The Safe Installation and Removal of Temporary Traffic Control

Bob Karrick
About Area Wide Protective

- Currently serving 17 states with 35 offices
  - Flagging
  - Special Events
  - Rolling Roadblocks
  - Work Zone Design & Set-Up
  - Sign/Equipment Rentals & Sales
  - Zone Installation, Maintenance & Removal
  - 24/7 Emergency Response
  - Work Zone Inspections
  - Training Services

- More than 5,000,000 man hours of operation with zero at-fault incidents or crashes in our work zones

Key Message: Summarize who and what AWP is and all about.
Est. Presentation Time: <1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Largest traffic management service company in the eastern U.S.
  - Over 1,200 employees
  - Protecting a diverse range of clients including construction contractors, engineering firms, state transportation agencies, and major public utilities.
  - We are dedicated to keeping roads safe for workers and the motoring public.
Suggested Questions: None
Additional Information: Reinforce that SAFETY is AWP’s first priority.
Possible Problems: None
Slides with ATSSA Content

♦ This presentation has been developed and adapted from the ATSSA “Safe Installation and Removal of Temporary Traffic Control Devices” presentation with permission from ATSSA.
♦ Slides containing copyrighted material is denoted by the ATSSA logo, as shown below.

Key Message: None
Est. Presentation Time: #.# minute(s)
Explanation of Cues/Builds: None
Suggested Comments: None
Suggested Questions: None
Additional Information: None
Possible Problems: None
Module Objectives

♦ Discuss the importance of proper installation and removal procedures
♦ Discuss the sequence to install and remove devices
**Safe Operation?**

- Installation & removal of setups is a dangerous part of the job

**Key Message:** Discuss installation and removal (I&R) procedures

**Est. Presentation Time:** 2 minute(s)

**Explanation of Cues/Builds:** Text box appears upon click

**Suggested Comments:** I&R could possible be the most dangerous activities of any work zone. Why? Things are on the move, devices may not be installed and need to be delivered, workers are present, etc. Installation & removal of setups is a dangerous part of the job

**Suggested Questions:** Is this a safe operation? What can go wrong here?

**Additional Information:** The MUTCD does not discuss this material. Discuss in general terms.

**Possible Problems:** Some states may have I&R procedures. Emphasize that every project is different. Also, I&R may be considered a separate “short duration” project.
Key Message: Discuss installation and removal (I&R) procedures
Est. Presentation Time: Less than 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: This picture shows proper installation procedures, deploying traffic control devices for a lane closure operation.
Suggested Questions: Is this a safe operation? What can go wrong here?
Additional Information: Photo from Washington State DOT webpage
Possible Problems: None
Key Message: Discuss installation and removal (I&R) procedures
Est. Presentation Time: 2 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Safe? Crossing an open lane of traffic carrying devices is not permitted
Suggested Questions: Is this a safe operation? What can go wrong here?
Additional Information: The MUTCD does not discuss this material. Treat as an effective proactive. OSHA Imminent Danger Clause. Photo by Brian Fry, VDOT, taken on I-495, Virginia.
Possible Problems: None
Key Message: Discuss installation and removal (I&R) procedures
Est. Presentation Time: 2 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Safe? Crossing an open lane of traffic carrying devices is not permitted
Suggested Questions: Is this a safe operation? What can go wrong here?
Additional Information: The MUTCD does not discuss this material. OSHA Imminent Danger Clause. Photo by Brian Fry, VDOT, taken on I-495, Virginia.
Possible Problems: None
Key Message: Discuss installation and removal (I&R) procedures
Est. Presentation Time: 2 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Safe? Crossing an open lane of traffic carrying devices is not permitted
Suggested Questions: Is this a safe operation? What can go wrong here?
Additional Information: The MUTCD does not discuss this material. OSHA Imminent Danger Clause. Photo by Brian Fry, VDOT, taken on I-495, Virginia.
Possible Problems: None
Advance Preparation Checklist

- Inventory or materials
- Review of the plans
- Discuss procedures
  - “Tailgate meeting”
- Trained workers
- Emergency contacts
- Visit site in advance
- Notify law enforcement & rescue personnel

Key Message: Discuss installation and removal (I&R) procedures
Est. Presentation Time: 2 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory. Be prepared and do your homework!
Suggested Questions: None.
Additional Information: The MUTCD does not discuss this material.
Possible Problems: None
Laying out the Traffic Control

♦ Which point do we need to locate first in the field?

The beginning of the work space!

♦ Begin measurements from the work area against the flow of traffic, facing traffic at all times.

**Key Message:** Discuss installation and removal (I&R) procedures  
**Est. Presentation Time:** 3 minute(s)  
**Explanation of Cues/Builds:** Text boxes (3) appear upon click  
**Suggested Comments:** Self explanatory. Be prepared and do your homework!  
**Suggested Questions:** Which point do we need to locate first in the field? The beginning of the work space! Everything is measured form there, working your way towards traffic, to mark the location of all devices. Only then are we ready to bring devices to the site for installation. For installation, install devices WITH THE FLOW OF TRAFFIC until the installation is complete.

**Additional Information:** The MUTCD does not discuss this material.

**Possible Problems:** The following slides visually show this sequence.
Installing Stationary Lane Closures

1. Lay out the traffic control
   ♦ Determine the beginning of the work space.
   ♦ Measure and mark:
     ♦ Buffer space
     ♦ Taper length
     ♦ Shoulder taper, if used
     ♦ Sign spacing

Key Message: Summarize sequence of installation and removal procedures

Est. Presentation Time: 1 minute(s)

Explanation of Cues/Builds: Text box appears upon click

Suggested Comments: In summary, erect the sign the motorists would see first, and proceed “with the flow of traffic” until you complete the installation.

Suggested Questions: Why white and pink only? All other colors are taken! See next slide

Additional Information: The MUTCD does not discuss this material.

Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is in the Guide, page 25.
Key Message: Discuss marking colors
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Buils: None
Suggested Comments: Self explanatory
Suggested Questions: Why white and pink only? All other colors are taken!
Additional Information: The MUTCD does not discuss this material. Utility color code;
RED = Electric
YELLOW = Gas/Oil
BLUE = Water
GREEN = Sewer
ORANGE = Communications/Cable TV
PINK = Temporary Survey Markings
WHITE = Proposed Excavation
Possible Problems: None
Step 1

*Install*

*Advance Warning Signs*

*To warn the motorist of activity on or near the road*

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**Key Message:** Discuss sequence of installation procedures  
**Est. Presentation Time:** 1 minute(s)  
**Explanation of Cues/Builds:** Arrow appears upon click  
**Suggested Comments:** Self explanatory. Discuss as needed.  
**Suggested Questions:** None  
**Additional Information:** The MUTCD does not discuss this material.  
**Possible Problems:** The following slides visually show this sequence.
Key Message: Discuss sequence of installation procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: Arrow appears upon click
Suggested Comments: Self explanatory. Discuss as needed.
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
Key Message: Discuss sequence of installation procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: Arrow appears upon click
Suggested Comments: Self explanatory. Discuss as needed.
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
Step 4

Install
Channelizing Devices (tangent) along the Work Space

Allow space for equipment, materials and vehicles between the work area and buffer.

<table>
<thead>
<tr>
<th>Key Message:</th>
<th>Discuss sequence of installation procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Est. Presentation Time:</td>
<td>1 minute(s)</td>
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<tr>
<td>Explanation of Cues/Builds:</td>
<td>Arrow appears upon click</td>
</tr>
<tr>
<td>Suggested Comments:</td>
<td>Self explanatory. Discuss as needed.</td>
</tr>
<tr>
<td>Suggested Questions:</td>
<td>None</td>
</tr>
<tr>
<td>Additional Information:</td>
<td>The MUTCD does not discuss this material.</td>
</tr>
<tr>
<td>Possible Problems:</td>
<td>The following slides visually show this sequence.</td>
</tr>
</tbody>
</table>
**Key Message:** Discuss sequence of installation procedures

**Est. Presentation Time:** 1 minute(s)

**Explanation of Cues/Builds:** Arrow appears upon click

**Suggested Comments:** Self explanatory. Discuss as needed.

**Suggested Questions:** None

**Additional Information:** The MUTCD does not discuss this material.

**Possible Problems:** The following slides visually show this sequence.
Step 6

Install

END ROAD WORK sign if used

Typically not used on short duration operations of 12 hours or less.

Key Message: Discuss sequence of installation procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: Arrow appears upon click
Suggested Comments: Self explanatory. Discuss as needed.
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
After Completion of Installation

- Drive-through inspection
- Put yourself in the position of the driver
- How are other motorists navigating it?
- Is everything in its correct place? Visible?
- Document it!

Key Message: Discuss sequence of installation procedures
Est. Presentation Time: 2 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory. Discuss as needed.
Suggested Questions: Now that the installation is complete, what’s the next step? Drive through inspection.
Additional Information: The MUTCD does not discuss this material.
Possible Problems: Drive through inspection is usually required by the State, not in MUTCD.
Key Message: Discuss sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Removal may start after the work space is clear.
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
What would you remove first?

WHY?

Key Message: Discuss sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Removal may start after the work space is clear.
Suggested Questions: What would you remove first? The termination area, to leave the advance warning area up for as long as possible.
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
Key Message: Discuss sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Removal may start after the work space is clear.
Suggested Questions: What would you remove first? The termination area, to leave the advance warning area up for as long as possible.
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
**Key Message:** Discuss sequence of removal procedures

**Est. Presentation Time:** 1 minute(s)

**Explanation of Cues/Builds:** None

**Suggested Comments:** Removal may start after the work space is clear.

**Suggested Questions:** See slide

**Additional Information:** The MUTCD does not discuss this material.

**Possible Problems:** The following slides visually show this sequence.
Remove buffer space

Continue removal against the flow of traffic.

Key Message: Discuss sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Removal may start after the work space is clear.
Suggested Questions: See slide
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
Get off on the shoulder

Remove taper and arrow board

Continue removal “against the flow of traffic”.

Key Message: Discuss sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Removal may start after the work space is clear.
Suggested Questions: See slide
Additional Information: The MUTCD does not discuss this material.
Possible Problems: The following slides visually show this sequence.
**Remove Advance Warning signs last!**

**Why?**

*They tell drivers to look for you!*

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**Key Message:** Discuss sequence of removal procedures  
**Est. Presentation Time:** 1 minute(s)  
**Explanation of Cues/Builds:** None  
**Suggested Comments:** Removal may start after the work space is clear.  
**Suggested Questions:** See slide  
**Additional Information:** The MUTCD does not discuss this material.  
**Possible Problems:** The following slides visually show this sequence.
**Key Message:** Summarize sequence of installation and removal procedures  
**Est. Presentation Time:** 1 minute(s)  
**Explanation of Cues/Builds:** Text box appears upon click  
**Suggested Comments:** In summary, erect the sign the motorists would see first, and proceed *“with the flow of traffic”* until you complete the installation.  
**Suggested Questions:** See slide  
**Additional Information:** The MUTCD does not discuss this material.  
**Possible Problems:** This is a summary slide. Review quickly and move on.
2. If post-mounting signs, call for utility locations

Key Message: Summarize sequence of installation and removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Why white and pink only? All other colors are taken!
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures.
There is no need to go through these slides in detail. The description is in the Guide, page 25.
Key Message: Summarize sequence of installation and removal procedures

Est. Presentation Time: 1 minute(s)

Explanation of Cues/Builds: None

Suggested Comments: Self explanatory

Suggested Questions: Why white and pink only? All other colors are taken!

Additional Information: The MUTCD does not discuss this material.

Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is in the Guide, page 25.
Installing Stationary Lane Closures

4. Install the shoulder taper, if used
5. If required, place an arrow board on the shoulder at the beginning of the merging taper

Key Message: Summarize sequence of installation and removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Why white and pink only? All other colors are taken!
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is in the Guide, page 25.
Installing Stationary Lane Closures

6. Place channelizing devices at the required spacing for the appropriate distance to form the taper

Key Message: Summarize sequence of installation and removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Why white and pink only? All other colors are taken!
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is in the Guide, page 25.
Key Message: Summarize sequence of installation and removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Why white and pink only? All other colors are taken!
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures.
There is no need to go through these slides in detail. The description is in the Guide, page 25. Worker may be wearing a class 1 vest. Turn into a question.
安装固定车道封闭

9. 如果需要，放置设备，使其相隔20英尺，创造出一个100英尺长的下游斜坡。

**Key Message:** 简要总结安装和移除程序的顺序

**Est. Presentation Time:** 1分钟(s)

**Explanation of Cues/Builds:** 无

**Suggested Comments:** 自我解释

**Suggested Questions:** 为什么只使用白色和粉红色？所有其他颜色都用完了！

**Additional Information:** MUTCD未讨论此材料。

**Possible Problems:** 此幻灯片用文字解释了你刚刚用图片讨论的内容。没有必要详细阅读这些幻灯片。描述在Guide，第25页。
Installing Stationary Lane Closures

10. If required, install the END ROAD WORK sign
11. Drive-through inspection
   ♦ If night, nighttime inspection is needed for night work

Key Message: Summarize sequence of installation and removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Why white and pink only? All other colors are taken!
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is in the Guide, page 25.
Removing Stationary Lane Closures

- Reverse the process so the advance warning area is removed last!
- Remove “against the flow of traffic”

Key Message: Summarize sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: Text box appears upon click
Suggested Comments: Reverse the process so the advance warning area is removed last! Remove “against the flow of traffic”
Suggested Questions: Why?
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This is a summary slide. Review quickly and move on.
Key Message: Illustrate previous point with a photo
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: This photo shows devices properly being removed against the flow of traffic
Suggested Questions: None
Additional Information: Photo source unknown
Possible Problems: Make your point and move on. Do not “pick” at this photo.
Removing Stationary Lane Closures

1. Make sure activity area is clear
2. If required, see that appropriate pavement markings are in place
3. Remove channelizing devices “against the flow of traffic”

Key Message: Summarize sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is on the Guide, page 25.
Removing Stationary Lane Closures

4. Place removal vehicle on shoulder and remove devices upstream from taper by hand
5. Remove the arrow board after ensuring the roadway is clear
6. Remove the advance warning signs as soon as possible

Key Message: Summarize sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This slide discussed in words what you just discussed with pictures. There is no need to go through these slides in detail. The description is on the Guide, page 25.
Key Message: Summarize sequence of removal procedures
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Always follow that sequence. There is only one exception? Which one and why?
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This is a summary slide.
Why are detours the exception?

Key Message: Discuss why detours are the exception
Est. Presentation Time: 2 minute(s)
Explanation of Cues/Builds: None

Suggested Comments: How would you install and remove this detour? Drivers would look for signs that are not there yet! So detours are installed “backwards” or “against the flow of traffic”.

Suggested Questions: What would happen if we install devices with the flow of traffic? Drivers would look for signs that are not there yet! Poor public relations?

Additional Information: MUTCD 6B.01: Before any new detour or temporary route is opened to traffic, all necessary signs shall be in place.
Possible Problems: None
**Key Message:** Summarize sequence of I&R of detours  
**Est. Presentation Time:** 1 minute(s)  
**Explanation of Cues/Builds:** None  
**Suggested Comments:** Self explanatory  
**Suggested Questions:** None  
**Additional Information:** The MUTCD does not discuss this material.  
**Possible Problems:** This is a summary slide.
Installation and Removal Sequence for Detours

3. Begin installation with the last sign in the detour series before establishing activity signing and placing devices (unless those signs are covered until detour is in effect)
4. Detour signs should be removed downstream
5. Drive through

Key Message: Summarize sequence of I&R of detours
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: None
Additional Information: The MUTCD does not discuss this material.
Possible Problems: This is a summary slide
**Utility Work**

- Short daytime operations
- Intersection work
- Work beyond the shoulder

**Key Message:** Discuss utility operations and how they may require adjustments.

**Est. Presentation Time:** 2 minute(s)

**Explanation of Cues/Builds:** None

**Suggested Comments:** Utility operations are unique since most of them are short duration. The same standards and guidelines apply!

**Suggested Questions:** What are utility operations?

**Additional Information:** Utility: a public service, as a telephone or electric-light system, a streetcar or railroad line, or the like. A business enterprise, as a public-service corporation, performing an essential public service and regulated by the federal, state, or local government.

**Possible Problems:** None
Utility Work

- Small crew size
- Few vehicles
- Little traffic control training

**Same standards apply!**

**Key Message:** Discuss utility operations and how they may require adjustments.

**Est. Presentation Time:** 1 minute(s)

**Explanation of Cues/Builds:** None

**Suggested Comments:** Utility operations usually work with small crew sizes and few vehicles. They usually have little or no traffic control training.

**Suggested Questions:** Does the MUTCD apply to utility operations? YES!

**Additional Information:** None

**Possible Problems:** None
Key Message: Discuss utility operations and how they may require adjustments.
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: This photo shows a typical utility operation on a public street.
Suggested Questions: Do the same standards apply?
Additional Information: Photo taken near Fort Lauderdale, FL. By J. Morales
Possible Problems: NOTE: Florida allows work over an open lane if some conditions are met. Some states may not allow this and would require the lane underneath to be closed.
Key Message: Discuss utility operations and how they may require adjustments.
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: This photo shows a typical utility operation on a public street. No advance warning signs and cones still on back of truck. Vehicle encroaching in to the lane & sitting in the CLEAR ZONE. Worker there for ~30 minutes.
Suggested Questions: Do the same standards apply?
Additional Information: Photo taken in Kent, OH by E. A. Hulme
Possible Problems:
Key Message: Introduce TMA as a shadow vehicle to protect workers
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: Self explanatory
Suggested Questions: Now we know the meaning of these diagonal lines. What is it?
Additional Information: The MUTCD does not discuss this material.
Possible Problems: TMAs are discussed in the TCS course in more detail. The discussion here is from the perspective of protecting workers during I&R. Keep this short.
What is a “Shadow Vehicle”?

♦ Trucks or trailers used to protect workers or work equipment from errant vehicles
♦ Normally equipped with:
  ♦ Flashing arrows,
  ♦ Changeable message signs, and/or
  ♦ High-intensity rotating, flashing, oscillating, or strobe lights

The shadow vehicle may be equipped with a rear-mounted “impact attenuator”

Key Message: Introduce TMA as a shadow vehicle to protect workers
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: TMA requirements vary by State but are usually required 45 mph and above.
Suggested Questions: None
Additional Information: None
Possible Problems: This was discussed earlier. Treat as a review or turn into a question.
Use of Truck-Mounted Attenuators (TMA)

♦ It is highly recommended that a shadow vehicle with a Truck Mounted Attenuator (TMA) with appropriate warning lights be used when installing and removing devices on multi-lane highways and whenever the shoulder width prevents setup completely off the traveled way.

TMA requirements vary by State: Usually required @ 45 mph and above

Key Message: Introduce TMA as a shadow vehicle to protect workers
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: It is highly recommended that a shadow vehicle with a Truck Mounted Attenuator (TMA) with appropriate warning lights be used when installing and removing devices on multi-lane highways and whenever the shoulder width prevents setup completely off the traveled way.
Suggested Questions: None
Additional Information: Standard: Stationary crash cushions shall be designed for the specific application intended. Truck-mounted attenuators shall be energy-absorbing devices attached to the rear of shadow trailers or trucks. If used, the shadow vehicle with the attenuator shall be located in advance of the work area, workers, or equipment to reduce the severity of rear-end crashes from errant vehicles. Trucks or trailers are often used as shadow vehicles to protect workers or work equipment from errant vehicles. These shadow vehicles are normally equipped with flashing arrows, changeable message signs, and/or high-intensity rotating, flashing, oscillating, or strobe lights located properly in advance of the workers and/or equipment that they are protecting. However, these shadow vehicles might themselves cause injuries to occupants of the errant vehicles if they are not equipped with truck-mounted attenuators. The shadow truck should be positioned a sufficient distance in advance of the workers or equipment being protected so that there will be sufficient distance, but not so much so that errant vehicles will travel around the shadow truck and strike the protected workers and/or equipment.
Possible Problems: In some states, TMAs may be required, not only recommended (usually
for speeds 45 mph and above) Discuss in general terms. Details are given in the TCS course.
Session Recap

- What point do you need to determine first to lay out the traffic control?
- Which device is erected first? Last?
- Which device is removed first? Last?
- What’s the only exception?
- What is a “shadow vehicle”?

Key Message: Recap module
Est. Presentation Time: 1 minute(s)
Explanation of Cues/Builds: None
Suggested Comments: None
Suggested Questions: None
Additional Information: None
Possible Problems: Avoid telling the audience the answers to these questions. Their purpose is to gauge understanding. You may add other questions.
Helpful Resources

♦ **INDOT**’s *Indiana Manual on Uniform Traffic Control Devices*

♦ **INLTAP**’s “Handbook for Temporary Traffic Control”

♦ **ATSSA**’s “Field Guide on Installation and Removal of Temporary Traffic Control for Safe Maintenance and Work Zone Operations”
THANK YOU and WORK SAFE

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