Safety Bulletin: 1926.500 Fall Protection General

The provisions of this subpart 1926.500 does not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of work or after all work has been completed.

1926.501 Duty to have fall protection:

Management understands that workers are from time-to-time required to work in areas where there are potential fall exposures. The purpose of this bulletin is to help our workers identify the various types of fall exposures, which may be present while working on the roof, while on a job site and to assist workers in developing corrective actions to eliminate the potential fall exposure.

This bulletin identifies many different types of fall exposures and potential corrective action for each exposure. This program is not design to identify every possible fall exposure, instead to identify the most common exposures. If you are exposed to an unusual fall hazard, then notify your supervisor.

Our policy is to stop the fall before it occurs and to use personal fall arrest systems as the last resort. Because, personal fall arrest systems are not designed to stop the fall, but to control a fall once one has occurred. If a personal fall arrest system is the only option, then you must be trained in the proper use and care for the personal fall arrest system. Communicate with your supervisor is personal fall arrest is the only option.

The following hazards are classed as fall exposures when there is a possibility of falling 6 feet or more. Each hazard is discussed in this bulletin along with possible corrective actions that can be taken to eliminate the fall exposure.

I) Holes

II) Unprotected sides & Edges

III) Wall openings

IV) Roof work on low-slop roofs

V) Roof Openings

VI) Hoist areas

I) Holes: Definition of a hole-A gap or void 2" or more in its least dimension in a floor, roof and other working/walking surface.

Covers for smaller holes:

a) Covers are the most effective forms of guarding smaller holes in the floor, roof and other working/walking surface.

b) Covers shall be designed to support twice the weight of employees, equipment and material that maybe imposed on the cover at one time.

c) Covers placed in an area where any vehicle may pass, the cover must be designed to support two times the maximum axle load of the largest vehicle expected to cross.

d) Covers must be secured when installed so that wind, equipment or employees will not displace the cover. This can be done by cleating, wiring them down, or nailing to secure the cover.

e) Covers must be marked with the word "Hole" or "Cover" written on them in clear view. This is to identify them to workers so they are not removed.

f) Covers must be so installed to eliminate any tripping hazard.

Cover Construction: (Smaller Holes)

a) *Small Holes*: Plywood is the most common material used for covering smaller holes. When plywood is used, the plywood must be at least ¾" thick and free from any visible defects to the plywood.

b) *Lager small Holes*: Plywood over construction grade wood 2"x4" framing is one method of covering a larger hole. OHSA approved scaffold planks can be used to cover larger holes.

c) All covers must meet "a" - "f" requirement in the first part of this section.

Large holes: Stairwells, elevator shafts, etc.

Guard railing systems or perimeter warning lines are usually provided to protected large holes.

Wooden guardrail systems: Is one of most common forms of fall protection for large holes seen on the construction site. The following guidelines set forth the criteria for guardrails systems.

a) *Wood railings construction*: Wood components shall be a minimum of (stress grade) construction grade lumber; the posts shall be at least 2"x4" no more than 8 feet on center; the top rail shall be at least 2"x4" material, and the midrail shall be at least 1"x6" material. When the guardrail is assembled it must be capable of withstanding a 200-pound force applied to the top rail in an outward or downward direction.

b) *Top rail* of the guardrail system shall be 42 inches plus or minus 3 inches, above the walking/working surface.

c) *Midrails* must be installed between the top edge of the guardrail system and the walking/working surface.
d) *Toe boards* are usually installed to help prevent possible falling debris.

e) *Vertical supports* for the railing system shall not be more then 8 feet on center.

Perimeter Warning Lines: is another method used to protect large holes.

a) Perimeter warning lines construction: Ropes and supporting stanchions The rope (minimum tensile strength of 500 pounds) shall be supported in such a way that the lowest point (including sag) is not less than 34 inches and the highest point is not more than 39 inches from the walking/working surfaces. . The rope must be flagged at 6 feet intervals with high-visibility material. The stanchions shall be capable of resisting, without tipping over, a force of at least 16-pound applied horizontally against the stanchion.

b) Perimeter warning lines: Shall be erected around all sides and not less than 6 feet from hole.

c) When mechanical equipment is being used, the perimeter warning line shall be erected not less than 10 feet from all sides of the hole.

d) No employee or material is allowed to work or be stored between the warning line and the hole.

II) Unprotected sides and edges: Each employee on a walking/working surface with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of a guardrail system.

Wooden guardrail systems: Is one of most common forms of fall protection for unprotected sides and edges seen on the construction site. The following guidelines set forth the criteria for guardrails systems.

a) *Wood railings construction*: Wood components shall be a minimum of (stress grade) construction grade lumber; the posts shall be at least 2"x4" no more than 8 feet on center; the top rail shall be at least 2"x4" material, and the midrail shall be at least 1"x6" material. When the guardrail is assembled it must be capable of withstanding a 200-pound force applied to the top rail in an outward or downward direction.
b) *Top rail* of the guardrail system shall be 42 inches plus or minus 3 inches, above the walking/working surface.
c) *Midrails* must be installed between the top edge of the guardrail system and the walking/working surface.
d) *Toe boards* are usually installed to help prevent possible falling debris.

e) *Vertical supports* for the railing system shall not be more then 8 feet on center.

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b) Perimeter warning lines: Shall be erected around all sides and not less than 6 feet from sides or edge.

c) When mechanical equipment is being used, the perimeter warning line shall be erected not less than 10 feet from all sides or edges.

d) Points of access, material handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines. When the path to a point of access is not used, then the path must be barricade with equivalent material and height as the warning line.

e) No employee or material is allowed to work or be stored between the warning line and the unprotected side or edge.

III) Wall openings: (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less then 39 inches above the walking/working surface, shall be protected by a guardrail system.

a) Wood 2”x4”s guardrail systems are the most common method of providing protection for wall openings.

b) *Window openings*: Install one wooden 2”x4” board across the opening, so the top portion of the board is 42 inches above the inside walking/working surface. If needed install a midrail 2”x4”, that must be installed between the top edge of the guardrail system and the walking/working surface. If the window starts at the walking/working surface then a toe board (1”x4”) must be installed.

c) *Door openings*: Install one wooden 2”x4” board across the opening, so the top portion of the board is 42 inches above the inside walking/working surface. Install a midrail 2”x4”, that must be installed between the top edge of the guardrail system and the walking/working surface. Install a toe board (1”x4”) at the bottom of the door opening at the walking/working surface. If the door is less than 6 feet above the lower level and steps have not been install then precaution must be taken to protect the opening from use.

d) *Securement*: The guardrail members must be securely fastened across the interior of opening. This is usually accomplished by nailing.

IV) Roof work on low-slop roofs: Employees engaged in activities on a low slope roofs, with unprotected sides and edges must be protected from falling by a guardrail system, perimeter warning line, or perimeter warning line and safety monitoring system. On roofs of 50 feet or less in width can use a safety monitoring system alone.

Perimeter Warning Lines: is the most common method used to protect unprotected roof edges.

a) Perimeter warning line construction: Ropes (minimum tensile strength of 500 pounds) and supporting stanchions shall be installed in such a way that the lowest point (including sag) is not less than 34 inches and the highest point is not more than 39 inches from the walking/working surfaces. The rope must be flagged at 6 feet intervals with high-visibility material. The stanchions shall be capable of resisting, without tipping over, a force of at least 16-pound applied horizontally against the stanchion.

b) Perimeter warning lines: Shall be erected around all sides of the work zone and not less than 6 feet from roof edges.

c) When mechanical equipment is being used, the perimeter warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of the mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of the mechanical equipment operation.

e) The line shall be attached at each stanchion in such a way that pulling on one section of line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

f) Points of access, material handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines. When the path to a point of access is not used, then the path must be barricade with equivalent material and height as the warning line.

g) No employee is allowed to work between the warning line and the unprotected roof edge.
Exception: When an employee must work outside the warning line, that employee must be monitored by a competent person (safety monitor) who is within visual and verbal range of the employee.

g) No material is allowed to be stored between the warning line and the unprotected roof edge.

Safety monitor system: The safety monitor system is designed for work on low sloped roof, 4/12 pitch or less, and roofs less than 50 feet in width. If the roof is greater than 50 feet in width, a safety monitor system alone is not acceptable.

a) A competent person is to monitor the safety of other employees. The safety monitor will comply with the following requirements:

* The safety monitor shall be a competent to recognize fall hazards.
* The safety monitor shall warn the employee when it appears that the employee is unaware of the fall hazard or is acting in an unsafe manner
* The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored
* The safety monitor shall be close enough to communicate orally with the employee.
* The safety monitor shall not have other responsibilities, which could take the monitor's attention from the monitoring function.

b) No employee, other than an employee engaging in work shall be allowed in an area where an employee is being protected by a safety monitoring system.

V) Roof Openings: (See Holes)

VI) Hoist areas: Each employee in the hoist area shall be protected from a fall hazard. The following are several methods of omitting the fall hazards.

a) When radio communication is used between the employee in the landing zone and with the hoist operator and the load will be landed within a fall-protected area, then the material maybe landed without additional requirement.

b) When an employee is required to be at a leading edge to communicate with the hoist operator, so the load can be properly landed, then the employee must be protected by installing a guardrail system along the edge extending inward 6 feet to the perimeter warning line. The following guidelines set forth the criteria for guardrails/warning line systems.

1) *Wood railings construction*: Wood components shall be a minimum of (stress grade) construction grade lumber; the posts shall be at least 2"x4" no more than 8 feet on center; the top rail shall be at least 2"x4" material, and the midrail shall be at least 1"x6" material. When the guardrail is assembled it must be capable of withstanding a 200-pound force applied to the top rail in an outward or downward direction.

2) *Top rail* of the guardrail system shall be 42 inches plus or minus 3 inches, above the walking/working surface.
3) *Midrails* must be installed between the top edge of the guardrail system and the walking/working surface.
4) *Toe boards* are usually installed to help prevent possible falling debris.

5) *Vertical supports* for the railing system shall not be more then 8 feet on center.

c) **Important**: If the guardrail system or portions thereof, are removed to facilitate the hoisting operation and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and material, for example), that employee shall be protected from fall hazards by personal fall arrest systems. **Personal fall arrest systems are not covered in this program.**

Perimeter Warning Lines: can only be used 6 feet or more away from a leading edge. In most cases the perimeter warning line encloses the work zone, employee access way, and more then 6 feet from the leading edge of the hoist area. From the leading edge to 6 feet inside the edge a guard rail system must be used.

a) Perimeter warning lines construction: Ropes (minimum tensile strength of 500 pounds) and supporting stanchions shall be installed in such a way that the lowest point (including sag) is not less than 34 inches and the highest point is not more than 39 inches from the walking/working surfaces. The rope must be flagged at 6 feet intervals with high-visibility material. The stanchions shall be capable of resisting, without tipping over, a force of at least 16-pound applied horizontally against the stanchion.

b) Perimeter warning lines: Shall be erected around all sides of the work zone and not less than 6 feet from roof edges.

c) When mechanical equipment is being used, the perimeter warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of the mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of the mechanical equipment operation.

e) The line shall be attached at each stanchion in such a way that pulling on one section of line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

f) Points of access, material handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines. When the path to a pint of access is not used, then the path must be barricade with equivalent material and height as the warning line.

g) No employee is allowed to work between the warning line and the unprotected roof edge.
Exception: When an employee must work outside the warning line, they must be monitored by a competent person (safety monitor) who is within visual and verbal range of the employees.

g) No material is allowed to be stored between the warning line and the unprotected roof edge.