Sign Replacement Program for Cities - 2015

Sign Inspection Guidelines

Signs may be inspected using a variety of techniques. The most common and cost effective method is visual nighttime inspection. Signs are essential to communicating regulatory, warning, and guidance information. It is critical that signs are able to fulfill this role during both daytime and nighttime periods. The ability of a sign to fulfill its role during nighttime periods is provided by a unique form of reflection known as “retroreflectivity.” The retroreflectivity of signs degrades as the signs age in the field.

Traffic signs should be properly positioned, legible and sufficiently reflective. Signs should be visible during the day and at night. They should be viewable without being obscured by such things as weeds, shrubbery, trees or any other object. Damaged or deteriorated signs should be replaced.

General Review Guidelines

- The inspection is conducted at normal roadway operating speeds.
- Signs are normally inspected from the travel lane and not the shoulder.
- The signs must be clean and free of dew or frost during the inspection.
- The weather should be normal without precipitation.

Daytime Review

During daylight hours, signs should be reviewed and the following factors should be considered:

- Sign condition and orientation
- Lateral placement
- Longitudinal placement
- Vertical placement
- Condition of support assembly
- Whether the sign is obscured

The categories listed below are the general reasons why sign are considered to be inadequate and need replacement:

- Bent
- Cracked face material
- Damaged
- Faded
- Illegible
- Missing
- Peeling face material
- Rusty
- Scratched
- Vandalized
- Other (obsolete, etc.)

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Nighttime Review
Procedures from FHWA Publication FHWA-HRT-08-026:
The usual method of inspecting signs at night is to use a two-person crew. While the driver focuses on the driving task, the passenger evaluates the signs and records the appropriate information. An alternative to a two-person crew is to use one person with a tape recorder or camcorder. If an inventory is available, signs that have been knocked down or missing for some other reason can be identified during the nighttime inspection. If no inventory exists, an inventory of existing signs can be created while conducting the nighttime inspection, but it may not account for missing signs. A nighttime inspection procedure can be performed without a sign inventory.

The nighttime visual inspection method should only use the low-beam headlamps of the vehicle as the source of illumination for the signs. The interior light of the vehicle should remain off to the extent feasible. The inspection should be performed at highway speeds and from the travel lanes and not the shoulder. As the vehicle approaches the sign, the sign's overall appearance in terms of brightness and legibility is assessed. Usually the sign is given a rating defined by the agency. At a minimum, the scale should include three designations: good, fair, and poor. The inspector records the information for each sign and the rating that it is given. Signs rated as poor should be scheduled for replacement as soon as possible. Depending on the inspection schedule, signs rated as fair can be noted as requiring attention during the next set of scheduled inspections or can be identified for additional assessment, such as measurement at a later date using a handheld retroreflectometer.

The vehicle and inspector combination should be selected to provide a conservative estimate of sign retroreflectivity. The increased sales of pickup trucks and sport utility vehicles, which result in larger observation angles, make these types of vehicles appropriate for use in many regions. Relatively new vehicles, with visually/optically aimable (VOA) headlamps, should be considered. Ideally, the inspector should be older, with nighttime visual capabilities similar to older drivers. The vision of the inspector should be tested to ensure that it is within the legal limits of the State. It is important that an agency develop consistent guidelines to decrease the subjectivity of inspections. For instance, some items to consider are procedures to clean the headlamps and windshield before each night of inspections and to periodically check the headlamp aiming. A procedure to check the headlamp aim of VOA headlamps is provided in table 4.

Table 4. Headlamp Aiming Procedure.
What you will need:

- A level area with a distance of approximately 25 feet plus the length of the vehicle from a flat lightly colored wall
- A tape measure
- Masking tape

Instructions:

- Park the vehicle so that the headlamps are precisely 25 feet from a flat lightly colored wall. The vehicle should have at least ½ of a tank of gas and should be loaded as it would be when inspecting signs. This includes the weight of the driver (and passenger present).
- Measure the exact middle of both the windshield and rear window, and mark them with strips of tape, creating vertical centerlines, front and rear.
- Standing behind the car, sight along the centerlines, and have an assist mark the position of the vehicle centerline on the wall with a vertical strip of tape.
- Measure the distance between the vehicle centerline and the headlamp lenses. Mark that distance to the right and left of the centerline on the wall with vertical strips of tape.
- Measure the height of each headlamp from the ground (measuring to the center of the lens). Using those measurements, place horizontal strips of tape on the wall where the vertical strips have been applied. There should now be two crosses on the wall, with centers that correspond to the center of each headlamp lens.
- For headlamps with a left-side cutoff (VOL), mark a horizontal line that is 2.1 inches below the headlamp centers with a horizontal strip of tape. For headlamps with a right-side cutoff (VOR), mark a horizontal line that runs through the headlamp centers.
- Turn the vehicle headlamps on low beam. The left edge of the bright spots on the wall should just touch the vertical bars of the crosses. The top edge of the strongest gradient of light should just touch the horizontal line. Adjust the headlamp aim per manufacturer's instructions, if required.

Probably the most important element of the nighttime inspection is documenting the process and results. This can be done with a voice or video recorder, or even with paper and pencil. Whichever method is selected, it is important that inspections are properly documented and archived to provide tort protection.

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Post Inspection Guidelines

The categories listed below are the general reasons why sign posts are considered to be inadequate and need replacement:

- Leaning
- Bent (metal)
- Warped (wood)
- Damaged
- Two Posts Spliced Together where Bottom Post > 2.5' Above Ground
- Other (rotten, too short, etc.)

Signs are mounted on a variety of post types and structures. Post Types in Service are listed below:

- Building
- U Channel
- Fence
- Light Pole (metal)
- Mast Arm
- Pipe
- Signal Pole (metal)
- Square Tube (Telespar)
- Utility Pole (wood)
- Wood (round)
- Wood (4” x 4”)
- Wood (4” x 6”)
- Other

Replacement Post Types Available Through Program:

- U Channel
- Square Metal Tube (2” x 2” Telespar)
- Wood (4” x 4”) various lengths
- Wood (4” x 6”) various lengths