National Traffic Incident Management Responder Training Program

California 4-Hour Trainer Guide

March 2016

U.S. Department of Transportation
Federal Highway Administration

SHRP2 SOLUTIONS
STRATEGIC HIGHWAY RESEARCH PROGRAM

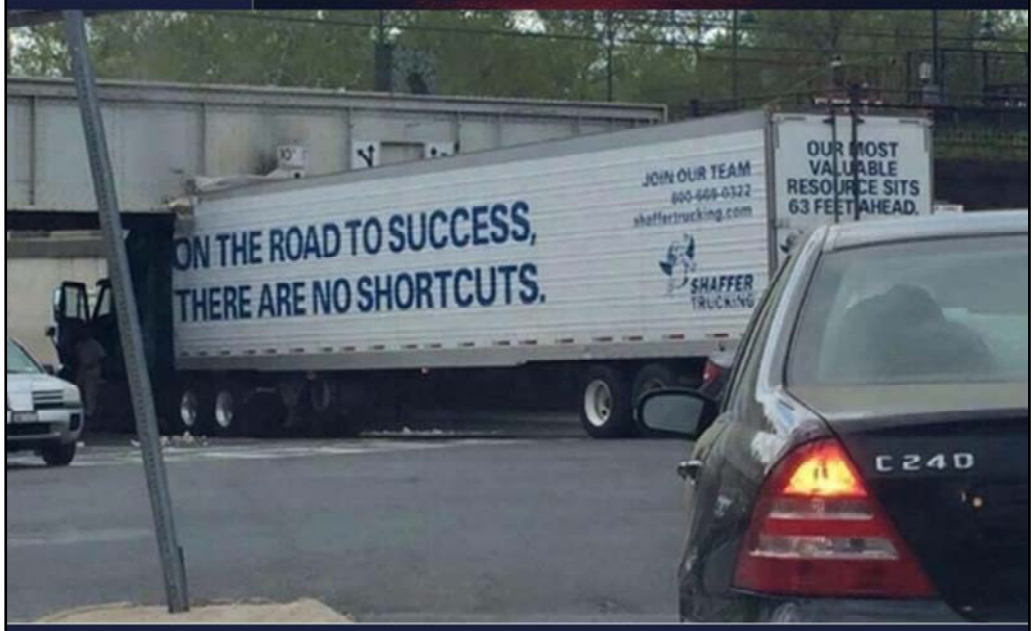
American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

TRB

Welcoming Remarks

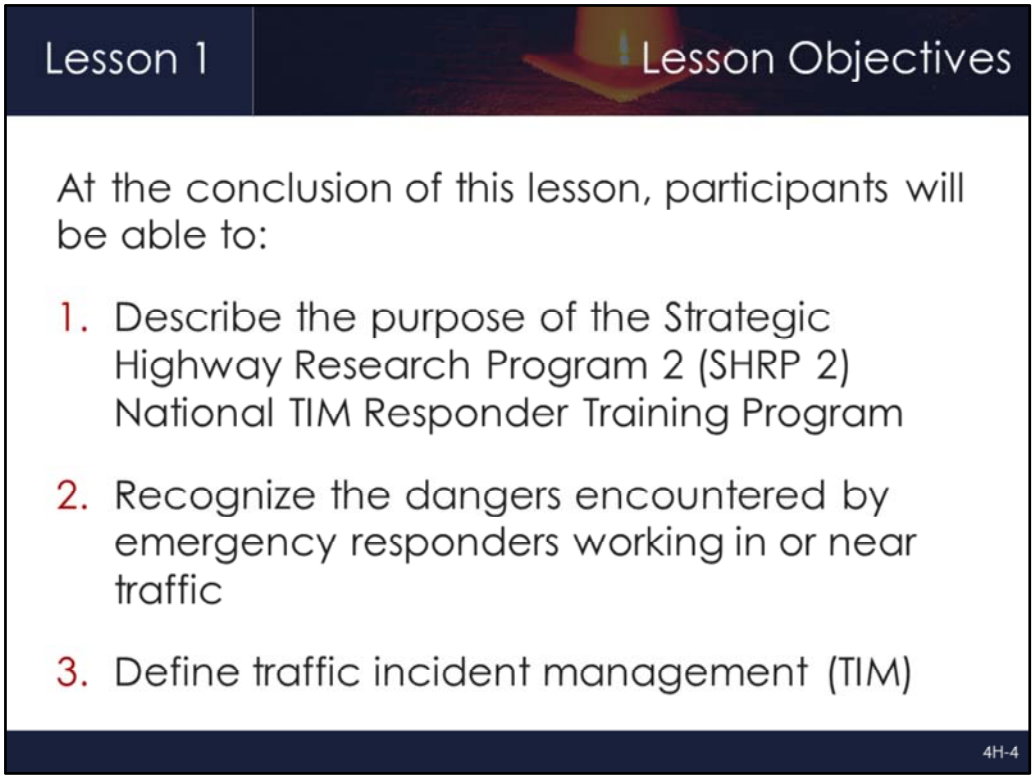
- Welcome students to the class and have the trainers introduce themselves, including name, agency, and years on the job
- Cover the following information about the training facility:
  - Exits
  - Bathroom locations
  - Policy for food and drink in the classroom
  - Locations for drinks, snacks and meals
  - Smoking rules for the facility
  - Policy for cell phones, text messages, pagers, and portable radios
  - Signing the class roster
- Review the handouts and any other materials provided to the students

Your Humor Slide Before We Get Serious…

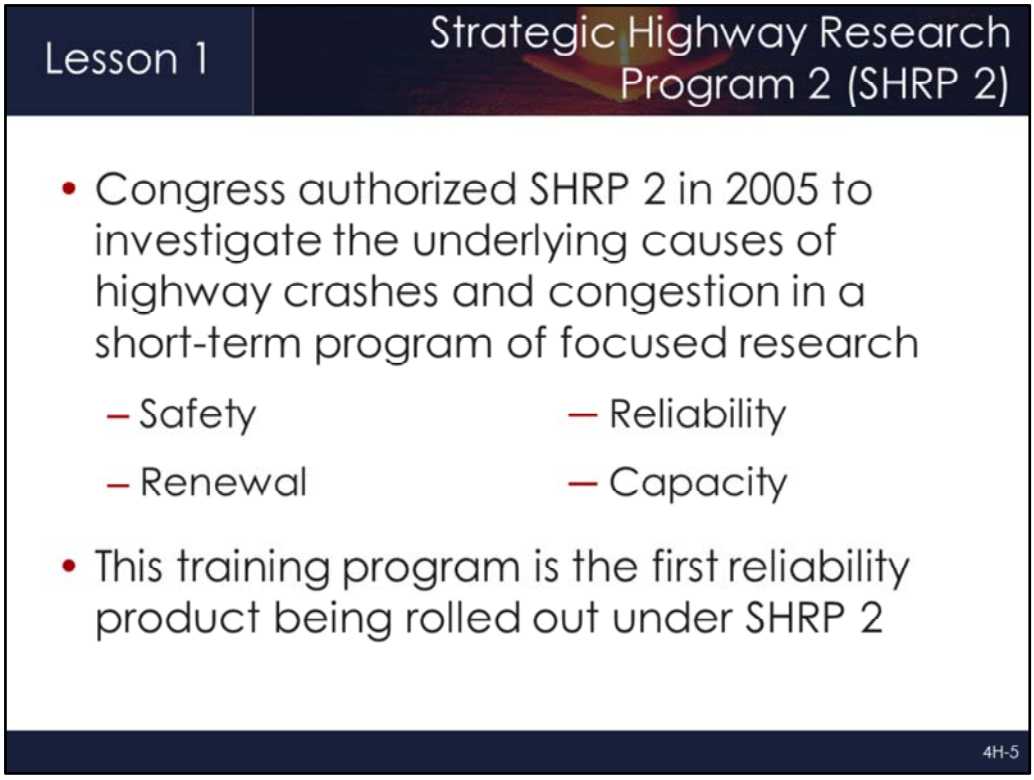


Lesson 1	Full Version Reference Slide: 1-3

Lesson Objectives	Full Version Reference Slide: 1-4

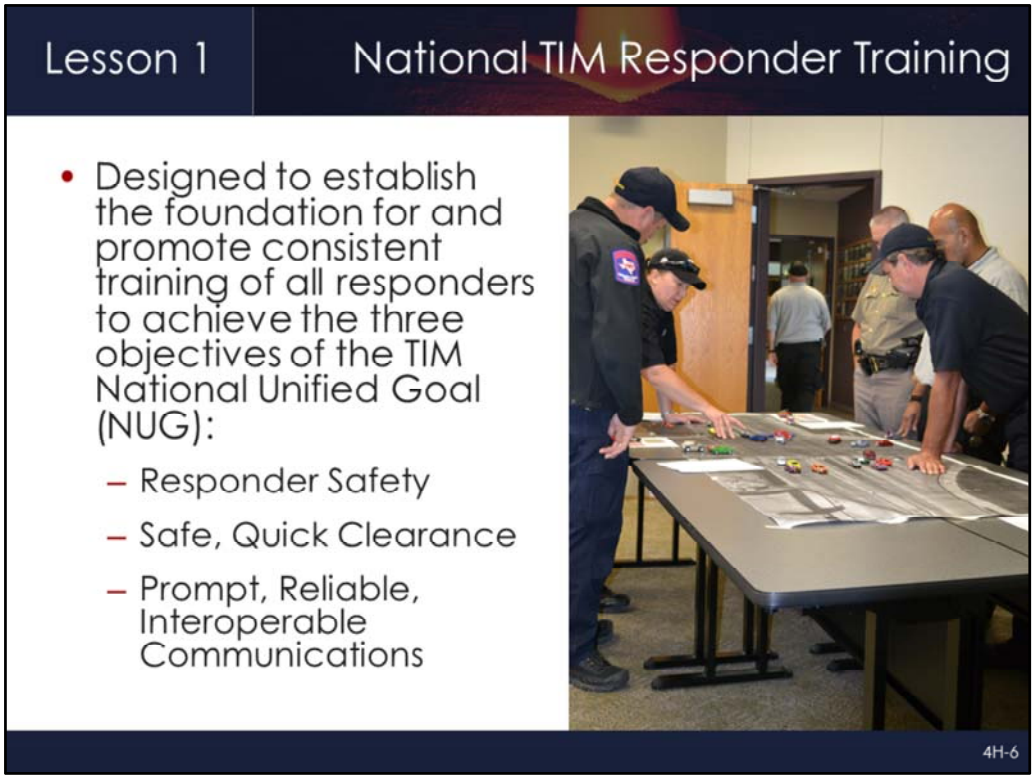


Lesson Objectives	Full Version Reference Slide: 1-4



Lesson Objective: 1.1	Full Version Reference Slide: 1-5

- The National TIM Responder Training Program was created as part of the second Strategic Highway Research Program (SHRP 2)
- SHRP 2 was authorized by Congress in 2005
- SHRP 2 has four areas of focus: safety, renewal, reliability, and capacity
- The National TIM Responder Training Program was developed under the focus of reliability, but it also impacts safety



Lesson Objective: 1.1	Full Version Reference Slide: 1-6

- In 2006, organizations representing TIM stakeholders formed the National Traffic Incident Management Coalition (NTIMC)
- The group developed a document referred to as the National Unified Goal (NUG) for TIM
  - Represents a unified national vision that this SHRP 2 program addresses
- The NUG has three main objectives and 18 related strategies – the objectives are:
  1. Responder Safety
  2. Safe, Quick Clearance
  3. Prompt, Reliable, Interoperable Communications
- To promote the vision of the NUG, this course was developed and reviewed by professionals from all disciplines
  - The target audience for the National TIM Responder Training Program includes all responder disciplines
- The course was successfully pilot tested in four cities and subsequently adopted by the FHWA for national rollout in 2012

Lesson Objective: --	Full Version Reference Slide: 1-9

- Review the structure of the course and the anticipated times for breaks
- Emphasize that the course lessons are similar to the chronological sequence of real-world incidents

- For a typical response in California including: two law enforcement responders, four fire department responders, two EMS responders, one tow truck operator, and six Caltrans responders, that's a total of fifteen responders potentially in harm's way every three minutes.

- The basic 15 responder count on the slide is used here only to present a minimum number for the most common or routine situations and to establish the teaching point of the "Degree of Risk" that is on-going every single day.

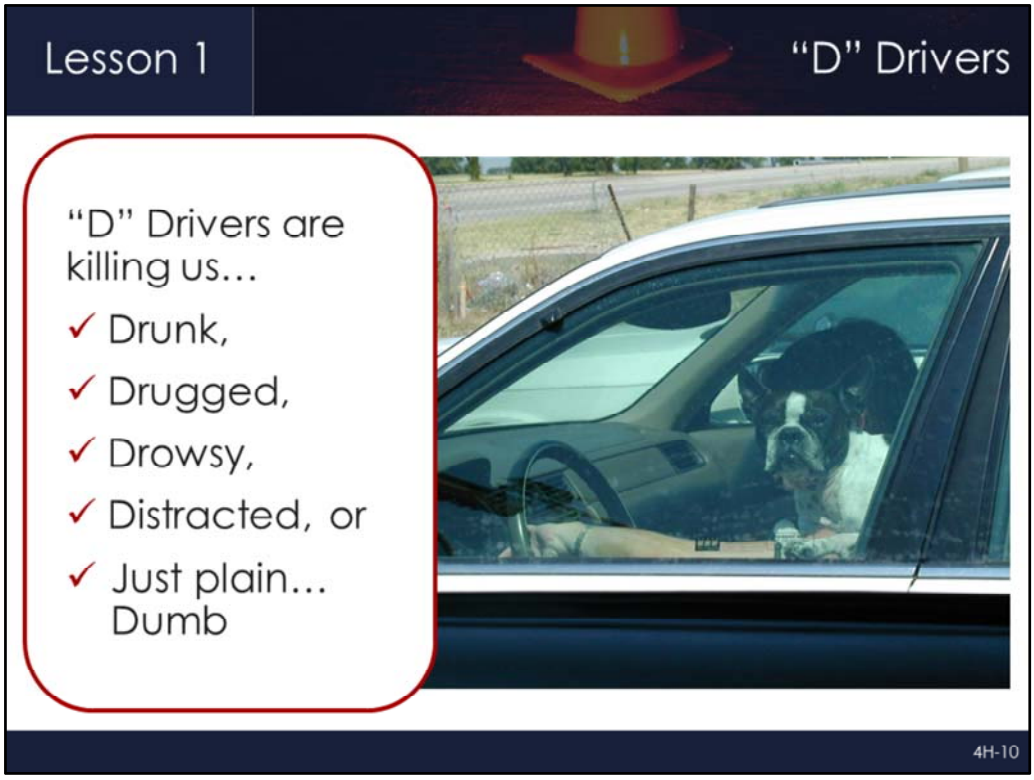
Lesson Objective: 1.2	Full Version Reference Slide: 1-14

- From 2002-2011, CHPs Statewide Integrated Traffic Records System indicates there is:
  - 1 injury accident every 3 minutes in California. That's 21 accidents every hour, 504 per day, 184,000 each year.

- With three injury crashes occurring every minute on average across the U.S., there is the potential for:
  - 315 new responders to arrive at new injury crashes every hour
  - 7,560 responders working at traffic-related crashes every day
  - 2,759,400 every year

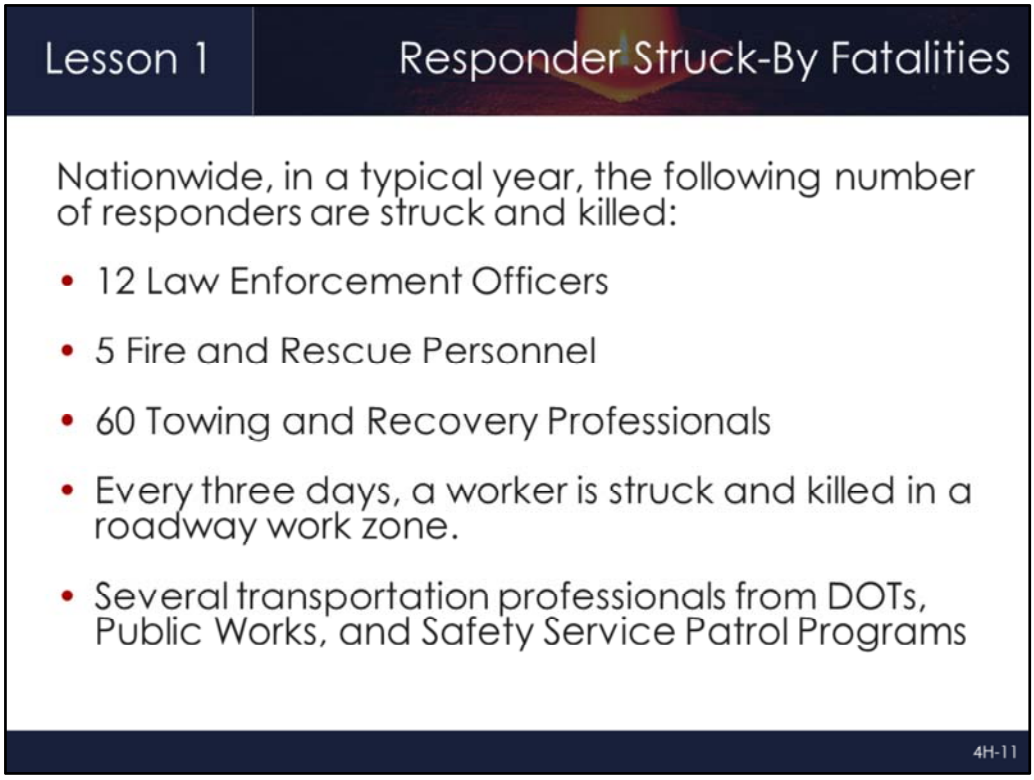
- Add in hazardous waste clean up crews, Coroners, MAIT teams and others for major incidents, and those numbers go up considerably

- The numbers represent a picture of responder exposure at injury traffic crashes; the degree of risk



Lesson Objective: 1.2	Full Version Reference Slide: 1-15

- "D" Drivers is a phrase that has been coined to describe a type of driver who is inattentive, impaired, or makes poor driving decisions
- **CHP's Statewide Integrated Traffic Record System shows 54 alcohol involved incidents a day, over 19,500 per year.**
- According to the National Safety Council:
  - Using a mobile phone while driving is equivalent to driving impaired
  - Texting while driving is equivalent to driving blindfolded
- These are the type of drivers who cause crashes and kill responders in the line of duty



Lesson Objective: 1.2	Full Version Reference Slide: 1-16

- According to the National Law Enforcement Officers Memorial, over the past 24 years, an average of 12 officers are killed each year in struck-by incidents
- The National Fallen Firefighters Memorial in Emmitsburg, MD indicated that statistics from 2010 are typical for firefighter struck-by deaths, about 5 per year
- The International Towing and Recovery Hall of Fame and Museum in Chattanooga, TN tells us that about 60 tow operators are struck and killed each year
- Aside from work zone deaths, transportation workers are also killed at incidents, though the exact numbers are difficult to pin down

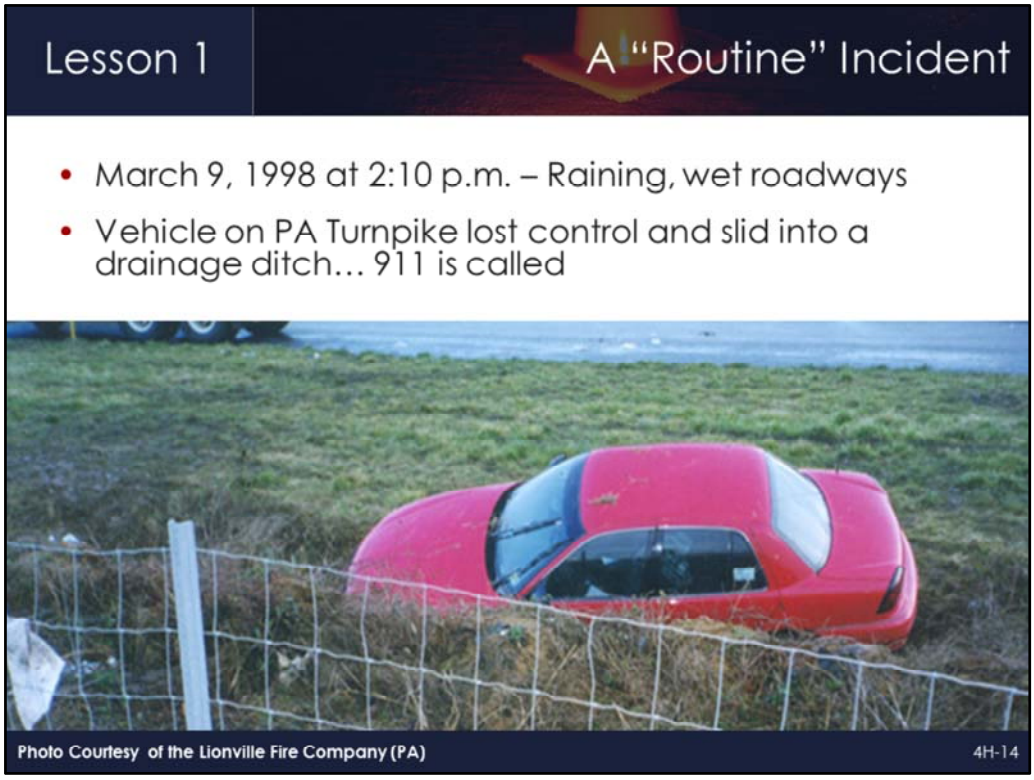
Lesson Objective: 1.2	Full Version Reference Slide: 1-16

- Police Officers 116 http://www.odmp.org/search/year/2015?ref=sidebar
  Firefighters 75 http://apps.usfa.fema.gov/firefighter-fatalities/
  EMS 05 National EMS
  Towers 21 http://www.internationaltowingmuseum.org

Lesson Objective: 1.2	Full Version Reference Slide: 1-17

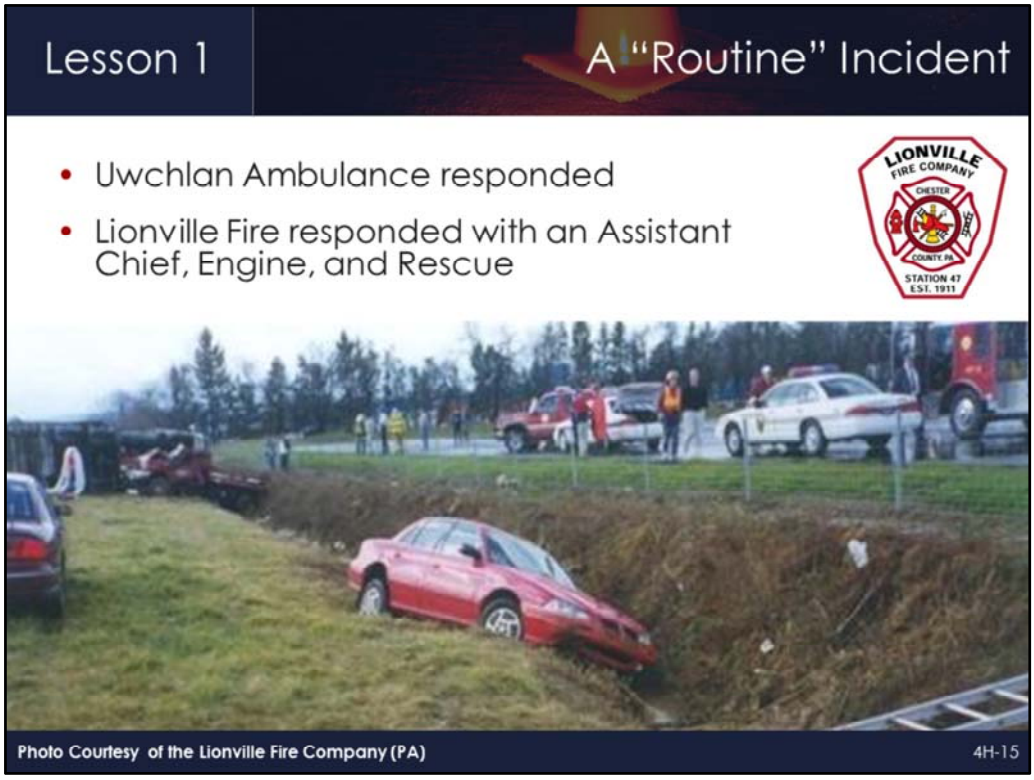
- Responder deaths and injuries are a significant reason for TIM
- Several examples of responder deaths are highlighted in this lesson to reinforce responder safety
- The value in the accounts are the activities of the responders and actions of "D" drivers, not wrong or right

- **Transition:** The following slides show examples of line-of-duty-deaths from several disciplines



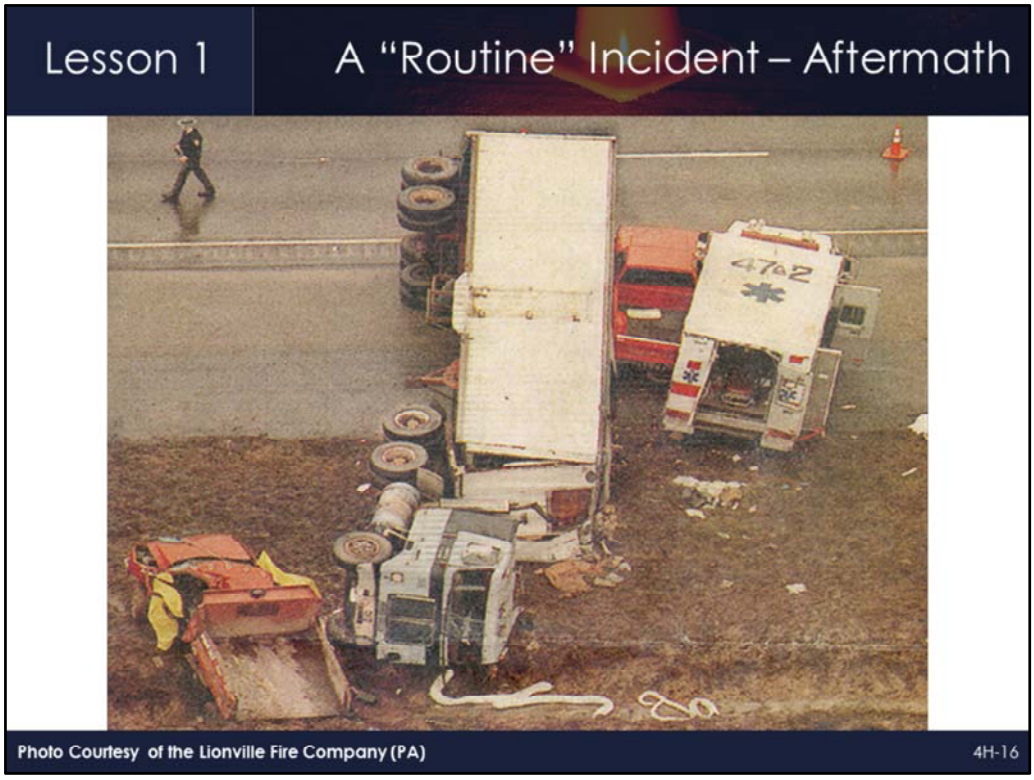
Lesson Objective: 1.2	Full Version Reference Slide: 1-18

- An older incident from the Pennsylvania Turnpike still represents the largest number of responders struck in a single incident
- It was raining and wet when a Pontiac Grand Am heading west on the Pennsylvania Turnpike lost control and slid off the roadway
- Uwchlan Ambulance and the Lionville Fire Company were dispatched to the scene



Lesson Objective: 1.2

- Uwchlan Ambulance and the Lionville Fire Company were dispatched to the scene

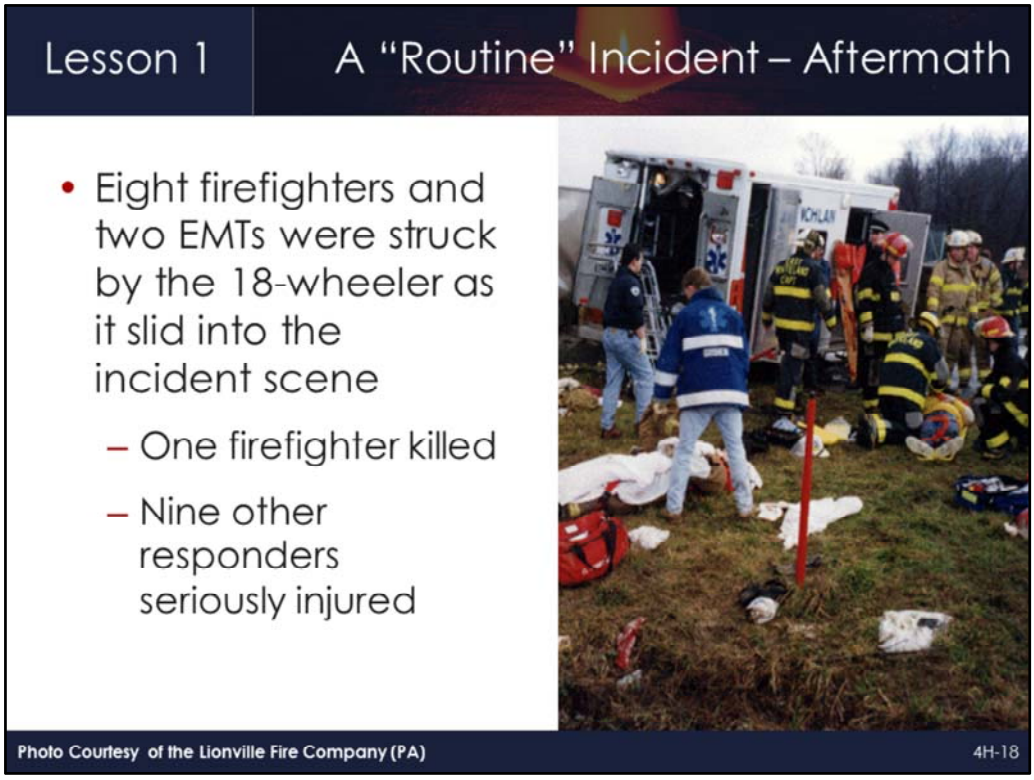


Lesson Objective: 1.2	Full Version Reference Slide: 1-20

- As the responders were working at the incident scene, an18-wheeler topped the hill, saw the incident, and attempted to change lanes
- The driver lost control and flipped the rig on to its side
- The vehicle slid down the hill and slammed into the unprotected incident scene just as the patient was being loaded into the ambulance
- Several responder vehicles, including the fire engine and the ambulance where the patient was being loaded, were struck

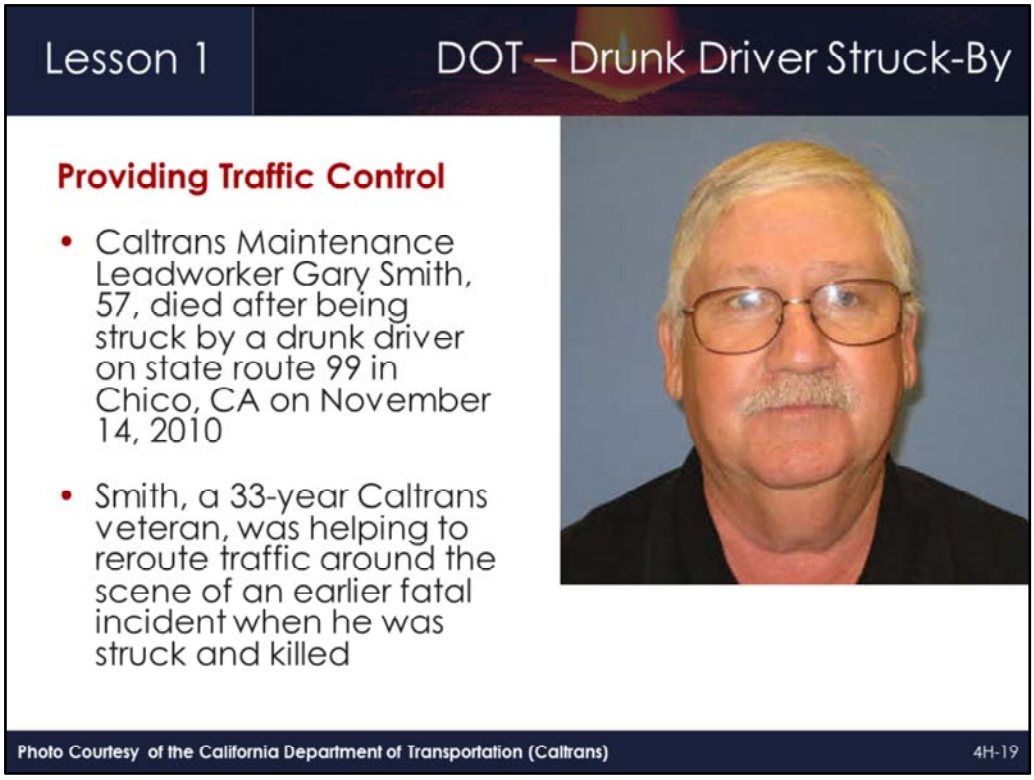
Lesson Objective: 1.2

- Rear loading zone of ambulance after being struck by the roll-over 18-wheeler



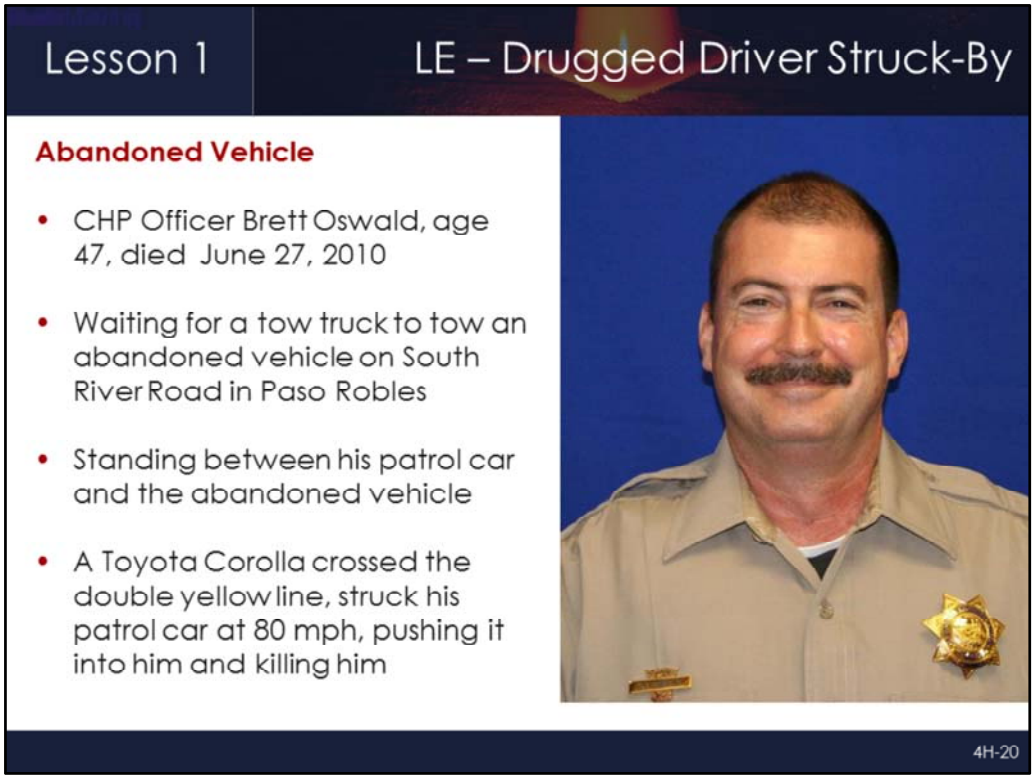
Lesson Objective: 1.2	Full Version Reference Slide: 1-22

- Eight firefighters and two EMTs were struck by the 18-wheeler as it slid into the incident scene
- One firefighter was killed and nine other responders seriously injured



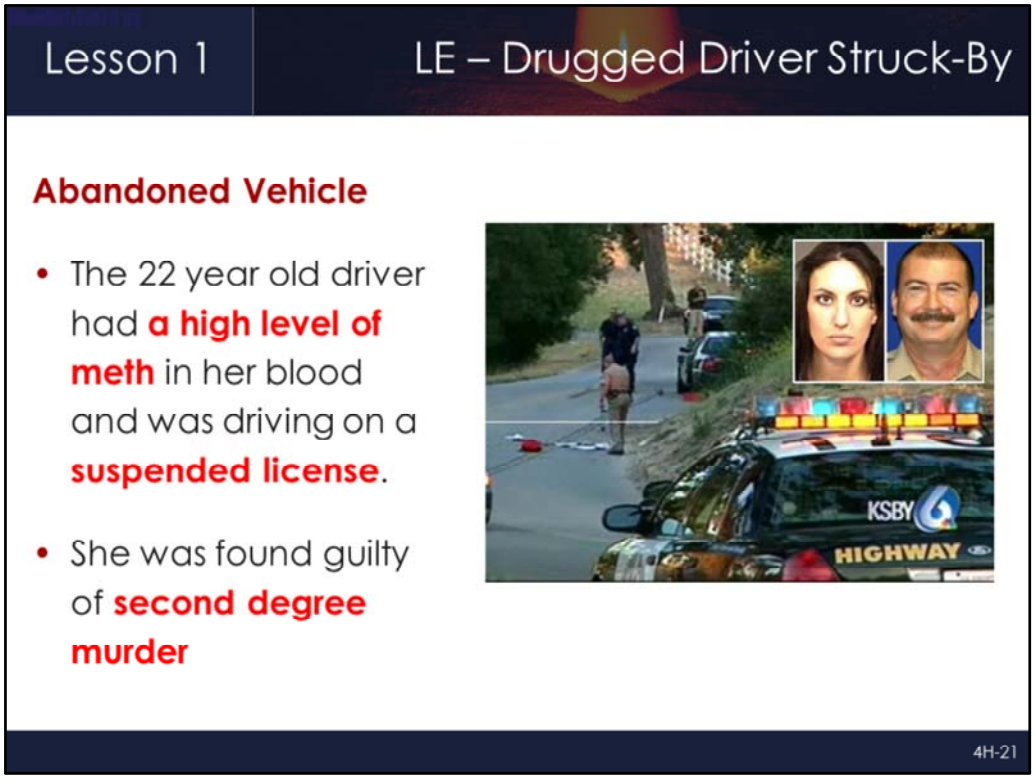
Lesson Objective: 1.2	Full Version Reference Slide: 1-31

- Gary Smith, 57, was a Caltrans Maintenance Leadworker.
- He was providing traffic control assistance for an earlier incident involving a fatality. on November 14, 2010.
- Smith, a 33-year Caltrtans employee, was helping to reroute traffic around the scene when he was struck by a drunk driver
- The driver had three prior drunk driving convictions and a suspended license
- The driver was charged with gross vehicular manslaughter while intoxicated and with three prior convictions, faces life in prison



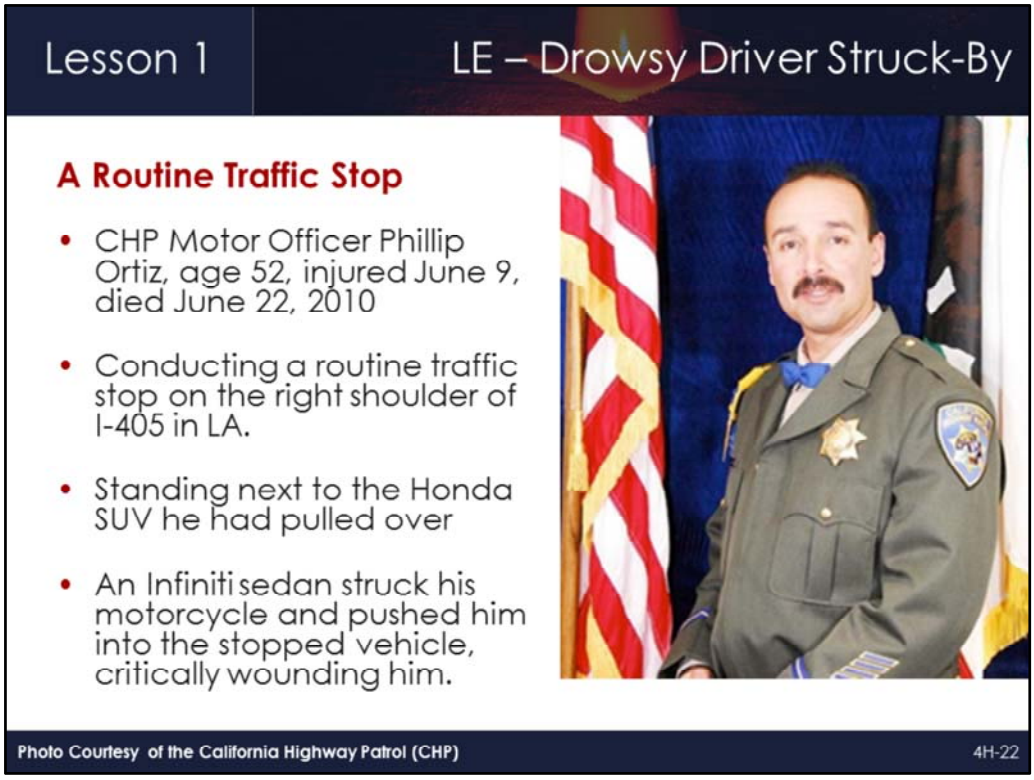
Lesson Objective: 1.2	Full Version Reference Slide: 1-25

- On June 27, 2010 at 5:54 PM, CHP Officer Brett Oswald, was responding to an abandoned vehicle partially blocking the SB lane of South River Road when his patrol car was struck by a vehicle, pushing it into him and killing him
- Oswald was a 20-year veteran of the CHP
- Upon arriving, Oswald positioned his marked patrol car behind the abandoned vehicle and was waiting for a tow truck



Lesson Objective: 1.2	Full Version Reference Slide: 1-25

- The driver, a 22-year old woman, was driving a Toyota Corolla and was arrested and charged with felony vehicular manslaughter and driving with a suspended license
- The driver was found guilty of second degree murder.



Lesson Objective: 1.2	Full Version Reference Slide: 1-23

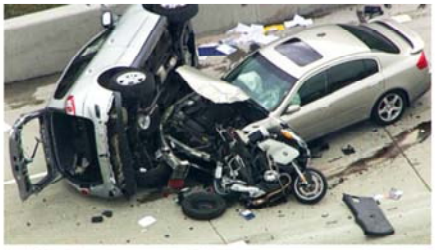
- California Highway Patrol officer Phillip Ortiz , 52, was struck and killed on right shoulder of northbound I-405 south of National Blvd in Los Angeles, CA on June 9, 2010
- Ortiz had been a officer with the CHP for 28 years and a motor officer for over 20 years
- Ortiz was conducting a traffic stop just after 8:30 a.m., when he was struck by an Infiniti sedan driving along the shoulder.
- He sustained major injuries and succumbed to those injuries on June 22, 2010

Lesson 1

LE – Drowsy Driver Struck-By

A Routine Traffic Stop

- Reports indicate that the driver was not arrested, was allegedly sick and had passed out behind the wheel of his vehicle.



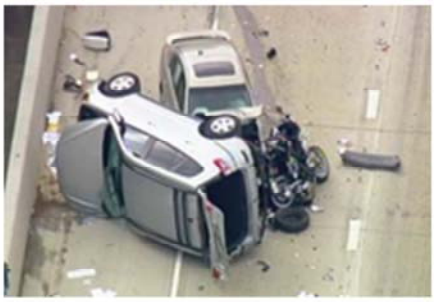
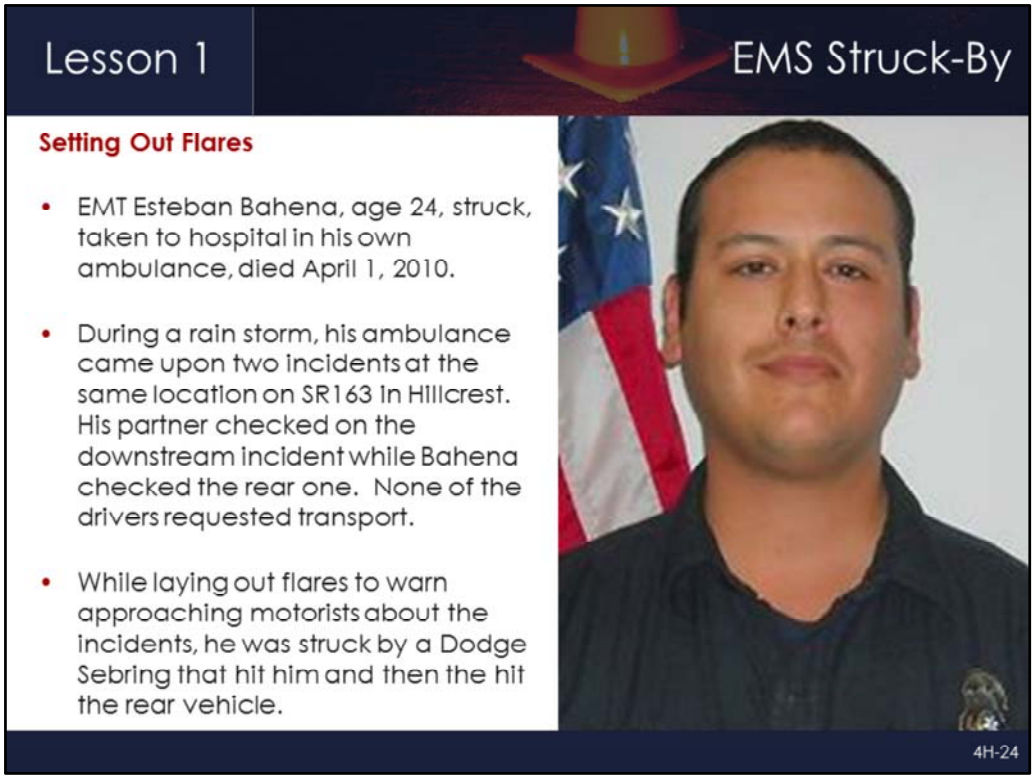


Photo Courtesy of the California Highway Patrol (CHP)

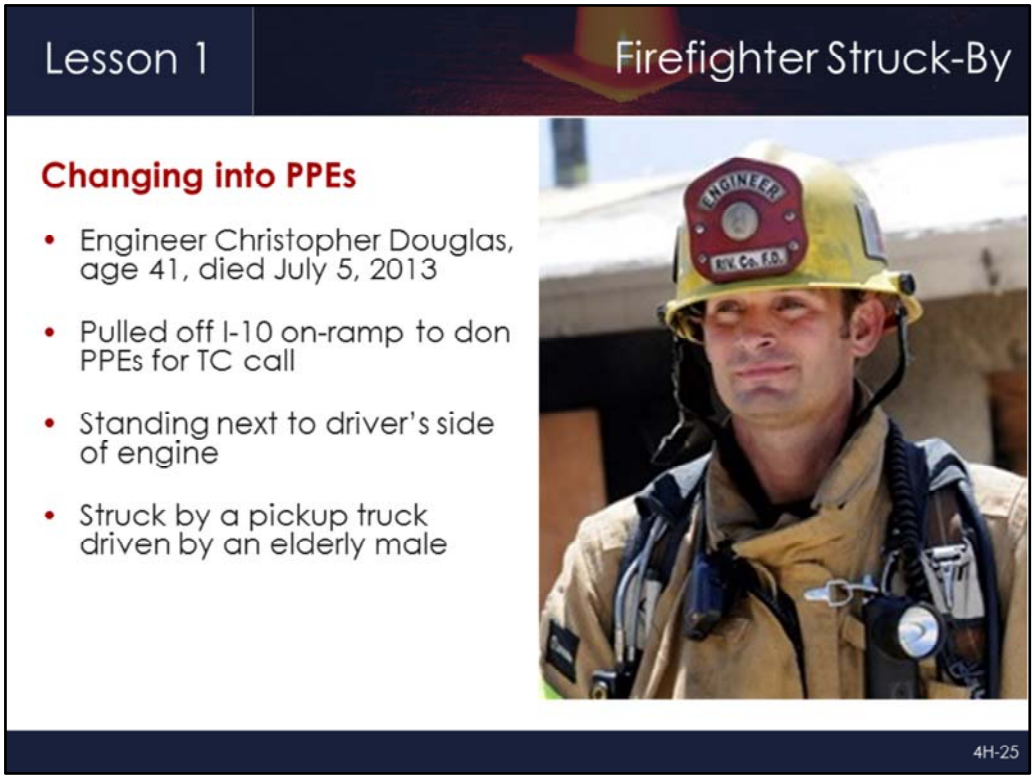
4H-23

Lesson Objective: 1.2	Full Version Reference Slide: 1-23



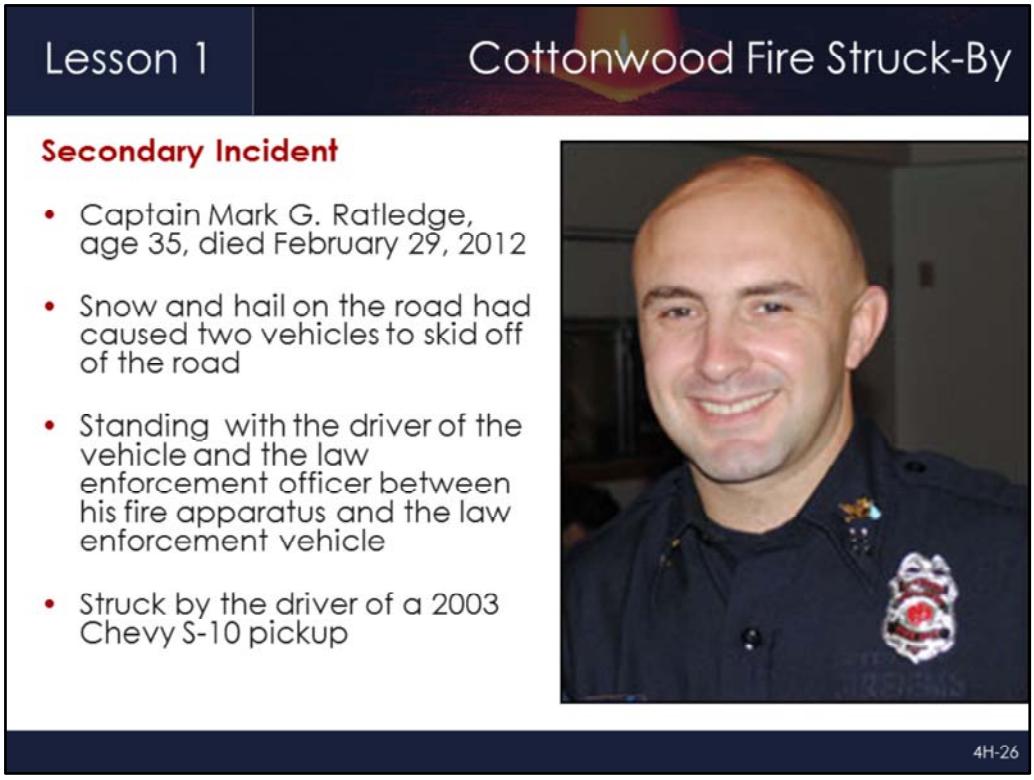
Lesson Objective: 1.2	Full Version Reference Slide: 1-27

- EMT Esteban Bahena, 24, was a passenger in an ambulance with fellow EMT Paul Santos on April 1, 2010
- Returning to company headquarters at about 7:00 a.m. on State Route 163 in Hillcrest, CA, they came upon a one-car accident on the shoulder
- Bahena and Santos stopped to check on injuries, where the 1999 Mustang had struck a concrete wall on the right shoulder
- Upon stopping, they noticed another accident in front of the Mustang involving a Dodge Ram pickup truck and a Toyota Scion
- It was raining at the time
- Santos got out of the ambulance and went to check on the drivers of the two-vehicle accident, neither of which requested to be transported
- Bahena checked on the driver in the Mustang and then began to put out flares to warn approaching traffic of the accidents
- He was struck by a silver Dodge Sebring, which then hit the rear of the Mustang



Lesson Objective: 1.2	Full Version Reference Slide: 1-23

- Cal Fire Engineer/Paramedic Christopher Douglas, with Thousand Palms Engine Company 35 from Temecula was killed Friday, July 5, when he was struck by a pickup truck while standing on the Monterey Avenue onramp on I-10 about 9:40 a.m.
- Douglas was taken to Desert Regional Medical Center where he died from his injuries.
- His fire truck was parked on the right shoulder when the pickup struck the drivers side and the fireman.
- The driver, who stopped and was cooperative with authorities, has not been identified. Authorities said he is a disabled army veteran and Coachella Valley resident. He consented to a blood test, but drugs and alcohol do not appear to be a factor, Hamilton said.
- The fire truck was responding to a crash on the freeway
- It is unclear why they stopped on the onramp.



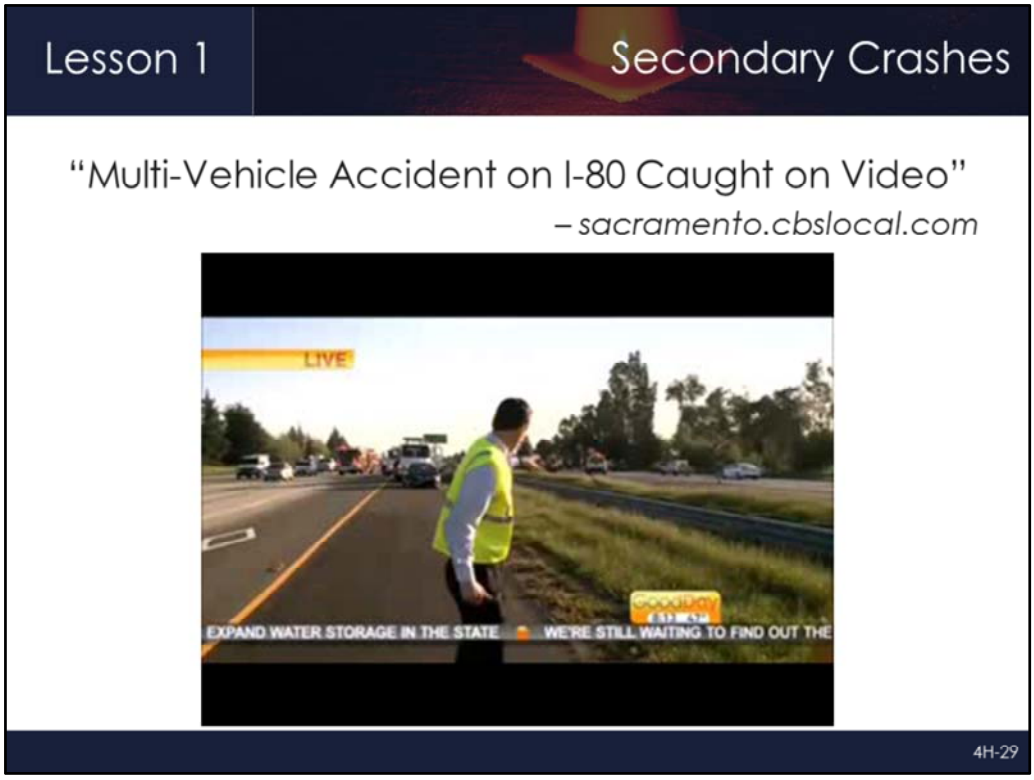
Lesson Objective: 1.2	Full Version Reference Slide: 1-27

- Ratledge, 35 had responded to an incident on SB I-5 and was standing on the wet shoulder between the fire apparatus and a CHP vehicle with CHP Officer Jason Dotzenrod and the driver of one of the vehicles involved in the initial incident.
- The weather at the time was a mixture of snow and hail, and the roadway was slick
- At approximately 6:14 AM, the driver of a 2003 Chevrolet S-10 pickup lost control of his vehicle, sliding into area where the three were standing, impacting all of them, killing Ratledge and injuring the other two.

Lesson Objective: 1.2	Full Version Reference Slide: 1-27

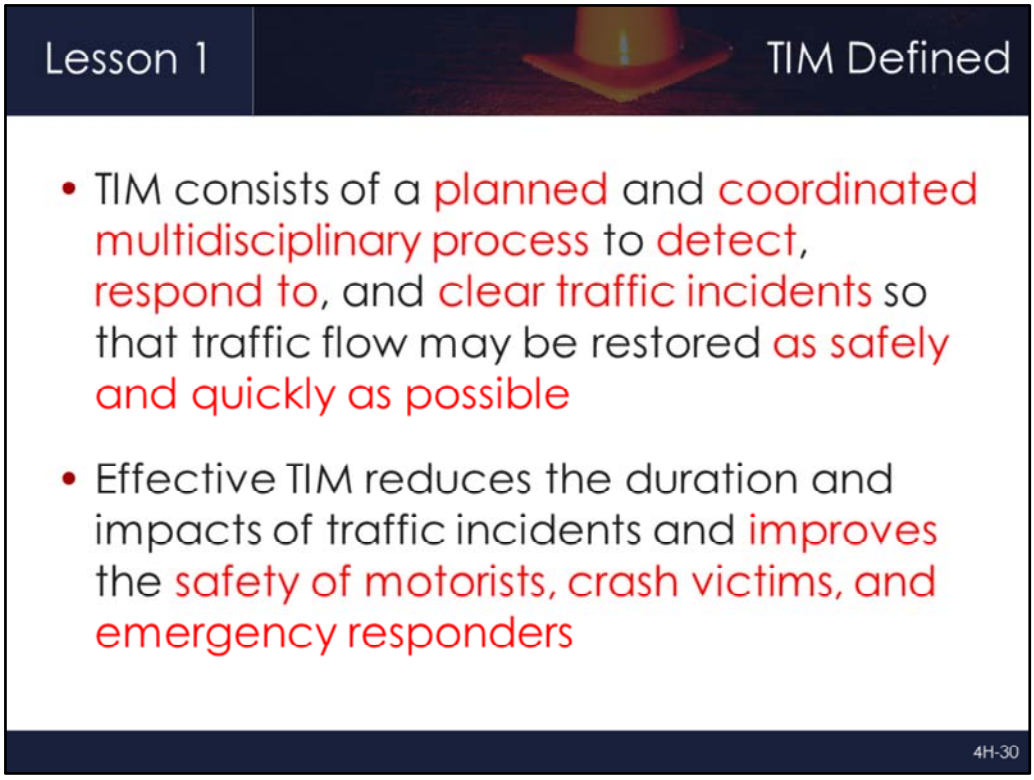
Lesson Objective: 1.2	Full Version Reference Slide: 1-29

- Tow truck driver Christopher Gladden, 24, was crushed when a vehicle hit the vehicle he was loading onto his wheel lift tow truck
- Gladden had partially loaded the vehicle on his wheel lift tow truck when it was struck
- Gladden was airlifted to the UCD Medical Hospital and lived for 18 days before succumbing to his injuries



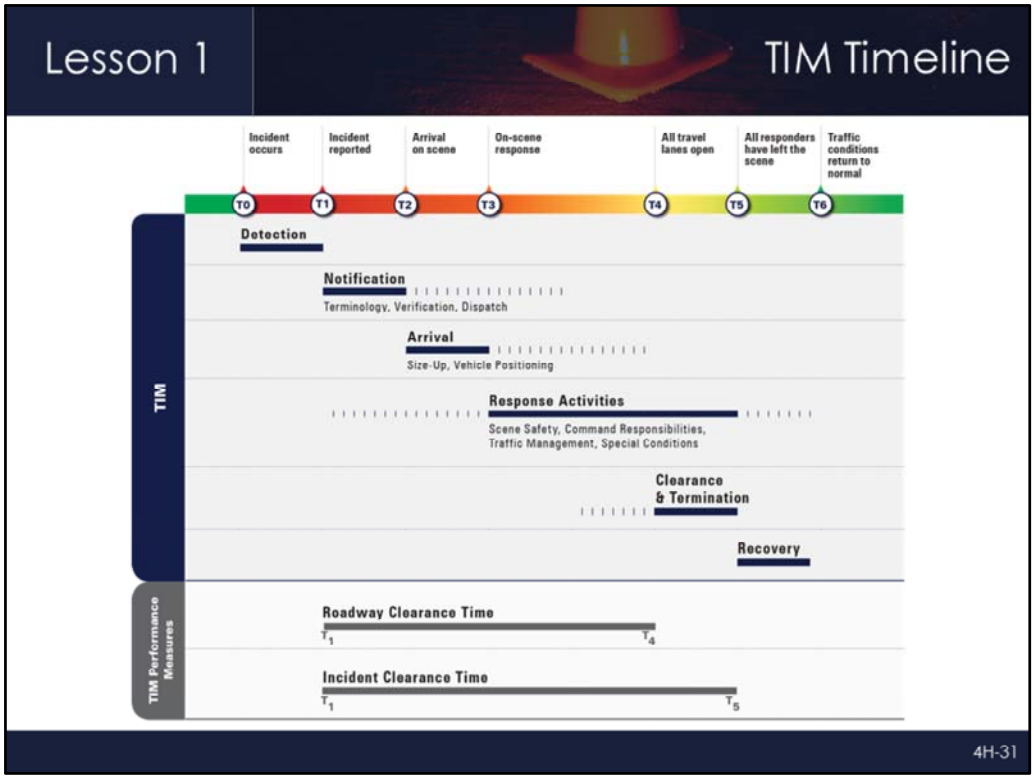
Lesson Objective: --	Full Version Reference Slide: 1-35

- Crashes that occur within the incident scene or within the queue or backup, including the opposite direction, resulting from an original incident are called secondary crashes
- Responders are not the only ones that are victims of secondary crashes
- Show video



Lesson Objective: 1.3	Full Version Reference Slide: 1-37

- TIM consists of 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
- Reiterate that effective TIM has a direct impact on traffic congestion as well as the responder statistics and secondary crashes discussed in the previous slides



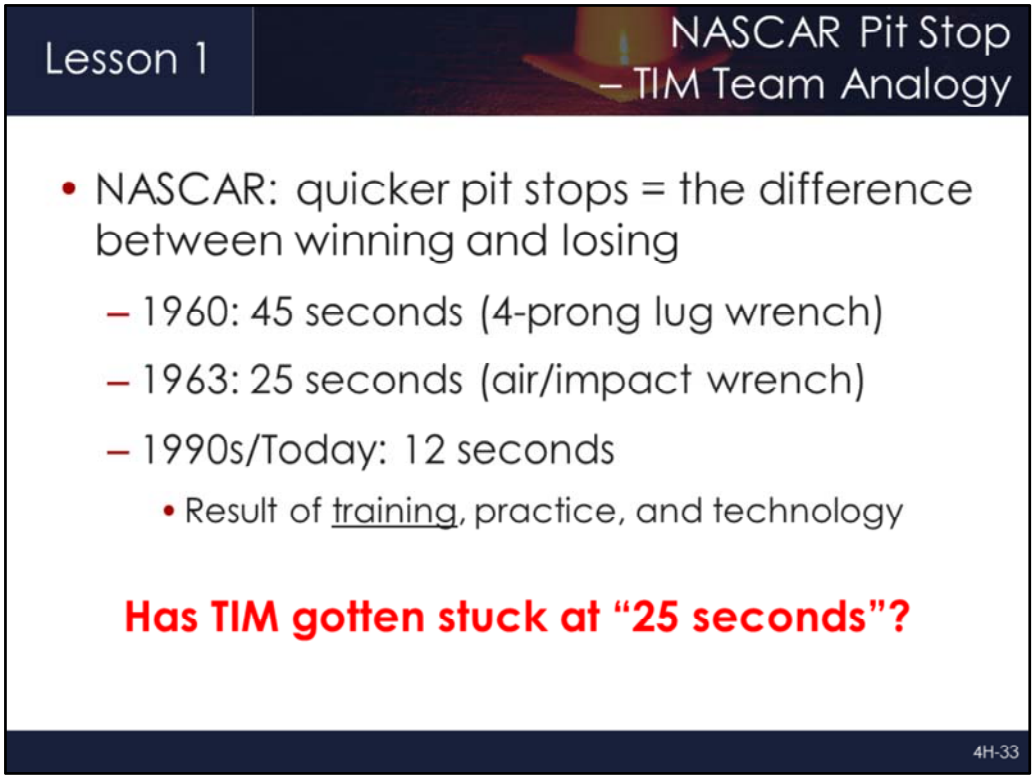
Lesson Objective: 1.3	Full Version Reference Slide: 1-38

- The TIM timeline lays out what happens from when an incident occurs until when traffic conditions return to normal
- Notice the color bar at the top of the chart changes from green to red, and then slowly back to green, representing potential traffic congestion along the timeline
- Along the color bar are time stamps T0 (incident occurs) through T6 (traffic conditions return to normal)
- The goal of TIM is to shorten the time duration between T0 and T6
- Incremental improvements during each phase may be easier to accomplish than drastically re-working any one aspect of TIM
- Reducing the duration of an incident reduces responder exposure
- One study cites the likelihood of a secondary crash increases by 2.8% for each minute a lane is closed
- The TIM activities under the timeline are those that responders typically perform and correspond with the lessons in this course
- The bottom area of the table shows two TIM performance measures
    - Roadway Clearance Time (T4-T1) – The time between first recordable awareness of an incident by a responsible agency and first confirmation that all travel lanes are open
    - Incident Clearance Time (T5-T1) – The time between the first recordable awareness and the time at which the last responder has left the scene
- The third TIM performance measure is the number of secondary crashes
- TIM performance measures will be gaining more attention in the coming years

Lesson Objective: 1.3	Full Version Reference Slide: 1-39

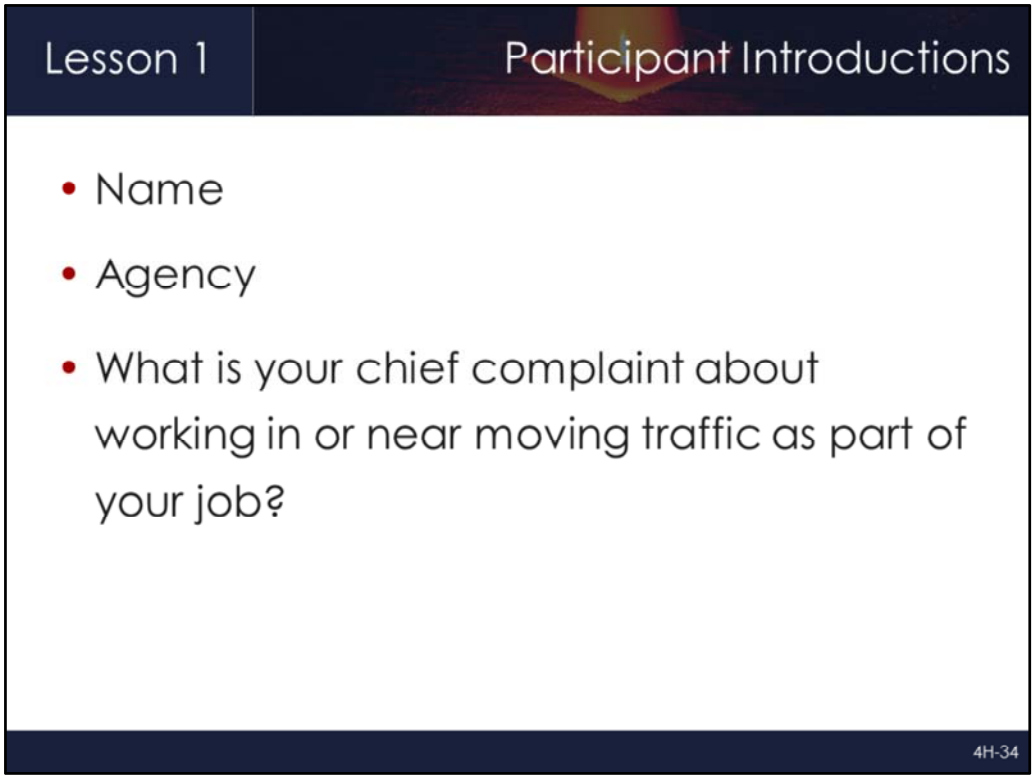
- **Video:** L1_V2 - NASCAR Pit Stop.wmv

- **Ask/Discuss:** What analogies can be drawn between TIM and racing pit stops?
  - Incident Commander
  - Safety Officer
  - Sense of urgency
  - Clear roles and responsibilities
  - Use of technology
  - Practice and training
  - Success = Safety + Expedited Response



Lesson Objective: 1.3	Full Version Reference Slide: 1-40

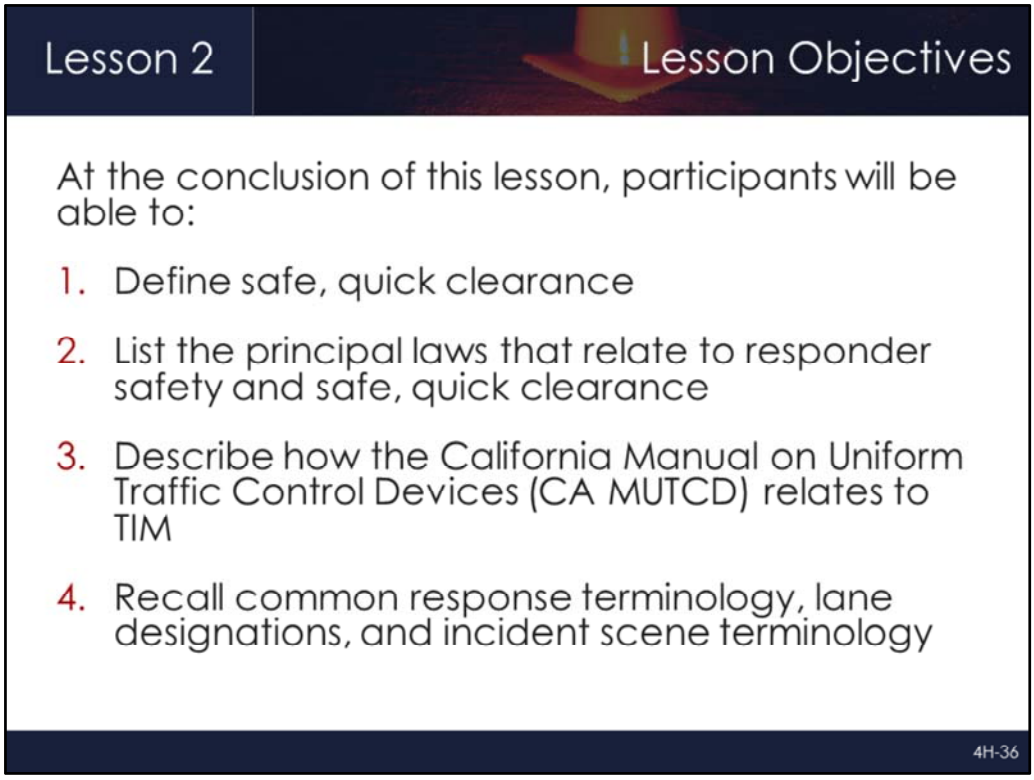
- In the early 1960s, NASCAR race teams recognized that quicker pit stops often made the difference between winning and losing races
- Technology shortened these pit stops to around 25 seconds:
    - Spinning 4-prong lug wrench vs. use of the air impact wrench for example
- Training and practice led to professional pit crews, reducing stops to what they are today, 12-15 seconds
- The question has been raised – Has TIM gotten stuck at "25 seconds"?
- We should be able to apply the same principles of training, practice, and technology to effect similar improvements in our incident clearance times



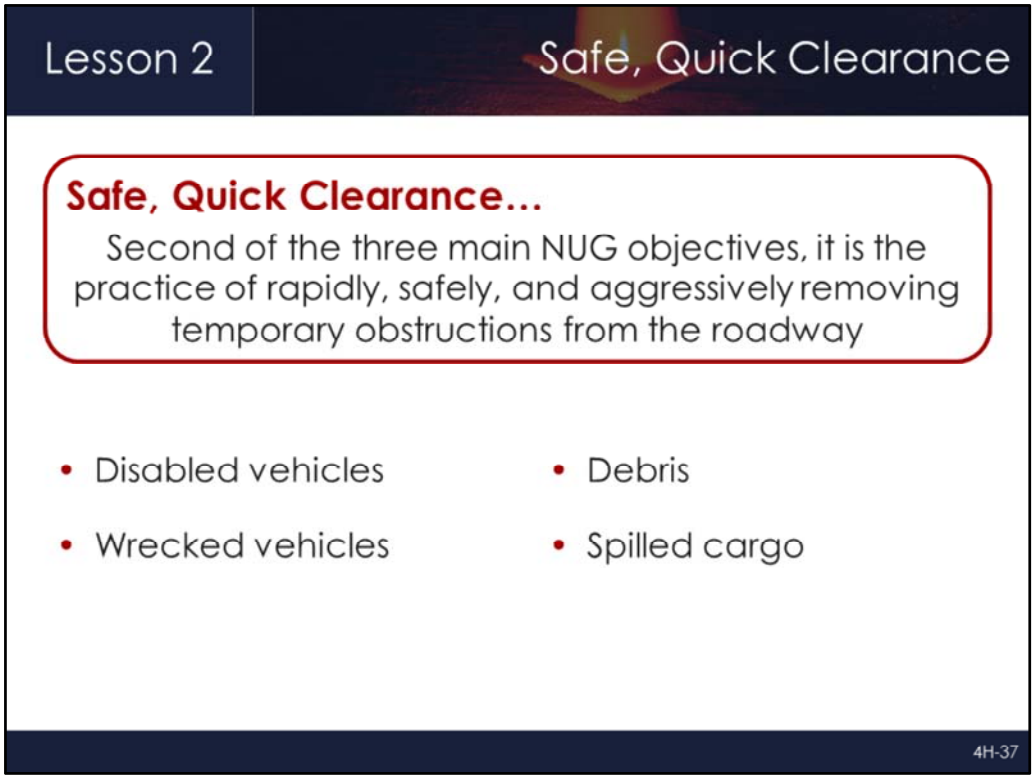
Lesson Objective: --	Full Version Reference Slide: 1-41

- A multi-discipline group of students is the most effective way to train for TIM
- Participant introductions allow those present to get acquainted and vent about working in or near moving traffic
- With a small group (15-20 people) allow everyone to answer the questions above as you go around the room
- With a larger group (20+), forego introductions and focus on the chief complaint question
- The discussion must be managed well by the trainer to ensure it does not take up too much time

Lesson 2	Full Version Reference Slide: 2-1

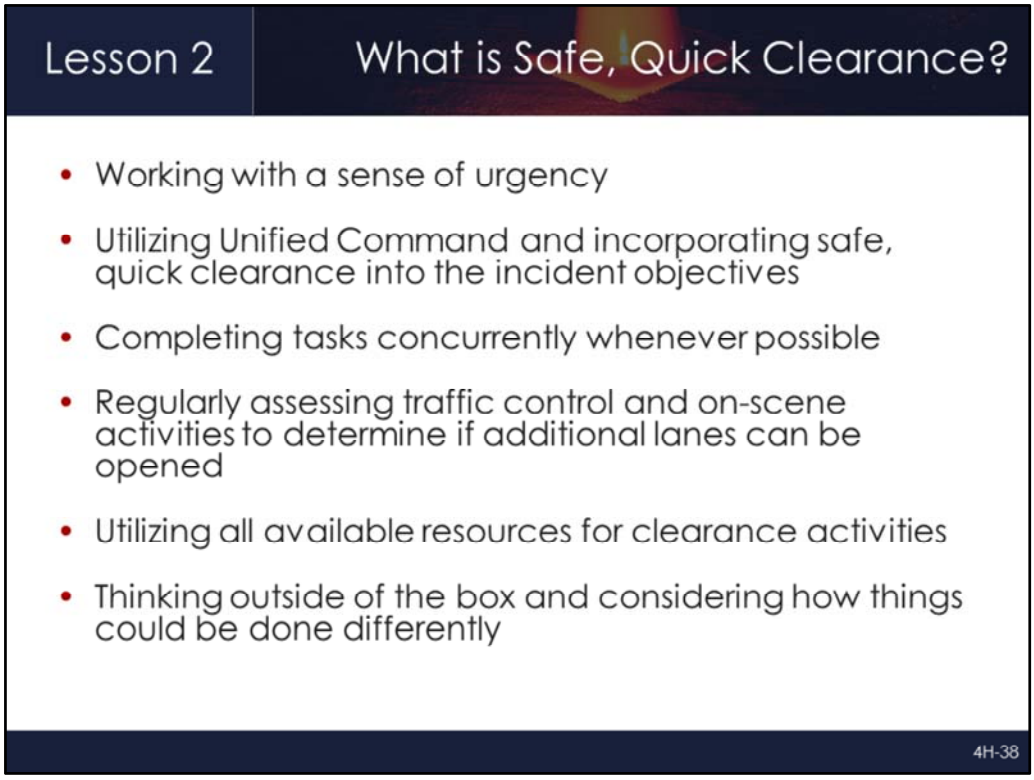


Lesson Objectives	Full Version Reference Slide: 2-2



Lesson Objective: 2.1	Full Version Reference Slide: 2-3

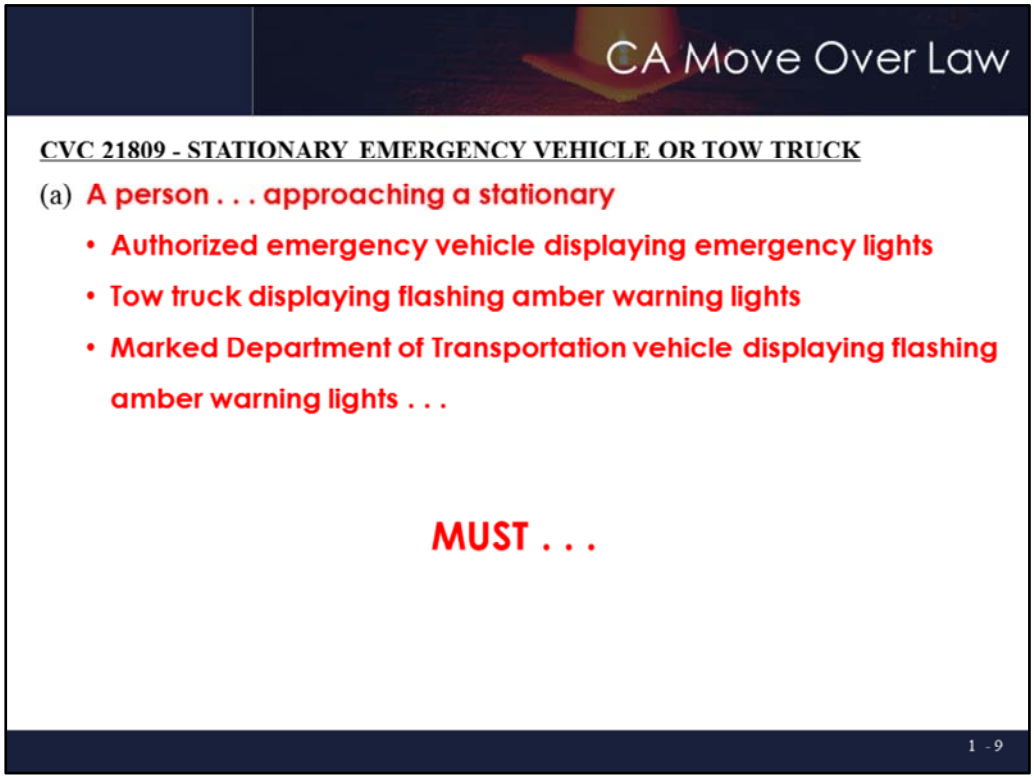
- Safe, quick clearance is the practice of rapidly, safely, and aggressively removing temporary obstructions from the roadway to:
  - Increase the safety of incident responders by minimizing their exposure to adjacent passing traffic
  - Reduce the probability of secondary crashes
  - Relieve overall congestion and delay
- Quick, clearance goals
  - Restore the roadway to its pre-incident capacity as quickly and safely as possible
  - Minimize motorists delays though traffic control and opening of lanes
  - Make effective use of all clearance resources
  - Enhance the safety of responders and motorists
  - Protect the roadway system and private property from unnecessary damage during the removal process
- Safe, quick clearance and responder safety are NOT mutually exclusive, as a matter of fact they complement each other



Lesson Objective: 2.1	Full Version Reference Slide: 2-5

- Paraphrase slide content

- With Hawaii passing their law in July 2012, every state now has a move over law.
- The District of Columbia is the only US jurisdiction that does not have a move over law.



- Review your state move over law with the students.

CA Move Over Law

CVC 21809 - STATIONARY EMERGENCY VEHICLE OR TOW TRUCK

(1) Make a lane change into an available lane not immediately adjacent to the authorized emergency vehicle, tow truck, or DOT vehicle, with due regard for safety and traffic conditions, if practicable and not prohibited by law.

Move over, or, if unsafe

(2) If the maneuver described in paragraph (1) would be unsafe or impracticable, slow to a reasonable and prudent speed that is safe for existing weather, road, and vehicular or pedestrian traffic conditions.

Slow to a reasonable and prudent speed

(b) A violation of subdivision (a) is an infraction, punishable by a fine of not more than fifty dollars ($50). **Infraction/$50 fine max**

. . . [does] not apply if the . . . vehicle. . . is not adjacent to the freeway or is separated from the freeway by a protective physical barrier

1 - 9

- Only an infraction and a very low fine.
- Difficult to enforce due to “reasonable and prudent” speed language. Some other states have a reduced speed in the law (e.g. slow to 45 MPH)

- Driver Removal laws, commonly referred to as 'Fender Bender,' 'Move It,' 'Steer Clear," and 'Steer It, Clear It', currently in effect in 23 states.
- Require that vehicles involved in typically minor traffic incidents - with no apparent physical injury and/or minor property damage - be moved out of the travel lanes to a safe location where drivers can exchange information and/or wait for law enforcement assistance.

CA "Steer Clear" Law

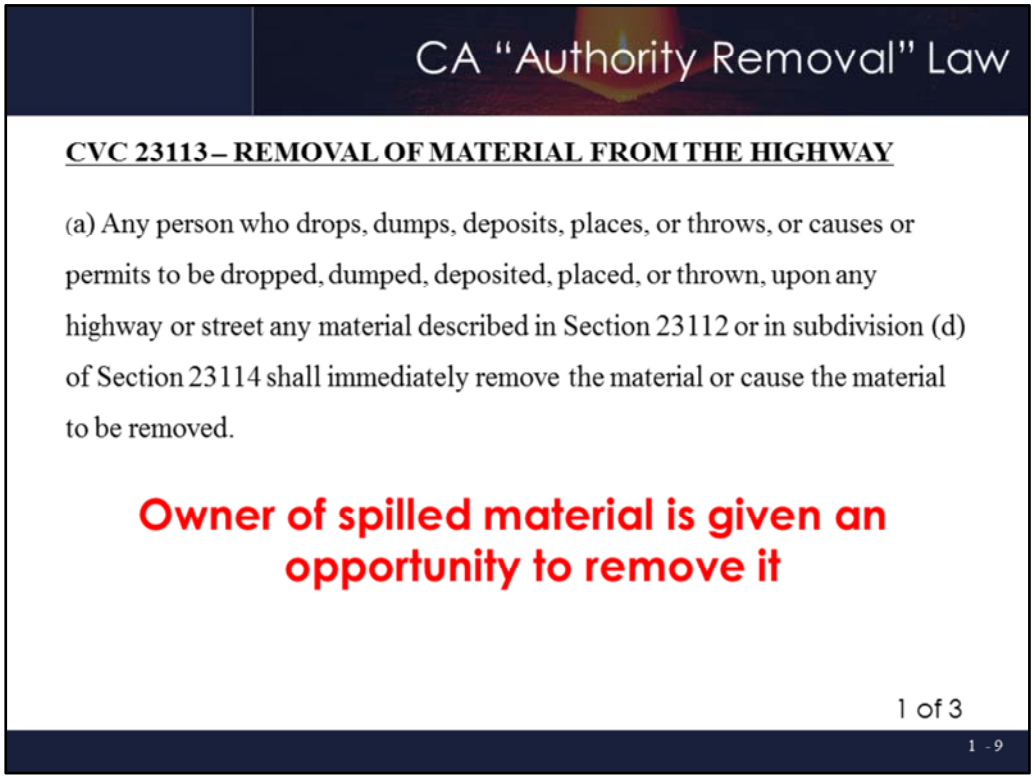
CVC 20002 – DUTY WHERE PROPERTY DAMAGED

(a) The driver of any vehicle involved in **an accident resulting only in damage to any property**, including vehicles, **shall immediately stop the vehicle at the nearest location that will not impede traffic or otherwise jeopardize the safety of other motorists**. Moving the vehicle in accordance with this subdivision does not affect the question of fault. . .

. . . Any person failing to comply with all the requirements of this section is **guilty of a misdemeanor** and, upon conviction thereof, shall be punished by **imprisonment in the county jail not exceeding six months, or by a fine not exceeding one thousand dollars ($1,000), or by both** that imprisonment and fine.

1 - 9

- Review your state move over law with the students.
  - **Up to 6 months in county jail and/or a $1000 fine**



- Review your state move over law with the students.

New slide with California's Authority Removal law

CA "Authority Removal" Law

CVC 23113 – REMOVAL OF MATERIAL FROM THE HIGHWAY

(b) If the person fails to comply with subdivision (a), the governmental agency responsible for the maintenance of the street or highway on which the material has been deposited may remove the material and collect, by civil action, if necessary, the actual cost of the removal operation in addition to any other damages authorized by law from the person made responsible under subdivision (a).

If the owner does not remove it in a timely manner, Caltrans can remove it and charge the owner

2 of 3

1 - 9

- Review your state move over law with the students.

Example: A load of iPads is dumped on the highway

CA "Authority Removal" Law

CVC 23113 – REMOVAL OF MATERIAL FROM THE HIGHWAY

(c) A member of the Department of **the California Highway Patrol may direct a responsible party to remove the aggregate material** described in subdivision (d) of Section 23114 from a highway when that material has escaped or been released from a vehicle.

(d) Notwithstanding any other provision of law, **a government agency described in subdivision (b), the Department of the California Highway Patrol, or the employees or officers of those agencies, may not be held liable for any damage to material, to cargo, or to personal property** caused by a negligent act or omission of the employee or officer when the employee or officer is acting within the scope and purpose of subdivision (b) or (c). Nothing in this subdivision affects liability for purposes of establishing gross negligence or willful misconduct. This subdivision applies to the negligent performance of a ministerial act, and does not affect liability under any provision of law, including liability, if any, derived from the failure to preserve evidence in a civil or criminal action

3 of 3

1 - 9

- Review your state move over law with the students.
  - **Responsible party includes all responders directed by CHP**
  - **Section (d) indemnifies anyone directed by CHP to remove the material**
  - **Does not apply if there is gross negligence or willful misconduct during removal**
  - **Using the example of the iPads, you would not be required to pick them each up and move them off the highway, you could use a front loader to expedite it and could not be held liable for damage to the iPads.**

New California Laws

- AB 198 – CVC 21719 – January 1, 2016

CHP authority to grant tow operators permission to use shoulder/median

A tow truck driver who is either operating under an agreement with the law enforcement agency responsible for investigating traffic collisions on the roadway or summoned by the owner or operator of a vehicle involved in a collision or that is otherwise disabled on the roadway **may utilize the center median or right shoulder of a roadway if** all of the following conditions are met:

(1) **A peace officer . . . has determined that the obstruction has caused an unnecessary delay to motorists using the roadway**.

(2) **A peace officer** . . . has determined that a tow truck can provide emergency roadside assistance by removing the disabled vehicle and **gives explicit permission to the tow truck driver allowing the utilization of the center median or right shoulder of the roadway.**

(3) The tow truck is not operated on the center median or right shoulder at a **speed greater than what is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of, the roadway, and in no event at a speed that endangers the safety of persons or property**.

(4) The **tow truck displays flashing amber warning lamps to the front, rear, and both sides while driving in the center median or right shoulder** of a roadway pursuant to this section.

AB 1222 – CVC 22513 – January 1, 2016

(c) (1) **Prior to attaching a vehicle to the tow truck, if the vehicle owner or operator is present at the time and location** . . . the **towing company or the owner or operator of the tow truck shall furnish the vehicle's owner or operator with a written itemized estimate** of all charges and services to be performed. . .

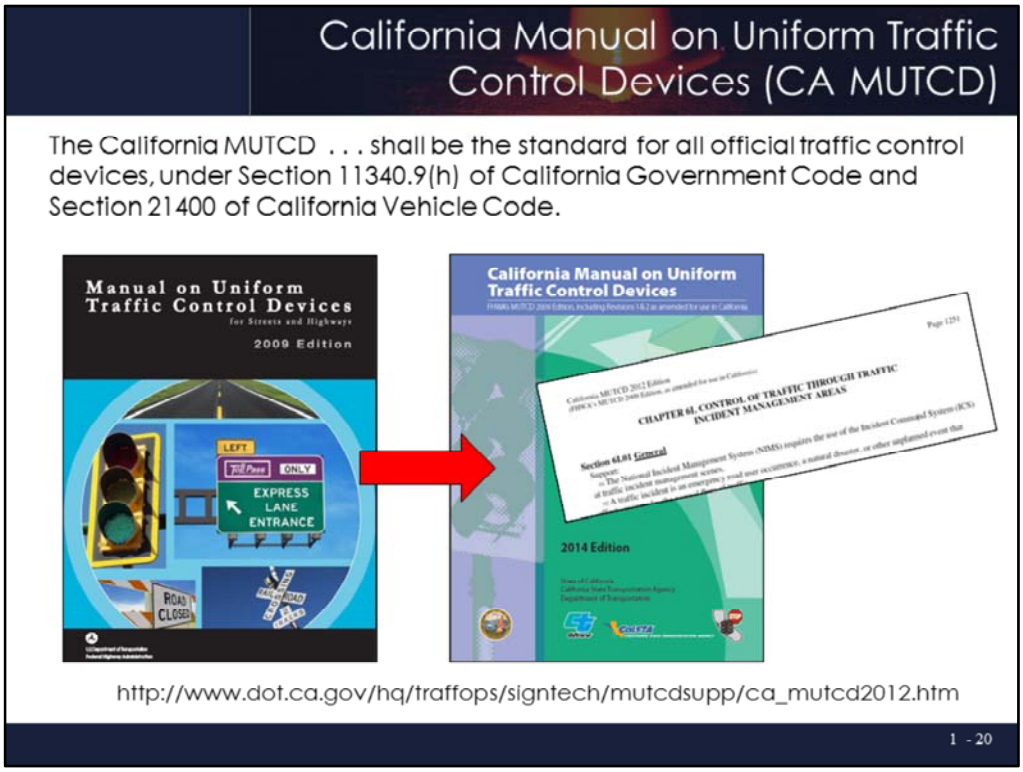
(2) The **tow truck operator shall obtain the vehicle owner or operator's signature** on the itemized estimate **and shall furnish a copy to the person who signed the estimate**.

(3) The requirements in paragraph (1) **may be completed after the vehicle is attached and removed to the nearest safe shoulder or street** if done **at the request of law enforcement or a public agency**, provided the **estimate is furnished prior to the removal of the vehicle from the nearest safe shoulder or street**.

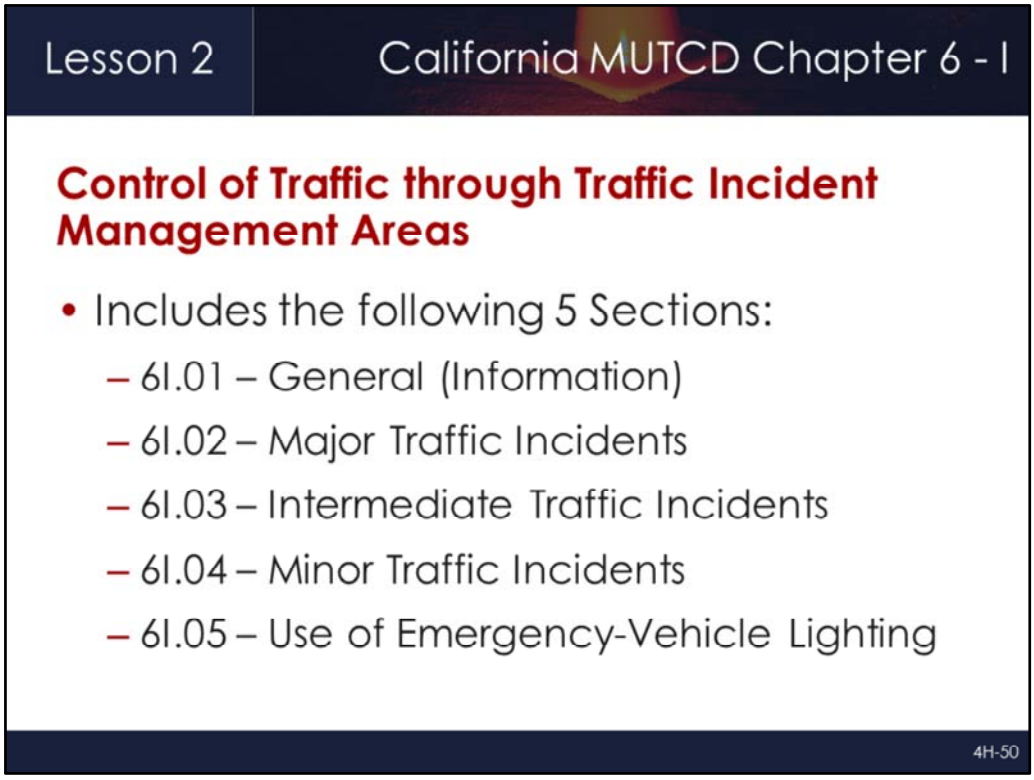
(4) The **towing company or the owner or operator of a tow truck shall maintain the written documents described in this subdivision for three years**, and shall **make them available for inspection and copying within 48 hours of a written request** from any officer or agent of a police department, sheriff's department, the Department of the California Highway Patrol, the Attorney General's office, a district attorney's office, or a city attorney's office.

. . .**does not apply** to a towing company or the owner or operator of a tow truck **summoned to the scene by a motor club**. . . pursuant to the request of the owner or operator. . .

. . . **does not apply** to a towing company or the owner or operator of a tow truck **summoned to the scene by law enforcement or a public agency** pursuant to that agency's procedures, and **operating at the scene pursuant to a contract with that law enforcement agency or public agency**.

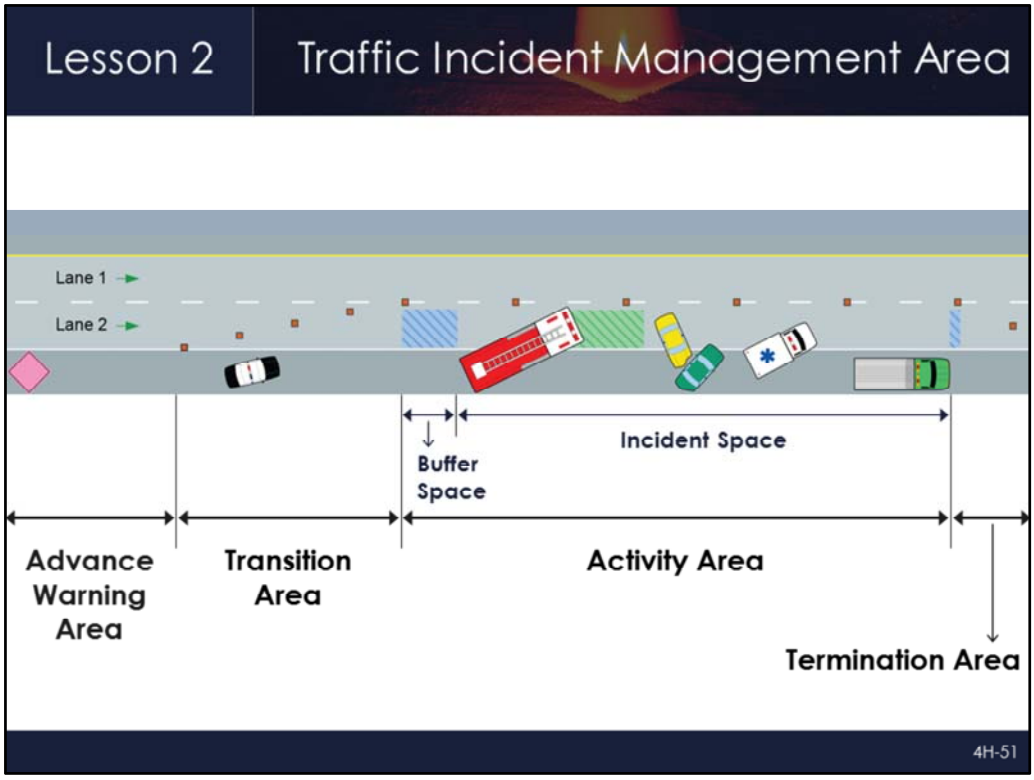


- Display the federal Manual on Uniform Traffic Control Devices (MUTCD) and the California MUTCD slide, explaining to the students that the MUTCD has been in existence since 1935 as a vehicle to regulate the uniformity of roadway signs and their usage for the purpose of safety and eliminating driver confusion.
- The CA MUTCD Chapter 6-I was specifically written for traffic control device use during traffic incident management in the traffic incident management
- Remind the students that the standards set forth by CA MUTCD referenced in this chapter are considered federal law and there is a significant legal impact when they are not followed.
- A traffic incident management area is defined by the CA MUTCD as: "an area of a highway where temporary traffic controls (TTC) are installed, as authorized by a public authority or the official having jurisdiction of the roadway, in response to a road user incident, natural disaster, hazardous material spill, or other unplanned incident.
- Inform the students that more information about traffic control at incidents will come later in the course.



Lesson Objective: 2.3	Full Version Reference Slide: 2-11

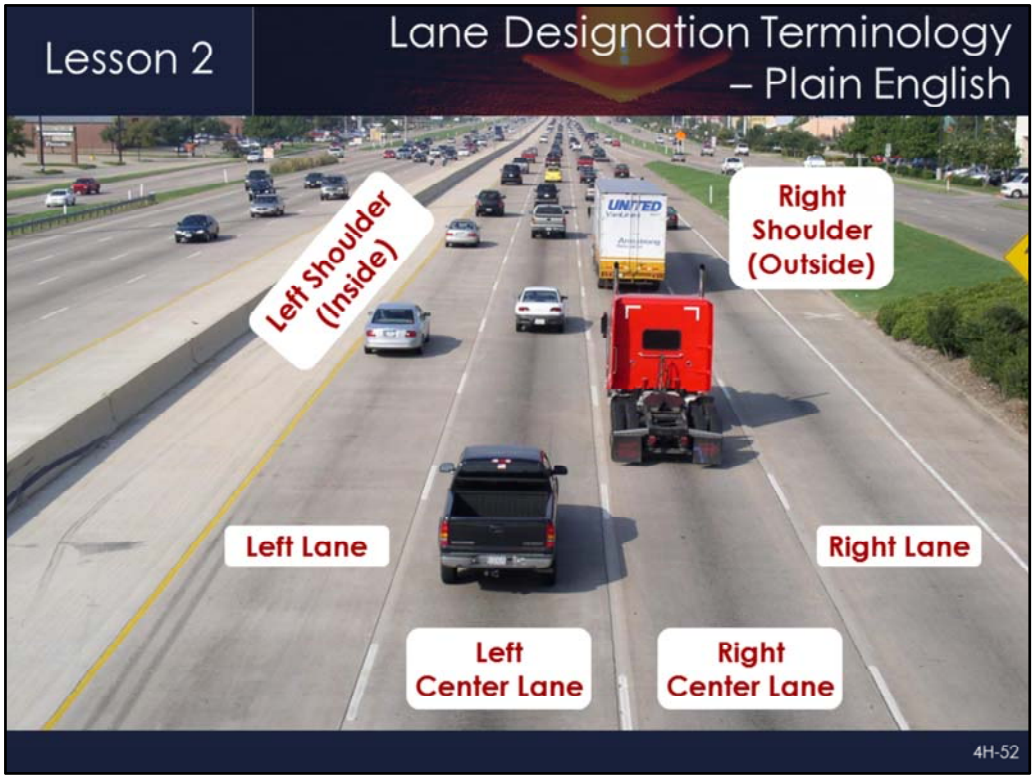
- Part 6 of the CA MUTCD covers Temporary Traffic Control (TTC) zones, commonly known as highway construction or work zones
- A subset of Part 6 is Chapter 6I (pronounced "six-eye"), which specifically addresses traffic incidents
- Because they are emergency events of a temporary nature, traffic incidents are different from highway work zones and are not required to conform with the requirements of work zones
- Review the five sections of Chapter 6I



Lesson Objective: 2.3	Full Version Reference Slide: 2-12

- **Animation:** Click forward to make the Buffer and Incident Space labels appear

- A Traffic Incident Management Area is a type of TTC zone
- A Traffic Incident Management Area has four main components:
  - Advance Warning Area
  - Transition Area
  - Activity Area
  - Termination Area
- The Activity Area is further comprised of a Buffer Space and an Incident Space **[Click]**
- The parts of a Traffic Incident Management Area are covered in greater detail in Lesson 7
- Note the general positioning of the responder vehicles, this will be covered more in Lesson 4



Lesson Objective: 2.4	Full Version Reference Slide: 2-17

- The National Incident Management System (NIMS) requires the use of the Incident Command System (ICS) at traffic incident scenes
- ICS requires the use of uniform terminology and plain English
- Incident communications should be easily understood by all responders and responder disciplines
- Review recommended response terminology for elements of this eight-lane divided highway
- Left and right are determined from the perspective of the flow of traffic
- Left is often analogous with inside and right with outside

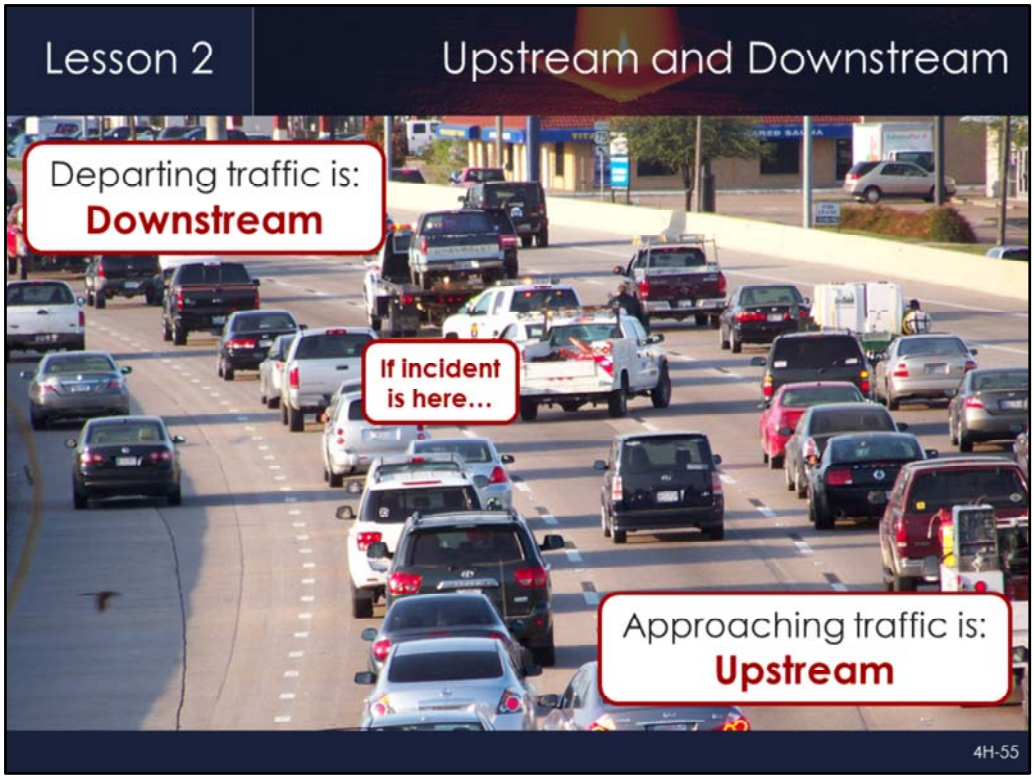
- **Transition: For highways with four or more lanes, the plain English process for identifying lanes can become confusing, which is why lane numbering may be used for lane identification (see next slide)**

Lesson Objective: 2.4	Full Version Reference Slide: 2-18

- A system for numbering lanes is an alternative to the lane names like left, right, etc.
- The recommended practice for describing travel lanes involves use of a left-to-right lane numbering system, from the perspective of the flow of traffic
- Either plain English or numbering are acceptable, provided area responders train to both

Lesson Objective: 2.4	Full Version Reference Slide: 2-19

- Note that a special or unique use lane, such as an high-occupancy vehicle (HOV) lane, is not a numbered lane
- The HOV lane shown here should just be referred to as the “HOV Lane”
- “Lane 1” would be the first general traffic lane



Lesson Objective: 2.4	Full Version Reference Slide: 2-22

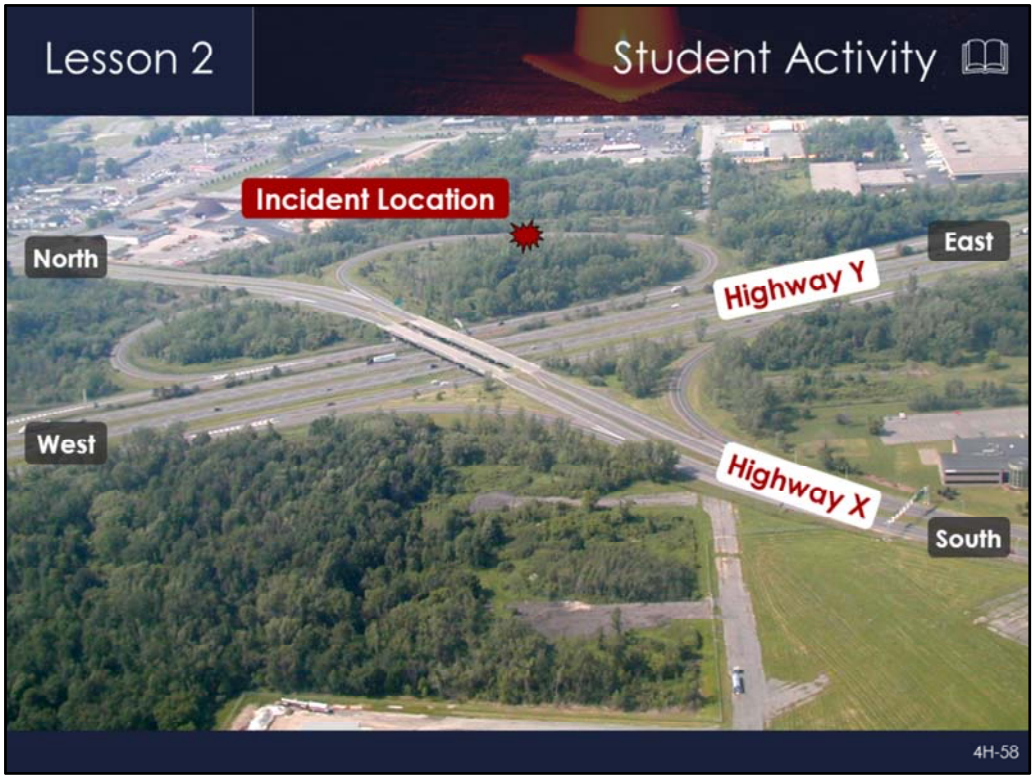
- Traffic that is departing or past the incident is considered downstream traffic
- Traffic that is entering or approaching the incident scene is considered upstream traffic
- Relate these terms as being similar to how running water flows past a fixed point - upstream and downstream

Lesson Objective: 2.4	Full Version Reference Slide: 2-23

- A traffic queue is the backup of traffic that results from an incident or blocked lanes
- It is pronounced "Q"
- A queue may form in either direction of travel because of rubberneckers
- The back of a queue is a very dangerous place, as we saw in the earlier slide where the tractor trailers were involved in a fatal crash four miles from the original incident
- Responders must mind the back of queues, which will be discussed in further detail in Lesson 7

Lesson Objective: 2.4	Full Version Reference Slide: 2-25

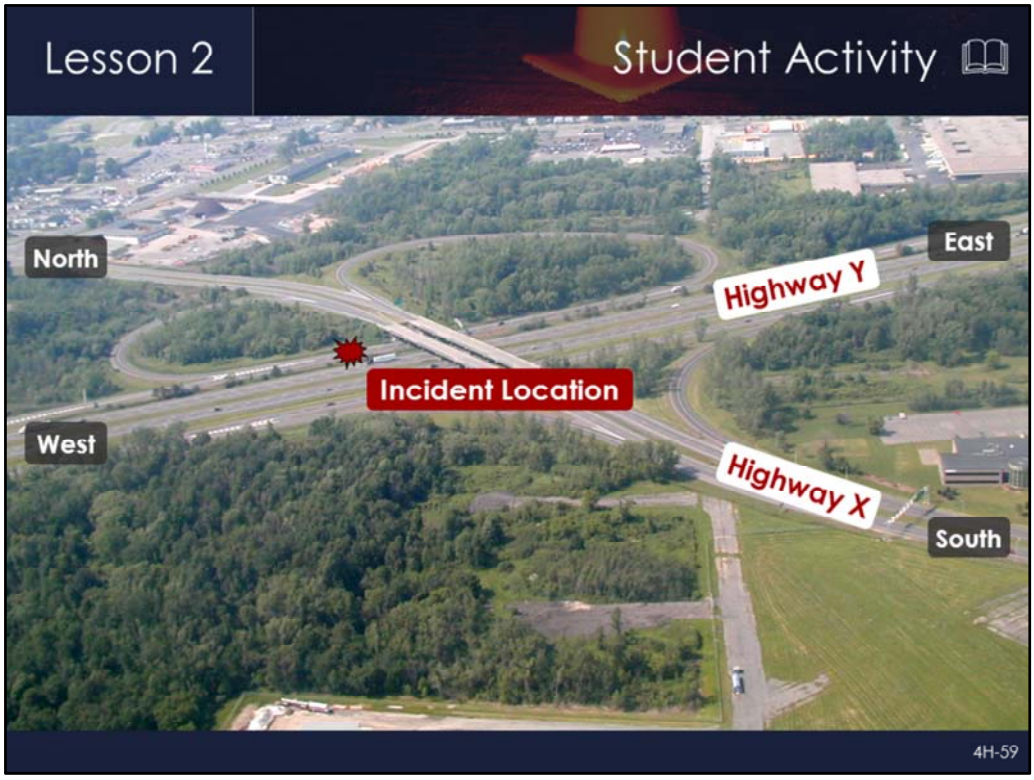
- Review the common response terminology used to describe a variety of roadway and highway features that may exist within the local region
    - On-ramp/off-ramp
    - Distributor/collector road
    - Service road
    - Access road
    - Overpass/underpass
    - Flyover
    - Median turnaround



Lesson Objective: 2.4	Full Version Reference Slide: 2-26

- For this student activity, select one class participant
  - Explain that they are on this scene as the first-arriving responder
  - Ask them to describe the location of the incident as if they were radioing their location to their communications center

- **Answer:** The incident is on the Highway X northbound ramp to Highway Y westbound



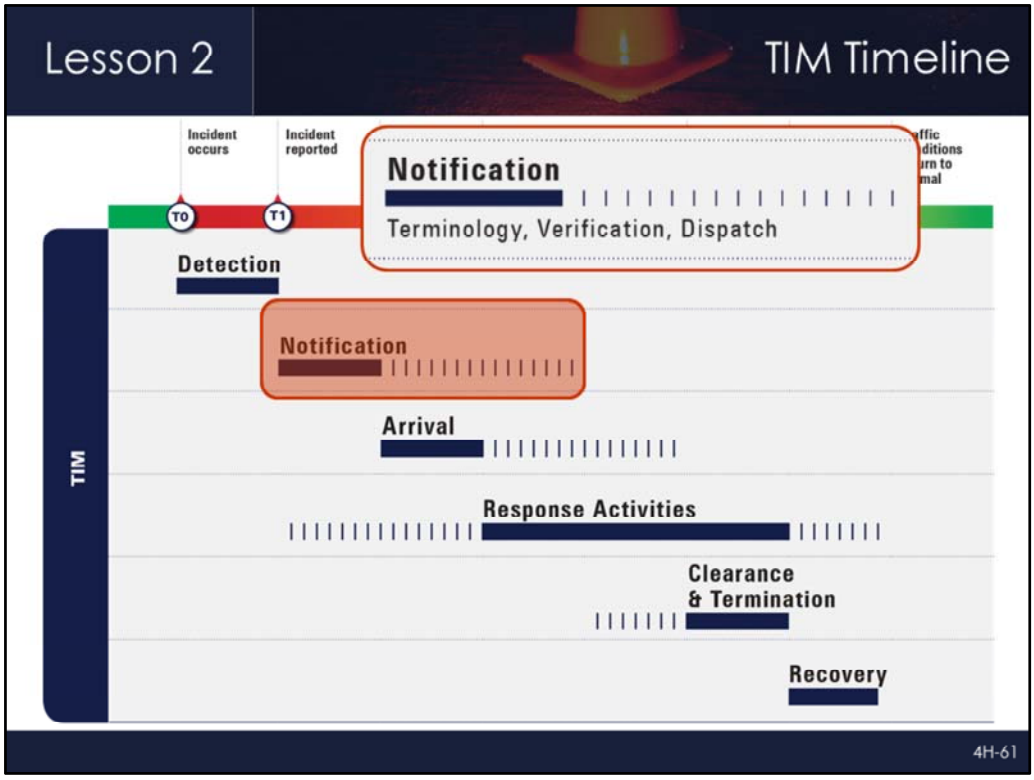
Lesson Objective: 2.4	Full Version Reference Slide: 2-27

- Using the same highway scene, select a different class participant
  - Explain that they are on this scene as the first-arriving responder
  - Ask them to describe the location of the incident as if they were radioing their location to their communications center

- **Answer:** The incident is on the westbound frontage or collector road just prior to the Highway X southbound on-ramp

Lesson Objective: 2.4	Full Version Reference Slide: 2-31

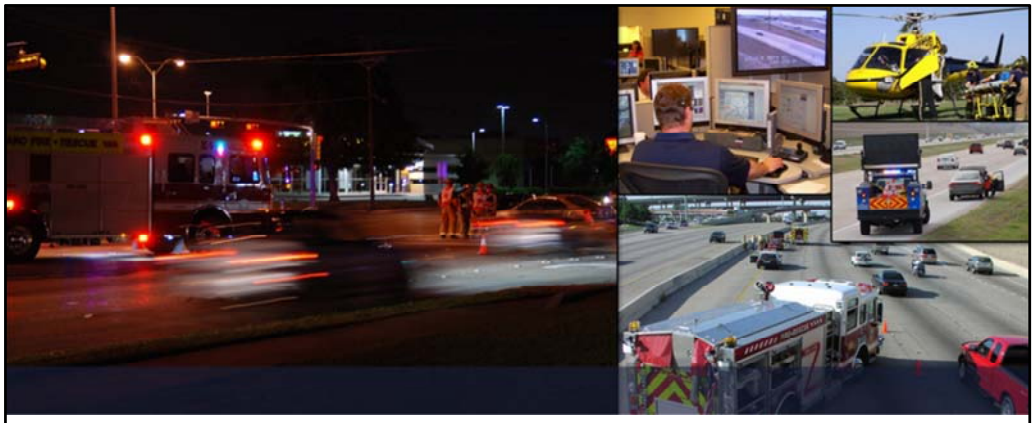
- Emphasize that TIM does not just apply to urban freeway environments
- Rural road response terminology is very similar to what has already been discussed
- Stress that directions are according to the posted road signs and not compass readings



TIM Timeline	Full Version Reference Slide: 2-33

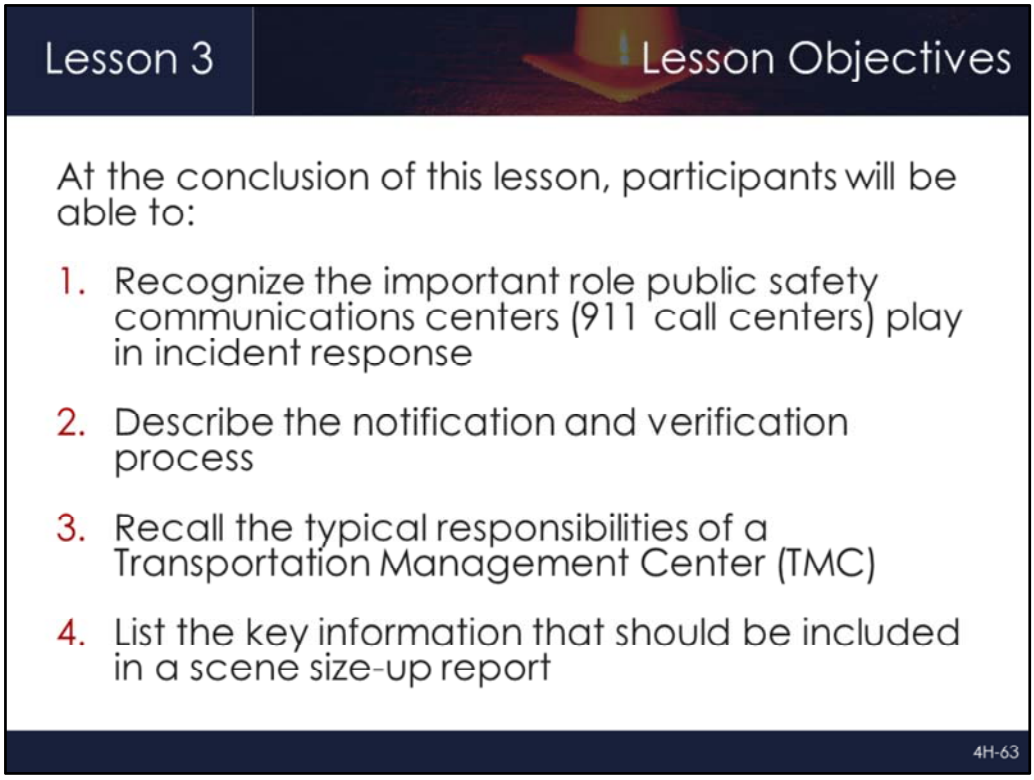
- **Animation:** Click forward to make dark orange box appear and then click again to bring up detailed view of Notification

- **Ask/Discuss:** How does the use of common terminology impact the TIM Timeline?
  - Accurate, clear communication among all disciplines involved in TIM means responders arrive at the scene quickly, clear the scene sooner, and improve safety for themselves and those involved in incidents

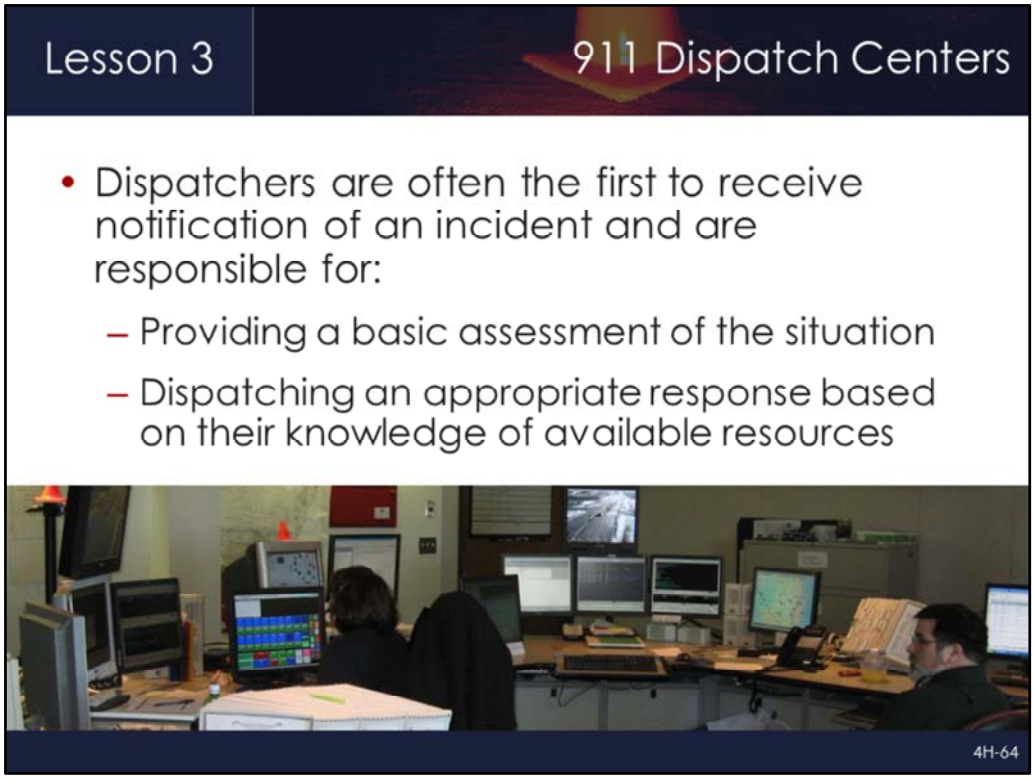


Lesson 3: Notification and Scene Size-Up

4H-62

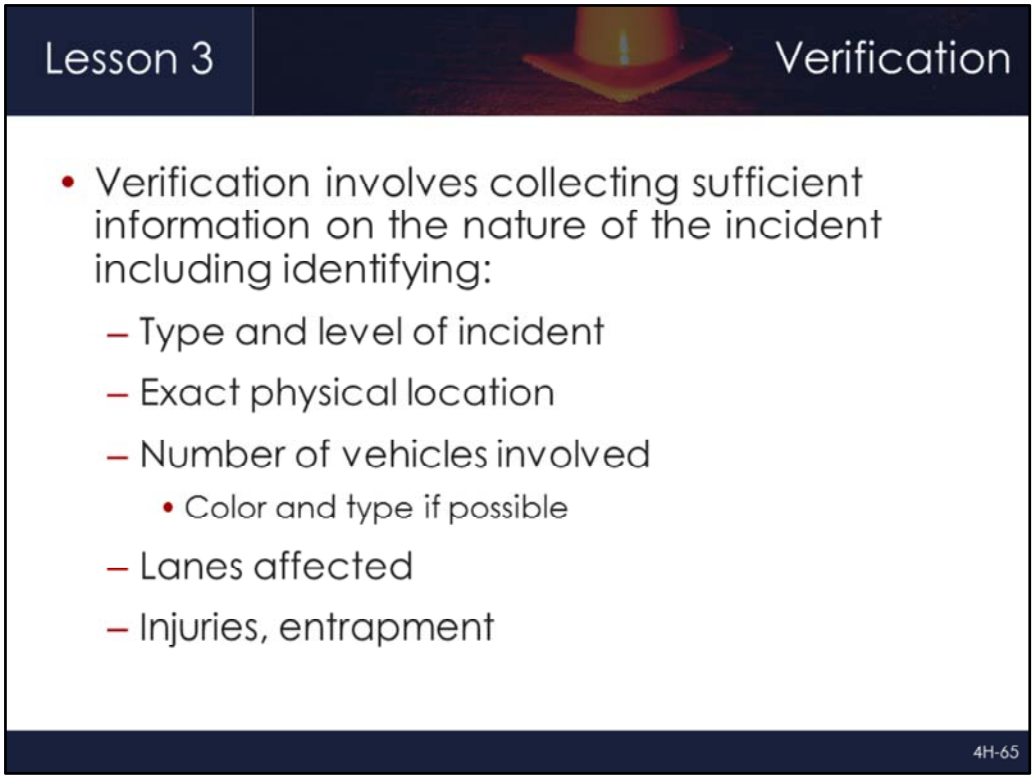


Lesson Objectives	Full Version Reference Slide: 3-2



Lesson Objectives: 3.1 and 3.2	Full Version Reference Slide: 3-3

- The first step of the TIM process is detection, a term used to refer to the discovery of an incident
- Incident detection can be a call from the parties involved in the incident or a call from a passing motorist
- Incidents may also be detected by responders who happen upon them
- Telecommunicators working at public safety communications centers are typically the first to receive notification of an incident
- TIM training is very beneficial to telecommunicators, given their important role
- Understanding TIM concepts and terminology ensures telecommunicators are able to aid responders
- Knowing available TIM resources and assets is part of a telecommunicator's basic duties
- The nature of their job requires telecommunicators to be proficient at multi-tasking, using computers, radios, and telephones
- They are the conduit or connection between individuals, agencies, and other resources
- The accuracy, timeliness, and overall quality of information received by dispatch has a significant impact on effective TIM

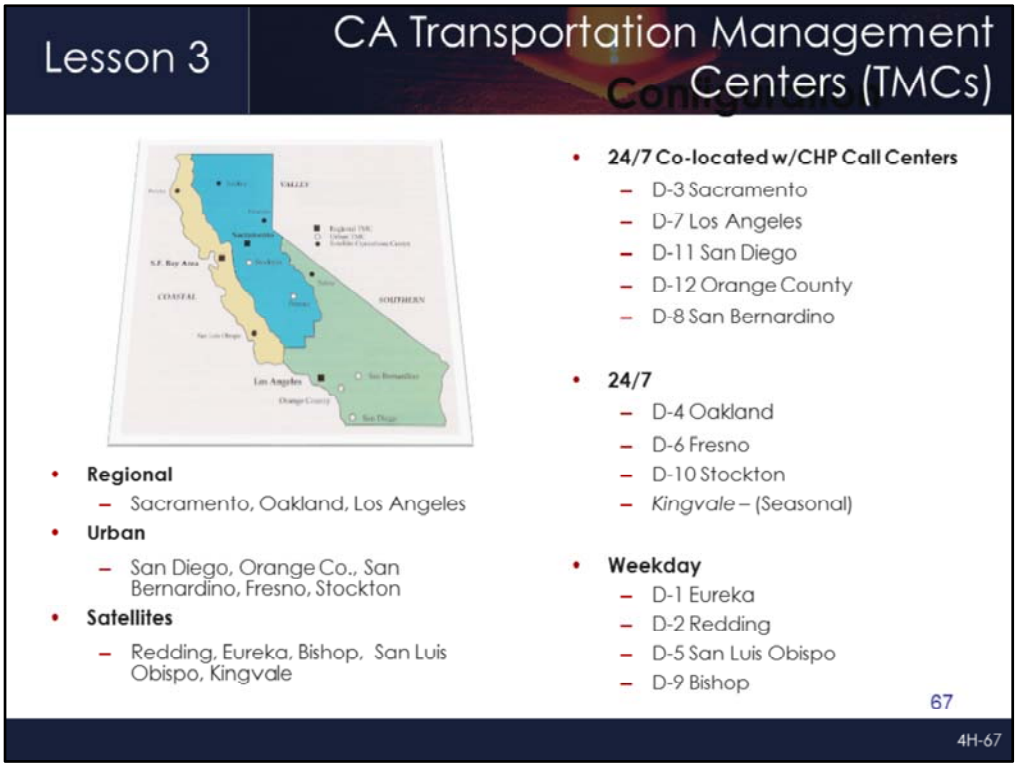


Lesson Objective: 3.2	Full Version Reference Slide: 3-5

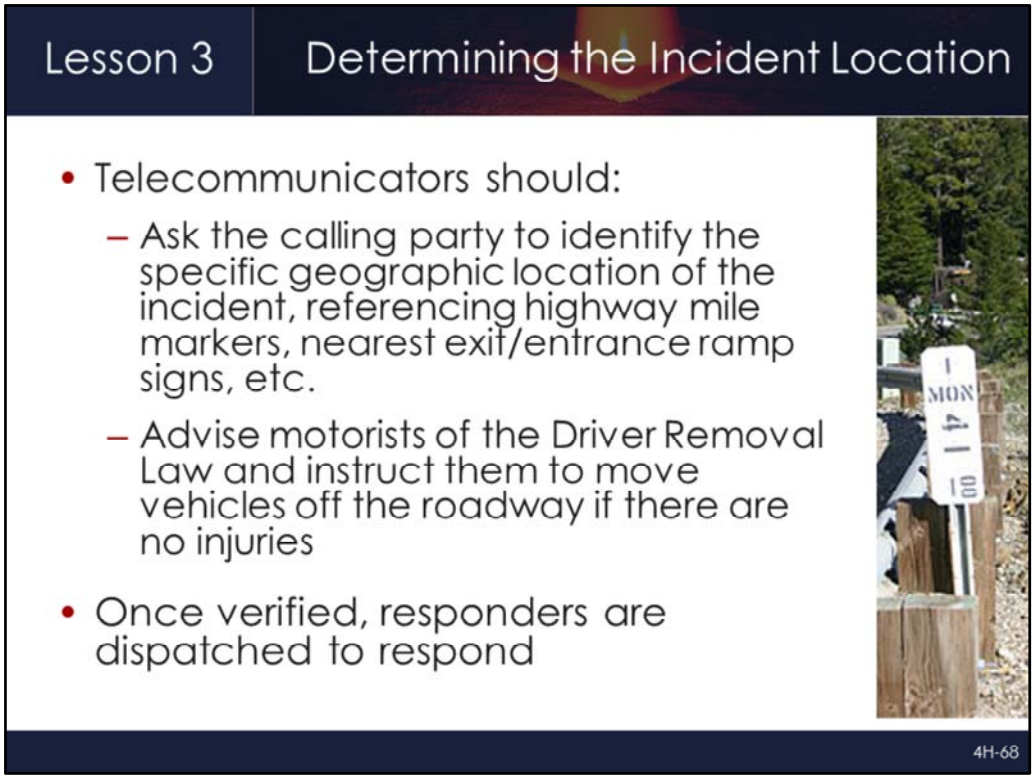
- Verification involves collecting as much information as possible from the individual(s) reporting the incident
- Emphasize that the make, model, and color of the involved vehicles can assist responders in locating the incident
    - Vehicle descriptions can also clarify potential duplicate calls

Lesson Objective: 3.3	Full Version Reference Slide: 3-6

- Transportation Management Centers TMCs:
- TMCs serve as the hub for the collection and dissemination of incident information and they play a critical role with incident detection and verification
- TMCs are responsible for:
  - Monitoring traffic conditions using:
    - Closed-circuit television (CCTV)cameras
    - Roadway detectors and congestion maps
    - Public safety contacts via phone and/or computer-aided dispatch (CAD) links
  - Providing real-time traveler information using:
    - 511 – phone systems, websites and Twitter
    - Changeable message signs (CMS)
    - Portable changeable message signs (PCMS)
    - Highway advisory radio (HAR)
  - Providing traffic and incident information notification to other traffic management/ communication centers, public safety partners and the news media
  - Monitoring traffic management devices to ensure they are functioning properly
  - Controlling traffic management devices, including ramp meters, traffic signal systems, etc.

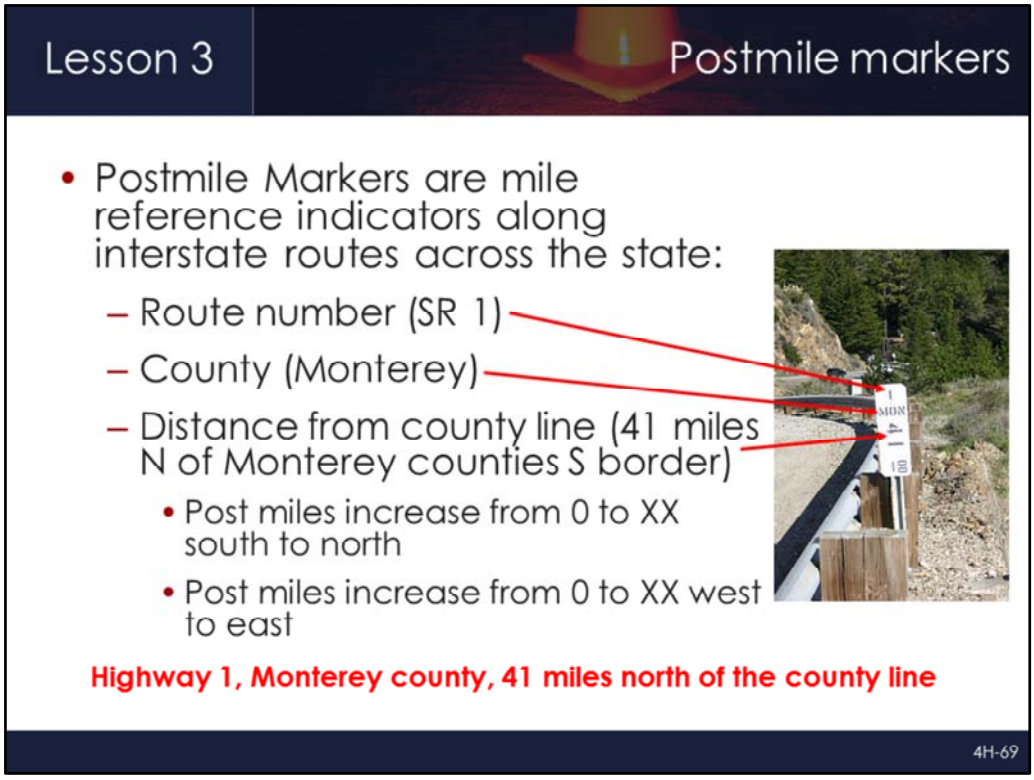


- **Sergio**
- Caltrans has 12 Transportation Management Centers throughout the State.
- Various types – Regional, Urban and Satellites (Rural)
- **Five TMCs are currently co-located with CHP Call Centers and are stand alone facilities. These are essential service facilities with emergency facility operations systems.**
- The weekday TMC's convert to 24/7 during incidents and needed winter operations



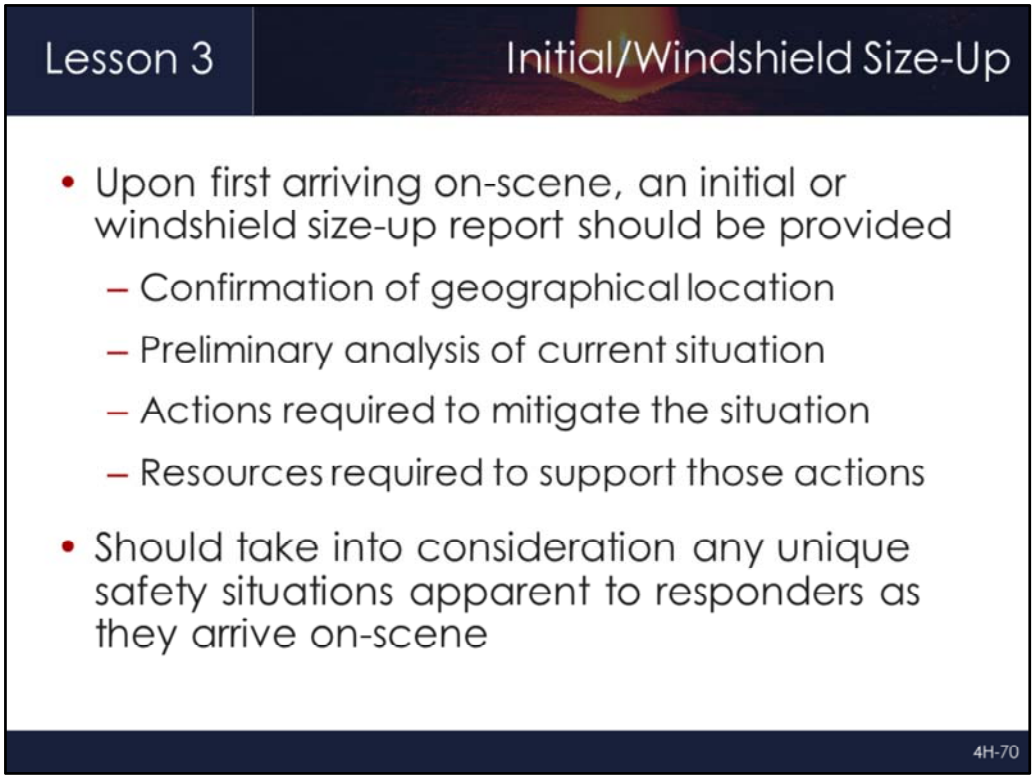
Lesson Objectives: 3.1 and 3.2	Full Version Reference Slide: 3-11

- With the proliferation of cellphones, it is often a passing motorist who first notifies a communications center, via 911, that an incident has occurred
- Streets and nearest intersections are the staple for identifying traffic incident locations
- Highway markers and nearest interchange locations are most often used for freeway locations
- Some places use ½ mile while other systems use mile markers every one-tenth of a mile
- Interchange locations present unique challenges – some places have implemented lettering for ramps and flyovers with mile marker type signs indicating the ramp letter
- Motorists may have traveled past the incident by the time they talk to the communications center, so it is not uncommon for them to give a location that is downstream of the actual incident
- Knowing the color of the vehicles involved can help responders verify whether they have located the reported incident or a different incident
- Multiple reports in the same area should be assessed for any additional information that can help improve response
- A simple TIM strategy at the onset of a call is to direct motorists to remove vehicles from travel lanes if the vehicles are drivable
- Once verification is complete, the communications center will dispatch the appropriate response



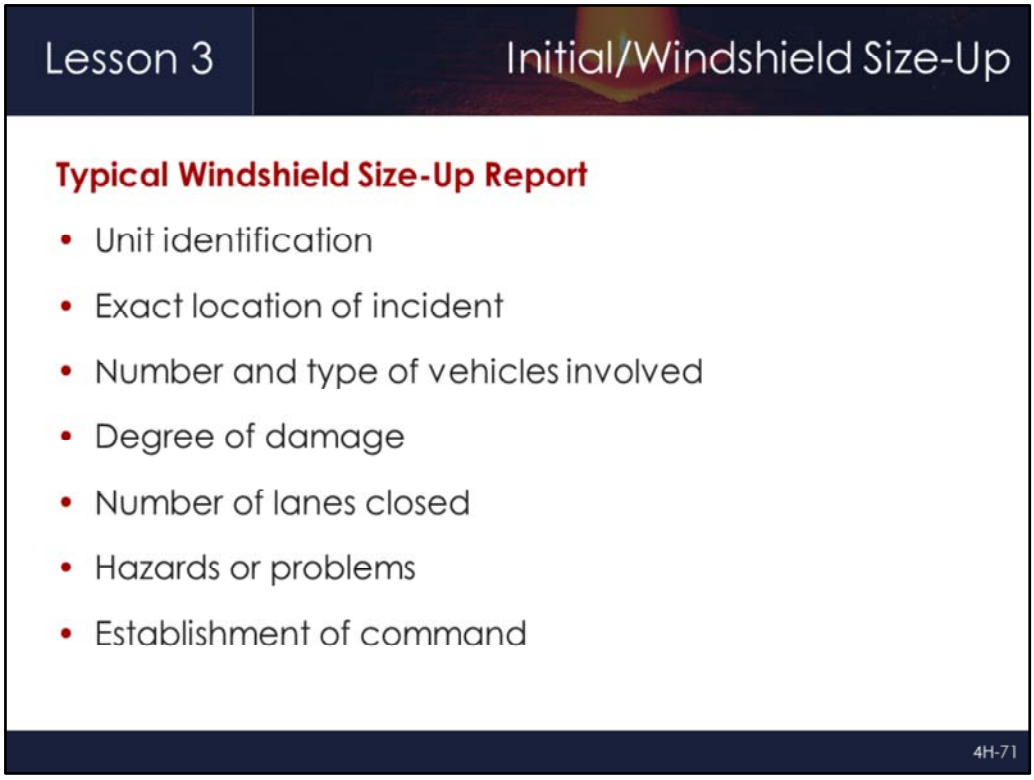
Lesson Objectives: 3.1 and 3.2	Full Version Reference Slide: 3-11

- May be the only reference on some rural roads or long stretched of highway where there may be few geographical references (I-5 between Fresno and Bakersfield for example)
- This mile marker is located on Highway 1 in Monterey county, 41 miles north of the county line.



Lesson Objective: 3.4	Full Version Reference Slide: 3-16

- Reiterate that the more accurate and detailed the information obtained and relayed to additional responders, the faster the response and the quicker the clearance
- Upon first arriving on-scene, an immediate arrival report should be given to the communications center:
    - Confirm the geographical location and approach specifics for later-arriving units
    - Other pertinent information that can be determined at first glance
    - Actions and additional resources that may be required
- This report, typically given while still in the vehicle and viewing the scene through the windshield, is called a windshield size-up
- A more detailed and accurate size-up should be provided after the responder has more fully assessed the scene
- Emphasize that if the incident location is different than what was originally reported, it MUST be reported to the communications center
    - Additional responding units can report to the correct location
    - If an emergency were to occur (i.e., struck-by, shooting, officer down, etc.), additional responders would know where to go



Lesson Objective: 3.4	Full Version Reference Slide: 3-17

- Review the information that is typically included in an initial arrival/windshield size-up report
  - Unit identification
  - Exact location of incident
  - Number and type of vehicles involved
  - Degree of damage
  - Number of lanes closed
  - Hazards or problems
  - Establishment of command

Lesson Objective: 3.4	Full Version Reference Slide: 3-18

- This example is an initial arrival report for a fire department when arriving on a scene

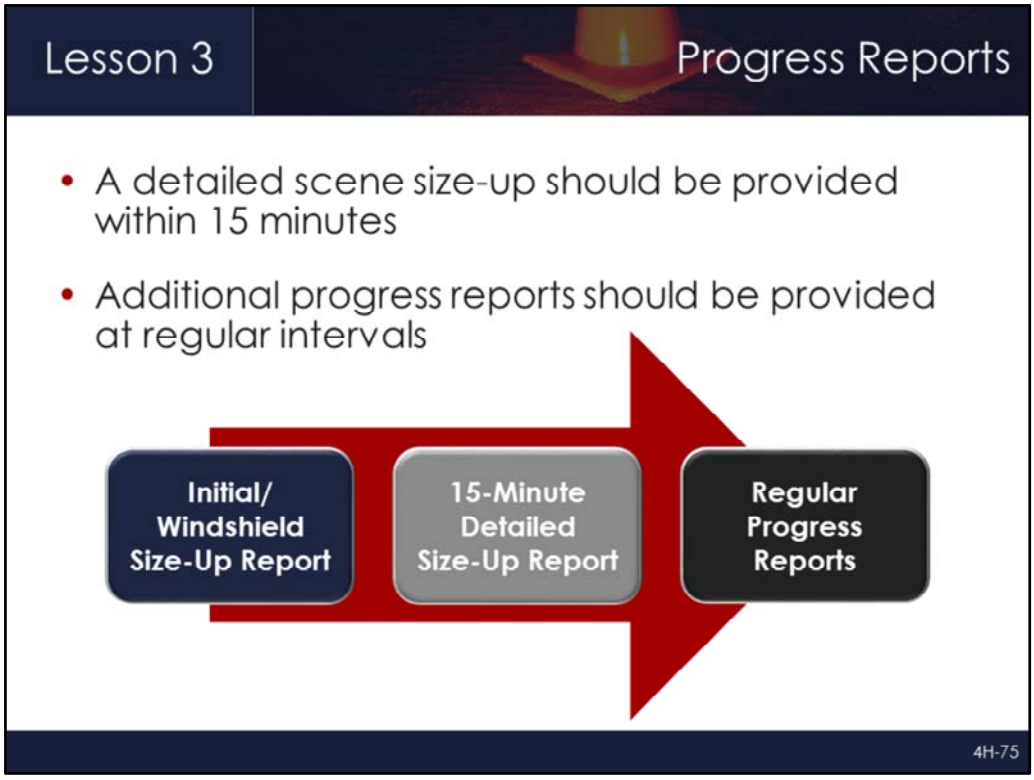
Lesson Objective: 3.4	Full Version Reference Slide: 3-18

- Fire should be made aware of the possibility of a structure fire

Lesson Objective: 3.4	Full Version Reference Slide: 3-19

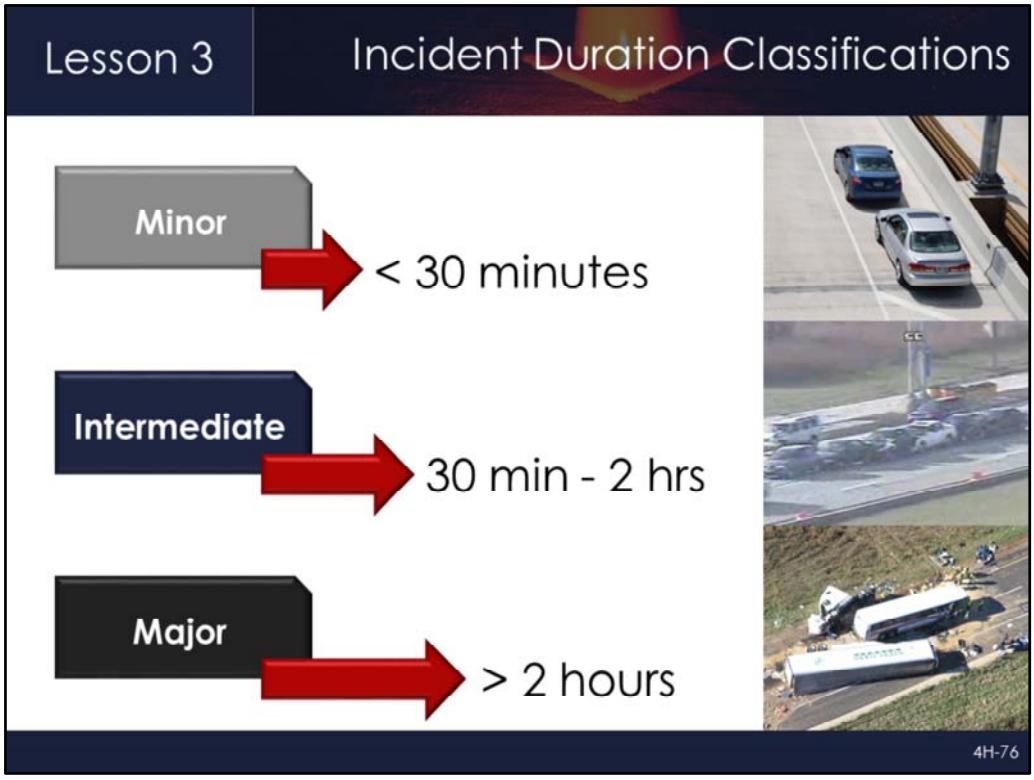
- Elements of this arrival size-up report should include the following:
  - Unit identification
  - Exact location of incident
  - Number and type of vehicles involved
  - Degree of damage
  - Number of lanes closed
  - Hazards or problems
  - Establishment of command

- **Sample Answer:** Unit one on-scene… Francis Street northbound shoulder prior to Woodside Drive… Two vehicles with minor damage… No apparent injuries… Assuming Francis Street command



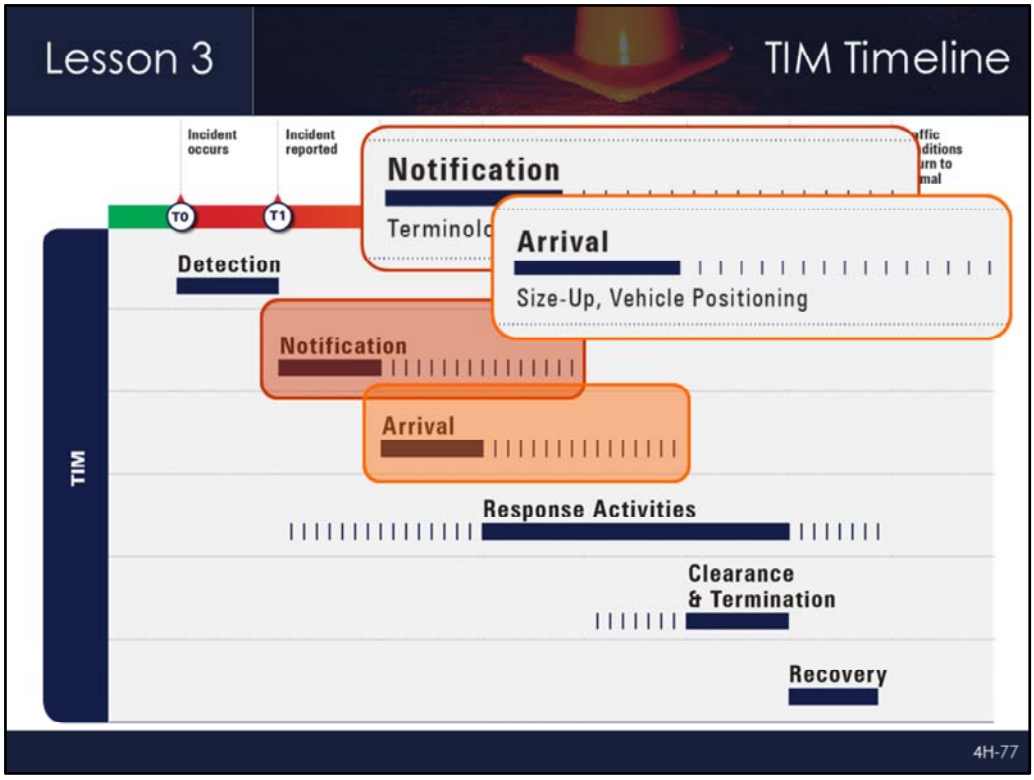
Lesson Objective: 3.4 | Full Version Reference Slide: 3-26

- The initial arrival/windshield size-up report provides a quick assessment of the scene for dispatch and other responders monitoring the channel
- A more detailed size-up report should be conducted within 15 minutes of arrival at the scene
- For the duration of the incident, progress reports should be communicated at regular intervals to provide an update on how response, traffic management, and clearance activities are progressing
- Describe when it's appropriate to update your initial size up report. Some local procedures call for every 15 minutes, some for updates when an event of activity has been completed. Both procedures accomplish the objective of updating command and communications units with current information.
- Ask the question "How often do you update your Size-Up report?" to start the discussion. Outline the importance of conducting an Initial Size-Up. Underscore the role that a timely and accurate Size-Up can play in clearing an incident and restoring normal traffic flow. Describe the 15-minute rule outlining the Size-Up tasks that need to be accomplished within 15-minutes of on-scene arrival and the importance of providing frequent progress reports.
- The CA MUTCD guidelines state that you should have gathered enough information in the first 15 minutes to determine incident duration and start getting the necessary resources in place. Encourage students to work with the local/regional TIM team partners to develop and use a model plan for how to most efficiently communicate regular updates on the radio to all response stakeholders.
- Develop a standard to ensure that everyone is on the same page with regard to requirements. You can use the example of Air Traffic Controllers who communicate regularly in short information clips almost like bullet points to make an analogy for students.



Lesson Objective: 3.4	Full Version Reference Slide: 3-27

- CA MUTCD Chapter 6I divides traffic incidents into three general classes based on duration
- Each of these classifications have unique traffic control characteristics and needs
- The longer you are on the scene, the more that is expected and the more that is required of you and your TIM team
- CA MUTCD Chapter 6I states that responders arriving at a traffic incident should:
    - Estimate the magnitude of the traffic incident
    - Estimate the expected time duration of the traffic incident
    - Estimate the expected vehicle queue length
    - Set up the appropriate temporary traffic controls based on these duration estimates; shorter requires less resources; long duration incidents will require more resources
    - Lesson 7 provides a detailed overview of traffic management and temporary traffic control
- If the expected duration is bordering between two classifications, it is recommended that the higher (longer) classification be used to ensure that adequate resources are requested and mobilized



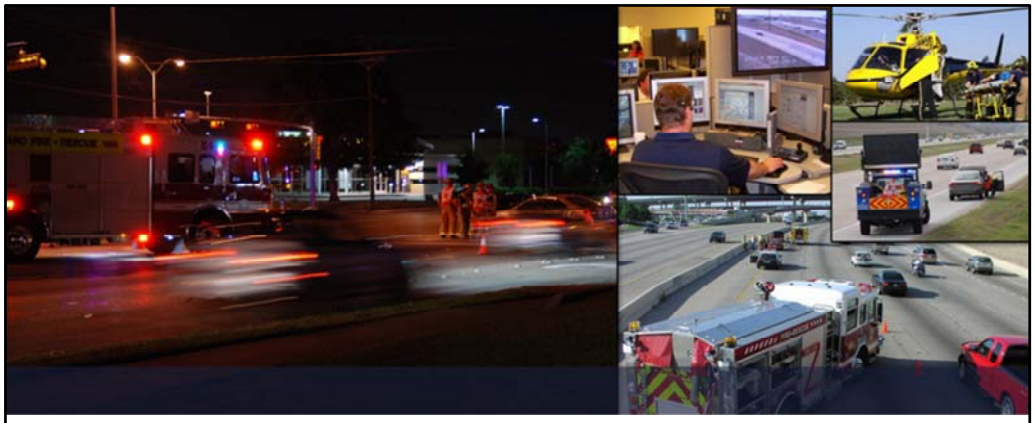
TIM Timeline	Full Version Reference Slide: 3-31

- **Animation:** Click forward to make dark orange box appear, second click brings up detailed view of Notification, third click makes orange box appear, and fourth click brings up detailed view of Arrival

- **Ask/Discuss:** How can notification and verification impact the TIM Timeline? **[First and second click]**
  - It is very important to obtain and provide accurate and concise incident details
  - Locations reported by citizen callers are not always accurate and can delay response

- This lesson also covered portions of Arrival **[Third click]**

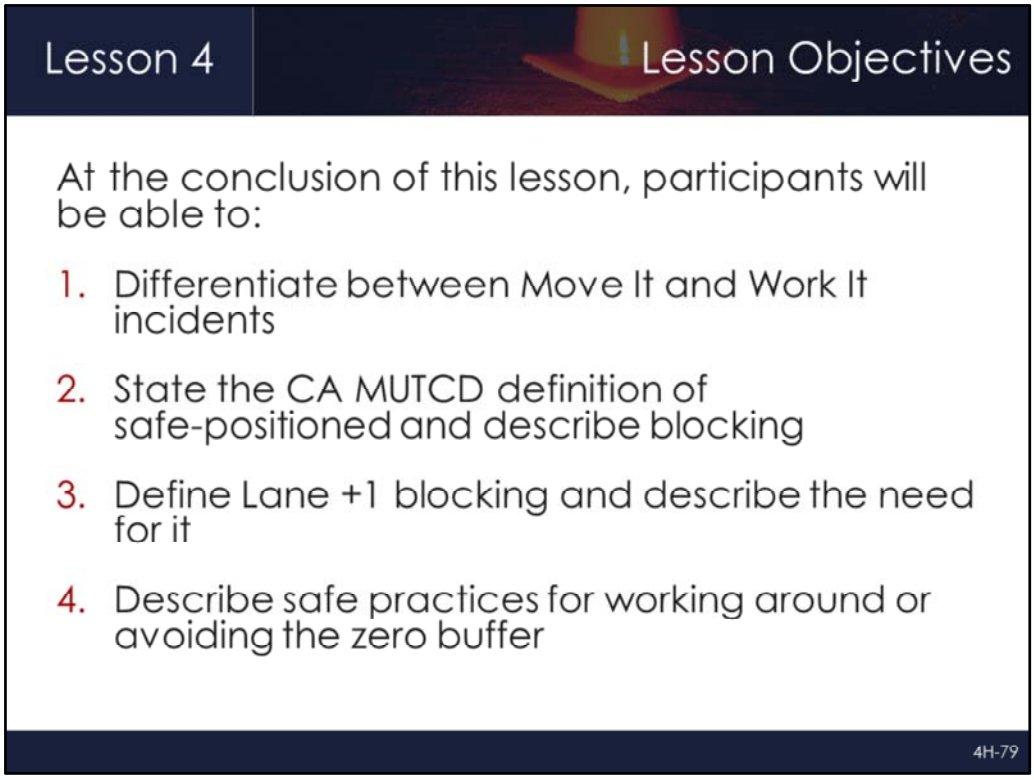
- **Ask/Discuss:** How can the scene size-up impact the TIM Timeline? **[Fourth click]**
  - An accurate windshield size-up report can help to ensure later arriving units have the correct location and are aware of any safety concerns



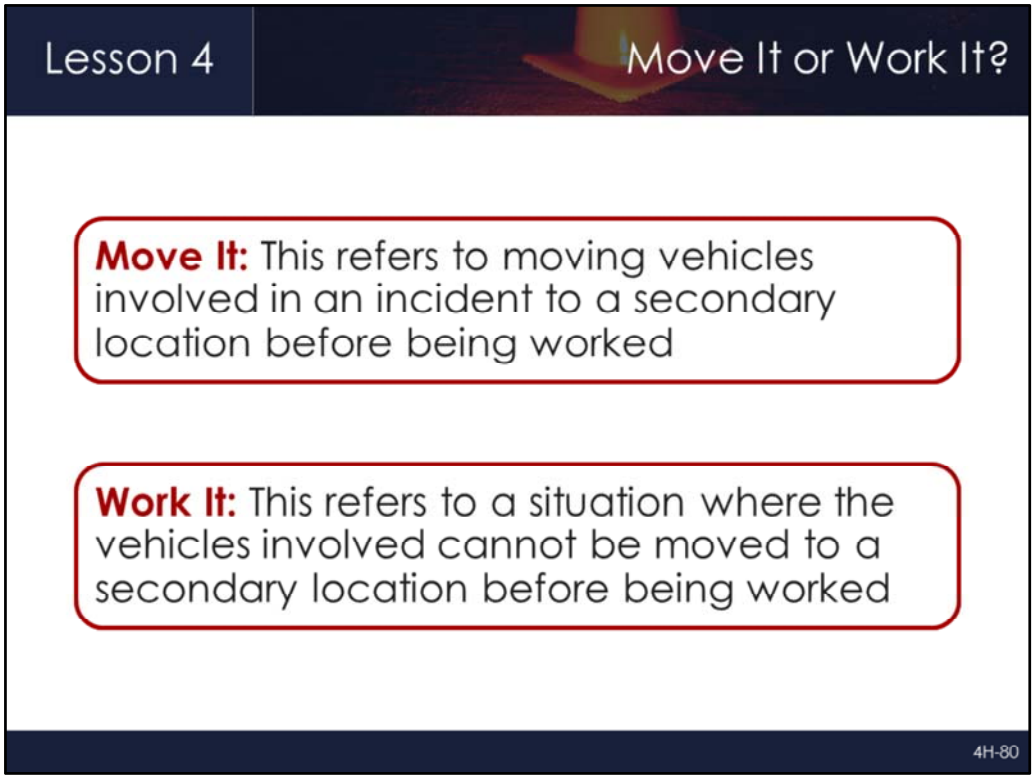
Lesson 4:
Safe Vehicle Positioning

4H-78

Lesson 4	Full Version Reference Slide: 4-1



Lesson Objectives	Full Version Reference Slide: 4-2



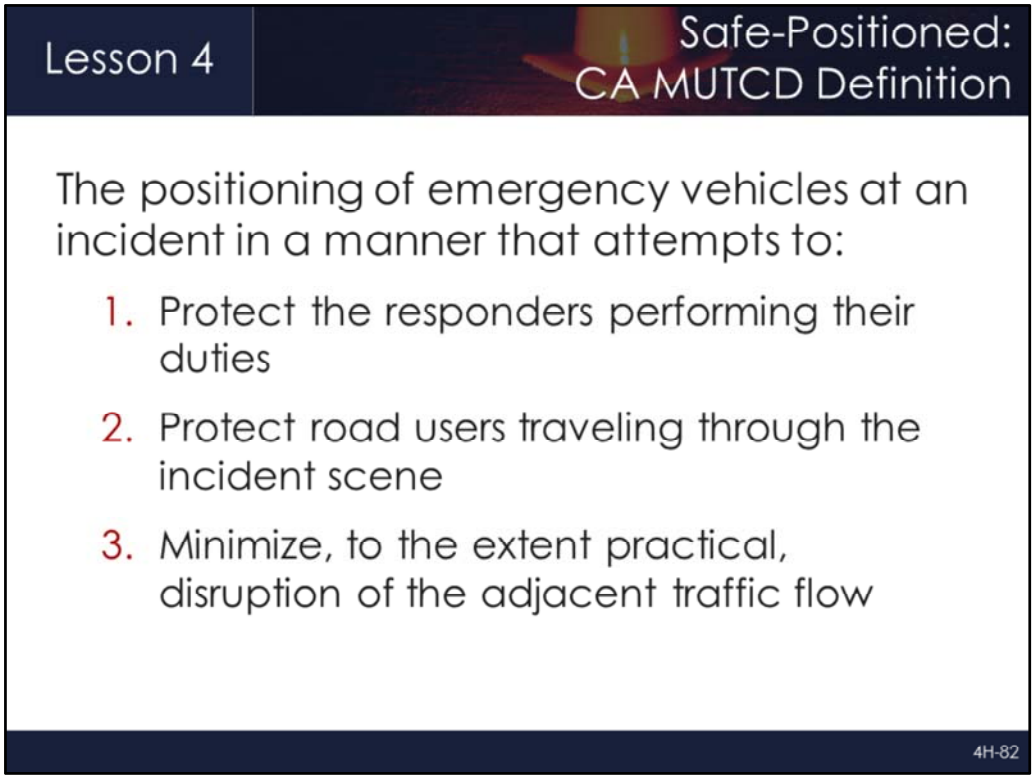
Lesson Objective: 4.1	Full Version Reference Slide: 4-4

- The windshield size-up upon your arrival sets the stage for early decisions that are made at traffic incidents
- Every time you arrive at an incident scene, you have to make a choice to either *Move It* or to *Work It*
- Move It: This refers to moving vehicles involved in an incident to a secondary location before being worked
- Work It: This refers to a situation where the vehicles involved cannot be moved to a secondary location before being worked

Lesson Objective: 4.1	Full Version Reference Slide: 4-5

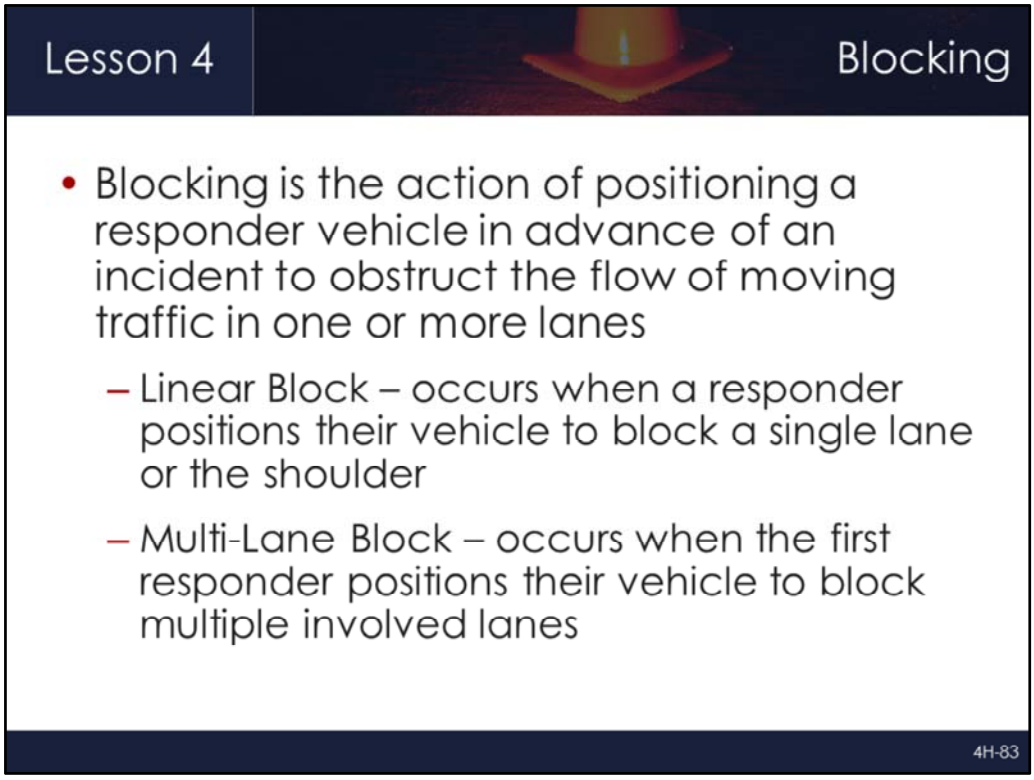
- **Ask/Discuss:** Is this a Move It or Work It incident?
  - This is an example of a Move It incident if the vehicle is vacated
  - This could be an example of a Work It situation if an injured person were still inside the vehicle
  - This could be an example of a Work It situation if the vehicle were leaking fluids or if it were on fire upon the arrival of the responders

- When possible, moving the incident is preferred since it clears the incident from the roadway and obstructs traffic less – a very effective quick clearance strategy



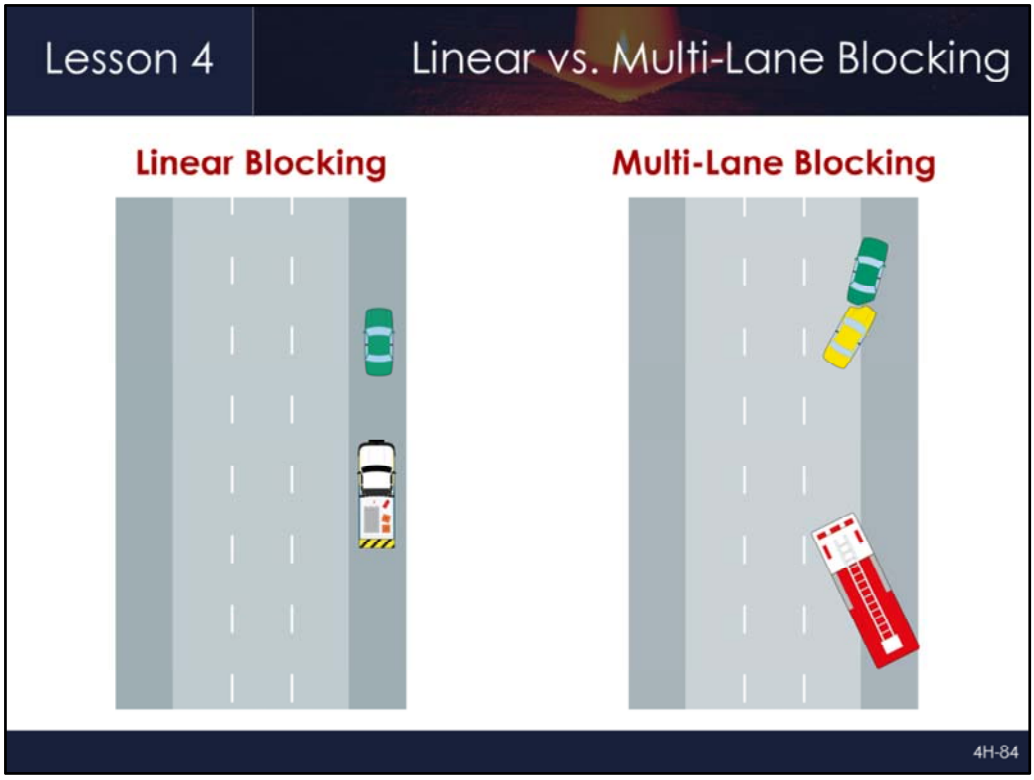
Lesson Objective: 4.2	Full Version Reference Slide: 4-8

- Positioning emergency vehicles to establish a safe work area is another foundational decision for responders arriving at an incident scene
- Vehicle positioning is a critical element to protecting both emergency responders and motorists



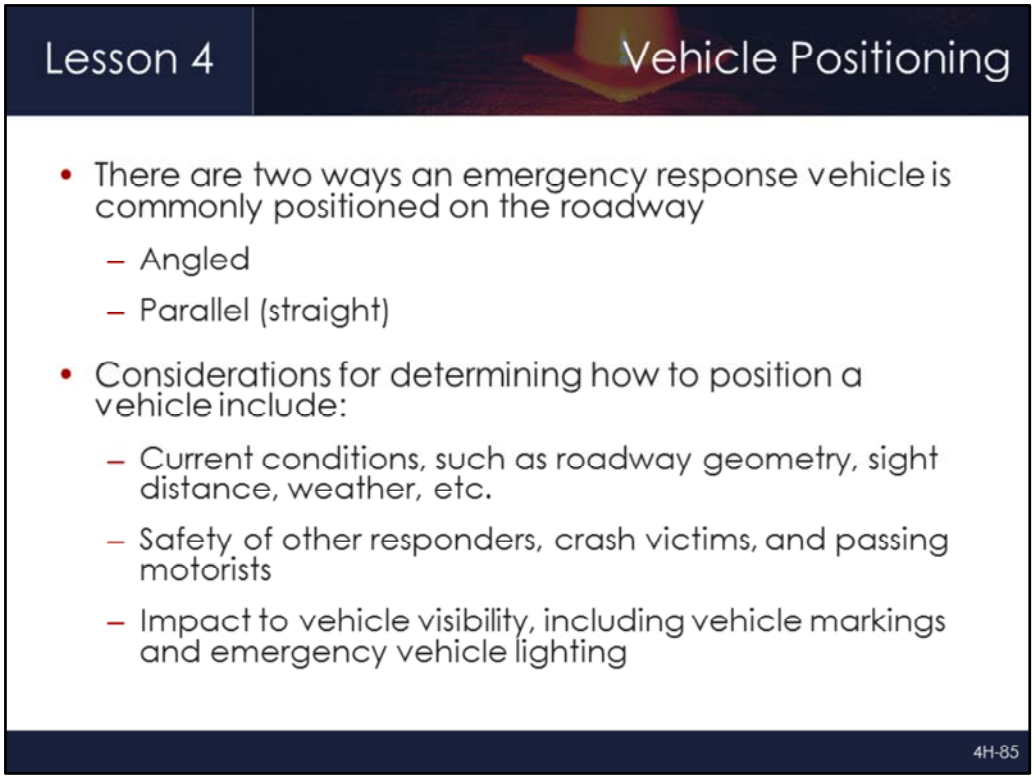
Lesson Objective: 4.2	Full Version Reference Slide: 4-9

- The first emergency vehicle that arrives at an incident scene is responsible for positioning their vehicle as an initial block
    - The number of lanes that need to be blocked will vary based on the circumstances of the incident
- The shoulder of a highway is considered a lane when establishing a block
- Blocking creates a barrier between traffic and the incident scene where responders are working
- Blocking vehicle will be the term used throughout this course, however, some DOT participants may also refer to the blocking vehicle as the shadow vehicle, which is a term used in the CA MUTCD
- Linear Block – occurs when a responder positions their vehicle to block a single lane or the shoulder
- Multi-Lane Block – occurs when the first responder positions their vehicle to block multiple involved lanes



Lesson Objective: 4.2	Full Version Reference Slide: 4-10

- This slide provides a visual representation of two new terms; linear blocking and multi-lane blocking
- At this point, blocking entails only the involved lanes but visually, the participants can see that the shoulder is included in these scenarios



Lesson Objective: 4.2	Full Version Reference Slide: 4-12

- There are two ways a vehicle can be positioned on the roadway:
  - Angled – meaning the vehicle is positioned at an angle with respect to the travel lanes
  - Parallel – meaning the vehicle is positioned in parallel with the travel lanes or the shoulder
- Considerations for determining how to position a vehicle include:
  - Current conditions, such as roadway geometry, sight distance, weather, etc.
  - Safety of other responders, crash victims, and passing motorists
  - Impact to vehicle visibility, including vehicle markings and emergency vehicle lighting

Lesson Objective: 4.2	Full Version Reference Slide: 4-13

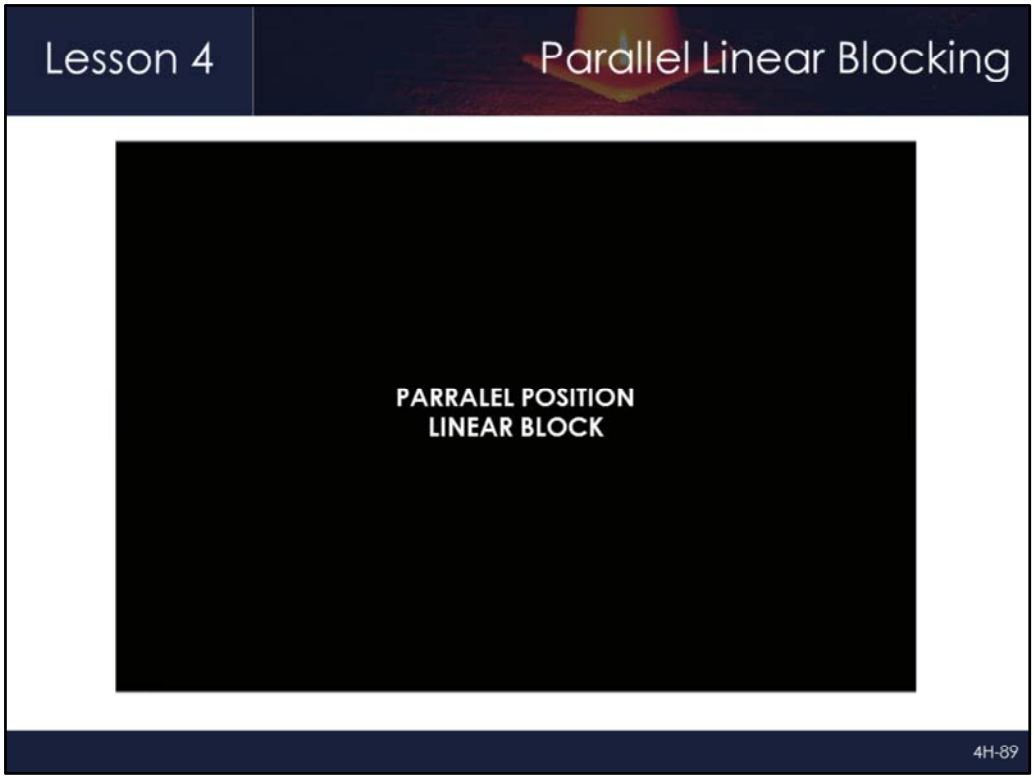
- Example of a fire truck that is using an angled multi-lane blocking position

Lesson Objective: 4.2	Full Version Reference Slide: 4-14

- Examples of law enforcement vehicles that are using a parallel linear blocking position

Lesson Objective: 4.2	Full Version Reference Slide: 4-15

- Example of a safety service patrol vehicle that is using a parallel linear blocking position
    - Vehicles that are using a vehicle-mounted variable message sign or arrow board typically position their vehicles parallel so that passing motorists can see the sign/board more effectively



Lesson Objective: 4.2	Full Version Reference Slide: 4-17

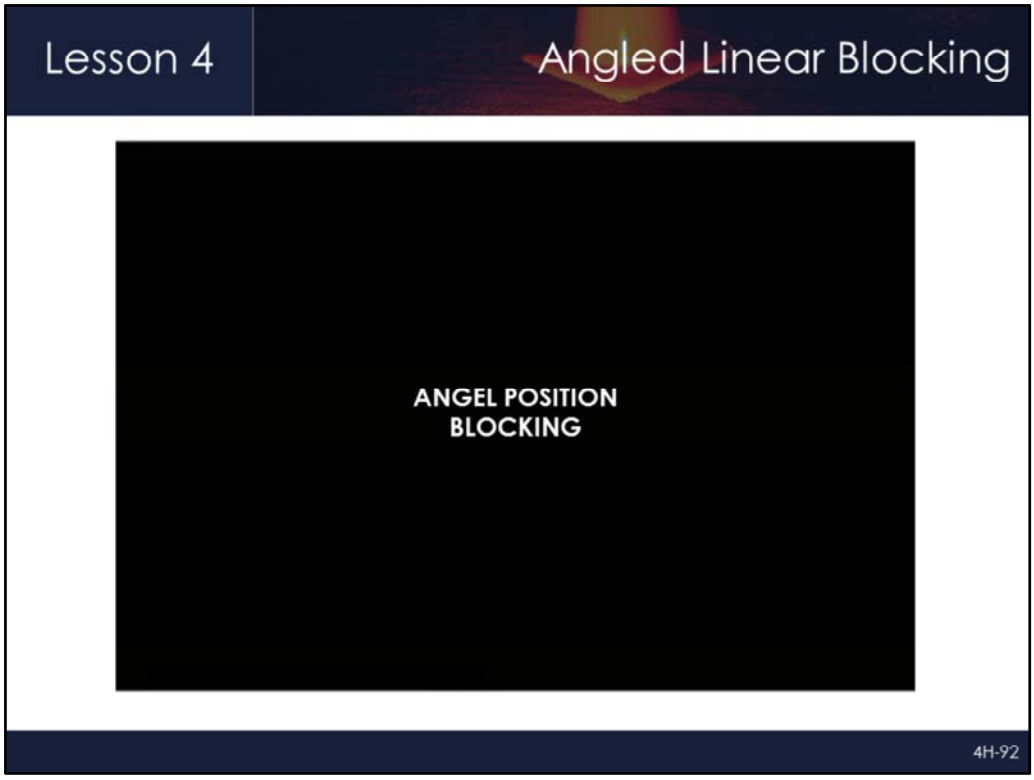
- Example of a safety service patrol vehicle that is using an angled linear blocking position within the width of the outside shoulder of this highway
    - Point out that the vehicle-mounted variable message sign is not being utilized in this example

Lesson Objective: 4.2	Full Version Reference Slide: 4-16

- Example of a law enforcement vehicle that is using an angled linear blocking position
    - Although angled, the vehicle is remaining within the width of one travel lane
- When a vehicle is using linear positioning, the vehicle angle, as shown here, provides motorists a more effective visual cue that the vehicle is not moving
- In this case, the angle of the patrol vehicle also guides motorists to merge or taper into the available right lane

Lesson Objective: 4.2	Full Version Reference Slide: 4-17

- Example of a safety service patrol vehicle that is using an angled linear blocking position within the width of the outside shoulder of this highway
    - Point out that the vehicle-mounted variable message sign is not being utilized in this example

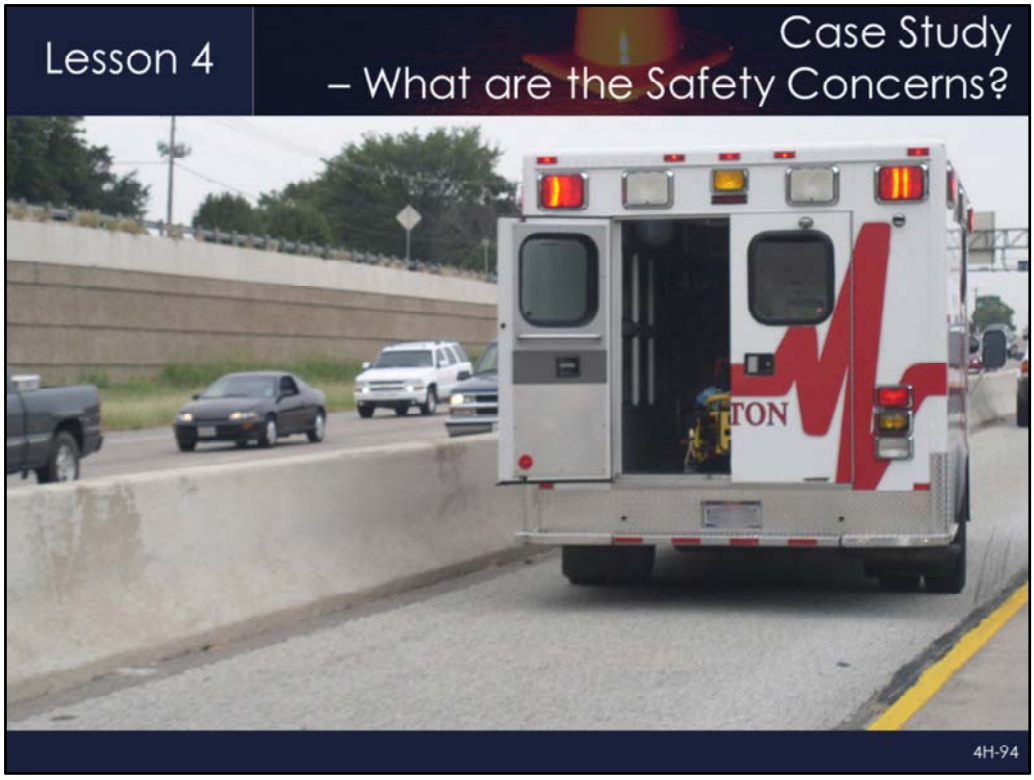


Lesson Objective: 4.2	Full Version Reference Slide: 4-17

- Example of a safety service patrol vehicle that is using an angled linear blocking position within the width of the outside shoulder of this highway
    - Point out that the vehicle-mounted variable message sign is not being utilized in this example

Lesson Objective: 4.3	Full Version Reference Slide: 4-19

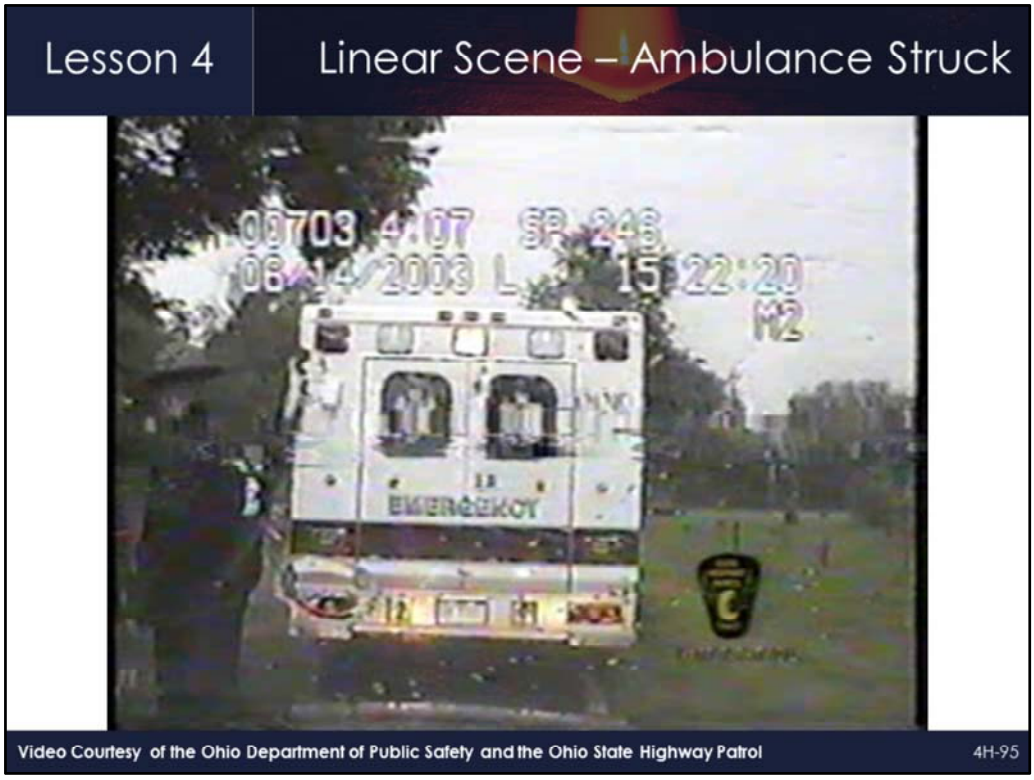
- Provide the following case study details:
  - The ambulance has responded to a medical emergency in a white SUV which has parked on the left shoulder
  - The driver is slumped over the wheel
  - Access via the driver's side door is obstructed since the vehicle is parked so close to the center divider barrier
  - Law enforcement is in a parallel linear blocking position upstream of the ambulance



Lesson Objective: 4.3	Full Version Reference Slide: 4-20

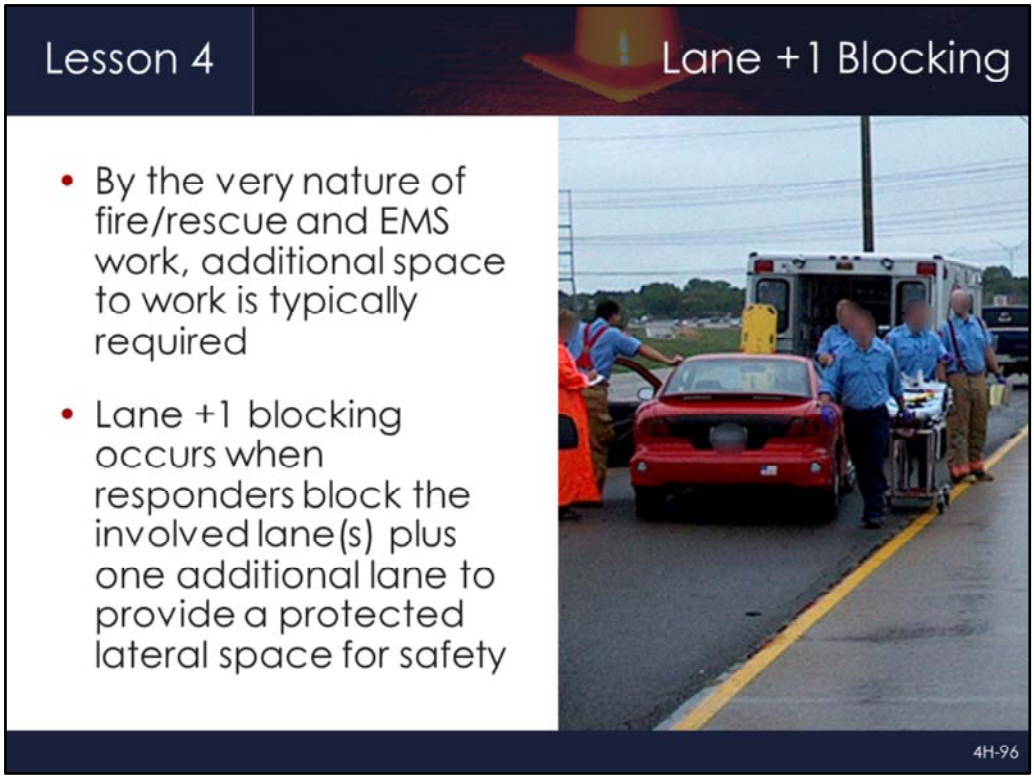
- **Ask/Discuss:** What safety concerns do you see with this linear operation?
  - Since it is not possible to remove the vehicle occupant via the driver's door, this will have to be accomplished through the passenger side, meaning that EMS responders will be directly exposed to moving traffic since no travel lanes have been closed
  - Think about how they would bring a stretcher to the patient – they essentially have to walk in a moving lane of traffic
  - Due to the challenge of loading a patient into an ambulance, EMS personnel will have all their attention focused on that task and will consequently have their backs turned to traffic and be unable to monitor approaching traffic
  - Due to the limited space available to work, the time needed to complete incident clearance will be increased

- In this situation, it is recommended that Lane 1, or the left lane, be blocked in addition to the inside shoulder to provide a safer work environment for the responders and the patient



Lesson Objective: 4.3	Full Version Reference Slide: 4-21

- **Video:** L4_V1 - Linear Ambulance Crash.wmv
- **Ask/Discuss:** Debrief the video
  - Vehicle positioning and scene security should be discussed



Lesson Objective: 4.3	Full Version Reference Slide: 4-22

- To ensure responder and motorist safety, it may be necessary to close additional lanes for a short time
- A good rule of thumb is to take only as many lanes as you need for only as long as you need them and then work together to give them back
- This protocol, where one additional lane is blocked in order to increase safety for actively working, is referred to as Lane +1 blocking
- Use of the Lane +1 blocking protocol creates an adequate incident/work space for responders that is protected against moving traffic

Lesson Objective: 4.2	Full Version Reference Slide: 4-13

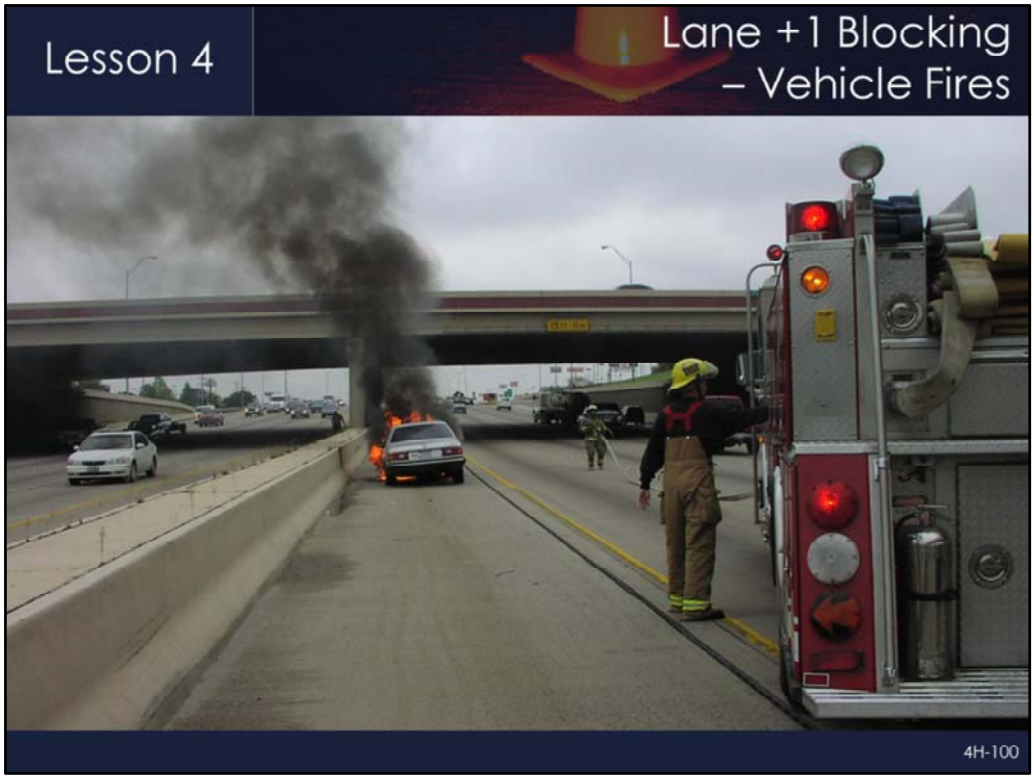
- Example of a fire truck that is using an angled multi-lane blocking position

Lesson Objective: 4.3	Full Version Reference Slide: 4-23

- **Animation:** Click forward for red shape to appear
- Lane +1 blocking expands the protected area provided by the blocking vehicle

Lesson Objective: 4.3	Full Version Reference Slide: 4-25

- Another example where the extra space created by Lane +1 blocking is needed
- It is not possible to safely remove a person from a vehicle on a long board confined to one 12-foot wide lane
- Fire and EMS personnel need additional room to work during patient treatment and patient movement
- Lane +1 blocking allows EMS providers to focus on the patient and not be distracted by moving traffic being so close to them
- Once the patient is loaded, vehicle positioning could be re-assessed to determine if the extra lane can be opened back up

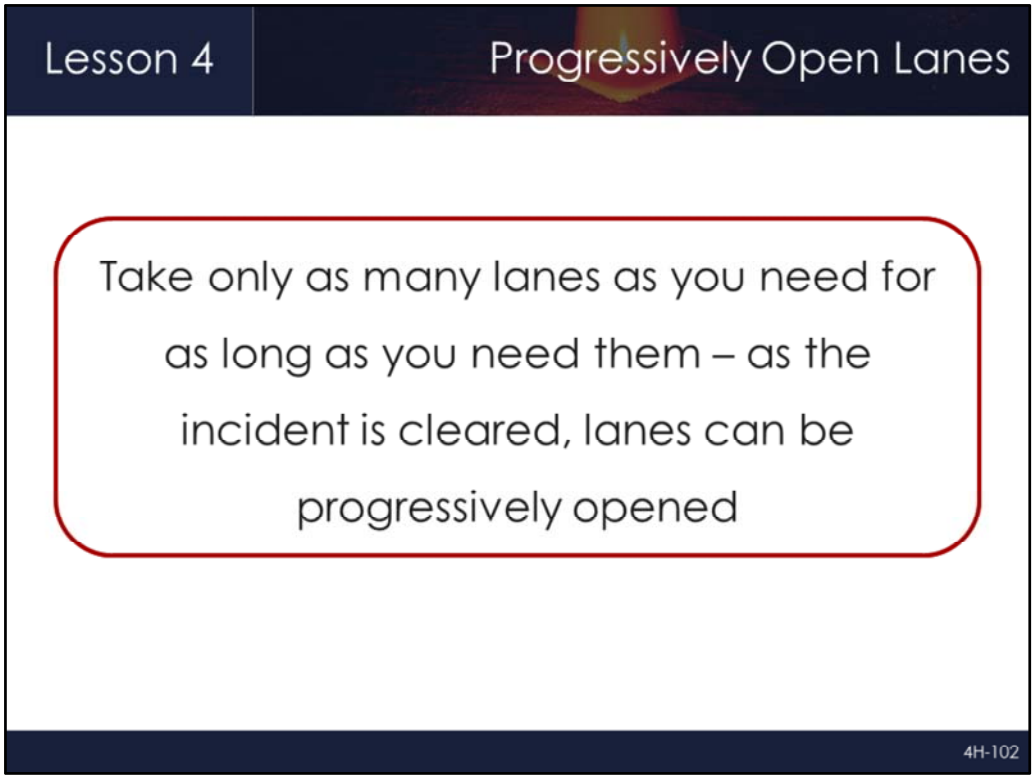


Lesson Objective: 4.3	Full Version Reference Slide: 4-26

- Lane +1 blocking is also beneficial in the case of vehicle fires where an off-angle approach is needed for firefighter safety

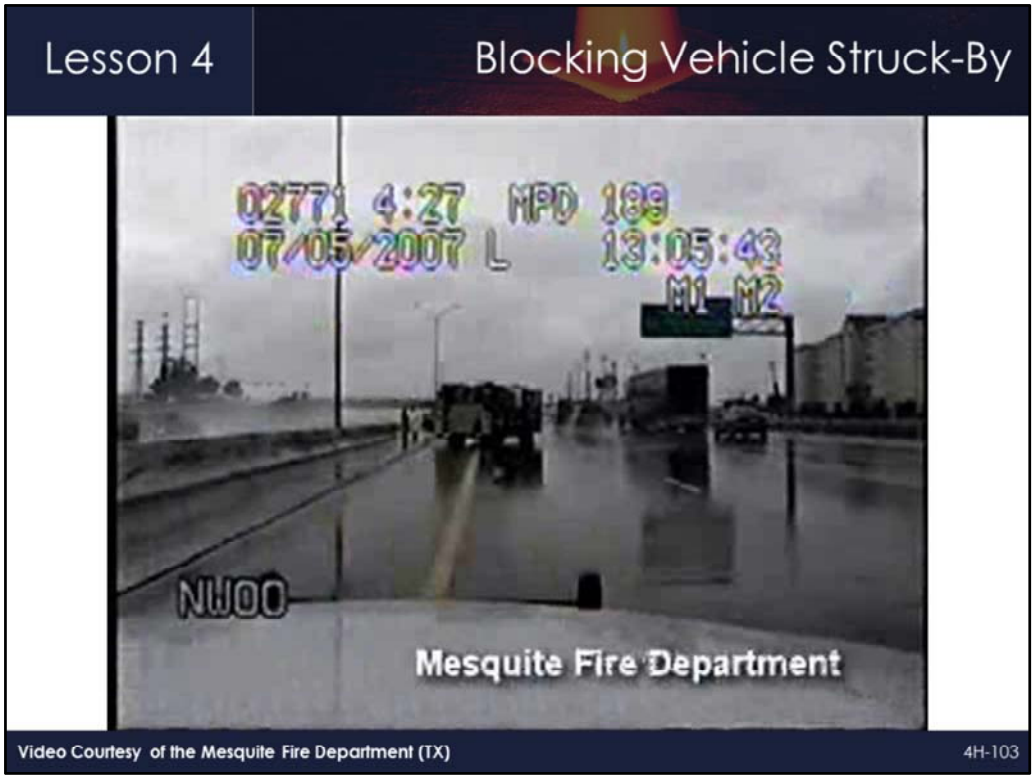
Lesson Objective: 4.3	Full Version Reference Slide: 4-27

- Lane +1 blocking is used for activities related to patient loading, vehicle fires, extrication, etc.
- Once active participation in these activities stops, the scene should be re-evaluated
- It is possible that the additional lane or lanes originally shut down could be opened, with the blocking vehicle only blocking the involved lane(s)



Lesson Objective: 4.3	Full Version Reference Slide: 4-28

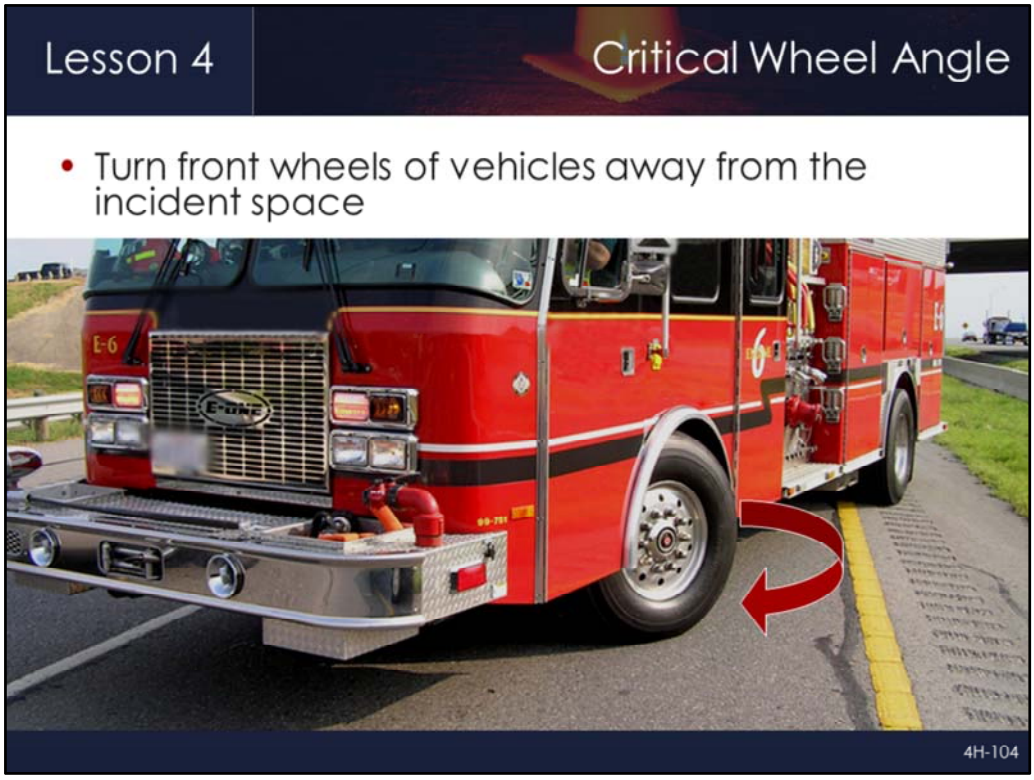
- Take only as many lanes as you need for as long as you need them – as the incident is cleared, lanes can be progressively opened



Lesson Objective: 4.2	Full Version Reference Slide: 4-31

- **Video:** L4_V2 - TX Struck-By.wmv

- Video from Mesquite Texas where a motor vehicle crash was being worked by responders
- Fire apparatus was providing a protective block
- Fire crew had just entered their vehicle and were preparing to depart
- Dash cam from the law enforcement vehicle at the scene that was providing advance warning



Lesson Objective: 4.2	Full Version Reference Slide: 4-34

- When positioning a response vehicle, drivers should work on the assumption that the unit may be hit by a vehicle approaching from upstream
- Turning wheels so that they are not facing the incident space is a recommended practice referred to in this course as the *critical wheel angle*
- The critical wheel angle may help divert a struck responder vehicle away from downstream responders
- Agency policy about critical wheel angle should be followed, particularly in the case of law enforcement

Lesson Objective: 4.4	Full Version Reference Slide: 4-35

- **Animation:** Click forward to make STOP sign appear

- Every block creates an area of danger at the space between the furthermost point of the blocking vehicle and moving traffic
- This area is referred to as the *zero buffer*
- If responders have to pass through the zero buffer zone, they should stop, check for traffic, and then proceed as close to the emergency vehicle as possible
- Zero buffer in not a term officially recognized by the CA MUTCD

Lesson Objective: 4.4	Full Version Reference Slide: 4-37

- Working in the zero buffer is very dangerous
- This photo was taken by a police officer who saw the tow truck operator in an unsafe situation
- The operator relayed that because of the tension on the cable/chain, if the chain broke, the cable could kill him.

- **Ask/Discuss:** What can be learned from this situation?
  - Any person at an incident scene who sees someone in an unsafe situation should assist to get them back to safety
  - The officer who saw the issue could have initiated a Lane +1 block or momentarily stopped traffic to provide a safe location for the tower to work
  - Speaking about the unsafe situation after the fact (possibly during an after-action review) might prevent this from happening again

Lesson Objective: 4.4	Full Version Reference Slide: 4-38

- **Video:** L4_V3 - TN Zero Buffer.wmv

- A Tennessee Highway Patrol trooper was required to move his seat organizer from the front to the rear to accommodate a rookie
- At the scene of an accident, it was necessary to obtain forms requiring he place himself in the zero buffer

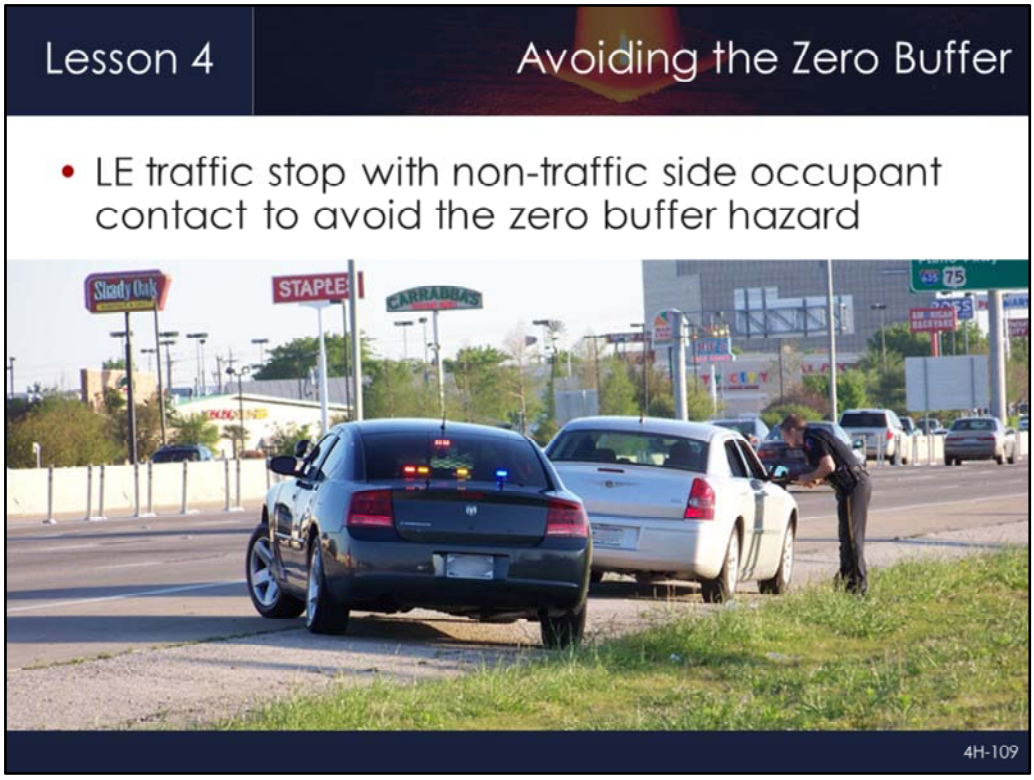
- **Ask/Discuss:** Debrief the video

Lesson Objective: 4.4	Full Version Reference Slide: 4-39

- **Video:** L4_V4 - FL Zero Buffer.wmv

- A Florida Highway Patrol trooper is conducting a traffic stop, executing a driver's side approach
- The driver of the passing vehicle was running late for the airport and panicked when he saw traffic ahead slowing

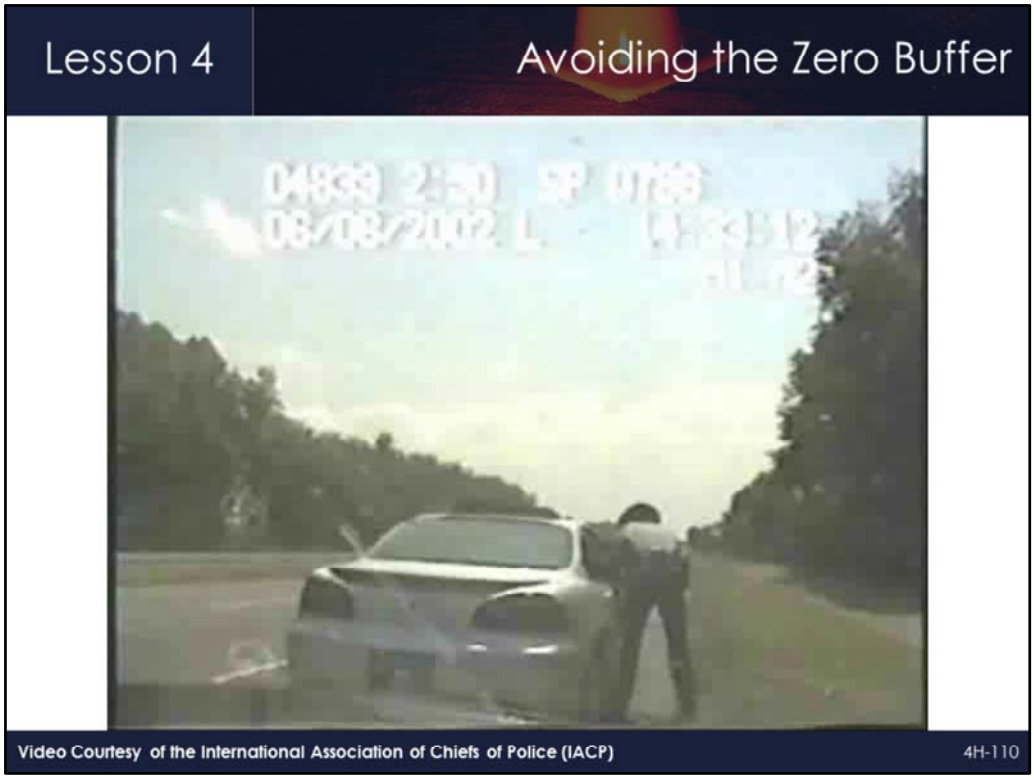
- **Ask/Discuss:** Debrief the video
    - Notice the distance from the edge line



Lesson Objective: 4.4	Full Version Reference Slide: 4-41

- **Ask/Discuss:** What is your local law enforcement agency's policy for making vehicle contact?
  - Driver's side or passenger side; traffic-side or non-traffic side approach

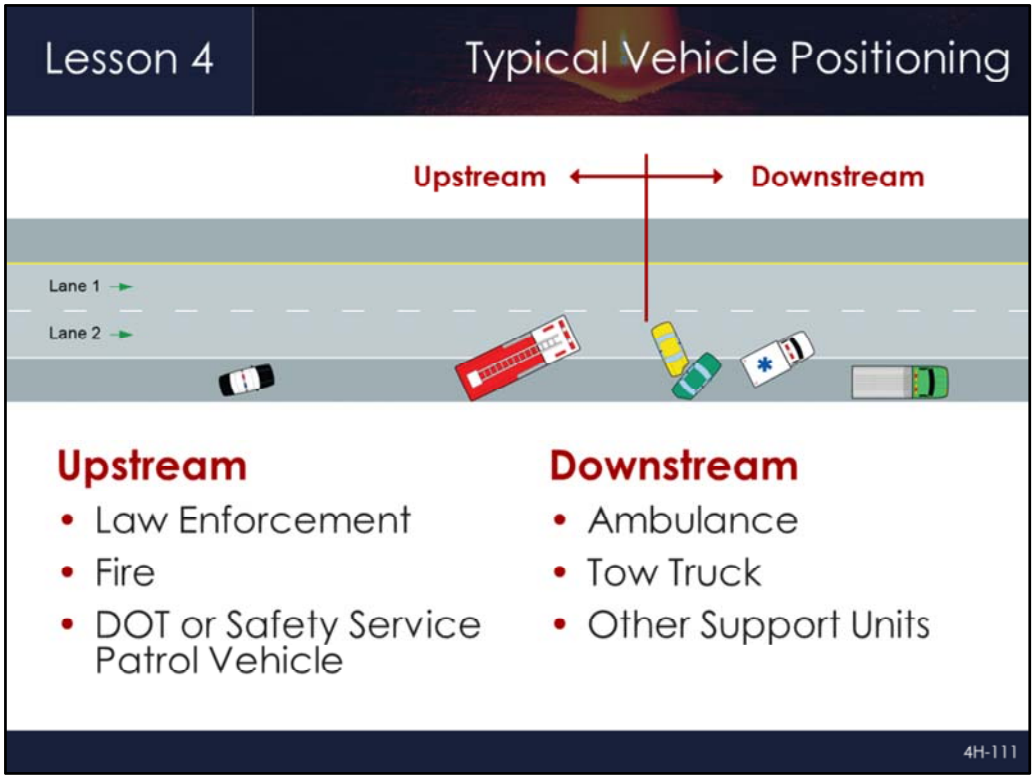
- The use of a passenger side, non-traffic side, approach during this traffic stop reduces the officer's exposure to the hazard of being in the zero buffer
- A subcommittee of the International Association of Chiefs of Police (IACP) found that nationally, differences exist in vehicle positioning, approach side, and critical wheel angle among police agencies
- Agency policy and the threat of the encounter should dictate all traffic stop protocols for law enforcement personnel



Lesson Objective: 4.4	Full Version Reference Slide: 4-42

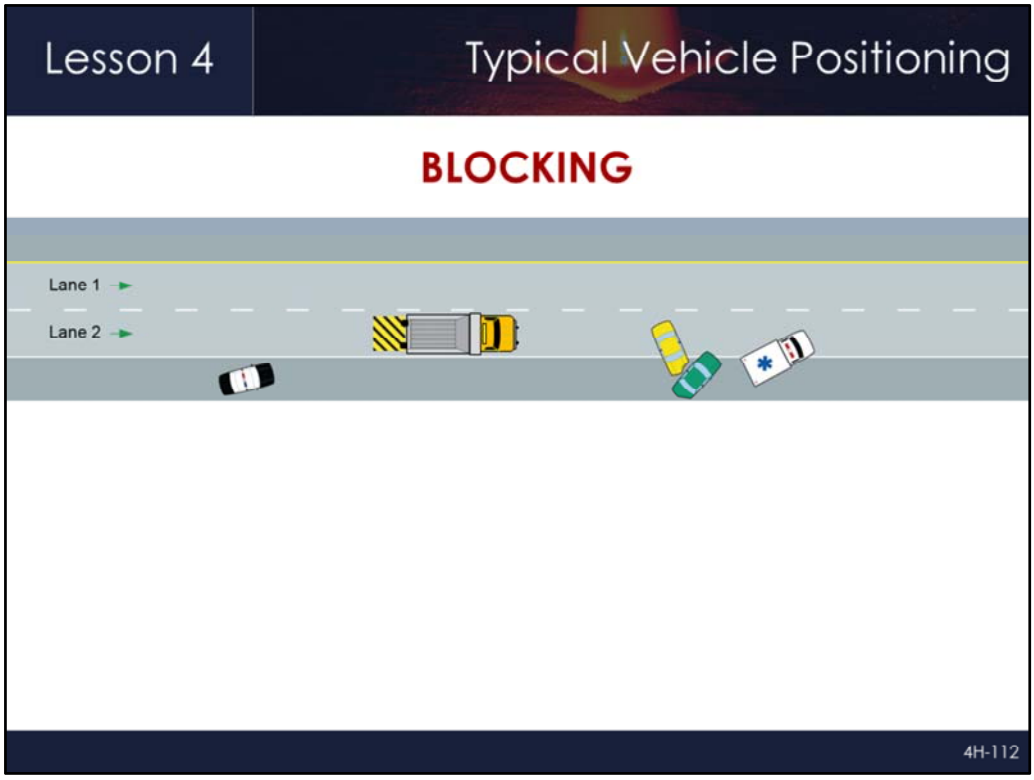
- **Video:** L4_V5 - Avoiding Zero Buffer.wmv

- **Ask/Discuss:** Debrief the video
  - Highlight the Trooper's situational awareness and the need to have an escape route



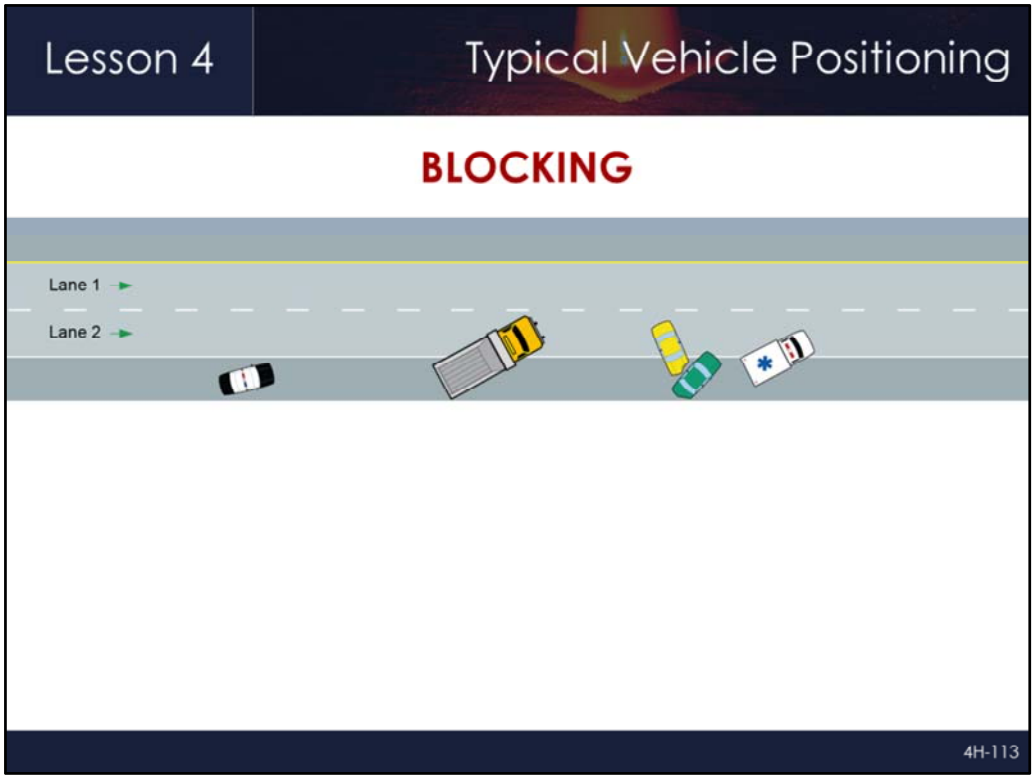
Lesson Objective: 4.2	Full Version Reference Slide: 4-50

- This graphic provides the typical positioning of response vehicles relative to the incident itself
- Highlight that vehicle positioning should be reviewed and adjusted as the incident progresses



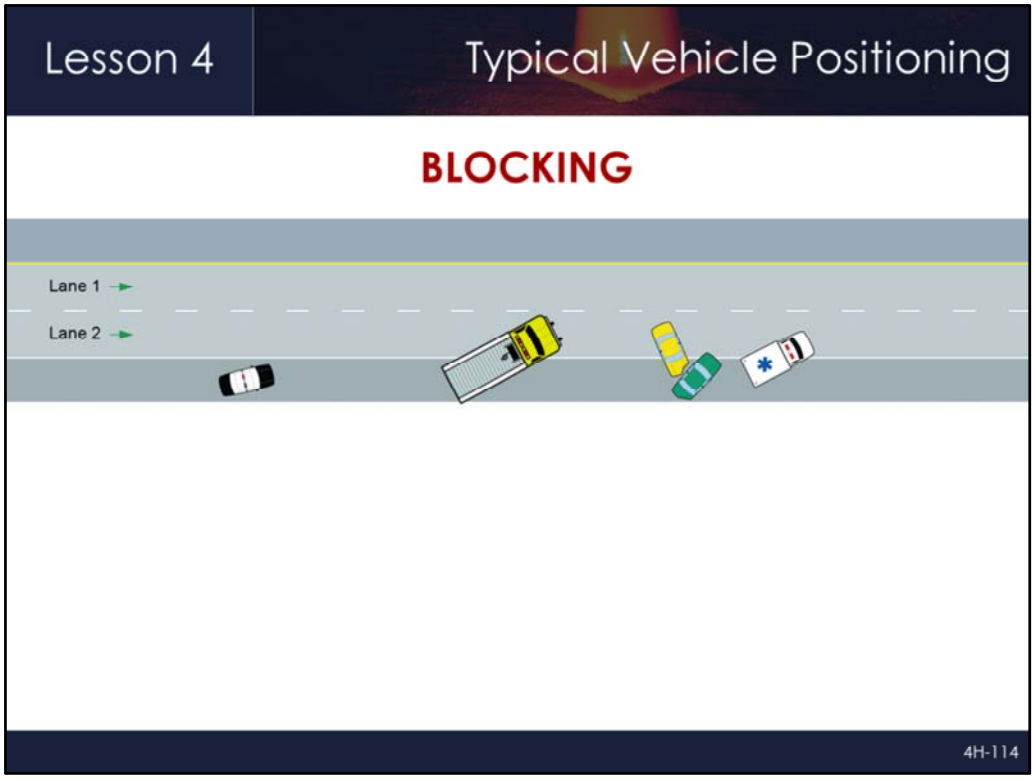
Lesson Objective: 4.2	Full Version Reference Slide: 4-50

- Fire not there? What about a Caltrans attenuator truck?



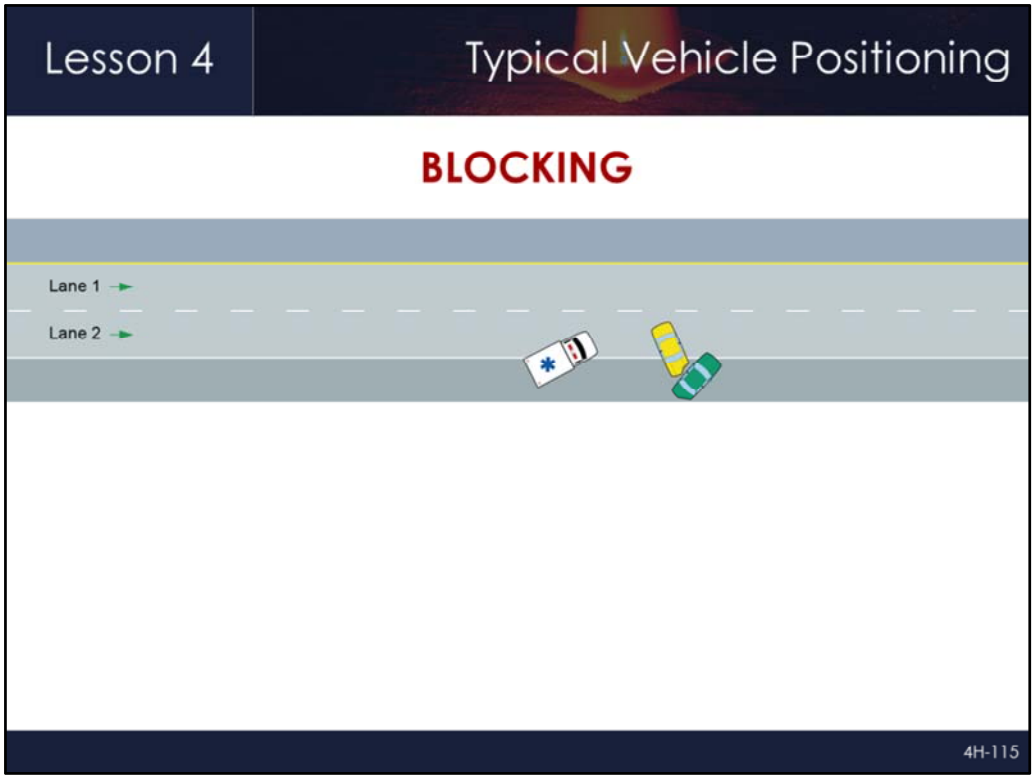
Lesson Objective: 4.2	Full Version Reference Slide: 4-50

- … or a Caltrans dump truck?



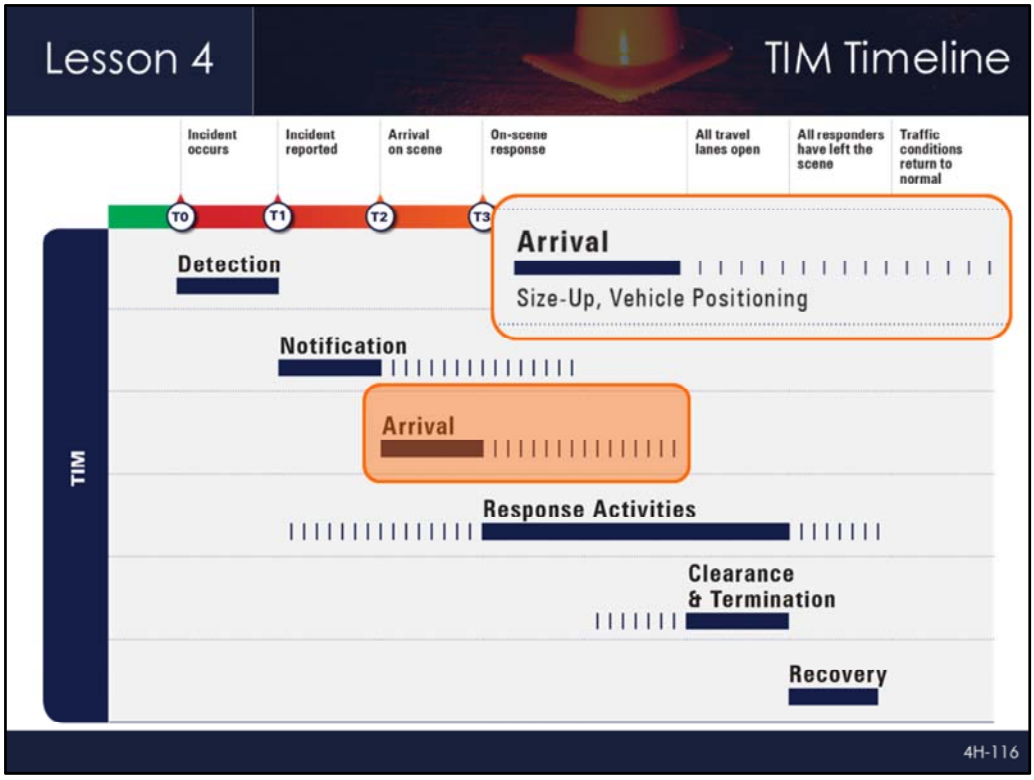
Lesson Objective: 4.2	Full Version Reference Slide: 4-50

- … a large tow truck?



Lesson Objective: 4.2	Full Version Reference Slide: 4-50

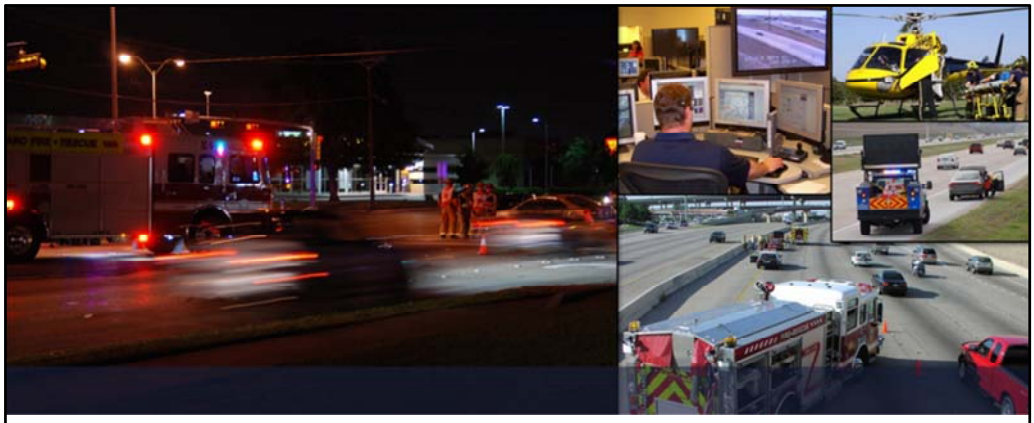
- Any responder vehicle blocking is better than nothing. Reposition vehicles as they arrive to maximize safety and protection of victims, responders, and the public.



TIM Timeline	Full Version Reference Slide: 4-54

- **Animation:** Click forward to make orange box appear and then click again to bring up detailed view of Arrival

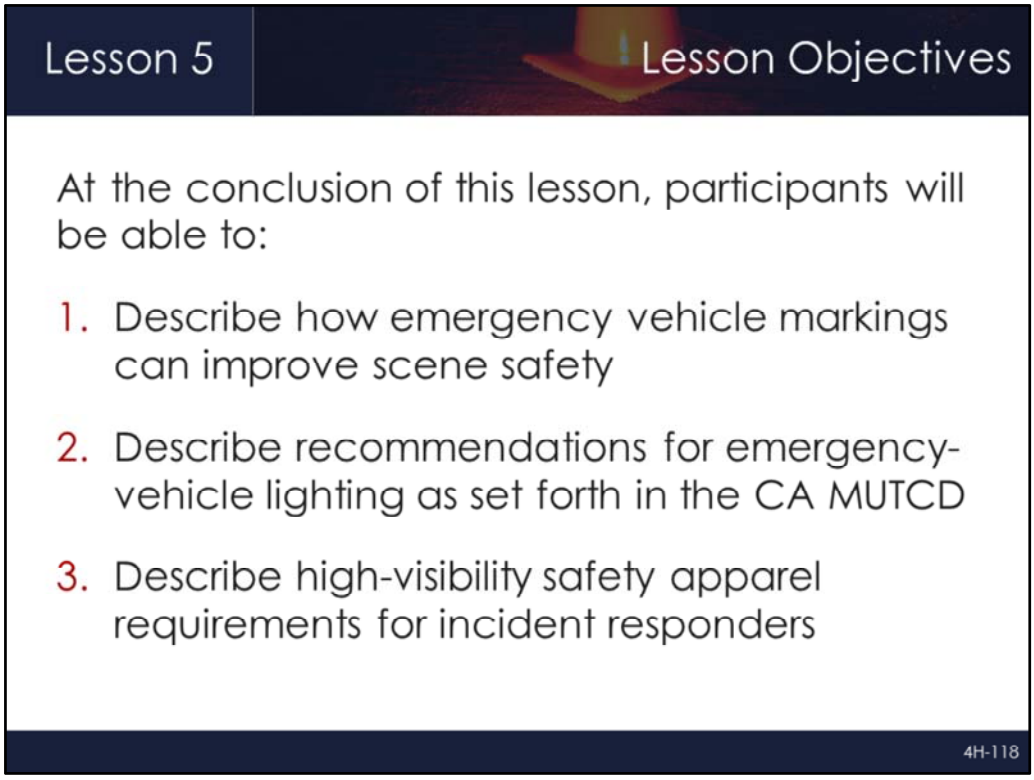
- **Ask/Discuss:** How does safe vehicle positioning impact the TIM Timeline?
  - Making the correct Move It or Work It decision can significantly reduce incident duration
  - Correct vehicle positioning and the use of Lane +1 when required can actually reduce clearance times



Lesson 5:
Scene Safety

4H-117

Lesson 5	Full Version Reference Slide: 5-1



Lesson Objectives	Full Version Reference Slide: 5-2

Lesson Objective: 5.1	Full Version Reference Slide: 5-3

- Making responder vehicles more visible improves safety by reducing the chances they will be hit at incident scenes
- The term conspicuity refers to the ability of a vehicle to draw attention to its presence, even when other road users are not actively looking for it
- The Emergency Vehicle Lighting and Conspicuity Study was published in 2009 and is available online
    - Study reports on research done by the Federal Emergency Management Agency (FEMA) and the US Fire Administration (USFA) with support from the US Department of Justice (DOJ) and the National Institute of Justice (NIJ)
- Markings are referred to as passive treatments that complement emergency lighting
- Contrasting colors make the vehicle stand out
- Fluorescent colors increase daytime visibility
- Retro-reflective materials maximize nighttime visibility

Lesson Objective: 5.1	Full Version Reference Slide: 5-4

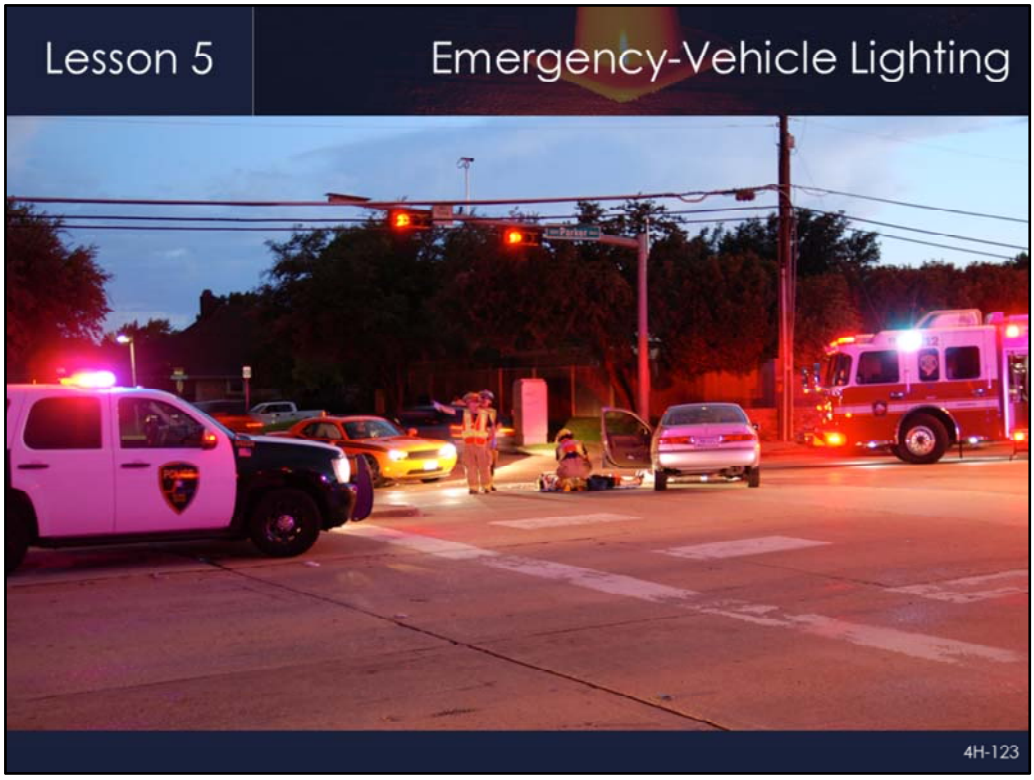
- National Fire Protection Association (NFPA) Standard 1901 governs the application of retro-reflective markings on fire apparatus
- NFPA 1901 is the Standard for all automotive fire apparatus built on or after January, 2009
- Standard requires 50% of the rear of the fire vehicle have minimum 6 inch striping placed at 45 degree angle down and away from centerline
- Striping pattern is referred to as chevrons
- Standard requires red, yellow, or hi-visibility green/yellow
- Additional new NFPA Standard 1917, released in 2013, includes similar retro-reflective striping requirements for ambulances
- There is no standard for other disciplines; law enforcement vehicles, DOT vehicles, Safety Service Patrol vehicles, or towing and recovery vehicles

Lesson Objective: 5.1	Full Version Reference Slide: 5-7

- Unlike fire apparatus and ambulances, there is no standard for law enforcement vehicle markings in the United States
- Increasingly, police departments are using high-visibility markings on their vehicles
- Pictured is a patrol car with contour markings to silhouette the outline of the vehicle when viewed from the side
- The Emergency Vehicle Lighting and Conspicuity Study acknowledged that law enforcement vehicles may have a need for stealth
- Recommendation for law enforcement is to concentrate markings on the rear of the vehicle
- Challenge for law enforcement are vehicle contours, large rear glass surface area, and minimal vertical surfaces on the rear of vehicles

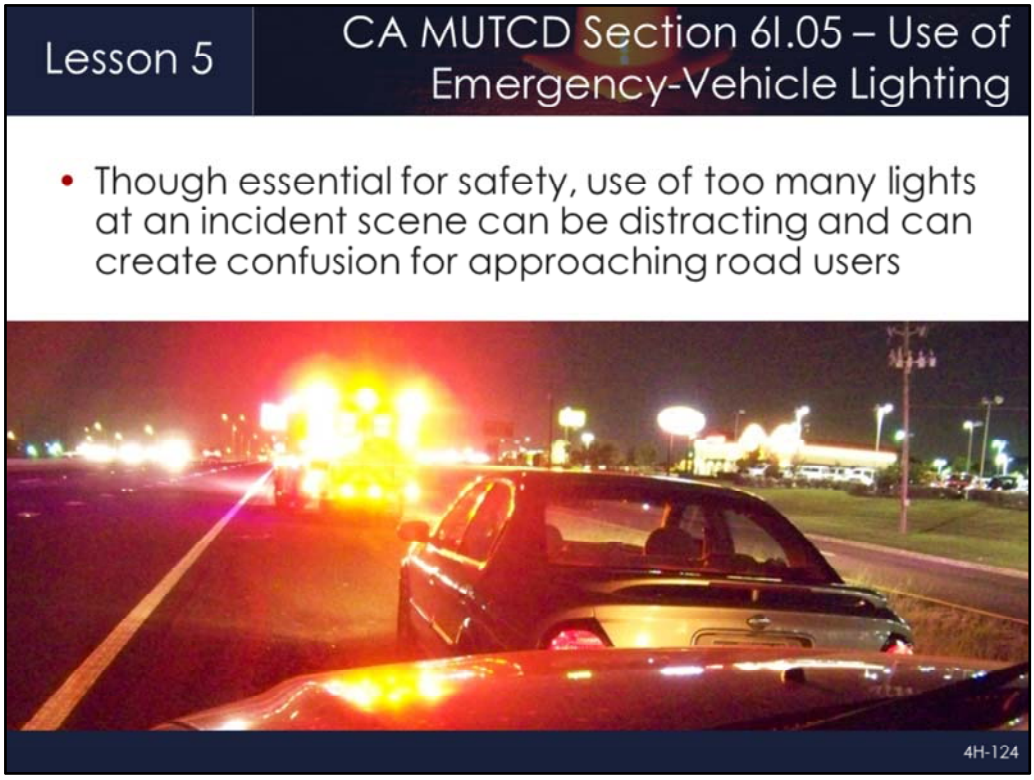
Lesson Objective: 5.1	Full Version Reference Slide: 5-8

- Retro-reflective markings increase nighttime conspicuity
- Highlight the large lettering billboard effect and the addition of red reflective material next to the taillights
- New lettering, chevrons, and red reflective materials were a vast improvement over the older markings shown on the right
- According to research, however, the use of high-visibility red, green, or yellow/green fluorescent colors is essential to daytime conspicuity



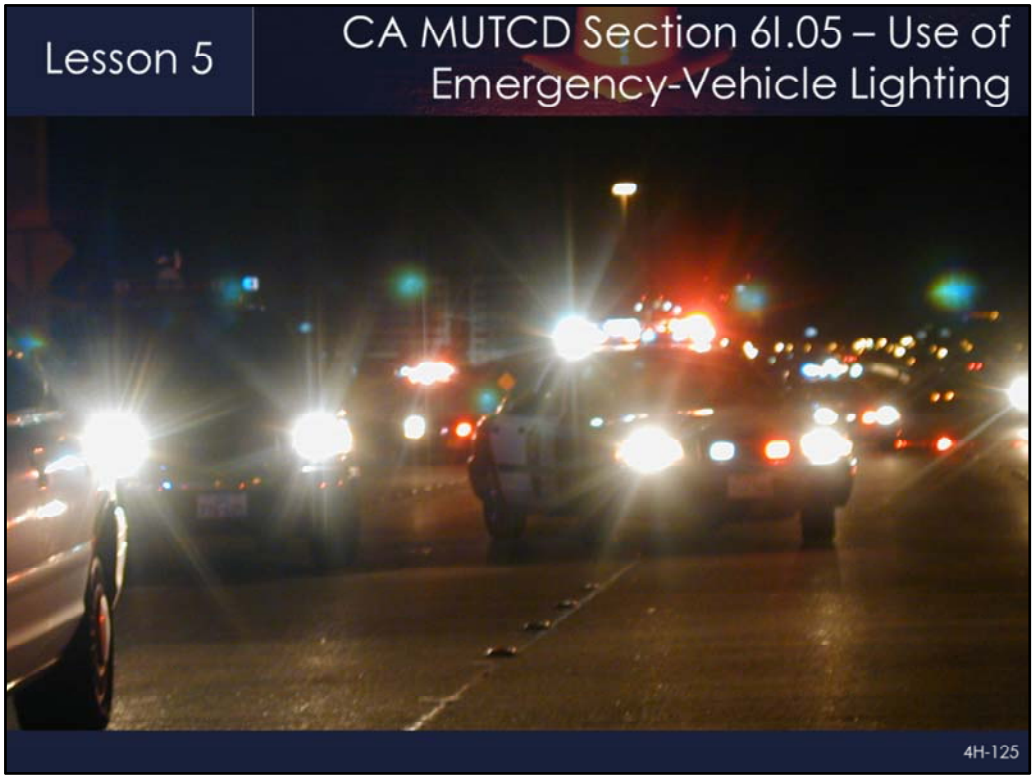
Lesson Objective: 5.2	Full Version Reference Slide: 5-10

- CA MUTCD Section 6I.05 specifically covers the use of emergency-vehicle lighting and states:
  - The use of emergency-vehicle lighting (such as high-intensity rotating, flashing, oscillating, or strobe lights) is essential, especially in the initial stages of a traffic incident, for the safety of emergency responders and persons involved in the traffic incident, as well as road users approaching the traffic incident



Lesson Objective: 5.2	Full Version Reference Slide: 5-11

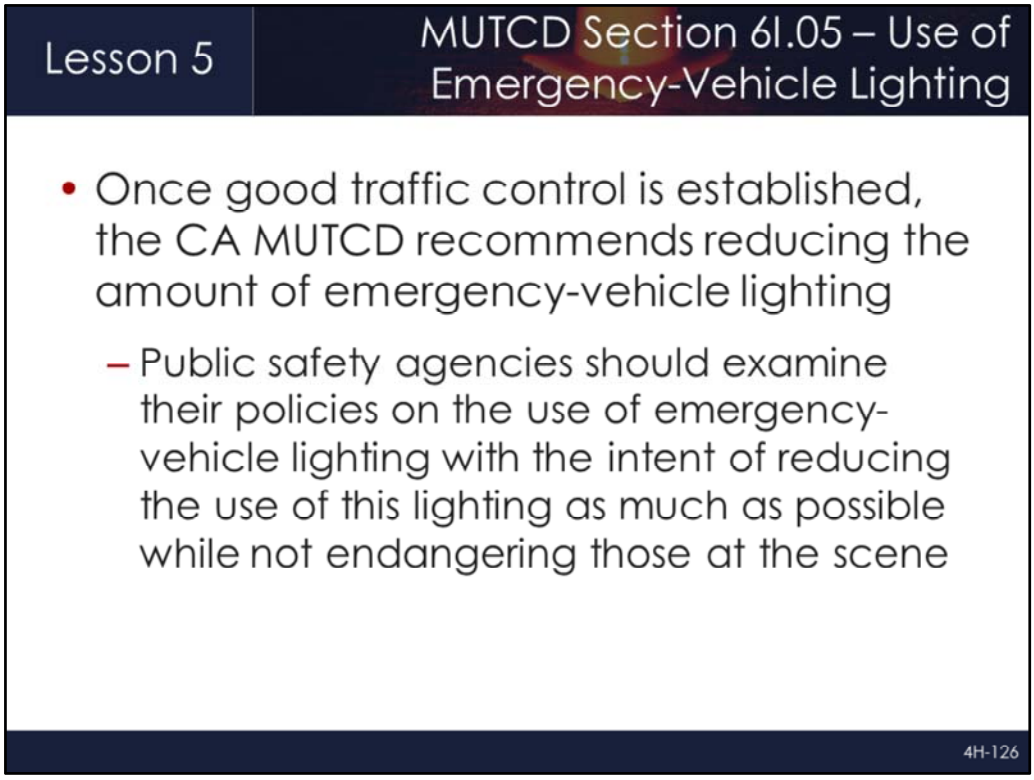
- Emphasize here that more is not always better where emergency lighting is concerned
- Too many lights can be distracting or even worse blinding to approaching motorists
- Lighting technology has advanced significantly in recent decades
- LEDs make more efficient and compact units for public safety applications
- The CA MUTCD specifically states that emergency-vehicle lighting provides warning only and provides no effective traffic control
    - Most lighting has the effect of *look at me* or *watch out, I am here* rather than guiding approaching drivers
- Vehicle lighting needs to warn drivers but not overload their senses
- Some red and blue emergency lights are beneficial to promote warning and Move Over Law compliance
- Reducing some lights when multiple responders are on scene eliminates a blinding effect
- According to the Emergency Vehicle Lighting and Conspicuity Study, there is no research to support the *moth* effect where drivers are drawn into lights



Lesson Objective: 5.2	Full Version Reference Slide: 5-13

- CA MUTCD Section 6I.05:
  - The use of too many lights at an incident scene can be distracting and can create confusion for approaching road users (and other responders), especially at night
- Reducing forward-facing lights is another important part of TIM
- Forward-facing lights distract traffic traveling in the opposite direction and create rubbernecker delays
- Forward-facing lights can blind opposite direction vehicles
- Forward-facing lights contribute to secondary crashes on opposite direction travel lanes
- Most modern lighting systems allow forward lights to be turned OFF – ask participants if their agency has any vehicles that are not equipped with that capability
- CA MUTCD Chapter 6-I recommends reducing the amount of lighting at the incident scene, while maintaining safety. If good traffic control is established through placement of advance warning signs and traffic control devices to divert or detour traffic, public safety agencies can perform their tasks on scene with minimal emergency-vehicle lighting.
- Emergency-vehicle lighting is meant for warning only, providing no effective traffic control. In fact, the use of too many lights can actually create dangerous situations by distracting drivers so they slow down and create a hazardous situation.
- The basic guidelines for turning off emergency flashing lights include:
  - When the emergency vehicle is outside and farther away from the travel lanes.
  - When multiple response vehicles are parked at the incident scene, turn off the overhead flashers on

all the vehicles except for the rear and front vehicles furthest upstream emergency vehicles.



Lesson Objective: 5.2	Full Version Reference Slide: 5-14

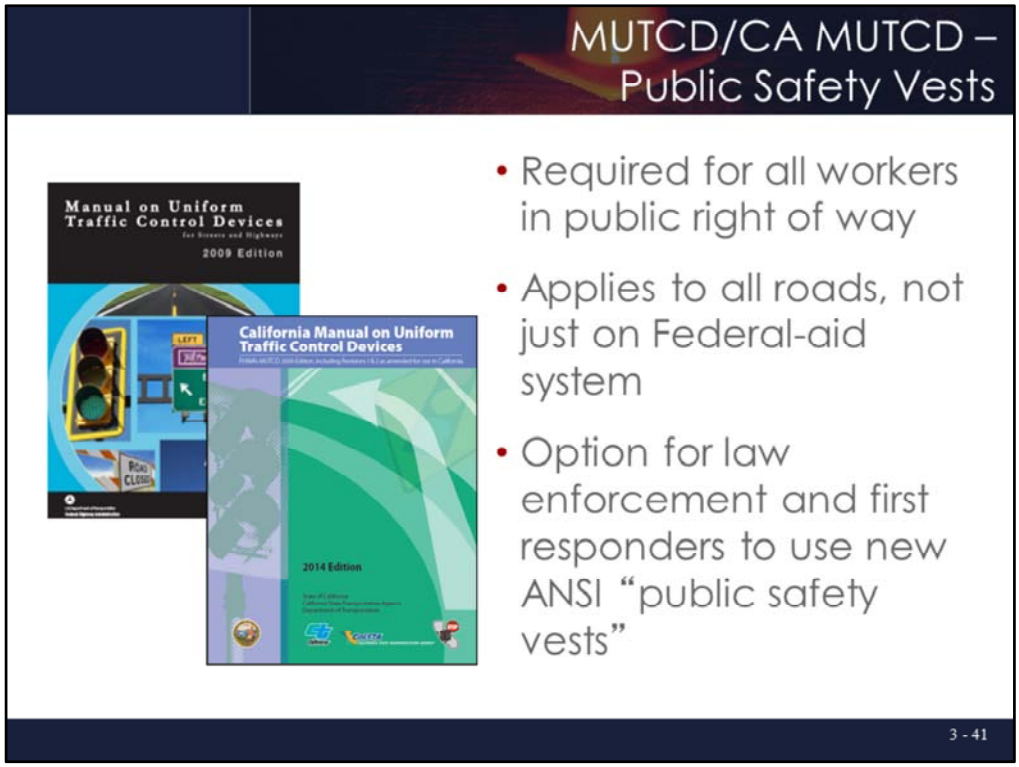
- CA MUTCD Section 6I.05 (continued):
  - The use of emergency-vehicle lighting can be reduced if good traffic control has been established at a traffic incident scene
- When multiple responder vehicles are present, only the rear-most(upstream) vehicles and blocking vehicles should continue the use of emergency (warning) lights after appropriate traffic control is in place
- Policy guidance might include:
  - Reducing the use of emergency-vehicle lighting as much as possible while not endangering those at the scene
  - Reducing or extinguishing forward facing emergency-vehicle lighting, especially on divided roadways, to reduce distractions to oncoming road users
  - Vehicle headlights, any floodlights or vehicle headlights that are not needed for illumination, or to provide notice to other road users of an incident response vehicle being in an unexpected location, should be turned off at night
- To support the recommendations set forth in the MUTCD, agencies should also consider installing day/night or high/low power switches on LED and strobe bars

On-Scene Emergency Lighting

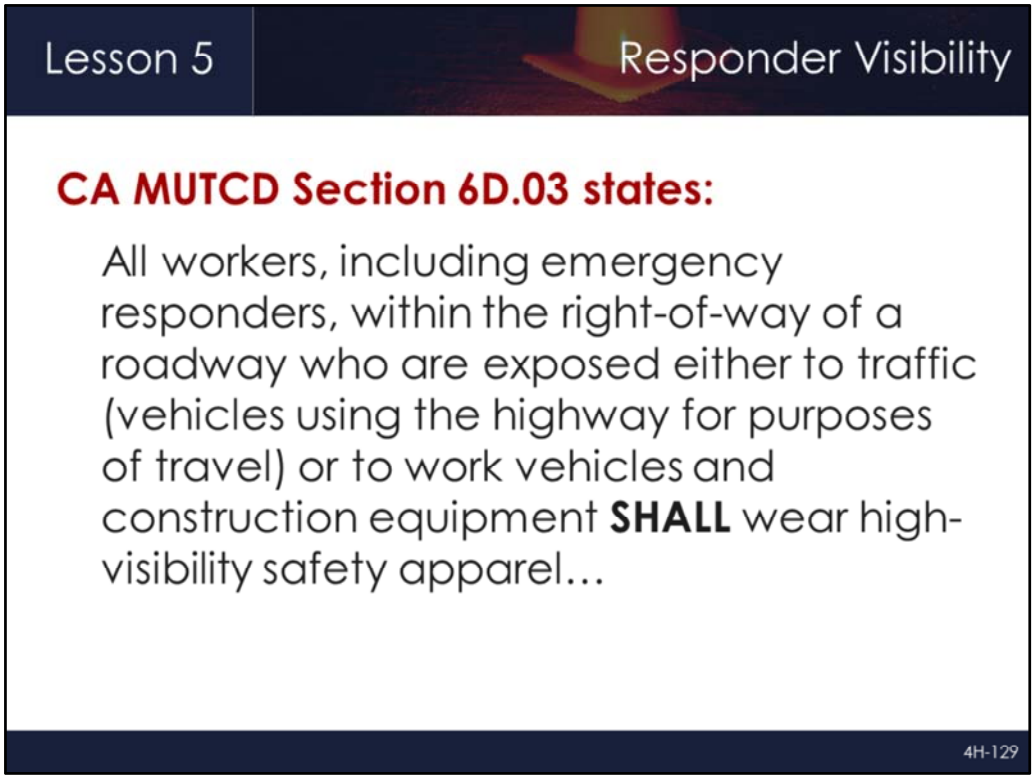
- Though essential for safety, use of too many lights at an incident scene can be distracting and can create confusion for approaching road users
- Once good traffic control is established, CA MUTCD Chapter 6-I recommends reducing the amount of lighting

3 - 37

- Describe briefly (review) what the CA MUTCD is and where it can be found. http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ Describe briefly that extensive research on emergency lighting has been conducted and the results are not definitive but do indicate that some drivers are attracted to emergency lights, especially at night and especially in certain circumstances: low visibility, nighttime, when drivers are fatigued, impaired, etc.
- The CA MUTCD recommends reducing emergency lighting to that which is necessary to secure the scene. Lighting that is facing unaffected traffic or otherwise unnecessary can be distracting and create confusion.



- The CA MUTCD is different from the federal regulation in that it applies to all roads. California adopted the CA MUTCD which has substantial compliance with the CA MUTCD on January 13, 2012.
- CA MUTCD requires use of proper reflective vests, the next slide describes types of vests.



Lesson Objective: 5.3	Full Version Reference Slide: 5-17

- As discussed previously, the CA MUTCD applies to all streets and highways open to public travel
- This requirement applies to all incident responders, including, but not limited to:
  - Law enforcement
  - Fire
  - EMS
  - Towing and recovery
  - Medical examiner/Coroner
  - Local/county/state maintenance and transportation officials
  - Insurance investigators
  - Traffic engineers
  - Media personnel
- The Code of Federal Regulations (23 CFR Part 634) implemented a high-visibility safety apparel requirement for Federal Aid Highways in November of 2008
- The 2009 Federal MUTCD supersedes 23 CFR and applies the high-visibility safety apparel requirement to all roadways

Lesson Objective: 5.3	Full Version Reference Slide: 5-20

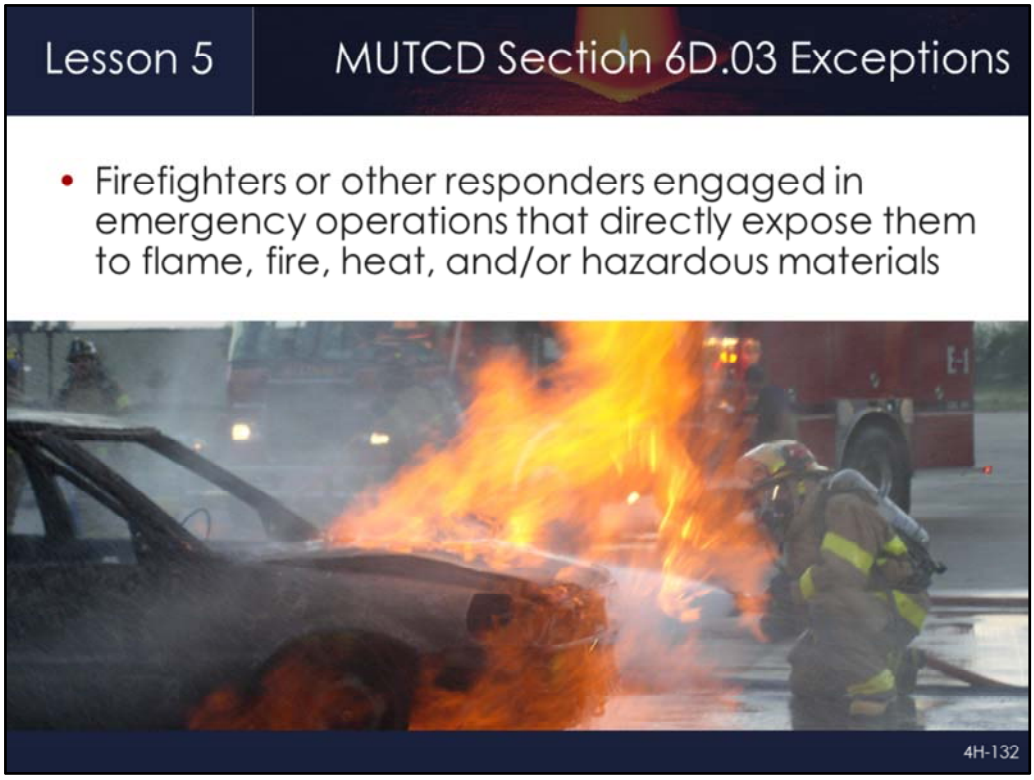
- **Prop:** Recommend having examples of Class II, Class III, and Public Safety (with breakaway) vests

- High-visibility safety apparel examples (from left): Class II-107 vest, Class III-107 vest, pant, and Class II-207 Public Safety Vest
- Each class of vest has different requirements for the amount of reflective material and coverage of the garment, i.e. sleeves, width of reflective stripes, reflective material location, etc.
- The ANSI/ISEA 207 Public Safety Vest is shorter in length to allow access to the gun belt
- In addition to the items shown here, ANSI-compliant jackets and coats are also available and acceptable for use by responders
- ANSI-compliant garments must have a permanently affixed label with the Class II or Class III, 107 or 207 reference
- Class I vests are not allowed for TIM response under any circumstances
- The typical vest useful life depends on the type of work an individual performs while wearing the vest
- Vests, when worn, must be visible up to 1000 feet day or night to be compliant with the ANSI Standard

Lesson Objective: 5.3	Full Version Reference Slide: 5-23

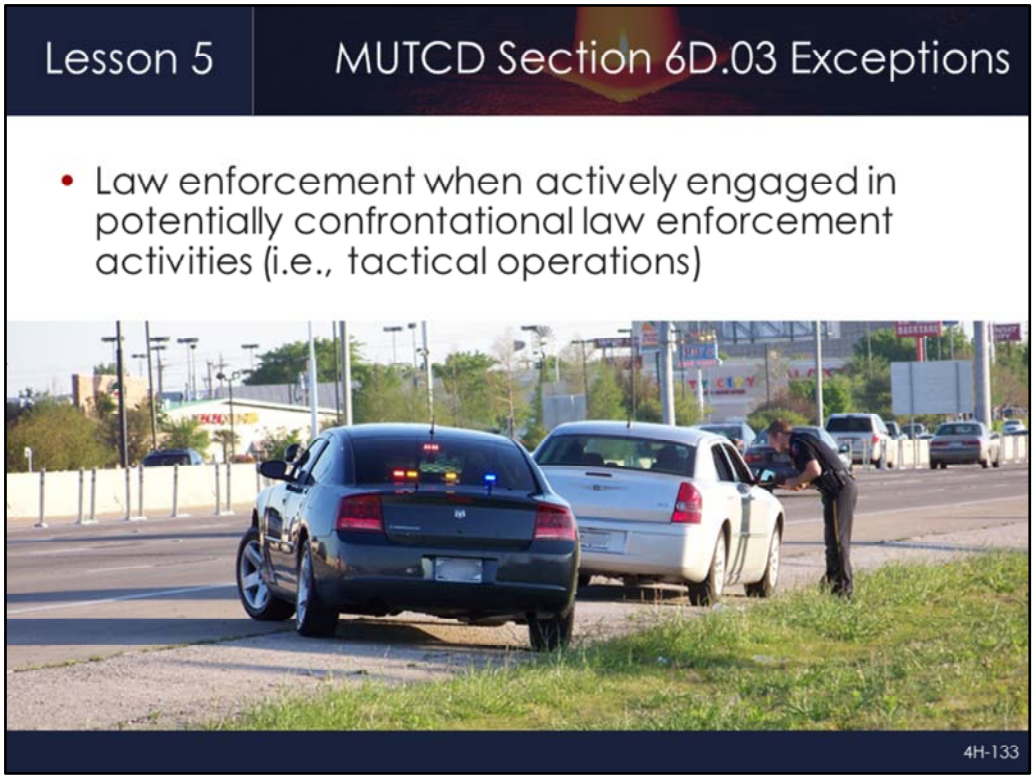
- **Animation:** Click forward to make the text box appear

- The ANSI 207 standard includes basic requirements such as vest dimensions, color, and materials performance
- The five-point breakaway function is also available for ANSI 107 and 207 standard vests **[Demo if vest is available]**
- Vests may also have badge holders, pen holders, microphone holders, and other accessories beneficial to responders



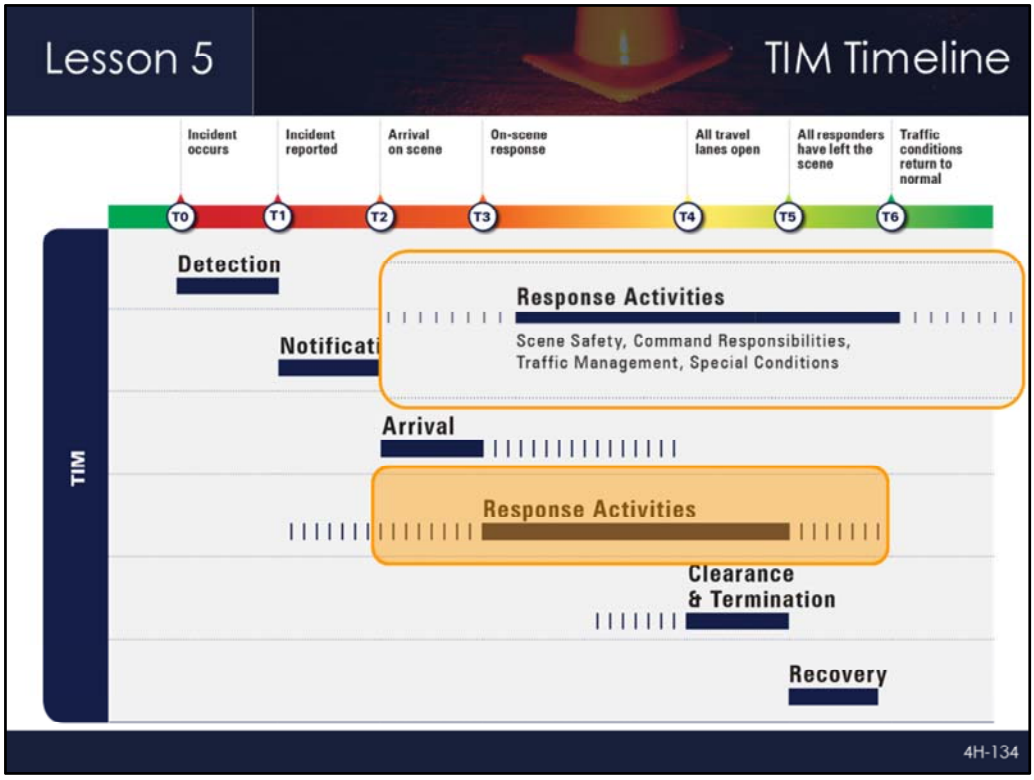
Lesson Objective: 5.3	Full Version Reference Slide: 5-25

- Firefighters are exempt from MUTCD high-visibility safety apparel requirements when they are engaged in any activity that directly exposes them to flame, fire, heat and/or hazardous materials
- Other firefighters on the scene, such as the pump operator and the supervising officer, are required to comply with the requirement if not exposed to fire, etc.



Lesson Objective: 5.3	Full Version Reference Slide: 5-26

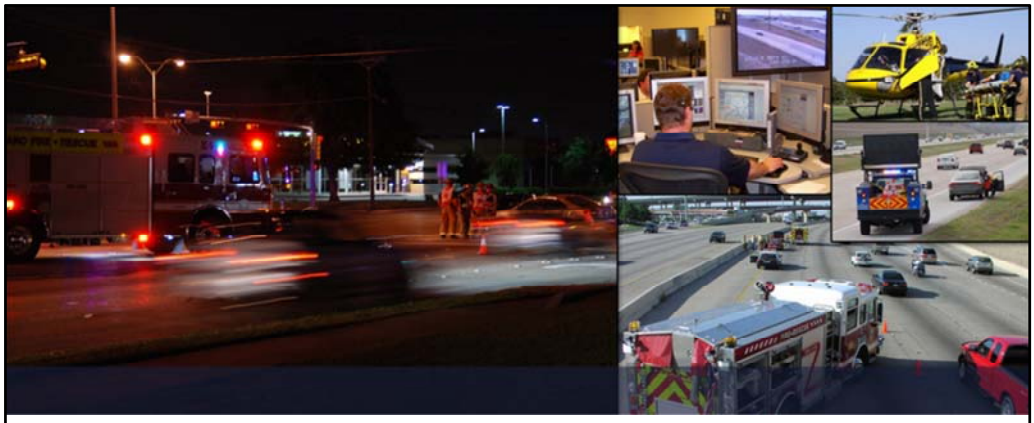
- Law enforcement personnel are exempt from CA MUTCD high-visibility safety apparel requirements when engaged in potentially confrontational law enforcement activities such as traffic stops and searches, but are required to wear high-visibility apparel any other time they are afoot near a roadway:
    - Directing traffic
    - Investigating crashes
    - Handling lane closures, obstructed roadways, or disasters



TIM Timeline	Full Version Reference Slide: 5-29

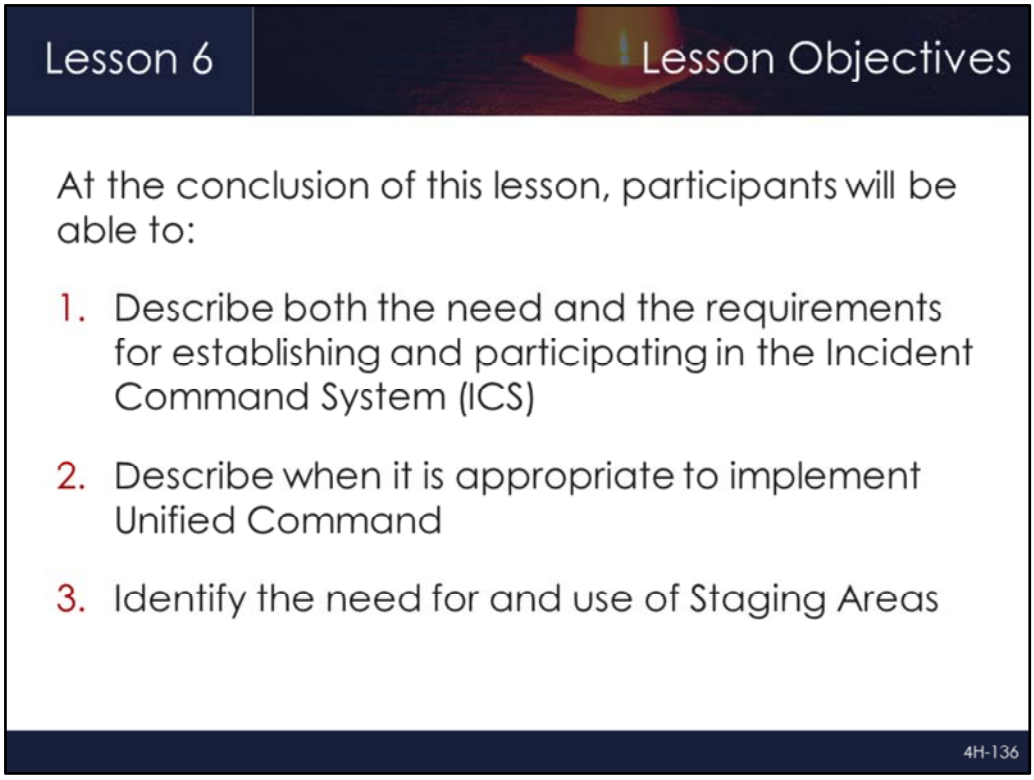
- **Animation:** Click forward to make orange box appear and then click again to bring up detailed view of Response Activities

- **Ask/Discuss:** How do emergency vehicle markings and emergency-vehicle lighting impact the TIM Timeline?
    - Highlight that scene safety is a critical and required component of effective TIM

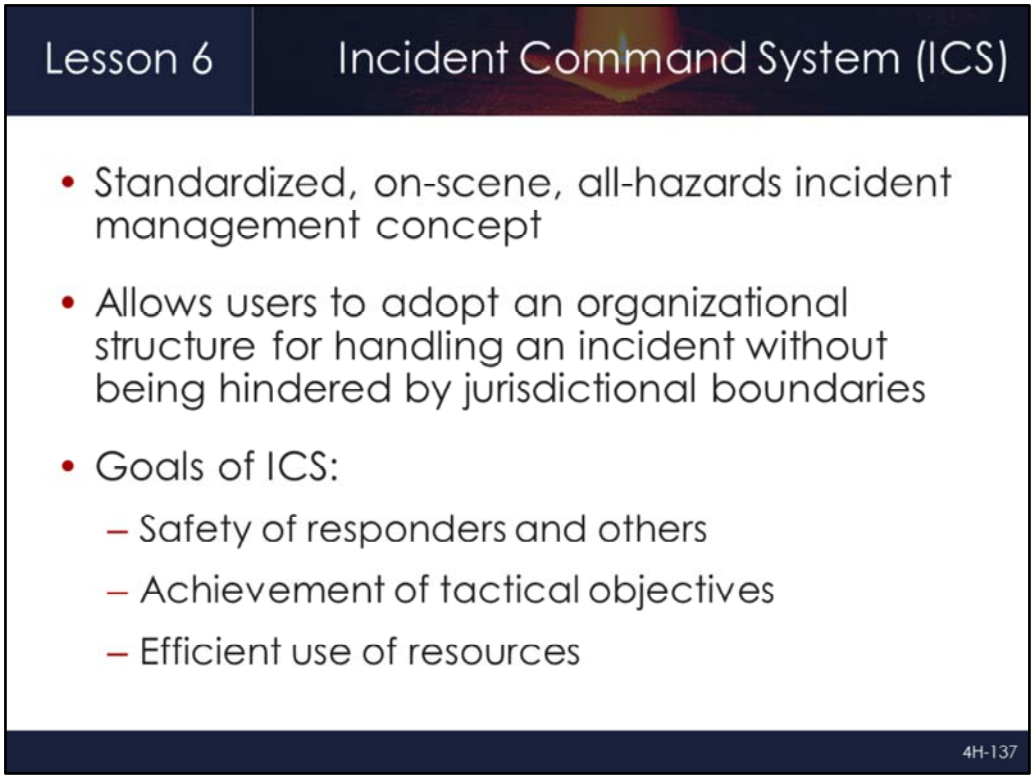


Lesson 6: Command Responsibilities

4H-135

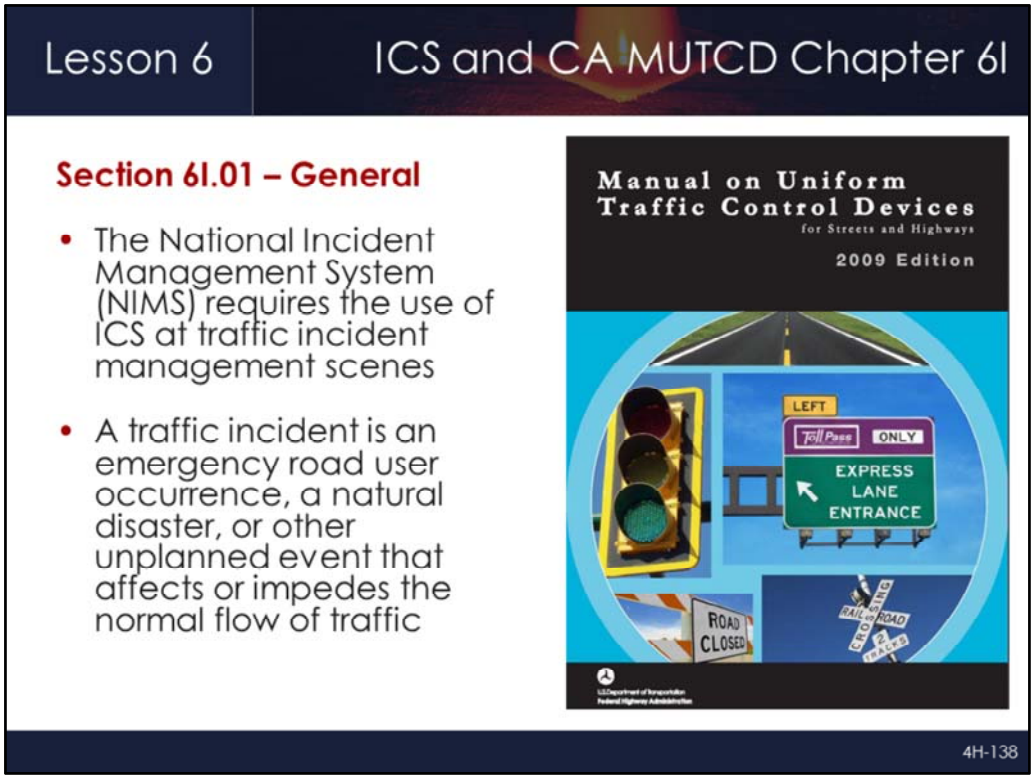


Lesson Objectives	Full Version Reference Slide: 6-2



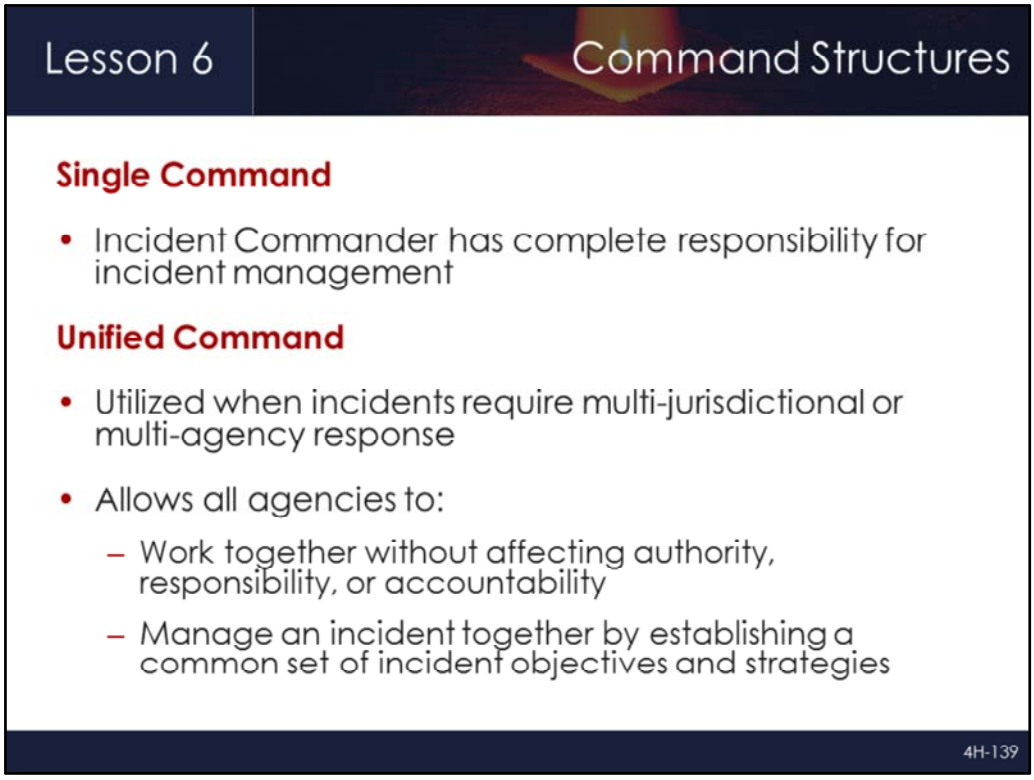
Lesson Objective: 6.1	Full Version Reference Slide: 6-3

- Clearing incidents safely and quickly depends on developing coordinated, multi-agency operations that are supported by integrated communications
- Coordination comes when all responders from all disciplines are trained and can effectively operate under the ICS at highway incidents
- Like the NASCAR Pit Crew analogy, everyone works together under a coordinated system, knowing their role plus understanding the roles of their team members



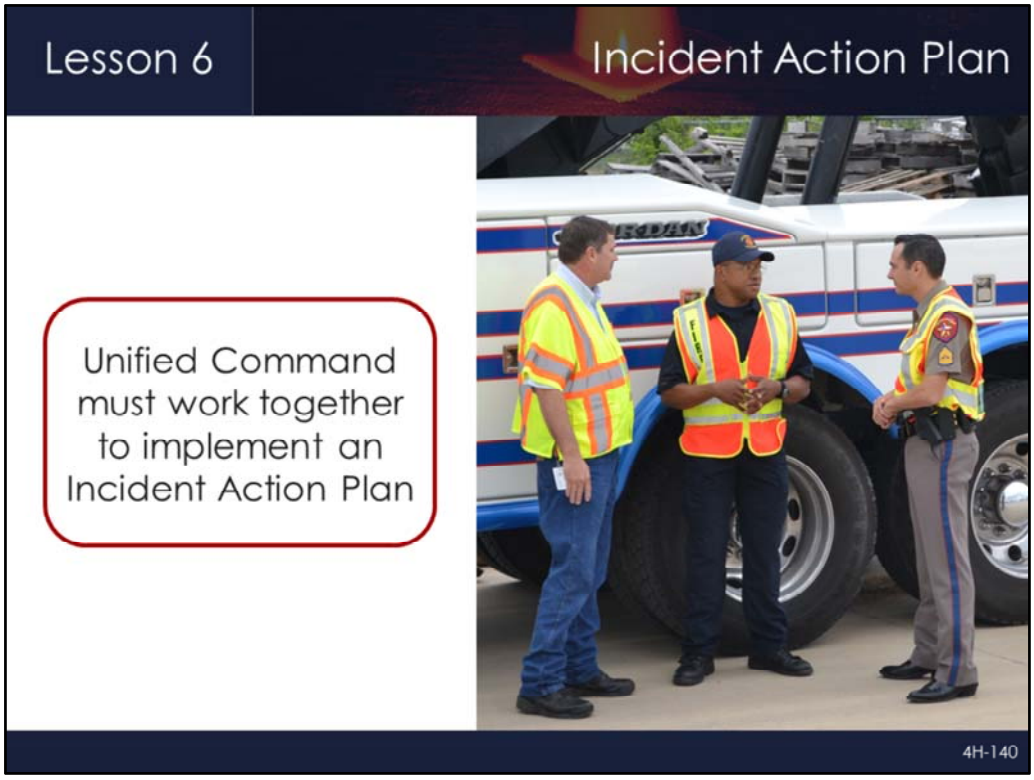
Lesson Objective: 6.1	Full Version Reference Slide: 6-4

- The NIMS requirement that ICS be used at traffic incident scenes is emphasized in MUTCD Section 6I.01
- The National TIM Responder training course assumes that participants have already taken ICS 100, 200, and IS 700
- The material in Lesson 6 is intended to simply be a review of the fundamental ICS information presented in these three online courses



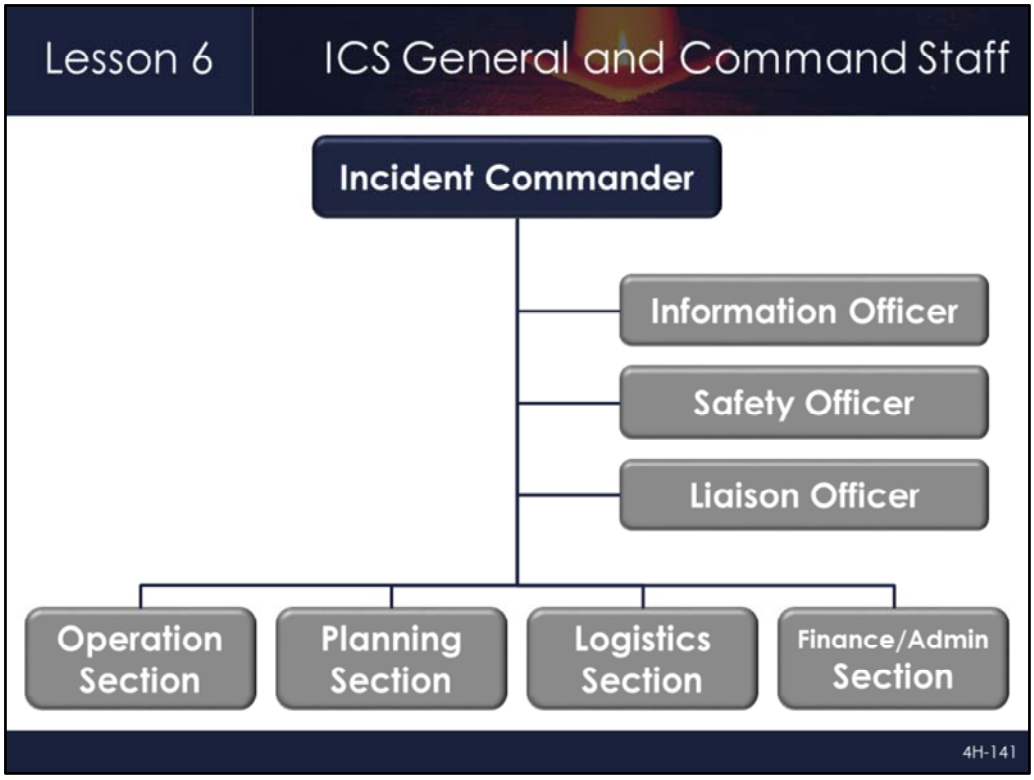
Lesson Objective: 6.2	Full Version Reference Slide: 6-6

- When one individual is designated as Incident Commander, or the IC, that person represents the Single Command concept
- Unified Command is a joint management and authority structure in which the role of Command is shared by two or more individuals
    - Unified Command typically is fulfilled by a team of individuals already having authority within their discipline or responding agency
    - Allows responding agencies and/or jurisdictions with responsibility for the incident to share incident management
    - May be needed and is most appropriate for major incidents involving multiple agencies



Lesson Objectives: 6.1 and 6.2	Full Version Reference Slide: 6-7

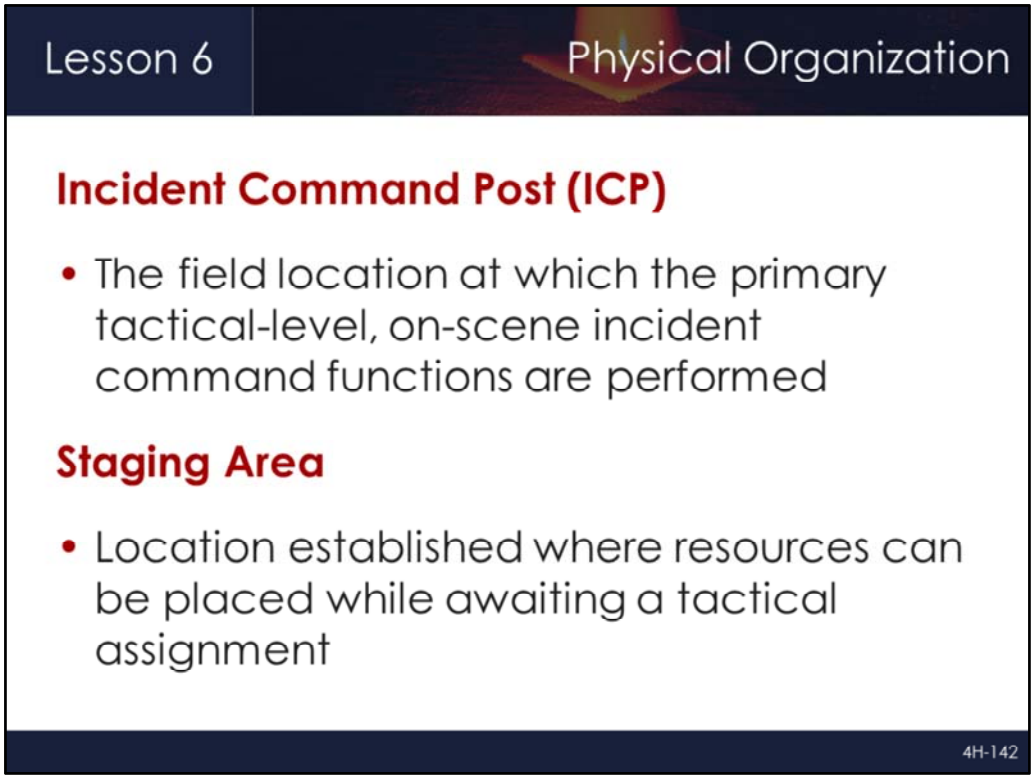
- Incident Action Plans (IAPs) are developed to identify tactical objectives and identify:
  - How the objectives will be accomplished
  - The resources needed to achieve those objectives
- IAPs are often unwritten in small-scale incidents and recorded in a written format during larger-scale incidents
- The IAP assigns resources to accomplish the tactical objectives and allots specified amounts of time to accomplish them
- After the IAP is developed, on-going size-up occurs so that the IAP can be modified as necessary
- The purpose of an IAP is to:
  - Record and document incident objectives
  - List and maintain a record of activities to be completed to address the objectives
  - Cover the operational period of an incident



Lesson Objectives: 6.1 and 6.2	Full Version Reference Slide: 6-8

- **Animation:** First click forward turns the Information Officer box red and the second click turns the Safety Officer box red

- The Command function is carried out by an Incident Commander or Unified Command
- The Incident Commander is supported by a Command Staff and a General Staff
- The Public Information Officer is responsible for: **[First click]**
    - Serving as the go-between for Command and the media
    - Relaying information on the incident and response efforts
- The Safety Officer: **[Second click]**
    - Is responsible for monitoring scene safety and developing preventative safety measures
    - Possesses the ability to immediately stop any action that is deemed hazardous, unsafe, or too high a risk
    - All responders must adhere to immediate direction/orders from the Safety Officer
    - The Incident Commander can over-ride the Safety Officer's orders after consultation with the Safety Officer and personnel involved in an action that was halted
- The leaders of the individual sections are know as the General Staff and individually as Section Chiefs (can be any agency organizational rank)
- Both the Command and General Staff report directly to the Incident Commander or Unified Command



Lesson Objective: 6.3	Full Version Reference Slide: 6-14

- Physical organization of a scene involves the establishment of a Traffic Incident Management Area, as well as an Incident Command Post, Staging Area(s), and diversion routes for larger-scale incidents
- The Incident Command Post is where the Incident Commander or those participating in a Unified Command operation are physically located at the incident scene
    - An Incident Command Post should be established when ICS is initiated
    - Initially, it can be inside a responder's radio-equipped vehicle
    - The Incident Command Post location should be communicated to responders as needed and clearly marked if possible
    - The Incident Commander/Unified Command team should be located at the Incident Command Post
- Staging Areas allow for the organization of personnel and equipment to be readied for immediate use at the incident scene
    - Holding incoming resources that are not actively involved in incident operations
    - Consideration should be given to the location and whether there is enough room for large response vehicles to easily enter or exit the staging area
- Staging Areas also allow for un-needed resources and/or personnel to immediately depart the scene and return to service

Lesson Objective: 6.1	Full Version Reference Slide: 6-17

- **Video:** L6_V1 - MO On-Scene Arrest.wmv

- Following is a synopsis of the video:
  - One of the LE Officers on the scene has an issue with where the fire engine has been parked and walks over to the engine and tells the FD driver to move
  - The FD driver refuses to move the engine because his Captain directed him to park within Lane 2
  - The LE Officer approaches the FD Captain who is working on getting the injured motorist out of the vehicle
  - The FD Captain tells the engine driver not to move the vehicle
  - This confrontational situation leads the LE Officer to place the FD Captain into custody while he is supporting the head of the patient

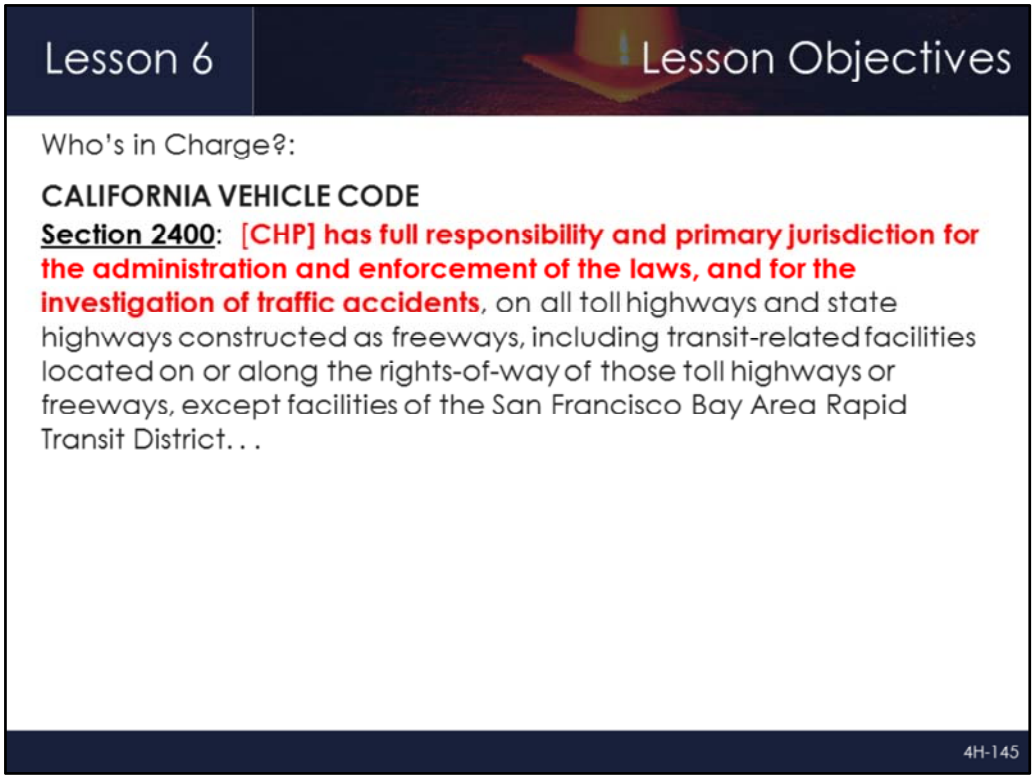
- **Ask/Discuss:** Was ICS followed?

- **Ask/Discuss:** If ICS had been used, how could this incident have turned out differently?

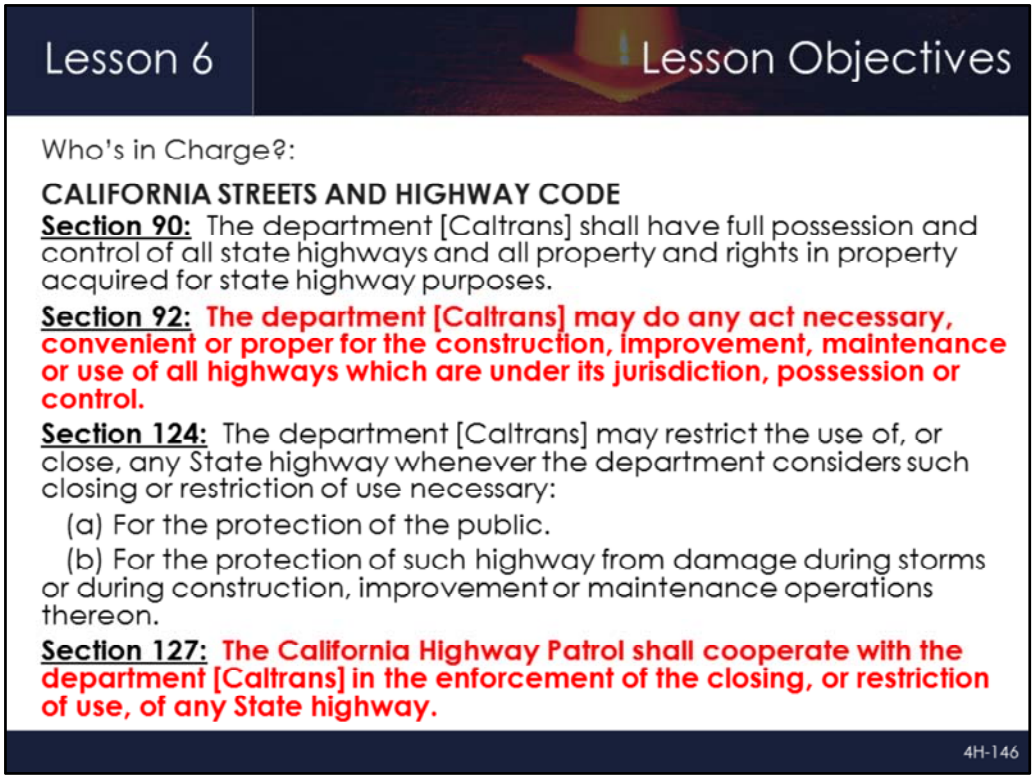
Lesson Objective: 6.1	Full Version Reference Slide: 6-18

- **Ask/Discuss:** In terms of both the second arriving LE unit and FD engine, was the positioning of these vehicles appropriate or could it have been improved? If so, how?
    - The FD engine could have parked behind the LE as there was already a Lane +1 block in place

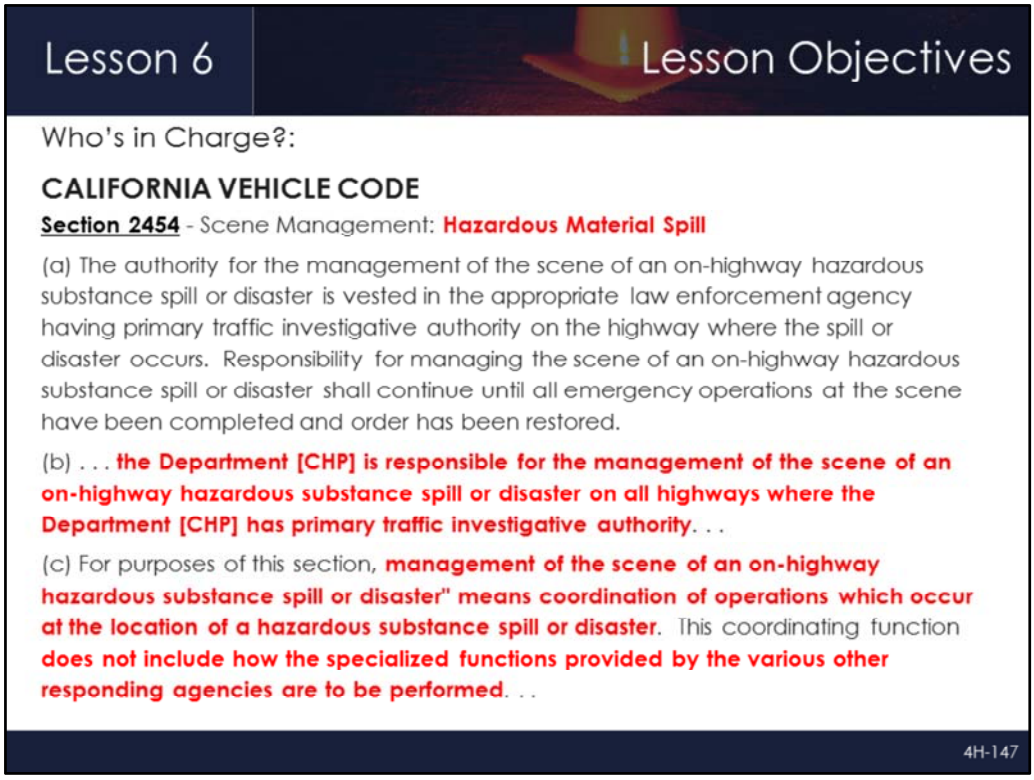
- Additional considerations:
    - The way the FD Captain exited the engine is unsafe, not a recommended practice, and violates common safety protocols within the Fire Service
    - There was a long running personality clash between the LE Officer and the FD Captain



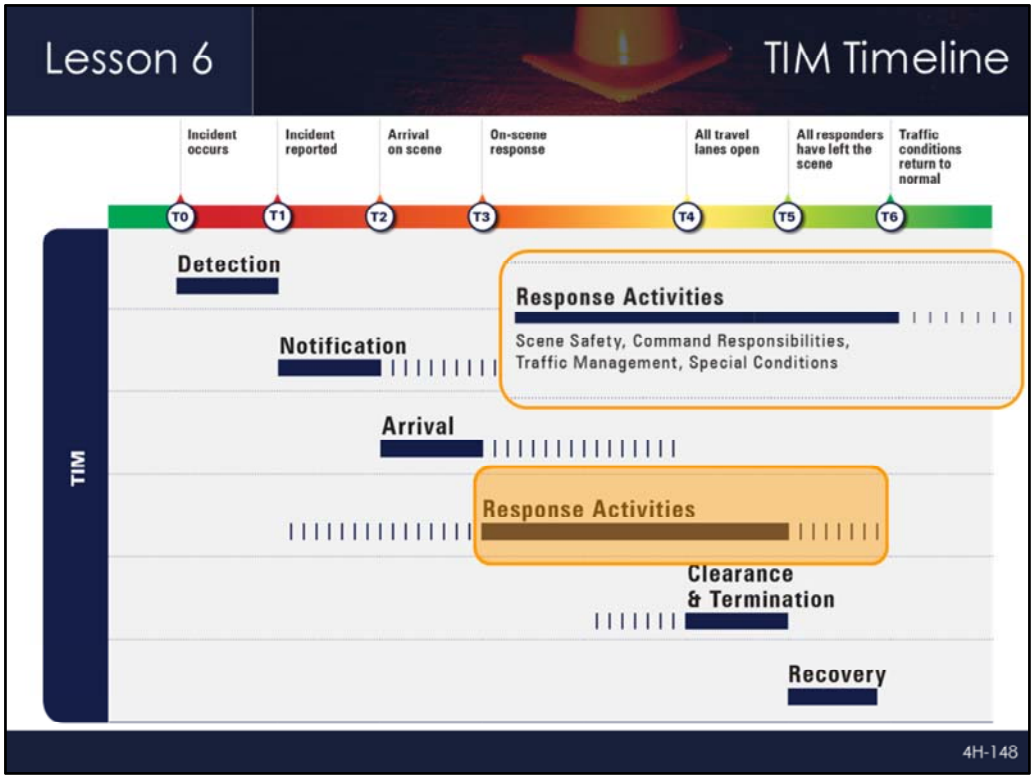
Lesson Objectives	Full Version Reference Slide: 6-2



Lesson Objectives	Full Version Reference Slide: 6-2



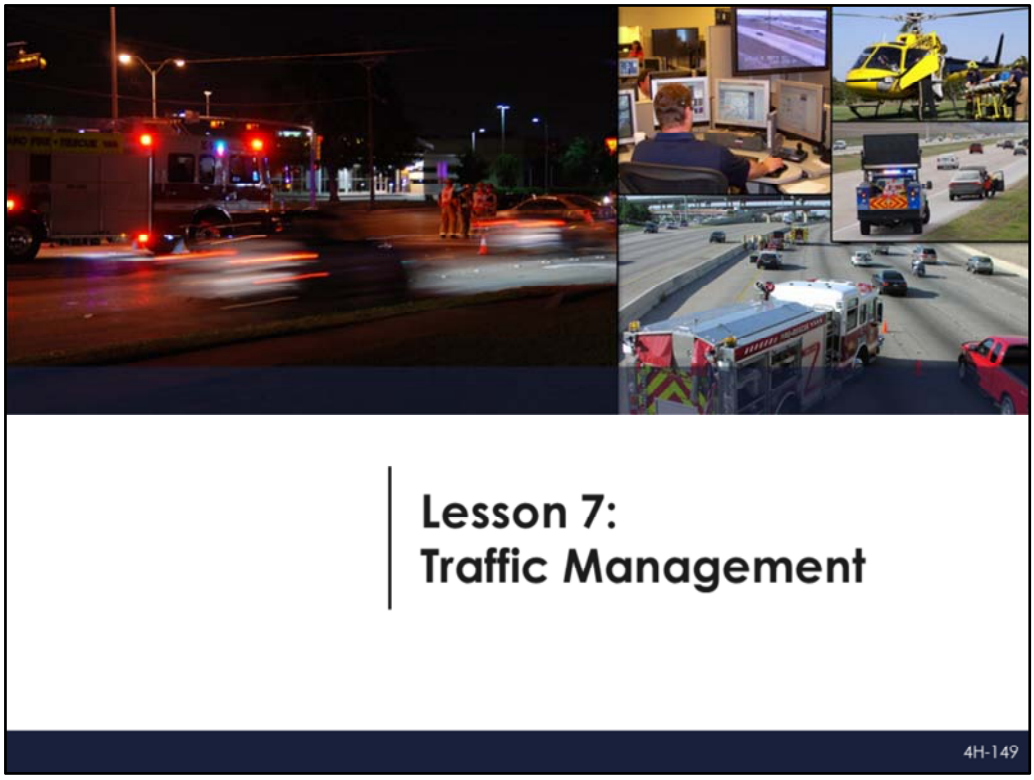
Lesson Objectives	Full Version Reference Slide: 6-2

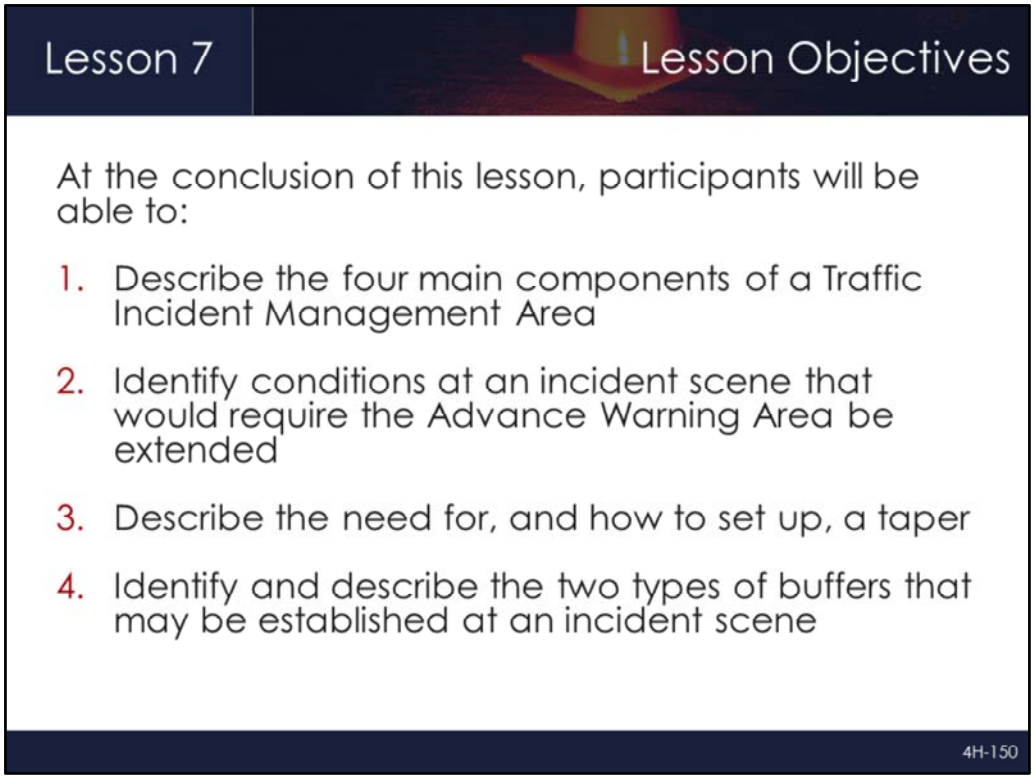


TIM Timeline	Full Version Reference Slide: 6-19

- **Animation:** Click forward to make orange box appear and then click again to bring up detailed view of Response Activities

- **Ask/Discuss:** How could the effective use of ICS impact the TIM Timeline?
  - Highlight that ICS should be established at every incident scene as soon as the first responder arrives on-scene


Lesson 7:
Traffic Management
4H-149



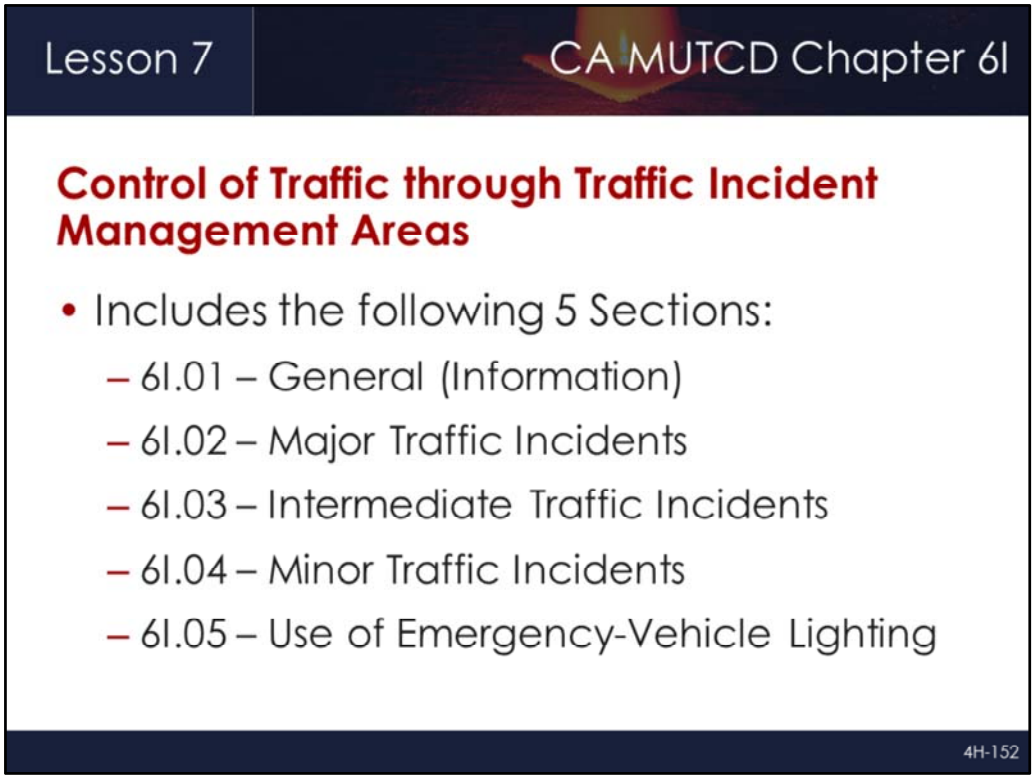
Lesson Objectives	Full Version Reference Slide: 7-2

Lesson Objective: --	Full Version Reference Slide: 7-3

- **Video:** L7_V1 - OH Struck-By.wmv

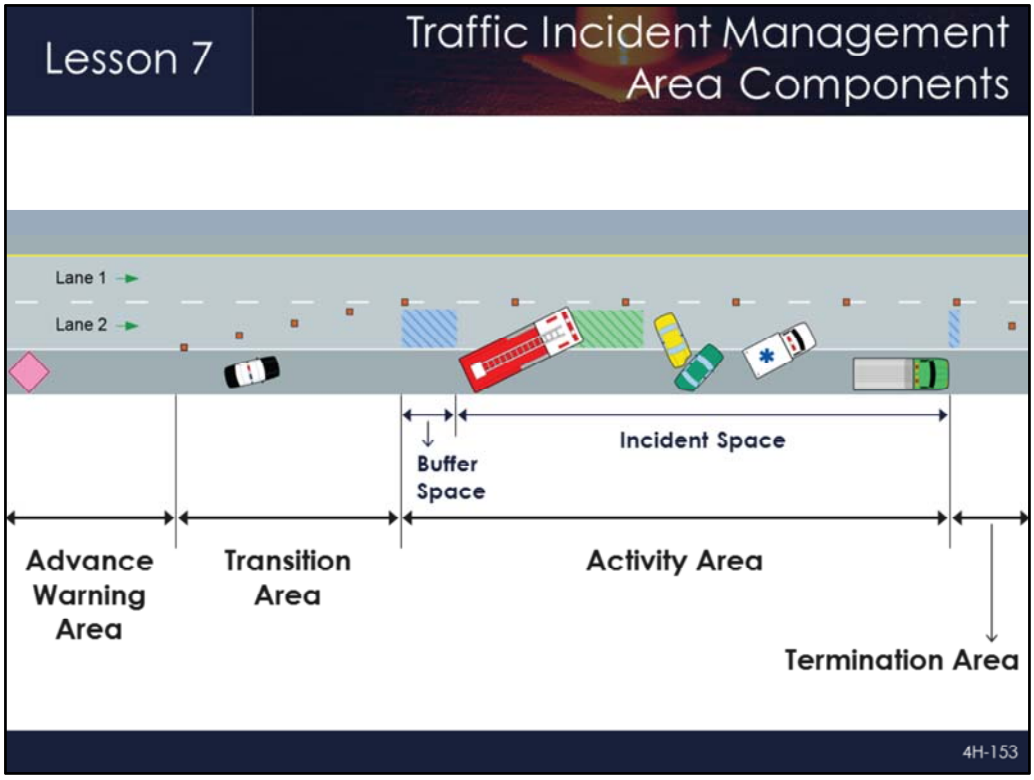
- **Ask/Discuss:** Debrief the video
  - As an introduction to this lesson, discuss the importance of using traffic control devices to establish a Traffic Incident Management Area

- Law enforcement dash cam video of a single vehicle crash in Dayton, OH
- March of 2013 at approximately 5:30 am, icy roads led to multiple crashes on US 35
- A fire crew is on the scene, as is another law enforcement vehicle on the inside shoulder in the opposite direction
- Captain Barry Cron narrowly avoided a secondary crash and while he was checking on the victim, a third vehicle struck the second vehicle and threw him 20 feet away
- Captain Cron suffered 3 broken ribs and a broken leg, but was thankful to be alive



Lesson Objective: 7.1 | Full Version Reference Slide: 7-5

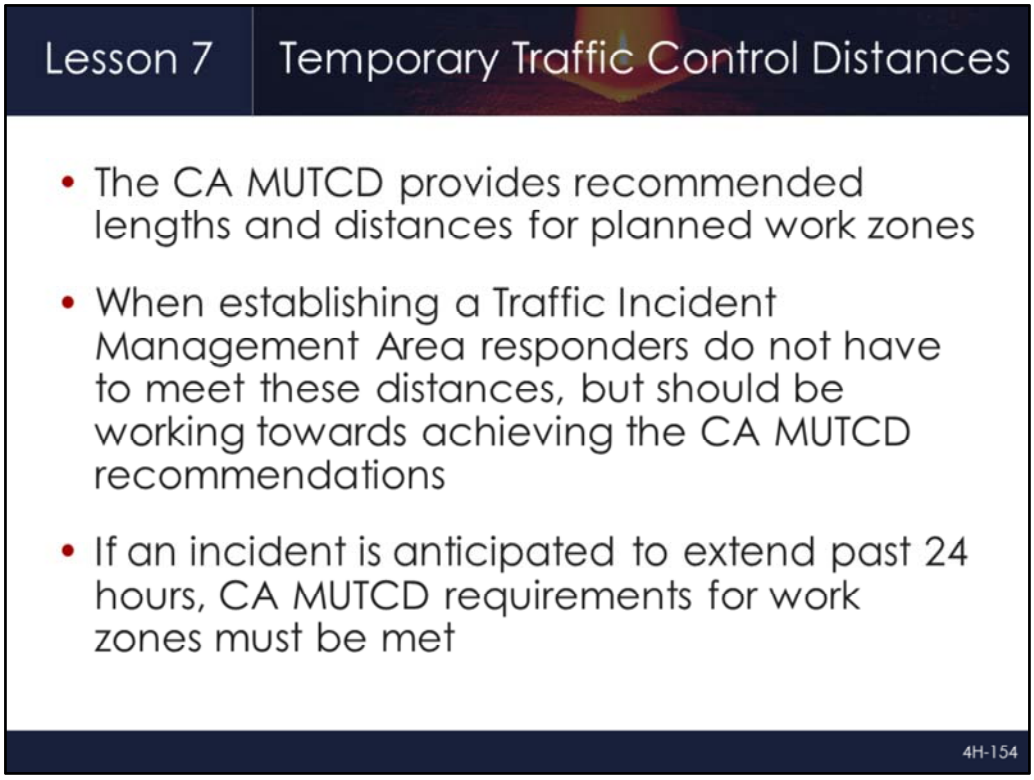
- Chapter 6I of the CA MUTCD specifically addresses traffic control at incident scenes
- Latitude is give to responders, because of the nature of the events:
  - For traffic incidents, particularly those of an emergency nature, TTC devices on hand may be used for the initial response as long as they do not themselves create unnecessary additional hazards
- Chapter 6I establishes different requirements, based on the duration of the incident
  - For MINOR incidents:
    - When a minor traffic incident blocks a travel lane, it should be removed from that lane to the shoulder as quickly as possible
  - For INTERMEDIATE and MAJOR incidents, more is required of responders:
    - 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 should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert traffic approaching the queue and to encourage early diversion to an appropriate alternative route



Lesson Objective: 7.1	Full Version Reference Slide: 7-6

- **Animation:** Click forward to make the buffer and incident space labels appear

- A Traffic Incident Management Area is a type of temporary traffic control zone
- While there are similarities, there are also significant differences between a work zone and a traffic incident
    - The time to plan and availability of resources are the main differences between the two
- A Traffic Incident Management Area is a type of emergency event
- Review the four main components of a Traffic Incident Management Area, which will be discussed in detail in this lesson:
    - Advance Warning Area
    - Transition Area
    - Activity Area
    - Termination Area
- The Activity Area is further comprised of a Buffer Space and an Incident Space **[Click]**



Lesson Objective: 7.1	Full Version Reference Slide: 7-7

- The CA MUTCD provides recommended lengths and distances for planned work zones
- When establishing a Traffic Incident Management Area responders do not have to meet these distances, but should be working towards achieving the CA MUTCD recommendations
- If an incident is anticipated to extend past 24 hours, MUTCD requirements for work zones must be met

Lesson 7 — Temporary Traffic Control Distances (Required for Incidents Lasting > 24 hours)

Speed (mph)	Advance Warning Area: Advance Warning Sign Minimum Distance (ft)				Transition Area: Recommended Lengths (ft)			Activity Area	Termination Area	Cone Spacing (ft)
	A	B	C	Cumulative Total[1]	Shoulder Taper[2]	Taper	Distance Between Tapers (longitudinal)[3]	Buffer (longitudinal)	Downstream Taper	
25	100	100	100	300	45	125	250	155	50-100	25
35	350	350	350	1,050	85	245	490	250		35
45	500	500	500	1,500	180	540	1,080	360		45
55	1,000	1,500	2,640	5,140	220	660	1,320	495		55
65	1,000	1,500	2,640	5,140	260	780	1,560	645		65

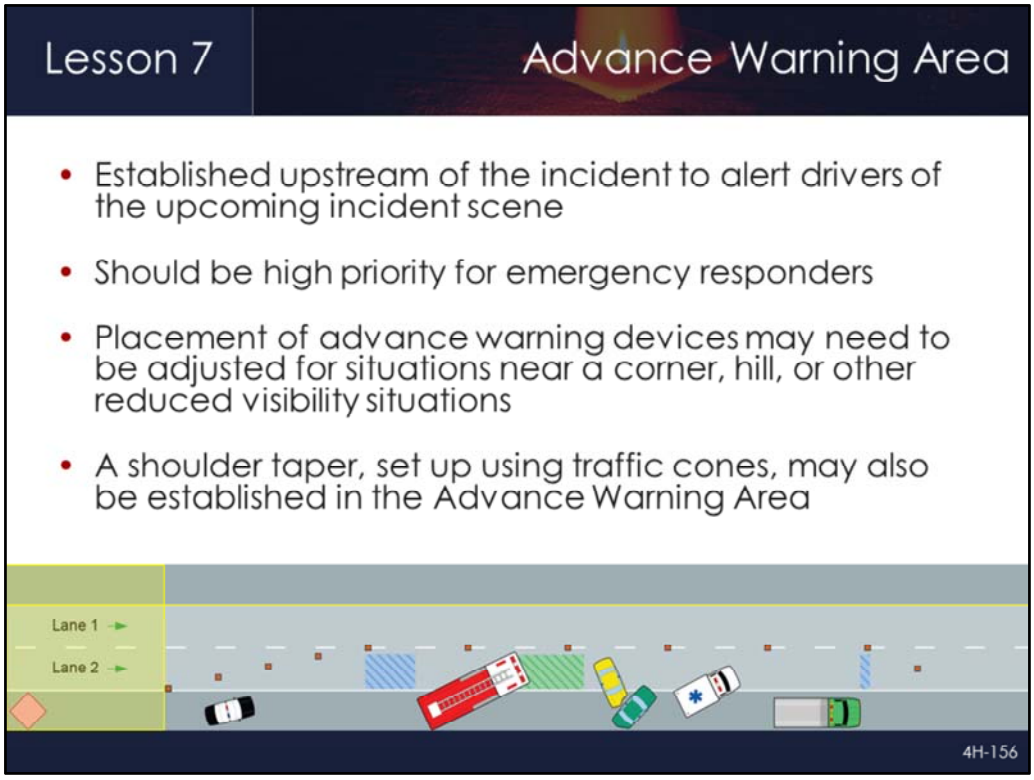
Source: 2009 MUTCD

4H-155

Lesson Objective: 7.1 | Full Version Reference Slide: 7-8

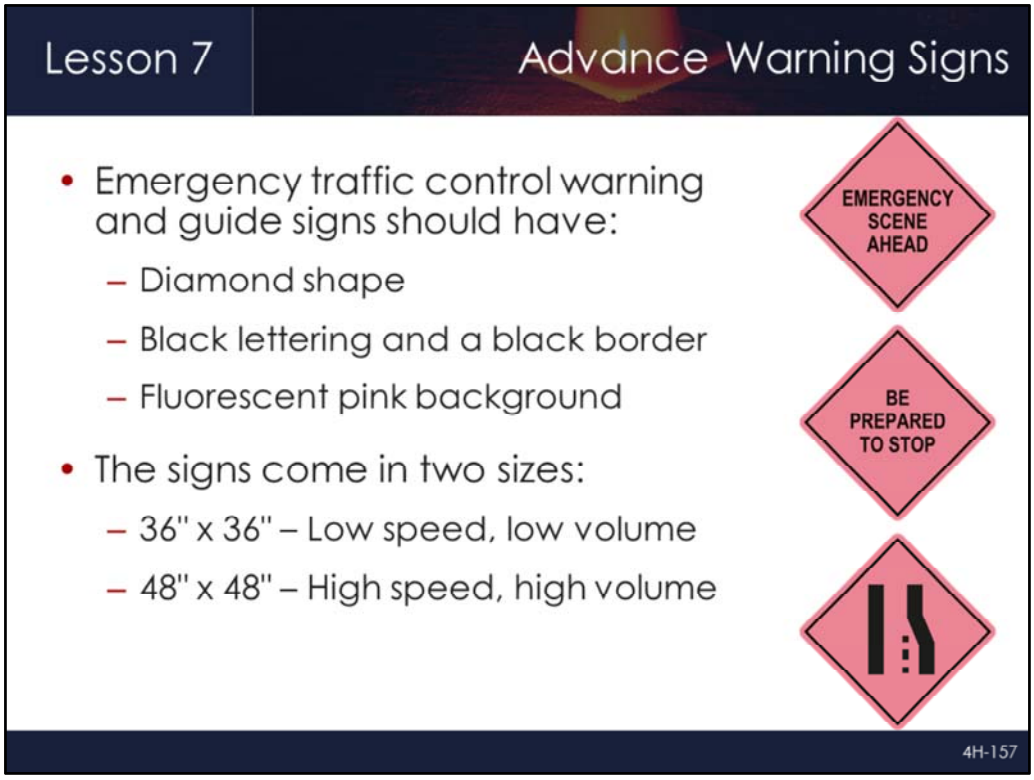
- The distances provided in this table are specifically for work zones
- The top of the table shows the four components of a temporary traffic control zone
- Along the left column is the speed limit of the roadway
- The distances for the advance warning signs are listed, nearly 1 mile for a 65 mph roadway
- The length of a taper on a 65 mph roadway would be 780 feet

- **Ask/Discuss:** Are any of these distances achievable in a TIM scenario?



Lesson Objective: 7.1	Full Version Reference Slide: 7-9

- All advance warning devices should be placed so that they will provide enough warning for vehicles to slow before reaching the incident and any queue that might form
- Advance warning should be a high priority for responders, particularly in the cases of reduced visibility which will be discussed later
- The shoulder taper is used to advise motorists that the shoulder is closed ahead
    - Due to limited resources (availability of cones) a typical Traffic Incident Management Area will likely not include a shoulder taper

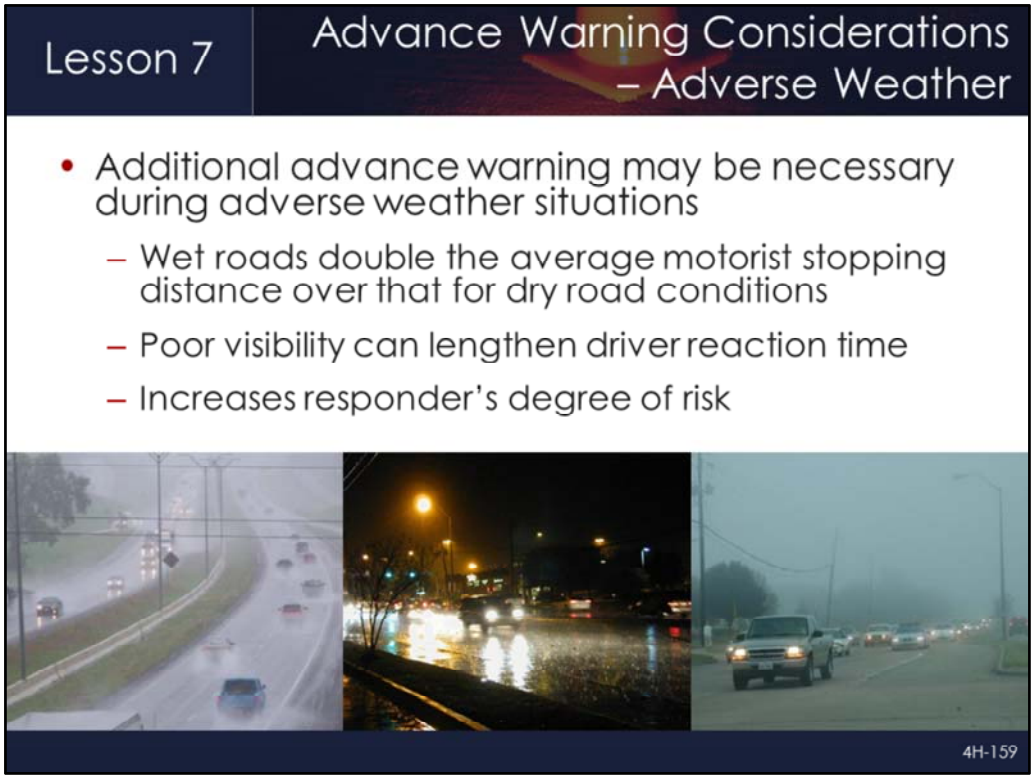


Lesson Objective: 7.1	Full Version Reference Slide: 7-10

- To distinguish Traffic Incident Management Areas from work zones, the CA MUTCD specifies a fluorescent pink advance warning sign
- These signs are being carried by many fire crews and Safety Service Patrols
- Emergency traffic control warning and guide signs should have:
    - Diamond shape
    - Black lettering and a black border
    - Fluorescent pink background
- The signs come in two sizes:
    - 36" x 36" – Low speed, low volume
    - 48" x 48" – High speed, high volume

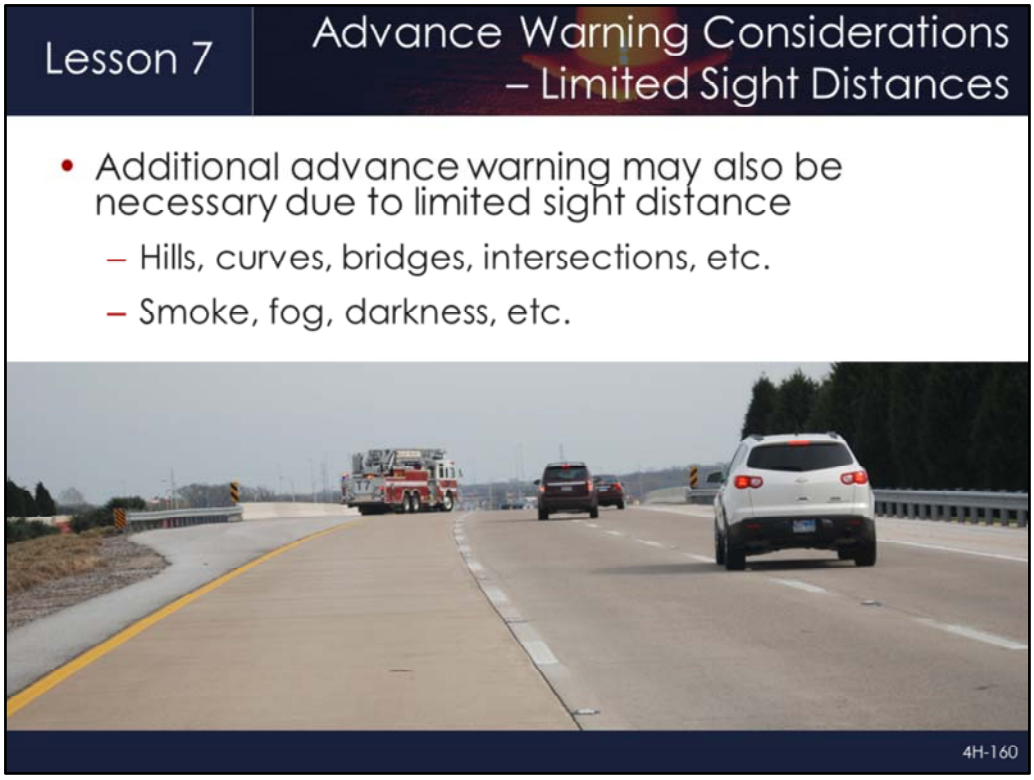
Lesson Objective: 7.1	Full Version Reference Slide: 7-11

- Example of a deployed advance warning sign
- Explain that the sign is on the shoulder, in advance of the taper
- The placement of an advance warning sign might be accomplished by a fire crew immediately prior to arrival on the scene, or by a secondary responder



Lesson Objective: 7.2	Full Version Reference Slide: 7-14

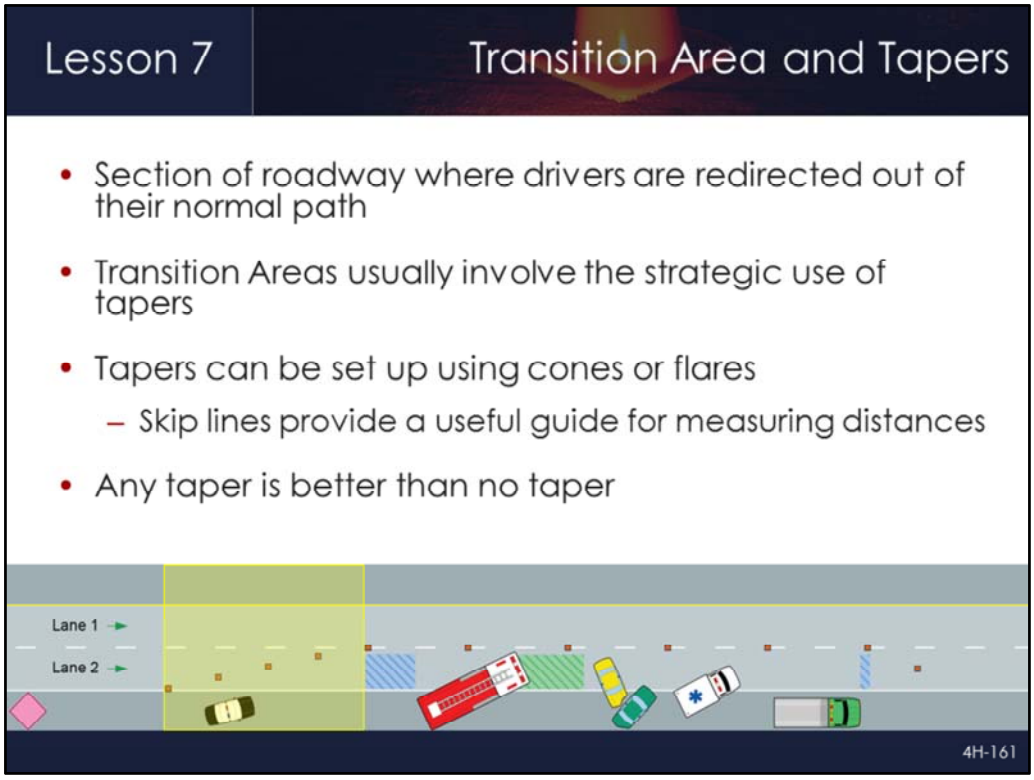
- Identify lighting, road, and weather conditions that should be taken into account when setting up an Advance Warning Area
- Bad weather, such as rain, fog, and snow, all create significant responder risks
- Wet roads double the average motorist's stopping distance over that for dry road conditions, and poor visibility can lengthen driver reaction time
    - These combined increase responders degree of risk
- With these concerns in mind, the Advance Warning Area should be extended to compensate when such conditions exist



Lesson Objective: 7.2	Full Version Reference Slide: 7-16

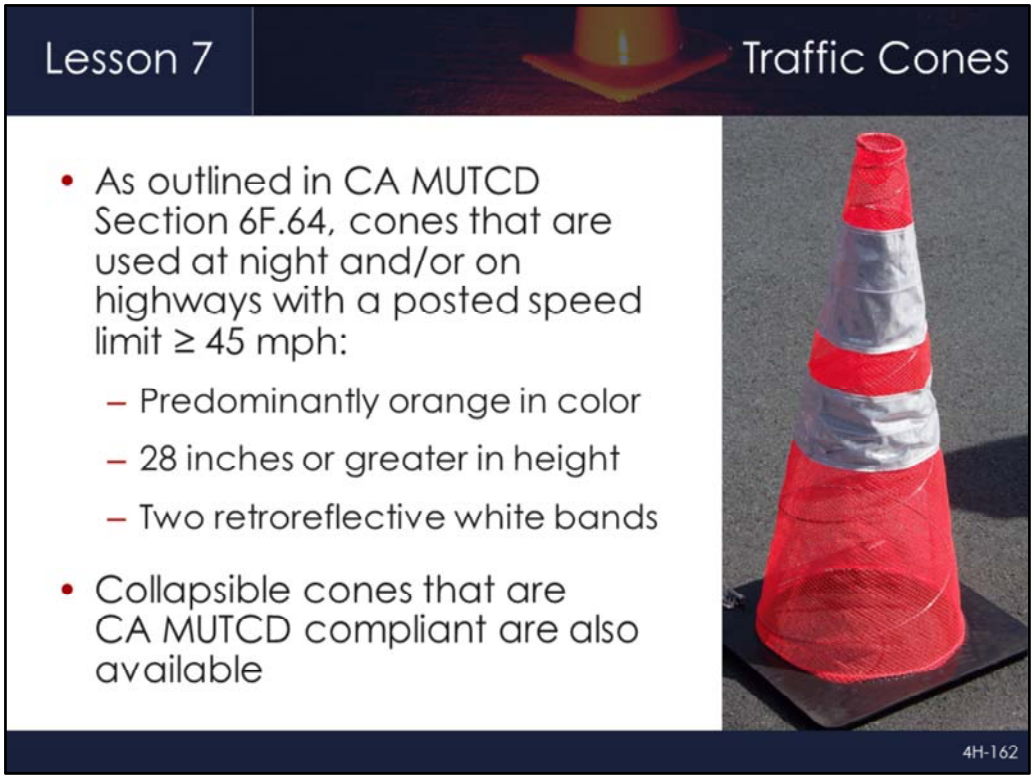
- **Animation:** Click forward to make second picture appear

- Another advance warning adjustment consideration involves limited sight distance
- A small elevation or curvature in the roadway can obstruct a driver's view, as can smoke, fog, and darkness
- Once it has been determined the incident is a limited sight distance situation:
    - Position your vehicle further upstream of the scene than normal to serve as advance warning and keep your lights on
    - Contact other responding units and advise them of the exact location and request they position for extended advanced warning
    - Setup temporary warning and traffic control with available cones and signs



Lesson Objectives: 7.1 and 7.3	Full Version Reference Slide: 7-17

- Section of roadway where drivers are redirected out of their normal path
- Transition Areas usually involve the strategic use of tapers
- Tapers can be set up using cones or flares
    - Skip lines provide a useful guide for measuring distances
- Any taper is better than no taper



Lesson Objective: 7.3	Full Version Reference Slide: 7-18

- **Animation:** Click forward to make collapsible cone picture appear

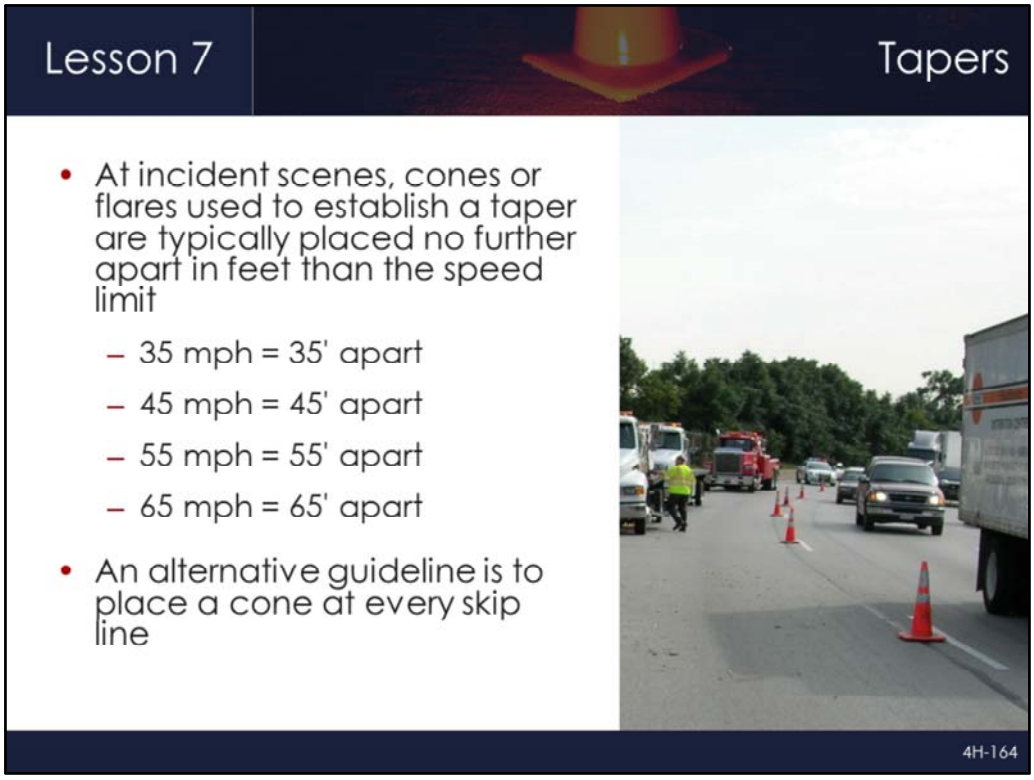
- Traffic cones are a type of channelizing device used to direct traffic
- There is no CA MUTCD requirement that responders carry traffic cones
- The CA MUTCD *does* require appropriate traffic control for intermediate and major incidents, so their use at incident scenes *is* required
- Response vehicles are typically not designed to hold more than a few cones, and a cone's shape and size present storage issues
- For nighttime use and on roadways with speeds over 45 mph, a 28 inch cone is specified in the MUTCD
- Collapsible traffic cones are available, but price and durability warrant some caution **[Click]**

Lesson Objective: 7.3	Full Version Reference Slide: 7-19

- Nighttime channelizing devices are available
  - Flares or fusees
  - Chemical light sticks
  - Light emitting diodes
- Flares and fusees are most effective when used with a stand
- Nighttime devices can augment the use of traffic cones when strategically placed

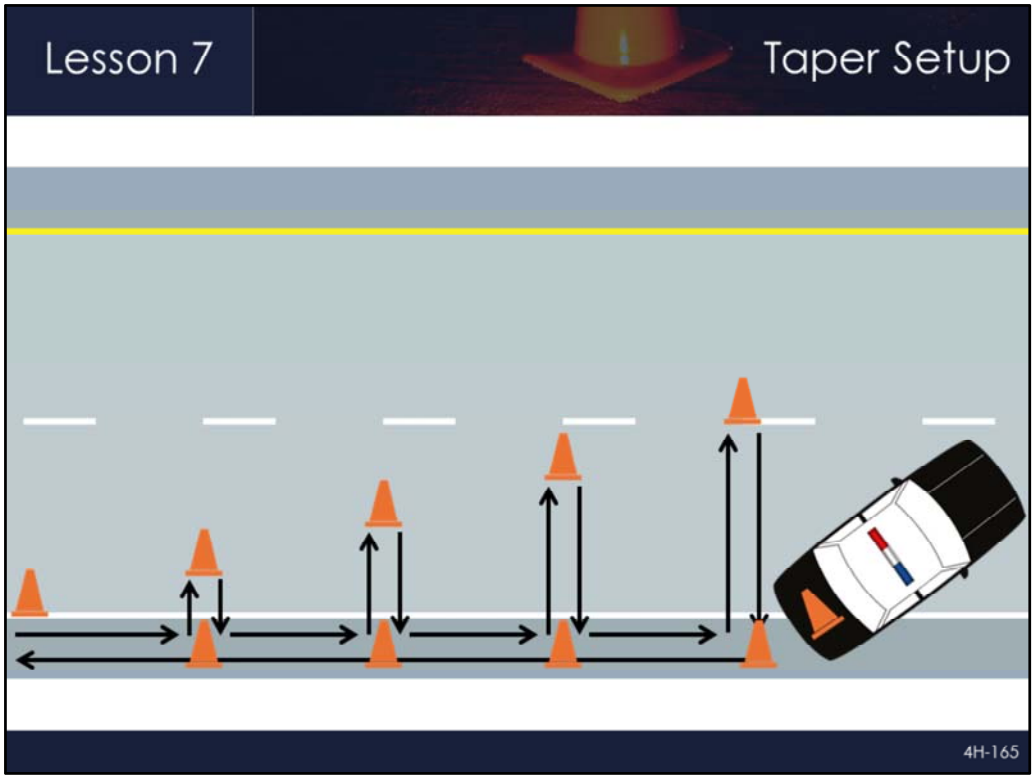
- **CA MUTCD 6F.64**
- **"When cones are used on freeways and other high-speed highways or at night on all highways, or when more conspicuous guidance is needed, cones shall be a minimum of 28 inches in height.**

- **For nighttime use, cones shall be retro-reflectorized or equipped with lighting devices for maximum visibility. Retro-reflectorization of cones that are 28 to 36 inches in height shall be provided by a 6-inch wide white band located 3 to 4 inches from the top of the cone and an additional 4-inch wide white band**
- **located approximately 2 inches below the 6-inch band."**



Lesson Objective: 7.3	Full Version Reference Slide: 7-20

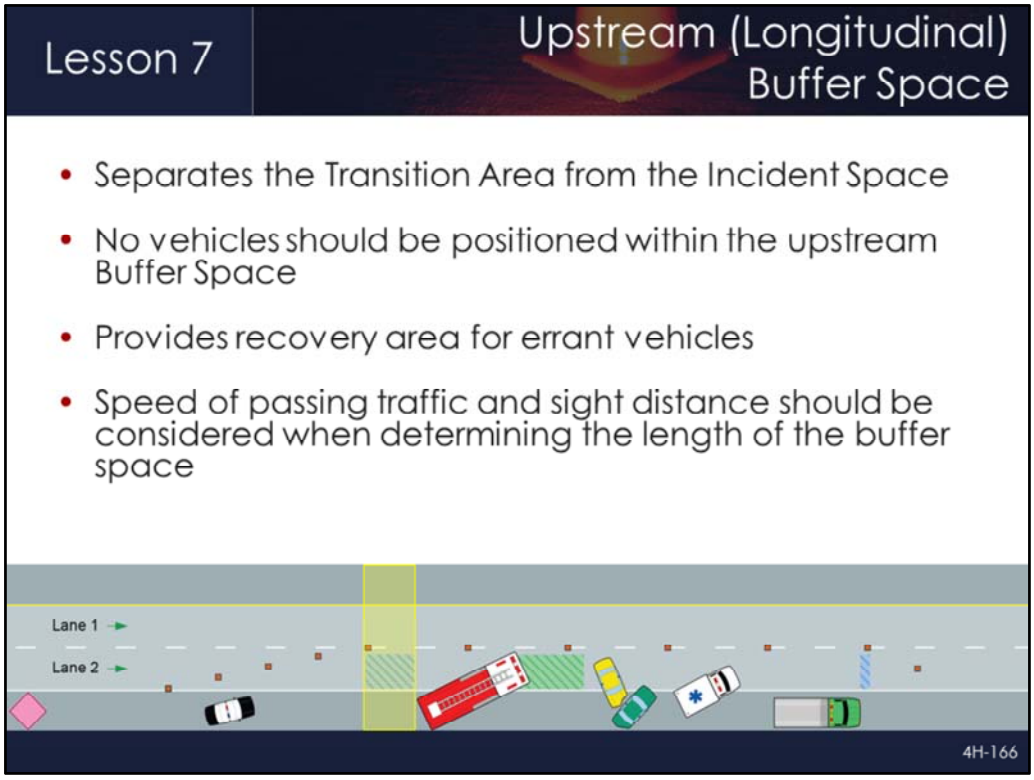
- Channelizing devices, such as cones, are typically spaced according to the speed of the roadway
- As an alternative, skip lines provide a useful guide for setting up tapers
- Based on CA MUTCD guidance, broken lines (or skip lines) should consist of 10-foot line segments and 30-foot gaps



Lesson Objective: 7.3	Full Version Reference Slide: 7-23

- **Animation:** Click forward to start taper set up, placement of each cone requires two clicks for a total of 11 clicks

- Florida Gulf Coast University in Ft. Myers worked on a Justice Department grant related to nighttime traffic control devices
- As a related issue, they developed a deployment technique that fills a historical training gap
- The deployment of 5 cones to block one traffic lane is demonstrated
- In this example, the skip lines are used to guide taper set up
- The methodology has the responder use the refuge of the shoulder throughout deployment
    1. The responder retrieves available cones from the trunk placing one at the rear of the responder vehicle on the edge line
    2. Walking along the shoulder, facing traffic, a cone is subsequently placed on the edge line at each skip line (alternatively, they can be placed every 10 paces)
    3. When the last cone has been placed on the edge line, the responder begins walking backwards until the next cone is reached
    4. The responder takes one lateral step into the travel lane and places the cone, immediately returning to the shoulder – facing traffic
    5. The responder again walks backwards until the next cone is reached and then takes two lateral steps into the travel lane to place the cone, immediately returning to the shoulder
    6. The steps are repeated until all cones are deployed

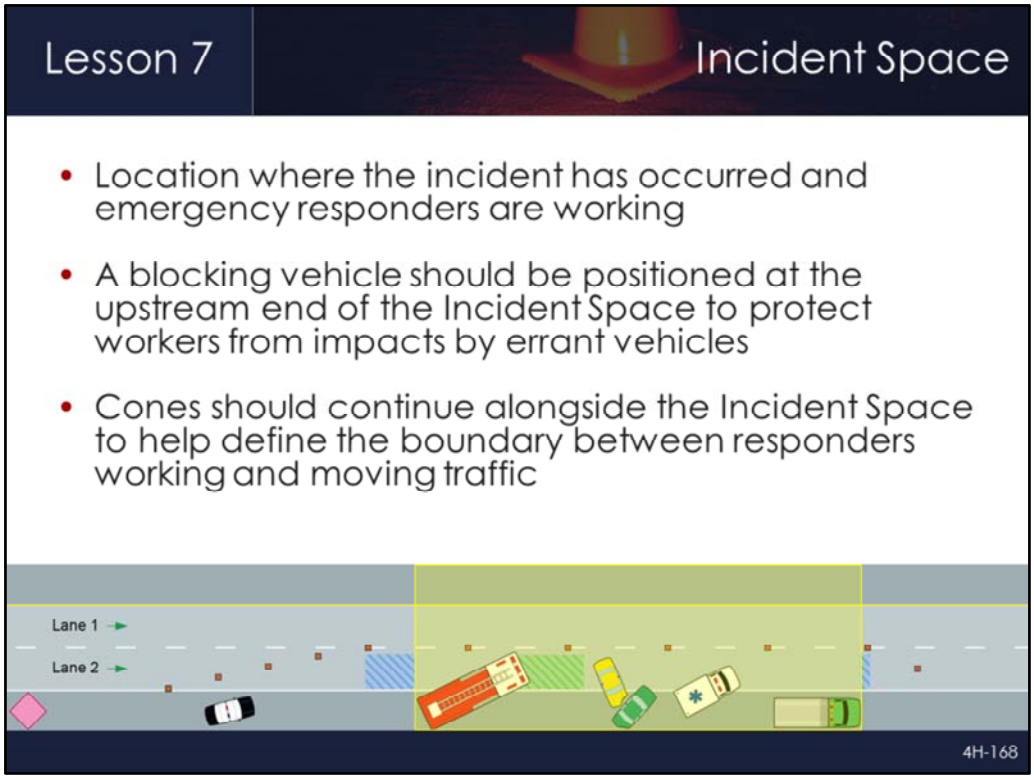


Lesson Objectives: 7.1 and 7.4	Full Version Reference Slide: 7-28

- The Buffer Space covers the distance between the Transition Area and the Incident Space
- In work zone settings, this space is determined based on the stopping sight distance of a vehicle traveling at the posted speed limit
- The buffer space in TIM applications will typically be fairly short due to the limitation of channelizing devices
- When additional resources are available, the buffer should be expanded to accommodate errant vehicles

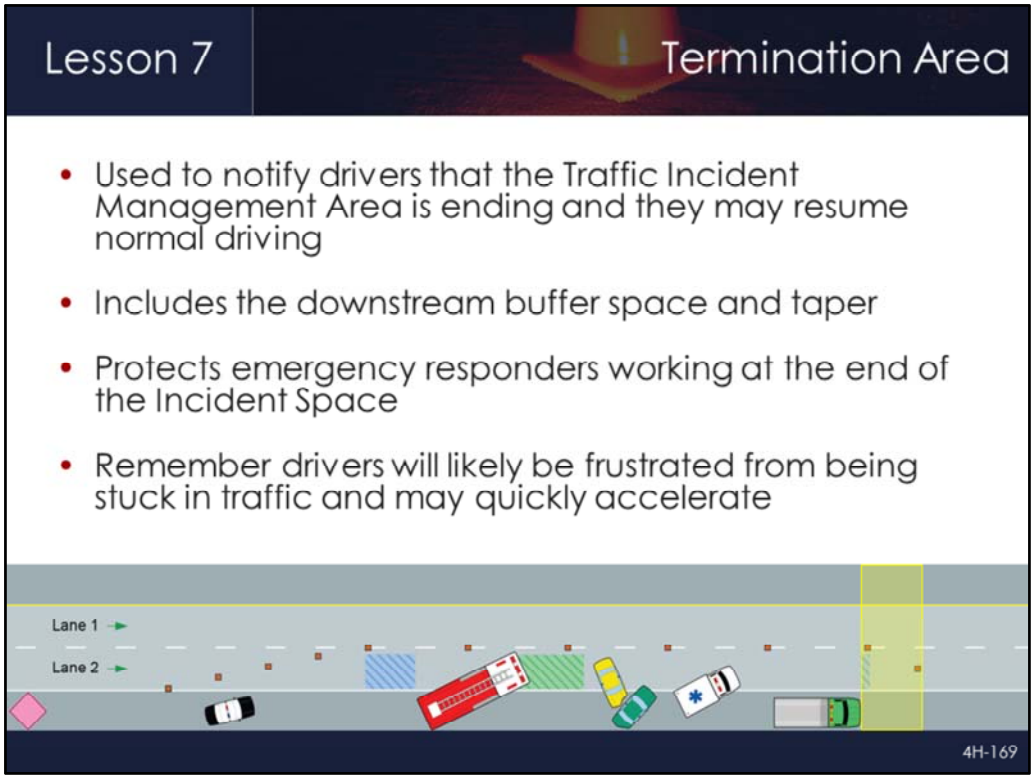
Lesson Objective: 7.4	Full Version Reference Slide: 7-29

- Lateral buffer space is the area between the incident space and the adjacent travel lane
- Lateral buffer space can be beneficial because it allows for more room for responders to work
- Lateral buffer space can be accommodated through the use of Lane +1 blocking
- Partial lane closures are not recommended because they can confuse drivers and decrease scene safety (photo example)



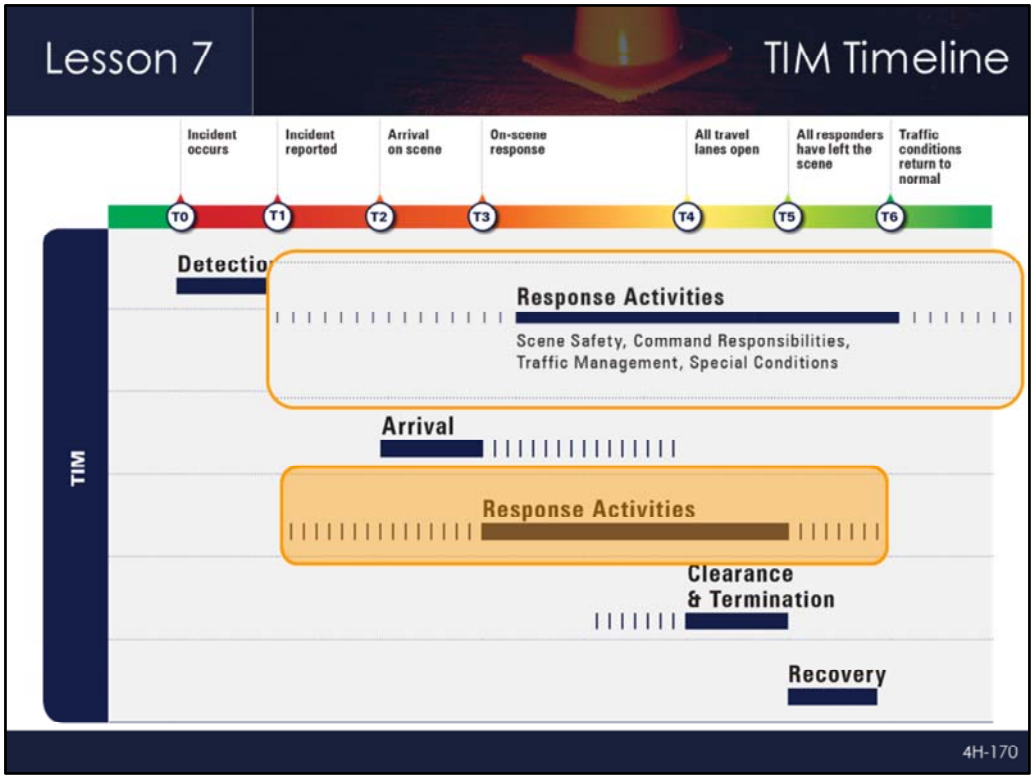
Lesson Objective: 7.1	Full Version Reference Slide: 7-30

- The Incident Space is also called the work space or activity space in temporary traffic control zone terminology
- Once traffic control devices are in place, the blocking vehicle is positioned at the upstream end of the incident space to protect workers and civilians
- The CA MUTCD also uses the term shadow vehicle to describe the blocking vehicle
- As outlined in the CA MUTCD, the blocking (or shadow) vehicle should be positioned a sufficient distance in advance of responders to absorb contact (Illustrated by green area on graphic)
- The distance to the scene should not impede access to responder gear and not allow errant vehicles to travel around the blocking vehicle and re-enter the lane prematurely
- Cone placement alongside the Incident Space can help dissuade premature re-entry



Lesson Objective: 7.1	Full Version Reference Slide: 7-31

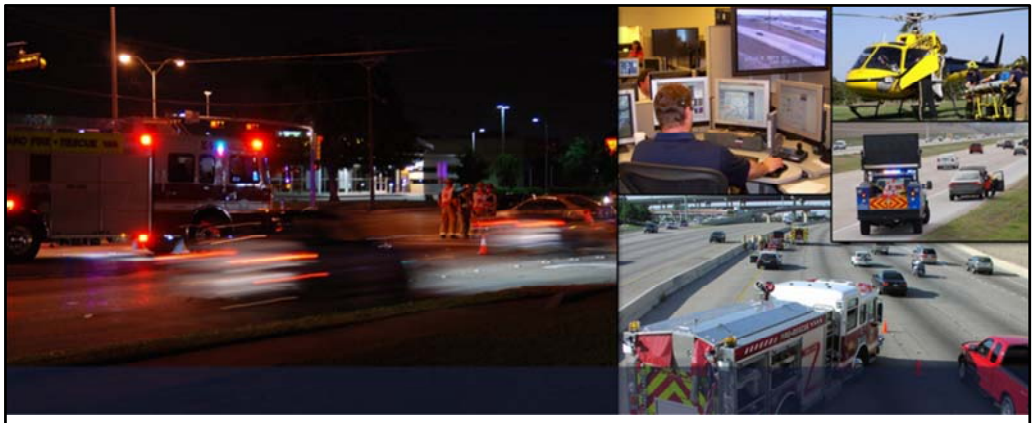
- The Termination Area is typically small in TIM applications
- The last channelizing device and/or responder vehicle typically signals the end or termination of the Traffic Incident Management Area
- Used to notify drivers that the Traffic Incident Management Area is ending and they may resume normal driving
- Includes the downstream buffer space and taper
- Protects emergency responders working at the end of the Incident Space
- Remember drivers will likely be frustrated from being stuck in traffic and may quickly accelerate



TIM Timeline	Full Version Reference Slide: 7-43

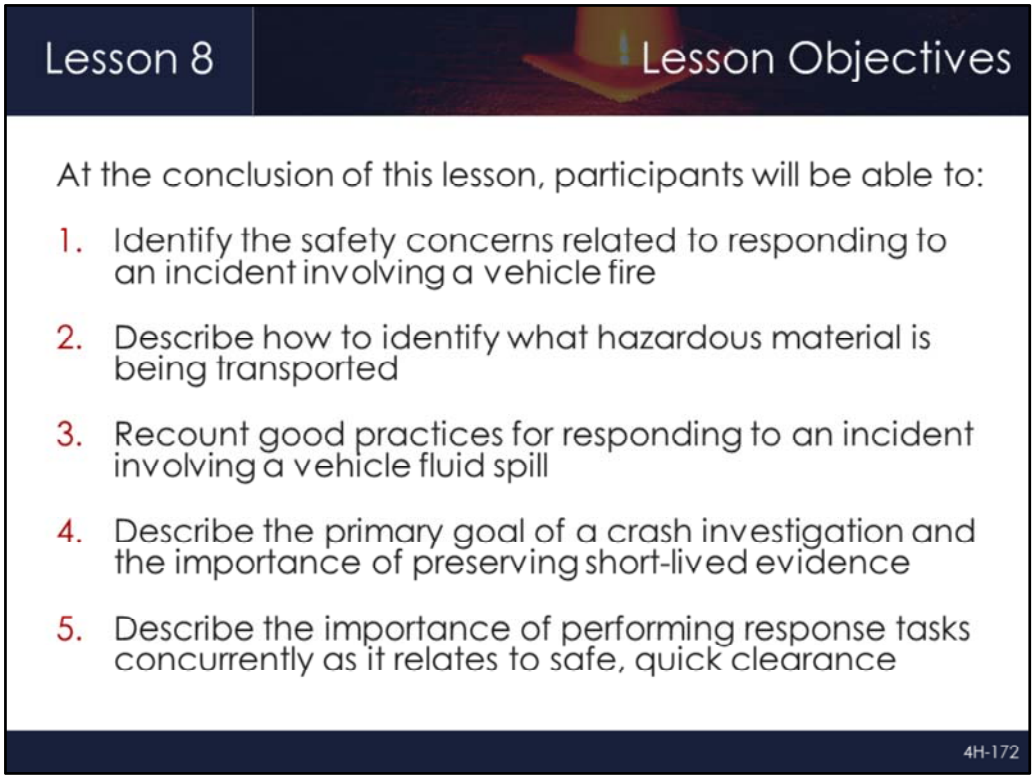
- **Animation:** Click forward to make orange box appear and then click again to bring up detailed view of Response Activities

- **Ask/Discuss:** How does proper traffic management impact the TIM Timeline?
  - Highlight that traffic management activities may occur even before arrival on scene if there is a TMC in the area
    - For example, the TMC may be able to provide advance warning through use of VMS and/or PCMS



Lesson 8:
Special Circumstances

4H-171



Lesson Objectives	Full Version Reference Slide: 8-2

Lesson Objective: 8.1	Full Version Reference Slide: 8-3

- **Video:** L8_V1 - MN Minivan Fire.wmv

- This video highlights the potential dangers encountered at vehicle fires and the need for shutting down additional lanes during vehicle fires
- The first traffic camera perspective shows a burning minivan on the right shoulder of the highway; well involved in fire
    - This is an older Ford minivan with a plastic-type fuel tank
- The second traffic camera view is of the same scene from the opposing direction

Lesson Objective: 8.1	Full Version Reference Slide: 8-4

- A vehicle fire presents a *danger zone* that surrounds the vehicle
- The danger zone at a vehicle fire specifically includes the area directly in front of or behind the burning vehicle where projectiles may launch from the vehicle
- Non-firefighting responders should remain clear of all sides of a burning vehicle, and remain uphill and upwind of the incident

Lesson Objective: 8.1	Full Version Reference Slide: 8-6

- **Video:** L8_V2 - FL Vehicle Fire.wmv

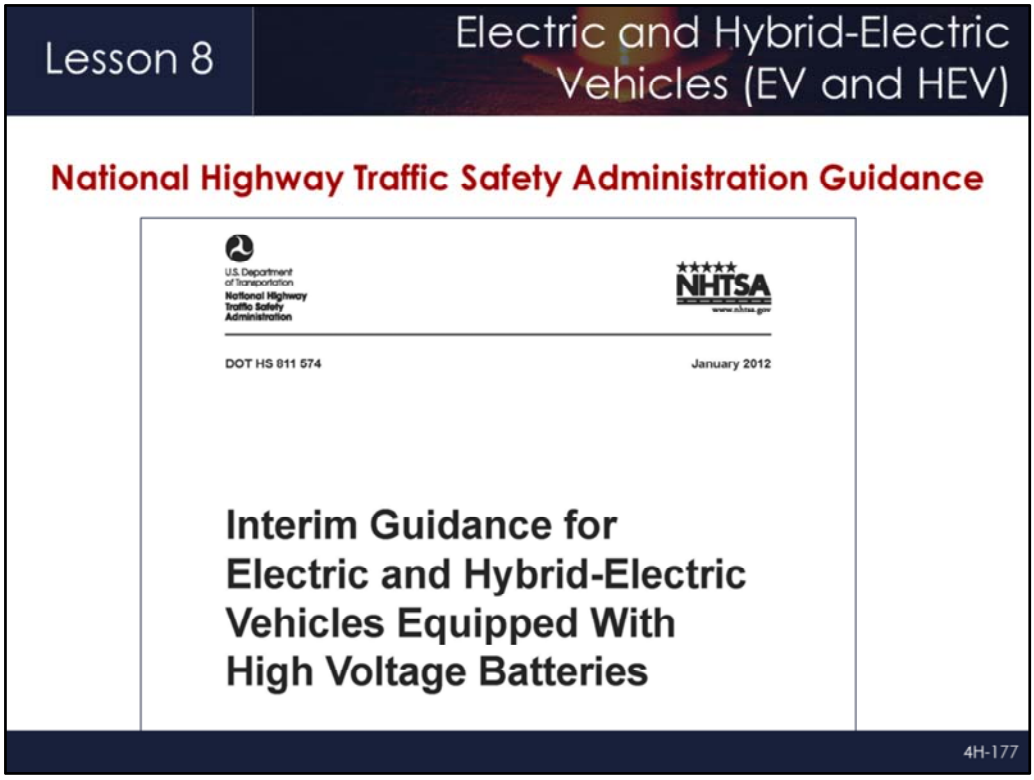
- Incident details are as follows:
  - Volvo sedan has caught fire and is positioned along the right shoulder of the highway
  - The engine compartment is fully involved
  - The fire department engine company positions in the same lane of traffic but facing the opposing direction and obstructed by smoke from the vehicle
- Explain that the explosion that occurs is the energy-absorbing bumper piston from the vehicle's front bumper
- This video underscores how critical it is to keep personnel out of the danger zone directly in front of or directly behind a burning vehicle

Lesson Objective: 8.1	Full Version Reference Slide: 8-11

- **Video:** L8_V3 - WI Vehicle Fire.wmv

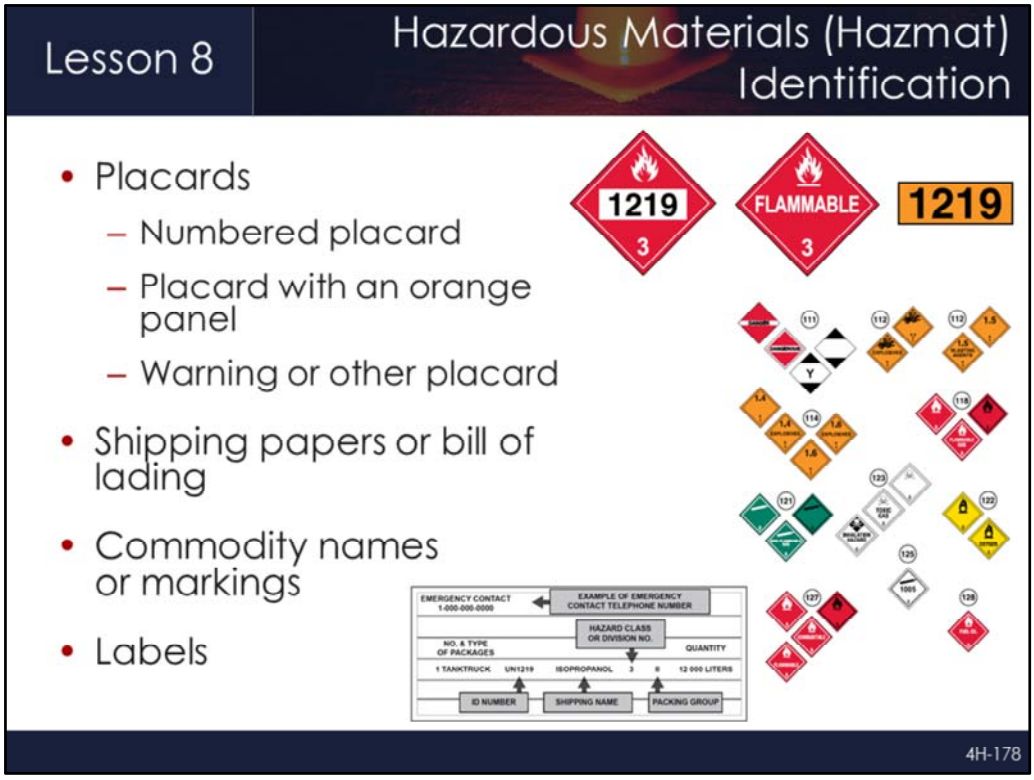
- **Ask/Discuss:** What safety concerns did you identify in this video?
  - Safety implications of providing no traffic control during firefighting activities
  - Fire department pump operator exposed to upstream traffic
  - Limited sight distance due to drifting smoke
  - Individual walking on downstream side of smoke screen
  - Burning vehicle danger zone
  - Rubbernecker drivers in the opposing lanes of traffic

- It is oftentimes better to close more lanes while the fire is being extinguished



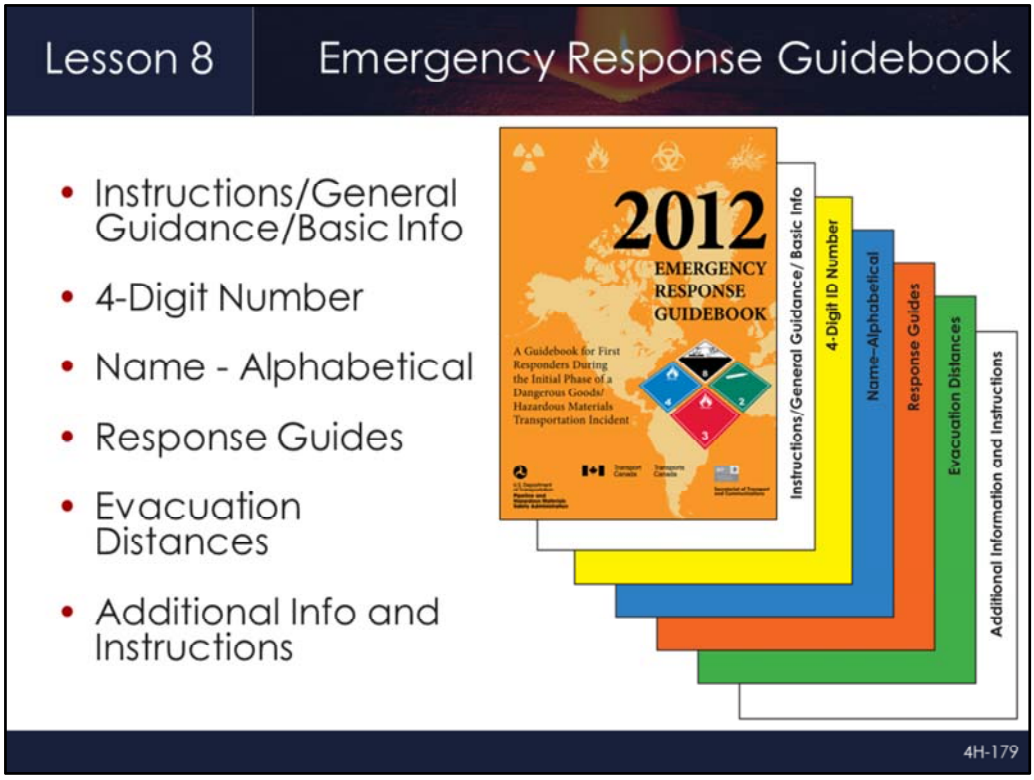
Lesson Objective: --	Full Version Reference Slide: 8-12

- The National Highway Traffic Safety Administration (NHTSA) has published interim guidance for all responder disciplines when dealing with electric and hybrid-electric vehicles
- It is intended to serve as a general reference for vehicle operators and responders when confronted with a hybrid or electric plug-in disabled vehicle, crash, or fire incident
- Individual sections of the document are specifically written for firefighters, medical personnel, law enforcement officers, and tow operators with each section providing specific instructions to that responder discipline
- The NHTSA interim guidance document is free and downloadable at:
  - http://www.nhtsa.gov/



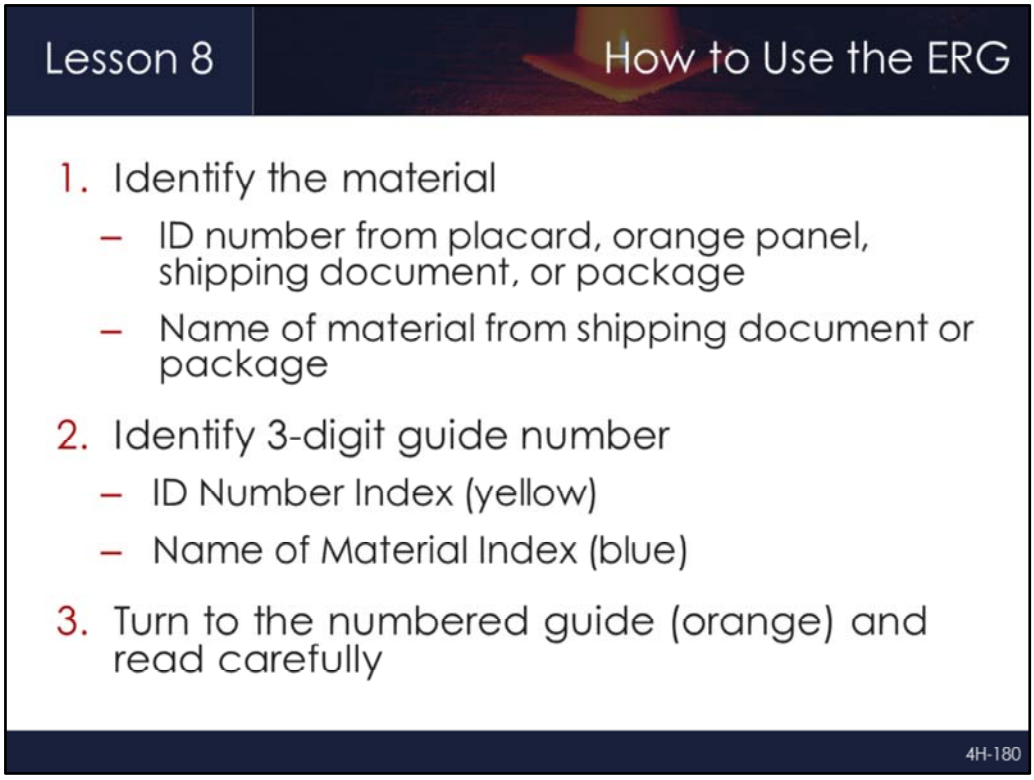
Lesson Objective: 8.2	Full Version Reference Slide: 8-19

- Placards are the most familiar way to identify hazardous materials that are being transported
- The 4-digit ID Number may be shown 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, bill of lading, labels, names, and other markings can also help identify hazmat
- Shipping documents (papers) are synonymous and can be found as follows:
    - Road – kept in the cab of a motor vehicle
    - Rail – kept in possession of a crew member
- Shipping documents (papers) provide the vital information regarding the hazmat/dangerous goods needed to initiate protective actions



Lesson Objective: 8.2	Full Version Reference Slide: 8-20

- The Emergency Response Guidebook (ERG) is an excellent resource for all incident responders
- The ERG is divided into sections, based on the color of the pages
  - White pages in the front of the book
    - Instructions / General Guidance / Basic Info
  - Yellow pages
    - 4-Digit ID Number
  - Blue pages
    - Name - Alphabetical
  - Orange pages
    - Actual response guides (more than 170)
    - In the event of an unknown material, Guide #111 should be followed
  - Green pages
    - Suggests initial evacuation or shelter in place distances for spills of materials that are Toxic-by-Inhalation
  - White pages in the back of the book
    - Additional instructions and information on protective clothing and equipment
- Electronic versions of the ERG, computer software, and mobile applications are also available

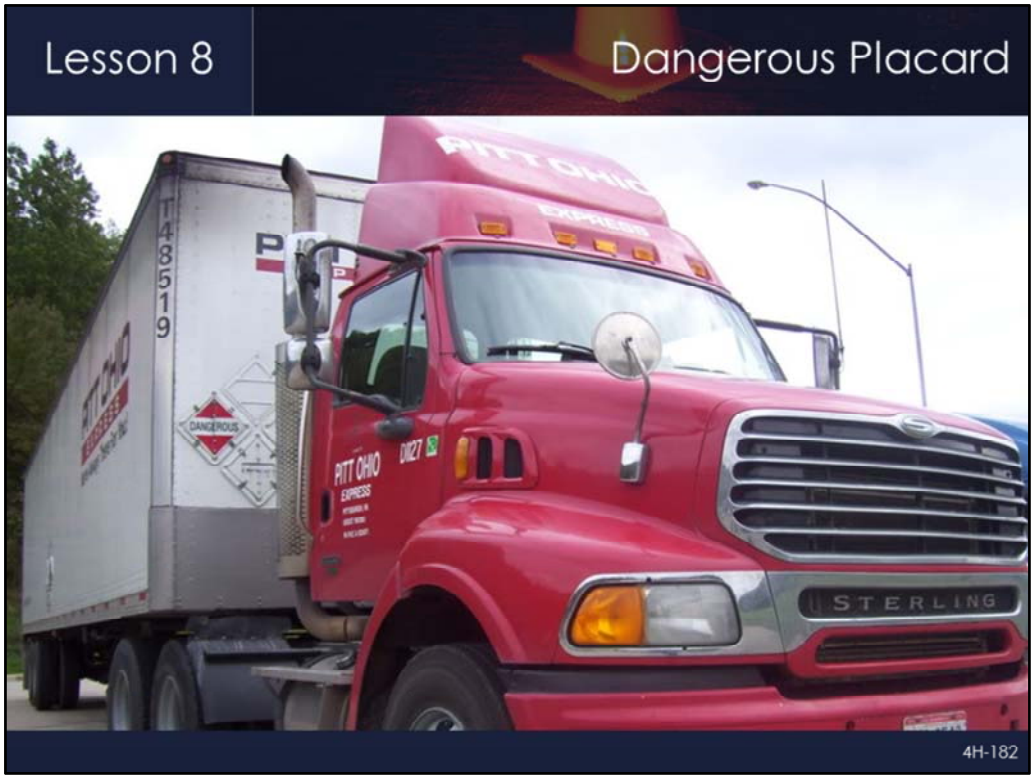


Lesson Objective: 8.2	Full Version Reference Slide: 8-21

- Step One: identify the material and use any of the following:
  - Identification number (4-digit ID) from a:
    - Placard
    - Orange panel
    - Shipping document or package
  - Name of the material from a:
    - Shipping document or package
- Step Two: identify 3-digit guide number, use:
  - ID Number Index in yellow-bordered pages or
  - Name of Material Index in blue-bordered pages
  - Guide number supplemented with the letter (P) indicates that the material may undergo violent polymerization
  - Index entries highlighted in green are a toxic inhalation hazard (TIH) material
  - If a reference to a guide cannot be found and this incident is believed to involve dangerous goods:
    - Use Guide 111, until additional information becomes available
    - Use Guide 112, Explosives (other than 1.4 and 1.6)
    - Use Guide 114, Explosives (1.4 and 1.6)
- Step Three: Turn to the numbered guide (the orange-bordered pages) READ CAREFULLY

Lesson Objective: 8.2	Full Version Reference Slide: 8-23

- UN Number 1993:
  - Placard is a Class 3 – Flammable and Combustible Liquids
  - Appropriate response guide is number 128 (ERG page 194, 2012 Edition)
  - Possible substances listed in the ERG are:
    - Combustible liquid, n.o.s. (not otherwise specified)
    - Cleaning liquid
    - Tree or weed killing liquid
    - Diesel fuel
    - Flammable liquid, n.o.s.
    - Fuel oil
- Discuss initial precautions and actions found in ERG



Lesson Objective: 8.2	Full Version Reference Slide: 8-25

- Dangerous Placard:
  - Appropriate response guide is number 111 (ERG page 160, 2012 Edition)
- Reiterate that a dangerous placard can be utilized by trucks carrying multiple, non-bulk packages of hazardous materials

Warning

The following video contains graphic images and sounds and may be disturbing to some viewers

Lesson 8
What You Don't Know Can Kill You
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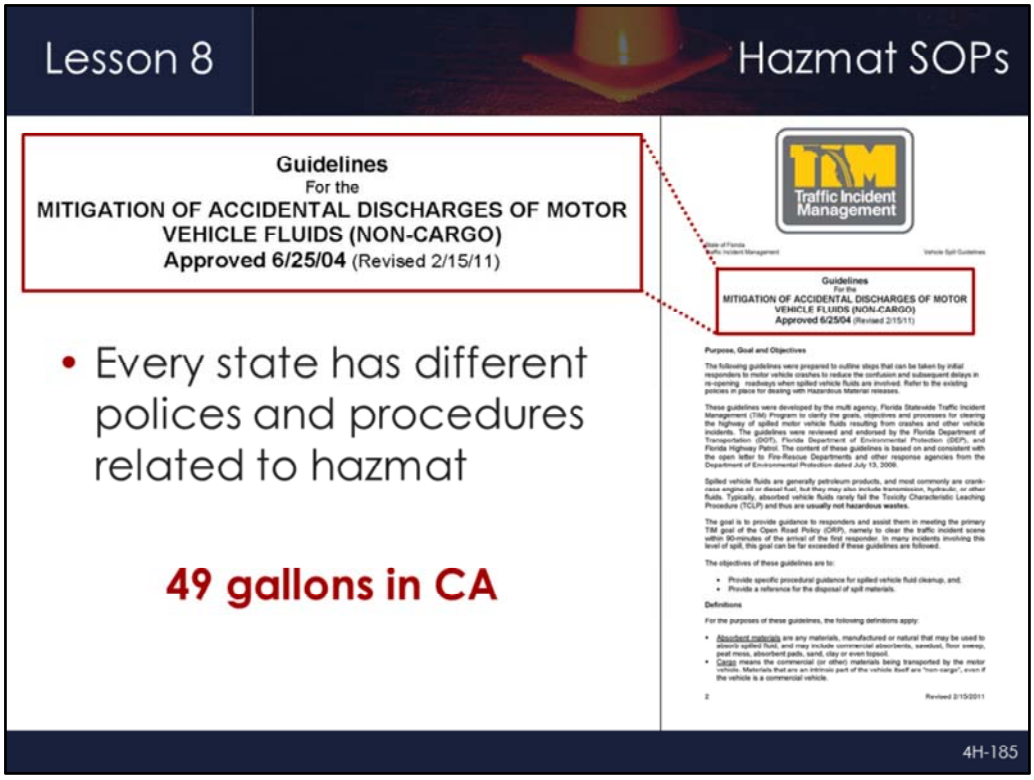
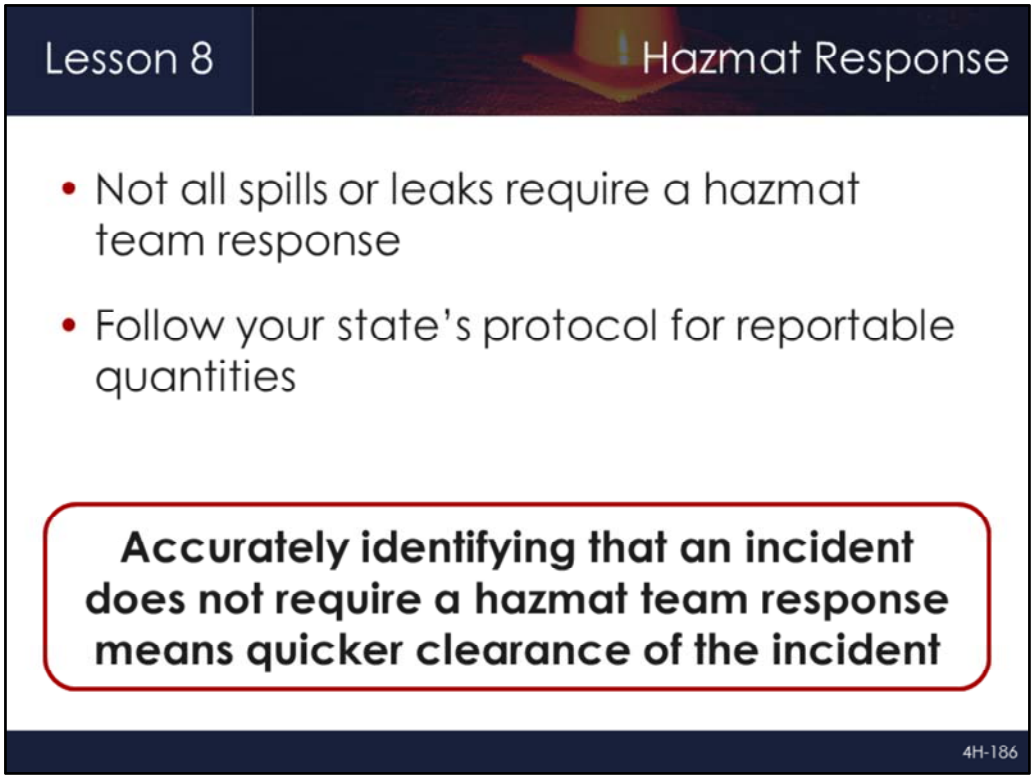
06-13-00
4H-184

- Imbed movie



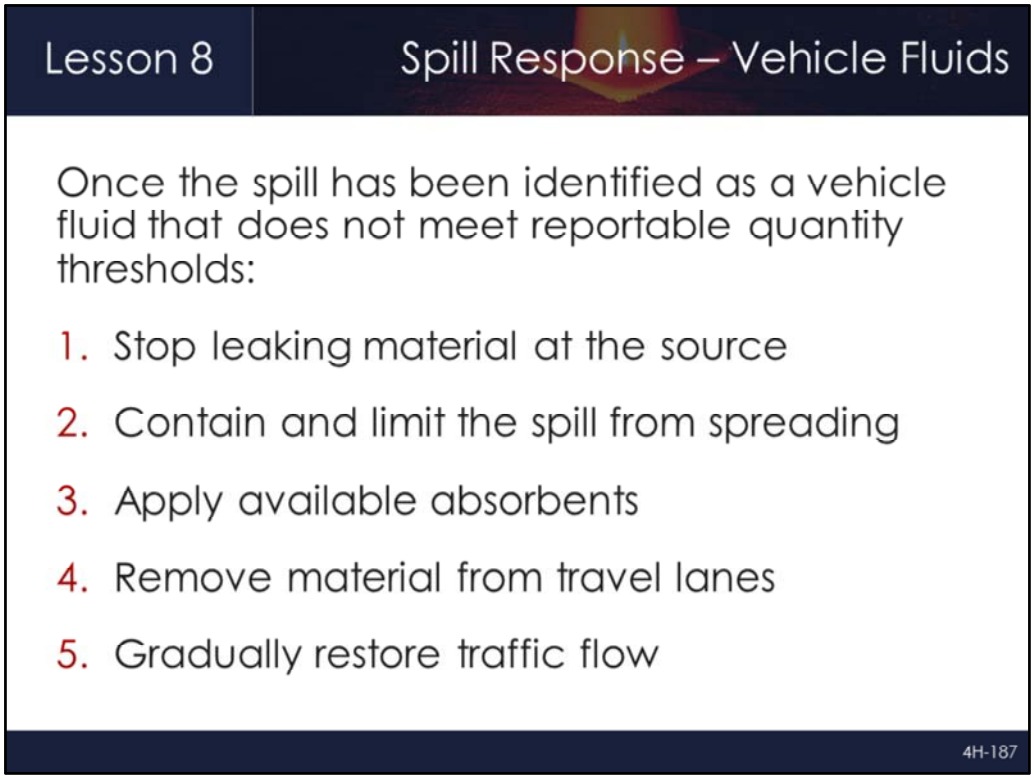
Lesson Objective: 8.3	Full Version Reference Slide: 8-27

- Each state defines reportable quantities for hazardous materials so ensure that participants are fully aware of the reportable amounts in the state
- Agencies should be capable of the following actions when hazardous materials are involved in a traffic incident:
  - Identify reportable quantities
  - Determine what response is required
  - Understand the capabilities of local responders
  - Have appropriate policies developed and put in place in advance of a hazmat incident



Lesson Objective: 8.3	Full Version Reference Slide: 8-30

- Responders should limit themselves to working on spills or leaks of a magnitude that are within their capabilities and training
  - Operations-level or Technician-level
- Dedicated hazmat teams should be called in to deal with those incidents which fall outside of the capabilities of on-scene responders

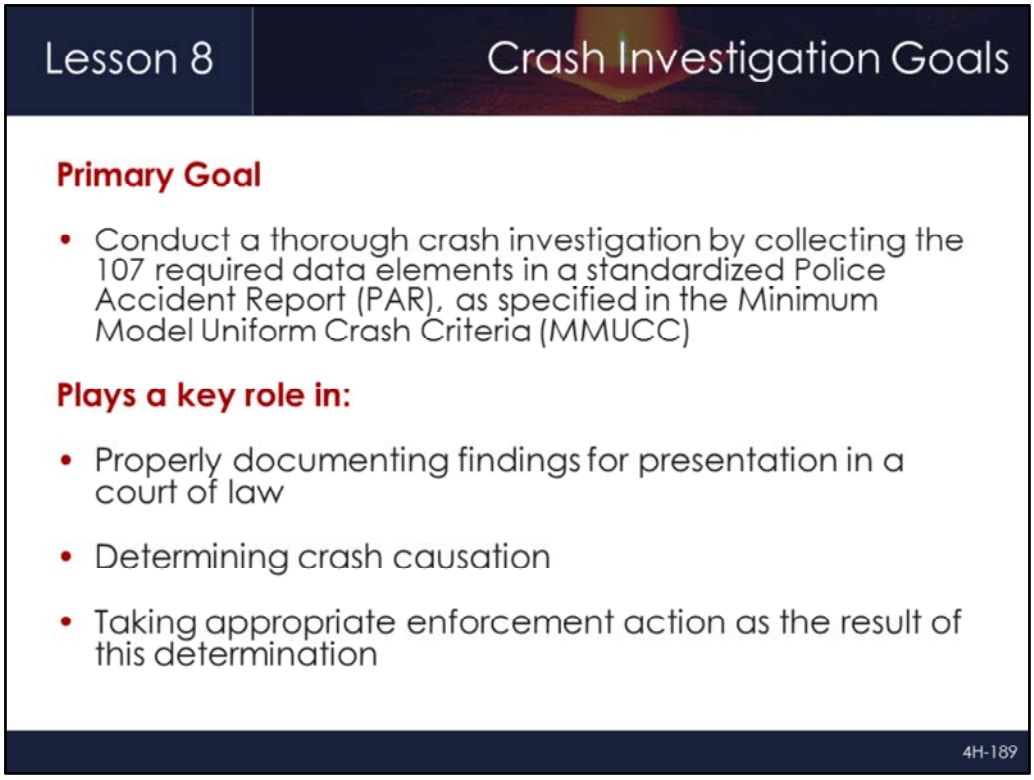


Lesson Objective: 8.3	Full Version Reference Slide: 8-32

- Once the spill has been identified as a vehicle fluid that does not meet reportable quantity thresholds:
    1. Stop leaking material at the source
    2. Contain and limit the spill from spreading
    3. Apply available absorbents
    4. Remove material from travel lanes
    5. Gradually restore traffic flow

Lesson Objective: --	Full Version Reference Slide: 8-44

- Emphasize that transport to an off-site landing zone may be preferable to improve responder safety and facilitate quick clearance
- Consideration does need to be given to the logistics of using an off-site landing zone
  - Need for resources to protect both the initial scene and the off-site landing zone
  - Transport of patients to the off-roadway, alternate landing zone location
- Potential off-site landing zones include:
  - Local airports/airfields
  - Parking lots
  - Large, flat fields
- Consider identifying and recording the GPS coordinates of preferred off-site landing zones

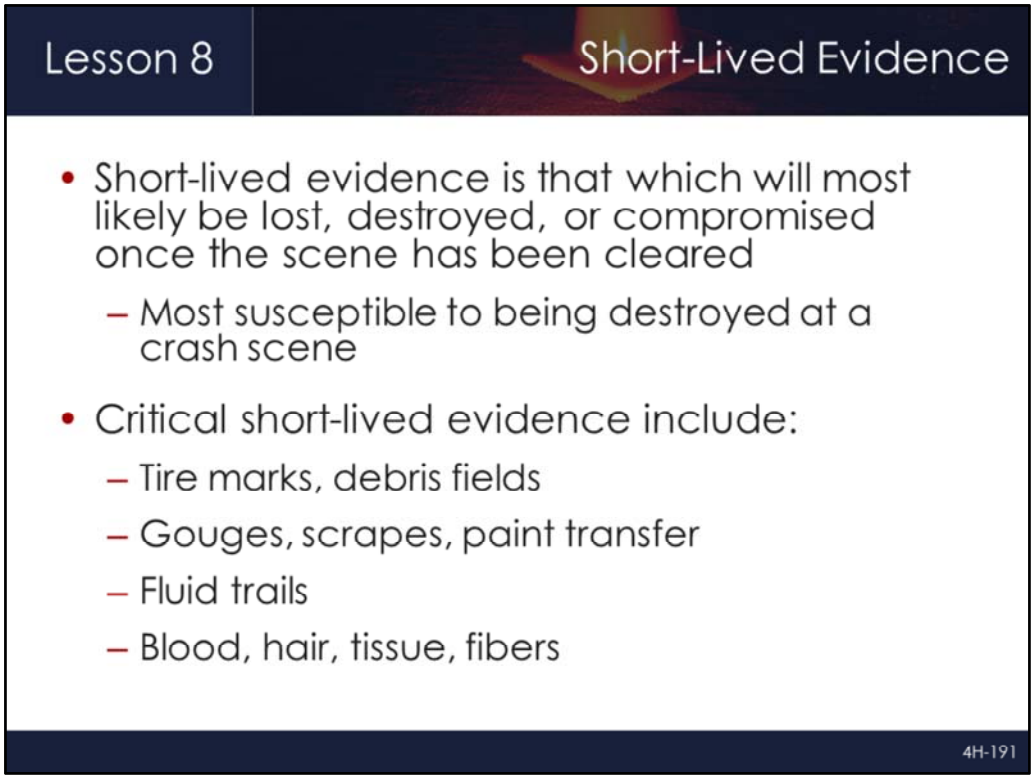


Lesson Objective: 8.4	Full Version Reference Slide: 8-46

- Review the purposes of a crash investigation
  - Collect data that ultimately helps understand when, where, and why crashes occur
  - Identifies who is at fault for vehicle repairs and other compensation
  - Ensures that individuals who committed a crime are brought to justice (DUI, manslaughter, vehicular homicide, leaving the scene, etc.)

Lesson Objective: 8.4	Full Version Reference Slide: 8-47

- It is the responsibility of all incident responders to ensure that the incident scene is preserved
  - Refraining from removing, moving, or eradicating physical evidence until approved by law enforcement personnel
  - Understanding the necessity for law enforcement personnel to collect physical evidence from the roadway and any involved vehicles
  - Understanding the value of not moving vehicles or other physical evidence until told to do so by law enforcement personnel



Lesson Objective: 8.4	Full Version Reference Slide: 8-48

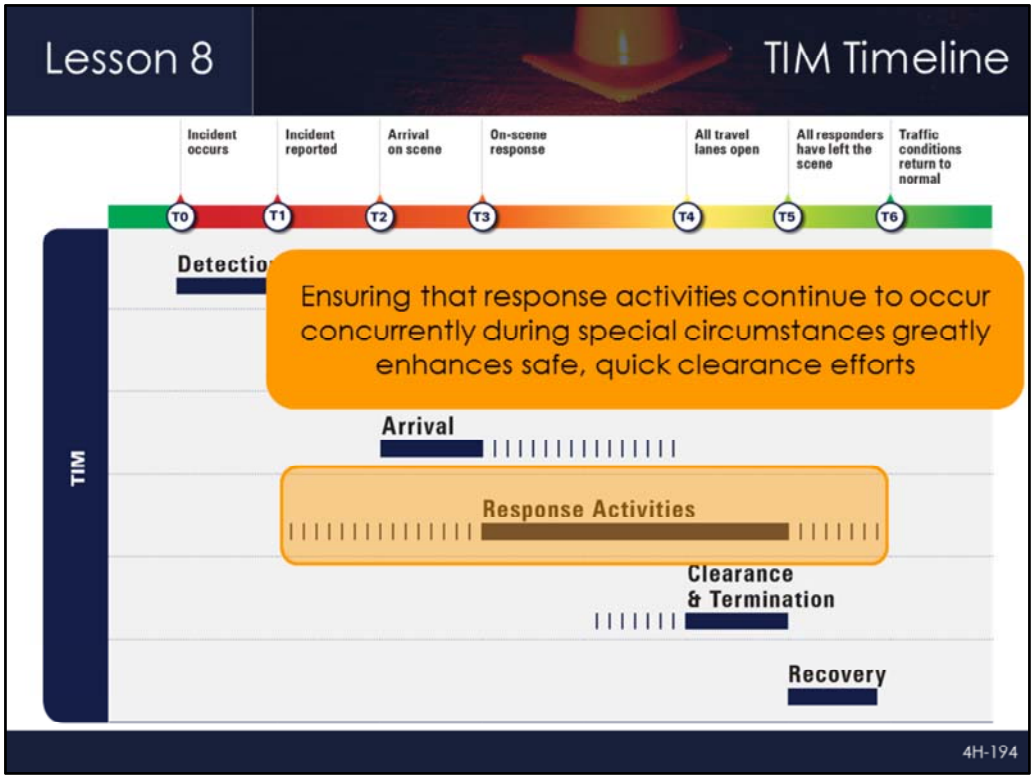
- All responders should be aware and conscious of short-lived evidence
- Critical short-lived evidence can disappear when walked on by responders, flushed away with water, unintentionally swept away with a broom, etc. and includes:
    - Tire marks, debris fields
    - Gouges, scrapes, paint transfer
    - Fluid trails
    - Blood, hair, tissue, fibers

Lesson Objective: 8.4	Full Version Reference Slide: 8-50

- Take only those actions needed to complete your own area of responsibility with minimal disturbance of the scene unless authorized or assigned
- Reinforce that all debris is evidence until proven otherwise by law enforcement personnel. When in doubt about something… ask!

Lesson Objective: 8.4	Full Version Reference Slide: 8-53

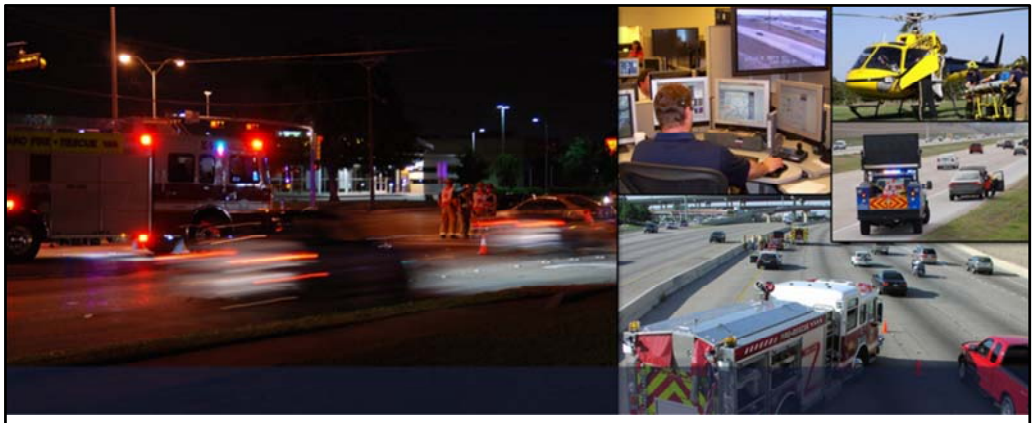
- Knowing the laws in the state that govern declaring death and removing fatally injured victims is critical
- Some states have memorandums of understanding that allow fatalities to be documented by the local law enforcement agency and removed from the scene without waiting for the medical examiner
- In some jurisdictions, the medical examiner will prioritize traffic fatalities above other deaths, like one in a home, to promote safe quick clearance



TIM Timeline - Lesson Objective: 8.5	Full Version Reference Slide: 8-58

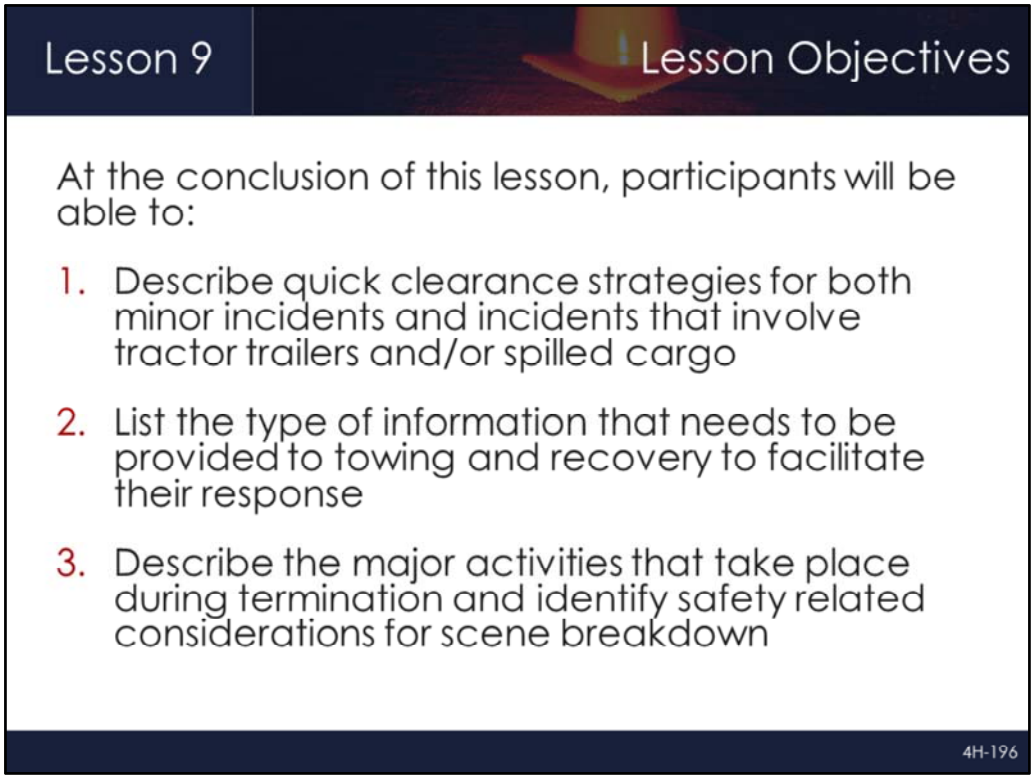
- **Animation:** Click forward to make orange box appear, second click brings up detailed view of Response Activities, and third click brings up orange text box

- Discuss how important it is for responders to communicate and coordinate during special activities
- Response activities should be occurring concurrently, not sequentially, whenever possible
  - Reference the pit crew analogy where every team member works simultaneously to accomplish the overall goal of the team
- Discuss common situations that contribute to incident clearance delays
  - Waiting to contact the medical examiner until after the crash investigation is almost complete
  - Waiting for accident investigators to arrive during after hours and weekends
  - Delayed request for dispatching of tow or recovery vehicles

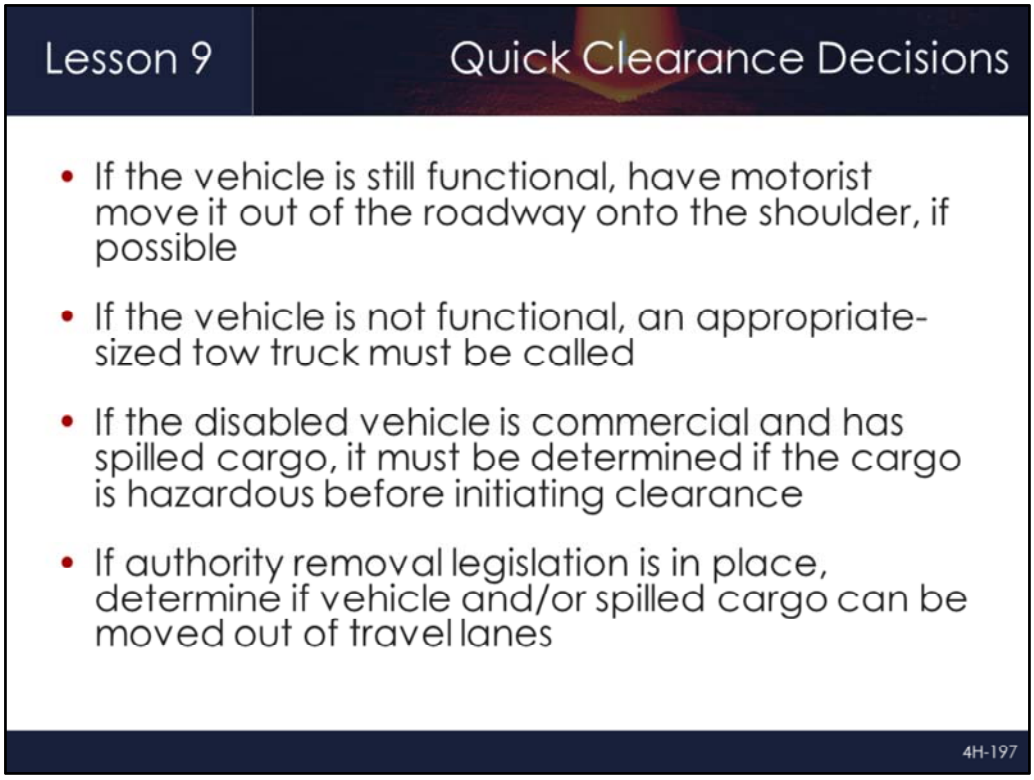


Lesson 9: Clearance and Termination

4H-195



Lesson Objectives	Full Version Reference Slide: 9-2



Lesson Objective: 9.1	Full Version Reference Slide: 9-6

- Discuss the key decisions that have a direct impact on getting lanes open as soon as possible
  - If the vehicle is still functional, have motorist move it out of the roadway onto shoulder, if possible
  - If the vehicle is not functional, an appropriate-sized tow truck must be called
  - If the disabled vehicle is commercial and has spilled cargo, it must be determined if the cargo is hazardous before initiating clearance
  - If authority removal legislation is in place, determine if vehicle and/or spilled cargo can be moved out of travel lanes

Lesson Objective: 9.1	Full Version Reference Slide: 9-10

- **Video:** L9_V3 - WI Move It.wmv

- This video from Wisconsin shows officers utilizing a push bumper to relocate a disabled vehicle from the travel lanes to a paved shoulder
- Highlight the coordination between the two officers

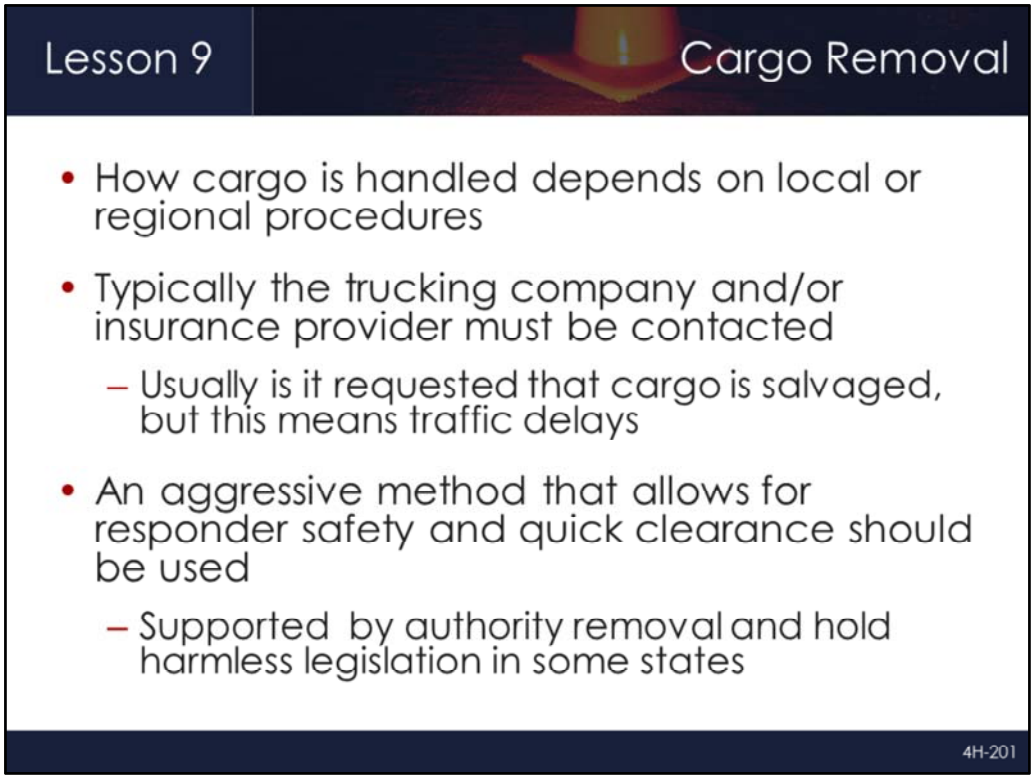
Lesson Objective: 9.1	Full Version Reference Slide: 9-8

- Push bumpers can be used to move disabled vehicles out of traffic lanes
- Some places equip responder vehicles with push bumpers, but discourage or even prohibit their use in deference to the potential to cause damage or incur liability
- Recall that the Authority Removal Law in many states has a *hold harmless* component
- The cost-benefit of a scratched bumper far outweighs a more significant loss if a secondary crash occurs
- Responders and their vehicles are at risk when push bumpers are not used and they must work an incident in or near moving traffic

Lesson Objective: 9.1	Full Version Reference Slide: 9-11

- Provide the following incident details:
  - The overturned 18-wheeler's cargo consisted of 38,000 lbs. of empty wine bottles
  - Since the structural integrity of the trailer was compromised, the load had to be unloaded manually

- **Ask/Discuss:** What strategies could be employed for clearing this incident?



Lesson Objective: 9.1	Full Version Reference Slide: 9-12

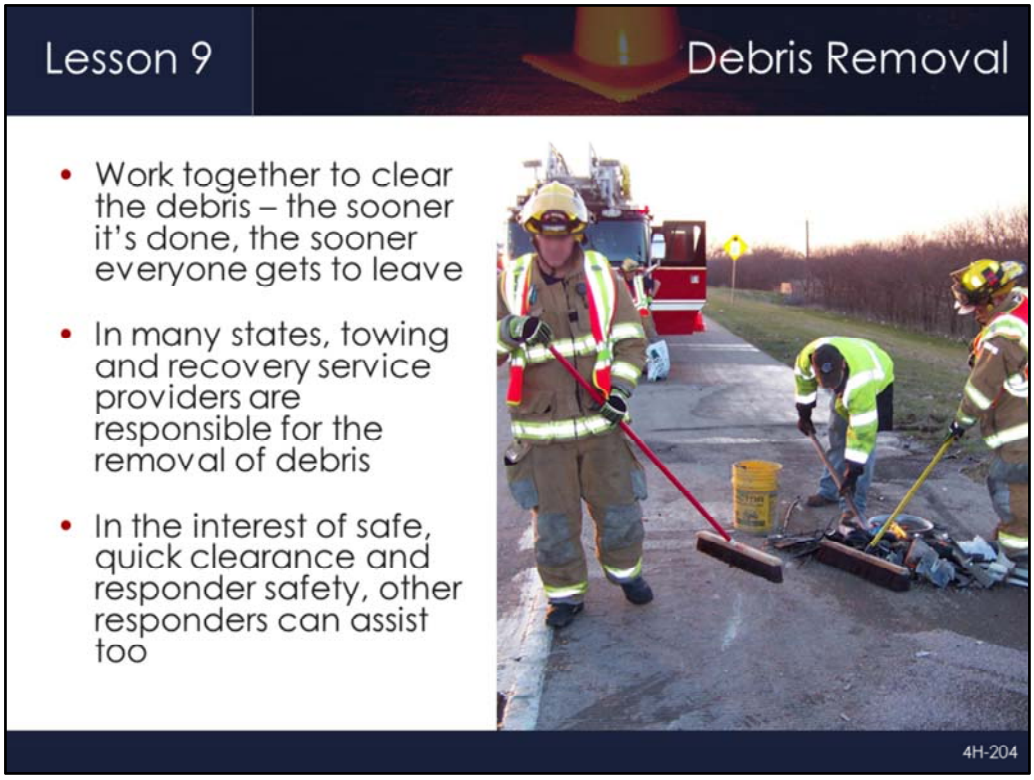
- Review these considerations as part of the strategy discussion for clearing the WA incident

Lesson Objective: 9.1	Full Version Reference Slide: 9-13

- The time period from the start of the incident to when all lanes could be opened was 2 hours, 13 minutes
- The actual removal time was 37 minutes since two 50 ton rotators were able to relocate the wreckage off the roadway
- Once the 18-wheeler was relocated to the shoulder, the trailer could be unloaded which took 4 hours, 30 minutes making the entire incident duration 7 hours, 9 minutes
- The estimated lane blockage time saved was between 4.5 and 5 hours
- Operations like this need to be done with care to ensure that no significant damage is done to the roadway surface
- If during rush hour, a best practice might be to move the vehicle off the road, and work the incident later outside of rush hour

Lesson Objective: 9.1	Full Version Reference Slide: 9-17

- In September 2005 during evacuations from Houston, TX before Hurricane Rita, a 54-passenger motor coach transporting 44 assisted living residents plus nursing staff to Dallas, TX, became engulfed in flames while traveling northbound on I-45, close to Wilmer, TX
- Despite attempts to evacuate the passengers from the coach, many of whom were non-ambulatory or had cognitive impairments, 23 passengers were fatally injured
- The decision to clear the incident and have the coroners perform their work at an off-highway location meant that the roadway was open 8 hours sooner than it otherwise would have been



Lesson Objective: 9.1	Full Version Reference Slide: 9-21

- Work together to clear the debris – the sooner it's done, the sooner everyone gets to leave
- In many states, towing and recovery service providers are responsible for the removal of debris
- In the interest of safe, quick clearance and responder safety, other responders can assist too

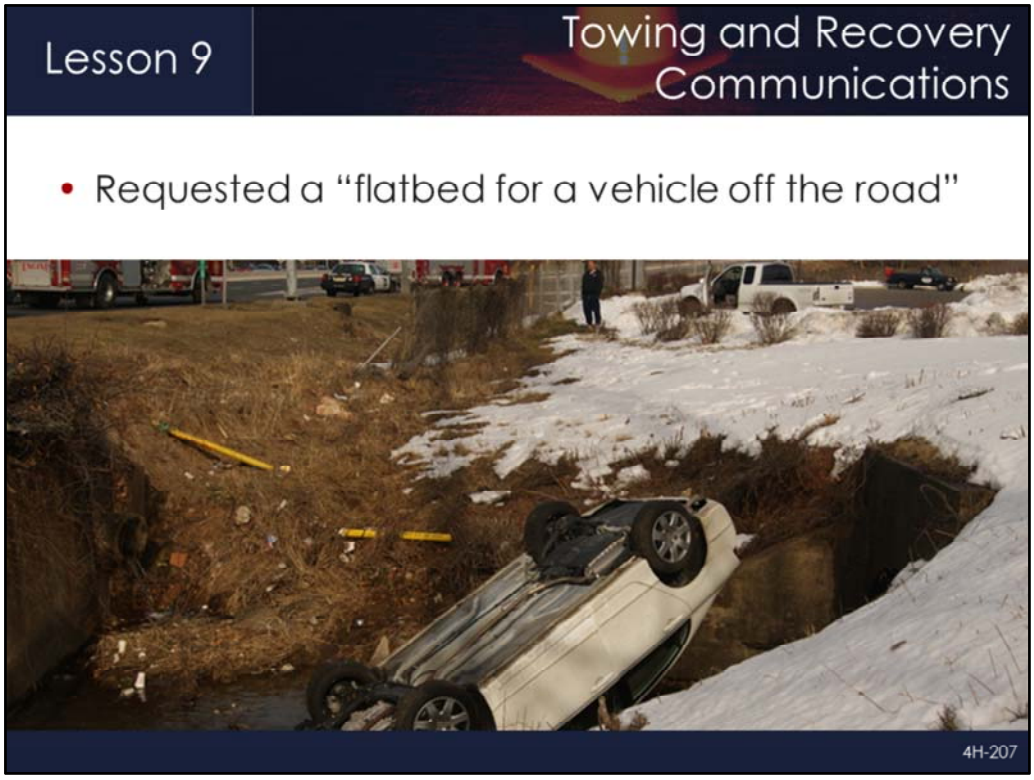
Lesson Objective: 9.2	Full Version Reference Slide: 9-22

- During incident response, tow operators play an invaluable role in promoting quick clearance by removing damaged vehicles
- Clearance goals for tow operators include:
  - Departing the scene as quickly as possible
  - Transporting occupants from towed vehicles to a safe location away from the incident
  - Handling financial negotiations off-site

Lesson Objective: 9.2	Full Version Reference Slide: 9-23

- **Animation:** Click forward to make picture appear

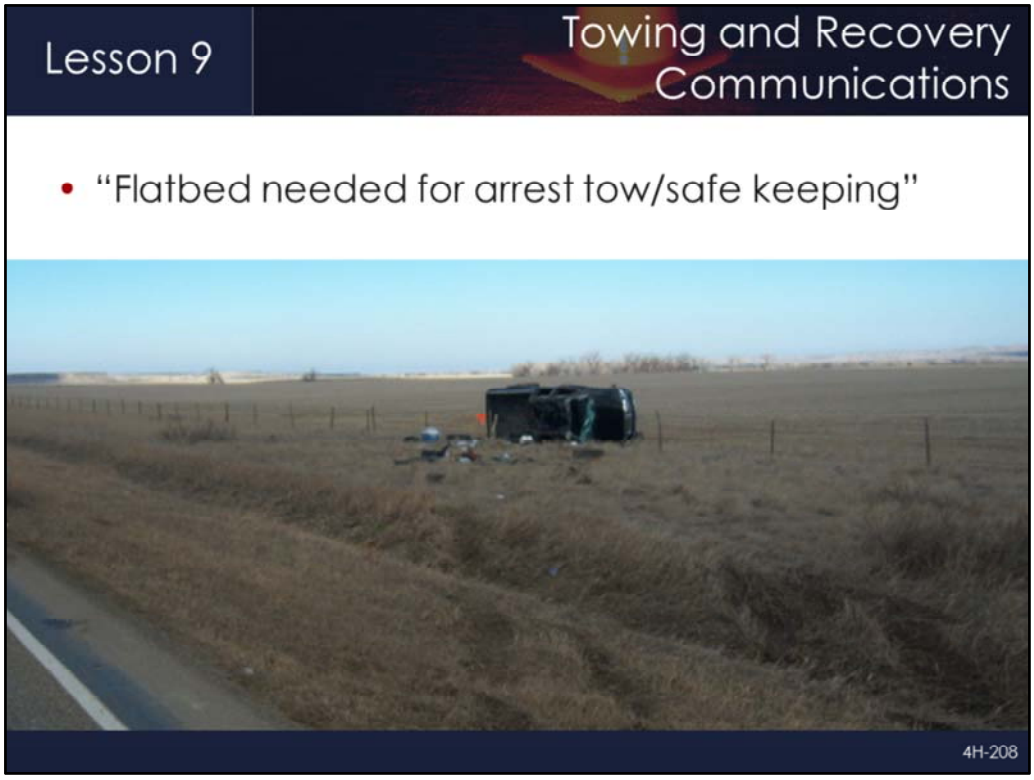
- **Ask/Discuss:** Was the description of the incident provided accurate enough to ensure that the tow company responded with the appropriate equipment?



Lesson Objective: 9.2	Full Version Reference Slide: 9-24

- **Animation:** Click forward to make picture appear

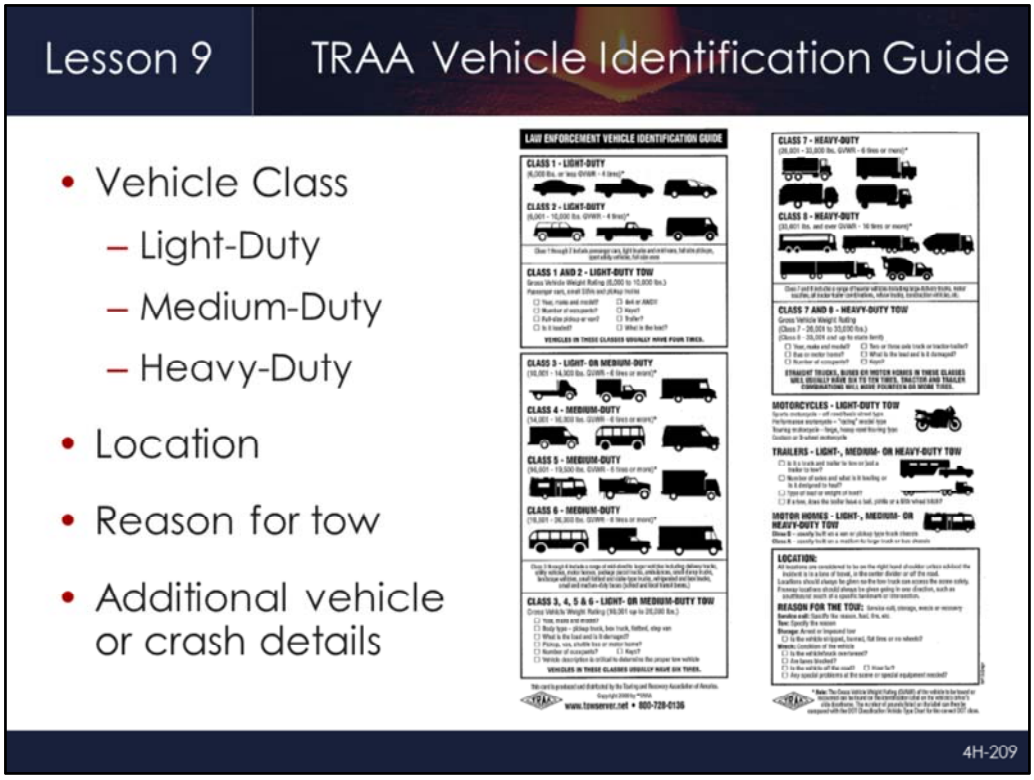
- **Ask/Discuss:** Was the description of the incident provided accurate enough to ensure that the tow company responded with the appropriate equipment?



Lesson Objective: 9.2	Full Version Reference Slide: 9-25

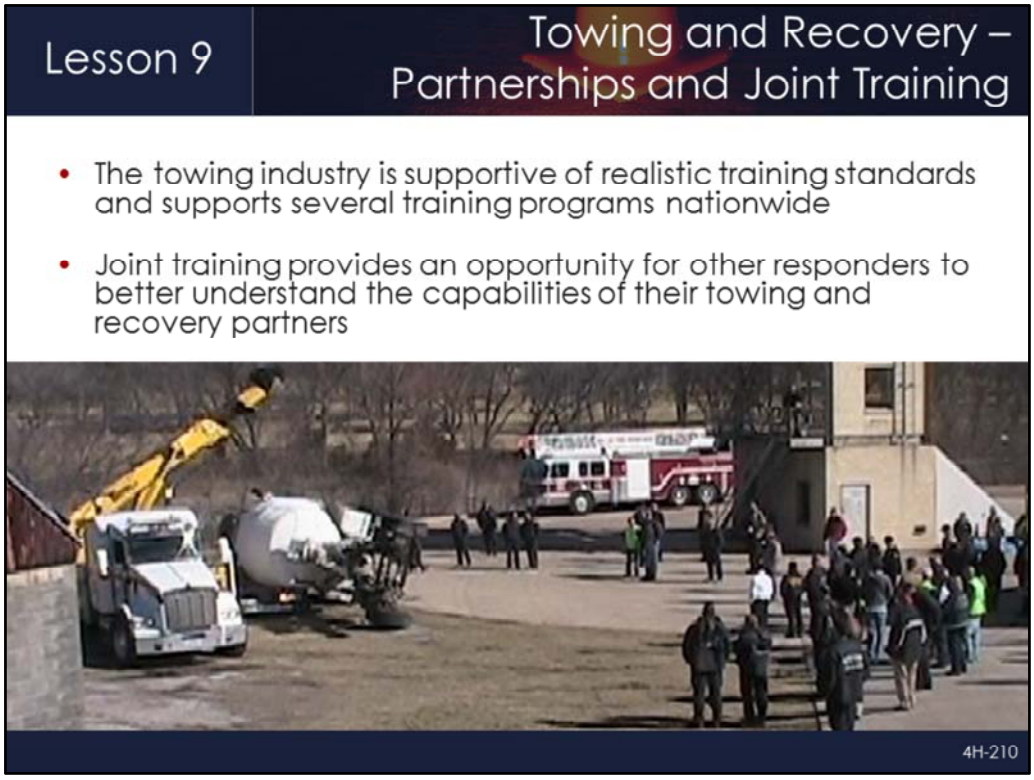
- **Animation:** Click forward to make picture appear

- **Ask/Discuss:** Was the description of the incident provided accurate enough to ensure that the tow company responded with the appropriate equipment?



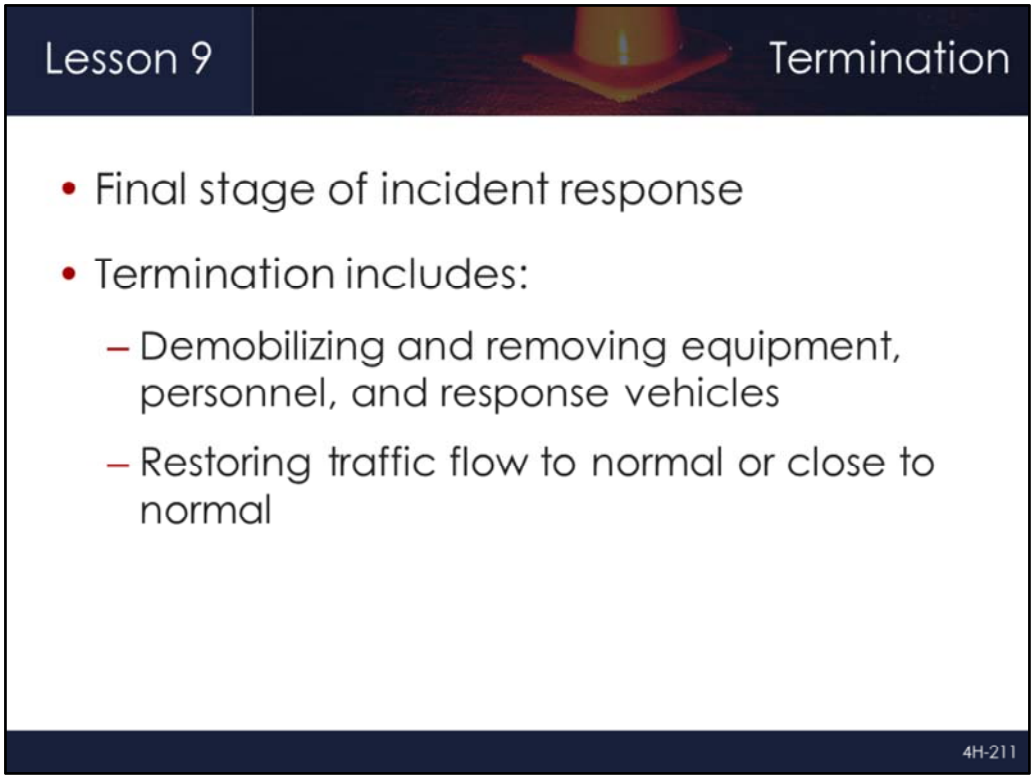
Lesson Objective: 9.2	Full Version Reference Slide: 9-26

- To assist non-towing responders, the Towing and Recovery Association of America (TRAA) has developed a Vehicle Identification Guide
- The guide:
  - Groups common vehicle silhouettes with the type of wrecker that is needed to safely and effectively tow it from an incident scene
  - Lists information that towing dispatchers require to dispatch the appropriate towing vehicle
  - Explains how the VIN number indicates the year of the vehicle, which is essential for a tower to know for correct towing procedures



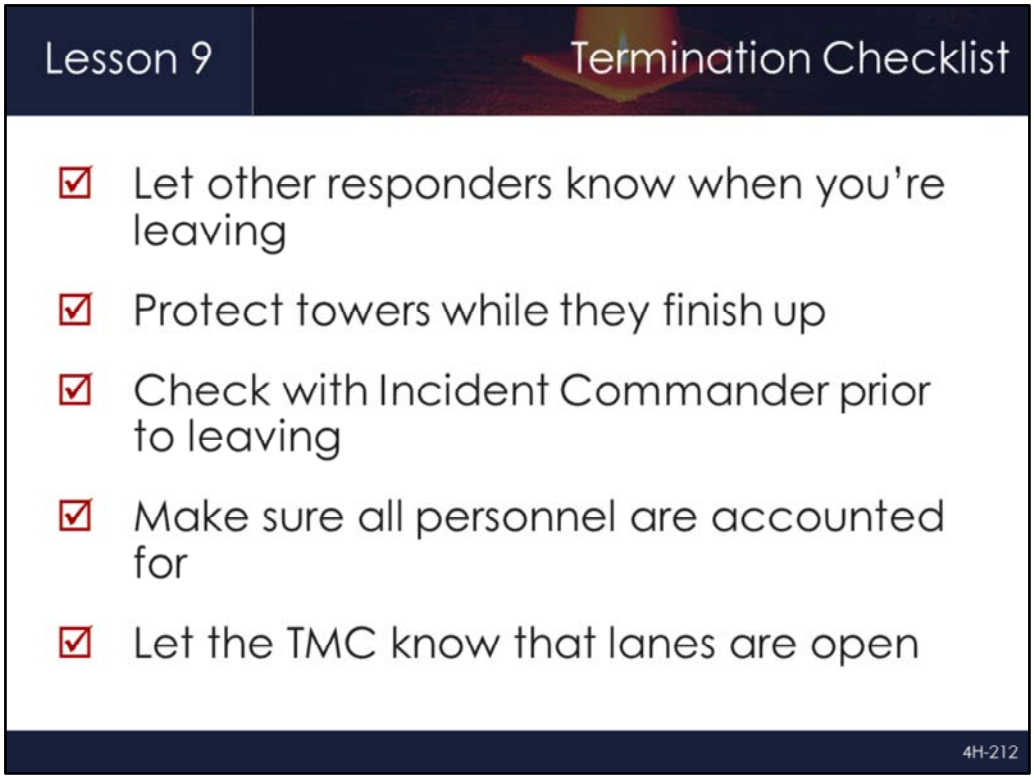
Lesson Objective: --	Full Version Reference Slide: 9-27

- While joint training that focuses on recovery capabilities is very important, towing and recovery professionals should be part of general TIM training as well
- Joint training provides an opportunity for other responders to better understand the capabilities of their towing and recovery partners



Lesson Objective: 9.3 | Full Version Reference Slide: 9-35

- All responders must exercise care when demobilizing, particularly if other responders remain present
- Equally important to properly establishing or setting up a Traffic Incident Management Area, and associated traffic control, is safely breaking down or dismantling the scene
- Major activities during termination include:
  - Recovering the roadway from any damage caused by the incident
  - Removing temporary traffic control devices from the incident scene
  - Lifting the alternate route or detour restrictions
  - Informing drivers of the return to normal traffic flow conditions
  - Departure of the responders from the incident scene

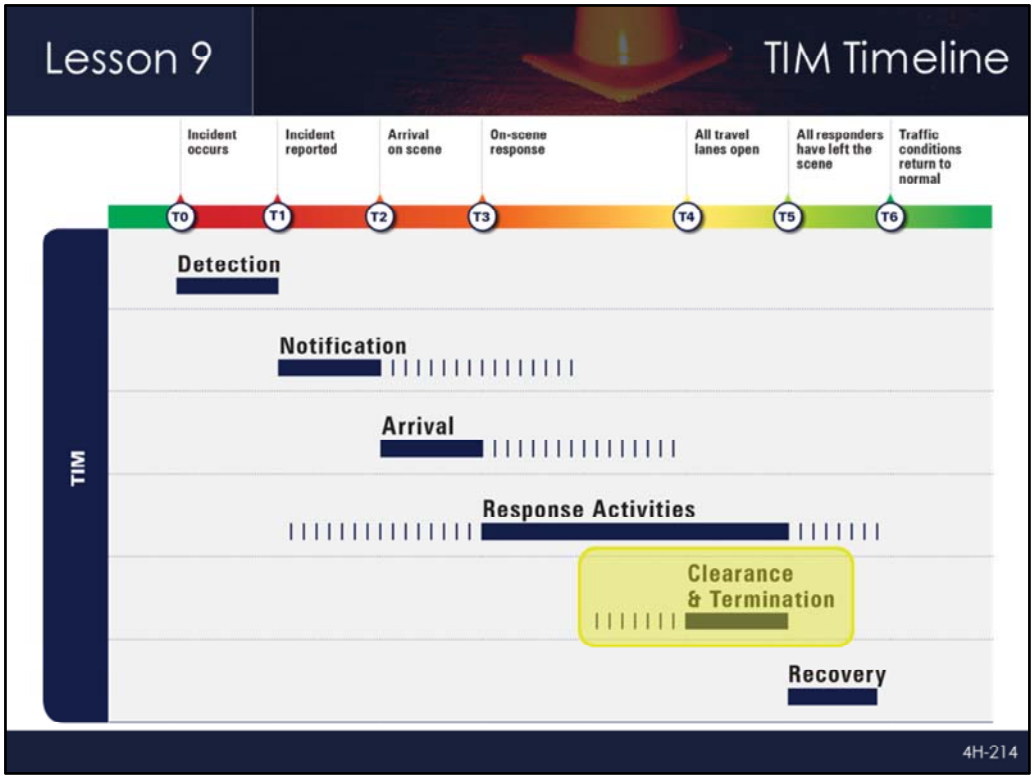


Lesson Objective: 9.3	Full Version Reference Slide: 9-37

- Emphasize that this 5-point checklist is very important and provides great guidance for safe and effective termination of an incident
    - Let other responders know when you're leaving
    - Protect towers while they finish up
    - Check with Incident Commander prior to leaving
    - Make sure all personnel are accounted for
    - Let the TMC know that lanes are open

Lesson Objective: 9.1	Full Version Reference Slide: 9-31

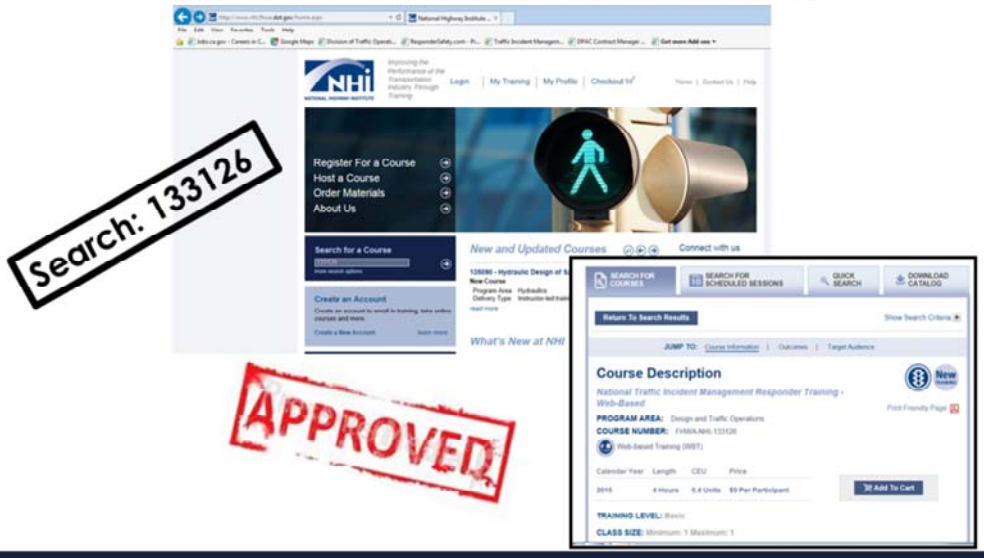
- **Video:** L9_V4 - WI QC Case Study.wmv
- **Ask/Discuss:** Debrief the video
- Incident timeline:
  - 15:16:17 - Incident occurs
  - 15:25:37 - Responders arrive on scene
  - 16:18:59 - Vehicles have cleared the area; towing and recovery providers have arrived on scene and are moving the truck that hit the semi
  - 16:29:05 - Beginning to move semi towards the shoulder to reopen lanes
  - 16:39:13 - Semi moved towards shoulder and out of Lanes 1 and 2
  - 17:15:44 - Highway department on scene and setting up cones along the entire Traffic Incident Management Area
  - 17:20:10 - Lanes 1 and 2 reopened to traffic
  - 17:39:35 - Towing and recovery professionals beginning to use air cushions to lift semi
  - 17:40:14 - Semi up-righted
  - 18:47:06 - Semi cab being removed from scene, Lane 3 has been reopened
  - 18:51:54 - Semi trailer being removed from scene
  - 18:57:23 - Highway department picking up cones



TIM Timeline	Full Version Reference Slide: 9-39

- **Animation:** Click forward to make yellow box appear

- **Ask/Discuss:** How can employing quick clearance strategies impact the TIM Timeline?
  - Reiterate the concept of Move It or Work It
  - Highlight that some clearance activities may be able to begin concurrently to response activities

SHRP2 National TIM Web-Based 4-Hour Course

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