
10. Variable Message Signs

Portable variable message sign devices capable of displaying various messages to the motorist will sometimes facilitate construction zone signing. These devices are normally trailer or truck mounted and have their own power system. As they are expensive to buy and operate variable message signs are normally used for the more complex traffic control plans.

Messages, or series of messages, can be preprogrammed into the device or can be added with an additional memory device. Some variable message signs can be programmed in the field. Display panels may have one, two, or three lines of copy.

When using a variable message sign care should be taken to insure that the message is clear. A lengthy message may distract the motorist from his driving task for too long a time. The sequencing of the words in a message can also cause problems. For example, RIGHT LANE CLOSED MERGE would get a different driver response than LANE CLOSED MERGE RIGHT. Yet, the messages are similar except for the beginning point.

Variable message signs are especially useful in the following situations:

- When different messages are needed during the day due to changing work operations.
- For upstream traffic diversion when instructions vary with traffic conditions.
- For emergency conditions.

D. Typical Applications (Layouts)

Each traffic control zone is different, with variables such as speed, volume, location of work, pedestrians, and intersections changing the needs for each location. The goal of a traffic control zone is safety, and the key factor in making the control zone work is the application of proper judgment. The examples in this chapter are guides showing how to apply the standards.

Typical applications include the use of various traffic control methods, although they do not include a layout for every conceivable work situation. Typical applications may be altered to fit the conditions of a particular work area.

The layouts in the MUTCD and this Handbook represent minimum requirements. Other devices may be added to supplement the devices shown in the layout, and sign spacings and taper lengths can be increased to provide additional

time or space for driver response. When difficult situations or potentially hazardous conditions are encountered, typical designs may be modified to a higher-type treatment as indicated by the following:

- Additional devices
 - additional signs
 - flashing arrow panels
 - more channelizing devices
 - high-level warning devices

- Upgrading of devices
 - improved pavement markings
 - larger signs
 - higher-type channelizing devices
 - barriers in place of channelizing devices
 - variable message signs

- Improved geometrics at detours or crossovers

- Increased distances
 - longer advance warning area
 - longer tapers

- Lighting
 - steady-burn lights for channelization
 - flashing lights for isolated hazards
 - illuminated signs
 - floodlights

Five of the typical applications used in this Handbook are taken from the Ohio MUTCD. On five of the typical applications, the existing pavement markings have been either marked or changed to indicate those that should be changed for long-term projects. If the project is short-term, such as 1-day maintenance operations, the

pavement markings may not need to be removed and replaced although guidance should be provided with channelizing devices to insure that drivers don't follow the permanent markings.

Table 1 (page 13) shows the typical traffic control devices needed for various work zones. It indicates how traffic control increases as work approaches the traveled lane and as conflict with traffic increases. Some of the less complicated work zones are not illustrated. The typical traffic control devices for such zones are given in Table 1, page 13.

1. Work Entirely Beyond Shoulder or Parking Lane

Traffic control depends primarily on devices such as advance warning signs, flashing vehicle lights, and flags. An advance warning sign should be used when any of the following conditions occur:

- Work will be performed immediately adjacent to the roadway at certain stages of the activity,
- Equipment may be moved along or across the highway, and
- Motorists may be distracted by the work activity.

A typical sign for this situation could be MOWING AHEAD. If the equipment travels on or crosses the roadway, it should be equipped with appropriate flags, flashing lights and/or a Slow Moving Vehicle symbol.

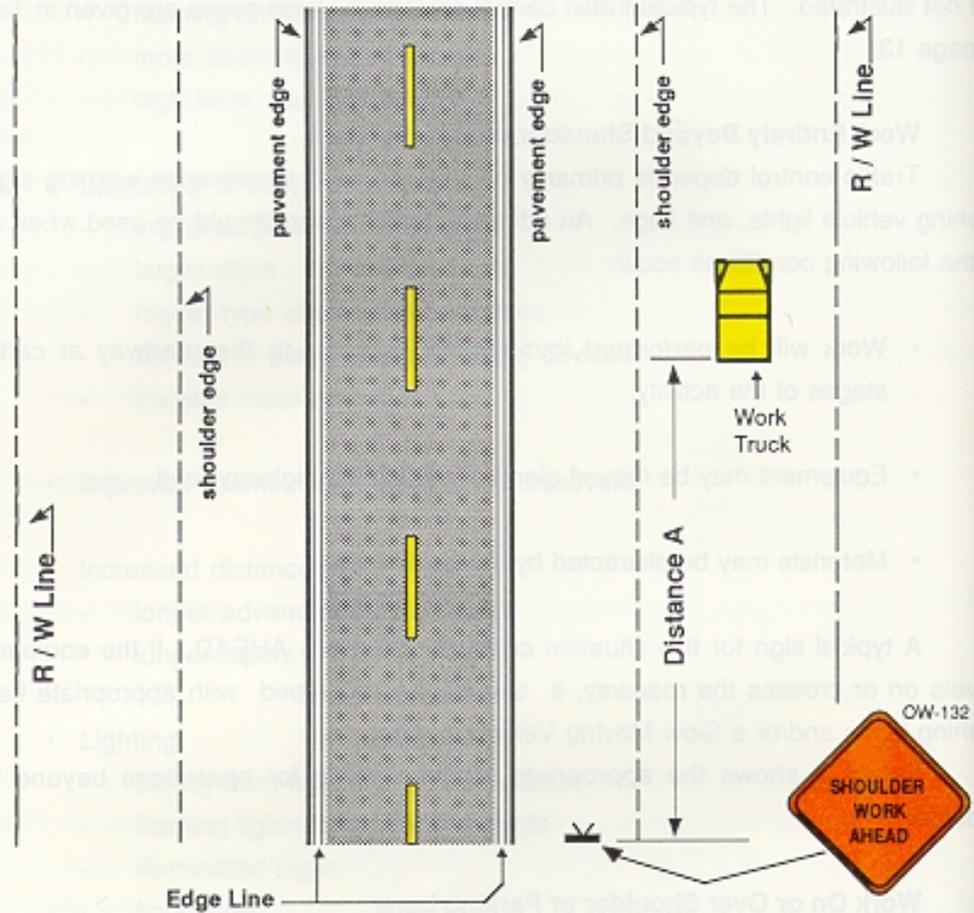
Figure 8 shows the appropriate traffic controls for operations beyond the shoulder.

2. Work On or Over Shoulder or Parking Lane

No Encroachment in Traveled Lane

There is no direct interference with traffic. When the shoulder is occupied or closed, the motorist should be advised and the workers should be protected. Usually, the single warning sign SHOULDER WORK is adequate. Refer to Figures 9 and 10 for typical applications for stationary and moving shoulder operations.

TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR OPERATIONS BEYOND THE SHOULDER



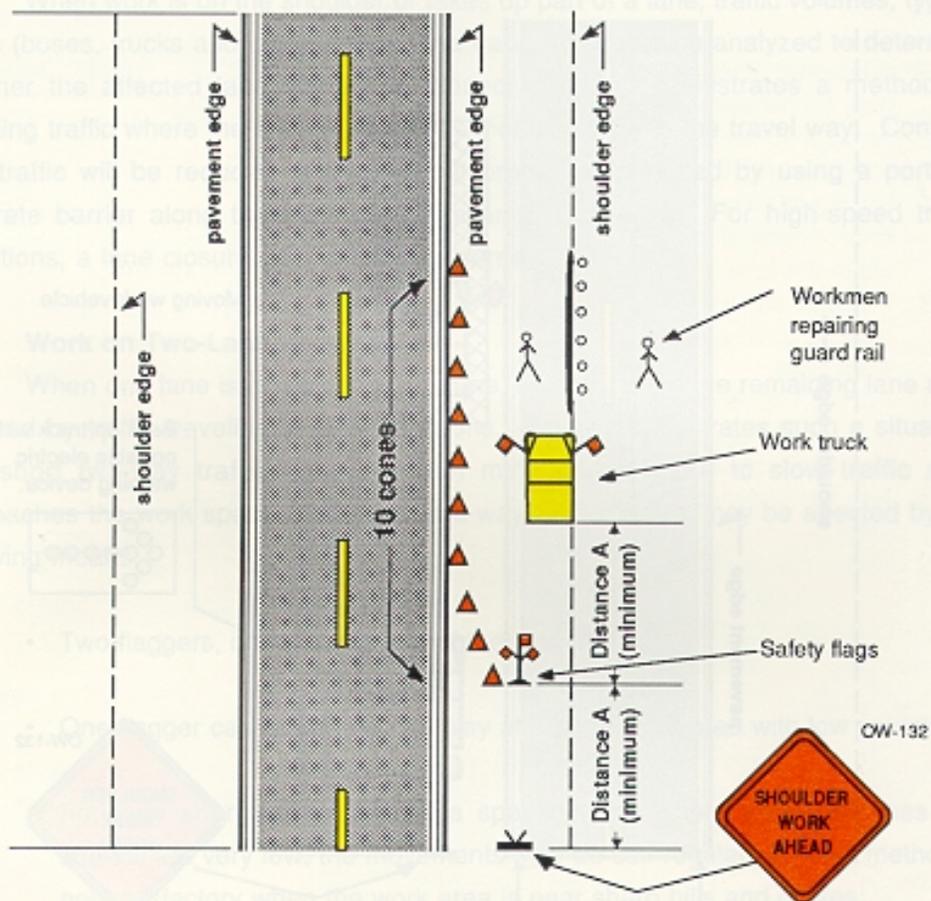
NOTES:

1. Erect signs only on that side of the road where work is being done.
2. Erect signs facing both directions for work in the median area.

TYPE OF ROADWAY	DISTANCE A - feet
Urban	200
Standard	500
Expressway	1500

Figure 8

TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR STATIONARY OPERATIONS ON THE SHOULDER



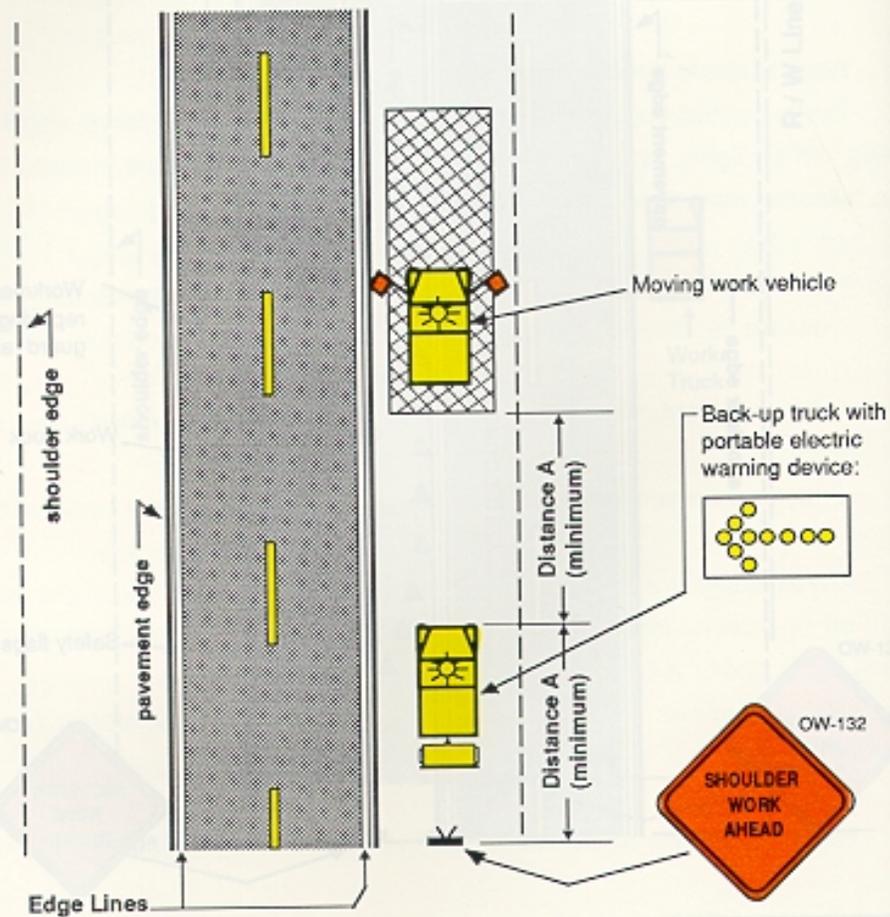
NOTES:

1. Space the cones at 50' maximum.
2. For work within the median, install the same cones and signs for both directions of travel.

TYPE OF ROADWAY	DISTANCE A - ft.
Urban	200
Standard	500
Expressway	750

Figure 9

TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR MOVING OPERATIONS ON THE SHOULDER



NOTE:

1. For work within the median, use the same treatment for both directions of travel.

TYPE OF ROADWAY	DISTANCE
	A - feet
Urban	200
Standard	500
Expressway	750

Figure 10

When an improved shoulder is closed on a high-speed roadway, it should be treated as a closure of a portion of the road system, since the motorist expects to be able to use it in an emergency. The work area on the shoulder should be closed off by a taper for channelizing devices. However, flashing arrow panels should not be used, except in the caution mode.

Minor Encroachment in Traveled Lane

When work is on the shoulder or takes up part of a lane, traffic volumes, type of traffic (buses, trucks and cars), speed, and capacity should be analyzed to determine whether the affected lane should be closed. Figure 11 illustrates a method for handling traffic where the work area encroaches slightly into the travel way. Conflicts with traffic will be reduced and additional protection provided by using a portable concrete barrier along the work area similar to Figure 12. For high-speed traffic conditions, a lane closure should be considered.

3. Work on Two-Lane Roadway

When one lane is closed on a two-lane, two-way road, the remaining lane must be used by traffic traveling in both directions. Figure 13 illustrates such a situation. The short two-way traffic taper (50 feet minimum) is used to slow traffic as it approaches the work space. Alternate one-way traffic control may be affected by the following means:

- Two flaggers, one at each end of the work area;
- One flagger can assign right-of-way at a short work area with low volumes;
- For very short work areas at a spot location where traffic volumes and speeds are very low, the movements may be self-regulating. This method is not satisfactory when the work area is near sharp hills and curves;
- A pilot car; and
- Temporary traffic signals for long-duration projects.