

OSHA's New Walking-Working Surfaces & Fall Protection Requirements

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Current rules: Background

- Slips, trips, and falls constitute the majority of general industry accidents
 - About 20% of all disabling occupational injuries result from falls (202,066 serious accidents/year)
 - Data attribute 15% of all accidental deaths to slip/trip/fall incidents, second only to motor vehicles as a cause of fatalities (falls results in 345 fatalities/yr)
- Falls from ladders account for 20% of all fatal and LWD injuries in general industry
- Hazards to GI industry employees often arise from level surfaces such as floors (usually less serious injuries), but GI also covers worker falls from ladders, scaffolds, towers, aerial lifts, outdoor signs, roof hatches and similar heights
- OSHA standards for walking/working surfaces apply to all permanent places of employment, except where only domestic, mining, or agricultural work is performed
 - Walking/working surfaces are addressed in specific standards for the general industry, shipyard employment, marine terminals, longshoring, and the construction industry

Why Do S/T/F Injuries Occur?

Slip: Too little friction or traction between feet (footwear) & walking/working surface, resulting in loss of balance

Trip: (1) Foot or lower leg hits object & upper body continues moving, resulting in loss of balance, or (2) Stepping down to lower surface & losing balance

Fall: Occurs when too far off center of balance

- Two types
 - Fall at same level
 - Fall to same walking or working surface, or fall into or against objects above same surface
 - Fall to lower level
 - Fall to level below walking or working surface

Common Slip/trip/fall injuries

Sprains & strains

Knee, ankle and/or foot

Bruises & contusions

Wrist &/or elbow

Fractures

Back &/or shoulder

Abrasions & lacerations

Hip

Head

Old Rules

- Subpart D, general industry standards for walking-working surfaces, was adopted in April 1971
- Existing general industry standards recognize use of **guardrails** and **barriers** as primary methods of protection but don't directly recognize personal fall protection systems
 - OSHA has 1984 GI directive that use of personal fall arrest systems would be permitted when workers were exposed to falls of 4+ feet if the situation was not occurring on a "predictable and regular basis" – defined as at least one every two weeks, or for total of 4+ manhours during any sequential four-week period
- The primary sources for subpart D were several **pre-1971** editions of American National Standards Institute (ANSI) consensus standards

OSHA Rulemaking: Overview

- 4/10/1990 - Initial NPRM issued, comments closed 8/22/1990, hearing 9/11/1990
- 5/2/2003 – Rulemaking record reopened as result of issues raised in earlier comments and hearing
- 5/24/2010 – second proposed rule issued to reflect current information and increase consistency with other OSHA standards - <https://www.gpo.gov/fdsys/pkg/FR-2010-05-24/html/2010-10418.htm>
- Hearings and comments received through 2011
- 10/16 - Final rule cleared by OMB/OIRA
- 11/18/2016 – Final rule published in Federal Register (81 Fed Reg 82494) – 513 pages!
 - Covers all horizontal/vertical/inclined walking-working surfaces including, but not limited to: floors, aisles, ladders, dockboards, step bolts, roofs, ramps, stairways, scaffolds, elevated work surfaces and walkways
 - Effective date is January 17, 2017, but some requirements have later compliance dates/grandfathering

Revision of General Industry Rules

- Final Rule (29 CFR Part 1910, Subparts D & I) addresses:
 - Fixed ladders
 - Rope descent systems (300-foot height limit)
 - Fall protection systems
 - Training on fall hazards and fall protection systems
 - Adds requirements on design, performance and use of fall protection systems
 - NOTE: WWS defined as: “Any horizontal or vertical surface on or through which an employee walks, works or gains access to a work area or workplace location.”
- Adds consistency between GI and construction standards (29 CFR Part 1926, subparts L, M & X)
- Updates requirements to harmonize with national consensus standards: e.g., ANSI A1264.1 (surfaces, floor, wall and roof openings; stairs and guardrail systems), ANSI Z359.1 (personal fall arrest systems), and ANSI I-14.1 (window cleaning)
- Gives employers flexibility to use personal fall protection systems (personal fall arrest, travel restraint, and work positioning systems) in lieu of guardrail systems – performance orientation

Costs and Benefits

- OSHA estimates the rule will prevent 29 fatalities and 5,842 injuries annually
 - There were 270 fatal falls to lower level in 2012
- OSHA said it would not have a “significant” economic impact on small businesses (so no SBREFA panel)
- Total annualized costs: \$305 million
 - Majority of the costs attributed to training (\$74.2 million), Scaffolds and rope descent systems (\$71.6 million), and duty to have fall protection and falling object protection (\$55.9 million)
- Total annual monetized benefits: \$614.5 million
- Net Benefit: \$309.5 million
- OSHA assumes that most equipment manufacturers already provide equipment that meets the new rule, so will reduce costs ... also phase-in for some provisions of 20 years (fixed ladders)
- Industries affected include: manufacturing, warehousing, utilities, retail, window cleaning, chimney sweeping, building management services, and outdoor advertising ... and everyone else under the GI standard!

Revision of General Industry Rules

- Fall protection flexibility
- Updated scaffold requirements to match OSHA construction standards
- Phase-in of ladder safety systems or PFA systems on fixed ladders (20 years)
- Phase-out of “qualified climber” exception in outdoor advertising
- Rope descent systems (RDS) and certification of anchorages (to 5000 lbs)
- Personal fall protection system performance and use requirements
- Inspection of walking-working surfaces
- Training and retraining in manner the worker understands

Revision of General Industry Rules

- Compliance flexibility is provided, with new subpart D options for compliance:
 - Guardrails
 - Designated Areas
 - Safety Net Systems
 - Travel Restraint Systems
 - Personal Fall Arrest (PFA) Systems
- Subpart I provides criteria on the proper use of personal fall protection systems when used by the employer – similar to construction rule 29 CFR 1926.502(d)/(e)
- Appendix provides examples of procedures and test methods used by PPE manufacturers to prove compliance with PPE criteria (may need technical correction)
- OSHA imports language from existing Part 1926 (construction), Part 1915 (shipyard), and powered platforms for building maintenance (1910.66) to address criteria and performance requirements for fall arrest systems used

Final Rule Provisions

- 1910.21 – Scope & Definitions
- 1910.22 – General Requirements
- 1910.23 – Ladders
- 1910.24 – Step Bolts & Manhole Steps
- 1910.25 – Stairways
- 1910.26 – Dockboards
- 1910.27 – Scaffolds and rope descent systems
- 1910.28 – Duty to have fall protection and falling object protection
- 1910.29 – Fall protection systems & falling object protection criteria & practices
- 1910.30 – Training requirements
- Two non-mandatory appendices (C&D) addressing:
 - Planning for, selecting, using and inspecting personal fall arrest systems (Appendix C) and
 - Test methods and procedures for personal fall arrest work positioning systems (Appendix D)

Implementation Timeline

- Most provisions take effect January 17, 2017 (60 days from publication) except:
 - Ensuring exposed workers are trained on fall hazards (May 17, 2017)
 - Ensuring workers who use equipment covered by the final rule are trained (May 17, 2017)
 - Inspecting/certifying permanent anchorages for rope descent systems (November 20, 2017)
 - Installing PFA or ladder safety systems on new fixed ladders over 24 feet and on replacement ladders and sections (November 19, 2018)
 - Ensuring existing fixed ladders over 24 feet (including on outdoor advertising structures) are equipped with a cage, well, PFA system, or ladder safety system (November 19, 2018), and
 - Replacing cages and wells (used as fall protection) with ladder safety systems or PFA systems on all fixed ladders over 24 feet high (November 18, 2036)

General Requirements - 29 CFR 1910.22

■ Surface Conditions

- Keep clean, orderly, sanitary
- Keep free of hazards such as sharp or protruding objects, spills, snow and ice
- WWS must support maximum intended load
- Provide and ensure use of safe means of access and egress to/from each WWS
- Inspect WWS “regularly and as necessary” and maintain in safe condition
- Correct or repair hazardous conditions on WWS before EE uses it again, or else guard to prevent use until fixed
- When correction/repair involves structural integrity of WWS, a qualified person performs or supervises the correction/repair
 - Qualified means: “Person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work or the project.” 29 CFR 1910.21

Ladders –1910.23

■ GENERAL REQUIREMENTS:

- Ensure each ladder used meets requirements of section
- Covers all ladders except when ladder is used in emergency ops, designed into or “integral part” of machines/equipment
- Ensure ladder and stepstool rungs, steps, cleats meet spacing specs in rule
- Ensure wooden ladders are not coated with material that could obscure structural defects, and that metal ladders are protected against corrosion
- Ladder surfaces must be free of puncture and laceration hazards
- Ladders must be used only for the purpose for which designed
- Ladders must be inspected BEFORE initial use in EACH work shift, and more frequently as needed, to identify any visible defects that could cause injury
- Ladders with structural or other defects must be IMMEDIATELY tagged “Dangerous: Do Not Use” or with similar language and removed from service until repaired or replaced
- EEs must face ladder when climbing up/down
- EEs must use at least one hand while climbing, and cannot carry objects/loads that could cause the EE to lose balance and fall while climbing

Portable Ladders

- Ensure rungs and steps of portable metal ladders are corrugated, knurled, dimpled, coated with skid-resistant material or treated to minimize possibility of slipping
- Stepladders and combination ladders used as stepladder must have metal spreader or locking device to security hold open when in use
- Ladders may not be loaded beyond maximum intended load, must be used only on stable and level surfaces (unless secured or stabilized to prevent displacement)
- No portable single rail ladders may be used
- No ladder may be moved, shifted, or extended while a worker is on it
- Ladders may not be placed in passageways, doorways, or driveways where they could be displaced unless secured, or guarded by temporary barricade
- Cap and top step of a stepladder may not be used as steps
- Portable ladders used on slippery surfaces must be secured and stabilized
- Top of non-self-supporting ladder must be placed so both side rails are supported unless it has a single support attachment
- Portable ladders used to gain access to upper landing surface must have side rails extending at least 3 feet above landing surface
- Ladders/sections cannot be tied or fastened together to provide added length unless designed for this, and ladders cannot be placed on boxes or other unstable bases to obtain additional height

Mobile Ladder Stands and Platforms

- Mobile ladder stands, platforms, wheels and casters under load must support 4 times maximum intended load, plus proportional share of unit's weight
- Meet specified design criteria, including slip-resistant surfaces
- Stands and platforms with wheels or casters must have system to impede horizontal movement when occupied, and may not be moved when EE is on it
- All ladder stand platforms with platform height above 10-feet must have guardrails and toeboards on exposed sides and ends of platform
- Removable gates or non-rigid members, such as chains, may be used on mobile ladder stand platforms instead of handrails/guardrails in special-use applications

Step Bolts and Manhole Steps – 1910.24

- Step Bolts:
 - In environment where corrosion may occur, step bolts must be coated with material to protect against corrosion
 - Must be designed, constructed and maintained to prevent EEs foot from slipping of end of step bolt
 - Meet design specifications and support maximum intended load (by factor of four if installed after 1/17/17)
 - Must be inspected at start of worksift and maintained
- Manhole steps:
 - Must support max. intended load, has corrugated/knurled/dimpled or surface to minimize slipping
 - Construction of material or coated to prevent corrosion
 - Meets design specs
 - Must be inspected at start of workshift and maintained

Stairways – 1910.25

- Covers all types (standard, spiral, ship, alternating tread-type stairs) except those serving floating roof tanks, scaffolds, and those designed into machines or on self-propelled motorized equipment
- Must provide handrails, stair rail systems, and guardrail systems meeting the specs in rule
- Stairs must have uniform risers and tread depth between railings
- Spiral, ship or alt-tread stairs used only when ER demonstrates not feasible to use standard stairs, and installed, used and maintained in acc'd with manufacturer's instructions
- Standard stairs must also meet specs if installed after 1/17/17

Dockboards – 1910.26

- Must be capable of supporting intended load
- If put into initial service after 1/17/17, must be designed, constructed, and maintained to prevent transfer vehicles from running off dockboard edge
- When ER demonstrates there is no hazard of running off dockboard edge, ER may eliminate run-off protection
- Portable dockboards must be secured by anchoring them in place or using devices/equip to prevent from moving out of safe position unless ER demonstrates infeasibility, in which case ER must ensure there is sufficient contact between dockboard and surface to prevent movement out of safe position
- Measures (chocks, sand shoes etc.) must be used to prevent transport vehicle on which dockboard is placed from moving while EE are on dockboard
- Portable dockboards must be equipped with handholds or other means to permit safe handling of dockboards

Scaffolds & Rope Descent Systems – 1910.27

- **Scaffolds must meet requirements in construction rule (Part 1926, Subpart L)**
- **Rope Descent Systems**
 - Before use, building owner must inform ER in writing that owner has identified, tested, certified and maintained each anchorage so it is capable of supporting at least 5,000 lbs in any direction for each worker attached
 - Information must be based on annual inspection by qualified person and certification of each anchorage as necessary and at least every 10 years
 - ER must make sure no EE uses anchorage before ER receives the written information from owner and info must be kept for duration of job
 - Must implement this section by **11/20/2017**
 - Cannot use RDS for heights greater than 300 feet unless demonstrate infeasibility of other safer methods
 - RDS must be used in accordance to manufacturer limitations and specs
 - EE using RDS must be trained under 1910.30
 - RDS must be inspected at start of workshift that it is to be used, and ER must ensure defective equipment removed from service immediately and replaced
 - RDS must have proper rigging, including anchorages and tiebacks
 - Each EE must use separate independent PFA system meeting requirements in Subpart I of rule
 - Prompt rescue must be provided for EE in event of fall
 - Ropes must be protected effectively en they could contact edges of building, anchorage, obstructions (to prevent cutting or weakening)
 - EE cannot use when hazardous weather, and equipment must be secured by tool lanyard to prevent it from falling
 - Ropes of RDS must be protected from open flame, hot work, corrosive chemicals and destructive conditions

Duty to Have Fall Protection and FOPs – 1910.28

- ER must provide protection for each EE exposed to fall and falling object hazards (FOPs ref. 1910.29 – Personal Fall Protection systems ref. 1910.30)
- Applies to scaffolds and RDS, Stairways, Work on Low-Slope Roofs, Slaughtering facility platforms and more!
- Does NOT apply to:
 - Portable ladders
 - When inspecting, investigating, or assessing workplace prior to start or work or after work completed (unless FPS or equipment have been installed and are available for workers to use pre/post-work)
 - Fall hazards from entertainment stages and exposed perimeters of rail-station platforms
 - To powered platforms covered by 1910.66
 - Aerial lifts covered by 1910.67
 - Telecommunications work covered by 1910.268
 - Electric power generation, transmission and distribution work covered by 1910.269
- If not excluded, must provide protection if side or edge is 4 feet or more above lower level using: guardrail systems, safety net systems, or personal fall protection systems (PFA, travel restraint, or positioning systems)
- If not feasible to comply on residential roofs, ER must develop and implement fall protection plan meeting 1926.502(k) and training pursuant to 1926.503(a) and (c)

Hoists and Holes – 1910.28

- Hoist areas
 - Must protect EE from falling 4 feet or more to lower level by: guardrail system, PFA system or travel restraint system and if a portion of guardrail, gate or chain must be removed, and EE must lean through or over edge of opening, PFA must be used
 - Grab handles in hoist areas must meet 1910.29 specs
- Holes
 - ER must ensure protection from falling through any hole including skylights that is 4 feet or more above lower level by: covers, guardrails, travel restraint systems, PFA systems
 - Protect from tripping into or stepping into or through any hole less than 4 feet above lower level by covers or guardrail system
 - Protect from falling into stairway floor hole by fixed guardrail system on all exposed sides except stairway entrance (unless used less than once per day where traffic prevents use of fixed system, may use hinged floor hole cover and removable guardrail system)
 - Protect from falling into ladderway floor hole or platform hole by guardrail system and toeboards on all exposed sides, except entrance where self-closing gate or offset must be used
 - Protect from falling through hatchway and chute-hold by hinged floor cover meeting 1910.29, and fixed guardrail system leaving only one exposed side, or removable guardrail system and toeboard on not more than two sides and fixed system on other sides, or guardrail or travel restraint systems when necessary to pass material through hatchway or chute floor hole
 - Other specs for dockboards, runways, openings, repair pits, fixed ladders, outdoor advertising, stairways, dangerous equipment

Fall Protection Systems and FOPS Criteria and Practices – 1910.29

- ER must ensure each FPS and FOPs other than personal fall protection systems, meet the criteria in this section in terms of design specifications for:
 - Guardrail systems
 - Safety Net Systems
 - Designated Areas
 - Cages, wells, and platforms used with fixed ladders
- Outdoor advertising has unique provisions 1910.29(h) requiring EE who climb fixed ladders w/o PFA systems to be demonstrate physical capacity for climbing fixed ladders without fall protection complete training or apprenticeship program including hands-on training on safe climbing (retrain as needed), performs climbing duties as part of routine work activity
- Ladder safety systems are specified in 1910.29(i)
- Personal fall protection systems (body belts, harnesses, other components) must meet 1910.140
- Protection from falling objects – toeboards must be provided on exposed edge of overhead surfaces for sufficient length to protect workers, meeting specs

Employee Training – 1910.30

- Employers must ensure workers who use personal fall protection and work in high hazard situations are trained (retrained as needed) about fall and equipment hazards, and use of fall protection systems – before exposure to hazards!
 - **DEADLINE FOR TRAINING IS 5/17/2017**
- Trainer must be a qualified person and train workers to correctly:
 - Identify and minimize fall hazards
 - Use personal fall protection systems and rope descent systems
 - Use, maintain, inspect and store equipment or systems used for fall protection
 - Must also train on equipment use and hazards such as portable dockboards and RDS
- Whenever there is a change in workplace operations or equipment, or employer believes worker would benefit from additional training based on lack of knowledge or skill, worker must be retrained
- Training must be provided in language and vocabulary that worker will understand

Personal Fall Protection Systems – 1910.140

- Section provides criteria for performance, care, and use of personal fall protection systems
- ER must ensure that each system meets the requirements of section – which contains MANY definitions, general requirements for anchorages, PFPS, PFAs, and positioning systems on how connectors , lifelines, lanyards, hooks and carabiners must be designed and tested
- Competent person or qualified person must inspect each knot in a lanyard or vertical lifeline to make sure it meets requirements
- PFPS cannot be used for any purpose other than for EE fall protection (not for hoisting materials)
- Personal fall protection systems must be inspected before initial use, during workshift and removed if defective
- Ropes, belts, lanyards and harnesses must be compatible with all connectors and protected from being cut, abraded, melted or otherwise damaged
- ER must provide for prompt rescue of each EE in the event of a fall

Unique Issues

- **STATE PLAN STATES have 6 months to adopt standards that are at least as effective**
- Agricultural operations are EXEMPT
- Amends 1910.66 (Powered Platforms for Building Maintenance)
- Amends 1910.67 (Vehicles Mounted Elevating and Rotating Work Platforms) to require PFA system or travel restraint when working from aerial lift and attached to boom or basket
- Amends 1910.68 (Manlifts) concerning construction of toeboards and emergency exit ladders
- Amends 1910.178 (Powered Industrial Trucks) to cross-reference Dockboard provisions of new rule
- Amends 1910.179 (overhead and gantry cranes) concerning methods of access (no gaps over 12 inches on platforms), to bring toeboard and handrails into alignment with new standard, and concerning ladder construction
- Amends 1910.261 (pulp, paper & paperboard mills) concerning construction of platforms that cross passageways or roadways, concerning runways to the jack ladder, requiring a fall protection system meeting this part during certain tasks etc.
- Amends 1910.262 (textiles) concerning guardrail specs for gray and white bins
- Amends 1910.265 (sawmills) concerning elevated platforms and ladders
- Amends 1910.268 (telecommunications) concerning personal climbing equipment and ladders
- Amends 1910.269 (electric power generation) concerning use of PFA system specifications

Rolling Stock & Motor Vehicles

- OSHA was asked by many commenters to exempt them (continue 1986 interpretation)
- OSHA's definition of "walking-working surface" in construction rule does not include rolling stock and motor vehicles (1926.500(b))
- Jurisdictional exclusion when employee exposure to fall hazards arises when railroad rolling stock is traveling on rails or when trucks are traveling on highways (DOT has authority)
- OSHA finds it is feasible to provide fall protection for rolling stock, even when it is not contiguous or next to a structure
- BUT ... the final rule does NOT include any specific requirements for fall protection on rolling stock and motor vehicles
- OSHA's existing enforcement policies on this issue remain in effect!

Residential Roofs

- Residential roofs 4 foot or higher are covered, but fall protection is not required when inspecting investigating, or assessing workplace conditions or work prior to start of work or after completion
- If not feasible to use fall protection systems on a residential roof, employer must develop and implement fall protection plan and provide worker training
- Fall protection plan must:
 - Be prepared by qualified person
 - Be site-specific
 - Be implemented under supervision of "competent person"
 - Identify each location where fall protection systems cannot be used
 - Document why fall protection is infeasible or would create greater hazard
 - Discuss measures employer will take to eliminate or reduce fall hazard for workers
 - Provide for implementation of control measures or implement a safety monitoring system conforming to construction rule (1926.502(h))
 - Identify each worker who works in location where fall protection plan is implemented, and
 - Provide for investigation of circumstances of any fall or serious incident that occurs to determine whether plan must be changes (and implement those changes)

Prevention of Fall-related injuries

- Train supervisors and workers on hazard recognition and eliminate:
 - Grease or oil on walking/working surfaces
 - Ice or Wet spots
 - Water
 - Mud
 - Dry product hazards (dust, wood chips, powders, granules, plastic wrapping)
 - Food
 - Blood
 - Offal
 - Polished floors, concrete, marble, ceramic tile
 - Loose flooring or carpeting
 - Uneven walking surfaces
 - Clutter and other housekeeping hazards on or appurtenant to walkways
 - Electrical cords on walkways and stairs
 - Hole covers that have become displaced

Other Slip/fall Risk Factors

- Sloped walking surfaces, or uneven terrain
- Loose floorboards or shifting tiles
- Wet, muddy or greasy shoes
- Ramps & gang planks without skid- or slip-resistant surfaces
- Metal surfaces
 - Dockboards & dock plates
 - Platforms
 - Sidewalk & road covers
- Mounting & dismounting vehicles & equipment
- Improper practices while Climbing ladders or defective equipment
- Loose, irregular surfaces such as gravel
- Leaves, pine needles & other plant debris (wet or dry)

Trip hazard prevention

- Eliminate hazards such as:
 - Uncovered hoses, cables, wires or extension cords across aisles or walkways
 - Clutter, obstacles in aisles, walkway & work areas
 - Open cabinet, file or desk drawers & doors
 - Changes in elevation or levels
 - Unmarked steps or ramps
 - Rumpled or rolled-up carpets/mats or carpets with curled edges
 - Irregularities in walking surfaces
 - Thresholds or gaps
 - Missing or uneven floor tiles & bricks
 - Damaged steps
 - Non-uniform, improper or irregular steps

Summary of Fall Prevention Techniques

- Design of workplace & work processes to prevent potential exposures to slip & trip hazards
- Good housekeeping: Maintain clear, tidy work areas free of clutter
- Safe Aisles: Sufficient safe clearance maintained where mechanical handling equipment is used, keep Aisles and passageways clear and in good repair, and remove all obstructions that could create a hazard
- Safe walking practices and Routes
- Practice ladder safety – inspect, properly position, and use correctly
- Wear proper PPE
 - Wear proper footwear with good traction
 - Wear respiratory protection that does not impede vision
 - Wear appropriate PFA equipment where needed due to lack of guardrails or other protections

Conclusion

- Under new rules, Employers must set up the work place to prevent employees from falling off of overhead platforms, elevated work stations or into holes in the floor and walls
- As a baseline, OSHA expects employers to:
 - Inspect and provide working conditions that are free of known fall dangers.
 - Keep floors in work areas in a clean and, so far as possible, a dry condition.
 - Select and provide needed personal protective equipment at no cost to workers
 - Utilize guardrail or other permissible systems to engineer out fall hazards where possible, but otherwise effectively use PFAs, train workers on use of PPE, maintain, inspect equipment
 - Provide appropriate ladders or other manlifts to allow workers to safely access work areas (and train them on the use of this equipment)
 - Train workers generally about fall hazards and PPE use in a language that they can understand
- Document, document, document!!!

Questions???

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