Walking-Working Surfaces and Fall Protection Standards Update

OSHA General Industry
Slips, trips, and falls account for a majority of all general industry injury incidents.

Caused 849 workplace fatalities in 2016. It ranks 3rd in fatal workplace injuries. Transportation is #1 (2,083 fatalities) and Violence and other injuries by person or animals is #2 (866 fatalities).

For the year 2016, there were 5,190 fatal workplace injuries recorded.
Top 10 Causes and Direct Costs of the Most Disabling U.S. Workplace Injuries

2018 Liberty Mutual Workplace Safety Index

Total cost of the most disabling workplace injuries: $58.5 Billion
Cost of top 10 most disabling workplace injuries: $51.4 Billion

1. The 2018 Liberty Mutual Workplace Safety Index is based on non-fatal 2015 injury data with more than 5 days away from work.
2. Due to a change in BLS coding, Index series 2013–2018 is not directly comparable to Index series 2000–2012.
As OSHA holds its National Safety Stand-Down to Prevent Falls in Construction during the week of May 7–11, the U.S. Bureau of Labor Statistics (BLS) delved into the data from the Injuries, Illnesses, and Fatalities program. The BLS found that fatal work–related falls to a lower level increased 26 percent from 2011 to 2016.

In 2011, 533 workers died in falls to a lower level; in 2016, that number increased to 697. The data show that the number of fatal falls to a lower level rose each year starting in 2011 except for 2015. During the six-year period, there were 3,723 fatal falls to a lower level.

The BLS points out that more than half of the fatal falls to a lower level occurred in the private construction industry. Deaths from falls to a lower level in this industry increased from 255 workers in 2011 to 370 workers in 2016, a 45–percent increase. For all other industries combined, the increase was 10 percent.

The BLS also looked at the primary sources of falls to a lower level, which are the objects or surfaces from which workers fall. According to the BLS, falls from ladders were the most common sources of worker falls, with 836 fatal injuries involving falls from ladders. Falls from roofs accounted for 763 deaths.

The table below presents the data by source and height of fall from 2011 to 2016.

<table>
<thead>
<tr>
<th>Height</th>
<th>Ladders</th>
<th>Roofs</th>
<th>Vehicles</th>
<th>Scaffolds, staging</th>
<th>Machinery</th>
<th>Trees</th>
<th>Stairs, steps</th>
<th>All other sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 30 feet</td>
<td>29</td>
<td>127</td>
<td>62</td>
<td>93</td>
<td>81</td>
<td>81</td>
<td>4</td>
<td>181</td>
</tr>
<tr>
<td>26–30 feet</td>
<td>27</td>
<td>100</td>
<td>19</td>
<td>26</td>
<td>19</td>
<td>20</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>21–25 feet</td>
<td>59</td>
<td>130</td>
<td>16</td>
<td>43</td>
<td>14</td>
<td>12</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>16–20 feet</td>
<td>109</td>
<td>146</td>
<td>27</td>
<td>48</td>
<td>33</td>
<td>16</td>
<td>6</td>
<td>46</td>
</tr>
<tr>
<td>11–15 feet</td>
<td>145</td>
<td>151</td>
<td>49</td>
<td>50</td>
<td>23</td>
<td>6</td>
<td>14</td>
<td>93</td>
</tr>
<tr>
<td>6–10 feet</td>
<td>174</td>
<td>41</td>
<td>63</td>
<td>50</td>
<td>20</td>
<td>7</td>
<td>20</td>
<td>85</td>
</tr>
<tr>
<td>Under 6 feet</td>
<td>87</td>
<td>—</td>
<td>127</td>
<td>18</td>
<td>21</td>
<td>1</td>
<td>40</td>
<td>108</td>
</tr>
<tr>
<td>Height not specified</td>
<td>206</td>
<td>67</td>
<td>53</td>
<td>59</td>
<td>29</td>
<td>32</td>
<td>67</td>
<td>142</td>
</tr>
</tbody>
</table>
OSHA Walking-Working Surfaces Rule

- This specific requirement requires employers to protect workers from all fall hazards along unprotected sides or edges that are at least four feet above a lower level.
- The rule now provides more fall prevention options other than using guardrails.
- Safety net systems, personal fall arrest systems, positioning systems, travel restraint systems, and ladder safety climb systems.
OSHA Walking-Working Surfaces Rule

- Applies to all permanent places of employment
- Employer flexibility for fall protection
- Inspections and training will help to prevent and eliminate walking-working surface hazards
New fall protection requirements for General Industry standards align with the Construction standards.
OSHA Walking-Working Surfaces Rule

- The rule incorporates advances in technology, industry best practices, and national consensus standards to provide effective and cost-efficient worker protection.
- OSHA estimates that these changes will prevent 29 fatalities and 5,842 lost-workday injuries every year.
Revised OSHA Standards

- 1910.21 – Scope and Definitions
- 1910.22 – General requirements
- 1910.23 – Ladders
- 1910.24 – Step bolts and manhole steps
- 1910.25 – Stairways
- 1910.26 – Dockboards
- 1910.27 – Scaffolds and rope descent systems
- 1910.28 – Fall protection and falling object protection
- 1910.29 – Fall protection systems and falling object protection-criteria and practices
- 1910.30 – Training requirements
Revised OSHA Standards

- 1910.66 – Powered Platforms for Building Maintenance
- Mandatory Appendix D of 1910.66 – Existing Installations
- 1910.68 – Manlifts
- 1910.132 – Personal Protective Equipment (PPE) General Requirements
- 1910.140 (New) – Personal Fall Protection Systems
- 1910.178 – Powered Industrial Trucks
Revised OSHA Standards

- 1910.179 – Overhead and Gantry Cranes
- 1910.261 – Pulp, paper, and paperboard mills
- 1910.262 – Textiles
- 1910.265 – Sawmills
- 1910.268 – Telecommunications
- 1910.269 – Electric power generation, transmission, and distribution
1910.22 – General Requirements

- Employers must inspect all walking-working surfaces regularly and as necessary to maintain a safe condition.
- Employers must correct, repair, or guard against hazardous conditions.
1910.22 – General Requirements

- Identify trip hazards and eliminate:
  - Poor housekeeping
  - Loose flooring, carpeting, or uneven surfaces
  - Damaged steps or abnormalities in walking surfaces
1910.22 – General Requirements

- Cords, hoses, open drawers or other protruding items
1910.23 – Ladders

Step Ladder

Extension Ladder

Fixed Ladder

Mobile Ladder Stands/Platforms

- Meet all design specifications as listed in standard
- Capable of supporting at least four times intended load
- Those equipped with wheels or casters are designed with system to impede horizontal movement when an employee is on stand or platform so it does not move when an employee is on it
1910.23 – Ladders

- Ladder design requirements for all
- Ladders need to be inspected before initial use in each work shift and more frequently as necessary to identify any visible defects that could cause employee injury.
- Ladder side rails need to extend 3 feet above upper landing.
- General ladder safety
1910.23 – Ladders
Maintain 3 Points of Contact
1910.23 – Ladders

• Proper use
  – Ladders must be used according to the manufacturer.
  – Take the time to read the information.
  – Read and follow all informational stickers and warning labels.
1910.24 – Step Bolts and Manhole Steps

- **Step bolts** installed after 1-17-2017 in an environment where corrosion may occur need to be coated.
- Designed, constructed, and maintained to prevent the employee's foot from slipping off the end of the step bolt.
- Inspection requirements
1910.24 – Step Bolts and Manhole Steps

- **Manhole steps** installed after 1-2017 in an environment where corrosion may occur need to be coated and have a corrugated, knurled, dimpled, or other surface that minimizes the possibility of an employee slipping.

- Design, installation, and inspection requirements
1910.25 – Stairways

- Design requirements for hand rails, tread, riser, and landing platform measurements
- Stairs need to support five times the normal anticipated live load.
- Landing dimension requirements
1910.26 – Dockboards

- Design and construction requirements to support max load and prevent equipment from going over the dockboard edge.
- Dockboards secured and chock transport vehicles.
1910.27 – Scaffolds and Rope Descent Systems (RDS)

- Scaffolds
  - The final rule replaces the outdated general industry scaffold standards with the requirement that employers comply with OSHA’s Construction Standards 29 CFR Part 1926, Subpart L (Scaffolds).
1910.27 – Scaffolds and Rope Descent Systems (RDS)

- RDS example – window washers on tall buildings using a seat board.
- Rule prohibits employers from using RDS at heights greater than 300 feet.
- Inspection, training, and proper rigging.
1910.27 – Scaffolds and Rope Descent Systems (RDS)

- Rope descent systems are not suspended scaffolds that we use at our Generation Sites.
- Our boiler suspended scaffolds fall under the definition of a Scaffold platform which is OSHA’s Construction Standards 29 CFR Part 1926, Subpart L (Scaffolds).
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- Requires employers to provide protection for each employee exposed to fall and falling object hazards.
- Fall protection flexibility allows employers to choose a range of acceptable fall protection systems.
- Can use non-conventional fall protection practices such as designated areas on low-slope roofs for work that is temporary and infrequent.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Unprotected sides and edges**
  - (A) Guardrail systems;
  - (B) Safety net systems; or
  - (C) Personal fall protection systems such as personal fall arrest, travel restraint, or positioning systems
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Hoist Areas**
  - A guardrail system;
  - A personal fall arrest system; or
  - A travel restraint system.

Note: When any portion of a guardrail system, gate, or chain is removed, and an employee must lean through or over the edge of the access opening to facilitate hoisting, the employee is protected from falling by a personal fall arrest system.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Holes**
  - Covers;
  - Guardrail systems;
  - Travel restraint systems; or
  - Personal fall arrest systems.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Ladderway floor hole**
  - Each employee is protected from falling into a ladderway floor hole or ladderway platform hole by a guardrail system and toeboards erected on all exposed sides, except at the entrance to the hole, where a self-closing gate or an offset must be used.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- Safety Double Chains **Not Allowed**
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- Dangerous equipment
  - Guardrail systems;
  - Safety net systems;
  - Travel restraint systems; or
  - Personal fall arrest systems.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Openings**
  - Guardrail systems;
  - Safety net systems;
  - Travel restraint systems; or
  - Personal fall arrest systems.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- Fixed ladders (that extend more than 24 feet above a lower level).
  - Existing fixed ladders installed before November 19, 2018, must be equipped with a cage, well, personal fall arrest system (PFAS), or ladder safety climb system.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Fixed ladders (that extend more than 24 feet above a lower level).**
  - New fixed ladders installed on or after November 19, 2018, must have a PFAS or a ladder safety system. Cages and wells are no longer acceptable.
  - All fixed ladders over 24 feet will need to be equipped with a PFAS or ladder safety system on and after November 19, 2036.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Stairways**

Handrails are required when there are at least 3 treads and 4 risers.
1910.28 – Duty to Have Fall Protection and Falling Object Protection

<table>
<thead>
<tr>
<th>Stair width</th>
<th>Enclosed</th>
<th>One open side</th>
<th>Two open sides</th>
<th>With earth built up on both sides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 44 inches (1.1 m)</td>
<td>At least one handrail</td>
<td>One stair rail system with handrail on open side.</td>
<td>One stair rail system with handrail on each open side.</td>
<td></td>
</tr>
<tr>
<td>44 inches (1.1 m) to 88 inches (2.2 m)</td>
<td>One handrail on each enclosed side</td>
<td>One stair rail system with handrail on open side and one handrail on enclosed side.</td>
<td>One stair rail system with handrail on each open side.</td>
<td></td>
</tr>
<tr>
<td>Greater than 88 inches (2.2 m)</td>
<td>One handrail on each enclosed side and one intermediate handrail located in the middle of the stair</td>
<td>One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair.</td>
<td>One stair rail system with handrail on each open side and one intermediate handrail located in the middle of the stair.</td>
<td></td>
</tr>
<tr>
<td>Exterior stairs less than 44 inches (1.1 m)</td>
<td></td>
<td></td>
<td>One handrail on at least one side.</td>
<td></td>
</tr>
</tbody>
</table>

Note to table: The width of the stair must be clear of all obstructions except handrails.
1910.28 – Duty to Have Fall Protection and Falling Object Protection
1910.28 – Duty to Have Fall Protection and Falling Object Protection.

- **Work on low-slope roofs**
  - Fall protection for (less than 6 ft.) from the edge.
  - Fall protection for (6 ft. to less than 15 ft.) from the edge.
  - Fall protection for (15 ft. or more) from the edge.

**Designated Area**
Warning line, being used in a Fall Protection Plan
1910.28 – Duty to Have Fall Protection and Falling Object Protection

- **Walking-working surfaces not otherwise addressed**
  - Guardrail systems;
  - Safety net systems; or
  - Personal fall protection systems, such as personal fall arrest, travel restraint, or positioning systems.
Protection from falling objects

- Employee needs to wear a hardhat
- Erecting toeboards, screens, or guardrail systems
- Erecting canopy structures
- Move potential falling objects far enough from an edge, hole, or opening to prevent falling.
- Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area.
1910.29 – Fall Protection Systems and Falling Object Protection – Criteria and Practices

- Design and installation requirement for fall protection systems.
  - Guardrails
  - Stair Rails
  - Designated areas
  - Safety Nets
  - Covers
  - Cages and Wells
  - Ladder Safety Systems
  - Toe Boards
Guardrail systems:

**Standard railing**: consists of top rail, mid-rail, and posts. Height from the upper surface of top rail to floor level is 42” (+/- 3”). Mid-rail height is 21 inches.

**Standard toeboard**: 3.5” high, with not more than ¼” clearance above the floor.
1910.29 – Fall Protection Systems and Falling Object Protection – Criteria and Practices

- Safety Net Systems
The perimeter of the designated area is delineated with a warning line consisting of a rope, wire, tape, or chain. Minimum breaking strength of 200 pounds. Warning line is not less than 34 inches and not more than 39 inches above the walking-working surface. Is erected not less than 6 feet from the roof edge for work that is both temporary and infrequent or not less than 15 feet for other work.
1910.29 – Fall Protection Systems and Falling Object Protection – Criteria and Practices

- Designated Areas: Infrequent Tasks
Covers for a hole

- Is capable of supporting without failure at least twice the maximum intended load that may be imposed on the cover at any one time; and

- Is secured to prevent accidental displacement.
Ladder Safety Systems - reduce the possibility of falling from a fixed ladder.

- The safety sleeve is a moving component that travels on the carrier, a lanyard, connectors, and a body harness.
§1910.29 – Fall Protection Systems Criteria

Travel Restraint System - means a combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of an employee going over the edge of a walking-working surface.

Unlike personal fall arrest systems, travel restraint systems do not support the worker’s weight. Rather, the purpose of these systems is to prevent workers from reaching the fall hazard, such as an unprotected side or edge.
Positioning System (work-positioning system) means a system of equipment and connectors that, when used with a body harness or body belt, allows an employee to be supported on an elevated vertical surface, such as a wall or window sill, and work with both hands free.

- Positioning systems also are called "positioning system devices" and "work-positioning equipment."

Example: Whenever the worker leans back, the system is activated. However, the personal positioning system is not specifically designed for fall arrest purposes.
1910.30 – Training Requirements

- Fall Hazards
- Equipment Hazards
- Personal Fall Protection Systems
- Training Must Be Understandable
- Retraining
1910.140 (New) – Personal Fall Protection Systems

- Basically, OSHA has adopted the Construction Standards 1926, Subpart M into General Industry 1910, Subpart D
- Based on ANSI Z.359 Standard
Personal Fall Protection Systems (§1910.140)

- Examples are personal fall arrest systems, positioning systems, and travel restraint systems.
- Requirements on the performance, inspection, use, and maintenance of these systems.
- Prohibits the use of body belts as part of a personal fall arrest system.
OSHA Timeline

- Most of the rule was effective January 17, 2017, 60 days after publication in the Federal Register, but some provisions have delayed effective dates, including:
  - 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 and certifying permanent anchorages for rope descent systems (November 20, 2017)
OSHA Timeline

- 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 (November 19, 2018),
- Ensuring existing 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 (November 19, 2018), and
- Replacing cages and wells (used as fall protection) with ladder safety or personal fall arrest systems on all fixed ladders over 24 feet (November 18, 2036).
Hazard Recognition

Identify hazards and what should be done to control them.

Source of photos: WVU
Hazard Recognition

Identify hazards and what should be done to control them.

Source: WVU

Source: OSHA

Source: OSHA
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Disclaimer

- The information provided in this presentation is not all inclusive of all of Subpart D – Walking-Working Surface Rule Standards. The regulatory text (pdf) is 88 pages long.
- This presentation is just an overview of the new Walking-Working Surface Rule requirements.

- Larry Stenzel - Manager, Safety (Power Plant Operations) – Lead Dairyland Power Cooperative