



# Maintaining Traffic Sign Retroreflectivity

- FHWA Minimum Levels of Retroreflectivity Ruling effective January 22, 2008
- Replace non-compliant traffic signs to meet new federal retroreflectivity standards
- Improve sign brightness and visibility to help meet safety goals

Fifteen years ago the Congress of the United States acknowledged the importance of nighttime visibility of road signs and markings as important safety tools. The 1993 DOT Appropriations Act stated that the “Secretary of Transportation shall revise the MUTCD to include a standard for a minimum level of retroreflectivity that must be maintained for traffic signs and pavement markings which apply to all roads open to public travel.” The Federal Highway Administration’s Minimum Levels of Retroreflectivity Ruling for traffic signs went into effect on January 22, 2008.

## Summary of MUTCD Revisions

From January 22, 2008 (the effective date of the ruling) agencies have:

- **Four years** to implement and continue using an assessment or management method to maintain traffic sign retroreflectivity at or above the established minimum levels.
- **Seven years** for replacement of regulatory, warning and ground-mounted signs (except street name signs) that fail to meet the established minimum levels.
- **Ten years** for replacement of street name signs and overhead guide signs that fail to meet the established minimum levels.

## Summary of the Minimum Maintained Retroreflectivity Levels Table

- White copy on overhead guide signs must be made from prismatic sheeting
- White copy on ground mounted street name signs cannot be made from Type I sheeting
- Warning signs (black on yellow or orange) cannot be made from Type I sheeting
- Regulatory signs (black on white) must retain a minimum retroreflectivity level of  $\geq 50$  cd/lx/m<sup>2</sup> (while use of Type I sheeting—with an initial retroreflectivity value of 70 cd/lx/m<sup>2</sup>—is allowed, sign life will be short and may result in poor life cycle value)
- Stop signs (white on red) have a minimum contrast ratio of  $\geq 3:1$  (white reflectivity  $\div$  red reflectivity) (older stop signs—especially south-facing signs—are at risk of noncompliance due to ink fading)

Sign Color	Minimum Maintained Retroreflectivity Levels <sup>1</sup>				Additional Criteria
	Sheeting Type (ASTM D4956-04)				
	Beaded Sheeting		Prismatic Sheeting		
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*: G $\geq 7$	W*: G $\geq 15$	W*: G $\geq 25$	W $\geq 250$ ; G $\geq 25$	Overhead
	W*: G $\geq 7$		W $\geq 120$ ; G $\geq 15$		Ground-mounted
Black on Yellow or Black on Orange	Y*: 0*		Y $\geq 50$ ; 0 $\geq 50$		2
	Y*: 0*		Y $\geq 75$ ; 0 $\geq 75$		3
White on Red			W $\geq 35$ ; R $\geq 7$		4
Black on White			W $\geq 50$		

<sup>1</sup> The minimum maintained retroreflectivity levels shown in this table are in units of cd/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 1200 mm (48 in) and for all sizes of bold symbol signs  
<sup>3</sup> For text and fine symbol signs measuring less than 1200 mm (48 in)  
<sup>4</sup> Minimum Sign Contrast Ratio  $\geq 3:1$  (white retroreflectivity  $\div$  red retroreflectivity)  
This sheeting type should not be used for this color for this application.

## Summary of Assessment/Management Methods

Method	Process	Advantages	Disadvantages
Visual Nighttime Inspection	Trained sign inspector, moving vehicle	Quick and inexpensive	Annual process, not 100% reliable
Measured Retroreflectivity	Measure signs with a retroreflectometer	Extremely accurate	Annual process, large time and resource commitment
Expected Life	Determine expected life, replace at end of service life	Very easy to use and plan, can use preexisting asset management systems	Does not consider signs that may fail early or last longer
Blanket Replacement	All signs in a corridor or of a specific type are replaced at specific intervals	No need to track signs or assess retroreflectivity, easiest method to manage	May replace good signs that do not necessarily need it
Control Signs	Replacement based on performance of control signs	Less costly and time consuming than monitoring all signs in the field	Creating and setting up appropriate control environment, sample-based
Other Engineering-based method	Varies with method	Varies with method	Varies with method

For details and additional information about the FHWA Minimum Levels of Retroreflectivity Ruling, check out [www.minimumreflectivity.org](http://www.minimumreflectivity.org). To learn more about bright, durable 3M prismatic reflective sheetings, traffic sign upgrade services and flexible funding programs, contact your 3M representative or visit [www.3M.com/tss](http://www.3M.com/tss).



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