Highway Safety: High Speed, High Risk…
…Putting the Odds in Your Favor

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A “Routine” Incident

- March 9, 1998 at 2:10 p.m. – Raining, wet roadways
- Vehicle on PA Turnpike lost control and slid into a drainage ditch… 911 is called
A “Routine” Incident – Aftermath
A “Routine” Incident – Aftermath

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

At the conclusion of this lesson, participants will be able to:

1. Differentiate between Move It and Work It incidents.
2. State the MUTCD definition of safe-position and describe blocking.
3. Define Lane +1 blocking and describe the need for it.
4. Describe safe practices for working around or avoiding the zero buffer.
The Why?

- We lose one emergency service worker every other week on the roadway that is outside of the vehicle.

- Even more are injured every day.

- To help make responders more aware of the new techniques and training that is available.
“Firefighters responding to calls need to operate as if someone is trying to run them over.”

-James Joyce
Commissioner, Chicago FD
Safe-Positioned – MUTCD Definition

The positioning of emergency vehicles at an incident in a manner that attempts to:

1. Protect the responders performing their duties
2. Protect road users traveling through the incident scene
3. Minimize, to the extent practical, disruption of the adjacent traffic flow
MUTCD Duration Classes

Types of Incidents:

- **Minor**: Usually less than 30 minutes
  - One incident lane
  - Only requires flashing warning lights.
- **Intermediate**: Usually 30 min to 2 hrs duration
  - Requiring lane diversion
  - Upstream warning devices
  - Tapering of lanes with cones
- **Major**: usually 2 hours or more
  - Roadway closure
  - Full set-up
• Usually less then 30 minutes
• Car stops
• Disabled vehicles
Intermediate

- Usually 30 minutes to 2 hours in duration
- Requires upstream notification
- Requires lane diversion
Major

- Usually 2 hours or more
- Examples: HazMat spill, multi-vehicle collision, Fatalities, Investigation.
Temporary Traffic Control Zone

Up Stream

Down Stream
Advanced Warning Signs

Drop Signs

- New concept.
- Usually second unit sets it up.
- Minimum storage, Easy open
- Set a minimum of 300 feet upstream from the incident.
Transition Area & Buffer Space

Advanced Warning Area

Transition Area

Buffer Space

EMERGENCY INCIDENT AHEAD

Activity Area
Buffer Space

Cone/Flare Placement
Safety First!

- ALWAYS face traffic
- Wear DOT approved High Visibility Vest
- Stay to the side of the road.
- Watch for spilled fluids, debris and potholes that may cause a fall.
Wrong Way to Use a Flare
• 1<sup>st</sup> cone set 300 feet upstream from incident.
  • Count approx, 90 paces or
  • 10 skip lines
• 10:1 pace placement
  • Set the 1<sup>st</sup> cone at the curb
  • Walk 10 paces downstream and one pace into the roadway and set the 2<sup>nd</sup> cone and continue.
Cone Placement

- Extend on hills and around curves
- Directional boards (arrow sticks) should be used when available
- Ensure arrow sticks are pointing in the **correct** direction
Road Closure

- Position vehicle across lanes perpendicular to traffic
- Motorist identify:
  - Emergency vehicle sooner
  - That the EV is not moving in any direction
  - It may have more reflective surface
Major Incidents may require:
- Road closures
- Advanced warning that road is closed
- Coordination between agencies

Diverting traffic can be as:
- Simple as tapering traffic onto an off-ramp
- To the more complicated and resource intensive road closure.
Protection Vehicles

EMERGENCY INCIDENT AHEAD

Activity Area
Lighting & Markings

- Studies have shown that too much lighting is confusing to the motorist and dangerous to the responders on scene.
Studies suggest that the blocking vehicle upstream have its warning lights fully engaged and apparatus at the scene have minimal emergency lights and flood lights on.
Lighting & Markings

- Lighting should be based on the:
  - Time of day
  - Weather conditions
  - Roadway conditions
  - Traffic conditions
 Chevron markings need to be:
  - 6” wide
  - Set at a 45° angle downward from the centerline
  - Have a reflective distance of 500 feet under normal conditions.
Vehicle Markings

• Helps to give early warning
• Helps to identify vehicles
• Proper markings help motorist to group objects for earlier and easier identification.
Blocking

- Blocking is the action of positioning a responder vehicle in advance of an incident to obstruct the flow of moving traffic in one or more lanes
  - 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
Vehicle Positioning

- Two ways an emergency response vehicle is commonly positioned on the roadway
  - Angled
  - Parallel (straight)
- Considerations for positioning 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
Linear vs. Multi-Lane Blocking

Linear Blocking

Multi-Lane Blocking
While working at the scene use your vehicle to protect crew and patient from oncoming traffic.

Set flares a minimum of 300’ for expected speeds of 50 mph.

Use caution with flares when flammable liquids have spilled.

Consider extending distance on curves and hills to ensure YOUR safety.
Linear Blocking

- Minor incident: traffic stops, disabled vehicles, etc.
- Linear blocking usually involves only the incident lane
- The blocking vehicle remains in the lane.
Parallel Linear Blocking
Parallel Linear Blocking
Angled Linear Blocking
Angled Linear Blocking
Multi-lane Blocking
Multi-lane Blocking

- Incident lane + one.
  - May use cones for tapering.
  - Position vehicles to both block & direct traffic.
Angled Multi-Lane Blocking
5 Categories

1. Gawkers
   • What happened?

2. Do Gooders (good sams)
   • Can I help, should I help

3. Other EMS personnel
   • See you at the next meeting

4. Family & Friends
   • OMG! Is that my family

5. The Complainer
   • Has to prove they are right
Benefits of Safe, Quick Clearance:

- Responder safety is increased
- Potential for secondary crashes is decreased
- Responder and motorist deaths and injuries are reduced
- Congestion is relieved when the road is cleared quickly

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Move It or Work It

Goal of Safe, Quick Clearance

- Restore roadway to pre-incident capacity as quickly and safely as possible
- Minimize traffic delays by opening lanes when safety permits
- Prompt, reliable, interoperable communications
Move It or Work It

Elements of Clearance

- Legislative framework
- Coordinated, multiagency approach
- Mutual procedure agreements
- Unified command
- Incident action plan
- Safety is Priority!

- Sense of urgency
- Continual reassessment & adjustment of traffic patterns.
- Utilization of resources
- Simultaneous execution of actions
Lane +1 Blocking

- By the very nature of fire/rescue and EMS work, additional space to work is typically required.
- Lane +1 blocking occurs when responders block the involved lane(s) plus one additional lane to provide a protected lateral space for safety.
Lane +1 Blocking – Protected Incident Space
Lane +1 Blocking – Patient Loading
Lane +1 Blocking
Wear Your Gear!
Wear Your Gear!

Provides Protection
How many rescuers are there?

Increases Visibility
Under no circumstances shall fewer than two emergency vehicles operate at an incident on an express highway or other potentially dangerous roadway. Call for additional units. Use the collision scene to protect crew and patient from on-coming traffic when loading patient into ambulance.
Termination Area

- Tow trucks and other ancillary vehicles
  - Recovery trucks
  - Highway (DOT) trucks
  - Coroner & Medical Examiner vehicles
  - media

- Extend termination area a safe distance beyond the scene
Advanced Warning Area

EMERGENCY INCIDENT AHEAD

Activity Area