



Kansas LTAP Fact Sheet

A Service of The University of Kansas Transportation Center for Road & Bridge Agencies

Tips for Effective Sign Maintenance

Traffic signs will require repair or replacement for any one of a number of reasons including:

- Vandalism.
- Hit by vehicle.
- Relocated and/or adjusted by private individuals.
- Damage by weather or other natural factors.
- Reached its useful life.

When a traffic sign requires repeated maintenance, consideration should be given to the reason why the problem exists.

Although sign vandalism in some cases seems to be an overwhelming problem, it is a situation that cannot be ignored. Examples of sign vandalism include sign stealing, over-painting, and bullet holes. Also, signs are often severely bent or knocked down by vehicles running off the road and hitting the sign, which is why crashworthy sign supports should be used. Signs can be bent, twisted, knocked down or even blown away

by strong winds. Finally, signs will eventually become ineffective, when they have reached their service life, because the colors have faded and/or the retroreflectivity level is below the minimum required for that type of sign.

When signs are damaged by vandalism, by a vehicle hit, or by weather factors, the sign technician must determine if the sign should be repaired, replaced, or left as is. This is usually a field judgment. More often than not, it is cheaper to replace a badly damaged or unreadable sign than attempt many repairs in the field.

When determining whether or not to conduct repairs in the field, the technician should consider the repair costs, remaining service life of the sign face after repairs and the value of the sign blank (when it is reusable) against replacing it with a new or recycled sign. A sign technician should not leave a sign down or take a damaged sign away and leave nothing in its place. The technician should always have a replacement sign

or sufficient repair materials while working in the field. If a field repair is appropriate or repair of the sign is needed until a replacement sign can be obtained, consider the following tips while performing the work.

Field repair of bent signs

Signs may be bent such as this STOP sign shown in Figure 1, on page 7. While many bent signs can be read in the daylight, some bent signs, even signs with minor bending, are difficult to see at night because they no longer reflect the light from the vehicle's headlights back to the driver's eyes. Minor bending like this may be repaired by removing the sign from the post and straightening the sign face.

If after straightening, the message remains clear, legible, retroreflective and the sign surface is not opened, cracked or separated from the sign face, it may be reused. Remember, if a sign is so badly bent that it will take several hours to fix, it is often cheaper to



Figure 1.



Figure 2.



Figure 3.

Examples of signs needing maintenance. Sometimes it's less expensive to replace the sign than spend the time to fix it.



replace the sign and leave any repair or salvage to a shop operation. To repair a sign with minor bends:

1. First try to straighten the sign. If possible, bend the sign back in place on the sign post with hand pressure (wear leather gloves).

2. If the sign cannot be straightened sufficiently with hand pressure, remove the sign from the support and place it on a flat surface such as a truck bed, trailer bed, or fender dolly. Use cardboard or cloth to protect the sign face and pound it flat with a rubber mallet. (The cloth and rubber mallet will minimize further damage to the reflective sheeting.)

3. If the sign is no longer serviceable, replace it immediately if it is a regulatory or warning sign. If a replacement sign is not immediately available, remount the existing sign until you return later with a satisfactory replacement.

Field repair of scrapes and holes

Signs with scraped faces (usually as a result of being hit in a collision) or signs that have holes in them (typically as a result of gunshot vandalism) are often no longer legible, particularly at night. The damaged areas no longer reflect light back to the driver.

The sign in Figure 2 has been hit by several gunshots. Even with the holes, the sign can be read during the day and functions as intended, but leaving a sign up in this condition does not convey a serious message and may encourage more gun shots to this and other signs. The sign should be replaced or repaired as soon as practical. Minor damage can often be repaired in the field.

Field patching can be done by preparing a repair kit that includes the appropriate colors and types of new sheeting materials (including pressure-sensitive adhesive sheeting), cleaners and sealants. To repair a sign with scrapes or a few holes:

1. The sign should first be straightened and any bullet holes pounded flat using cardboard or cloth to protect the sign face and pound it

flat with a rubber mallet.

2. Clean the area(s) to be patched with Xylol, then Varnish Naphtha.

3. If you carry replacement sign faces or patching materials, make sure that the retroreflective material being used for patching is the same as the material on the face of the sign. If in doubt about what type of sheeting to use replace the sign.

4. Follow the manufacturer's recommendations when making field patches. Cut background field patches slightly larger than the damaged area. Pressure sensitive material should be extended at least 1/2-inch beyond the damaged area.

5. Replace the damaged legend with diecut, pressure sensitive, pre-spaced letters, borders and symbols and firmly squeegee into place.

6. Seal the hole on the back of the sign by applying aluminum foil tape to stop moisture from reaching the adhesive on the sign sheeting patch. For large holes, start placing the foil at the bottom of the hole, overlapping about 1/2-inch in a shingle fashion as you move up covering the hole.

7. If the sign is subject to snow burial and the replacement sheeting extends to the top edge of the sign, place transparent film along the top edge to seal out any moisture. Of course, if a sign can be relocated to an area to avoid snow burial, it should be.

Field removal of spray paint on signs

The sign shown in Figure 3 has been sprayed with black paint. Everyone who looks at the sign notices it. At night the message becomes hard to read. The safety effectiveness of this sign is significantly reduced and requires immediate attention.

Over-painted signs can often be cleaned, but many cleaning materials will damage the sign face materials which will result in the need to replace the sign.

There are several approaches to over-painted signs. All these approaches work to varying degrees to help reduce and control this problem. Generally

a combination of these approaches is recommended for communities with recurring or increasing vandalism.

Paint can sometimes be removed from the face of signs without damaging or reducing the sign's retroreflective properties. Several manufacturers have developed sign protective overlays that are more tolerant to paints and cleaning agents, and they have also developed improved cleaners.

Paint should not be removed with abrasive compounds or implements that will leave the sign face scratched (e.g., steel wool). After cleaning off the paint, signs should be inspected under night conditions or measured to determine if they have retained sufficient retroreflective characteristics to remain legible at night.

Sign has reached or exceeded its service life

Over time the colors of the sign facing will fade—especially for signs facing south towards the sun—reducing the contrast level between the legend and the background. The sheeting's retroreflectivity properties will diminish, such that the sign can no longer be seen and read by the driver from an adequate distance. Under either condition the sign has reached its service life and should be replaced.

There is a new standard in the MUTCD for maintaining sign retroreflectivity and contrast levels. By January 2015, agencies are required to replace regulatory, warning and ground-mounted guide signs (except street name signs) that fall below the minimum requirements. By January 2018, the replacement requirement extends to street name signs and overhead guide signs.

As noted earlier the agency's inspection program should be able to identify signs that need to be replaced for this reason. Also mentioned earlier is the possibility of cleaning the sign to extend its useful life.

An agency can program the replacement of signs due to low levels of retroreflectivity by methods other than a field inspection, including:



- Based on expected sign life—the sign is replaced when it has reached its expected life, which is based on the experience of retroreflectivity degradation in the geographic area.
- Blanket replacement—all signs in an area or route, or of a given sign type are replaced at specified time intervals.
- Control signs—replacement of signs in the field is based on the performance of a sample set of signs placed and monitored in the maintenance yard.

For more information on maintenance of signs as well as sign supports, consult the FHWA guide that was source of this article, referenced below. The guide was last updated in January 2010.

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- Adapted from Maintenance of Signs and Sign Supports: A Guide for Local Highway and Street Maintenance Personnel. U.S. Department of Transportation, Federal Highway Administration. FHWA Safety. January 2010 edition. Accessed 6-28-10. PDF. http://safety.fhwa.dot.gov/local_rural/training/fhwasa09025/