CREATE A SPHERE OF SAFETY
PREVENT STRUCK-BY INCIDENTS

The NIOSH-NORA Construction Sector Council Struck-By Work Group Presents

a Two-Part Series on Head Protection in the Construction Industry…

October 15th
2:00 PM ET

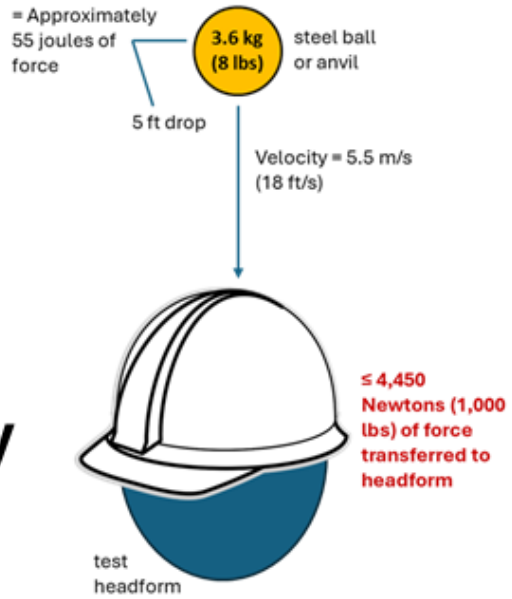
Head Protection in the Construction Industry – The Basics

October 31st
2:00 PM ET

Selection and Practical Use of Head Protection in the Construction Industry

Visit cpwr.com/webinars for more info

Figure 1: TYPE I & TYPE II
FORCE TRANSMISSION TESTING



Housekeeping

- Today's webinar will be recorded and automatically shared via follow-up email.
- The recording and slides will also be posted on cpwr.com/webinars.
- Attendees are automatically muted! Please submit panelist questions via the Q&A box.
- Spanish audio is available via simultaneous interpretation

Simultaneous Interpretation

WINDOWS / MAC / BROWSER

1. In your meeting/webinar controls, click **Interpretation** 🌐.
2. Click the language that you would like to hear.
3. (Optional) To hear the interpreted language only, click **Mute Original Audio**.

Notes:

- You must join the meeting audio through your computer audio/VoIP. You cannot listen to language interpretation if you use the dial-in or call me phone audio features.

ANDROID / IOS (MOBILE APP)

1. In your meeting controls, tap the ellipses •••.
2. Tap **Language Interpretation**.
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Head Protection in the Construction Industry – The Basics

October 15, 2024

Panelists:

- **Bradley Sant**, Senior Vice President, Safety and Education, American Road & Transportation Builders Association (ARTBA)
- **Srinivas Konda, MPH**, Epidemiologist, Division of Safety Research, National Institute for Occupational and Safety and Health (NIOSH)
- **Diana Jones**, Senior Director, Technical Programs and Development, International Safety Equipment Association (ISEA)
- **Rosa Greenberg, MPH**, Research Analyst, Research to Practice Program, CPWR – The Center for Construction Research and Training (CPWR)
- **Brady Robinette**, Lieutenant, Lubbock Fire Rescue
- **Douglas Trout, MD**, NIOSH Office of Construction Safety and Health

Burden of Traumatic Brain Injuries in the U.S. Construction Industry

Srinivas Konda
National Institute for Occupational Safety and Health

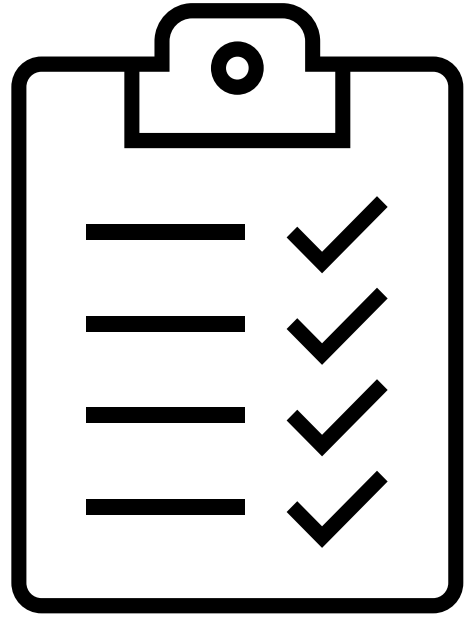
October 15, 2024

Webinar: Head Protection in the Construction Industry – The Basics

CPWR- The Center for Construction Research and Training

Agenda

- Traumatic brain injury (TBI) definition
- Burden of work-related TBIs
  - Fatal
  - Nonfatal
  - Costs
- Summary



What is a Traumatic Brain Injury (TBI)*?

- A brain injury resulting from an external force:
  - Bump
  - Blow
  - Jolt
  - Penetrating Injury
- Impact on brain function
- Mild, moderate, and severe TBIs

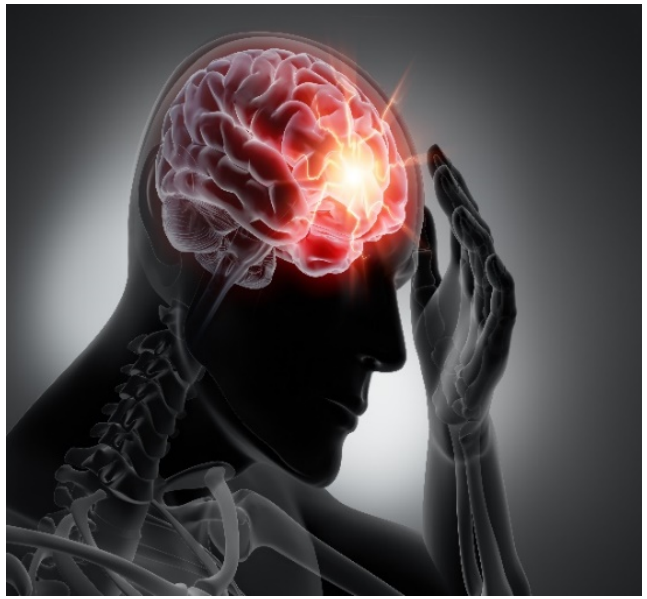


Photo credit: Getty

* Marr, A.L., and Coronado, V.G. (Eds.). (2004). Central nervous system injury surveillance data submission standards—2002. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

Work-related fatal TBIs*, construction, 2011-2022

- Total : 2,429 (Average per year: 202)
- Rate: 2.0 per 100,000 full-time equivalent (FTE) workers
- These TBIs in construction accounted for:
  - **21%** of total 11,732 construction fatalities
  - **27%** of total 9,117 work-related fatal TBIs across all industries

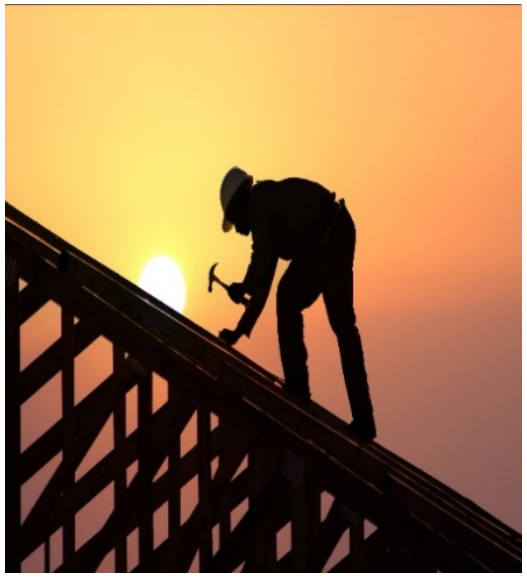
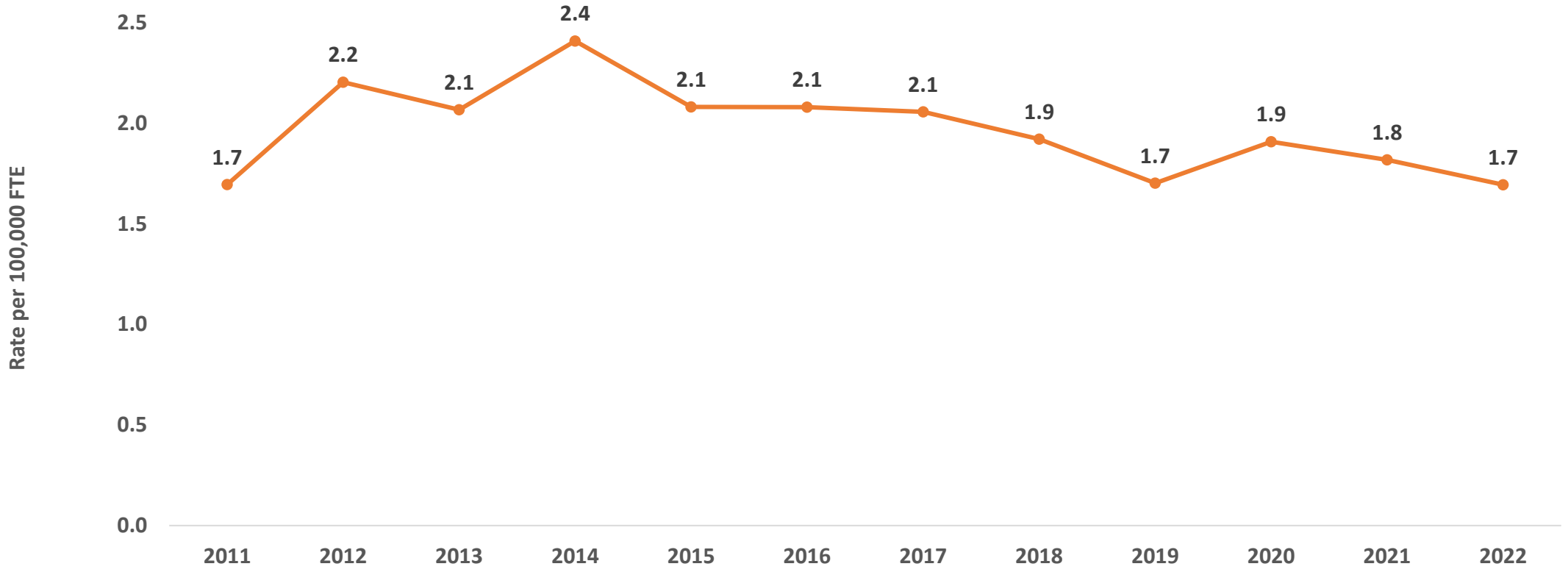


Photo credit: Getty

Sources: Bureau of Labor Statistics, Census of Fatal Occupational Injuries (CFOI) Query System; Labor force data for rate calculations: Current Population Survey (CPS)

*CFOI does not have a specific TBI case identification methodology; thus, the TBI definition applied: nature of injury is "Intracranial injuries" (Konda S, Tiesman HM, Reichard AA. Fatal traumatic brain injuries in the construction industry, 2003-2010. Am J Ind Med. 2016 Mar;59(3):212-20).

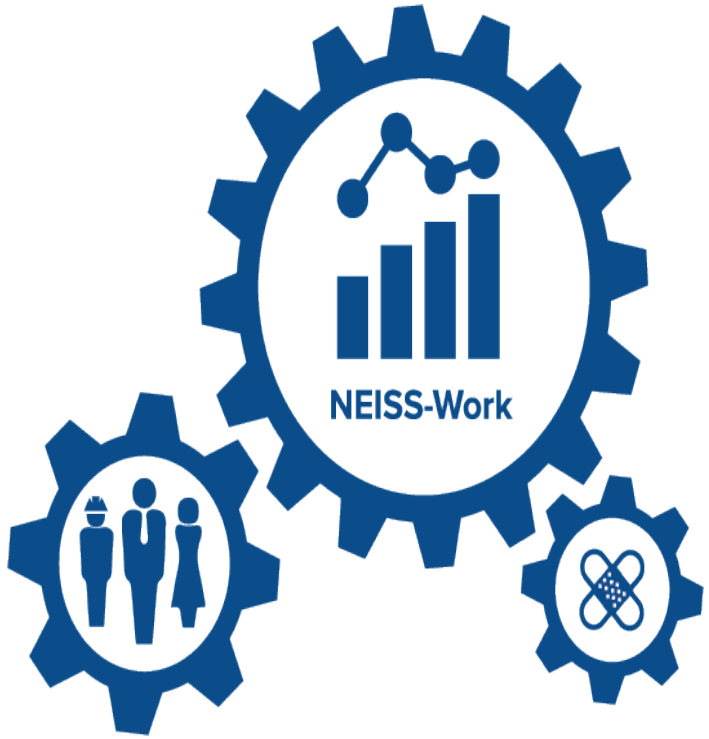
Annual rates of work-related fatal TBIs, construction, 2011-2022



Sources: Bureau of Labor Statistics, Census of Fatal Occupational Injuries (CFOI) Query System ; Labor force data for rate calculations: Current Population Survey (CPS)

Nonfatal work-related TBIs* treated in emergency departments (EDs), construction, 2015-2021

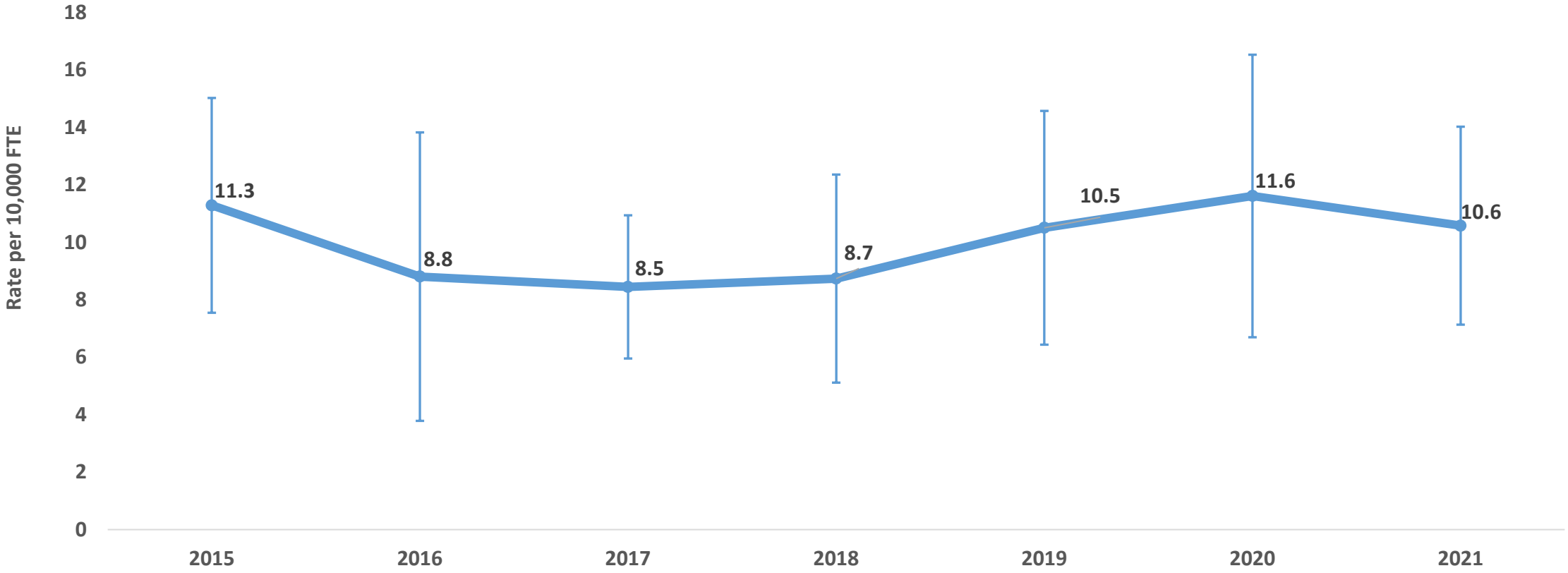
- Total number: 75,600 (95% CI: ±26,100)
  - Annual average: 10,800 (95% CI ± 4,300)
- Rate: 10 (95% CI ±3.5) per 10,000 FTE workers
- These nonfatal TBIs in construction accounted for:
  - **4%** (95% CI ±1%) of total (1,770,200 (95% CI ± 673,900)) construction nonfatal injuries/illnesses
  - **9%** (95% CI ±2%) of total (825,800 (95% CI ± 158,600)) nonfatal TBIs across all industries



Sources: National Electronic Injury Surveillance System - Occupational Supplement (NEISS-WORK); Labor force data for rate calculations: Current Population Survey (CPS)

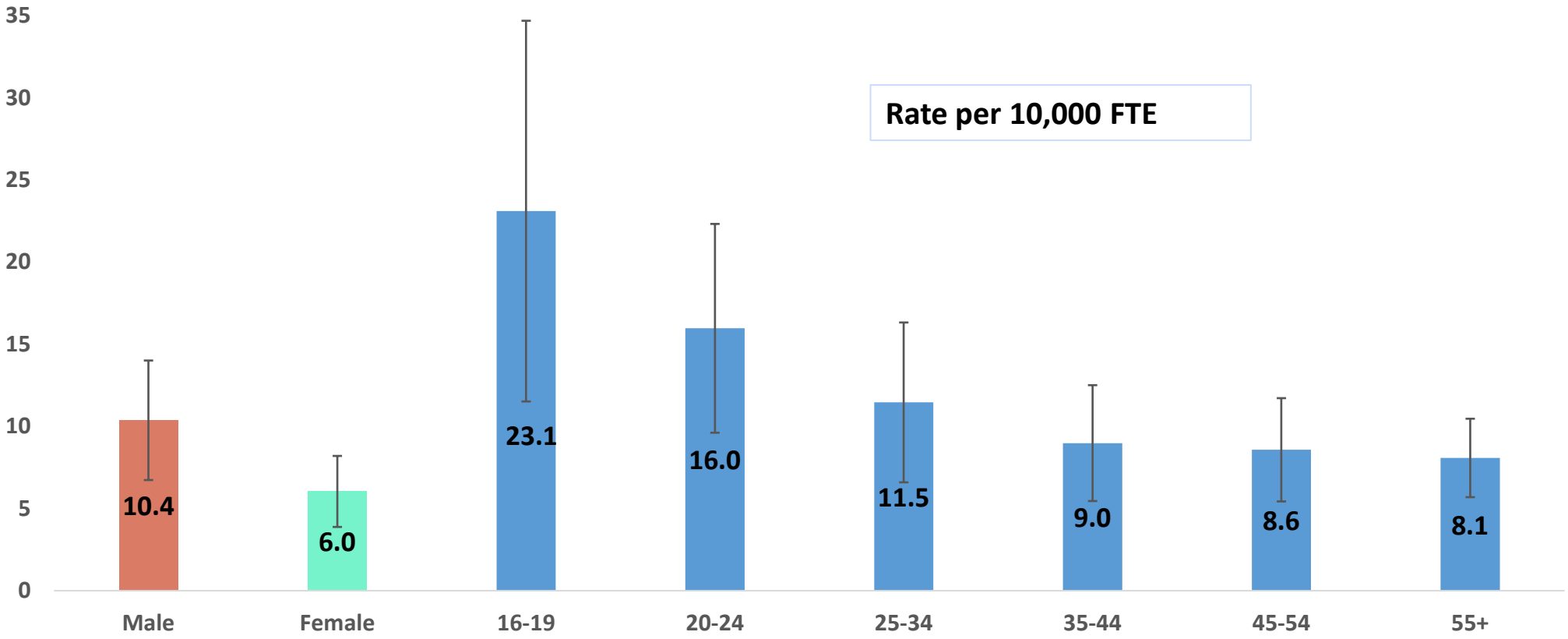
*NEISS-Work does not have a specific TBI case identification methodology; thus, the TBI definition applied is a diagnosis of concussion, fracture, or internal organ injury, and the injured body part is the head (Konda S, Reichard A, Tiesman HM, Hendricks S. Non-fatal work-related traumatic brain injuries treated in US hospital emergency departments, 1998-2007. Inj Prev. 2015 Apr;21(2):115-20. doi: 10.1136/injuryprev-2014-041323).

Annual rates of nonfatal work-related TBIs treated in EDs, construction, 2015-2021



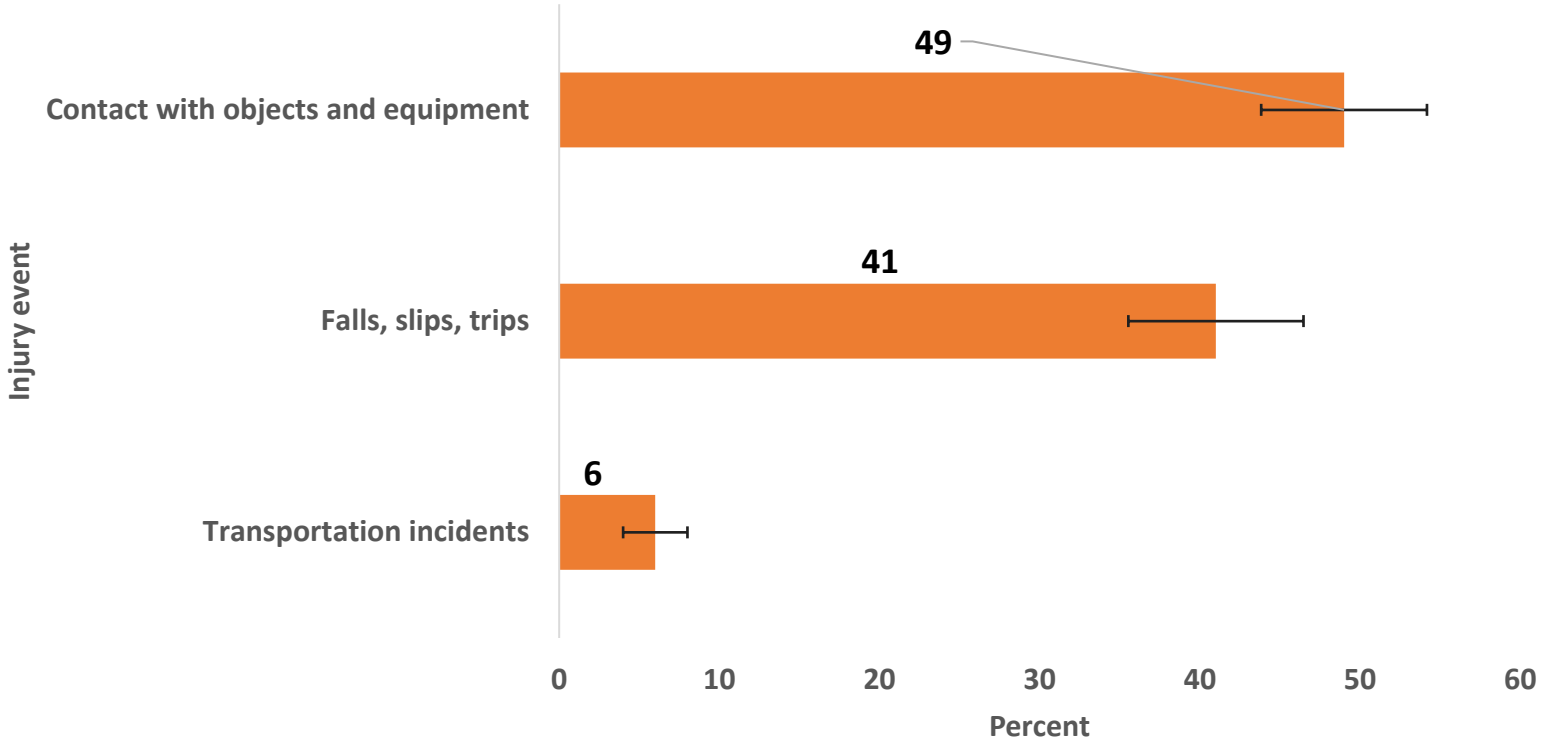
Sources: National Electronic Injury Surveillance System - Occupational Supplement (NEISS-WORK); Labor force data for rate calculations: Current Population Survey (CPS) ;
The error bars represent 95% confidence intervals.

Rate of nonfatal work-related TBIs treated in EDs by sex and age group, construction, 2015-2021



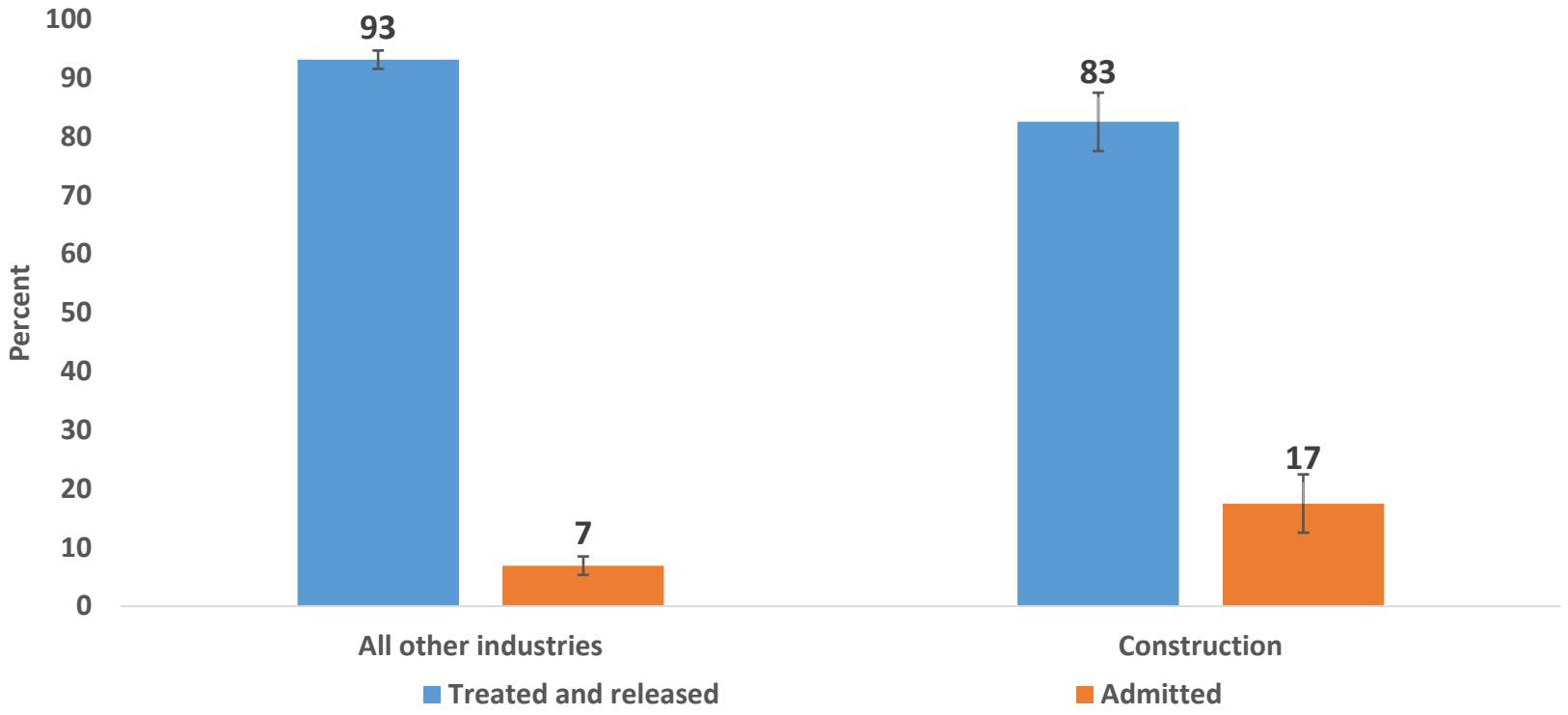
Sources: National Electronic Injury Surveillance System - Occupational Supplement (NEISS-WORK); Labor force data for rate calculations: Current Population Survey (CPS) ; The error bars represent 95% confidence intervals.

Nonfatal work-related TBIs in construction treated in EDs by event of injury, 2015-2021



Source: National Electronic Injury Surveillance System - Occupational Supplement (NEISS-WORK); The error bars represent 95% confidence intervals.

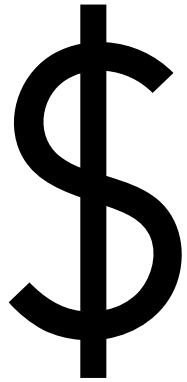
Disposition of work-related nonfatal TBIs treated in EDs: construction vs. all other industries combined, 2015-2021



Source: National Electronic Injury Surveillance System - Occupational Supplement (NEISS-WORK); The error bars represent 95% confidence intervals.

Costs of work-related TBIs

- **National Council on Compensation Insurance (NCCI)**
  - TBI claims for all industries (2013-2018)*:
    - Ave total costs per TBI claim: $136,000
    - Ave lost-time costs per any injury claim: $51,000



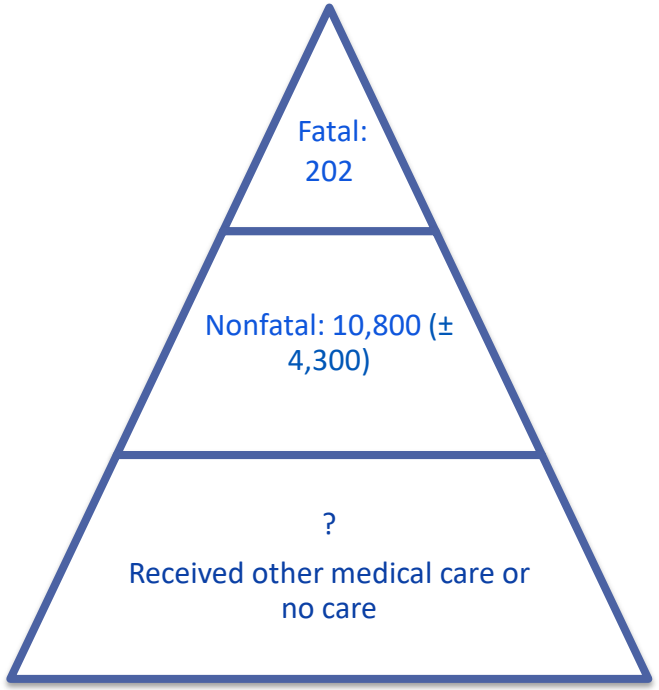
  - Mega claims (> $3 million; 2001-2017)**
    - Brain and Head Injuries for all industries:
      - 17% were $3-5 million; 27% were $5-10 million; 30% > $10 million
    - Mega claims over $10 million primarily arise from the **construction industry**, especially due to severe head and brain injuries

*National Council on Compensation Insurance: Traumatic Brain Injuries in Workers Compensation - Associated Medical Services and Costs

**National Council on Compensation Insurance: Country Mega Claims. Obtained from: ncci.com/Articles/Pages/II_Country-Wide-Mega-Claims-Report-2020-BureauReady.pdf

Summary

- **Prevalence of TBIs**
  - A considerable number of fatal TBIs were reported in construction sector
- **Hospitalization**
  - Construction workers with TBIs are more likely to be hospitalized than those in other industries
- **Cost Implications**
  - The financial burden of TBI claims can be substantial
- **Limitations exist in the data systems**
  - Lack of ICD diagnosis codes: missed or misclassified TBIs (e.g., internal organ injuries to the head (NEISS-Work); undercounts.



Annual work-related TBIs in construction

Sources: Bureau of Labor Statistics, Census of Fatal Occupational Injuries (CFOI) Query System ; National Electronic Injury Surveillance System - Occupational Supplement (NEISS-WORK)

Thank You

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Email: skonda@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
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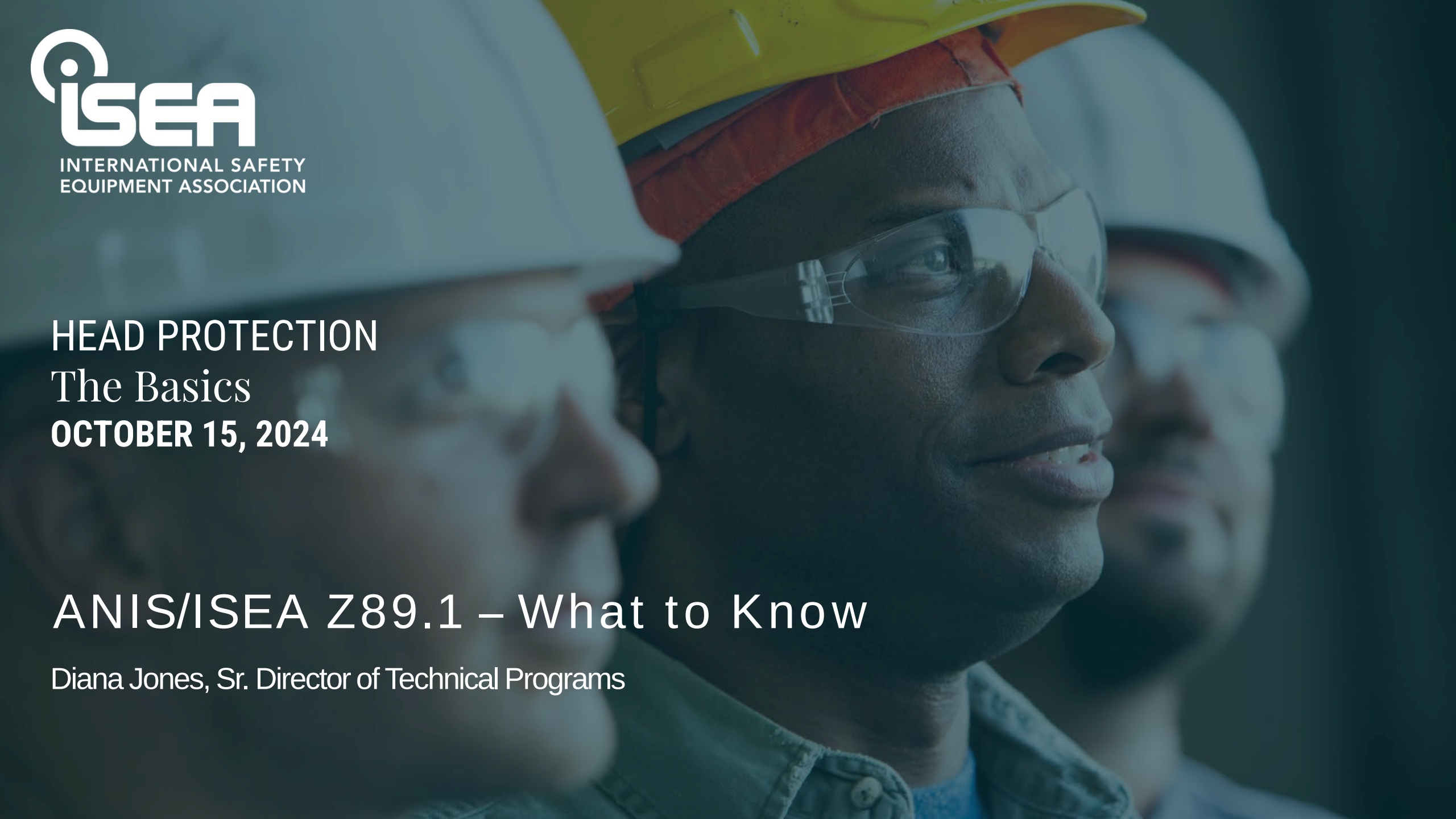
The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.



INTERNATIONAL SAFETY EQUIPMENT ASSOCIATION

HEAD PROTECTION

The Basics

OCTOBER 15, 2024

ANIS/ISEA Z89.1 – What to Know

Diana Jones, Sr. Director of Technical Programs

Who is ISEA?

Nonprofit trade association based in Arlington, VA

- **Develops and publishes ANSI/ISEA standards** for PPE (ANSI/ISEA Z89.1-Industrial Head Protection)
- **Advocates** for the safety equipment industry
- **Provides market insights**, industry action, and education

100 PPE Manufacturer Member Companies

15 ANSI/ISEA Standards

Head Protection is Evolving

Innovations & Advancements

- **Enhanced Design and Materials** – Lighter, more durable, and offer greater protection
- **Integrated Features** – Adding additional functionality to safety gear
- **Increased Comfort** – Wearable for longer periods of time

Misunderstanding Head Protection Terminology

Hard Hats vs. Safety Helmets: Different Styles

- **Low Understanding:** difference between hard hats and safety helmets, significant confusion persists.

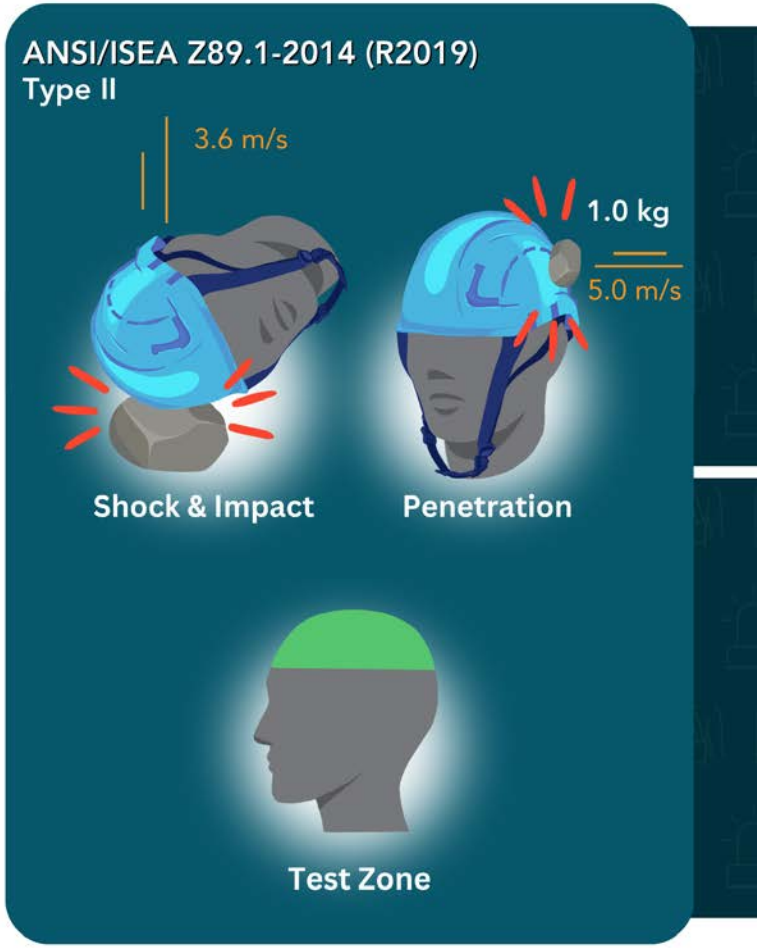
- Hard hats, safety helmets are **different styles** of head protection

72% of respondents believe they understand the differences between hard hats and safety helmets.

When it comes to head protection, it's essential to select the appropriate type and class of head protection for the specific work environment and potential hazards. While they're widely used by the industry, terms like "hard hat" or "safety helmet" aren't currently defined in ANSI/ISEA Z89.1. Further complicating matters, styles vary by manufacturer and are constantly evolving. You can't simply look at a piece of head protection and know what level of protection it offers. To pick the right protection for the job at hand, read the label. For more information, click here.

Misunderstanding Head Protection Terminology

Hard Hats vs. Safety Helmets: Features & Protection



- **Features Oversimplification:** perceive safety helmets offer more modern safety features
- **Impact Protection Misconception:** only safety helmets offer impact protection on all sides (top, sides, front, and back).

- In reality, both **hard hats and safety helmets can provide this level of protection** when designed to meet Type II standards

Misconceptions About Standards

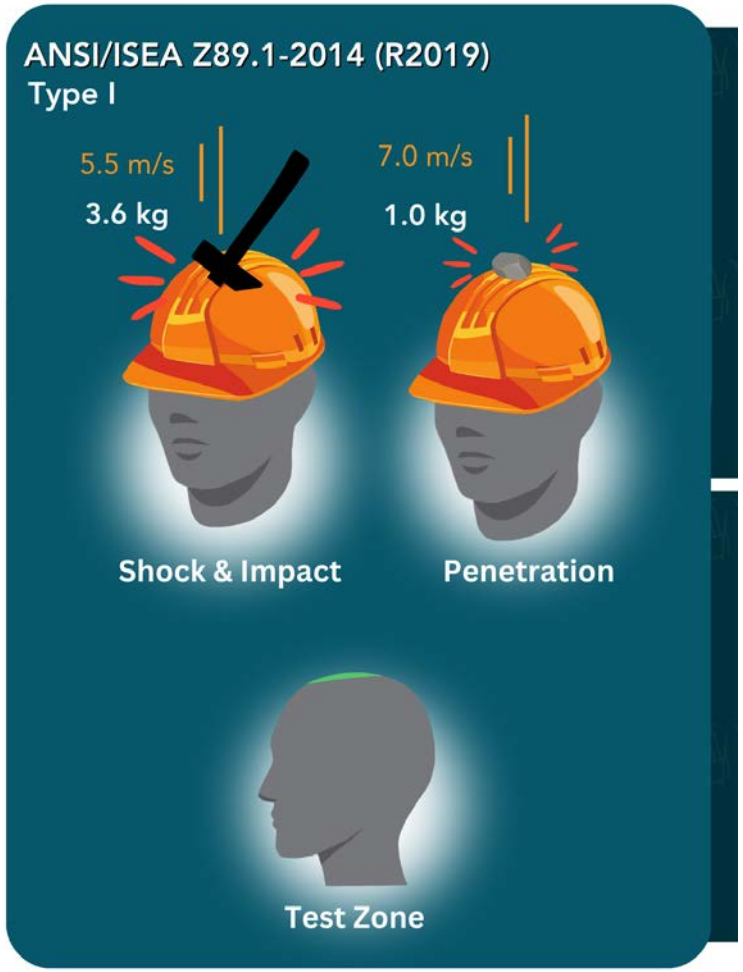
ANSI/ISEA Z89.1 vs. EN 12492

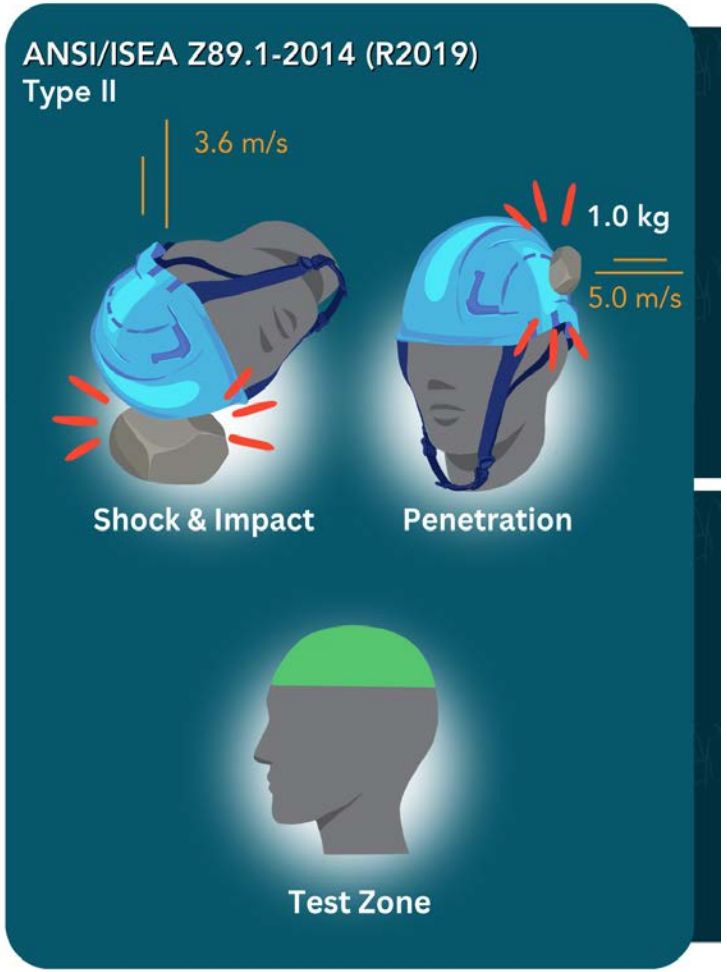
- **Standards Confusion:** One offers more protection over the other, reflecting a misunderstanding of the scope and applicability of these standards.

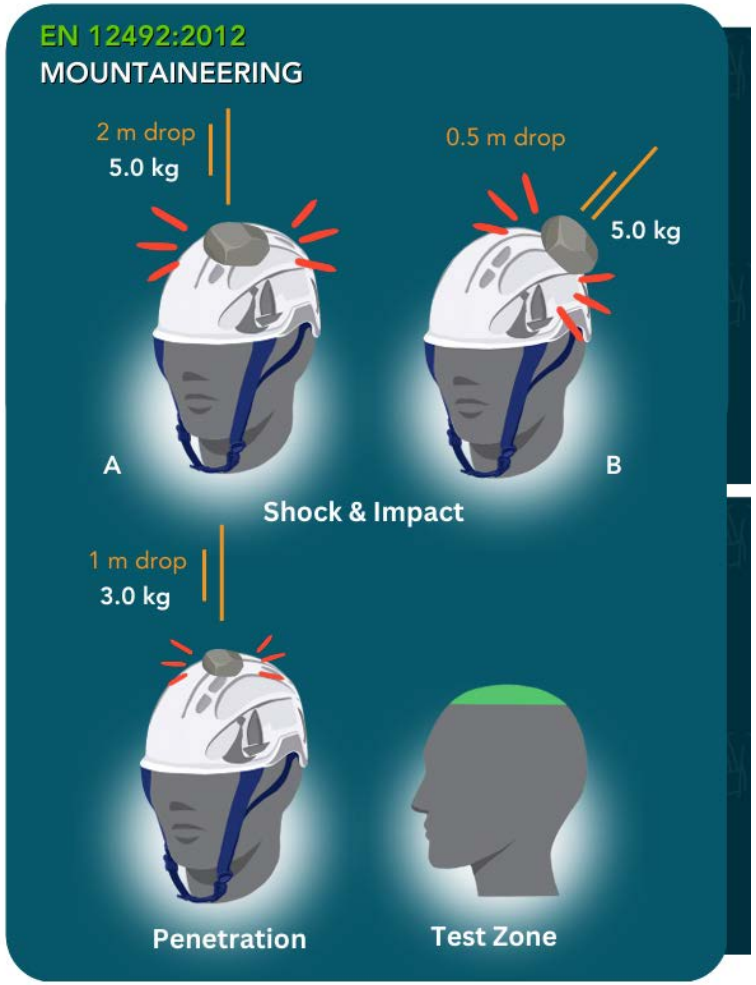
OSHA Standard – 1910.135

Addressing Misconceptions

ANSI/ISEA Z89.1 – Type I; Type II vs. EN 12492



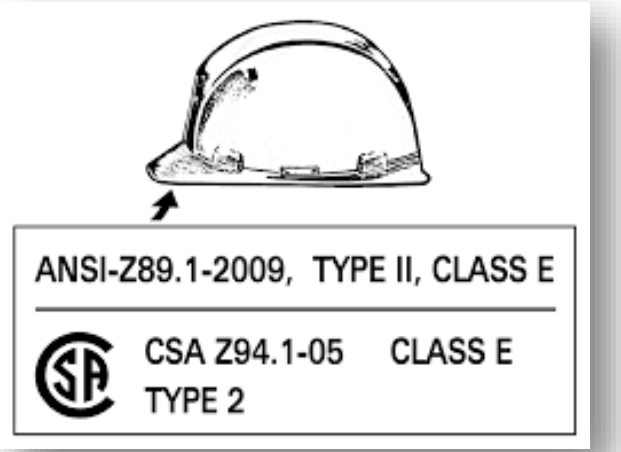




Addressing Misconceptions

Know the Facts:
Choosing the Right Head Protection

Read the label



What's Next for Industrial Head Protection - ANSI/ISEA Z89.1

Expected Publication 2025

Key (pending) Updates *not final until ANSI approval*

Additional criteria for added protection, identified by a plus (+) marking

Available for Type I and Type II and for Class E, C or G

- Type I additional criteria:
  - Shock absorption
  - Penetration
  - Chin Strap mandatory
  - Retention System Effectiveness (Roll Off)
- Type II additional criteria:
  - Chin Strap mandatory
  - Retention System Effectiveness (Roll Off)

INTERNATIONAL SAFETY EQUIPMENT ASSOCIATION

Contact Info

Diana Jones, Sr. Director of Technical Programs

djones@safetyequipment.org

ABOUT ISEA

ISEA is the voice of the safety equipment industry. For 90 years, we have been a recognized leader in the development of ANSI-accredited safety equipment standards. We advocate on behalf of the industry for policies that improve worker safety, deliver actionable insights on the safety equipment market, develop critical skills for safety sales professionals, and provide a unique forum for collaboration, learning, and growth.

safetyequipment.org

A Guide to Selecting Head Protection for Construction Work

Rosa Greenberg, MPH
Research Analyst
Research to Practice
CPWR – The Center for Construction Research and Training
rgreenberg@cpwr.com

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RESEARCH AND TRAINING

Agenda

- CPWR Expert Evaluation Panel on Head Protection
- Outline of new head protection resource
- Limitations of existing standards
- Factors to consider when selecting head protection

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Expert Evaluation Panel on Head Protection Goals

- Since 2023, CPWR has convened experts from academia, labor, government, manufacturing, and others to participate in an **expert evaluation panel on head protection**
- Goals:
  1. Assess industry awareness and adoption of ANSI/ISEA Z89.1 Type II protective headgear with and without chin straps over time;
  2. Establish and disseminate recommendations for use of protective headgear.

https://www.cpwr.com/research/research-to-practice-r2p/r2p-library/other-resources-for-stakeholders/head-injuries/cpwr-expert-panel-on-head-protection/

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Expert Evaluation Panel Process

- 25 panel members
- Iterative process based loosely on the Delphi Method, a systematic process to achieve a reliable consensus among a panel of experts
- Progress as of October 2024:
  - 5 meetings held
  - 4 questionnaires distributed and analyzed
  - 1 resource developed and published

https://www.cpwr.com/research/research-to-practice-r2p/r2p-library/other-resources-for-stakeholders/head-injuries/cpwr-expert-panel-on-head-protection/

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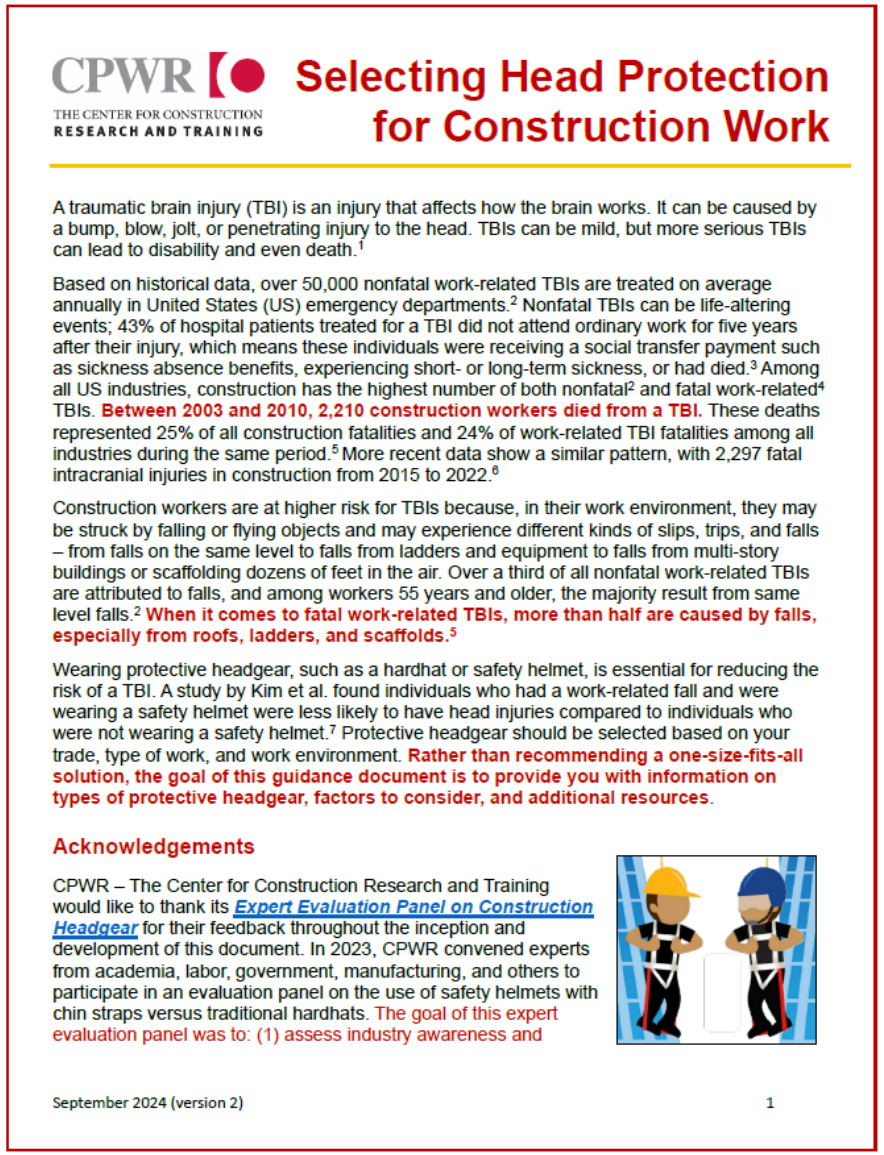
Selecting Head Protection for Construction Work



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Selecting Head Protection for Construction Work

A traumatic brain injury (TBI) is an injury that affects how the brain works. It can be caused by a bump, blow, jolt, or penetrating injury to the head. TBIs can be mild, but more serious TBIs can lead to disability and even death.[1]

Based on historical data, over 50,000 nonfatal work-related TBIs are treated on average annually in United States (US) emergency departments.[2] Nonfatal TBIs can be life-altering events; 43% of hospital patients treated for a TBI did not attend ordinary work for five years after their injury, which means these individuals were receiving a social transfer payment such as sickness absence benefits, experiencing short- or long-term sickness, or had died.[3] Among all US industries, construction has the highest number of both nonfatal[2] and fatal work-related[4] TBIs. **Between 2003 and 2010, 2,210 construction workers died from a TBI.** These deaths represented 25% of all construction fatalities and 24% of work-related TBI fatalities among all industries during the same period.[5] More recent data show a similar pattern, with 2,297 fatal intracranial injuries in construction from 2015 to 2022.[6]

Construction workers are at higher risk for TBIs because, in their work environment, they may be struck by falling or flying objects and may experience different kinds of slips, trips, and falls – from falls on the same level to falls from ladders and equipment to falls from multi-story buildings or scaffolding dozens of feet in the air. Over a third of all nonfatal work-related TBIs are attributed to falls, and among workers 55 years and older, the majority result from same level falls.[2] **When it comes to fatal work-related TBIs, more than half are caused by falls, especially from roofs, ladders, and scaffolds.[5]**

Wearing protective headgear, such as a hardhat or safety helmet, is essential for reducing the risk of a TBI. A study by Kim et al. found individuals who had a work-related fall and were wearing a safety helmet were less likely to have head injuries compared to individuals who were not wearing a safety helmet.[7] Protective headgear should be selected based on your trade, type of work, and work environment. **Rather than recommending a one-size-fits-all solution, the goal of this guidance document is to provide you with information on types of protective headgear, factors to consider, and additional resources.**

Acknowledgements

CPWR – The Center for Construction Research and Training would like to thank its *Expert Evaluation Panel on Construction Headgear* for their feedback throughout the inception and development of this document. In 2023, CPWR convened experts from academia, labor, government, manufacturing, and others to participate in an evaluation panel on the use of safety helmets with chin straps versus traditional hardhats. The goal of this expert evaluation panel was to: (1) assess industry awareness and

- Resource produced by the Expert Evaluation Panel
- Provides an overview of key issues in head protection to help inform stakeholders about how to make the best decision about head protection for their needs
- Released in March 2024; updated in September 2024
- Available in English and Spanish

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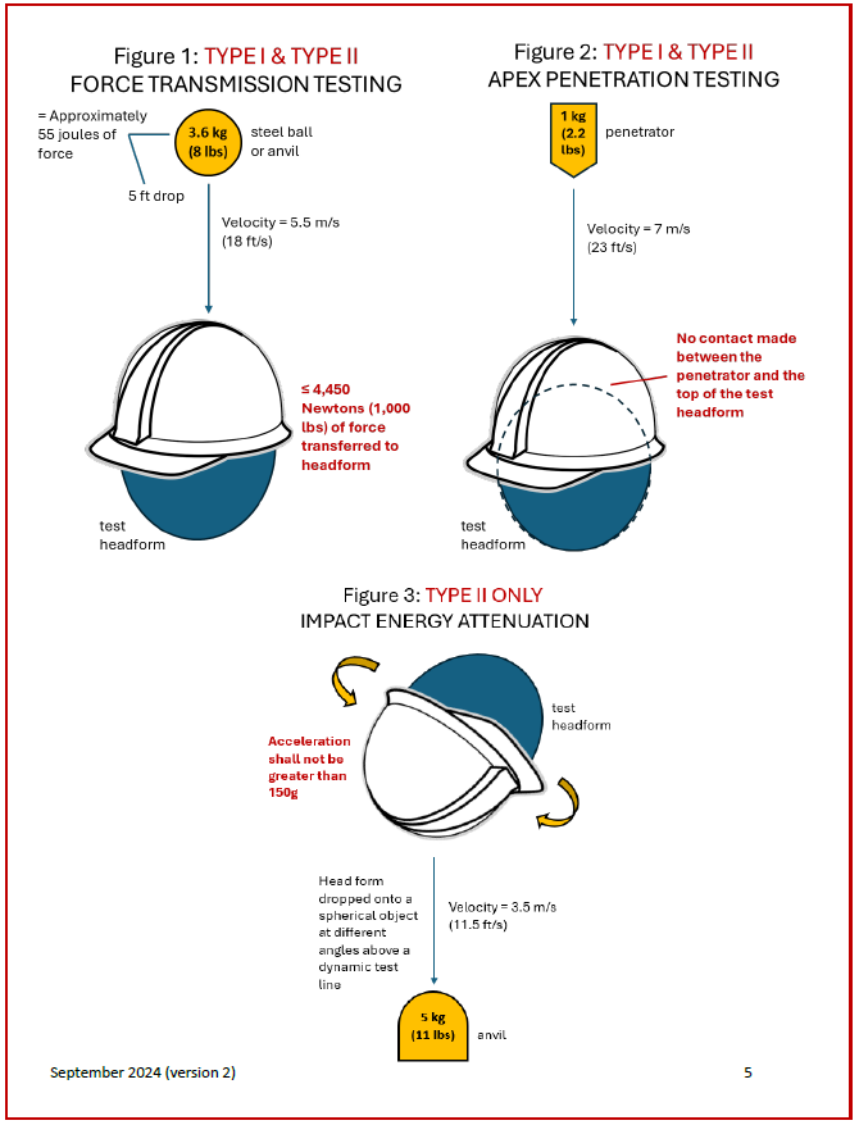
https://www.cpwr.com/wp-content/uploads/FS-Selecting_Head_Protection.pdf

Selecting Head Protection for Construction Work



Sections:

- Hardhats vs. Safety Helmets: What's the Difference?
- ANSI/ISEA Z89.1 Type I vs. Type II Headgear: What's the Difference?
- Key Elements of ANSI/ISEA Z89.1 Type I & II Testing for Industrial Head Protection
- Limitations in Testing Standards
- Additional Testing for Headgear
- Making Your Selection: Primary Factors to Consider

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Limitations to ANSI/ISEA Z89.1 Standard

Limitations recognized in the ANSI/ISEA Z89.1:

- Protective headgear that passes testing standards should "**never be viewed as a substitute for good safety practices and engineering controls**."
- "Protective helmets reduce the amount of force from an impact blow but **cannot provide complete head protection from severe impact and penetration**. Helmets that meet this standard provide limited protection but should be effective against small tools, small pieces of wood, bolts, nuts, rivets, sparks and similar hazards."

Additional Limitation: No third-party testing or certification required

- **No oversight of testing and no third-party certification requirements** like those found in government regulations.
- **Consider talking to your manufacturer about their testing methods and results**. You can request a Certificate of Compliance and/or a Declaration of Conformity

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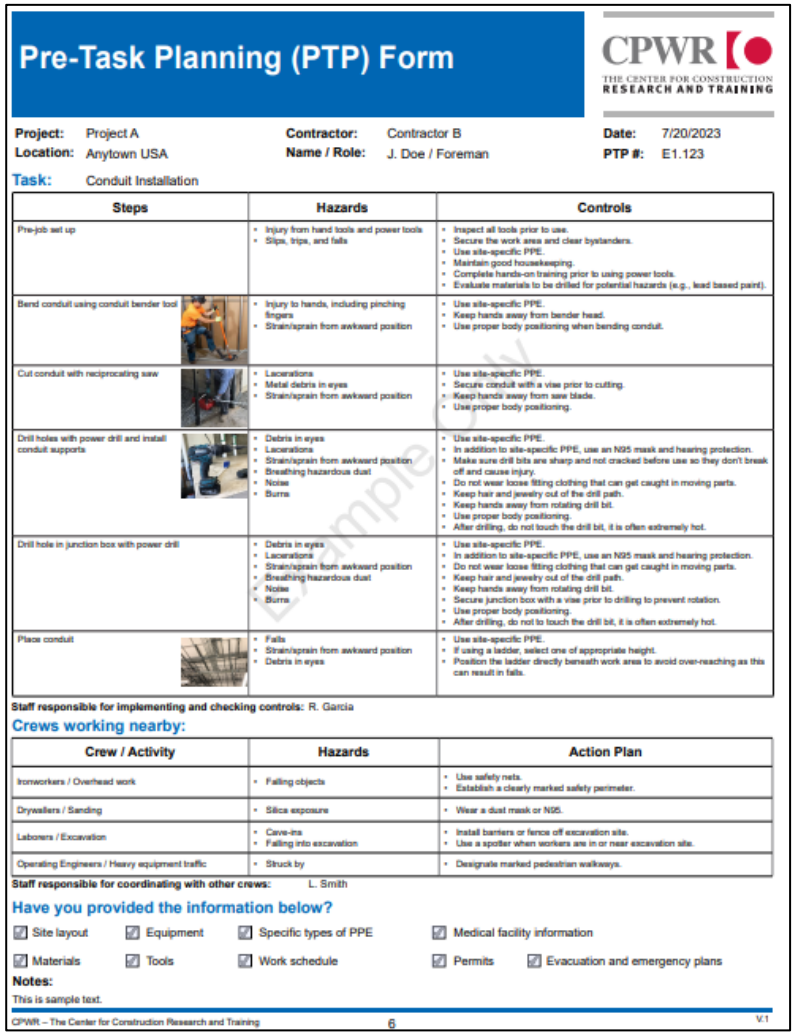
Making Your Selection: Job Hazard Analysis

The first step in deciding what protective headgear to purchase or wear is **conducting a job hazard analysis (JHA), job safety analysis (JSA), or risk assessment**.

The level and type of protection needed, along with stylistic choices and accessories, is influenced by the tasks being done and the work environment.

Consult CPWR's Pre-Task Planning Guidelines and Resources.



Pre-Task Planning (PTP) Form

CPWR — THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

Project: Project A
Location: Anytown USA
Contractor: Contractor B
Name / Role: J. Doe / Foreman
Date: 7/20/2023
PTP #: E1.123

Task: Conduit Installation

Steps	Hazards	Controls
Pre-job set up	• Injury from hand tools and power tools • Slips, trips, and falls	• Inspect all tools prior to use. • Secure the work area and clear bystanders. • Use site-specific PPE. • Maintain good housekeeping. • Complete hands-on training prior to using power tools. • Evaluate materials to be drilled for potential hazards (e.g., lead based paint).
Bend conduit using conduit bender tool	• Injury to hands, including pinching fingers • Strain/sprain from awkward position	• Use site-specific PPE. • Keep hands away from bender head. • Use proper body positioning when bending conduit.
Cut conduit with reciprocating saw	• Lacerations • Metal debris in eyes • Strain/sprain from awkward position	• Use site-specific PPE. • Secure conduit with a vise prior to cutting. • Keep hands away from saw blade. • Use proper body positioning.
Drill holes with power drill and install conduit supports	• Debris in eyes • Lacerations • Strain/sprain from awkward position • Breathing hazardous dust • Noise • Burns	• Use site-specific PPE. • In addition to site-specific PPE, use an N95 mask and hearing protection. • Make sure drill bits are sharp and not cracked before use so they don't break off and cause injury. • Do not wear loose fitting clothing that can get caught in moving parts. • Keep hair and jewelry out of the drill path. • Keep hands away from rotating drill bit. • Use proper body positioning. • After drilling, do not touch the drill bit, it is often extremely hot.
Drill hole in junction box with power drill	• Debris in eyes • Lacerations • Strain/sprain from awkward position • Breathing hazardous dust • Noise • Burns	• Use site-specific PPE. • In addition to site-specific PPE, use an N95 mask and hearing protection. • Do not wear loose fitting clothing that can get caught in moving parts. • Keep hair and jewelry out of the drill path. • Keep hands away from rotating drill bit. • Secure junction box with a vise prior to drilling to prevent rotation. • Use proper body positioning. • After drilling, do not to touch the drill bit, it is often extremely hot.
Place conduit	• Falls • Strain/sprain from awkward position • Debris in eyes	• Use site-specific PPE. • If using a ladder, select one of appropriate height. • Position the ladder directly beneath work area to avoid over-reaching as this can result in falls.

Staff responsible for implementing and checking controls: R. Garcia

Crews working nearby:

Crew / Activity	Hazards	Action Plan
Ironworkers / Overhead work	• Falling objects	• Use safety nets. • Establish a clearly marked safety perimeter.
Drywallers / Sanding	• Silica exposure	• Wear a dust mask or N95.
Laborers / Excavation	• Cave-ins • Falling into excavation	• Install barriers or fence off excavation site. • Use a spotter when workers are in or near excavation site.
Operating Engineers / Heavy equipment traffic	• Struck by	• Designate marked pedestrian walkways.

Staff responsible for coordinating with other crews: L. Smith

Have you provided the information below?

☑ Site layout ☑ Equipment ☑ Specific types of PPE ☑ Medical facility information
☑ Materials ☑ Tools ☑ Work schedule ☑ Permits ☑ Evacuation and emergency plans

Notes:
This is sample text.

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Primary Factors to Consider

- Work at Heights
- Slips, Trips, and Falls at the Same Level
- Struck-By Hazards
- Weather and Temperature
- Visibility Needs
- Use of Accessories
- Electrical Hazards
- Fit and Comfort
- Cost

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Thank you!

Rosa Greenberg, MPH
Research Analyst
Research to Practice
CPWR – The Center for Construction Research and Training
rgreenberg@cpwr.com

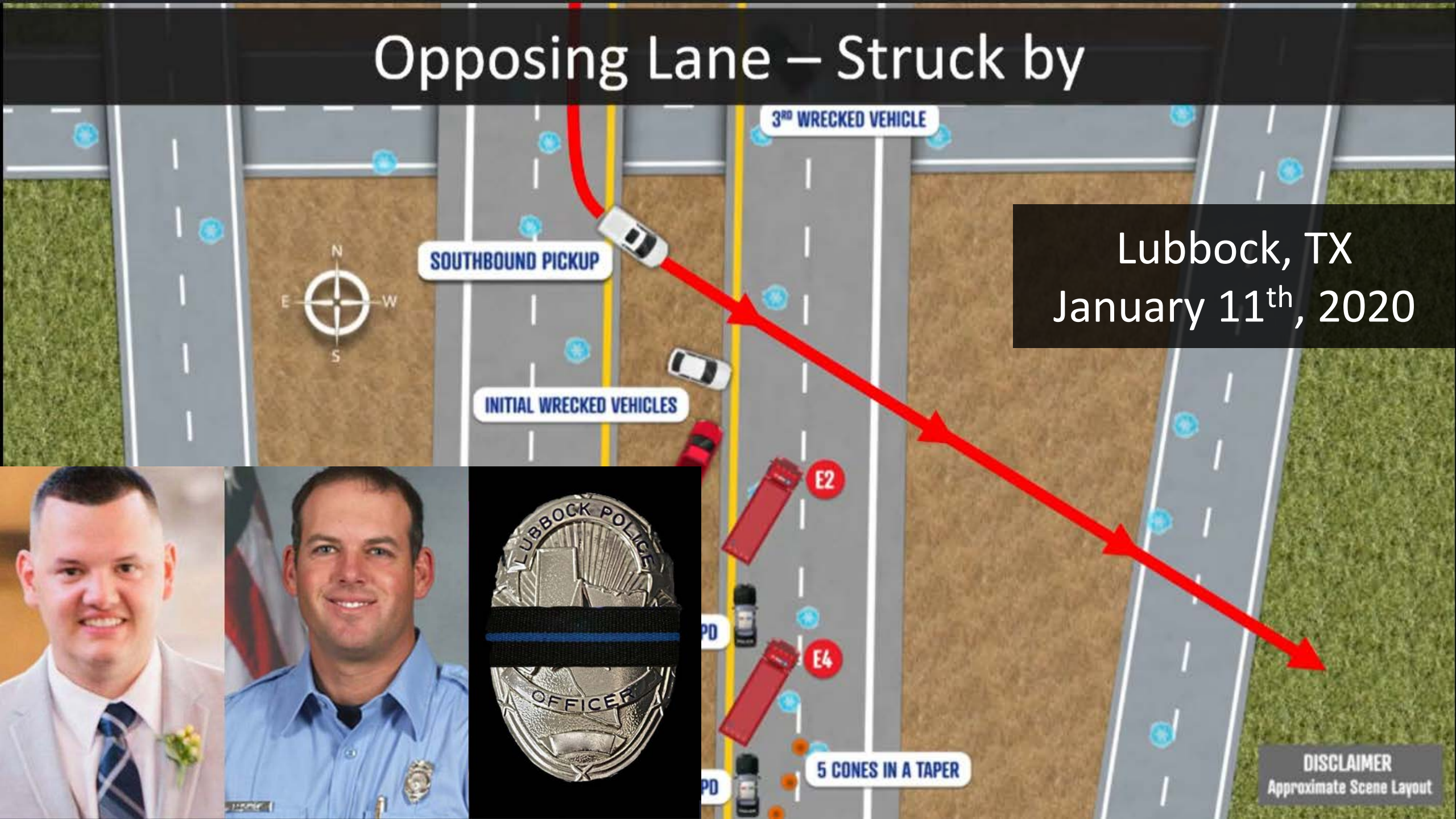
ASTM INTERNATIONAL

E54 Committee on Homeland Security Applications

Specification for Protective Helmets Worn by Pedestrian Roadway Workers

Brady Robinette
Lubbock Fire Rescue
brady.d.Robinette@gmail.com

Opposing Lane – Struck by



Lubbock, TX
January 11th, 2020

Who This Standard is For

- Fire Police
- Towing/ Recovery
- Law Enforcement
- Mobile Vehicle Maintenance
- Department of Transportation
- Roadway Construction & Maintenance
- Emergency Medical Services
- Safety Service Patrols
- Fire Service


LUBBOCK
LOCAL
LPFFA


LOCAL
LPFFA

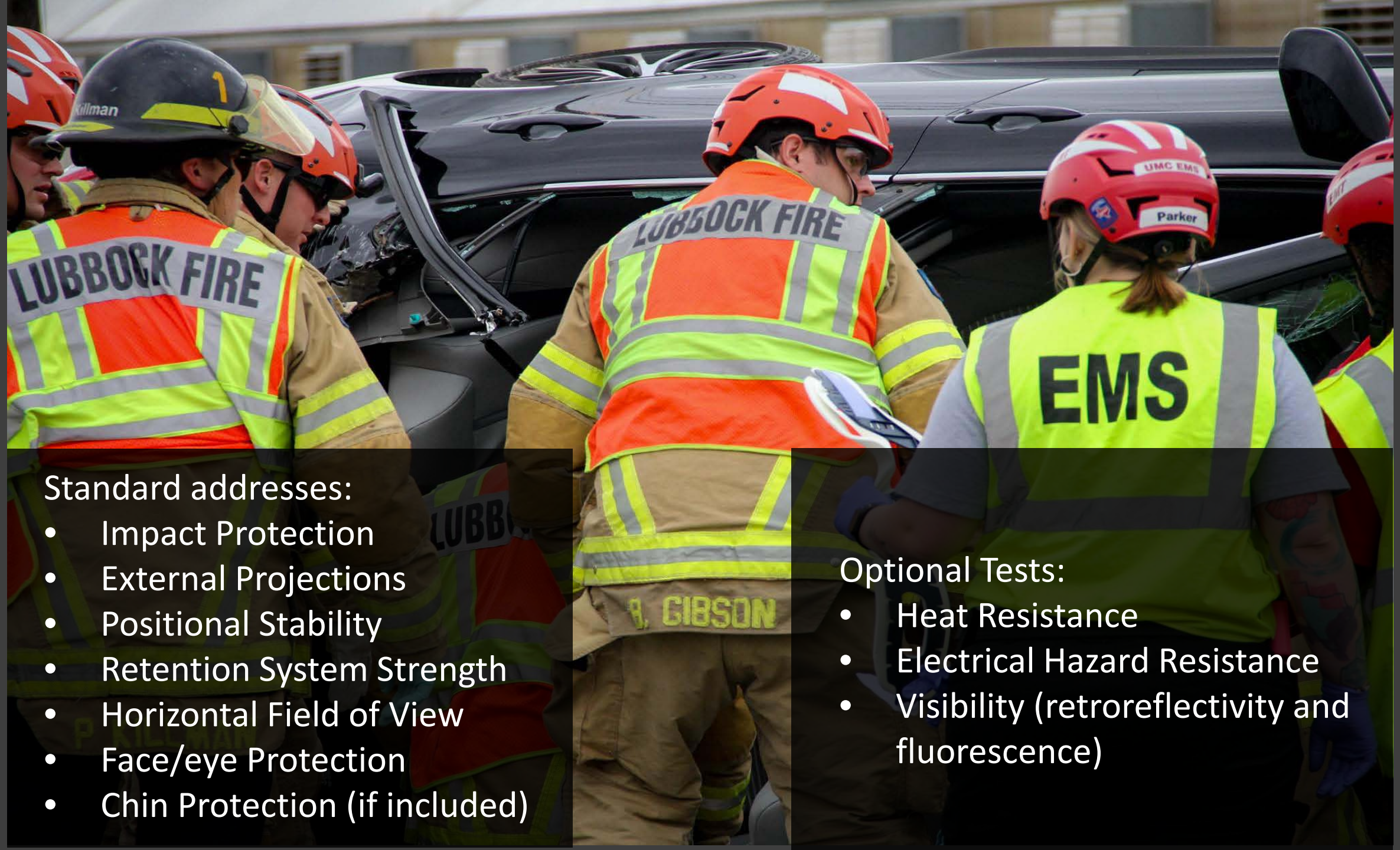
Photo Credit: National Highway Traffic Safety Administration

Webbing Suspension Systems vs Foam Impact Liners

Flying Roadway Debris

Kansas Highway Patrol Troop C

Mid-Piatt Fire Protection District



Standard addresses:

- Impact Protection
- External Projections
- Positional Stability
- Retention System Strength
- Horizontal Field of View
- Face/eye Protection
- Chin Protection (if included)

Optional Tests:

- Heat Resistance
- Electrical Hazard Resistance
- Visibility (retroreflectivity and fluorescence)

Head protection leaps into 21st century

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

By Emily Freehling for The Signal

The hard hat is a ubiquitous symbol of safety in construction zones. But it provides a lower level of head protection from multi-directional impacts than the helmets many parents place on their

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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

VDOT

SPRINGDALE
EST. 1939
FIRE DEPT.

LUBBOCK
LFD
1909
FIRE • RESCUE

IRVING
TEXAS' FIRST RECOGNIZED
BEST PRACTICES
FD
FIRE DEPT.

GRAND PRAIRIE FIRE DEPARTMENT
SERVING PROUDLY
GP
1917

WOLFFORTH
FD
FIRE & EMS

QUESTIONS?

Recordings and resources will be made available on cpwr.com/webinars

Panelists:

- **Bradley Sant**, Senior Vice President, Safety and Education, American Road & Transportation Builders Association (ARTBA)
- **Srinivas Konda, MPH**, Epidemiologist, Division of Safety Research, National Institute for Occupational and Safety and Health (NIOSH)
- **Diana Jones**, Senior Director, Technical Programs and Development, International Safety Equipment Association (ISEA)
- **Rosa Greenberg, MPH**, Research Analyst, Research to Practice Program, CPWR – The Center for Construction Research and Training (CPWR)
- **Brady Robinette**, Lieutenant, Lubbock Fire Rescue
- **Douglas Trout, MD**, NIOSH Office of Construction Safety and Health