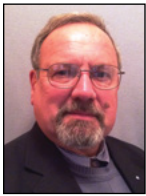


# Preventing Falls in the Workplace — The Rules Have Changed (For the Better)

Hazards are ever present in the steel plant environment, and a heightened awareness and emphasis on safety is a necessary priority for our industry. This monthly column, coordinated by members of the AIST Safety & Health Technology Committee, focuses on procedures and practices to promote a safe working environment for everyone.



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Like many standards of the U.S. Occupational Safety and Health Administration (OSHA), the rules for walking and working surfaces in general industry (the rules that cover manufacturing and most other industries in the United States) were very old. The standard (located at 29CFR1910 Subpart D) was originally written in 1971 and had undergone nearly no changes since. This was remedied on 1 January 2017

when the newly rewritten Subpart D took effect. The rules are now clearer, offer more options to prevent workplace falls, and many of the requirements are performance-based rather than prescriptive. There is now a greater correlation between the general industry standards and the construction standards. This article will discuss the requirements that pertain to manufacturing operations.

The U.S. Bureau of Labor Statistics reported a yearly average of 261 fatal workplace falls to a lower level from 2006 to 2012 (see Table 1). During the same period, there was an average of 48,379 lost-workday injuries each year. The human toll as well as the economic costs of these injuries makes it imperative that employers take positive steps to prevent them.

Up until the 2017 update, the OSHA standards required guardrails for fall protection. That was essentially the only option. It was assumed, but not written, that personal fall protection systems should

### Table 1

<i>Fatal Falls to a Lower Level — General Industry</i>	
Year	Fatal falls to a lower level
2006	283
2007	279
2008	234
2009	237
2010	243
2011	278
2012	270

### Table 2

<i>Lost Workday Falls to a Lower Level — General Industry (2006–2012) Median Days Away From Work, by Industry Sector</i>							
Industry sector	2006	2007	2008	2009	2010	2011	2012
Manufacturing	14	14	16	12	16	20	20
Trade, transportation utilities	14	16	17	22	25	20	21
Information	15	8	10	34	27	30	13
Financial activities	10	10	5	5	14	25	16
Professional and business services	14	12	13	12	14	11	21
Educational and health services	8	8	7	6	6	7	13
Leisure and hospitality	7	7	14	11	6	11	7
Other services, except public administration	11	4	33	3	8	35	10
All private industry	14	15	15	14	16	21	18

Comments are welcome.

If you have questions about this topic or other safety issues, please contact [safetyfirst@aist.org](mailto:safetyfirst@aist.org).

Please include your full name, company name, mailing address and email in all correspondence.

be used whenever guardrails weren't in place. Many companies followed the OSHA Construction standards to cover those situations where guardrails weren't an option. Maintenance work, for instance, often mimics construction work. Repairing hood leaks at the BOF shop, repairing conveyor galleys at the coke plant/coal handling facility, installing new wheels on overhead cranes, and dozens more jobs that are frequently performed don't lend themselves to installation of guardrails. The updated General Industry standard provides clarity as to the intent of the standard while allowing options for protection.

## General Requirements<sup>1</sup>

While housekeeping is an important part of injury prevention, OSHA has never had many requirements. The housekeeping rules remain in Subpart D — expanded a bit, but still not very robust. The requirements are simply:

- The workplace is kept in a clean, orderly and sanitary condition.
- Floors are kept clean and dry, and when wet processes make that impossible, drainage and dry standing places (e.g., false floors, platforms, and mats) are to be provided.
- Floors should be free of sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.
- A safe means of access and egress to and from walking-working surfaces must be provided (e.g., stairs or ladders to scaffolds).

OSHA stopped enforcing the requirement to post working loads on mezzanines in the 1990s — the rule has now been removed from the standard. Instead, it simply states: “The employer must ensure that each walking-working surface can support the maximum intended load for that surface.”

The standard now requires that walking-working surfaces are inspected, *regularly and as necessary* (emphasis added by the author of this article), and maintained in a safe condition. There is no definition as to what “regularly” means, and no instruction on how the inspection is to be carried out or by whom — that is left to the discretion of the employer. It does require that if hazards are found, they be immediately corrected or repaired. If that can't be accomplished, the hazard must be guarded to prevent employee exposure.

## Ladders<sup>2</sup>

The former rules for ladders were broken out by ladder type — portable wood, portable metal and fixed. Fiberglass ladders hadn't been invented yet when the old standard was written, so no requirements for them were included. The new standard states that it applies to all ladders, with “ladder” defined simply as a “...device with rungs, steps or cleats used to gain access to a different elevation.” All the ladder rules are now found in a single section, covering design, maintenance and use. Specifically included in this section are step stools, mobile ladder stands and mobile ladder stand platforms, as well as stepladders, extension ladders and fixed ladders.

OSHA now describes (and requires the employer to enforce) the safe method for ascending or descending a ladder. They require that employees maintain three points of contact with the ladder by facing the ladder, keeping one hand in contact, and not carry anything that could cause them to lose their balance or fall. (The requirement to keep one hand in contact with the ladder at all times eliminates the ability to carry anything in a hand — material should be hoisted aloft, or carried on a belt or backpack. Material carried over the shoulder could cause a balance issue.)

One of the big changes in the new standard is the phasing out of cages and wells on fixed ladders. Safety professionals have said for years that ladder cages and wells provide no protection — they just aim the body as it falls. OSHA now requires newly installed fixed ladders to have a ladder safety system or personal fall arrest system to actively prevent falls. By 18 November 2036, all fixed ladders must be so equipped. (This requirement isn't found in the ladder section, but later in the standard. Section 1910.28 establishes the requirement for fall protection of employees on fixed ladders, and Section 1910.29 specifies the criteria for those systems.)

## Step Bolts and Manhole Steps<sup>3</sup>

The design, construction and maintenance requirements for pole steps/step bolts and manhole ladders/steps were formerly found in the Telecommunications Standard — 1910.268. They've now been moved to Subpart D — they apply to all such installations, not just in the telecom industry. Installations made after 17 January 2017 have some more rigorous construction requirements than existing installations. All these devices must be inspected prior to the work shift.

<sup>1</sup> 29CFR1910.22

<sup>2</sup> 29CFR1910.23

<sup>3</sup> 29CFR1910.24

## Stairways<sup>4</sup>

The term “fixed industrial stairs” has disappeared. Now it’s simply “stairways,” defined as “...risers and treads that connect one level with another, and includes any landings and platforms in between those levels. Stairways include standard, spiral, alternating tread-type and ship stairs.” Specifically excepted are stairs serving floating roof tanks, stairs on scaffolds, stairs designed into machines or equipment, and stairs on self-propelled motorized equipment.

There aren’t a lot of surprises in this section, where the strength and dimensional requirements of stairs are laid out. Existing stairs that met the old requirements can remain unchanged — new stairs must meet the newly published requirements. The “three or more risers” requirement for railings is no longer in the standard. Rather, the general fall protection requirement of 4 feet or more applies.

Standard stairways must be provided for access from one walking-working surface to another when “regular and routine travel between levels” is necessary. When standard stairs are not feasible, the standard allows the use of alternatives such as ship, spiral or alternating-tread stairs. The use of ladders in these “regular and routine travel” conditions is not acceptable (e.g., access to overhead crane cabs).

## Dockboards<sup>5</sup>

Dockboards (bridge plates) installed after 17 January 2017 must now have a means for ensuring that forklifts or other equipment can’t run off the edge. This simply means that dockboards should have edging or curbing at the sides. This applies to all dockboards and levelers, not just portable ones. There is an exception permitted, though: “When the employer demonstrates there is no hazard of transfer vehicles running off the dockboard edge, the employer may use dockboards that do not have run-off protection.”

A requirement for securing a vehicle or railcar when a dockboard is in place has been added, similar to that in the Powered Industrial Truck (PIT) standard. OSHA doesn’t specifically mention using dock lock devices; nor does it prohibit them. It states that the employer must ensure that “Measures, such as wheel chocks or sand shoes, are used to prevent the transport vehicle (e.g., a truck, semi-trailer, trailer or railcar) on which a dockboard is placed, from moving while employees are on the dockboard.”)

There has been much discussion over OSHA’s authority to enforce the “wheel chock” requirement in the PIT standard. The Federal Motor Carrier Safety

Administration (FMCSA) has exercised its authority over commercial motor vehicles and muddied the waters over OSHA requiring vehicles to be secured. Having said that, OSHA remains firmly in charge of vehicles other than those regulated by FMCSA — yard vehicles, vehicles not being used in interstate commerce, agricultural vehicles, etc. Regardless of jurisdiction, though, the fact remains that loading an unsecured vehicle of any type is dangerous — let the agencies fight it out, but keep employees safe with locking devices or wheel chocks. (And don’t forget to use trailer jacks at the front of any spotted trailer being loaded by a PIT. The back and forth movement of a forklift can cause the trailer’s landing gear to collapse. See Reference 1.)

## Scaffolds and Rope Descent Systems<sup>6</sup>

There has long been confusion due to the differences between the OSHA General Industry and Construction standards for scaffolds. Those differences have now been eliminated. All the existing General Industry requirements for scaffolding have been removed; now General Industry employers are told that they must comply with the Construction requirements for scaffolds found in Part 1926, Subpart L.

Both the General Industry and Construction standards were previously silent about rope descent systems. These are defined as a “...suspension system that allows a worker to descend in a controlled manner, and as needed, to stop at any time during the descent...the RDS usually consists of a roof anchor, support rope, a descent device, carabiner(s) or shackle(s), and a chair (seatboard)” as opposed to a swing stage often used by window cleaners, which allows ascent as well as descent. The new standard includes extensive rules for the design of these systems and their anchorages, as well as their use, maintenance and inspection.

## Fall Protection and Falling Object Protection<sup>7</sup>

Guardrails are no longer the only option for employee fall protection called out in the standard. The new standard is more performance-based, allowing similar options as those found in the Construction standard. Four feet is still the trigger height at which fall protection needs to be provided. There is no trigger height if employees are working over uncovered dangerous equipment — fall protection must be provided in all cases.

<sup>4</sup> 29CFR1910.25

<sup>5</sup> 29CFR1910.26

<sup>6</sup> 29CFR1910.27

<sup>7</sup> 29CFR1910.28

Various scenarios are described in the standard, but the options for fall protection now are:

- Guardrails.
- Safety net systems.
- Personal fall arrest systems.
- Positioning systems.
- Travel restraint systems.
- Restricted access.

Note that each option is not acceptable for every scenario.

When employees may be exposed to objects falling from above them, they must wear hard hats. In addition the employer must take extra precautions such as:

- Erecting toeboards, screens or guardrail systems to prevent objects from falling to a lower level.
- Erecting canopy structures and keeping potential falling objects far enough from an edge, hole or opening to prevent them from falling to a lower level.
- Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level.

Certainly, objects can fall just about anywhere. Just as certainly letters of interpretation will follow, but it does not seem likely that OSHA intends to require canopies to be built to protect workers under operating overhead cranes and in other normal daily work areas. It is certain, though, that toeboards or other protection need to be installed on the maintenance access platforms and on the cab “porches” on these cranes. The intent, just as in the old toeboard rule, is to protect people working below from objects being dropped or otherwise falling from people working or moving above.

## Fall Protection Systems<sup>8</sup>

This is where all the design criteria and practices for the fall protection options in 1910.28 are described. OSHA expects that, wherever possible, fall protection systems be permanently installed so they are ready for use when needed. The 42-inch, 21-inch and 200# requirements for guardrails are found here. So are the design requirements for floor hole covers, ladder safety systems, toeboards, etc. The criteria for using designated areas for fall protection are in this section, too. The design of personal

fall protection equipment (harnesses and related equipment) is referred to 1910.140 in the Personal Protective Equipment standard.

## Training<sup>9</sup>

The older OSHA standards had very few training requirements. Over the years as new standards have been promulgated and older ones refreshed, OSHA has tightened up the training rules. This standard is no exception. Training is now required for any employee who uses any type of fall protection equipment or system beyond guardrails. The training was required to have been completed by 17 May 2017 for existing employees.

A qualified person must train each effected employee in at least these topics:

- The nature of the fall hazards in the work area and how to recognize them.
- The procedures to be followed to minimize those hazards.
- The correct procedures for installing, inspecting, operating, maintaining and disassembling the personal fall protection systems that the employee uses.
- The correct use of personal fall protection systems and equipment, including but not limited to proper hook-up, anchoring, and tie-off techniques, and methods of equipment inspection and storage, as specified by the manufacturer.

This training (and other equipment-specific training mentioned in the standard) is “one and done” — it does not have to be repeated on a periodic basis. However, if the employer has reason to believe that an employee does not have the necessary knowledge and competence then retraining is required. These circumstances could include changes in the workplace making prior knowledge obsolete, changes in the fall protection equipment being used or the method of using it, or simply observation of an employee not using fall protection as intended. There is no training curriculum mandated, nor a required length of time that the training must last — its requirement is entirely performance-based. The only written requirements are that training be delivered by a qualified person in a manner that the employee understands. Offering training in English to a Spanish-speaking worker, for instance, is not acceptable.

<sup>8</sup> 29CFR1910.29

<sup>9</sup> 29CFR1910.30

## Conclusion

The new Subpart D is significantly different than the older version. However, it doesn't present many surprises — the methods and criteria presented in the standard are those that have been recognized as “best practices” for many years. Most employers have been training their employees who use fall protection devices. Many have been proactive in permanently installing fall protection systems on crane runways, mill stands and other places where employees frequently have to work. There will be some inconvenience and expense in replacing ladder cages with safety systems, but there is a very long grandfather period to allow for that conversion. Fall injuries are often devastating; compliance with the standard, as well as continued attention to new innovations in fall protection, can help prevent them from occurring.

## Reference

1. U.S. Occupational Safety and Health Administration (OSHA), “Clarification of OSHA’s Authority to Enforce Wheel Chocking of Commercial Motor Vehicles and Related Safety Hazards at Loading Facilities;” 7 March 2011, [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=28121](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=28121).

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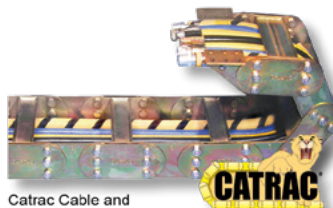
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