

Safe and Effective Use of Law Enforcement Personnel in Work Zones

Module 2.2

Traffic Control Strategies for Advance Warning Areas



Module 2.2

Module 2 includes the following:

Lesson 2.1— Work Zone Area Components

- Defines the four areas common to most work zones

Lesson 2.2 — Advance Warning Area

- Describes traffic control and configuration for advance warning area

Lesson 2.3 — Types of Tapers

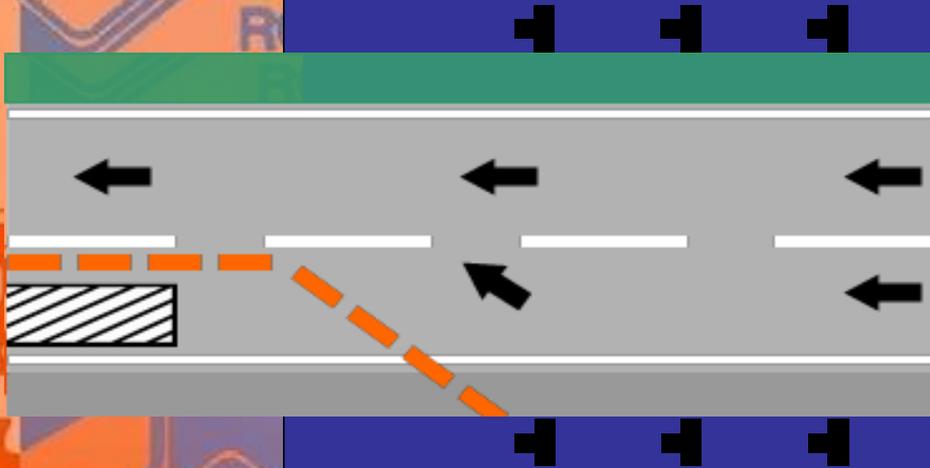
- Discusses the configuration and layout of tapers and buffers

Objectives of this Lesson

When you complete this lesson, you will be able to:

- Identify the type and placement of traffic signs in advance warning areas
- Discuss the use of portable changeable message signs (PCMS)
- Discuss the use of arrow panel

Advance Warning Area Signs



The Book of Standards provides guidance for sign spacing in advance warning areas based on the type of roadway and the prevailing speed of traffic.

3rd Sign



2nd Sign



1st Sign



When 3 signs are used:

- 1st sign: Gets motorist attention
- 2nd sign: Gives specific message
- 3rd sign: Provides guidance

Sign Spacing in AWAs

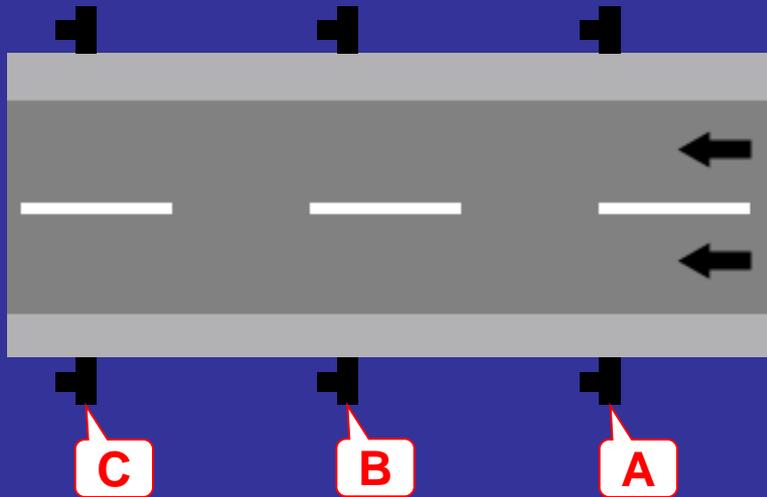
Recommended minimum sign spacing in the Book of Standards is based on roadway type and likely traffic speeds.

The threshold between high and low speed is between 40 mph and 45 mph.

Road Type	Distance Between Signs		
	A	B	C
Urban (low speed, ≤ 40 mph)	100'	100'	100'
Urban (high speed > 40 mph)	350'	350'	350'
Rural	500'	500'	500'
Expressway / Freeway	1,000'	1,500'	2,640'

Expressway - A high-speed divided highway with full or partial control of access and grade separations at major intersections.
Freeway - An expressway with full control of access.

Advance Warning Sign Spacing



For a high speed urban roadway (other than a freeway), signs A, B, and C would be placed 350 feet apart on both sides of the roadway.



If recommended sign spacing is not possible, it may be better to increase rather than decrease spacing.

<u>Road Type</u>	<u>A</u>	<u>B</u>	<u>C</u>
Urban (low speed, ≤ 40 mph)	100'	100'	100'
Urban (high speed, > 40 mph)	350'	350'	350'
Rural	500'	500'	500'
Freeways and Expressways	1,000'	1,500'	2,640'

Supplemental Devices

Portable Changeable Message Signs (PCMS) and Arrow Panels are used in addition to static signs and other TCDs, never as a replacement.



The arrow panel in the arrow mode is used ONLY when a lane is closed and merging is required. When arrow panels are used to close multiple lanes, a separate arrow panel is used for each closed lane.

Move/Merge Right



Move/Merge Right or Left



Caution



Arrow Panels

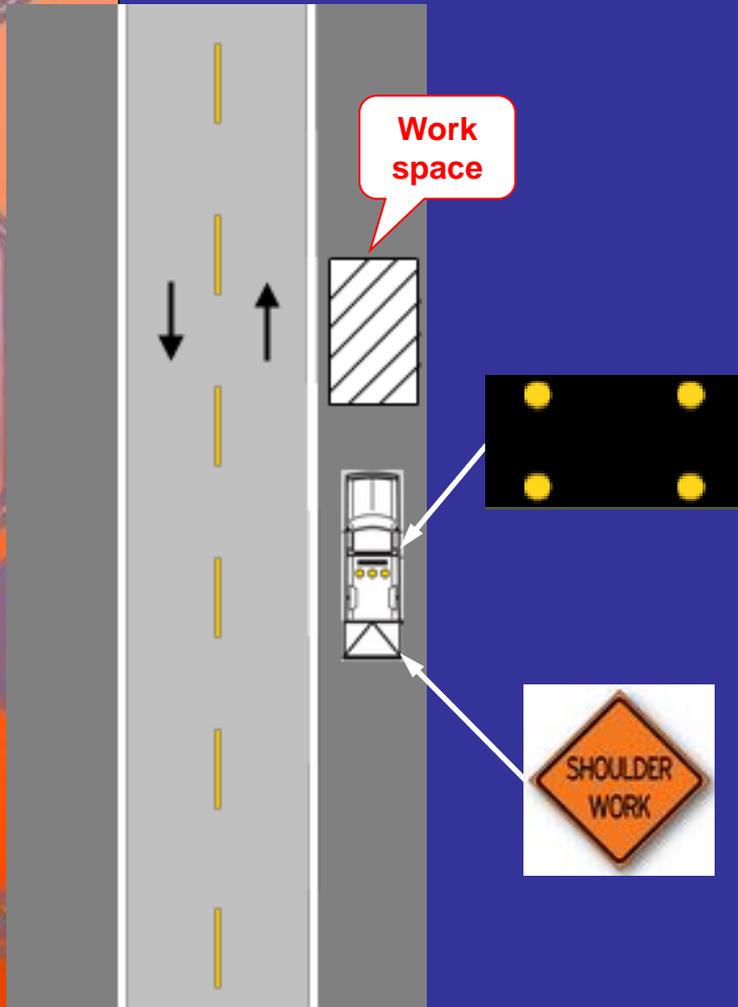
Flashing or sequential arrow panels are displayed when traffic must move or merge right.



The display is in *caution mode* for shoulder operations if all lanes are open.



Arrow Panels in Caution Mode



This example is for shoulder work where the arrow panel is in a caution mode and is included as a part of the protection vehicle.

Arrow Panels are used in a caution mode for shoulder work, when the shoulder is occupied but all lanes are open.

Portable Changeable Message Signs

The primary purpose of PCMS in TTC zones is to advise the road user of unexpected situations or a significant change in traffic patterns.

Some applications of PCMS include:

- Where motorist's attention needs to be drawn to the travel speed through the work zone
- Where significant queuing and delays are expected
- Where adverse weather conditions are present
- Where the speed of vehicular traffic is expected to drop substantially
- Where there are changes in alignment or surface conditions
- Where advance notice of ramp, lane, or roadway closures is needed
- Where significant changes in the road user pattern are expected

Placement of PCMS

PCMS and arrow panels are used in combination with static signs and TCDs.

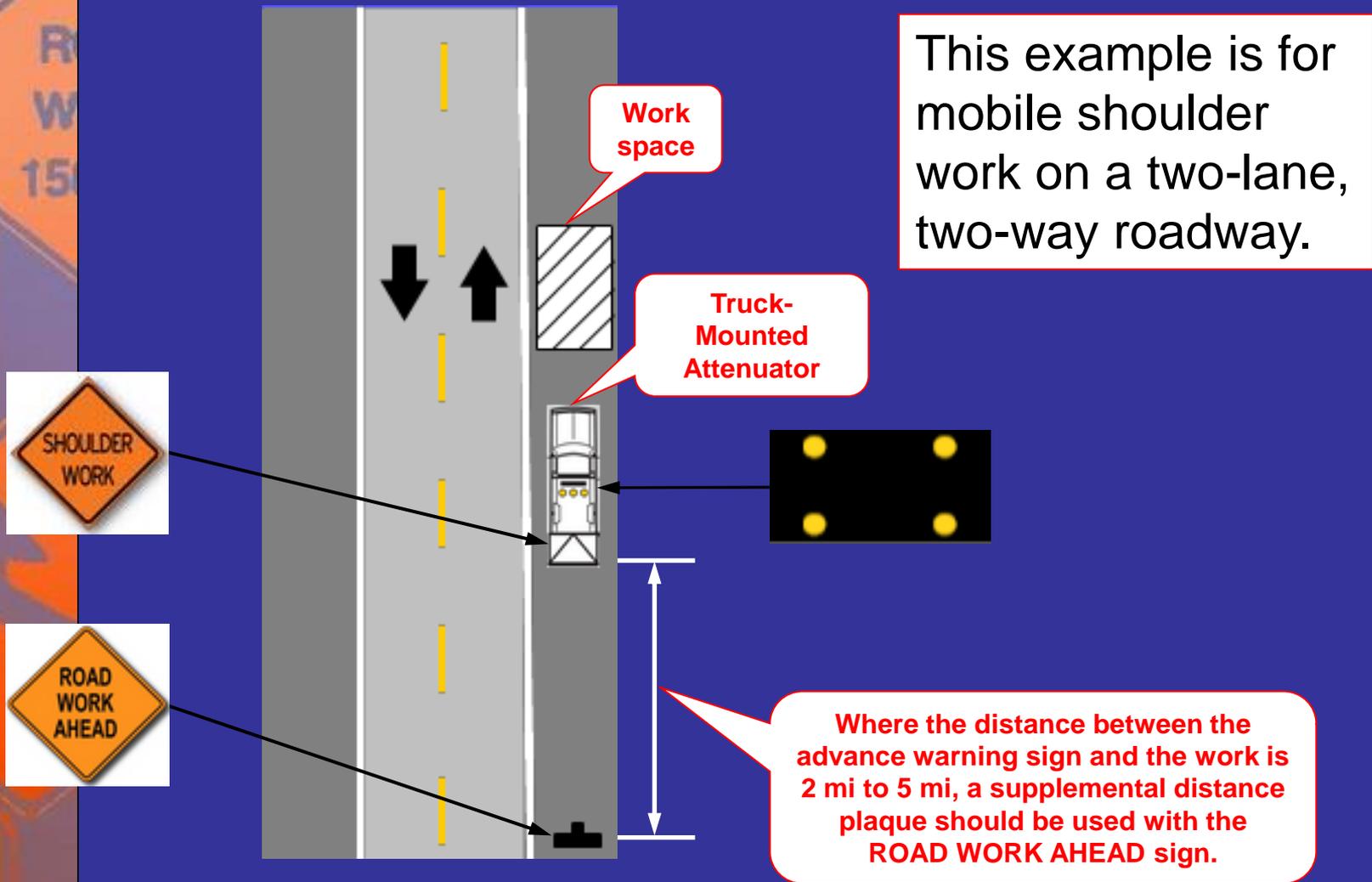


- PCMS should be placed on the shoulder of the roadway or if practical, further from the traveled lane
- Multiple PCMS should be placed on the same side of the roadway, separated from each other by minimum of 1000 feet

SHA Typical Applications

- In Module 3 of this course, we will review a few specific typical applications of interest to LEOs.
- Typical Application for shoulder work, from Section 6H of the MdMUTCD, is presented to illustrate Guidance, Options and Standards.

Typical Example



This example is for mobile shoulder work on a two-lane, two-way roadway.

Multiple Choice

Question 1

Which statement is true with respect to arrow panels?

- A. Should always be used in combination with other signs and TCDs.
- B. Can be used instead of signs in most applications.
- C. Are never used in flash mode.

Multiple Choice

Question 2

Which type of arrow panel display should be used for work zones on the left (median) shoulder when no lanes are closed?



Multiple Choice

Question 3

If site conditions do not make it possible to space advance warning signs at the distances recommended in the Book of Standards, it may be better to _____ sign spacing.

A. Increase

B. Decrease

Matching

Question 4

When 3 signs are used in the advance warning area:

Column 1

___ 1st sign

___ 2nd sign

___ 3rd sign

Column 2

A. Gives specific message

B. Gets drivers attention

C. Provides guidance

Answer Key

1. A

2. C

3. A

4. B, A, C

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