Course Learning Outcomes for Unit VIII

Upon completion of this unit, students should be able to:

2. Assess the Occupational Safety and Health Administration’s (OSHA) construction standards and related safety practices.
   2.1 Identify hazards related to steel erection operations.
   2.2 Explain standards and safe work practices that protect construction workers from fall hazards.

4. Examine common construction hazards and hazard control methods.
   4.1 Analyze hazards that contribute to construction accidents.

Reading Assignment

*In order to access the following resource(s), click the link(s) below:*

Click [here](https://www.osha.gov/Publications/osha2202.pdf) to access the OSHA Construction Industry Digest and read the sections indicated below.


- Steel Erection, pp.60-61
- Fall Protection, pp.24-26


Chapter Lesson

Steel Erection

The Occupational Safety & Health Administration (OSHA) issued its first steel erection standard in 1971, and although it did improve safety for steel workers, the industry continued to record large numbers of fatalities and serious injuries. The standard was completely revised and reissued in 2001. What makes this standard unique is that it was the first standard developed under the Department of Labor’s negotiated rulemaking policy (Occupational Safety & Health Administration [OSHA], n.d.-b). Representatives from organized labor, industry, public interests, and government participated in face-to-face discussions and worked out the details of the proposed standard. By using this process, OSHA hoped to develop a rule that would result in increased compliance, reducing the need for enforcement and litigation.

Some of the factors involved in steel erection fatalities and addressed in the standard include:

- placing loads on unsecured or unbridged joists,
- prematurely disconnecting the crane before the piece was secure,
- walking or working under a load,
- being struck while landing a load or making a connection,
- failing to use available fall protection systems, and
- unsecured decking slipping out of place.

A significant provision in the standard is the requirement for site preparation. The controlling contractor must provide written notification to the steel erector that the concrete in footings, piers, and walls has been cured to a sufficient strength. Access roads for safe movement of equipment and materials must be established and maintained, all hoisting operations must be pre-planned, and in some cases, a site-specific erection plan must be prepared by a competent person (OSHA, n.d.-a).

Steel erection is a highly specialized craft with many hazards not found in other parts of the construction industry. It follows that safety practitioners working in steel erection need to develop specialized skill sets. Trade associations such as the American Iron and Steel Institute (https://www.steel.org/), The Metal Construction Association (http://www.metalconstruction.org/index.php), and others that participated in the negotiated rulemaking process for the steel erection standard are valuable resources for additional information.

\( Almeida, \text{n.d.}\)
Fall Protection

Falls are the leading cause of fatalities in construction, so it is fitting that we conclude the course with an examination of fall hazards and fall protection. Fall hazards are present in many of the activities and operations we have discussed in previous course units:

- walkways and ramps,
- open sides and holes,
- concrete forms and rebar,
- excavations,
- roofs,
- wall openings,
- bricklaying, and
- residential construction.

As a general rule, if a worker can fall more than six feet, then fall protection is needed (OSHA, 2014). The exception is steel erection. The Standard 29 CFR 1926 Subpart R requires fall protection at 15 feet except for workers in controlled decking zones and connectors, as long as they wear the equipment necessary to be tied off. At 30 feet, all workers in steel erection must be provided with fall protection.

There are four acceptable methods of providing fall protection:

- guardrails—which must include a top rail, mid-rail, and toeboard;
- covers—must cover floor openings or hole completely;
- safety nets—placed as close as possible but no more than 30 feet below; and
- personal fall arrest systems (PFAS) which include a full body harness, lifeline, and anchorage point engineered to support at least 5,000 pounds per worker.

In all cases where fall protection is required, the method(s) of protection must be planned and installed before work begins. Employees must be trained on how to recognize and minimize fall hazards and how to use fall protection devices.

Click on the image below for some practice in recognizing fall hazards.

References


Suggested Reading

Are you looking for more insight on the topics discussed in this unit? Access the items listed below to view videos and additional information to gain further insight and understanding.

*In order to access the following resource(s), click the link(s) below:*

**OSHA Construction Standards**


- 29 CFR 1926 Subpart R, Steel Erection
- 29 CFR 1926 Subpart M, Fall Protection


Use OSHA’s video tool below to learn more about fall hazards in construction, as well as other construction site hazards.
