Safe and Effective Use of Law Enforcement Personnel in Work Zones

Module 4

Application Workshop

State Highway Administration
Maryland Department of Transportation

Module 4

Module 4 takes you through an example problem step by step. In this module, you will be required to apply concepts presented in earlier modules.

The workbook for Module 4 includes key references you need to complete this example.

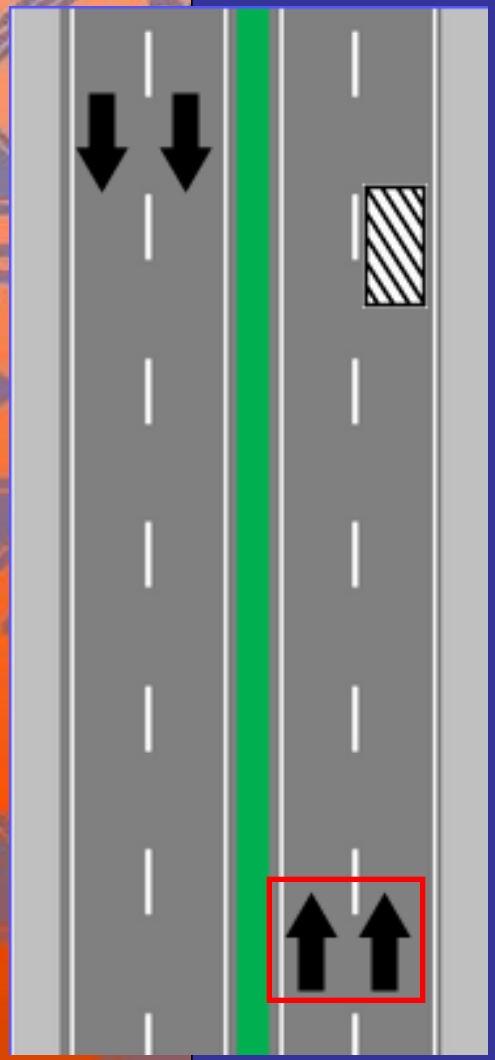
The example is not graded. A solution to the problem can be printed at the end of the lesson, but we encourage you to try and complete the example without looking at the solution.

Objectives of this Lesson

When you complete this lesson, you will be able to apply the concepts learned in previous modules to a freeway lane closure and determine:

- Sign types and spacing in the advance warning area
- Taper lengths
- Device spacing on tapers
- LEO vehicle placement under light traffic conditions
- The need for relocation of LEO vehicle when queues develop

Example Problem



This example is for a four-lane roadway in a rural area with little or no traffic congestion.

Road Type: Rural Freeway
Speed = 55 mph
Lane Width (W) = 12 Feet
Work Zone Duration = 6 Hours, Daytime

LEOs should focus on traffic approaching the work zone.

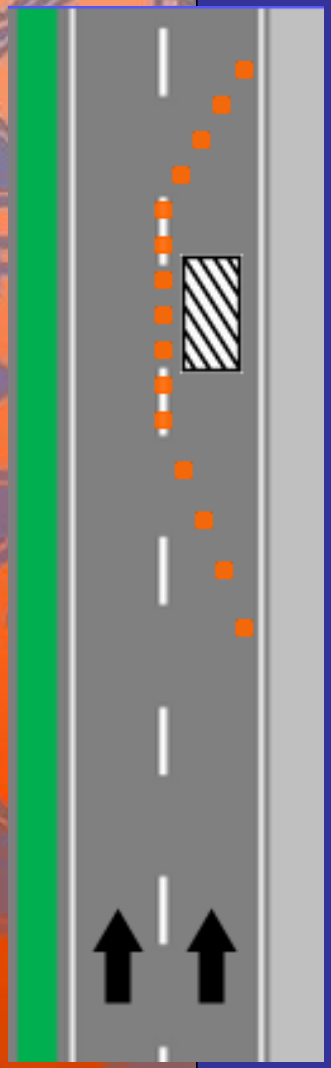
Example Problem

For this problem:

1. Determine the appropriate TTC typical application.
2. Determine signs and note the sign spacing from the typical application above.
3. Calculate minimum taper and buffer lengths.
4. Recommend the appropriate location for the LEO vehicle.

Road Type: Rural Freeway
Speed = 55 mph
Lane Width (W) = 12 Feet
Work Zone Duration = 6 Hours, Daytime

Step 1: Determine the appropriate TTCTA



Type of Roadway - Freeway

Type of Work - Stationary-Roadway

Type of Improvement - Right Lane Closure

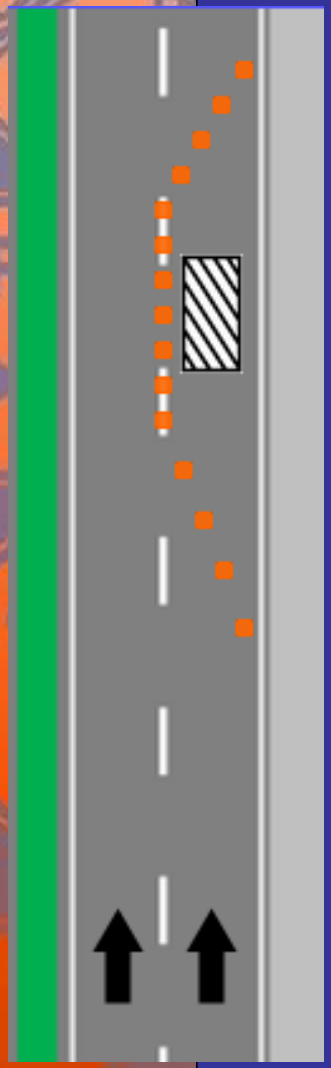
Speed - > 40mph

The appropriate TTCTA is

MD 104.05-07

Road Type: Rural Freeway
Speed = 55 mph
Lane Width (W) = 12 Feet
Work Zone Duration = 6 Hours, Daytime

Step 2: Signs & Sign Spacing



Refer to the Book of Standards MD 104.05-07 to determine signs and sign spacing.

Road Type: Rural Freeway
Speed = 55 mph
Lane Width (W) = 12 Feet
Work Zone Duration = 6 Hours, Daytime

Step 2: Signs & Sign Spacing

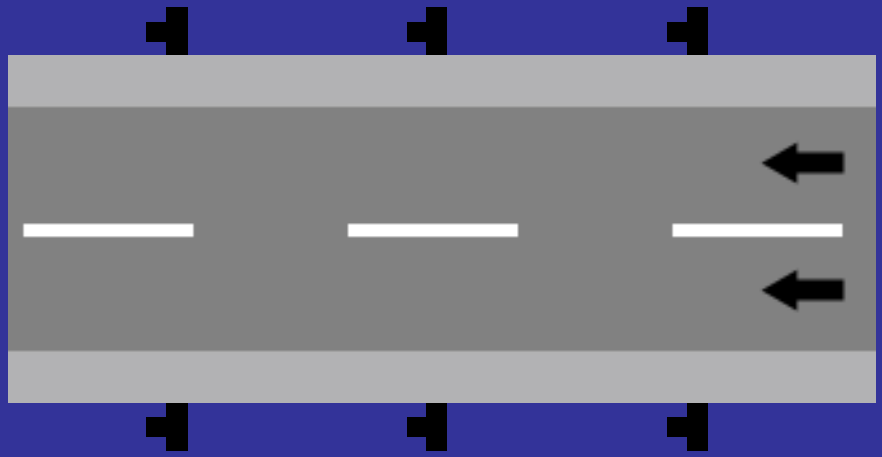
From the typical application MD 104.05-07, we know:

1. The messages on signs to be installed

2. The sign spacing

Sign Spacing Exercise

Match the correct sign to the correct location.



1) RIGHT LANE CLOSED 1/2 MILE

2) ROAD WORK 1 MILE

3) 

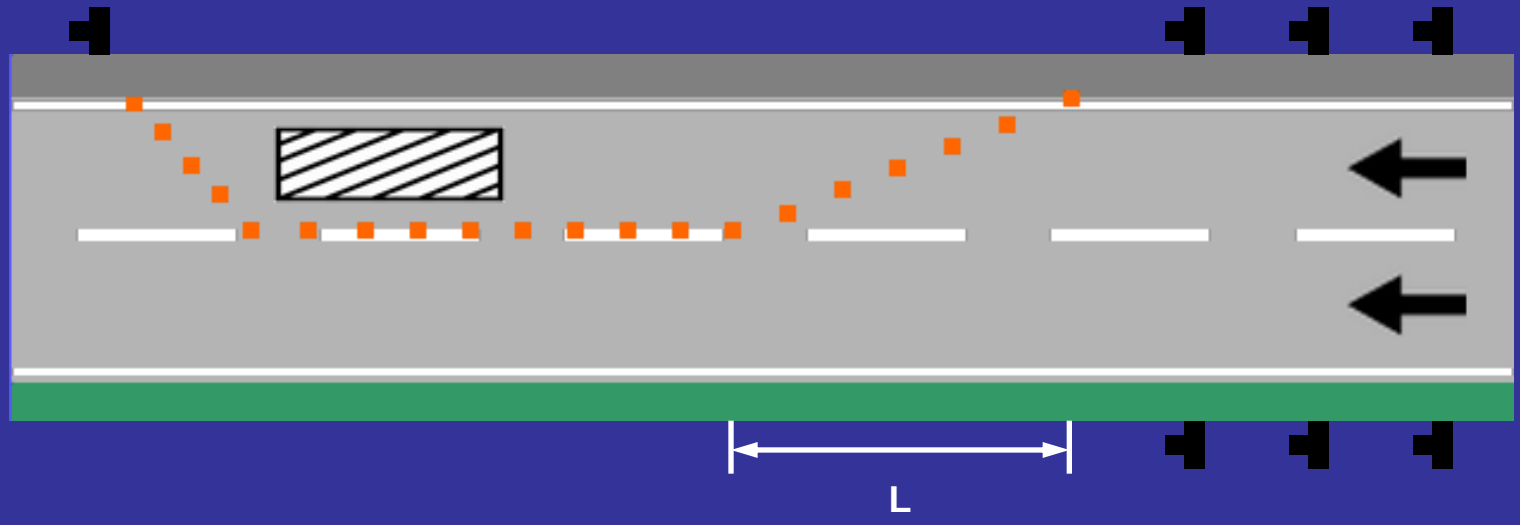
Step 3: Taper & Buffer Length

Using the typical application MD 104.05-07, with a motorist speed of 55 MPH, we can know that:

- *Sign A* should be placed 800 feet from the beginning of the taper
- *Sign B* should be placed 800 feet upstream of Sign A, 2600 feet from the beginning of the taper
- *Sign C* should be placed ½ mile upstream of Sign B, 1 mile from the beginning of the taper

Step 3: Taper & Buffer Length

Calculate the appropriate taper length for the roadway below.



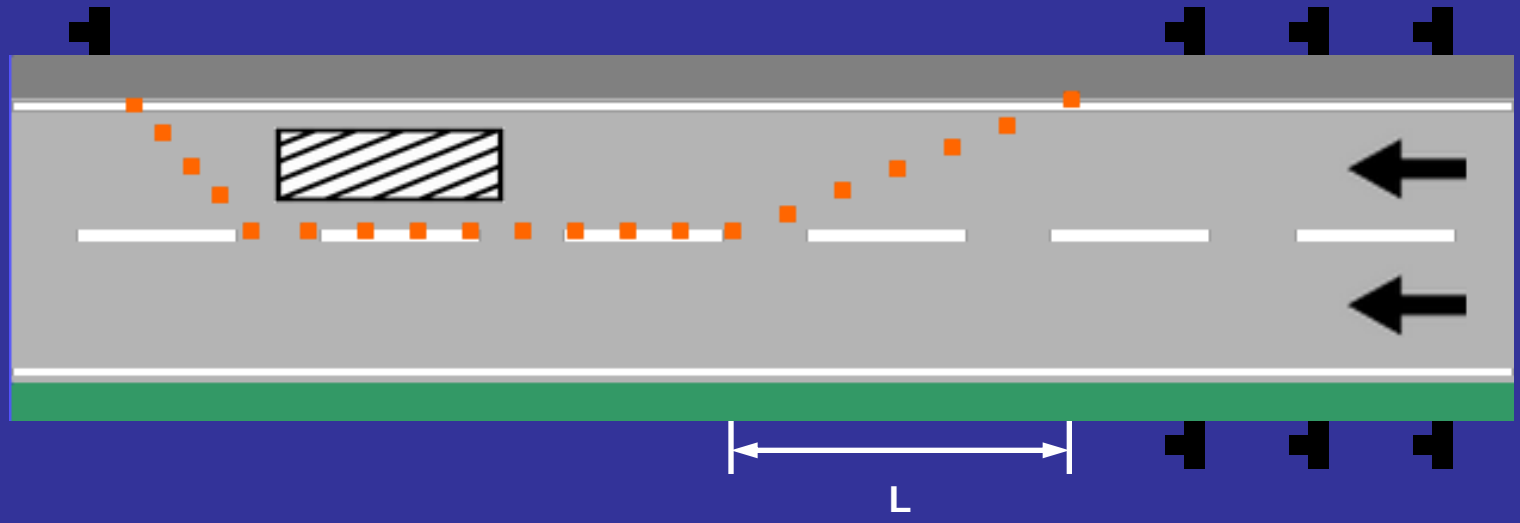
What is the Merging Taper Length (L)?

L = WS = 12 ft x 55

L = 660 ft

Taper Lengths

The taper calculation gives L= 660 feet. However, according to Maryland Book of Standards, MD 104.01-80, the minimum merging taper length shall be 1000 feet for all expressways and freeways.



Therefore,

- The merging taper length L = 1000 feet
- The termination taper length is 100 feet

Step 3: Taper & Buffer Length

The Maryland Book of Standards provides guidance regarding the minimum buffer lengths. The typical application MD 104.01-81 shows the following table:

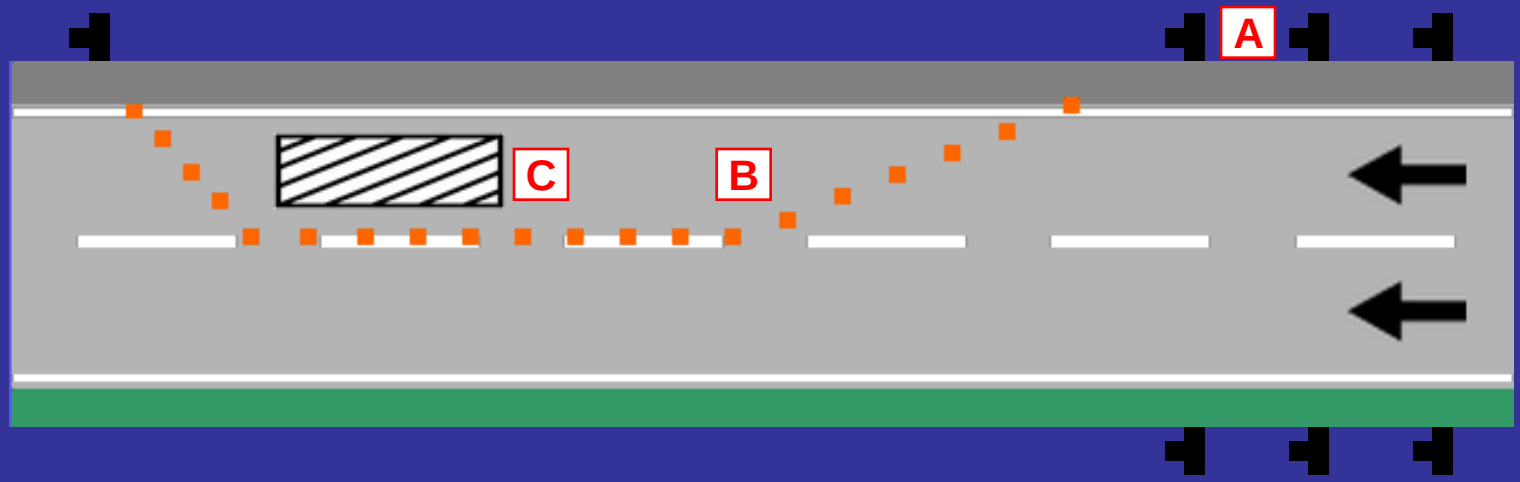
BUFFER LENGTH (BL)

TYPICAL BUFFER LENGTH	
PREVAILING SPEED (MPH)	LENGTH (FEET)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

In this case, with roadway speed of 55 MPH, the minimum buffer length is 495 feet.

Step 4: LEO Vehicle Placement

Where should the LEO vehicle be placed when traffic is moving freely?

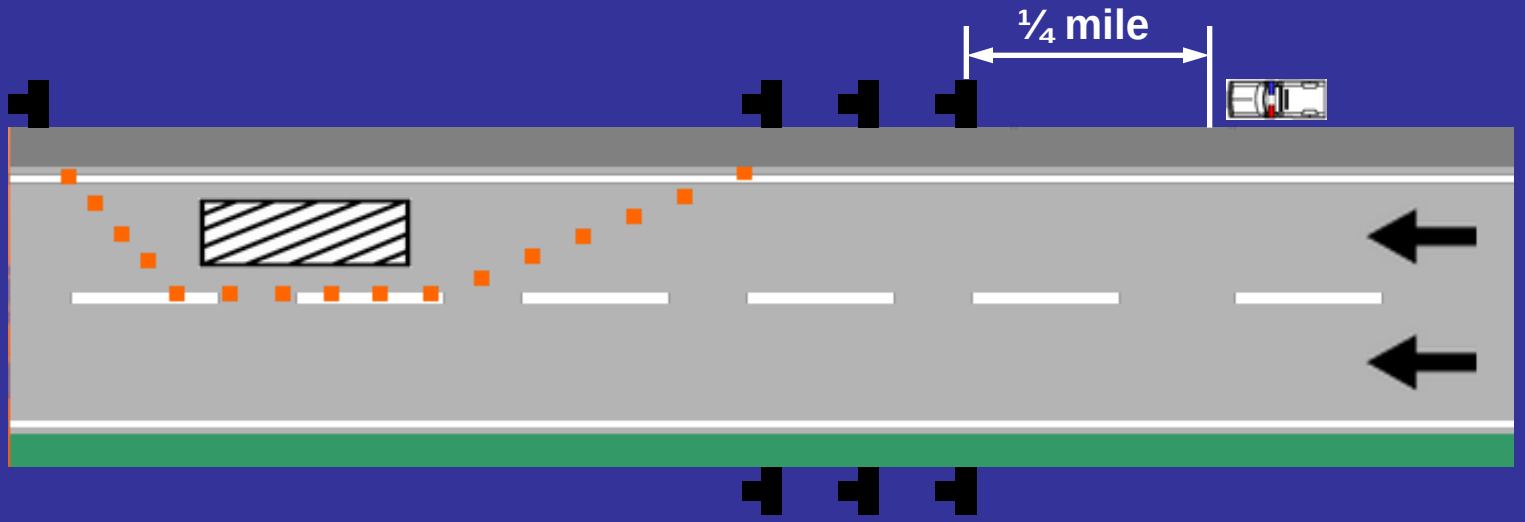


1) Placement A
2) Placement B
3) Placement C

Speed = 55 mph
Lane Width (W) = 12 Feet
Work Zone Duration = 6 Hours, Daytime

Step 4: LEO Vehicle Placement

Where should the LEO vehicle be placed when traffic queue extends ¼ mile beyond advance warning area?



The LEO vehicle should be moved to a location ¼ mile before the end of the queue.

Answer Key

1. 3, 1, 2

2. A

Congratulations

You have completed all four modules of this course. Follow the instructions below to document the completion of your training.

1. Click on the “Certificate of Completion” under course materials on the course main page. On the left near the top, type in your name, agency name and address.

2. Click on “Print Form” located near the top right to make two copies. Retain one for your records and submit the other for your auxiliary personal file.

3. Click on “Submit by email”. When the new email opens, it will already have the subject — LEO Course Completion, the recipient’s email address — mpaylor@sha.state.md.us and the xml file as an attachment. Send the email.

4. If you do not have MS Outlook installed on your computer, you may not be able to send the email as directed above. If you have tried and have been unable to send the email, please save a copy of the completed “Certificate of Completion” as a PDF and email it to mpaylor@sha.state.md.us. You may also print, scan and email the completed “Certificate of Completion” to mpaylor@sha.state.md.us.

5. Note the expiration date at the bottom of the letter. If you are deployed in SHA’s work zones after this expiration date, you will be in violation of the Interagency Agreement. To ensure that you are in conformance with the Interagency Agreement, please ensure that you undergo SHA’s Work Zone Law Enforcement Training Course or an SHA approved equivalent every four years.

Contact Information

Clarence Haskett
Maryland State Highway Administration
Office of Traffic and Safety
410-787-5876
chaskett@sha.state.md.us