

# Maintaining Sign Retroreflectivity: MUTCD Standard 2A.09

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## **SUPPORT:**

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

## **STANDARD:**

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.

## **SUPPORT:**

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

## **GUIDANCE:**

Except for those signs specifically identified in the Option portion of this Section, one or more of the following assessment or management methods should be used to maintain sign retroreflectivity:

### **A. Visual Nighttime Inspection**

The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.

### **B. Measured Sign Retroreflectivity**

Retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.

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### **C. 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.

### **D. 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.

### **E. 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.

### **F. Other Methods**

Other methods developed based on engineering studies can be used.

## **SUPPORT:**

Additional information about these methods is contained in the 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see Section 1A.11).

## **OPTION:**

Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines described in this Section:

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

**Compliance Dates:**

June 13, 2014: Implementation and use of Sign Management Program to maintain retroreflectivity to minimum levels.

**Table 2D-3. Minimum Maintained Retroreflectivity Levels<sup>1</sup>**

Sign Color	Sheeting Type (ASTM D4956-04)				Additional Criteria
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*;G ≥ 15	W*;G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120;G ≥ 50			Post-Mounted
Black on Yellow	Y*; O*	Y ≥ 50;O ≥ 50			2
Black on Orange	Y*; O*	Y ≥ 75;O ≥ 75			3
White on Red	W ≥ 35; G ≥ 7				4
Black on White	W ≥ 50				---








<sup>1</sup>The Minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m<sup>2</sup> measured at an observation angle of 0.2° and an entrance angle of -4.0°.








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








<sup>3</sup>For text and fine symbol signs measuring less than 48 inches.








<sup>4</sup>Minimum sign contrast ratio 3:1 (white retroreflectivity ÷ red retroreflectivity).








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




						
W1-1	W1-2	W1-3	W1-4	W1-5	W1-6	W1-7
Turn	Curve	Reverse Turn	Reverse Curve	Winding Road	Large Arrow	Chevron







						
W1-8	W1-10	W1-11	W1-15	W2-1	W2-2	W2-3
Chevron	Intersection on Curve	Hairpin Curve	270 Degree Curve	Cross Road	Side Road	Side Road with Acute Angle

						
W2-4	W2-5	W2-6	W3-1	W3-2	W3-3	W4-1
T-Intersection	Y-Intersection	Circular Intersection	Stop Ahead	Yield Ahead	Signal Ahead	Merge

						
W4-2	W4-3	W4-5	W4-6	W6-1	W6-2	W6-3
Lane Ends	Added Lane	Entering Roadway Merge	Entering Roadway added Lane	Divided Highway Begins	Divided Highway Ends	Two-Way Traffic

						
W10-1	W10-2	W10-3	W10-4	W10-11	W10-12	W11-2
Railroad Ahead	Parallel Railroad Crossing-Cross Road	Parallel Railroad Crossing-Side Road	Parallel Railroad Crossing-T	Railroad Crossing Behind Intersection	Skewed Railroad Crossing	Pedestrian Crossing

						
W11-3	W11-4	W11-5	W11-6	W11-7	W11-8	W11-10
Deer Crossing	Cattle Crossing	Farm Equipment	Snowmobile Crossing	Equestrian Crossing	Fire Station	Truck Crossing

					
W12-1	W16-5p	W16-6p	W16-7p	W20-7a	W21-1a
Double Arrow	Arrow	Turn Arrow	Diagonal Arrow	Flagger	Worker



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