SCS
S.C. SWIDERSKI LLC

Fall Protection Training

SESSION OBJECTIVES

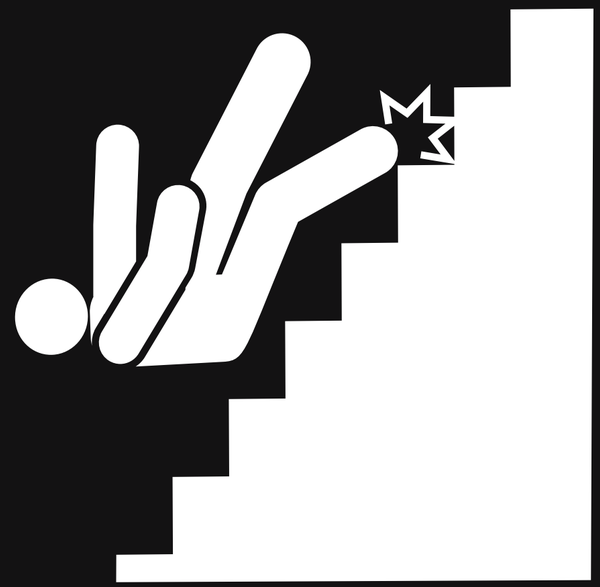
YOU WILL BE ABLE TO

- Understand OSHA regulations and the importance of fall protection
- Recognize fall hazards and identify when fall protection is needed
- Use basic fall protection systems
- Prevent objects from falling
- Inspect personal fall arrest systems
- Rescue yourself and others from falls

IMPORTANCE OF FALL PROTECTION

- Each year approximately 14% of fatal workplace injuries are caused by falls

- In construction, approximately 150-200 workers are killed annually due to falls



OSHA Regulations

- **29 CFR 1926.500 to 1926.503 – Fall protection regulation is the responsibility of OSHA. These cover:**
  - Construction sites
  - All workers who might be exposed to fall hazards
  - Recognize fall hazards and follow training procedures to minimize fall hazard

Employer Requirement

- Assessing site conditions
- Selecting appropriate fall protection
- Install fall protection systems
- Follow safe work procedures
- Train workers

RECOGNIZE FREE FALL HAZARDS

- Tools and equipment falling onto workers
- Ladders
- Edges of platforms
- Sloping surfaces such as a roof
- Edges of platforms
- Holes or openings including skylights

WHEN IS FALL PROTECTION NEEDED?

- 6ft or more above a lower level
- Hazard of falling into dangerous equipment
- Specific areas or activities
    - Ramps, runways, walkways, roofing work, wall openings, residential construction, etc.
- While walking and working surfaces are being inspected

FALL PROTECTION SYSTEMS

- Fall prevention restraint systems
  - Guardrail
  - Keep you from falling
- Fall arrest systems
  - Harness
  - Stops a fall in progress

FALL PREVENTION – SAFE WORK PRACTICES

- Use fall protection for every fall hazard
- Never run when working at a high elevation
- Avoid dropping objects i.e., tools and materials
- Listen to verbal warnings
- Look around you and be aware of your surroundings
- Keep area clean, neat, and orderly

Fall Prevention Systems and Practices

- Positioning device system – harness
  - Effective for both restraining and for arresting falls
  - Commonly used when working close to an unprotected edge or on a slope
  - Harness connected by a lanyard to an anchor as fall restraint
  - Allows movement around worksite
  - Prevents going over the edge because the length of the lanyard can be adjusted

Fall Prevention Systems and Practices

- Guardrails
  - Most common protection to restrain workers from falls off ramps, runways, walkways, unprotected sides and edges, and wall openings
  - Top rail must withstand 200-pound force and be 39-45” above the walking or working surface and cannot be constructed of steel or plastic banding
  - Mid-rail must withstand 150-pounf force – must be installed halfway between the top rail and the walking or working surface
  - Toe board must withstand 50-pound force applied in an outward or downward direction

Fall Prevention Systems and Practices

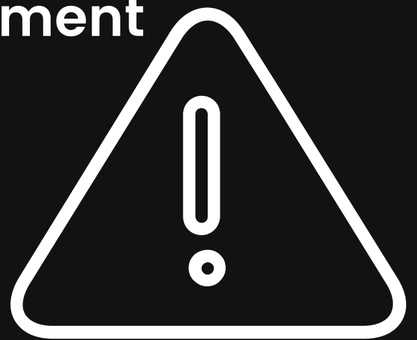
- Fall Prevention Systems and Practices
  - Guardrail Systems (cont.)
    - Must be smooth, no projections that could poke, puncture, or scrape i.e., nails
    - Ends of the rails cannot hang out over the posts or project out into the walking or walking surface
    - You must use a fall arrest system as required when guardrails are removed or not present
    - Guards must be installed on all unprotected openings, excavations, and ramps
    - Holes, including skylights, may also be protected by covers

Fall Prevention Systems and Practices

- Warning Line Systems
  - Used for large, open elevated areas
  - Warns workers to stay away from fall hazards – leading edge or roofline
  - Consists of ropes, wires, or chains -minimum tensile strength of 500 pounds
  - Flagged every 6 feet
  - Must be 34-39 inches above working surface
  - Erected around all sides of roof work area at least 6 feet from edge
  - Stanchions must not tip over easily – resist force of at least 16 pounds
  - Workers must be trained to stay out
  - Work outside the line requires another fall arrest system

Fall Prevention Systems and Practices

- Safety Monitoring Systems
  - Used only when no other alternative means of fall protection can be used
  - Competent person monitors and warns workers of potential fall hazards
  - Competent person recognizes fall hazards
  - Competent person communicates with workers, alerts them about hazards and unsafe work practices
  - Competent person has no other duties while acting as safety monitor
  - Competent person keeps unauthorized workers, materials, and equipment away from area being monitored
  - Workers must comply with safety monitor



Fall Prevention Systems and Practices

- Controlled Access Zones (CAZs)
  - Apply to certain specific types of work i.e., overhand bricklaying
  - Regulated work areas without conventional fall protection systems
  - Combination warning line and safety monitor systems
  - Limited access to qualified employees - specialty workers i.e., masons
  - Allows leading edge work without fall protection systems
  - Designated and clearly marked work areas – control lines should run the entire length the unprotected edge and run parallel; should be no closer than 6’ and not more than 25’ from the unprotected edge
  - Overhand bricklaying – control lines should be 10-15 ft from unprotected edge

Fall Prevention Systems and Practices

- Hole Covers
  - Intended to prevent falling hazards i.e., tripping, twisting an ankle, fall partially into a hole, or drop materials to a lower level
  - Prevents worker or worker’s body part from penetrating a walking or working surface
  - Required for all holes equal or greater than 2” wide
  - Must be able to support twice the load of people or equipment
  - Secured to prevent accidental displacement
  - Color-coded or marked with “HOLE” or “COVER”

Prevent Objects from Falling

- Use screens or panels to prevent tools or equipment from falling on workers
- Store materials at least 4 feet from edge – only masonry bricks and mortar can be closer than 4 ft from the edge
- Excess material and debris should be kept out of the work area and removed at regular intervals
- For roofing work, store material 6 feet from edge
- Use canopies strong enough to prevent collapse and prevent penetration
- Keep areas barricaded where objects are likely to fall

Prevent Objects from Falling (cont.)

- Use toe boards to prevent objects from being accidentally kicked over the edge
- Toe boards need to be strong enough to withstand a force of at least 50 pounds and at least 3 ½ inches high from working surface
- Paneling or screening should be installed if tools, equipment, or materials are piled higher than the toe board
- Tools, materials, and debris need to be picked up
- Never throw objects down to lower levels
- Always wear a hard hat if you are working underneath workers on a higher level

Fall Arrest – Safety Net System

- Fall Arrest – Safety Net System
- Fall arrest systems do not prevent someone from falling – they are intended to stop a free fall
- Safety Net Systems are intended to catch falling workers
- Installed under working surface
- Should never be more than 30 feet below workers
- Inspect regularly – at least once a week
- Sufficient clearance underneath to prevent contact with the below surface or structure
- Remove fallen items from net such as tools, scraps, and other materials

Personal Fall Arrest System – Harness

- Most effective fall arrest system
- Harness distributes arresting forces among your thighs, pelvis, waist, chest, and shoulders
- Rated for a maximum of 1,8000 pounds of arresting forces
- Harness for fall arrest, positioning, or suspension
- Body belt is NOT authorized for use as part of a fall arrest system
- The D-ring on the upper back is important for fall arrest. Make sure your anchor point is above this location to limit the length of the fall. If your anchor point is above your D-ring, use a shorter lanyard to limit your fall distance to 6 ft
- Belts can cause damage to the spine or internal organs when used to arrest a fall – can still be used as a positioning device

Effective Personal Fall Arrest System

- Maximum arresting force of 1,800 lbs. – force is determined by body weight and distance of the fall
- Arresting force is equal to your weight times the distance – the more you weigh and longer the fall, the more force needed to stop a fall
- Free fall no more than 6 ft - a 6-foot fall distance, you would need to weigh more than 300 pounds to suffer arresting forces of more than 1,800 pounds
- Avoid contact with a lower level
- Max deceleration distance of 3.5 ft
- Designed to withstand twice the impact forces

Fall Arrest System – Connectors

- Critical component of any personal fall arrest system
- Connectors (snap hooks and rings) attach the lanyard to the anchor and harness
- Ensure that snap hooks lock in place by inspecting regularly
- Non-locking snap hooks are prohibited for fall protection
- Proper snap hooks automatically lock shut after they have been hooked and must be manually unlocked to be released

Fall Arrest System – Connectors (Cont.)

- Snap Hook Don’ts
  - Do not attach to webbing or rope
  - Do not attach to another snap hook
  - Do not attach them to a D-ring with another snap hook attached
  - Do not attach to horizontal lifelines
  - Do not attach to an object incompatible in shape or dimension

Fall Arrest System – Lanyard

- Key component of a fall arrest system
- Flexible line with connector that connects harness to the anchor
- Often contains a deceleration device
- Deceleration device on the lanyard reduces arresting forces by “giving” and by preventing you from bouncing
- Lanyards should not have any knots or wrapping around sharp objects
- Knots can reduce the strength of a lanyard by up to 50 percent

Fall Arrest System – Lifeline

- Not the same as a lanyard
- Lifelines connect personal fall arrest system to anchor point if the anchor cannot be reached by a short lanyard
- A lifeline should be designed, installed, and used under the supervision of a qualified person, and should not be used as a substitute for a lanyard.
- Can hang vertically – hang from one anchor point
- Can be stretched horizontally – stretched between two anchor points
- Lifelines are generally ropes and straps made of synthetic fibers
- Must be able to withstand 5,000 pounds of force
- Protect against being cut or abraded – keep away from sharp edges

Fall Arrest System – Deceleration Device

- Used with a fall arrest system to reduce the forces on your body as the result of a fall
- Dissipates substantial amount of energy during fall arrest
- Rip-stitch, tearing or stretching lanyard are the most common types of lanyards
- Maximum deceleration distance is 3-1/2 feet
- Rope grab device travels on a lifeline and automatically engages lifeline and locks to arrest the person’s fall
- Retracting lifelines or lanyards include devices that allow the line to be slowly extracted or retracted
- Lanyard required where there is no deceleration device

Fall Arrest System – Anchors

- Critically important – fall arrest system is only as good as its anchor
- Secure point of attachment for lifeline, lanyard, or deceleration device
- Withstand 5,000-pound force per person
- Anchors point above you - maximum allowable distance for a free fall is 6 feet
- Ask if unsure about proper anchor points
- Never anchor to electrical conduits, water lines, or guardrails

Inspect Personal Fall Arrest Systems

- Inspect before each use
- Check D-rings for any sign of deterioration – must have a tensile strength of 5,000 pounds
- Check ropes, straps and tongue-buckle for any cuts, tears, etc.
- Ensure that parts move freely and operating as designed
- Snap hooks should work easily and lock correctly
- Remove defective components, tag “Defective” and provide to your supervisor to either repair or replace

Rescue Plan

- Safely rescue worker in the shortest time possible to avoid “suspension trauma”
- If suspended in an upright position, you will faint and remain vertical, in which case recirculation cannot occur
- If suspended in a harness
  - Push legs against objects for blood flow
  - Raise legs if possible

KEY POINTS TO REMEMBER

- Recognize fall hazards
- Use and operate fall protection systems
- Implement safe work practices
- Inspect fall protection systems
- Protect from falling objects
- Safely rescue in the shortest time possible

TAKE THE QUIZ

- https://forms.office.com/Pages/ResponsePage.aspx?id=RZJ-M6ZlREqmNwvW9nbIKxyzzaSUgJJFgf5zZdrqY-lUMVBZWDdHVlYzUkZWMklQNjUzUFZBTVY5MC4u