Lake County Safety Council
Thursday, March 10 Meeting

Back to the Basics – Construction Safety & OSHA's Fatal Four

Justin Snyder, Hammond Construction –- Taylor Palmerton, Platform Contracting
Matt Reichardt, Valley Interior Systems –- Drew Williams, Great Lakes Construction
Nick Papadorotheou, Ritenour Group –- Ryan Maraffi, Hatzel & Buehler

Event Sponsor

HzW Environmental Consultants

Event Sponsor

University Hospitals
Employer Solutions

UH/Lake Health
Occupational Services

Lake Health IS NOW PART OF University Hospitals

UH Occupational Services

Exciting News for Lake Health Corporate Solutions Clients, Communication

Lake Health System's *Corporate Solutions* continually strives for higher levels of excellence in the quality and access of care at our Occupational Health Centers. On **Monday, January 3, 2022,** we integrated with University Hospitals, including its Occupational Health Service Suite.

Lake Health integrated with University Hospitals as the two systems share a culture that puts patients first and emphasizes compassion in its high quality of care. By combining Systems, we are certain we will offer the best value in healthcare.[1]

UH Occupational Services

WELCOME TO THE NEW OCCUPATIONAL HEALTH SERVICES PORTALS – ISYSTOC
University Hospitals Occupational Health Clinics use iSystoc as their EMR (Electronic Medical Records) system.
The employer portal provides Employer access 24/7 to their Occupational Health records and results, which includes:

- Chain of custody form for drug testing
- Breath alcohol results
- Physical report (Medical Clearance)
- Respirator clearance
- TB results or IGRA (blood test for TB status)
- Titer results for Hepatitis B, MMR, and Varicella
- WebCheck tracking form

Substance Abuse Testing

- MedTox is a secure drug testing laboratory, partnered with UH to complete the analysis of drug screen specimens.
- MedTox is certified by the Substance Abuse and Mental Health Services Administration (SAMHSA).
- Negative results usually report out within 24-72 hours depending on when the specimen arrives at the laboratory.

UH Occupational Services

University Hospitals
Employer Solutions

Is your account current for designated contacts?

- Do you have the correct staff listed on your client profile?
- **In order to obtain access, each person authorized to view employee results needs to sign the Agreement -** iSystoc User Agreement.

Is your account current for the types of services needed to meet your organizational needs?

- Respirator Clearance
- Respirator Fit Testing
- Webcheck (digital finger printing)
- OSHA Audio testing
- Onsite OSHA Audio testing
- TB testing……and more options are available

If you need to set up your web portal access or update your account, please contact Chris Brill-Packard at (440) 479-8644 or via email: Christine.Brill-Packard@UHhospitals.org or Seth Baumberger via email: Seth.Baumberger@UHhospitals.org

Future Safety Executive Committee

CEA™

OSHA FATAL FOUR EVENTS

THE FOUR COMMON HAZARDS THAT KILL MANY CONSTRUCTION WORKERS EACH YEAR…

PRESENTED BY: THE FUTURE SAFETY EXECUTIVE COMMITTEE AND THE CEA

THE FATAL FOUR…

OSHA has identified 4 major hazards that make up half of fatalities that occur on construction sites:

1. **Falls** – Matt Reichardt
2. **Struck-By** – Drew Williams
3. **Caught-In/Between** – Nick Papadorotheou
4. **Electrocutions** – Ryan Maraffi

FALL HAZARDS

MATT REICHARDT
VALLEY INTERIOR SYSTEMS
SAFETY MANAGER

FALLS ARE THE LEADING CAUSE OF DEATH IN CONSTRUCTION.

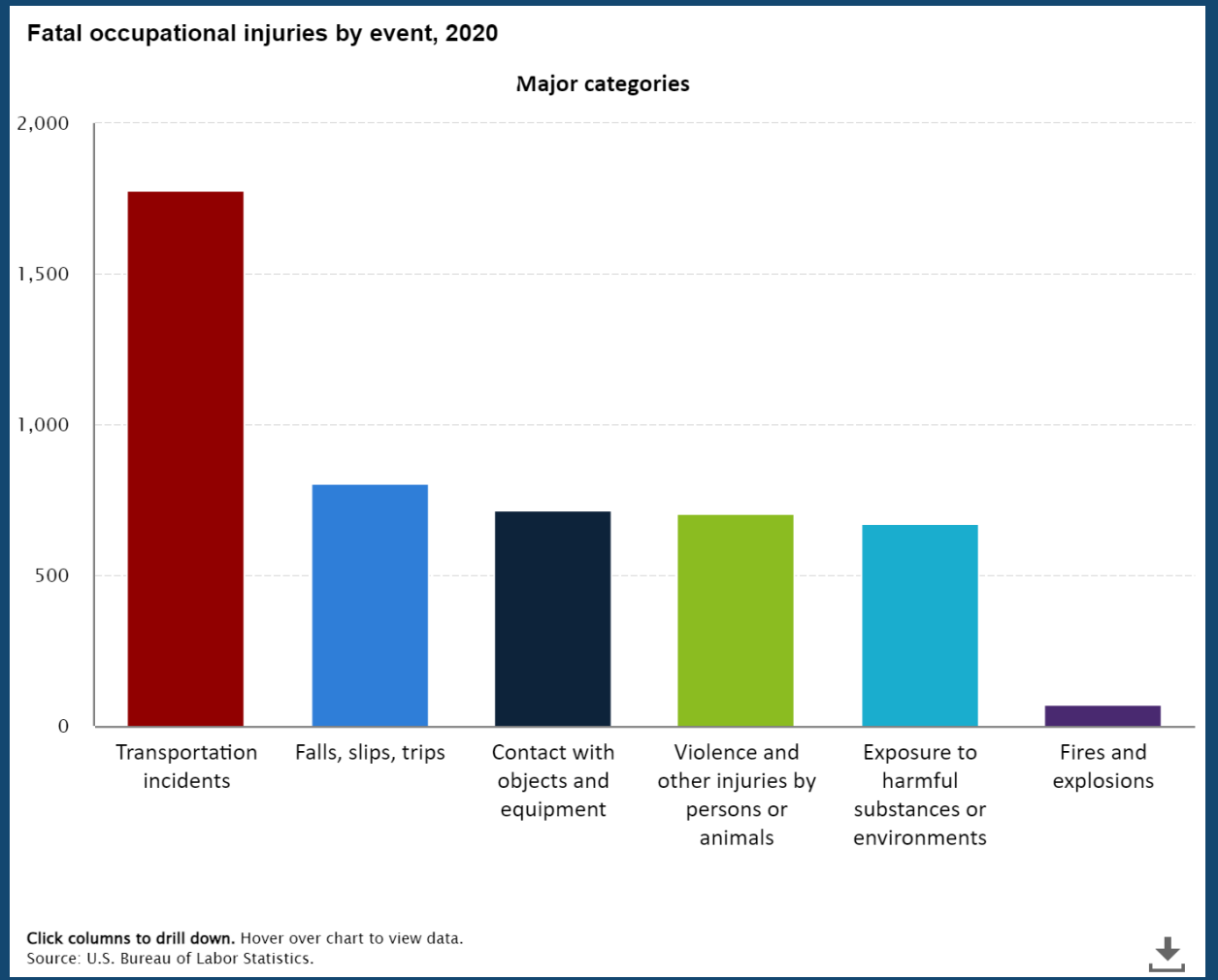
IN 2020, THERE WERE 351 FATAL FALLS TO A LOWER LEVEL OUT OF 1,008 CONSTRUCTION FATALITIES (BLS DATA).

CER™

Future Safety Executive Committee

OSHA'S FATAL 4 # 1

NUMBER 2 IN ALL MAJOR CATEGORIES



Future Safety Executive Committee

TYPES OF FALL HAZARDS

1 Slips ,Trips and Falls

2 Falling from Heights

3 Falls from Scaffolds

4 Falls from Ladders

Future Safety Executive Committee

MOST COMMON CAUSES OF CONSTRUCTION SITE SLIPS, TRIPS AND FALLS

- 1 Housekeeping (materials)
- 2 grease, oil , water, mud, ice, sand other materials
- 3 Unsafe or uneven surfaces or ground
- 4 Improper footwear

Future Safety Executive Committee

FALLING FROM HEIGHTS PROTECT YOURSELF

Almost all sites have unprotected sides and edges, wall openings, or floor holes at some point during construction.

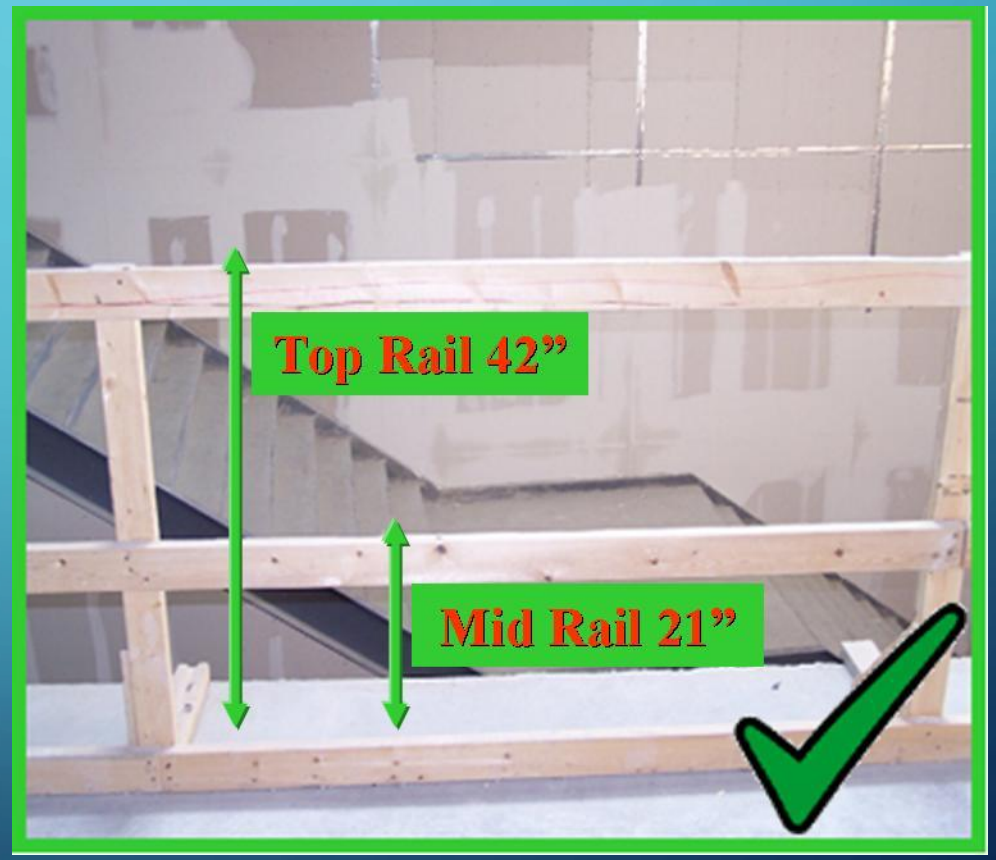
Elevated areas 6 feet or more above a lower level must use conventional fall protection systems:

- Guardrail Systems
- Safety Net Systems
- Personal Fall Arrest Systems

Future Safety Executive Committee

GUARDRAIL SYSTEMS

- Guardrail systems must have a top rail, a mid rail and a toe board.
- The top rail must be at least 42” from the working surface.



Future Safety Executive Committee

GUARDRAIL SYSTEMS

- All guardrail systems must be constructed with a top rail and a mid rail.
- The top rail must support 200 lbs. of force downward and outward.
- The mid rail must support 150 lbs. of force.
- Cable guardrails must meet the same rules as wood guardrails and flagged every 6 feet.

Future Safety Executive Committee

ROOF WORK – WARNING LINES

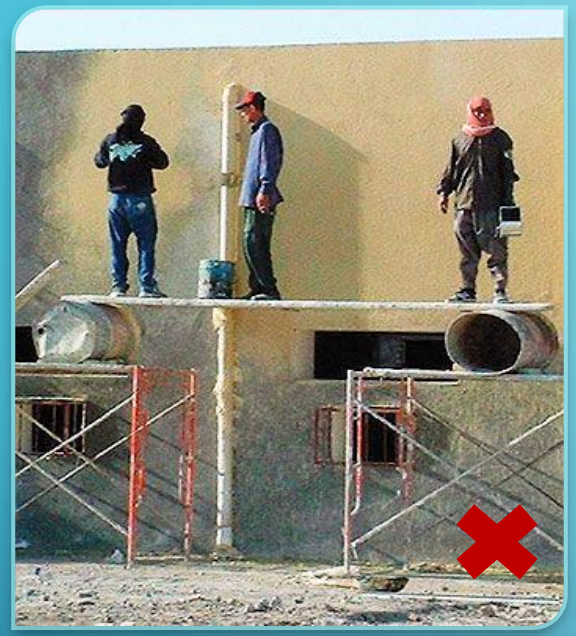
- At least 6’ from the edge (10 feet with mechanical equipment)
- Cones every 20’
- Flagging in critical on this
  - Red = do not enter without permission
  - Yellow = caution hazards may be present

FALLING FROM HEIGHTS CONT.

- Cover or guard floor holes as soon as they are created during new construction.
- Anything over 2”
- Marked clearly “Hole” in all languages needed
- Construct all floor hole covers so they will effectively support two times the weight of employees, equipment, and materials that may be imposed on the cover at any one time.
- In general, it is better to use fall *prevention* systems, such as guardrails, than fall *protection* systems, such as safety nets or fall arrest devices, because they provide more positive safety means.

Future Safety Executive Committee

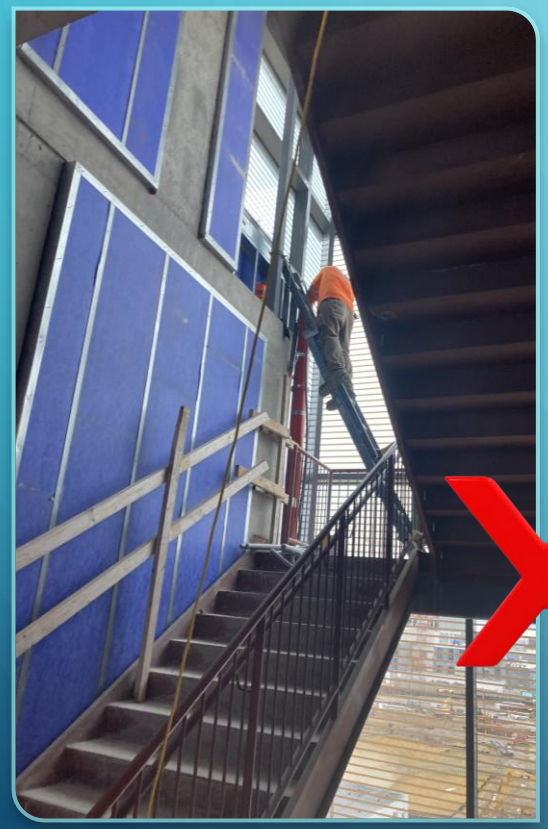
SCAFFOLDING FALLS



- Construct all scaffolds according to the manufacturer's instructions and to ensure scaffolding safety, the scaffold must be built under the supervision of a competent person. Make sure they are tagged and inspected daily.
- Install guardrail systems along all open sides and ends of platforms.
- Use at least one of the following for scaffolds more than 10 feet above a lower level:
  - Guardrail Systems
  - Personal Fall Arrest Systems
- Provide safe access to scaffold platforms. [Do not climb cross-bracing as a means of access.
- Remember you can not use barrels or other objects to get higher on scaffolding

Future Safety Executive Committee

FALLS FROM PORTABLE LADDERS



- Position portable ladders so the side rails extend at least 3 feet above the landing
- Use 4 to 1 rule for extension ladders
- Secure side rails at the top to a rigid support and use a grab device when 3-foot extension is not possible.
- Make sure that the weight on the ladder will not cause it to slip off its support.
- Before each use inspect ladders for cracked or broken parts such as rungs, steps, side rails, feet and locking components.
- Do not apply more weight on the ladder than it is designed to support. Use only ladders that comply with OSHA design standards.
- Always maintain 3 points of contact
- Never use top Rung

Future Safety Executive Committee

FALL DEATHS ARE PREVENTABLE !

- **Plan Ahead**
- **Provide the correct fall protection and the right equipment for the job.**
- **TRAIN everyone to set up and use the equipment safely**
- **Conduct regular inspections on safety equipment and Tools being used.**

Future Safety Executive Committee

THANK YOU!


Valley
INTERIOR SYSTEMS


Future Safety
Executive Committee


CEA™


Future Safety
Executive Committee

Struck-By Hazards

Drew A. Williams
The Great Lakes Construction Co.

THE GREAT LAKES CONSTRUCTION CO.

CEA™

Future Safety Executive Committee

Crane Tip Over and Failure Incidents

- Soft Ground
- Inadequate outrigger support
- Overload
- Crane out of level
- Boom strike

Future Safety Executive Committee

Handling Loads

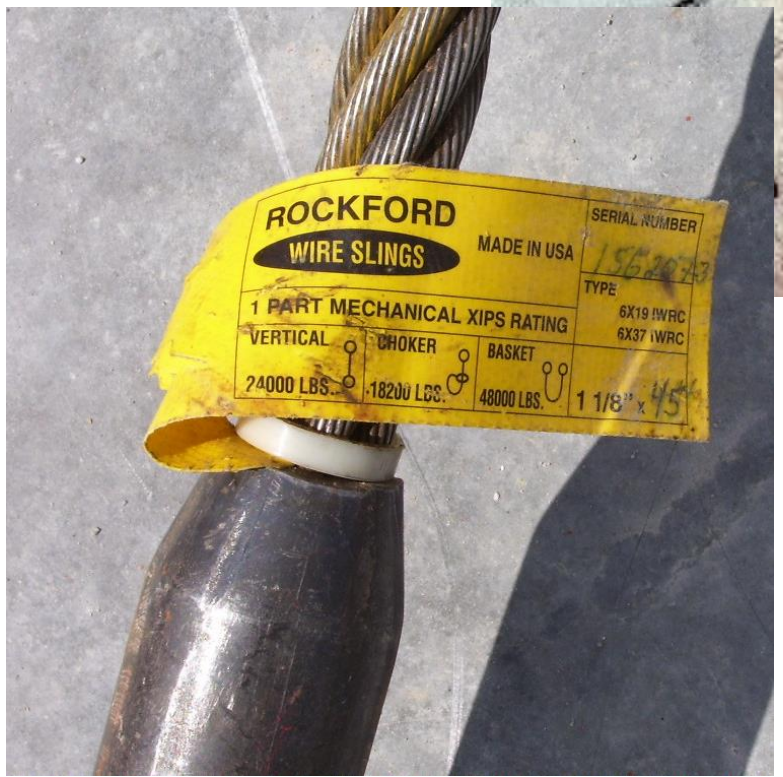
- Struck by the load
- Rigging equipment failure
- Rigging equipment overload
- Improper rigging technique
- Quick Coupler

CEA™

Future Safety Executive Committee

Rigging Inspection

- Slings must be inspected before each use
- Slings should have tags that indicate capacities



CEA™

Future Safety Executive Committee

Forklifts

- Tip-over’s
- Stability
- Capacity
- Operator Training

Future Safety Executive Committee

Wall Stability

- Masonry
- Reinforced Concrete
- Pre-cast/Tilt-up
- Environmental factors
- Limited access (safety) zones established

Future Safety
Executive Committee

Striking Workers on Foot

Future Safety
Executive Committee

Equipment & Vehicle Hazards

Future Safety
Executive Committee

Dumping Trucks

- Stay clear of dump trucks while they are dumping
- Trucks can become unstable with the boxes raised
- Watch for spillage out of the end gates
- If an end gate chain breaks, you could be covered in material

CEA™

Future Safety Executive Committee

Backing Equipment

- Have audible back-up alarms
- Have a spotter to direct the operator if visibility is restricted
- Keep adequate clearance behind the vehicle
- Always pay attention to backing equipment

CEA™

Future Safety Executive Committee

Equipment Does Roll Over!

Future Safety Executive Committee

Wear Your Seat Belt!

- When there is a roll-over hazard, there must be a seat belt
- Always wear the seat belt
- Only ride in the seat provided
- No riding in buckets, on fenders or on steps

CEA™

Future Safety Executive Committee

Poor Worker Positions

- This worker stepped into a trap

- This worker is out of the driver's mirror view

Future Safety Executive Committee

Maintenance Hazards

Workers under equipment that is insufficiently supported

Future Safety Executive Committee

Materials Handling and Storage

Future Safety
Executive Committee

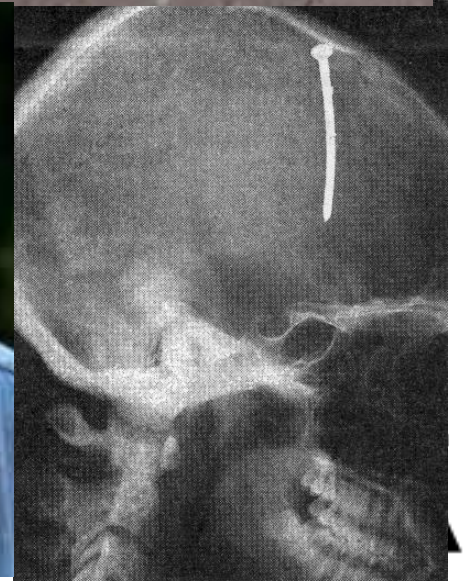
Stack and Store Materials Properly

- No more than 4:1 height to base ratio
- Secure all loads
- Stack, block, and interlock
- Keep at least 6' back from edges
- Be prepared for heavy weather

Future Safety Executive Committee

Air Nailers

- Penetration checks must be made
- Safety’s must be operational
- All proper PPE must be worn



Future Safety
Executive Committee

Last, But NOT Least…Hard Hats

- Proper use
  - Brim forward
  - Suspension adjustment in the rear
- Care
- Aged or damaged? Remove from service.

Future Safety Executive Committee

Caught In-Between Hazards

Nick Papadorotheou

Ritenour Group

Safety Officer

Future Safety Executive Committee

CAUGHT-IN/BETWEEN HAZARDS

- When the injury is created as a result of crushing injuries between objects, the event should be recorded as CAUGHT BETWEEN

Future Safety Executive Committee

CAUGHT-BETWEEN

The Caught-between accidents occur when a person is crushed, pinched, or caught between a moving object and a stationary object, or between two moving objects.

These accidents can result in amputated body parts and even death.

EVENTS THAT SHOULD BE CLASSIFIED AS CAUGHT INCLUDE:

- Unprotected excavations and trenches, leading to collapse of walls
- Cave-ins trenching may contain Crushing, Engulfment, and Hazardous Atmospheres Dangers

  Workers can drown in water sewage or chemicals in trenches.
- Being pulled into or caught in machinery and equipment.
- Being Compressed or crushed between rolling, sliding, or shifting objects such as semi-trailers and a dock wall, or between a truck frame and a hydraulic bed that is lowering.

TYPES OF CAUGHT-IN OR BETWEEN HAZARDS IN CONSTRUCTION

- Excavation
- Unguarded machinery
- Being caught between a vehicle and an object
- Being caught between objects
- Being caught between a piece of equipment or machinery

Excavations

Quick Tips:

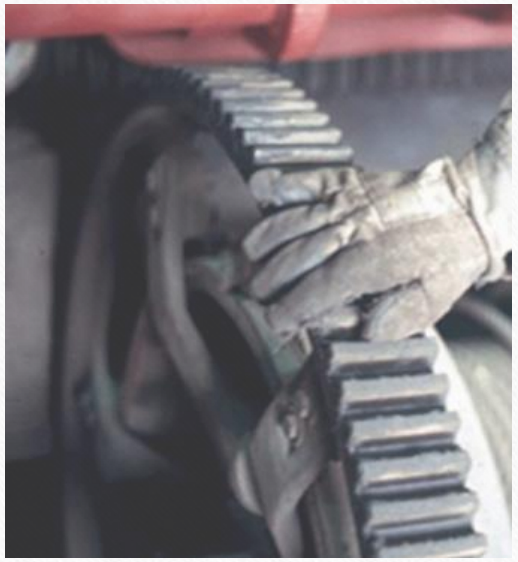
- Do not work in a unprotected trench that is 5’ deep or more
- Ensure proper access and egress
- CP and Training

PROTECT YOURSELF ON EXCAVATION SITES

- ACESS AND EGRESS TO A TRENCH USING A LADDER, STAIRWAY OR PROPERLY DESIGNED RAMP THAT IS PLACED IN THE PROTECTED AREA

Being pulled into or caught in machinery and equipment

Machine



Guarding

UNGUARED MACHINERY

- Use machinery that is properly guarded
- Never remove safety guards when tool is being used
- Moving parts of power tools and equipment need to be safe guarded
- Be sure to avoid wearing loose clothing or jewelry that can be caught in moving parts

Future Safety Executive Committee

UNGUARDED MACHINERY

- Ensure machinery is secure and made safe
- Make sure equipment is de energized and cannot be started accidentally
- Disconnect tools when not in use before servicing and when changing accessories
- Lock out power sources to the equipment
- Ensure proper training

BEING CAUGHT BETWEEN A VEHICLE AND AN OBJECT

- BARRICADES, USE THEM RESPECT THEM, AVOID WALKING WITHIN THE DESIGNATED AREA
- KNOW YOUR SURROUNDINGS!
- WORKER CAN GET PINNED BETWEEN EQUIPMENT AND STATIONARY OBJECTS, SUCH AS A WALL.
- TRAINING

BEING CAUGHT BETWEEN A VEHICLE AND AN OBJECT

- MAKE EYE CONTACT WITH THE OPERATOR AND USE CLEAR HAND SIGNALS THAT YOU ARE APPROACHING THIS MANCHINE
- THE OPERATOR MAY NOT SEE YOU!

BEING CAUGHT BETWEEN A VEHICLE AND AN OBJECT

- Be aware at all times of the equipment around you and stay a safe distance from it.
- Never place yourself between moving materials and an immovable structure, vehicle, or stacked materials

BEING CAUGHT BETWEEN A VEHICLE AND AN OBJECT

- Make sure that all loads carried by equipment are stable and secured
- Stay out of the swing radius or cranes and other equipment.

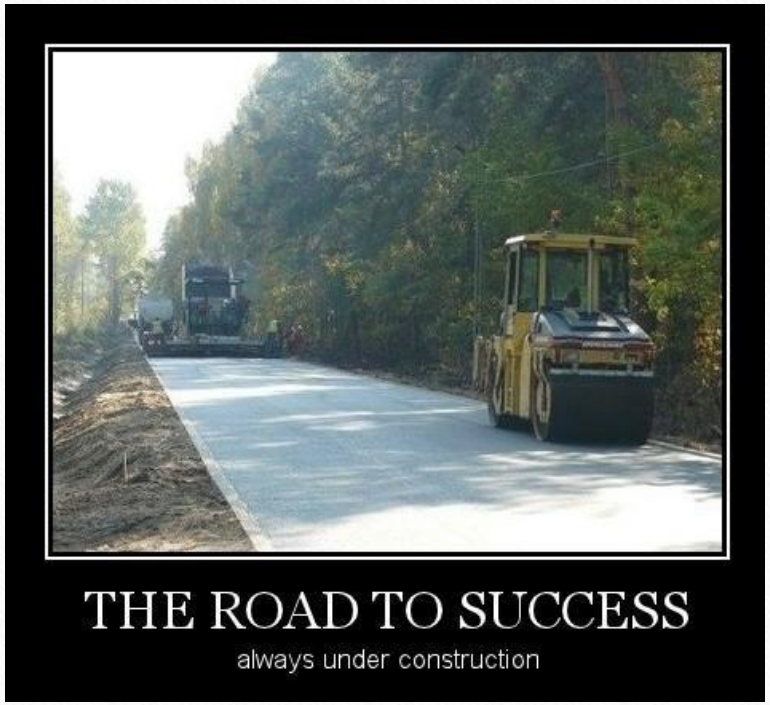
WHAT COULD POSSIBLY GO WRONG???

Future Safety Executive Committee

TRAINING

- MAKE SURE YOUR EMPLOYEES HAVE THE PROPER
- TRAINING ON THE EQUIPMENT AND HAZARDS SO THAT THEY CAN DO THE WORK SAFELY

THANK YOU!!!



Future Safety Executive Committee

HATZEL & BUEHLER, INC.
Electrical Construction Since 1884
Bluestone Communications Inc.

Electrical Safety in the Workplace
NFPA 70E

By
Ryan Maraffi

CEA™

Future Safety
Executives Committee

Electrical Shock

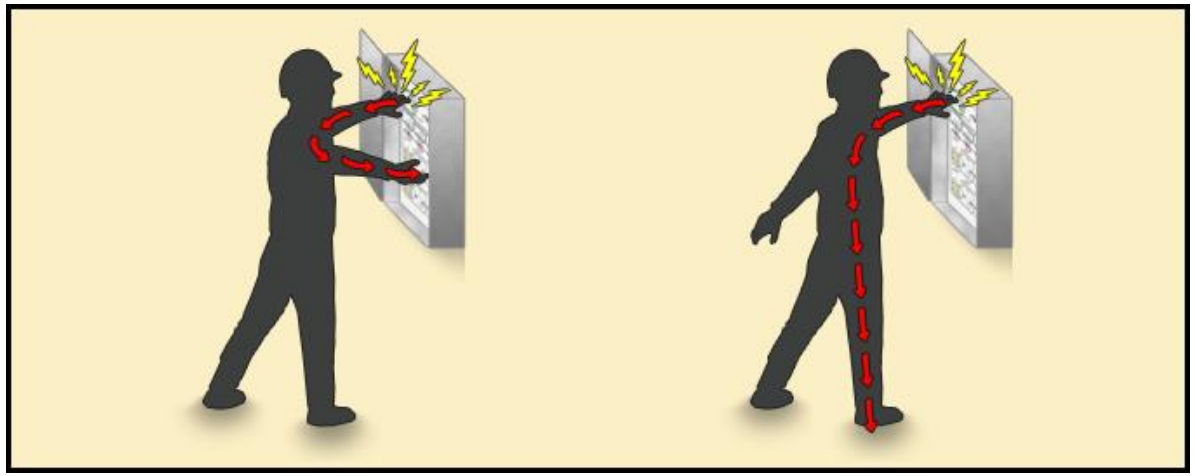
An electrical shock is received when electrical current passes through the body.

You will get an electrical shock if a part of your body completes an electrical circuit by…

- Touching a live wire and an electrical ground

OR

- Touching a live wire and another wire at a different voltage.

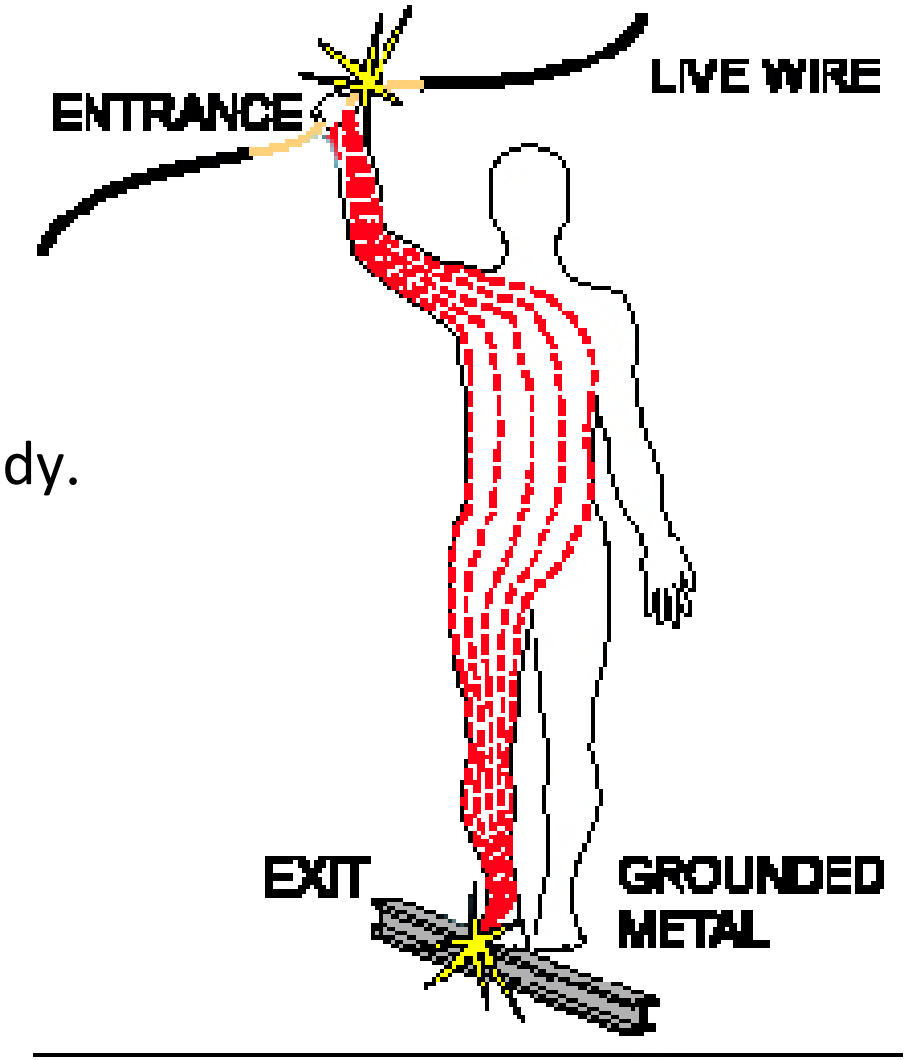


Shock Severity

- Severity depends on:
  - Path of current through the body
  - Amount of current flowing through the body.
  - Duration of the shocking current through the body.

- **LOW VOLTAGE DOES NOT MEAN LOW HAZARD**

  50 Volts or greater



Dangers of Electrical Shock

mA	Effect
3 to 5 mA	painful reaction and can lead to an indirect accident
above 10 mA*	paralyze or “freeze” muscles
more than 75 mA	rapid, ineffective heartbeat -- death may occur in a few minutes unless a defibrillator is available
75 mA is not much current	a small power drill uses 30 times as much

What other injuries might have occurred following an electrical shock:

Reaction Heat Falls
Impact Light Noise

Inspecting Electrical Cords

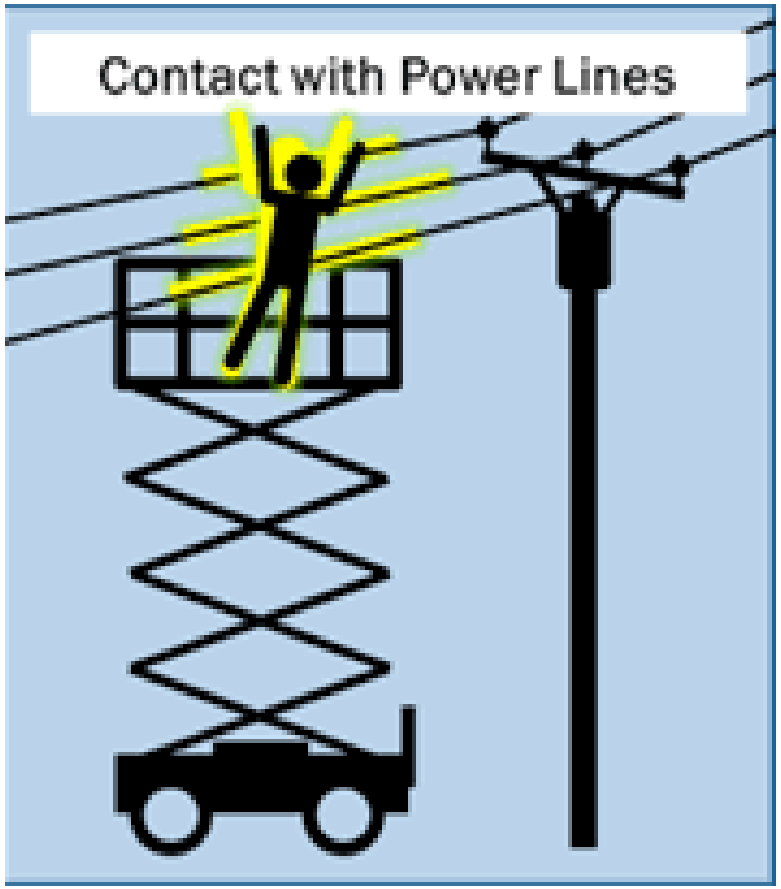
- Look for cracks or damaged insulation and loose or missing plug blades.
- Make sure the plug fits snugly into the outlet, never force a plug into an outlet if it doesn’t fit.
- Keep slack in flexible cords to prevent tension on electrical terminals.
- Grasp the plug, not the cord, when removing a plug from an outlet.

GFCI Protection

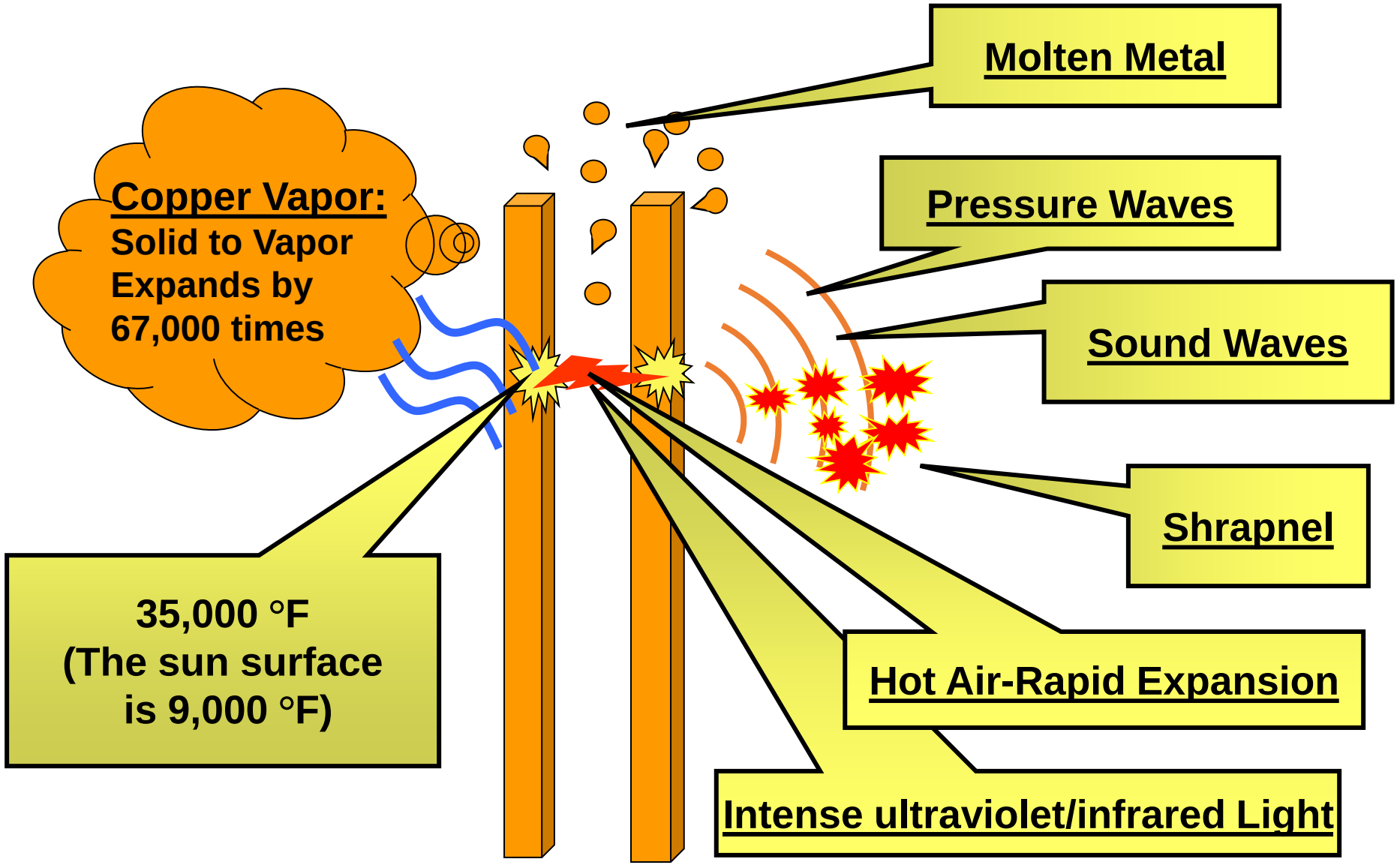
- When portable electric tools and equipment are used with temporary wiring methods or extension cords for construction, repair, and maintenance.
- When electric equipment is used in highly conductive work locations (with water or other conductive liquids)
- Portable GFCI cord sets are tested by the user
  - Visually inspect device for obvious defects and broken parts.
  - Press reset button.
  - Press test button and verify no voltage at outlet.
  - Using a trouble light or tool
  - Press reset button and verify power is restored.

Minimum Approach Distance (M.A.D.)

Voltage Range	Minimum Approach Distance
Up to 50kV	10 feet (3 meters)
Over 50kV to 200kV	15 feet (5 meters)
Over 200kV to 350kV	20 feet (6 meters)
Over 350kV to 500kV	25 feet (8 meters)
Over 500 kV to 75kV	35 feet (11 meters)
Over 750kV to 1,000kV	45 feet (meters)



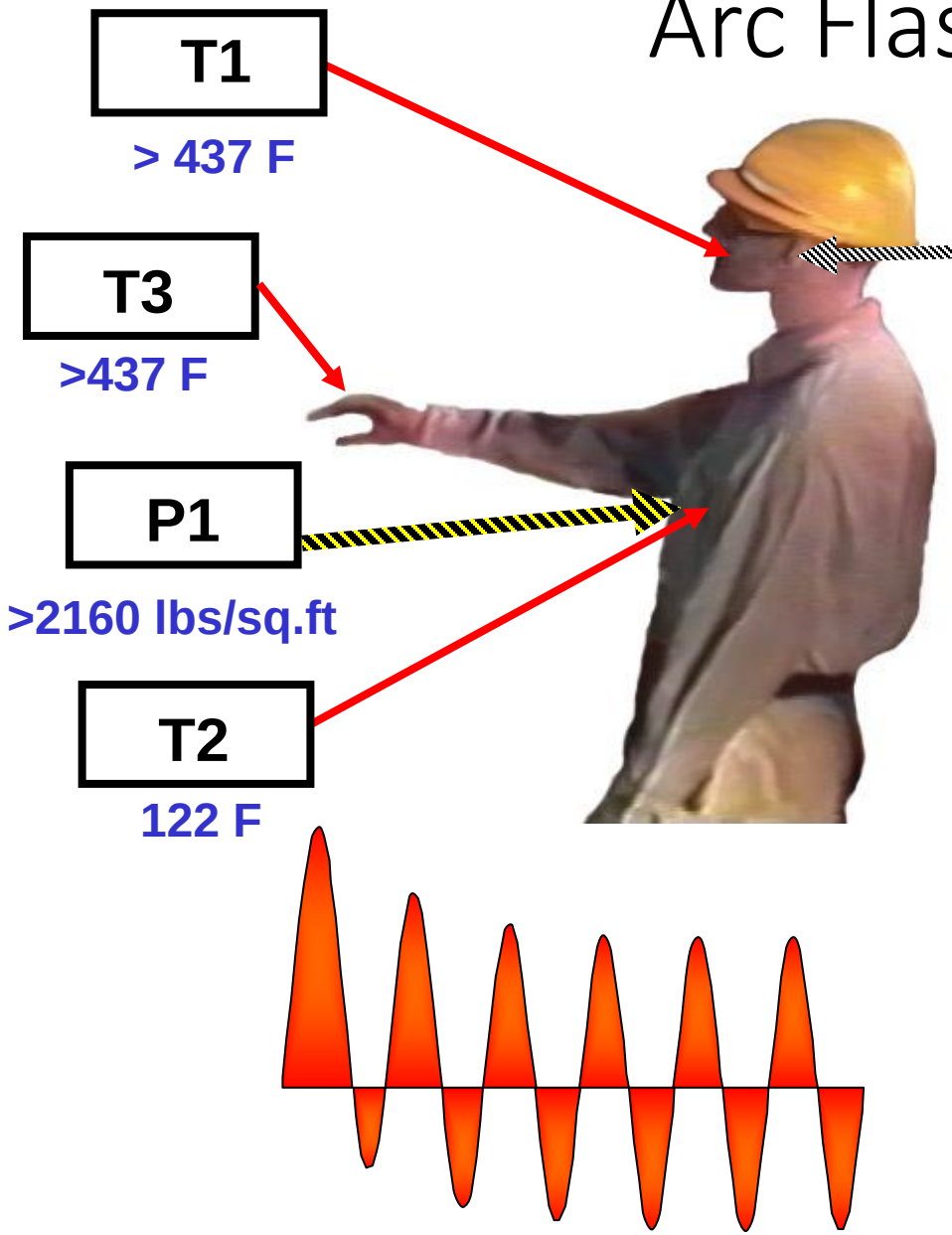
Electrical Arc Flash / Blast Hazards



Flash Protection Boundary

The following pictures were taken during the tenth of a second it took for a circuit breaker to clear the fault.

Arc Flash Results

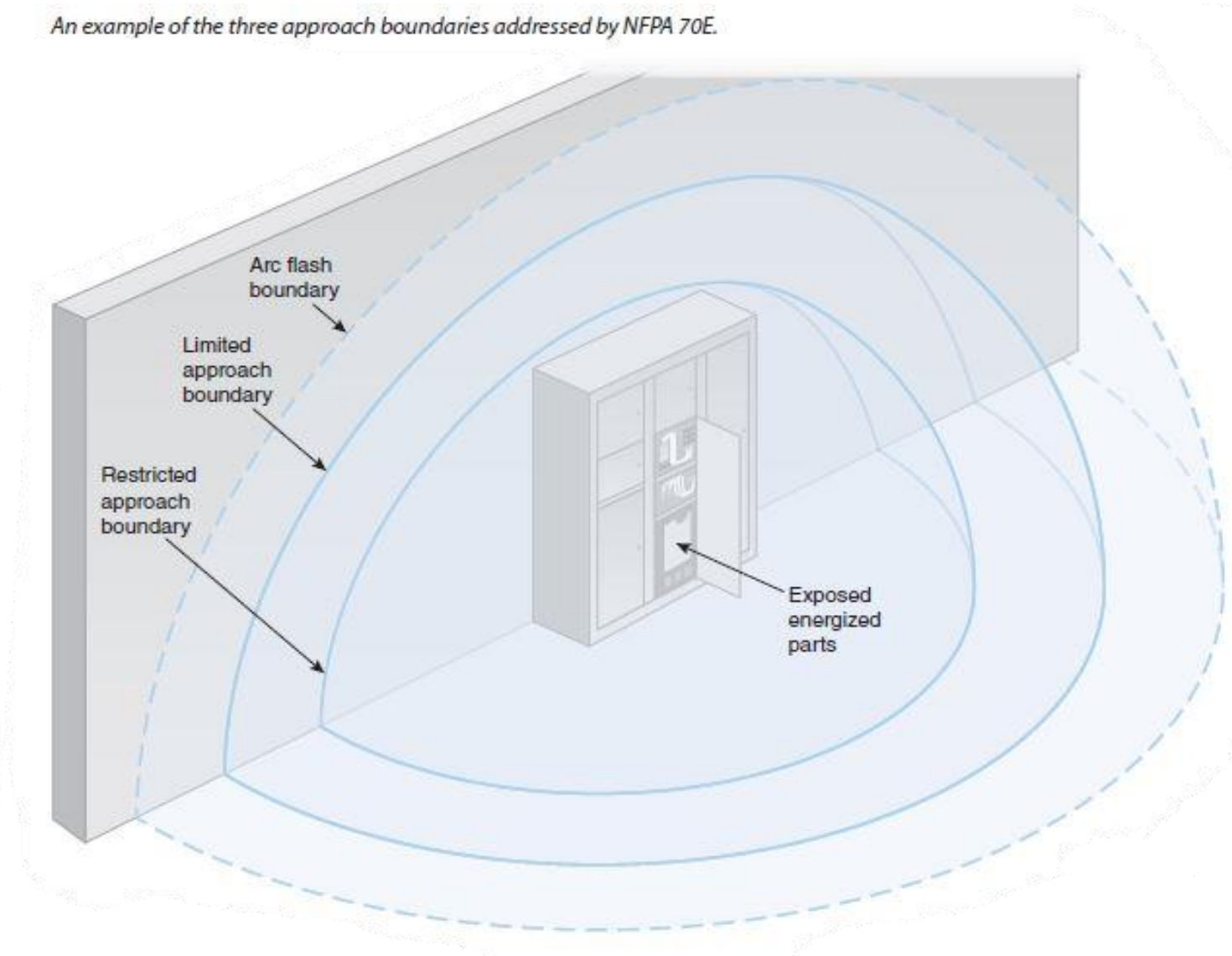


Resulting Temperature, Pressure and Sound from a short circuit on the secondary side of a 13.8kV to 4160V, 10MVA transformer

- In this test, (with 25kA Short Circuit Current) the clearing time was 0.1 seconds or 6 cycles
- For a Non-Current Limiting fuse circuit breaker clearing times can be as high as 30 cycles or 0.5 seconds.
- The results of a longer clearing time would be much more devastating.

Non-Current Limiting – 6 cycle clearing time

Approach Boundaries



Limited Approach Boundary

50-750V	3 ft. 6 in.
751–15kV	5 ft. 0 in.
15.1kV-36kV	6 ft. 0 in.
36.1kV-46kV	8 ft. 0 in.

Restricted Approach Boundary

50-150V	Avoid Contact
151-750V	1 ft. 0 in
751–15kV	2 ft. 2 in
15.1kV-36kV	2 ft. 7 in
36.1kV-46kV	2 ft. 9 in

Personal Protective Equipment (PPE)

General

- When an employee is working within the restricted approach boundary, the worker shall wear PPE in accordance with NFPA 70E. When an employee is working within the arc flash boundary, he or she shall wear protective clothing and other PPE in accordance with NFPA 70E. All parts of the body inside the arc flash boundary shall be protected.

Movement and Visibility

- When arc-rated clothing is worn to protect an employee, it shall cover all ignitable clothing and shall allow for movement and visibility.

PPE CATEGORY 1

Minimum Arc Rating of

4 cal/cm²

Arc Rated Clothing:

- AR long-sleeve shirt and pants, or AR coverall
- AR face shield, or AR flash suit hood
- AR jacket, parka, rainwear, or hard hat liner (as needed)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (with inserts)
- Heavy-duty leather gloves
- Leather footwear (as needed)

PPE CATEGORY 2

Minimum Arc Rating of

8 cal/cm²

Arc Rated Clothing:

- AR long-sleeve shirt and pants, or AR coverall
- AR flash suit hood, or AR face shield and AR balaclava
- AR jacket, parka, rainwear, or hard hat liner (as needed)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (with inserts)
- Heavy-duty leather gloves
- Leather footwear

PPE CATEGORY 3

Minimum Arc Rating of

25 cal/cm²

Arc Rated Clothing:

- As required: AR long-sleeve shirt, AR pants, AR coverall, AR flash suit jacket, and/or AR flash suit pants
- AR flash suit hood
- AR gloves
- AR jacket, parka, rainwear, or hard hat liner (as needed)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (with inserts)
- Leather footwear

PPE CATEGORY 4

Minimum Arc Rating of

40 cal/cm²

Arc Rated Clothing:

- As required: AR long-sleeve shirt, AR pants, AR coverall, AR flash suit jacket, and/or AR flash suit pants
- AR flash suit hood
- AR gloves
- AR jacket, parka, rainwear, or hard hat liner (as needed)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (with inserts)
- Leather footwear

ASTM Labeling Chart

Natural Rubber Electrical Insulating Gloves

Class Color	Proof Test Voltage AC/DC	Max. Use Voltage AC/DC	Insulating Rubber Glove Label
00 Beige	2,500 / 10,000	500 / 750	10 ASTM D120 EN60903 CLASS 00 TYPE I MAX USE VOLT 500V AC
0 Red	5,000 / 20,000	1,000 / 1,500	10 ASTM D120 EN60903 CLASS 0 TYPE I MAX USE VOLT 1000V AC
1 White	10,000 / 40,000	7,500 / 11,250	10 ASTM D120 EN60903 CLASS 1 TYPE I MAX USE VOLT 7500V AC
2 Yellow	20,000 / 50,000	17,000 / 25,500	10 ASTM D120 EN60903 CLASS 2 TYPE I MAX USE VOLT 17000V AC
3 Green	30,000 / 60,000	26,500 / 39,750	10 ASTM D120 EN60903 CLASS 3 TYPE I MAX USE VOLT 26500V AC
4 Orange	40,000 / 70,000	36,000 / 54,000	10 ASTM D120 EN60903 CLASS 4 TYPE I MAX USE VOLT 36000V AC

Care and Maintenance of Arc-Rated Clothing

- **Inspection**. Inspected before each use.
  - Contaminated, or damaged to the extent that their protective qualities are impaired, shall not be used.
  - Contaminated with grease, oil, or flammable liquids or combustible materials shall not be used.
- **Storage**. Prevent physical damage; damage from moisture, dust, or other deteriorating agents; or contamination from flammable or combustible materials.

THANK YOU!!!

Future Safety Executive Committee

CONCLUSION

Lastly, a comment about mental health in construction…

Safety and worker wellbeing does not stop when the worker goes home.

2Tuff2talk shines light on a very real problem that has been stigmatized for too long

According to OSHA, 1,061 workers died in 2019 due to work-related injuries. According to CIASP, there are approximately 5,500 suicides among construction workers per year.

2Tuff2Talk Mission statement : To help construction workers and their families navigate mental health issues by educating front-line supervisors, providing resources, and guiding them through the roadblocks in the mental health system with a boots-on-the-ground approach.

Visit www.2tuff2talk.com for additional resources

Mental health can be a difficult discussion to have, but you never know when it may save a life!

Future Safety Executive Committee

CONCLUSION

In Conclusion:

- Thank you for allowing the FSEC to present to your group!!!
- If you have any questions about the topics covered or about the FSEC, please reach out to us at Jsnyder@HammondConstruction.com