Session Two

Elevated Work and Fall Protection
Session Two Objectives

When trainees have completed this session, they should be able to do the following:

2. Describe the safe work requirements for elevated work, including fall protection guidelines.
   a. Identify and describe various fall hazards.
   b. Identify and describe equipment and methods used in fall prevention and fall arrest.
   c. Identify and describe the safe use of ladders and stairs.
   d. Identify and describe the safe use of scaffolds.
Performance Tasks

1. Properly set up and climb/descend an extension ladder, demonstrating proper three-point contact.

2. Inspect the following PPE items and determine if they are safe to use:
   • Fall arrest harnesses
   • Lanyards
   • Connecting devices

3. Properly don, fit, and remove the following PPE items:
   • Fall arrest harness
2.1.1 and 2.1.2 – Falls (1 of 2)

FALL PREVENTION

• Keep all walking and working areas clean and dry. If you see a spill or ice patch, clean it up, or barricade the area until it can be properly attended to.

• Keep all walking and working surfaces clear of clutter and debris.

• Run cables, extension cords, and hoses overhead or through crossover plates so that they will not become tripping hazards.

• Do not run on scaffolds, work platforms, decking, roofs, or other elevated work areas.
2.1.1 and 2.1.2 – Falls (2 of 2)

BARRICADE COLOR CODES

**RED** = DANGER  
**YELLOW** = CAUTION  
**YELLOW/PURPLE** = RADIATION

Any opening in a wall or floor is a safety hazard. The two types of protection for these openings are guarded or covered. IF THERE IS A HOLE IN THE FLOOR OF A STRUCTURE COVER THE OPENING AND LABEL THE COVER IN ORDER TO PROTECT WORKERS FROM FALL.
Barricade color codes

• Red - Danger
  • Do not enter an area with a red warning barricade.
  • Is used when there is danger from falling objects.
  • When a load is suspended over an area.

• Yellow - caution
  • Be sure you know what the hazard is.
  • Yellow barricades are used around wet areas or areas containing loose dust.

• Yellow and purple together mean radiation warning. No one is allow without authorization, training and the appropriate PPE.

Ex. These barricades are often used where piping welds are being X-rayed
6. FALLS FROM ELEVATED AREAS ARE THE LEADING CAUSE OF FATALITIES IN THE WORKPLACE. FALL PREVENTION CONSISTS OF COVERED FLOOR OPENINGS, CLIMBING AIDS, BARRICADES, AND GUARDRAILS THAT ARE DESIGNED TO PROTECT AGAINST FALLS.

A BODY HARNESS MUST FIT CORRECTLY TO ENSURE THAT IT WILL PROVIDE PROPER PROTECTION. HARNESS STRAPS ARE GENERALLY DESIGNED WITH SOME STRETCH TO HELP ABSORB SOME OF THE POTENTIAL FORCE OF A FALL. FOR EXAMPLE, THE BACK D-RING LOCATION IS VITAL TO PROPER FALL ARREST. THE POSITION OF THE BACK D-RING SHOULD BE BETWEEN THE SHOULDERS BLADES. (IN THE MIDDLE OF THE BACK)
Carpenter Falls off Ladder, Then Through Opening in Floor
All elements of a personal fall prevention and arrest system must be in place for effective fall protection.

The fall arrest anchor point will be located directly above the back D-ring. The maximum free-fall distance is 6 feet.
2.2.0 and 2.2.1 – Fall Arrest (2 of 2)

ANCHOR POINTS

(A) PERMANENT ANCHOR

(B) CONCRETE ANCHOR

(C) BEAM ANCHOR

(D) TIE-BACK LANYARD
• 8. THE PERSONAL FALL ARREST SYSTEM (PFAS) SHOULD BE INSPECTED MONTHLY BY A COMPETENT PERSON.
2.2.2 – Suspension Trauma Strap

The strap is stored in a pouch attached to the harness. It relieves pressure that could affect blood flow by allowing a worker to stand up in the harness. Simple and effective.
2.2.4 – Lanyards (1 of 2)

These lanyards are designed to stop an active fall while also minimizing the stress placed on the body by a sudden stop. They are not usually under tension; normally, some slack is maintained.

(A) SHOCK-ABSORBING

(B) RETRACTABLE
2.2.4 – Lanyards (2 of 2)

This type of lanyard is designed to help position (restrain) a worker or prevent a fall. These lanyards are often under tension as the worker depends on them to maintain position.

FALL RESTRAINT or POSITIONING LANYARD
9. LANYARDS WITH NON-SHOCK ADSORBING ARE USED FOR POSITIONING AND FALL RESTRAINT. LANYARDS USED FOR POSITIONING ARE NOT CONSIDERED PART OF THE FALL-ARREST SYSTEM.
2.2.4 – Determining Fall Distance

The fall distance must be determined by a person qualified to make that decision. It determines the type of lanyard chosen.
2.2.5 – Vertical and Horizontal Lifelines (1 of 2)

Vertical lifelines must have a minimum breaking strength of 5,000 pounds (2,267 kg). One worker is connected at a time.
WARNING!

Horizontal lifelines are rated for a maximum number of connected workers. Check with your supervisor or the manufacturer before connecting to a lifeline that is being used by other workers.
2.2.6 – Guardrails

Guardrails must be of a specified minimum height and have a toe board. (42", 4") Support 200 pounds. Wood, pipe, steel or wire rope.
https://www.youtube.com/watch?v=Tbr_jjNUAfI&list=PLoTyR54yw6-dneM7_1wZk8tsyJgw4I5vR

People Falling Off Ladders Compilation (Possibly Funny)
2.3.0 – Ladders (1 of 2)

It is critical to select the right ladder for the job. Metal ladders should never be used around electrical installations.
Ladder Safety

- Make sure the ladder is suited for the type of job you plan to do.
- Before using a ladder, especially a ladder that has been stored in the garage for a while, inspect it for cracks or broken joints.
- Place your ladder on a stable, even, flat surface. Never place a ladder on top of another object.
- Use the 4:1:3 ratio to ensure a stable working platform. Place the base of the ladder 1 foot away of whatever it leans against for every 4 feet of height to the point where the ladder contacts at the top.
- When using an A-frame stepladder, make sure the brace is locked in place.
All ladders are rated for a maximum load that must not be exceeded.

<table>
<thead>
<tr>
<th>Duty Ratings</th>
<th>Load Capacities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type IAA</td>
<td>375 lbs., extra-heavy duty/professional use</td>
</tr>
<tr>
<td>Type IA</td>
<td>300 lbs., extra-heavy duty/professional use</td>
</tr>
<tr>
<td>Type I</td>
<td>250 lbs., heavy duty/industrial use</td>
</tr>
<tr>
<td>Type II</td>
<td>225 lbs., medium duty/commercial use</td>
</tr>
<tr>
<td>Type III</td>
<td>200 lbs., light duty/household use</td>
</tr>
</tbody>
</table>
2.3.1 – Straight Ladders (1 of 2)

- **Aluminum** – Lightweight; corrosion-resistant
- **Fiberglass** – Very durable
- **Wood** – Strong; suitable for heavy loads
2.3.1 – Straight Ladders (2 of 2)

The foot is positioned for a smooth surface such as concrete. For turf, the foot is pivoted, allowing the teeth to dig into the soft surface.
2.3.1 – Ladder Positioning (1 of 3)

The foot of the ladder must be one-fourth the distance from the base of the structure to the point where the ladder touches the structure.
2.3.1 – Ladder Positioning (2 of 3)

Secure the ladder at the top and bottom to keep it from slipping.
2.3.1 – Ladder Positioning (3 of 3)

Maintain three points of contact and keep your weight centered on the ladder.
• WHEN CLIMBING A STRAIGHT LADDER KEEP BOTH HANDS ON THE RAILS OR RUNGS. MAINTAIN THREE POINTS OF CONTACT AT ALL TIMES.

• 10. WHEN USING LADDER ONTO A PLATFORM OR ROOF, THE TOP OF THE LADDER SHOULD EXTEND AT LEAST 3 FEET ABOVE THE POINT WHERE THE LADDER TOUCHES THE PLATFORM OR ROOF.
2.3.2 – Extension Ladders (1 of 2)

MAKE SURE RUNG LOCKS ARE SECURE!

To carry tools, climb the ladder and then pull up the tools by using a hand line or tagline attached to the tools.
2.3.2 – Extension Ladders (2 of 2)

**EXTENSION LADDER OVERLAP**

- Up to 36' = 3' minimum
- 36' to 48' = 4' minimum
- 48' to 60' = 5' minimum
2.3.4 and 2.3.5 – Ladder and Stairs

LADDER AND STAIR INSPECTION

• Check rails and rungs for cracks and other damage
• Check for loose rungs
• Check for loose screw and other hardware
• Check the rung locks on extension ladders
• Check stepladders for defective hinges and spreaders
• Check all ladders and stairs for oil or grease on the rungs or steps
• Make sure there are railings along unprotected sides of stairs
CAUTION

Only a competent person has the authority to supervise setting up, moving, and taking down scaffolds. Only a competent person can approve the use of scaffolds on the job site after inspecting the scaffolds.
WARNING!

Never unlock the wheel brakes of a rolling scaffold while anyone is on it. People on a moving scaffold can lose their balance and fall.
2.4.2 – Scaffold Inspection (1 of 2)

Green Tag = Safe to use (OSHA)
Yellow Tag = Does not meet all safety standards
Red Tag = Unsafe; Do Not Use!
• **GREEN-** OSHA standards and is safe to use.
• **YELLOW-** does not meet all OSHA standards. It can be used but, you may have to take other safety measures.
• **RED-** scaffold is being put up or taken down.
2.4.2 – Scaffold Inspection (2 of 2)

WARNING!

Keep scaffolds a minimum of 3 feet (0.9 m) from power lines carrying up to 300 volts and a minimum of 10 feet (3 m) from power lines above 300 volts in accordance with OSHA guidelines.
Wrap Up – Trade Terms (1 of 4)

Cross-bracing

Braces (metal or wood) placed diagonally from the bottom of one rail to the top of another rail that add support to a structure.

Excavation

Any man-made cut, cavity, trench, or depression in an earth surface, formed by removing earth. It can be made for anything from basements to highways. Also see trench.

Guarded

Enclosed, fenced, covered, or otherwise protected by barriers, rails, covers, or platforms to prevent dangerous contact.
Wrap Up – Trade Terms (2 of 4)

Hand line
A line attached to a tool or object so a worker can pull it up after climbing a ladder or scaffold.

Lanyard
A short section of rope or strap, one end of which is attached to a worker’s safety harness and the other to a strong anchor point above the work area.

Maximum intended load
The total weight of all people, equipment, tools, materials, and loads that a ladder can hold at one time.
Midrail
Mid-level, horizontal board required on all open sides of scaffolds and platforms that are more than 14 inches (35 cm) from the face of the structure and more than 10 feet (3 m) above the ground. It is placed halfway between the toeboard and the top rail.

Planked
Having pieces of material 2 inches (5 cm) thick or greater and 6 inches (15 cm) wide or greater used as flooring, decking, or scaffold decks.

Scaffold
An elevated platform for workers and materials.
Wrap Up – Trade Terms (4 of 4)

Six-foot rule
A rule stating that platforms or work surfaces with unprotected sides or edges that are six feet (1.8 m) or higher than the ground or level below it require fall protection.

Toeboard
A vertical barrier at floor level attached along exposed edges of a platform, runway, or ramp to prevent materials and people from falling.

Top rail
A top-level, horizontal board required on all open sides of scaffolds and platforms that are more than 14 inches (35 cm) from the face of the structure and more than 10 feet (3 m) above the ground.
Next Session...

STRUCK-BY, CAUGHT IN OR BETWEEN, AND ENERGY RELEASE HAZARDS

Read Sections 3.0.0 through 4.2.1. Complete the 3.0.0 and 4.0.0 Section Reviews.