

University of Portland



FALL PROTECTION PROGRAM **(General Industry)**



UNIVERSITY OF PORTLAND

PORTLAND, OREGON



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FALL PROTECTION PROGRAM

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FALL PROTECTION PROGRAM

1.0 INTRODUCTION AND PURPOSE

The University of Portland *Fall Protection Program* exists to prevent fall related injuries. It is adapted and implemented on an area by area basis.

The purpose of University of Portland *Fall Protection Program* is:

1. To supplement University of Portland standard safety policies and procedures by providing safety standards specifically designed to cover fall protection on the job, and;
2. To ensure that each employee is trained and made aware of the safety provisions which are to be implemented by this program prior to the start of work.

Key highlights of the University of Portland Fall Protection Program:

- A University of Portland Supervisor will provide employees training in recognizing risk of harm from fall hazards and in the proper use of each piece of their fall protection equipment. "Fall protection" is any equipment, device, or system that prevents a worker from falling from an elevation or that prevents the worker from coming into contact with a lower level if a fall occurs.
- Training includes the required basics of fall protection program issued by OSHA and all University of Portland's internal fall protection rules and procedures.
- Employees share full responsibility for ensuring their safety when working at hazardous heights.
- Each employee's fall arrest system must be inspected and maintained after each and every use to make sure there are no cuts or frayed areas in this equipment. Maintenance instructions are included with your equipment. If a fall occurs, all components of the fall arrest system must be removed from service.
- If a task requires the use of a machine to lift an employee:
 - The employee must use fall arrest equipment: safety harness, lifeline; lanyard and rope grab; or a guardrail system adequate to prevent fall exposure.
 - At no time will an employee operate a manlift or aerial lift of any type without adequate fall protection.

Always remember that if as an employee, if you are uncertain of what type of fall protection is required for a particular situation, ask your supervisor. If you think that after following the established procedures there may still be a hazard, you **must** notify a supervisor of your concern.

➔ ALL SAFETY CONCERNS MUST BE ADDRESSED BEFORE BEGINNING OR CONTINUING WORK!

2.0 RESPONSIBILITY

2.1 Employee Responsibility

Each employee must understand:

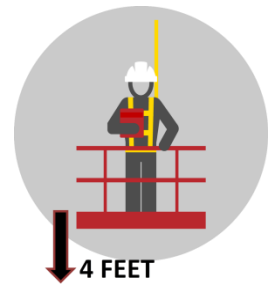
- The Fall Protection Program safety policies and procedures, and their purpose
- What his/her individual role in complying with the safety policies and procedures
- The physical, emotional, and financial costs of injuries

Employees must be trained in fall hazards *before* beginning work at heights four feet or higher:

- ✓ **Recognizing fall hazards**
- ✓ **How to be protected from getting injured**

University of Portland employees must:

- Complete all required safety training
- Follow safe work procedures
- Follow the instructions of their supervisor
- Correct and/or report safety violations and unsafe conditions
- Know location and operation of safety and emergency equipment



The goal of University of Portland is to promote a more personal approach to safety through planning, training, understanding, and cooperative effort rather than only through strict enforcement. However, disregard for safety procedures will not be tolerated and employees who do not comply may be disciplined up to and including termination of employment.

2.2 Foremen, Supervisors, and Managers Responsibilities

Foremen, supervisors, and managers must:

- Schedule specialized training and reinforce training
- Educate and train employees about the hazards and safe work practices of their jobs
- Ensure that all defective/unsafe equipment is removed from service
- Address safety issues promptly
- Report and investigate accidents
- Evaluate employee participation and performance in the safety program

2.3 Competent Person (Supervisor)

The "Competent Person" is the worksite **Supervisor ("competent supervisor")**.

It is the responsibility of the competent Supervisor to implement this safety program. The competent Supervisor:

- Must be capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees.
- Is responsible for continual visual safety checks of the work operations and for enforcing safety policies and procedures.

Any substantial changes to this safety program's standards must be approved by the competent Supervisor and the senior management of University of Portland.

3.0 WHY DOES OSHA HAVE FALL PROTECTION STANDARDS?



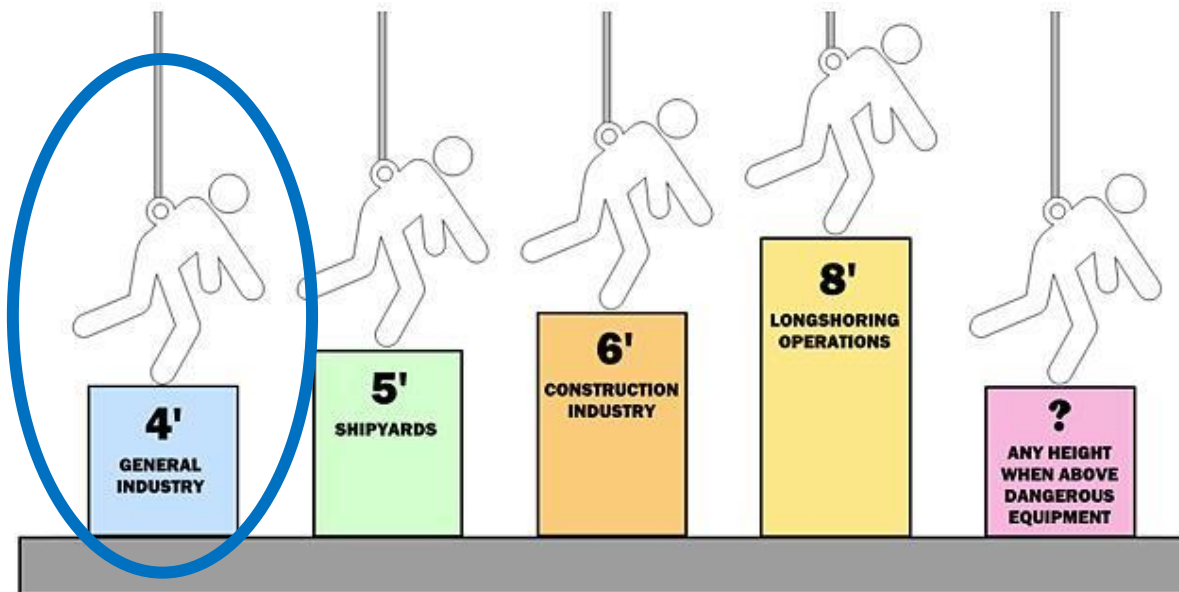
Federal OSHA recognizes that there are many walking-working surface hazards that can cause slips, trips, and falls. These hazards include damaged or worn components on personal fall protection systems and rope descent systems; portable ladders used for purposes for which they were not designed; fixed ladders that are not equipped with fall protection; damaged stair treads; snow, ice, water, or grease on walking-working surfaces such as floors; and dockboards that are not properly secured or anchored.

Therefore, the University of Portland *Fall Protection Program* requires the following:

- Identifying, regularly inspecting, and inspecting as needed all walking-working surfaces for fall hazards and deciding how best to reduce or eliminate and/or protect employees.
- Where protection is required, protection systems appropriate for the fall hazard must be used and used properly.
- Safe work procedures are adequately developed, implemented, and enforced.
- Training of workers in the proper selection, use, and maintenance of equipment and systems.
- Adequate supervision of employees working at hazardous heights is conducted.

4.0 WHAT DO THE FALL PROTECTION STANDARDS COVER?

OSHA standards cover all employees except those inspecting, investigating, or assessing workplace conditions prior to the actual start of work or after all work has been completed. These standards identify areas or activities where fall protection is needed. These include, but are not limited to, ramps, runways, and other walkways, excavations, hoist areas, holes, formwork and reinforcing steel, leading edge work, unprotected sides and edges, roofing work, precast concrete erection, wall openings, and other walking/working surfaces, and exposure to falls onto dangerous equipment. OSHA fall protection rules also require ensuring a safe means of access and egress to and from walking-working surfaces and that employees use those safe means.



OSHA has set a uniform hazardous fall threshold height of four feet for companies in General Industry. This means that employers must protect employees from risk of harm including fall hazards and falling objects whenever an affected employee is four feet or more above a lower level. Protection also must be provided for workers who are exposed to the hazard of falling into dangerous equipment.

OSHA gives employers significant flexibility in choosing a fall protection system allowing them to choose from accepted fall protection systems and controls that they believe will work best in a particular situation including using non-conventional fall protection in certain situations such as designated areas on low-slope roofs. Under the standards, employers are to select fall protection measures compatible with the type of work being performed. Fall protection generally can be provided through the use of guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, and/or warning line systems in most situations.

5.0 REQUIREMENTS OF THE FALL PROTECTION PROGRAM

The University of Portland *Fall Protection Program* follows the standards of the federal OSHA regulations. Therefore, University of Portland requires:

- a) Personal protective equipment is provided to workers without charge.
- b) Standards are established for when use of the PPE is required.
- c) Employee training:

Initial and annual training, understandable to employees, be conducted in:

- Identifying fall hazards.
- When fall protection is needed.
- How to use fall protection PPE equipment.
- What are and when to use controlled access zones, safety nets, guardrails, personal fall arrest, warning line, positioning device systems, and safety monitoring systems.



Retraining must be conducted when any the following occur:

- ✓ When workplace changes render previous training obsolete or inadequate.
- ✓ When changes in the types of fall protection systems or equipment workers use renders previous training obsolete or inadequate.
- ✓ When inadequacies in a worker's knowledge or use of fall protection systems or equipment indicate that the worker does not have the requisite understanding or skill necessary to use the equipment or perform the job safely.
- ✓ When workers are no longer proficient in fall protection including:
 - When the worker performs the job or uses equipment in an unsafe manner.
 - When the worker or employer receives an evaluation or information that the worker is not performing the job safely.
 - When the worker is involved in an incident or near-miss.

d) Work Surfaces:

- a. University of Portland Supervisors must regularly inspect each workplace to determine if the walking or working surfaces on which employees are to work have the strength

and structural integrity to safely support workers. Inspections must also be done as conditions dictate.

- b. Employees are not permitted to work on those surfaces until it has been determined that the surfaces are safe and able to support the workers.
- e) Once it is determined that the surface is safe for employees and that there is a fall hazard present, the Supervisor must select one of the options listed for the safe work. For instance, if a worker is exposed to falling four feet or more from an unprotected side or edge, the Supervisor selects a guardrail system, safety net system, or personal fall arrest system to protect the worker.

5.1 Controlled Access Zones

A controlled access zone is a designated and clearly marked work area in which certain types of work may be performed without the use of conventional fall protection systems – guardrail, personal arrest, or safety net – to protect the employees working in the zone. Control lines may consist of ropes, wires, tapes or equivalent materials, and supporting stanchions.

University of Portland employees do not perform the types of work that qualify for using controlled access zones, therefore, they are not trained in using controlled access zones. However, employees are trained to recognize controlled access zones so as not to violate entry rules.

5.2 Excavations

Employees of University of Portland do not engage in excavation work (holes, ditches or tunnels), however, they are sometimes exposed to elevated walk-ways that are provided to permit them to access excavation-adjacent work locations. In these conditions, guardrails are required on the walkway if the fall would be four feet or more to the lower level.

5.3 Fall Protection Systems, Criteria, and Practices

5.3.1 Covers

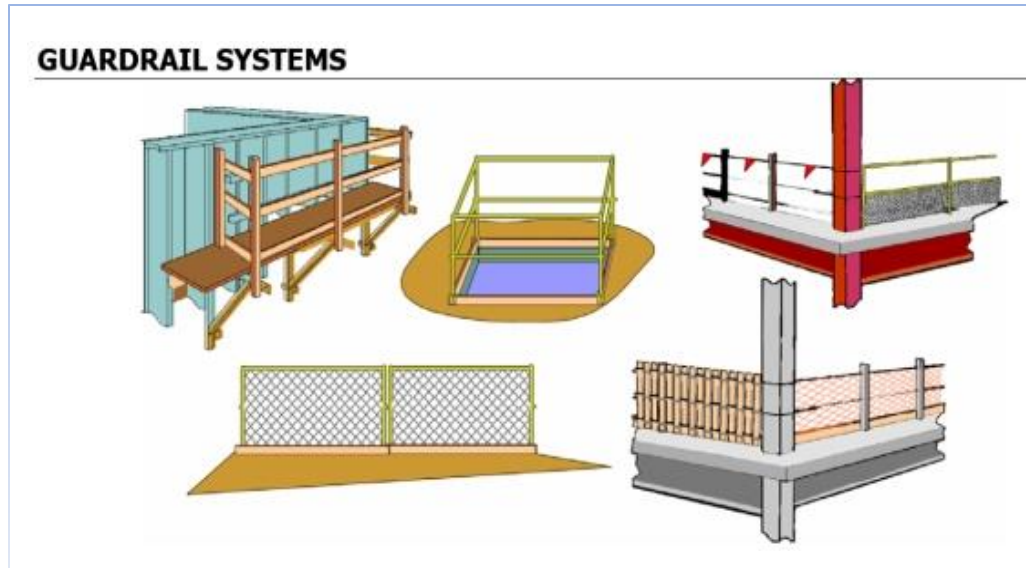
- a) All pedestrian covers must be able to support at least twice the total weight of employees, equipment, and materials that may be carried over them at any one time.
- b) To prevent accidental displacement resulting from air currents, equipment, or workers' activities, all covers must be secured.
- c) All covers will be color coded or bear the markings "HOLE" or "COVER."



5.3.2 Guardrail Systems

When University of Portland uses guardrail systems to protect workers from falls, the systems must meet the following criteria.

- a) Guardrail systems must have a smooth surface to protect workers from punctures or lacerations and to prevent clothing from snagging.
- b) The ends of top rails and midrails must not overhang terminal posts, except where such an overhang does not constitute a projection hazard.
- c) Toprails and midrails of guardrail systems must be at least one-quarter inch (0.6 centimeters) nominal diameter or thickness to prevent cuts and lacerations.



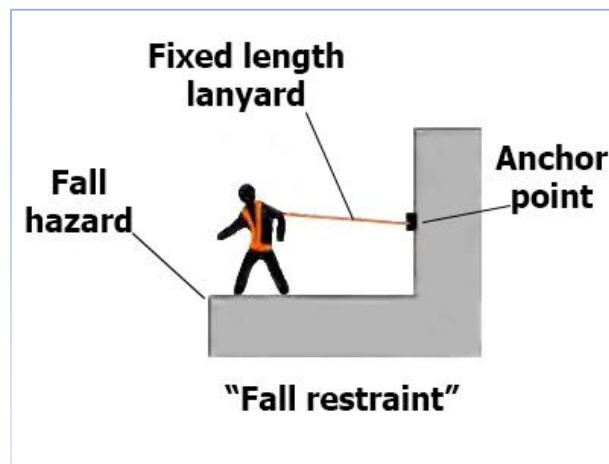
- d) When wire rope is used for top rails, it must be flagged at not more six feet intervals (1.8 meters) with high-visibility material.
- e) Steel and plastic banding cannot be used as top rails or midrails.
- f) Manila, plastic, or synthetic rope used for top rails or midrails must be inspected as frequently as necessary to ensure strength and stability.
- g) The top edge height of top rails or (equivalent) guardrails must be 42 inches (1.1 meters) plus or minus 3 inches (8 centimeters), above the walking/working level.
- h) If workers are using stilts, the top edge height of the top rail, or equivalent member, must be increased an amount equal to the height of the stilts.
- i) Screens, midrails, mesh, intermediate vertical members, or equivalent intermediate structural members must be installed between the top edge of the guardrail system and the walking/working surface when there are no walls or parapet walls at least 21 inches (53 centimeters) high.
- j) When midrails are used, they must be installed at a height midway between the top edge of the guardrail system and the walking/working level.
- k) When screens and mesh are used, they must extend from the top rail to the walking/working level and along the entire opening between top rail supports.
- l) Intermediate members, such as balusters, when used between posts, will not be more than 19 inches (48 centimeters) apart.
- m) Other structural members, such as additional midrails and architectural panels, will be installed so that there are no openings in the guardrail system more than 19 inches (48 centimeters).
- n) Guardrail system strength:
 - Must be capable of withstanding a force of at least 200 lbs. applied within 2 inches of the top edge in any outward or downward direction. When the 200 lbs. test is applied in a down-ward direction, the top edge of the guardrail must not deflect to a height less than 39 inches (1 meter) above the walking/working level.

- Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members will be capable of withstanding a force of at least 150 lbs. applied in any downward or outward direction at any point along the midrail or other member.
- o) When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section must be placed across the access opening between guardrail sections when hoisting operations are not taking place.
- p) At holes, guardrail systems must be set up on all unprotected sides or edges. When holes are used for the passage of materials, the hole will have not more than two sides with removable guardrail sections. When the hole is not in use, it must be covered or provided with guardrails along all unprotected sides or edges.
- q) If guardrail systems are used around holes that are used as access points (such as ladder ways), gates must be used or the point of access must be offset to prevent accidental walking into the hole.
- r) If guardrails are used at unprotected sides or edges of ramps and runways, they must be erected on each unprotected side or edge.

5.3.3 Travel Restraint Systems

A travel restraint system is a combination of an anchorage, an anchorage connector, lanyard (or other means of connection), and body support that eliminates the possibility of a worker going over the edge of a walking working surface.

Unlike personal fall arrest systems, travel restraint systems do not support a worker's weight. Rather, the purpose of these systems is to limit a worker's travel in order to prevent workers from reaching the fall hazard, such as an unprotected side or edge.



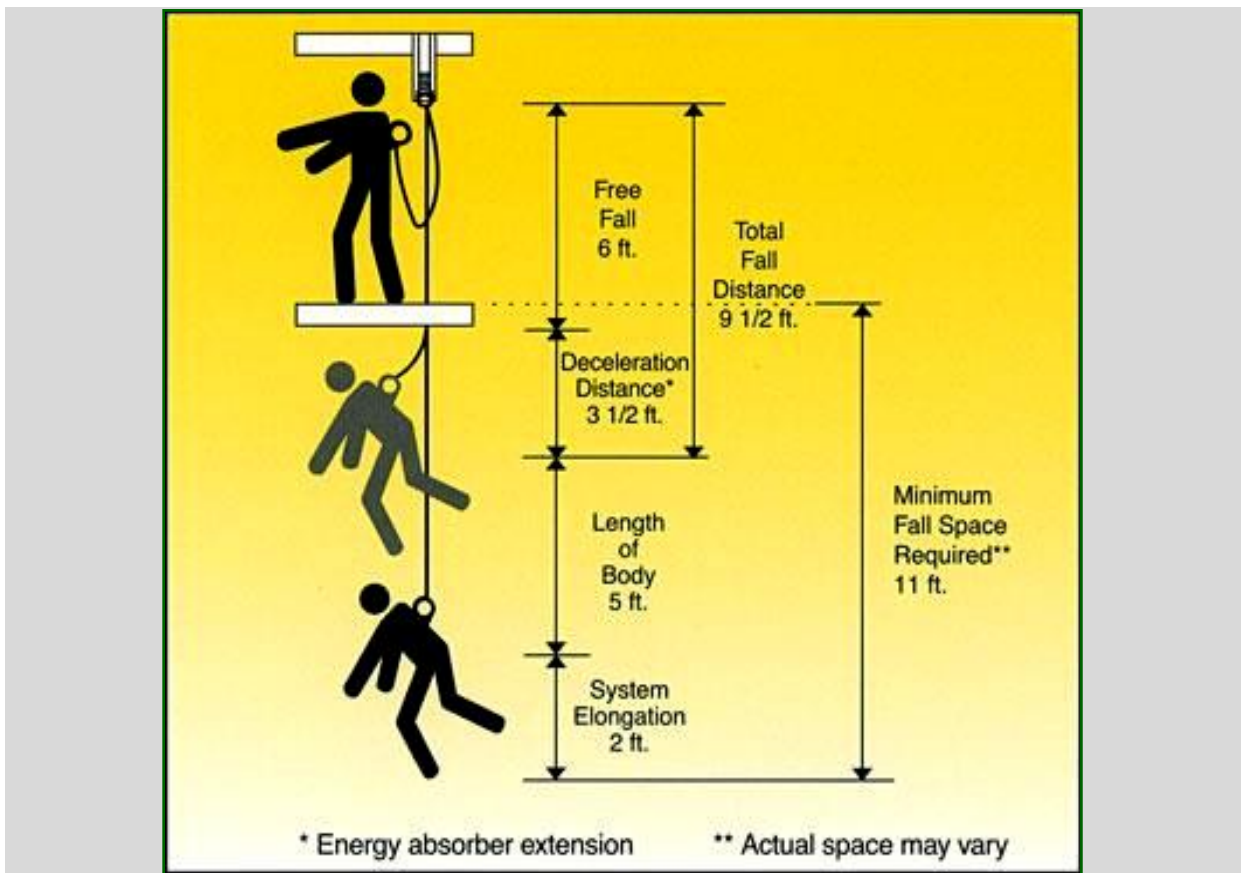
5.3.4 Personal Fall Arrest Systems and System Components

A personal fall arrest system consists of (1) an anchorage, (2) connectors, and (3) a body belt or body harness that may include a deceleration device, lifeline, or suitable combinations. When a personal fall arrest system is used for fall protection, it must do the following:

- a) Limit maximum arresting force on an employee to 900 pounds when used with a body belt.



- b) Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.
- c) Be rigged so that an employee can neither free fall more than six feet nor contact any lower level.
- d) Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters).
- e) Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of six feet or the free fall distance permitted by the system, whichever is less.
- f) **The use of a body belt for fall arrest is prohibited;** however, the use of a body belt in a positioning device system is acceptable.

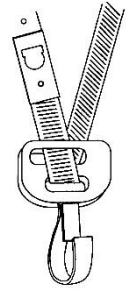


Personal fall arrest systems:

- 1) Must be inspected prior to each use for wear damage, and other deterioration.
- 2) Defective components must be removed from service.
- 3) D-rings and snaphooks must have a minimum tensile strength of 5,000 pounds.
- 4) D-rings and snaphooks will be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or suffering permanent deformation. (See more on equipment inspection in section 5.4 of this University of Portland Fall Protection Program.)

Snaphooks:

- 1) Must be sized to be compatible with the member to which they will be connected, or will be of a locking configuration. Unless the snaphook is a locking type and designed for the following connections, they will not be engaged:
 - a. Directly to webbing, rope, or wire rope
 - b. To each other
 - c. To a D-ring to which another snaphook or other connector is attached
 - d. To a horizontal lifeline
 - e. To any object incompatible in shape or dimension relative to the snaphook, thereby causing the connected object to depress the snaphook keeper and release unintentionally.
- 2) OSHA considers a hook to be compatible when the diameter of the D-ring to which the snaphook is attached is greater than the inside length of the snaphook when measured from the bottom (hinged end) of the snaphook keeper to the inside curve of the top of the snaphook. Thus, no matter how the D-ring is positioned or moved (rolls) with the snaphook attached, the D-ring cannot touch the outside of the keeper, thus depressing it open. **The use of non-locking snaphooks is prohibited.**
- 3) On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifelines, the devices used to connect to a horizontal lifeline will be capable of locking in *both* directions on the lifeline.
- 4) Horizontal lifelines must be designed, installed, and used under the supervision of a Supervisor, as part of a complete personal fall arrest system that maintains a safety factor of at least two.
- 5) Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses will be made of synthetic fibers and must be protected against being cut or abraded.
- 6) Anchorages – both temporary and permanent – must be designed, installed, certified and used under the supervision of a **Qualified Person**, as part of a complete personal fall arrest system that maintains a safety factor of at least two (i.e., capable of supporting at least twice the weight expected to be imposed upon it). Anchorages used to attach personal fall arrest systems must be independent of any anchorage being used to support or suspend platforms and must be capable of supporting at least 5,000 pounds per person attached.
- 7) Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 pounds.
- 8) Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet (0.61 meters) or less must be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
- 9) Self-retracting lifelines and lanyards that do not limit free fall distance to 2 feet (0.61 meters) or less, ripstitch lanyards, and tearing and deforming lanyards must be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.



5.3.5 Positioning Device Systems

These body belt or body harness systems are to be set up so that a worker can free fall no farther than 2 feet (0.6 meters). They will be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater. Requirements for snaphooks, D-rings, and other connectors used with positioning device systems must meet the same criteria as those for personal fall arrest systems.

5.3.6 Leading Edges and Safety Monitoring Systems

When employees are performing non-construction-type roofing work within six feet of a leading edge fall exposure of four feet or more on a low-slope roof, the roof width is less than 50 feet, and no other alternative fall protection has been implemented, University of Portland may implement a safety monitoring system. Roofing work means hoisting, storing, applying, and removing roofing materials and equipment. The Supervisor will appoint a competent person to monitor the safety of workers, and will ensure that the safety monitor:

- Is competent in the recognition of fall hazards
- Is capable of warning workers of fall hazard dangers and in detecting unsafe work practices
- Is operating on the same walking/working surfaces of the workers and can see them
- Is close enough to work operations to communicate orally with workers and has no other duties to distract him/her from the monitoring function

Mechanical equipment will not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in elevated operations on low-sloped surfaces.

No worker, other than one engaged in elevated operations on low-sloped surfaces or one covered by a fall protection program, will be allowed in an area where an employee is being protected by a safety monitoring system. All workers in a controlled access zone are instructed to promptly comply with fall hazard warnings issued by safety monitors.

5.3.7 Safety Net Systems

Safety nets systems are not permitted to be used by University of Portland employees.

5.3.8 Warning Line Systems

Warning line systems consist of ropes, wires or chains, and supporting stanchions and are set up as follows:

- Flagged at not more than 6-foot (1.8 meters) intervals with high-visibility material.
- Rigged and supported so that the lowest point including sag is no less than 34 inches (0.9 meters) from the walking/working surface and its highest point is no more than 39 inches (1 meter) from the walking/working surface.
- Stanchions, after being rigged with warning lines, will be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches (0.8 meters) above the walking/working surface, perpendicular to the warning line and in the direction of the floor, elevated surface, or platform edge.
- The rope, wire, or chain will have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, must support without breaking the load applied to the stanchions as prescribed above.

- Line will be attached to each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in the adjacent section before the stanchion tips over.

→ → IMPORTANT INFORMATION ON EDGE CONTROL WARNING LINES:

Warning lines must be erected around ALL sides of an elevated stationary work area that are not less than 10 feet (3.05m) from the edge under normal conditions when no equipment is being used. When mechanical equipment is being used, the warning line will be erected not less than six feet from the edge parallel to the direction of mechanical equipment operation, and not less than 10 feet (3.05m) from the edge perpendicular to the direction of mechanical equipment operation. When mobile mechanical equipment is used to perform other work, a warning line must be erected at least 15 feet from the roof edge.

5.4 Personal Fall Arrest Equipment Inspection and Maintenance Procedures

<p>5.4.1 Belt and Harness Inspection</p>	<p>Belts and harnesses are made to perform to standards set by OSHA and the American National Standard Institute (ANSI). The standards provide for strength, durability, and dependability while satisfying a wide range of job requirements.</p> <p>To maintain service life – approximately five years of service – all harnesses should be inspected frequently. Visual inspection before each use is just common sense.</p> <p>Fall protection equipment must be inspected daily and replaced immediately if any of the defective conditions explained below are found.</p>
<p>5.4.2 Inspection Procedures</p>	<p>Beginning at one end, holding the body side of the harness toward you, grasp one area of the harness with your hands six to eight inches apart. Bend the strap in an inverted “U”. This makes damaged fibers or cuts easy to see.</p> <p>Follow this procedure the entire length of the belt or harness. Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage.</p> <p>Special attention should be given to the attachment of buckles and D-rings to webbing. Note any unusual wear, frayed, cut, or burned stitches.</p> <p>Inspect for frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface.</p> <p>Rivets must be tight and unmovable with fingers. Body-side rivet base and outside rivet burr should be flat against the material. Bent rivets fail under stress.</p> <p>Especially note condition of D-ring rivets and D-ring metal wear pads (if any). Discolored, pitted, or cracked rivets indicate chemical corrosion.</p> <p>The tongue or billet of bolts receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted, or broken grommets. Harnesses using punched holes without grommets should be checked for torn or elongated holes causing slippage of the tongue buckle.</p>
<p>5.4.3 Tongue Buckle</p>	<p>Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn freely on frame. Check for distortion or sharp edges.</p>
<p>5.4.4 Friction Buckle</p>	<p>Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points of the center bar.</p>

<p>5.4.5 Sliding Bar Buckle</p>	<p>Inspect buckle frame and sliding bar for cracks, distortion, or sharp edges. The sliding bar should move freely. Knurled edge will slip if worn smooth. Pay special attention to corners and ends of sliding bar.</p> <p>Closely inspect the forged steel D-ring for cracks or other defects. Inspect the assembly of the D-ring to the body pad or D-saddle. If the D-ring can be moved vertically independent of the body pad or D-saddle, the harness should be replaced.</p>
<p>5.4.6 Waist Strap</p>	<p>Inspect assembly of buckle to waist strap. Check threads closely and tongue buckle holes for excessive elongation. Check waist strap for cuts or other deteriorating conditions. Never cut or punch additional holes in waist strap or strength members. A close inspection should be given to tool loops and belt sewing because broken or stretched loops can drop tools. Check bag rings and knife snaps to see that they are secure and working properly and check tool loop rivets. Make sure tools are not adversely affecting the waist strap. Check for thread separation or rotting both inside and outside of body pad belt.</p> <p>Inch-by-inch visual inspection for fiber laceration or stitch damage is done by flexing the strap in an inverted “U.” Note cuts, frayed areas, or corrosive damage.</p> <p>Straps with friction buckles should be checked for slippage and sharp buckle edges. Those equipped with tongue buckle holes should be examined for excessive wear or elongation of the hole.</p> <p>Snaphooks should be checked for distortion of hook or frame attachment to belt. Cracks, corrosion or pitted surfaces indicate an unsafe condition. The keeper (latch) should seat into snap nose without binding or obstruction and the keeper spring should have sufficient force to close the keeper firmly.</p> <p>All rivets should be tight, free of wear or distortion, and without cracks, sharp edges or corrosion.</p>
<p>5.4.7 Lanyard and Hardware Inspection</p>	<p><u>Note:</u> Only shock absorbing lanyard devices are allowed on University of Portland areas.</p> <p>When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures also detailed below (e.g., Snaps, D-ring and Thimbles).</p>
<p>5.4.8 Steel</p>	<p>While rotating the steel lanyard watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyard.</p>
<p>5.4.9 Webbing</p>	<p>While bending webbing over a pile or mandrel, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Swelling, discoloration, cracks, and charring are obvious signs of chemical or heat damage. Closely observe for any breaks in the stitching.</p>
<p>5.4.10 Rope</p>	<p>Rotation of a rope lanyard while inspecting from end to end will reveal any worn, broken, or cut fibers. Areas weakened by extreme loads will appear as noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period. Strands are to be separated and inspected since the rope may wear on the inside if grit or moisture becomes embedded.</p>
<p>5.4.11 Snaps</p>	<p>Inspect closely for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should seal into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper.</p>

5.4.12 D-Rings	Check D-Rings and D-Ring metal wear pad (if any) for distortion, cracks, breaks, and rough or sharp edges. The D-Ring bar should be at a 90 degree angle with the long axis of the belt and should pivot freely.
5.4.13 Thimbles	The thimble must be unmovable in the eyes of the splice, and the splice should have no loose or cut strands. The edges must be free of sharp edges, distortion, or cracks.
5.4.14 Cleaning	<p>Basic care of all fall protection equipment will prolong the durable life of the unit and contribute towards its performance. Proper storage and maintenance after use is as important as cleansing the equipment of dirt, corrosives, or contaminants. Storage areas should be clean, dry and free of exposure to fumes or corrosive elements.</p> <p>Wipe off all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather with a vigorous back and forth motion.</p> <p>Wipe the belt dry with a clean cloth. Hang freely to dry but away from excessive heat.</p> <p>Bolts and other equipment should dry thoroughly without close exposure to heat, steam, or long periods of sunlight.</p> <p>Mildly dirty cotton may be cleaned normally. For heavy dirt or grease, soak belts in a solution of one tablespoon of grease cutter to one gallon of water. DO NOT USE A STRONGER SOLUTION!!! After soaking, rinse again, and then hang to dry.</p>

5.5 Formwork and Reinforcing Steel

University of Portland employees are not exposed to or permitted to engage in elevated formwork or steel work.

5.6 Hoist Areas

Each employee in a hoist area must be protected from falling four feet or more by guardrail systems, personal fall arrest systems or other effective fall protection system. If guardrail systems (or chain gate or guardrail) or portions of it must be removed for hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, then that employee *must* be protected by a personal fall arrest system.

5.7 Holes

Personal fall arrest systems, covers, or guardrail systems must be erected around holes (including skylights) that are more than four feet above lower levels.

5.8 Leading Edges

Each employee who is within six feet of a leading edge that is four feet or more above lower levels must be protected by guardrail systems, safety net systems, or personal fall arrest systems.

5.9 Protection from Falling Objects

When guardrail systems are used to prevent materials from falling from one level to another, any openings must be small enough to prevent passage of potential falling objects. No materials or equipment may be stored within 4 feet (1.2 meters) of working edges.

During elevated work, materials and equipment may not be stored within six feet of an edge unless guard-rails are erected at the edge, and materials piled, grouped, or stacked near an edge must be stable and self-supporting.

5.9.1 Canopies

When used as protection from falling objects, canopies must be strong enough to prevent collapse and to prevent penetration by any objects that may fall onto them.

5.9.2 Toeboards

When toeboards are used as protection from falling objects, they must be erected along the edges of the overhead walking or working surface for a distance sufficient to protect persons working below.

Toeboards must be capable of withstanding a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard. Toeboards will be a minimum of 3.5 inches (9 centimeters) tall from their top edge to the level of the walking/working surface, have no more than 0.25 inches (0.6 centimeters) clearance above the walking/working surface, and be solid or have openings no larger than 1 inch (2.5 centimeters) in size.



Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening must be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or midrail, sufficient to protect employees below.

5.10 Training

University of Portland provides training programs for its employees who are or might be exposed to fall hazards. Hazard recognition and protection procedures are included in the training.

Employee training covers the following areas:

1. The kind of fall hazards in the work area;
2. The correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems;
3. The use and operation of controlled access zones and guard-rail, personal fall arrest, safety net, warning line, and safety monitoring systems;
4. The role of each employee in the safety monitoring system when the system is in use;
5. The limitations on the use of mechanical equipment during the performance of elevated operations on low-sloped surfaces;
6. The correct procedures for equipment and materials handling and storage, and the erection of overhead protection;
7. Employees' roles in the University of Portland Fall Protection Program;
8. The details in this program.



Additional Fall Protection training details:

1. Each University of Portland Supervisor conducts ALL fall protection training.



2. New employees whose duties include work above the heights standard are oriented to the University of Portland Fall Protection Program as part of the new employee orientation program.
3. Every employee whose duties include work above the heights standard is trained in the Fall Protection Program at least on an annual basis.
4. Every employee whose duties include work above the heights standard signs off on all safety training related to fall protection.
5. Any employee whose duties include work above the heights standard who has not received appropriate training in the Fall Protection Program will not be allowed to work above grade level until the employee has been trained and understands the program.
6. The *Fall Protection Program* is based on published standards that govern fall protection. These standards are considered to be a minimum program; the University of Portland Fall Protection Program has been designed to *exceed* the minimum requirements.

→→ **Trainer.** Each University of Portland Supervisor must prepare a written certification that identifies each employee trained and the date of the training. The Supervisor or trainer must sign the certification record.



5.11 Ramps, Runways, and Other Walkways

Each employee using ramps, runways, and other walkways must be protected by guardrail or other acceptable fall protection system against falling four feet or more.

5.12 Ladder Safety

The **4** causes of **MOST** ladder injuries:

1. Not securing a portable ladder causing a wobbly ladder that tips over when used.
2. Not having the top of a ladder extend at least 3 feet above the edge of an upper landing.
3. Untrained employees using ladders improperly – usually not knowing ladder limitations.
4. Using broken ladders – typically when in a hurry or when another ladder can't be found.



Portable Ladder Safety

Each employee using portable ladders must follow all ladder safety rules including:

Required PPE:

- ✓ Wear safe, flat heeled shoes with non-slip soles while climbing or standing on ladders or stools. Never climb or use a ladder while wearing high heeled shoes, flip-flops, or sandals.



Work Rules:

- a) All ladders are required to be maintained in good condition at all times and if they are made out of wood they will be stored in a well-ventilated area and not be exposed to the elements.
- b) All ladders carried on or in vehicles are required to be properly secured during transit.
- c) Before using a ladder, and thereafter as necessary, inspect it for dangerous defects such as loose joints, grease on steps, or missing rubber feet. (Never paint a ladder as you may hide a dangerous defect.)

Every ladder inspection must include inspecting at least the following:

- Side rails for dents or bends
 - Rungs for excessive dents
 - All rung-to-side-rail connections
 - Hardware connections
 - Rivets for shear
- d) Always face the ladder when climbing up and down it, and always use at least one hand to grasp the ladder at all times when climbing up and down it.
 - e) No ladders may be used to gain access to a roof unless the top of the ladder extends to at least 3 feet above the point of support, eave, gutter, or roofline and be secured at the top and bottom.
 - f) When working with a step ladder over 5 feet high an employee may not stand on a step higher than the third step from the top of the step ladder.
 - g) Always unfold a step ladder and lock the spreaders.
 - h) Do not stand on the top step of a step ladder.
 - i) Do not use a ladder as a brace, workbench or for any other purpose than climbing.
 - j) Maintain full control and balance while climbing. Never carry anything that may impede your control and balance. Do not carry objects up or down a ladder if it will prevent you from using both hands to climb.
 - k) If you must place a ladder at a doorway, barricade the door to prevent its use and post a sign.
 - l) Only one person is allowed on a ladder at a time.
 - m) Always keep both feet on the ladder rungs except while climbing. Do not step sideways from an unsecured ladder onto another object.
 - n) Do not lean a step ladder against a wall and use it as a single ladder or set a single or extension ladder with the base 1/4 of the working ladder length away from the support.



Additional Fixed Ladder Safety OSHA Requirements (effective date)

A fixed ladder has rails or individual rungs that is permanently attached to a structure, building, or equipment. This includes individual-rung ladders and side-step ladders, but do not include step bolts, manhole steps, or ladders that are designed into or are an integral part of machines or equipment.

- On new fixed ladders over 24 feet, and on replacement ladders/ladder section, installing personal fall arrest or ladder safety systems is required.
- Ensuring existing fixed ladders over 24 feet must be equipped with a cage, well, personal fall arrest system, or ladder safety system.
- Replacing cages and wells (used as fall protection) with ladder safety or personal fall arrest systems on all fixed ladders over 24 feet.

6.0 WORK PLAN

University of Portland has developed and uses a written *Fall Protection Work Plan Template* at each specific area or project including each area of a work place where the employees are assigned and where fall hazards of four feet or more exists.

1. The Fall Protection Work Plan accomplishes these goals:
 - a. Identify all fall hazards in the work area.
 - b. Describe the method of fall arrest or fall restraint to be used.
 - c. Describe the correct procedures for the assembly, maintenance, inspection, and disassembly of the fall protection system to be used.
 - d. Describe the correct procedures for the handling, storage, and securing of tools and materials.
 - e. Describe the method of providing overhead protection for workers who may be in or pass through the area below the work area.
 - f. Describe the method for prompt, safe removal of injured workers.
 - g. Be available on the job area for inspection by the department.
2. Prior to permitting employees into areas where fall hazards exist University of Portland:
 - a. Ensures that its workers are trained and instructed in the items described in this University of Portland Fall Protection Work Plan.
 - b. Inspect fall protection devices and systems to ensure compliance.
3. Training of employees as required by this section; this training will be documented and available on the job area.

See the following page for the *Fall Protection Work Plan Template*

FALL PROTECTION WORK PLAN

Work Area: _____ Date: _____

Portable Ladder Type: Straight ladder Step ladder Other _____

Describe Fall Risk Hazard(s) of four (4) feet or higher: _____

Roof Work? Yes: No:

Type of roof work: _____

In the scope of work to be performed on this job, does an overhead hazard exist? Yes No

If yes, all individuals below the work must be warned of potential hazards so they may protect themselves.

Has this warning been given? Yes: Has hardhat sign been posted? Yes:

Method(s) of Fall Protection (check all methods being used):

- 1) Lanyard, lifeline, belt and full body harness
 - a) Fall arrest
 - b) Fall restraint
- 2) Guardrails
- 3) Warning Lines
- 4) Safety Monitor System
- 5) Catch Platform / Safety nets

All safety equipment must be inspected daily prior to use. Replace any damaged safety equipment necessary. Has all safety equipment been inspected prior to use? Yes

Other than material in use, all materials shall be at least 6 feet from the perimeter of the work height exposure. Are materials stored at least 6 feet from perimeter of the work height exposure? Yes

Has a fall **Rescue Plan** been configured and qualified rescue-designated employees trained? Yes

In the event of injury:

- 1) Dial 911 if the injury is serious, or if you are unsure of the seriousness.
- 2) Administer general first aid as necessary
- 3) Consult emergency personnel for care and instructions for removal of injured person

Signature of Supervisor: _____

Print Name: _____ Date: _____

7.0 DEFINITIONS

Anchorage means a secure point of attachment for equipment such as lifelines, lanyards, deceleration devices and rope descent systems. Anchorages can also be a component of a fall protection system. An anchorage may be installed to serve such purpose or may be a fixed structural member such as a post, beam, girder, column, floor, or wall that is an integral part of a structure. An anchorage must be capable of safely supporting the impact forces applied by a fall protection system – normally capable of supporting 4 times the intended load. Guardrails are prohibited from being used as personal fall protection anchorages unless approved and marked by a registered structural engineer, and that horizontal rails in wood guardrails be attached on the inside of the posts so the nails are not pushed out in a fall.

Approved means, for the purpose of this section, tested and certified by the manufacturer or any recognized national testing laboratory to possess the strength requirements specified in this section.

Catenary Line – see Horizontal Lifeline.

Competent Person means an individual knowledgeable of fall protection equipment, including the manufacturer's recommendations and instructions for the proper use, inspection, and maintenance; who is capable of identifying existing and potential fall hazards; who has the authority to take prompt corrective action to eliminate those hazards; and who is knowledgeable of the rules contained in this section regarding the erection, use, inspection, and maintenance of fall protection equipment and systems.

Continuous Fall Protection means the design and use of a fall protection system such that no exposure to an elevated fall hazard occurs. This may require more than one fall protection system or a combination of prevention or protection measures.

Dangerous Equipment means equipment, such as vats, tanks, electrical equipment, machinery, equipment or machinery with protruding parts, or other similar units that, because of their function or form, may harm an employee who falls into or onto it.

Drop Line means a vertical lifeline secured to an upper anchorage for the purpose of attaching a lanyard or device.

Fall Arrest System means the use of multiple, approved safety equipment components such as body harnesses, shock absorbing lanyards, deceleration devices, droplines, horizontal and/or vertical lifelines and anchorages, interconnected and rigged as to arrest a free fall.

Fall Protection Work Plan means a written planning document in which the employer identifies all areas on the job area where a fall hazard of four feet or greater exists. The plan describes the method or methods of fall protection to be utilized to protect employees, and includes the procedures governing the installation, use, inspection, and removal of the fall protection method or methods which are selected by the employer.

Fall Restraint System means an approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from falling to a lower level. When standard guardrails are selected, compliance with applicable sections governing their construction and use will constitute approval.

Fall Distance means the actual distance from the workers' support to the level where a fall would stop.

Fixed Ladder means a ladder that has rails or individual rungs that is permanently attached to a structure, building, or equipment. This includes individual-rung ladders and side-step ladders, but do not include

ship stairs, step bolts, manhole steps, or ladders that are designed into or are an integral part of machines or equipment.

Full Body Harness means a configuration of connection straps to distribute a fall arresting force over at least the thighs, shoulders and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration devices.

Full Body Harness System means a Class III full body harness and lanyard attached to an anchorage or attached to a horizontal or vertical lifeline which is properly secured to an anchorage(s) capable of withstanding the forces specified in the applicable sections.

Guardrail System means a toprail approximately 42 inches high, a midrail installed between the top edge of the guardrail system and a toeboard with a minimum height of 4 inches.

Hardware means snap hooks, D-rings, buckles, carabineers, adjusters, and O-rings used to attach the components of a fall protection system together.

Hole means a gap or open space in “horizontal walking-working surfaces,” (e.g., floor, roof, similar surfaces) and an “opening” as a gap or space in “vertical walking-working surfaces” (e.g., wall or partition)

Horizontal Lifeline means a rail, rope, or synthetic cable installed in a horizontal plane between two anchorages and used for attachment of a worker’s lanyard or lifeline device while moving horizontally; used to control dangerous pendulum-like swing falls.

Lanyard means a flexible line of webbing, rope or cable used to secure a body belt or harness to a lifeline or an anchorage point; usually 2, 4, or 6 feet long.

Leading Edge means the advancing edge of a floor or elevated surfaces.

Lifeline means a vertical line from a fixed anchorage or between two horizontal anchorages, independent of walking or working surfaces, to which a lanyard or device is secured. The line must reach the ground. Lifeline as referred to in this text is one which is part of a fall protection system used as back-up safety for an elevated worker.

Maximum Intended Load means the total weight of all employees, equipment, machines, vehicles, tools, materials, and loads that employers reasonably anticipate they may be apply to that walking-working surface.

Personal Fall Arrest System means an arrest system consisting of a body harness, anchorage, connector, and a means of connecting the body harness and anchorage, such as a lanyard, deceleration device, lifeline, or a suitable combination of these.

Portable Ladder means a ladder that can readily be moved or carried, and usually consists of side rails joined at intervals by steps, rungs, or cleats. The term portable ladder includes specialty ladders, fruit-picker’s ladders, combination step and extension ladders, stockroom step ladders, aisle-way step ladders, shelf ladders, and library ladders; it excludes orchard ladders used solely in agricultural activities and ladders with narrow rungs that are not designed to be stepped on.

Positioning System means a system of equipment and connectors that, when used with a body harness or body belt, allows an employee to be supported on an elevated vertical surface, such as a wall or window sill, and work with both hands free. Positioning systems also are called “positioning system devices” and “work-positioning equipment.”

Ramp means an inclined walking-working surface that is used to gain access to another level. Employers use ramps to move workers, equipment, materials, supplies, and vehicles from one level to another.

Restraint Line means a line from a fixed anchorage or between two anchorages to which an employee is secured in such a way as to prevent the worker from falling to a lower level.

Rope Descent System (RDS) means a suspension system that allows a worker to descend in a controlled manner and, as needed, to stop at any time during the descent.

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

Safety Line – see Lifeline.

Shock Absorbing Lanyard means a flexible line of webbing, cable, or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber.

Standard Guardrail - see Guardrail System.

Static Line – see horizontal lifeline.

Step Stool means a self-supporting, portable ladder that has flat steps and side rails. Similar to the proposed definition, the final rule defines the term “stepstool” to include only those ladders that have a fixed height, do not have a pail shelf, and do not exceed 32 inches in overall height to the top cap, although the side rails may extend above the top cap.

Strength Member means any component of a fall protection system that could be subject to loading in the event of a fall.

Toeboard means a low protective barrier that is designed to prevent materials, tools, and equipment from falling to a lower level, and protect workers from falling. Typically, employers erect toeboards on platforms, dockboards, catwalks, gridirons, and other elevated or exposed floor level edges. Toeboards, also are referred to as toeplates or kickplates, and may be part of a guardrail system.

Travel Restraint System means a combination of an anchorage, an anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of a worker going over the edge of a walking-working surface.

Unprotected Sides and Edges means any side or edge of a walking-working surface, (except at entrances and other points of access) where there is no wall, guardrail system, or stair rail system to protect workers from falling to a lower level.

Walking/Working Surface means a horizontal or vertical surface on or through which workers walk, work, or gain access to work areas or workplace locations. Walking-working surfaces include floors, stairways, roofs, ladders, runways, ramps, walkways, dockboards, aisles, platforms, manhole steps, step bolts, equipment, trailers, and other surfaces.

Warning Line means a barrier that is erected on a roof to warn workers they are approaching an unprotected side or edge, and which designates an area in which work may take place without using other means of fall protection. The warning line is a component of a designated area, which is an alternative method for preventing falls that the final rule allows employers to use to protect workers on low-slope roofs. A warning line alerts workers that the space marked off by the line is an area where they may work without conventional or additional fall protection (e.g., guardrail, safety net, or personal fall protection system).

Work Area means that portion of a walking/working surface where job duties are being performed.