Misunderstanding Crane Operator Certification

By James Headley

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Crane operator certification is the second of OSHA'S three steps to operator qualification.

By now, most people who use cranes are aware that crane operator certification is firmly established as federal law. That officially occurred on December 10, 2018, but it took more than thirty years to happen.

I remember jokingly telling someone years ago that I would probably be dead before operator certification became law. Since my birthday is December 9, I'm thankful that it was not a self fulfilling prophecy.

It is important to understand that the certification law applies to opera-tors of all *"power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load."*

OSHA provides many examples of this equipment, including articulating boom cranes, mobile cranes, tower cranes, overhead cranes, gantry cranes, multi-purpose machines, etc.

It's also important to note that the regulation applies to that equipment **only when it's used in construction.**

After learning this, students at the Crane Institute commonly ask: Do our operators have to be certified if we operate in a plant? How do we know when we are under the OSHA construction standard rather than the general industry regulation?

Perhaps a little help from OSHA will suffice: *"Construction work means work for construction, alter-ation, and/or repair, including painting and decorating."*

If a crane is being used to construct something new or to alter or repair something, it is being used to per-form construction work. Therefore, its operator must be certified even though the crane is operated in an industrial or manufacturing facility, which is not normally considered a construction site.

A Little History

The road to operator certification began when some serious crane accidents became public, particularly the tower crane collapse in the center of the financial district in San Francisco on November 28, 1989. Due to the immense public exposure that accident and others received, people began to note that crane operators did not need to be licensed or certified.

At the time, however, a few training companies did offer operator certification. In fact, the Crane Institute of America was established to create an operator certification program. The program required candidates to have at least three years of operating experience and to pass written tests with a score of at least 80%.

Even though the certification programs were not accredited, they provided a template for future accredited programs. In the mid-80s, a crane and rigging association began exploring development of an accredited certification program, which became a reality in the mid-90s.

To understand the thinking back then, see the article, "Certification Needed More Than Ever," *Cranes Today,* November 1990.

Certification Misunderstood

Sadly, the significance of operator certification has been misunderstood right from the start.

In the distant past, most people thought that formal training made an operator qualified to run a crane. When certification came along, the thinking changed. Most people assumed certification signified that a crane operator was qualified.

Both are false indicators.

I have many times heard operators say: "So and so is certified to operate this type of crane, but workers are afraid to work with him. That organization's certifications are no good. He should be able to operate better than that!"

Here is what they failed to understand.

Operator certification is much like an automobile driver's license—some people even think it's more like a learner's permit.

Considering how poorly some people drive automobiles these days, I think we can agree that not all licensed drivers are really qualified to drive a car.

When a person applies for a driver's license, the state tests whether he or she correctly recognizes road signs and lane markers, knows the rules of the road, and understands how to drive safely. The applicant must then pass a practical on-road driving test to prove he or she can actually drive a car.

Editor's note: This is the second of three articles by James Headley about OSHA's three step process to operators being considered to be qualified - training, certification and employer evaluation. The first article appeared in the June 2019 edition of Crane Hot Line.

"Construction work" also includes alteration, repair, painting, and decorating.

The applicant can take the test in any car. He or she can choose one that's small, easy to drive, and easy to park.

During the test, the prospective driver doesn't have to drive in the mountains, on icy roads, in hard rain, or in other situations that require more skill. Applicants need only demonstrate they can meet minimum knowledge and driving requirements.

Crane operator certification is similar.

Accredited Testing

Today, crane operators have three options for meeting OSHA's certification requirements.

One option is licensing by a state or local government. A second option is certification through an audited employer program. However, both of those options have limitations.

For example, unless there is reciprocity with other states, a license is good only in the state where it is issued. If an operator is certified through an audited employer program, the operator is certified only while working for that employer.

Most crane operators use the third option: being certified by one of the four accredited testing organizations that are recognized by federal OSHA.

An operator certification from any of the four accredited testing organizations is equally good and complies with the law.

That's because an accredited testing organization has voluntarily had its materials and processes verified by an independent, impartial examiner like ANSI or NCCA.

ANSI or NCCA accreditation assures that the testing/certifying organization meets or exceeds OSHA's minimum requirements.

(d)(1) "For a certification to satisfy the requirements of this section, the crane operator testing organization providing the certification must:

(i) be accredited by a nationally recognized accrediting agency based on that agency's determination that industry-recognized criteria for written testing materials, practical examinations, test administration, grading, facilities/equipment, and personnel have been met.

(ii) Administer written and practical tests that: (A) Assess the operator applicant regarding, at a minimum, the knowledge and skills listed in paragraphs (j)(1) and (2) of this section. (B) Provide certification based on equipment type, or type and capacity…"

Note: The crane operator testing organization must be accredited, not the certifications.

Developing a Certification

Let's look at how those requirements are used in developing a certification, for example a certification for mobile crane operators.

Written Tests: First, written tests are not provided by OSHA or the accrediting agency (ANSI or NCCA). Subject matter experts from the testing organization develop them by following assessment standards and industry-recognized criteria for written testing materials.

Second, OSHA says that the written test must determine that: (j)(1)(i) The individual knows the information necessary for safe operation of the specific type of equipment the individual will operate, including all of the following:

(A) The controls and operational/performance characteristics.

(B) Use of, and the ability to calculate (manually or with a calculator), load/capacity information on a variety of configurations of the equipment.

(C) Procedures for preventing and responding to power line contact.

(D) Technical knowledge of the subject matter criteria listed in appendix C of this subpart applicable to the specific type of equipment the individual will operate. Use of the appendix C criteria meets the requirements of this provision.

(E) Technical knowledge applicable to the suitability of the supporting ground and surface to handle expected loads, site hazards, and site access.

(F) This subpart, including applicable incorporated materials.

(ii) The individual is able to read and locate relevant information in the equipment manual and other materials containing information referred to in paragraph (j)(1)(i) of this section.

Practical Tests - Like written tests, OSHA or the accrediting agency (ANSI or NCCA) do not provide practical tests. Practical tests are developed by subject matter experts from the testing organization and must determine that:

(2) …the individual has the skills necessary for safe operation of the equipment, including the following:

(i) Ability to recognize, from visual and auditory observation, the items listed in 1926.1412(d) (shift inspection).

Operating a crane with a long boom requires more skill.

(ii) Operational and maneuvering skills.
(iii) Application of load chart information.
(iv) Application of safe shutdown and securing.

Type and/or Type and Capacity:

OSHA originally required crane operator certification to be based both on a piece of equipment's type and its capacity. But before certification became law, OSHA changed the requirement to also allow certification just by type of equipment, without regard to capacity.

Most certification providers issue certifications based just on the type of crane.

For operators of lattice-boom crawler cranes, Crane Institute Certification (CIC) also bases its certification solely on crane type because those cranes typically have very high capacities.

Because cranes with telescoping booms have such a wide range of capacities, CIC provides certifications with different capacity levels, for example under 21 tons, 21 to 75 tons, and over 75 tons.

Certification by type and capacity is generally considered to be a higher level of certification. (See "Crane Operator Certification — Getting it Right" *Crane Hot Line*, March 2018.)

Developing a Practical Test

You might be surprised that the four testing organizations use different methods to test operator skill.

Some configure the course using balls atop poles. Others use barrels and traffic cones. Any way is acceptable if it determines that the individual has met the prescribed practical criteria.

However, some practical exams are inherently more difficult. It depends on the design of the exam course, the crane that's used, crane configuration, and how the exam is scored.

So how do you develop practical test that determines the individual has at least the knowledge and skills to safely operate the type or type and capacity of crane for which he or she is being certified?

Since I am closely associated with one of the accredited certification providers, Crane Institute Certification (CIC), I will take you through our process as we designed practical exams for certifying mobile crane operators.

First, we considered that the multitude of differences between mobile cranes makes it unfeasible to test for every difference, for example controls, computers, types, configurations, and mountings.

However, mobile cranes can easily be divided into two major categories: friction and hydraulic.

Friction cranes can be very complex. Their operators must engage gears and clutches to raise and lower booms and use foot brakes to control load lowering.

Conversely, hydraulic cranes have self-setting brakes for both load and boom hoists. Thus, hydraulic cranes require less skill to operate. It's a little like driving a car equipped with an automatic transmission as opposed to one with manual shift.

Friction cranes haven't been manufactured for a long time, but many are still at work. CIC is the only testing organization that offers a certification for operators of friction cranes.

Before developing our practical exams, we asked ourselves: "What major difference causes one mobile crane to require more operator skill than another?"

The answer reveals what a practical exam should be based on. Is it friction versus hydraulic? Arguably, no. Is it the type of mobile crane? Again, the answer is, no. So, what is it that demands more skill to operate a mobile crane safely?

The answer: the length of the boom. Decades ago, when I operated cranes, my union knew it. Our officials negotiated more money per hour for operating cranes with longer booms. New York City and Chicago both know it, too.

The width, depth, and shape of the boom don't matter; only the length does. So we at CIC base our practical exam on boom length.

We also separate our telescoping boom certifications into capacity levels of small, medium, and large. Lower-capacity certifications test with a shorter boom. Higher-capacity certifications test with a longer one.

A longer boom makes controlling the load more difficult and causes the course to be set up farther from the operator. That combination makes for a harder exam. The benefit is that only one practical exam is required for up to six certifications.

For example, if an operator applies for a lattice boom or a large (over 75-ton) telescoping boom certification, the practical test will use a 120' boom.

If that operator also applies for telescoping-boom certifications of lower capacity levels, (under 21 tons, or 21-75 tons), he or she must take the written tests for the lower-capacity certifications, but the practical test with the long (120') boom suffices for both certifications because the lesser-capacity certification would require a practical test with only a 36' or 75' boom. It would be ridiculous to require tests on shorter boom lengths after the applicant passed the 120' boom test.

This practical exam has many advantages.

Since only one practical test is needed, the equipment cost will be much lower.

Also, applicants need less time off of the job, which saves money.

But the largest benefit is that the individual took a test centered on the main thing that affects the safe operation of the crane: boom length.

Next month, we'll wrap up the series by looking at the third, and final, step to operator qualification: evaluation. ■

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