National Committee on
Uniform Traffic Control Devices
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NCUTCD Proposal for Changes to the Manual on Uniform Traffic Control Devices

TECHNICAL COMMITTEE:	Bicycle Technical Committee
ITEM NUMBER:	18B-BIK-04
TOPIC:	Bicyclist Rail/Flangeway Warning Sign
ORIGIN OF REQUEST:	NCUTCD Bicycle Technical Committee Mike Cynecki (BTC TF Chair) R/W Signs TF members - Robert Seyfried, Herman Hill
AFFECTED SECTIONS OF MUTCD:	Section 9B.17

DEVELOPMENT HISTORY:

- Approved by Bicycle Technical Committee: 06/20/2018
- Concurrence RWSTC 06/20/2018
- Concurrence by RRLRT TC 06/21/2018
- Approved by NCUTCD Council: MM/DD/YYYY

This is a proposal for recommended changes to the MUTCD that has been developed by a technical committee of the NCUTCD. The NCUTCD is distributing it 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, or options. 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:
Given the expansion of fixed guideway transit networks throughout the country, rails have been embedded into the roadway creating a flush surface allowing other roadway users to share this same space. This design, though acceptable for motor vehicle traffic, is problematic for bicyclists as bicycle tires can drop into the flangeway gap if not crossed at an appropriate angle, creating a dangerous situation for the bicyclist. Additionally, the top of the rail can become slippery in wet conditions. These conditions also occur where fixed guideway transit networks and rail lines cross shared-use paths. There is currently no MUTCD-approved sign to warn bicyclists about this potential hazard though some state and local highway agencies have developed signs for this

purpose. Some of the signs display a regulatory or guidance-related message on a diamond-shaped warning sign, an inappropriate use of the shape and color reserved for warning signs.

DISCUSSION:

The Bicycle Technical Committee proposed a Traffic Control Devices Pooled Fund Study (TCD PFS) to identify and recommend an appropriate warning sign to alert bicyclists of the hazards when light rail, streetcar or other tracks are embedded in the street or shared-use path pavement that will be shared with bicyclists. The TCD PFS focuses on a systematic evaluation of novel traffic control devices (TCDs), employing a process that addresses human factors and operations issues for each TCD idea. Approximately 20 variations of bicyclist warning signs or sign combinations used by various agencies were identified and submitted as a starting point for the TCD PFS. The Federal Highway Administration (FHWA) Human Factors Team evaluated four of the most promising variations of bicyclist warning signs for in-pavement rail were selected for testing. Sign alternatives were evaluated for bicyclist comprehension and legibility. Participants were also asked to rank the effectiveness of the alternatives.

The TCD PFS was completed and the findings published in December 2017. Two word signs and two symbol signs were tested for bicyclist comprehension, effectiveness and legibility as a part of the study. Sign Alternative 1 was a standard diamond warning sign with the text TRACKS IN PAVEMENT, with a BICYCLISTS USE CAUTION supplemental plaque; Sign Alternative 2 was a black on yellow rectangular sign with the text, BICYCLES CROSS TRACKS WITH CARE; Sign Alternative 3 was standard diamond-shaped warning sign with a track symbol shown diagonally across the sign and a bicycle symbol at the bottom and an arrow showing the bicyclist crossing the track at a 90-degree angle; and Sign Alternative 4 is a variation of Alternative 3 symbol-sign but with the bicycle symbol shown at the top of the warning sign.

Bicyclist comprehension tests were completed with the four sign alternatives.

Next, participants were told the intended meaning of the rail flangeway sign. The four sign alternatives were presented and participants were asked to rank them in terms of perceived effectiveness. Sign Alternative 2 was selected as the top choice by a majority of the participants. The data helps support that the Tracks warning signs were usually preferred by the participants in the following order: Tracks Sign Alternative 2, Tracks Alternative Sign 1, Tracks Sign Alternatives 3 or 4. Thus, the two symbol signs were rated the lowest in providing the intended meaning of the warning message.

Testing of legibility distance for the four alternatives, revealed that Tracks Sign 1 had a significantly worse legibility distance than the other signs tested, however, no differences between Sign alternatives 2, 3, and 4 were found ($p > .05$).

The results of the study concluded Sign alternative had a significant influence on participant response. Of the signs tested, Alternative 2 is the best option for signing for a rail/flangeway gap bicycle warning. Alternative 2 had the highest comprehension and was selected as the top choice by the majority of participants.

No other testing is known to have been conducted on bicyclist warning signs for in-pavement rail/flangeways in a shared roadway.

Section 2A.06 provides state and local highway agencies the ability to develop special word message signs in situations where roadway conditions warrant additional warning information. However, specifically designating Sign Alternative 2 as an optional sign in Part 9 of the MUTCD can provide an additional option for agencies with in-pavement rail transit systems on the most effective warning sign for communicating with bicyclists based on testing to date.

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 [highlighted light blue in brackets].

PART 9. TRAFFIC CONTROL FOR BICYCLE FACILITIES

CHAPTER 9B. SIGNS

Section 9B.17 Bicycle Surface Condition Warning Sign (W8-10, W10-x)

Option:

01 The Bicycle Surface Condition Warning (W8-10) sign (see Figure 9B-3) may be installed where roadway or shared-use path conditions could cause a bicyclist to lose control of the bicycle.

02 Signs warning of other conditions that might be of concern to bicyclists, including BUMP (W8-1), DIP (W8-2), PAVEMENT ENDS (W8-3), and any other word message that describes conditions that are of concern to bicyclists, may also be used.

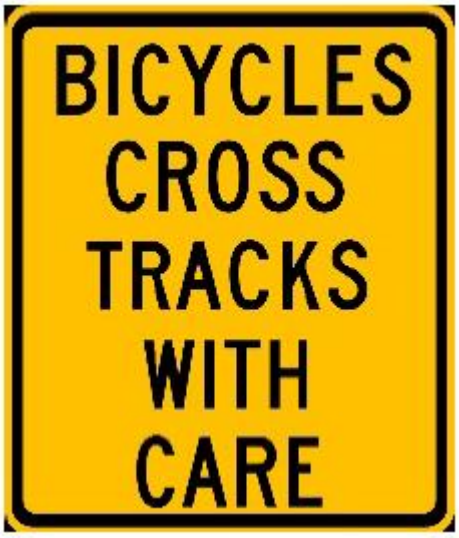
03 A supplemental plaque may be used to clarify the specific type of surface condition.

04 Where bicyclists cross or are riding adjacent to rail facilities, the BICYCLES CROSS TRACKS WITH CARE (W10-XX) rectangular sign or plaque may be used.

Standard:

05 The BICYCLES CROSS TRACKS WITH CARE (W10-XX) sign shall be a vertical rectangle.

The following new sign is added to Figure 9B-3



W10-X
18” x 24” or
24” x 30”