Managing Retroreflectivity

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SD LTAP

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Managing Retroreflectivity

1. Assessment Methods
   - A. Visual Inspection Method
     • Calibrated Sign Procedure
     • Comparison Panel Procedure
     • Consistent Parameter Procedure
   - B. Measure Retroreflectivity Method

2. Management Methods
   - Control Signs
   - Blanket Replacement
   - Expected Sign Life
Assessment Methods

- Calibrated Sign Procedure
  - “Calibrate” eyes with calibration signs
  - Before leaving the yard, inspector visually inspects a representative of sign to calibrate their eyes.
Assessment Methods

- Calibrated Sign Procedure (con’t)
  - Must have retroreflectivity levels **at least** that of MUTCD minimum retro values.
  - Mounted on rack or yard fence.
  - Covered when not in use to preserve values.
Assessment Methods

- **Calibrated Sign Procedure (Con’t)**
  - Any Vehicle, any age inspector.
  - View rack with same vehicle to be used during inspection.
  - View calibration signs from inspection vehicle at typical viewing distance --- 100 to 600 feet --- before leaving the yard.
  - Use low beams
  - Conduct evaluations at roadway speeds from travel lane.
Assessment Methods

- Calibrated Sign Procedure (Con’t)
  - Look for signs *less bright* than the calibrated signs AND mark less bright for replacement.
  - *Inventory of signs* useful for marking replacements
  - Evaluate BOTH colors of the sign.
Assessment Methods

• Comparison Panel Procedure
  - Tie to minimum values by *comparison panels*.
    • Small panels at near desired retro.
    • Clipped to sign - viewed from a distance.
    • Evaluate signs compared to panels.
Assessment Methods

• Comparison Panel Procedure (con’t)
  – Panels must have retro level at least that of MUTCD minimum retro values.
  – Procedure must be done at night.
  – Any vehicle, any inspector age is OK.
  – The “initial” inspection occurs at roadway speeds with low beams.
Assessment Methods

• Comparison Panel Procedure (con’t)
  – When a marginal sign is spotted,
    • Safely pull over to inspect the sign (w/ vest, etc)
    • Install comparison panel on the sign,
    • Evaluate from at least 25 feet,
    • Hold a flashlight near inspector’s ear/eyes.
  – Evaluate BOTH colors on a sign.
Assessment Methods

Comparison Panel Procedure (con’t)

- Use retroreflectometer to find signs at minimum levels.
- Cut panels from these signs
- No known supplier of the panels.

Use flashlight at NIGHT at minimum distance – 25 Ft.
Assessment Methods

• Consistent Parameter Procedure
  – Simulates conditions of research FHWA used for developing minimum retro levels - Key Assumptions.
    • Dark, rural, straight, flat roadway.
    • No ambient light, glare, or visual complexity.
    • Inspector needs to be at least 60 years old.
Assessment Methods

• Consistent Parameter Procedure (con’t)
  – SUV or Truck used to be equipped with VOA cutoff headlamps.
    – VOA = Visually Optically Aimable
  – Inspection occurs at roadway speeds.
  – Two person crew:
    • Driver
    • Inspector (60 yrs old) judges signs.
Assessment Methods

• Measure Sign Retroreflectivity
  - Uses portable hand-held instrument
  - Receive proper training
  - Consistent protocol
  - Compare reading to minimum values
  - Measure in-service signs, comparison panels, or calibration signs.
  - Measurement done annually or every other year.
Assessment Methods

• Measure Sign Retroreflectivity (con’t)
Assessment Methods

- Measure Sign Retroreflectivity (con’t)
  - Note each type of sheeting.
  - Measure each color.
  - Multiple measurements & compute average.
  - Develop a measurement protocol.
  - Use an inventory.
Management Methods

- Three management methods:
  1. Control Signs
  2. Blanket Replacement
  3. Expected Sign Life
Management Methods

• Control Signs
  – Based on measurements of a set of control signs.
  – Control signs can be in-service signs or signs in yard orientated similar to those they represent.
  – Periodically monitor control signs.
  – As control signs approach minimum levels it is time to replace.
Management Methods

• Blanket Replacement
  – All signs in a **specific area** are replaced at the same time when the effective **service life** is reached.
    • Geographic area
    • Route or corridor
    • Jurisdiction
  – All signs of a **specific type** are replaced at the same time when the effective **service life** is reached.
  – Advantage --- All signs replaced
  – Disadvantage --- Potential waste
Management Methods

• Expected Sign Life
  – Find the life of the sheeting in your area.
  – Expected life based on:
    • Warranty information.
    • Measure in-field signs, removed signs or control signs with known install date and compare to minimum levels.
    • Use data from weathering rack.

Mn/DOT 2002
$700 fine and/or imprisonment for theft or vandalism of this sign

CECIL COUNTY
• 2006 • 2007
• 2008 • 2009

2018 North Central Local Roads Conference
Management Methods

• AASHTO Data:
  - http://www.ntpep.org
Managing Retroreflectivity

- More Information/Resources:
  - www.fhwa.dot.gov/retro
  - Colorado LTAP
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