

TRAFFIC SIGNING

for

OPTION LANES

ON FREEWAYS AND EXPRESSWAYS

PRESENTED TO THE

Traffic Control Devices Committee (AHB50)

TRB 89th Annual Meeting

Monday, January 11th, 2010

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DISCLAIMER

ALTHOUGH THE RECOMMENDATION DISPLAYED IN THIS PRESENTATION IS A MATTER OF POLICY FOR MANY PUBLIC AGENCIES, THE VIEWS AND OPINIONS EXPRESSED IN THIS PRESENTATION ARE THOSE OF THE PRESENTER AND ARE NOT INTENDED TO REFLECT THE VIEWS, PREFERENCES, OR POLICIES OF PARSONS BRINCKERHOFF, THE NATIONAL COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES, THE TRANSPORTATION RESEARCH BOARD OR ANY OF ITS COMMITTEES OR SPONSORING ORGANIZATIONS.

COMMENTS ON THIS PRESENTATION

COMMENT SLIDES WITH TEXT IN THIS YELLOW COLOR WERE NOT ORIGINALLY PROVIDED FOR THE PRESENTATION, BUT ARE INCLUDED FOR THIS WEB VERSION TO FACILITATE UNDERSTANDING IN THE ABSENCE OF THE PRESENTER'S NARRATION.

THE PURPOSE OF THIS PRESENTATION IS TO ILLUSTRATE THE VARIOUS SIGNING SCENARIOS FOR OPTION LANE SIGNING IN THE UNITED STATES. FROM THIS MATERIAL, THE READER IS INVITED TO UNDERSTAND THE PRESSING NEED FOR A SINGLE SIGNING SOLUTION FOR OPTION LANES THAT IS EXCLUSIVELY USED FOR OPTION LANES AND IS DIFFERENT FROM SIGNING USED FOR MANDATORY MOVEMENT LANES, YET RETAINS A PROPER UNDERSTANDING OF THE USE OF STANDARD UP AND DOWN ARROWS AND THE ORIENTATION OF SUCH ARROWS.

COMMENTS ON THIS PRESENTATION - GLOSSARY

IN THIS PRESENTATION, TWO TERMS ARE USED THAT MAY APPEAR TO BE INTERCHANGEABLE.

“GORE” REFERS TO THE GENERAL AREA BETWEEN THE THEORETICAL GORE AND THE PHYSICAL SEPARATION BETWEEN THE MAINLINE LANES AND EXITING LANE(S). WHEN USED HERE, IT DOES NOT REFER TO ANY SPECIFIC PORTION OR POINT WITHIN THE GORE AREA.

“DEPARTURE POINT” IS ANOTHER MEANS OF REFERRING TO THE THEORETICAL GORE, THAT IS, THE UPSTREAM POINT AT WHICH THE SOLID WHITE PAVEMENT MARKINGS FOR THE GORE STRIPING BEGIN TO DIVIDE.

GEOMETRIC DESIGN

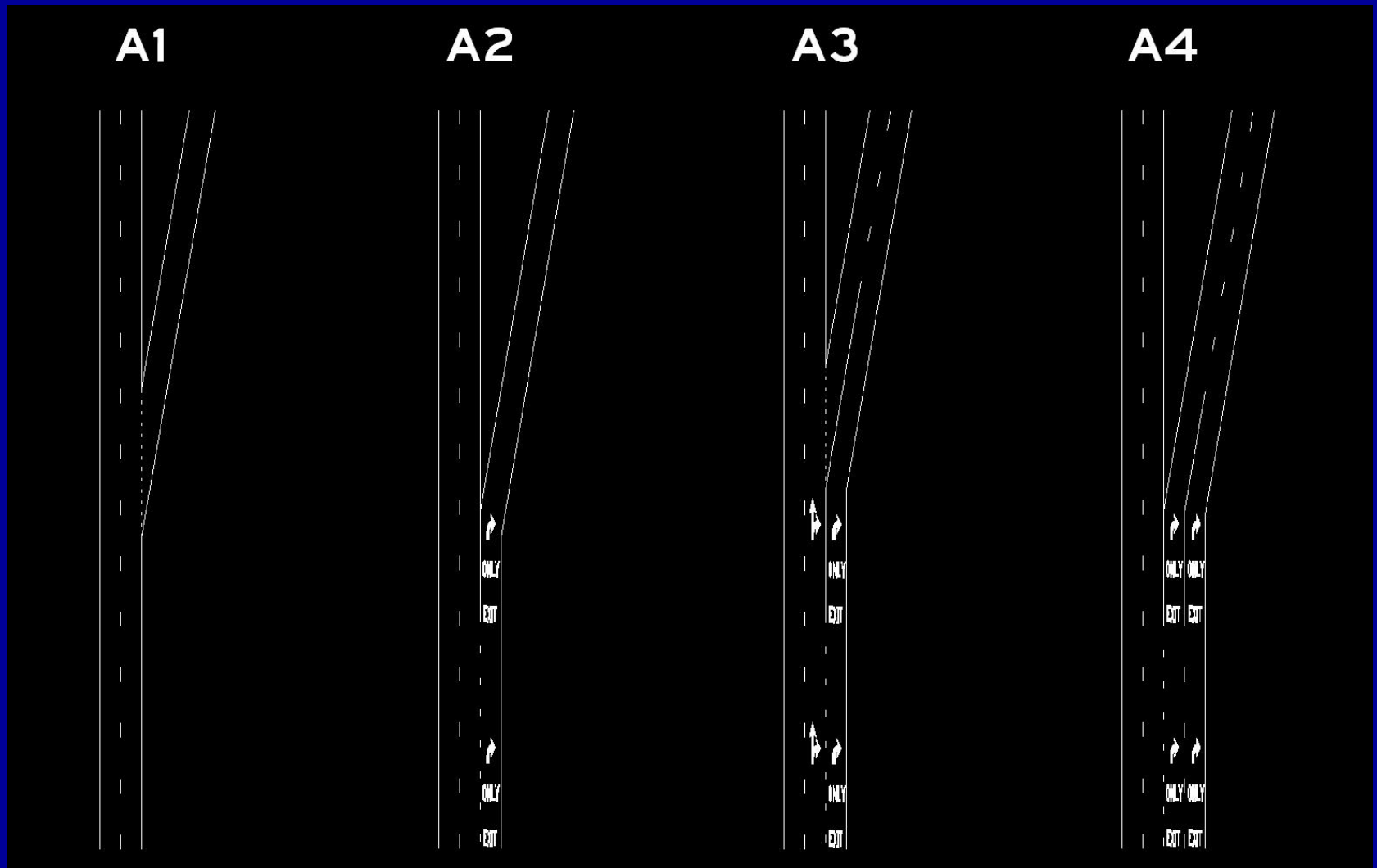


PHOTO SURVEY

PHOTO SURVEY

LOCATION 1

LOCATION 1



LOCATION 1



PHOTO SURVEY

LOCATION 2

LOCATION 2



LOCATION 2



LOCATION 2



LOCATION 2



LOCATION 2



COMMENTS ON COMPARISON OF LOCATIONS 1 & 2

THE SIGNING USED FOR LOCATION 1 IS IDENTICAL TO THE SIGNING USED FOR LOCATION 2, BUT THE GEOMETRICS FOR EACH LOCATION ARE ENTIRELY DIFFERENT.

THIS PROBLEM IS ESPECIALLY EVIDENT IN LOCATION 2, WHERE A LACK OF PROPER PAVEMENT MARKING AND THE VERTICAL CURVE COMBINE TO CREATE AN UNREADABLE GEOMETRICS THAT MUST BE SUPPLEMENTED WITH EFFECTIVE SIGNING, LEST MOTORISTS PERCEIVE THE SECOND LANE FROM THE RIGHT AS AN OPTION LANE.

HOWEVER, THE USE OF THE WHITE ARROW FOR THE SECOND LANE FROM THE RIGHT WOULD BE ACCEPTABLE IN THE CASE OF LOCATION 1, ASSUMING THAT THE EXIT ONLY PANEL IS USED IN CONJUNCTION WITH THE ARROW OVER THE RIGHT LANE AT THAT LOCATION.

PHOTO SURVEY

LOCATION 3

LOCATION 3



LOCATION 3



LOCATION 3



LOCATION 3



LOCATION 3



PHOTO SURVEY

LOCATION 4

LOCATION 4



LOCATION 4



LOCATION 4



COMMENTS ON THIS PRESENTATION

BASED ON THE SIGNING FROM LOCATION 3, WHAT GEOMETRICS WOULD YOU EXPECT TO SEE HERE AT LOCATION 4?

WOULD YOU EXPECT TO SEE TWO MANDATORY MOVEMENT LANES AT THE DEPARTURE POINT?

LOCATION 4



LOCATION 4



LOCATION 4 IN COMPARISON TO LOCATION 3



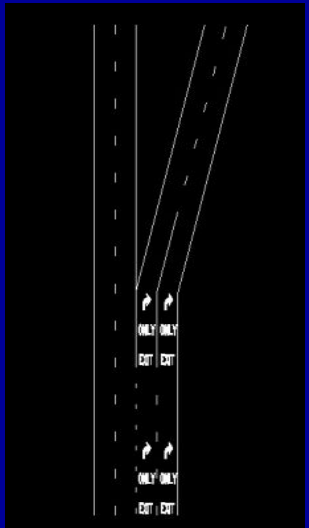
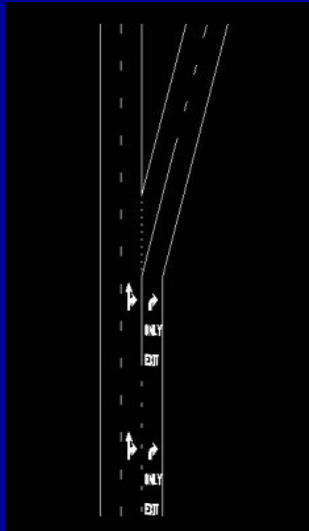
COMMENTS ON COMPARISON OF LOCATIONS 3 & 4

THE SIGNING FOR LOCATION 3 IS A CORRECT IMPLEMENTATION OF THE DOUBLE EXIT ONLY SIGN INDICATING A MANDATORY MOVEMENT FOR THE RIGHT TWO LANES.

MOTORISTS WHO ENCOUNTER THE SIGNING IN LOCATION 4 MAY MAKE ERRATIC MOVEMENTS OUT OF THE MIDDLE LANE WHEN APPROACHING THE DEPARTURE POINT, UNSURE OF THE LANE USE CONTROL AT THE GORE. THE SIGNING FOR LOCATION 4 SHOULD NOT MATCH THE SIGNING FOR LOCATION 3, AS THE GEOMETRY OF THE TWO SITUATIONS IS ENTIRELY DIFFERENT.

NOTE THAT THE GEOMETRY OF LOCATION 4 IS IDENTICAL TO THE GEOMETRY OF LOCATION 1 AND THE GEOMETRY OF LOCATION 3 IS IDENTICAL TO THE GEOMETRY OF LOCATION 2.

LOCATION COMPARISON MATRIX - NOTE GEOMETRY AND SIGNS



MANY OPTIONS . . .

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as **EXIT ONLY**
 - present practice of approximately 15 states
including IL, IN, many older installations in other states

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
 - present practice of several states, including WI
 - displayed in the 2009 MUTCD, figure 2E-11

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
 - proposed by the NCUTCD to amend the NPA
 - sporadically implemented in several states, sometimes in conjunction with the method above.

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance and at the gore
 - present practice (often documented) of approximately 15 states, including WA, OR, CA, UT, AZ, CO, GA, FL, NC, used in MN, MS, TX

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance and at the gore
- signing of the EXIT ONLY lane as an option lane at the gore
 - inconsistently applied by several states, including KS
 - displayed in the 2009 MUTCD, Figure 2E-12

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance and at the gore
- signing of the EXIT ONLY lane as an option lane at the gore
- signing of the option lane in advance using two downward-pointing or angled arrows from separate sign panels
 - specifically prohibited in the 2009 MUTCD
 - practice used in extensively in MD, OH, KS and other states

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance and at the gore
- signing of the EXIT ONLY lane as an option lane at the gore
- signing of the option lane in advance using two downward-pointing or angled arrows from separate sign panels
- signing of the option lane using the new method in the 2009 MUTCD
 - experimental in a few states, including WI

MANY OPTIONS . . .

- no signing of the option lane in advance or at the gore
signing the mandatory lane in advance and at the gore as EXIT ONLY
- no signing of the option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance
signing of the option lane as an EXIT ONLY lane at the gore
- signing of the option lane as an option lane in advance and at the gore
- signing of the EXIT ONLY lane as an option lane at the gore
- signing of the option lane in advance using two downward-pointing or angled arrows from separate sign panels
- signing of the option lane using the new method in the 2009 MUTCD

**THREE OF THE METHODS ABOVE ARE DISPLAYED IN THE
2009 MUTCD, YET NONE OF THE 2009 MUTCD OPTIONS
REFLECT A CONSISTENT PRACTICE**

COMMENTS ON THE MANY OPTIONS BEING USED

THERE ARE THREE PROBLEMS IN PRACTICE TODAY.

- **THE USE OF THE IDENTICAL SIGNING SCENARIOS AT LOCATIONS WITH DIFFERING GEOMETRICS.**
- **THE USE OF DIFFERENT SIGNING SCENARIOS AT LOCATIONS WITH IDENTICAL GEOMETRICS.**
- **THE USE OF UPSTREAM SIGNING THAT PRESENTS A DIFFERENT MESSAGE THAN THE DOWNSTREAM SIGNING ALONG A SEGMENT WITH A CONSISTENT CROSS SECTION, SUCH THAT THE LANE ASSIGNMENTS ALONG THE SEGMENT AND AT THE DEPARTURE POINT ARE NOT CLEARLY IDENTIFIED OR ARE IDENTIFIED IN DIFFERENT WAYS.**

Manual on Uniform Traffic Control Devices

for Streets and Highways

2009 Edition



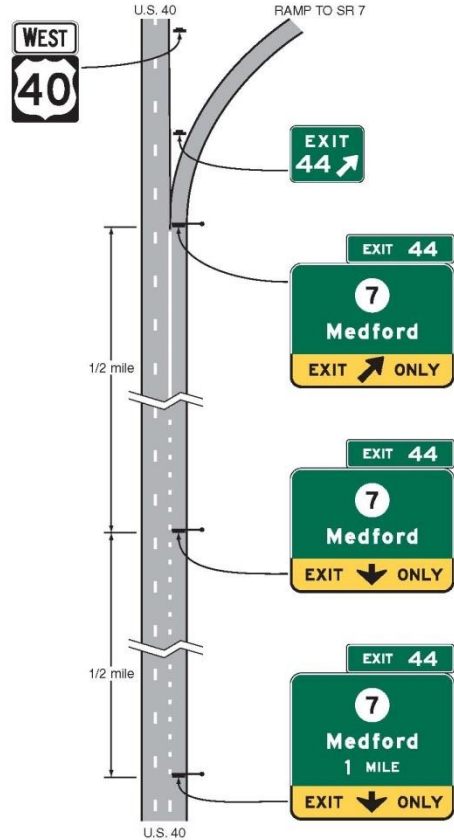
U.S. Department of Transportation
Federal Highway Administration

2009 MUTCD FIGURES - Figure 2E-16

2009 Edition

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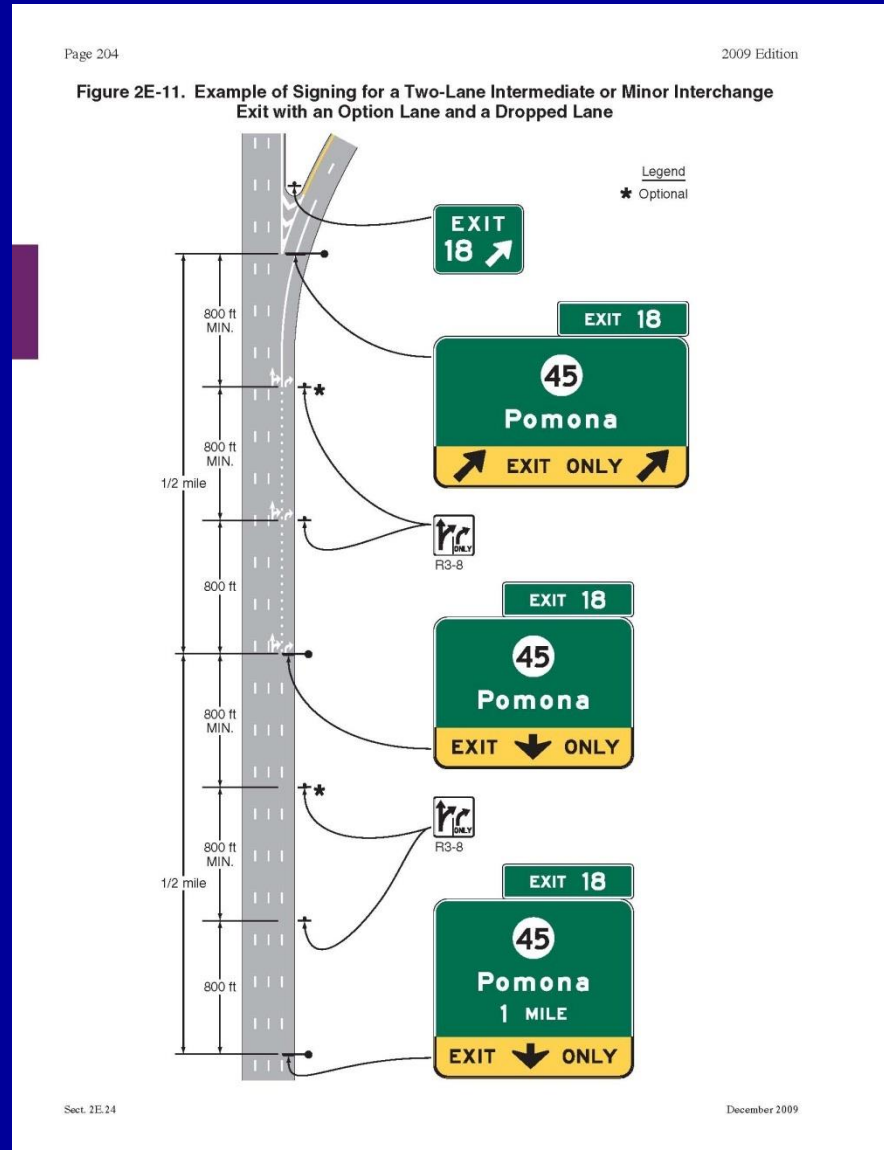
Figure 2E-16. Guide Signs for a Single-Lane Exit to the Right with a Dropped Lane



December 2009

Sect. 2E.15

2009 MUTCD FIGURES - Figure 2E-11



Sect. 2E.24

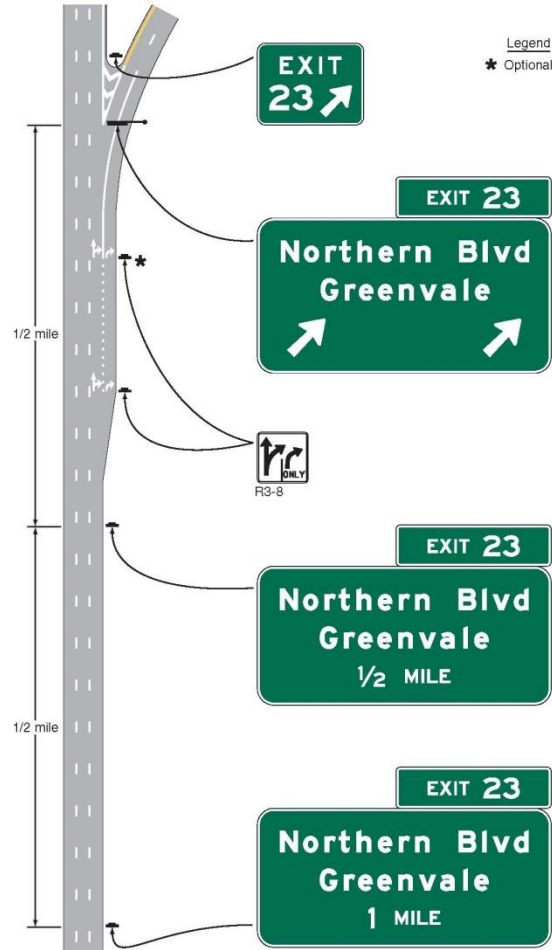
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2009 MUTCD FIGURES - Figure 2E-12

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Figure 2E-12. Example of Signing for a Two-Lane Intermediate or Minor Interchange Exit with Option and Auxiliary Lanes



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Sect. 2E.24

COMMENTS ON FIGURES 2E-11 AND 2E-12

NOTE THAT FIGURE 2E-12 SHOWS AN IMPLEMENTATION OF SIGNING THAT IS IDENTICAL TO THE SIGNING SHOWN IN LOCATION 1 AND LOCATION 2 OF THE PHOTO SURVEY.

THERE IS NO DIFFERENCE IN THE DEPARTURE POINT GEOMETRY BETWEEN FIGURES 2E-11 AND 2E-12. THE SIGNING FOR EACH FIGURE, REGARDLESS OF THE UPSTREAM LANE CONFIGURATION, SHOULD BE IDENTICAL. NEITHER SIGNING SCENARIO SHOWN, HOWEVER, SATISFIES A CLEAR REPRESENTATION OF THE DEPARTURE POINT GEOMETRY.

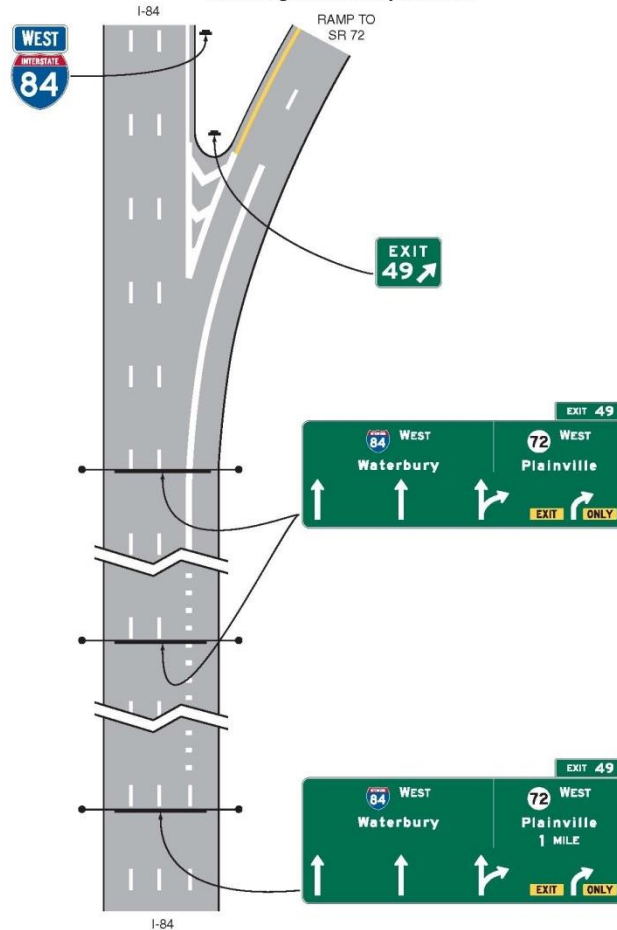
THE FOLLOWING FIGURE (2E-4) DISPLAYS A NEW METHOD FOR SIGNING OPTION LANES. ITS EFFECTIVENESS COMPARED TO A MODIFICATION OF FIGURE 2E-12 HAS NOT BEEN CLEARLY DEMONSTRATED.

2009 MUTCD FIGURES - Figure 2E-4

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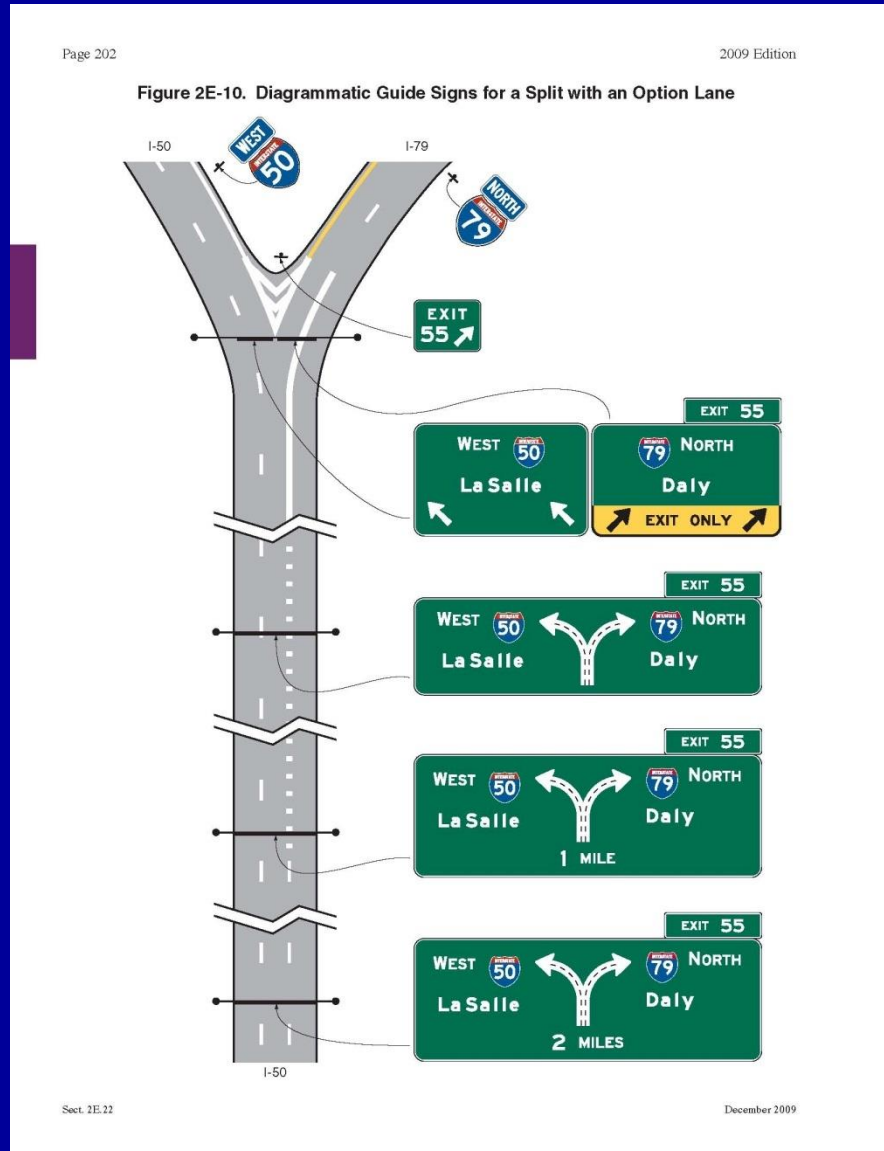
Figure 2E-4. Overhead Arrow-per-Lane Guide Signs for a Two-Lane Exit to the Right with an Option Lane



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Sect. 2E.21

2009 MUTCD FIGURES - Figure 2E-10



2009 MUTCD FIGURES - Figure 2E-14

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Figure 2E-14. Guide Signs for a Split with Dedicated Lanes



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Section 2E.15

COMMENTS ON FIGURES 2E-10 AND 2E-14

FOR THE PURPOSE OF THIS PRESENTATION, MAJOR SPLITS WITH OPTION LANES WILL BE TREATED NO DIFFERENTLY THAN OPTION LANES AT SERVICE INTERCHANGES (FIGURES 2E-11 AND 2E-12). IN PRACTICE, THE MAJOR SPLIT IS LIKELY TO REQUIRE PULL-THROUGH SIGNING.

WHILE FIGURES 2E-11 AND 2E-12 USE DIFFERENT SIGNING FOR THE SAME GEOMETRY, FIGURES 2E-10 AND 2E-14 USE IDENTICAL SIGNING FOR DIFFERENT GEOMETRIC CONFIGURATIONS.

FOR MAJOR SPLITS, THE SIGNING AT THE DEPARTURE POINT NEEDS TO CLEARLY REFLECT THE PRESENCE OF AN OPTION LANE. THIS DIFFERENCE IS NOT EVIDENT WHEN COMPARING THE SIGNING PRESENTED IN FIGURES 2E-10 AND 2E-14.



THE PRACTITIONER WILL BE FAR TOO EASILY CONFUSED BY THE MYRIAD OPTIONS FOR SIMILAR GEOMETRICS.

WE MUST THEN EXPECT EVEN MORE CONFUSION ON THE PART OF THE MOTORING PUBLIC.

RESEARCH IS NEEDED TO IDENTIFY A SINGLE BEST OPTION FOR SIGNING OPTION LANES.

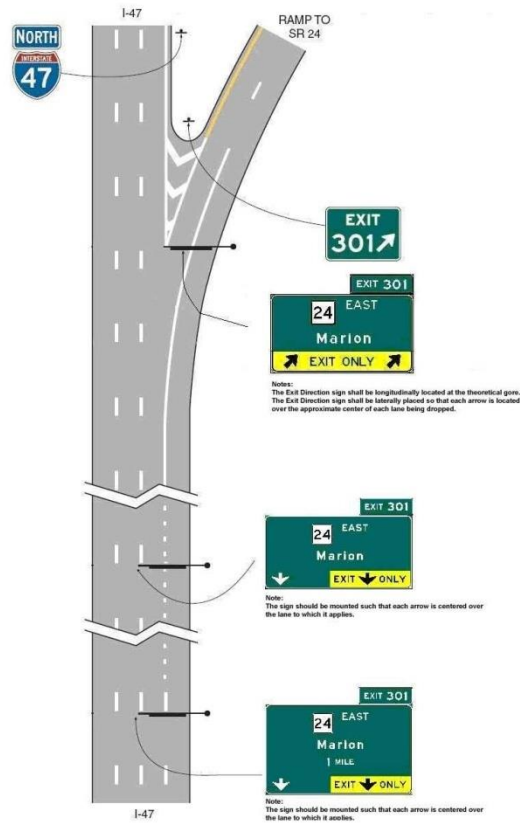
COMMENTS ON THE RECOMMENDATION

THE FOLLOWING FIGURE ILLUSTRATES A RECOMMENDATION MADE TO FHWA BY THE NATIONAL COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDED IN THE NCUTCD OFFICIAL COMMENTS TO THE FHWA ON THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES NOTICE OF PROPOSED AMENDMENT, ISSUED IN 2008.

THE RED CIRCLES INCLUDED ON THE SIGNING ARE INTENDED TO DRAW THE READER'S ATTENTION TO THE USE OF TWO DIFFERENT INDICATIONS OF LANE USE CONTROL, ONE IN ADVANCE AND THE OTHER AT THE DEPARTURE POINT.

2009 MUTCD FIGURES - NCUTCD RECOMMENDATION from June 2008

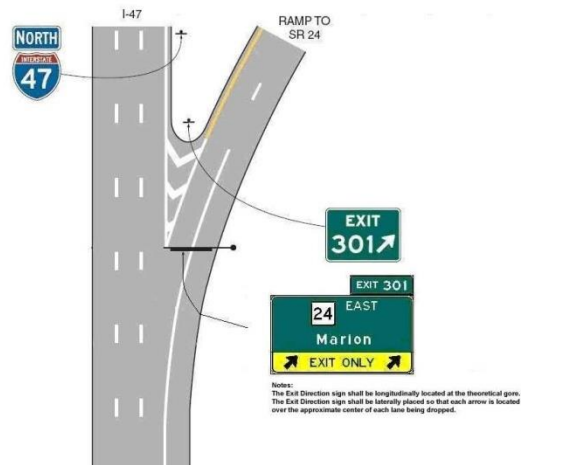
Figure 2E-J Example of Text Message Sign for a Two Lane Exit with an Option Lane for Other Than Freeway to Freeway Interchange



2009 MUTCD FIGURES - NCUTCD RECOMMENDATION from June 2008

Figure 2E-J

Example of Text Message Sign for a Two Lane Exit with an Option Lane for Other Than Freeway to Freeway Interchange



2009 MUTCD FIGURES - NCUTCD RECOMMENDATION from June 2008

Figure 2E-J

Example of Text Message Sign for a Two Lane Exit with an Option Lane for Other Than Freeway to Freeway Interchange



COMMENTS ON THE RECOMMENDATION

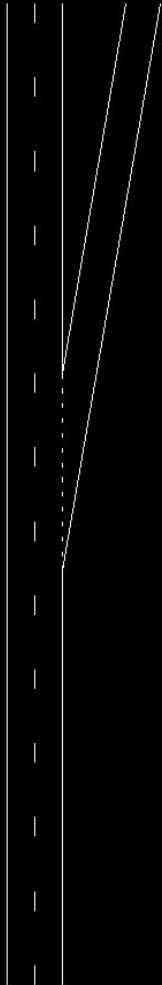
THIS FIGURE IS ESSENTIALLY A MODIFICATION OF FIGURE 2E-12, IN THAT EXIT ONLY SIGNING HAS BEEN ADDED TO THE RIGHT-MOST LANE AND INCLUDED FOR BOTH LANES AT THE DEPARTURE POINT.

THE ADVANCE SIGNING SHOWN IN THIS FIGURE CLEARLY AND CORRECTLY DEPICTS THAT THE SECOND LANE FROM THE RIGHT IS NOT A MANDATORY MOVEMENT LANE. HOWEVER, THE SIGNING AT THE GORE DEPICTS THAT THERE ARE TWO MANDATORY MOVEMENT LANES. THIS COULD BE MISINTERPRETED FROM A DISTANCE, AS WAS ILLUSTRATED IN PHOTO SURVEY LOCATION 4.

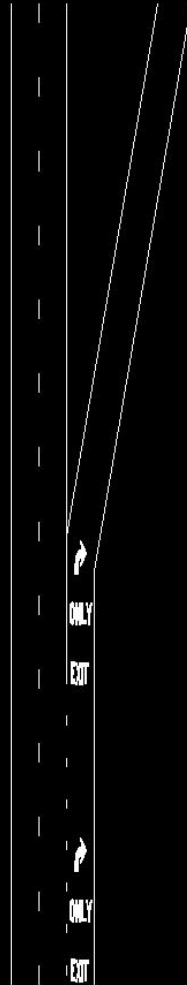
THIS RECOMMENDATION DOES NOT ADDRESS THE DIFFERENCE BETWEEN A DOUBLE MANDATORY EXITING LANES CONFIGURATION (SLIDES 3 & 55, DEPICTION A4) AND AN OPTION LANE CONFIGURATION (DEPICTION A3).

FOUR GEOMETRIC DESIGN OPTIONS ...

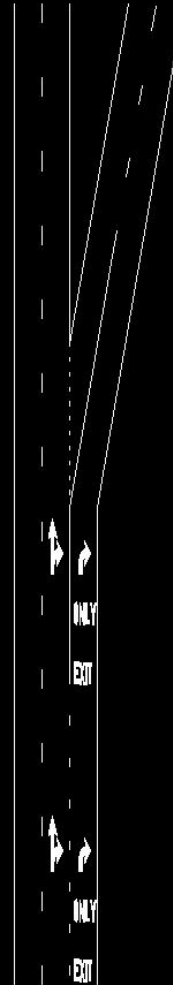
A1



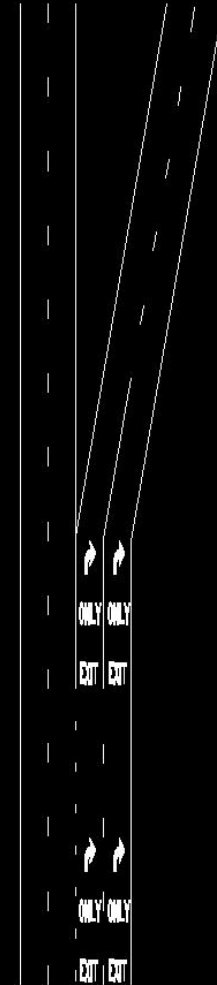
A2



A3



A4



FOUR GEOMETRIC DESIGN OPTIONS . . .

RECALL . . . THE THREE PROBLEMS IN PRACTICE TODAY.

- THE USE OF THE IDENTICAL SIGNING SCENARIOS AT LOCATIONS WITH DIFFERING GEOMETRICS.
- THE USE OF DIFFERENT SIGNING SCENARIOS AT LOCATIONS WITH IDENTICAL GEOMETRICS.
- THE USE OF UPSTREAM SIGNING THAT PRESENTS A DIFFERENT MESSAGE THAN THE DOWNSTREAM SIGNING ALONG A SEGMENT WITH A CONSISTENT CROSS-SECTION, SUCH THAT THE LANE ASSIGNMENTS ALONG THE SEGMENT AND AT THE DEPARTURE POINT ARE NOT CLEARLY IDENTIFIED OR ARE IDENTIFIED IN DIFFERENT WAYS.

FOUR GEOMETRIC DESIGN OPTIONS . . . FOUR *EXCLUSIVE* SIGNING SCENARIOS

A1



A2



A3



A4



COMMENTS ON EXCLUSIVE USE OF SPECIFIC SIGNS

ONE CHANGE CAN BE MADE TO THE GORE SIGN FROM THE NCUTCD RECOMMENDATION TO PROVIDE A UNIFORM METHOD OF SIGNING THE OPTION LANE FOR ANY GEOMETRY THAT EMPLOYS OPTION LANES.

THE SIGN ILLUSTRATED ON THE FOLLOWING SLIDES, IF USED IN THE LOCATION SHOWN, COULD BE USED IN CONJUNCTION WITH A PULL-THROUGH SIGN. THE PULL THROUGH SIGN COULD FEATURE NO DOWNWARD-POINTING ARROWS OR COULD FEATURE ONE DOWNWARD-POINTING ARROW FOR EACH LANE, WITHOUT CONFLICTING WITH THE ARROWS OVER THE LANES ON THE RAMP, AS THE LOCATION OF THE SIGN IS AT THE THEORETICAL GORE AND SEPARATED FROM THE MAINLINE.

THE DESIGN OF THE SIGN PERMITS EACH ARROW TO BE CENTERED OVER THE LANE DIRECTED BY THE ARROW.

2009 MUTCD FIGURES - NCUTCD RECOMMENDATION from June 2008



PRACTICE-BASED OPTION LANE RECOMMENDATION

Figure 2E-J

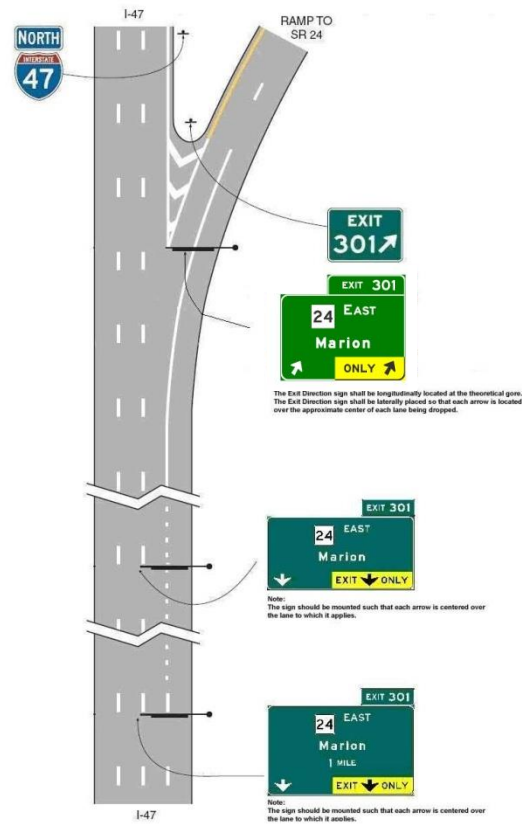
Example of Text Message Sign for a Two Lane Exit with an Option Lane for Other Than Freeway to Freeway Interchange



PRACTICE-BASED OPTION LANE RECOMMENDATION

Figure 2E-J

Example of Text Message Sign for a Two Lane Exit with an Option Lane for Other Than Freeway to Freeway Interchange



PRACTICE-BASED OPTION LANE RECOMMENDATION



EXCLUSIVE USE OF SPECIFIC SIGNS . . . WORLDWIDE



QUESTIONS? COMMENTS?

PLEASE CONTACT

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