

**Approved by NCUTCD Council June 25, 2004**

**MTC Sponsor Ballot**

**Changes to Accommodate Older Driver Recommendations**

Additions to MUTCD language are indicated by underline and a vertical line in the margin.

Explanations for the changes are presented in the accompanying report.

**OLDER DRIVER REPORT RECOMMENDATION – INTERSECTIONS E.4c**

**Section 3B.19 Pavement Word and Symbol Markings**

Support:

Word and symbol markings on the pavement are used for the purpose of guiding, warning, or regulating traffic. Symbol messages are preferable to word messages. Examples of standard word and arrow pavement markings are shown in Figures 3B-20 and 3B-21.

**Standard:**

**Word and symbol markings shall be white, except as otherwise noted in this Section.**

Guidance:

Letters and numerals should be 1.8 m (6 ft) or more in height.

Word and symbol markings should not exceed three lines of information.

If a pavement marking word message consists of more than one line of information, it should read in the direction of travel. The first word of the message should be nearest to the road user.

Except for the two opposing arrows of a two-way left-turn lane marking (see Figure 3B-7),

the longitudinal space between word or symbol message markings, including arrow markings,

should be at least four times the height of the characters for low-speed roads, but not more than

ten times the height of the characters under any conditions.

The number of different word and symbol markings used should be minimized to provide effective guidance and avoid misunderstanding.

Except as noted in the Option, pavement word and symbol markings should be no more than

one lane in width.

Option:

The SCHOOL word marking may extend to the width of two approach lanes (see Section 7C.06).

Guidance:

When the SCHOOL word marking is extended to the width of two approach lanes, the characters should be 3 m (10 ft) or more in height (see Section 7C.06).

Pavement word and symbol markings should be proportionally scaled to fit within the width of the facility upon which they are applied.

Option:

On narrow, low-speed shared-use paths, the pavement words and symbols may be smaller than suggested, but to the relative scale.

The International Symbol of Accessibility parking space markings may be placed in each parking space designated for use by persons with disabilities. A blue background with white

border may supplement the wheelchair symbol as shown in Figure 3B-19.

**Standard:**

**Where through traffic lanes approaching an intersection become mandatory turn lanes,**

**lane-use arrow markings (see Figure 3B-21) shall be used and shall be accompanied by**

**standard signs.**

**Lane use, lane reduction, and wrong-way arrow markings shall be designed as shown**

**in Figure 3B-21.**

Guidance:

Where through lanes become mandatory turn lanes, signs or markings should be repeated as

necessary to prevent entrapment and to help the road user select the appropriate lane in advance

of reaching a queue of waiting vehicles.

Option:

Lane-use arrow markings (see Figure 3B-21) may be used to convey either guidance or mandatory messages.

The ONLY word marking (see Figure 3B-20) may be used to supplement lane-use arrow markings (see Figure 3B-22).

In situations where a lane reduction transition occurs, the lane reduction arrow markings shown in Figure 3B-21 may be used.

Guidance:

Where crossroad channelization or ramp geometrics do not make wrong-way movements difficult, a lane-use arrow should be placed in each lane of an exit ramp near the crossroad

terminal where it will be clearly visible to a potential wrong-way road user (see Figure 3B-23).

Option:

The wrong-way arrow markings shown in Figure 3B-21 may be placed near the downstream

terminus of a ramp as shown in Figures 3B-23 and 3B-24 to indicate the correct direction of

traffic flow and to discourage drivers from traveling in the wrong direction.

A yield-ahead triangle symbol or YIELD AHEAD word pavement marking may be used on

approaches to intersections where the approaching traffic will encounter a YIELD sign at the intersection (see Figure 3B-25).

Where opposing offset channelized left turn lanes exist, lane use arrows may be placed near

the downstream terminus of the offset left turn lanes to reduce wrong way movements.

Support:

Lane-use arrow markings are often used to provide guidance in turn bays (see Figure 3B-22),

where turns may or may not be mandatory, and in two-way left-turn lanes (see Figure 3B-7).

Option:

Word and symbol markings may include, but are not limited to, the following. Other words

or symbols may also be used under certain conditions.

A. Regulatory:

1. STOP
2. RIGHT (LEFT) TURN ONLY
3. 40 km/h (25 MPH)
4. Arrow Symbols

B. Warning:

1. STOP AHEAD
2. YIELD AHEAD
3. YIELD AHEAD Triangle Symbol
4. SCHOOL XING
5. SIGNAL AHEAD
6. PED XING
7. SCHOOL
8. R X R
9. BUMP
10. HUMP

C. Guide:

1. US 40
2. STATE 135
3. ROUTE 40

**Standard:**

**Except at the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line (see Section 3B.16) and STOP sign (see Section**

**2B.04). At the ends of aisles in parking lots, the word STOP shall not be used on the pavement unless accompanied by a stop line.**

**The word STOP shall not be placed on the pavement in advance of a stop line, unless**

**every vehicle is required to stop at all times.**

**The yield-ahead triangle symbol or YIELD AHEAD word pavement marking shall not**

be used unless a YIELD sign (see Section 2B.08) is in place at the intersection. The yield sign symbol marking shall be as shown in Figure 3B-25.

#### **OLDER DRIVER REPORT RECOMMENDATION – INTERSECTIONS E.4d**

##### **Section 3B.08 Extensions Through Intersections or Interchanges**

###### **Standard:**

**Pavement markings extended into or continued through an intersection or interchange area shall be the same color and at least the same width as the line markings they extend (see Figure 3B-11).**

###### **Option:**

A normal line may be used to extend a wide line through an intersection.

###### **Guidance:**

Where highway design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an intersection or interchange, such as at offset, skewed, complex, or multilegged intersections, on curved roadways, or where multiple turn lanes are used, or where offset left turn lanes cause driver confusion, dotted line markings should be used to extend longitudinal line markings through an intersection or interchange area.

###### **Option:**

Dotted edge line extensions may be placed through intersections or major driveways.

###### **Guidance:**

Where greater restriction is required, solid lane lines or channelizing lines should be extended into or continued through intersections or major driveways. However, edge lines should not be extended into or continued through intersections or major driveways as solid lines. A single line of equal width to one of the lines of the double line should be used to extend a double line through an intersection.

To the extent possible, pavement marking extensions through intersections should be designed in a manner that minimizes potential confusion for drivers in adjacent or opposing lanes.

#### **OLDER DRIVER REPORT RECOMMENDATION – INTERSECTIONS F.2**

##### **Section 3B.21 Curb Markings**

###### **Support:**

Curb markings are most often used to indicate parking regulations or to delineate the curb.

###### **Standard:**

**Signs shall be used with curb markings in those areas where curb markings are frequently obliterated by snow and ice accumulation unless the no parking zone is controlled by statute or local ordinance.**

**Where curbs are marked, the colors shall conform to the general principles of**

**markings (see Section 3A.04).**

**Guidance:**

Except as noted in the Option, when curb markings are used without signs to convey parking regulations, a legible word marking regarding the regulation (such as “No Parking” or “No Standing”) should be placed on the curb.

**Option:**

Curb markings without word markings or signs may be used to convey a general prohibition by statute of parking within a specified distance of a STOP sign, driveway, fire hydrant, or crosswalk.

**Guidance:**

Retroreflective solid yellow markings should be placed on the noses of raised medians and curbs of islands that are located in the line of traffic flow where the curb serves to channel traffic to the right of the obstruction.

Retroreflective solid white markings should be used when traffic may pass on either side of the island.

**Option:**

Local highway agencies may prescribe special colors for curb markings to supplement standard signs for parking regulation.

**Support:**

Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs (see Sections 2B.39 through 2B.41).

Where the curbs of the islands become parallel to the direction of traffic flow, it is not necessary to mark the curbs unless an engineering study indicates the need for this type of delineation.

Curbs at openings in a continuous median island need not be marked unless an engineering study indicates the need for this type of marking.

**Option**

Retroreflective or internally illuminated RPMs may be used as a substitute for or a supplement to retroreflective white and yellow markings placed on the pavement in front of the curb and/or on top of the curbed noses of raised medians and curbs of islands.

**OLDER DRIVER REPORT RECOMMENDATION – INTERCHANGES A.4a**

**Section 3B.05 Other White Longitudinal Pavement Markings**

**Standard:**

**A channelizing line shall be a wide or double solid white line.**

Option:

Channelizing lines may be used to form channelizing islands where traffic traveling in the same direction is permitted on both sides of the island.

**Standard:**

**Other pavement markings in the channelizing island area shall be white.**

Support:

Examples of channelizing line applications are shown in Figures 3B-8, 3B-9, and 3B-13. Channelizing lines at exit ramps as shown in Figure 3B-8 define the neutral area, direct exiting traffic at the proper angle for smooth divergence from the main lanes into the ramp, and

reduce the probability of colliding with objects adjacent to the roadway.

Channelizing lines at entrance ramps as shown in Figure 3B-9 promote reasonably safe and

efficient merging with the through traffic.

**Standard:**

**For exit ramps, channelizing lines shall be placed along the sides of the neutral area adjacent to the through traffic lane and the ramp lane. With a parallel deceleration lane, a**

**lane line shall be extended from the beginning of the channelizing line upstream for a**

**distance of one-half the length of the full-width deceleration lane as shown in Figure 3B-8.**

Option:

White chevron markings may be placed in the neutral area for special emphasis as shown in

Figure 3B-8.

For exit ramps, both the channelizing lines and the optional chevron markings may be supplemented with retroreflective or internally illuminated RPMs for added visibility.

Guidance:

For entrance ramps, a channelizing line should be placed along the side of the neutral area

adjacent to the ramp lane.

For entrance ramps with a parallel acceleration lane, a lane line should be extended from the

end of the channelizing line for a distance of one-half the length of the full-width acceleration

lane as shown in Figure 3B-9.

Option:

For entrance ramps with a tapered acceleration lane, lane line markings may be placed to extend the channelizing line, but not beyond a point where the tapered lane meets the near side of

the through traffic lane as shown in Figure 3B-9.

Lane drop markings as shown in Figure 3B-10 may be used in advance of lane drops at exit

ramps to distinguish a lane drop from a normal exit ramp or from an auxiliary lane. The lane drop marking may consist of a wide, white dotted line with line segments 0.9 m (3 ft) in length separated by 2.7 m (9 ft) gaps.

Guidance:

If used, lane drop markings should begin 800 m (0.5 mi) in advance of the theoretical gore point.

Option:

Where lane changes might cause conflicts, a wide solid white channelizing line may extend upstream from the theoretical gore point.

## **OLDER DRIVER REPORT RECOMMENDATION ROADWAY CURVATURE AND PASSING ZONES A.2**

### **Section 3B.13 Raised Pavement Markers Supplementing Other Markings**

Guidance:

The use of raised pavement markers for supplementing longitudinal line markings should conform to the following:

#### A. Lateral Positioning

1. When supplementing double line markings, pairs of raised pavement markers placed laterally in line with or immediately outside of the two lines should be used.
2. When supplementing wide line markings, pairs of raised pavement markers placed laterally adjacent to each other should be used.

#### B. Longitudinal Spacing

1. When supplementing solid line markings, raised pavement markers at a spacing no greater than  $N$  (see Section 3B.11) should be used, except when supplementing left edge line markings, a spacing of no greater than  $N/2$  should be used. Raised markers should not supplement right edge line markings.
2. When supplementing broken line markings, a spacing no greater than  $3N$  should be used. However, when supplementing broken line markings identifying reversible lanes, a spacing of no greater than  $N$  should be used.
3. When supplementing dotted line markings, a spacing appropriate for the application should be used.
4. When supplementing longitudinal line markings through at-grade intersections, one raised pavement marker for each short line segment should be used.
5. When supplementing edge line extensions through freeway interchanges, a spacing of no greater than  $N$  should be used.

Option:

Raised pavement markers also may be used to supplement other markings for channelizing islands or approaches to obstructions.

To improve the visibility of horizontal curves, centerlines may be supplemented with retroreflective or internally illuminated RPMs for the entire curved section as well as for a 5

second travel time distance in advance of the curve.