

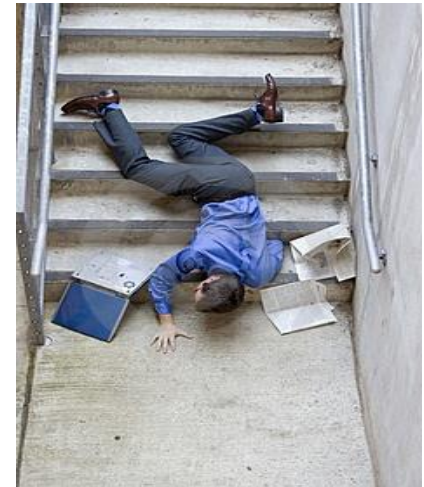
OSHA 29 CFR 1926 Subpart M
(1926.500-503)

OSHA 29 CFR 1910 Subparts
D, F, I (1910.23, 66, 67, and 132)



Importance of Fall Protection

- Each year, approximately 14 percent of fatal workplace injuries are caused by falls (Source: U.S. Dept. of Labor).
- In construction, approximately 150-200 workers are killed annually due to falls (Source: OSHA).



Fall Protection Requirements

General Industry (OSHA 1910) – must have in place if working at or above four (4) feet

Maritime (OSHA 1915) – must have in place if working at or above five (5) feet

Construction (OSHA 1926) – must have in place if working at or above six (6) feet

Determining (Plan)

- Employer should determine if walking/working surfaces have structural strength and integrity to support employees safely.
- Employer should verify Employees are allowed to work *only* on surfaces having strength and integrity.



Competent Person

- One who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.



Qualified Person

- One who, by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work or the project.



Factors Affecting Total Fall Distance

- Length of connecting means (i.e., lanyard length, use of carabineers, snap hooks, etc.)
- Position and height of anchorage relative to work platform/area (always keep above head whenever possible)
- Position of attachment and “D-ring” slide on full body harness
- Deployment of shock absorber (max. 42”)
- Movement in lifeline
- Initial position of worker before free fall occurs

Types of Fall Protection Systems

- Articulating platforms provided with restraint systems and full body harness to anchor point below waist
- Guardrails with toeboards
- Personal fall arrest systems:
 - Anchor points (rated at 5,000 lbs.)
 - Connectors (self-locking snap hooks)
 - Retractable lanyard
 - Full body harness
 - Restraint line-lanyard
 - Shock absorbing lanyard
 - Rope grabs

Types of Fall Protection Systems

- Engineered life lines
 - Warning lines
 - Safety nets
- Safety monitor systems



Recommended Locations for Fall Protection

- All open excavations/pits
- All tasks requiring use of manlifts
- Scaffolding erection 10' in height or greater
- Tuck-pointing/chimney repair
- Gymnasium (catwalks)

Recommended Locations for Fall Protection

- All flat and low sloped roof locations when within 6' of roof edge or for repair/maintenance
- All exterior and interior platforms, catwalks, towers/antennas, etc.
- All exterior and interior ladders above 20 feet
- All mezzanine and balcony edges

Personal Fall Arrest Systems

- Full body harness used
- Should be inspected before each use by employee, looking for:
 - Deteriorated areas
 - Excessive wear
 - Bent hooks/rings
 - Evidence of impact/damage

Personal Fall Arrest Systems

- Connectors should be inspected to ensure they are drop-forged, pressed, formed steel or equivalent material.
- Connectors should have corrosion-resistant finish, and surfaces/edges should be smooth.
- D-rings and snap hooks should have minimum tensile strength of 5,000 lbs. and should be proof tested to 3,600 lbs.
- Only shock absorbing or retractable lanyards should be used (keeps impact forces to the body at a minimum).

Personal Fall Arrest Systems

- Nylon rope or nylon straps with locking snap hooks used for restraints.
- Ensure unintentional disengagement of snap hooks cannot happen by either:
 - Checking to see if snap hooks are correct size for place they are to be connected, or
 - Snap hooks are of the locking type.

Personal Fall Arrest Systems

- Snap hooks should *not* be engaged as follows:
 - Directly to webbing, rope, wire rope
 - To each other
 - To D-ring that has another snap hook attached
 - To a horizontal lifeline
- Maximum free-fall distance not to exceed 6 feet.
- Consideration should be given to total fall distance.

1926.502(d)(6)

Calculating Total Fall Distance

- Height of person
- Location distance of D-ring from work surface or platform
- Total length of shock absorbing lanyard
- *Always allow minimum of 6 feet clearance above ground, equipment, etc., at end of fall from fall-arrest point!*

Inspection of Fall Protection Systems

Inspect body harness before each use:

- Closely examine all nylon webbing for burn marks, tears, wear points, etc.
- Ensure no torn, frayed, broken fibers, pulled stitches, frayed edges anywhere on harness.
- Examine D-ring to ensure no pits, deterioration, cracks, excessive wear.
- Ensure buckles are not deformed/cracked and operate correctly

Inspection of Fall Protection Systems

Body harness before each use:

- Ensure all grommets (if present) are secure and not deformed from fall/abuse.
- Ensure harness has no additional punched holes.
- Ensure all rivets are tight and not deformed.
- Check tongue straps for excessive wear from repeated buckling.

Inspection of Fall Protection Systems

Body harness:

- Annual inspection of harnesses should be completed by competent person.
- Annual inspection should be documented.
- Harnesses should be stored hanging in enclosed cabinet to protect from damage.
- Harnesses involved in fall should be destroyed.

Inspection of Fall Protection Systems

Lanyards/shock absorbing lanyards, before each use:

- Check lanyard material for burns, cuts, rips, abrasions, kinks, knots, broken stitches, excessive wear.
- Ensure snaphooks are not distorted.
- Check carabineer for excessive wear, distortion, lock operation.
- Ensure all locking mechanisms seat & lock properly.

Inspection of Fall Protection Systems

Lanyards/shock absorbing lanyards, before each use:

- Once locked, locking mechanism should prevent hook from opening.
- Visually inspect shock absorber for signs of damage.
- Ensure points where lanyard attaches to snaphooks are free of defects.

Inspection of Fall Protection Systems

Lanyards/shock absorbing lanyards:

- Should be inspected annually by competent person.
- Annual inspection should be documented.
- Store lanyards/shock absorbing lanyards hanging in enclosed cabinet to prevent damage.
- Destroy all lanyards/shock absorbing lanyards involved in a fall.

Inspection of Fall Protection Systems

Snaphooks, before each use:

- Look for hook and eye distortions.
- Verify that there are no cracks, eye distortions, pitted surfaces.
- Ensure keeper latch is not bent, distorted, obstructed.
- Ensure keeper latch “seats” into “nose” without binding.
- Ensure keeper spring securely closes keeper latch.
- Test locking mechanism to verify it’s working properly.

Inspection of Fall Protection Systems

Self-retracting lanyards, before each use:

- Visually inspect body to ensure no damage.
- Make sure all back nuts or rivets are tight.
- Make sure entire length of nylon strap is free from cuts, abrasions, burns, kinks, knots, etc.
- Test unit by pulling sharply on lanyard to verify locking mechanism is working properly.
- Return to manufacturer for annual inspection, if required by manufacturer.

Inspection of Fall Protection Systems

Self-retracting lanyards:

- Monthly inspection should be conducted by competent person.
- Service per manufacturer's recommendations.
- Inspect for proper function after every fall.

Inspection of Fall Protection Systems

Tie-off adapters/anchorage:

- Inspect for integrity and attachment to solid surface.
- Annual inspection should be done by competent person and documented.
- Destroy and replace after fall.

Inspection of Fall Protection Systems

Horizontal lifelines:

- Before each use, check for structural integrity of line and anchors.
- Annual inspection should be completed by competent person and documented.

Inspection of Fall Protection Systems

Guardrails:

- Temporary systems =
 - Daily visual inspection by competent person.
 - Complete structural by competent person.
- Permanent systems =
 - Annual inspection by competent person.
 - Frequency of future inspections based on conditions/controls present.

Storage & Maintenance of Fall Protection Equipment

- Never store in bottom of tool box, on ground or outside where exposed to elements.
- Hang equipment in cool, dry place in a way so it retains its shape.
- Always follow manufacturer's recommendation for inspection.
- Clean with mild, non-abrasive soap and hang to dry.
- Never "force dry;" allow to air dry.
- Never use strong detergents for cleaning.

Storage & Maintenance of Fall Protection Equipment

- Never store near excessive heat, chemicals, moisture or sunlight.
- Never store in an area where exposure to fumes or corrosive elements may exist.
- Avoid dirt and build-up on equipment.
- Never use equipment for any other purpose other than personal fall arrest.
- Once exposed to fall, remove equipment from service immediately.

Engineered Lifeline

- Lifeline systems must be designed and approved by an engineer or qualified person.
- Lifeline systems must be engineered to have:
 - Appropriate anchorages
 - Strength of line to hold X number of people
 - Line strength to aid in arrest of fall
 - Durability to hold fallen worker until rescued

Warning Line System

- Should be erected no less than 6 feet from edge of roof.
- Use stationary posts made of wood or metal.
- Should have wire or nylon rope and “caution flags” strung from post to post; must withstand 16 pounds of force.
- Entire perimeter of roof where work being performed must be guarded by warning line.

Floor & Wall Openings & Holes (OSHA 29CFR1910.23)

Stairway Opening:

- Must be guarded by standard railing containing top rail, mid-rail, posts.
- Height: 42” from upper surface of top rail to floor/platform, etc.
- Top rail should be smooth-surfaced.
- Mid-rail should be halfway between top and floor/platform, etc.
- Railing on all exposed sides, except entrance to stairway.

Floor Openings & Holes

Ladder-way opening or platform:

- Must be guarded with standard railing and toeboard.
- Guarded on all exposed sides, except entrance to opening.
- Entrance to have swinging gate or an offset to prevent direct access.

Floor Openings & Holes

Hatchway & chute opening guarded by one of the following:

- Hinged floor opening cover of standard strength with standard railings.
- Cover must be closed when not in use or exposed side guarded with removable railings.
- Removable railing and toeboard on not more than two sides of opening.
- Fixed standard railings with toeboards on all other exposed sides.

Floor Openings & Holes

Skylight opening/hole:

- Must be guarded by standard skylight screen or fixed standard railing on all exposed sides.

Pit and trapdoor opening (if infrequently used):

- Must be guarded by standard strength and construction floor opening cover.
- When cover not in place, must be constantly attended or protected on all exposed sides by removable standard railings.

Floor Openings & Holes

Manhole opening:

- Must be guarded by standard manhole cover.
- Cover does not need to be hinged in place.
- When cover not in place, manhole must be constantly attended or must be protected by removable standard railings.

Temporary floor opening:

- Must be guarded by standard railings or constantly attended.

Wall Openings & Holes

Wall opening with drop of more than 4 feet (G.I.) or 6 feet (Const.) must be guarded by one of the following:

- General Industry requires either: Rail, Roller, Picket fence, Half door, or Equivalent barrier
- Construction requires either: Guardrail System, Safety net system, or Personal Fall Arrest System.
- If exposure below to falling materials, must have removable toeboard or equivalent.

Wall Openings & Holes

Chute openings with drop of 4 feet or more must be guarded by one of the following:

- Rail
- Roller
- Picket fence
- Half door
- Equivalent barrier

Powered Platforms, Manlifts, Vehicle-Mounted Work Platforms

- Employees on working platforms shall be protected by a personal fall arrest system.
- System must meet requirements of OSHA 29 CFR 1910.66, Appendix C, Section I.



Vehicle Mounted Elevating & Rotating Work Platforms

- Body belt should be worn and lanyard attached to boom or basket when working from an aerial lift.



Ramps, Runways, Other Walkways

- Employees must be protected from falling by guardrail systems.



Training

- Employer must provide training to all affected employees.
- Suggested topics:
 - Overview of related OSHA regulations.
 - Nature of fall hazards in workplace.
 - Correct procedures for assembling, maintaining, disassembling and inspecting fall protection equipment to be used.
 - Use and operation of guardrail, personal fall arrest, safety net, warning line and safety monitor systems, as well as other protection used.

Training Record

- Employers should maintain written certification training records for affected employees.
- Record should contain at least:
 - Topic of training provided.
 - Name or other identity of employee trained.
 - Date(s) of training.
 - Name (and signature recommended) of instructor who provided training.

Remember: Plan, Provide, and Train

- Provide fall protection when employees are working above 4' in general industry, 5' in Shipyards, or 6' in construction.
- Fall protection should be a priority: *safe actions save lives!*



Questions

