



# Fall Protection

## Construction Supervisor Responsibilities for Fall Prevention

Presented By BHHC Loss Control

August 2025

# Introduction

## Slips, trips, and falls:

- Falls combined account for \$15.67 Billion in costs
- 15% of all accidental deaths, second only to motor vehicle crashes.

## FALLS COMBINE FOR \$15.67 Billion

### Falls on same level



Cost per year: \$9.99B

### Falls to lower level



Cost per year: \$5.68B

### Overexertion involving outside sources



Cost per year: \$12.49B

# Fatality Mixing Concrete

- On August 9, 2023, a 52-year-old carpenter (victim) and his co-worker were obtaining measurements in preparation for a plywood installation project in a restaurant being constructed. In the process, the victim's ladder overturned, and he fell and struck the concrete surface below. The victim succumbed to the injuries sustained in the incident.
- Key contributing factors identified in this investigation include:
  - Unrecognized job hazards
  - Lack of Safety training
  - Reaching outside ladder side rails

## INCIDENT HIGHLIGHTS



**DATE:**  
August 9, 2023



**TIME:**  
2:45 p.m.



**VICTIM:**  
52-year-old Hispanic carpenter



**INDUSTRY/NAICS CODE:**  
Finish carpentry contractor / 238350



**EMPLOYER:**  
Finish carpentry contractor



**SAFETY & TRAINING:**  
No formal program



**SCENE:**  
Commercial restaurant dining room



**LOCATION:**  
Kentucky



**EVENT TYPE:**  
Fall from heights



**Photo 3. Interior photo of the location where the fall occurred (construction now finished). Photo also shows plywood ceiling panels that were being installed by the victim and his co-worker.**

Source – NIOSH FACE reports

# Fatality Investigation

- Implement a job hazard analysis process
  - Use JHA to guide job instruction training
  - Conduct Observations of employees using JSA to guide corrective feedback
- When available, employees should utilize equipment that best reduces the risk of injury
- Develop, implement, and enforce a formal health and safety program that includes ladder safety.

May 2025

1. Understand Slip, Trip and Fall Hazards in Construction
2. Review the Regulations and Standards for fall protection in Construction
3. Discuss the components of fall protection systems and when they should be used
4. Identify Best Practices and Tips for preventing falls in the workplace
5. Discuss real life examples and case studies of falls

# We will focus on Best Practices....

...with a hint of compliance. Why?

- The goal of a fall prevention effort is to prevent injuries.
- Regulatory standards are *minimum* requirements. Best in class employers go above and beyond.
- Remember that every workplace is different. Find the risk potential and address it proactively.

ABR Training

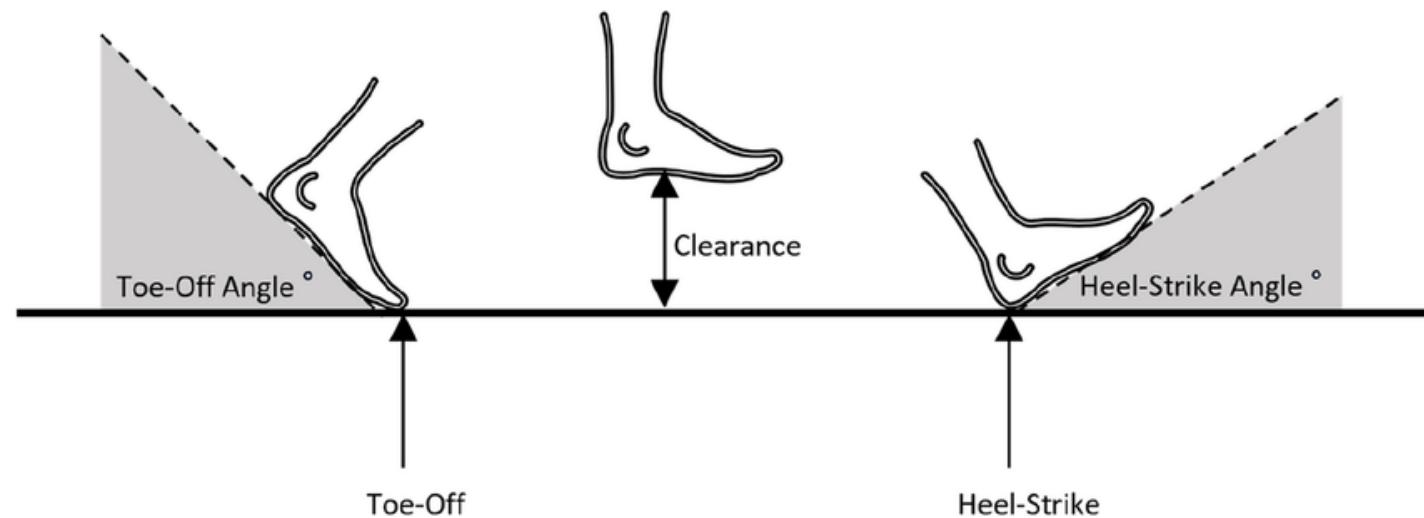


# Slip Trip and Fall Hazards

## Slip Hazards

- **Wet or Oily Surfaces:** Spills of water, grease, or oil.
- **Weather Conditions:** Ice, snow, or rain.
- **Loose Mats or Carpets:** Unanchored or wrinkled mats and carpets.
- **Smooth Floors:** Marble, concrete, or ceramic tiles.
- **Freshly Waxed Floors:** Newly waxed surfaces.

“A loss of traction between a person's foot and the walking surface”



Source - NIOSH

# Slip Trip and Fall Hazards



A slip is caused by the absence of sufficient friction between a person's feet and his/her walking surface.

## Trip Hazards

- **Cluttered Walkways:** Objects left on the floor, such as tools or boxes.
- **Poor Lighting:** Dimly lit areas.
- **Uncovered Cables:** Extension cords, hoses, or wires across walkways.
- **Uneven Surfaces:** Missing bricks, floor tiles, or irregular steps.
- **Obstructed Views:** Items blocking the view of the walking path.



A trip is a loss of balance that occurs when the forward or backward movement of one foot or both feet is interrupted.



A fall is the consequence of a slip. Falls happen when an irregular body movement disrupts balance.

# Slip Trip and Fall Hazards

**“An individual falls from one level to another, such as from a ladder, scaffold, or elevated platform to the ground or a lower surface.”**



## **Fall to Different Level Hazards**

- **Ladders:** Unstable or broken ladders
- **Platforms and Stairs:** Lack of guardrails or handrails
- **Scaffolding:** Improperly set up scaffolding
- **Carrying Large Items:** Obstructing vision while carrying large objects
- **Improper Use of Equipment:** Using equipment incorrectly for height access

# Construction Fall Protection

Category	OSHA (Federal)	Cal/OSHA (California)
Regulatory Code	29 CFR Part 1926, Subpart M	Title 8, California Code of Regulations (T8 CCR), Sections 1669–1731
Trigger Height (General)	6 feet	7.5 feet (general), varies by task
Trigger Height (Steel Erection)	15 feet (Subpart R)	30 feet or 2 stories (§1710)
Trigger Height (Roofing)	6 feet	20 feet (§1730)
Trigger Height (Framing)	6 feet	15 feet (§1716.2)
Trigger Height (Residential Construction)	6 feet	6 feet (effective July 1, 2025)
Fall Protection Plan	Allowed when conventional methods are infeasible (§1926.502(k))	Required for certain tasks (§1671.1)
Training Requirements	Mandatory under §1926.503	Mandatory under §1510 and §3203
Personal Fall Arrest Systems	Criteria in §1926.502(d)	Criteria in §1670
Controlled Access Zones	Permitted under §1926.502(g)	Permitted under §1671.2
Safety Monitoring Systems	Allowed for low-slope roofing under certain conditions	Allowed under strict conditions (§1671.2)
Enforcement Agency	U.S. Department of Labor – OSHA	California Department of Industrial Relations – DOSH
PPE Fit Requirement	Updated in 2025 to require properly fitting PPE (§1926.95)	Emphasized in §3380 and §1514

Source – OSHA

# Construction Fall Protection

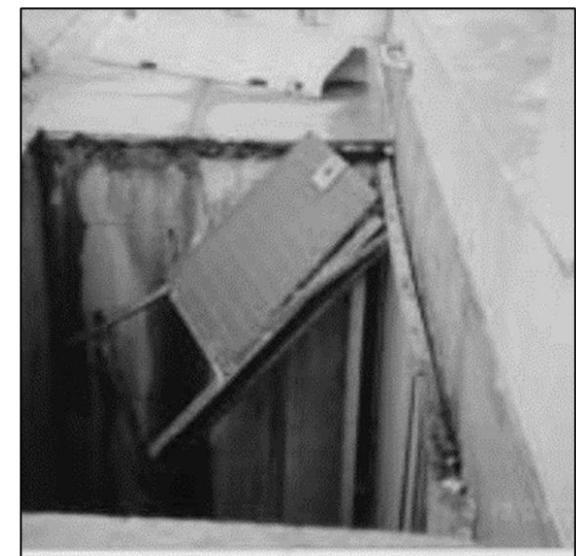
## OSHA (Federal) – Construction Fall Protection

- Regulatory Source - 29 CFR Part 1926, Subpart M – Fall Protection
- Key Sections:
  - §1926.501 – Duty to have fall protection
  - §1926.502 – Fall protection systems criteria and practices
  - §1926.503 – Training requirements
  - §1926.760 – Fall protection for steel erection
  - §1926.1051–1060 – Stairways and ladders
  - §1926.1423 – Fall protection for cranes and derricks
- Trigger Height - 6 feet for most construction activities
- Recent Update (2025): §1926.95 was amended to require that PPE, including fall protection gear, must properly fit each worker.

# Construction Fall Prevention Expectations

- **Guarding Floor Openings:** Ensure all floor holes are covered or guarded with railings and toe-boards.
- **Guardrails and Toe-Boards:** Install guardrails and toe-boards around elevated platforms, floors, or runways.
- **Fall Protection Systems:** Use safety harnesses, safety nets, and other fall protection systems where necessary.
- **Ladder Safety:** Ensure ladders are stable, properly maintained, and used correctly.

*Photo: example of a sidewalk grate system failure*



Source of photos: OSHA

# Construction Fall Prevention Expectations

## Slips

Reduce Frequency
<ul style="list-style-type: none"><li>Avoid icy or slick surfaces by rerouting</li><li>Don't climb by moving grease fittings to floor level</li></ul>

Reduce Likelihood
<ul style="list-style-type: none"><li>Floor Maintenance</li><li>Slip resistant Shoes</li><li>Drainage and spill cleanup</li><li>Ice and snow removal</li></ul>

Reduce Severity
<ul style="list-style-type: none"><li>Return to Work Programs</li><li>Higher percentage of work at ground level</li><li>Fall arrest systems</li></ul>

## Trips

Reduce Frequency
<ul style="list-style-type: none"><li>Avoid uneven surfaces by rerouting</li><li>Repair or replace uneven flooring</li></ul>

Reduce Likelihood
<ul style="list-style-type: none"><li>Well lit and marking walkways</li><li>Good Housekeeping</li><li>Report Repair processes</li><li>Reroute hoses and cables</li><li>Repair leaks</li></ul>

Reduce Severity
<ul style="list-style-type: none"><li>Return to Work Programs</li><li>Improve balance, flexibility and strength</li></ul>

- Housekeeping:** Keep walking surfaces clean, dry, and free of clutter to prevent slips and trips.
- Lighting:** Provide adequate lighting in all work areas to enhance visibility and reduce hazard.
- Training:** Conduct regular training on fall hazards and the proper use of fall protection equipment.
- Inspections:** Perform regular inspections of walking-working surfaces and fall protection equipment.
- Compliance with OSHA Standards:** Adhere to OSHA regulations, including 29 CFR 1926 Subpart M, which covers walking-working surfaces.

# Reducing the risk of falls to lower level



Know the ABCs of Personal Fall Arrest Systems

- Anchorages
- Body harness
- Components

(connectors like snap hooks or Dee-rings, connection points, lanyards, deceleration devices, lifelines, etc.)

Source: Honeywell/Miller, used with permission.

**Installed, used, and maintained according to the manufacturer.**

# Components of Fall Arrest Systems

- **Anchorage**

- Definition: A secure point of attachment for lifelines, lanyards, or deceleration devices. Must hold 5000 per person tied off. Roof anchors, beam clamps, or fixed structures.
  - Usage: Essential for all fall protection systems to ensure stability and safety.

- **Body Harness**

- Definition: Straps that distribute fall arrest forces over the thighs, pelvis, waist, chest, and shoulders. Ensure proper fit and adjustability, Mid Back D Ring, Compliance with ANSI Z359.11
  - Usage: Worn by workers to safely arrest falls and minimize injury.

# Components of Fall Arrest Systems

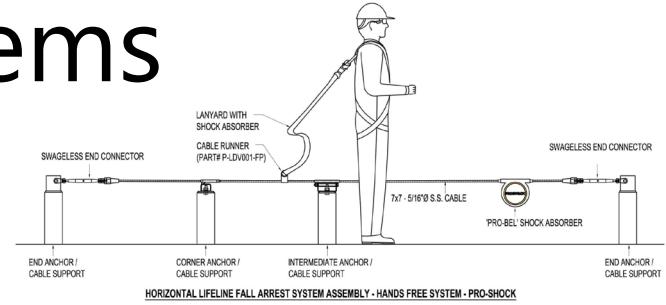
- **Connectors (lifeline or lanyard)**

- Definition: Devices used to couple parts of the fall protection system together, such as carabiners and D-rings. Links the harness to the anchorage point. It could be a shock-absorbing lanyard, a self-retracting lifeline (SRL), or a rope grab system
- Usage: Connects the harness to the anchorage and other components.

- **Deceleration Devices**

- Definition: Mechanisms that dissipate energy during a fall, such as self-retracting lifelines (SRLs) and energy absorbers. Shock Absorbers.
- Usage: Reduces the impact force on the worker during a fall.

# Components of Fall Protection Systems



## Self-Retracting Lifelines (SRLs)

- Lifelines that automatically extend and retract as the worker moves. They lock instantly when a fall occurs.
- Best for: Jobs requiring mobility and limited fall distance, such as warehouse loading docks, towers, or confined spaces.
- Advantages:
  - Minimized fall distance
  - Quick arrest reduces injury risk
  - Allows more movement than traditional lanyards

## Horizontal Lifeline Systems

- Cable or rail systems are installed horizontally along elevated work areas. Workers attach their lanyard or SRL to the line and move along the length safely.
- Best for: Long rooftops, bridges, building maintenance, and steel construction
- Advantages:
  - Continuous fall protection across wide areas
  - Multiple users can tie off (if rated appropriately)

# Components of Fall Protection Systems

## Vertical Lifeline Systems

- Lifelines are installed vertically along ladders, poles, or towers. A rope grab or traveler device moves with the worker.
- Best for: Climbing fixed ladders, telecommunication towers, or wind turbines.
- Advantages:
  - Fall protection while ascending or descending
  - Ideal for confined or narrow vertical spaces



## Mobile Fall Arrest Systems

- Portable systems like overhead rail systems or mobile anchorage units that can be moved from one site to another.
- Best for: Temporary work at height where permanent systems aren't installed—like truck loading areas or aircraft maintenance
- Advantages:
  - Flexibility
  - No need for permanent structure modifications

# Fall Prevention Plan

## CA Fall Prevention Plan

- Mandatory Site-Specific Fall Protection Plan - If conventional fall protection is not feasible, employers must develop a site-specific Fall Protection Plan. This plan must be tailored to the jobsite and task.
- Plan Must Be Created by a Qualified Person - The Fall Protection Plan must be developed by a qualified person (not just a competent person), who can justify why standard methods aren't viable and propose safe alternatives.
- Applies to All Roofing Tasks - The new rules apply to all roofing activities, including sheathing, underlayment, and tile or shingle installation. No broad exceptions are allowed.
- Training and Documentation Required - Employers must train workers on fall hazards and the use of protection systems, and document that training. Inspectors will verify compliance.

## FED Fall Prevention Plan

- A site-specific Fall Protection Plan is allowed only when conventional fall protection (guardrails, safety nets, or personal fall arrest systems) is infeasible or poses a greater hazard during specific tasks like leading edge work, precast concrete work, or residential construction.
- The plan must be prepared by a qualified person, defined by OSHA as someone with extensive knowledge and experience in fall protection systems and safety practices.
- The plan must be developed specifically for the jobsite and task. It cannot be a generic or template document reused across multiple projects.
- The plan must include a thorough hazard assessment and outline alternative measures that will be used to protect workers in lieu of conventional systems.
- The plan must be kept up to date and available at the jobsite for review by workers and OSHA inspectors



# Reducing the risk of falls to lower level

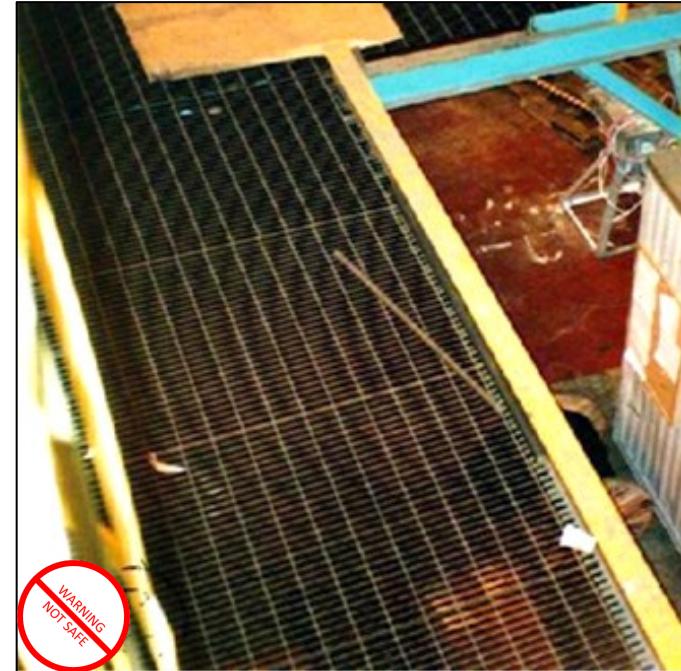
## Controlling fall hazards

- Tanks, towers, machines, and other elevated surfaces:
  - It is best to engineer out the need to go up in the first place.
  - Guardrails are often used, whether temporary or permanent.
  - As a last resort, use a Personal Fall Arrest System (PFAS).

Source: OSHA

# Reducing the risk of falls to lower level

- Open-sided platforms and runways:
  - Always use proper guardrail system.
  - Platforms and runways next to dangerous operations require standard railings, regardless of height.



Source: OSHA

# Reducing the risk of falls to lower level

- Structural collapse:
  - Ensure walking/working surfaces are structurally sound.
  - Surfaces must be able to support intended/potential load, including people, equipment, and stored materials
  - Load limits must be posted

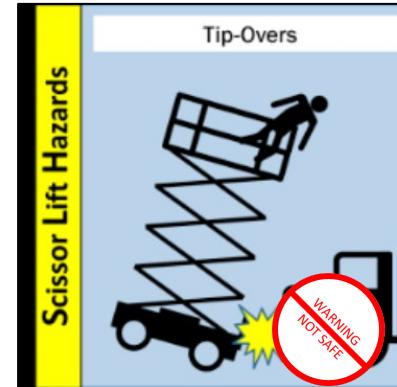


Source: OSHA

# Falls to Lower-Level Hazards

## Conditions leading to falls:

- Ladders
- Scaffolds and scissor lifts
- Stairways
- Floor and wall openings
- Other elevated surfaces



Source: OSHA



Source: OSHA



Source: WVU Susan Harwood



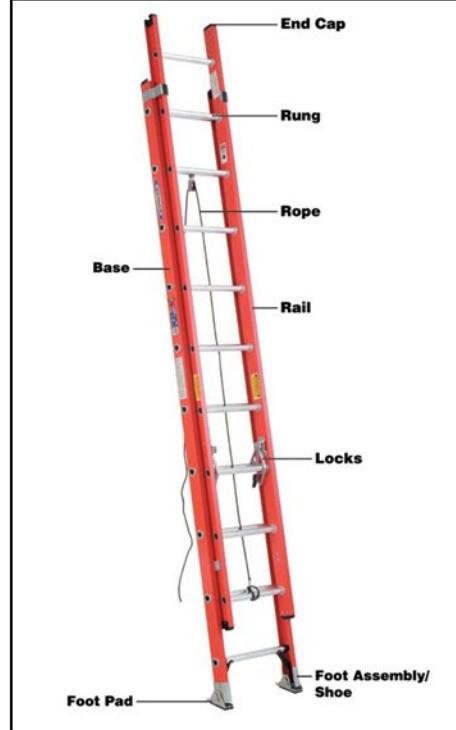
Source: www.elcosh.org

# Falls to Lower-Level Hazards

## Basic types of ladders:



Step Ladder



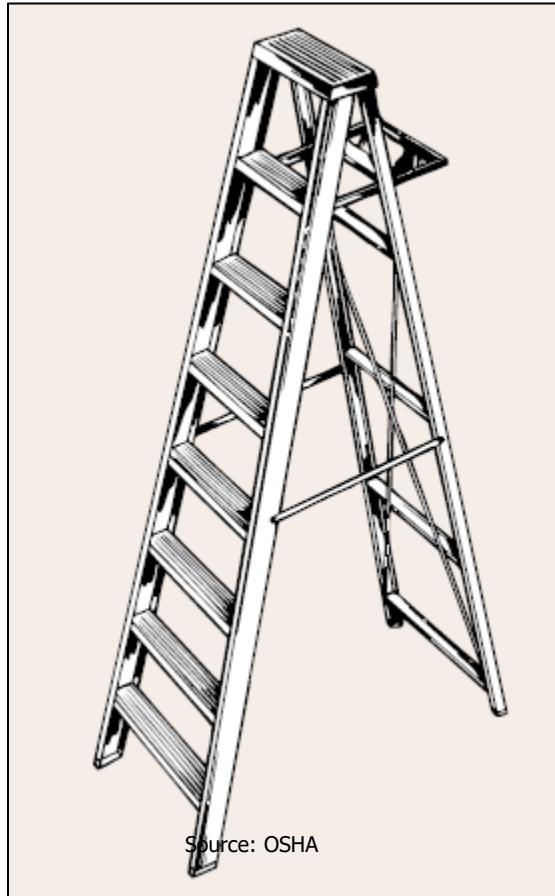
Extension Ladder



Fixed Ladder

Source of photos: OSHA

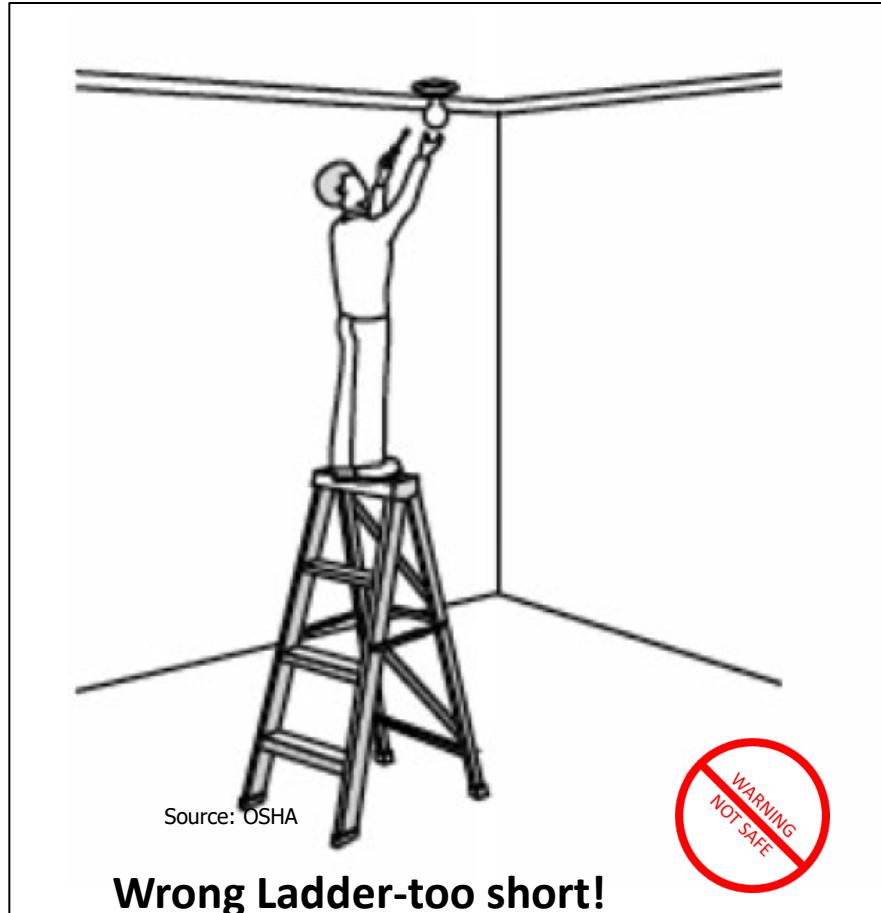
# Reducing the risk of falls to lower level



## Controlling fall hazards – ladders:

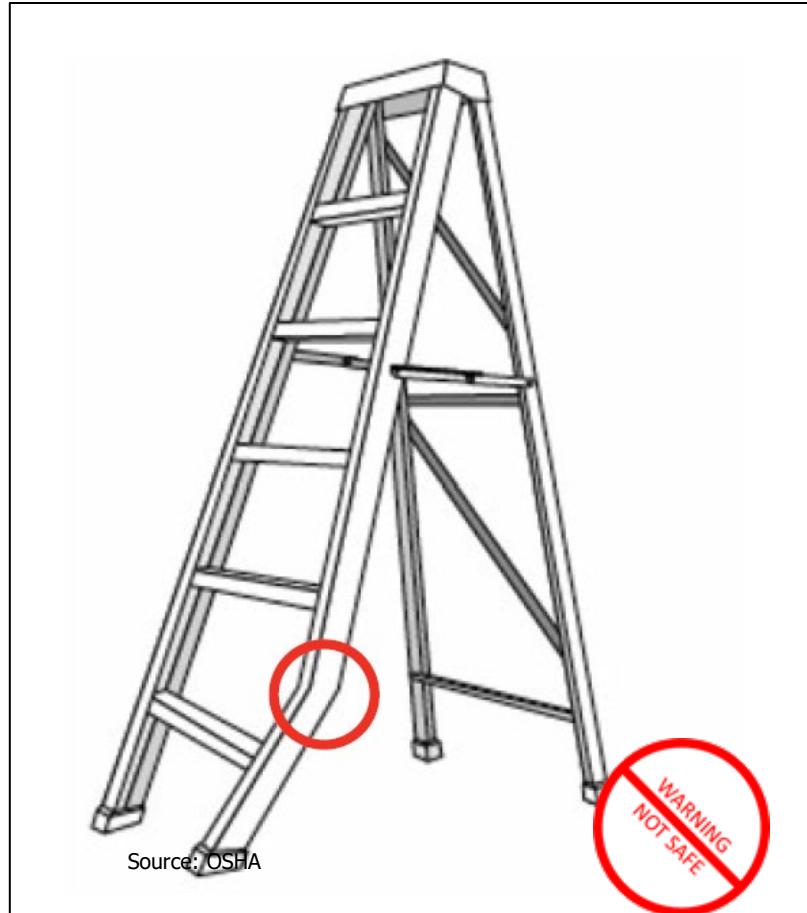
- One of the leading causes of fatalities and injuries.
- Ladder safety
  - Use the right ladder.
  - Use ladder that is free from defects.
  - Use the ladder properly.

# Reducing the risk of falls to lower level



- The right ladder:
  - Use the right type, length, and rating for the job.
  - Never use the top two steps of a step ladder.
  - Tell your supervisor if you need a longer ladder.

# Reducing the risk of falls to lower level



- Free from defects
  - Regardless of ladder type, inspect the ladder before use.
  - Do not use the ladder if it is bent or there are missing parts.

# Reducing the risk of falls to lower level



- Proper use

- Ladders must be used according to the manufacturer.

- Take the time to read the information.

- Read and follow all informational stickers and warning labels.

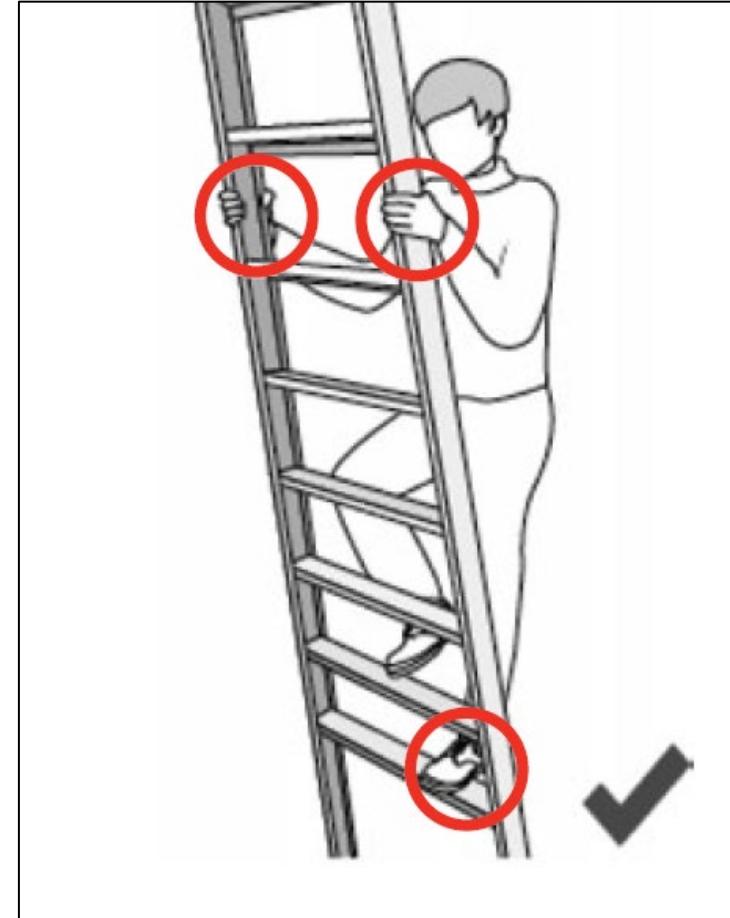
Source: Werner shares page

# Reducing the risk of falls to lower level

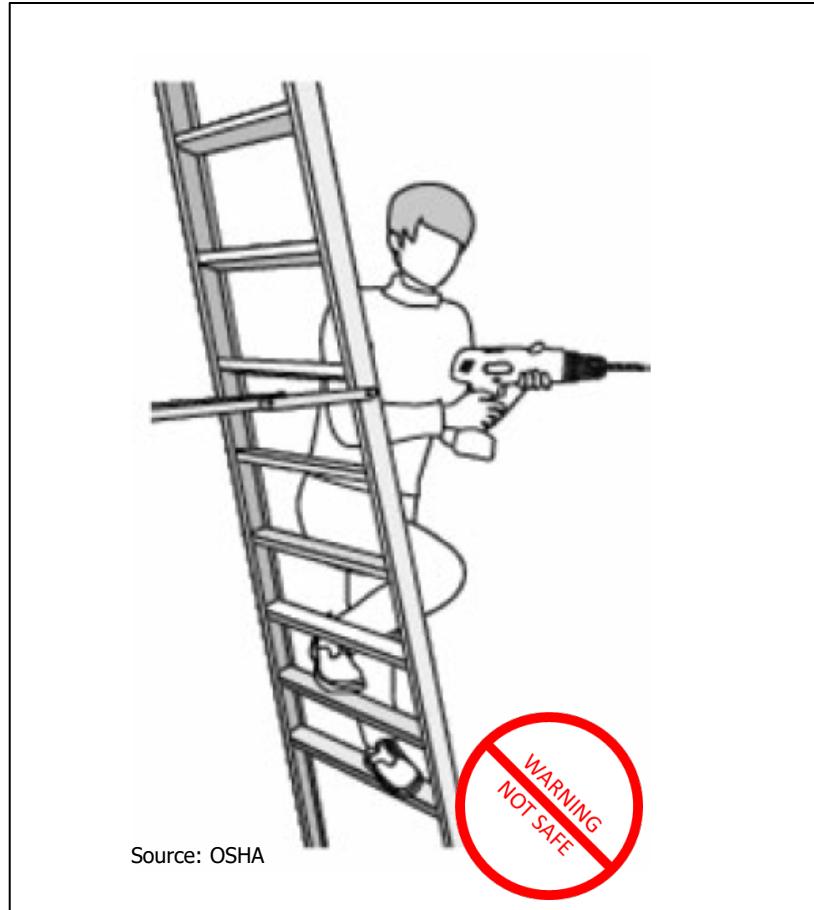
- Maintain 3 points of contact



Source: OSHA

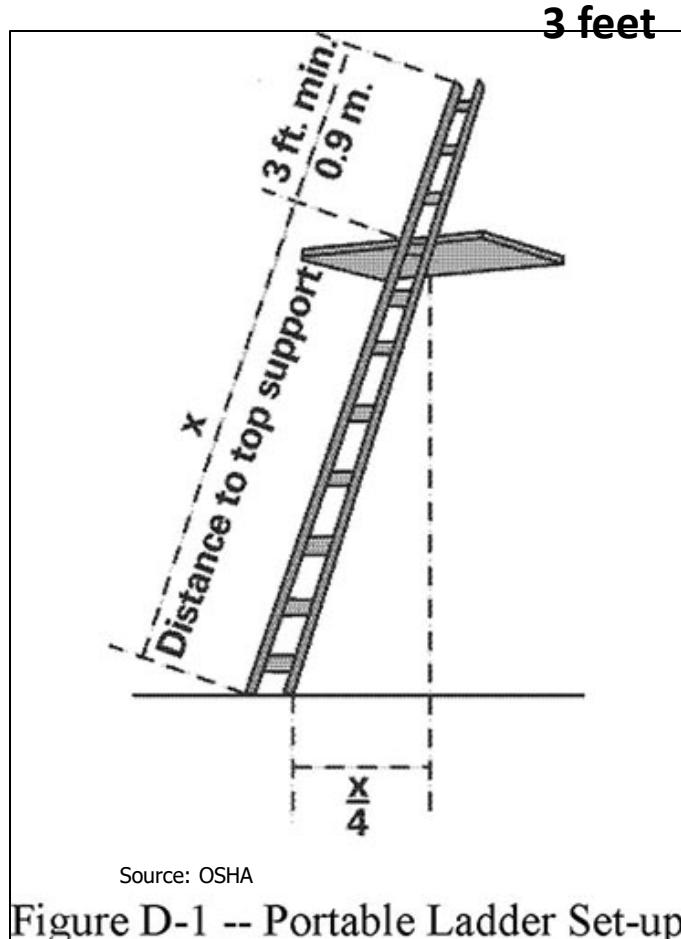


# Reducing the risk of falls to lower level



- Maintain proper positioning.
- Do not lean away from the ladder to carry out your task.
- Always keep your weight centered between the side rails.
- Move the ladder, as necessary.

# Reducing the risk of falls to lower level



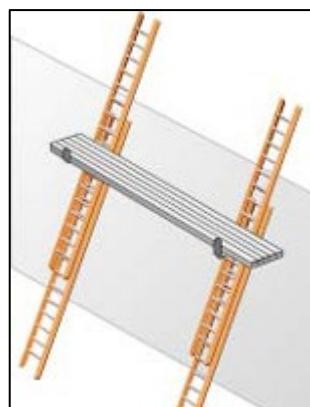
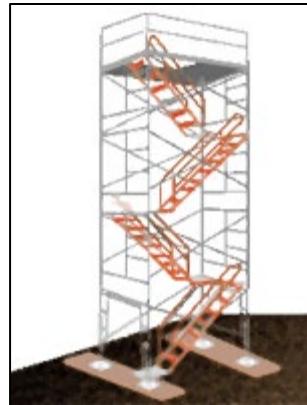
- When using ladders to access another level, secure and extend the ladder at least 3 feet above the landing point.
- Angle ladder so the horizontal distance of bottom is  $\frac{1}{4}$  the working length of the ladder.

# Reducing the risk of falls to lower level



- Fixed industrial ladders
  - Must be equipped with a
    - Personal fall arrest system, ladder safety system (if installed on/after 12/19/18)
    - Personal fall arrest system, ladder safety system, cage, or well (if installed before 12/19/18)
  - PFAS or ladder safety system must provide protection throughout entire vertical distance of ladder

# Reducing the risk of falls to lower level



Source: OSHA

## Controlling fall hazards – scaffolds:

- Scaffold-related incidents can also lead to injury and death.
- Scaffold safety
  - free from defects
  - proper set-up
  - proper use

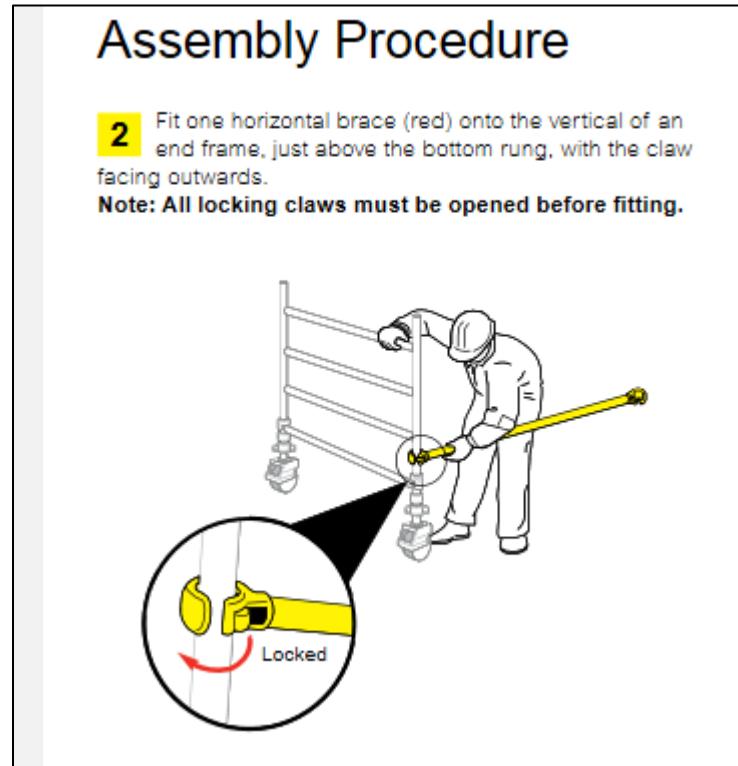
# Reducing the risk of falls to lower level



- Free from defects
  - Take the time to look the scaffold over before you use it.
  - Report damage if you identify defective components.
  - Damaged components must be replaced before use.

Source: OSHA

# Reducing the risk of falls to lower level



Source: Wernerco shares page

- Proper set-up
  - Scaffolds must be assembled and used according to the manufacturer.
  - Under the supervision on a competent person
  - All components such as braces and pins must be present.
  - If you don't have a copy of instructions, most can be downloaded.

# Reducing the risk of falls to lower level



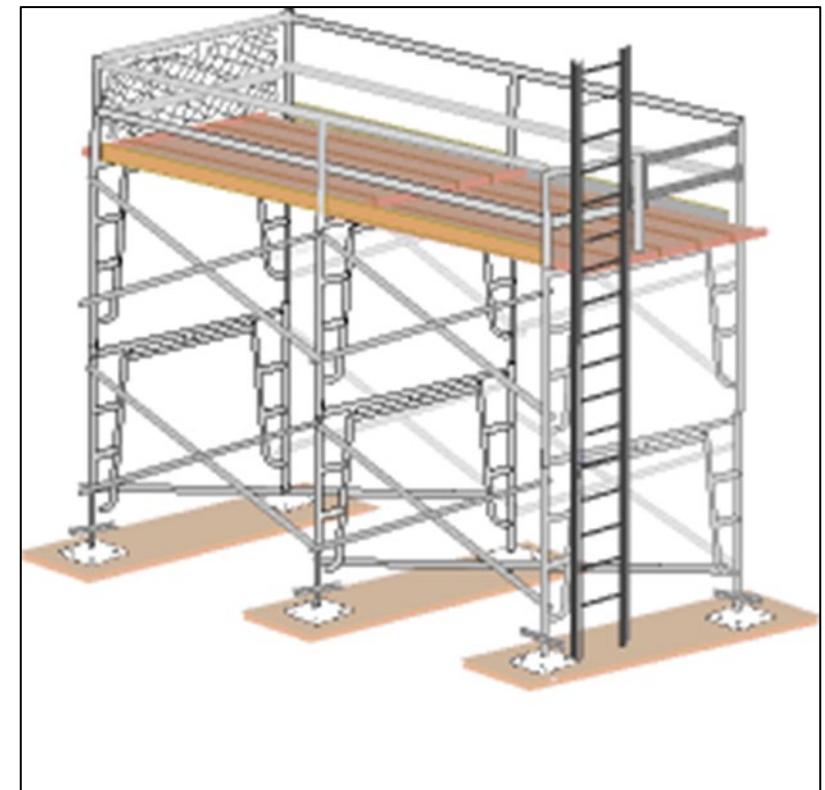
- Each platform must be fully planked or decked between the front uprights and the guardrail supports.
- You should not be exposed to a fall hazard due to partial decking.

Source: OSHA

# Reducing the risk of falls to lower level

- Fall protection consists of either a guardrail system or a personal fall-arrest systems (PFAS).
- It must be provided on any scaffold 10 feet or more above a lower level.

Source: OSHA



# Reducing the risk of falls to lower level



Source: OSHA

- Safe access
  - Preventing falls begins with safe access.
  - You are most vulnerable to fall hazards when climbing on or off a scaffold.

# Reducing the risk of falls to lower level

- Proper use
  - Make sure you are a properly trained scaffold user.
  - Use scaffolds according to the manufacturer.
  - Follow your company's scaffold safety policy.
  - Report scaffold-related safety issues to your employer.

# Reducing the risk of falls to lower level

- Never climb the bracing.
- Never climb the frame unless designed to be a ladder.
- Don't carry tools or materials while climbing.
- Never use a ladder or other device to increase your reach from a platform.

# Reducing the risk of falls to lower level



- Make sure the scaffold system, your tools, and the materials stay at least 10 feet away from powerlines.
- 3 feet from insulated lines.

Source: OSHA

# Reducing the risk of falls to lower level



Source: OSHA



- Mobile scaffolds - additional concerns:
  - All casters must be locked when occupied.
  - They can not be moved while occupied.
  - All casters must have retainer pins.

# Reducing the risk of falls to lower level



Source: Wernerco shares page

- The height of the platform must never exceed 4 times the minimum base dimension.
- Outriggers may be necessary to increase the minimum base dimension.

# Reducing the risk of falls to lower level



Source: OSHA

## Controlling fall hazards – scissor lifts:

- OSHA's investigations found that most injuries and fatalities involving scissor lifts were the result of employers not addressing:
  - Fall Protection
  - Stabilization
  - Positioning

# Reducing the risk of falls to lower level



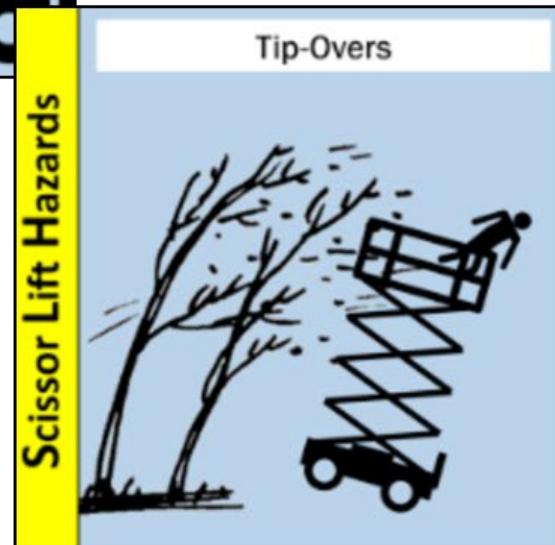
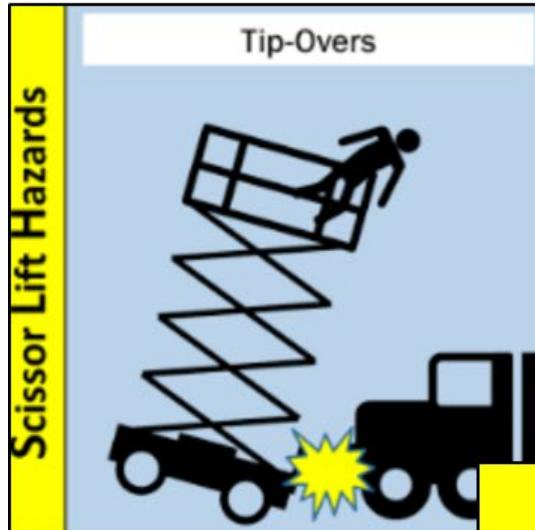
Source: OSHA

- Fall protection
  - Check to see that a guardrail system is in place before working on the scissor lift.
  - Only stand on the work platform; never stand on the guardrails.
  - Keep work within easy reach to avoid leaning away from the scissor lift.

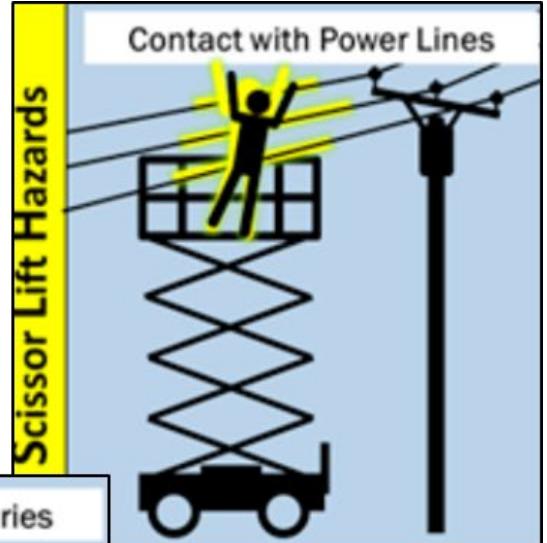
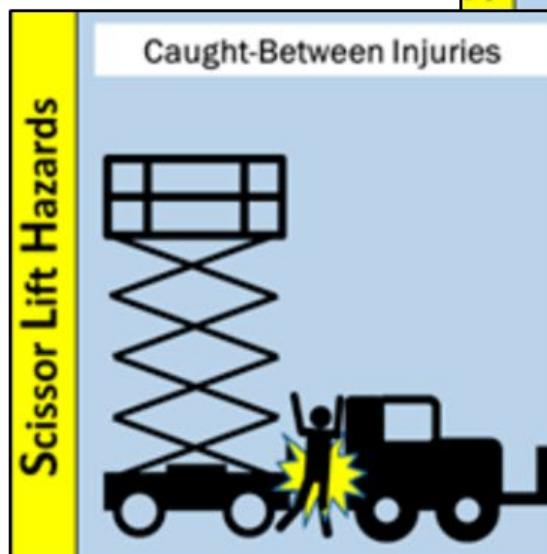
**Note: Some manufacturers require a PFAS in addition to the unit's guardrails.**

# Reducing the risk of falls to lower level

- Stabilization and positioning



Source: OSHA



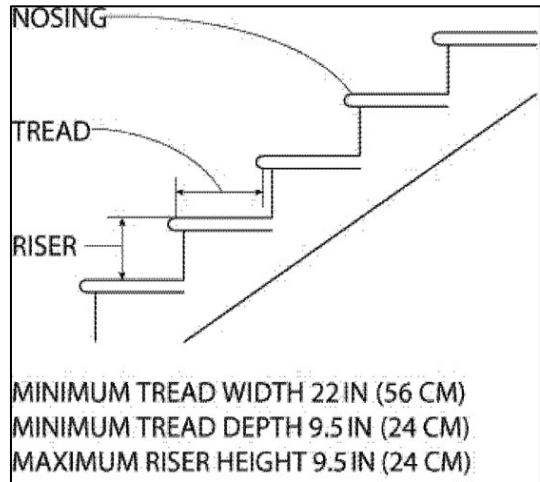
# Reducing the risk of falls to lower level



## Controlling fall hazards – stairs:

- Often stair-related hazards can be overlooked.
- Stair safety comes down to proper
  - Design & Construction
  - Condition
  - Use

# Reducing the risk of falls to lower level



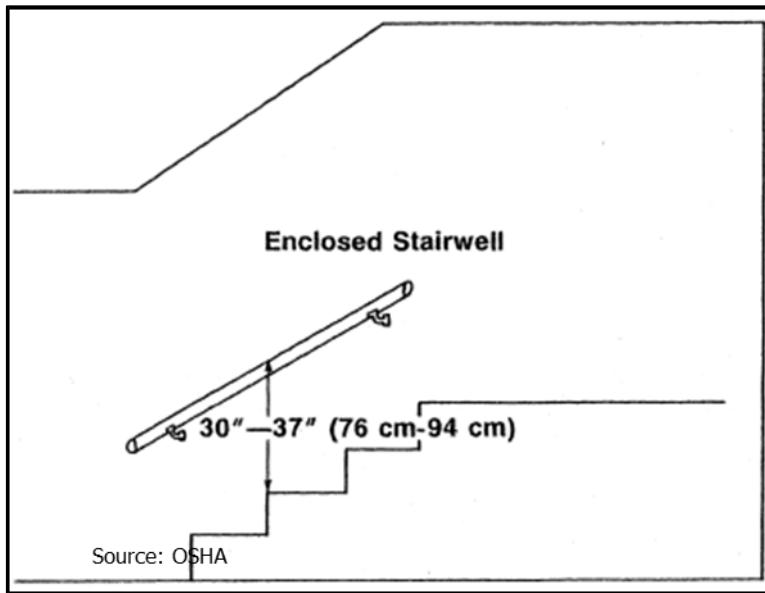
- Proper design/construction
  - Fixed industrial stairs must be:

Source: OSHA

- strong enough to handle a minimum 1,000 lb. live load;
- at least 22 inches wide;
- installed at angles between 30-50 degrees; and
- no more than  $\frac{1}{4}$  inch variation.

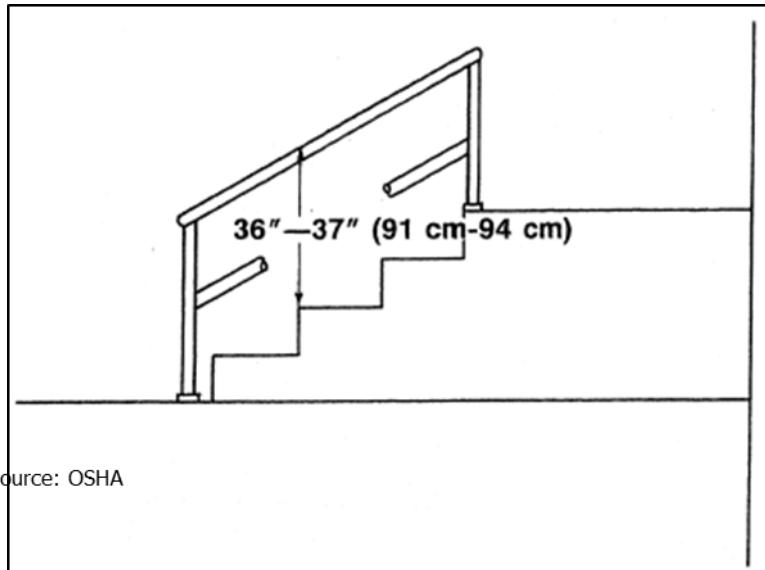
Source: WVU Susan Harwood

# Reducing the risk of falls to lower level



- Handrails are required when there is 4 or more risers.
- Mainly to be used on the right side as you descend.
- Allows you to maintain three points of contact.

# Reducing the risk of falls to lower level



- Stair rails prevent falls from open sides.
- Stair rail system must be present on the unprotected sides and edges (open stairs).
- Stair rails are required when there is 4 or more risers.

# Reducing the risk of falls to lower level



Source: OSHA

- Condition
  - Fixed industrial stairs must be maintained in good shape
  - These stairs are uneven and unpredictable.
  - Report stair-related defects
  - What else is wrong?

# Reducing the risk of falls to lower level



- Proper use
  - Maintain at least three (3) points of contact.
  - Do not run up or down stairs.
  - Do not carry heavy objects, only light loads.
  - Do not jump the last few steps.

Source: WVU Susan Harwood

# Hazards and Controls



- Items should never be placed or stored on stairs.
- Stairs should be inspected on a regular basis.
- Remove items to ensure no one gets hurt.

Source: OSHA

# Reducing the risk of falls to lower level

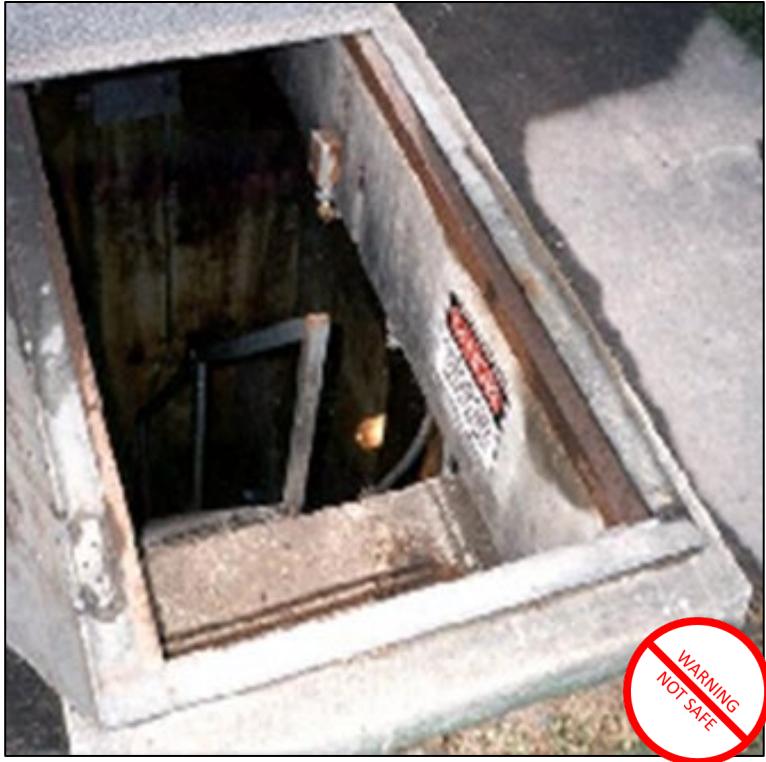
## Common fall hazards:

- Floor and wall openings
- Open-sided platforms and runways



Source of photos: OSHA

# Reducing the risk of falls to lower level

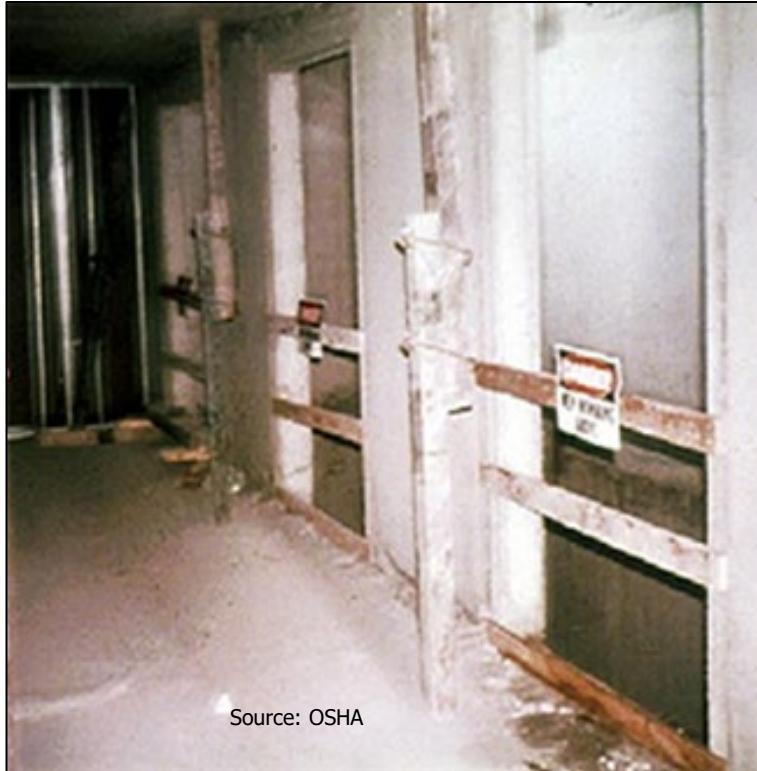


Source: OSHA

Controlling fall hazards – floor openings:

- Unguarded openings like this must never exist.
- They require a proper cover or guardrail system at all times.
- Posting a “guard” to monitor an opening like this for temporary access is permitted.

# Reducing the risk of falls to lower level



## Controlling fall hazards – wall openings

- Wall openings from which there is a drop of more than 4 feet must be guarded.
- They require a proper guardrail system, like this one, at all times.

# Hazards and Controls



## Guardrail systems:

- **Standard railing:** consists of top rail, mid-rail, and posts. Height from the upper surface of top rail to floor level is 42" (+/- 3").  
Mid-rail height is 21 inches.
- **Standard toe board:**  
3.5" high, with not more than  $\frac{1}{4}$ " clearance above the floor.

# Employer Requirements

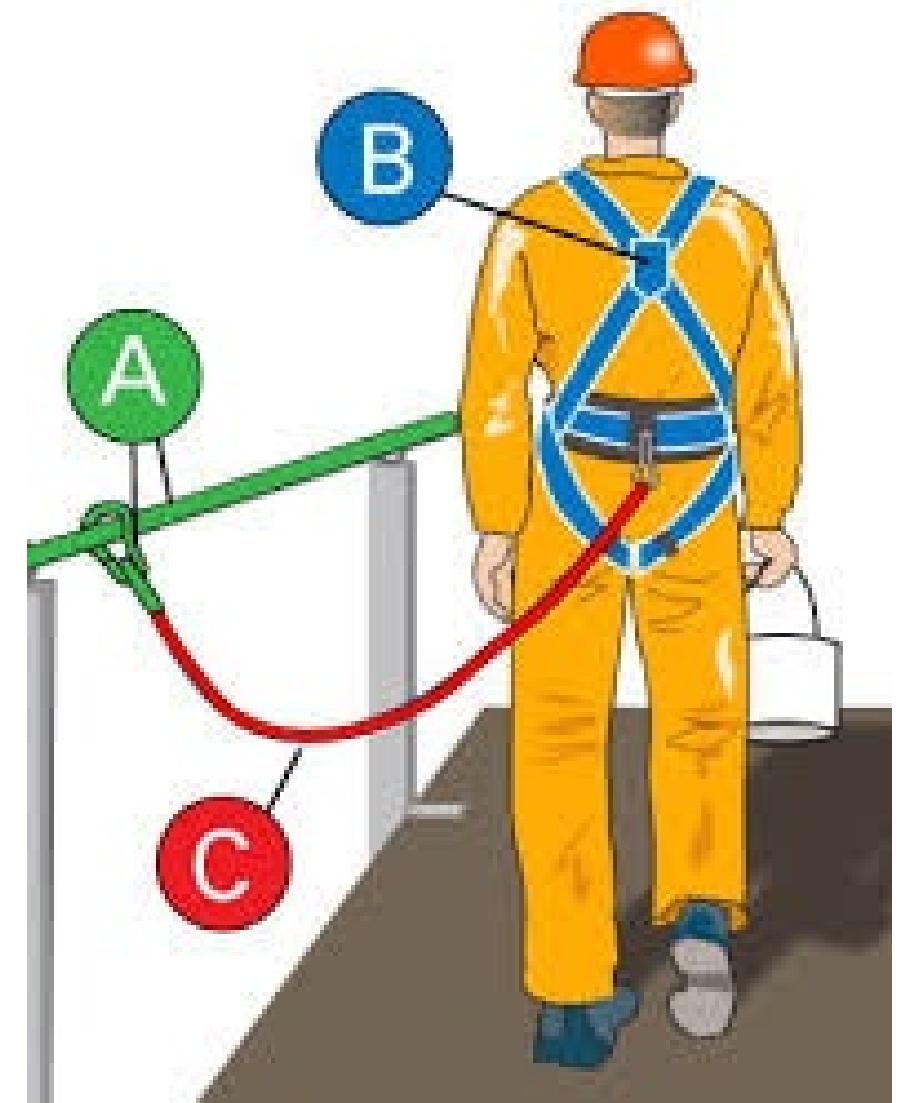
To prevent employees from being injured from falls, employers must:

- Guard every floor hole into which a worker can accidentally walk.
- Provide a guardrail and toe board around every open-sided platform, floor or runway that is 4 feet or higher off the ground or next level.

2023 Direct Accident Costs		Cost in billions	Percent of total
1		Overexertion involving outside sources (handling object)	\$1.69 22.5%
2		Falls on same level	\$1.31 17.3%
3		Struck by object or equipment (being hit by objects)	\$0.86 11.4%
4		Caught in or compressed by equipment or objects (running equipment or machines)	\$0.75 10.0%
5		Falls to lower level	\$0.54 7.2%

# Employer Requirements

- Regardless of height, if a worker can fall into or onto dangerous machines or equipment, employers must provide guardrails and toe boards.
- Other means of fall protection that may be required on certain jobs include safety harness and line, safety nets, stair railings and handrails.



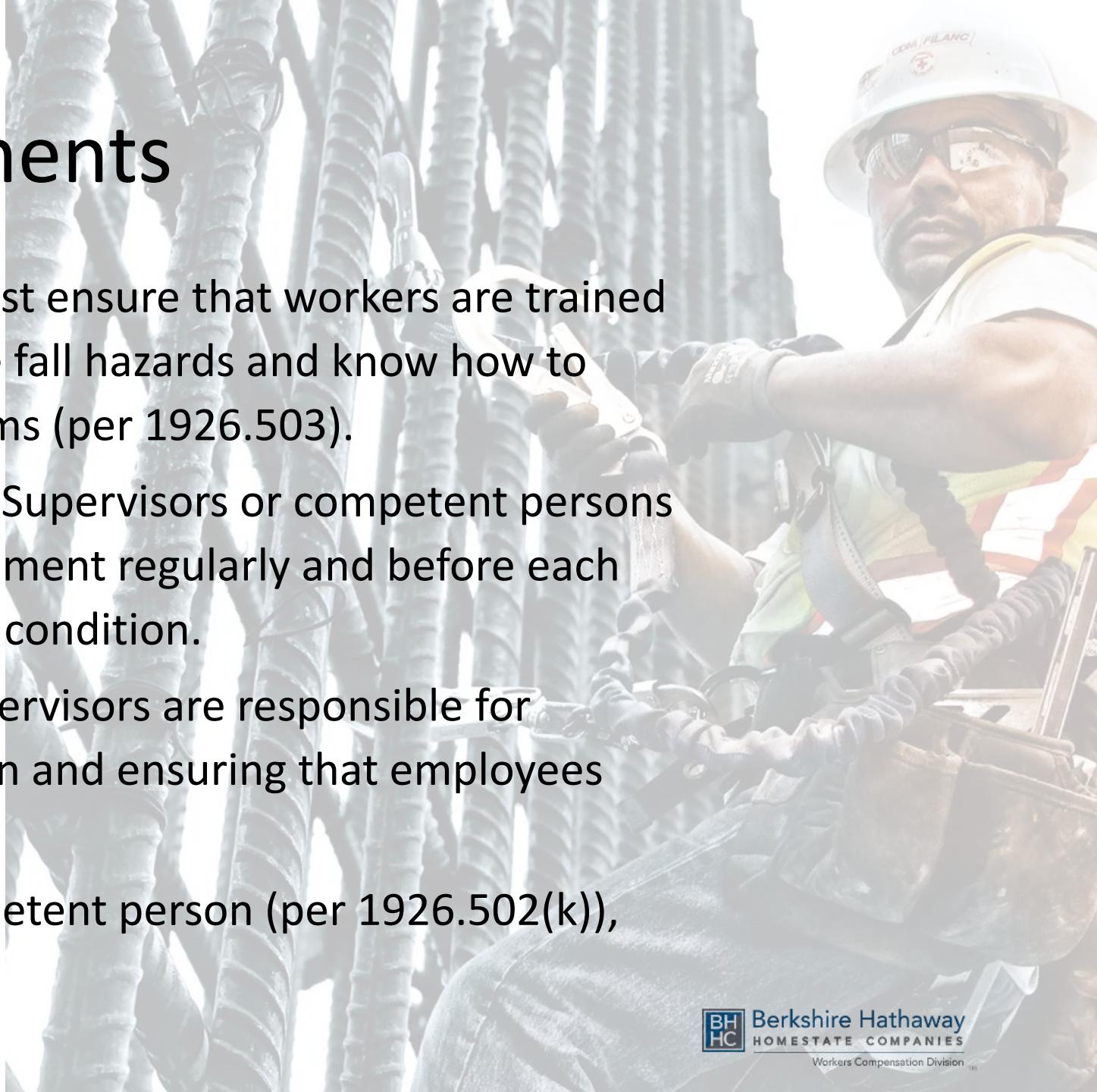
# Employer Requirements

- Ensure Fall Protection is Provided and Used - Employers (and by extension, supervisors) must provide and install all required fall protection systems before employees begin work that exposes them to fall hazards.
- Conduct Hazard Assessments - Supervisors must identify fall hazards in the work area and determine the appropriate fall protection methods (e.g., guardrails, personal fall arrest systems, safety nets).
- Designate a Competent Person - A competent person (often a supervisor) must be designated to: Inspect fall protection systems. Identify existing and predictable hazards. Take prompt corrective measures to eliminate them.



# Employer Requirements

- Train Employees - Supervisors must ensure that workers are trained by a qualified person to recognize fall hazards and know how to properly use fall protection systems (per 1926.503).
- Inspect Equipment and Systems - Supervisors or competent persons must inspect fall protection equipment regularly and before each use to ensure it is in safe working condition.
- Enforce Safe Work Practices - Supervisors are responsible for enforcing the use of fall protection and ensuring that employees follow safe work procedures.
- Maintain Documentation - competent person (per 1926.502(k)), Inspection, Training



# Questions?



Please email questions to [losscontrol@bhhc.com](mailto:losscontrol@bhhc.com)