

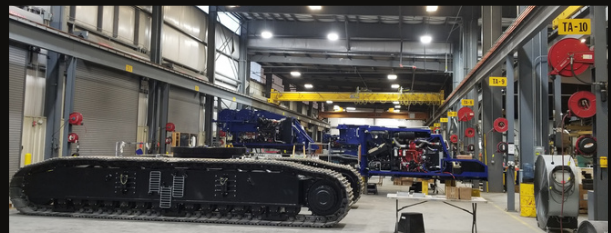
JANUARY 2023 | ISSUE 124



Crane Certification Association of America

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CCAA NEWSLETTER



Wish You Were There!

If you were not able to join us in November please know that you were missed and we look forward to seeing you in Shreveport, Louisiana April 30th – May 2nd for our next Professional Conference. And, for us who were there, well done!

The 2022 Fall Educational Conference in November took place in Bristol, Virginia which, by the way a fun fact is one of the cities in America that is located in two states. Bristol is located in both Virginia and Tennessee. Other examples include: Kansas City, (Missouri and Kansas), Texarkana (Arkansas and Texas), Texhoma (Oklahoma and Texas), Union City (Indiana and Ohio). Well, moving on from a little geography trivia...



The kick off reception which was very generously sponsored by Stephenson Equipment on Sunday was excellent. Most importantly, the reception gave us the chance to spend time together rekindling and making new connections while enjoying excellent food and bevies. We could feel the Southern hospitality and attention to detail the hotel staff afforded us.



After breakfast sponsored by HESCO/ Heavy Equipment Services company Ed Shapiro, President of CCAA and Owner of HESCO shared perspectives of becoming a lifetime member including how the association lives true to the motto of "The Future of Crane Safety." Ed discussed the progress we have made in updating the Crane Certifying Surveyors (CCS) hand book and on line testing. In keeping with a city that spans two states Ed introduced and recognized Marcial Marquez from member company Inter-American Inspection & Certification Bureau (IAICB) who translated our CSS manual to Spanish. This contribution by IAICB and their proactive approach as part as of CCAA is what we are all about!



To access the CCS Handbooks: <https://cranecertification.org> -> Member Resources -
Login to > CCS Handbook



Ed recognized Donald O'Rourke CCAA Director from National Crane Services and David Rareigh Integrated Equipment & Services for their service to CCAA. We are so grateful for their leadership and commitment to our industry. Thank you!



Dave Wood CCAA Director from WHECO presented "Proper Crane Repair". The presentation created a lively exchange of questions, ideas and solutions. Gail Lowney Alofsin, Keynote Speaker facilitated "Creating a Culture of Success" which contemplated how to create a company-wide leadership model. NYC Constructors sponsored our break together on Monday. A signature lunch was sponsored by CraneMill US. Julie Fuller, President & COO of Tandano Mantis presented about the company, key product features and differentiates before we took a shuttle to the Tandano Mantis production facility in Richlands, Virginia. The Tandano Mantis Team shared and demonstrated the production process in detail highlighting the unique features and capabilities and GTC-1300.

All Ships & Cargo Surveys sponsored our breakfast on Tuesday. Thank you John Muhlbauer, CCAA Director and Liz, for the commitment to CCAA and travelling from Hawaii. Aloha! JR Bristow led a compelling review and conversation about jobsite safety "OPPS"! Ray Feidt presented "Self-Erecting Tower Crane Inspections in the 21st Century." Our break was generously sponsored by Peerless Crane Services owned and operated by our CCAA Secretary and Director Eric Johnson. Dennis O'Rourke led "The Inspectors Decision But Why?" After lunch Ray Feidt presented "Procedures for Verifying the Accuracy of an LMI/RCL"

Donald O'Rourke shared "When The Rubber Meets The Road" perspectives. Crane Certification Enterprises II sponsored our break. Tad Dunville, from Unique Group presented about "Water Weights".

Ed Shapiro, President of CCAA brought the member conference to conclusion thanking our presenters, members and our conference sponsors. Platinum sponsors: Doc Bailey Construction Equipment & WireCo., Gold Sponsors: Bay Crane Service of Ct., East Coast Crane Inspection, & Yonkers Contracting Co., Silver Sponsor Crane Inspection & Certification Bureau. Ed continued to emphasize the importance of participation by us together.

WE HOPE TO SEE YOU IN SHREVEPORT LOUISIANA APRIL 30TH – MAY 2ND !



Thank you!

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To Our Platinum Sponsors!



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November 13- 15, 2022
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SAVE THE DATE!
CRANE CERTIFICATION ASSOCIATION OF AMERICA
2023 SPRING CONFERENCE
Sunday April 30, 1:00 PM 2023 - Tuesday May 2, 5:00 pm 2023
LOCATION: SHREVEPORT, LOUISIANA



Plan to join us for two days of action packed networking & professional development!

To include a tour of the Crosby Plant in Longview, Texas



AIRPORT: SHV (SHREVEPORT, LOUISIANA)



MEMBERSHIP NEWS

We celebrate our newest lifetime Member Ed
Shapiro from HESCO / Heavy Equipment
Services Company



It is membership Renewal Time. Please check
your email and renew your membership by
February 16, 2023

If you need any help or have questions please
email:

Admin@CraneCertification.org

CCS TESTING

Certifying Crane Surveyor Program, Process, Testing and Why Now?

The Crane Surveyors Handbook has been written as a result of the accumulated experience of more than fifty years of crane inspection and testing by the Crane Certification Association of America (CCAA) members. The handbook is available in both English and Spanish. CCAA members have sought to comply with the recommendations and standards of the crane manufacturers, the American Society of Mechanical Engineers, the Society of Automotive Engineers and various departments within the U. S. military establishment. This handbook attempts to embrace these rules in their most applicable form with the primary effort being to bring to the readers' attention to information that will support the primary objective and that is to encourage and promote safe crane operation.

Why become a Certifying Crane Surveyor (CCS)?

A few States and Municipalities already require tested and licensed crane surveyors. These same Government Agencies crane to realize that in order to decrease the accident rates, they needed well-trained crane surveyors inspecting the equipment. When these programs were implemented they did in fact decrease the accident rate. Another benefit was derived in the industry in that the reliability of the equipment increased. Why did this happen? It happened because it put more qualified crane surveyors in the industry.

The crane owner realized a safer operation and lowered their long-term operating costs. Except for these few Government Agencies, there are no licensing or certification requirements for crane surveyors in construction or general industry. In other words, the crane owner has to put all their trust in the crane inspector and hope they are knowledgeable and qualified to inspect or test the equipment.

The Crane Certification Association of America (CCAA) does not want to wait for a catastrophic accident to happen. We have developed tests and study guides along with the requirements related to the structural, mechanical, and electrical questions concerning Tower Cranes, Mobile Cranes, and Overhead Cranes. Successfully passing these tests demonstrates that the individual has the required knowledge to become a Certifying Crane Surveyor (CCS).

Benefits in becoming a Certifying Crane Surveyor

Credibility

This is the most important aspect of becoming a CCS. Your customers will know that you or your employees have been tested and are qualified to test and inspect their equipment.

Education

CCAA has educational conferences each year to keep surveyors up to date on manufacturer improvements and code and standard changes.

Documentation

You or your employees will be provided with a certificate that states you have demonstrated, by meeting the qualifications and completing the required testing, that you have the required knowledge to inspect and test their devices. CCAA has raised the bar and is challenging you to become all you can be and contribute to creating a safer workplace environment. For those of you who have not yet taken the test to become a Certifying Crane Surveyor (CCS), we urge you to consider putting forth the effort to do so.

Certifying Crane Surveyor Requirements

1. Review of CCAA application by CCS Committee
2. Employed in the crane inspection activities
3. Letter of recommendation on CCAA form from 3 business associates
4. 3 years or 2000 hours or survey experience
5. Good Standing as a CCAA member

Certifying Specialties

- Mobile Cranes
- Tower Cranes
- Overhead Cranes

How

1. Be a CCAA member in good standing
2. Fill out and email a completed CCS application to admin@cranecertification.org.
3. After the CCS Committee reviews and approves your CCS application, you will receive an email on how to register for the test.
4. Study the Study Guides
5. Register for testing

[CCS Application](#)
[Mobile Crane Surveyor Study Guide](#)
[Tower Crane Surveyor Study Guide](#)
[Overhead Crane Surveyor Study](#)
[Guide](#)
Testing

You must fill out and email a CCS application to admin@cranecertification.org. Click the link above for the CCS application. The online test is provided by TesTrac Inc. Click the link below to register for online testing. Your member number is required for registering for online testing. You can find your member number after you sign on to the member area of the CCAA website. It is located on the profile tab at the top. Click the link below to see a picture of its location.

Test Names: Mobile, Tower, Overhead

Passing score: 70%

Number of questions: 65-66 each

Time for test: 2 hours for each test

Timer Visible: Yes

Present Feedback: No

Requires Proctor: Yes

Test Instructions

You are sitting for CCAA's Certifying Crane Surveyor exam. This exam contains 65 or 66 questions depending on which exam. You have 2 hours to complete the exam. Select the best answer for each question. Questions unanswered will be marked incorrect.

Cost

The cost is \$300.00 USD plus a \$20.00 registration fee and a \$28.00 proctoring fee. for each test.

Cards

The CCS cards will be valid for 5 years as long as you are a member in good standing. After successfully passing a test you will receive a CCS card which will expire when your current membership expires. If you renew your membership you will receive a new CCS card which will expire at the end of your new membership. A fee of \$25.00 USD may apply for replacement CCS cards.



Good Enough – the Inspector's Decision!

Dennis J. O'Rourke, CSP, Historiographer, Humorous

The moment a device is placed in use, it starts to wear out. Since the Federal Safety regulations in 1971, an entire industry has developed around lifting equipment to ensure that the device is not too 'worn out' to be safely worked. Persons of many different job descriptions have been given the authority to say – it's good enough – for this lift, to use all day, okay this month, or till next year. This paper will examine the thinking behind and the decisions such as go ahead, use it! What exactly were those conclusions based on – sound judgment or a gut feeling?

The question is, it is not new but is it still safe? Fundamental reasons influence one to agree or not to proceed with a lift. A list of these reasons varies with the work and an estimate of the failure consequence of a dropped load, i.e., a ½ yard dirt bucket in the water versus a million-dollar generator 50 feet to a concrete floor. A baby in a high-chair lets go of their spoon, and it drops to the floor. They look at Mom, then back to the floor, trying to comprehend what happened – what magical force whisked it away, eventually they will understand – gravity. The *significance* of this force came upon me at about the age of thirteen. I was jacking up a Model A Ford using a bumper jack. The side of the base sunk in the sand, causing the jack to tilt and fall, dropping the Ford on its axle. From this mishap, we conclude 1. A load requires adequate support, and 2. The C.G. of a load not vertically supported will be subject to rotation.

If we were discussing cranes, the two accidents described (spoon and jack) would be operator errors. We have spent five decades teaching operators to do the right thing. Much progress has been made, but with cranes becoming monsters, challenges exist. This paper, however, focuses on the physical – what if the plastic spoon broke or the jack's base split? What if people were hurt? During the last twelve years, Florida has averaged 6,000 lawyers passing their Bar exam annually, adding to the litigation pool – all accidents are scrutinized.

The Right or Wrong Condition

The Owner of the device is ultimately responsible for its use and condition. In the larger sense, they are held accountable for following "best practices" when utilizing their equipment. The Navy crane regulations took the term best practice many decades ago to mean expectation standards for their employees, which is now written into the OSHA regulations. If found inconsistent with these methods, they would be considered – negligent. *Thus, during litigation, the term (best practice) became a Club to beat the employers over their heads. It is an excellent term for lawyers because its meaning is in the "brain of the clubber!"* The "Reasonable Man Theory" is a related legal term from English common law. Basically, it asks what would the majority of knowledgeable people do under the same circumstances. Pondering the information provided to the judge/jury, did one do the right thing or not?

Design Factors For Wire Ropes

The Design Factor or its synonym Factor of Safety is a ratio between the yield strength of a material compared to the working capacity of the device. For example, if the material yields at 500 and the manufacturer's capacity is labeled 100, the factor is 5 to 1 or 5/1. The designer arbitrarily selects this number to represent a real-world compromise between not being excessively overbuilt (costly) yet having enough reserve strength to withstand wear and assumed abuse. Compare this to an arbitrary speed limit of 65 mph, set to allow people to get where they're going without killing too many of them; if the kill rate is deemed too high, it will be lowered to acceptable levels. Aware of the statistics and the consequence of a failure in critical lifts (nuclear or munitions,) factors have climbed to 10 to 1. Wire rope failures represent the majority of structural accidents with cranes.

Interestingly, the Factor of safety was the usual term 50 years ago. Over the years, the term changed from SWL (safe working load) to WLL (working load limit), and now W.L. (working limit, load force can increase due to movement, C.G. location, or angles - it was argued) is labeled on lifting gear. Some manufacturers vary – but I don't see "safe" anymore. The term Safe implies a method of use, and the manufacturers were "Clubbed" in court as having to anticipate how the dummy user could misuse their product. Thus, the term became Design Factor or simply capacity, which is easier to defend.

Wire rope has various design factors, 7.5/1, 5/1, 3.5/1, 3/1, 2.5/1, etc. All these factors (percentage of load to rope strength) represent the designer's attempts to guess how long it takes to wear down to its visible replacement criteria and still possess reserve muscle to hold the force placed on it. Wire Rope manufacturers perform many rope-life tests at their factories under various conditions affecting fatigue, wire wear, location of broken wires, and distortion. The primary causes influencing the rope's condition are rope construction, tensile load, the diameter of sheaves, rope support by sheave grooves, rope speed, and lubrication. Thus, matching the design factors with how and where the rope is used produces a reasonable wire rope life.

The above safety depends on rope inspection for visible worn or broken wires – a tiring and hazardous activity. *The greatest advice I could give to the crane owner is to determine how your crane uses up its rope and set sensible inspections in those areas – then allow your qualified people time and access to complete their work.*

The rope also wears out on the inside, where breaking is not visible. What will reduce internal breaks is lubricants that penetrate the rope's core, proper D/d ratios (sheave to rope diameter), and correct rope selection for the application. Older recommendations explain how to open up the rope with a 'marlinspike.' But, with the many modern wire rope construction types, the procedure caused more harm than help, so field inspectors are told not to open the rope for internal inspection, fig. 2.

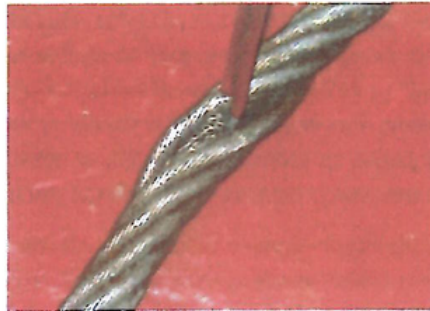


Fig. 2 Opening a rope to inspect the inside for wire breaks can cause additional damage.

Some manufacturers are replacing steel sheaves with synthetic ones, further reducing the detection of the number of broken wires outside the rope – a basic replacement criterion – allowing possible internal damage to go undetected. The Wire Rope Committees has issued new standards for inspection methods, ASME B30.30-2019 Pg. 20, fig. 3, a/b.



Fig. 3 Usual steel sheaves, left, hard & heavy; Synthetic sheaves, right, lighter and easier on the rope

Structural Design Factors

Physical equipment inspection has become more critical due to its size and accessibility. In the last decade or so, capacity, size, and height have increased to the point that challenges one's faith in structural designs—looking at some of the new cranes. They appear to have been imagined by a kid playing in a sandbox – computer-aided design (CAD), ha, fig. 4. The computer provides engineers to go "where no man has gone before," Gene Roddenberry. It is all about saving money on construction costs.

All equipment is manufactured with predictable service life. This life assumes the proper use, maintenance, and environment. Crane builders are quick to caution users to perform "preventive maintenance inspections (PMI)" to ensure a safe condition based on how and where the device is actually employed. Here again, the judgment of the Owner is examined if accidents occur. Several factors influence a decision to proceed with a lift, of which one's estimation of their experience is paramount. I've witnessed the decisions of senior persons are rarely challenged.

The photo in figure one is an excellent example of what we are discussing, whether we should lift or not. First, this condition existed for a long time and could have been repaired before this work day, avoiding a choice that placed a dollar amount on a delay or safety as part of the decision. And the problem is easily visible to all; many are aware. So, if nothing goes wrong, go back to work – if an accident, "they knew," negligence.

The experienced Operators confirmed that the Back-hitch was bent for a time and was used successfully. Past inspectors didn't mention it; it was load-tested two years ago. Maybe it's bent a little, but these old cranes are built strong; it won't break. We are only lifting about one-half of the chart! Does this new safety guy know more than the crane people?

The safety department says they inspect the cranes for operating and structural conditions. Both OSHA and the Navy state that the inspector should not speculate about the magnitude of the damage and that evaluations are for the "qualified person." The bent member is a deficiency per OSHA and the manufacturer.

But will it break while unloading the barge Mr. Manager? The answer to the question is affected by the cost of the delay. Plus, the integrity of the company inspection program and the people's morale. Besides, who bent it in the first place? Interestingly, they wanted a simulated test after the part was replaced, and the 2-inch pin failed first during a destructive tensile test, Fig. 1.



Fig.1 Bent structural gantry back stay – held during a load test!



Fig. 4 No, not a kid's toy, sold as a Wind Turbine crane. Want to certify it is assembled correctly?

The well-known structure design for hooks and blocks is five to one, but other structural factors are not published. The manufacturer depends on following industry standards, sound engineering, Q.A. programs, and acceptance testing to build a safe product. If they are amiss in their product design, the market, lawyers, and insurance companies will get even.

American construction output on large-scale projects shows dismal labor performance, never even really coming close to original budgets. One current example would be the Wind industry. They especially yearn to assemble Wind turbines on shore under manufacturing supervision rather than at an offshore construction site, then carry them out to sea and set them complete. Transporting complete units offshore requires enormous equipment. Materials need to be as light as possible, assembled correctly, and when built, their capacities never exceeded when used, a tall order. China, Germany, Netherlands, and Denmark are building these 5000 - 7000 metric ton Workshops to set completed wind turbines, with some spectacular accidents reported. Mass production means more profits for the installation contractor by controlling the construction and setting of the water-born generators after they figure out their design problems.

Fig. 5. This assembling and installation method of setting fabricated shore turbines should be of interest to us as America gets ready to spend a Trillion and a half dollars on our seaboard Wind Farms. The Jones Act will be compromised in letting the foreign erection ships operate in our continental waters – don't worry, the politicians will do the right thing by us – low bidder (pray be it a NATO country!)



Fig. 5 A fully assembled Wind Turbine carried to its foundation offshore in China via ship.

Regulations

The process of inspection/certification has *arbitrarily* evolved since WW II; due to what I discussed above, too many were killed, and the *speed limit* needed to be lowered. The equipment in the 40s, 50s, and 60s was reasonably well described and controlled in the USAS B 30 safety standards. It concentrated on what was to be done, not how to do it (same as today.) The chapters were scope/definitions, components description/assembly, inspection/testing, and operations. In practice, it worked; someone built a crane, general mechanic skills maintained it, and with OJT, it was operated.

However, the equipment has changed. The first 100-ton mobile crane I encountered was in 1962. This Bucyrus Erie, with a triangular boom and hydraulic winches, was already a mismatch in the USAS description, which were mechanical winches and rectangular booms, indicating that updating was required. When the OSHact was enacted in 1971 due to what was thought to be an excessive kill rate among the American workforce, the USAS (NavFac) was taken over and changed to ANSI (American National Standards Institute) with an unlimited budget – changes were to come!

OSHA and MSHA jurisdictions, the latter focuses on the mines, and the former on industry separated into General Industry (1910), Construction (1926), and Maritime (1915, 1917, 1918, and 1919) with billions of dollars for their budget. Note that the Federally operated cranes must equal OSHA per an executive letter from President Gerald Ford. The States crane program can do what it likes – but the measure will be best practice and the reasonable man theory.

Who Says It Safe

Size matters, age matters, and location matters! First, you determine if the unit is correctly assembled—the increase in size and complexity of cranes causes difficulties in certification. Next, look at the component to see if it is bent, cracked, or worn. Then you operate it to determine if it has smooth movements, speed/stop control, and full travel capabilities with all limits set correctly and functioning. It is then tested with a load. When inspecting this equipment, the manufacturer's specification must be followed and available at the location for review.

OSHA general industry and construction assigns the employer the responsibility for selecting qualified people to perform the required inspections at daily, monthly, and annual intervals. OSHA states that these are the minimum requirements, and the employer must implement a program that maintains safe equipment based on the severity of their operations. The employer's monthly and annual written forms must be kept on file for review.

In all maritime jurisdictions under part 1919 (other than shipbuilding,) the inspections are performed by accredited agencies the OSHA has appointed, now about ninety, on federal forms 71 - certified or 72 - deficient.

Conclusion

The question first asked, on what was the decision to work the devised base? An answer is a skilled person knowledgeable of the specific operations and able to recognize deficiencies. *Here's the kicker*, is this person's opinion heeded by those in authority? Once again, the employer's decisions will be scrutinized appropriately and, if needed, necessary clubbing.

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