

1 **NACE Recommended Changes to the MUTCD NPA (Docket No. FHWA-2009-0139)**
2 **Maintaining Minimum Retroreflectivity of Longitudinal Pavement Markings**
3

4 Note: Additions to the FHWA NPA language are shown as underlined blue font and deletions
5 are shown as ~~double strikethrough red font~~.
6

7 Add to Table I-2 Target Compliance Dates Established by the FHWA:

8 **Section 3A.03 Maintaining Minimum Retroreflectivity of Longitudinal Pavement Markings—new**
9 **section—from the effective date of the Final Rule for Revision 1 of the 2009 MUTCD:**

- 10 • **4 years from date of Final Rule for implementation and continued use of a maintenance**
11 **method that is designed to maintain pavement marking retroreflectivity ~~at or above the~~**
12 **~~established minimum levels~~; and**
- 13 • **6 years from date of Final Rule for replacement of pavement markings that are identified**
14 **using the maintenance method as failing to meet the established minimum levels.**

15
16 Add new reference document to Section 1A.11 Relation to Other Publications:

17 **Section 1A.11**

18 **“Summary of the MUTCD Pavement Marking Retroreflectivity Standard,” Report No. FHWA-SA-**
19 **10-015.**

20
21 Revise Section 3A.03 as follows:

22 **Section 3A.03 Maintaining Minimum Retroreflectivity of Longitudinal Pavement**
23 **Markings**

24 **Standard:**

25 **Public agencies or officials having jurisdiction shall use a method designed to maintain**
26 **retroreflectivity of the following white and yellow longitudinal pavement markings, ~~at or above the~~**
27 **~~minimum levels in Table 3A-1~~:**
28

- 29 1. **Center line markings on roads where they are required or recommended ~~by~~ in Section**
30 **3B.01. This shall include any no-passing zone markings, longitudinal two-way left-turn**
31 **lane markings, and yellow markings used to form flush medians on such roads.**
- 32 2. **Lane line markings on roads where they are required or recommended ~~by~~ in Section**
33 **3B.04. This shall include any dotted lane lines, lane drop markings, and longitudinal**
34 **preferential lane markings on such roads.**
- 35 3. **Edge line markings on roads where they are required or recommended ~~by~~ in Section**
36 **3B.07. This shall include any channelizing lines delineating gores, divergences, or**
37 **obstructions on such roads.**
- 38 4. **Any optional edge line markings that are used to qualify for the lower minimum**
39 **retroreflectivity values in the “All other roads” row of Table 3A-1.**
40

41 Except for the optional edge line markings described in item #4, markings which are not
 42 required or recommended in 3B.01, 3B.04 or 3B.07 are not subject to this Standard, but shall
 43 comply with the requirements of Section 3A.02.
 44

45 ~~Support:~~ [Relocated Paragraph and Changed to Standard]

46 Compliance with the above standard is achieved by having a method in place and using the
 47 method to ~~maintain the minimum levels established in Table 3A-1~~ manage pavement marking
 48 retroreflectivity levels in the manner described in the Guidance section below. **Provided that a method**
 49 **is being used, an agency or official having jurisdiction would be in compliance** ~~with the above~~
 50 ~~Standard~~ even if there are **occurrences when** pavement markings ~~that~~ do not meet the minimum
 51 retroreflectivity levels at a particular location or at a particular point in time.

52 Support: [Relocated Paragraph]

53 These occurrences include, ~~There are many factors for agencies to consider in developing a method of~~
 54 ~~maintaining minimum pavement marking retroreflectivity including,~~ but are not limited to, winter weather
 55 and the deterioration of markings due to snow and ice control, environmental conditions, reconstruction,
 56 ~~and~~ pavement resurfacing, and localized or abnormal wear.

57
 58 Guidance:

59 The method should be designed to maintain retroreflectivity of the white and yellow longitudinal
 60 markings described in items 1-4 of the preceding Standard at or above the minimum levels in Table 3A-1.

61 **Table 3A-1 Recommended Minimum Maintained Retroreflectivity Levels^① for**
 62 **Longitudinal Pavement Markings**

	Posted Speed (mph)		
	≤ 30	35 – 50	≥ 55
Two-lane roads with centerline markings only ^②	n/a	100	250 <u>150</u>
All other roads ^② <u>markings covered in Standard 3A.03</u>	n/a	50	100

① Measured at standard 30-m geometry in units of mcd/m²/lux for clean and dry pavement markings.
 ② Exceptions:
 A. When RRPMs supplement or substitute for a longitudinal line (see Section 3B.13 and 3B.14), minimum pavement marking retroreflectivity levels are not applicable as long as the RRPMs are maintained so that at least 3 are visible from any position along that line during nighttime conditions.
 B. When continuous roadway lighting assures that the markings are visible, minimum pavement marking retroreflectivity levels are not applicable.
 C. When delineators are placed along the roadway according to Section 3F.04, minimum pavement marking retroreflectivity levels are not applicable.

63 ~~Guidance:~~

64 *Except for those pavement markings specifically identified in the Option below, one or more of the*
 65 *following methods, as described in the 2010 Edition of FHWA’s “Summary of the MUTCD Pavement*
 66 *Marking Retroreflectivity Standard (see Section 1A.11),” should be used to maintain retroreflectivity of*
 67 *longitudinal pavement markings at or above the levels identified in Table 3A-1:*
 68

- 69 A. *Calibrated Visual Nighttime Inspection* – Prior to conducting a nighttime inspection from a
70 moving vehicle and in conditions similar to nighttime field conditions, a trained inspector
71 calibrates his eyes to pavement markings with known retroreflectivity levels at or above those in
72 Table 3A-1. Pavement markings identified by the inspector to have retroreflectivity below the
73 minimum levels are replaced or re-marked.
- 74 B. *Consistent Parameters Visual Nighttime Inspection* –A trained inspector at least 60 years old
75 conducts a nighttime inspection from a moving vehicle under parameters consistent with the
76 supporting research. Pavement markings identified by the inspector to have retroreflectivity
77 below the minimum levels are replaced or re-marked.
- 78 C. *Measured Retroreflectivity* – Pavement marking retroreflectivity is measured using a
79 retroreflectometer. Pavement markings with retroreflectivity levels below the minimums are
80 replaced or re-marked.
- 81 D. *Service Life Based on Monitored Markings* – Markings are replaced or re-marked based on the
82 monitored performance of similar in-service markings with similar placement characteristics.
83 All pavement markings in a group/area/corridor are replaced when those in the representative
84 monitored control set are near or at minimum retroreflectivity levels. The control set markings
85 are monitored on a regular basis by the visual nighttime inspection method, the measured
86 retroreflectivity method, or both.
- 87 E. *Blanket Replacement* – All pavement markings in a group/area/corridor or of a given type are
88 replaced or re-marked at specific intervals. The replacement interval is based on when the
89 shortest-life material in that group/area/corridor approaches the minimum retroreflectivity level.
90 The interval is also based on historical retroreflectivity data for that group/area/corridor.
- 91 F. *Other Methods* – Other methods developed based on engineering studies that determine when
92 markings are to be replaced or re-marked based on the minimum levels in Table 3A-1.

93 Option:

- 94 Public agencies or officials having jurisdiction may exclude the following markings from their
95 minimum pavement marking retroreflectivity maintenance method(s) and the minimum maintained
96 pavement marking retroreflectivity levels, but not from any requirements in Section 3A.02 to be
97 retroreflective.
- 98 A. Words, symbols, and arrows,
99 B. Crosswalks and other transverse markings,
100 C. Black markings used to enhance the contrast of pavement markings on a light colored pavement,
101 D. Diagonal or chevron markings within a neutral area of a flush median, shoulder, gore, divergence,
102 or approach to an obstruction,
103 E. Dotted extension lines that extend a longitudinal line through an intersection or interchange area,
104 F. Curb markings,
105 G. Parking space markings, and
106 H. Shared use path markings