

The numbers game

A look at the effectiveness of voluntary Speed compliance signs

We're all familiar with the "radar trailer" traffic calming devices that police departments have been using for many years. Now,

permanently mounted versions of these displays, known variously as "driver feedback signs," "voluntary speed compliance" (VSC) displays, "self-policing" signs, etc., are being installed in growing numbers in areas where radar trailers have proven effective.

Numerous tests have shown these devices to have a long-term positive effect, particularly near schools and playgrounds. Users also report strong support from the communities, as is too often not the case with other calming methods.

These permanently mounted speed displays trace their roots to the early days of radar guns, where large displays connected by cable to a police radar gun were sometimes used in community watch programs. They never really caught on though until in 1987 when the first such display was mounted to a trailer. The radar trailer was ultimately the catalyst to making self-policing a common practice.

Permanently mounted signs first appeared in 1995, but those first units received a cool reception, because their effectiveness had still not been well established.

"It wasn't until radar trailers reached 'critical mass' that we started seeing widespread acceptance of the fixed signs," said Information Display Co.'s spokesman Gary Odell.

Quick education

Numerous studies indicate that VSC signs tend to be most effective in school zones and have the greatest effect on those motorists who are traveling significantly over the speed limit. Their effect is more limited on multilane roads and in areas where the need for reduced speed is not as readily apparent to the motorist.



In a 1998 study, photo radar and speed-display boards were found to be about equally effective. This study also revealed that all speed-control devices produced more significant results on speeds of 10 mph or more over the 25-mph speed limit. Photo radar reduced these excessive speeds by 30.2%, and the speed-display board reduced them by 34.9%. The study concluded that VSC signs are more cost-effective. Similarly, a report by the Texas Transportation Institute showed a substantial reduction in average school-zone speed from 44.5 down to 35.3 mph shortly after the sign was installed. That decrease held up well in a second study conducted four months later which showed an average of 35.7 mph.

The Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) provides standards to which traffic-control devices used on federal highways or federally funded roadways must be designed and installed. States and cities typically have crafted their own traffic-control requirements either wholly or substantially in accordance with the MUTCD and smaller municipalities that do not have specific ordinances in place follow the MUTCD to maintain standardization and to minimize liability concerns.

By designing to MUTCD specs then, manufacturers meet the specifications of the vast majority of states and municipalities. Because MUTCD compliance is often an absolute requirement, and because failure to meet MUTCD standards may indicate a lack of understanding of the requirements of the traffic-control environment, this article focuses only on those products that are MUTCD-compliant. A number of other products are available.

Many aspects of the MUTCD apply to these signs and most readers of this publication would probably be able to look at the various displays and immediately know which are compliant and which are not. Not surprisingly, a compliant display looks very much like the standardized road signs that we're all use to.

The common look

With the exception of 3M, which uses their familiar fluorescent yellow-green

electromechanical flip-disk displays seen in variable-message signs for many years, these signs all use yellow (amber) LED-numerical displays. Most signs have a "violation alert" option, which flashes the vehicle speed if in excess of a preset value, and most are available for either AC-grid or solar-powered installations.

All the products reviewed here have a data collection option, but interestingly of the people we spoke with who have displays with the data collection feature, we found none who is actually using it. Consider carefully before paying extra for this option.

Size/shape

The size and shape of a VSC sign must meet all of the requirement for stan-

not specifically addressed in the MUTCD, but an FHWA representative has stated that the color of VSC signs should be white. A number of the engineers we spoke with who have specified VSC signs have concluded that their state or local guidelines restrict the use of white to regulatory signs only. One engineer points back to the MUTCD itself, which states:

- Regulatory signs give notice of traffic laws or regulations; and
- Warning signs give notice of a situation that might not be readily apparent.

His conclusion is that a VSC sign is not giving notice of a law or regulation, but rather of something that may not be apparent, to wit, that the driver is trav-



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ard highway signs. The absolute minimum size is 24 in. x 30 in. and can vary upwards from those dimensions in 6-in. increments. Per the MUTCD, the sign must read "YOUR SPEED" above the speed readout.

Color

Per the MUTCD, the changeable numerals must be yellow in color. A 3M spokesman stated that an FHWA interpretation allows for the use of their fluorescent yellow-green electromechanical flip-disk displays as well.

The color of the sheeting material is

eling at an excessive speed.

Information Display Co. indicates that engineers have been ordering these signs in warning sign colors for many years, with the majority now specifying fluorescent yellow-green for use in school zones. "I doubt that we sell 5% of these signs in white anymore," said an IDC spokesman.

Power considerations

With a typical power consumption of less than 300 watt-hours/day, even the most power hungry of these displays will cost less than \$15 per year to operate. Instead, getting power connected to

it in the first place is what can sometimes break the budget.

Grid Power vs solar

At first blush it seems that solar power would be used only for installations far from a source of grid power. But engineers report that even in urban areas, the cost of getting power to the unit can easily exceed the cost of a solar-powered package (especially in Southern states, where the solar kit is less expensive). The ongoing cost of solar is somewhat greater, because the battery(s) will require replacement, but a properly sized battery can typically be expected to last five to eight years. By considering the total installed cost, you may find yourself going solar. Expect prices in the range of \$1,500-5,000 for a solar kit, depending upon the power consumption of the sign, hours of operation and the amount of sunlight available in your area.

Currently on display

The following is a breakdown currently available MUTCD compliant products.

3M Dynamic Message Systems (formerly American Electronic Sign)

Product: Driver feedback sign, 24-in. x 30-in. and 36-in. x 48-in. models.

To gain entrée into the variable message sign (VMS) business, in 2000, 3M purchased Spokane, Wash.-based American Electronic Sign. The primary product was large VMS signs, but AES also had a VSC sign which, at the time, was little more than a footnote to 3M. Within three years 3M was to find themselves out of the VMS business, and VSC sign the only remnant.

Their driver feedback sign uses the vary familiar "TriLux" mechanical flip-disk/LED combination display technology that has been a staple of the VMS industry. 3M's application of their considerable market penetration to their VSC sign has been a Major factor in establishing VSC signs in the market-place.

Housed in a rugged steel enclosure, the 3M sign utilizes 3M's own antigraffiti film on both the display window and sign. This sign is available in both 24-in. x 30 in. and 36-in. x 48-in. models, both of which the company maintains are MUTCD-compliant based on an FHWA interpretation allowing fluorescent yellow-green mechanical display

segments in place of yellow LEDs.

3M's spokesman offered the following reasons for selecting their product over other manufacturers' products:

- 3M service and support;
- Most popular display of its kind—more 3M signs out there than any other brand;
- Combination of mechanical flip -disk display and LED-display technologies provides good visibility under all light conditions;
- Timer system is built in at no extra cost;
- Broad viewing angle so you don't lose the message as you get close to the sign (160° cone of vision); and
- Antigraffiti front face – both window and sign.

Information Display Co.

Product: SpeedCHECK, fixed mount (VSC-1520 & VSC-1820)

Founded in 1988 as a manufacturer of speed-radar guns, IDC supplied components and speed displays to major police radar manufacturers. In 1996 they developed the first integrated portable VSC system, as well as a fixed-mount sign.

IDC's forte became high-visibility outdoor displays as they developed proprietary methods of improving display contrast and intensity. Their latest designs include unique features to eliminate reflections from sun, sky and headlights and additional advanced vandal-resistance features.

IDC's spokesman offered the following reasons for buying their product over other manufacturers' products:

- In stark contrast to 3M's wide viewing angle, IDC touts a closely defined viewing area; "Our first signs had a real wide viewing angle, but we used to see a high percentage of drivers craning their necks to watch as they drove past ...right where you most want their attention on the road ahead. The SafetyMask system in our second-and third-generation signs prevents that by limiting viewing to a defined area within the driver's normal forward field of view.";
- Ultraclear contrast enhancement technology provides a deep black background for greatly improved viewability in adverse light conditions;
- Display blanking of upper speed

range discourages speed contests;

- Multiple complementary features work together to achieve very low power consumption while still providing industry-leading visibility;
- Highly vandal resistant—window and display panels deflect up to 2½ in. on impact;
- 100% solid-state—no moving parts to wear, stick or break; and
- Simple to repair – two vandal-resistant fasteners provide access to components. Self-test and troubleshooting cards allow untrained personnel to quickly repair problems.

U.S. Traffic Corp.

Product: "515P Radar Display"

U.S. Traffic Corp., a division of Quixote Co., is one of the big players in the traffic control business. U.S. Traffic occupies nearly 300,000 sq ft of manufacturing facilities in Southern California and Mexico. Although they are new to the VSC arena, their 515P Radar Display is based on their mature VMS display technology.

The product line includes permanent and portable message signs, arrow boards and radar speed displays, including LED message signs and the MUTCD-compliant 515P Radar Speed Displays.

A U.S. Traffic spokesman offered the following as reasons for selecting their product over other manufacturers' products:

- Uses the same CPU and LED board that are used in other U.S. Traffic VMS signs;
- Compatibility with and durability of the major components used in portable trailers;
- Four communication ports, eight digital inputs, eight analog inputs and eight digital outputs allow the user to interface to external equipment or devices; and
- Optional pixel feedback allows the user the advantage of checking for LED pixels that have failed. **TME**

Knaras is owner of Intermountain Traffic Safety Inc., West Valley, Utah.



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