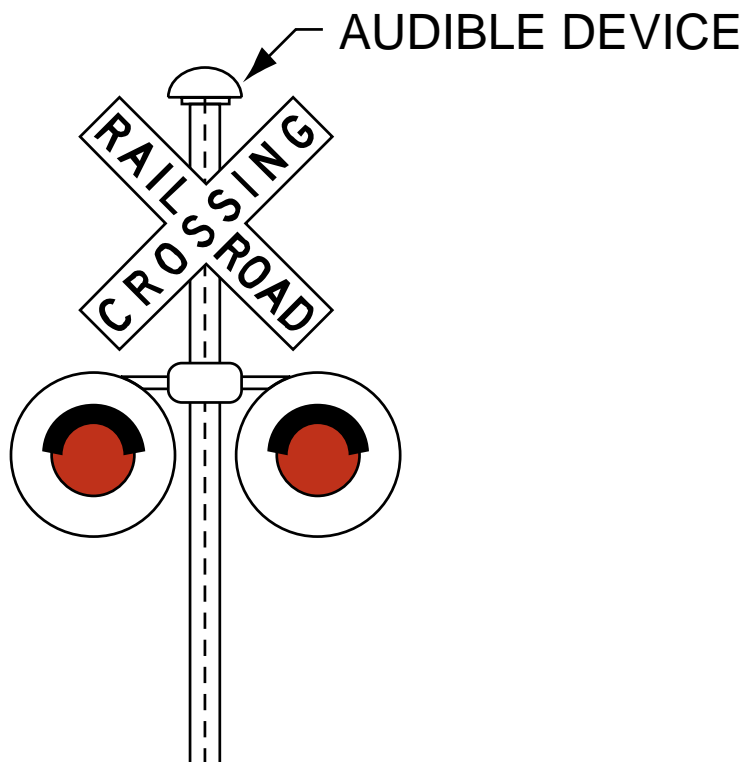
All aspects (or signal indications) are white.

(1) Could be in single housing.

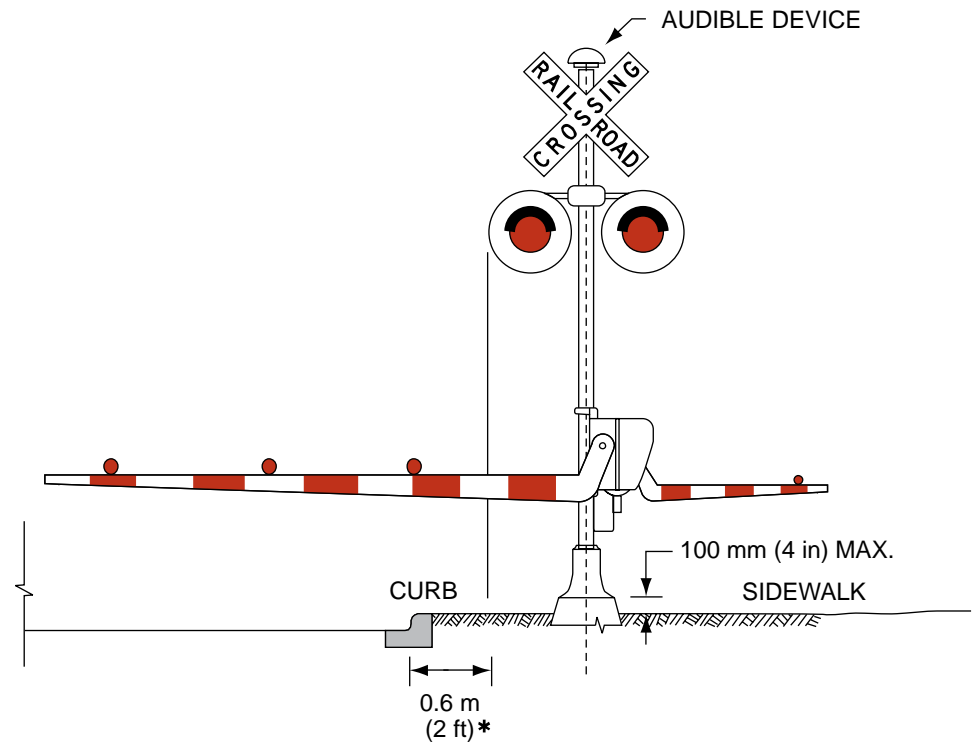
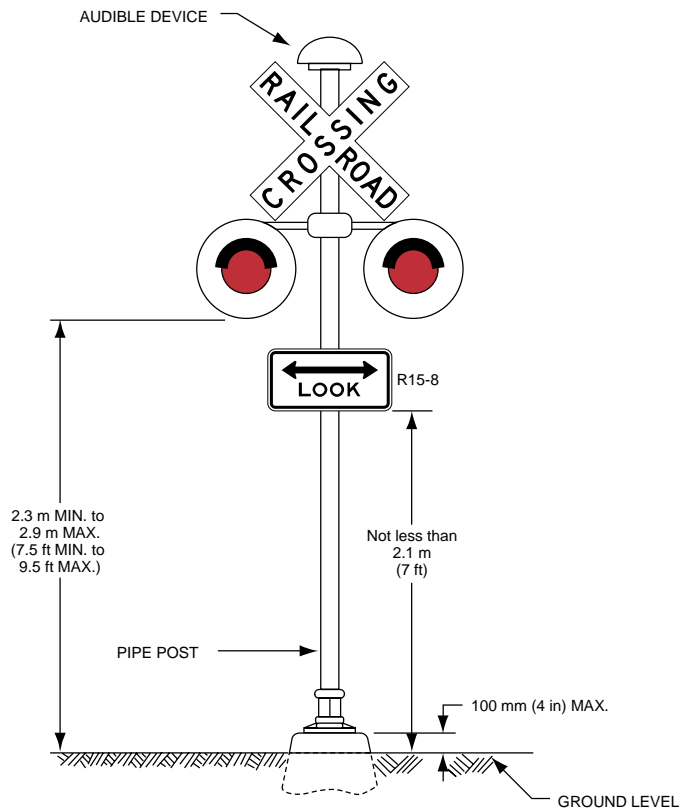
(2) "Go" lens may be used in flashing mode to indicate "prepare to stop".



Use of audible devices at LRT crossings used by pedestrians changed from option to requirement



LOOK sign and/or pedestrian gates should be considered to provide sufficient notice of approaching LRT vehicle



* For locating this reference line at other than curb section installation, see Section 8C.01.

End of Presentation

