USE OF SPEED DISPLAY TRAILERS IN WORK ZONES

A. INTRODUCTION

The Speed Display Trailer (SDT) is a small device that usually consists of a changeable speed display, a radar speed detector and a regulatory speed limit or advisory speed sign. The speeds of approaching vehicles detected by the radar are displayed in real-time. A static sign that reads "Your Speed" is also attached to the display, thus, passing drivers receive immediate feedback as to how fast they are driving and how their speed relates to the posted speed limit.

Speed display trailers are not intended as an enforcement tool. "The assumption is that motorists will drive slower once they are aware of their speed. These speed reductions occur in two ways. First, drivers will read the display, realize that they are speeding, and choose to slow down. Second, motorists with radar detectors will likely slow down when their detectors are activated by the radar signals." (5)

B. OBJECTIVE

- Reduce the speed of vehicles traveling through a work zone.
- Encourage speed limit compliance.
- Increase safety in construction and maintenance work zones.

C. LITERATURE REVIEW SUMMARY

C.1. ADVANTAGES

- The speed display trailer is an effective speed reduction measure in work zones. Mean speeds are reduced by 2 to 7 mph (see *4, 6, 7, 9, 10, 11, 12, 13 and 16*).
- Speed limit compliance is increased by 10 to 40 percentage points (see *7, 9, 10, 12 and 13*).

- Drivers have shown positive attitudes toward the speed monitoring display.
- Set-up and removal of the speed display trailer is easily accomplished.
- The speed display trailer is a cost-effective speed control measure.

C.2. DISADVANTAGES

- The effectiveness of the speed monitor display decreases over time.
- Although an effective speed control countermeasure, speed reductions attained with the SDT are usually less than what is desired.

C.3. OTHER RELEVANT ISSUES

- Larger speed displays are easier to read and attract more attention.
- Some factors affecting the effectiveness of the speed monitoring display include its size, placement and design of the trailer.

D. DEPLOYMENT GUIDELINES

- The speed display trailer should be used in work zones where speeding is expected to be or has been shown to be a problem.
- Speed display trailers may be used in both urban and rural areas; however, its use in urban environments is discouraged due to the smaller display.
- Speed display trailers should not be used on highways with three or more lanes in one direction. In these cases, Portable Changeable Message Signs (PCMS) with Speed Display feature are recommended.
- Preferably, speed display trailers should not be used over an extended period of time (i.e., for more than two weeks), particularly in locations with high commuter traffic volume.
- However, if the display is going to be active for several weeks, periodic police enforcement should be arranged to maintain its effectiveness.

- The speed display trailer should be placed upstream of the work zone location (e.g., workers and equipment very near the traffic stream, hidden or unobvious work zone conditions, locations where an engineering study has indicated that drivers tend to increase speed).
- The mounting height, lateral offset, and orientation of the speed display trailer shall conform to applicable guidelines from MUTCD sections 2A.18, 2A.19, and 2A.20.
- The speed display trailer should be delineated/protected with traffic control devices as shown in SHA's temporary traffic control typical applications.
- To maintain speed reductions throughout the work zone, more than one speed display trailer should be used in work zones longer than one mile.
- The speed display trailer should be sited and aligned to provide maximum legibility.
- If two speed display trailers are used, they should be placed on the same side of the roadway and be separated by at least 1,000 ft. Placement on both sides of the roadway at the same location may cause driver distraction and conflicting messages.
- Each time the SDT is set up, the radar should be checked and adjusted (if necessary) to ensure accuracy.
- The radar should be aimed to measure the speeds of vehicles traveling on the fastest moving lane, at no more than 10 seconds of distance upstream of the radar location.
- The speed display should be activated only when an approaching vehicle is detected traveling at 3 mph or more over the speed limit. If no vehicles are approaching, the display should be blank.
- On high-speed facilities (i.e., roadways where the posted speed limit is 50 mph or greater) the speeds of vehicles traveling more than 25 mph over the speed limit should not be displayed. This measure is intended to discourage drivers from seeing how fast they can get the speed display trailer to read.
- The display should be visible from ½ mile under both day and night conditions.
- The sign should be legible from a minimum distance of 650 feet.
- Preferably, the speed display configuration shown in Figure 1 should be deployed in the work zone area. However, if roadway clearances or other lateral restrictions exist, the vertical configuration shown in Figure 2 may be used.

- The text size of the LED speed display digits should be 18 inches for standard applications, and 24 inches for freeways/expressways.

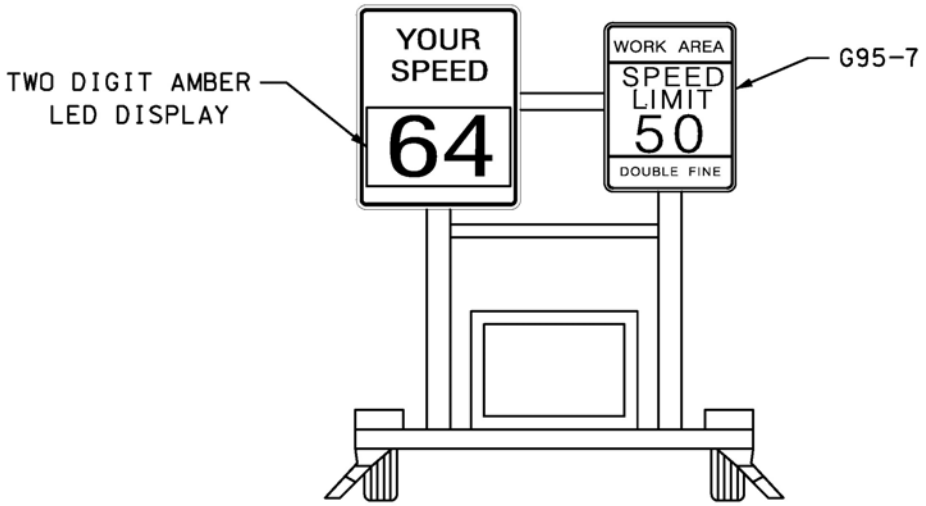

Figure 1. Preferred speed display configuration.

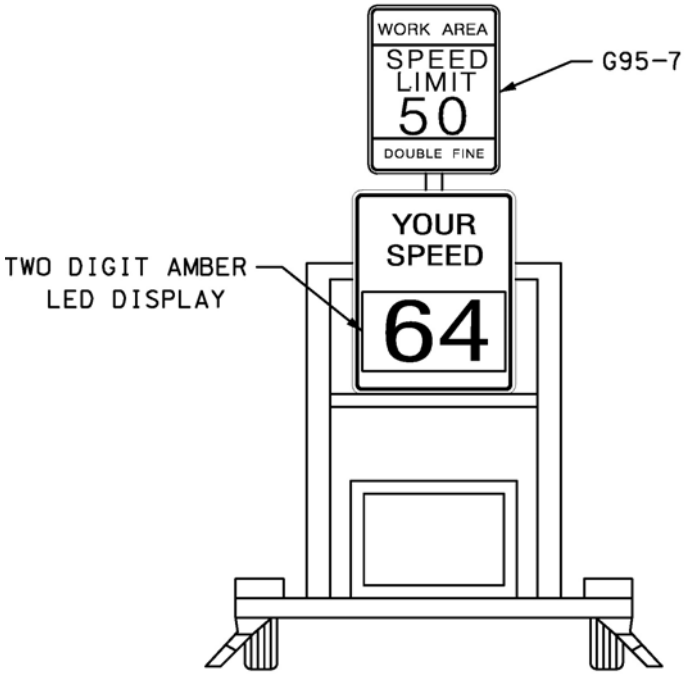

Figure 2. Speed display configuration to be used on roadways with lateral restrictions.

Disclaimer

The information provided in this section of the Maryland State Highway Administration's Work Zone Safety Tool Box is only to provide guidance. The Work Zone Safety Tool Box supplements current practices and standards provided in the current edition of the following documents:

1) The Manual on Uniform Traffic Control Devices (MUTCD)
2) The Maryland Supplement to the Manual on Uniform Traffic Control Devices
3) Maryland State Highway Administration Standard Sign Book
4) Maryland State Highway Administration Book of Standards and for Highway and Incidental Structures
5) Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials

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