

## Checking for Sign Reflectivity

Reflectorization is an essential attribute of most signs. This is particularly true for stop, yield, regulatory, and warning signs. The in section 2A-16 of the MUTCD it states that "Regulatory and warning signs, unless excepted in the standards covering a particular sign or group of signs, **SHALL** be reflectorized or illuminated to show the shape and color both by day and night. All overhead sign installations should be illuminated where an engineering study shows that reflectorization will not perform effectively. Reflectorization, non-reflectorization, or illumination of guide signs shall be as provided in subsequent sections"

Each year we receive a number of questions regarding how to check traffic signs for retroreflectivity. Maybe the following will shed some light on this subject.

One way to check signs for retroreflectivity is to drive the entire system at night and look at every sign. Use a vehicle with less than perfect headlights and, possibly, a slightly older observer, whose night vision isn't nearly as good as your 19-year-old temporary summer employee. If the observer can see the signs at night, they're probably okay.

Some jurisdictions find it both expensive and hazardous to have employees out on the roadways at night, so they have experiments with flashing a strong spotlight (200,000 candlepower) on the sign during the day. From the flashback, the sign's retroreflectivity at night can be predicted.

A time consuming but highly precise method of checking retroreflectivity is the use of a retroreflectometer. This device is placed directly on the face of the sign and the amount of reflectivity is read in units of retroreflectivity. Obviously, this method is fairly time consuming, but gives numerical data that can be compared to acceptable or unacceptable values.

Other agencies use a procedure, which was described in the January 1989 issue of *Better Roads*:

1. With masking tape, affix a 10- by 8-inch sign inspection guide to a clean section of the sign. An inspection guide can be fabricated from old, reflective sheeting in the sign shop. It should be 75 percent as reflective as new sheeting if made from engineer grade, or 50

## Scrap Tires Fuel Cement Ovens

*Adding tire rubber to our asphalt is a good idea if it enhances the quality of our pavements, but, other measures are needed if we are mostly concerned with the environment -- "old tires are used in asphalt pavement... but stock pile grows"*

New technology on recycling scrap tires by burning them as fuel in cement kilns is being made available free of charge to all cement companies in the U.S. and Canada by Bridgestone/Firestone, Inc.

The technology was developed in Japan by Bridgestone Corporation and Nihon Cement Company. U.S. and Canadian patents were granted to Bridgestone in the early 1980s, and they can now be obtained at no cost from the Scrap Tire Management Council in Washington, D.C.

About 240 million tires are discarded by consumers in the U.S. each year, said Michael Blumenthal, executive director of the Scrap Tire Management Council.

"Reliable estimates indicate that stockpiles across the country contain 2.5 to be a 3 billion tires. These stockpiles can source of damage to the environment in case of fire and can provide breeding grounds for mosquitoes that spread disease... This generous donation by Bridgestone/Firestone and its parent company, Bridgestone Corporation, will help overcome a great deal of these problems," he said.

Many scrap tires end up in landfills, but Blumenthal warns that most landfills now ban or soon will ban scrap tires. Some old tires are used in asphalt pavement, construction of artificial reefs for



fishing, and other uses, but the stockpile continues to grow.

The efficiency of kilns, or ovens, used in the manufacture of cement is boosted by the use of scrap tires as fuel because tires have more BTUs and are less expensive than coal, and cement production can use the steel in the tire.

There are 200 cement kilns in the U.S. that could use this process, sources say. A spokesman for the Portland Cement Association said they "wholeheartedly support" the use of tires in cement kilns.

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percent as reflective as new sheeting if made from a higher reflectivity sheeting. If no reflectometer is available, an estimate will have to be used.

2. Step back about 30 feet. Holding a flashlight about two inches from your eyes, shine it at a sign.
3. If the inspection guide is brighter than the sign, the sign should be replaced within a year.
4. If the sign is brighter than the inspection guide, the sign will not have to be replaced for several years.

5. If the sign and the inspection guide appear of equal brightness, the sign has from one to two years of useful life.

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