

Fall Protection

PURPOSE

The purpose of the Fall Protection program is to ensure that each employee who might be exposed to fall hazards is properly trained to recognize the hazards of falling and use that knowledge to minimize fall hazards and injuries.

TRAINING

Provide fall protection training for employees exposed to fall hazards. A competent person must provide training for each employee exposed to fall hazards. The training must enable each employee to recognize the hazards of falling and procedures to be followed in order to minimize those hazards.

1. Each affected employee must be trained by a competent person to know at least the following:
 - a. The nature of fall hazards in the work area.
 - b. When fall protection is required.
 - c. What fall protection is required.
 - d. The correct procedures for erecting, maintaining, assembling, disassembling, and inspecting the fall protection systems to be used.
 - e. The use and operation of fall protection systems used.
 - f. Limitations of fall protection systems used.
 - g. Proper care, maintenance, useful life, removal from service.
 - h. The requirements of this chapter.
2. Make sure before an employee is allowed to perform work requiring the use of fall protection that the employee can:
 - a. Demonstrate an understanding of the training specified above.
 - b. Demonstrate the ability to use fall protection properly.
3. Retrain employees who use fall protection, if necessary. Retrain an employee when the employer has reason to believe the understanding, motivation, and skills required to use fall protection have not been trained. Circumstances where retraining is required include:
 - a. Changes in the workplace that make previous training out of date.
 - b. Changes in the types of fall protection to be used make previous training out of date.
 - c. Work habits or demonstrated knowledge indicate that the employee has not retained the necessary understanding, skill, or motivation to use fall protection.
4. Document fall protection training. Document in writing that each employee has received and understood the required training. This documentation must include:
 - a. Name of each employee.
 - b. Date(s) of training.
 - c. Subject(s) of the training.
 - d. Name or signature of the competent person who conducted the training, signatures of the employer, or employer's designee.

Documentation may be stored electronically as long as it is available to safety and health personnel for the department of labor and industries.

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PROCEDURES

General Requirements

- A competent person must ensure that all surfaces on which employees will be working or walking on are structurally sound and will support them safely prior to allowing employees to work or walk on them.
- Inspection criteria.
 - The employees must inspect all components (including hardware, lanyards, and positioning harnesses or full body harnesses depending on which system is used) of personal fall arrest systems, personal fall restraint systems, and positioning device systems prior to each use according to manufacturer's specifications for mildew, wear, damage, and other deterioration. The employee must remove defective components from service if their function or strength has been adversely affected.
 - The employees must inspect safety nets at least once a week according to manufacturer's specifications for wear, damage, and other deterioration. The employee must also inspect safety nets after any occurrence which could affect the integrity of the safety net system. The employee must remove defective components from service. The employee must not use defective nets.
- The employee must only use personal fall arrest systems, personal fall restraint systems, positioning device systems, and their components for employee protection and not to hoist materials.
- The competent person or lead on site must plan for and provide prompt rescue of employees in the event of a fall or must assure the self-rescue capability of employees.
- In the event of an incident, incidents involving a fall are investigated. (See the Incident Investigation policy for processes and procedures.)
- Slips and Trips - Each year slips and falls injure too many construction workers. Slipping on the floor is bad enough but falling from a height can be disastrous. Workers can eliminate many slipping and tripping hazards by following the principles of good housekeeping. Take these steps to help keep your workspace "fall proof":
 - Clean up all spills immediately.
 - Remove clutter from stairs and walkways.
 - Cover or elevate cables that cross walkways.
 - Repair uneven, defective flooring, or worn stairs.
 - Maintain proper lighting.
 - Keep trash and loose objects picked up and dispose of them regularly.
 - Store all tools and materials in their place.
 - Keep ramps slip resistant with special anti-slip paint or other slip resistant material.
 - Avoid carrying materials that will block visibility.

Fall Protection Requirements regardless of height

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- Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, such as dip tanks and material handling equipment, and similar hazards must be guarded with a standard guardrail system.
- Holes into which an employee can trip, step into, or step through must be guarded by a cover of standard strength and construction or a standard guardrail system.
- Regardless of height employees must be protected from falling into or onto impalement hazards, such as: Reinforcing steel (rebar), exposed steel, or wood.

Fall protection work plan required at ten feet or more

- A competent person must develop and implement a written fall protection work plan including each area of the workplace where the employees are assigned and where fall hazards of ten feet or more exist. See the two page template at the end of this document.
- The fall protection work plan must:
 - Identify all fall hazards in the work area.
 - Describe the method of fall arrest or fall restraint to be provided.
 - Describe the proper procedures for the assembly, maintenance, inspection, and disassembly of the fall protection system to be used.
 - Describe the proper procedures for the handling, storage, and securing of tools and materials.
 - Describe the method of providing overhead protection for workers who may be in, or pass through the area below the work area.
 - Describe the method for prompt, safe removal of injured workers.
 - Be available on-site for inspection by the department.
- Prior to permitting employees into areas where fall hazards of ten feet or more exist the employer must ensure employees are trained and instructed in the items described in the fall protection work plan.

A fall protection work plan is not required where the use of a guardrail system eliminates the fall hazard.

Fall protection required at four feet or more

Employees must use fall arrest systems, fall restraint systems, or positioning device systems are provided, installed, and implemented in accordance with WAC 296-880 400 Fall protection system specifications when they are exposed to fall hazards of four feet or more to the ground or lower level. The following sections include the fall protection requirements for each work environment:

Walking/working surface with an unprotected side or edge (one of the following)

- A standard guardrail system, or the equivalent, as specified in WAC 296-880-40005, on all open sides, except where there is entrance to a ramp, stairway, or ladder. The guardrail must be provided with a standard toe board wherever: Beneath the open sides, persons can pass, there is moving machinery, or there is equipment with which falling materials could create a hazard.

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- When employees are using stilts, the height of the top rail or equivalent member of the guardrail system must be increased (or additional rails may be added) an amount equal to the height of the stilts while maintaining the strength specifications of the guardrail system.
 - Where employees are working on or from platforms or ladders above the protection of the guardrail system, the competent person must either increase the height of the guardrail system (or additional rails may be added) or select and implement another fall protection system as specified in this section.
 - When guardrails must be temporarily removed to perform a specific task, the area must be constantly attended to by an employee until the guardrail is replaced. The only duty the employee must perform is to warn persons entering the area of the fall hazard. The employee must be protected from the fall hazard by a personal fall arrest system or personal fall restraint system.
- A personal fall restraint system
 - A personal fall arrest system
 - A safety net system
 - A catch platform
 - A warning line system

Guarding of ramps, runways, and inclined walkways (one of the following)

- Ramps, runways, and inclined walkways that are four feet or more above the ground or lower level must be equipped with a standard guardrail system or the equivalent, as specified in WAC 296-880-40005, along each open side. Wherever tools, machine parts, or materials are likely to be used on the runway, a toe board must also be installed on each open side to protect persons working or passing below.
- Runways used exclusively for special purposes may have the guardrail on one side omitted where operating conditions necessitate such omission, provided the falling hazard is minimized by using a runway not less than 18 inches wide.

Holes (one of the following)

- A standard guardrail system, or the equivalent, as specified in WAC 296-880-40005, on all open sides, except where there is entrance to a ramp, stairway, or ladder. The guardrail must be provided with a standard toeboard wherever, beneath the open sides, persons can pass, or there is moving machinery, or there is equipment with which falling materials could create a hazard.
- A cover, as specified in WAC 296-880-40015.
- A warning line system erected at least 15 feet from all unprotected sides or edges of the hole and meets the requirements of WAC 296-880-40040.
- When the cover, guardrail system, or warning line system must be temporarily removed to perform a specific task, an employee must remain at the hole until the cover, guardrail system, or warning line system is replaced. The only duty the employee must perform is to warn

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persons entering the area of the fall hazard. The employee must be protected from the fall hazard by a personal fall arrest system or personal fall restraint system.

- Personal fall arrest systems or personal fall restraint systems.

skylight holes and skylights

- Unprotected skylight holes must be guarded by covers of standard strength and construction, standard guardrail systems on all exposed sides, or employees must be protected by personal fall restraint systems, or personal fall arrest systems.
- If the skylight has been installed and is not capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the skylight at any one time, the skylight must be guarded by a cover of standard strength and construction, a standard guardrail system on all sides, or employees must be protected by personal fall restraint systems, or personal fall arrest systems.

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Hatchways and chute holes (one of the following)

- Hinged covers of standard strength and construction and a standard guardrail system with only one exposed side. When the hole is not in use, the cover must be closed, or the exposed side must be guarded at both top and intermediate positions by removable standard guardrail systems.
- A removable standard guardrail system with toe board on not more than two sides of the hole and fixed standard guardrail system with toe boards on all other exposed sides. The removable guardrail must be kept in a place where the hole is not in use and must be hinged or otherwise mounted to be conveniently replaceable.

Roofs with pitch greater than four in 12 (one of the following)

- Fall restraint system. Safety monitor systems and warning line systems are prohibited on steep pitched roofs.
- A personal fall arrest system.
- A positioning device system.

Fall protection on low pitched roofs other than roofing work or constructing a leading edge (one of the following)

- A personal fall restraint system.
- A personal fall arrest system.
- A positioning device system.
- A warning line system.
- A standard guardrail system.
- Safety watch system when work, other than construction work, is performed that is both infrequent and temporary, and not within six feet of the roof edge.

*When roofing work or constructing a leading edge is performed, these rules apply at six feet or more.

*Exception: When work, other than construction work, is performed 15 feet or more from the roof edge, the employer is not required to provide any fall protection, provided the work is both infrequent Employees are prohibiting from going within 15 feet of the roof edge without using fall protection in accordance with this section.

Exemption from fall protection on low pitched roofs

- During initial installation of the fall protection anchor prior to engaging in any work activity, or the disassembly of the fall protection anchor after all work activities have been completed.
- When employees are inspecting, investigating, or assessing roof level conditions or work to be performed only on low pitch roofs prior to the start of any work activity or after all work activities have been completed.

This exemption does not apply on steep pitch roofs, where construction work is underway, or when fall protection systems or equipment meeting the requirements of this chapter have been

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installed and are available for workers to use for pre-work and post-work inspections, investigations, or assessments.

Examples of Activities recognized as inspecting or estimating include:

- Measuring a roof to determine the amount of materials needed for a project.
- Inspecting a roof for damage without removing equipment or components.
- Assessing the roof to determine what methods of fall protection will be provided to employees.

Tasks not recognize as inspecting or estimating under this exemption include:

- Delivering, staging, or storing materials on a roof.
- Persons estimating or inspecting roofs that would be considered “hazardous slope” by definition.

Other hazards

- Employees must be guarded from pits and trap door holes by covers of standard strength and construction. While the cover is not in place, the pit or trap door holes must be protected on all exposed sides by a standard guardrail system.
- Employees must be guarded from repair pits, service pits, and assembly pits by a cover, a guardrail system, a fall restraint system or fall arrest system.
- Employees must be guarded from manholes by standard covers which need not be hinged in place. While the cover is not in place, the hole must be constantly attended or must be protected by a removable standard guardrail system.
- Each employee working on, at, above, or near openings (including those with chutes attached) where the outside bottom edge of the opening is four feet or more above a lower level and the inside bottom edge of the opening is less than 39 inches above the working surface, must be protected from falling by the use of a guardrail system, a safety net system, a personal fall arrest system, or personal fall restraint system.
- Employees exposed to fall hazards of four feet or more while placing or tying reinforcing steel or working on the face of formwork or reinforcing steel are protected by personal fall arrest systems, positioning device systems, or safety net systems.
- Employees exposed to falls of four feet or more while performing construction work on hazardous slope must use personal fall restraint systems or position device systems.
- Employees exposed to fall hazards of four feet or more to the ground or lower level from vehicles or rolling stock on which employees must be located in order to perform their job duties are protected by fall arrest systems, fall restraint systems, or positioning device systems.

*Exception: Where suitable anchorage cannot be provided when the use of fall protection creates a greater hazard, work may be performed on vehicles or rolling stock without a fall protection system.

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Excavation and trenching operations

- Fall protection is not required at excavations when employees are:
 - Directly involved with the excavation process and on the ground at the top edge of the excavation; or
 - Working at an excavation site where appropriate sloping of side walls has been implemented as the excavation protective system.
- Fall protection is required for employees standing in or working in the affected area of a trench or excavation exposed to a fall hazard of 10 feet or more; and:
 - The employees are not directly involved with the excavation process.
 - Or the employees are on the protective system or any other structure in the excavation.

Note: Persons considered directly involved in the excavation process include:

- Foreman of the crew.
- Signal person.
- Employee hooking on pipe or other materials.
- Grade person.
- State, county, or city inspectors inspecting the excavation or trench.
- An engineer or other professional conducting a quality-assurance inspection.

Order pickers (PITS)

This section applies to powered industrial trucks (PITS) under the scope of chapter 296-863 WAC, Forklifts and other powered industrial trucks.

- All persons operating an order picker are protected by standard guardrails on all open sides.
- A full body harness and lanyard that are connected to a tie-off point that has been approved by the PIT manufacturer.

Elevating work platforms

This section applies to the following types of elevating work platforms covered under the scope of chapter 296-869 WAC, Elevating work platforms:

- Aerial lifts.
- Manually propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base.
- Self-propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base.
- Boom-supported elevating work platforms.

Before elevating the platform, all persons on the platform wear a full body harness with a lanyard attached to either:

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- The manufacturer's recommended attachment point
- Or the boom or platform if the manufacturer does not specify an attachment point.

The employee must never attach a lanyard to an adjacent pole, structure, or equipment.

This section applies to manually propelled and self-propelled elevating work platforms.

- Before elevating the platform, all persons on the platform are wearing fall protection devices and other safety gear, if required by the manufacturer of the platform.

This section applies to boom supported elevating work platforms.

- Before elevating the platform, all persons on the platform of boom-supported elevating work platforms wear a full body harness and lanyard fixed to manufacturer provided and approved attachment points.

Scaffolds

This section applies to suspended and supported scaffolds under the scope of chapter 296-874 WAC, Scaffolds.

- Employees on a scaffold must be protected by use of:
 - A personal fall arrest system.
 - Guardrails.
- Personal fall arrest systems are attached by a lanyard to one of the following:
 - Vertical lifeline.
 - Horizontal lifeline.
 - Appropriate structural member of the scaffold.
- Fall protection for persons erecting or dismantling supported scaffolds will be provided.
 - A competent person must determine the feasibility of providing fall protection for persons erecting or dismantling supported scaffolds.
 - Fall protection must be used if the installation and use of fall protection is feasible and does not create a greater hazard.
- Employees erecting the scaffold must install the guardrail system, if required, before the scaffold is used by any other employees.
- When scaffold is too far from the work face employees must use a guardrail system along the front edge of the platform, or use a personal fall arrest system, if the distance from the front edge of the platform to the work face is greater than:
 - Eighteen inches (46 cm) for scaffolds used for plastering and lathing operations.
 - Fourteen inches (36 cm) for all other scaffolds.
- Employees must use a personal fall arrest system to protect employees on the following scaffolds:
 - Boatswain's chair.
 - Catenary scaffold.
 - Float scaffold.
 - Ladder jack scaffold.

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- Needle beam scaffold.
- The employee must use a personal fall arrest system and a guardrail system on:
 - Single-point adjustable suspension scaffolds.
 - Two-point adjustable suspension scaffolds.
- Employees working on a self-contained adjustable scaffold that has the platform supported by the frame structure, using a guardrail system with a minimum two-hundred-pound top rail capacity suspended by ropes are to be protected using:
 - A guardrail system with a minimum two-hundred-pound top rail capacity.
 - A personal fall arrest system.
- Employees working on walkways located within a scaffold must use a guardrail system that meets all the following:
 - Has a minimum two-hundred-pound top rail capacity.
 - Is installed within nine and one-half inches (24.1 cm) of the walkway.
 - Is installed along at least one side of the walkway.

Lifelines

- Ensure vertical lifelines used with personal fall arrest systems meet these requirements:
 - Fastened to a fixed, safe point of anchorage.
 - Independent of the scaffold.
 - Protected from sharp edges and abrasion.

Note: Safe points of anchorages include structural member of buildings, but do not include:

- Standpipes, vents, or other piping systems.
- Electrical conduit.
- Outrigger beams.
- Counter weights.

FALL PROTECTION SYSTEM SPECIFICATIONS

Guardrail Systems

Guardrail systems and their use must conform to the following provisions:

1. A standard guardrail system must consist of top rail, intermediate rail, and posts, and must have a vertical height of 39 to 45 inches from upper surface of top rail to floor, platform, runway, or ramp level. When conditions warrant, the height of the top edge may exceed the 45 five inch height, provided the guardrail system meets all other criteria of this subsection. The intermediate rail must be halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails must not overhang the terminal posts except where such overhang does not constitute a projection hazard.
2. Minimum requirements for standard guardrail systems under various types of construction are specified in the following items:
 - a. For wood guardrails, the posts must be of at least two-inch by four-inch stock spaced not to exceed eight feet. The top rail must be of at least two-inch by four-inch stock and each length of lumber must be smooth surfaced throughout the length of the guardrail. The intermediate rail must be of at least one-inch by six-inch stock. Other configurations

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- may be used for the top rail when the configuration meets the requirements of (g) of this subsection.
- b. For pipe guardrails, posts and top and intermediate rails must be at least one and one-half inches nominal OD diameter with posts spaced not more than eight feet on centers. Other configurations may be used for the top rail when the configuration meets the requirements of (g) of this subsection.
 - c. For structural steel guardrails, posts and top and intermediate rails must be of two-inch by two-inch by three-eighths inch angles or other metal shapes of equivalent bending strength, with posts spaced not more than eight feet on centers. Other configurations may be used for the top rail when the configuration meets the requirements of (g) of this subsection.
 - d. For wire rope guardrails, the top and intermediate rails must meet the strength factor and deflection of (h)(ii) of this subsection. The top rail must be flagged at not more than six foot intervals with high visibility material. Posts must be spaced not more than eight feet on centers. The rope must be stretched taut and must be between 39 and 45 inches in height at all points. Other configurations may be used for the top rail when the configuration meets the requirements of (h) of this subsection.
 - e. Guardrail systems must be of such construction that the completed structure is capable of withstanding a load of at least 200 pounds applied within two inches of the top edge, in any outward or downward direction, at any point along the top edge.
 - f. When the 200 pound test load specified in (e) of this subsection is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches above the walking/working surface.
 - g. Guardrails receiving heavy stresses from employees trucking or handling materials must be provided additional strength by the use of heavier stock, closer spacing of posts, bracing, or by other means.
 - h. Other types, sizes, and arrangements of guardrail construction are acceptable, provided they meet the following conditions:
 - i. A smooth surfaced top rail at a height above floor, platform, runway, or ramp level between 39 and 45 inches;
 - ii. When the 200 pound (890 N) load specified in (e) of this subsection is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches (1.0 m) above the walking/working surface. Guardrail system components selected and constructed in accordance with this chapter will be deemed to meet this requirement;
 - iii. Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;
 - iv. Elimination of overhang of rail ends unless such overhang does not constitute a hazard.
3. Toe board specifications.
- a. A standard toe board must be a minimum of three and one-half inches in vertical height from the top edge to the level of the walking/working surface. Toe boards may be made of any substantial material, either solid, or with openings not over one inch in greatest dimension. Toe boards must be securely fastened in place with no more than one-quarter inch clearance above the walking/working surface.

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- b. Where material is piled to such height that a standard toe board does not provide protection, paneling, or screening from floor to intermediate rail or to top rail must be provided.

Ramps, runways, and inclined walkway requirements

Ramps, runways, and inclined walkways must conform to the following provisions:

1. Be at least eighteen inches wide
2. Not be inclined more than twenty degrees from horizontal and when inclined, they must be cleated or otherwise treated to prevent a slipping hazard on the walking surface.

Note: See WAC 296-880-20005 for guarding ramps, runways, and inclined walkways that are four feet or more above the ground or lower level.

Cover requirements – Holes and openings

Covers and their use must conform to the following provisions:

1. Hole covers must be of any material that meets the following strength requirements:
 - a. Conduits, trenches, and manhole covers and their supports, when located in roadways, and vehicular aisles must be designed to carry a truck rear axle load of at least two times the maximum intended load.
 - b. Hole covers must be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.
2. All covers must be secured when installed so as to prevent accidental displacement by wind, equipment, or employees.
3. All temporary covers must be color coded or they must be marked with the word “hole” or “cover” to provide warning of the hazard.
4. Barriers and screens used to cover openings must meet the following requirements:
 - a. Barriers must be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least two hundred pounds applied in any direction (except upward), with a minimum of deflection at any point on the top rail or corresponding member.
 - b. Screens must be of such construction and mounting that they are capable of withstanding a load of at least two hundred pounds applied horizontally at any point on the near side of the screen. They may be of solid construction of either grill work with openings not more than eight inches long, or of slat work with openings not more than four inches wide with length unrestricted.

Personal Fall Arrest System Requirements

Personal fall arrest systems and their use must conform to the following provisions:

1. Personal fall arrest systems:
 - a. A full body harness must be used.
 - b. The attachment point of the full body harness must be in the center of the wearer's back near shoulder level, or above the wearer's head.

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- c. Lanyards must have a minimum breaking strength of five thousand pounds (22.2 kN).
 - d. Safety lines and lanyards must be protected against being cut or abraded.
 - e. D-rings and snap hooks must be proof-tested to a minimum tensile load of thirty-six hundred pounds (16 kN) without cracking, breaking, or taking permanent deformation.
 - f. Snap hooks must be a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member.
 - g. Unless the snap hook is designed for the following connections, snap hooks must not be engaged:
 - i. Directly to the webbing, rope, or wire rope.
 - ii. To each other
 - iii. To a D-ring to which another snap hook or other connector is attached.
 - iv. To a horizontal lifeline.
 - v. To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself.
 - h. Hardware must be drop forged, pressed or formed steel, or made of materials equivalent in strength.
 - i. Hardware must have a corrosion resistant finish, and all surfaces and edges must be smooth to prevent damage to the attached full body harness or lanyard.
 - j. All components of full body harness systems whose strength is not otherwise specified in this section must be capable of supporting a minimum fall impact load of five thousand pounds (22.2 kN) applied at the lanyard point of connection.
 - k. Vertical lifelines (droplines) must have a minimum breaking strength of five thousand pounds (22.2 kN), except that self-retracting lifelines and lanyards which automatically limit free fall distance to two feet (.61 m) or less must have a minimum breaking strength of three thousand pounds (13.3 kN).
 - l. When vertical lifelines (droplines) are used, not more than one employee must be attached to any one lifeline.
 - m. Horizontal lifelines must be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
2. Anchorages for full body harness systems.
- a. Anchorages for full body harness systems must be capable of supporting (per employee)
 - i. Three thousand pounds when used in conjunction with:
 - 1. A self-retracting lifeline that limits the maximum free fall distances to two feet or less.
 - 2. A shock absorbing lanyard that restricts the forces on the body to nine hundred pounds or less.
 - ii. Five thousand pounds for all other personal fall arrest system applications, or they must be designed, installed, and used:
 - 1. As part of a complete personal fall arrest system which maintains a safety factor of at least two.
 - 2. Under the supervision of a qualified person.

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Note: The system strength requirements in this section are based on the total combined weight of the employee and tools of no more than three hundred ten pounds. If the combined weight is more than three hundred ten pounds, appropriate allowance must be made, or the system will not comply. For more information on system testing, see WAC 296-880-510 Appendix C.

1. When stopping a fall, personal fall arrest systems must:
 - a. Be rigged to allow a maximum free fall distance of six feet nor allow an employee to contact any lower level. A free fall may be more than six feet provided the manufacture designed the system to allow a free fall of more than six feet and the system has been tested to ensure a maximum arresting force of eighteen hundred pounds is not exceeded.
 - b. Limit maximum arresting force on an employee to eighteen hundred pounds (8 kN).
 - c. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to three and one-half feet (1.8 m).
 - d. Have sufficient strength to withstand twice the potential impact energy of an employee free falling a maximum distance of six feet (1.8 m).

Note: Shock absorbers that meet the requirements of ANSI Z359.1 that are used as a part of a personal fall arrest system in accordance with manufacture's recommendations and instructions for use and installation will limit the maximum arresting forces on an employee's body to eighteen hundred pounds or less.

To calculate fall clearance distance using a shock absorbing lanyard and D-ring anchorage connector, see WAC 296-880-505 Appendix B.

Personal fall restraint system requirements

Personal fall restraint systems and their use must conform to the following provisions. Personal fall restraint systems must be rigged to allow the movement of employees only as far as the unprotected sides and edges of the walking/working surface, and must consist of:

1. A full body harness must be used.
2. The full body harness must be attached to securely rigged restraint lines.
3. All hardware assemblies for full body harness must be capable of withstanding a tension loading of four thousand pounds without cracking, breaking, or taking a permanent deformation.
4. Components must be compatible.
5. Anchorage points used for fall restraint must be capable of supporting four times the intended load.
6. Rope grab devices are prohibited for fall restraint applications unless they are part of a fall restraint system designed specifically for the purpose by the manufacturer and used in strict accordance with the manufacturer's recommendations and instructions.

Positioning device system requirements

Positioning device systems and their use must conform to the following provisions:

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1. Positioning harnesses or full body harnesses must be used.
2. Positioning devices must be rigged to prevent an employee from a free fall greater than two feet.
3. Positioning devices must be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or three thousand pounds (13.3 kN), whichever is greater.
4. Connectors must be drop forged, pressed, or formed steel, or made of equivalent materials.
5. Connectors must have a corrosion-resistant finish, and all surfaces and edges must be smooth to prevent damage to interfacing parts of this system.
6. Connecting assemblies must have a minimum breaking strength of five thousand pounds (22.2 kN).
7. D-rings and snap hooks must be proof-tested to a minimum tensile load of three thousand six hundred pounds (16 kN) without cracking, breaking, or taking permanent deformation.
8. Snap hooks must be a locking type of snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member.
9. Unless the snap hook is designed for the following connections, snap hooks must not be engaged:
 - a. Directly to webbing, rope, or wire rope.
 - b. To each other.
 - c. To a D-ring to which another snap hook or other connector is attached.
 - d. To a horizontal lifeline.
 - e. To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself.

Self-rescue device requirements

Self-rescue devices and their use must conform to the following provisions:

1. Self-rescue devices are not to be used as a fall protection system.
2. Self-rescue devices must be used according to the manufacturer's instructions.
3. The use of self-rescue devices must be addressed in the fall protection work plan.

Warning line system requirements

Warning line systems and their use must conform to the following provisions:

Warning line system specifications used on roofs with a pitch of four in twelve or less for roofing work, leading edge work and on low pitched open sided surfaces for work activities other than roofing work or leading-edge work must comply to the following requirements:

1. Warning lines must be erected around all unprotected sides and edges of the work area.
 - a. Warning lines used during roofing work:
 - i. When roofing work is taking place or when mechanical equipment is not being used, the warning line must be erected not less than six feet (1.8 m) from the edge of the roof.

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- ii. When mechanical equipment is being used, the warning line must be erected not less than six feet (1.8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than ten feet (3.1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation.
 - b. Warning lines erected for leading edge work. Warning lines must be erected to separate employees who are engaged in leading edge work (between the forward edge of the warning line and the leading edge), from other work areas on the low-pitched surface.
 - i. The warning line must be erected not less than six feet nor more than twenty-five feet from the leading edge.
 - ii. When fall arrest systems as described in WAC 296-880-40020, or fall restraint systems as described in WAC 296-880-40025 are not used, a safety monitor system as described in WAC 296-880-40045 must be used to protect employees engaged in constructing the leading edge who are working between the forward edge of the warning line and the leading edge.
 - c. Warning lines erected on low pitched open sided surfaces for work activities other than roofing work, or leading-edge work must be erected not less than fifteen feet from the unprotected sides or edges of the open sided surface.
- 2. The warning line must consist of a rope, wire, or chain and supporting stanchions erected as follows:
 - a. The rope, wire, or chain must be flagged at not more than six-foot (1.8 m) intervals with high visibility material. Highly visible caution or danger tape as described in (d) of this subsection, does not need to be flagged.
 - b. The rope, wire, or chain must be rigged and supported in such a way that its lowest point (including sag) is no less than thirty-six inches from the surface and its highest point is no more than forty-five inches from the surface.
 - c. After being erected, with the rope, wire or chain attached, stanchions must be capable of resisting, without tipping over, a force of at least sixteen pounds (71 N) applied horizontally against the stanchion, thirty inches (0.76 m) above the surface, perpendicular to the warning line, and in the direction of the unprotected sides or edges of the surface.
 - d. The rope, wire, or chain must have a minimum tensile strength of five hundred pounds (2.22 kN), and after being attached to the stanchions, must be capable of supporting, without breaking, the loads applied to the stanchions. Highly visible caution or danger tape may be used in lieu of rope, wire, or chain as long as it is at least three inches wide and three mils thick, and has a tensile strength of at least two hundred pounds.
 - e. The line must be attached at 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 adjacent sections before the stanchion tips over.
- 3. Access paths must be erected as follows:
 - a. Points of access, materials handling areas, and storage areas must be connected to the work area by a clear access path formed by two warning lines.
 - b. When the path to a point of access is not in use, a rope, wire, or chain, equal in strength and height to the warning line, must be placed across the path at the point where the path intersects the warning line erected around the work area.

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Safety monitor system requirements

Safety monitor systems and their use must conform to the following provisions:

1. A safety monitor system may be used in conjunction with a warning line system as a method of fall protection during roofing work on low pitched roofs or leading-edge work on low pitched surfaces.
2. Note: The warning line is not required when performing roofing work on low pitched roofs less than fifty feet wide. For information on determining roof widths, see WAC 296-880-500, Appendix A, Determining roof widths.
3. When selected, the safety monitor system must be addressed in the fall protection work plan, including the name of the safety monitor(s) and the extent of their training in both the safety monitor and warning line systems. The following requirements must be met:
 - a. The safety monitor system must not be used when adverse weather conditions create additional hazards.
 - b. Employees working outside of the warning line system, (between the forward edge of the warning line and the unprotected sides or edges of a low-pitched surface), must be readily distinguishable from other members of the crew that are working inside the warning line system by wearing highly visible, distinctive, and uniform apparel.
 - c. Employees must promptly comply with fall hazard warnings from the safety monitor.
 - d. The person acting in the capacity of safety monitor(s) in the function of both the safety monitor and warning line systems, must be trained and they must:
 - i. Be a competent person as defined in WAC 296-880-095.
 - ii. Have control authority over the work as it relates to fall protection.
 - iii. Be instantly distinguishable over members of the work crew.
 - iv. Perform no other duties while acting as safety monitor.
 - v. Be positioned in relation to the workers under their protection, so as to have a clear, unobstructed view and be able to maintain normal voice communication.
 - vi. Not supervise more than eight exposed workers at one time.
 - vii. Warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.

Safety watch system requirements

Safety watch systems and their use must conform to the following provisions:

1. When one employee is conducting work other than construction work, on a low pitch roof, not within six feet of the roof edge, and when the work is both infrequent and temporary, a safety watch system is allowed.
2. The safety watch system must meet the following requirements:
 - a. There can only be two people on the roof while the safety watch system is being used: One employee acting as the safety watch and one employee engaged in the work activity.
 - b. The employee performing the work must comply promptly with fall hazard warnings from the safety watch.
 - c. Mechanical equipment is not used.

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- d. The safety watch system is not used when weather conditions create additional hazards.
- 3. Employee's acting as the safety watch meets all of the following:
 - a. Is a competent person as defined in WAC 296-880-095.
 - b. Is trained in the requirements of this section.
 - c. Has full control over the work as it relates to fall protection.
 - d. Has a clear, unobstructed view of the worker.
 - e. Can maintain normal voice communication.
 - f. Performs no other duties while acting as the safety watch.

Safety Net Requirements

Safety nets systems and their use must conform with the following provisions:

- 1. Safety nets must be installed as close as practicable under the surface on which employees are working, but in no case more than thirty feet (9.1 m) below such a level unless specifically approved in writing by the manufacturer. The potential fall to the nest must be unobstructed.
- 2. Safety nets must extend outward from the outermost projection of the work surface as follows:

Vertical distance from working levels to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet
More than 5 feet up to 10 feet	10 feet
More than 10 feet	13 feet

- 3. Safety nets must be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified in subsection (5) of this section.
- 4. Safety nets and their installations must be capable of absorbing an impact force equal to that produced by the drop test.
 - a. Except as provided in subsection (6) of this section, safety nets and safety net installations must be drop-tested at the job site after initial installation and before being used as a fall protection system, whenever relocated, after major repair, and at six-month intervals if left in one place. The drop-test must consist of a four hundred pound (180 kg) bag of sand, thirty plus or minus two inches (76 plus or minus 5 cm) in diameter dropped into the net from the highest walking/working surface at which employees are exposed to fall hazards, but not from less than forty-two inches (1.1 m) above that level.
 - b. When the employer can demonstrate that it is unreasonable to perform the drop-test required by (a) of this subsection, the employer (or a designated competent person) must certify that the net and net installation is in compliance with subsections (2) and (3) of this section by preparing a certification record prior to the net being used as a fall protection system. The certification record must include an identification of the net and net installation for which the certification record is being prepared; the date that it was determined that the identified net and net

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installation were in compliance with subsection (5) of this section and the signature of the person making the determination and certification. The most recent certification record for each net and net installation must be available at the job site for inspection.

5. Safety nets must be inspected at a minimum of once a week for wear, damage, and other deterioration. Defective components must be removed from service. Safety nets must also be inspected after any occurrence which could affect the integrity of the safety net system.
6. Materials, scrap pieces, equipment, and tools which have fallen into the safety net must be removed as soon as possible from the net and at least before the next work shift.
7. The maximum size of each safety net mesh opening must be not exceeding thirty-six square inches (230 cm²) nor be longer than six inches (15 cm) on any side, and the opening, measured center-to-center of mesh ropes or webbing, must not be longer than six inches (15 cm). All mesh crossings must be secured to prevent enlargement of mesh opening.
8. Each safety net (or section of it) must have a border rope or webbing with a minimum breaking strength of five thousand pounds (22.2 kN).
9. Connections between safety net panels must be as strong as integral net components and must be spaced not more than six inches (15 cm) apart.

Catch platform requirements

Catch platforms and their use must comply with the following provisions:

1. Catch platforms must be installed within four vertical feet of the work area.
2. Catch platforms must be a minimum of forty-five inches wide and equipped with standard guardrails and toe boards on all open sides.
3. Catch platforms must meet the strength and stability requirements of supported scaffolds in chapter 296-874- WAC, Scaffolds.

Canopy requirements

Canopies and their use must comply with the following provisions: Canopies, when used as falling object protection, must be of sufficient strength to prevent collapse and to prevent penetration by any objects which may fall onto the canopy.

Roof bracket requirements

Roof brackets and their use must comply with the following provisions:

1. Roofing brackets are not a fall protection system.
2. Roofing brackets must be constructed to fit the pitch of the roof.
3. In addition to securing brackets using the pointed metal projections, brackets must also be secured in place by nailing. When it is impractical to nail brackets, rope supports must be used. When rope supports are used, they must consist of first grade manila of at least three-quarter inch diameter, or equivalent.

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Crawling board and chicken ladder requirements

Crawling boards, chicken ladders, and their use must conform with the following provisions:

Crawling boards and chicken ladders are not fall protection systems.

1. Crawling boards must be not less than ten inches wide and one inch thick, having cleats one by one and one-half inches:
 - a. The cleats must be equal in length to the width of the board and spaced at equal intervals not to exceed twenty-four inches.
 - b. Nails must be driven through and clinched on the underside.
 - c. The crawling board must extend from the ridge pole to the eaves when used in connection with roof construction, repair, or maintenance.
2. Crawling boards must be secured to the roof using ridge hooks or other equivalent means.

Roof edge materials handling and material storage requirements

Roof edge materials handling areas and materials storage must conform with the following provisions:

1. When guardrails are used at hoisting areas, a minimum of four feet of guardrail must be erected along each side of the access point through which materials are hoisted.
2. A chain or gate must be placed across the opening between the guardrail sections when hoisting operations are not taking place.
3. When guardrails are used at bitumen pipe outlet, a minimum of four feet of guardrail must be erected along each side of the pipe.
4. Mechanical equipment must be used or stored only in areas where employees are protected using a fall arrest system as described in WAC 296-880-40020, or a fall restraint system as described in WAC 296-880-40025. Mechanical equipment may not be used or stored where the only protection is provided by the use of a safety monitor.
5. The hoist must not be used as an attachment/anchorage point for fall arrest or fall restraint systems.
6. Materials must not be stored within six feet of a roof edge unless guardrails are erected at the roof edge. Guardrails must include a toe board if employees could be working or passing below.

Fall Protection**Fall Protection Work Plan**

Company Name	Date
Site Address	

(if additional space is needed, use the back of the sheet)

Identify all fall hazards 10 feet or more above the ground level or lower level. Check all that apply.

- | | |
|--|--|
| ☐ Open-sided floors | ☐ Window openings |
| ☐ Decks/Balconies | ☐ Door openings |
| ☐ Floor openings | ☐ Roof openings |
| ☐ Skylight openings | ☐ Leading edge work |
| ☐ Wall openings | ☐ Mobile lift work |

Methods of fall protection to be used: (LSO = Low Slopes Only. Low Slopes = 4 x 12 or less)

- | | |
|--|---|
| ☐ Guardrail system (LSO) | ☐ Personal fall restraint system |
| ☐ Warning line System (LSO) | ☐ Positioning device system |
| ☐ Catch platform | ☐ Horizontal life lines |
| ☐ Safety net | ☐ Vertical life lines & rope grab |
| ☐ Covers | ☐ Safety watch system (LSO) |
| ☐ Personal fall arrest system | ☐ Warning line w/ safety monitor (LSO) |

Name of safety watch or monitor (if used):

Overhead Hazard Protection Methods

- | | |
|--|--|
| ☐ Hard Hats | ☐ Toe boards on Guardrails |
| ☐ Overhead Hazard Signs | ☐ Screens on Guardrails |
| ☐ Debris Nets | ☐ Barricade to control Access to Area |
| ☐ Other: | ☐ Other: |

Describe procedures for assembly, maintenance, inspection, disassembly of fall protection system to be used.

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Describe procedures for handling, storage, and securing tools, equipment, and materials.

Describe methods of overhead protection for workers who may be in, or pass through work area.

Describe methods to be implemented for prompt, safe removal of injured worker(s).

Employees who received fall protection training on the above site specific fall protection work plan.

Name(s):

Date:

The competent person's signature verifies that the fall protection work plan has been done, the employees informed of the plan and that employees have received training in the fall protection systems in use:

Name	Title	Date