



Certified Traffic Incident Management Person

Test Prep Exam Workbook & Study Guide

revised 12-6-21

ANSWER KEY



Institute (ERSI) serves as an advisory group of public safety leaders and transportation experts committed to reducing deaths and injuries to America's emergency responders. ERSI is dedicated to the safety of these men and women by engaging in and promoting activities that include developing educational material to support responder safety training; promoting the National Unified Goal (NUG) for Traffic Incident Management (TIM) including responder safety, safe, quick clearance and interoperable communications; encouraging the development of TIM Teams; promoting collaboration, communication and cooperation among the nation's emergency responders; and keeping emergency responders up to date on national rules, regulations and trends related to safe roadway incident operations.



The Emergency Responder Safety Institute (ERSI), a Committee of the 118-year-old Cumberland Valley Volunteer Fireman's Association, is an advisory group of public safety leaders and transportation experts committed to reducing deaths and injuries to America's emergency responders while working on the roadways helping others. The ERSI mission includes responder training as well as public education.



The Cumberland Valley Volunteer Firemen's Association (CVVFA) aims to provide for the general improvement of the five states (Delaware, Maryland, Pennsylvania, Virginia, and West Virginia) represented in its membership: to promote fire prevention activities within its member companies; to promote public fire safety awareness; to assist in the education of members of the fire service in the five state region; and to encourage fraternal friendship among firefighters in the five state region.



The Fire Department Safety Officers Association (FDSOA) was established in 1989 as a non-profit Association, incorporated in Massachusetts. In 2013, the offices moved to Michigan. Its mission is to promote safety standards and practices in the fire, rescue and emergency services community by providing education, certification, and networking for safety officers. The Association is led by a volunteer Board of Directors and has a small staff to handle the day to day operations. It is the Association dedicated to the issues that affect your critical role as Safety Officer in protecting and promoting the safety and health responsibilities you have to your department, your community and yourself. In fact, so critical is the role of the Safety Officer in every department in the country, that in a very short time in order to be a qualified Safety Officer, certification may be required. FDSOA works to help you achieve proficiency, promote the recognition of your skills and secure your future.

This publication was produced by the Cumberland Valley Volunteer Firemen's Association Emergency Responder Safety Institute in cooperation with the Fire Department Safety Officers Association and Stonehouse Media and was funded by the FEMA Assistance to Firefighters Fire Prevention & Safety Grant Program.

Copyright © 2021 Cumberland Valley Volunteer Firemen's Association and the Emergency Responder Safety Institute

This Certified Traffic Incident Management Person Test Prep Exam Workbook & Study Guide is available online here: <https://www.respondersafety.com/training/tim-person-professional-certification>

This first edition of the Traffic Incident Management Personnel Professional Certification Test Prep Exam Workbook & Study Guide Answer Key used the following editions of the standards mentioned herein:

NFPA 1091 Standard for Traffic Incident Management Personnel Professional Qualifications 2019 Edition

NFPA 1901 Standard for Automotive Fire Apparatus 2016 Edition

NFPA 1917 Standard for Automotive Ambulances 2016 Edition

Manual on Uniform Traffic Control Devices 2009 Edition

ANSI/ISEA 107-2015

The Federal Highway Administration National TIM Responder Training Program content as delivered in 2020

National Unified Goal 2007 Version

Responder Safety Learning Network programs as of May 2020

All other resources referenced were used as of their noted edition number or release date.

Funding for this Exam Workbook and Study Guide was provided by a FEMA Assistance to Firefighters Fire Prevention & Safety Grant.

This document is an answer key for the Certified Traffic Incident Management Person Test Prep Exam Workbook & Study Guide from ResponderSafety.com that prepares professionals to take the Certified TIM Person test from the [Fire Department Safety Officers Association](#).

You are strongly encouraged to answer all questions in the Exam Workbook & Study Guide yourself before consulting this Answer Key. In that [Exam Workbook & Study Guide](#), please consult the Resources listed on pages 6-7 and listed with each Topic for assistance answering the questions. For questions that are not multiple choice, your answers do not need to match the Answer Key word-for-word, but they should be similar enough to demonstrate you have grasped the concept. This Answer Key is not meant to be exhaustive, but each answer given is consistent with the study materials, relevant to the question asked, and offered as a good faith example of a strong response to that question that will help further your understanding of that topic.

Topic 1: Introduction to Roadway Response Safety and Traffic Incident Management (TIM)

Section A: Key Terms

Traffic Incident Management:

A planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible.

National Unified Goal:

A national policy that encourages state and local transportation and public safety agencies to adopt unified, multi-disciplinary policies, procedures and practices that will dramatically improve the way traffic incidents are managed on U.S. roadways. The National Unified Goal consists of three major goals and 18 strategies for achieving those goals.

Standard Operating Procedure:

A policy that documents, authorizes, and publishes a departmental procedure for emergency response operations, such as response to traffic incidents.

Move Over or Slow Down legislation:

A state statute that specifies when drivers are required to change lanes (move over) and decrease the vehicle's speed (slow down) when encountering an emergency scene on the roadway.

Driver Removal Law (also called Move It and Fender Bender Law):

A statute that authorizes licensed drivers involved in minor traffic accidents without serious injuries to move any driveable vehicle to the shoulder, side of the road, or other safe area out of the travel lanes.

Topic 1: Introduction to Roadway Response Safety and Traffic Incident Management (TIM)

Section B: Study Questions

1. What are the three major objectives of the National Unified Goal? Then, for each objective, identify three strategies proposed by the National Unified Goal to realize that objective.

The three major objectives of the National Unified Goal and strategies proposed to realize each one are:

1. Responder Safety

- a. Recommended practices for responder safety
- b. Move Over/Slow Down laws
- c. Driver training and awareness

2. Safe, Quick Clearance

- a. Multidisciplinary TIM procedures
- b. Response and clearance time goals
- c. 24/7 availability

3. Prompt, Reliable Incident Communications (any three of these are an acceptable answer)

- a. Multidisciplinary communication practices and procedures
- b. Prompt, reliable responder notification
- c. Interoperable voice and data networks
- d. Broadband emergency communications systems
- e. Prompt, reliable traveler information systems
- f. Partnerships with news media and information providers

2. What are the benefits of traffic incident management?

The benefits of traffic incident management are:

- Congestion relief via quicker clearance due to improved cooperation, collaboration, and communication
- Economic savings via reducing travel delays, fuel consumption, and secondary incidents

Topic 1: Introduction to Roadway Response Safety and Traffic Incident Management (TIM)

- Energy conservation and environmental benefits due to shorter incident durations reducing fuel consumption and emissions from idling vehicles in traffic
- Improved public health and safety by reducing the number of crashes and the severity of crashes that do happen.
- Reduced mortality and morbidity of motorists and responders by improving response time and implementing consistent safety procedures.
- Reduced public safety personnel commitment and exposure to hazards through quicker clearance
- Increased responder safety with improved traffic control practices, procedures, resources, communications networks, and safety equipment
- Increased customer satisfaction due to shorter delays and better service.

3. What is the key to implementing the National Unified Goal?

A. cooperation, collaboration, and communication

4. What multidisciplinary organization is an ideal way to administer implementation of the National Unified Goal?

D. Traffic Incident Management Committee

5. To achieve the National Unified Goal, SOPs should be consistent with *NFPA 1091* and the National TIM Training Program, as well as:

B. The same for each responding agency

6. Describe the role of training in achieving the National Unified Goal:

The role of cross-disciplinary, joint training in achieving the National Unified Goal is to enable each responder to understand both the overall approach to managing the incident and everyone's role and responsibilities in the response process.

Topic 1: Introduction to Roadway Response Safety and Traffic Incident Management (TIM)

7. How can the individual roadway responder help implement the National Unified Goal?

The individual roadway responder can help implement the National Unified Goal by:

- Getting trained.
- Following established procedures: using temporary traffic control devices, wearing PPE parking safely.
- Cooperating with one another.
- Understanding the roles of the other responders on the roadway.
- Understanding how their actions affect other responders and the motoring public.
- Understanding all the implications of closing a road.

8. What are some of the ramifications of poor communications?

Some of the ramifications of poor communications are:

- a. Compromised safety of emergency responders and motorists
- b. Longer incident clearance times
- c. Wasted time and effort

9. What is the relationship between safe, quick clearance and responder safety?

Safe, quick clearance improves responder safety by 1) reducing public safety personnel commitment and exposure to hazards because less time is spent on the roadway; and 2) increasing protection for responders through improved traffic control practices, procedures, resources, communications networks, and safety equipment.

Topic 2: Traffic Incident Management Teams

Section A: Key Terms

Traffic Incident Management:

A planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible.

TIM Team:

An interdisciplinary group that guides and leads this the traffic incident management effort across all responding agencies in a given geographic area. The terms “TIM Team” and “TIM Committee” are typically used synonymously and are therefore interchangeable.

Section B: Study Questions

1. List the agencies and organizations that should be part of a local TIM Team:

The agencies and organizations that should be part of a local TIM Team are:

- Fire departments
- Local law enforcement
- State police
- Sherriff's departments
- EMS
- Traffic control special units, such as fire police
- Safety service patrols
- Departments of transportation
- Coroner or medical examiner's office
- Offices of emergency management
- Departments of public works
- Towing and recovery Associations
- Utilities
- Emergency dispatch and 911 call centers
- Environmental agencies
- Insurance State Association

Topic 2: Traffic Incident Management Teams

- Fatal Crash Investigations Association
- Hazardous Material Response Association
- State or local Health Departments
- MPO's
- Homeland Security
- Motor Truck Association
- Bureau of Motor Vehicles
- Air Medical Services Association
- Criminal Justice Institute
- Petroleum Marketers Association
- Statewide 911
- Public Safety Commission
- Department of Labor
- Board of Animal Health
- Road Contractors Association
- Media Association

2. What are the typical tasks that TIM Teams tackle?

The typical tasks that TIM Teams tackle are:

- Developing coordinated SOPs / standardizing TIM SOPs across agencies
- Sharing information
- Working out incident command protocols
- Holding multiagency, multidiscipline training sessions about roadway incident response
- Devising solutions for known problem roadway locations
- Preplanning response for special events
- Preplanning response for known community hazards, such as airports, industrial facilities, and natural disasters
- Reviewing past incidents for what worked and what can be improved

Topic 2: Traffic Incident Management Teams

- Reviewing the MUTCD Chapter 6I to ensure compliance
- Understanding and initiating ways to reduce secondary crashes
- Initiating ways to reduce first responder struck by incidents
- Benchmarking performance measures and assessing progress
- Technology review
- Responding to emerging challenges
- Committee work on specific tasks

3. What are the eight elements that form the framework for a successful TIM Team?

The eight elements that form the framework for a successful TIM Team are:

- Leadership
- Mission and goals
- Membership
- Administration
- Structure
- Agenda items
- Recommended tasks
- Measuring progress

4. What are the three national TIM performance measures recommended by the Federal Highway Administration? Select three.

C. incidence of secondary crashes

F. roadway clearance time

H. incident clearance time

5. What is the key to success of a TIM Team?

F. All of the above

Topic 3: NFPA 1091

Section A: Key Terms

Define the following terms.

Professional qualifications standard:

A document, typically developed in a consensus process by a group of expert representatives from stakeholder organizations, that sets out the minimum job performance requirements needed to execute a specific occupation or job duty competently.

Job performance requirement:

Written statements that describe a specific job task, list the items necessary to complete the task, and define measurable or observable outcomes and evaluation areas for the specific task.

Section B: Diagram

Draw a simple diagram of the NFPA standards development process.

The official diagram of the NFPA standards development process is available here: <https://www.nfpa.org/Codes-and-Standards/Standards-development-process/How-the-process-works>

Section C: Study Questions

1. List the advantages of a standardized traffic control protocol:

The advantages of a standardized traffic control protocol are:

- Agencies could seamlessly work together to execute traffic control because they would all be using the same protocol.
- Traffic control professionals from different agencies could work together easily because they would be trained and experienced in the same procedures for tasks like manual traffic control.
- All responders would have equal confidence in their safety under a standardized traffic control protocol.
- All responders, no matter their agency, could be trained in the same procedures and know that those procedures would be followed at any local incident, and even that their skills would be transferrable if they went to another jurisdiction or another state.
- Incident commanders would no longer have to be preoccupied with traffic control after delegating tasks to the appropriate responder; they would have confidence in the responder's knowledge, skills, and abilities under a common protocol.

Topic 3: *NFPA 1091*

- The motoring public could come to expect a certain consistent approach to traffic control, and thus better anticipate how to respond, rather than encountering the unknown every time they approached a scene.

2. What does it mean to be a “voluntary standard”?

B. The standard only becomes mandatory for departments to follow when adopted by a given jurisdiction.

3. Who developed *NFPA 1091*?

A. A committee of volunteer experts in traffic incident management and responder safety

4. What are some ways to use *NFPA 1091*?

Some ways to use *NFPA 1091* are:

- As a road map to define training objectives, guide curriculum development, and examine existing training offerings
- As a guide for seeking out training that conforms to the standard
- As criteria for evaluating candidates for hire and for conducting performance evaluations.
- As a qualification for who to assign to perform traffic control and traffic incident management duties
- To create professional development plans
- As a qualification to testify in a legal proceeding
- As input for formulating organizational policies and procedures with regard to traffic control practices at roadway incidents

5. Why was *NFPA 1091* developed?

B. As a response to the dangers of working on the roadway

6. If adopted in a jurisdiction, *NFPA 1091* applies to all personnel in that jurisdiction who perform traffic control duties. (Circle one)

True

Topic 3: *NFPA 1091*

7. Which of the following are NOT job performance requirements in the *NFPA 1091* standard? Select all that apply.

- A. Investigate the cause of a roadway incident
- E. Report traffic incident data to the national database

Topic 4: *Manual on Uniform Traffic Control Devices*

Section A: Key Terms

Manual on Uniform Traffic Control Devices:

Designated by federal law as the national standard defining all traffic control devices installed on any public highway or road and any private road parking area open to public travel in the United States.

Traffic incident:

An emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic.

Channelizing devices:

Traffic control equipment, including cones, tubular markers, vertical panels, drums, barricades, and longitudinal channelizing devices, that:

- Warns road users of conditions created by work activities in or near the roadway
- Guides road users away from the work space, pavement drop-offs, pedestrian or shared-use paths, or opposing directions of vehicular traffic
- Provides for smooth and gradual vehicular traffic flow from one lane to another, onto a bypass or detour, or into a narrower traveled way.

Temporary traffic control zone:

An area of a highway where road user conditions are changed because of a work zone or incident by the use of temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel.

Minor incident:

An emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic for an expected duration of under 30 minutes.

Intermediate incident:

An emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic for an expected duration of 30 minutes to 2 hours.

Major incident:

An emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic for an expected duration of more than 2 hours.

Topic 4: *Manual on Uniform Traffic Control Devices*

Section B: Photo Identification

Out of the available choices, the following cones are MUTCD-compliant:



Section C: Study Questions

1. What is the purpose of the Manual on Uniform Traffic Control Devices?

D. To provide basic uniformity of traffic control devices so that, no matter where a driver is driving, consistent, recognizable signaling devices guide the operation of the motor vehicle.

Topic 4: *Manual on Uniform Traffic Control Devices*

2. Which of the following is **NOT** a permitted way for a State to use the federal *MUTCD*?

D. Develop its own state manual on traffic control devices irrespective of the federal *MUTCD*'s provisions

3. Why does the *MUTCD* apply to the work of roadway responders?

A. Because the *MUTCD* governs temporary traffic control zones, which roadway responders have the authority to set up

4. To what do ANSI/ISEA standards apply at the roadway incident scene?

C. To high visibility apparel specifications

5. Who is required to wear compliant high visibility apparel?

B. All responders exposed to moving traffic; firefighters engaged in emergency operations that directly expose them to flame, fire, heat, and/or hazardous materials may wear retroreflective turn-out gear that is specified and regulated by other organizations

6. Which entity requires the use of the Incident Command System at traffic incident management scenes?

B. The National Incident Management System

7. According to the *MUTCD*, what color should temporary traffic control signs used at a roadway incident be?

A. Pink with black lettering

8. What recommended steps should be taken in the response to a major incident?

The recommended steps to be taken in response to a major incident are:

- Emergency personnel should notify the transportation agency responsible as soon as possible so they can mobilize personnel and equipment to setup appropriate TTC and/or detours for a major incident. This may be the Dept of Transportation, State Highway Administration, Public Works, or similar agency.
- Transportation agencies will consider, evaluate and establish appropriate detours where warranted.
- All responding agencies involved with the incident should work together to provide timely updates to the general public through press releases, traffic radio, state 511 systems, variable message signs, and the news media.

Topic 4: *Manual on Uniform Traffic Control Devices*

- All traffic control devices needed to set up the TTC at a traffic incident should be available so that they can be readily deployed.
- The TTC zone should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert oncoming traffic and to divert traffic around the incident as early as possible.
- Advanced warning devices should be deployed to give approaching motorists sufficient warning of the incident and potentially stopped or slowed traffic.
- Manual traffic control, if needed, should be provided by qualified flaggers or uniformed law enforcement officers.
- As available, temporary devices like flares should be replaced or used in conjunction with more visible channelizing devices like cones.

9. According to the *MUTCD*, emergency lighting:

D. Provides only warning, not effective traffic control

10. First responders who do not follow the *MUTCD* can be criminally charged. (Circle one)

True. For more information on this answer, please review the RSLN.org module titled "[Manual on Uniform Traffic Control Devices \(MUTCD\)](#)".

Topic 5: Emergency Vehicle Visibility and Conspicuity

Section A: Key Terms

Visibility:

How well an object can be seen.

Conspicuity:

The ability of a vehicle to draw attention to its presence, even when other road users are not actively looking for it.

High visibility:

Describes materials with properties like fluorescent colors, contrasting colors, and retroreflectivity that enable objects to be seen better than without those materials.

Retroreflective materials:

Items possessing a property of a surface that allows a large portion of the light coming from a point source to be returned directly back to a point near its origin.

Moth-to-flame concept:

This is the idea that a driver impaired by alcohol, drugs, or tiredness is drawn to bright lights and tends to drive towards them, resulting in collisions with emergency vehicles parked on or alongside the roadway.

Flash pattern:

The way the on/off sequencing of emergency lights is coordinated.

NFPA 1901:

A voluntary consensus standard from the National Fire Protection Association that defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of other hazardous situations.

NFPA 1917:

A voluntary consensus standard from the National Fire Protection Association that defines the minimum requirements for the design, performance, and testing of new and remounted automotive ambulances used for out-of-hospital medical care and patient transport.

Topic 5: Emergency Vehicle Visibility and Conspicuity

Section B: Diagram

On this vehicle diagram, draw the markings you would add to make it as visible and conspicuous as possible. Consider applicable standards, color, retroreflective striping and chevrons, arrows, and logos.



Section C: Study Questions

1. Who sets the regulations for the color of warning lights on emergency vehicles?

C. The state government

2. Once parked, what is the recommended practice for forward-facing white lights on the emergency vehicle?

B. Reduce or extinguish them.

3. Emergency warning lights provide direction for motorists. (Circle one)

False. Emergency lights provide only warning, not direction.

Topic 5: Emergency Vehicle Visibility and Conspicuity

4. What should be the guiding principle of deploying emergency lighting at a roadway response scene?

C. Focus on clear identification of emergency vehicles to oncoming motorists.

5. When an emergency scene is properly lit, wearing high visibility apparel is not necessary. (Circle one)

False. High visibility apparel improves the visibility of emergency responders in all conditions, including at night in the dark, particularly when illuminated by headlights or other light sources.

6. What is key to proper deployment of emergency lighting at a scene?

B. Know the capabilities of the lighting package on the vehicle and how to use those capabilities in different situations.

7. Fill in the blanks according to the *NFPA 1901* standard for high visibility markings on fire apparatus.

A. 50%; 25%

B. 4 inches

C. 4 inch wide; 50%; chevron; downward; away; 45°; red; yellow; yellow; yellow-green; 6 inches

D. the same

8. List the factors that affect visibility and conspicuity of an emergency vehicle:

- Vehicle size
- Color scheme
- Marker lamps
- Retroreflective striping (high visibility markings)
- Presence and use of active warning devices
 - » emergency lighting
 - » sirens
 - » horns
- Environmental conditions (ambient lighting, weather, driver distractions, visual clutter in the surroundings)

Topic 5: Emergency Vehicle Visibility and Conspicuity

9. Which types of colors offer the best visibility?

A. Fluorescent

10. How many modes of emergency lighting are required by *NFPA 1901*?

2 modes are required; they are calling for the right-of-way and blocking the right-of-way.

Topic 6: High Visibility Apparel

Section A: Key Terms

High visibility apparel:

Clothing that uses fluorescent colors and retroreflective material to make the wearer noticeable to viewer under a variety of environmental conditions.

ANSI/ISEA compliance:

In the context of high visibility apparel, this term describes high visibility apparel manufactured according to the relevant standard issued by the American National Standards Institute / International Safety Equipment Association.

Section B: Photo Identification

Circle all of the following garments that are ANSI/ISEA compliant for emergency operations on the roadway.

The garments that are ANSI/ISEA compliant for emergency operations on the roadway are Type R Class 3 Vest (top left), Type P Class 2 Vest (top right), and Type R Class 2 Vest (lower left).



Topic 6: High Visibility Apparel

Section C: Study Questions

1. Which standard sets the nationwide mandatory requirement for use of high visibility apparel at the roadway incident scene?

A. Manual on Uniform Traffic Control Devices

2. What are some of the reasons that responders might object to wearing high visibility apparel?

- Policy issues
 - » Lack of enforcement
 - » Poor role-modeling from leadership
- Equipment issues
 - » Poor fit
 - » Difficult to don/doff
 - » Interferes with other equipment or apparel
- Routine issues:
 - » Hard to remember
- Perception issues:
 - » Detracts from authority
 - » Not comfortable wearing it in certain situations
 - » Belief that it makes the wearer a target

3. When should high visibility apparel be donned?

A. Prior to exiting the response vehicle

4. Whose requirements should be taken into account when writing an SOP on the wearing of high visibility apparel? Circle all that apply.

B. Occupational Safety and Health Administration

C. Manual on Uniform Traffic Control Devices

D. Applicable state regulation(s)

Topic 6: High Visibility Apparel

5. What standard does the high visibility apparel worn at a roadway incident scene have to comply with?

D. ANSI/ISEA 107

6. In what situation is NFPA-compliant turnout gear considered an acceptable substitute for a compliant high visibility vest?

B. When the wearer is exposed directly to flame, fire, heat, and/or hazardous materials

7. Which of the following is NOT a situation in which a law enforcement officer is required to wear a compliant high visibility vest?

E. conducting traffic stops

8. What are the keys to ensuring all department personnel wear compliant high visibility apparel when working roadway incident scenes?

The keys to ensuring all department personnel wear compliant high visibility apparel when working roadway incidents are:

- A clear policy that meets applicable requirements, states the requirements, references the applicable regulations, specifies when high visibility apparel must be worn, and spells out the consequences of non-compliance.
- Leadership leads by example and is in 100% compliance with the policy.
- Training for officers in the requirements and the department's policy.
- Enforcement of the policy with real consequences for noncompliance.
- Proper procurement in a range of sizes and fittings to ensure proper fit.
- A care, maintenance, and replacement plan for the apparel.
- Accurate perception of why vests are important and reinforcement of when they are and are not required.
- Dispelling myths about negative perception issues, such as diminishing authority by wearing a vest.

9. Where is the best place to store a high visibility vest in an emergency response vehicle?

C. In the cab next to the seat where each responder sits

Topic 7: Incident Command and Scene Management

Section A: Key Terms

Incident Command System:

A standardized, on-scene, all-hazards incident management organizational structure that:

- Allows for the integration of facilities, equipment, personnel, procedures and communications operating within a common organizational structure.
- Enables a coordinated response among various jurisdictions and functional agencies, both public and private.
- Establishes common processes for planning and managing resources

Unified Command:

A team effort that allows all agencies with jurisdictional responsibility for an incident or planned event, either geographical or functional, to manage the incident or planned event by establishing a common set of incident objectives and strategies.

Span of Control:

The number of subordinates a supervisor manages.

Incident Action Plan:

A response strategy that specifies the incident objectives and states the activities to be completed and by whom to achieve those objectives over a specific operational period time frame.

Incident Command Post:

The single location outside of the present and potential hazard zone from which the incident commander oversees all operations.

Staging Area:

The temporary locations proximate to but outside the immediate impact zone where personnel and equipment wait to be assigned.

Helispot:

A temporary location at the incident where helicopters can safely land and take off.

After Action Review:

The process of conducting a constructive critical review of an incident, drawing lessons, and passing on what was learned.

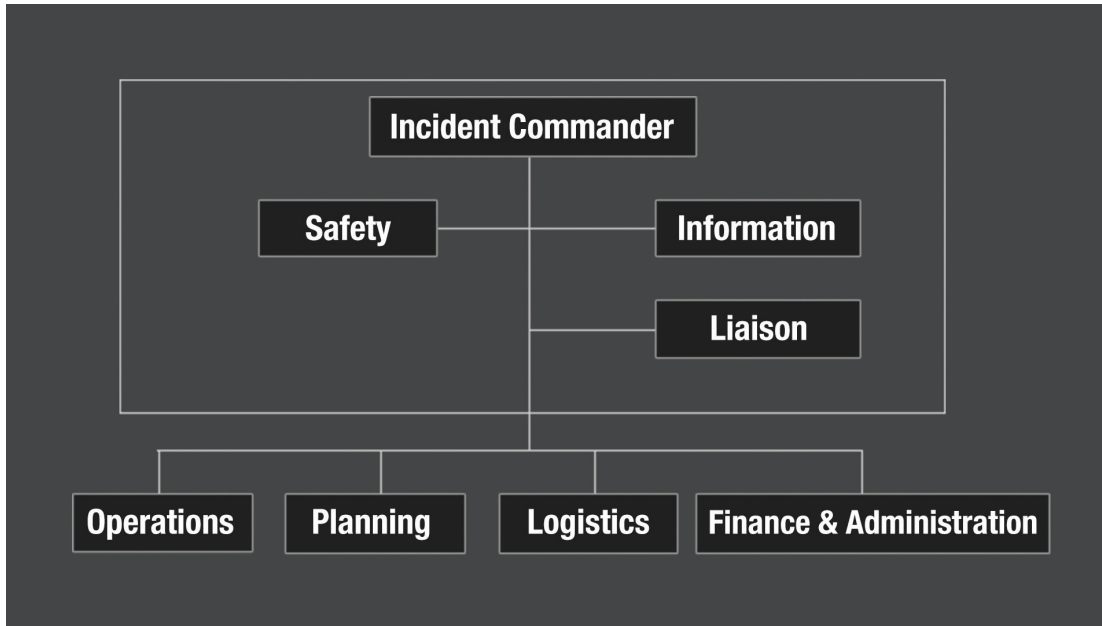
Topic 7: Incident Command and Scene Management

Non-involved person:

Any person at the scene of a roadway incident who is not directly involved in the incident.

Section B: Diagrams

Draw a diagram of the incident command system.



Section C: Study Questions

1. What are the six features of a fully-implemented Incident Command System:

The six features of a fully-implemented Incident Command System are:

- A. Command
- B. Operations
- C. Planning
- D. Logistics
- E. Finance/Administration
- F. Intelligence/Investigations

2. Fill in the blank:

3; 7; limited to no more than 5 tasks

Topic 7: Incident Command and Scene Management

3. When should the first arriving responder begin the scene size up?

A. As soon as the responder has arrived

4. In what direction should lanes be numbered?

B. Left to right in the direction of travel

5. Who establishes initial command at an incident?

D. The highest ranking officer in the first-arriving unit, no matter what agency

6. What step indicates formal completion of a task assigned by the Incident Commander?

B. Informing incident command of task completion

7. What is assignment of position, role, and title within the ICS organizational and administrative structure based on?

B. Expertise

8. The Incident Command System is flexible and can be tailored to fit the incident. (Circle one)

True

9. What is the purpose of an After Action Review?

C. To discuss what went well and what could have been done better

10. For each topic, explain what measures can be taken to establish scene control?

A. Traffic control: Create a temporary traffic control zone marked with appropriate traffic control devices.

B. News media: Enforce your SOP covering media access to the scene and requiring high visibility apparel and displayed identification; Set up a meeting to brief media crews on SOPs, what is expected, and consequences for non-compliance; Designate staging areas, as needed, for media and direct media to those areas; Make provisions for regular media briefings.

C. Non-involved persons: Designate staging areas, as needed, for noninvolved persons; escort noninvolved persons out of the work area and into this controlled, monitored, safe location staging area; Involve law enforcement promptly if a noninvolved person causes a problem; Reassess and adjust the handling of noninvolved persons as the incident changes.

Topic 7: Incident Command and Scene Management

D. Personnel accountability: Establish an accountability system to monitor who enters/exits the work area and ensure they have a legitimate purpose in the area; Arriving responders should check in immediately with the IC so command is aware of which responders are on scene and what tasks they are performing.

E. Scene access: Establish a perimeter around the scene to keep additional noninvolved persons from arriving and gaining access; Assign personnel to intercept any arriving parties and direct them according to their business at the scene (such as picking up victims), move them to a safe area, or deny them entry; Instruct victims and witnesses what to tell family or friends who they contact to pick them up about where to go and how to meet up.

F. Personnel dispatch: Dispatch all responders through the designated systems as defined by the jurisdiction's response plan so who is a responder and who is not is clearly known; Any responder who witnesses or comes upon a crash and is on scene as a good Samaritan should yield to dispatched units when they arrive, report what he/she did and observed, and then step aside unless directed by command to stay or continue assisting.

G. Incident command and task assignment: Maintain awareness of who has been dispatched to the scene (fire, police, EMS, DOT, utility personnel, service patrols, towing and recovery), what tasks they are performing, and when their portion of the response is concluded; Assign traffic control duties to trained and qualified personnel who are not minors; Direct personnel without a current assignment to a safe location if they cannot depart until their apparatus is no longer needed.

H. Towing: Create a towing policy ahead of time, in accordance with applicable laws, including a list of approved towers to be dispatched through the official system as defined in the jurisdiction's response plan; Plan how to handle self-dispatching towers who arrive and solicit vehicle owners.

11. Which agency regulates the use of unmanned aerial vehicles (drones)?

D. Federal Aviation Administration

12. Fill in the blanks:

17; aeronautics; check by the Transportation Security Agency; 55; 500; 100.

13: In general, persons in a public space are allowed to photograph or video whatever is in plain view. (Circle one)

True

Topic 7: Incident Command and Scene Management

14. What are the five questions to ask during an After Action Review?

1. What was our intention?
2. What went well?
3. What could have gone better?
4. What should we have done differently?
5. Who needs to know?

Topic 8: The Traffic Incident Management Area

Section A: Key Terms

Traffic Incident Management Area:

An area of a roadway where temporary traffic controls are installed, as authorized by a public authority or the official having jurisdiction of the roadway.

Cone Taper:

A sequence of at least 5 cones placed on a diagonal to close one or more lanes of traffic.

Buffer:

Empty space between responders' work area and moving traffic.

Upstream:

Describes the location of activities that occur prior to the involved vehicles in a roadway incident when viewed from the direction of approaching traffic.

Downstream:

Describes the location of activities that occur after to the involved vehicles in a roadway incident when viewed from the direction of approaching traffic.

Transition Area:

The part of a traffic incident management area immediately downstream of the Advance Warning Area where temporary traffic control channelizing devices, like cones, are used to close one or more lanes of traffic to provide a protected work area for responders.

Advance Warning Area:

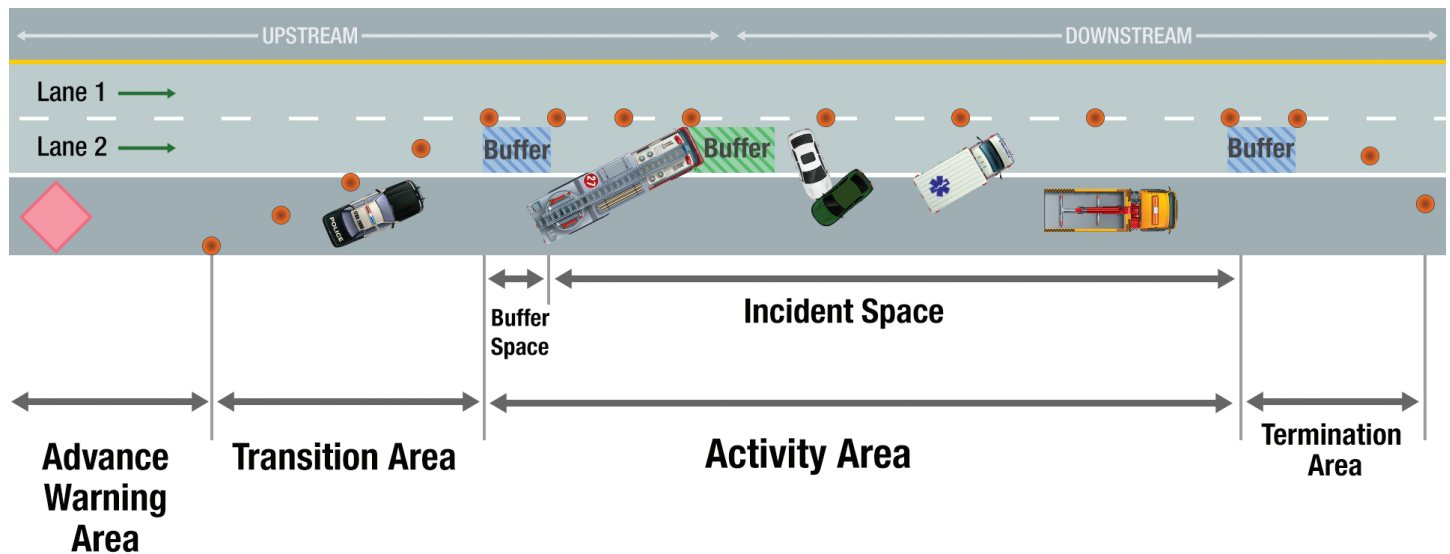
The first, most upstream part of a traffic incident management area encountered by oncoming traffic where temporary traffic control devices, like signage, notify the motorist that there is an emergency response ahead.

Topic 8: The Traffic Incident Management Area

Section B: TIMA Diagram

Traffic Incident Management Area (TIMA)

also known as a Temporary Traffic Control Zone (TTC)



Section C: Study Questions

1. What part of a traffic incident management area is used to close lanes upstream of the incident?

B. Transition area

2. What are the effects of lane closure on traffic flow?

Lane closure can lengthen traffic queues. However, it also protects responders and gives them more room to work an incident. Lane closure can actually contribute to quicker clearance of the incident because responders have more room to work and can remain focused on their response tasks.

Topic 8: The Traffic Incident Management Area

3. Complete the blank with the type of traffic control required by the federal *Manual on Uniform Traffic Control Devices* for the incident category noted:

Type of traffic control required by the MUTCD for each incident category:

- A. Minor: Only a flashing light on a vehicle as advance warning.
- B. Intermediate: Upstream warning signs and cones for lane tapering.
- C. Major: Set up a full work zone (traffic incident management area) and, if needed, manual traffic control by qualified personnel.

4. What are the responder safety benefits of setting up a traffic incident management area?

The responder safety benefits of setting up a traffic incident management area are:

- Decreases line of duty deaths, near misses, vehicle struck bys, and secondary accidents
- Gives drivers early warning to slow down and move over because there is an emergency ahead

5. You are first arriving at the scene of a two-vehicle crash in the middle of the intersection at four-way stop on a rural road. All roads are one lane in each direction. The north entry to the intersection has limited sight distance due to a curve. The two victims are out of their cars and talking. One is complaining of back pain. Would you set up a traffic incident management area at this scene? Why or why not? If you chose to set up a traffic incident management area, what would it consist of? Where would you place traffic control devices? Draw a diagram of your TIMA setup at a four-way intersection, if you choose to do one.

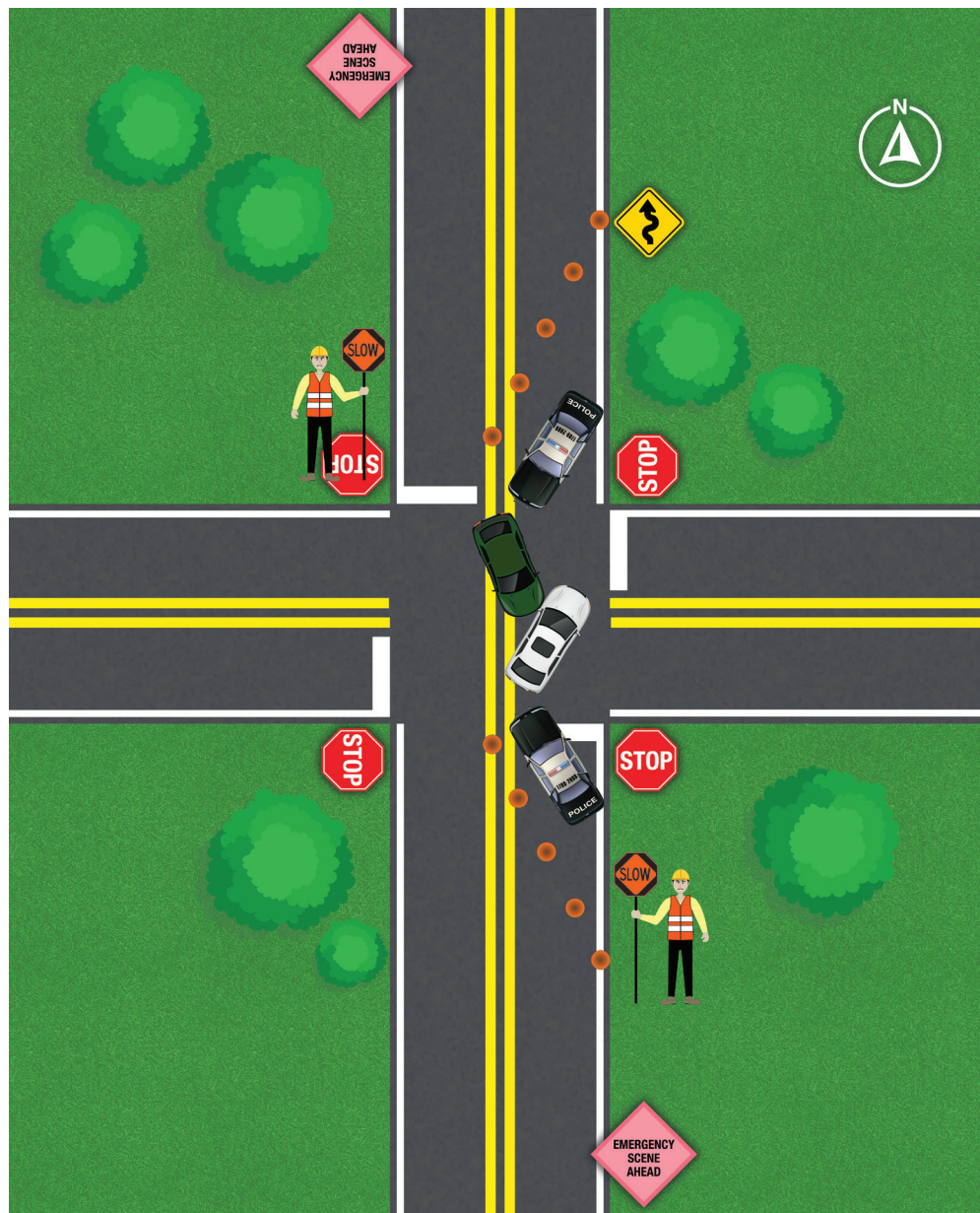
I would first ask the two victims if the vehicles are drivable and, if they are, whether they are able to drive the vehicles out of the roadway and off onto the grassy shoulder. If the victims are not seriously injured and the vehicles are drivable, I would have them relocate the vehicles to one of the level, grassy shoulders and instruct them to wait inside their vehicles for towing to arrive. Then, I would park my vehicle in a linear position upstream of those vehicles with emergency lights on in parking mode to provide protection. Then, I would call a for a tow and stay inside my vehicle until one arrived.

If the cars were not drivable or if one could not be moved because the victim with back pain was too injured to move their car, I would instruct them to wait on the grassy shoulder away from traffic and, if permitted in my jurisdiction, I would push the cars off the roadway with my vehicle (equipped with a push bar) to clear them. I would call for EMS if needed for the victims.

Topic 8: The Traffic Incident Management Area

If it was not possible to move or clear the cars, I would call for assistance because the location of the incident in the middle of the intersection means that road closure and manual traffic control are needed. I would temporarily close the road in the eastbound and westbound directions at the nearest detour point (off the diagram below) because the vehicles straddle both lanes in those directions. I would take the northbound and southbound traffic and alternate it in the southbound lane using manual traffic control because the vehicles are mostly clear of that lane. I would place pink “Emergency Scene Ahead” signs approximately 200 yards upstream of the intersection and use a cone taper to close the lane with the vehicles in it. I would call for towing to get the vehicles cleared as quickly as possible.

Here is how I would set up the traffic control. The eastbound and westbound road closures are not shown because they would happen at a distant detour point.



Topic 9: Advance Warning

Section A: Key Terms

Advance warning:

Notice to oncoming traffic that there is an emergency response ahead.

Arrow board:

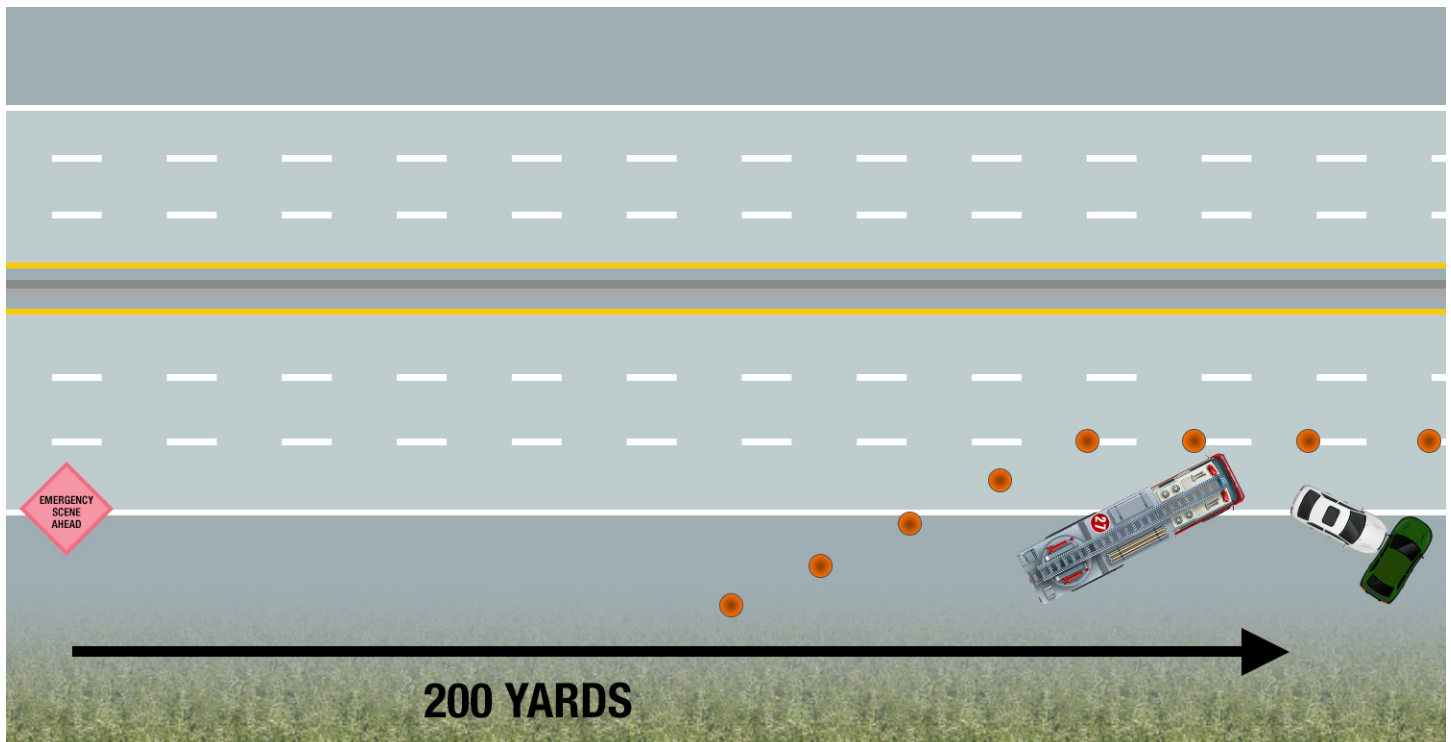
An electronic sign traffic control device that displays a directional arrow notifying traffic which way to proceed around an emergency incident scene on the roadway.

Variable message sign:

An electronic, programmable sign (either portable or fixed in place) that can be configured to display a written message to motorists as notification of a traffic condition or emergency incident ahead.

Section B: Diagram

Indicate on this diagram which advance warning devices you would place and where you would place them. Write the distance of each device you place from the incident itself.



Topic 9: Advance Warning

Section C: Study Questions

1. Identify each advance warning device in the photos. Write your answer below each photo.



Portable traffic incident management area advance warning "Emergency Scene Ahead" pink drop sign.



MUTCD-compliant traffic cones.



Arrow stick and high visibility NFPA 1901-compliant chevrons.



Arrow board or portable variable message sign.

Topic 9: Advance Warning

2. Is this cone MUTCD-compliant? Why or why not?



Yes, the cone is MUTCD-compliant because it meets the following requirements in section 6F.64 of the Manual on Uniform Traffic Control Devices:

- Predominantly orange in color
- Made of a material that can be struck without damaging the impacting vehicle
- At least 28" in height (the minimum for freeways and high-speed highways; 18" in height is the minimum for low-speed roadways)
- Has two retroreflective white bands, the first one 6" wide located 3-4" from the top of the cone and the second one 4" wide located approximately 2" below the 6" band (the standard for cones not more than 36" in height; cones that are more than 36 inches in height must have alternating orange and white retroreflective stripes that are 4 to 6 inches wide not more than 3" apart with a minimum of two orange and two white stripes with the top stripe being orange)

3. Emergency vehicles equipped with high visibility markings and devices to direct traffic can be used as advance warning devices. (Circle one)

True

4. Which NFPA standard specifies high visibility markings required on new automotive fire apparatus?

C. NFPA 1901

Topic 9: Advance Warning

5. Describe the process for safely setting a cone taper.

While wearing a high-visibility garment and always keeping an eye on oncoming traffic, remove cones from the emergency vehicle. Stand on the shoulder side edge of the lane you intend to close. Pick up the first cone, walk about 20 paces, which is approximately 30', upstream of the first blocking vehicle. This will place you behind the blocking vehicle along the fog line. Place a cone. Watching traffic, return to your stack of cones and pick up another cone. Walk 20 paces past the first cone and place another cone in a straight line with the first cone, along the side of the lane to be closed. Repeat for the remaining cones. This places 5 cones, each about 20 paces apart, laid out in a line along the side of the lane to be closed. Now, starting where you are (at the most upstream start of the taper), pick up that cone, which is the fifth one you placed, and place it on the lane fog line. While watching traffic, go to the next cone in the line, and walk it 1/4 of the way into the lane being closed. Place the cone. Continuing to watch traffic, return to the line of cones again and move the third cone to about halfway across the lane. Return to the line of cones and move the fourth cone 3/4 of the distance into the lane being closed. Finally, place the last cone all the way across the lane being closed, along the line at the opposite side of the lane from where you placed the first cone. The cone taper is complete. Flares can then be placed at each cone to increase the cone's visibility. Remember to execute the same procedure in the termination area using five additional cones. Use any remaining available cones to mark the edge of the closed lane line across the Activity Area. Remember to keep an eye on traffic at all times.

6. List the ways in which a state's Department of Transportation can assist with advance warning.

The state DOT can provide protective vehicles as advance warning, use its network of traffic cameras to provide incident details and the opportunity to plan the traffic incident management response prior to arrival, activate variable message signs with an appropriate advance warning message, and broadcast advance warning of the incident over 511 and traffic radio stations.

Topic 9: Advance Warning

7. What factors affect the length of the advance warning area at a given roadway incident?

Factors affecting the length of the advance warning area at a given roadway incident are:

- characteristics of the incident
- posted speed limit
- actual speed of moving traffic
- topography
- weather
- road configuration
- expected length of the response
- TTC device requirements and apparatus
- personnel availability

8. Match the incident type to the minimum advance warning required by the federal *Manual on Uniform Traffic Control Devices*:

Minor: Flashing lights on an emergency vehicle

Intermediate: Upstream warning signs and a cone taper

Major: A full work zone setup

9. List the benefits of advance warning.

Advance warning decreases line of duty deaths, near misses, vehicle struck bys, and secondary accidents; and gives drivers early warning to slow down and move over because there is an emergency ahead.

10. The first arriving unit always places the advance warning devices. (Circle one)

False. Although the first-arriving unit can place advance warning devices if they have them available and it is possible, it is more typical for the second-arriving unit to place the advance warning devices because they have been advised of the location and incident details prior to their arrival so they know where to deploy the advance warning sign (or other device). The first arriving unit typically provides blocking at the incident, at least until a replacement unit arrives. If the second unit's arrival is not imminent, the first unit is encouraged to deploy advance warning.

Topic 9: Advance Warning

11. Circle all the characteristics of a vehicle properly equipped to act as advance warning.

A. equipped with flashing emergency lighting

B. marked with high visibility, retroreflective markings in compliance with applicable standards

Topic 10: Blocking and Safe Positioning

Section A: Key Terms

Linear positioning:

Parking response vehicles directly upstream of, in-line, and within the same lane as the vehicles involved in the incident.

Angled block positioning:

Parking response vehicles in a blocking position upstream of the incident location at an angle across one or more lanes of traffic.

Lane +1:

The practice of using one or more blocking vehicles to close the lane(s) where the incident has occurred plus one additional adjacent lane to act as a buffer space between responders working the incident and oncoming traffic.

Block-to-the-right:

An angled blocking position where the front of the unit is angled toward the right.

Block-to-the-left:

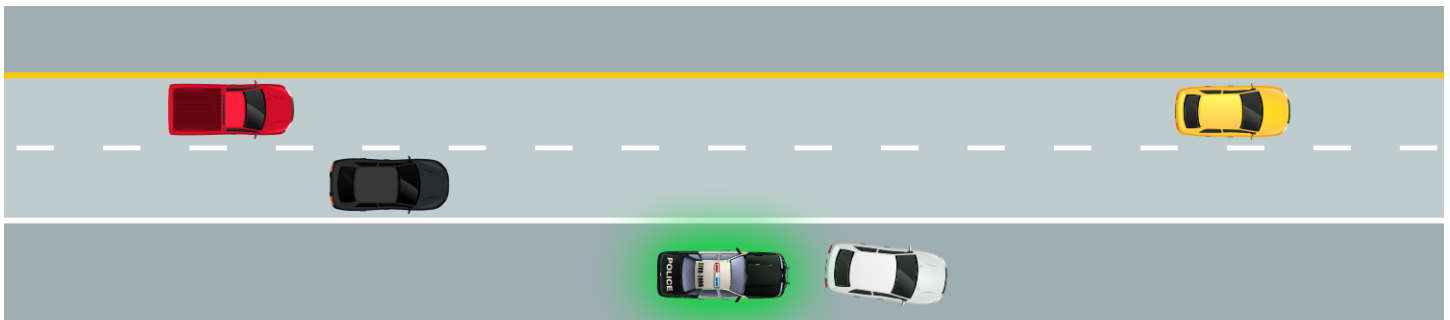
An angled blocking position where the front of the unit is angled toward the left.

Zero buffer area:

The space where approaching traffic comes closest to the blocking vehicle, typically at the furthestmost point of the angled vehicle (often the front left or front right corner of the blocker), where responders have very little room to pass between the blocker and oncoming traffic.

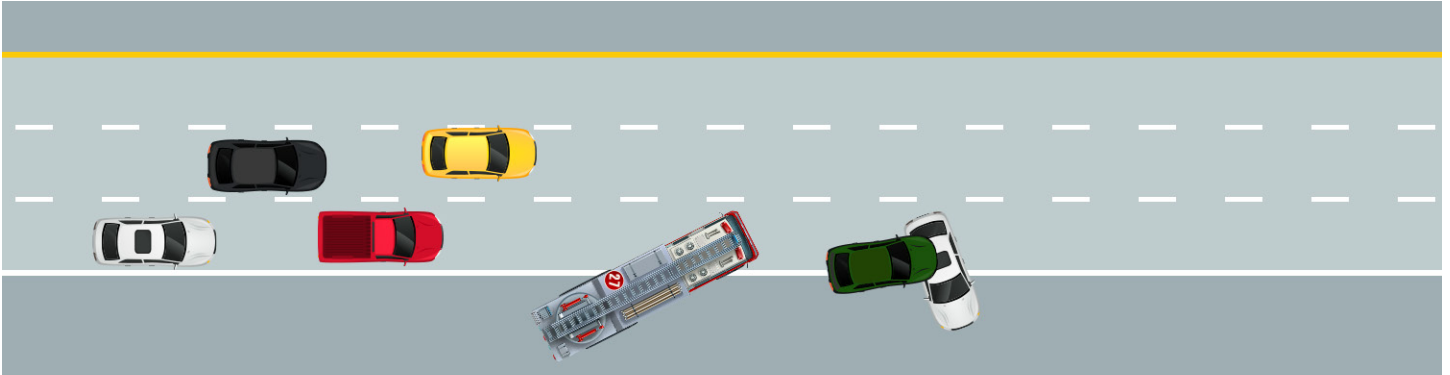
Section B: Diagram

1. Linear. The disabled vehicle is completely in the shoulder and can be safely accessed on foot without blocking a lane of travel with an angled block.

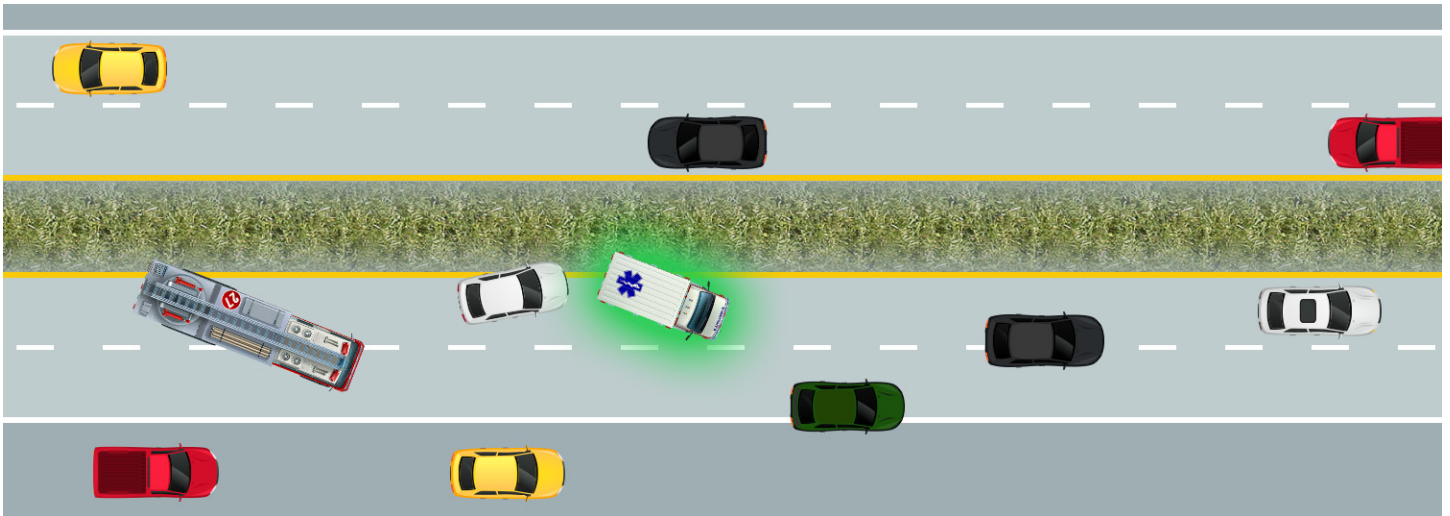


Topic 10: Blocking and Safe Positioning

2. Angled. The involved vehicles are in a lane of traffic and the shoulder so both must be closed and an angled position is necessary to achieve that. In addition, following the “lane +1” principle, the middle lane should also be closed with the blocking apparatus to give responders room to work because the incident is so close to the lane skip line between the right and middle lanes.



3. Angled. Although the involved vehicle is in only one lane of travel, due to the possibility that a patient may have to be loaded into the ambulance, the ambulance should be parked at an angle with patient loading doors angled away from traffic.



Topic 10: Blocking and Safe Positioning

Section C: Study Questions

1. Where is the zero buffer area in this photo?



2. List the guiding principles for the use of blocking vehicles established by the SHRP2 National TIM Training Program.

The guiding principles for the use of blocking vehicles established by the SHRP2 National TIM Training Program are (A) Arriving responder vehicles should be positioned in a manner that lessens the likelihood of them being hit by oncoming traffic and (B) provides the safest possible work area for the victims of the original incident and responders working at the scene by creating a barrier between them and traffic.

Topic 10: Blocking and Safe Positioning

3. List the factors to consider when deciding whether to use a linear block or an angled block:

- Type of roadway
- Lane location of the vehicles involved in the incident
- How easily oncoming traffic can use other lanes to pass the incident
- Number of vehicles involved in the incident
- Number of lanes obstructed by the vehicles involved in the incident
- Vehicles available for blocking
- Speed of oncoming traffic
- Volume of oncoming traffic
- Road conditions, topography, and obstructions restricting visibility of the incident scene to approaching traffic
- Whether taking an additional lane will improve the speed of clearance
- Weather conditions
- Probable components, complexity, and duration of response operations

4. You are the driver/operator of a fire apparatus second-arriving to a vehicle fire in the lefthand lane of a four lane divided highway. The first-arriving engine is suppressing the fire. You have been dispatched to provide blocking. The fire officer suggests block-to-the-right angled positioning, closing lane +1, 500' upstream of the first-arriving engine so approaching drivers have plenty of warning. Do you agree or disagree with this positioning? Why?

Partially agree and partially disagree. The engine should be parked angled to the right with the front of the engine aimed to the right as suggested by the officer. Closing lane +1 as suggested is correct. However, positioning 500' upstream of the first-arriving engine as suggested is too far away for blocking. It gives drivers the opportunity to cut back into the lane between the blocker and the apparatus working the vehicle fire. The blocker should be positioned no further than 300' upstream but not so close as to be in danger of rolling into other emergency vehicles or personnel if struck.

Topic 10: Blocking and Safe Positioning

5. What steps are to be taken in each category of tasks after the emergency vehicle has assumed a blocking position?

Brake: Set the parking brake.

Lighting: Initiate stationary light shedding procedures according to NFPA standards, department protocol, and apparatus capabilities.

Wheels: Turn the steering wheel to point the wheels away from the work area and set wheel chocks.

6. Describe how to safely pass through the zero buffer area.

To safely pass through the zero buffer area, approach from the protected side, stop at each corner and check for approaching traffic. If it is clear, proceed along the unit as closely to the blocking vehicle as possible, perform the task such as retrieving equipment while constantly checking for approaching traffic. Move to the protected side of the vehicle once the task is complete (rather than go back through the zero buffer area). Do NOT turn your back to moving traffic. Remain exposed to traffic for as short a time as possible.

Topic 11: Move It or Work It

Section A: Key Terms

Authority Removal Law:

A state statute gives designated public agencies permission to remove vehicles and/or spilled cargo from the roadway to restore traffic flow. Depending on the type of cargo, these laws often hold harmless agencies if removal duties are performed in good faith and without gross negligence.

Driver Removal Law:

A state statute that authorizes licensed drivers involved in minor collisions without serious injuries to move any driveable vehicle to the shoulder or other safe area out of the travel lanes.

Move It:

The process of moving vehicles involved in a roadway incident to a different location before commencing operations.

Work It:

The process of conducting response actions with the vehicles in place.

Section B: Scenarios

Given the situation described, decide whether you would Move It or Work It and explain your decision.

A. In a single vehicle incident, an SUV has hit the concrete wall on an overpass that is one lane in each direction. The vehicle will no longer start, but the driver is not seriously injured.

Work It. The vehicle is not driveable because it doesn't start and there is no room on an overpass to push it safely off the road.

B. It is rush hour on the interstate, which is three lanes in each direction with a wide, grassy median in between and a right-hand soft shoulder. A van has collided with a pickup in the left-hand lane of the northbound side. The driver of the van is pinned inside the vehicle. Traffic is backed up for at least two miles when the first unit arrives.

Work It. Vehicle extrication is necessary to free the victim in the van and that must be completed before the vehicle can be moved.

Topic 11: Move It or Work It

C. A bicyclist was hit by a car at a rural intersection. Initially, the intersection was closed and the incident worked in place while the bicyclist received treatment. The bicyclist has now been transported to the hospital. Debris from the bicycle and the car that hit it remains in the roadway. The car is parked in the grass next to the road. The sheriff's department is on scene investigating the incident.

Move It or Work It depending on the stage of the investigation. Work with law enforcement to evaluate whether or not the incident is a crime scene and/or whether any investigation will require the vehicles, debris, or obstructions to remain in their "as found" positions. If the answer is yes, Work It. If the answer is no and law enforcement states that the debris can be moved and the investigation no longer requires being in the roadway, then Move It and clean the debris before restoring access to the lane.

D. A 14' box truck has overturned on a curve on a mountain roadway, blocking both lanes (one in each direction). The cargo, furniture being moved, has partially spilled out of the truck because the latch was not properly secured. The driver of the truck has a broken arm and is being transported by ambulance to the hospital.

Work It if needed until a tow truck arrives then Move It by securing the cargo inside the truck and having the truck towed from the scene with the furniture inside rather than taking many hours to unload it in the roadway. In this type of situation, always confer with a tow or transport expert to see if the vehicle with the cargo inside can be safely moved. The structural integrity of the trailer is a key factor; if it is compromised, the trailer may fail when it is moved, spill the cargo, and make the situation worse. If the vehicle cannot be safely moved, Work It and remove the cargo by hand, loading it into an appropriate vehicle for removal.

Section C: Study Questions

1. If a vehicle accident has no injuries, the vehicles are driveable, and there is a safe location nearby where the vehicles can be relocated, the drivers of the vehicles are permitted to drive the vehicles to the safe location. (Circle one)

True

Topic 11: Move It or Work It

2. What are the advantages of moving vehicles out of an active roadway before working the incident?

Advantages of moving vehicles out of an active roadway before working the incident:

- Responder safety is increased because of less time exposed to the hazards on the roadway.
- The potential for secondary crashes is decreased because the obstruction is on the roadway for a shorter period of time.
- Responder and motorist deaths and injuries are reduced because they are exposed to traffic for a shorter period of time. This also reduces medical expenses to treat these victims.
- Congestion is relieved by shorter response duration when the road is cleared quickly.
- Economic savings is realized by reducing travel delays, thereby reducing fuel consumption and lost time and wages while sitting in traffic.
- Energy is conserved and environmental impacts mitigated by reducing vehicle idling time, which decreases fuel consumption and emissions.
- Motorist satisfaction is improved due to shorter delays and better service.

3. List the major factors that affect the Move It or Work It decision.

Major factors affecting the Move It or Work It decision:

- Is there a working fire?
- Is there a fatality? Are you permitted and able to move the body?
- Is extrication or stabilization needed?
- Is the driver incapacitated or have injuries precluding removal?
- Is there a cargo spill that precludes removal?
- Are the involved vehicles driveable?
- Is there a safe place to remove vehicles to? Is the equipment available to remove them?
- Is the incident a crime scene that precludes removal?
- Are you legally permitted to remove the vehicles?

Topic 11: Move It or Work It

4. Circle all the instances that necessitate a Work It response in all situations.

- C. Active vehicle fire
- E. Incapacitated victim inside a vehicle
- G. Vehicle stabilization required
- H. Vehicle is too damaged to be driveable
- I. There is no safe place for removal near the incident
- J. Law enforcement has declared the incident a crime scene where items must remain in "as found" condition

5. Who has the power to determine whether a vehicle can be moved from the roadway if there is a fatality in the vehicle?

- F. It depends on the state and local jurisdiction's regulations and policies

6. In general, who retains ownership of spilled cargo?

- A. The responsible party, such as the owner or contractee of the carrier

7. Which laws provide legal permission to remove a vehicle or an obstruction on the roadway?

- A. Authority Removal Laws
- B. Driver Removal Laws

8. Move It or Work It is a one-time decision made early on in the incident. (Circle one)

False. The Move It or Work It decision should be continually re-assessed throughout the incident as it develops.

Topic 12: Manual Traffic Control

Section A: Key Terms

Traffic control professional:

Emergency incident responders with specified training as prescribed by the authority having jurisdiction for traffic control at roadway incidents and who are properly equipped to establish temporary traffic controls at roadway incidents or special events.

Flagger:

A person who actively controls the flow of vehicular traffic into and/or through a temporary traffic control zone using hand-signaling devices or an Automated Flagger Assistance Device (AFAD).

Section B: Photo Identification

Write the meaning of each hand signal below the photographs.



Topic 12: Manual Traffic Control

Which of the following positions correctly shows a “proceed” signal to oncoming traffic when using a flag? Circle one.



Section C: Study Questions

1. Which document sets the national standard for hand signals used in manual traffic control?

B. Manual on Uniform Traffic Control Devices

2. Which standards include manual traffic control requirements? Select all that apply.

A. NFPA 1001

B. NFPA 1091

D. Manual on Uniform Traffic Control Devices

3. What is the goal of manual traffic control?

The goal of manual traffic control is to provide guidance information on the path to follow through the incident area.

4. What are the criteria for selecting the location from which to manually direct traffic?

The criteria for selecting the location from which to manually direct traffic are:

- Sufficient distance from approaching vehicles so they are able to stop at the intended point
- Allow extra space for stopping without entering the work zone
- Allow the traffic control professional to have a clear escape route to avoid being struck by an errant vehicle

Topic 12: Manual Traffic Control

5. What are the five expectations set by the *MUTCD* for traffic control professionals?

The five expectations set by the *MUTCD* for traffic control professionals are:

1. Ability to receive and communicate specific instructions clearly, firmly, and courteously;
2. Ability to move and maneuver quickly in order to avoid danger from errant vehicles;
3. Ability to control signaling devices (such as paddles and flags) in order to provide clear and positive guidance to drivers approaching a TTC zone in frequently changing situations;
4. Ability to understand and apply safe traffic control practices, sometimes in stressful or emergency situations; and
5. Ability to recognize dangerous traffic situations and warn workers in sufficient time to avoid injury.

6. Which of the following are requirements for performing traffic control? Check all that apply.

- A. physical fitness
- B. mental sharpness
- D. professional appearance
- F. communication skills

7. How does a traffic control professional demonstrate professionalism?

A traffic control professional demonstrates professionalism by:

- A. Proper official dress
- B. Sympathetic, patient, calm demeanor
- C. Clear, precise communications in person and over the radio (in plain English)

8. In what ways can traffic control professionals communicate with each other at the scene?

- B. by radio
- C. verbally in person
- D. using hand signals

9. Which device or devices is preferred for conducting manual traffic control?

- D. STOP/SLOW paddle

Topic 12: Manual Traffic Control

10. When using the right arm to hold a STOP/SLOW paddle and directing traffic to stop, what should be done with the left arm?

C. Raise it above the shoulder and face the palm toward approaching traffic

11. Which describes the correct procedure when using a flashlight to signal traffic to proceed?

C. Point the flashlight at the vehicle's bumper, slowly aiming the flashlight toward the open lane in a vertical arc, then holding the flashlight in that position.

12. When directing traffic, do not ever turn your back to traffic. (Circle one)

True

Topic 13: Termination

Section A: Key Terms

Termination:

The final phase of a traffic incident response where equipment, personnel, and vehicles are demobilized and normal traffic flow is restored on a fully opened roadway.

Incremental lane reopening:

The process of progressively reopening lanes to restore greater traffic flow volume.

Relocation and return:

An approach to clearance, often employed during peak hours when traffic is heavy and a road closure would exacerbate heavy volume, where equipment and personnel are relocated off the roadway and return during off-peak hours to complete clearance tasks such as up-righting, cargo removal, cleanup, and investigation. Traffic control is necessary during return.

Section B: Planning

A. [The answers to this question's elements are dependent upon the individual respondent's department plan.]

B. Towing & Recovery: List the six keys to a successful relationship with towing and recovery.

1. Preplan prior to the incident.
2. Conduct joint training.
3. Know and adhere to the regulations and SOPs with regard to removal and towing and recovery.
4. Know the capabilities and specialties of the towers who serve your jurisdiction, as well as their equipment lists and response times.
5. Make a timely call for the tower and provide accurate information.
6. Protect the tower.

Topic 13: Termination

Section C: Study Questions

1. Why is termination a dangerous time in the life of an incident response?

Termination is a dangerous time in the life of an incident response because:

- Remaining responders may be less protected
- Motorists may be frustrated by backups
- Termination operations by nature require responders to be exposed on the roadway as they secure vehicles, pack up and stow equipment, and remove traffic control devices.
- Successful, safe termination depends on executing many diverse tasks properly while keeping an eye on and being aware of approaching traffic and the possible errant vehicle.

2. Which direction should personnel face when removing traffic control devices?

B. toward oncoming traffic

3. Blocking should remain in place until the last person, including towing, has returned inside their vehicle to depart. (Circle one)

True

4. Wearing high visibility apparel is not necessary when removing temporary traffic control devices because the devices are reflective and incident operations have concluded.

False. High visibility apparel is necessary during all emergency operations on the roadway, including termination activities.

5. In which direction should the traffic incident management area be dismantled?

A. Termination Area backwards to the Advance Warning Area

6. During the termination process, when should temporary traffic control devices be removed?

C. As the last task in dismantling the traffic incident management area, after all vehicles and personnel have departed except the blocking vehicle

7. A blocking vehicle should be established upstream of the first temporary traffic control device prior to manual removal of the device. (Circle one)

True

Topic 13: Termination

8. Emergency vehicle departures should begin with the vehicle that is the furthest:

D. Downstream

9. List the information that should be provided to the tower when making a request for response:

When making a request for response from towing and recovery, describe the incident to the tower. Include the following information:

- Number of vehicles
- Reason for tow
- Vehicle classes
- Vehicle makes, models, and colors
- Vehicle locations
- Vehicle positions (upside down, right-side-up, on side)
- Vehicle damage
- Vehicle in relationship to topography (for example: in a ditch, on a hill, off the road and how far off the road)
- Access points to reach the vehicle
- Any clean-up information (fuel spill, large amount of debris)
- Lane blockage or necessary routing information; any specific instructions on how to access the scene

10. Circle all the safety practices necessary when conducting termination tasks:

- A. Wear high visibility apparel.
- B. Never turn your back to traffic.
- C. Work downstream to upstream when removing traffic control devices.
- E. Maintain situational awareness.
- G. Minimize the amount of time you are exposed to traffic on the roadway.

Topic 14: Vehicle Fires

Section A: Key Terms

Hybrid vehicle:

A vehicle with more than one fuel source, such as electricity and gasoline.

Electric vehicle:

A vehicle whose only fuel is electricity.

Section B: Scenarios

A. Heavy smoke from a vehicle fire and steam from suppression with water are obscuring the scene and making it difficult for oncoming traffic to see responders. What measures would you take to improve safety under these conditions? Write your response for each category of actions.

Measures to improve safety during a heavy steam or smoke condition.

- A. Traffic control: Given that a traffic incident management area with advance warning and highly visible traffic control devices has already been established, I would consider: closing additional lanes or the entire road until responders finish their work or visibility improves; deploying additional advance warning devices at further distances; and activating variable message signs to explicitly state the smoke condition hazard so approaching motorists are prepared.
- B. Blocking vehicles: I would deploy additional blocking vehicles to protect any exposed sides of the work area.
- C. Additional resources: I would Deploy spotters in protected areas where visibility is good and provide a communication method for them to advise personnel of dangers from approaching traffic. I would also work with the fire department to provide what they need to quickly extinguish the fire, which will naturally mitigate the smoke condition.

B. You are the incident commander at a vehicle fire involving a hybrid sedan. A police officer directing traffic reports that her nose and throat are becoming irritated. What do you do?

I would evacuate all personnel who are not wearing breathing protection from the immediate area and move them to a safe distance upwind and uphill from the vehicle. I would instruct firefighters wearing breathing protection and conducting fire suppression to be alert for potentially hazardous and flammable vapors venting from the battery.

Topic 14: Vehicle Fires

Section C: Study Questions

1. NFPA-compliant turnout gear is an acceptable substitute for a ANSI-compliant high visibility apparel when the responder is exposed to direct flame or heat when in the vicinity of moving traffic. (Circle one)

True

2. What is the first step that should be taken after arriving at an active vehicle fire and establishing traffic control at the scene?

C. Secure the involved vehicle(s) with wheel chocks

3. List as many potential safety hazards at the vehicle fire scene as you can:

Potential safety hazards at the vehicle fire scene include: fire/flame/heat, spills, flammable liquids, smoke obscuration, potential explosion and projectile ejection, debris, slippery conditions from fire suppression materials, hazardous materials from cargo and vehicle fluids and components, and electrocution shock from electric or hybrid vehicle batteries, airbags, traffic, weather, road conditions, and electrical power lines.

4. When approaching a vehicle fire, which safety principles should be observed?

Proximity: far from

Angle: not in the path of components that may fail

Initial attack: straight stream and/or wider than medium fog pattern

Advance: medium fog pattern

5. List the sources of explosion hazards at the vehicle fire scene:

Sources of explosion hazards at the vehicle fire scene include: cargo, energy-absorbing bumpers, strut launches, electric/hybrid batteries, gasoline tank and other fuel tanks.

6. Match the hybrid/electric vehicle component to the appropriate safety practice(s).

Battery: Assume it is energized and charged; Avoid touching due to shock hazard

Electrical components and wires: Assume it is energized and charged; Avoid touching due to shock hazard

Vapors: Avoid inhalation

Orange cables: Assume it is energized and charged; Avoid touching due to shock hazard

Engine: Assume it is running; Stay out of the travel path

Topic 14: Vehicle Fires

7. What are the signs of a lithium ion battery fire?

The signs of a lithium ion battery fire are:

- Leaking fluids
- Increased temperature
- Gurgling sounds
- Popping or hissing noises from the HV battery compartment
- Smoke
- Flames
- Sparks

8. Number the following steps to show the order in which to execute tasks when securing a hybrid/electric vehicle manually:

- 2— Set the parking brake
- 5— Move the vehicle keys at least 20 feet away from the vehicle
- 1— Place the shift in Park
- 6— Disconnect the 12-volt battery, if permitted and you are trained to do so
- 4— Activate the hazard lights
- 3— Turn off the vehicle

9. What is the proper way to store an electric or hybrid vehicle that has been involved in a fire?

C. Leave the vehicle windows open and contact the manufacturer or authorized service center for instructions.

10. Match the post-fire action to its potential safety risk(s).

Fire suppression materials ► Slip and fall

Spill cleanup ► Slip and fall; HAZMAT; Debris

Overhaul ► Rekindle; Debris

Topic 15: Hazardous Materials

Section A: Key Terms

HAZMAT:

Hazardous Material

The Emergency Response Guidebook:

A resource for first responders to use when dealing with hazardous materials to help identify the hazardous material and take appropriate action for that identified hazardous material.

Section B: Study Questions

1. Match the motor vehicle fluid to its typical color.

Antifreeze ► acid green

Battery ► clear

Transmission fluid ► red

Fuel ► brown/green

2. List the resources that can be used to identify hazardous materials:

Resources that can be used to identify hazardous materials:

- Identification placards, which may include a four-digit ID number on the diamond-shaped placard or on an adjacent orange panel displayed on the ends and sides of a cargo tank, vehicle or rail car.
- Shipping papers or bills of lading, which may be found in the cab of the vehicle or in possession of a driver or crew member
- Commodity names or markings
- Labels

Topic 15: Hazardous Materials

3. Match the Emergency Response Guide section to its page color.

General Guidance ▶ white

Compounds list ▶ blue

Response guides ▶ orange

ID numbers ▶ yellow

Evacuation and shelter in place distances ▶ green

4. Labels on hazardous material containers are always correct and can be relied upon to look up the substance's name.

False. Fluid containers are mislabeled all the time and many do not have labels at all.

5. For a spill that is determined to be NOT a hazardous material and is not of reportable quantity, number these cleanup steps in the order in which they should be taken.

6- Properly dispose of any absorbents and tools used in the cleanup.

4- Contain the spill with a dike or absorbent.

2- Set up traffic control devices to allow for enough room to handle the spill.

5- Clean up the spill according to your SOP.

1- Wear proper PPE.

7- Restore traffic flow.

3- Stop the leak at the source.

Topic 16: Medical Helicopter Landings

Section A: Key Terms

Landing zone:

The area designated for a medical helicopter to land at a roadway incident scene.

Section B: Study Questions

1. List the advantages of pre-designated landing zones:

The advantages of pre-designated landing zones are: enables responders to know immediately where the helicopter will be landing; allows requirements like overhead clearance, size, surface grade, and debris to be assessed ahead of time and resolved if there are issues.

2. For each concern regarding landing a helicopter at or near an incident location, describe what can be done to address it:

Need to close the roadway:

Designate a landing zone off the roadway, such as in a parking lot. Ensure transport for the patient from the incident to the landing zone.

Responders may be hit by flying debris:

Adjust PPE accordingly and require head protection.

Landing zone must be on the roadway:

Establish a restricted area for the landing zone and revise traffic control to close the road. Enforce a “no vehicle movement” restriction within 300’ of the LZ when the helicopter is landing, on the ground, and taking off.

Non-involved persons may attempt to enter the restricted landing zone:

Add security to the perimeter and restrict access to the landing zone.

A vehicle may drive into the landing zone:

Enforce a “no vehicle movement” restriction within 300’ of the landing zone when the helicopter is landing, on the ground, and taking off. This applies to emergency vehicles as well as civilian vehicles.

The helicopter may not be able to land or take off:

Have standby, ground-based patient transport.

3. Who sets the requirements for medical helicopter landing zones?

C. air medical ambulance service provider

Topic 17: Crash Investigation and Fatalities

Section A: Key Terms

Extrication:

Removal of a trapped victim from a vehicle.

Section B: Study Questions

1. What is the purpose of a crash scene investigation? Circle all that apply.

A. Document the incident for later presentation in court proceedings

C. Determine the cause of the crash

E. Satisfy reporting requirements to the national crash database

F. Identify fault

G. Provide the basis for taking enforcement action

2. When an investigation is necessary, list the steps to be taken to preserve the scene:

Steps taken to preserve the scene are: do not move any items; restrict foot traffic to only necessary personnel; secure the area; put traffic control in place to give law enforcement enough room to conduct the investigation; treat all debris as evidence until determined to be otherwise by law enforcement; take only the necessary response actions and disturb the scene as little as possible.

3. All debris should be treated as evidence until determined to be otherwise by law enforcement. (Circle one)

True

4. If permitted in your jurisdiction, which are possible reasons to remove a vehicle to an off-site location for later investigation? Select all that apply.

A. A fatality is in the vehicle

C. Extensive investigation is required

D. The medical examiner is required and will not arrive for over an hour

5. Who is permitted to certify death in a fatality?

A. Varies by jurisdiction

Topic 17: Crash Investigation and Fatalities

6. List common situations that can cause incident clearance delays when an investigation is necessary:

The common situations that can cause incident clearance delays when an investigation is necessary are:

- Waiting to contact the medical examiner until the crash investigation is almost complete
- Waiting for accident investigators to arrive after hours and on weekends
- Waiting until the investigation is complete to request tow or recovery vehicles
- Waiting for the medical examiner to arrive

7. In order to prioritize lifesaving, extrication operations should begin immediately, even if that is before traffic control is in place. (Circle one)

False. Fire service personnel cannot conduct extrication safely if they are not protected from oncoming traffic by a traffic incident management area. Therefore, a traffic incident management area should be set up prior to commencing extrication operations.

Topic 18: Rural Roads

Section A: Key Terms

POV (Privately Owned Vehicle):

Describes a civilian vehicle when a first responder drives it to respond to an emergency scene rather than responding in a department-owned emergency vehicle.

Section B: Study Questions

1. Because rural roads typically have light traffic, standard traffic incident management procedures like setting up a traffic incident management area are rarely needed. (Circle one)

False. The dangers of working in or near moving traffic in the rural road environment are real, particularly given that many rural roads have no or minimal shoulders, one or two lanes, blind curves and hills, weather issues, and potential speeding vehicles due to light overall traffic. A traffic incident management area is the best tool we have to protect responders from these dangers at a rural roadway incident scene and provide guidance to motorists for how to pass that scene safely.

2. Which of the following situations commonly found on rural roads present challenges for temporary traffic control? Circle all that apply.

A. Two-lane roads, one in each direction

3. For each category, which traffic incident management principles can be implemented unchanged in rural road responses?

Traffic incident management principles that can be implemented unchanged in rural road responses include the following.

Preplanning steps: Forming a TIM Committee/Team; Preplanning, coordination, and multidisciplinary training through a traffic incident management (TIM) team; Training and preparing personnel for the duty of directing traffic

Adoption of standards and SOPs: Adopting the National Unified Goal; Adhering to the MUTCD and/or state supplement

PPE: Wearing high visibility PPE

Vehicle markings: High visibility chevron markings on response vehicles

Incident command: Using the Incident Command System

Safe positioning: Implementing elements of safe parking protocols like critical wheel angle and zero buffer safety

Topic 18: Rural Roads

Emergency lighting: Properly deploying emergency lighting

Post-incident debriefing: Conducting an after action review

Public education: Implementing public outreach strategies

4. What can a traffic incident management committee do to preplan for roadway incident response in rural jurisdictions? Select all that apply.

- A. Write SOPs/SOGs applicable to all response agencies
- B. Provide a forum for information exchange between leaders
- D. Pool resources
- E. Host multidisciplinary training
- F. Conduct preplanning for specific roadways and/or situations
- G. Standardize traffic control procedures

5. What is the minimum high visibility apparel piece that should be issued to every roadway responder from every agency?

- D. An ANSI/ISEA-compliant high visibility traffic safety vest or similar garment

6. What roadway and traffic management features should be assessed at an incident on a rural road when determining which traffic incident management practices should be implemented?

Features to be assessed to determine which traffic incident management practices to implement:

- Number of lanes
- Direction of travel
- Lines
- Road layout
- Shoulder size and condition
- Posted speed
- Weather conditions
- Traffic volume

Topic 18: Rural Roads

7. In the rural roads context, what factors influence the determination of where to place advance warning devices upstream of the incident?

The following factors influence the determination of where to place advance warning devices upstream of an incident:

- sight distance
- posted speed limit
- actual speed of moving traffic
- topography
- weather
- road configuration

8. Why might the characteristics of rural roads cause an issue for the recommended practice of blocking lane +1? Circle all that apply.

B. On two-lane roads (one lane in each direction), lane +1 blocking effectively closes the road

C. The first arriving vehicle may not be long enough to block two lanes

9. Describe alternate blocking options for each situation above that you selected:

If lane +1 is not possible due to the fact that it would close the road, provided the crash is clear of one lane and responders do not need that lane to work safely, a linear or slight block that leaves one lane open for traffic is an option. The linear position parks the responder vehicle in line with the accident lane and traffic flow. A slight block angles the vehicle slightly within the travel lane. A slight block clearly indicates to approaching motorists that the responder vehicle is stopped.

If lane +1 is not possible due to the fact that the first arriving vehicle is not long enough to block two lanes, that vehicle can angle block to close the lane where the incident is located and then request a second or larger response vehicle to close the +1 (if the incident crosses more than one lane, the emergency vehicle would angle block across the part of the road where the incident vehicles are). While only one smaller blocking vehicle is on scene, if enough personnel are available, manual traffic control could be initiated to ensure traffic moves slowly past the single closed lane. It is also possible to briefly close the road fully until large enough blocking vehicles arrive to close lane +1 or more.

10. What is the safest, and therefore preferred, option for POV response to rural roadway incidents?

A. Ban response in POVs

Topic 18: Rural Roads

11. Which professional qualifications standard applies to personnel who perform traffic control duties?

C. NFPA 1091

12. Manual traffic control is usually not needed on rural roads because the road typically has to be closed because it is narrow. (Circle one)

False. On rural roads, manual traffic control takes on an increased importance because, in many cases, an incident on a smaller, two-lane road closes at least one lane, leaving a single lane or shoulder for two-way traffic. Manual traffic control is needed to safely alternate traffic sharing one lane. It is often difficult to close the entire road because detours can be inconvenient or not available, therefore one lane may have to stay open and thus manual traffic control is needed to regulate two way traffic through one lane.