



# Impacts of adopting the 2009 MUTCD on ODOT signing practices

New practices

New compliance dates



# Resources

FHWA <http://www.fhwa.dot.gov/>

Code of Federal Regulations Title 23

[http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?sid=99fabfd81c8ae12b9a2d63a3af54354e&c=ecfr&tpl=/ecfrbrowse/Title23/23tab\\_02.tpl](http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?sid=99fabfd81c8ae12b9a2d63a3af54354e&c=ecfr&tpl=/ecfrbrowse/Title23/23tab_02.tpl)

MUTCD <http://mutcd.fhwa.dot.gov/index.htm>

Oregon Supplement to the 2009 MUTCD

<http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/MUTCD.shtml>

Oregon Revised Statutes [http://www.leg.state.or.us/ors/ors\\_info.html](http://www.leg.state.or.us/ors/ors_info.html)

Oregon Administrative Rules [http://arcweb.sos.state.or.us/rules/number\\_index.html](http://arcweb.sos.state.or.us/rules/number_index.html)

Sign Policy and Guidelines

[http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/sign\\_policy.shtml](http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/sign_policy.shtml)

Traffic Standards <http://www.oregon.gov/ODOT/HWY/TS/>

# Compliance Dates

- New installations, replacements, rebuilds – must comply immediately
- New Table I-2 with specific compliance dates to retrofit or replace existing devices to meet 11 of the new Standards in the 2009 MUTCD

Table I-2. Target Compliance Dates Established by FHWA (Sheet 2 of 3)

2009 MUTCD Section Number(s)	2009 MUTCD Section Title	Specific Provision	Compliance Date
2C.50	Non-Vehicular Warning Signs	Elimination of crosswalk lines from crossing signs and use of diagonal downward pointing arrow (W16-7P) supplemental plaque if at the crossing (2003 MUTCD Section 2C.41)	January 17, 2011 (a)(b)
2C.61	PHOTO ENFORCED Plaque (W16-10P)	New plaque (2003 MUTCD Section 2C.53) (*)	December 22, 2013 (b)
2C.63	Object Marker Design and Placement Height	Width of stripes on Type 3 striped marker (2003 MUTCD Section 3C.01)	December 22, 2013 (b)
2D.43	Street Name Signs (D3-1 or D3-1a)	6-inch letter height for lettering on post-mounted Street Name signs (except on multi-lane streets with speed limits greater than 40 mph) (2003 MUTCD Section 2D.38)	January 9, 2012 (a)
2D.43	Street Name Signs (D3-1 or D3-1a)	8-inch letter height on post-mounted signs on multi-lane streets with speed limits greater than 40 mph and 12-inch letter height on overhead signs (2003 MUTCD Section 2D.38)	December 22, 2018 (b)
2D.44	Advance Street Name Signs (D3-2)	Requirements of new Section 2D.39 in the 2003 MUTCD	December 22, 2018 (b)
2D.45	Signing on Conventional Roads on Approaches to Interchanges	New requirement in the 2009 MUTCD for multi-lane approaches to interchanges to have guide signs to identify which direction of turn is to be made for access to each direction of the freeway or expressway	December 31, 2019

Previously-established dates

New compliance date in 2009 edition

# Application of horizontal alignment signs based upon curve differential speed

**Table 2C-5. Horizontal Alignment Sign Selection**

Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (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
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	Optional	Optional	Recommended	Required	Required



# New criteria for the determination of advisory speeds (2C.08)

**Support:** Among the established engineering practices that are appropriate for the determination of the recommended advisory speed for a horizontal curve are the following:

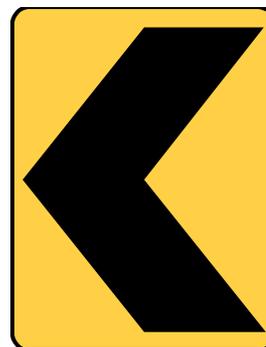
- A. An accelerometer that provides a direct determination of side friction factors**
- B. A design speed equation**
- C. A traditional ball-bank indicator using the following criteria:**
  - 16 degrees of ball-bank for speeds of 20 mph or less**
  - 14 degrees of ball-bank for speeds of 25 to 30 mph**
  - 12 degrees of ball-bank for speeds of 35 mph and higher**



With new ball Bank guidelines and the results of the OSU research on our curve signing practice we are going to be reevaluating all horizontal curves and signing appropriately. (Cost estimated for state hwy's at 1-2 mil per Region for "Shall and Should" conditions. May be as low as 3 mil statewide for "Shall" conditions only)



W13-1P



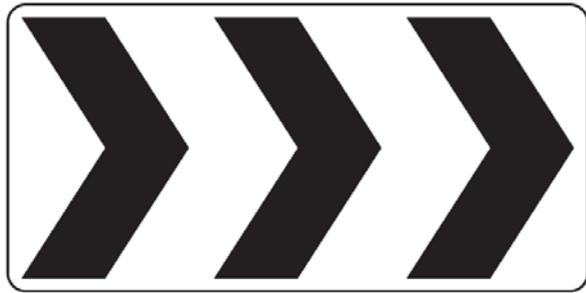
W1-3



W1-1

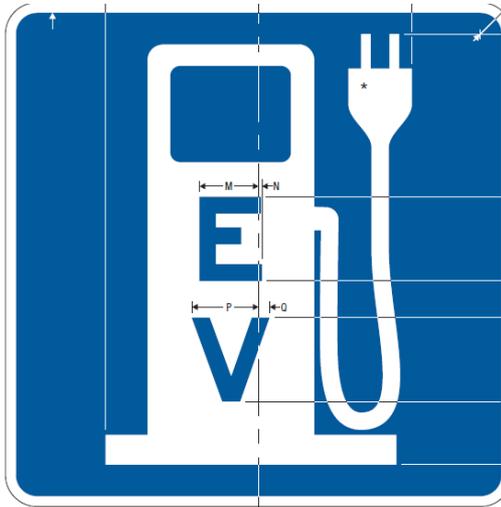


# Many new symbols



# New Alternate symbol for Electric Vehicle Charging Station

Electric Vehicle community wanted some separation from fossil fuels



D9-11b (Alternate)



D9-11bP



D9-11b

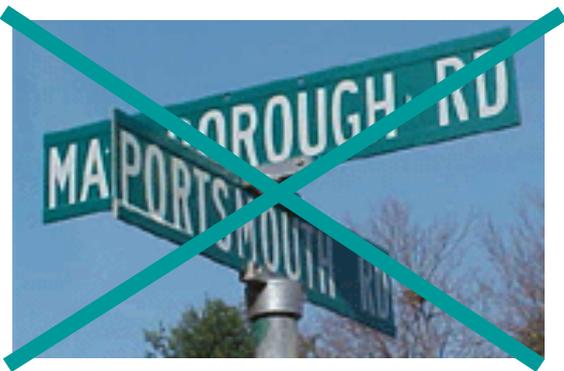


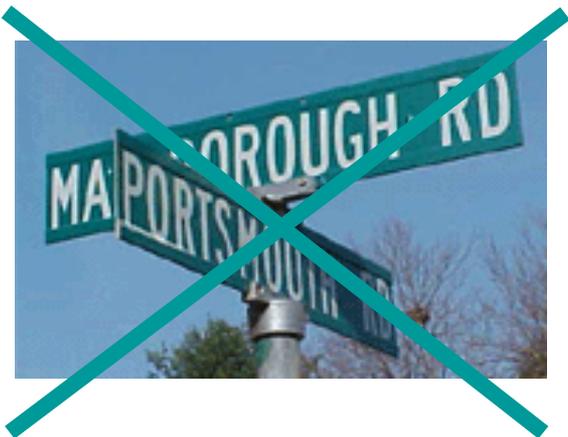
# New and revised sign size tables

- Updated/expanded table for regulatory sign sizes. Note: Tables 2B-1 (Regulatory) and 2C-2 (Warning) have Conventional Roads / Single Lane – Multi Lane designation now.
- New detailed sign size tables:
  - Warning signs (Minimal Impacts)
  - Conventional road guide signs (Minimal Impacts)
  - Freeway/expressway guide signs ( see later slides)
  - General service signs (Minimal Impacts)
  - General information signs (Minimal Impacts)

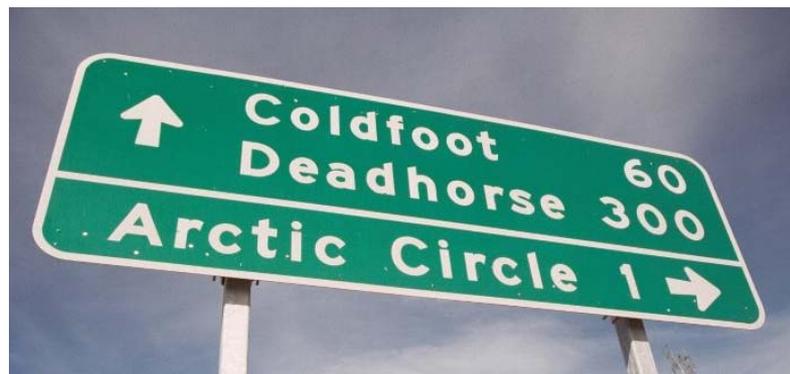
# Lettering for place names and destinations

- Mixed-case lettering required for names of places, streets, and highways for guide signs
- Mixed-case lettering consists of an initial upper-case letter followed by lower-case letters
- Letter height is specified as the height of the initial upper-case letter





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





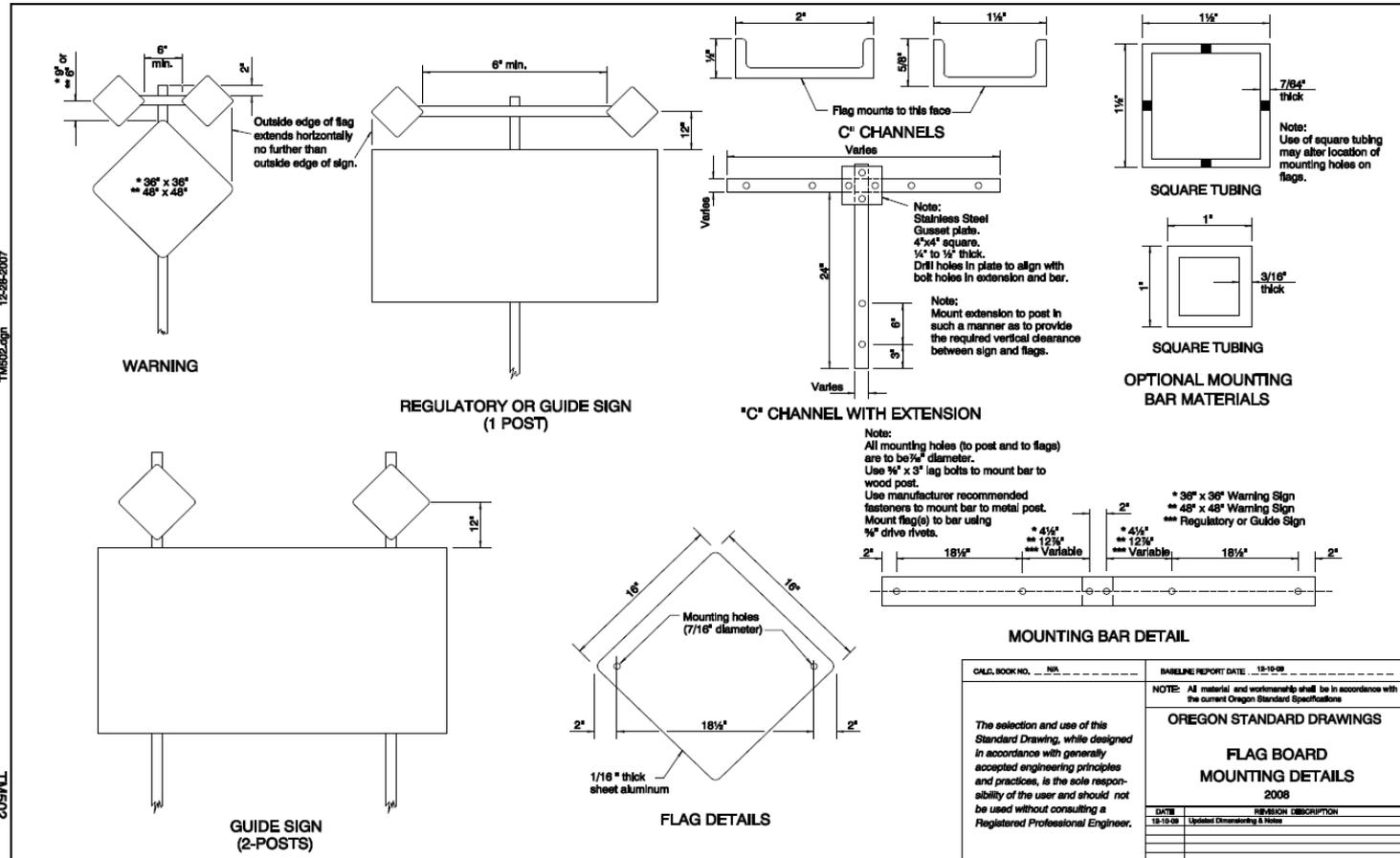
# New options for sign conspicuity enhancement



# One ODOT use of new options for sign conspicuity enhancement. Policy is in development



# Note policy on sign flag boards in ODOT Sign Policy and Guidelines Chapter 4



TM2002.dgn 12-08-2007

GUSMNTL

<p>Calc. Book No. _____</p> <p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</p>	<p>BASELINE REPORT DATE: 12-10-09</p> <p>NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications</p> <p><b>OREGON STANDARD DRAWINGS</b></p> <p><b>FLAG BOARD MOUNTING DETAILS</b></p> <p>2008</p> <p>DATE: 12-10-09</p> <p>DESIGNER: _____</p> <p>INSP: _____</p> <p>APP: _____</p>
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The use of 2-WAY,  
3-WAY, and  
4-WAY plaques is  
prohibited

ALL-WAY plaque  
remains as a “shall”  
if STOP signs are  
used on all  
approaches





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



**EXCEPT  
RIGHT  
TURN**

**RIGHT  
TURN  
PERMITTED  
WITHOUT  
STOPPING**

# Fluorescent yellow-green color

Required for school and school bus signs



Optional for pedestrian, bike, and playground signs

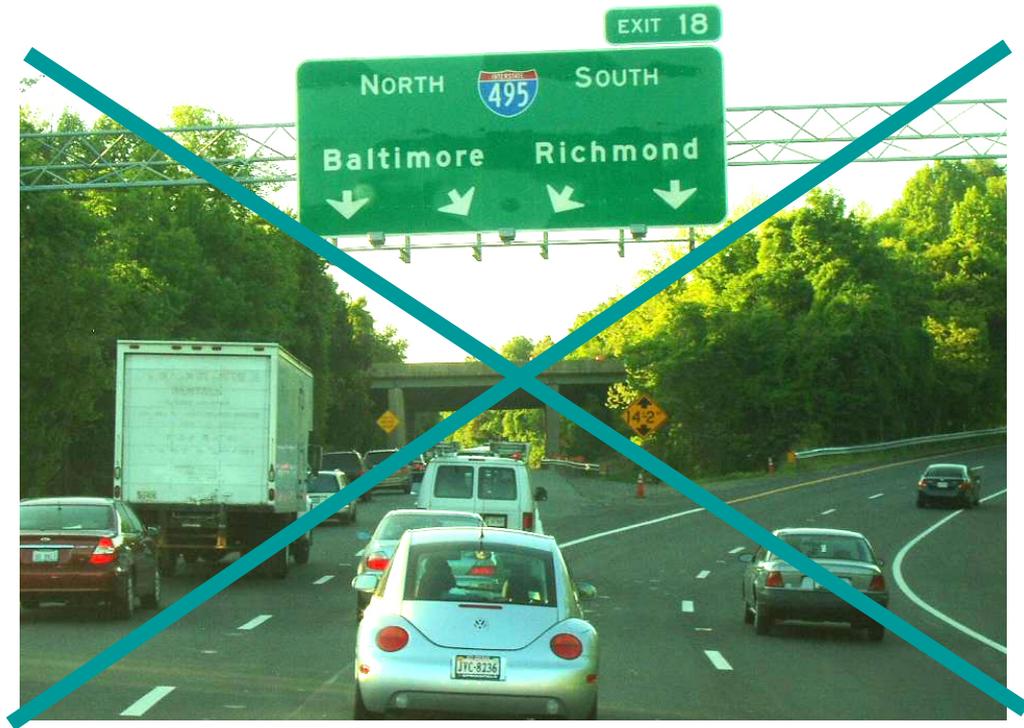


# New sign to warn of a traffic pattern revision



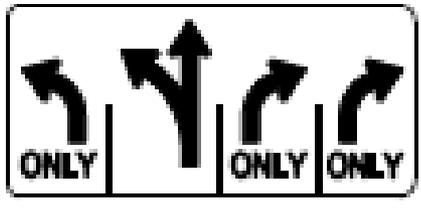


Down arrows shall always be vertical and positioned directly over the approximate center of each applicable lane



Current Down Arrow practice will have to be accommodated in another way.





R3-8a

# Combination lane-use and destination overhead guide signs



OR





# New table for letter heights on Street Name signs

**Table 2D-2. Recommended Minimum 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	12 inches	9 inches
Post-mounted	Multi-lane	More than 40 mph	8 inches	6 inches
Post-mounted	Multi-lane	40 mph or less	6 inches	4.5 inches
Post-mounted	2-lane	All speed limits	6 inches*	4.5 inches*

\* On local two-lane streets with speed limits of 25 mph or less, 4-inch initial upper-case letters with 3-inch lower-case letters may be used.

# Supplement:

## Section 2D.43 Street Name Signs (D3-1 or D3-1a)

- » [Insert new Option and Support paragraphs following Section 2D.43, P7, as shown below:]
- *Guidance:*
  - » *If overhead Street Name signs are used, the lettering should be composed of initial upper-case letters at least 12 inches in height and lower-case letters at least 9 inches in height.*
- Option:
  - » Where engineering judgment determines that structural limitations such as the load capacity of the mast arm or lateral spacing of signal heads prevent the prescribed dimensions for overhead Street Name signs from being met, the lettering on overhead Street Name signs may be reduced. Larger sizes are preferred, the minimum initial upper-case letters at least 8 inches in height and lower-case letters at least 6 inches in height.
- Support:
  - » Overhead Street Name signs are more visible to drivers and are preferred over post-mounted Street Name signs at signalized intersections. Some road authorities have overhead structures with limited load capacity. Allowing reduced letter sizes results in smaller overhead Street Name signs that can be accommodated on these smaller structures.

# New requirement for minimum freeway and expressway guide sign and plaque sizes

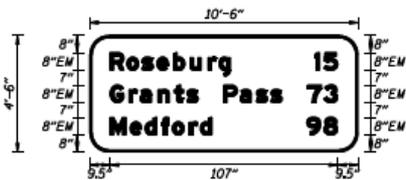
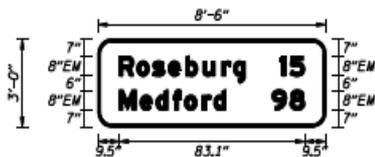
**Table 2E-1. Freeway or Expressway Guide Sign and Plaque Sizes (Sheet 2 of 2)**

Sign or Plaque	Sign Designation	Section	Minimum Size
State Route Sign (3 digits)	M1-5	2D.11	45 x 36
County Route Sign (1, 2, or 3 digits)	M1-6	2D.11	36 x 36
Forest Route (1, 2, or 3 digits)	M1-7	2D.11	36 x 36
Eisenhower Interstate System	M1-10,10a	2E.28	36 x 36
Junction	M2-1	2D.13	30 x 21
Combination Junction (2 route signs)	M2-2	2D.14	60 x 48*
Cardinal Direction	M3-1,2,3,4	2D.15	36 x 18
Alternate	M4-1,1a	2D.17	36 x 18
By-Pass	M4-2	2D.18	36 x 18
Business	M4-3	2D.19	36 x 18
Truck	M4-4	2D.20	36 x 18
To	M4-5	2D.21	36 x 18
End	M4-6	2D.22	36 x 18
Temporary	M4-7,7a	2D.24	36 x 18
Begin	M4-14	2D.23	36 x 18
Advance Turn Arrow	M5-1,2,3	2D.26	30 x 21
Lane Designation	M5-4,5,6	2D.27	36 x 24

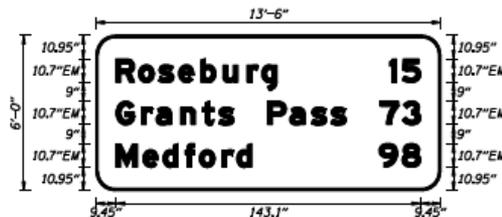
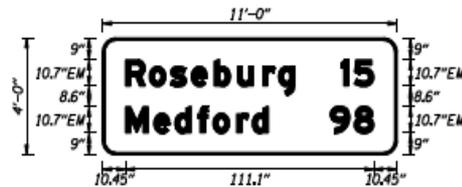
# Destination Distance Signing D2-1 thru D2-3

Oregon practice produces a larger sign than the 2009 MUTCD minimum for Freeway locations. However here again we see excess green space for signs produced when following the standards from Table 2E-1 and Section 2E.15. If the MUTCD standard sign was produced without the minimum size required by 2E-1 it would be approximately 33% smaller for the two destination sign below and 25% smaller for the 3 destination sign below.

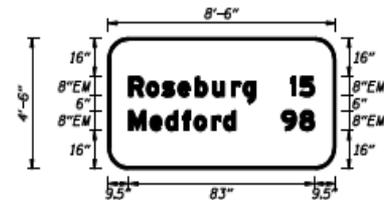
*ODOT Current Practice  
(Minimum)*



*ODOT Current Practice  
(Preferred)*



*New Standard  
(2009 MUTCD)*

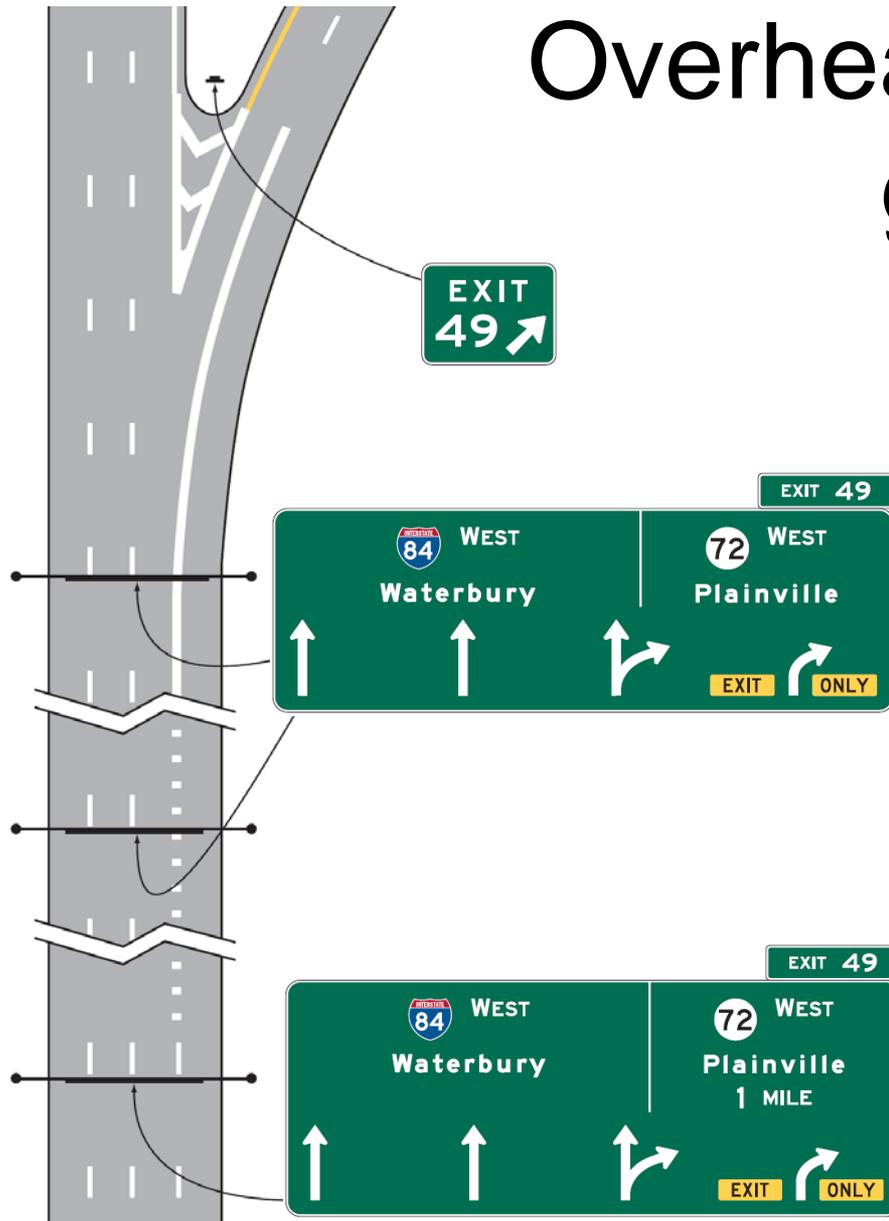




# New sections added for signing of option lanes

- 2E.20 – Splits and multi-lane exits with an option lane
- 2E.21 – Design of Overhead Arrow-per-Lane signs
- 2E.22 – Design of freeway and expressway diagrammatic signs
- 2E.23 – Signing for intermediate and minor interchange multi-lane exits with an option lane

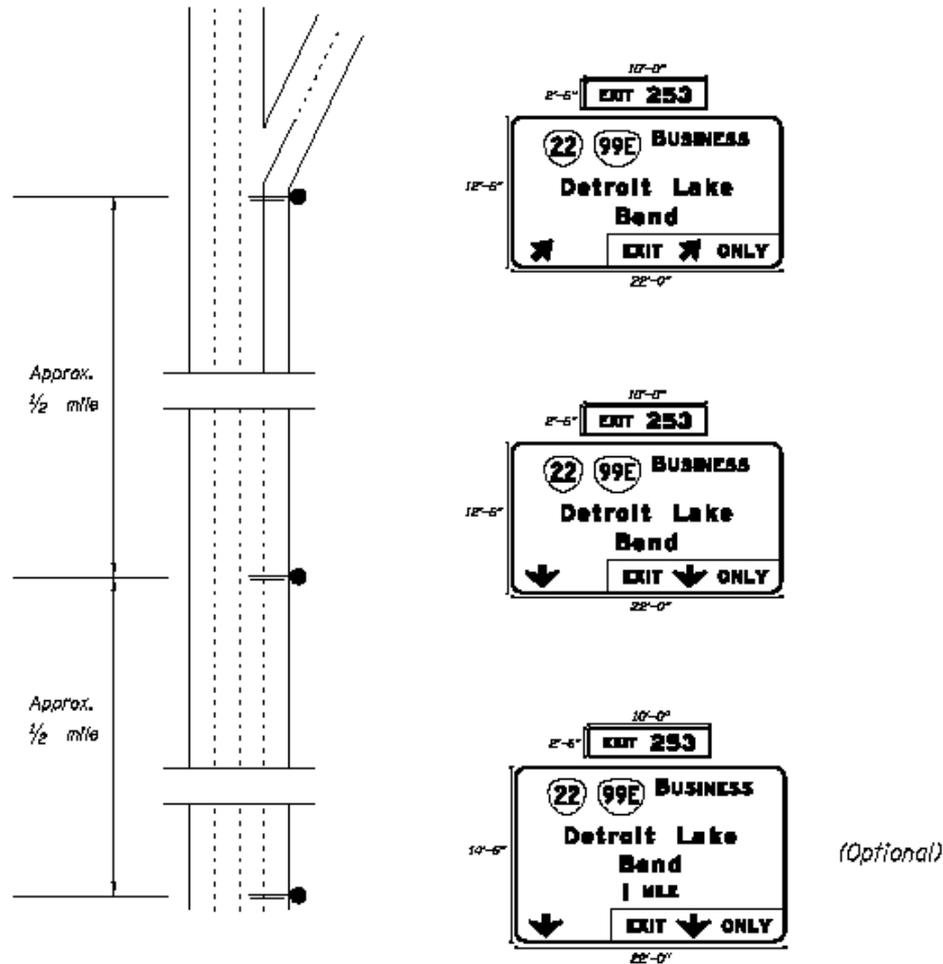
# Overhead Arrow-per-Lane guide signs



- Required at new or reconstructed option lane locations (major interchanges, splits)
- Provision for conversion from diagrammatic (interim gore sign location)

# Current ODOT Practice

## Optional 2-lane Exit



# ODOT Sign Policy and Guidelines

- Updates/Revisions
  - Posted to the web.
  - Most recent Update is April 2011. Deleted some 65 signs that are the same or similar to ones in the MUTCD or are no longer needed.
  - Paper copies of updates will no longer be sent. Users can sign up for email updates notifications at web site.

# ODOT Sign Policy and Guidelines

- Chapters have been combined and the entire SP&G is now available as a single document.
- Ball bank information in chapter 4 will be removed as soon as rule making (Adoption of the 2009 MUTCD and Supplements through OAR and the OTC) is complete for the 2009 MUTCD. A reference to 2C.08 will be inserted.
- Some additional revisions will follow adoption of the 2009 MUTCD

# Other Impacts

- The Traffic Manual revisions
  - Right Turn Permitted Without Stopping in 6.31.2. There is a similar sign plague R1-10P “EXCEPT RIGHT TURN”
- Travel Information Council has signing Supplements and is language in their OARs.
- ODOT Standard drawings will be updated.
  - Uppercase/Lowercase legends on Guide and Street Name signs for example.
- The Sign Design Manual updated in 2010 will get a revision. (judging from the number of comments we received so far we have additional work to do here)