



CCO

CANDIDATE HANDBOOK

- **DIGGER DERRICK OPERATOR**

®



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What Is a Digger Derrick?

The pictures below illustrate the type of equipment that the CCO Digger Derrick Operator (DDO) certification program is designed to cover. This equipment is frequently used by utilities and electrical contractors and is typically equipped with a digging auger and devices used to lift and stabilize a pole during installation. Digger derricks also have applications in lights and sign installation, telecommunications, and general construction.

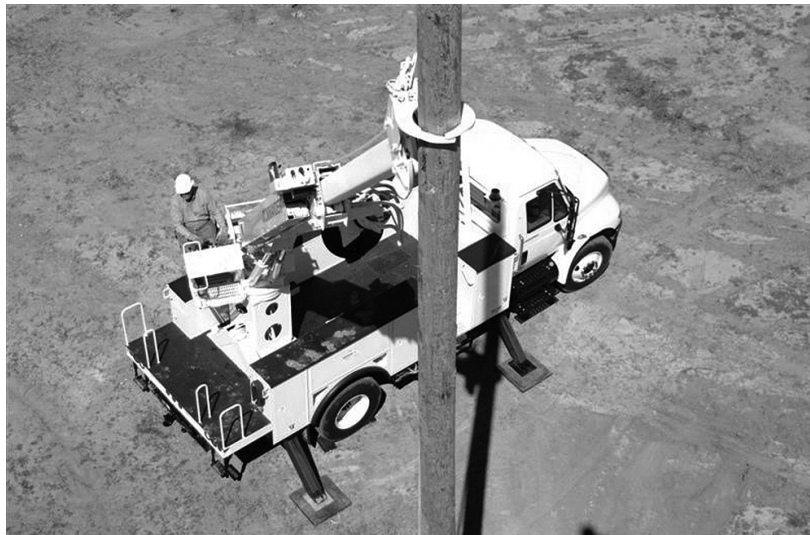
Most digger derricks are built to the ANSI A10.31 standard and not to the ASME B30.5 standard. Therefore these machines are appropriately used for the CCO Digger Derrick Operator certification, but they cannot be used for CCO Mobile Crane Operator certifications.

Digger derricks falling under the ANSI A10.31 industry standard can be controlled via a number of ways, includ-

ing by command post (top seat), fixed manual controls, or radio/remote controls.

Certified digger derrick operators directly control the functions of a digger derrick. To earn CCO certification, the operator demonstrates competence in planning work tasks, assessing the suitability of the equipment for the assigned task, positioning, setup, and operation of the equipment in a competent manner, and aspects of safety associated with the digger derrick, equipment, load, and worksite conditions.

If you have any questions regarding whether this is the appropriate certification for you or your operators, please do not hesitate to contact CCO for further information.





Certification Policies

DIGGER DERRICK OPERATOR

ELIGIBILITY

To be eligible for certification, candidates must:

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

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.

EXAMINATION FEES

For all exam and related fees, visit www.nccco.org/fees.

CCO CERTIFICATION TIME FRAMES

Candidates have 12 months after they pass their first exam to pass the corresponding written or practical exam. Any tests passed within a 12-month period count towards certification. For example, a candidate passing the Digger Derrick Operator Written Exam in December 2024 has until the end of December 2025 to pass the Digger Derrick Operator Practical Exam.

RECERTIFICATION REQUIREMENTS

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

Recertificants must:

- Pass the Digger Derrick Operator Written Examination
- Comply with CCO's Substance Abuse Policy
- Comply with CCO's Code of Ethics

Candidates who can attest to at least 500 hours of actual operating experience on digger derricks during their period of certification do not need to take the practical exam to recertify.

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.



Written Examination Outline

DIGGER DERRICK OPERATOR

75 QUESTIONS/90 MINUTES (CALCULATOR PERMITTED)

The Written examination portion of the CCO Digger Derrick Operator certification program tests the following knowledge areas relating to the operation of digger derricks:

Domain 1: Site

- Approximately 11% of test

Domain 2: Pre-Operation

- Approximately 17% of test

Domain 3: Operation

- Approximately 36% of test

Domain 4: Technical Knowledge

- Approximately 19% of test

Domain 5: Manufacturers' Load Charts

- Approximately 17% of test

DOMAIN 1: SITE

1. Know the ability of supporting surfaces to handle the expected loads. Elements of concern include, but are not limited to:
 - a. Weakness below surface, such as voids, tanks, and loose fill
 - b. Weakness on the surface, such as retaining walls, slopes, excavations, and depressions
 - c. Firm, drained, and graded ground conditions for adequate support
 - d. Job brief and overhead obstructions
2. Know electric power line hazards, corresponding regulations, and safety practices
3. Know how to identify and evaluate hazards associated with:
 - a. Access to the job site
 - b. Site hazards, such as underground utilities
 - c. Transportation clearances
 - d. Traffic control
4. Know how to review lift requirements with site supervision, including:
 - a. Lift/job plan
 - b. Travel clearance
 - c. Ground support
5. Know site restrictions regarding personnel:
 - a. Qualified employees
 - b. Unauthorized public

DOMAIN 2: PRE-OPERATION

1. Know and perform the following inspections:
 - a. Controls
 - b. Safety devices
 - c. Operator aids
 - d. Visual/audible warning devices
 - e. Pre-travel and DOT inspection
 - f. Structural/mechanical
 - g. Load lines, hooks, rigging
2. Know the requirements for personal protective equipment
3. Know how to plan the job, including:
 - a. Load charts
 - b. Clearance/minimum approach distances
 - c. Rigging
 - d. Signalperson
4. Know the requirements for grounding and/or barricading
5. Know and understand the proper setup of digger derricks, including:
 - a. Positioning and securing of the vehicle
 - b. Outriggers
 - c. Slopes
 - d. Ice and snow
 - e. Pads, mats, blocking, and cribbing
6. Know the purpose of decals and placards
7. Know the requirements for operating in various weather conditions and understand how environmental conditions affect the safe operation of the digger derrick
8. Understand the operation of all controls and components
9. Have general knowledge of booms, platforms, liners
 - a. Insulated
 - b. Non-insulated
10. Know how to prepare the digger derrick for transportation:
 - a. Loading/unloading from trailers

DOMAIN 3: OPERATION

1. Know which federal regulations and industry standards affect safe operations of digger derricks, including, but not limited to:
 - a. ANSI/ASSE A10.31
 - b. OSHA 1910.180
 - c. OSHA 1926 Subpart CC
2. Have specific knowledge of dielectric protection and safety
 - a. Insulated/non-insulated parts
3. Know the proper use of material handling and phase lifting equipment
4. Know how to identify unsafe equipment conditions/deficiencies and when to notify supervision
5. Know how to swing and place the load smoothly and safely
6. Know proper procedures for multiple-part line reeving
7. Know standard method signals as specified in OSHA 1926 Subpart CC
 - a. Hand signals
 - b. Voice signals
 - c. Non-standard/special
8. Know how to shut down and secure the digger derrick properly when leaving it unattended
9. Know how to verify the capacity of the digger derrick, weight of the load, rigging, and path prior to initiating the lift
10. Know basic load rigging procedures
11. Know how to use and understand the requirements for safety devices, including:
 - a. Digger derrick level indicator
 - b. Hydraulic outrigger holding/check valve devices
 - c. Horn
12. Know and understand the requirements for operational aids and temporary alternative measures for:
 - a. Load weight indicating device (LMI, LML, rated load indicator)
 - b. Anti two-block device
 - c. Boom angle indicator
 - d. Outrigger position sensors/monitors
13. Know the proper procedure for operating safely under the following conditions:
 - a. Operating near electric power lines
 - b. Traveling under or near power lines
 - c. Using a personnel platform
 - d. Lifting loads from beneath the surface of the water
 - e. Lifting stuck or embedded loads
 - f. Handling loads out of the operator's vision ("operating in the blind")
 - g. Swing radius hazards
14. Know proper procedures for load control, including the use of:
 - a. Insulated tools/PPE
 - b. Tag lines
15. Know how to react to emergency conditions like:
 - a. Overhead/underground utility line contact
 - b. Loss of stability
 - c. Control malfunction
 - d. Block and line twisting
 - e. Personnel under load or in fall zone
 - f. Fire
 - g. Two-blocking
16. Know the effects of dynamic loading from:
 - a. Wind and weather
 - b. Stopping and starting
 - c. Impact loading
 - d. Moving the load
17. Know the effect of side loading
18. Know the operator's authority to stop operations
19. Platform work:
 - a. Fall-protection (including guard rails, gates, and PPE)
 - b. Combined use
20. Know the requirements of:
 - a. Stowing/unstowing boom
 - b. Stowing/unstowing auger
 - c. Storing/unstoring equipment
21. Know the requirements for the following operations:
 - a. Digging
 - b. Screw anchor installation
 - c. Pole setting
 - d. Pole pulling

DOMAIN 4: TECHNICAL KNOWLEDGE

1. Know basic digger derrick terminology and definitions
2. Know functions and limitations of the digger derrick
3. Know load line (wire and synthetic):
 - a. Construction and working load limit
 - b. Inspection procedures and replacement criteria
 - c. Capacity, line pull, multi-part reeving
 - d. Care and maintenance
 - e. Lubrication of wire rope
4. Know rigging devices
 - a. Slings
 - b. Spreaders
 - c. Lifting beams
 - d. Rigging hardware
 - e. Saddles (softeners)
 - f. Hooks
5. Know the limitations of protective measures against electrical hazards:
 - a. Assembly/disassembly in proximity to power lines
6. Know the effects of the load share and load transfer in multi-digger derrick lifts
7. Know the significance of the instruments and gauge readings
8. Know the requirements for inspections and maintenance
 - a. Shift/frequent
 - b. Monthly/periodic
 - c. Annual/comprehensive
 - d. Records
9. Know how to use attachments/accessories and their effect on the digger derrick's operations
 - a. Anchor adaptors
 - b. Jibs
 - c. Pole pullers
 - d. Augers
 - e. Phase lifting equipment
 - f. Aftermarket attachments
10. Know requirements for fall protection
11. Know requirements for access and egress
12. Know the general requirements that apply to assembly/disassembly operations

13. Know the requirements of operator qualification/certification:
 - a. Equipment familiarization
 - b. General training
 - c. Retraining/recertification
14. Know the operations and requirements for the use of winches

DOMAIN 5: MANUFACTURERS' LOAD CHARTS

1. Know the terminology necessary to use load charts
2. Know how to ensure that the load chart is the appropriate chart for the machine in its particular application
3. Know how to use capacity load charts, including:
 - a. Operational limitations of load charts and notes
 - b. Difference between structural capacity and capacity limited by stability
 - c. What is included in load chart capacity
 - d. The range diagram and its relationship to the load chart
 - e. The work area chart and its relationship to the load chart
 - f. Where to find and how to use the parts-of-line information
 - g. The safe working load of hoist line
 - h. Appropriate load-handling deductions
4. Know how to use the load chart with:
 - a. Hydraulic overload protection gauge
 - b. Load weighing devices
5. Know how to calculate net capacity for the digger derrick configuration using the applicable manufacturer's load charts



Practical Examination

DIGGER DERRICK OPERATOR

SKILLS TESTED

The digger derrick operator practical examination comprises seven main tasks that increase progressively in the skill level tested. Skills tested are: inspecting the equipment, hoisting, booming, swinging, telescoping, following hand signals, combination (multifunction) operations, augering, and picking up a pole. Digger derrick operation with load and without load is required.

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 seven tasks that make up the Practical Examination are:

- *Task 1: Pre-Operational Inspection*
- *Task 2: Place Chain in Designated Area 2*
- *Task 3: Follow Hand Signals*
- *Task 4: Negotiate Corridor with Test Weight*
- *Task 5: Auger a Hole*
- *Task 6: Pick up a Pole*
- *Task 7: Stow Boom and Shutdown Procedures*

There is also a Pre-Test Briefing and a Pre-Test Familiarization Period. You will be required to complete all phases of the test in sequence.

During the practical exam, 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.

OPTIMUM TIMES

For some tasks *optimum time limits* have been set. If the task is completed within this time period, you receive no time penalty. Other tasks are untimed, as noted below.

Once you exceed this time limit, however, you will lose points on a gradual basis. The optimum time for each task is stated as part of the task descriptions. At one-and-a-half 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 digger derrick they will operate. In addition, they will be informed of the make and model of the digger derrick, the maximum boom length, and the weight of the test weight. They will also watch a short video showing all the tasks they will be required to perform during the examination.

Note that:

- The digger derrick's load-limiting system (if the digger derrick is so equipped) has been correctly programmed and will not interfere with the proper operation of the digger derrick.
- The digger derrick has been set up and leveled. A spirit level is available to verify that the digger derrick is level.
- None of the target points has been placed at a radius that exceeds the digger derrick's rated capacity.
- All hand signals used throughout the test will be in accordance with OSHA Standard Hand Signals.

CIRCUMVENTING THE COURSE

Circumventing the course on CCO Digger Derrick 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 leapfrogs 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

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. An "unsafe act"

is defined as an action by a candidate that is uncontrolled or reckless, and is sufficient to cause safety concern for persons or property damage.

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 take any additional practical exams that day.

CORKSCREWING

“Corkscrewing” while auguring the hole is defined as “absence of spoils coming up on the flights while the auger is turning, pulling the boom towards the ground.” Corkscrewing during Task 5B is a performance deduction.

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, 5, or 6, when you will go back to the beginning of the subtask, as appropriate.
- You will be entitled to a Pre-Test 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.

DIGGER DERRICK WALK AROUND

- You will be allowed a couple of minutes to walk around the digger derrick to ensure proper set-up.

TASK 1: PRE-OPERATIONAL INSPECTION

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

- Points will be deducted for each incorrectly identified inspection item

PRE-OPERATION FAMILIARIZATION PERIOD

- You will have up to 10 minutes to get used to the digger derrick to ensure proper operation.
- You will be allowed to run the digger derrick through its functions, except the auger.
- You cannot interfere with the course or test weight, or shadow the corridor.
- If at any point you feel like you are not ready to test, you may disqualify yourself from testing. You will be required to sign to that effect.

TASK 2: CHAIN IN DESIGNATED AREA 2

Optimum time: 1:30

- When the Proctor gives the start signal, timing will begin. You will raise the chain about 10 ft. off the ground to clear obstacles and personnel and land the chain in the landing area.
- You must avoid contacting any part of the course.
- Once the chain is under control in the designated area, the Proctor will give you the stop signal.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - Dragging or contact of the chain outside of landing area
 - Hook touching ground
 - Hook or chain contacting any part of the course or truck
 - Lifting the chain off the ground after initial contact inside the landing area
 - Exceeding optimum time

TASK 3: HAND SIGNALS

Untimed

- The Proctor will give you four hand signals to bring the chain back to the original location. Any of the following signals may be given, in any order:
 - Hoist and stop
 - Swing (left or right) and stop
 - Lower the load and stop
 - Boom (up or down) and stop

- Telescope (in our out) and stop
- Boom down and raise load and stop
- Boom up and lower load and stop
- Any above signal given slowly and stop
- Points will be deducted for missing any of the hand signals

TASK 4A: NEGOTIATE CORRIDOR—FORWARD

Optimum time: 3:30

- Prior to corridor task, you will be allowed one minute to lift test weight and position it inside the designated area.
- When the Proctor gives the start signal, timing will begin. Guide the test weight through the corridor.
- Avoid contacting anything, but keep the chain on the ground, and place the test weight inside the circle.
- Once in the circle, the Proctor will give you the stop signal.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - Knocking ball off pole
 - Moving pole base off line
 - Knocking pole over
 - Chain leaving ground
 - Passing poles with chain off ground
 - Load touching ground
 - Circumventing the course
 - Exceeding optimum time

TASK 4B: NEGOTIATE CORRIDOR—REVERSE

Optimum time: 3:30

- When the Proctor gives you the start signal, timing will begin. Guide the test weight back through the corridor.
- Avoid contacting anything, keep the chain on the ground, and place the test weight inside the circle.
- Once in the circle, the Proctor will give you the stop signal.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:

- Knocking ball off pole
- Moving pole base off line
- Knocking pole over
- Chain leaving ground
- Passing poles with chain off ground
- Load touching ground
- Circumventing the course
- Exceeding optimum time

TASK 5A: UNSTOW AUGER

Optimum time: 2:45

- When the Proctor gives you the start signal, safely unstow the auger and contact ground in preparation to dig.
- Indicate to the Proctor when you are done.
- If your time exceeds one-and-a-half times the optimum time, the Proctor will stop this task and move to Task 6A.
- Points will be deducted for the following:
 - Unstowing boom at less than a 45° angle
 - Unstowing at high speed
 - Shock loading of auger strap
 - Leaving boom fully extended/retracted
 - Auger contacting ground and left out of plumb
 - Intermediate boom extended as auger leaves storage bracket
 - Exceeding optimum time

TASK 5B: AUGER HOLE

Optimum time: 1:45

- When the Proctor gives you the start signal, auger a hole.
- Dig until flights are no longer visible and the Proctor gives you the stop signal.
- You may ask for assistance to plumb the auger.
- Once the flights are no longer visible, the Proctor will give you the stop signal.
- Indicate to the Proctor when you are done.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - Corkscrewing
 - Outrigger coming off ground
 - Exceeding optimum time

TASK 5C: STOW AUGER

Optimum time: 2:00

- When the Proctor gives you the start signal, safely stow auger.
- When ready, signal the proctor to assist in connecting the auger strap to the pin.
- Indicate to the Proctor when you are done.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - Auger off ground for strap attachment
 - Stowing at high speed
 - Stowing boom at less than a 45° angle
 - Improper wind-up procedure
 - Improper stowage procedure
 - Shock loading of auger strap
 - Auger not resting on latch
 - Boom extended as auger enters storage bracket
 - Exceeding optimum time

TASK 6A: PICK UP UTILITY POLE

Optimum time: 4:00

- When the Proctor gives you the start signal, pick up the utility pole and place securely in the guides a few inches off the ground. Keep the pole butt within the designated area.
- You may ask for assistance in the final placement of the utility pole in the guides.
- Once the task is completed, the Proctor will give you the stop signal.
- For safety reasons, if at any point you lose control of the utility pole, the Proctor will be forced to stop the task and your exam will end.
- If your time exceeds one-and-a-half times the optimum time, the Proctor will stop this task and move to Task 7.
- Points will be deducted for the following:
 - Dragging pole butt outside designated area
 - Contacting obstruction
 - Pole guides supporting weight of utility pole
 - Raising utility pole more than 3 ft.
 - Exceeding optimum time

TASK 6B: PLACE UTILITY POLE IN DESIGNATED AREA

Optimum time: 1:30

- When the Proctor gives you the start signal, timing will begin. Place the utility pole inside the designated area.
- Once inside the area, lower the utility pole until the Proctor gives you the stop signal.
- Avoid contacting the ground or obstructions.
- You will then be assisted in putting the utility pole back on the ground.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and move on to the next task.
- Points will be deducted for the following:
 - Raising utility pole more than 3 ft.
 - Contacting PVC pole base/ground
 - Pole guides supporting weight of utility pole
 - Lowering utility pole out of guides
 - Knocking ball off PVC pole
 - Knocking PVC pole over
 - Exceeding optimum time

TASK 7: STOW BOOM IN CRADLE

Optimum time: 1:45

- When the Proctor gives you the start signal stow the boom in cradle.
- Apply safe shutdown procedures prior to leaving operator station.
- Indicate to the Proctor when you are done.
- If your time exceeds one-and-a-half times the optimum time, the Proctor may stop you and end the test.
- Points will be deducted for the following:
 - Boom not fully retracted
 - Load line not fully retracted
 - Leaving boom out of cradle
 - Exceeding optimum time



Reference List

DIGGER DERRICK OPERATOR

The latest versions of the following reference materials are used by CCO's Digger Derrick Management 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.

PRIMARY REFERENCES

ANSI/ASSE A10.31

American National Standard for Construction and Demolition Operations—Safety Requirements, Definitions, and Specifications for Digger Derricks

webstore.ansi.org

AEM DIGGER DERRICK SAFETY MANUAL

shop.aem.org

OSHA 1926 SUBPART CC—CRANES AND DERRICKS IN CONSTRUCTION

www.osha.gov

SECONDARY REFERENCES

Cordage Institute International Guidelines: CI 1401-06—Safer Use of Fiber Rope

www.ropecord.com/new/CI1401.PDF

OSHA, U.S. DEPARTMENT OF LABOR CODE OF FEDERAL REGULATIONS

www.osha.gov

- OSHA 1910.180—Crawler Locomotive and Truck Cranes
- OSHA 1910.184—Slings
- OSHA 1910.268—Telecommunications
- OSHA 1910.269—Electric Power Generation, Transmission, and Distribution
- OSHA 1926.251—Rigging Equipment for Material Handling
- OSHA 1926.453—Aerial Lifts
- OSHA 1926.601—Motor Vehicles
- OSHA 1926 Subpart V—Power Transmission and Distribution



CCO Policies

DIGGER DERRICK OPERATOR

Code of Ethics

www.nccco.org/coe

Disciplinary Policy

www.nccco.org/discipline

Substance Abuse Policy

www.nccco.org/abuse

Testing Accommodations

www.nccco.org/accommodations

Test Security

www.nccco.org/security

Information Release Policy

www.nccco.org/inforelease



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