

**RESCINDED
JANUARY 2024**

This Recommended
Change to the MUTCD
was rescinded by the
NCUTCD Council on
January 12, 2024.

Attachment No.4
RW Signs No. 3



National Committee on Uniform Traffic Control Devices

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RWSTC Agenda item IV.C.
June 2012
RWSTC Agenda item III.3
January 2013

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National Committee on Uniform Traffic Control Devices RWSTC RECOMMENDATION FOLLOWING SPONSOR COMMENTS

14 **TECHNICAL COMMITTEE: NCUTCD Regulatory/Warning Signs Technical**
15 **Committee**

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17 **DATE OF ACTION: (Task Force) 5-6-12, revised 5-24-12, 5-26-12, revised 12-9-12,**
18 **revised 12-21-12 following sponsor comments, revised 1-10-13 following sponsor**
19 **comments**

20 **TASK FORCE: Tom Heydel (chair), Paul Carlson, Jason Kennedy**

21 **RWSTC APPROVAL DATE: 1-10-13**

22 **TRANSMITTAL TO SPONSORS DATE: Fall 2012**

23 **COUNCIL APPROVAL DATE: 1-11-13**

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25 **TOPIC: Visual Assessment Method – Maintaining Minimum Retroreflectivity,**
26 **Section 2A.08**

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28 **AFFECTED PORTIONS OF MUTCD: Section 2A.08**

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30 **DISCUSSION:**

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Section 2A.08 paragraph 04 lists Visual Nighttime Inspection as one of the 5 methods that can be used to maintain sign retroreflectivity. The 6th method is “other methods”. However, there are actually 3 visual assessment procedures (methods); and these are not mentioned in the MUTCD, but are mentioned in various FHWA documents and other research documents. Many agencies are reading the MUTCD not realizing that there are three specific techniques (called procedures) that make up the visual inspection method. Even though paragraph (05) of this section does refer the reader to the 2007 Edition of FHWA’s “Maintaining Traffic Sign Retroreflectivity” (FHWA –SA-07-020) which lists these 3 procedures (methods); that is often overlooked and additional language is needed in the MUTCD to name these 3 procedures with a description. There is a guidebook called “sign retroreflectivity from Sept 2009 by USDOT and FHWA. (FHWA CFL TD 09-005). This document also lists the 3 procedures.

Additional language is needed in the MUTCD to name these 3 procedures with a description. **The procedures are presently in the resources, but NCHRP Synthesis 431 (May 2012) stated that the current MUTCD is confusing in terms of the visual assessment method because it does not match the resources.**

The visual assessment method has three procedures under this method. The procedures describe what activities are at night.

Other documents: 2007 “Methods for Maintaining Traffic Sign Retroreflectivity”, (FHWA –HRT-08-026).

Also, 2 of the 5 methods are assessment methods and 3 are management methods, and that should be described as well in the MUTCD.

RECOMMENDATION: Include the 3 procedures under the visual assessment method in section 2A.08. Add paragraph showing which methods are management methods and which are assessment methods.

RECOMMENDED WORDING:

Note: Proposed changes to the MUTCD are shown in underline red and removed text are shown in ~~strikethrough red~~.

Section 2A.08 Maintaining Minimum Retroreflectivity

Support:
01 Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.22).

Standard:
02 **Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-3.**

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Table 2A-3. Minimum Maintained Retroreflectivity Levels¹

Sign Color	Sheeting Type (ASTM D4956-04)				Appl. Code
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	$W_{7}^{*}; G \geq 7$	$W^{*}; G \geq 15$	$W^{*}; G \geq 25$	$W \geq 250; G \geq 25$	C
	$W_{7}^{*}; G \geq 7$	$W \geq 120; G \geq 15$			Pos
Black on Yellow or Black on Orange	$Y^{*}; O^{*}$	$Y \geq 50; O \geq 50$			
	$Y^{*}; O^{*}$	$Y \geq 75; O \geq 75$			
White on Red	$W \geq 35; R \geq 7$				
Black on White	$W \geq 50$				

Notes:

¹ The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.

² For text and fine symbol signs measuring at least 48 inches and for all sizes of bold symbol signs.

³ For text and fine symbol signs measuring less than 48 inches.

⁴ Minimum sign contrast ratio $\geq 3:1$ (white retroreflectivity \div red retroreflectivity)

* This sheeting type shall not be used for this color for this application.

Bold Symbol Signs

<ul style="list-style-type: none"> W1-1, -2 – Turn and Curve W1-3, -4 – Reverse Turn and Curve W1-5 – Winding Road W1-6, -7 – Large Arrow W1-8 – Chevron W1-10 – Intersection in Curve W1-11 – Hairpin Curve W1-15 – 270 Degree Loop W2-1 – Cross Road W2-2, -3 – Side 	<ul style="list-style-type: none"> W3-1 – Stop Ahead W3-2 – Yield Ahead W3-3 – Signal Ahead W4-1 – Merge W4-2 – Lane Ends W4-3 – Added Lane W4-5 – Entering Roadway Merge W4-6 – Entering Roadway Added Lane W6-1, -2 – Divided Highway Begins and Ends W6-3 – Two-Way Traffic W10-1, -2, -3, -4, -11, -12 – Grade Crossing Advance Warning 	<ul style="list-style-type: none"> W11-2 – Pedestrian Crossing W11-3, -4, -16-22 – Lane Reduction W11-5 – Farm Equipment W11-6 – Snowmobile Crossing W11-7 – Equestrian Crossing W11-8 – Fire Station W11-10 – Truck Crossing W12-1 – Double Arrow W16-5P, -6P, -7P – Point-to-Point <p>Plaques</p> <ul style="list-style-type: none"> W20-7 – Flagger W21-1 – Worker
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	Beaded Sheeting			Prismatic Sheeting III, IV, VI, VII, VIII, IX, X	
	I	II	III		
Road <ul style="list-style-type: none"> • W2-4, -5 – T and Y Intersection • W2-6 – Circular Intersection • W2-7, -8 – Double Side Roads 					
Fine Symbol Signs (symbol signs not listed as bold symbol signs)					
Special Cases					
<ul style="list-style-type: none"> • W3-1 – Stop Ahead: Red retroreflectivity ≥ 7 • W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35 • W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7 • W3-5 – Speed Reduction: White retroreflectivity ≥ 50 • For non-diamond shaped signs such as W14-3 (No Passing Zone), W4-4P (Cross Traffic Stop), or W13-1P, -2, -3, -6, -7(Speed Advisory Signs), use largest sign dimension to determine proper minimum retroreflectivity level. 					

74 Support:
 75 03 Compliance with the Standard in Paragraph 2 is achieved by having a method in place
 76 and using the method to maintain the minimum levels established in Table 2A-3.
 77 Provided that an assessment or management method is being used, an agency or official
 78 having jurisdiction would be in compliance with the Standard in Paragraph 2 even if there
 79 are some individual signs that do not meet the minimum retroreflectivity levels at a
 80 particular point in time.

81 *Guidance:*
 82 04 *Except for those signs specifically identified in Paragraph 6, one or more of the*
 83 *following assessment or management methods should be used to maintain sign*
 84 *retroreflectivity at or above the minimum levels in Table 2A-3. Signs that are below the*
 85 *minimum levels should be replaced:*

86 Assessment Methods

87 A. Visual **Nighttime-Inspection**—The retroreflectivity of an existing sign is assessed
 88 by a trained sign inspector conducting a visual nighttime inspection from a moving
 89 vehicle during nighttime conditions. Signs that are visually identified by the inspector
 90 to have retroreflectivity below the minimum levels should be replaced.—The visual
 91 inspection method is made up of three specific procedures that can be used by
 92 themselves or combined with other methods.

- 93 1. Calibration Signs Procedure - In this procedure, an inspector views a
 94 "calibration sign" prior to conducting a nighttime inspection. Calibration signs

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have retroreflectivity levels at or above minimum levels. These signs are set up where the inspector can view the calibration signs in a manner similar to nighttime field inspections. The inspector uses the visual appearance of the calibration sign to establish the evaluation threshold for that night's inspection activities.

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2. Comparison Panels Procedure- Comparison panels are used to supplement a nighttime inspection of sign retroreflectivity. When signs are identified as having questionable retroreflectivity. Comparison panels are used to determine whether those identified signs have retroreflectivity levels at or above the minimum levels. To use this procedure, a comparison panel is attached to the sign and the sign/panel combination is viewed and compared by the inspector.
3. Consistent Parameters Procedure - Nighttime inspections are conducted using the following conditions:

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- o Using a sport utility vehicle or pick-up truck to conduct the inspection.
- o Using a model year 2000 or newer vehicle for the inspection.
- o Using an inspector who is at least 60 years old.

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B. Measured Sign Retroreflectivity—Sign retroreflectivity is measured using a handheld or mobile retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.

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Management methods

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- A. Expected Sign Life—When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.
- B. Blanket Replacement—All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.
- C. Control Signs—Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.

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Other methods:

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D. Other management and/or assessment methods developed based on engineering studies, can be used.

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Support:
05 Additional information about these methods and procedures is contained in the Sign Retroreflectivity Guidebook, FHWA September 2009 by USDOT and FHWA. (FHWA CFL TD

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143 09-005). The 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see
144 Section 1A.11) also provides information on sign retroreflectivity.

145 Option:
146 66 Highway agencies may exclude the following signs from the retroreflectivity
147 maintenance guidelines described in this Section:

- 148 A. Parking, Standing, and Stopping signs (R7 and R8 series)
- 149 B. Walking/Hitchhiking/Crossing signs (R9 series, R10-1 through R10-4b)
- 150 C. Acknowledgment signs
- 151 D. All signs with blue or brown backgrounds
- 152 E. Bikeway signs that are intended for exclusive use by bicyclists or pedestrians

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154 RWSTC 6-20-12 Vote: For: 18
155 Opposed: 3
156 Abstentions: 0

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158 RWSTC 1-10-13 Vote: For: 25
159 Opposed: 2
160 Abstentions: 1

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162 COUNCIL 1-11-13 Vote: For: 37
163 Opposed: 1
164 Abstentions: 0

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166 c: NCUTCD/January 2013/Heydel/RW # 3 visual assessment method , Section 2A.08 5-6-12,
167 revised 5-24-12, revised 5-26-12, 6-20-12 READY FOR SPONSORS, revised following sponsor
168 comments 12-9-12, revised 12-21-12, revised 1-9-13, revised 1-10-13 following sponsor comments,
169 approved by Council 1-11-13
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