

Sign Maintenance



Traffic signs promote highway safety and provide for the orderly movement of all road users. They notify road users of regulations and provide warning and guidance needed for safe,

uniform, and efficient travel.

The *Manual of Uniform Traffic Control Devices* (MUTCD) governs traffic signs in all states and NH cities and towns. It states that signs must

- Fulfill a need,
- Command attention and respect,
- Convey a clear, readable message, and
- Allow the driver time to respond correctly.

To meet these purposes, agencies should keep signs properly positioned, clean, and legible. They must repair or replace damaged or deteriorated signs. To ensure proper signage, they should have a maintenance system.

Maintenance Systems

Maintenance systems enable managers to prepare repair work plans. Some prepare budgets to accomplish the plans. Managers should give priority to critically located signs, such as at intersections and around schools.

Agencies must regularly inspect all its signs for repair or replacement. The MUTCD recommends day and night inspection. Managers must thoroughly train field inspectors. In addition, they should train employees who travel on roadways to report unsafe signs.

Inspectors should look for obstructions that obscure sign visibility. Glare, shadows, and orientation are also visibility issues. Inspectors should also identify where new signs are needed. They should also ensure proper sign height and offset.

Mounting Height. The MUTCD requires

signs on rural roads to be at least 5 feet from the bottom of the sign to the near edge of the pavement. NHDOT advises that in areas of expected heavy snow fall, mounting height should be 6 feet to limit winter damage. The MUTCD requires that where parking or pedestrian movements occur, the clearance to the bottom of the signs shall be at least 7 feet.

Lateral Offset. The minimum distance from the shoulder edge to the near edge of a sign must be 6 feet. If no shoulder exists, the distance is from the pavement edge.

Causes of Damage

Retroreflectivity makes signs visible at night by bouncing light back to its source. Age, sunlight, and air pollution reduce it.

Sign damage often hinders the message. Support damage can cause it to fail. Weather, accidents, and vandalism cause sign and support damage. Weather deteriorates sign faces and metal backing. It causes support to rust. Vehicle accidents bend and scrape them. Vandalism also causes missing and paint-sprayed signs. Bullet holes and dings can erase at least parts of a sign message. Many bullet holes reduce retroreflectivity. Crews should replace these signs.

Shop and Field Repair

Crews can sometimes repair minor sign damage in the field. They should repair major damage in the shop. If they remove a sign to repair it, they should install a temporary sign.

Whatever the cause of reduced reflectivity, crews should replace such signs. They should also replace signs if a repair will reduce reflectivity. They should replace any damaged signs when motorist cannot easily read the message.

Crews can repair bent signs if they can straighten it on the post by hand pressure. If it is necessary to remove the sign and pound it flat, they will probably damage the background or legend. They should replace it, which is usually less expensive.

Many agencies find that replacing supports with breakaway posts is less expensive over time. They

also cause less damage and injury when struck. *State law requires calling DigSafe before digging.*

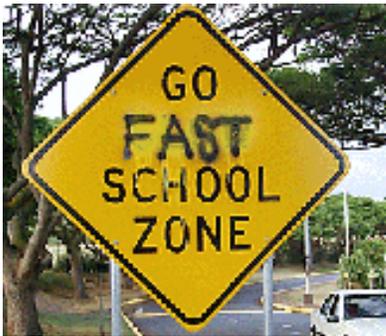


Figure 1

Crews cannot remove paint from the Figure 1 sign without damaging the retroreflectivity. They should replace it. Furthermore, the new sign should be a MUTCD designated S1-1. (See Part 7 of the MUTCD.)

Sometimes crews can remove paint without reducing the sign's reflective properties. To remove paint,

1. Wipe the sprayed area lightly with a soft cloth moistened with mineral spirits. If ineffective, go to step 2.
2. Wipe the sprayed area with a soft cloth moistened with lacquer thinner.

Abrasive materials and compounds usually scratch the sign face. Retroreflective sheeting damage depends on paint type, paint exposure length, and the cleaning chemical. After cleaning, night inspection is best. Repaired signs that look good in daylight can be ineffective, and unsafe, at night.

SIMS (Sign Inventory Management System), a software-based system, will assist road managers with inspection and reviews. Its purpose is repair plan development. Contact the UNH T² Center for more information. The UNH T² Center also has information on the MUTCD and sign placement.

Reference:

Interchange. Nebraska LTAP, Summer 2003. Vol. 17, No. 3.
Sign Guidelines. US Dept. of Interior, March 2002.
Maintenance of Small Traffic Signs. FHWA & USDOT, 1991.
Traffic Sign Handbook, UNH T² Center, 2005.

Pothole Patching

In 1998, Stephanie Fishman, then a UNH student, wrote an article on pothole patching for *Road Business*. It remains a clear description of how potholes form and how to repair them. Recent PW.Net traffic and new product developments indicate that some emphasis would be useful.

Potholes form when water becomes trapped beneath the pavement surface. As traffic moves over it, the pavement ruptures. Traffic makes the hole deeper and wider. As tires strike the water, it washes away the aggregate base. The longer the delay in repairing the hole, the bigger the pothole becomes.

Semi-permanent patching requires the following steps.

- Remove water and debris from the pothole, using a broom, shovel, and/or compressed air.
- Enlarge the hole with right angle corners and vertical sides using a pavement saw and square shovels.
- Use a tack on the bottom and sides, and place the mix with a shovel and rake in no more than 3" lifts.
- Compact each lift from the center towards the edges and corners with a vibratory plate compactor or single-drum vibratory roller.

Since Stephanie's article, some excellent proprietary mixes have become available. Their anti-stripping additives reduce the affect of water.

Sometimes, managers must quickly repair a pothole using a "throw-and-roll" or similar method. Crews at times patch a hole with water in it. Even with the modern mixes, crews will probably have to make a semi-permanent patch later. These mixes perform better than other materials, but cannot substitute for the steps described above.

For a copy of Stephanie's article, see the website below or contact the UNH T² Center.

Reference:

Fishman, Stephanie R. 1998. "Cost Effective Pothole Repairs." *Road Business*. Winter, UNH Technology Transfer Center.
<http://www.t2.unh.edu/winter98/pg6.html>