



**NATIONAL COMMISSION FOR THE
CERTIFICATION OF CRANE OPERATORS (CCO)**

CANDIDATE HANDBOOK

- **MOBILE CRANE OPERATOR**
 - Lattice Boom Cranes (LAT)
 - Telescopic Boom Cranes—Swing Cab (TLL)
 - Telescopic Boom Cranes—Fixed Cab (TSS)
 - Service Truck Cranes (STC)

®



This CCO certification program is accredited by the ANSI National Accreditation Board (ANAB) to ISO 17024 (General Requirements for Bodies Operating Certification Systems of Persons).



**ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17024
PERSONNEL CERTIFICATION
BODY**

Mobile, Tower, Overhead,
Articulating, and Service Truck Crane
Operator, Digger Derrick Operator,
Signalperson, Rigger Level I and
Level II, Crane Inspector, and Lift
Director Programs Accredited

This handbook reflects CCO's current policies at the time of publication; to be sure that you have the latest version of this book, see the Handbooks and Forms page on the CCO website. Please read this handbook carefully and retain it for reference throughout the certification process.

Do not discard this document.

CCO does not discriminate against any individual because of race, gender, age, creed, disability, or national origin.

Dear Mobile Crane Operator Certification Candidate:

Welcome to the National Commission for the Certification of Crane Operators (CCO) national mobile crane operator certification program.

CCO is a nonprofit organization founded in 1995 to establish a fair and independent evaluation of crane operator knowledge and skills. Key to this industry-led effort was the development of the CCO Written and Practical Examinations, initially for mobile crane operators but now also for tower, overhead, and articulating crane operators, digger derrick operators, riggers, signalpersons, crane inspectors, and lift directors. These nationally recognized and internationally accredited certification programs are the culmination of many years' hard work by experts from the varied industries and groups that use cranes, including construction, steel erection, operating engineers, utilities, crane rental, petrochemicals, pulp and paper, and others.

The CCO Mobile Crane Task Force that developed this certification program was made up of experts from all aspects of the crane industry—crane operators, crane users, trainers, safety supervisors, manufacturers—who together represent many thousands of hours of crane-related experience. These volunteers gave freely of their time and expertise with the primary goal of improving the safety of all whose work brings them into contact with cranes and lifting equipment.

When this program was created, crane operator certification was voluntary unless required by local jurisdictions or specific employers. However, in August 2010, the federal Occupational Safety and Health Administration (OSHA) enacted new national standards for cranes and derricks used in construction under 29 CFR 1926 Subpart CC. These new rules require that operators of most cranes above 2,000 lb. capacity when used in construction need to be either certified by an accredited crane operator testing organization such as CCO or qualified through an audited employer program. Section 1926.1427 of the new rule describes crane operator certification/qualification requirements. Option 1, which is anticipated to be the most commonly used, requires operators to be certified by a nationally accredited crane operator testing organization that tests operators through written and practical testing. Obtaining CCO certification from CCO meets all the requirements set forth by the new OSHA rule.

To ensure CCO examinations are—and remain—valid measurements of crane operators' proficiency, CCO teamed its exam development expertise with the task force's knowledge and experience. In addition to guiding the development of new examinations, CCO continually analyzes the performance of CCO exams and reports to the Exam Management Committees. To be able to provide fair and independent assessments, CCO does not conduct training, nor does it provide training materials.

CCO, as a third-party certification body, is fully committed to, and understands the importance of, delivering all certification activities on a foundation of impartiality. All policies and procedures are established in an objective manner and ultimately strive to achieve fairness throughout all activities. CCO prevents any conflicts of interest through detailed policies and procedures observed by staff, governing body representatives, and those involved in written and practical exam administration.

This candidate handbook has been developed to provide you with comprehensive information about the CCO Written and Practical Examinations leading to certification. CCO recognizes the commitment you are about to make and will do everything it can to make your experience a positive and successful one. If, after reading this handbook, there is anything you do not fully understand, please call CCO at 703-560-2391 or email candidate@nccco.org. CCO staff will guide you through any aspects of the program that you would like explained in more detail.

Thank you for your interest—and good luck with your efforts to become CCO-certified!



Table of Contents

| | |
|---|-----------|
| Introduction | 1 |
| Program Description | 1 |
| CCO Examination Development | 1 |
| Certification Policies | 2 |
| Eligibility..... | 2 |
| CCO Written Examinations | 2 |
| CCO Practical Examinations | 2 |
| CCO Certification Time Frames | 2 |
| Recertification Requirements..... | 3 |
| Code of Ethics for Certified Operators | 3 |
| Disciplinary Policy | 3 |
| Substance Abuse Policy | 4 |
| Certification Cards..... | 4 |
| Change of Address | 4 |
| How to Apply for CCO Exams..... | 5 |
| Start with myCCO Portal..... | 5 |
| Written Examination Options | 5 |
| Rescheduling/Cancellation | 6 |
| Identification at the Test Site | 6 |
| Score Reporting | 7 |
| Practical Examination Options | 7 |
| Applying for Practical Exam..... | 7 |
| Written Examination Process..... | 8 |
| Candidates Requesting Testing Accommodations..... | 8 |
| Test Site Information | 8 |
| Test Scoring Information..... | 8 |
| Retaking the Examination(s) | 9 |
| Information Release Policy | 9 |
| Written Examination Outline—Core Examination..... | 10 |
| Domain 1: Site | 10 |
| Domain 2: Operations..... | 10 |
| Domain 3: Technical Knowledge | 11 |
| Domain 4: Load Charts | 11 |
| Written Examination Outline—Specialty Examinations | 12 |
| Domain 1: Setup | 12 |
| Domain 2: Operations..... | 12 |
| Domain 3: Technical Knowledge | 12 |
| Domain 4: Load Charts | 12 |

| | |
|--|-----------|
| Reference List | 13 |
| Practical Examination Process | 14 |
| Skills Tested | 14 |
| Scheduling a Test | 14 |
| Applying for Practical Exam..... | 14 |
| Test Day | 14 |
| Practical Scoring..... | 14 |
| Practical Score Reporting..... | 14 |
| Practical Exam Candidate Fees | 14 |
| Practical Exam Scoring Review Requests..... | 15 |
| Practical Examination Outline | 16 |
| Candidate Information and Instructions | 16 |
| Tasks..... | 16 |
| Time Limits | 16 |
| Pre-Test Briefing | 16 |
| Circumventing the Course | 16 |
| Unsafe Act..... | 17 |
| Telescoping During the Exam | 17 |
| Candidate ID and Signature | 17 |
| Weather Conditions and Equipment Problems | 17 |
| Crane Walk Around..... | 17 |
| Pre-Operational Inspection..... | 17 |
| Pre-Test Familiarization Period..... | 17 |
| Task 1: Place Chain in Stop Circle..... | 18 |
| Task 2: Follow Hand Signals | 18 |
| Task 3: Place Ball in Barrels | 18 |
| Pre-Task Familiarization Period (with Test Weight)..... | 18 |
| Task 4: Negotiate Zigzag Corridor with Test Weight | 19 |
| Task 5: Safe Shutdown and Securing Procedures..... | 19 |
| Post-Test Procedures..... | 19 |
| Service Truck Crane Operator | 20 |
| Program Description..... | 21 |
| Written Examination Outline | 23 |
| Practical Examination Outline | 25 |



Introduction

PROGRAM DESCRIPTION

The National Commission for the Certification of Crane Operators (CCO) is an independent, nonprofit organization formed to set standards for fairly measuring the knowledge and proficiency required for the safe operation of cranes. CCO currently administers a nationwide program of certifications for crane operators and related trades, including riggers and signalpersons.

Based on extensive discussions with representatives from all segments of business and industry who recognize the impact of safety issues, CCO has identified the following potential benefits of operator certification:

- Fewer accidents, injuries, and fatalities
- Reduced risk of loss
- Assurance of operators' abilities
- Less property damage
- Improved safety records
- Enhanced public image of crane operators

All candidates are required to pass both written and practical examinations to be certified. The practical examination Specialties correspond to the written exam Specialties.

The initial certification period is for five years. To maintain their certification, certificants are required to recertify prior to their expiration date. Periodic written examinations are necessary to ensure that certificants' knowledge of industry standards, equipment, and safety practices keeps pace with changes in these areas. CCO's subject matter experts, working in conjunction with psychometric consultants, reviewed the speed of such change in the industry and researched other comparable certification/licensing programs before determining that this goal could be achieved by setting the examination interval at five years; little, if any, additional benefit is believed would accrue by more frequent testing. A practical (skills) examination is not required for recertification, providing the certificant meets experience requirements.

CCO EXAMINATION DEVELOPMENT

The first step in the development of an objective test to measure what is required for safe crane operations was a job analysis study. The study identified the knowledge and skills necessary for safe crane operations. A representative number of crane operators then validated that the knowledge recommended by the experts was vital to safe operations. The test blueprints and content specifications were then generated from the validation study.

Development of the *Mobile Crane Operator Written Examinations* (Core and Specialty Exams) involved a panel of crane operation content experts who worked with CCO staff to write and review all questions used in the examination. Each examination contains a unique combination of questions from the question bank. Questions are selected for examinations on the basis of the content areas and specialties defined by the test blueprints.

The CCO *Mobile Crane Operator Practical Examinations* were developed as fair and objective assessments of the essential skills a crane operator needs to operate mobile cranes safely. These exams were developed over a three-year period by an CCO task force staffed by experts from all aspects of the crane industry—crane operators, training directors, managers, supervisors, manufacturers—who together represent many thousands of hours of crane operating experience.

CCO teamed its exam development expertise with the task force's knowledge and experience. CCO guided the task force in establishing key elements of the program, including identifying essential skills, selecting tasks, standardizing test conditions, developing the scoring process, establishing reliability among tests, and creating flexible application and scheduling procedures.

In concert with the task force, CCO also helped design the Practical Exam Proctor Program whereby CCO trains and credentials CCO-certified crane operators to administer CCO practical examinations.



Certification Policies

MOBILE CRANE OPERATOR

ELIGIBILITY

To be eligible for certification, candidates must:

- Be at least 18 years of age
- Comply with CCO's Substance Abuse Policy
- Pass written examinations (Core exam and at least one Specialty exam)
- Pass practical examination(s)
- Comply with CCO's Code of Ethics

CCO WRITTEN EXAMINATIONS

The Mobile Crane Operator written examination consists of a Core examination in crane operation and up to four crane Specialty examinations. Certification requires competency in both the Core and one or more Specialty designation(s).

The Core examination has 90 multiple-choice questions. Candidates are allowed 90 minutes to complete the Core examination. Each Specialty examination consists of 26 multiple-choice questions. Candidates are allowed 60 minutes to complete each Specialty examination.

All candidates are required to take the Core examination, regardless of the Specialty(s) in which they wish to be certified.

The written Specialty examinations are:

- Lattice Boom Cranes (LAT)
- Telescopic Boom Cranes—Swing Cab (TLL)
- Telescopic Boom Cranes—Fixed Cab (TSS)*

Candidates must register for the Core and at least one of the Specialty examinations. Candidates meeting the eligibility requirements may take the written and practical examinations in any order.

*For information about the Service Truck Crane Operator program, a subcategory of the Telescopic Boom Crane—Fixed Cab (TSS) designation, please see page 20.

CCO PRACTICAL EXAMINATIONS

The Mobile Crane Operator practical examination demonstrates crane operation proficiency and is available for three crane types:

- Lattice Boom Cranes (LAT)
- Telescopic Boom Cranes—Swing Cab (TLL)
- Telescopic Boom Cranes—Fixed Cab (TSS)

A candidate must pass the written Core and at least one Specialty examination as well as the corresponding practical exam(s) to be certified for a five-year period.

CCO CERTIFICATION TIME FRAMES

Candidates must pass written exams (Core + Specialty) and a practical exam for the designation(s) for which they seek certification. Candidates may take their written and practical exams in any order.

Candidates have 12 months after they pass their first exam (written or practical) to pass the corresponding written or practical exam(s) for the same designation(s). For example, a candidate passing the written exams (Core + Specialty) in the Telescopic Boom Cranes—Swing Cab (TLL) designation in January 2022 has until the end of January 2023 to pass the Telescopic Boom Cranes—Swing Cab (TLL) practical exam.

Any tests passed within a 12-month period count towards certification. For example, a candidate who passes the written Core exam in January 2022 and the practical exam in June 2022 but does not pass the corresponding written Specialty exam until February 2023 will then be required to retake (and pass) the written Core exam. The practical exam would count toward certification until the end of June 2023.

If a certified operator subsequently becomes certified in an additional operator designation by taking the appropriate written and practical exams, the certification period for the additional designation expires at the same time his/her original certification (i.e., all operator designations expire on the same date, regardless of when in the five-year certification period the candidate passed them). If the new designation is added within the final 24 months of his/her certification period, the certificant is exempt from recertifying for the new designation after five years; after that, however, certificants must recertify for all designations during the 12 months prior to their certifications' expiration date. This ensures that all of the certificant's operator designations maintain the same expiration date.

Candidates for certification or recertification may petition for an extension of CCO's standard timeline(s). CCO staff shall have the discretion to make the initial determination of whether a requested extension should be granted. Petitions for an extension of time are generally denied absent a showing of extraordinary circumstances. Denials of such petitions may be appealed to the Appeals Committee.

RECERTIFICATION REQUIREMENTS

CCO certification is valid for five years. **Recertification candidates must complete all recertification requirements during the 12 months prior to their certification's expiration date.** This includes:

- Passing the Mobile Crane Operator written examination(s)
- Compliance with CCO's Substance Abuse Policy
- Compliance with the Code of Ethics

The Mobile Crane Operator written examinations consist of a Core examination in crane operation and up to four Specialty examinations. These are identical to the exams required for initial certification.

Recertification candidates may take their Mobile Crane Operator written examinations up to one year prior to their certification's date of expiration. Regardless of the date of the exams within that one-year period, the new five-year certification period begins from the date of expiration of the candidate's initial certification.

Candidates who can attest to at least 1,000 hours of crane-related experience during their period of certification do not need to take the practical exam to recertify. *Crane-related experience* is defined as: operating, maintaining, inspecting, or training on cranes.

Recertification candidates who need to take the practical exam for any reason, however, must do so before their certification expires. **There is no grace period after their certification expires.** Candidates whose certification has lapsed must take both the written and practical examinations again to be certified again.

NOTE: Candidates who recertify more than 12 months prior to their expiration date will have their new certification period begin immediately, not from the end of their current certification period.

Candidates who are not certified in all Specialties may add a new Specialty by taking additional Specialty exams when they recertify.

CODE OF ETHICS FOR CERTIFIED OPERATORS

CCO-certified crane operators must comply with CCO's Code of Ethics during their certification, as set forth below:

In my occupation, I will conduct myself in a manner:

- i. *So as to place the safety and welfare of others associated with my work above all other considerations;*

- ii. *So as to protect and preserve nearby general public property and the environment; and*
- iii. *So as to be free of bias with regard to religion, ethnicity, gender, age, national origin, and disability.*

Furthermore, in connection with my work and in my dealings with CCO, I will:

- iv. *Make management and appropriate personnel aware promptly if I have any safety concerns relating to the work that I am performing or with which I am involved;*
- v. *Not knowingly violate any safety-related regulations, warnings, or instructions set forth by OSHA, recognized safety standards, prevailing jurisdictions, or equipment manufacturers; and,*
- vi. *Not mislead, misrepresent or knowingly deceive others concerning my experience or the capabilities of myself or the equipment I am operating or with which I am working.*

In addition, in my dealings with CCO, I will:

- vii. *Provide accurate and complete information and abide by CCO's policies and procedures, including this Code of Ethics, as they may be updated from time to time;*
- viii. *Not act dishonestly or unfairly in order to gain an advantage, or to provide another with an advantage, in connection with any dealings with CCO;*
- ix. *Cooperate fully and completely with any administrative inquiries or investigations by CCO; and,*
- x. *Not misrepresent or misuse any CCO card, or the NCCCO or CCO acronyms and logos, or any registered trademark or other intellectual property of CCO; and I understand that I must return the card to CCO immediately if required to do so.*

CCO-certified personnel who intentionally or knowingly violate any provision of the Code of Ethics will be subject to action by a peer review panel, the Ethics and Discipline Committee, which may result in suspension or revocation of certification.

DISCIPLINARY POLICY

All participants in CCO's certification programs, including CCO certified personnel, are held to very high standards of conduct and are expected to conduct themselves in an ethical manner.

In recognizing its responsibility to maintain the integrity of CCO's certification programs, CCO understands that action may be needed against a candidate or certificant upon receipt and investigation of allegations of violation(s)

of the Code of Ethics or Substance Abuse Policy or similar policies, if they are found to be substantiated.

Find grounds for disciplinary action as well as the policies and procedures surrounding such action at www.nccco.org/discipline.

SUBSTANCE ABUSE POLICY

It is the policy of the National Commission for the Certification of Crane Operators (CCO) that certified personnel shall not perform duties related to their certification while under the influence of any substance that impairs or may reasonably be expected to impair their ability to work safely in the workplace.

See details of the CCO substance abuse policy at www.nccco.org/abuse.

CERTIFICATION CARDS

Certified operators receive a laminated photo ID card at no cost when they certify, add a designation, or recertify.

Replacement cards may be ordered online at: www.nccco.org/newcard.

Certification cards remain the property of CCO, are not transferable, and must be returned to CCO upon demand.

CHANGE OF ADDRESS

Certificants who change their address must notify CCO as soon as possible. Failure to do so may cause important updates on CCO's programs to be missed that could affect a certificant's stature.

The fastest and easiest way to update your contact information is using the myCCO portal smartphone app, available for iPhones and Android phones. Alternatively, you may use the companion website (www.nccco.org/myCCO) to access and update your contact information and review your current certifications and expiration dates. The app also enables you to view your upcoming exams and recent exam history, including exam results.



How to Apply for CCO Exams

WRITTEN AND PRACTICAL

START WITH myCCO PORTAL

All candidates applying for CCO exams—both written and practical—need a myCCO account to submit their exam applications and payments. A myCCO account is free and takes only minutes to set up.

To apply for CCO exams, complete the following steps:

1. Go to my.cco-cert.org and login or register for an account.
2. Once you are logged in, submit an online application and pay for the exam(s).
3. Application deadlines and processing times vary by type of testing. Please see specifics below.
4. Candidates have six months from the date of application to take exam(s).

Examination Fees

For all exam and related fees, visit the Exam Fees page on CCO's website at www.nccco.org/fees.

WRITTEN EXAMINATION OPTIONS

The following exam administration options are available for CCO written exams:

Online Proctored Testing (OPT)

Take your exam(s) online using your internet-connected computer. You will be monitored by a live online proctor for the full duration of the exam. You can test from almost anywhere, 24/7/365. Computers must meet minimum technical requirements as found at www.nccco.org/techreq. For more information, go to www.nccco.org/OPT.

Applications may be submitted at any time, but no less than two business days before your preferred exam date.

Once the application has been processed, candidates will receive a scheduling authorization email with specific instructions on how to schedule the date and time of their exam. Scheduling exam appointment occurs through the myCCO portal. Once scheduled, candidates will receive a CCO appointment confirmation email with the date and time of their appointment.

Candidates will receive preliminary exam results immediately following testing.

Event Online Testing (EOT)

Take your exam(s) online using a computer at an authorized CCO test site. For more information, go to www.nccco.org/EOT.

Applications may be submitted at any time, but no less than two business days before your preferred exam date.

Once the application has been processed, candidates will receive a scheduling authorization email with specific instructions on how to find an available authorized CCO test site. Scheduling your exam appointment occurs through the Test Site Coordinator. Once scheduled, candidates will receive a CCO appointment confirmation email with the date, time, and location of their appointment.

Candidates will receive preliminary exam results immediately following testing.

Computer-Based Testing (CBT)

Take your exam(s) online using a computer at any of the 400+ PSI test centers across the country. For more information about CBT, go to www.nccco.org/cbt.

Applications may be submitted at any time, but no less than five business days before your preferred exam date.

Once the application has been processed, candidates will receive a scheduling authorization email with specific instructions on how to schedule the date, time, and location their exam. Scheduling exam appointments occurs through PSI. Once scheduled, candidates will receive a CCO appointment confirmation email with the date, time, and location of their appointment.

Candidates will receive exam results immediately following testing.

Paper/Pencil Testing (PPT)

Take your exam(s) via paper/pencil on a specific date, time, and location. If interested in paper/pencil testing, go to www.nccco.org/findwritten to find a PPT exam administration convenient to you; then contact the Test Site Coordinator to confirm availability.

Paper/pencil CCO written examinations are electronically scored by CCO. For this reason, it is important to complete the answer sheet according to the instructions provided by the Written Exam Proctor on the day of the exam. Candidates will receive credit only for answers recorded on the scannable answer sheet. Answers marked in the

test booklet(s) will NOT be counted toward a candidate's score.

RESCHEDULING/CANCELLATION

The following policies apply should a candidate be unable to attend the scheduled exam appointment.

Online Proctored Testing (OPT)

- Candidates may reschedule or cancel their exam appointment at no cost through the myCCO portal at least one minute prior to the exam start time.
- Candidates who are 15 minutes late for their appointment, miss their exam appointment entirely, or do not test within six months of their application submission will forfeit their fees.
- Note that candidates who scheduled testing through OPT are able to cancel and reschedule through EOT if they so choose, at no additional cost.

Event Online Testing (EOT)

- Candidates may reschedule or cancel their exam appointment at no cost by contacting their Test Site Coordinator as long as the exam has not been started.
- Candidates who decide not to take exams, or do not test within six months of application submission will forfeit their fees.
- Note that candidates who scheduled testing through EOT are able to cancel and reschedule through OPT if they so choose, at no additional cost.

Computer-Based Testing (CBT)

- Candidates may reschedule their exam appointment at no cost through PSI as long as they do so at least 24 hours prior to the exam start time.
- To reschedule or unreschedule exams:
 - Log into PSI account, or
 - Call PSI at 833-333-4752
- Candidates who do not cancel their appointment by the deadline, miss their exam appointment, arrive late for their appointment, decide not to take exams, or do not test within six months of application submission will forfeit their fees.

Paper/Pencil Testing (PPT)

Standard Cancellation

- Candidates may cancel their application as long as they do so at least seven business days prior to the exam date.

- To cancel an application email candidate@nccco.org.
- Refunds, minus a cancellation fee, will be issued within 30 days of the cancellation.
- Candidates who miss their exam appointment, or miss the cancellation deadline will forfeit their fees.

Emergency Cancellation

Only the following are considered grounds for emergency cancellation:

- **Called to work**—supporting documentation required: letter from employer
- **Candidate illness**—supporting documentation required: doctor's note
- **Family death**—supporting documentation required: death certificate or obituary notice

To be considered for an emergency cancellation:

- Candidates must notify CCO within seven business days following the exam date.
- To cancel an application, email candidate@nccco.org along with required supporting documentation.
- Refunds, minus a cancellation fee, will be issued within 30 days of the cancellation.
- Candidates who miss their exam, decide not to take exams, or cancel after the deadline will forfeit their fees.

IDENTIFICATION AT THE TEST SITE

Candidates must bring valid (not expired) government-issued photo identification that includes date of birth to the test site on the day of the test administration. Candidates will be required to sign the test site roster upon entry to the testing area.

Acceptable forms of photo identification may include a current:

- Passport
- Government-issued driver's license
- Military identification card
- U.S. Government-issued alien registration card

NOTE: Candidates without appropriate identification documents will NOT be admitted to take the CCO examination(s) and all fees will be forfeited.

SCORE REPORTING

Online Proctored Testing (OPT) and Event Online Testing (EOT)

- Candidates will receive preliminary exam results immediately following testing.
- Candidates results will also be available in the myCCO Portal and mobile phone app.

Computer-Based Testing (CBT)

- CBT candidates will receive their test results immediately following their exams and should retain these score reports for their records.
- Candidates results will also be available in the myCCO mobile phone app.

Paper/Pencil Testing (PPT)

- Paper/pencil CCO written examinations are electronically scored by CCO. For this reason, it is important to complete the answer sheet according to the instructions provided by the Written Exam Proctor on the day of the exam. Candidates will receive credit only for answers recorded on the scannable answer sheet. Answers marked in the test booklet(s) will NOT be counted toward a candidate's score.
- Examination results are emailed to candidates approximately 12 business days after the examination administration.

PRACTICAL EXAMINATION OPTIONS

To find upcoming practical exam administrations for the program(s) you're interested in, contact your Test Site Coordinator to determine the date of the next scheduled practical exam, or visit www.nccco.org/practicalsites to find the nearest practical testing locations to you; then contact the Test Site Coordinator to confirm availability and to schedule.

Applications may be submitted at any time, but at least one hour prior to testing.

Once the application has been processed, candidates will receive an email for each exam they are approved to take with a testing authorization code. Candidates will not be permitted to take a practical exam without their authorization code.

APPLYING FOR PRACTICAL EXAM

Candidates must apply for practical exams online at my.ccocert.org. Upon submission of their application,

candidates will receive a confirmation email within one hour with an authorization code for each practical exam they are approved to take. Candidates have up to six months to take their practical exam before their authorization expires.

Please note the following requirements:

- Candidates will **not** be permitted to take a practical exam without their authorization code.
- Candidates must take the authorized practical exam by the expiration date. No extensions permitted.
- Applications **cannot** be cancelled, refunded, or transferred to another candidate.
- **On test day candidates must bring a valid government-issued photo ID (passport, driver's license) with date of birth.**



Written Examination Process

MOBILE CRANE OPERATOR

CANDIDATES REQUESTING TESTING ACCOMMODATIONS

Arrangements for persons with disabilities will be provided upon request, in conformance with the Americans with Disabilities Act (ADA).

Professional documentation in support of a request for accommodation must be submitted to CCO no later than four weeks prior to the scheduled test date. For further information about testing accommodations, see the complete CCO Testing Accommodations Policy at: www.nccco.org/accommodations.

TEST SITE INFORMATION

Test Security

For the purpose of test security, candidates who sit for CCO examination(s) acknowledge that they understand the following:

- The examination is the exclusive property of CCO.
- The examination and the questions contained therein are protected by federal copyright law.
- No part of the examination(s) may be copied or reproduced in part or whole by any means whatsoever, including memorization.
- Theft or attempted theft of an examination is punishable as a felony.
- While at the examination site, candidates are considered professionals and shall be treated as such. In turn, candidates must conduct themselves in a professional manner at all times. While at the site, they shall not use words or take actions that are vulgar, obscene, libelous, or that would denigrate the staff or other candidates.
- No conversing or any other form of communication among the candidates is permitted once they enter the examination area.
- No smoking, eating, or drinking is allowed at the examination site.
- No guests, visitors, or family members are allowed in the testing room or reception areas.
- Candidate participation in any irregularity during the examination, such as giving or obtaining unauthorized information or aid, as evidenced by an observation or subsequent statistical analysis, may be sufficient cause to terminate participation, invalidate

the results of the examination, or other appropriate remedy.

- A candidate's signature on the answer sheet or roster for the administration of the examination confirms that the candidate has read and understands the above statements.

Candidate Question Comment Forms

Computer-based testing candidates may provide comments for any question by clicking on the "Comments" button to the left of the Time button. This opens a dialogue box where candidates may enter comments.

NOTE: Only comments completed on the Candidate Question Comment Form or provided during the computer-based examination at the test site will be considered for review.

TEST SCORING INFORMATION

CCO written examinations are criterion-referenced examinations; i.e., the passing score is set beforehand, and candidate performance on the examination is not compared to the performance of others taking the examination. In a criterion-referenced examination, a candidate must obtain a score equal to or higher than a predetermined passing score to pass the test. The passing score represents an absolute standard and is determined by a panel of CCO content experts using a psychometrically accepted standard-setting methodology.

In reporting the examination results to candidates, statistical procedures are used to convert raw scores (i.e., the number of test questions answered correctly) to scaled scores, which are set for all administrations of the examination(s). The scaled score is not a number-answered-correctly score.

Candidate results are reported as a pass/fair status.

Candidate scores are never reported by telephone.

Score Review Requests

Candidates not passing exam(s) may request from CCO a hand scoring of their answer sheet(s), provided their request is made in writing within three months of the test date. A Score Review Processing Fee will be invoiced.

Scoring review requests should be emailed to candidate@nccco.org.

In the event that score review of a failing candidate's answer sheet results in a passing score, the score review fee will be refunded in full.

RETAKE THE EXAMINATION(S)

Candidates who fail an examination(s) may retake the examination(s); they must reapply and pay all corresponding retest fees. Written exam retest candidates are required to wait a minimum of four weeks before retesting on the same exam.

INFORMATION RELEASE POLICY

CCO releases information pertaining to individuals who have successfully passed one or more CCO examinations according to its Information Release Policy as detailed at www.nccco.org/inforelease.



Written Examination Outline

CORE EXAMINATION—MOBILE CRANE OPERATOR

The Core examination portion of the CCO written examination tests the following knowledge areas relating to the operation of mobile cranes:

Domain 1: Site

- Approximately 20% of test

Domain 2: Operations

- Approximately 26% of test

Domain 3: Technical Knowledge

- Approximately 28% of test

Domain 4: Load Charts

- Approximately 26% of test

DOMAIN 1: SITE

1. Understand elements that affect ground stability:
 - a. Below surface (e.g., voids, tanks, loose fill)
 - b. On surface (e.g., retaining walls, slopes, excavations, depressions)
2. Know the proper use of supporting materials (e.g., mats, blocking/cribbing).
3. Know electric power line hazards during assembly/disassembly.
4. Know the requirements to travel without load.
5. Know how to identify and evaluate hazards concerning:
 - a. Access to job site
 - b. In-transit clearances
 - c. Pinch/crush points
 - d. Personnel
6. Know the responsibilities of the controlling entity concerning site conditions.
7. Know how to review lift requirements with site supervision.

DOMAIN 2: OPERATIONS

1. Know how to inspect the crane for unsafe conditions.
2. Know personnel safety requirements during crane inspections.
3. Know how to level the crane.
4. Know how to obtain dimensions, weight, and center of gravity of the load.
5. Know how to verify the radius.
6. Know electric power line hazards during operations.

7. Know wire rope:
 - a. Reeving
 - b. Parts of line
8. Know types of signals:
 - a. Hand signals
 - b. Voice/radio signals
 - c. Audible signals
 - d. New or non-standard signals
9. Know the requirements for:
 - a. Multi-crane lifts
 - b. Suspended personnel platforms
 - c. Duty cycle operations
 - d. Barge operations
 - e. Multi-drum operations
10. Know the effects of lifting loads from beneath the surface of the water.
11. Know the requirements and procedures for when load is not in full view of the operator.
12. Know the requirements of tag lines.
13. Know how to react to:
 - a. Block and line twisting
 - b. Personnel in fall zone
14. Know the use/function of the following operator aids:
 - a. Load moment indicator, load moment limiter, load weighing devices
 - b. Anti-two block devices
 - c. Boom angle indicator
 - d. Wind indicator
 - e. Drum rotation indicators
 - f. Radius indicators
15. Know alternative operating procedures when operator aids malfunction.
16. Know the use/function of the following safety devices:
 - a. Horn
 - b. Level indicator
17. Know emergency procedures for:
 - a. Electric power line contact
 - b. Loss of stability
 - c. Control malfunction
 - d. Carrier or travel malfunction
 - e. Two-blocking
 - f. Overloading
 - g. Fires

18. Know the effects of dynamic loading from:
 - a. Shock loading
 - b. Moving loads
19. Know the effect of side loading.
20. Know the effects of operating in various weather conditions (e.g., wind, temperature, wave action)
21. Understand the condition where backward stability presents limitations.
22. Know how to use the manufacturer-approved attachments and their effect on the crane's operation.
23. Know operator's authority to stop operations.
24. Know how to shut down and secure the crane when leaving it unattended.

DOMAIN 3: TECHNICAL KNOWLEDGE

1. Know current federal regulations and industry standards, including but not limited to ASME B30.5, B30.10, OSHA 1910.180, 1926 Subpart CC.
2. Know basic crane terminology and definitions.
3. Know functions and limitations of cranes and attachments.
4. Know the inspection requirements for:
 - a. Shift inspections
 - b. Monthly inspections
 - c. Annual inspections
 - d. Notifying supervision of inspection deficiencies
5. Know basic procedures for rigging devices and their use, such as slings, softeners, lifting beams, and shackles.
6. Know basic procedures for termination of wire rope.
7. Know the proper use of hook blocks and overhaul balls.
8. Know wire rope:
 - a. Types and designations of wire rope and their application
 - b. Replacement criteria and inspection procedures of running ropes
 - c. Maintenance and lubrication
9. Know relationship between line pull and safe working load of running ropes.
10. Know protective measures against electrical hazards and their limitations.
11. Know the significance of the instruments and gauge readings.
12. Know requirements for fall protection.
13. Know requirements for access and egress of the crane.

DOMAIN 4: LOAD CHARTS

1. Know the terminology necessary to use load charts.
2. Demonstrate basic math skills without the use of a calculator.
3. Know how to ensure that the load chart is the appropriate chart for the machine in its particular application.
4. Know how to use load charts, including:
 - a. The difference between capacity limited by stability and factors other than stability
 - b. The range diagram
 - c. The work area chart
 - d. "Parts-of-line" information



Written Examination Outline

SPECIALTY EXAMINATIONS—MOBILE CRANE OPERATOR

The Specialty examinations for the CCO mobile crane operator certification program test the following knowledge areas relating to the operation of each of these types of cranes:

- Lattice Boom Cranes (LAT)
- Telescopic Boom Cranes—Swing Cab (TLL)
- Telescopic Boom Cranes—Fixed Cab (TSS)

Each Specialty exam only contains questions relevant to cranes within that specialty area. For example, questions about lattice booms will appear on LBT and LBC exams, but will NOT appear on TLL or TSS exams.

Domain 1: Setup

- Approximately 23% of test

Domain 2: Operations

- Approximately 23% of test

Domain 3: Technical Knowledge

- Approximately 19% of test

Domain 4: Manufacturers' Load Charts

- Approximately 35% of test

DOMAIN 1: SETUP

1. Know the proper use of supporting materials (e.g., mats, blocking/cribbing).
2. Know proper boom assembly and disassembly procedures:
 - a. Lattice booms
 - b. Telescopic booms
 - c. Extensions/jibs
3. Know how to properly use:
 - a. Outriggers/stabilizers
 - b. Crawlers
4. Know how to use outrigger position indicators/sensors.

DOMAIN 2: OPERATIONS

1. Know how to operate a crane:
 - a. Stationary on rubber tires
 - b. On outriggers
 - c. Stationary on crawlers
2. Know how to pick and carry:
 - a. On rubber
 - b. On crawlers

3. Know how to shut down and secure the crane properly when leaving it unattended:
 - a. Lattice boom cranes
 - b. Telescopic boom cranes
4. Know the use/function of the following operator aids:
 - a. Boom length indicators
 - b. Boom hoist limiting devices
 - c. Luffing jib limiting devices
5. Know the use/function of the following safety devices:
 - a. Boom stops
 - b. Brake locks
 - c. Jib stops
6. Know power flow systems.
7. Know the procedures when approaching two-blocking for:
 - a. Telescopic boom cranes
 - b. Lattice boom cranes

DOMAIN 3: TECHNICAL KNOWLEDGE

1. Know basic crane terminology and definitions specific to different crane types.
2. Know functions and limitations and attachments specific to different crane types.
3. Know wire rope replacement criteria and inspection procedures (standing ropes)

DOMAIN 4: LOAD CHARTS

1. Understand different elements of load charts:
 - a. Apply load chart notes
 - b. Specifications
 - c. Range diagram
 - d. Work area diagram
 - e. Boom/jib erection charts
 - f. Rated capacity charts
2. Understand and apply manufacturers' load charts given various configurations:
 - a. Determining maximum radius for load placement
 - b. Determining gross capacity
 - c. Determining net capacity



Reference List

MOBILE CRANE OPERATOR

The following reference materials are used by CCO's Written Examination Committee to verify the accuracy of CCO test questions.

Candidates are strongly advised to become familiar with manufacturers' load charts in preparing for the CCO certification examinations. Prices current at press time.

ANSI/ASME, B30.5 (2018) \$94.00 **MOBILE AND LOCOMOTIVE CRANES**

Order by Internet: <https://www.asme.org/codes-standards>

Order by mail:

American Society of Mechanical Engineers
22 Law Drive, Box 2900
Fairfield, NJ 07007
ph: 800-843-2763; fax: 201-882-1717

Payments accepted: Check, VISA, MasterCard, American Express, Discover, Diner's Club

MOBILE CRANE MANUAL \$73.99 CDN

Order by Internet: <https://www.ihsa.ca/IHSA/Products/Items.aspx>

NOTE: Online product orders must be shipped to a Canadian address.

Order by phone: For U.S. or International orders, please contact IHSA Customer Service at 905-625-0100.

Infrastructure Health & Safety Association
Voyager Training Centre
21 Voyager Court South
Etobicoke, Ontario M9W 5M7 Canada
Phone: 905-625-0100
Fax: 416-674-8866

Payments accepted: Check, VISA, MasterCard, American Express, Discover, Diner's Club

AEM MOBILE CRANE SAFETY MANUAL \$5.25

Order by Internet: <http://shop.aem.org/>

Order by mail:

111 East Wisconsin Ave, Suite 940
Milwaukee, WI 53202-4879
ph: 414-272-0943; fax: 414-272-1170

Payments accepted: VISA, MasterCard, check, money order

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, U.S. DEPARTMENT OF LABOR CODE OF FEDERAL REGULATIONS, PARTS 1926 SUBPART CC—CRANES AND DERRICKS IN CONSTRUCTION AND 1910.180—CRANES IN GENERAL INDUSTRY

CFR 1910.180: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.180>

CFR 1926 Subpart CC: <https://www.osha.gov/laws-regs/regulations/standardnumber/1926>

IPT'S CRANE AND RIGGING HANDBOOK & MANUAL

| | |
|----------|---------|
| Handbook | \$24.75 |
| Manual | \$41.00 |

Order by Internet: <http://www.iptbooks.com/>

Order by mail:

IPT Publishing and Training Ltd.
P.O. Box 9590
Edmonton, Alberta, T6E 5X2 Canada
ph: 780-962-4548; fax: 780-962-4819

Payments accepted: VISA, MasterCard, American Express, check, money order



Practical Examination Process

MOBILE CRANE OPERATOR

SKILLS TESTED

CCO Mobile Crane Operator Practical Examinations are available on three crane types:

- **Lattice Boom Crane (LAT):** includes lattice boom crawler cranes and lattice boom truck cranes
- **Telescopic Boom Crane—Fixed Cab (TSS):** cranes having a fixed (non-rotating) operator's station
- **Telescopic Boom Crane—Swing Cab (TLL):** cranes having an operator's station that rotates with the crane's upper works or turret of the boom. (These include any cranes for which an operator stands at a control station and "walks" with the controls as they rotate with the boom structure; this definition also applies to any cranes with a rotating operator station, including walk-around, platform, and cab-operated boom trucks.)

Candidates may take the practical examination on one, two, or all three of the crane types, provided they have passed/will pass the written examination for the corresponding designation within the 12-month time frame.

The practical examination is comprised of six main tasks that increase progressively in the skill level tested. Skills tested are: inspecting the equipment hoisting, booming, swinging, following hand signals, and combination (multifunction) operations. Crane operation with load and without load is required.

CCO adapts the Test Site Layout (CAD) for each model of crane used for the practical examination to ensure the examination remains standardized for all candidates, wherever and whenever they may test.

SCHEDULING A TEST

Candidates for the practical examination should contact their Test Site Coordinator to determine the date of the next scheduled practical exam. Candidates may also visit the CCO website at www.nccco.org/practicalsites for a listing of upcoming open test sites.

TEST DAY

Candidates must report to the test site at the scheduled time. Candidates must present their Practical Exam Authorization code either as a printed document or electronically.

All candidates shall comply with test site requirements concerning personal protective equipment (PPE), which at a minimum shall meet OSHA requirements. Candidates

must bring valid (not expired) government issued photo identification that includes date of birth to the test site on the day of the test administration.

Candidates are required to submit a digital passport size head-and-shoulders color photo (without hat or sunglasses). Please coordinate with your Test Site Coordinator to either provide one in advance or have the photo taken the day of the exam.

PRACTICAL SCORING

Candidate performance on the practical examination is recorded by Practical Exam Proctors credentialed by CCO. Proctor requirements include meeting CCO requirements for operator certification, passing the written and practical exams, and successfully completing an accreditation workshop.

The testing procedure has been developed to provide the highest degree of standardization and reliability. The Proctor's task is primarily to record the performance of the candidate.

A candidate may lose points either through operational errors or exceeding established optimum time limits. Candidates' performances are scored off site at CCO's facilities.

PRACTICAL SCORE REPORTING

All candidates receive score reports of their performance via email. The free myCCO app for Apple and Android devices provides the fastest way to access score reports; get the app at www.nccco.org/myCCO. Examination results are emailed to candidates approximately 12 business days after the receipt of practical examination score sheets by CCO.

Please note that while Practical Exam Proctors are encouraged to expedite score sheets after each test administration, they may batch score sheets from several test administrations over a number of days. This means that candidates may receive their score reports from CCO more than three weeks after their test administration.

Both the practical examination and the scoring system have been validated and verified by CCO's pilot testing program. A score of 75 represents the minimum passing score for Mobile Crane Practical Examinations.

PRACTICAL EXAM CANDIDATE FEES

For all exam and related fees, visit the Exam Fees page on CCO's website at www.nccco.org/fees.

PRACTICAL EXAM SCORING REVIEW REQUESTS

Candidates not passing the examination(s) may request from CCO a scoring review of their answer sheets, provided the request is made in writing within three months of the test date. A Score Review Processing Fee will be invoiced.

Score review requests should be emailed to candidate@nccco.org.

In the event that a review of the scoring of a failing candidate's answer sheet results in a passing score, the Score Review Fee will be refunded in full.



Practical Examination Outline

MOBILE CRANE OPERATOR

The following is an outline of the practical testing procedure, as provided to candidates at the time of testing.

CANDIDATE INFORMATION AND INSTRUCTIONS

The following sections describe the specific tasks you will be performing when taking the Practical Examination. It is important that you understand these instructions. If there is anything you do not understand, please request clarification from the Practical Exam Proctor.

TASKS

The practical exam tasks are:

- **Task: Pre-Operational (Shift) Inspection**
- **Task 1: Place Chain in Stop Circle**
- **Task 2: Follow Hand Signals**
- **Task 3: Place Ball in Barrels**
- **Task 4: Negotiate Zigzag Corridor with Test Weight**
- **Task 5: Safe Shutdown and Securing Procedures**

There is also a Pre-Test Briefing, a Crane Walk Around, a Pre-Test Familiarization Period, and a Pre-Task Familiarization Period (prior to the Zigzag task) with a load. You will be required to complete all phases of the test in sequence.

You must report to the test site at the scheduled time. **All candidates shall comply with test site requirements concerning personal protective equipment (PPE), which at a minimum shall meet federal OSHA requirements.**

The Test Site Coordinator is responsible for setting the testing schedule. If you are familiar with the operation of the test crane, you may elect to test first to allow other candidates time to review the operator's manuals and load charts. Otherwise, selection shall be by random drawing or by assignment of the Test Site Coordinator.

During the practical examination, you are under the direction of the Proctor and must follow the Proctor's directions at all times.

Once you have completed all of the tests you are taking, you must leave the testing area. Only personnel involved in the administration of the test are allowed in the test area.

TIME LIMITS

For Task 1, Task 3, and Task 4 an *optimum time* limit has been set. If the task is completed within this time period, you receive no time penalty.

Once you exceed this time limit, however, you will lose points on a gradual basis. If you take one and a half times as long as the optimum time, you will have lost all the points allotted to that particular task. The optimum time for each task is stated as part of the task descriptions. At two times the optimum time the Proctor may end the task and move on to the next task.

PRE-TEST BRIEFING

While candidates are waiting to take their tests, they will have sufficient time to read this description of the tasks to be performed and review the operator's manual and load chart for the crane(s) they will operate. In addition, they will be informed of the make and model of the crane, the boom length, and the weight of the test load. They will also watch a short video showing all the tasks they will be required to perform during the examination. This video is also available on the CCO website and candidates must view it within 24 hours before their practical exam(s).

Note that:

- The crane's LMI system (if the crane is so equipped) has been correctly programmed and will not interfere with the proper operation of the crane.
- The crane has been set up and leveled. A spirit level is available to verify that the crane is level.
- None of the target points have been placed at a radius that exceeds the crane's rated capacity.
- On telescopic boom cranes, the boom length has been pre-set. **Telescoping will not be permitted at any time.**
- All signals used throughout the test are in accordance with the Standard Method hand signals.

CIRCUMVENTING THE COURSE

Circumventing the course on CCO Mobile Crane Operator Practical Exams is defined as when:

1. Chain leaves the corridor while on or off the ground and passes more than one pole left still standing on the original string line before re-entering the corridor; you **must** enter the circles from inside the corridor to avoid this being marked as a deficiency
2. Chain leaps from one leg of corridor to another with the chain off the ground, outside the corridor
3. Chain passes four or more poles consecutively with the chain off the ground, inside the corridor

All points for that task are lost if a circumvention occurs.

UNSAFE ACT

If at any time during the Pre-Test Familiarization Period or during the test, you commit an unsafe act, you will be disqualified from continuing with the test. *Unsafe acts* include but are not limited to the following:

- Dropping the ball or load hook on ground (lattice boom cranes: free fall ONLY)
- Two-blocking of the crane
- Contacting the crane with the test weight
- Uncontrolled or reckless operation (must be sufficient to cause safety concern to personnel or crane)
- Failure to respond to a *stop* signal
- Contacting obstruction with crane or test weight

The Proctor has the authority to stop the test at any time for reasons of safety. Please ask the Proctor if you have any questions.

If you are disqualified due to an unsafe act, you will not be permitted to test *on any crane* until the next day.

TELESCOPING DURING THE EXAM

You are not permitted to telescope during the mobile crane practical exam. In the event you telescope in or out, intentionally or otherwise, while timing continues the Proctor will give you a Stop signal, a Telescope In or Out signal as needed, and indicate that you may continue the task. Please note timing of the task continues while necessary corrections are made and until the task is complete. This is not considered a circumvention or an unsafe act. Should you fail to respond to the Stop signal, the Proctor will stop the test and record it as an unsafe act.

CANDIDATE ID AND SIGNATURE

Prior to beginning the examination, the Proctor will ask you for a valid (not expired) government-issued photo identification that includes date of birth, such as a driver's license.

The Proctor will ask you if you have read the Candidate Information and Instructions and will answer any questions you may have. The Proctor will review the weather conditions and ask the candidates to sign indicating that they understand the instructions for the test and that they agree with the Proctor's assessment of the weather conditions.

WEATHER CONDITIONS AND EQUIPMENT PROBLEMS

The Proctor will use an anemometer to check the wind speed and then will record the weather conditions on the score sheet.

The Proctor has the responsibility to determine if weather conditions or equipment problems are such that a test needs to be suspended. If the test is interrupted due to weather conditions or equipment problems, the procedure for restarting is as follows:

- You will resume the test at the beginning of the task you were performing at the time of the interruption, except for Task 4, when you will go back to the beginning of either Task 4a or 4b, as appropriate.
- You will be entitled to a Pre-Test or Pre-Task Familiarization period before resuming the test.
- If testing resumes on a different machine, you must start the test over from the beginning. The first score sheet will be marked as "VOID" with an explanation and returned to CCO.
- If the testing is delayed to a different day, the test must be restarted from the beginning.

CRANE WALK AROUND

- Before you begin operations, you are allowed a couple of minutes to walk around the crane to ensure proper setup.

PRE-OPERATIONAL INSPECTION

- You will be asked to identify five items on the crane that are part of the pre-operational inspection.
- One at a time, you will be asked to describe how you would conduct the inspection and what deficiencies you would look for.
- You have approximately one minute per item.

PRE-TEST FAMILIARIZATION PERIOD

- You will be allowed 15 minutes to familiarize yourself with the crane and to examine anything on the crane that you feel is necessary to operate it comfortably.
- You will be allowed to get the feel of the controls and run the crane through its functions. The boom length has been preset. The brakes and other devices have been set according to the crane manufacturer's recommendation.
- You may not interfere with the test course, lift the test weight, or shadow the Zigzag Corridor or the barrels.

- You must finish the Pre-test Familiarization Period with the load hook under control and the chain on the ground at the Starting Point within the 15-minute period.
- The Proctor will notify you when there are ten, five, and one minute(s) remaining.
- If you are ready in less than 15 minutes, you may indicate this to the Proctor.
- If, at the end of the Pre-Test Familiarization Period, you feel that you are not ready to take the examination, you should notify the Proctor. You will have, in effect, disqualified yourself from taking the examination at this time, and you will be required to sign to that effect on the Candidate Score Sheet.

TASK 1: PLACE CHAIN IN STOP CIRCLE

Optimum Time: 1½ minutes

- At the Proctor's indication to start, at which point timing will begin, raise the ball and chain at least 10 ft. off the ground to clear all obstacles and personnel.
- Bring it from the Starting Point to the Stop Circle.
- Once the ball and chain reaches the Stop Circle, place it there such that the chain suspended from the hook makes contact with the ground inside the circle and remains there.
- The Proctor will give you a *stop* signal once the ball and chain are under control.
- Points will be deducted for the following:
 - a. Dragging chain or contacting ground outside of the circle
 - b. Hook or ball touching ground either inside or outside of the circle
 - c. Hook, ball, or chain contacting any part of the course or crane
 - d. Lifting the chain off the ground after it has made contact with the ground inside the circle
 - e. Exceeding the optimum time

TASK 2: FOLLOW HAND SIGNALS

This task is not timed.

- At the Proctor's direction, you will be guided back to the Starting Point using standard B30.5 hand signals.
- The Proctor will select four signals from the following:
 - a. *Hoist* and *stop*
 - b. *Swing* and *stop*
 - c. *Lower the load* and *stop*
 - d. *Lower the load slowly* and *stop*

- e. *Lower the boom, raise the load, and stop*
- f. *Raise the boom and stop*
- g. *Lower the boom and stop*
- h. *Raise the boom, lower the load, and stop*

- The Proctor may give the signals in any sequence.
- The Proctor or Assistant Proctor will remove the chain at the completion of this task.

TASK 3: PLACE BALL IN BARRELS

Optimum Times:

Telescopic Boom Crane—Fixed Cab: 3½ minutes
Telescopic Boom Crane—Swing Cab: 3½ minutes
Lattice Boom Crane: 4 minutes

- At the Proctor's indication to start, at which point timing will begin, bring the overhaul ball from the Starting Point and place it into Barrel #1. (If you knock over Barrel #1, at the Proctor's indication proceed to put the ball in Barrel #2.)
- The Proctor will determine when the horizontal line around the center of the ball has dropped below the rim of Barrel #1 and will so indicate to you. At the Proctor's indication, move the ball from Barrel #1 to Barrel #2.
- The Proctor will determine when the horizontal line around the center of the ball has dropped below the rim of the barrel. Hold the ball in Barrel #2 until instructed by the Proctor to remove it.
- Timing stops when the ball is completely clear of Barrel #2 and the Proctor has given you a *stop* signal.
- Points will be deducted for the following:
 - a. Moving barrel (2 in. or more)
 - b. Knocking over barrel
 - c. Hook or ball touching ground
 - d. Exceeding the optimum time

PRE-TASK FAMILIARIZATION PERIOD (WITH TEST WEIGHT)

This part of the test is not scored.

- At the Proctor's indication, bring the overhaul ball over the test weight located in the Test Weight Circle.
- The load will be attached to the crane's hook by the Proctor or Assistant Proctor.
- You are allowed to bring the test weight to the designated area, where you can get the feel of the load, test the brake, etc., before beginning the Zigzag Corridor task.

- You may not swing the load outside of the designated area or shadow the Zigzag Course.
- You will be allowed a maximum of five minutes for this Pre-Task Familiarization, by the end of which period you must have placed the test weight on the ground in the Test Weight Circle with the rigging taut.
- The Proctor will notify you when there is one minute remaining.

TASK 4: NEGOTIATE ZIGZAG CORRIDOR WITH TEST WEIGHT

Optimum Times:

Telescopic Boom Crane—Fixed Cab: 4 minutes each direction

Telescopic Boom Crane—Swing Cab: 3 minutes each direction

Lattice Boom Crane: 3 minutes each direction

- At the Proctor's direction to start, at which point timing will begin, lift the test weight into the air and swing, boom up or down, and hoist up or down as you judge necessary to guide the load through the Zigzag Corridor without touching the ground with the test weight, raising the test weight so high that the chain leaves the ground, or knocking over any part of the PVC pole barrier.
- Points will be deducted for the following:
 - a. Knocking ball off pole
 - b. Moving pole base off line
 - c. Knocking pole over
 - d. Chain leaving ground
 - e. Passing poles with chain off ground
 - f. Load touching ground
 - g. Circumventing the course
 - h. Exceeding the optimum time
- Timing stops when you have placed the test weight on the ground in the Stop Circle and the Proctor has given you a *stop* signal. The task is not complete until the load is placed completely within the outside perimeter of the circle and the Proctor has given you a *stop* signal. If the Proctor does not give you a *stop* signal, this indicates the weight is not within the circle and the task continues to be timed.
- Once you have placed the test weight in the Stop Circle and the Proctor has given you a *stop* signal, you may reposition the boom tip over the test weight if necessary. You may not lift or reposition the test weight.
- At this time the Proctor will reconstruct the corridor, as necessary.
- At the direction of the Proctor, at which point timing will begin, lift the test weight from the Stop Circle and travel through the corridor in reverse fashion.
- Timing stops when you have placed the test weight on the ground in the Test Weight Circle and the Proctor has given you a *stop* signal. The task is not complete until the load is placed completely within the outside perimeter of the circle and the Proctor has given you a *stop* signal. If the Proctor does not give you a *stop* signal, this indicates the weight is not within the circle and the task continues to be timed.
- The Proctor will then detach the test weight from the load hook.
- At the Proctor's direction, swing the hook to the Starting Point and allow the Proctor to re-attach the chain.

TASK 5: SAFE SHUTDOWN AND SECURING PROCEDURES

- Before leaving the operator station, you will be required to apply safe shutdown procedures to the crane in preparation for the next candidate.
- Once the crane is shut down, you will leave the operator station and describe to the Proctor the procedures you would follow to secure the crane at the end of the work day.

POST-TEST PROCEDURES

Once you have completed the Practical Examination:

- The Proctor will record your performance.
- The Proctor is not permitted to review your score sheet or discuss your performance on the test.
- Exam results will be emailed to you within approximately twelve business days of the receipt of the score sheet by CCO.
- If you have made formal applications to test on any other cranes, return to the candidate briefing area.
- If you have completed all of your tests, you must leave the test site.



Service Truck Crane Operator

MOBILE CRANE OPERATOR

- **Program Description**
- **Written Exam Outline**
- **Practical Exam Outline**

®



Service Truck Crane Operator

MOBILE CRANE OPERATOR

PROGRAM DESCRIPTION

The CCO Service Truck Crane Operator certification (STC) is a subcategory of the CCO Telescopic Boom—Fixed Cab (TSS) certification and was developed specifically for the industries that use these smaller machines.

Service truck cranes are identified by their telescopic boom, where the base and mast structure is not integral to the stabilizer/outrigger system. Lifting is typically accomplished via a winch (electric or hydraulic) and its functions (rotation, elevation, telescoping) are either powered or manual. These machines tend to have relatively shorter boom lengths (10–35 ft.) and lower capacities (1–7 tons) as compared to other Telescopic Boom—Fixed Cab machines (e.g., Boom Trucks, Carry Deck cranes). Additionally, operations are usually conducted by the use of radio remote or pendant control with the operator standing on the ground following the load.

Please note that the CCO Telescopic Boom—Fixed Cab Operator (TSS) certification covers service truck cranes. Operators of service truck cranes who currently possess a TSS certification are not required to also possess the Service Truck Crane Operator certification. The reverse is not true, however. STC certification is intended only for operators of service truck cranes and not for those who operate larger Telescopic Boom—Fixed Cab. To be certified to operate all TSS cranes, candidates must achieve the full TSS certification (Core + TSS specialty written + TSS practical).

ELIGIBILITY

To be eligible for the Service Truck Crane Operator certification, candidates must:

- Be at least 18 years of age
- Comply with CCO's Substance Abuse Policy
- Pass the STC written exam
- Pass the STC practical exam
- Comply with CCO's Code of Ethics

CCO WRITTEN EXAM

The Service Truck Crane Operator written examination consists of a single comprehensive exam with 70 questions. Candidates are allowed 90 minutes to complete the exam. Please note that candidates for the Service Truck Crane Operator program are not required to take the Mobile Crane Operator Core Exam.

Candidate results are reported as a scaled score, with a score of **70** representing the minimum passing score for

this test. Written exam score reports include a strength and weakness report by content domain.

CCO PRACTICAL EXAM

The Service Truck Crane Operator practical exam demonstrates crane operation proficiency. It consists of five main tasks that increase progressively in the skill level tested. Skills tested are: inspecting the equipment, hoisting, booming, swinging, following hand signals, and combination (multifunction) operations. Crane operation with load and without load is required.

Both the practical examination and the scoring system have been validated and verified by CCO's pilot testing program. A score of **70** represents the minimum passing score for Mobile Crane Operator practical examinations.

CCO CERTIFICATION TIME FRAMES

Candidates must pass both the STC written and practical exams within twelve months of each other. Candidates may take their written and practical exams in either order.

RECERTIFICATION REQUIREMENTS

CCO certifications are valid for five years. Recertification requirements are detailed page 3. Candidates who can attest to at least 500 hours of crane-related experience during their period of certification do not need to take the practical exam to recertify. *Crane-related experience* is defined as: operating, maintaining, inspecting, or training on cranes.

Recertification candidates who need to take the practical exam for any reason, however, must do so before their certification expires. There is no grace period after their certification expires. Candidates whose certification has lapsed must take both the regular written and practical examinations again to be certified again.

CODE OF ETHICS FOR CERTIFIED OPERATORS

CCO-certified service truck crane operators are required to follow the same code of ethics as all other CCO-certified operators. CCO's Code of Ethics can be found on page 3.

DISCIPLINARY POLICY

CCO-certified service truck crane operators are subject to the same disciplinary policy as all other CCO-certified operators. CCO's Disciplinary Policy can be found at www.nccco.org/discipline.

SUBSTANCE ABUSE POLICY

It is the policy of the National Commission for the Certification of Crane Operators (CCO) that certified personnel shall not perform duties related to their certification while under the influence of any substance that impairs or may reasonably be expected to impair their ability to work safely in the workplace.

See details of the CCO substance abuse policy at www.nccco.org/abuse.

CANDIDATE EXAM FEES

For all exam and related fees, visit the Exam Fees page on CCO's website at www.nccco.org/fees.

REFERENCES

For a list of references, please refer to page 11.



Written Examination Outline

MOBILE CRANE OPERATOR—SERVICE TRUCK CRANES

The Service Truck Crane Operator written exam tests the following knowledge areas relating to the operation of service truck cranes:

Domain 1: Site

- Approximately 17% of test

Domain 2: Operations

- Approximately 44% of test

Domain 3: Technical Knowledge

- Approximately 21% of test

Domain 4: Manufacturers' Load Charts

- Approximately 17% of test

DOMAIN 1: SITE

1. Know the responsibilities of worksite personnel and their responsibilities concerning site conditions.
 - a. Controlling entity
 - b. Crane operator
2. Understand elements that affect ground stability:
 - a. Below surface (e.g., voids, tanks, loose fill)
 - b. On surface (e.g., retaining walls, slopes, excavations, depressions)
3. Know the proper use of supporting materials (e.g., mats, blocking, or cribbing).
4. Know electric power line hazards for:
 - a. Site access
 - b. Setup
5. Know how to identify and evaluate hazards concerning:
 - a. Access to job site
 - b. Pinch/crush points
 - c. Personnel during assembly/disassembly (outrigger/stabilizer setup)
6. Know how to review lift requirements with site supervision (if present).

DOMAIN 2: OPERATIONS

1. Know current federal regulations and industry standards, including but not limited to:
 - a. ASME B30.5
 - b. OSHA 1910.180
 - c. OSHA 1926 Subpart CC
 - d. SAE 765A
2. Know how to lift, swing, and place the load smoothly.

3. Know wire rope:
 - a. Reeving
 - b. Parts of line
4. Know types of signals:
 - a. Hand signals
 - b. Voice/audio signals
 - c. Audible signals
 - d. New or non-standard signals
5. Know how to shut down and secure the crane when leaving it unattended.
6. Know the limitations of operating in various weather conditions (e.g., wind, temperature).
7. Know how to obtain dimensions, weight, and center of gravity of the load. Know how to verify the radius.
8. Know basic procedures for rigging devices and their use, such as: slings, softeners, lifting beams, and shackles.
9. Know proper use of hook blocks and downhaul weights.
10. Know proper procedures and requirements for crane inspections:
 - a. Shift
 - b. Monthly
 - c. Annual
 - d. Repaired/modified
 - e. Notifying supervision of inspection deficiencies
11. Know and understand the use and function of operator aids, including:
 - a. Load moment indicator (LMI)
 - b. Anti-two block device/two-block damage prevention systems
 - c. Boom angle indicator
 - d. Boom length indicator
12. Know alternative operating procedures when operator aids malfunction.
13. Know and understand the use and function of safety devices, including:
 - a. Horns
 - b. Level indicator
 - c. Holding/check valve devices
 - d. Emergency stop
14. Know the proper procedures for operating safely near energized power lines.

15. Know the effects of lifting loads from beneath the surface of the water.
16. Know the requirements and procedures for when load is not in full view of the operator.
17. Know the requirements of tag lines.
18. Know how to react to:
 - a. Electric power line contact
 - b. Loss of stability
 - c. Control malfunction
 - d. Block and line twisting
 - e. Personnel under the load or in the fall zone
19. Know how to properly use outriggers/stabilizers, including the use of operational assist devices, such as outrigger/stabilizer position sensor monitors.
20. Know the effects of dynamic loading from:
 - a. Wind, extreme weather and wave action
 - b. Impact loading
 - c. Moving loads
 - d. Boom deflection
 - e. Side loading
21. Know how to use manufacturer-approved attachments and their effect on the crane's operation
22. Know the emergency response procedures for a vehicle fire
23. Know the effects of load share and load transfer in multi-crane lifts
24. Know the operator's authority to stop operations
25. Know how to react to changes in conditions that affect the safe operation of the crane

DOMAIN 3: TECHNICAL KNOWLEDGE

1. Know basic crane terminology and definitions.
2. Know functions and limitations of cranes and attachments.
3. Know general maintenance and lubrication requirements.
4. Know wire rope:
 - a. Construction and classification
 - b. Replacement criteria and inspection procedures
 - c. Capacity and multi-part rope requirements
 - d. Maintenance and lubrication
 - e. Implementing proper corrective measures
5. Know relationship between line pull and safe working load.

6. Know the limitations of protective measures against electrical hazards.
7. Know the significance of instruments, gauges, and machine power readings.
8. Know the requirements of standard and optional controls.
9. Know the emergency response procedure for:
 - a. Overloading
 - b. Two-blocking
10. Know power systems (e.g., hydraulic, electrical).

DOMAIN 4: MANUFACTURERS' LOAD CHARTS

1. Know terminology necessary to use load charts.
2. Know basic math.
3. Understand different elements of load charts:
 - a. Apply load chart notes
 - b. Rated capacity charts
 - c. Stability charts
4. Understand and apply manufacturer's load charts given various configurations:
 - a. Determining maximum radius for load placement
 - b. Determining gross capacity
 - c. Determining net capacity
 - d. Determining load moment
 - e. Determining intermediate values on capacity charts (boom length, radius, boom angle)
5. Know how to calculate net capacity, including factors such as:
 - a. Rigging weight
 - b. Limiting factors (e.g. line pull restriction, winch capacity)
 - c. Intermediate values on capacity charts (boom length, radius, boom angle)
6. Read and locate relevant information in the equipment manual and other materials containing information necessary for safe operation.



Practical Examination Outline

MOBILE CRANE OPERATOR—SERVICE TRUCK CRANES

The following is an outline of the practical testing procedure, as provided to candidates at the time of testing.

CANDIDATE INFORMATION AND INSTRUCTIONS

The following sections describe the specific tasks you will be performing when taking the Practical Examination. It is important that you understand these instructions. If there is anything you do not understand, please request clarification from the Proctor.

TASKS

The tasks that make up the Practical Examination are:

- Task 1: Pre-Operational Inspection
- Task 2: Chain in Circle
- Task 3: Test Weight in Pole Circle
- Task 4A: Zigzag Corridor (Forward)
- Task 4B: Zigzag Corridor (Reverse)
- Task 5: Safe Shutdown Procedures

There is also a Pre-Test Briefing, a Crane Walk Around, a Pre-Test Familiarization Period, and a Pre-Task Familiarization Period (prior to the Pole Circle task) with a load. You will be required to complete all phases of the test in sequence.

You must report to the test site at the scheduled time.

All candidates must comply with test site requirements concerning personal protective equipment (PPE), which at a minimum shall meet federal OSHA requirements.

The Test Site Coordinator is responsible for setting the test schedule. If you are familiar with the operation of the test crane, you may elect to test first to allow other candidates time to review the operator's manual and load charts. Otherwise, selection shall be by random drawing or by assignment of the Test Site Coordinator.

If you bring your own crane to test on, ensure that its annual inspections are up-to-date and the crane is in fully working order.

During the Practical Examination, you are under the direction of the Proctor and must follow the Proctor's directions at all times.

Once you have completed all of the tests you are taking, you must leave the testing area. Only personnel involved in the administration of the test are allowed in the test area.

TIME LIMITS

For Tasks 2 through 4b, an optimum time limit has been set. If the task is completed within this time period, you receive no time penalty.

PRE-TEST BRIEFING

While candidates are waiting to take their tests, they will have sufficient time to read this description of the tasks to be performed and review the operator's manual and load chart for the crane(s) they will operate. In addition, they will be informed of the make and model of the crane, the boom length, and the weight of the test load. They will also watch a short video showing all the tasks they will be required to perform during the examination. This video is also available on the CCO website and candidates must view it within 24 hours before their practical exam(s).

Note that:

- The crane's LMI system (if the crane is so equipped) has been correctly programmed and will not interfere with the proper operation of the crane.
- The crane has been set up and leveled. A spirit level is available to verify that the crane is level.
- None of the target points have been placed at a radius that exceeds the crane's rated capacity.

CIRCUMVENTING THE COURSE

Circumventing the course on CCO Service Truck Crane Operator Practical Exams is defined as when:

- Chain leaves the corridor while on or off the ground and passes more than one pole left still standing on the original string line before re-entering the corridor; you **must** enter the circles from inside the corridor to avoid this being marked as a deficiency
- Chain leapfrogs from one leg of corridor to another with the chain off the ground, outside the corridor
- Chain passes four or more poles consecutively with the chain off the ground, inside the corridor

All points for that task are lost if a circumvention occurs.

UNSAFE ACT

If at any time during the test you commit an unsafe act, you will be disqualified from continuing with the test. *Unsafe acts* include but are not limited to the following:

- Dropping the ball or load hook on ground
- Two-blocking of the crane

- Contacting the crane with the test weight
- Uncontrolled or reckless operation (must be sufficient to cause safety concern to personnel or crane)
- Failure to respond to a *stop* signal
- Contacting obstruction with crane or test weight

The Proctor has the authority to stop the test at any time for reasons of safety. Please ask the Proctor if you have any questions.

If you are disqualified due to an unsafe act, you will not be permitted to test *on any crane* until the next day.

CANDIDATE ID AND SIGNATURE

Prior to beginning the examination, the Proctor will ask you for a valid (not expired) government-issued photo identification that includes date of birth, such as a driver's license.

The Proctor will ask you if you have read the Candidate Information and Instructions and will answer any questions you may have. The Proctor will review the weather conditions and ask the candidates to sign indicating that they understand the instructions for the test and that they agree with the Proctor's assessment of the weather conditions.

WEATHER CONDITIONS AND EQUIPMENT PROBLEMS

The Proctor will use an anemometer to check the wind speed and then will record the weather conditions on the score sheet.

The Proctor has the responsibility to determine if weather conditions or equipment problems are such that a test needs to be suspended. If the test is interrupted due to weather conditions or equipment problems, the procedure for restarting is as follows:

- You will resume the test at the beginning of the task you were performing at the time of the interruption, except for Task 4A or Task 4B, when you will go back to the beginning of the task, as appropriate.
- You will be entitled to a Pre-Test or Pre-Task Familiarization period before resuming the test.
- If testing resumes on a different machine, you must start the test over from the beginning. The first score sheet will be marked as "VOID" with an explanation and returned to CCO.
- If the testing is delayed to a different day, the test must be restarted from the beginning.

CRANE WALK AROUND

- Before you begin operations, you are allowed a couple of minutes to walk around the crane to ensure proper setup.

TASK 1: PRE-OPERATIONAL INSPECTION

- You will be asked to identify five items on the crane that are part of the pre-operational inspection.
- One at a time, you will be asked to describe how you would conduct the inspection and what deficiencies you would look for.
- You have approximately one minute per item.

PRE-TEST FAMILIARIZATION PERIOD

- You will be allowed five minutes to familiarize yourself with the crane and to examine anything on the crane that you feel is necessary to operate it comfortably.
- You will be allowed to get the feel of the controls and run the crane through its functions. The brakes and other devices have been set according to the crane manufacturer's recommendation.
- You may not interfere with the test course, lift the test weight, or shadow the Zigzag Corridor.
- You must finish the Pre-test Familiarization Period with the load hook under control and the chain on the ground in Designated Area 1 within the five-minute period.
- The Proctor will notify you when there is one minute remaining.
- If you are ready in less than five minutes, you may indicate this to the Proctor.
- If, at the end of the Pre-Test Familiarization Period, you feel that you are not ready to take the examination, you should notify the Proctor. You will have, in effect, disqualified yourself from taking the examination at this time, and you will be required to sign to that effect on the Candidate Score Sheet.

TASK 2: CHAIN IN CIRCLE

Optimum Time: 1½ minutes

- At the Proctor's indication to start, at which point timing will begin, raise the chain to clear all obstacles and test personnel.
- Bring the chain from its starting position inside Designated Area 1 (DA-1) over to Designated Area 2 (DA-2), and land the chain fully inside the circle.
- Once the chain makes contact with the ground inside the circle, do not lift the chain off the ground.

- Avoid contacting anything but DA-2.
- Once the chain is under control inside the circle, the Proctor will give you a *stop* signal.
- Points will be deducted for the following:
 - a. Dragging chain or contacting ground outside of the circle
 - b. Hook touching the ground either inside or outside of the circle
 - c. Hook or chain contacting any part of the course or crane
 - d. Lifting the chain off the ground after it has made contact with the ground inside the circle
 - e. Exceeding the optimum time

PRE-TASK FAMILIARIZATION PERIOD

- At the Proctor's indication, bring the hook over to the test weight located in Test Weight Area.
- The load will be attached to the crane's hook by either the Proctor or Assistant Proctor.
- You will be allowed to bring the test weight to the designated area, where you can get the feel of the load before beginning the Zigzag Corridor task.
- You may not swing the load outside the designated area or shadow the Zigzag Corridor.
- You will be allowed a maximum of five minutes for this Pre-Task Familiarization; by the end of this period you must have placed the test weight on the ground in the Test Weight Area with the rigging taut.
- The Proctor will notify you when there is one minute remaining.

TASK 3: TEST WEIGHT IN POLE CIRCLE

Optimum Time: 2 minutes

- At the Proctor's indication to start, timing will begin. Lift the test weight from the Test Weight Area and place it in DA-3.
- Once the test weight is in DA-3, the Proctor will give you the *stop* signal.
- If your time exceeds twice the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - a. Load touching ground outside of designated area
 - b. Knocking ball off pole
 - c. Knocking pole over
 - d. Exceeding the optimum time

TASK 4A: ZIGZAG CORRIDOR (FORWARD)

Optimum Time: 5½ minutes

- At the Proctor's indication to start, timing will begin. Guide the test weight through the Corridor. You will be permitted to use all of the crane's functions during this task.
- Avoid contacting anything; do not lift the chain off the ground; do not let the test weight touch the ground.
- Place the test weight inside DA-2. Once the test weight is inside the Designated Area, the Proctor will give you the *stop* signal. If the test weight is not within the outside perimeter of DA-2, timing will continue.
- If your time exceeds twice the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - a. Knocking ball off pole
 - b. Moving pole base off line
 - c. Knocking pole over
 - d. Chain leaving ground
 - e. Passing poles with the chain off the ground
 - f. Load touching ground outside of designated area
 - g. Load touching the outriggers/stabilizers
 - h. Circumventing the course
 - i. Exceeding the optimum time

TASK 4B: ZIGZAG CORRIDOR (REVERSE)

Optimum Time: 6 minutes

- At the Proctor's indication to start, timing will begin. Guide the test weight through the Corridor. You will not be permitted to use the telescoping function during this task.
- Avoid contacting anything; do not lift the chain off the ground; do not let the test weight touch the ground.
- Place the test weight inside DA-1. Once the test weight is inside the Designated Area, the Proctor will give you the *stop* signal. If the test weight is not within the outside perimeter of DA-1, timing will continue.
- If your time exceeds twice the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - a. Knocking ball off pole
 - b. Moving pole base off line
 - c. Knocking pole over
 - d. Chain leaving ground
 - e. Passing poles with the chain off the ground
 - f. Load touching ground outside of designated area
 - g. Load touching the outriggers/stabilizers

- h. Circumventing the course
- i. Exceeding the optimum time

TASK 5: SAFE SHUTDOWN PROCEDURES

- The Proctor will ask you to describe the safe shutdown procedures you would apply to the crane in preparation to leave the site.

POST-TEST PROCEDURES

Once you have completed the Practical Examination:

- The Proctor will record your performance.
- The Proctor is not permitted to review your score sheet or discuss your performance on the test.
- Exam results will be emailed to you within approximately 12 business days of CCO's receipt of the score sheet.
- If you have made formal applications to test on any other cranes, return to the candidate briefing area.
- If you have completed all of your tests, you must leave the test site.



**NATIONAL COMMISSION FOR THE
CERTIFICATION OF CRANE OPERATORS**

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