The 4’ Rule: What You Need to Know About Fall Protection

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OSHA REQUIRES THAT FALL PROTECTION BE PROVIDED AT ELEVATIONS OF 4’ IN GENERAL INDUSTRY WORKPLACES?
What is Fall Protection?

Any effective means of preventing injury while working at height.

Aren’t these workers utilizing fall protection equipment?
Falls are among the most common causes of serious work-related injuries and deaths\(^1\).

According to 2009 data compiled from the Bureau of Labor Statistics, 605 workers were killed and an estimated 212,760 were seriously injured by falls to the same or lower level.

Fall injuries constitute a considerable financial burden for employers and injured employees; workers compensation and medical costs associated with occupational fall incidents have been estimated at approximately $70 billion annually in the US\(^2\).

1 – www.osha.gov/SLTC/fallprotection
• Fatal falls to a lower level accounted for 85% of all falls

• 30% of fatalities occur while the worker is using fall protection

Before the sun sets today 3 people will be injured or killed as a result of a fall...
Legislation & Standards

What applies to me?
What OSHA Requires

Under Title 29 of the Code of Federal Regulations (29 CFR), the Occupational Health & Safety Act assures and enforces **safe and healthful working conditions** for general industry, construction & maritime trades.

OSHA enforces regulation 1926, Subpart M for construction and regulation 1910, Subparts D & F for general industry which require fall protection must be provided at:

- ✓ 4’ in General Industry
- ✓ 5’ in Shipyards
- ✓ 6’ in Construction
- ✓ 8’ in Longshoring Operations

However, regardless of the fall distance, fall protection must be provided when working over dangerous equipment and machinery.
OSHA Regulations

- OSHA 1926.32  
  Definition of Authorized/Competent/Qualified Persons

- OSHA 1910 Subpart D  
  Walking/Working Surfaces

- OSHA 1910.26/27  
  Portable Metal/Fixed Ladders

- OSHA 1910.66  
  General Industry

- OSHA 1926.500/503  
  Construction Standard for Fall Protection
  - 1926.500  
    Scope, application and definitions
  - 1926.501  
    Duty to have fall protection
  - 1926.502  
    Fall Protection systems criteria and practices
  - 1926.503  
    Training Requirements
  - Appendix A  
    Roof Width Determinations
  - Appendix B  
    Guard Rail Systems
  - Appendix C  
    Personal Fall Arrest Systems
  - Appendix D  
    Positioning Device Systems
  - Appendix E  
    Sample Fall Protection Plan
Legislation vs. Standards

- OSHA regulations are **legislation** and must be followed under penalty of law.

- ANSI standards are voluntary consensus standards set forth by the American National Standards Institute, a standards committee responsible for specifying product performance and testing criteria.

- While not enforceable by law, ANSI standards should be adhered to, as they are often adopted by OSHA or other regulatory agencies.

- ANSI Standards can become mandatory by “Incorporation by Reference” (when an OSHA standard cites the ANSI standard for compliance) OR when the “General Duty” clause is cited, which requires employers to keep the workplace “free from recognized hazards.”
Fall Protection Hierarchy

Assessing the Fall Hazard

**ELIMINATE**
Work At Ground Level

**PREVENT**
Work In Guarded Area

**RESTRAIN**
Work while Anchored

**ARREST**
Work with an Engineered Fall Arrest System
Eliminate the Hazard

Remove the hazard altogether or move work to ground level. Example: Relocate a panel box to a more accessible location.
Fall Prevention

Work in a guarded area, utilizing products such as handrails, safety gates, guardrails and rooftop railings.

Ladder Cage
Over 24’

Railing
42” +/- 3”

Guardrail
42” +/- 3”
Fall Restraint

Connection of the worker to an anchorage point, preventing the worker from reaching the fall hazard.
Fall Arrest

Connection of a worker to a system by the use of a harness and lanyard to stop a fall after it has occurred, preventing the worker from hitting an object below.
The **primary** and **secondary** approach to fall protection states that all workers should have two systems or lines of defense against falling.

**Primary form** → our sense of balance and coordination, along with any positioning system that assists the worker from falling.

**Secondary form** → the fall prevention or fall arrest system being employed.
The ABC’s of Fall Protection

The components of a Fall Protection System
Components of a Fall Arrest System

- Anchorage
- Body Support
- Connectors
- Rescue
This is NOT an Anchorage
or a harness, or a lanyard...
What is an Anchorage Connector?

- An anchorage connector (or an anchor) is a piece of equipment used as a safe means of attachment for the lanyard or lifeline to the anchorage. For example, cable and synthetic slings, roof anchors, and beam clamps.
Anchor Strength Requirements

• **Fall arrest systems:**
  – Non-certified anchorages must be capable of supporting a load of 5,000 lbs per worker
  – Certified anchorages must withstand 2x the Maximum Arresting Force (MAF)

• **Fall restraint systems:**
  – Non-certified – static load of 1,000 lbs
  – Certified – 2x the foreseeable force

• **Work Positioning Systems (Rigged so worker cannot fall more than 2’):**
  – Non Certified – 3000 lbs
  – Certified – 2x the foreseeable force

• **Rescue Systems:**
  – Non-certified – static load of 3,000 lbs
  – Certified – 5x the applied load
Types of Anchorage Connectors

- Roof anchors
- Vertical steel flange connectors
- Concrete anchor
- Tie-off adaptors:
  - Cable, web, or chain. Kevlar tie-offs should be used when working with high temperatures.
- Horizontal Anchors:
  - Synthetic, retractable, stanchions
Body Support

Body Supports have evolved considerably from the early days of securing a rope around a worker’s waist and calling it a lifeline.
What is a Body Harness?

• A body harness provides a connection point on the worker to distribute the forces evenly across the body in the event of a fall. A full body harness is a body support device that distributes fall arrest forces across the shoulders, thighs and pelvis and has a center back fall arrest attachment for connection to the connecting device.

• Advantages over body belts: prolonged tolerable suspension time, distribution of impact forces, decreased potential of serious injuries, upright position, and easy rescue.

• Full Body Harnesses include a built-in fall arrest indicator that activates to give a permanent, readily visible warning after the Full Body Harness has arrested a fall.
Body Belt vs. Harness

Body belts and saddles are not intended for use as body support in the arrest of a worker’s fall, due to the possibility of injury or death.
Proper Use of Belts

Work Positioning

Fall Restraint

Body belts and saddles are used as part of work positioning and travel restraint systems.
What is a Connector?

- Connectors include lanyards, snap-hooks, carabineers, deceleration devices such as Self-Retracting Lanyard’s (SRL’s), ladder climbing systems, vertical & horizontal lifelines and rope grabs.

- Connecting assemblies shall have a minimum tensile breaking strength of 5,000 lbs. (22.5 kN).
Snap Hooks

Carabiners

Must be:

✓ Double action
✓ Auto locking
✓ Rated for 5000 lbs
✓ Gates must be rated for 3600 lbs
Self Retracting Lifelines

• A deceleration device containing a drum wound line which may be slowly extracted from, or retracted onto the drum under slight tension during normal movement and after onset of a fall, automatically locks the drum and arrests the fall (within 3.5’ to meet OSHA regs/ ANSI standards)

• Meant to be anchored directly above the worker.
• Reduces the free fall of the worker
• Reduces swing falls
Although self retracting lanyards can be used in a variety of situations, they are primarily used to provide movement and protection of users in a vertical work environment.

A tagline should always be used to store an SRL.

**Fall Indicator Deployed**

**RED INDICATOR**

**Tagline**
Types of Fall Arrest Systems
Why Choose a Rigid Rail Fall Arrest System?

**Side By Side: Rigid Rail vs. Wire Rope**

- Less fall clearance distance
- Safer for multiple people
- Longer distances between supports
- Reduced risk of secondary fall injuries

![Diagram showing Wire Rope System and Tether Track™ Rigid Rail Fall Arrest System]
Ceiling Mounted Monorail Systems

• Offers mobility along a single axis for applications when workers need to travel in a straight line

• Curved track sections available

• Track can accommodate single or multiple workers; dual bypassing track allows workers to safely pass each other without disconnecting
Free Standing Monorail Systems

• Provides free-standing support when application is inadequate for ceiling mounted applications

• Available in **Cantilevered design** for fewer support columns or **Goal Post design**, reducing the need for costly foundations

• An ideal application in transportation; allowing trains or trucks to drive underneath.
Ceiling Mounted Bridge Systems

• Comprised of two runways and a traveling bridge for maximum coverage within a rectangular work area

• Aluminum bridge follows the worker, remaining directly overhead

• Available in ceiling mounted or free-standing designs
Fold Away Systems

- Deploy as needed, then fold away when done; maintaining productivity without compromising safety
- Perfect solution for work cells requiring access to overhead cranes, when floor space is limited or when infrequent fall protection is necessary
- Wall Mounted, Column Mounted or Free-Standing Designs
Swing Arm Systems

• Provides circular or semi-circular fall protection with a compact footprint

• Versatile and adaptable, the swing arm can be positioned over the work space when needed and moved out of the way when not in use

• Wall Mounted, Column mounted or Free-Standing Designs
Single Pole Systems

• Space-saving design allows for installation in areas where there is minimal floor space or limited room for foundations

• Utilizes only one free-standing support, with one single foundation with a smaller footprint on the ground, while covering a large area overhead
Summary

✓ Occupational fall incidents cost US business approximately $70 billion annually

✓ OSHA requires that fall protection be provided at elevations of 4’ in general industry workplaces

✓ Once the need for fall protection has been determined, how will it be implemented?

  • Can the fall hazard be eliminated by changing the working environment or prevented by installing railings, safety gates or guardrails?

  • Is personal fall protection, such as fall restraint or an engineered fall arrest system a better option?

✓ Remember the ABC’s of a complete fall arrest system – Anchorage, Body support, Connectors, and rescue

✓ Rigid rail fall arrest systems are safer and more cost effective than wire rope systems
Thank you for your time

For more information contact us:
Gorbel Inc.
www.gorbel.com
1-800-821-0086

Visit gorbel.com/righttrack2 for a FREE downloadable Fall Protection Toolkit.