

# APPARATUS POSITIONING & ROADWAY SAFETY

Emergency Vehicle Operator Course  
Module 8





# MOTIVATION

- In 2015, MCFRS answered 116,424 incidents
- Nearly every incident requires operators to position for:
  - Operational efficiency
  - Crew safety
- Operational efficiency
  - EMS equipment
  - Hoseline deployment
  - Ground and aerial ladder deployment
  - Master stream reach
- Crew safety
  - Between 2000 and 2013, 61 firefighters have been killed when struck by vehicles
  - Nearly half of the deaths were on non-fire incidents

# MONTGOMERY COUNTY EXPERIENCE



**January 6, 2016 @ 1615hrs – AT719  
struck while blocking**



**February 15, 2015 @ 0015hrs – A711  
struck while on the shoulder**



# MONTGOMERY COUNTY EXPERIENCE





# FEDERAL & STATE STANDARDS

## **Definition of a “Traffic Incident”**

**A traffic incident is defined as any non-recurrent event, (vehicle crash, vehicle breakdown, special event) that causes a reduction of roadway capacity or an abnormal increase in traffic demand or congestion.**

Maryland Manual on Uniform Traffic Control Devices – Section 6I



# WORK ZONE

- Every incident requires establishing a work zone to some degree
- Focus is traditionally on vehicle crashes or on highways
- Upon approach to a scene the apparatus operator must assess how best to protect their crew and the scene from oncoming traffic
- Any time apparatus will impede or effect open traffic lanes some form of work zone must be established

# ROADWAY TERMS

- Lane Identification
  - Number left to right

**LEFT  
SHOULDER**

**RIGHT  
SHOULDER**





# ROADWAY TERMS

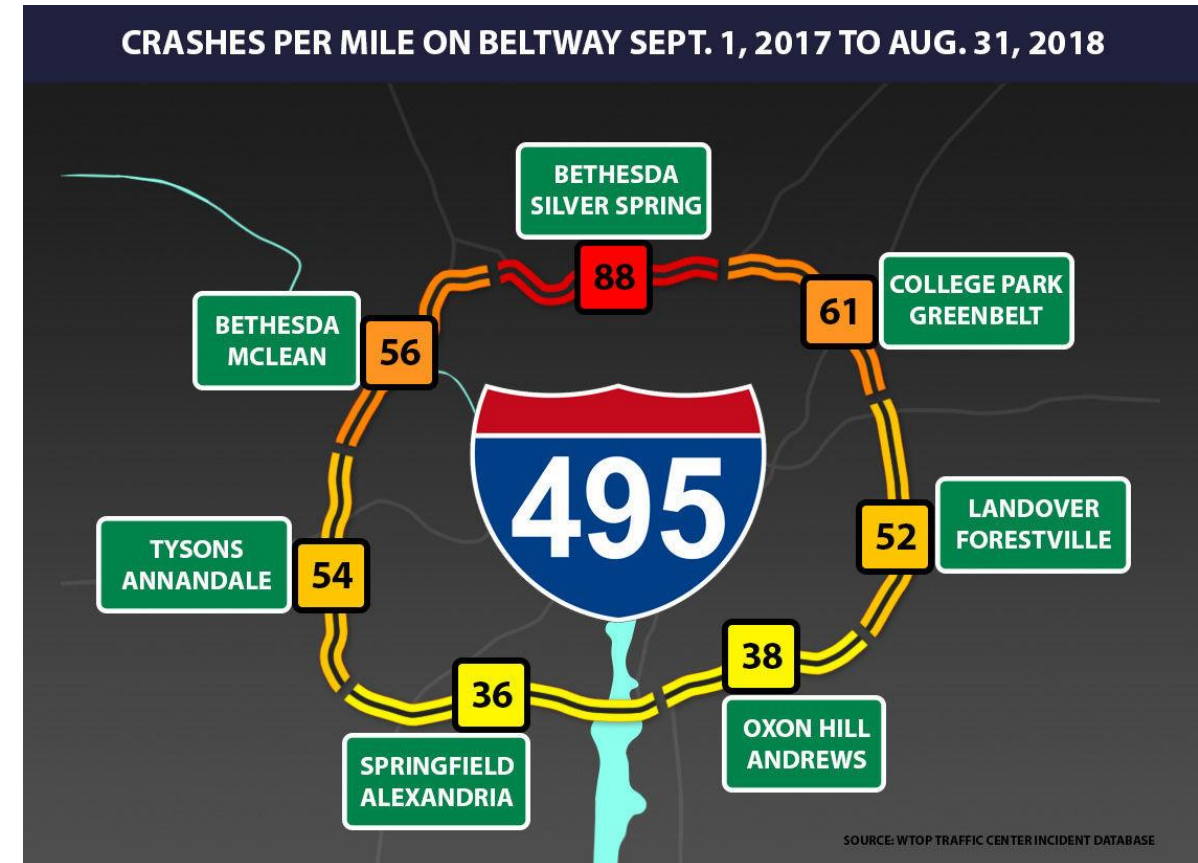
- “CD” or “Local” lanes
  - Collector distributor
  - Local lanes
- “Main” lanes
  - Through lanes





# THE BELTWAY

- Inner loop vs. Outer loop
  - Inner: Clockwise around DC
  - Outer: Counterclockwise around DC
- River Road to Georgia Avenue is very hazardous due to road design
- Exits 41 (Carderock) through 28 (NH Ave.) are within MoCo



# ROADWAY TERMS



**‘Upstream’ or ‘downstream’**  
refers to the direction  
of normal vehicle travel relative  
to the scene.





# CONTROLLING THE EXPOSURE

- Time
  - Clear the scene efficiently
  - Reduce the assignment
- Distance
  - Use a space buffer between you and traffic
  - Provide advanced notice downstream
- Shielding
  - Blocking apparatus
  - Traffic control devices



# EXPOSURE TIME

## “QUICK CLEARANCE”

- DOT and PD want the road open
- Citizens want the road open
- Operational goals should include:
  - Minimize time on scene
  - Open lanes to return traffic to normal
  - Reduce the potential for secondary crashes downstream

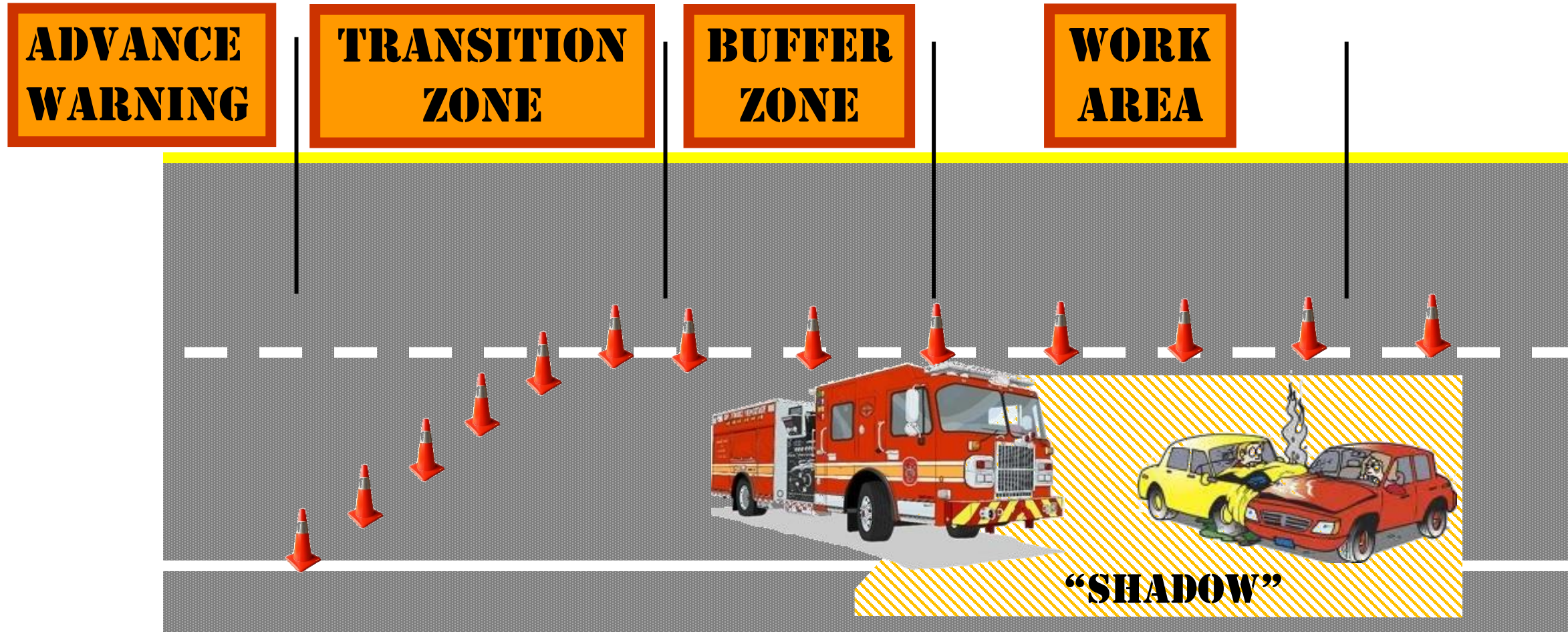


# TEMPORARY TRAFFIC CONTROL ZONE

- TTC zone is created by the blocking apparatus
- All response activities must occur within this protected zone



# WORK ZONE TERMS





# PRIORITIES OF THE FIRST ARRIVING UNIT

- Block
- Prioritize the moving traffic hazards
- Set out traffic control devices



# BLOCKING APPARATUS

“Blocking ” is the action of positioning an apparatus or vehicle at an angle to halt or divert the flow of moving traffic in one or more lanes.

Blocking apparatus may be a unit with other duties or solely dispatched for traffic control





# BLOCKING APPARATUS

- Blocking apparatus should not be occupied
- Avoid blocking partial lanes
- Beware that gaps behind or in front of the apparatus allow cars to enter your work area

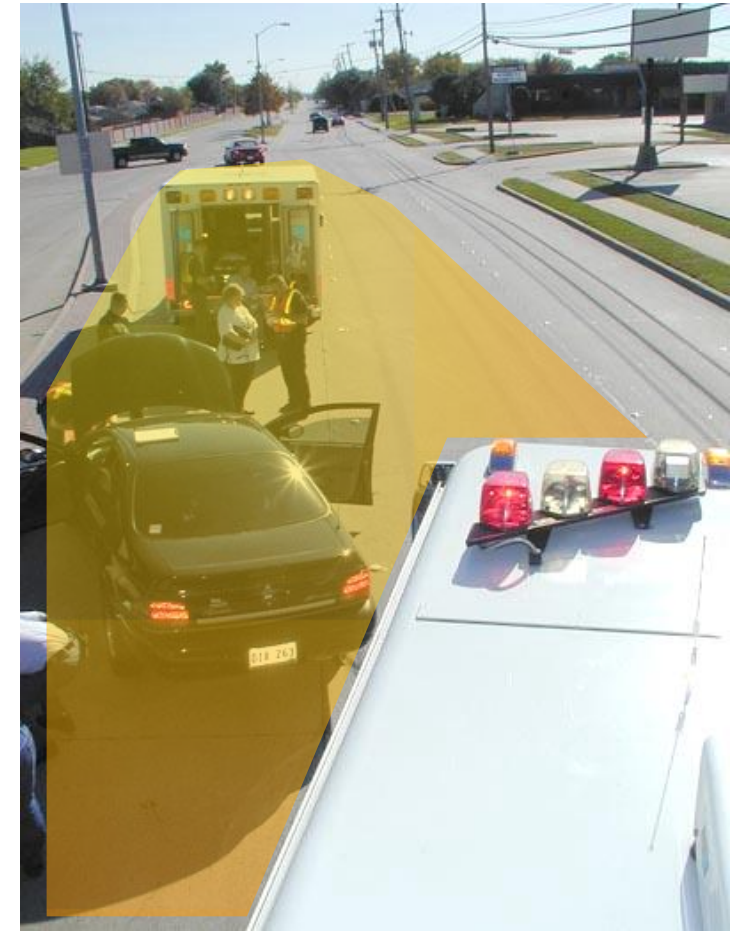




# BLOCKING APPARATUS

A "Shadow " is the area immediately downstream of any apparatus or vehicle that blocks moving traffic

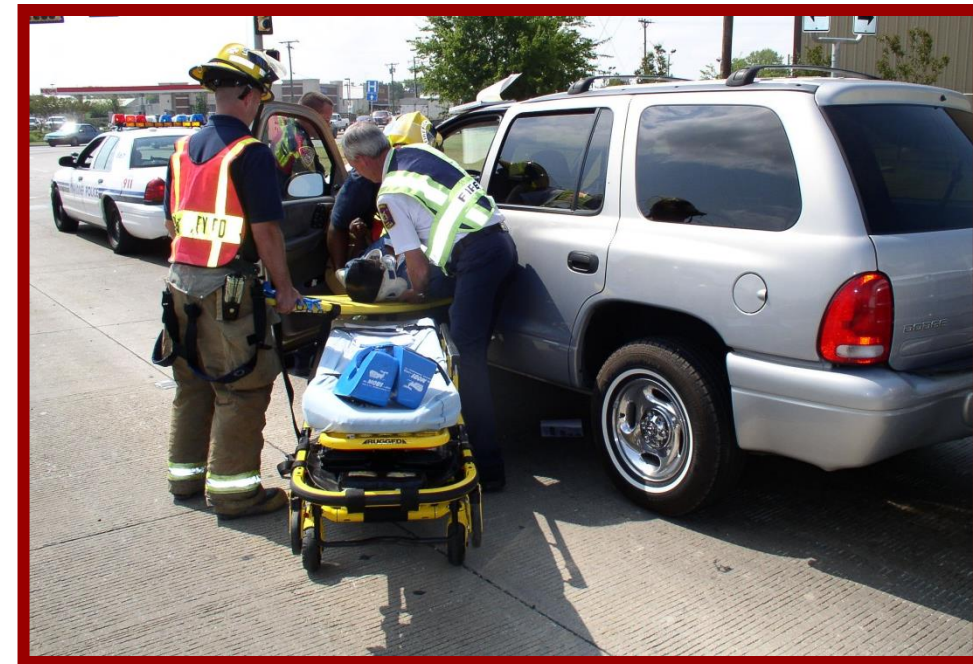
Work within this "shadow" area for greatest degree of safety and protection from moving traffic.



# BUFFER SPACE LANE + 1



**If moving  
traffic  
occupies  
this lane, is  
there an  
adequate  
“buffer”?**





# PROTECT THE AMBULANCES

Ambulances may be parked at an angle that puts the loading area deep in the shadow

The patient "loading area" at the rear of the ambulance must be within the protected area





# TRAFFIC CONTROL DEVICES

## CONES, FLARES, SIGNS

Use flares to  
illuminate  
cones at night  
or bad weather



MUTCD provides  
standards for  
cones - size and  
reflectivity



# ADVANCE WARNING

- Beware of short sight distances
- Curves, hills, access ramps, vegetation
- Position apparatus, traffic control devices, and/or warning signs ahead of the scene





# ADVANCE WARNING

- Familiarize yourself with known dangerous locations
  - I-495 b/n River Road and Wisconsin Ave
  - Any other examples?
- May require placing apparatus further from the scene than normal





# SCENE LIGHTING

- Pro's
  - Makes the scene and personnel visible
  - Identifies the work area
  - Augments apparatus warning lights
- Con's
  - Blinding to oncoming motorists
  - Makes the scene visible



# BAD WEATHER



**Anything that impacts  
visibility or traction  
increases the need for  
traffic control.**





# GOOD WEATHER



Sun glare impacts  
visibility in  
good weather!!




# YOU ARE A SOFT TARGET

- ✓ Drunk,
- ✓ Drugged,
- ✓ Drowsy,
- ✓ Distracted
- ✓ Dumb
- ✓ Disoriented

Traffic vests and turnout gear do not stop the "D" Drivers...

Cones and flares do not stop the "D" Drivers...



Here lies the  
subject of a  
NIOSH  
report



# SUBJECT OF THE REPORT

2007 - One firefighter was struck by a vehicle and killed. He was at the scene of a vehicle fire shortly after 4:00 am, loading hose back onto fire apparatus in the right-hand lane on an interstate highway when he was struck by a bus traveling approximately 65 mph. The driver of the bus had not noticed the emergency lights of fire apparatus parked on the shoulder and in the right-hand travel lane or traffic cones set up near the fire scene, and was traveling in the right-hand lane. When he belatedly tried to change lanes, he sideswiped the first apparatus and struck the firefighter. **The fire department had declined traffic control on the highway during their operations at the vehicle fire because there was no traffic on the road.**



# SUBJECT OF THE REPORT

2010 - A firefighter who was directing traffic at the scene of a motor vehicle crash was struck by a vehicle whose driver **drove over traffic cones that had been set out to close the road. A flare had been placed near the cones.** The victim was wearing coveralls with some reflective material and a high-visibility hat, and was using a flashlight with a traffic wand. However, **he had his back to oncoming traffic** and had positioned his vehicle, with emergency lights operating, beyond the point where the road was closed. Factors in the death included no advance warning to drivers, inconspicuousness of the victim and careless driving.





# SUBJECT OF THE REPORT

2011 - A firefighter directing traffic at a motor vehicle crash on a highway was struck while trying to keep the left-hand lane closed to traffic. **A driver came over the hill, tried to maneuver around slowed traffic and struck the victim**, who was wearing personal protective equipment and a reflective vest. Speed and alcohol were not factors in the incident.



# SUBJECT OF THE REPORT

2012 – The firefighter was killed at the scene of a motor vehicle crash when another driver deliberately struck him and two other emergency responders. The victim was wearing a high visibility vest, **was standing close to traffic and was not protected by the positioning of the emergency apparatus.**

# GAP ANALYSIS

- Where can another vehicle come through to the scene?
- Is this a good blocking position?





# JUMPING THE BARRIER



**Southbound ambulance crew stops and jumps the median for a patient on the northbound shoulder....**

**Should NOT be permitted!!**

# MEDIAN CROSSINGS & TURNAROUNDS

**Policy forbids turning  
around at median  
crossings or breaks in the  
center barrier when traffic  
is uncontrolled**



# MEDIAN CROSSINGS

## PGFD EXPERIENCE



- E828 used a break in the median
- Returning to quarters
- I-495 near Route 50
- Struck from behind by a tractor-trailer
- 4 FF injured; one severely





# ROADWAY SURVIVAL

- Apparatus position does not eliminate the need for personal situational awareness
- Personnel are exposed when:
  - Getting out of the unit
  - Walking around the unit
  - Retrieving equipment from the unit
  - Getting into the unit
  - Spotting for the unit

**Don't forget the civilians!**





# ROADWAY SURVIVAL

- Give consideration for protecting the most people most of the time
  - Which side(s) of the apparatus contain the equipment you will need?
  - Protect the patient compartment entrance door
- The driver should check side mirrors just before people dismount – look for incoming vehicles



# ROADWAY SURVIVAL

- Stop, look, and listen.....before you walk around the corner of an apparatus
- Try to position yourself to face oncoming traffic when getting equipment from the apparatus
- Always avoid placing yourself between oncoming traffic and your apparatus – the rock and the hard place
- Consider angling the apparatus every time you park on a roadway, even at the curb



# ROADWAY SURVIVAL

## EXITING THE CAB

**Maintain a “Low Profile”**

**Do NOT open door fully**

**Do NOT walk around end of open door**



**Drivers and Officers cannot choose the side they exit**

# ROADWAY SURVIVAL

## EXITING THE PATIENT COMPARTMENT

**Maintain “Low Profile”**

**Do NOT open door fully**

**Do NOT walk around end of an open door**

**Minimize your time in the doorway**



# ROADWAY SURVIVAL EMS UNIT LOADING



**Protect the rear of EMS Transport Units.  
If the rear loading area is not within the  
shadow of another unit, consider  
positioning at an angle or in a protected  
area.**





# ROADWAY SURVIVAL

## PERSONAL VISIBILITY

- MCFRS Policy 26-07AM – Use of Traffic Vests
  - incident scenes on arterials/highways/streets
  - All personnel on scene must wear a:
    - traffic safety vest ;or
    - structural firefighting coat ;or
    - sector/command vest
- Flashlights
  - Attention grabber
  - Be cautious not to blind drivers

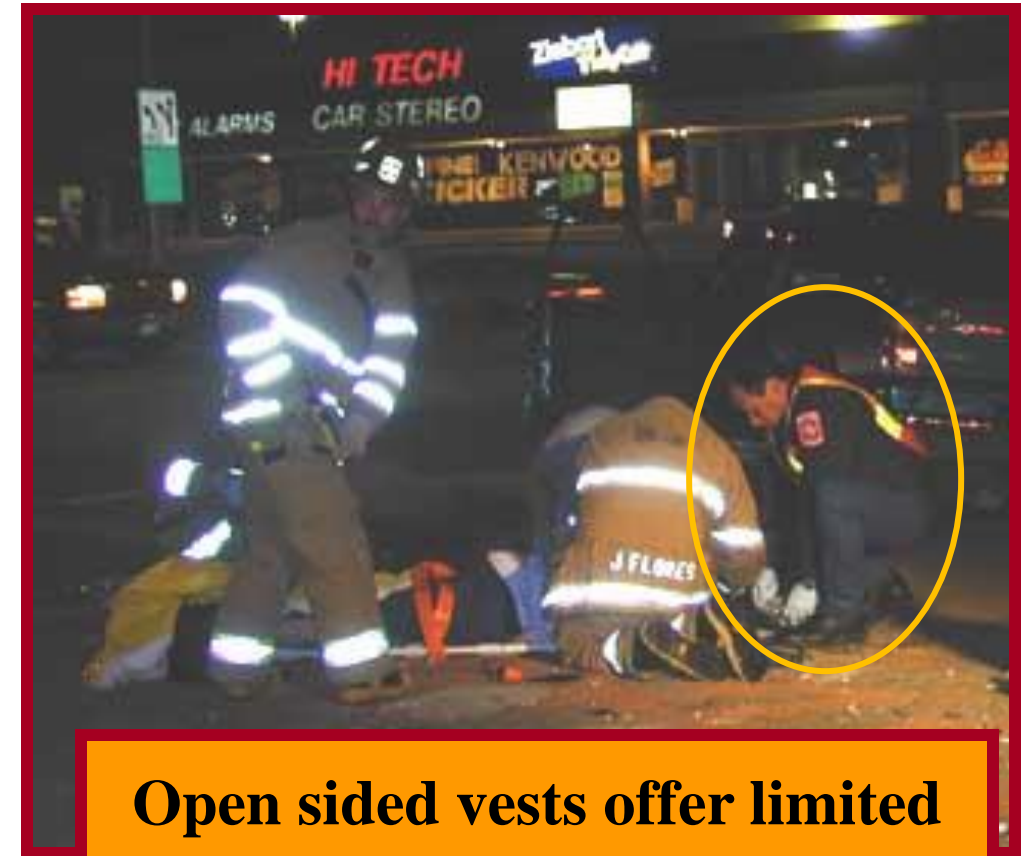


# ROADWAY SURVIVAL

## PERSONAL VISIBILITY



**Do you see all of the responders?**



**Open sided vests offer limited protection on roadways**

# ROADWAY SURVIVAL

## PERSONAL VISIBILITY



Who can you see?







# “MOVE OVER” LAW

## MARYLAND CODE - § 21-405

(e) Unless otherwise directed by a police officer or a traffic control device, when an emergency vehicle using any visual signal is stopped, standing, or parked on a highway, the driver of a motor vehicle approaching the emergency vehicle from the rear shall:

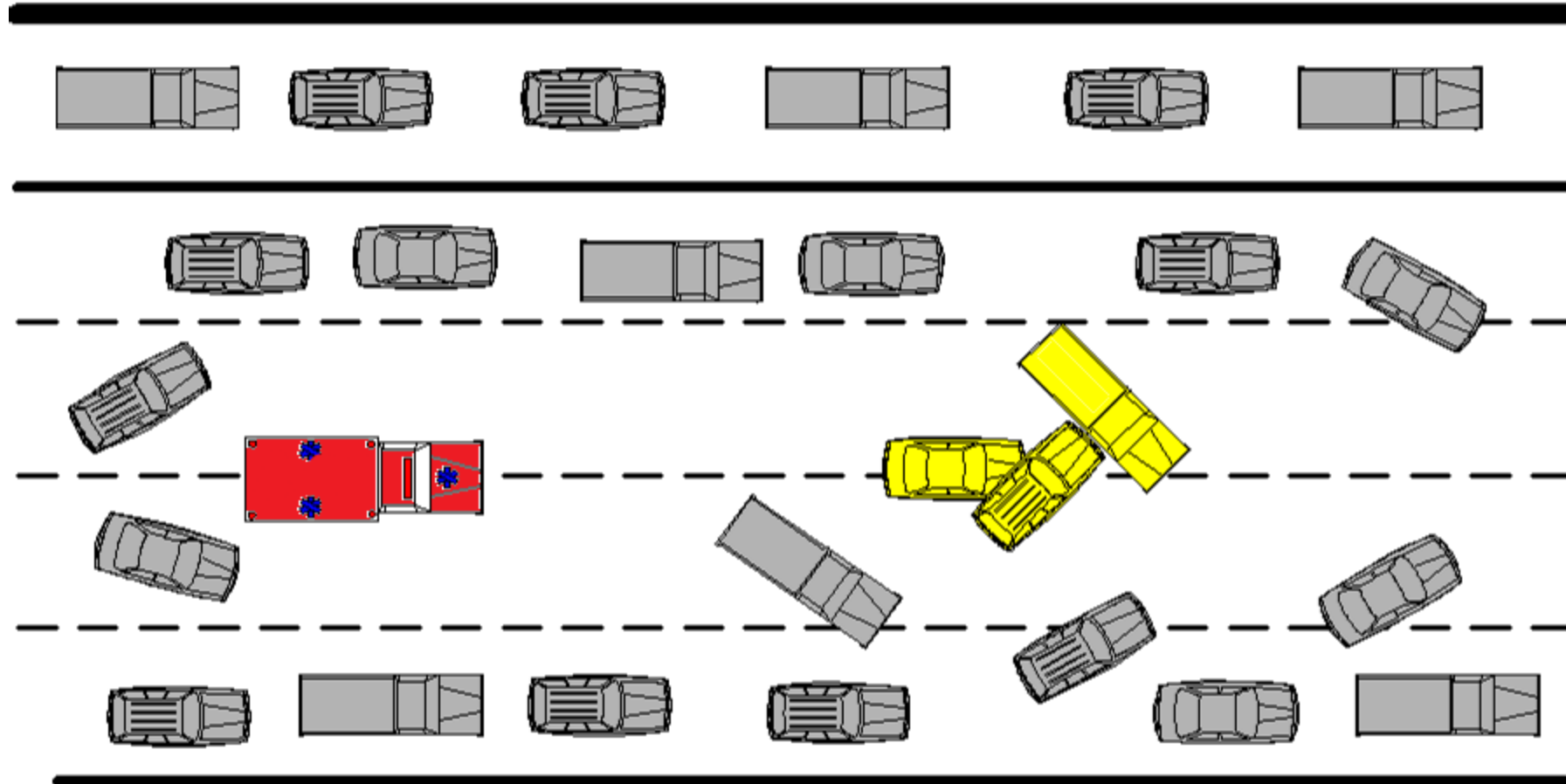
- (1) make a **lane change** into an available lane not immediately adjacent to the emergency vehicle; or
- (2) **slow to a reasonable** and prudent speed that is safe for existing weather, road, and vehicular or pedestrian traffic conditions.

# FIRST ARRIVING?

You arrive first on a crash on the interstate.

Where do you park and why?

What are your priorities?



# MONTGOMERY COUNTY EXPERIENCE

- E707 arrives on scene of a PIC with MoCo Sheriff already on scene
  - Outer loop prior to 355
- Near-hit occurs with vehicle swerving to avoid E707
- E4 dismounts to check the status of the PIC; other personnel remain on E707
- Within 3 minutes of arrival E707 is struck by another vehicle
- E707 effectively shielded the crew from harm



**February 1, 2021 – E707 struck shortly after arrival**



# SUMMARY



Position yourself and your apparatus for maximum visibility and protection.

Do not rely upon traffic cones or flares to stop a vehicle.

Treat the roadway like an IDLH atmosphere.

*Every time you are in the road – not just on calls.*