National Committee on
Uniform Traffic Control Devices

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Item No.: 25A-RAB-01

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

COMMITTEE / TASK FORCE:	Roundabout Joint Task Force
ITEM NUMBER:	25A-RAB-01
TOPIC:	Edge Lines in Roundabouts
ORIGIN OF REQUEST:	Roundabout JTF Members: Scott Zehngraff (Chair) and Brian Walsh (Vice-Chair)
AFFECTED SECTIONS OF MUTCD:	3D.03

DEVELOPMENT HISTORY:

Approved by Roundabout JTF:	01/08/2025
Approved by Markings TC:	01/09/2025
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 proposal reintroduces recommended changes for roundabout pavement markings that were reviewed by the Markings Technical Committee as part of the NPA review but were not reviewed by the NCUTCD Council and were not incorporated into the 11th Edition of the MUTCD.

DISCUSSION:

The intent of this proposal is to add to the edge line pavement markings section an enhancement to the lane line extensions at roundabout entries. This is being introduced as wider dotted edge line extensions have achieved widespread practice in application by practitioners and agencies and address an issue with roundabout operations and safety. Formalizing the practice to achieve uniformity is important for the next edition of the MUTCD.

NCHRP Report 1043 states in section 12.3.5 (on pages 12-19 & 12-20) that:

"Most roundabouts have been installed with a dotted circulatory roadway edge-line extension across the entry lane or lanes. These edge lines act as entrance lines, marking the boundary between entering and circulating vehicles. These entrance lines have been commonly installed with widths greater than a typical wide line: 12 in. to 24 in. (300 mm to 600 mm) is common. Many agencies have also used a marking pattern unique to this application, with patterns of 2-ft to 3-ft (0.6-m to 0.9-m) lines with 2-ft to 3-ft (0.6-m to 0.9-m) gaps being common.

Yield lines are sometimes used in addition to entrance lines to further indicate the point behind which vehicles are required to yield in response to the yield signs at roundabouts. As described in the MUTCD, yield lines consist of a row of solid white isosceles triangles pointing toward approaching vehicles. Like other applications of yield lines and stop lines, the yield lines should normally be placed at right angles to the entry roadway. Exhibit 12.24 illustrates an example.

Debate continues about best practices for entrance markings. The MUTCD defines different purposes for edge-line extensions and yield lines, but in practice edge-line extensions often function as yield lines when paired with the required yield signs. There is little documented evidence that the supplemental yield line improves yielding behavior enough to justify the increased installation and maintenance costs. Some agencies have instead used a yield word pavement marking at a roundabout entrance to supplement the yield sign and edge-line extension."

Based on the language above from NCHRP Report 1043, it appears some better guidance on the use of "entrance lines" may be needed in the MUTCD.

White edge lines and the wide dotted edge line extensions for entry in 3D.03 have been identified as important applications for circulating traffic as well as approaching traffic on an entry leg of a roundabout. Specifically, the wide dotted edge line extension is also a transverse line for the traffic approaching the roundabout and is an important visual to assist driver on where the "yield limit line" or "entry line" is before entering the circulatory roadway. While a wide dotted line can be 8 or 12 inches, this width is insufficient to be seen from a distance due to it being a transverse line that is viewed at an oblique angle (driver eye height of 3.5 feet), similar to a stop line.

A stop line can be 12"-24" wide but is typically installed 18"-24" wide because of the oblique angle at which it is viewed. The wide dotted edge line extension should similarly be 18"-24" wide to be a consistent width for a transverse marking line that may require a stop. Furthermore, marked crosswalks (present on many designs) and yield lines "shark teeth" (optional) make for visual clutter when combined with a normal 8 or 12" wide dotted line.

Due to the option to not use a "yield line/shark teeth", the wide dotted edge line extension is a critical line, and practitioners need to have the option for that line to be strengthened by being 18" – 24" to support the driver's ability to see where the "limit line" clearly delineates the start of a circulatory roadway.

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 or task force after initial distribution to sponsoring organizations are shown in ~~highlighted red strikethrough and Helvetica text~~. Additions made by a technical committee or task force after initial distribution to sponsoring organizations are shown in underline blue and Helvetica text.

PART 3. MARKINGS

CHAPTER 3D. CIRCULAR INTERSECTION MARKINGS

Section 3D.03 Edge Line Pavement Markings for Roundabout Circulatory Roadways

Guidance:

01 A white edge line should be used on the outer (right-hand) edge of the circulatory roadway.

02 Where a white edge line is used for the circulatory roadway, it should be as follows (see Figure 3D-1):

A. A solid line adjacent to the splitter island, and

B. A wide dotted line across the lane(s) entering the roundabout.

Standard:

03 Edge lines and edge line extensions shall not be placed across the exits from the circulatory roadway at roundabouts.

Option:

04 A yellow edge line may be placed around the inner (left-hand) edge of the circulatory roadway (see Figure 3D-1) and may be used to channelize traffic (see Drawing B in Figure 3D-3).

05 Wide dotted white edge line extensions may be 18 to 24 inches wide and 2-foot line segments with 2-foot gaps.

[Markings TC approved similar language in 2021 adding this Option Statement to paragraph 05]