

Fixed and Portable Ladders: OSHA's 1910 Walking-Working Surfaces and Fall Protection Standards Effective Date: January, 2017

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If you've taken the time to download this guide, you are probably searching for answers about OSHA's updated Slips, Trips, and Falls Standards, and how these regulations impact the use of ladders in general industry. This e-book explores the Occupational Safety and Health Administration's final ruling on Walking-Working Surfaces (29 CFR Part 1910, Subpart D) and the General Industry Personal Protective Equipment Standards (29 CFR Part 1910, Subpart I) as they relate to ladders.

With many of the provisions of OSHA's new regulations effective as of January 2017, many safety professionals are wondering about the steps they need to take in order to ensure compliance. We hope this guide helps addresses your ladder concerns—and if you have additional questions, feel free to contact Diversified Fall Protection for further clarification.

Enjoy!

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Chapter 1

Overview

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Overview of OSHA's Final Ruling on Walking-Working Surfaces and Fall Protection Systems

OSHA efforts to revise and update existing walking-working surfaces standards have been ongoing since 1973. During this time, OSHA has gathered and analyzed huge amounts of data and information on walking-working surface hazards and methods to prevent and eliminate them.

Although OSHA's final ruling has been long in the making, the agency's work is vital to the protection of the U.S. work force. According to Bureau of Labor Statistics (BLS) data, falls from heights are among the leading causes of serious work-related injuries and deaths. OSHA estimates that, on average, approximately 202,066 serious (lost-workday) injuries and 345 fatalities occur annually among General Industry workers directly affected by the final standard.

OSHA's final rule on Walking-Working Surfaces and Personal Fall Protection Systems better protects workers in general industry from these hazards by updating and clarifying standards and adding training and inspection requirements. The new regulations also usher in some sweeping changes where ladders are concerned. OSHA estimates implementation of the new Walking-Working Surfaces ruling will yield over \$300 million annually in monetized employer benefits by preventing fatalities and lost-workday injuries.

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Summary Explanation of the Final Rule

Although much of the press surrounding the new OSHA regulations focuses on ladders, the final rule covers all general industry walking-working surfaces, including floors, stairways, runways, dockboards, roofs, scaffold and walkways as well as ladders. To protect workers from hazards associated with these surfaces, particularly hazards related to falls from elevations, the final rule updates and revises the Walking-Working Surfaces Standard (29CFR part 1910, Subpart D). The final rule includes revised and new provisions that address fixed and portable ladders, fall protection systems and criteria, including personal fall protection systems, training on fall hazards and fall protection systems. In addition, the final rule adds new requirements on the design performance, and use of personal fall protection systems to the general industry Personal Protective Equipment (PPE) standards (29CFR part 1910 subpart I).

The final rule also gives the employer greater flexibility to prevent and eliminate walking-working surface hazards and increases harmonization between OSHA construction and general industry standards. The final rule drew many provisions from national consensus standards, including those of the American Society of Safety Engineers (ASSE), the American National Standard Institute (ANSI), and the International Window Cleaners Association (IWCA).

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Final Subpart D	Existing Subpart D
§1910.21 Scope and definitions.	§1910.21 Definitions.
§1910.22 General requirements.	§1910.22 General requirements.
§1910.23 Ladders.	§1910.23 Guarding floor and wall openings and holes.
§1910.24 Step bolts and manhole steps.	§1910.24 Fixed industrial stairs.
§1910.25 Stairways.	§1910.25 Portable wood ladders.
§1910.26 Dockboards.	§1910.26 Portable metal ladders.
§1910.27 Scaffolds and rope descent systems.	§1910.27 Fixed ladders.
§1910.28 Duty to have fall protection and falling object protection.	§1910.28 Safety requirements for scaffolding.
§1910.29 Fall protection systems and falling object protection—criteria and practices.	§1910.29 Manually propelled mobile ladder stands and scaffolds (towers).
§1910.30 Training requirements.	§1910.30 Other working surfaces.

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The following lists the sections in subpart D where changes have occurred that impact the use of ladders:

1910.21	Scope and definitions
1910.22	General requirements
1910.23	Ladders
1910.28	Duty to have fall protection and falling object protection
1910.29	Fall protection systems and falling object protection – criteria and practices
1910.30	Training Requirements

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Chapter 2

Definitions

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Section 1910.21 Definitions

Definitions:

■ **Cage:** An enclosure mounted on the side rails of a fixed ladder or fastened to a structure behind the fixed ladder. The final definition also specifies that a cage surrounds the climbing space of the ladder. The final ruling eventually phases out ladder cages and requires:

- Installing personal fall arrest or ladder safety systems on new fixed ladders over 24 feet and on replacement ladders/ladder sections, including fixed ladders on outdoor advertising structures (2 years),
- Ensuring fixed ladders over 24 feet, including those on outdoor advertising structures, are equipped with a cage, well, personal fall arrest system, or ladder safety system (2 years), and,
- Replacing cages and wells (used as fall protection with ladder safety or personal fall arrest systems on all fixed ladders over 24 feet (20 years).

■ **Fixed Ladder:** A ladder with rails or individual rungs that is permanently attached to a structure, building, or equipment. OSHA's definition also states that fixed ladders include individual rung ladders, but do not include ships stairs, step bolts, or manhole steps. While fixed ladders include ladders attached to equipment, OSHA notes ladders that are designed into or are an integral part of machines or equipment are excluded from coverage 1910.23(a)(2).

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Section 1910.21 Definitions

Definitions:

- **Individual Rung Ladder:** A type of fixed ladder that has rungs individually attached to a building or structure.
- **Ladder Safety System:** A system designed to eliminate or reduce the possibility of falling from a ladder. A ladder safety system usually consists of a carrier; a safety sleeve, which is a moving component that travels on the carrier; a lanyard; connectors; and a body harness. **The new final definition also specifies that cages and wells are no longer considered ladder safety systems and phases out their use. See notes above on ladder cages for the timetable for replacing ladder cages.**
- **Personal Fall Arrest System:** A system used to arrest a worker's fall from walking-working surfaces if one occurs. The final definition explains that a personal fall arrest system consists of a body harness, anchorage, connector, and a means to connect the body harness and anchorage such as a lanyard, deceleration device, lifeline, or a suitable combination of these.
- **Side-Step Ladder:** A type of ladder that requires a worker to step sideways from it to reach a walking-working surface such as a landing. The final definition also clarifies that when a worker steps off a side step ladder onto a walking-working surface, it may be a platform or another type of surface such as a roof.

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Section 1910.21 Definitions

Definitions:

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

■ **Well:** A permanent complete enclosure around a fixed ladder. A well surrounding a fixed ladder must provide sufficient clearance to enable the employee to climb the ladder. The term “well” and “cage” typically are used together because the structure serves the same purpose; to enclose the climbing area of a fixed ladder. See above notes on cages and ladder safety systems.

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Chapter 3

OSHA 1910.23: Ladder Regulations

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Section 1910.23 Ladder Regulations

Updates the requirements that apply to ladders in general industry:

- Paragraph (a) Application
- Paragraph (b) General Requirements for All Ladders
- Paragraph (c) Portable Ladders
- Paragraph (d) Fixed Ladders
- Paragraph (e) Mobile Ladder Stands

Final Paragraph (a) Application

1910.23(a)(1) excludes ladders used in emergency operations or training for these operations. The final rule has been expanded to include all emergency operations, training including tactical law enforcement operations.

1910.23(a)(2) exempts ladders that are designed into or are an integral part of machines or equipment. This exemption applies to vehicles the Department of Transportation (DOT) regulates.

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Section 1910.23 Ladder Regulations

Final Paragraph (b) General Requirements for All Ladders

- **1910.23(b)(1)** requires that employers ensure ladder rungs, steps, and cleats are parallel, level and uniformly spaced when the ladder is in position for use. The final paragraph is consistent with OSHA's other ladder requirements in general industry, marine terminals, longshoring, and construction.

- **1910.23(b)(2)** requires that, except for ladders in elevator shafts and telecommunication towers, employers ensure ladder rungs, steps, and cleats are spaced not less than 10 inches, and not more than 14 inches apart as measured between the centerlines of the rung or step.

- **1910.23(b)(2)(i)** specifies that employers must ensure rungs and steps on ladders in elevator shafts are spaced not less than 6 inches and not more than 16.5 inches apart, as measured along the ladder side rails.

- **1910.23(b)(2)(ii)** specifies that employers ensure that vertical spacing on fixed ladder rungs and steps on telecommunications towers not exceed 18 inches, measured between the centerlines of the rungs or steps.

- **1910.23(b)(3)** requires that employers ensure stepstool steps are spaced not less than 8 inches and not more than 12 inches apart, as measured between centerlines of the steps.

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Section 1910.23 Ladder Regulations

Final Paragraph (b) General Requirements for All Ladders (Cont.)

- **1910.23(b)(4)** requires employers to ensure that ladder rungs, steps and cleats on portable and fixed ladders have a “minimum clear width” of 11.5 inches and 16 inches respectively. “Clear width” is the space between ladder side rails, but does not include the width of the side rail. OSHA also incorporates into this paragraph the proposed note informing employers that the clear width measurement on fixed ladders is done before installation of any ladder safety system.

- **1910.23(b)(4)(i)** includes an exception for ladders with narrow rungs that are not designed to be stepped on, such as those located on the tapered end of orchard ladders and similar ladders.

- **1910.23(b)(4)(ii)** exception for portable manhole entry ladders supported by manhole openings. The final rule only requires that the rungs and steps of those ladders have a minimum clear width of 9 inches.

- **1910.23(b)(4)(iii)** exception for telecommunications rolling ladders, requires that rungs and steps on rolling ladders used in telecommunications centers have a minimum clear width of 8 inches.

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Section 1910.23 Ladder Regulations

Final Paragraph (b) General Requirements for All Ladders (Cont.)

■ **1910.23(b)(4)(iv)** is a new requirement that addresses the minimum clear width of stepstools, which OSHA defines as a type of portable ladder. The final rule specifies that stepstools which must have a minimum clear width of 10.5 inches instead of the 11.5 inch minimum clear width that the final rule requires for other forms of portable ladders.

■ **1910.23(b)(5)** adds a new requirement that employers ensure wooden ladders are not coated with any material that may obscure structural defects. OSHA does not consider manufacturer- applied “warning” labels to be “coatings” therefore, final paragraph (b)(5) does not prohibit placing labels on one side of side rails.

■ **1910.23(b)(6)** requires that employers ensure metal ladders are made with corrosion-resistant material or are protected against corrosion. For example, metal ladders coated or treated with materials that resist corrosion will meet this requirement. Alternatively, employers may use metal ladders made with material that is inherently corrosion-resistant, such as aluminum.

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Section 1910.23 Ladder Regulations

Final Paragraph (b) General Requirements for All Ladders (Cont.)

- **1910.23(b)(7)** employers must ensure ladder surfaces are free of puncture and laceration hazards. Workers can suffer cuts and puncture wounds if a ladder has sharp edges or projections, splinters or burrs. A workers instantaneous reaction to getting cut on a sharp projection could be to release his or her grip on the ladder, which could cause the worker to fall.

- **1910.23(b)(8)** requires that employers ensure ladders are used only for the purpose for which they were designed.

- **1910.23(b)(9)** requires that employers ensure ladders are inspected before initial use in each work shift, as well as more frequently as necessary. The purpose of this inspection is to identify visible defects that could affect the safe use and condition of the ladder and remove unsafe and damaged ladders from service before a worker is hurt.

- **1910.23(b)(10)** requires that employers immediately tag ladders with structural or other defects “Dangerous: Do Not Use” or similar language that is in accordance with 1910.145. In addition, employers are required to remove defective ladders from service until the employer repairs them in accordance with 1910.22(d) or replaces them. 1910.22(d) (2) contains a general requirement that employers correct, repair, or guard against “hazardous conditions on walking working surface surfaces,” including ladders.

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Section 1910.23 Ladder Regulations

Final Paragraph (b) General Requirements for All Ladders (Cont.)

■ **1910.23(b)(11)** requires that employers ensure workers face the ladder when climbing up or down it.

■ **1910.23(b)(12)** adds a new provision requiring that employers ensure workers use “at least one hand to grasp the ladder at all times when climbing up and down it.” As stated in the proposal, the intent of this provision is for employers ensure their workers maintain “three point contact.”

■ **1910.23(b)(13)** requires that employers ensure workers climbing ladders do not carry any objects or loads that could cause them to lose their balance and fall. The purpose of this provision is to emphasize the importance of proper and careful use of ladders when workers need to carry items to and from a work space. Employers also need to ensure workers know what items they can and cannot carry while climbing. OSHA does not believe workers can maintain the required balance and control if they must carry a heavy or bulky object in one hand while climbing.

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Section 1910.23 Ladder Regulations

Final Paragraph (c) Portable Ladders

The final rule defines “portable ladder” as a ladder that can be readily moved or carried, and usually consists of side rails joined at intervals by steps, rungs, or cleats.

■ **1910.23(c)(1)** requires that employers minimize slipping hazards on portable metal ladders. Employers must ensure rungs and steps of portable metal ladders are corrugated, knurled, dimpled, coated with skid resistant materials, or otherwise treated to minimize the possibility of slipping.

■ **1910.23(c)(2)** retains existing requirements that employers ensure each stepladder, or combination ladder used in a stepladder mode, is equipped with a metal spreader or locking device. This rule also requires that the spreader or locking device securely holds the front and back sections of the ladder in an open position while the ladder is in use.

■ **1910.23(c)(3)** requires that employers not load portable ladders beyond their maximum intended load. The maximum intended load includes the weight and force of workers and the tool, equipment, and materials workers are carrying, which is consistent with the definition of “maximum intended load” per 1910.21(b).

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Section 1910.23 Ladder Regulations

Final Paragraph (c) Portable Ladders

■ **1910.23(c)(4)** requires employers ensure portable ladders are used only on stable and level surfaces unless they are secured or stabilized to prevent accidental displacement. When the footing of ladders is not stable or level and the ladder is not secure, the ladder can slip out of place or tip over because of workplace activities, traffic, and weather conditions.

■ **1910.23(c)(5)** requires that employers ensure workers do not use portable single-rail ladders. Portable single-rail ladder is defined as a 'portable ladder with rungs, cleats, or steps mounted on a single rail instead of the normal two rails used on most other ladders.

■ **1910.23(c)(6)** is a new requirement that employers ensure a ladder is not moved, shifted, or extended while a worker is on it. Moving, shifting, or extending an occupied ladder is dangerous to workers, whether it is the worker on the ladder who moves (hops) it or a worker on the ground who moves the ladder while a worker is on the ladder.

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Section 1910.23 Ladder Regulations

Final Paragraph (c) Portable Ladders (Cont.)

■ **1910.23(c)(7)** requires that employers ensure ladders placed in locations where other activities or traffic can displace them (e.g., passageways, doorways, and driveways) are:

- **1910.23(c)(7)(i)** secured to prevent accidental displacement.
- **1910.23(c)(7)(ii)** guarded by a temporary barricade, such as a row of traffic cones or caution tape, to keep activities or traffic away from the ladder.

Final paragraph (c) (7) is consistent with the existing rule, which requires that employers must not place ladders in front of doors, unless the door is blocked, locked, or guarded.

■ **1910.23(c)(8)** requires that employers ensure that employees do not use the cap, if equipped, and the top step of a step ladder as steps. Using either surface as a step may decrease the ladder's stability and cause it to fall over, injuring the worker.

■ **1910.23(c)(9)** requires that employers ensure portable ladders used on slippery surfaces are secured and stabilized. For the purposes of this paragraph, slippery surfaces include, but are not limited to, environmental (e.g., rain, snow, ice) and workplace conditions (e.g., oil, grease, solvents).

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Section 1910.23 Ladder Regulations

Final Paragraph (c) Portable Ladders (Cont.)

■ **1910.23(c)(10)** requires that employers ensure that employees place the top of non-self-supporting ladders so that both side rails are supported, unless the ladders are equipped with single support attachments.

■ **1910.23(c)(11)** require that employers ensure portable ladders used to gain access to an upper landing surface have side rails that extend at least 3 feet above the upper landing surface. Requiring the ladder side rails to extend 3 feet above the upper landing surface (See figure D-1) ensures that workers have adequate support and hand holds so they can access the upper landing surfaces safely. OSHA notes that employers may use after-market ladder extensions to increase the length of a ladder provided:

- The after-market extensions ‘are securely attached (that is, secured to the extent necessary to stabilize the extension and not expose the employee to a falling hazard from the extensions displacement”:
- and
- The ladder to which the ladder extensions is attached is “specifically designed for the application” in accordance with paragraph 1910.23(c)(14)

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Section 1910.23 Ladder Regulations

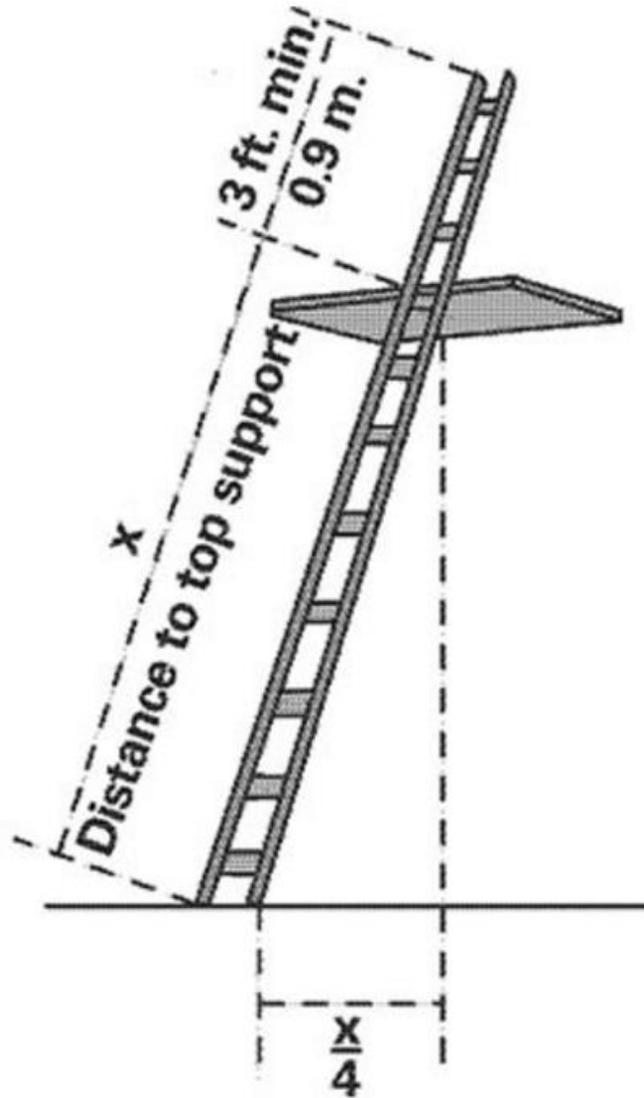


Figure D-1 -- Portable Ladder Set-up

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Section 1910.23 Ladder Regulations

Final Paragraph (c) Portable Ladders (Cont.)

■ **1910.23(c)(12)** requires that employers do not use ladders and ladder sections tied together or fastened together to provide added length unless the ladder specifically permits such use. This is to prevent unsafe rigging methods and to use ladders only as they were intended.

■ **1910.23(c)(13)** prohibits placing ladders on boxes, barrels or other unstable bases to obtain additional height. Unstable bases include surfaces such as vehicles, truck flatbeds, scaffolds, and stairs.

Final Paragraph (d) Fixed Ladders

Final paragraph (d) establishes requirements that apply to fixed ladders, in addition to the requirements in paragraph (b). The final rule defines “fixed ladder” as a ladder with side rails or individual rungs, that is permanently attached to a structure, building or equipment. Fixed ladders do not include ship stairs, stepbolts, or manhole steps.

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders

■ **1910.23(d)(1)** Establishes a performance based provision requiring that employers ensure any fixed ladder a worker uses is capable of supporting the maximum intended load. This final paragraph requires that employers ensure that a fixed ladder meets the minimum load that a designer specifically established for a particular fixed ladder. OSHA believes following the load requirement established for a particular ladder is at least as safe as a general specification (200 to 250 pounds) applied to all fixed ladders.

■ **1910.23(d)(2)** requires that employers ensure the minimum perpendicular distance from the ladder to the nearest permanent object in back of the ladder is 7 inches. The final rule requires that this distance be measured from the centerline of the fixed ladder steps and rungs or grab bars, or both, to the object in back of the ladder (e.g., wall). OSHA believes the 7 inch minimum will ensure that workers have adequate space to get a safe foothold on fixed ladders. Final paragraph (d) (2) adds a new exception that reduces the minimum perpendicular clearance in elevator pits to 4.5 inches.

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

■ **1910.23(d)(3)** requires that employers ensure grab bars on the climbing side do not protrude beyond the rungs of the ladder they serve. The final rule defines grab bars as individual vertical or horizontal handholds that provide access above the ladder height. Grab bars that protrude beyond the rungs of the ladder can be hazardous because they make it more difficult to climb and transition to landing surfaces.

■ **1910.23(d)(4)** requires that employers ensure the side rails of through and side-step ladders extend 42 inches above the top of the access level or platform served by the ladder. This final rule specifies “access level” for through and side-step ladders on buildings that have parapets. OSHA added this language to clarify the intent that workers must have sufficient handholds at least 42 inches above the highest level on which they will step when reaching the access level, regardless of the location of the access level, (i.e. roof or top of parapet).

■ **1910.23(d)(4)(i)** when a parapet has an opening that permits passage through it (i.e. through ladder) the final rule specifies that the access level is the roof.

■ **1910.23(d)(4)(ii)** for parapets without such an opening (i.e. side-step ladders), the final rule specifies the access level is the top of the parapet.

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

■ **1910.23(d)(5)** specifies that employers ensure that there are no steps or rungs on the portion of the through ladder extending above the access level. In addition 1910.23(d)(5) also requires flared extensions of the side rails above the access level to provide clearance of not less than 24 inches and not more than 30 inches. OSHA believes the additional clearance will help to ensure that workers equipped with personal fall protection systems, tools, and other items have adequate space to negotiate the pass-through area and reach the upper landing safely.

■ **1910.23(d)(6)** requires that employers ensure the side rails, rungs, and steps of side-step ladders be continuous in the extension (see figure D-2)

■ **1910.23(d)(7)** requires that employers ensure grab bars extend 42 inches above the access level or landing platforms of the ladder, which is the same height required for side rails in the extension area of through and side-step ladders.

■ **1910.23(d)(8)** requires employers ensure the minimum size (i.e. cross-section or diameter) of the grab bars are the same size as the rungs on that ladder.

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

■ **1910.23(d)(9)** establishes two requirements for ladders that terminate at hatch covers.

■ **1910.23(d)(9)(i)** requires that employers ensure the hatch cover opens with sufficient clearance to provide easy access to or from the ladder.

■ **1910.23(d)(9)(ii)** now requires that employers ensure counterbalanced hatch covers open at least 70 degrees from the horizontal. In essence, this provision defines in “objective” terms what constitutes “sufficient clearance” (See Figure D-3)

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

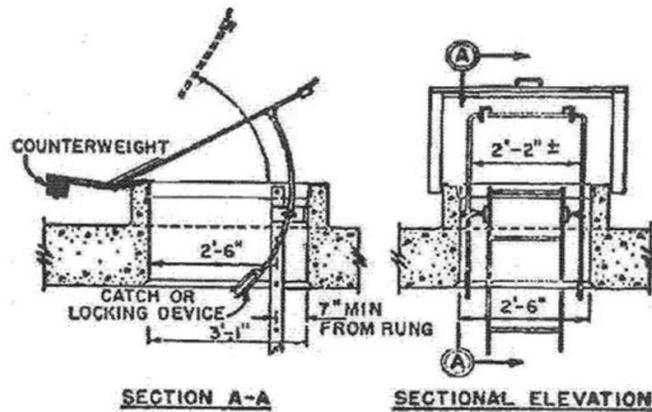


Figure D-3 – Example of Counterbalanced Hatch Cover at Roof

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Final Paragraph (d) Fixed Ladders (cont.)

■ **1910.23(d)(10)** requires that employers ensure that the construction of individual rung ladders will prevent workers feet from sliding off the ends of the rungs (See Figure D-4 of this section).

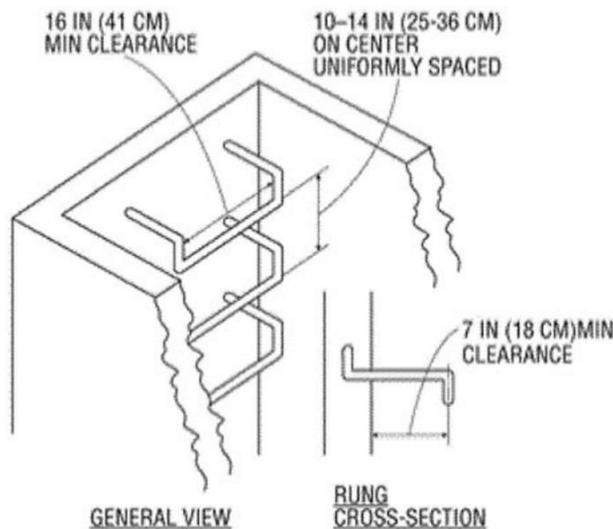


Figure D-4 -- Individual Rung Ladder

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

■ **1910.23(d)(11)** requires that employers ensure workers do not use fixed ladders that have a pitch greater than 90 degrees from the horizontal. A ladder that exceeds a pitch of 90 degrees makes the ladder dangerous to climb because pitch greater than 90 degrees requires climbers to exert considerable extra force to maintain their grip on the ladder against the gravitational force.

■ **1910.23(d)(12)** addresses step across distance for through and side-step ladders.

■ **1910.23(d)(12)(i)** requires that employers ensure that the step across distance for through ladders is not less than 7 inches and not more than 12 inches, to the nearest edge of the structure, building, or equipment accessed from the ladder, measured from the centerline of the ladder.

■ **1910.23(d)(12)(ii)** requires that employers ensure that the step across of side-step ladders is at least 15 inches, but not more than 20 inches, measured from the centerline of the ladder to the nearest point of access on the platform edge (See Figure D-2).

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

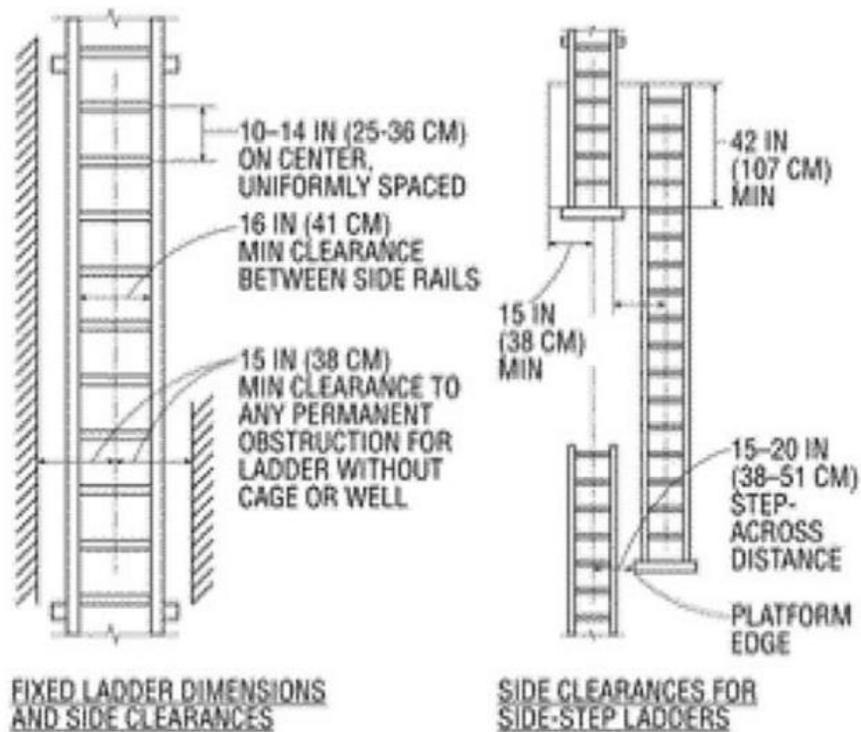


Figure D-2 -- Side-Step Fixed Ladder Sections

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Final Paragraph (d) Fixed Ladders (cont.)

- **1910.23(d)(13)** addresses fixed ladders that do not have cages or wells.
- **1910.23 (d)(13)(i)** requires a clear width of at least 15” (38 cm) on each side of the ladder centerline to the nearest permanent object;
- **1910.23(d)(13)(ii)** require that employers ensure there is a minimum perpendicular distance of 30 inches from the centerline of the steps or rungs to the nearest object on the climbing side of the ladder. This final rule provides an exception to the minimum perpendicular clearance requirement “when unavoidable obstructions are encountered.” The final rule allows a reduction of the minimum clearance to 24 inches in those cases, provided that employers install deflector plates. The deflector plate will protect workers on fixed ladders by guiding them around the obstruction (see Figure D-5 of this section).

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Section 1910.23 Ladder Regulations

Final Paragraph (d) Fixed Ladders (cont.)

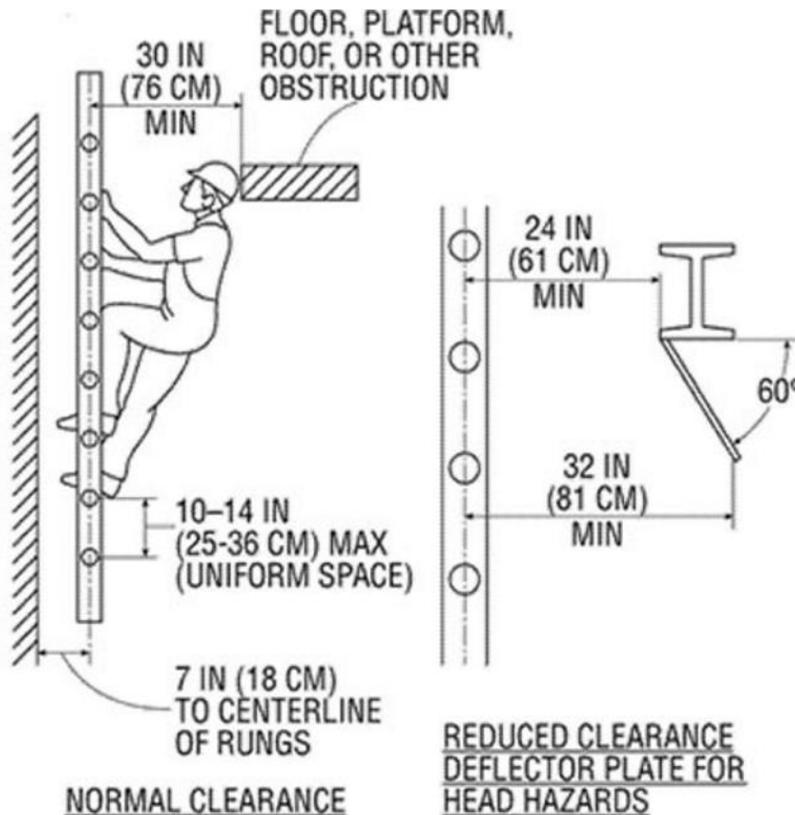


Figure D-5 -- Fixed Ladder Clearances

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

These requirements apply to mobile ladder stands and mobile ladder stand platforms in addition to the requirements specified in paragraph (b) that cover all ladders.

- **1910.23(e)(1)** establishes general design and use requirements that apply to both mobile ladder stands and mobile ladder stand platforms.
- **1910.23(e)(1)(i)** requires that employers ensure that the minimum width of steps on mobile ladder stands and platforms is 16 inches.

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

■ **1910.23(e)(1)(ii)** requires that employers ensure that steps and platforms of mobile ladder stands and platforms be slip resistant. Employers may meet the slip-resistance requirement by providing mobile ladder stands and platforms where the slip-resistance surfaces either are (1) an integral part of the design and construction of the mobile ladder stand and platform, or (2) provide a secondary process or operation. For the purpose of this final rule, processes include things such as dimpling, knurling, shot blasting, coating, spraying the walking working surface, or adding durable slip resistant tape to steps and platforms. For example, in outdoor, icy conditions, grated steps and platforms may provide better slip resistance than steps and platforms with a spray-on finish. Employers have both an initial and continuing obligation to ensure that steps and platforms on mobile ladder stands and platforms remain slip-resistant. If the slip resistance on steps of stands or platforms wears down or is in need of repair, the final rule requires that employers treat those surfaces with additional process to restore their resistance.

■ **1910.23(e)(1)(iii)** requires that employers ensure mobile stands and platforms are capable of supporting at least four (4) times their maximum intended load.

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

■ **1910.23(e)(1)(iv)** requires that employers ensure wheels and casters of mobile ladder stands and platforms under load are capable of supporting (1) their proportional share of four times the maximum intended load, plus (2) their proportional share of the units weight.

■ **1910.23(e)(1)(v)** requires that employers ensure mobile ladder stands and platforms have handrails when the height of the top step is 4 feet or higher above lower levels. Where handrails are required, employers must ensure that the handrails have a vertical height of at least 29.5 inches but not more than 37 inches, as measured from the front edge of the step, unless specified elsewhere in this section. This final rule is to assist the worker while climbing the ladder stands and platforms and also provide a handhold they can grab to steady themselves if they slip or start to fall off the unit.

■ **1910.23(e)(1)(vi)** requires that employers ensure the maximum working surface height of mobile ladder stands and platforms does not exceed four (4) times the shortest dimension of the base, without additional support. The final rule also specifies when mobile ladder stands and platforms need to reach greater heights, the employer must provide additional support such as outriggers, counterweights or comparable means to stabilize the base and prevent the unit from overturning.

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

■ **1910.23(e)(1)(vii)** requires that employers ensure wheels and casters on mobile ladder stands and platforms are equipped with a system that will impede horizontal movement when a worker is on the unit. OSHA believes the requirement in final paragraph (e)(1)(vii) is necessary to prevent accidental or inadvertent movement of a mobile ladder or platform. If the stand or platform suddenly moves, it may cause the worker to fall off the unit.

■ **1910.23(e)(1)(vii)** requires that employers ensure mobile ladder stands and platforms do not move while workers are on them. This final rule will prevent workers from falling from mobile ladder stands and platforms.

■ **1910.23(e)(2)** establishes design requirements for mobile ladder stands and platforms in addition to the general mobile ladder stand and platforms requirements stated in paragraph (e)(1).

■ **1910.23(e)(2)(i)** the employer must ensure that steps are uniformly spaced and arranged, have a maximum rise of 10 inches, and have a maximum depth of 7 inches. The final rule also requires that the employer ensures the slope (angle) of the “step stringer” to which the steps are attached is not more than 60 degrees from horizontal.

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

■ **1910.23(e)(2)(ii)** requires that employers ensure these mobile ladder stands have handrails on three sides of the top step. The employer must ensure that the handrail has a vertical height of at least 36 inches. Also, top steps with a length (depth) of at least 20 inches, front to back, must have midrails and toeboards.

■ **1910.23(e)(2)(iv)** requires that employers ensure the standing area of mobile ladder stands are within the base frame. OSHA believes this requirement is necessary to ensure the stability of mobile ladder stands. Keeping the center of gravity within the base frame increases the stability of the mobile ladder stand. This requirement reduces the potential for the mobile ladder stand to tip when a worker is using it.

■ **1910.23(e)(3)(i)** like the proposed paragraph and final paragraph (e)(2)(i), requires employers ensure that steps of mobile ladder stand platforms:

- Are uniformly spaced and arranged;
- Have a maximum rise of 10 inches; and,
- Have a maximum depth of 7 inches.

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

The final rule also requires that the employer ensures the slope (angle) of the “step stringer” to which the steps are attached is not more than 60 degrees from horizontal.

Final paragraph (e)(3)(i) differs from final paragraph (e)(2)(i) in one respect. It includes an exception when the employer demonstrates that the final requirement is not feasible. In that circumstance, the employer may use mobile ladder stand and platforms that have steeper slopes or vertical rung ladders, providing the employer stabilizes the alternative unit to prevent it from overturning. The final rule includes this exception because OSHA recognizes that there may be situations or locations where, for example, the slope of the step stringer on a mobile ladder stand platform may need to be greater than the 60 degree limit. When employers demonstrate the final rule is not feasible, OSHA notes that employers will be in compliance with the final paragraph (e)(3)(i) if they use mobile ladder stand platforms with a slope up to 70 degrees.

■ **1910.23(e)(3)(ii)** requires that employers ensure the platform areas have handrails and midrails. Employers also must ensure the handrails on the platforms in this height range have a vertical height of at least 36 inches. As discussed on final paragraph (e)(2)(ii), these requirements are necessary to protect workers from falling of walking-working surfaces that are 4 feet or more above a lower level.

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Section 1910.23 Ladder Regulations

Final Paragraph (e) Mobile Ladder Stands and Mobile Ladder Stand Platforms

■ **1910.23(e)(3)(iii)** establishes requirements for mobile ladder stand platforms that are more than 10 feet above a lower level. For these units, the final rule requires that employers must ensure that the exposed sides and ends of the platforms have both guardrails and toeboards. OSHA notes that all fall protection and falling object protection requirements must meet the systems criteria in final 1910.29.

The toeboards must, consistent with the requirements of 1910.29:

- Have vertical height of at least 3.5 inches;
- Not have more than a 0.25 inch clearance above the platform surface;
- Be solid, or have openings that do not exceed 1 inch at the greatest dimension; and
- Be capable of withstanding a force of at least 50 pounds applied at any downward or outward direction at any point along the toeboard (see final 1910.29(k)(1)(ii)).

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Chapter 4

OSHA 1910.28: Duty to Have Ladder Fall Protection

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Section 1910.28 Duty to Have Ladder Fall Protection

Section 1910.28 is the first of three new sections in subpart D that consolidate requirements pertinent to fall protection and falling object protection.

Paragraph (a) General

■ **1910.28(a)(1)** requires employers to provide protection to workers exposed to falls and falling object hazards. It also specifies that, unless otherwise specified, the protection employers provide must comply with the criteria and work practices in 1910.29. In addition this final paragraph clarifies that personal fall protection system must comply with the criteria and work practices in 1910.140, Personal Fall Protection Systems.

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Section 1910.28 Duty to Have Ladder Fall Protection

■ **1910.28(a)(2)** Lists seven situations in which the requirements in 1910.28 do not apply:

- **1910.28(a)(2)(i)** portable ladders
- **1910.28(a)(2)(ii)** when the employer is inspection, investigation, or assessing workplace conditions or the location at which work is to be performed prior to the start of work or after all work has been completed. However this exemption does not apply when fall protection systems or equipment meeting the requirements of 1910.29 have been installed and available for workers to use. If fall protection systems are present, workers must use them while conduction pre-work and post-work inspections, investigations, or assessments of workplace conditions.
- **1910.28(a)(2)(iii)** fall hazard presented by the exposed perimeters of stages and the exposed perimeters of rail-station platforms.
- **1910.28(a)(2)(iv)** powered platforms covered by 1910.66(j)
- **1910.28(a)(2)(v)** aerial lifts covered by 1910.67(c)(2)(v)
- **1910.28(a)(2)(vi)** telecommunications work covered by 1910.268(n)(7) and 1910.268(n)(8)
- **1910.28(a)(2)(vii)** electrical power generation, transmission and distribution work covered by 1910.269(g)(2)(i)

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Section 1910.28 Duty to Have Ladder Fall Protection

Paragraph (b) Protection From Fall Hazards

■ **1910.28(b)** sets forth the requirements on the types of fall protection systems that employers must select and use to protect workers from fall hazards, while working in specific workplace areas, situations, and activities. The final rule allows employers to use any one or more of the fall protection systems listed for the particular area, situation, or activity, including:

- Guardrail Systems
- Safety Net Systems
- Personal Fall Protection Systems
- Personal Fall Arrest Systems
- Travel Restraint Systems
- Ladder Safety Systems
- Hand Rails
- Designated Areas

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Section 1910.28 Duty to Have Ladder Fall Protection

Fixed Ladders (that extend more than 24 feet above a lower level)

■ **1910.28(b)(9)** requires that employers provide fall protection to those fixed ladders more than 24 feet above a lower level.

■ **1910.28(b)(9)(i)** establishes a new framework to protect workers from fall hazards on fixed ladders that allows employers gradually over 20-years, phase in ladder safety/personal fall protection systems and phase out the use of cages and wells as a means of fall protection.

• **1910.28(b)(9)(i)(A)** for fixed ladders erected before November 19, 2018, employers have up to 20 years to install ladder safety or personal fall arrest systems;

• **1910.28(b)(9)(i)(B)** for new fixed ladders erected on or after November 19, 2018, the employer must equip the ladder with a ladder safety or personal fall arrest system;

• **1910.28(b)(9)(i)(C)** for ladder repairs and replacements, when an employer replaces any portion of a fixed ladder the replacement must be equipped with a ladder safety or personal fall arrest system;

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Section 1910.28 Duty to Have Ladder Fall Protection

Fixed Ladders (that extend more than 24 feet above a lower level)

- **1910.28(b)(9)(i)(D)** the final deadline for all fixed ladders. After November 18, 2036 all fixed ladders must be equipped with a ladder safety or personal fall arrest system.

- **1910.28(b)(9)(ii)** adds new requirements for one-section fixed ladders that are equipped with personal fall arrest systems or ladder safety systems and fixed ladders equipped with those systems on more than one ladder section. For these ladders the final rule requires employers ensure:
 - **1910.28(b)(9)(ii)(A)** the personal fall arrest or ladder safety system provides protection throughout the vertical distance of the ladder, including all ladder sections; and

 - **1910.28(b)(9)(ii)(B)** the ladder has rest platform provided at least every 150 feet.

- **1910.28(b)(9)(iv)** is a new provision OSHA added to the final rule that allows employers to use cages and wells in combination with personal fall arrest and ladder safety systems, provided the cages and wells do not interfere with the operation of the system.

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Section 1910.28 Duty to Have Ladder Fall Protection

Ladders and Outdoor Advertising

■ **1910.28(b)(10)** addresses fall hazards on fixed ladders used in outdoor advertising billboards. Final paragraph 1910.28(b)(10) in combination with (b)(9) requires that employers ensure their workers use fall protection while climbing fixed ladders that extend more than 24 feet above a lower level.

■ **1910.28(b)(10)(i)** specifies the fall protection requirements for fixed ladders in final paragraph (b)(9) also apply to fixed ladders in outdoor advertising. In addition, they must follow the schedule in final paragraph (b)(9)(i) for gradually phasing in the installation of ladder safety and personal fall arrest systems on fixed ladders. Final paragraph (b)(10)(i) also requires that employers in outdoor advertising follow other provisions in revised subparts D and I, such as the inspection and maintenance requirements in final 1910.22, the training requirements in final 1910.30, and criteria for personal fall protection in 1910.140.

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Section 1910.28 Duty to Have Ladder Fall Protection

Ladders and Outdoor Advertising

■ **1910.28(b)(10)(ii)** establishes the requirements outdoor advertising employers must follow during the phase in period (two years) they have to install a cage, well, ladder safety system or personal fall arrest system. During this period when outdoor advertisers have not yet installed fall protection, employers must ensure that each worker:

- **1910.28(b)(10)(ii)(A)** receives training and demonstrates the physical capability to perform the necessary climbs in accordance with 1910.29(h);
- **1910.28(b)(10)(ii)(B)** wears a body harness equipped with an 18 inch rest lanyard;
- **1910.28(b)(10)(ii)(C)** keeps both hands free of tools and material while climbing the fixed ladder; and
- **1910.28(b)(10)(ii)(D)** is protected by a fall protection system upon reaching the work position

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Chapter 5

OSHA 1910.29: Ladder Fall Protection Criteria and Practices

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Section 1910.29 Ladder Fall Protection Criteria and Practices

■ **1910.29** requires that employers ensure the fall protection system and falling objects protection they select meet the specific criteria and practice provisions.

Paragraph (a) General Requirements

1910.29(a)(1) specifies that employers ensure those systems meet the application requirements in 29 CFR part 1910, subpart I, namely final 1910.132, general requirements, general requirements and 1910.140, personal fall protection equipment.

1910.29(a)(2) specifies that employers must provide and install all fall protection systems and falling object protection required by final subpart D, and comply with all other applicable requirements of final subpart D, before any worker begins work that necessitates fall or falling object protection. This provision requires that employers take a proactive approach to managing fall and falling object hazards by installing, for example fall protection systems or components (e.g. vertical lifeline), so the systems are in place and available for use whenever there is potential worker exposure to fall hazards.

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Section 1910.29 Ladder Fall Protection Criteria and Practices

Paragraph (g) Cages, Wells and Platforms Used With Fixed Ladders

- **1910.29(g)** establishes criteria and practice requirements for cages, wells, and platforms used with fixed ladders.

- **1910.29(g)(1)** requires that employers ensure cages and wells installed on fixed ladders are designed, constructed, and maintained to permit easy access to, and egress from the ladder that they enclose.

- **1910.29(g)(2)** both the general industry and construction standards require that cages extend along the fixed ladder to a point that is not less than 7 feet and no more than 8 feet above the base of the ladder (see 1910.27(d)(1)(iii) and 1926.1053(a)(20)(vii)). These standards also require that the tops of cages extend at least 42 inches above the top of the platform or the point of access at the top of the ladder (see 1910.27(d)(1)(iii) and 1926.1053(a)(20)(viii)).

- **1910.29(g)(3)** requires that employers ensure cages and wells are designed, constructed, and maintained so they contain workers in the event of a fall and direct them to a lower landing.

- **1910.29(g)(4)** requires that employers ensure landing platforms used with fixed ladders provide workers with a horizontal surface that is at least 24 inches by 30 inches.

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Section 1910.29 Ladder Fall Protection Criteria and Practices

Paragraph (h) Outdoor Advertising

1910.29(h) establishes temporary criteria and practice requirements for employers engaged in outdoor advertising (billboard) operations (hereafter referred to as “outdoor advertising operations” and “outdoor advertising employers”), during the phase out period.

1910.29(h)(1) requires that outdoor advertising employers ensure that each worker who climbs fixed ladders without fall protection is physically capable to perform those duties that employers may assign. To ensure that workers are physically capable, final paragraph (h)(1) requires that employers either observe workers performing actual climbing activities, or ensure workers undergo a physical examination.

1910.29(h)(2) requires that outdoor advertising employers ensure their workers who climb fixed ladders without fall protection (1) successfully complete a training or apprenticeship program that includes hands-on training for the safe climbing of ladders (including fixed ladders without fall protection and portable ladders); and (2) receive retraining as necessary to ensure they maintain necessary skills.

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Section 1910.29 Ladder Fall Protection Criteria and Practices

Paragraph (h) Outdoor Advertising

- **1910.29(h)(3)** requires that outdoor advertising employers ensure workers possess the skill to climb ladders safely as demonstrated through;
 - Formal classroom training; and
 - Performance observations

- **1910.29(h)(4)** requires that employers permit workers to climb fixed ladders without fall protection only if such climbing is part of their routine work activities.

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Section 1910.29 Ladder Fall Protection Criteria and Practices

Paragraph (i) Ladder Safety Systems

■ **1910.29(i)** establishes criteria and practice requirements for ladder safety systems permanently attached to fixed ladders or immediately adjacent to such ladders.

■ **1910.29(i)(1)** requires that employers must ensure each ladder safety system allows workers to climb up and down the fixed ladder with both hands free for climbing. The final rule also specifies that the design of the ladder safety system must be such that it does not require that workers continuously hold, push, or pull any part of the system while they are climbing.

■ **1910.29(i)(2)** requires that the employer ensure the connection between the carrier or lifeline and the point of attachment to the body harness or belt does not exceed 9 inches in length. The purpose of this provision is to limit the length of any fall and resulting arrest forces. The final rule ensures that no fall exceeds 18 inches, which will limit the arresting forces.

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Section 1910.29 Ladder Fall Protection Criteria and Practices

Paragraph (i) Ladder Safety Systems

■ **1910.29(i)(3)** requires employers to ensure that mountings for rigid carriers are attached at each end of the carrier, with intermediate mounting spaced, as necessary, along the entire length of the carrier so the system has the strength to stop workers fall.

■ **1910.29(i)(4)** requires that employers ensure flexible carriers have mounting attached at each end of the carrier. The final rule also requires the installation of cable guides for flexible carriers, at least 25 feet apart, but no more than 40 feet apart, along the entire length of the carrier.

■ **1910.29(i)(5)** requires employers to ensure that the design and installation of mountings and cable guides do not reduce the design strength of the ladder.

■ **1910.29(i)(6)** requires that employers ensure ladder safety systems and their support systems are capable of withstanding, without failure, a drop test consisting of an 18 inch drop of a 500 pound weight. This drop test, therefore, must arrest and suspend the 500 pound weight without damage to or failure of the ladder safety system and its support system and without the test weight hitting a lower level.

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Chapter 6

OSHA 1910.30 Training Requirements

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Section 1910.30 Training Requirements

1910.30 adds training requirements to 29 CFR part 1910, subpart D and requires training on fall and equipment hazards and, in certain situations, retraining. The final training requirements are performance based, and give employers flexibility to tailor the requirements and training methods to their workforce and workplace.

Paragraph (a) Fall Hazards

■ **1910.30(a)** contains training requirements related to fall hazards. Final paragraph (a)(1) requires that employers train each employee who uses a personal fall protection system.

■ **1910.30(a)(1)** requires that employers train each worker required to receive training under subpart D. Subpart D requires worker training in several situations, including:

- When employees use a rope descent system (1910.27(b)(2)(iii));
- When employees work on an unguarded side of a platform used on slaughtering facilities, loading racks, loading docks or teeming platforms (1910.28(b)(1)(iii) and 1910.28(b)(14)(ii)(C)); and
- When employees operate motorized equipment on dockboards not equipped with fall protection (e.g., guardrails) (1910.28(b)(4)(ii)(C)).

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Section 1910.30 Training Requirements

Paragraph (a) Fall Hazards

■ **1910.30(a)(2)** does not require or prohibit a specific format for delivering training to workers. OSHA supports the use of different formats (e.g., classroom, audio-visual, demonstration, practical exercise, field training, written) and new technology (e.g., online, interactive computer-based, web-based) to train workers in accordance with 1910.30. Thus, final paragraph (a)(2) allows employers to use video-based training and computer-based training, provided that:

- A qualified person, as defined in 1910.21(b), developed or prepared the training;
- The training content complies with the requirements in final 1910.30; and
- The employer provides the training in a manner each worker understands (1910.30(D)).

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Section 1910.30 Training Requirements

Paragraph (a) Fall Hazards

■ **1910.30(a)(3)** specifies the minimum subjects and topics that fall hazard training must cover. Final paragraph (a)(3) requires that employers provide training in at least the following topics:

- **1910.30(a)(3)(i)** the nature of fall hazards in the work area and how to recognize them;

- **1910.30(a)(3)(ii)** the procedures that must be followed to minimize the hazards;

- **1910.30(a)(3)(iii)** the correct procedures for installing, inspecting, operating, maintaining, and disassembling the personal fall protection systems that the worker uses; and

- **1910.30(a)(3)(iv)** the correct use of personal fall protection systems and equipment, including, but not limited to, anchoring, and tie-off techniques, and methods of equipment inspection and storage as specified by the manufacturer.

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Section 1910.30 Training Requirements

Paragraph (b) Equipment Hazards

■ **1910.30(b)** contains training requirements related to equipment hazards. The provisions require that employers ensure workers are trained in the following:

- **1910.30(b)(1)** the proper care, inspection, storage, and use of equipment covered in subpart D, under this provision employers must train workers in equipment as well as fall protection systems that final paragraph (a) does not cover;
- **30(b)(2)** how to properly place and secure dockboards to prevent unintentional movement;
- **1910.30(b)(3)** how to properly rig and use a rope descent system; and
- **1910.30(b)(4)** How to properly set up and use designated areas.

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Section 1910.30 Training Requirements

Paragraph (c) Retraining

■ **1910.30(c)** requires that employers retrain workers when they have reason to believe that those workers do not have the understanding and skill that final paragraphs (a) and (b) require. In particular final paragraph (c) requires that employers train workers in situations including, but not limited to, the following:

- **1910.30(c)(1)** when workplace changes render previous training obsolete or inadequate;
- **1910.30(c)(2)** when changes in the type of fall protection systems or equipment workers use renders previous training obsolete or inadequate; or
- **1910.30(c)(3)** when inadequacies in a workers knowledge or use of fall protection systems or equipment indicates the worker does not have the requisite understanding or skill necessary to use the equipment or perform the job safely.

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Section 1910.30 Training Requirements

Paragraph (c) Retraining

The training requirements in this section impose an ongoing responsibility on employers to maintain worker proficiency. As such, when workers are no longer proficient, the employer must retrain them in the requirements of final paragraphs (a) and (b) before workers perform the job again. Examples of when retraining is necessary include:

- When the worker performs the job or uses equipment in an unsafe manner;
- When the worker or employer receives an evaluation or information that the worker is not performing the job safely; or
- When the worker is involved in an incident or near-miss.

Paragraph (d) Training Must Be Understandable

1910.30(d) requires that employers provide information and training to each worker in a manner that the employee understands.

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Chapter 7

OSHA 1910.140: Ladders & Personal Fall Protection Systems

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (a) Scope and Application

1910.140(a) specifies that employers must ensure each personal fall protection system that part 1910 requires complies with the performance, care, and use criteria specified in 1910.140. OSHA notes that not only does 1910.140 apply to the new and revised requirements in subpart D, but also it applies to existing requirements in part 1910 that mandate or allow employers to protect workers from fall hazards using personal fall protection systems (1910.33; 1910.67; 1910.268; and 1910.269)

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (c) General Requirements

■ **1910.140(c)(4)** requires that employers ensure lanyards and vertical lifeline have a minimum breaking strength of 5,000 pounds. Breaking strength refers to the point at which a lanyard or vertical lifeline will break because of the stress put on it.

■ **1910.140(c)(5)** provides an exception to the 5,000 strength requirement for SRL's that automatically limit free fall distance to 2 feet or less. The final provision allows a lower strength requirement because the fall arrest requirements are less when free falls are limited to 2 feet. These lifelines and lanyards must have components capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position. Tensile load means a force that attempts to pull apart, stretch an object, while tensile strength means the ability of an object or material to resist forces that attempt to pull apart or stretch the object or material.

■ **1910.140(c)(6)** requires that a competent or qualified person must inspect each knot in lanyards and vertical lifelines, before a worker uses the lanyard or lifeline, to ensure they still meet the minimum strength requirements in paragraphs (c)(4) and (c)(5). This new requirement is based on the note OSHA included in proposed paragraph (c)(4) warning employers that the use of knots "may significantly reduce the breaking strength" of lanyards and vertical lifelines.

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (c) General Requirements

■ **1910.140(c)(12)** requires that employers ensure anchorages used to attach to personal fall protection equipment are independent of any anchorage used to suspend workers or work platforms. This requirement ensures that if the anchorage holding other equipment (such as powered platforms or RDS) fails, the worker will still be protected by the separate, independent anchorage to which the personal fall protection system is secured.

■ **1910.140(c)(13)** adopts strength requirements for anchorages for personal fall protection systems, and includes a performance based alternative. The final provision requires that anchorages either, (1) be capable of supporting at least 5,000 pounds for each worker attached, or (2) be designed, installed, and used under the supervision of a qualified person as part of a complete personal fall protection system safety factor of at least two. The anchorage strength requirement applies to personal fall arrest, travel restraint, and positioning position anchorages, but not to window cleaner's belt anchors, which are addressed separately in paragraph (e).

■ **1910.140(c)(14)** requires that restraint lines in travel restraint systems be capable of sustaining a tensile load of at least 5,000 pounds. OSHA existing fall protection standards do not include any requirements that specifically address travel restraint systems or lines.

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (c) General Requirements

- **1910.140(c)(20)** requires that employers ensure all ropes, lanyards, lifelines, harnesses, and body belts used for personal fall protection systems are protected from being cut, abraded, melted, or otherwise damaged.
- **1910.140(c)(21)** requires that employers provide for the prompt rescue of workers in the event of a fall. This requirement is necessary because workers suspended after a fall are in danger of serious injury due primarily to suspension trauma.
- **1910.140(c)(22)** requires that workers wear personal fall protection systems with the attached point of the body harness in the center of a workers back near shoulder level. The final rule includes one exception, the attachment point may be located in the pre-sternal position if the free fall distance is limited to 2 feet or less.

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (d) Personal Fall Arrest Systems

- **1910.140(d)** establishes specific requirements for using personal fall arrest systems.
- **1910.140(d)(1)** establishes performance criteria for personal fall arrest systems.
- **1910.140(d)(1)(i)** requires that employers ensure personal fall arrest systems limit the maximum arrest force on a worker to 1,800 pounds.
- **1910.140(d)(1)(ii)** limits the maximum deceleration distance to 3.5 feet. This requirement pertains only to the operation of the deceleration device itself and not to the 6 foot free fall distance specified in paragraph (d)(2)(ii). The 3.5 foot deceleration distance in the paragraph is in addition to the 6-foot free fall distance. Accordingly, once the free fall ends and the deceleration device begins to operate, the personal fall arrest system must bring the worker to a complete stop within 3.5 feet. Combining the free fall distance with the deceleration distance means that the total maximum distance a worker may travel during a fall could be 9.5 feet.

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (d) Personal Fall Arrest Systems

- **1910.140(d)(1)(iii)** requires personal fall arrest systems have sufficient strength to withstand twice the potential impact energy of the worker free falling a distance of 6 feet, or the free fall distance permitted by the system.
- **1910.140(d)(1)(iv)** is a new paragraph added to the final rule requiring that fall arrest systems be capable of sustaining the worker within the system or strap configuration without making contact with the workers neck and chin area.
- **1910.140(d)(1)(v)** personal fall arrest systems meeting the criteria and protocols set out in appendix D to 1910.140 will be deemed to be in compliance with the requirements of paragraphs 1910.140(d)(1)(i); 1910.140(d)(1)(ii); and 1910.140(d)(1)(iii) when used by a worker who has a combined tool and body weight of less than 310 pounds.
- **1910.140(d)(2)** establishes criteria for the use of persona fall arrest systems.

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Section 1910.140 Ladders & Personal Fall Protection Systems

Paragraph (d) Personal Fall Arrest Systems

- **1910.140(d)(2)(i)** OSHA, requires that, for horizontal lifelines that may become vertical lifelines, the device used to connect to the horizontal lifeline must be capable of locking in both directions on the lifeline.

- **1910.(d)(2)(ii)** requires the personal fall arrest system to be rigged so that a worker cannot free fall more than 6 feet, nor contact a lower level. The system strength and deceleration criteria for personal fall arrest systems are based on a maximum free fall distance of 6 feet.

- **1910.140(d)(3)** prohibits employers from using body belts as part of a personal fall arrest system.

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Section 1910.140 Ladders & Personal Fall Protection Systems

Profile of Affected Industries, Firms, Workers, and Other Factors of Production

Affected Industries and Employees

Revised subparts D and I apply to employers and industries covered by OSHA's standards for general industry in 29 CFR part 1910. Similarly, all other subparts in part 1910 affected by these revisions to OSHA's walking-working surfaces standards would impose requirements on employers in general industry under OSHA's jurisdiction. The general industry category excludes establishments in agriculture, maritime (longshoring, marine terminal, and shipyards), and mining industries (except for oil and gas extraction). Also excluded from the final standard are employee tasks on surfaces that fall outside of OSHA's jurisdiction due to location or operational status, or those tasks that are subject to unique industry-specific fall protection requirements addressed elsewhere in part 1910, including 1910.268, Telecommunications, Electric power generation, transmission, and distribution. An example of a jurisdiction category excluded from the scope of the final rule based on location or operational status is employee exposure to fall hazards when railroad rolling stock is traveling on rails or trucks are traveling on highways; the Department of Transportation regulates these operations

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Chapter 8

Next Steps: What Do I Need to Do?

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Next Steps

Bringing Your Ladders Into Compliance

Ladders are consistently on OSHA's top ten list of cited standards and with the new Slips, Trips, and Falls/Walking-Working Regulations now in effect, employers are under more pressure than ever to ensure their facilities are safe and compliant. If you are wondering about next steps, we recommend starting with a ladder assessment. During the assessment process, we can help identify facility areas where, by law, you are required to provide fall protection. What's more, the assessment can help determine if existing ladder systems meet the criteria outlined in OSHA 1910.29. It's also important to be mindful of the upcoming compliance dates for fixed ladders (higher than 24'):

- **11/19/2018** – Cages, wells, ladder safety systems, or personal fall arrest systems required ***on all existing fixed ladders***
- **11/19/2018** – Ladder safety systems or personal fall arrest systems required for ***all new fixed ladders***
- **11/18/2036** – Ladder safety systems or personal fall arrest systems required for ***all fixed ladders***

Thanks for your interest in OSHA's new ladder regulations and for taking the time to download and read this e-book—both of which are important steps toward ensuring the safety of your employees and the compliance of your facility. If you have questions about the OSHA compliance of your ladders, or wish to schedule an assessment, contact Diversified Fall Protection for further assistance.

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Next Steps

About Diversified Fall Protection

Diversified Fall Protection specializes in the design, development, and manufacture of highly engineered fall protection systems and ladders designed to keep workers safe while working at heights. Since 1994, Diversified Fall Protection has upheld its Life Matters™ promise by preventing one of the most common causes of work-related injuries, through the installation of thousands of OSHA-compliant fall protection systems.

We are committed to educating our clients about fall protection safety and utilize a turnkey approach that creates single source responsibility for all phases of your project, from assessments, design and fabrication to installation, training, and system re-certification. From our headquarters in Cleveland, Ohio and regional offices in Houston, Texas and South Carolina, Diversified Fall Protection can provide the expert knowledge and reliable resources required to keep your employees safe, safeguard your company's assets, and ensure your organization's compliance with all OSHA fall protection regulations.

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