National Committee on
Uniform Traffic Control Devices

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Item Number: 26A-MKG-02

NCUTCD PROPOSAL FOR CHANGES TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

COMMITTEE / TASK FORCE:	Markings Technical Committee
ITEM NUMBER:	26A-MKG-02
TOPIC:	Orange Color Supplemental Markings for TTC Zones
ORIGIN OF REQUEST:	Orange Markings MCTF
AFFECTED SECTIONS OF MUTCD:	3A.03, 6J.02

DEVELOPMENT HISTORY:
Approved by TTC TC: 01/07/2026
Approved by Markings TC 01/08/2026
Approved by NCUTCD Council: .....

This is a proposed change to the MUTCD that has been developed by a technical committee, joint committee, or joint task force of the NCUTCD. The NCUTCD is distributing this to its sponsoring organizations for review and comment. Sponsor comments will be considered in revising the proposal prior to NCUTCD Council consideration. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, options, or support. If approved by the NCUTCD Council, the recommended changes will be submitted to FHWA for consideration for inclusion in a future MUTCD revision. The MUTCD can be revised only through the federal rulemaking process.

SUMMARY:
The Markings and Temporary Traffic Control technical committees recommend changes to Section 3A.03 Colors, by assigning orange as a standard pavement marking color and permitting its use to supplement white and yellow longitudinal pavement markings installed in highway TTC zones (6J.01). The supplemental use of orange-color increases TTC zone conspicuity, lane recognition, and driver awareness for human and camera-vision based road users, especially when utilized in multi-stage roadway work zones (Section 1A.03).

DISCUSSION:
The use of supplemental pavement marking colors to assist motor vehicle operators in recognizing specific traffic designations is currently applied to bike lanes (green), ETC toll plaza lanes (purple), and for parking spaces for the disabled (blue). The role of contrast black markings on light colored pavements improves lane integrity and conspicuity, especially in high-glare environmental situations. The demonstrated benefits and adoption of these systemic lane marking system enhancements led state transportation agencies to consider the potential benefit of orange as a supplemental or primary TTC lane marking color. Orange is ubiquitously recognized in the United States as a TTC zone color. In 2013, FHWA granted Wisconsin DOT permission to experiment with orange longitudinal pavement markings for use within temporary traffic control zones. The experiment contrasted orange versus white solid lane markings installed to function during winter months when snow and salt diminished motor

vehicle operator recognition of white lane markings. The Kentucky Transportation Cabinet and the North Texas Tollway Authority (NTTA) also were permitted to experiment with orange as a stand-alone TTC zone treatment.

In 2020, Caltrans was granted permission to experiment with orange markings as a supplemental contrast marking in TTC zones. Michigan DOT installed stand-alone orange markings in 2022 to facilitate evaluation by machine vision ADAS and AV technology developers. In 2023, Washington State DOT and Indiana DOT received permission to experiment with orange markings as supplemental contrast pavement markings.

Experiments with orange as a supplemental contrast pavement marking demonstrated strong road user preference. Nearly 90% of motorists surveyed indicated that orange supplemental pavement markings increased awareness of the TTC zone. A large majority of motorists surveyed indicated that orange supplemental markings increased awareness of their operational speed and improved their ability to stay within the TTC zone designated lane. Eight in 10 motorists surveyed in Indiana said that the orange supplemental marking was more visible than either the white or yellow markings. Nearly 90% of motorists surveyed in Washington State "wanted to see orange striping used in work zones."

Agencies that installed orange markings as a supplemental or contrast treatment reported that orange markings were beneficial in improving lane integrity and work zone recognition in the initial stages of TTC zone application. In multi-stage TTC zone highway situations, orange contrast treatments significantly increased conspicuity and reduced motorist confusion often attributable to maintenance-related pavement treatments or from the installation and removal of previous temporary marking patterns. Machine vision lane-keeping ADAS and automated vehicle (AV) system developers reported similar potential benefits. Orange coupled with traditional yellow or white markings provide better cues when technologies are presented with road environments that contain crack seal treatments or "ghost" markings. AV developers specifically stated that their technologies can be trained to perceive and follow orange lane markings while ignoring other potential lane cues.

The proposed language permits orange to be used as a supplement to white or yellow lane markings in highway TTC zones. It permits broken line patterns consistent with NCUTCD Council approved language for the use of lag pattern contrast markings (See proposed Figure 6J.01). When orange is used in conjunction with white solid lane or edge line pavement markings, the orange color is placed contiguous to the outside edge of the line defining the lane. When orange is used in conjunction with yellow edge line markings, the orange color is placed contiguous to the left outside edge of the line. In multi-lane configurations where internal white solid lane lines are installed, solid orange supplemental lane lines may be placed on the left-hand-side of the solid internal longitudinal lane lines (See Figure 6J.02).

The designation of orange as a supplemental pavement marking color does not create a new mandate, compelling its use. It permits agencies to install orange on highways as a supplemental or contrast pavement marking TTC zone treatment based on engineering judgement.

RECOMMENDED MUTCD CHANGES:

The following present the proposed changes to the current MUTCD within the context of the current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background comments may be provided with the MUTCD text. These comments are indicated by [bracketed white text in shaded green]. Deletions made by a technical committee, joint committee, or task force after initial distribution to sponsoring organizations are shown in ~~highlighted red strikethrough and sans-serif text~~. Additions made by a technical committee, joint committee, or task force after initial distribution to sponsoring organizations are shown in underline blue and sans-serif text.

PART 3
MARKINGS

CHAPTER 3A. GENERAL

Section 3A.03 Colors

Standard:

01 Markings shall be yellow, white, red, blue, orange, or purple. The colors for markings shall conform to the standard highway colors.

Option:

02 Black markings may be used in combination with the colors mentioned in Paragraph 1 of this Section to enhance the contrast with a light-colored pavement.

Standard:

03 When used, yellow markings for longitudinal lines shall delineate:

A. The separation of traffic traveling in opposite directions,

B. The left-hand edge of the roadways of divided highways and one-way streets or ramps, or

C. The separation of two-way left-turn lanes and reversible lanes from other lanes.

04 When used, white markings for longitudinal lines shall delineate:

A. The separation of traffic flows in the same direction,

B. The right-hand edge of the roadway, or

C. Both the right-hand edge and left-hand edge of a reversible roadway.

05 When used, red raised pavement markers or delineators shall delineate:

A. Truck escape ramps, or

B. One-way roadways, ramps, or travel lanes that shall not be entered or used in the direction from which the markers are visible.

06 When used, blue markings shall supplement white markings for parking spaces for persons with disabilities.

07 When used, purple markings shall be in accordance with the provisions of Chapter 3F to identify toll plaza approach lanes restricted to use only by vehicles with registered electronic toll collection accounts.

07a When used, orange markings shall be in accordance with provisions of Section 6J.02.

08 When pavement markings that simulate route signs are used (See Section 3B.22), the colors shall be the same as those that are used for the route signs (ss Section 2D.11).

Support:

09 Provisions regarding colored pavements are contained in Chapter 3H.

PART 6
TEMPORARY TRAFFIC CONTROL

CHAPTER 6J. TTC ZONE PAVEMENT MARKINGS

Section 6J.02 Temporary Markings

Support:

01 Temporary markings are those pavement markings or devices that are placed within TTC zones to provide road users with a clearly defined path of travel through the TTC zone when the permanent markings are either removed or obliterated during the work activities. Temporary markings are typically needed during the reconstruction of a road while it is open to traffic, such as overlays or surface treatments or where lanes are temporarily shifted on pavement that is to remain in place.

Guidance:

02 Unless justified based on engineering judgment, temporary pavement markings should not remain in place for more than 14 days after the application of the pavement surface treatment or the construction of the final pavement surface on new roadways or over existing pavements.

03 The temporary use of edge lines, channelizing lines, lane-reduction transitions, gore markings, and other longitudinal markings, and the various non-longitudinal markings (such as stop lines, railroad crossings, crosswalks, words, symbols, or arrows) should be in accordance with the State's or highway agency's policy.

Standard:

04 Warning signs, channelizing devices, and delineation shall be used to indicate required road user paths in TTC zones where it is not possible to provide a clear path by pavement markings.

04a Temporary pavement marking colors shall comply with Section 3A.03.

05 Except as otherwise provided in this Section, all temporary pavement markings for no-passing zones shall comply with the requirements of Chapters 3A and 3B. All temporary broken line pavement markings shall use the same cycle length as permanent markings and shall have line segments that are at least 2 feet long.

Option:

05a Orange colored lane markings may be used to supplement white or yellow temporary highway lane markings within TTC zones.

Guidance:

05b When used in conjunction with broken white lane lines in TTC zones, temporary orange longitudinal pavement markings should be applied in a lag contrast pattern the same dimensions as the broken white lane line and placed immediately following each line segment (See Figure 6J-1).

05c When used in a TTC lane defined by a solid white lane line on the right side and a solid white lane line or solid yellow edge line on the left side, temporary orange solid longitudinal pavement markings should be applied immediately adjacent to the outside of each line (See Figure 6J-2). The temporary orange pavement marking should follow the alignment of the white or yellow solid line, and match the width to the extent practicable.

05d When used on a multi-lane TTC zone where solid white lane lines separate travel lanes, temporary orange longitudinal pavement markings should be placed adjacent to the right side of each solid white lane line (See Figure 6J-3).

06 All pavement markings and devices used to delineate road user paths should be reviewed during daytime and nighttime periods.

Option:

07 Half-cycle lengths with a minimum of 2-foot stripes may be used on roadways with severe curvature (see Section 3A.04) for broken line center lines in passing zones and for lane lines.

08 For temporary situations of 14 days or less, for a two- or three-lane road, no-passing zones may be identified by using DO NOT PASS (R4-1), PASS WITH CARE (R4-2), and NO PASSING ZONE (W14-3) signs (see Sections 2B.36, 2B.37, and 2C.53) rather than pavement markings. Also, DO NOT PASS, PASS WITH CARE, and NO PASSING ZONE signs may be used instead of pavement markings on roads with low volumes for longer periods in accordance with the State's or highway agency's policy.

Guidance:

09 If used, the DO NOT PASS, PASS WITH CARE, and NO PASSING ZONE signs should be placed in accordance with Sections 2B.36, 2B.37, and 2C.53.

10 If used, the NO CENTER LINE sign should be placed in accordance with Section 6H.29.

[The following figures are proposed to be added to Chapter 6J.]

Figure 6J-01. White Lag Bordered Pattern

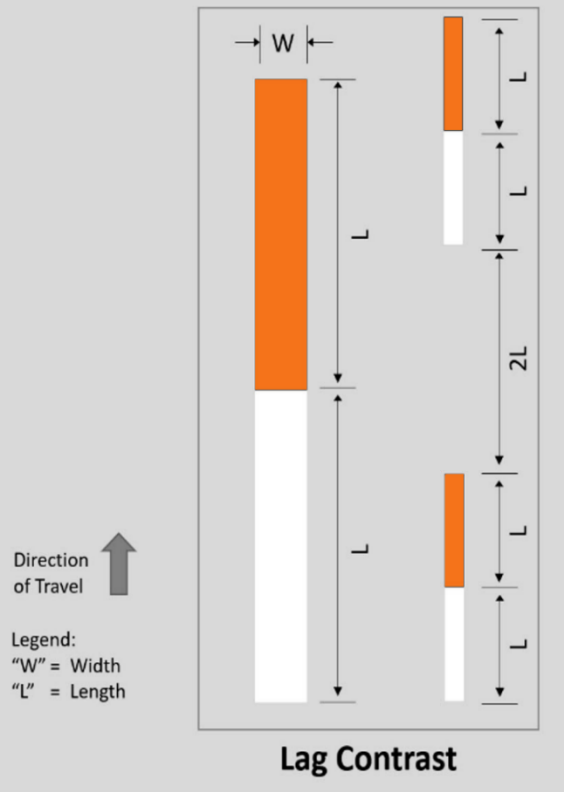


Figure 6J-02. Orange Contrast Solid Line

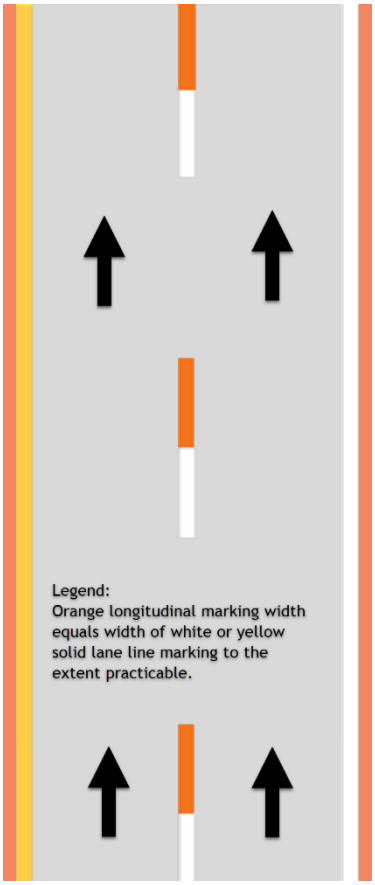
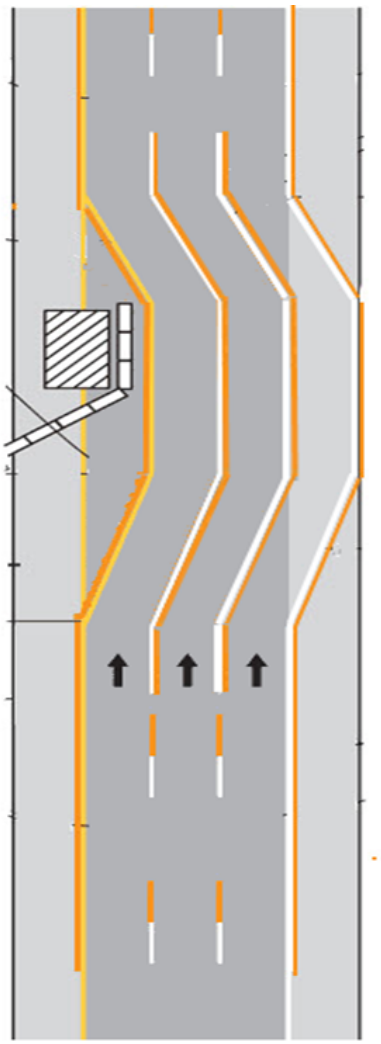


Figure 6J-03. Temporary Multi-Lane TTC Lane Shift Orange Contrast



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