NLC NATIONAL LEAGUE OF CITIES

RISC RISK INFORMATION SHARING CONSORTIUM

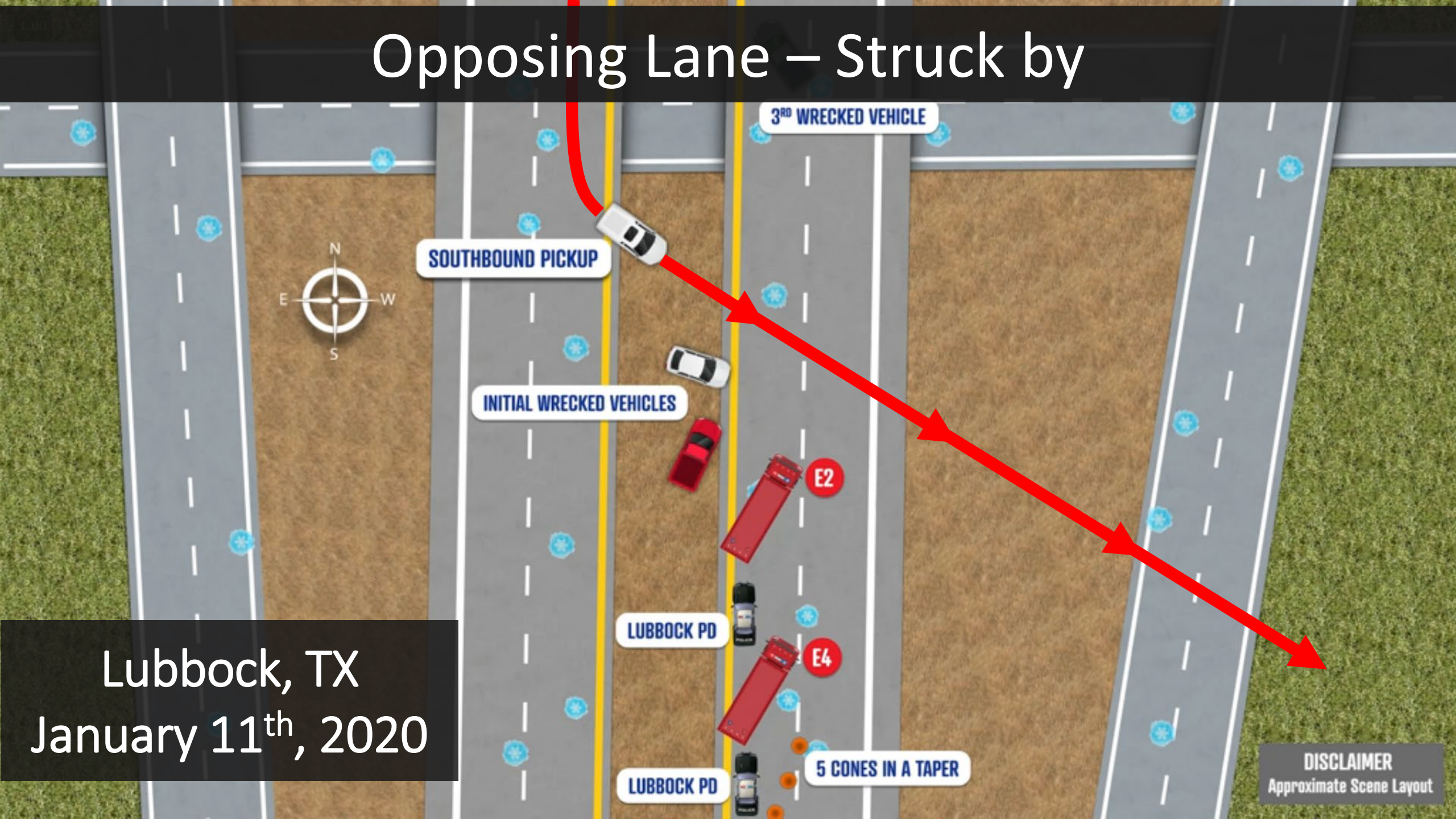
What's Your Head Worth: Preventing Injuries of Road and Public Safety Personnel

Tuesday, October 28th | 10:15 AM

What’s your head worth?

Brady Robinette
Lubbock Fire Rescue

Opposing Lane – Struck by



Lubbock, TX
January 11th, 2020


POLICE
FX4
6
SPEED
LIMIT
55

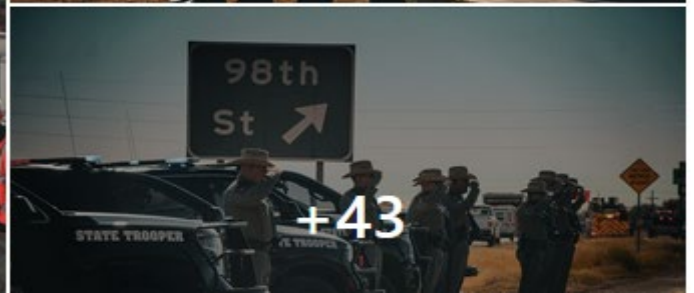

LUBBOCK POLICE
OFFICER


Happy

Lubbock Fire Rescue
8h ·

Yesterday, we celebrated the life of LFR Firefighter Matt Dawson, a true hero and public servants whose legacy will live on forever. We are forever grateful for the overwhelming support of our community from across the country. Your support, prayers, and well wishes have been a source of comfort and strength during this tragic loss.

#DawsonStrong

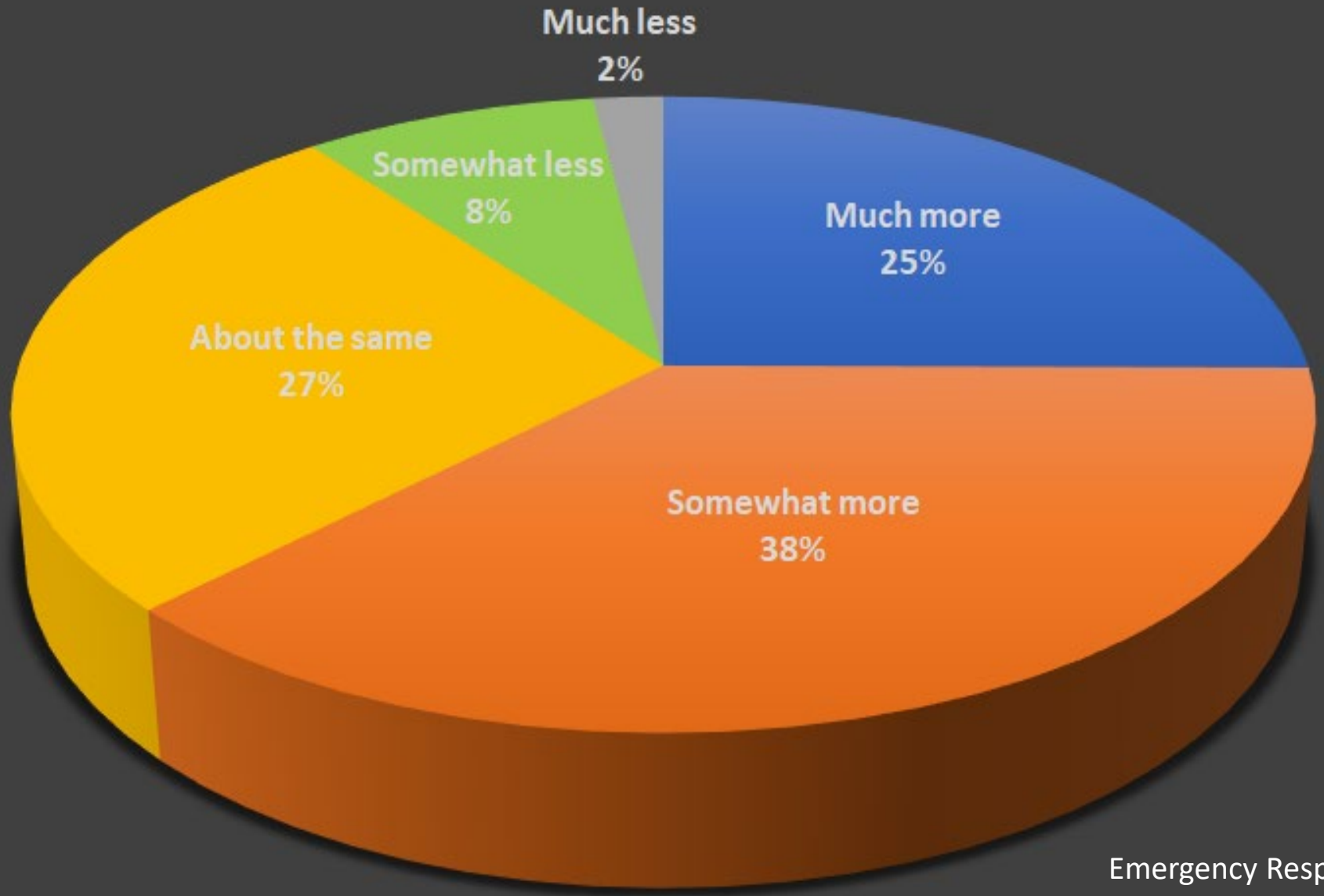


Warning

The following video shows actual struck-by accidents


kgw.com
POLICE

Overall, the life-safety hazard of roadway incidents compared to that of structure fires



Emergency Responder Safety Institute

Roadway Workers

Fire Police

Towing/ Recovery

Law Enforcement

Streets Department

Department of Transportation

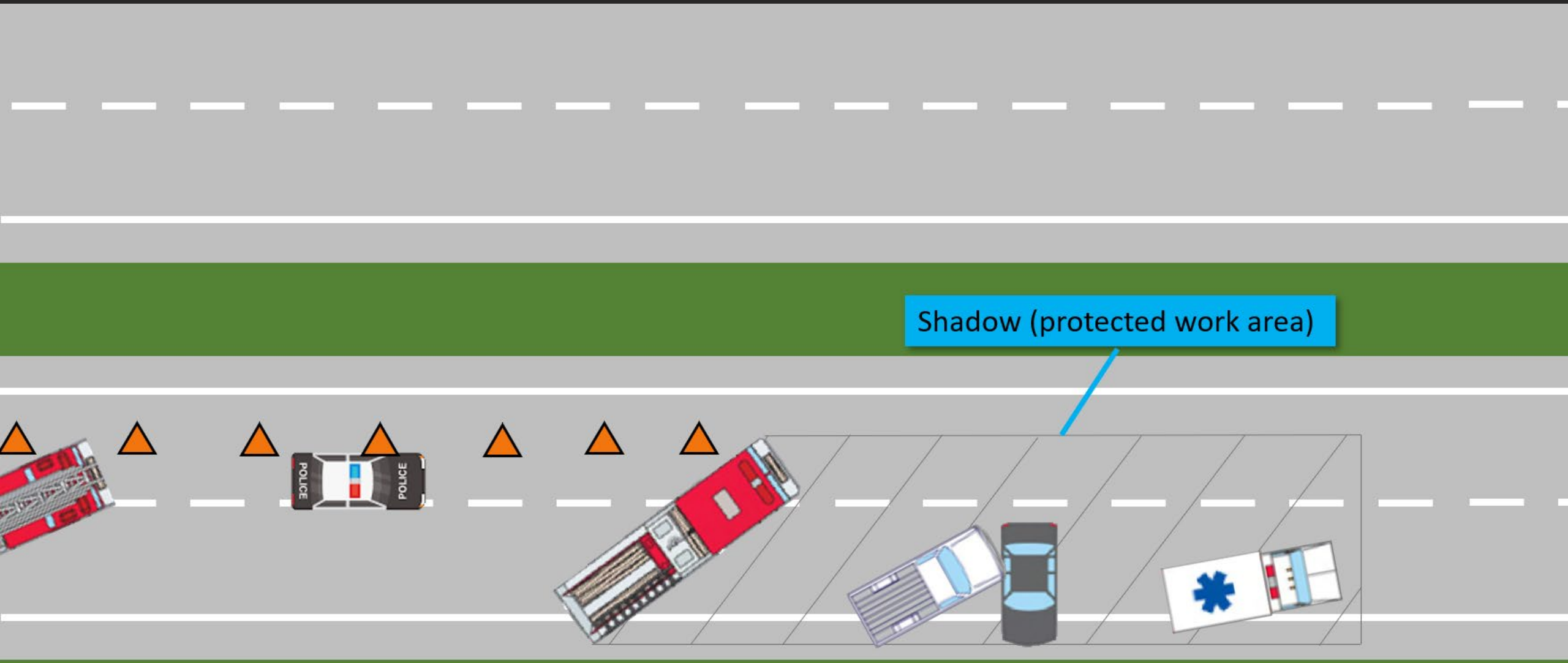
Roadway Construction

Emergency Medical Services

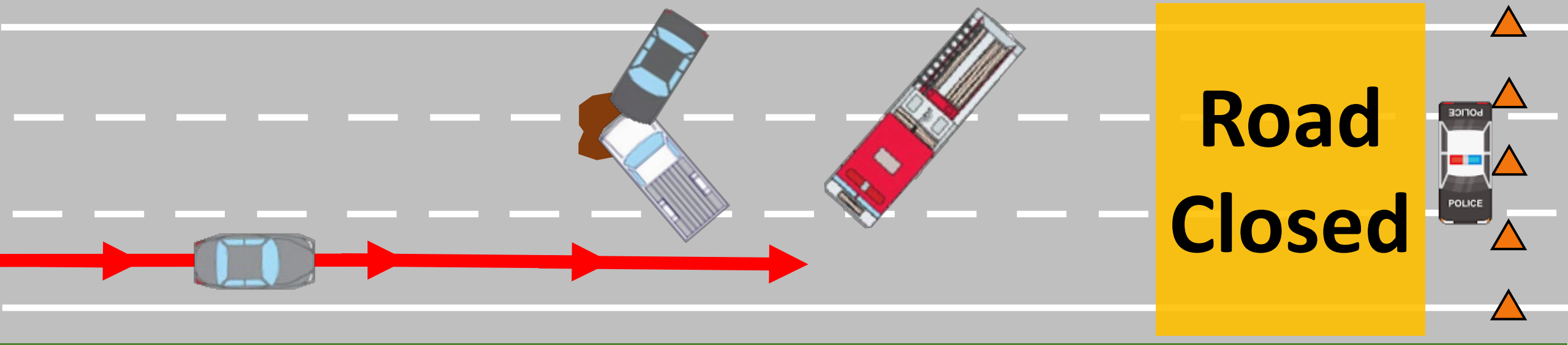
Safety Service Patrols

Fire Service

“Safe” Work Area



Wrong Way – Struck by



Irving, TX
December 2020

Regulations/Laws

OSHA Plan States - 1926.100 Head Proteciton

National Fire Protection Agency (NFPA) – As of 2025 provides no guidance on head protection for roadway incident operations

Check other local, state, federal regulations and laws

OSHA

- **Part Number:** 1926
- **Part Number Title:** Safety and Health Regulations for Construction
- **Subpart:** 1926 Subpart E
- **Subpart Title:** Personal Protective and Life Saving Equipment
- **Standard Number:** 1926.100
- **Title:** Head protection.
- **GPO Source:** e-CFR

1926.100(a)

Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

1926.100(b)

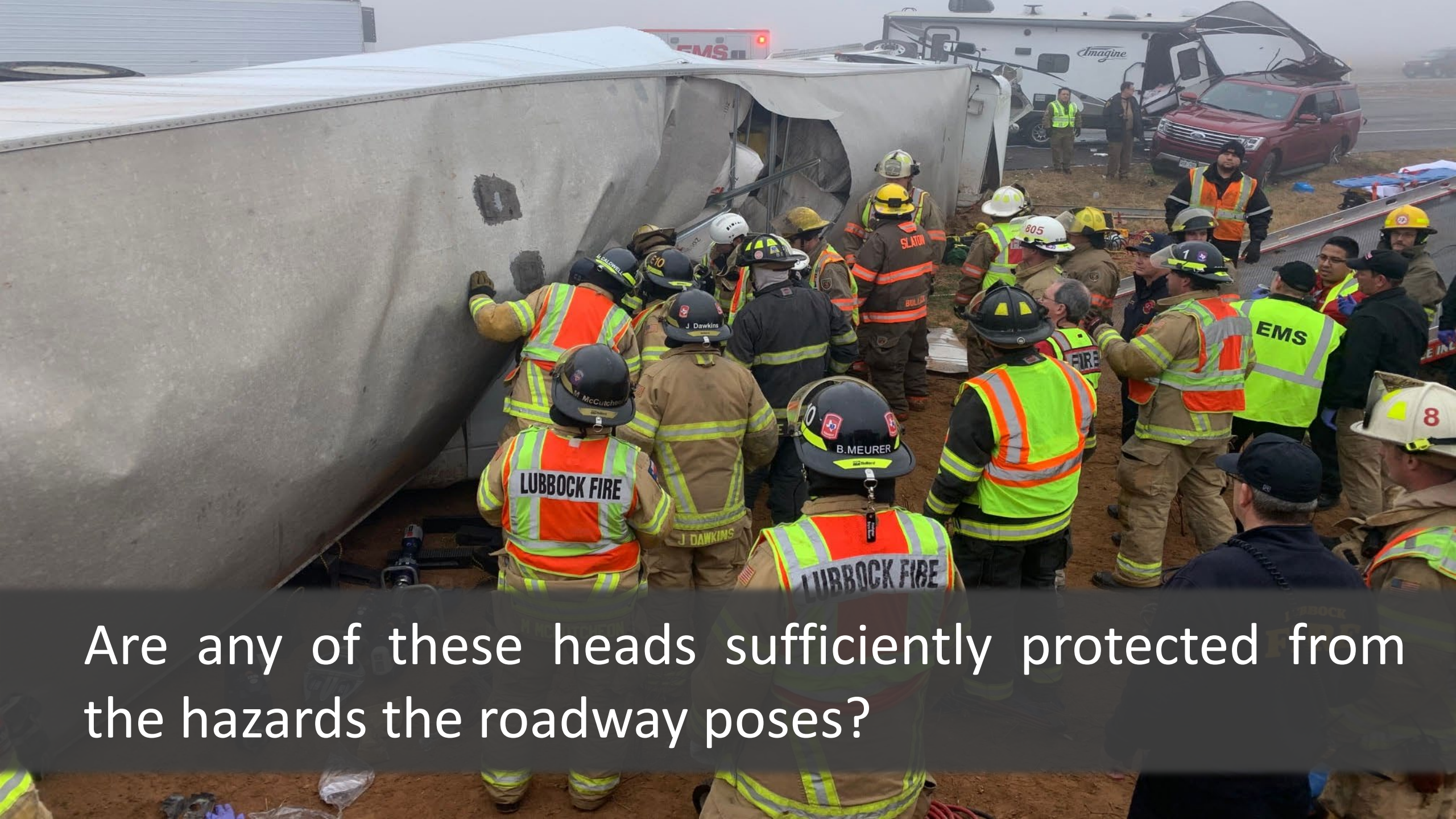
Criteria for head protection.

1926.100(b)(1)

The employer must provide each employee with head protection that meets the specifications contained in any of the following consensus standards:

1926.100(b)(1)(i)

American National Standards Institute (ANSI) Z89.1-2009, "American National Standard for Industrial Head Protection," incorporated by reference in §1926.6;



Are any of these heads sufficiently protected from the hazards the roadway poses?

Helmet Types

Impact Protection

Broadly speaking, helmets are designed to prevent skull fractures and injuries to the brain tissue

Penetrating trauma

Blunt force trauma

Acceleration/deceleration injuries

Contusions, hematomas, swelling, diffuse axonal injuries

According to SNELL M2020[1], four of the most critical elements affecting a helmet's protective properties are:

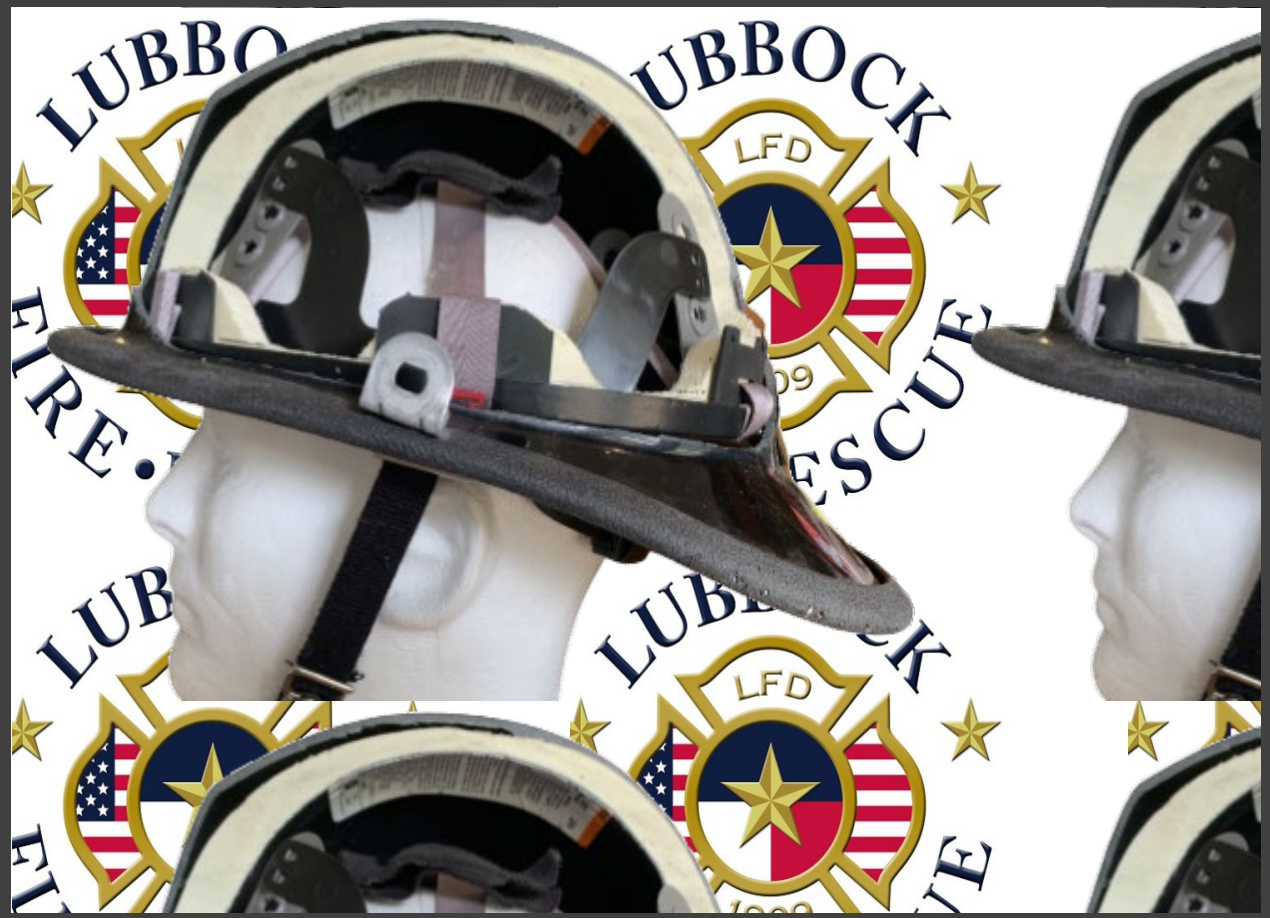
- **Impact management** - how well the helmet protects against collisions with large objects
- **Helmet positional stability** - whether the helmet will be in place, on the head, when it's needed most
- **Retention system strength** - whether the chin straps are sufficiently strong to hold the helmet throughout a head impact
- **Extent of protection** - the area of the head protected by the helmet

[1]SNELL Foundation®

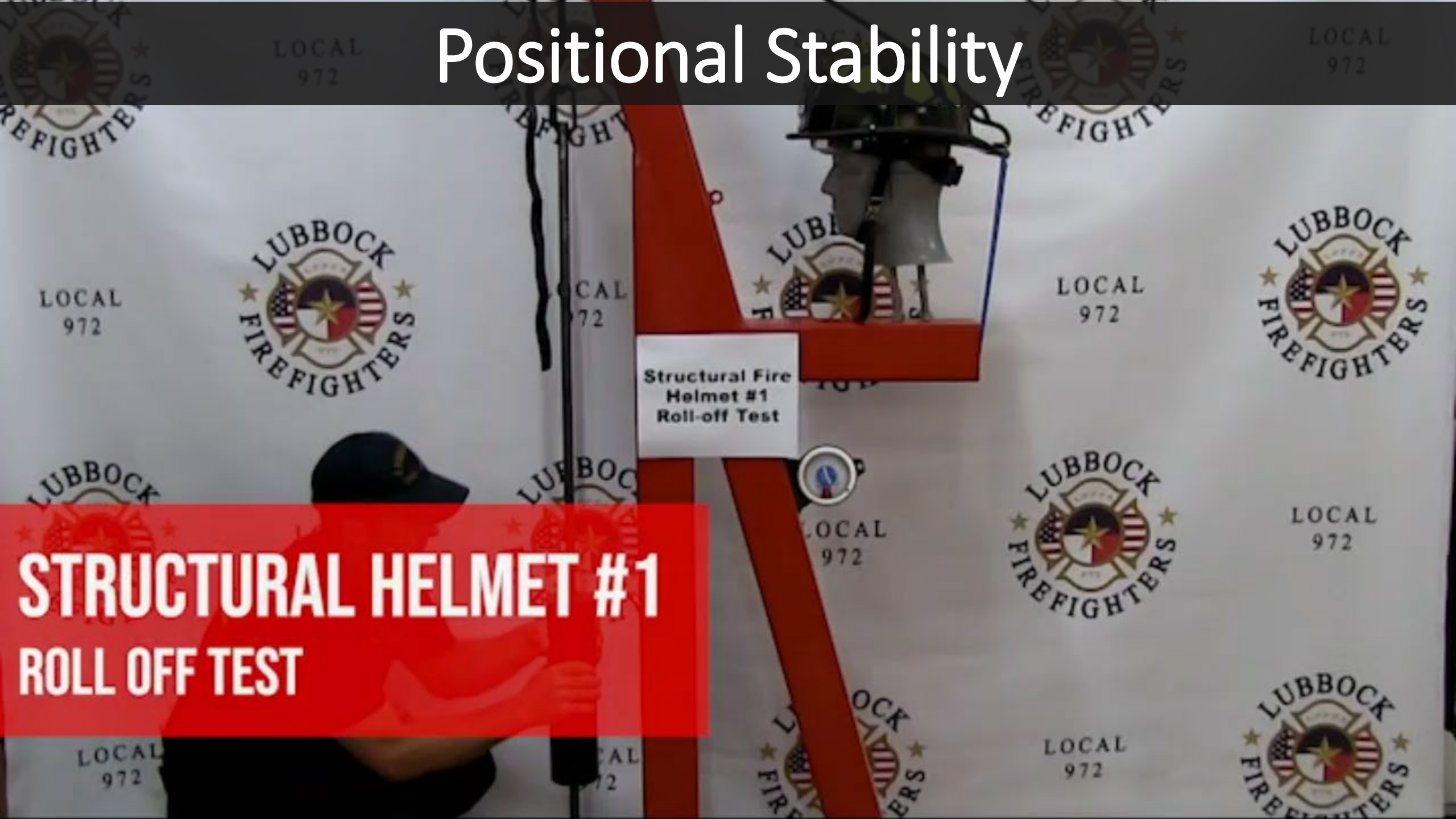
Photo Credit: National Highway Traffic Safety Administration

Webbing Suspension

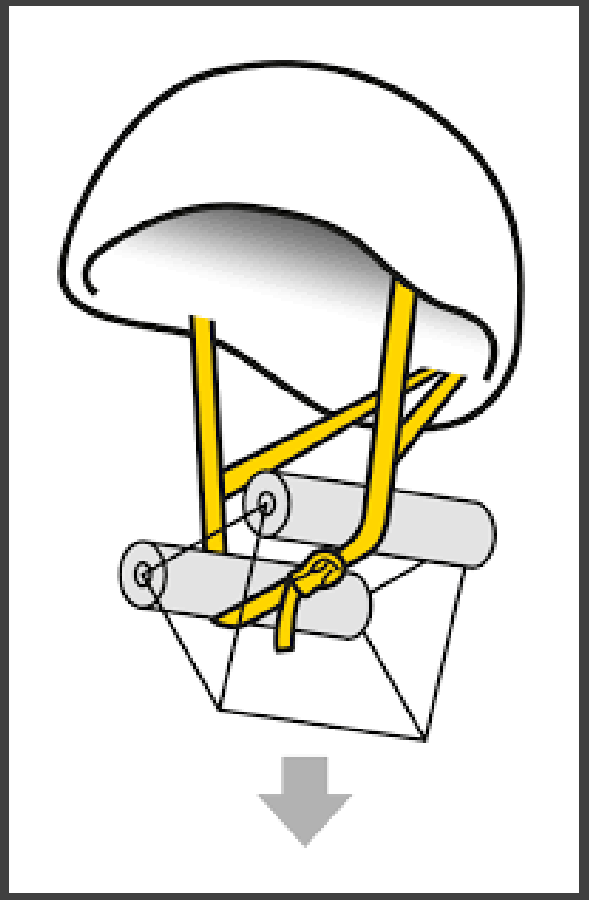
Webbing Suspension Systems vs Foam Impact Liners

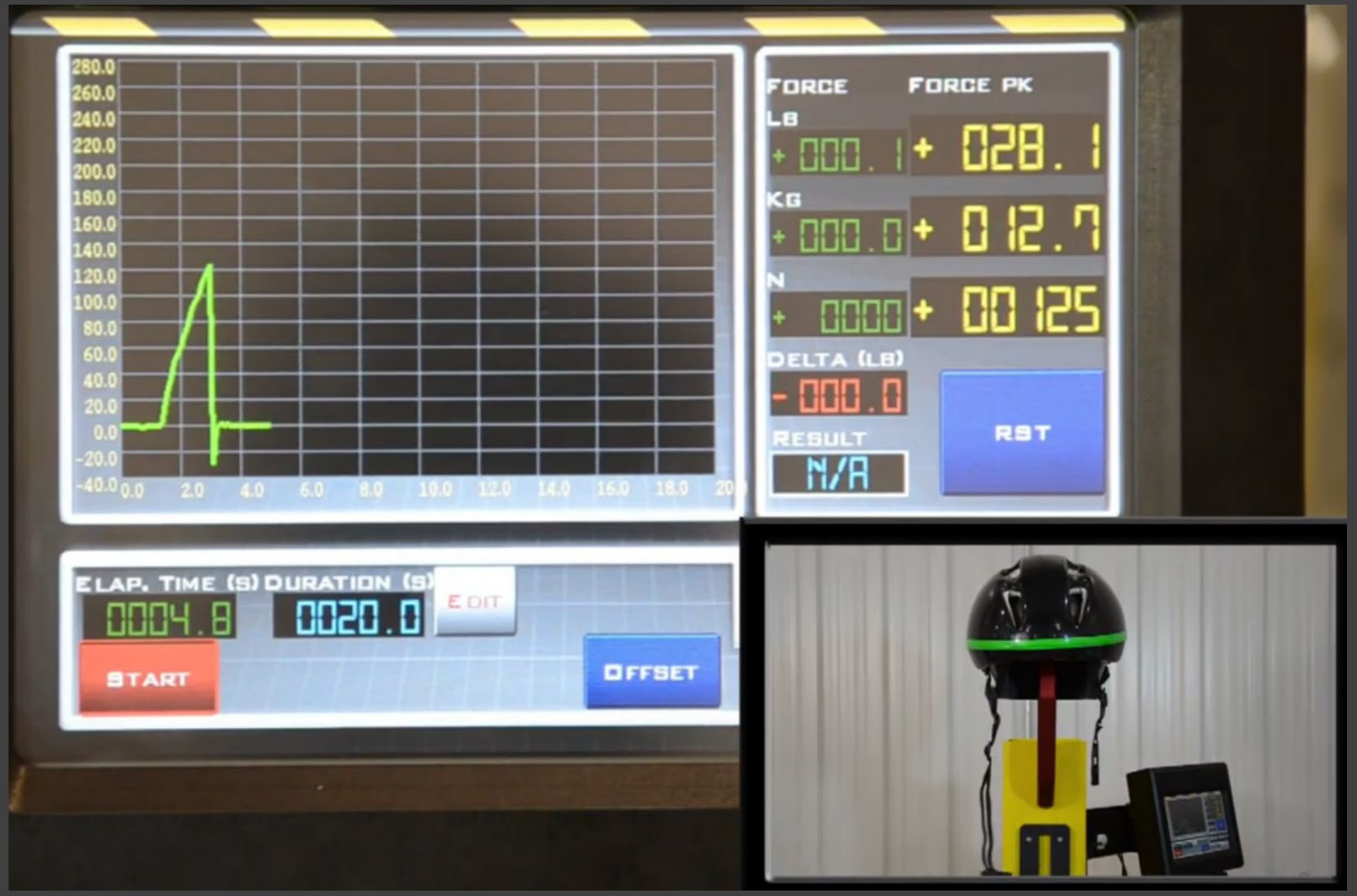


Positional Stability



Chinstrap Strength





What is the difference?

Chinstrap is required to breakaway <u>under</u> approx. 55lbs of force

Limited area of the head covered

External Projections

External Projections

Flying Roadway Debris

Kansas Highway Patrol Troop C

Mid-Piatt Fire Protection District

Criteria for Selecting a Roadway Helmet

Compliance with applicable regulations. Are there any local, state, or federal regulations in your area pertaining to helmet usage on the roadway? i.e. OSHA, NFPA, etc.

Impact protection. Impact protection to the sides of the head may be most important. Select a helmet that has an impact liner made of a material such as EPS foam instead of a webbing suspension system. How thick is the foam? Does the helmet have technologies to help address rotational forces?

Positional stability. Will the helmet stay on the head? Does it have a 4 point chin strap?

Chin strap strength. Ensure the helmet is not designed with a break away chinstrap that is present in standards such as EN 397.

Area of the head covered by the helmet.

Penetration protection. Will the helmet protect from flying debris and strikes against sharp objects?

Projections/protrusions. Objects that project out from the exterior of the shell or into the interior of the shell. These should be limited and/or readily break away on impact.

Helmet Standard. What helmet standard is this helmet certified to? Many helmet standards address the above criteria.

Communication ability for crew to crew, crew to patient and the ability for both sending and receiving radio transmissions.

Hearing for situational awareness. Emergency responders need to be able to hear the surrounding scene sounds to help alert them to possible danger.

Eye protection can either be built in or attachable that meets standards such as ANSI/ISEA Z87.1, Occupational and Educational Personal Eye and Face Protection Devices standards.

Criteria for Selecting a Roadway Helmet

Field of view. Is the field of view sufficient both horizontally and vertically?

Ventilation for adequate cooling in hot environments

Comfort is important. How heavy is the helmet? An uncomfortable helmet is not as likely to be worn.

Fit adjustability. Is the helmet one size fits all or does the helmet have to be fitted to each person.

User feedback. What is the feedback from frontline personnel on the helmets that have been identified as possible candidates?

Performance of duties. Can all of the duties/tasks be performed without removing the helmet? i.e. Entering the cab of a vehicle for patient care, using a stethoscope for patient assessment.

Visibility for low-light conditions. Reflective and/or florescent trim to improve visibility.

Removal. Removability is important in the event medical care needs to be administered to the emergency responder.

Chemical resistance. How resistant is the helmet material to chemicals? Bodily fluids? Motor vehicle fuels and fluids?

Cleaning. Can the helmet be easily decontaminated? Does it have removeable inner liner that can be cleaned?

Cost

Service life

My Roadway Helmet Short List

Off Road Dirt Bike Helmet

✓ Excellent impact protection

✗ Hot - Heavy - Large Profile
NOT one size fits all

¾ Shell Motorcycle Helmet

✓ Good impact protection

✗ Reduced hearing
NOT one size fits all

SAR Helmet (foam impact liner)

✓ One size fits all - Stylish
Slim profile - Good ventilation
Comfortable

✗ Impact protection

Public Safety

Other Agencies

Head protection leaps into 21st century

Construction firms, DOTs move to bike-style helmets for broader protection

These kinds of risks drove the concrete division of Bethesda, Md.-based Clark Construction—which performs work in public roadways and requires its flaggers and other traffic control workers to be ATSSA-trained—to require all of its employees to trade hard hats for safety helmets five years ago.

"Hard hats do an excellent job of protecting against falling objects," said Seth Randall, safety director for Clark's concrete division. "We have come to find out it's falling employees that need protecting as well."

A growing number of general contractors and some of the nation's transportation departments are seeing a mismatch between the hard hats their workers have worn for decades and the true injury risks their employees face on job sites.

As a result, they are replacing hard hats with safety helmets, which have foam padding to protect the head against impacts from multiple directions, and chin straps to keep the helmet in place if a worker falls or gets hit by an object.

The Virginia Department of Transportation (VDOT) is among the public agencies making the switch. As of this summer, VDOT had field-tested the safety helmets, and was awaiting delivery on its first order of 500, according to VDOT spokesperson Emily Wade.

OVERDUE FOR REDESIGN

George Stallings, a manufacturer representative in the commercial construction and industrial safety markets and a partner in Martinsburg, W.Va.-based

GDOT
Georgia Department of Transportation

VDOT

ASTM INTERNATIONAL

E54 Committee on Homeland Security Applications

Specification for Protective Helmets Worn by Pedestrian Roadway Workers

ASTM INTERNATIONAL

E54 Committee on Homeland Security Applications

Includes all the performance criteria for the protective properties of a roadway helmet

Also includes optional criteria:

- Heat Resistance
- Electrical Hazard Insulation
- Visibility (Retroreflectivity & Fluorescence)


BACK
TO THE FUTURE
Smarter
Every Day
YouTube

Additional Resources
Helmets and Head Protection

https://www.respondersafety.com/training/helmets-and-head-protection/

What's your head worth?

No matter what helmet one has, it should be worn while encouraging others around you to do the same

Chinstrap secured and headband adjustment tight

brady.d.robinette@gmail.com

Questions?