

Cranes & Derricks in Construction

Understanding OSHA 1926.1400

By Guy Snowdy

OSHA's new 29 CFR 1926.1400 rule covering cranes and derricks in construction has been described several ways depending on who is talking. Some say it is the most comprehensive reform ever. Others say it is overwhelming and will be difficult and expensive to comply with. And still others say it is just plain confusing. It can be difficult to get a handle on who needs to comply and to what extent the new rules will affect the wide variety of cranes used today.

This article discusses complexities of the new rule. As for compliance costs, it will certainly cost more to certify a crane operator due to the level of training required to meet the new requirements and the layers of oversight set forth in the accreditation process. Complying with the signal person/rigger requirements will be easier and less expensive.

So what are the rules and to whom do they apply? Simply, it is based on what you do and how you do it.

Riggers

When rigging loads to a crane, the person needs to be a "qualified rigger," which is a rigger who meets the criteria for a "qualified person." A qualified person is one "who, by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience, successfully demonstrates the ability to solve/resolve problems relating to the subject matter, the work or the project."

When conducting safety or compliance training, review the documents to ensure that they challenge riggers to solve problems such as low clearance areas, cause and effect of improper rigging, and removal from service criteria. If an incident occurs, one of the first tasks is to determine who rigged the load and how. Many loads have been dropped and cranes damaged by shock loading due to improper rigging.

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Signal Persons

Any worker providing crane operators with any of the four types of signals must be a qualified signal person. The new rules set forth three conditions that require the use of a signal person:

- 1) The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.
- 2) When the equipment is traveling, the view in the direction of travel is obstructed.
- 3) Due to site-specific safety concerns, either the operator or the person handling the load determines that it is necessary. These concerns could include elements such as power lines, nearby structures, people and other hazards that could enter the fall zone.

Signal Person Qualifications

The rule calls for the employer to ensure that all signal personnel be evaluated by a qualified evaluator using one of two options:

•**Option 1:** Third-party qualified evaluator. The signal person has documentation from a third-party qualified evaluator showing that s/he meets the qualification requirements.

•**Option 2:** Employer's qualified evaluator. The employer's qualified evaluator assesses the individual and determines that s/he meets the qualification requirements and provides documentation of that determination. An assessment by an employer's qualified evaluator under this option is not portable; other employers are not permitted to use it to meet the requirements of this section.

The employer must make the documentation for which option is used available at the site while the signal person is employed by the employer. The documentation must specify each type of signaling (e.g., hand signals, radio signals) for which the individual meets the requirements. If subsequent actions by the signal person indicate that s/he

does not meet the qualifications, the employer must not allow the individual to continue working as a signal person until s/he is retrained and reassessed.

Signal Person Qualification Requirements

Each signal person must:

- 1) Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the standard method for hand signals.
- 2) Be competent in the application of the type of signals used.
- 3) Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads, and boom deflection from hoisting loads.
- 4) Know and understand the relevant requirements of 1926.1419 through 1926.1422 and 1926.1428.
- 5) Demonstrate that s/he meets the requirements in paragraphs (c)(1) through (4) of this section via a verbal or written test, and via a practical test.

In addition, any signal person or ground crew member working around power lines must be trained in the following:

- 1) The procedures to be followed in the event of electrical contact with a power line. Such training must address:
 - information on the danger of electrocution from simultaneously touching equipment and the ground;
 - the importance of remaining inside the cab except where there is an imminent danger of fire;
 - explosion or other emergency that necessitates leaving the cab;
 - safest means of evacuating from equipment that may be energized;
 - danger of the potentially energized zone around the equipment (step potential);
 - need to avoid approaching or touching the equipment and load;
 - safe clearance distance.

2) Power lines are presumed to be energized unless the utility owner/operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.

3) Power lines are presumed to be uninsulated unless the utility owner/operator or a registered engineer who is

a qualified person with respect to electrical power transmission and distribution confirms that a line is insulated.

4) Limitations of an insulating link/device, proximity alarm and range control (and similar) device, if used.

5) Procedures for and limitations of properly grounding equipment.

Employees working as dedicated spotters must be trained so they can effectively perform their task; this includes training on the applicable requirements of this section.

Effects on Equipment

The new rule applies to most types of cranes with more than 1 ton capacity. In addition, some equipment that would not be normally considered a crane, such as a forklift configured with a boom attachment, is considered a form of a crane under the new rule. Some question the inclusion of this provision because regulations already cover the use of forklifts with boom attachments, such as 1910.178(l)(3)(i)(G through J) and ASME B56.6. Forklifts are excluded from the rule if the load is suspended from the forks.

Challenging provisions involve delivery of materials to a construction site. A flowchart may help the user determine compliance requirements. A few conditions, including the following, are required in the new rule.

Articulating/knuckle-boom truck cranes are excluded from the rule if the crane is used to "deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting." They are also excluded if used to transfer building supply sheet goods or packaged materials (e.g., plywood, cement bags) from the truck crane onto a structure, using a fork/cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device.

Articulating/knuckle-boom truck cranes are not excluded if the material being handled is a prefabricated component. Such components include precast concrete members or panels; roof trusses (wooden, cold-formed metal, steel or other material); and prefabricated building sections such as

floor panels, wall panels, roof panels, roof structures or similar items; or if the material being handled by the crane is a structural steel member [e.g., steel joists, beams, columns, steel decking (bundled or unbundled)] or a component of a systems-engineered metal building.

Another use not excluded from the new rule is when an articulating/knuckle-boom crane is used to hold, support or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure.

SH&E professionals coordinating multistate crane-related operations should know and understand application of those states' regulations.

Operator Certification

By Nov. 8, 2014, all operators must meet the requirements of 1926.4000. The clearest provision in the new rule is that all covered crane operators must be certified by an accredited organization such as National Center for Construction Education and Research (NCCER), working through an approved assessment center such as ABC Heartland that employs certified crane trainers and evaluators. National Commission for the Certification of Crane Operators and Crane Institute of American Certification also have accredited programs similar to NCCER. All three options are portable from one employer to another.

Other operator certification options included are an audited employer program and U.S. military or state-run program. However, these programs are not portable under the new rule.

The requirements also indicate who must be involved in crane assembly and disassembly (A/D). The use of an A/D director with a thorough understanding of the procedures is now required. Other provisions also mandate procedures to prevent accidents caused by stored kinetic energy.

The new controlling entity requirements change many responsibilities involving ground conditions and other jobsite setup. New inspection require-

ments for both pre- and post-assembly require a qualified person to verify that proper methods of assembly and components are used and are in safe working condition.

New wire rope provisions include both annual and monthly inspections that must be documented. The new rules also contain new guidelines on splicing rope, and worn and core damage.

The rule includes several requirements that apply when operating or conducting crane A/D within boom length plus 20 ft of power lines.

Insulating link/device requirements will go into effect in November 2011 and others in 2013 in some possible power line encroachment situations. The conditions and rules that govern them with regard to power lines in the crane's operating area are far too numerous to cover in this format, but must be reviewed carefully by all parties involved.

Safety devices and operational aids are defined, as are temporary (up to 30 days) alternative measures that can be used when operational aids do not work. The rule is clear that if any safety device fails to work, the crane must be taken out of service.

A Final Note

When implementing a program to incorporate changes to the rule, it is important to consider other sources of regulatory information. Some state and local government agencies have potentially more stringent regulations than federal rules. One should review and evaluate these documents in light of published rules at the federal level. SH&E professionals coordinating multistate crane-related operations should know and understand application of regulations within those states. Failure to do so could result in noncompliance with a state or local regulation despite compliance with the federal rule.

SH&E professionals should also review applicable ANSI standards on cranes, rigging and signaling, such as the B30 standards for cranes and ANSI/ASSE A10.42-2000 (R2010), Safety Requirements for Rigging Qualifications and Responsibilities. These standards are often cited by reference at the state and local level, so it is a good practice to review these documents.