

WAC 296-155-24615 Fall restraint specifications. Fall restraint protection must conform to the following provisions:

(1) 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:

(a) A full body harness must be used.

(b) The full body harness must be attached to securely rigged restraint lines.

(c) All hardware assemblies for full body harness must be capable of withstanding a tension loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.

(d) You must ensure component compatibility.

(e) Anchorage points used for fall restraint must be capable of supporting 4 times the intended load.

(f) 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.

(2) **Guardrail specifications.**

(a) 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 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.

(b) Minimum requirements for standard guardrail systems under various types of construction are specified in the following items:

(i) For wood railings, the posts must be of at least two-inch by 4-inch stock spaced not to exceed 8 feet; the top rail must be of at least two-inch by 4-inch stock and each length of lumber must be smooth surfaced throughout the length of the railing. The intermediate rail must be of at least one-inch by 6-inch stock. Other configurations may be used for the top rail when the configuration meets the requirements of (b)(vii) of this subsection.

(ii) For pipe railings, posts and top and intermediate railings must be at least 1 1/2 inches nominal OD diameter with posts spaced not more than 8 feet on centers. Other configurations may be used for the top rail when the configuration meets the requirements of (b)(vii) of this subsection.

(iii) For structural steel railings, posts and top and intermediate rails must be of two-inch by two-inch by 3/8 inch angles or other metal shapes of equivalent bending strength, with posts spaced not more than 8 feet on centers. Other configurations may be used for the top rail when the configuration meets the requirements of (b)(vii) of this subsection.

(iv) For wire rope railings, the top and intermediate railings must meet the strength factor and deflection of (b)(v) of this subsection. The top railing must be flagged at not more than 6 foot intervals with high-visibility material. Posts must be spaced not more than 8 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 (b)(vii) of this subsection.

(v) The anchoring of posts and framing of members for railings of all types must be of such construction that the completed structure must be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail. The top rail must be between 39 and 45 inches in height at all points when this force is applied.

(vi) Railings 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.

(vii) Other types, sizes, and arrangements of railing construction are acceptable, provided they meet the following conditions:

(A) A smooth surfaced top rail at a height above floor, platform, runway, or ramp level between 39 and 45 inches;

(B) When the 200 pound (890 N) load specified in (b)(v) 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 level. Guardrail system components selected and constructed in accordance with this part will be deemed to meet this requirement;

(C) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;

(D) Elimination of overhang of rail ends unless such overhang does not constitute a hazard.

(c) Toe board specifications.

(i) A standard toe board must be a minimum of 4 inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It must be securely fastened in place with not more than one-quarter inch clearance above floor level. It may be made of any substantial material, either solid, or with openings not over one inch in greatest dimension.

(ii) 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.

(3) **Cover specifications.**

(a) Floor opening or floor hole covers must be of any material that meets the following strength requirements:

(i) 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;

(ii) All floor opening and floor hole covers must be capable of supporting the maximum potential load but never less than 200 pounds (with a safety factor of 4).

(A) All covers must be secured when installed so as to prevent accidental displacement by the wind, equipment, or employees.

(B) All covers must be color coded or they must be marked with the word "hole" or "cover" to provide warning of the hazard.

(b) Barriers and screens used to cover wall openings must meet the following requirements:

(i) 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 200 pounds applied in any direction (except upward), with a minimum of deflection at any point on the top rail or corresponding member.

(ii) Screens must be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied hor-

izontally 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 8 inches long, or of slat work with openings not more than four inches wide with length unrestricted.

(4) Warning line system specifications on pitches 4 in 12 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. You must ensure the following:

(a) Warning lines must be erected around all unprotected sides and edges of the work area.

(i) Warning lines used during roofing work.

(A) When roofing work is taking place or when mechanical equipment is not being used, the warning line must be erected not less than 6 feet (1.8 m) from the edge of the roof.

(B) When mechanical equipment is being used, the warning line must be erected not less than 6 feet (1.8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet (3.1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation.

(ii) 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. You must ensure:

(A) The warning line is erected not less than 6 feet nor more than 25 feet from the leading edge; and

(B) When fall arrest systems as described in WAC 296-155-24613, or fall restraint systems as described in subsections (1) and (2) of this section are not used, you must implement a safety monitor system as described in subsection (5) of this section to protect employees engaged in constructing the leading edge who are working between the forward edge of the warning line and the leading edge.

(iii) 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 15 feet from the unprotected sides or edges of the open sided surface.

(b) The warning line must consist of a rope, wire, or chain and supporting stanchions erected as follows:

(i) The rope, wire, or chain must be flagged at not more than 6 foot (1.8 m) intervals with high visibility material. Highly visible caution or danger tape as described in (b)(iv) of this subsection, does not need to be flagged.

(ii) The rope, wire, or chain must be rigged and supported in such a way that its lowest point (including sag) is no less than 36 inches from the surface and its highest point is no more than 45 inches from the surface.

(iii) After being erected, with the rope, wire or chain attached, stanchions must be capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion, 30 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.

(iv) The rope, wire, or chain must have a minimum tensile strength of 200 pounds (90 k), 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 3 inches wide and 3 mils thick, and has a tensile strength of at least 200 pounds.

(v) 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.

(c) You must erect access paths as follows:

(i) 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.

(ii) When the path to a point of access is not in use, you must place a rope, wire, or chain, equal in strength and height to the warning line, across the path at the point where the path intersects the warning line erected around the work area.

(5) Safety monitor system specifications.

(a) 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.

Note: The warning line is not required when performing roofing work on low pitched roofs less than 50 feet wide. For information on determining roof widths, see WAC 296-155-24623, Appendix A, determining roof widths.

(b) When selected, you must ensure that the safety monitor system is 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. You must ensure that the following requirements are met:

(i) The safety monitor system must not be used when adverse weather conditions create additional hazards.

(ii) 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.

(iii) Employees must promptly comply with fall hazard warnings from the safety monitor.

(iv) You must train a person acting in the capacity of safety monitor(s) in the function of both the safety monitor and warning line systems, and they must:

(A) Be a competent person as defined in WAC 296-155-24603.

(B) Have control authority over the work as it relates to fall protection.

(C) Be instantly distinguishable over members of the work crew.

(D) Perform no other duties while acting as safety monitor.

(E) 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.

(F) Not supervise more than 8 exposed workers at one time.

(G) Warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.

(6) Safety watch system specifications.

(a) When one employee is conducting any repair work or servicing equipment on a roof that has a pitch no greater than 4 in 12, employers are allowed to use a safety watch system.

(b) Ensure the safety watch system meets the following requirements:

(i) There can only be two people on the roof while the safety watch system is being used: The one employee acting as the safety watch and the one employee engaged in the repair work or servicing equipment;

(ii) The employee performing the task must comply promptly with fall hazard warnings from the safety watch;

(iii) Mechanical equipment is not used; and

(iv) The safety watch system is not used when weather conditions create additional hazards.

(c) Ensure the employee acting as the safety watch meets all of the following:

(i) Is a competent person as defined in WAC 296-155-24603;

(ii) Has full control over the work as it relates to fall protection;

(iii) Has a clear, unobstructed view of the worker;

(iv) Is able to maintain normal voice communication; and

(v) Performs no other duties while acting as the safety watch.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-24615, filed 4/19/16, effective 5/20/16. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1926, Subpart M, Fall Protection. WSR 13-04-073, § 296-155-24615, filed 2/4/13, effective 4/1/13.]