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lanyard or similar method to prevent it from falling; and

(xiii) The ropes of each rope descent system are protected from exposure to open flames, hot work, corrosive chemicals, and other destructive conditions.

[81 FR 82981, Nov. 18, 2016, as amended at 84 FR 68796, Dec. 17, 2019]

### § 1910.28 Duty to have fall protection and falling object protection.

(a) *General.* (1) This section requires employers to provide protection for each employee exposed to fall and falling object hazards. Unless stated otherwise, the employer must ensure that all fall protection and falling object protection required by this section meet the criteria in § 1910.29, except that personal fall protection systems required by this section meet the criteria of § 1910.140.

(2) This section does not apply:

(i) To portable ladders;

(ii) When employers are inspecting, investigating, or assessing workplace conditions or work to be performed prior to the start of work or after all work has been completed. This exemption does not apply when fall protection systems or equipment meeting the requirements of § 1910.29 have been installed and are available for workers to use for pre-work and post-work inspections, investigations, or assessments;

(iii) To fall hazards presented by the exposed perimeters of entertainment stages and the exposed perimeters of rail-station platforms;

(iv) To powered platforms covered by § 1910.66(j);

(v) To aerial lifts covered by § 1910.67(c)(2)(v);

(vi) To telecommunications work covered by § 1910.268(n)(7) and (8); and

(vii) To electric power generation, transmission, and distribution work covered by § 1910.269(g)(2)(i).

(b) *Protection from fall hazards—(1) Unprotected sides and edges.* (i) Except as provided elsewhere in this section, the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following:

(A) Guardrail systems;

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(B) Safety net systems; or

(C) Personal fall protection systems, such as personal fall arrest, travel restraint, or positioning systems.

(ii) When the employer can demonstrate that it is not feasible or creates a greater hazard to use guardrail, safety net, or personal fall protection systems on residential roofs, the employer must develop and implement a fall protection plan that meets the requirements of 29 CFR 1926.502(k) and training that meets the requirements of 29 CFR 1926.503(a) and (c).

NOTE TO PARAGRAPH (b)(1)(ii) OF THIS SECTION: There is a presumption that it is feasible and will not create a greater hazard to use at least one of the above-listed fall protection systems specified in paragraph (b)(1)(i) of this section. Accordingly, the employer has the burden of establishing that it is not feasible or creates a greater hazard to provide the fall protection systems specified in paragraph (b)(1)(i) and that it is necessary to implement a fall protection plan that complies with § 1926.502(k) in the particular work operation, in lieu of implementing any of those systems.

(iii) When the employer can demonstrate that the use of fall protection systems is not feasible on the working side of a platform used at a loading rack, loading dock, or teeming platform, the work may be done without a fall protection system, provided:

(A) The work operation for which fall protection is infeasible is in process;

(B) Access to the platform is limited to authorized employees; and,

(C) The authorized employees are trained in accordance with § 1910.30.

(2) *Hoist areas.* The employer must ensure:

(i) Each employee in a hoist area is protected from falling 4 feet (1.2 m) or more to a lower level by:

(A) A guardrail system;

(B) A personal fall arrest system; or

(C) A travel restraint system.

(ii) When any portion of a guardrail system, gate, or chains is removed, and an employee must lean through or over the edge of the access opening to facilitate hoisting, the employee is protected from falling by a personal fall arrest system.

(iii) If grab handles are installed at hoist areas, they meet the requirements of § 1910.29(1).

(3) *Holes.* The employer must ensure:

(i) Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following:

- (A) Covers;
- (B) Guardrail systems;
- (C) Travel restraint systems; or
- (D) Personal fall arrest systems.

(ii) Each employee is protected from tripping into or stepping into or through any hole that is less than 4 feet (1.2 m) above a lower level by covers or guardrail systems.

(iii) Each employee is protected from falling into a stairway floor hole by a fixed guardrail system on all exposed sides, except at the stairway entrance. However, for any stairway used less than once per day where traffic across the stairway floor hole prevents the use of a fixed guardrail system (*e.g.*, holes located in aisle spaces), the employer may protect employees from falling into the hole by using a hinged floor hole cover that meets the criteria in § 1910.29 and a removable guardrail system on all exposed sides, except at the entrance to the stairway.

(iv) Each employee is protected from falling into a ladderway floor hole or ladderway platform hole by a guardrail system and toeboards erected on all exposed sides, except at the entrance to the hole, where a self-closing gate or an offset must be used.

(v) Each employee is protected from falling through a hatchway and chute-floor hole by:

(A) A hinged floor-hole cover that meets the criteria in § 1910.29 and a fixed guardrail system that leaves only one exposed side. When the hole is not in use, the employer must ensure the cover is closed or a removable guardrail system is provided on the exposed sides;

(B) A removable guardrail system and toeboards on not more than two sides of the hole and a fixed guardrail system on all other exposed sides. The employer must ensure the removable guardrail system is kept in place when the hole is not in use; or

(C) A guardrail system or a travel restraint system when a work operation necessitates passing material through a hatchway or chute floor hole.

(4) *Dockboards.* (i) The employer must ensure that each employee on a dockboard is protected from falling 4 feet (1.2 m) or more to a lower level by a guardrail system or handrails.

(ii) A guardrail system or handrails are not required when:

(A) Dockboards are being used solely for materials-handling operations using motorized equipment;

(B) Employees engaged in these operations are not exposed to fall hazards greater than 10 feet (3 m); and

(C) Those employees have been trained in accordance with § 1910.30.

(5) *Runways and similar walkways.* (i) The employer must ensure each employee on a runway or similar walkway is protected from falling 4 feet (1.2 m) or more to a lower level by a guardrail system.

(ii) When the employer can demonstrate that it is not feasible to have guardrails on both sides of a runway used exclusively for a special purpose, the employer may omit the guardrail on one side of the runway, provided the employer ensures:

(A) The runway is at least 18 inches (46 cm) wide; and

(B) Each employee is provided with and uses a personal fall arrest system or travel restraint system.

(6) *Dangerous equipment.* The employer must ensure:

(i) Each employee less than 4 feet (1.2 m) above dangerous equipment is protected from falling into or onto the dangerous equipment by a guardrail system or a travel restraint system, unless the equipment is covered or guarded to eliminate the hazard.

(ii) Each employee 4 feet (1.2 m) or more above dangerous equipment must be protected from falling by:

- (A) Guardrail systems;
- (B) Safety net systems;
- (C) Travel restraint systems; or
- (D) Personal fall arrest systems.

(7) *Openings.* The employer must ensure that each employee on a walking-working surface near an opening, including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches (99 cm) above that walking-working surface and the outside bottom edge of the opening is 4 feet (1.2 m) or more above

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a lower level is protected from falling by the use of:

- (i) Guardrail systems;
- (ii) Safety net systems;
- (iii) Travel restraint systems; or,
- (iv) Personal fall arrest systems.

(8) *Repair pits, service pits, and assembly pits less than 10 feet in depth.* The use of a fall protection system is not required for a repair pit, service pit, or assembly pit that is less than 10 feet (3 m) deep, provided the employer:

(i) Limits access within 6 feet (1.8 m) of the edge of the pit to authorized employees trained in accordance with § 1910.30;

(ii) Applies floor markings at least 6 feet (1.8 m) from the edge of the pit in colors that contrast with the surrounding area; or places a warning line at least 6 feet (1.8 m) from the edge of the pit as well as stanchions that are capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion at a height of 30 inches (76 cm); or places a combination of floor markings and warning lines at least 6 feet (1.8 m) from the edge of the pit. When two or more pits in a common area are not more than 15 feet (4.5 m) apart, the employer may comply by placing contrasting floor markings at least 6 feet (1.8 m) from the pit edge around the entire area of the pits; and

(iii) Posts readily visible caution signs that meet the requirements of § 1910.145 and state "Caution—Open Pit."

(9) *Fixed ladders (that extend more than 24 feet (7.3 m) above a lower level).* (i) For fixed ladders that extend more than 24 feet (7.3 m) above a lower level, the employer must ensure:

(A) *Existing fixed ladders.* Each fixed ladder installed before November 19, 2018 is equipped with a personal fall arrest system, ladder safety system, cage, or well;

(B) *New fixed ladders.* Each fixed ladder installed on and after November 19, 2018, is equipped with a personal fall arrest system or a ladder safety system;

(C) *Replacement.* When a fixed ladder, cage, or well, or any portion of a section thereof, is replaced, a personal fall arrest system or ladder safety system is installed in at least that section of

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the fixed ladder, cage, or well where the replacement is located; and

(D) *Final deadline.* On and after November 18, 2036, all fixed ladders are equipped with a personal fall arrest system or a ladder safety system.

(ii) When a one-section fixed ladder is equipped with a personal fall protection or a ladder safety system or a fixed ladder is equipped with a personal fall arrest or ladder safety system on more than one section, the employer must ensure:

(A) The personal fall arrest system or ladder safety system provides protection throughout the entire vertical distance of the ladder, including all ladder sections; and

(B) The ladder has rest platforms provided at maximum intervals of 150 feet (45.7 m).

(iii) The employer must ensure ladder sections having a cage or well:

(A) Are offset from adjacent sections; and

(B) Have landing platforms provided at maximum intervals of 50 feet (15.2 m).

(iv) The employer may use a cage or well in combination with a personal fall arrest system or ladder safety system provided that the cage or well does not interfere with the operation of the system.

(10) *Outdoor advertising (billboards).* (i) The requirements in paragraph (b)(9) of this section, and other requirements in subparts D and I of this part, apply to fixed ladders used in outdoor advertising activities.

(ii) When an employee engaged in outdoor advertising climbs a fixed ladder before November 19, 2018 that is not equipped with a cage, well, personal fall arrest system, or a ladder safety system the employer must ensure the employee:

(A) Receives training and demonstrates the physical capability to perform the necessary climbs in accordance with § 1910.29(h);

(B) Wears a body harness equipped with an 18-inch (46 cm) rest lanyard;

(C) Keeps both hands free of tools or material when climbing on the ladder; and

(D) Is protected by a fall protection system upon reaching the work position.

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(11) *Stairways.* The employer must ensure:

(i) Each employee exposed to an unprotected side or edge of a stairway landing that is 4 feet (1.2 m) or more

above a lower level is protected by a guardrail or stair rail system;

(ii) Each flight of stairs having at least 3 treads and at least 4 risers is equipped with stair rail systems and handrails as follows:

Table D-2 -- Stairway Handrail Requirements

Stair width	Enclosed	One open side	Two open sides	With earth built up on both sides
Less than 44 inches (1.1 m).	At least one handrail	One stair rail system with handrail on open side.	One stair rail system each open side.	
44 inches (1.1 m) to 88 inches (2.2 m).	One handrail on each enclosed side	One stair rail system with handrail on open side and one handrail on enclosed side.	One stair rail system with handrail on each open side.	
Greater than 88 inches (2.2 m).	One handrail on each enclosed side and one intermediate handrail located in the middle of the stair	One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair.	One stair rail system with handrail on each open side and one intermediate handrail located in the middle of the stair.	
Exterior stairs less than 44 inches (1.1 m).				One handrail on at least one side.
Note to table: The width of the stair must be clear of all obstructions except handrails.				

(iii) Each ship stairs and alternating tread type stairs is equipped with handrails on both sides.

(12) *Scaffolds and rope descent systems.* The employer must ensure:

(i) Each employee on a scaffold is protected from falling in accordance 29 CFR part 1926, subpart L; and

(ii) Each employee using a rope descent system 4 feet (1.2 m) or more above a lower level is protected from falling by a personal fall arrest system.

(13) *Work on low-slope roofs.* (i) When work is performed less than 6 feet (1.6 m) from the roof edge, the employer must ensure each employee is protected from falling by a guardrail system, safety net system, travel restraint system, or personal fall arrest system.

(ii) When work is performed at least 6 feet (1.6 m) but less than 15 feet (4.6 m) from the roof edge, the employer must ensure each employee is protected from falling by using a guardrail system, safety net system, travel restraint system, or personal fall arrest system. The employer may use a designated area when performing work that is both infrequent and temporary.

(iii) When work is performed 15 feet (4.6 m) or more from the roof edge, the employer must:

(A) Protect each employee from falling by a guardrail system, safety net system, travel restraint system, or personal fall arrest system or a designated area. The employer is not required to provide any fall protection, provided

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the work is both infrequent and temporary; and

(B) Implement and enforce a work rule prohibiting employees from going within 15 feet (4.6 m) of the roof edge without using fall protection in accordance with paragraphs (b)(13)(i) and (ii) of this section.

(14) *Slaughtering facility platforms.* (i) The employer must protect each employee on the unprotected working side of a slaughtering facility platform that is 4 feet (1.2 m) or more above a lower level from falling by using:

(A) Guardrail systems; or

(B) Travel restraint systems.

(ii) When the employer can demonstrate the use of a guardrail or travel restraint system is not feasible, the work may be done without those systems provided:

(A) The work operation for which fall protection is infeasible is in process;

(B) Access to the platform is limited to authorized employees; and

(C) The authorized employees are trained in accordance with §1910.30.

(15) *Walking-working surfaces not otherwise addressed.* Except as provided elsewhere in this section or by other subparts of this part, the employer must ensure each employee on a walking-working surface 4 feet (1.2 m) or more above a lower level is protected from falling by:

(i) Guardrail systems;

(ii) Safety net systems; or

(iii) Personal fall protection systems, such as personal fall arrest, travel restraint, or positioning systems.

(c) *Protection from falling objects.* When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following:

(1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level;

(2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or

(3) Barricading the area into which objects could fall, prohibiting employ-

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ees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level.

### § 1910.29 Fall protection systems and falling object protection—criteria and practices.

(a) *General requirements.* The employer must:

(1) Ensure each fall protection system and falling object protection, other than personal fall protection systems, that this part requires meets the requirements in this section. The employer must ensure each personal fall protection system meets the requirements in subpart I of this part; and

(2) Provide and install all fall protection systems and falling object protection this subpart requires, and comply with the other requirements in this subpart before any employee begins work that necessitates fall or falling object protection.

(b) *Guardrail systems.* The employer must ensure guardrail systems meet the following requirements:

(1) The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D–11 of this section).

(2) Midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members are installed between the walking-working surface and the top edge of the guardrail system as follows when there is not a wall or parapet that is at least 21 inches (53 cm) high:

(i) Midrails are installed at a height midway between the top edge of the guardrail system and the walking-working surface;

(ii) Screens and mesh extend from the walking-working surface to the top rail and along the entire opening between top rail supports;

(iii) Intermediate vertical members (such as balusters) are installed no more than 19 inches (48 cm) apart; and

(iv) Other equivalent intermediate members (such as additional midrails