Oregon State University Fall Protection Manual

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OSU Environmental Health and Safety

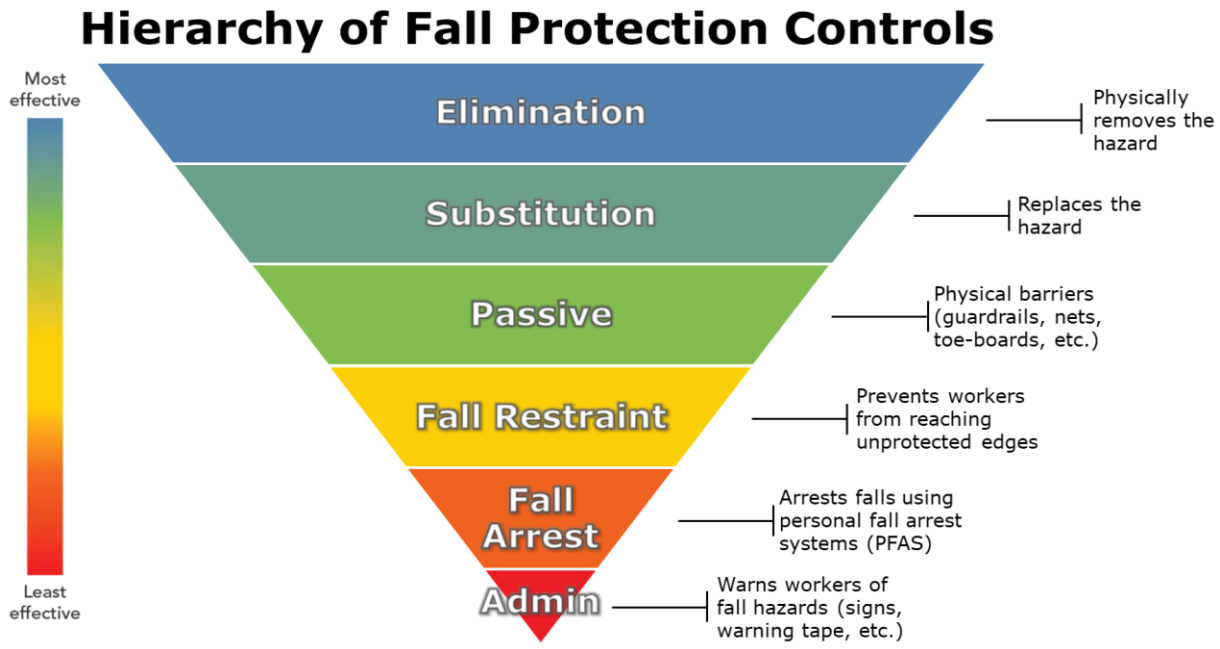
Contents

Purpose

In the field of occupational health and safety, the hierarchy of controls approach is commonly used to determine the best course of action for mitigating fall hazards. The end solution for managing fall hazards is often comprised of a combination of these controls:

1. Eliminate the fall hazard by surrounding serviceable mechanical equipment in an enclosed structure, preventing the possibility of a fall.
2. Substituting the fall hazard by using systems that require less maintenance in hazardous areas.

3. Passive controls for fall protection require little to no training and include structures such as guardrails, parapets, nets, skylight covers, and toe-boards.
4. Fall restraint systems such as fixed lanyards and positioning systems are meant to prevent workers from reaching the edge in the first place.
5. Fall arrest systems such as personal fall arrest systems (PFAS) use an anchorage, a body harness, and connectors to protect against the worst outcomes for workers in free-fall.
6. Administrative controls are how employers warn workers of potential fall hazards, including signs, warning tape, and markings.



The purpose of the Oregon State University Fall Protection Program is to use this approach to help protect University-affiliated employees, contractors, and visitors from potential exposure to fall hazards, encourage compliance with applicable national and state occupational safety and health regulations, and

assist in the designation, selection, and use of fall protection strategies.

University departments and operating units are required to implement the components of the plan needed to ensure compliance with the Occupational Safety and Health Administration (OSHA), Oregon OSHA, and OSU Environmental Health and Safety standards applicable to fall protection, including 29 CFR 1910-D, OAR 437-002-D, and OAR 437-002-I.

Scope

This program applies to OSU employees, students, and visitors who are exposed to fall hazards through the scope of their work.

Contractors on OSU property are bound to OSHA and OR OSHA regulations for construction standards set by 29 CFR 1926-L and 29 CFR 1926-M.

Roles and Responsibilities

OSU EH&S

- Assist in the initial planning stages of fall protection measures.
- Draft and update the EHS Fall Protection website, manual, and spreadsheets.
- Complete the rooftop survey of OSU's main campus.
- Provide consultation on fall protection measures in shops, labs, facilities, and rooftops with elevated work, ideally as part of the design and planning phase of construction.
- Refer employees to fall protection trainings (internal and external).

OSU Supervisors, Building Managers, and PI's

- Provide notice of concerns for fall protection safety.
- Ensure employees are trained properly by a qualified person at least every two years.
- Inspect and ensure fall protection PPE is properly used.
- Coordinate and carry out fume hood shutoffs for rooftop maintenance.

Facilities

- Carry out rooftop maintenance within scope of facilities departmental responsibilities.
- Plan, improve, and install fall protection measures on OSU property.
- Identify areas where fall protection is required for maintenance responsibilities.

Capital Planning

- Allocate funding for facilities work orders regarding fall protection.
- Address deferred maintenance backlog and capital renewal needs.
- Oversee design and development in capital construction on OSU property.

Qualified Personnel

Qualified personnel fulfill at least one of the following requirements:

- Possess a recognized degree, certificate, or professional standing (formal credentials)
- Possess extensive knowledge, training, and experience related to the subject matter

Qualified personnel can resolve problems involving fall hazards during a project. This includes performing or supervising correction of walking-working surfaces, inspecting permanent anchorages, overseeing proper installation procedures for temporary anchorages, and training employees on fall hazards specific to their job tasks.

Authorized or Competent Personnel

Authorized or competent personnel are employees who the employer designates to perform specific job tasks or access a specified area. They must be able to identify hazards and take corrective actions when needed. Authorized or competent personnel must receive proper training from a qualified person, read work plans and procedures, understand fall protection controls, inspect and wear proper fall protection PPE, sign required documentation regarding inspections and training acknowledgement, and report any incidents or near misses.

Fall Hazard Analysis

Overview

The goal of analyzing fall hazards is to identify any equipment, areas, or activities that could lead to a harmful fall and determine what protections are necessary/feasible to mitigate the risk of falling using the hierarchy of controls approach. It is essential to identify hazards, discuss necessary controls, and implement required protections before any work activities take place. Fall hazard analysis should be completed any time a new hazard is introduced or an existing hazard changes.

Types of Fall Hazards

The following table presents a list of potential fall hazards, the height at which regulations become applicable, the required protection, and the regulation number associated to the fall hazard.

Fall Hazard	Trigger Height	Required Protections	Regulation Citation
Unprotected Sides / Edges (General)	Greater than 4 feet	Guardrail systems, safety net systems, or personal fall protection systems	29 CFR 1910.28(b)(1)
Hoist Areas	Greater than 4 feet	Guardrails, personal fall arrest systems, or travel restraint systems. Any hoisting operation taking place over the edge of an access opening is protected via personal fall arrest system	29 CFR 1910.28(b)(2)
Holes (General)	Any height	Less than 4 feet → guardrails or covers Greater than 4 feet → guardrails, covers, travel restraint systems, or personal fall arrest systems (Includes skylights)	29 CFR 1910.28(b)(3)

Holes (Stairway Floor Holes)	Any height	Fixed guardrails on all exposed sides except stairway entrance. Hinged floor hole covers, and removable guardrails are accepted in low-use situations	29 CFR 1910.28(b)(3)(iii)
Holes (Ladderway Floor Holes)	Any height	Guardrails and toe boards on all exposed sides except entrance to the hole, where a self-closing gate or offset is required.	29 CFR 1910.28(b)(3)(iv)
Holes (Hatchways & Chutes)	Any height	a) Hinged floor-hole cover and fixed guardrails with one exposed side b) Removable guardrails and toe boards on two opposite sides and fixed guardrails on other sides or c) Guardrail or travel restraint system when material passes through hatchway or chute	29 CFR 1910.28(b)(3)(v)
Dock boards	Greater than 4 feet	Guardrails or handrails on all sides unless: a) Dock boards are only used for	29 CFR 1910.28(b)(4)

		materials-handling using motorized equipment b) Employees are not exposed to fall hazards greater than 10 feet c) Employees have been trained in accordance with training standards in this manual	
Runways / Walkways	Greater than 4 feet	Guardrails on both sides. In some situations, one guardrail is acceptable if the runway is 18 inches wide or more and each employee uses a personal fall arrest system or travel restraint system	29 CFR 1910.28(b)(5)
Working surfaces above dangerous equipment	Any height	Less than 4 feet → guardrails or travel restraint system (unless the equipment is guarded/covered) Greater than 4 feet → guardrails, safety nets, travel restraint systems, or personal fall arrest systems	29 CFR 1910.28(b)(6)
Wall Openings	Elevated edge or	Guardrails, safety nets, travel	29 CFR 1910.28(b)(7)

	barrier less than 4 feet above work surface, bottom of opening greater than 4 feet from lower level	restraint systems, or personal fall arrest systems	
Repair Pits	Any height	Less than 10 feet → Only trained employees within 6 feet of edge, markings / warning line at least 6 feet from pit, and "Caution – Open Pit" signs required	29 CFR 1910.28(b)(8)
Fixed Ladders	Greater than 24 feet	a) Ladders installed before 11/1/19 → personal fall arrest system, ladder safety system, cage, or well b) Ladders installed after 11/1/19 → personal fall arrest system or ladder safety system only c) All fixed ladders must have a personal fall arrest system or ladder safety system by 11/18/36	29 CFR 1910.23 29 CFR 1910.28(b)(9)

Stepladders / Portable Ladders	Any height	Ensure stepladders and portable ladders are inspected prior to each use, decommissioned immediately when defects or damages are found, and meet standards set in 29 CFR 1910.23	29 CFR 1910.23(b) 29 CFR 1910.23(c)
Stairways	4 feet or more	Guardrails or stair rail systems. Additional rules on stair handrail requirements apply with stairs that have at least 3 treads and 4 risers, ship stairs, or alternating tread type stairs.	29 CFR 1910.25, 29 CFR 1910.28(b)(11)
Rope Descent Systems	4 feet or more	Personal fall arrest system shall be used for rope descent systems	29 CFR 1910.27(b)
Scaffolds	10 feet	Refer to 29 CFR 1926 Subdivision L	29 CFR 1926 Subdivision L
Low Slope Roofs (slope ratio less than 2:12 vertical to horizontal)	Any height	a) Less than 6 feet from edge → guardrail, safety net system, travel restraint system, or personal fall arrest system b) 6-15 feet from edge → guardrail,	29 CFR 1910.28(b)(13)

		safety net system, travel restraint system, or personal fall arrest system – designated area can be used with infrequent and temporary work c) Greater than 15 feet → guardrail, safety net system, travel restraint system, or personal fall arrest system, or designated area. No fall protection required for infrequent / temporary work	
Slaughtering Facility Platforms	4 feet or more	Guardrail systems or travel restraint systems. See regulation for exceptions	29 CFR 1910.28(b)(14)

Program Requirements - Rooftops

Rooftop Protection Program

The rooftop protection program is a multifaceted effort to document hazard and safety measures on rooftops for buildings on campus. This helps us ensure proper fall protection methods are installed and provide adequate signage warning of the specific fall and chemical hazards that exist on the roof. The end goal of this survey is to provide critical safety information to OSU

facilities and maintenance employees who may be accessing the rooftops, as well as contracted workers. The onus is on the supervisors and employees to properly adhere to EH&S fall protection requirements that are posted when they access the rooftops on campus.

Documentation will be uploaded to the EHS website under the *Rooftop Protection* dropdown menu, finished signage and photographs of the rooftop. Work orders and other documents related to roofs will be stored in the EHS drive

Signage

At the entrance of each accessible rooftop space on campus, EH&S will post signage that provides important details about the overall safety of the rooftop, including:

- Overall fall hazard designation and regulations based on OR-OSHA regulations:
  - *Low hazard* - Minimal fall hazards exist for infrequent and temporary work – no additional fall protection controls are required.
  - *Medium hazard* - Significant fall hazards exist in areas of the roof and roof is low-slope – work performed within 6 feet of fall hazards requires the use of a travel restraint system or personal fall arrest system. Employers may approve infrequent and temporary work in a designated area between 6 and 15 feet from fall hazards without additional engineering controls or PPE.
  - *High hazard* - Roof slope ratio is above 2:12 (vertical to horizontal) and/or passive fall protection controls are inadequate – travel restraint system or personal fall arrest system required to access roof.
  - *Restricted Access* - No regular roof access permitted for OSU employees.

- Chemical hazard designation:
  - *Unlimited Access* – Roofs open to work with no restrictions related to hazardous chemical discharge.
  - *Limited Access* - Fume hoods in specified locations must be checked to prevent use of hazardous chemicals during roof access.
  - *Restricted Access* – Pre-planned and coordinated discontinuation of fume hood use required for roof access.
- Specific fall protection and fall hazards that are present on the rooftop space.
- Required PPE / engineering controls for access.

Roof Slopes

Roof slopes are typically measured as a ratio between the vertical height and horizontal width of the roof. Oregon regulations define low-slope roofs as roofs with a vertical to horizontal ratio less than 2:12, making any roof with a vertical to horizontal ratio greater than 2:12 a high-sloped roof.

Any roof with a walking-working surface that is classified as high slope *must* be protected by either parapet, walls, guardrail systems, safety net systems, travel restrain systems, or personal fall arrest systems for work to be performed on them.

Skylights / Holes

Skylights are a common feature on roofs around OSU's campus. Since skylights are usually made of glass or plastic, they are not meant to withstand large impacts beyond 200 lbs of force – falling onto a skylight may falling through the skylight. Skylights (like any hole on a walking-working surface) should be protected by covers, guardrail systems, travel restraint systems, or personal fall arrest systems. Furthermore, if passive engineering

controls such as covers and guardrails are not yet present, they should be treated as unprotected edges, warranting other controls until engineering controls are implemented.

Guardrails, Parapets, and Walls

Guardrails, parapets, and walls are all preferred controls for roofs, as they often remove the requirement of PPE for workers. The OSHA required height for sufficient guardrails and parapets is 42 ± 3 inches above the walking-working surface. Furthermore, there must be mid-rails, screens, mesh, or protective posts/railings between the walking-working surface and the top rail of the guardrail ***or*** be fastened atop a parapet that is at least 21 inches high. Other guardrail dimensions and requirements for the state of Oregon can be found in 29 CFR 1910.29. Walls are the best solution, as they are tall enough to fully prevent any routine work activities on the roof.

Program Requirements – Walking/Working Surfaces and Elevated Work

Housekeeping

All surfaces that are accessed by OSU employees or contractors – passageways, storage areas, service rooms, and walking-working surfaces – must be kept in a clean, orderly, structurally sound, and sanitary condition. This entails:

- Keeping surfaces dry when feasible and otherwise must be drained or have dry standing platforms.

- Freeing spaces of any sharp or protruding objects, loose footing, corrosion, spills, ice, leaks, equipment, or stored items.
- Walking-working surfaces must be able to support the maximum intended load for that surface.
- Maintaining a safe means of access and egress to and from walking-working surfaces.

Additionally, walking-working surfaces must be regularly inspected and maintained. Any hazards should be corrected prior to use, and signage / guards must be used if access is to occur prior to the hazard being fixed. A qualified person must perform or supervise the corrections or repairs that occur.

Slip Resistance

Slip resistant material can be applied on outdoor metal or wooden staircases, ramps, ladders, or walkways that become slippery due to precipitation. Installation of this protection is often contracted out and should be prioritized for highly trafficked or particularly high hazards surfaces on roofs, such as slopes or steps. Guardrails on the sides of walkways, even ones that are not elevated, assist in preventing slip and fall incidents on roofs.

Ladders (General)

Rungs

Ladder rungs, steps, or cleats are required to be:

- Parallel, level, and uniformly spaced when ladder is set up to use.
- Spaced between 10 and 14 inches apart as measured between the centerlines of the rung, step, or cleat.

    - Elevator shaft ladder rungs or steps must measure between 6 and 16.5 inches, as measured along ladder side rails.
    - Fixed ladder rungs or steps on telecom towers must not be spaced more than 18 inches apart, as measured between the centerline of the run, step, or cleat.
- Spaces between 8 and 12 inches apart for step stools.
- Designed with a clear width between 11.5 inches for portable ladders and 16 inches for fixed ladders (see 29 CFR 1910.23(e).4 for exceptions).

Structure

The structure of the ladder is required to be:

- Free of any coating that may obscure structural defects.
- Made with corrosion-resistant material or protected from corrosion / rot.
- Free of laceration, puncture, or burn hazards.
- Inspected prior to use and after use, or if there are any existing concerns about ladder structural integrity.

Use

To properly use a ladder:

- Inspect ladders prior to each use, both fixed and portable, for defects, instabilities, etc.
    - Label any ladder with defects as "Dangerous: Do Not Use" and remove from service.
- Always face the ladder when climbing up or down it.
- Use at least one hand to grasp the ladder.
    - 3 points of contact always.
- Do not carry any loads that impede balance or dexterity.

Storage

To properly store a ladder:

- Lay the ladder on its side, out of the way of walking paths, or
- Hang and secure ladder on designated ladder holder, or
- If stored upright, use rope, chains, or straps to secure ladder to ensure it does not tip over while being stored.

Mobile Ladder Stand Platforms

For work involving this specific type of ladder, visit 29 CFR 1910.23(e)

Ladders (Fixed)

Areas that demand regular access shoulder be equipped with a fixed ladder. These are especially useful at greater heights and on the outdoor portions of buildings.

Each supervisor in charge of the fixed ladder must ensure:

- Ladders can support the maximum intended load.
- The minimum perpendicular distance from the centerline of the steps or rungs, or grab bars, or both, to the nearest permanent object behind the ladder is 7 inches except for elevator pit ladders, which have a minimum perpendicular distance of 4.5 inches
- Grab bars do not protrude on the climbing side beyond the rungs of the ladder that they serve.
- The side rails of through or side-step ladders extend at least 42 inches above the top of the access level or landing platform served by the ladder. For parapet ladders, the access level is:
    - The roof, if the parapet is cut to permit passage through the parapet.
    - The top of the parapet, if the parapet is continuous.
- For through ladders, the steps or rungs are omitted from the extensions, and the side rails are flared to provide not less

than 24 inches and not more than 30 inches of clearance. When a ladder safety system is provided, the maximum clearance between side rails of the extension must not exceed 36 inches.

- For side-step ladders, the side rails, rungs, and steps must be continuous in the extension.
- Grab bars extend 42 inches above the access level or landing platforms served by the ladder.
- The minimum size (cross-section) of grab bars is the same size as the rungs of the ladder.
- When a fixed ladder terminates at a hatch, the hatch cover must:
    - Open with sufficient clearance to provide easy access to or from the ladder.
    - Opens at least 70 degrees from horizontal if the hatch is counterbalanced.
- Individual-rung ladders are constructed to prevent the employee's feet from sliding off the ends of the rungs.
- Fixed ladders having a pitch greater than 90 degrees from the horizontal are not used.
- The step-across distance from the centerline of the rungs or steps is:
    - For through ladders, not less than 7 inches and not more than 12 inches to the nearest edge of the structure, building, or equipment accessed from the ladders.
    - For side-step ladders, not less than 15 inches and not more than 20 inches to the access points of the platform edge.
- Fixed ladders that do not have cages or wells have:
    - A clear width of at least 15 inches on each side of the ladder centerline to the nearest permanent object.

- A minimum perpendicular distance of 30 inches from the centerline of the steps or rungs to the nearest object on the climbing side. When unavoidable obstructions are encountered, the minimum clearance at the obstruction may be reduced to 24 inches provided deflector plates are installed.

Ladders (Portable)

Due to the lightweight and versatile nature of portable ladders, they are often preferred for routing maintenance in areas. Regardless, they have specific inherent risks and therefore demand specific controls.

Each supervisor in charge of the portable ladder must ensure:

- Rungs and steps of portable metal ladders are corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize slip hazards.
- Each stepladder or combination ladder used in a stepladder mode is equipped with a metal spreader or locking device that securely holds the front and back sections in an open position while the ladder is in use.
- Ladders are not loaded beyond the maximum intended load listed on the product label.
- The maximum intended load, as defined in 29 CFR 1910.21(b), includes the total load (weight and force) of the employee and all tools, equipment, and materials being carried.
- Ladders are used only on stable and level surfaces unless they are secured or stabilized.
- No ladder is moved, shifted, or extended while an employee is on it.

- Ladders placed in locations such as passageways, doorways, or driveways where they can be displaced by other activities or traffic:
    - May secure to prevent accidental displacement.
    - May be guarded by a temporary barricade, such as a row of traffic cones or caution tape, to keep the activities or traffic away from the ladder.
- The cap (if equipped) and top step ladder step are not used as steps.
- Portable ladders used on slippery surfaces are secured and stabilized.
- The top of a non-self-supporting ladder is placed so that both side rails are supported, unless the ladder is equipped with a single support attachment.
- Portable ladders used to gain access to an upper landing surface have side rails that extend at least 3 feet (0.9 m) above the upper landing surface.
- Ladders and ladder sections are not tied or fastened together to provide added length unless they are specifically designed for such use
- Ladders are not placed on boxes, barrels, or other unstable bases to obtain additional height.
- Ladders are not set next to guardrails or any area that introduces additional fall hazard.

Scaffolds

The use of scaffolds on campus should only be set up by licensed contractors who have been certified to construct scaffolds. Scaffold use at OSU must be performed in accordance to 29 CFR Part 1926, Subpart L.

Stairways

All staircases have building requirements that must be satisfied prior to the use of the staircase. OSU must ensure:

- Handrails, stair rail systems, and guardrail systems are provided.
- Vertical clearance above any stair tread to any overhead obstruction is at least 6 feet, 8 inches, as measured from the leading edge of the tread.
- Stairs have uniform riser heights and tread depths between landings.
- Stairway landings and platforms are at least the width of the stairs and at least 30 inches in depth, as measured in the direction of travel.
- When a door or a gate opens directly on a stairway, a platform is provided, and the swing of the door or gate does not reduce the platform's effective usable depth to:
    - Less than 20 inches for platforms installed before January 17, 2017.
    - Less than 22 inches for platforms installed on or after January 17, 2017.
- Each stair can support at least five times the normal anticipated live load, but never less than a concentrated load of 1,000 pounds (454 kg) applied at any point.
- Standard stairs are used to provide access from one walking-working surface to another when operations necessitate regular and routine travel between levels, including access to operating platforms for equipment.
    - Winding stairways may be used on tanks and similar round structures when the diameter of the tank or structure is at least 5 feet.

- Spiral, ship, or alternating tread-type stairs are used only when it can be demonstrated that it is not feasible to provide standard stairs.
- When spiral, ship, or alternating tread-type stairs are used, they are installed, used, and maintained in accordance with manufacturer's instructions.

Stairways are further categorized as follows:

- *Standard stairs* - a fixed or permanently installed stairway.
- *Spiral stairs* - a series of treads attached to a vertical pole in a winding fashion, usually within a cylindrical space.
- *Ship stairs* - a stairway that is equipped with treads, stair rails, and open risers, and has a slope that is between 50 and 70 degrees from horizontal.
- *Alternating tread stairs* - a series of treads that usually are attached to a center support in an alternating manner such that an employee typically does not have both feet on the same level while using the stairway.

Regulations for stairway construction and modification should be consulted during the initial planning phases for the implementation of the stairs. These regulations can be found in 29 CFR 1910.25.

Mobile Elevating Work Platforms

OSU employees may utilize mobile elevating work platforms (MEWPs), such as aerial lifts (articulating or telescoping boom lifts), scissors lifts, and manlifts, to perform work at elevated positions. Examples of job tasks that use these devices include tree maintenance, theater lighting and stage effects, and electrical repairs. Each of these tasks pose hazards in addition to falls, such as falling objects, tip overs, ejections, electrocution, maintenance issues, and contact with other objects.

All personnel utilizing this equipment must be authorized and trained via the SciShield training on mobile elevating work platforms. This training includes critical information on operating requirements, employer and employee responsibilities, types of MEWPs, inspections, hazard assessments, and safe operation rules. All operators and users must also receive equipment-specific training from a qualified person.

Additional information on specific MEWP capabilities, limitations, and requirements, and safe practices can be found using the following links:

- Scaffolding eTool – Scissor Lifts
- Scaffolding eTool – Aerial Lifts

Personal Fall Protection Systems

Overview

Using the hierarchy of controls approach, two critical controls that for fall protection are fall restraint and fall arrest systems. The two are defined below:

- *Personal Fall Arrest Systems (PFAS)* - Systems used to arrest an employee in a fall from a walking-working surface. It consists of a body harness, anchorage, and connector. The means of connection may include a lanyard, deceleration device, lifeline, or a suitable combination of these.
- *Personal Fall Restraint Systems (PFRS)* - A combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of an employee going over

the edge of a walking-working surface. PFRS are also called *travel restraint systems.*

In addition to the general requirements listed below, Oregon State University is bound to all regulations regarding the integrity, installation, and use of PFAS and PFRS set by OSHA. The full rule is detailed in 29 CFR 1910.140.

General Requirements for Personal Fall Protection Systems

All personal fall protection systems must follow a set of general requirements, regardless of the system:

- Supervisors may only purchase personal fall protection equipment that has been certified and rated by a nationally recognized safety organization (ANSI, NFPA, CE, or equivalent).
    - Supervisors should consult a qualified person or OSU EH&S with any questions regarding equipment purchase and specifications
- Equipment must only be used by competent personnel who have been trained for the specific fall protection systems they are using and the job they will be performing.
- Horizontal lifelines and anchorages must only be designed, installed, and used under the supervision of a qualified person, and be part of a complete personal fall protection system that maintains a safety factor of at least two.
- Competent or qualified personnel must inspect each knot in a lanyard or vertical lifeline to ensure that it meets the OSHA requirements before any employee uses the lanyard or lifeline.
- When vertical lifelines are used, each employee must be attached to a separate lifeline.

- Snaphooks and carabiners must not be connected to any of the following unless they are designed for such connections:
    - Directly to webbing, rope, or wire rope
    - To each other
    - To a D-ring to which another snaphook, carabiner, or connector is attached
    - To a horizontal lifeline
    - To any object that is incompatibly shaped or dimensioned in relation to the snaphook or carabiner such that unintentional disengagement could occur when the connected object depresses the snaphook or carabiner gate, allowing the components to separate.
- Anchorages used to attach to personal fall protection equipment must be independent of any anchorage used to suspend employees or platforms on which employees work.
- Anchorages used to attach to personal fall protection equipment on mobile work platforms on powered industrial trucks must be attached to an overhead member of the platform, at a point located above and near the center of the platform.
- Personal fall protection systems and their components must be used exclusively for employee fall protection and not for any other purpose, such as hoisting equipment or materials.
- A personal fall protection system or its components subjected to impact loading must be removed from service immediately and not used again until a competent person inspects the system or components and determines that it is not damaged and safe for use for employee personal fall protection.
- Personal fall protection systems must be inspected before initial use during each work shift for mildew, wear, damage, and other deterioration, and defective components must be removed from service.

- Ropes, belts, lanyards, and harnesses used for personal fall protection must be compatible with all connectors used.
- Ropes, belts, lanyards, lifelines, and harnesses used for personal fall protection must be protected from being cut, abraded, melted, or otherwise damaged.
- The supervisor must provide for prompt rescue of each employee in the event of a fall.
- Personal fall protection systems must be worn with the attachment point of the body harness located in the center of the employee's back near shoulder level. The attachment point may be in the pre-sternal position if the free fall distance is limited to 2 feet (0.6 m) or less.

Training

Prior to any employee’s exposure to a fall hazard, the employer must provide fall protection training. This applies to any employee who uses personal fall protection systems or is exposed to any fall hazards during the scope of their work.

Training must be carried out by a qualified person.

This training must include:

- The nature of the fall hazards in the work area and how to recognize them.
- The procedures to be followed to minimize those hazards.
- The correct procedures for installing, inspecting, operating, maintaining, and disassembling the personal fall protection systems that the employee uses.
- The correct use of personal fall protection systems and equipment including, but not limited to, proper hook-up, anchoring, and tie-off techniques, and methods of

equipment inspection and storage, as specified by the manufacturer.
- Equipment selection and design requirements.
- Proper care, inspection, storage, and use of equipment.
- Equipment specific protocols as specified in 29 CFR 1910.30.b.

The training requirement can be satisfied through the following training sequence: SciShield fall protection training, in-person authorized/competent person training, and equipment-specific in-person training. The training must be understandable and accessible for the employees being trained.

Additional training for ladder safety and mobile elevated work platforms, such as aerial and scissor lifts, can be found in the SciShield training catalogue.

Employers must retrain employees when there is reason to believe the employee does not have a proper understanding of the fall protection training requirements for any reason.