IFCA LUNCH & LEARN 2017 NATIONAL SAFETY STAND-DOWN

Fall Protection Webinar May 8, 2017





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Did you know that FALLS are the leading CAUSE of DEATH in construction?

Each dot represents a fatal construction fall in 2015.

You can help prevent fall-related deaths and injuries. Join the Campaign! www.stopconstructionfalls.com





PLAN. PROVIDE. TRAIN

Source: http://stopconstructionfalls.com/fatality-map/fatality-mapping-project/























WHAT CAUSES PEOPLE TO FALL

- 91% No fall protection worn
- 82% No fall protection in place
- 79% Wore harness or belt but not attached
- 75% Loss of footing, balance, or grip

Falls are the leading cause of on-the-job deaths in construction. Sixty percent (60%) of all falls were preventable by fall protection.







"You weren't listening. I said, 'Don't fall.'"





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FALLS CAN BE PREVENTED

PLAN ahead to get the job done safely

PROVIDE the right equipment

TRAIN everyone to use the equipment safely







OBJECTIVES

- Know the hazards of working at heights
- Understand the types and components of fall protection systems
- Know which types of fall protection are required for different situations
- Understand the requirements for inspection and know how to inspect harnesses





IFCA MEMBER FALL HAZARDS

<u>Activities</u>

- Installing Lighting/Fixtures
- Carpentry/Millwork
- Framing
- Drywall
- Ceilings
- Windows
- Insulation

<u>Hazards</u>

- Working on elevated platforms/lifts (ladders, scaffolds, aerial lifts)
- Wall/floor openings
- Open sides & edges
- Elevated walkways & ramps





THE SIX FOOT FALL

200 lb. Worker falling 6 feet = 9,000+ lbs. of energy.

FALL DISTANCE	TIME (SEC)	IMPACT FORCE 200 Ib WORKER	4
2.0 inches	0.1	256 lbs	
7.6 inches	0.2	1,024 lbs	
17.0 inches	0.3	2,304 lbs	
31.0 inches	0.4	4,096 lbs	
48.0 inches	0.5	6,400 lbs 🎽	
69.0 inches	0.6	9,216 lbs	





FALLS IN CONSTRUCTION

• Falls are the leading cause of deaths in the construction industry.

• Most fatalities occur when employees fall from open-sided floors and through floor openings.

• Falls from as little as 4 to 6 feet can cause serious lost-time accidents and sometimes death.

• Open-sided floors and platforms 6 feet or more in height must be guarded.





PLANNING FOR FALL PROTECTION

- Best practice dictates that fall prevention/ protection becomes an integral part of the project planning process, from constructability, to systems installation, to use and maintenance
- A project cannot be truly safe unless fall prevention/protection is incorporated into every phase of the construction process
- Planning will keep workers safe and minimize liability for all parties involved



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PROVIDE THE RIGHT EQUIPMENT

Select fall protection systems appropriate for given situations

- PFAS
- Guardrails
- Safety Nets

Use proper construction and installation of the safety systems

- Anchorage
- Inspection
- Weight capacities

Evaluate the effectiveness of the system





PREFERRED ORDER OF FALL HAZARD MANAGEMENT

Fall Elimination

• Eliminate the need for elevated work through procedural changes, facilities modifications, alternate construction techniques, etc.

Fall Prevention

- Prevent the potential of falling via an approved permanent platform
 - Use man lifts
 - Use ladders

Fall Protection / Arresting

- Manage the risk of fall via approved fall protection devices
 - Harnesses, Lanyards, Self Retracting Lanyard

"Notify immediate supervisor if fall hazard cannot be readily addressed..."





COMMON PIECES OF EQUIPMENT



Shock Absorbing Lanyard







Full Body Harness

Strap



Self Retracting Lifelines



Anchor



PERSONAL FALL ARREST SYSTEMS



- You must be trained how to properly use PFAS
- PFAS = anchorage, lifeline, and body harness





BODY HARNESS

Most body harnesses have these parts:

- Shoulder straps
- Shoulder strap retainer
- Dee-ring
- Waist strap
- Thigh straps
- Sub-pelvic support
- Adjustment buckles







ANCHORAGE

OSHA has specific requirements:

- Capable of supporting at least 5,000 pounds per attached employee or used as part of an engineer-designed system that maintains a safety factor of at least '2'
- Independent of any anchorage being used to support or suspend platforms







HARNESS INSPECTION



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INSPECTION AND MAINTENANCE OF FALL PROTECTION EQUIPMENT

- Personal fall protection equipment must be visually inspected prior to each use by the user
- Harnesses and lanyards are to be annually inspected and documented
- Tag-out of service/dispose of any defective equipment





WEBBING

 Grasp the webbing with your hands 6 inches to 8 inches apart. Bend the webbing in an inverted "U" as shown. The surface tension resulting makes damaged fibers or cuts easier to detect. Follow this procedure the entire length of the webbing, inspecting both sides of each strap. Look for frayed edges, broken fibers, pulled stitches, cuts, burns and chemical damage.







D-RINGS/BACK PADS

 Check D-rings for distortion, cracks, breaks, and rough or sharp edges. The D-ring should pivot freely. Inspect for any unusual wear, frayed or cut fibers, or broken stitching of the D-ring attachments. Pads should also be inspected for cracks, excessive wear, or other signs of damage.









• Inspect for any unusual wear, frayed or cut fibers, or broken stitching of the buckle attachments.







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TONGUE BUCKLES/GROMMETS

 Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn freely on frame. Check for distortion or sharp edges. Inspect for loose, distorted or broken grommets. Webbing should not have additional punched holes.







FRICTION AND MATING BUCKLES

 Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points at the center bar.







QUICK CONNECT BUCKLES

 Inspect the buckle for distortion. The outer bars and center bars must be straight. Make sure dualtab release mechanism is free of debris and engages properly.







HARNESS FALL ARREST INDICATORS

 Inspect fall arrest indicators (located on the back D-ring pad) for signs of activation. Remove from service if broken or stretched between any of the four (4) pairs of arrows.







PFAS DEVICES SELF RETRACTING LIFELINE



- Limits fall to 2 feet or less
- Must be attached directly to "D" ring on harness
- Shock absorber may prevent lock up, or lead to ratchet effect
- Line must be protected from damage over edges
- Install and inspect in accordance with manufacturer; some will work horizontally, while some will not.





ANCHOR POINTS

Approved Anchor Points

- Horizontal structural steel beams 6" or greater for one or more persons in a completed structure.
- Four inches or larger diameter steel pipe. (2 inch diameter piping is acceptable if tie off point is within 2 inches of the pipe support.) Piping shall be in reasonably good condition (not corroded).
- Nozzles 3" for one person or >3" for two people.
- Ladder rails and clips for one person.
- Permanent platform handrail post below mid-rail for one person.





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ANCHOR POINTS

Unapproved Anchor Points

- Platform or scaffold handrails (except as noted above)
- Scaffold ladders
- All conduit
- Ladder cages and rungs
- Small diameter pipe (less than 4 inches, except as noted in B.2)
- Fire water piping, electrical conduit, any piping supported by pipe hangers suspended by threaded rod, and insulated piping
- Fixed handrails
- Bleeders
- Any part of a valve



• Using Electrical Conduit and tied outside bucket





ANCHOR POINTS

- Can withstand 5000 lbs. of force per employee
- Higher is better
- Reduce free falls and reduce impact load.
- Located directly above to avoid pendulum effect.
- Clear drop zone.
- Bigger is better
- The larger the structure the better.
- Don't use guardrail or other item that may break.
- Ex: cable tray, light fixtures, plumbing material are not good anchorage points.







GUARDRAILS

- Top rails between 39 and 45 inches tall
- Toe boards at least 3 -1/2 inches high







WALKWAYS AND RAMPS



Guard:

- Ramps,
- Runways,
- and other walkways





OPEN SIDED FLOORS & EDGES

Open edges on decks, roof, mezzanines, etc. over 6' high must be protected







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WHAT'S WRONG?







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SIDES & EDGES - IMPROPER GUARDING



This 1/4" nylon rope alone is not a proper way to guard this open floor



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SKY LIGHTS AND OTHER OPENINGS

- Holes more than 6 feet above lower levels must be protected
- This opening could be made safe by using a guardrail, or strong cover





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HOLES & GUARDRAILS

- All floor and roof openings into which an employee could accidentally walk or fall must be guarded by a barrier, or covered
- Covers must be properly marked, positively fixed in place, and capable of supporting twice the intended load
- Ensure covers are secured
- Signage should be clearly communicated to all employees









WALL OPENINGS



If you work near wall openings 6 feet or more above lower levels, you must be protected from falling.





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MATERIAL HANDLING PLATFORMS & HOIST AREAS

- Material handling platforms must have guardrails
- When the guardrails are opened to receive material, workers must be tied off
- Gates are preferred to removable rails









SCAFFOLDS

Scaffolds are checked / inspected by a qualified person:

- Prior to first use
- After modification
- After a severe weather, contacted by mobile equipment or overloaded
- Tagging system is used to inform workers of the status / condition of the scaffold. A tag is placed on each access point to the scaffold





SCAFFOLDS

Qualified Users of Scaffolds

- Must understand the inspection tagging system, including when fall arrest equipment is required
- Trained to inspect and use fall arrest equipment prior to use
- Trained to select an appropriate location as an anchor point
- Know how to conduct pre-use inspection of scaffold
- Understanding of load rating and ensure no excessive load to prevent overloading
- Knows that only a qualified scaffold builder can modify the scaffold
- Mitigate hazards introduced by a change of work environment (e.g. removal of handrail and piping) – Stop and review changes in work condition





LADDERS

- When performing task between 4 and 6 ft., fall arrest equipment is not necessary provided all three of the following conditions are met:
 - Maintain a 3 point contact with rung of ladder or 2 point contact with a step ladder
 - Belt buckle (center of gravity) is kept between the portable ladder's legs and work is not more than arm's length away from the ladder
 - The nature of work will not create a fall hazard from sudden movement , i.e. breaking a bolt loose
- When performing task above 6 feet, fall arrest equipment is required.





TRAIN WORKERS

- Train workers in the proper selection, use, and maintenance of fall protection systems.
- Supervise employees properly in the selection, use, and maintenance of fall protection systems.





SUMMARY

If you can fall more than 6 feet, you must be protected

- Use fall protection on:
 - Walkways & ramps, open sides & edges, holes, concrete forms & rebar, excavations, roofs, wall openings, bricklaying, residential construction
- Protective measures include guardrails, covers, safety nets, and Personal Fall Arrest Systems
- Resources for Fall Protection can be found at https://www.osha.gov/StopFallsStandDown/index.html





QUESTIONS?





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