



# Fall Hazards

10-Hour Construction Industry Course

Required Online Topic Time: 90m



# Learning Objectives



## Duration

90 minutes

## Terminal Learning Objective

Given current OSHA and industry information regarding construction worksite illnesses, injuries and/or fatalities, the student will be able to recognize fall hazards in construction.

## Enabling Learning Objectives

- Identify major fall hazards.
- Describe types of fall hazards.
- Protect yourself from fall hazards.
- Recognize employer requirements to protect workers from fall hazards.

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# Define Fall Hazards



**Falls** are the most common cause of on-the-job injuries to construction workers. The consequences of a fall affect you, the worker, but also your family and community.

A fall hazard is anything that may cause a person to **lose his or her balance** or **bodily support**, resulting in a fall. Anyone working at a height is at an **increased risk** of experiencing a fatal fall. As a result, OSHA requires that fall protection be provided when working:

- At a height of four feet in General Industry
- At five feet in the Maritime Industry
- At **six feet in the Construction Industry**
- At **any height** when working above **dangerous machinery**



# Define Fall Hazards continued...



## Knowledge Key

A fall hazard is anything at your worksite which could cause you to lose your balance or bodily support, resulting in a fall. OSHA requires that fall protection be provided in the construction industry for work being done 6 feet above a lower level or work being done above dangerous equipment and machinery.

# Unprotected Roofs and Edges



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

If these sides and openings are not protected at your site, injuries from falls or falling objects may result, ranging from sprains and concussions to death.

## Common roofing fall hazards:

- *Unprotected sides and edges*
- *Failure to use appropriate fall protection equipment*
- *Lack of fall prevention training and guidance*

**Workers erecting steel structures are exposed to even greater fall risks than other types of construction workers.**

# Unprotected Roofs and Edges

continued...



## Knowledge Key

Regardless of the type of worksite, all sites contain unprotected sides, edges, wall openings, and floor holes at some point during construction. Falls to a lower level are a major cause of fatalities in the construction industry. Those working in roofing or in the steel industry are at an increased risk of being injured or killed due to fall hazards.

# Scaffolds



**Most construction workers hurt in scaffold accidents attribute the accident to various factors, including:**

- *Improperly constructed scaffolds*
- *Scaffold planking or support giving way*
- *Lack of guardrails or other fall protection*
- *Increased difficulty of handling heavy equipment and building materials on the limited scaffold space*

To prevent falls and protect workers, OSHA requires guardrails or personal fall arrest systems for those working on scaffold platforms 10 feet or higher.



# Scaffolds continued...



## Knowledge Key

It's difficult to work with heavy equipment and materials on scaffolds. If you don't have guarded edges, correctly-constructed scaffolds, and/or fall protection equipment, you're highly likely to suffer an injury or be killed. Guardrails and personal fall arrest systems are required for workers on platforms 10 feet or higher.



# Portable Ladders



## A portable ladder is any ladder that

- *can be readily moved or carried*
- *is not permanently attached to a structure, building, or equipment*

The most cited OSHA ladder violations include not having a portable ladder extend three feet above the landing, lack of worker training, and improper use of the top of step ladders.



The Bureau of Labor Statistics found that falls from ladders account for over 100 fatalities each year. Factors contributing to falls from ladders include:

- *Failure to safely position a ladder each time a person uses it which can result in a loss of balance*
- *Ladder slips from the top or bottom*
- *Overreaching*
- *Slipping on rungs or steps*
- *Moving or slipping from a ladder's supports*
- *Using defective equipment*
- *Selecting the wrong type of ladder for a given task*

# Portable Ladders continued...



## Keys to preventing a fall from a ladder include:

- *Choosing the right ladder for the job:*
  - *Make sure a ladder is the best equipment for the task.*
  - *Determine whether the ladder is long enough and in good working condition.*
- *Tying the top and bottom of the ladder to fixed points when:*
  - *It doesn't extend 3 feet above the landing*
  - *Working on slippery surfaces*
  - *It could be displaced by work activities or traffic*
- *Keeping your hands free of carrying tools or other materials when climbing a ladder:*
  - *Use a tool belt*
  - *Install a rope and pulley system*
  - *Pull the materials up once you have reached the work surface*



# Portable Ladders continued...



## Points of Contact

When you climb a ladder, it's important that you maintain **at least three points of contact at any time** to safely ascend or descend the ladder.

A point of contact on a ladder is **where one of your hands or feet touches the ladder**. In the case of climbing, your hand needs to be gripping the sides or rungs to be considered a point of contact.

Having three points of contact with a ladder means that **two hands and one foot or two feet and one hand** are all **properly touching** the ladder while you climb or descend.

# Portable Ladders continued...



## Knowledge Key

You risk falling if a portable ladder is not safely positioned each time you use one. While you are on a ladder, it may move and slip from its supports. You can also lose your balance while getting on or off an unsteady ladder.

Ladders are one of the most common pieces of equipment on a construction site. Using them correctly is a great way to start preventing falls at your worksite. You should choose the right ladder for the job, tie off the top and bottom to fixed points when necessary, and don't carry tools or materials in your hands while climbing or descending the ladder.

# Guardrails and Safety Nets



When there are holes or openings in a floor or wall, OSHA regulates how employers must protect these potential fall hazards using various types of guards or barriers intended to **prevent falls**.

The most common fall prevention system is a **guardrail** which is a **barrier along the open sides of stairways and platforms** that prevents falling.

In general, it is better to use fall prevention systems, such as guardrails, than fall protection systems, such as safety nets/fall arrest devices, because prevention systems provide more positive safety means.



# Guardrails and Safety Nets

continued...



**Safety net systems consist of mesh nets and connecting components. When an employer uses safety nets on a construction site, he or she must:**

- *Install the net as close as possible below the working surface.*
- *Place the net no more than 30 feet below the working surface.*
- *Confirm that the net can absorb the force of a falling 400-pound bag of sand.*
- *Verify the net has a border rope with a minimum strength of 5,000 lbs.*
- *Inspect the net every week for damage and after any event that could damage them.*
- *Remove any potentially dangerous items immediately.*
- *Use OSHA's formula to determine if the net sufficiently covers the working surface.*



# Guardrails and Safety Nets

continued...



## Knowledge Key

Guardrails are considered fall prevention systems, as they stop you from falling in the first place. It is better to prevent a fall than to allow someone to fall and protect them with a device, such as a safety net or a personal fall arrest system.

Safety net systems are designed to catch you and break your fall. They must be placed as close as practicable under your working surface, but never more than 30 feet below.

# Personal Fall Arrest Systems



The most common type of fall arrest is the **personal fall arrest system (PFAS)**, also called a **lifeline**. Per OSHA's standards, workers must wear a full-body harness, one part of a PFAS, when working

- *On a suspended scaffold 10 feet or higher above the working surface, or*
- *In a bucket truck or aerial lift*

Employers may choose to use a PFAS, instead of a guardrail or other methods of fall protection, when workers are on a supported scaffold more than 10 feet above the working surface.

Employers are not allowed to use body belts as part of a personal fall arrest system.





# Personal Fall Arrest Systems continued...



A PFAS consists of an **anchor**, **full body harness**, and **connector**. Many PFAS also include a deceleration device which is a subsystem that dissipates the forces associated with a fall arrest event.

They are an integral tool in helping you stay safe. A simple way to remember the primary parts of a PFAS is by the acronym **ABC** which stands for

- **A**nchor
- **B**ody harness
- **C**onector

There are many combinations of products commonly used to assemble a personal fall arrest system, and each must meet strict standards. The specific environment or application generally dictates the combination or combinations that are most appropriate.



# Personal Fall Arrest Systems continued...



## How to wear a PFAS:

1. Hold on to the top shoulder straps or the D-ring on the back and check to ensure that **no section of the harness is twisted or tangled**.
2. Grasp the shoulder straps and slip into the harness **as if you were putting on a jacket**. Check to ensure that each shoulder strap lays flat against the body, and that there are no twists in the material.
3. Buckle the chest strap by connecting the male buckle to the female buckle. When it is secure, **adjust the chest strap** until it rests comfortably across the chest.
4. If the harness has a belt attachment, **buckle and adjust the belt**. Inspect the harness to ensure that the belt passed through all the existing belt loops.
5. Reach behind your left leg and grasp the leg strap. Bring the strap between the legs and **buckle securely**. Repeat this process with the right leg.
6. After you buckle both leg straps, **double-check all straps** to ensure they fit properly. The chest strap should rest approximately six (6) inches below the top of the shoulder, and the D-ring on the back of the harness should rest between the shoulder blades.



# Personal Fall Arrest Systems continued...



## Knowledge Key

A personal fall arrest system consists of an anchorage, connectors, and a full body harness to break your fall.

# Employer Responsibilities



Your employer has **five areas** of responsibility when it comes to keeping you safe from falls.

## Fall Protection

- Provide workers with suitable fall protection if a fall hazard exists.
- Ensure that workers know how to put on and inspect personal fall protection equipment.

## Scaffolds

- Construct scaffolds according to manufacturer's instructions.
- Assign a competent person to scaffold operations and setup.

## Training

- Provide training on various topics, including fall hazards, PPE, and scaffold and ladder usage.
- If you, the worker, see fall hazards on a work site or have questions about fall prevention, you can:
  - Contact your supervisor or employer.
  - Don't work until employers correct the unsafe conditions.
  - Contact OSHA and file a complaint if your employer does not rectify the hazards.

## Ladders

- Provide ladders where necessary.
- Keep ladders in proper condition.
- Train workers to recognize ladder and stairway hazards.
- Ensure that workers follow safety guidelines.

## Worksite Maintenance

- Keep work areas clean, orderly, and sanitary.
- Keep floors clean and dry or covered by the proper non-slip material.
- Dispose of form and scrap lumber with protruding nails properly.
- Remove other waste and trash properly.
- Maintain ladders, scaffolds, and fall protection equipment properly.

# Employer Responsibilities

continued...



## Knowledge Key

Your employer has five areas of responsibility when it comes to keeping you safe from falls. They must provide you with suitable fall protection, make sure that scaffolds are properly constructed and inspected by a competent person, make sure that ladders are suitable for the work being conducted and are in good condition, make sure that the worksite is properly maintained and free of debris and clutter, and provide training for their employees.

# Practice Questions



1. When is fall protection required in the construction industry? **Select all that apply.**

- a. When working at a height of four feet
- b. When working over dangerous machinery or equipment
- c. Only when working on scaffolds
- d. When working at a height of six feet or more

2. An ironworker is standing 30 feet in the air on a tilt-up concrete wall, throwing out bridging. He is wearing a harness and lanyard but is not tied-off. Is this a fall hazard?

- a. Yes
- b. No

3. To access a landing that is nine feet above the adjacent floor, a worker climbs an unsecured 10-foot ladder that has slip-resistant feet. Does this ladder pose a fall hazard to the worker?

- a. Yes
- b. No

4. Which of the following answer options are ways to prevent falls from ladders? **Select all that apply.**

- a. Choose the right ladder for the job.
- b. Use the ladder your coworker uses.
- c. Don't carry tools or materials in your hands while climbing.
- d. Tie off the top and bottom to fixed points.

# Practice Questions continued...



5. Which of the following is a fall prevention system?

- a. Personal fall arrest system
- b. Safety net system
- c. Guardrail
- d. Top rail

6. How close should safety nets be to the working surface?

- a. As close as possible below the working surface
- b. At least 10 feet below the working surface
- c. Safety nets should never be near working surfaces.

7. What provides a secure point of attachment for lifelines, lanyards, or deceleration devices?

- a. Full-body harness
- b. Connector
- c. Anchor and anchor connector

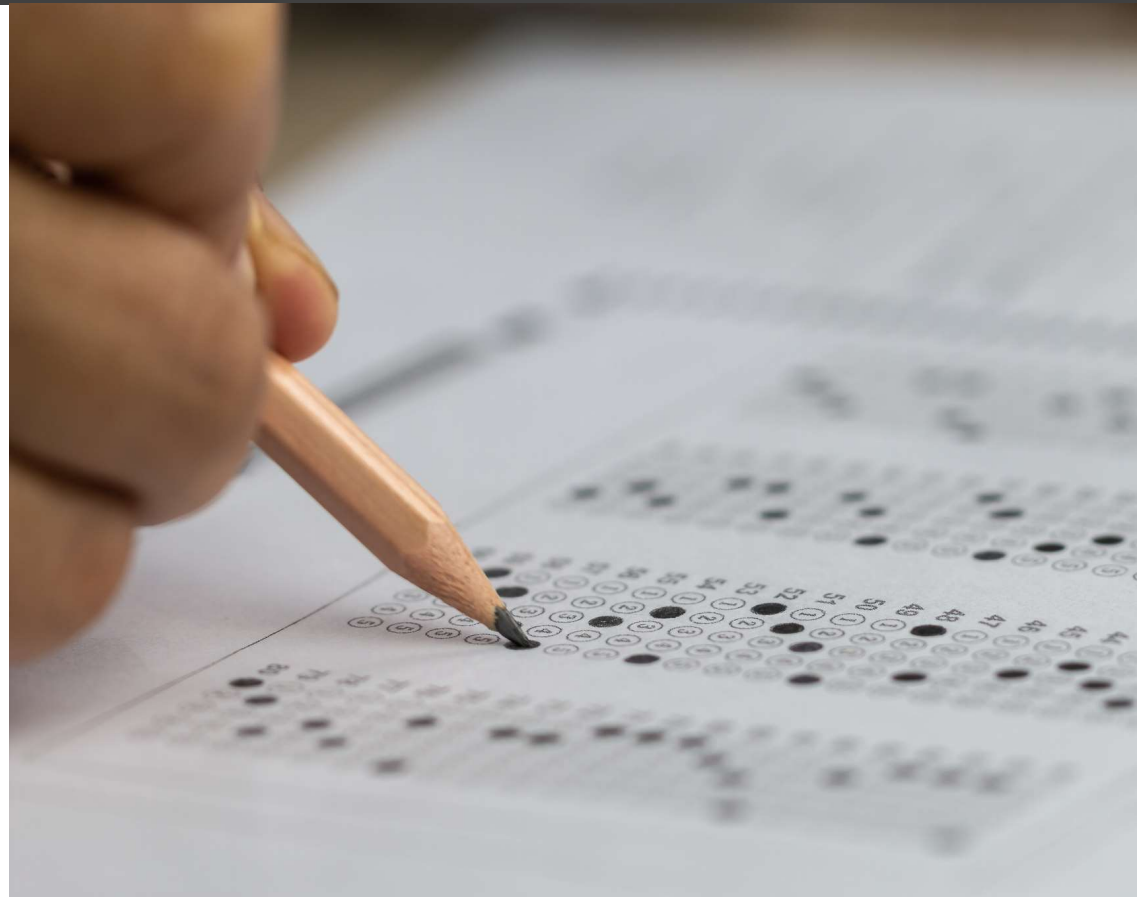
8. Which of the following actions does OSHA require employers to take when providing construction workers with fall protection? **Select all that apply.**

- a. Ensure that fall protection equipment is appropriate to the task.
- b. Call attention to unique fall hazards.
- c. Eliminate general fall prevention training.

# Practice Questions Answer Key



1. B, D
2. A
3. A
4. A, C, D
5. C
6. A
7. C
8. A, B





# Conclusion

## Great Job!

You have completed the Fall Hazards topic.

