Fall Protection
OSHA 1910.23 & 1926.500

NGFA – AAI Safety Seminar
Johnston, IA
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June 13, 2013
Fall Protection – General Industry
Why Fall Protection?

- Do your hands get sweaty when you watch someone working from heights?
- Do you know anyone who has fallen off of a deck or roof?
- Falls accounted for 10% of fatal work injuries.
Fall Protection Requirements

- **General Industry Regulations:**
  - If you are 4 feet or more above another level then handrails or personal fall arrest systems required, or...
  - Use platforms / scaffolds, lifts (buckets, scissor lifts)

- **Construction Industry Regulations:**
  - When working 6 feet or more above a lower level, some form of fall protection is required
  - Scaffolds, cranes, lifts, steel erection, tunneling, stairways, ladders
Ladder Fall Protection

- There are specific criteria for fixed ladders to be guarded with cages to help prevent falls.
- Ladders over 20 feet from the ground need a cage.
- Short ladders at elevated location needs a cage.
- Ladders over 30 feet high need rest platforms every 30 feet.
- Ladders with no cages can use a ladder climb device composed of a body belt and a cable clamp.
Hazard Recognition

- Falls to lower levels
- Tripping over tools, materials, etc.
- Mis-stepping or stumbling
- Not aware of location & Dropping objects
- Failure to use required fall protection
- Lifting people with improper equipment
Rules for Working at Elevation

- Use a personnel lift only if you’re authorized.
- Only authorized employees should work on elevated areas.
- Stay away from edges, unless you are working there and properly protected.
- Never run when working above ground.
- Listen for verbal warnings.
Falling Objects

- When working above ground:
  - Don’t leave tools or materials where they might be kicked over the edge or tripped over.
  - Don’t throw items over the edge.
  - Block or barricade pathways going under overhead work areas.

- Wear hard hats when under an above ground work area.
Guardrails for elevated edges and floor or wall holes.

- Serve as a barrier along an open edge or around a floor hole.
- 42" high with a middle rail halfway up.
- 4” Toe board or kick plate needed.*
- Withstand force greater 200 lb. in any direction.
- On flat roofs a warning line system can be used provided it is more than 6 feet from the roof edge.
Personal Fall Arrest System

- Worker tied to fixed object. [Anchorage]
- Harness or belt worn. [Body wear]
- Lanyard, lifeline, deceleration device. [Connector]
- Lanyards need a double locking snap hook.
- Never use fall protection system to hoist workers or objects.
Uses for Personal Fall Arrest

- Working above a lower level
- Worker positioning
- Worker restraint
- Climbing
- Worker riding or being lifted on a rated platform
Anchorage

- Locate directly above.
  - Avoid swinging
  - Clear drop zone
- Can withstand 5,000 pounds of force (eyebolts).
- Don’t use guardrail, conduit, pipes or other item that may break.
- Ask a supervisor if unsure about proper anchor points.
Anchorage Point Connectors

- Connectors are vital.
- Non-locking snap hooks cannot be part of personal fall arrest systems.
- Must use a double locking snap hooks.
- Do not link similar connectors together.
- Never tie a knot for a connection.
Harness [Body Wear]

- Arresting forces on thighs, pelvis, waist, chest and shoulders
  - Harness rated for 1,800 pounds of arresting forces.
  - Tolerable suspension time of 15 minutes
  - *Will need a means to rescue workers.*
- D-rings
Connecting Device – Lanyard or SRL

- Connects harness to lifeline or anchor.
- Must have double locking hooks.
- Stretching or tearing system absorbs shock, prevents bouncing to reduce arresting forces.
  - Steel provides no give, so large arresting forces.
  - Nylon rope gives mild arresting forces, however it bounces, so lots of jolts.
- No knots or wrapping around sharp objects. Use a lifting web strap around the object to connect the lanyard.
Deceleration Device

- Dissipates a substantial amount of energy during a fall arrest.
- Rip-stitch, tearing, or stretching lanyard, Shock absorbing lanyards.
- Rope grab device.
- Safety retracting lifelines (SRL) limit falls to less than 2 feet.
- Consider blocks that stops then slowly lowers workers to the ground where their use is feasible.
Lifeline

- Rope or webbed material
- Means to connect personal fall arrest system to an anchor
- Hangs vertically from one anchor point
- Stretches horizontally between two anchors
Fall Protection Equipment Inspection

- Inspect before every use
- Cuts, tears, abrasions, stitches coming out
- Cracks or burrs
- Parts move freely
- No alterations
- Appropriate labels
- Periodic inspections should be done on fixed fall protection systems (record)
Rail Safety – Fall protection

- In 1995 NGFA went to OSHA about the problem of citing grain facilities for not providing fall protection from railcars.
- In 1996 OSHA issued a letter of interpretation giving their position that they would not issue any citations for lack of fall protection unless the cars are position inside of or contiguous to a building or structure where fall protection is feasible (at loadout point).
Rail Safety – Fall protection Alternatives used

- Connect the fall protection to a structure at the loadout point.
- Install an over head cable above the rail cars in a loadout area and use a safety retracting lifeline block that rolls along the cable and have employees connect to it.
- Install supporting structure that overhangs the railcar with a I–beam that allows a small trolley to roll on its flange and use the SRL to connect to a worker on top of the cars. Systems vary in length from 1 to 3 cars most frequently with a few covering up to 10 cars.
- Place handrails on each side of the car suspended from a shed roof. Car height variation is a problem to deal with. Build to the tallest car for clearance.
OSHA states that they do not regulate rolling stock but could regulate workers being on top of railcars or trucks when they are exposed to falls.

OSHA has cited some facilities under the PPE rule 1910.132a and when cars were remote to the facility.

OSHA is now considering adding rail car fall protection as a regulation in its revision to the walking and working surfaces now being worked on.
Rail Safety – Fall protection

At loadout or receiving areas:

- Inside buildings and next to structures when need to get on top of the cars.
- Min. needed is at the loadout spout but may need for several cars to provide protection for all operations (opening, loading and closing doors).
- Use Construction standard guidelines for strength of system (Design for two workers).
- Have an administrative plan to deal with adverse weather or any need to access car tops in remote areas.
- Train workers on fall protection usage and procedures to be used.
Summary

- Understand and recognize potential hazards.
- Keep tools and materials organized and away from edges.
- Reduce arresting forces by limiting fall distance.
- Use decelerate devices to reduce arresting forces.
- Consider the need to rescue workers who fall and are held suspended.
- Inspect your fixed equipment prior periodically.