

#### **PSI Services LLC**

https://test-takers.psiexams.com/nccon Email: examschedule@psionline.com

### STATE OF NORTH CAROLINA

# LICENSING BOARD FOR GENERAL CONTRACTORS CANDIDATE INFORMATION BULLETIN

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Please refer to our website to check for the most updated information at https://test-takers.psiexams.com/nccon

#### **EXAMINATIONS BY PSI**

This Candidate Information Bulletin provides you with information about the examination and application process for General Contractors Licensure in the State of North Carolina.

Eligibility for examination is determined by the North Carolina Licensing Board for General Contractors.

The Board has contracted with PSI Services LLC (PSI) to conduct its examination program. PSI provides examinations through a network of computer examination centers in North Carolina and in many areas throughout the United States. PSI works closely with the State to be certain that examinations meet local as well as national requirements in basic principles and examination development standards.

# GUIDELINES FOR LICENSING APPLICATION/QUALIFICATION

#### **HOW TO OBTAIN A LICENSE**

 Complete and submit the License Application or Examination Request Form to:

North Carolina Licensing Board for General Contractors 5400 Creedmoor Road Raleigh, NC 27612 (919) 571-4183

- 2. Upon approval from the Board, you will be sent an Examination Eligibility Letter, along with instructions for registering and scheduling the examination. Included with your letter will be an identification number assigned by the State to you for this testing program. You must use this identification number when scheduling for your examination.
- 3. The eligibility letter is valid for 120 days from the date on the letter and allows the candidate to take one examination within that time frame. If you are absent for the examination, it will count as an attempt and you will need to contact the Board for instructions.

All questions and requests for information about examinations should be directed to PSI.

PSI Services LLC (855) 746-8173
https://test-takers.psiexams.com/nccon
Email: examschedule@psionline.com

## EXAMINATION REGISTRATION AND SCHEDULING PROCEDURES

Once you have been approved by the Board you will be sent an Eligibility letter. Upon receipt of your valid Eligibility Letter, you will be responsible for contacting PSI to schedule an appointment to take the examination and make exam payment arrangements. PSI will make every effort to schedule the examination site and time that is most convenient for you.

Failing candidates will receive the appropriate forms to reschedule examinations. These forms will be mailed with the official scores from the North Carolina Licensing Board for General Contractors. A candidate will receive a revised examination authorization issued by the North Carolina Licensing Board for General Contractors by email along with the examination scores within 3 working days of the Board receiving the examination score from PSI. Candidates may retake an examination as many times as they choose in a 12-month period so long as all information included in the license application remains valid. Failing candidates are strongly encouraged to evaluate their diagnostic report and study, particularly the areas of weakness, before retaking the examination.

The following fee table lists the applicable fee for each examination. The fee is for <u>each</u> examination, whether you are taking the examination for the first time or repeating.

#### **EXAMINATION FEE** \$ 79

NOTE: REGISTRATION FEES ARE NOT REFUNDABLE OR TRANSFERABLE. FEES ARE ONLY GOOD FOR THE DURATION OF THE ELIGIBLITY.

#### ON-LINE (HTTPS://TEST-TAKERS.PSIEXAMS.COM/NCCON)

For the fastest and most convenient examination scheduling process, PSI recommends that you register for your examinations using the Internet. You register online by accessing PSI's registration website at <a href="https://test-takers.psiexams.com/nccon">https://test-takers.psiexams.com/nccon</a>. Internet registration is available 24 hours a day.

Log onto PSI's website and select Sign in / Create Account. Select Create Account. You are now ready to pay and schedule for the exam. Enter your zip code and a list of the testing sites closest to you will appear. Once you select the desired test site, available dates will appear.

#### **TELEPHONE REGISTRATION**

For telephone registration, you will need a valid credit card (Visa, MasterCard, American Express or Discover).

PSI registrars are available at (855) 746-8173, Monday through Friday between 7:30 am and 10:00 pm, and Saturday-Sunday, between 9:00 am and 5:30 pm, Eastern Time, to receive your payment and schedule your exam.

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#### **CANCELING AN EXAMINATION APPOINTMENT**

You may cancel and reschedule an examination appointment without forfeiting your fee if your cancellation notice is received 2 days before the scheduled examination date. For example, for a Monday appointment, the cancellation notice would need to be received on the previous Saturday. You may use the PSI website or call PSI at (855) 746-8173.

Note: A voicemail or email message is not an acceptable form of cancellation. Please use the PSI Website or call PSI to speak directly to a Customer Service Representative.

#### MISSED APPOINTMENT OR LATE CANCELLATION

Your registration will be invalid, you will not be able to take the examination as scheduled, and you will forfeit your examination fee, if you:

- Do not cancel your appointment 2 days before the schedule examination date;
- Do not appear for your examination appointment;
- Arrive after examination start time:
- Do not present proper identification when you arrive for the examination.

#### **EXAM ACCOMMODATIONS**

All PSI examination centers are equipped to provide access in accordance with the Americans with Disabilities Act (ADA) of 1990, and exam accommodations will be made in meeting a candidate's needs. A candidate with a disability or a candidate who would otherwise have difficulty taking the examination should request for alternative arrangements by <u>Clicking Here</u>.

Candidates granted accommodation in accordance with the ADA, MUST schedule their examination by telephone and speak directly with a PSI registrar.

#### **EXAMINATION SITE CLOSING FOR AN EMERGENCY**

In the event that severe weather or another emergency forces the closure of an examination site on a scheduled examination date, your examination will be rescheduled. PSI personnel will attempt to contact you in this situation. However, you may check the status of your examination schedule by calling (855) 746-8173. Every effort will be made to reschedule your examination at a convenient time as soon as possible.

#### **EXAMINATION SITE LOCATION**

The North Carolina General Contractor licensing examinations are administered at the PSI examination centers in North Carolina as listed below:

#### ASHEVILLE 1306 C Patton Avenue Asheville, NC 28806

From I-40 take exit 44, Smokey Park Highway (US 19/23), turn left. Proceed North/East approx 3 miles (the test center is in a multi-building complex between Haywood Rd and Druid). Turn right onto Haywood Rd at intersection of Patton (19/23) and

Haywood Rd (Swannanoa Cleaners on right.) Proceed approximately 0.2 miles and turn left onto Parkwood. Follow building numbers to 1306, approx. 5th building complex on right, past the BB&T bank.

From I-240 exit 3A to 19/23 (Patton Ave) and proceed South approx 2 miles (the test center is in a multi-building complex between Druid and Haywood Rd). Take a left onto Druid (Burger King is on the left), then first right. Proceed (past post office) through stop sign and take first left into parking lot of building #1306.

# CHARLOTTE Tyvola Executive Park One 5701 Westpark Dr, #102 Charlotte, NC 28217

From I-77S towards Columbia, exit Tyvola Road (Exit #5). Turn left at Tyvola Road. Make a right at Westpark Dr.

From I-77N, exit Tyvola Road (Exit #5). Bear right at Tyvola Road. Turn right at Westpark Dr.

#### GREENVILLE Charles Center 2404 South Charles Blvd Suite B Greenville, NC 27858

From the South, proceed North on State Highway 11, and merge to the right onto Greenville Blvd SE (US 264/State 43). Turn right on Charles Blvd.

From the East, proceed West on US 264 and turn left onto Greenville Blvd SE. Turn left on Charles Blvd.

From the West, proceed East on US 264. Turn right on Memorial Drive. Turn left on Greenville Blvd. Turn right on Charles Blvd.

#### RALEIGH Forks Road Suite 208

5711 Six Forks Road Suite 208 Raleigh, NC 27609

From I-440, exit 8, Six Forks Road and proceed North. Turn left on Loft Lane, then right into the first driveway.

#### FAYETTEVILLE 3724 Sycamore Dairy Road, Suite 128 Arbor Alley Building Fayetteville, NC 28303

From the North, take I-95 South. Merge onto US 301/I-95 Business Route South towards Fayetteville/Fort Bragg/Pope AFB. Turn right onto NC-210/NC-24 Grove St. which becomes Rowan St. From Rowan St., turn right onto Bragg Blvd. Turn left onto Sycamore Dairy Road.

From the South, take I-95 North to Exit 46 and enter NC 87, Martin Luther King (MLK). Take the MLK to the Bragg Blvd exit. Turn left on Bragg Blvd. Stay in the left lane for a few miles. When you get to the traffic light at McDonald's, bear left onto Sycamore Dairy Rd. Very shortly there is another traffic light. Just past it, on the right, turn into the Arbor Alley strip mall.

From the Northwest, take NC-87 South to NC-24 E/Bragg Blvd. Continue on NC-24 E/Bragg Blvd beyond the intersection with Hwy 401 Bypass. Turn right onto Bargain Street and proceed to Sycamore Dairy Road.

From the Southwest, take US 401 North and turn left onto 401 Bypass (Skibo Road). Continue on 401 Bypass/Skibo Road. Turn right onto Legend Ave; turn left onto Sycamore Dairy Road.

PSI is located at the far back end of the Arbor Alley strip mall. The strip mall is located in between the State ABC store and Priscillas.

# WILMINGTON Judges Road Business Park 311 Judge's Road, Suite 8D Wilmington, NC 28405

When Interstate 40 ends, it merges with State Highway 132 (College Road). Exit Market Street (Highway 17) and proceed northeast toward Jacksonville, approximately 1 mile. Turn left at Judge's Road. As you approach Judge's Road Business Park, you will see a dozen brick buildings housing industrial units. Turn left into the Business Park and proceed to the third aisle. Turn right down the aisle for Building 8. Suite 8D is on the left. Overflow parking is available on the street.

#### WINSTON-SALEM 1540 Westbrook Plaza Drive, Suite 103 Winston-Salem, NC 27103

From Interstate 40, exit 189, Stratford Road proceed north (left) approximately 100 yards. Turn left on Westbrook Plaza Drive. Turn left at four-way stop, continuing on to Westbrook Plaza Drive. Go through next traffic light. The test center is approximately 1/4 mile past the light and on your left.

Additionally, PSI has examination centers in many other regions across the United States. You may take the written examination at any of these locations by following the instructions on the Out-Of-State Request Form at the end of this Candidate Information Bulletin.

#### REPORTING TO THE EXAMINATION SITE

On the day of the examination, you should arrive at least 30 minutes before your appointment. This extra time is for signin, identification, and familiarizing you with the examination process. If you arrive late, you may not be admitted to the examination site and you will forfeit your examination registration fee.

#### REQUIRED IDENTIFICATION AT EXAMINATION SITE

#### Candidates need to provide one (1) form of identification.

Candidates must register for the exam with their LEGAL first and last name as it appears on their government issued identification. The required identification below must match the first and last name under which the candidate is registered. Candidates are required to bring one (1) form of a valid (non-expired) signature bearing identification to the test site.

#### REQUIRED IDENTIFICATION (with photo) - Choose One

- State issued driver's license
- State issued identification card
- US Government Issued Passport
- US Government Issued Military Identification Card
- US Government Issued Alien Registration Card
- Canadian Government Issued ID NOTE: ID must contain candidate's photo, be valid and unexpired.

#### **SECURITY PROCEDURES**

The following security procedures will apply during the examination:

- Only non-programmable calculators that are silent, battery-operated, do not have paper tape printing capabilities, and do not have a keyboard containing the alphabet will be allowed in the examination site.
- Candidates may take only approved items into the examination room.
- All personal belongings of candidates should be placed in the secure storage provided at each site prior to entering the examination room. Personal belongings include, but are not limited to, the following items:
  - Electronic devices of any type, including cellular / mobile phones, recording devices, electronic watches, cameras, pagers, laptop computers, tablet computers (e.g., iPads), music players (e.g., iPods), smart watches, radios, or electronic games.
  - Bulky or loose clothing or coats that could be used to conceal recording devices or notes. For security purposes outerwear such as, but not limited to: open sweaters, cardigans, shawls, scarves, vests, jackets and coats are not permitted in the testing room. In the event you are asked to remove the outerwear, appropriate attire, such as a shirt or blouse should be worn underneath.
  - Hats or headgear not worn for religious reasons or as religious apparel, including hats, baseball caps, or visors.
  - Other personal items, including purses, notebooks, reference or reading material, briefcases, backpacks, wallets, pens, pencils, other writing devices, food, drinks, and good luck items.
- Although secure storage for personal items is provided at the examination site for your convenience, PSI is not responsible for any damage, loss, or theft of any personal belongings or prohibited items brought to, stored at, or left behind at the examination site. PSI assumes no duty of care with respect to such items and makes no representation that the secure storage provided will be effective in protecting such items. If you leave any items at the examination site after your examination and do not claim them within 30 days, they will be disposed of or donated, at PSI's sole discretion.
- Person(s) accompanying an examination candidate may not wait in the examination center, inside the building or on the building's property. This applies to guests of any nature, including drivers, children, friends, family, colleagues or instructors.
- No smoking, eating, or drinking is allowed in the examination center.
- During the check in process, all candidates will be asked if they possess any prohibited items. Candidates may also be asked to empty their pockets and turn them out for the proctor to ensure they are empty. The proctor may also ask candidates to lift up the ends of their sleeves and the bottoms of their pant legs to ensure that notes or recording devices are not being hidden there.
- Proctors will also carefully inspect eyeglass frames, tie tacks, or any other apparel that could be used to harbor a recording device. Proctors will ask to inspect any such items in candidates' pockets.
- If prohibited items are found during check-in, candidates shall put them in the provided secure storage or return

- these items to their vehicle. PSI will not be responsible for the security of any personal belongings or prohibited items.
- Any candidate possessing prohibited items in the examination room shall immediately have his or her test results invalidated, and PSI shall notify the examination sponsor of the occurrence.
- Any candidate seen giving or receiving assistance on an examination, found with unauthorized materials, or who violates any security regulations will be asked to surrender all examination materials and to leave the examination center. All such instances will be reported to the examination sponsor.
- Copying or communicating examination content is violation of a candidate's contract with PSI, and federal and state law. Either may result in the disqualification of examination results and may lead to legal action.
- Once candidates have been seated and the examination begins, they may leave the examination room only to use the restroom, and only after obtaining permission from the proctor. Candidate will not receive extra time to complete the examination.

# TAKING THE EXAMINATION BY COMPUTER

The examination will be administered via computer. You will be using a mouse and computer keyboard.

#### **TUTORIAL**

Before you start your examination, an introductory tutorial is provided on the computer screen. The time you spend on this tutorial, up to 15 minutes, DOES NOT count as part of your examination time. Sample questions are included following the tutorial so that you may practice answering questions, and reviewing your answers.

#### **TEST QUESTION SCREEN**

One question appears on the screen at a time. During the examination, minutes remaining will be displayed at the top of the screen and updated as you record your answers.

IMPORTANT: After you have entered your responses, you will later be able to return to any question(s) and change your response, provided the examination time has not run out.

#### **EXPERIMENTAL QUESTIONS**

In addition to the number of questions per examination, a small number of five to ten "experimental" questions may be administered to candidates during the examinations. These questions will not be scored, and the time taken to answer them will not count against examination time. The administration of such non-scored experimental questions is an essential step in developing future licensing examinations.

#### **EXAMINATION REVIEW**

In the event you fail the examination you will be given 30 minutes at the end of the examination to review the items you missed. The items will not be in any particular order.

PSI, in cooperation with the Board, will be consistently evaluating the examinations being administered to ensure that the examinations accurately measure competency in the required knowledge areas. While taking the examination, examinees will have the opportunity to provide comments on any questions, by using the comments key on the keyboard. These comments will be analyzed by PSI examination development staff. PSI does not respond to individuals regarding these comments, all substantive comments are reviewed. This is the only review of examination materials available to candidates.

#### **SCORE REPORTING**

In order to pass the examinations, you must receive a score of at least 70%.

Your score will be given to you immediately following completion of the examination. The following summary describes the score reporting process:

- On screen your score will appear immediately on the computer screen. This will happen automatically at the end of the time allowed for the examination;
  - If you <u>pass</u>, you will immediately receive a successful notification.
  - If you <u>do not pass</u>, you will receive a diagnostic report indicating your strengths and weaknesses by examination type with the score report.
- On paper an unofficial score report will be printed at the examination site.

#### **DUPLICATE SCORE REPORTS**

You may print the score report from your online account.

# TIPS FOR PREPARING FOR YOUR LICENSE EXAMINATION

The following suggestions will help you prepare for your examination.

- Planned preparation increases your likelihood of passing.
- Start with a current copy of this Candidate Information Bulletin and use the examination content outline as the basis of your study.
- Read study materials that cover all the topics in the content outline.
- Take notes on what you study. Putting information in writing helps you commit it to memory and it is also an excellent business practice. Discuss new terms or concepts as frequently as you can with colleagues. This will test your understanding and reinforce ideas.
- Your studies will be most effective if you study frequently, for periods of about 45 to 60 minutes. Concentration tends to wander when you study for longer periods of time.

# EXAMINATION REFERENCE MATERIAL AND CONTENT OUTLINE

If a test question answer could differ because of conflicting information in test reference sources, a legal requirement such as code, law, or regulation overrides any other reference. If two legal requirements appear to conflict, the state-specific code, law, or regulation overrides the national one. Information from sources on the test reference list override information from other sources or persons.

Many of the reference materials listed are available for purchase at <a href="https://www.psionlinestore.com">www.psionlinestore.com</a> or by calling the PSI Online Store, toll-free, at (866) 589-3088.

Titles currently in stock are listed on the order form near the end of this candidate information bulletin.

#### **BUSINESS AND LAW**

# of Questions	% Required to Pass	Time Allowed
40	70	90 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Erosion and Sedimentation Control	3
Licensing	21
Subcontractor's Pay Requirements	3
Liens and Bonds	8
One Call	5

#### **REFERENCE LIST**

The reference material listed below was used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. **Except for Code books**, you can base your answers on later editions of references as they become available. For Code questions, the examinations will be based **only** on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)

- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- North Carolina Administrative Code, Title 15A, Chapter 4
  Sedimentation Control, including the latest amendments,
  Sedimentation Control Commission, Archdale Building, 512
  N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611,
  <a href="http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf">http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf</a>
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
   le/Chapter 113A/Article 4.html

Candidates are responsible for bringing their own reference materials to the examination center. Only those references that pertain to the building codes are able to be copied, printed and spiral bound or hole punched and placed in a 3-ring binder. If you are downloading from the Internet, you may bring this reference material into the testing center with you as long as it is bound. NO partial references will be allowed/acceptable as Reference material for testing.

Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may be tabbed/indexed with permanent tabs only. Reference books may not have removable tabs. The following is a list of tabs that can be placed on pages in code or reference books when taking North Carolina general contractor exams, as per PSI the examination vendor for the North Carolina Licensing Board. These tabs stick onto pages and will tear the page if you try to remove them. This is only a sample list. As long as the tabs are not easily removed from the pages are the criteria for acceptable tabs.

#### Acceptable Tabs

Permanent Plastic Tabs Redi-Tag Self-Stick Permanent Adhesive Index Tabs Unacceptable Tabs

Post-It Index Flags Post-It Flags

References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers (loose or attached) with their approved references. Any additional materials will be removed from the references and confiscated.

#### (S) ASBESTOS

#### SCOPE OF WORK

This classification covers renovation or demolition activities involving the repair, maintenance, removal, isolation, encapsulation, or enclosure of Regulated Asbestos Containing Materials (RACM) for any commercial, industrial, or institutional building, whether public or private. It also covers all types of residential building construction involving RACM during renovation or demolition activities.

# of Questions	% Required to Pass	Time Allowed
60	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
General Asbestos	18
Respirators	10
Mini Enclosures and Glove Bag	5
Methods and Means	24
Laws and Regulations	2
Liens	1

#### REFERENCE LIST

The reference material listed below was used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. **Except for Code books**, you can base your answers on later editions of references as they become available. For Code questions, the examinations will be based **only** on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

### The following reference materials <u>are</u> allowed in the examination center:

- Asbestos: Engineering Management and Control, 1988, Kenneth Cherry, Lewis Publishers, Inc., 121 South Main Street, Chelsea, MI 48118
- 29 CFR 1910.1001 Asbestos, Occupational Safety and Health Administration, 800-321-6742 or 919-779-8560, https://www.osha.gov/pls/publications/publication.html
- Respiratory Protection Frequently Asked Questions, Occupational Safety and Health Administration, 800-321-6742 or 919-779-8560,
  - www.osha.gov/dte/library/respirators/faq.html

### The following reference materials <u>are not</u> allowed in the examination center:

- Asbestos Abatement & Management in Buildings Model Guide Specifications, 3rd Edition, 1996, National Institute of Building Sciences, 1201 L Street NW, Suite 400, Washington, DC 20005-4014, (202) 289-7800, www.NIBS.org, NIBS Document 2601-2
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

Candidates are responsible for bringing their own reference materials to the examination center. Only those references that pertain to the building codes are able to be copied, printed and spiral bound or hole punched and placed in a 3-ring binder. If you are downloading from the Internet, you may bring this reference material into the testing center with you as long as it is bound. NO partial references will be allowed/acceptable as Reference material for testing.

Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may be tabbed/indexed with permanent tabs only. Reference books may not have removable tabs. The following is a list of tabs that can be placed on pages in code or reference books when taking North Carolina general contractor exams, as per PSI the examination vendor for the North Carolina Licensing Board. These tabs stick onto pages and will tear the page if you try to remove them. This is only a sample list. As long as the tabs are not easily removed from the pages are the criteria for acceptable tabs.

#### Acceptable Tabs

Permanent Plastic Tabs
Redi-Tag Self-Stick Permanent Adhesive Index Tabs
<u>Unacceptable Tabs</u>
Post-It Index Flags
Post-It Flags

References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers (loose or attached) with their approved references. Any additional materials will be removed from the references and confiscated.

#### (S) BORING AND TUNNELING

#### **SCOPE OF WORK**

This classification covers the construction of underground or underwater passageways by digging or boring through and under the earth's surface, including the bracing and compacting of such passageways to make them safe for the purpose intended. It includes preparation of the ground surfaces at points of ingress and egress.

# of Questions	% Required to Pass	Time Allowed
60	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Boring and Tunneling	22
Sitework	6
Concrete	10
Concrete Reinforcement	5
Hoisting and Rigging	5
Safety	5
One Call	2
Erosion and sedimentation control	2
Liens	1

Laws and Regulations	2
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#### **REFERENCE LIST**

The reference material listed below was used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, you can base your answers on later editions of references as they become available. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

### The following reference materials <u>are</u> allowed in the examination center:

- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- Handbook of Rigging, 5th Edition, 2009, W.E. Rossnagel, McGraw-Hill, P.O. Box 182605, Columbus, OH 43218-2605, (800) 338-3987, www.McGraw-hill.com

### The following reference materials <u>are not</u> allowed in the examination center:

- North Carolina Administrative Code, Title 15A, Chapter 4
   Sedimentation Control, including the latest amendments,
   Sedimentation Control Commission, Archdale Building, 512
   N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611,
   http://reports.oah.state.nc.us/ncac/title%2015a%20%20environmental%20quality/chapter%2004%20%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
   le/Chapter 113A/Article 4.html
- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org
- Jacked Tunnel Design and Construction, 1998, Marco D. Boscardin, American Society of Civil Engineers, 1801

- Alexander Bell Drive, Reston, VA 20191-4400, (800) 548-2723. www.asce.org
- Standard Construction Guidelines for Microtunneling, 2001, American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400, (800) 548-2723, www.asce.org
- Code of Practice for Tunnels Under Construction, 1991, Dames and Moore, www.workcover.nsw.gov.au/NR/rdonlyres/BA459A8D-D048-4FE1-B144-7EFC36D27FB6/0/cop\_tunnels\_10.pdf
- Cost Estimating for Underground Transit: Too Dangerous to "Guesstimate", 1997, Romero, Victor S. Romero & John M. Stolz, Jacobs Associates, 500 Sansome Street, Suite 700, San Francisco, CA 94111, (415) 434-1822, www.jacobssf.com
- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- Instructional Manual for Training and Certification of Field Personel for Unbonded Post-Tensioning, 3<sup>rd</sup> Edition, 2003, Post-Tensioning Institute, 8601 North Black Canyon Highway, Suite 103, Phoenix, AZ 85021, (602) 870-7540, www.post-tensioning.org
- Placing Reinforcing Bars, Recommended Practices, 2011, 9th edition, Author- Concrete Reinforcing Steel Institute, Publisher- Concrete Reinforcing Steel Institute, 933 North Plum Grove Rd, Schaumburg, IL 60173, Phone (800) 328-6306, www.crsi.org

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#### Acceptable Tabs

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#### **BUILDING CONTRACTOR**

#### **SCOPE OF WORK**

This classification covers all building construction activity including: commercial, industrial, institutional, and all residential building construction. It includes parking decks; all site work, grading and paving of parking lots, driveways, sidewalks, and gutters; storm drainage, retaining or screen walls, and hardware and accessory structures; and indoor and outdoor recreational facilities including natural and artificial surface athletic fields, running tracks, bleachers and seating. It also covers work done under the specialty classifications of S(Concrete Construction). S(Insulation), S(Interior Construction), S(Marine Construction), S(Masonry Construction), S(Roofing), S(Metal Erection), S(Swimming Pools), and S(Asbestos).

# of Questions	% Required to Pass	Time Allowed
90	70	200 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Site Work	6
Concrete	13
Masonry	6
Metals	12
Carpentry	7
Roofing	6
Associated Trades	3
Business and Law	7
Safety	4
Estimating, Plan Reading and General Building Code Requirements	14
One Call	2
Erosion and Sedimentation Control	2
Licensing	2
Liens	1
Sports Fields	5

#### **REFERENCE LIST**

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- Sports Fields Design, Construction and Maintenance, Second Edition, 2010, John Wiley & Sons, Inc. (800) 762-2974, www.wilev.com
- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- North Carolina State Building Code: Building Code 2018 http://shop.iccsafe.org/north-carolina-state-building-code-building-code-2018-1.html
- ACI 530/530.1-11 or ACI 530/530.1-13 (2011 or 2013):
   Building Code Requirements and Specification for Masonry Structures and Companion Commentaries, American Concrete Institute, (248) 848-3700, <a href="https://www.concrete.org">www.concrete.org</a>
- ACI 318-11 or ACI 318-14 (2011 or 2014): Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute, (248) 848-3700, www.concrete.org
- North Carolina State Building Code: Administrative Code and Policies, 2018 http://shop.iccsafe.org/state-and-localcodes/north-carolina/north-carolina-state-building-codeadministrative-code-and-policies-2018-1.html
- ANSI A117.1-2017 Accessible and Usable Buildings and Facilities, 2017 American National Standards Institute, 1819 L Street NW, Washington, DC 20036, (202) 293-8020, www.ansi.org

### The following reference materials <u>are not</u> allowed in the examination center:

- Technical Digest No. 9 Handling and Erection of Steel Joists and Joist Girders, 3rd Edition, 2008, Steel Joint Institute, 234 W. Cheves Street, Florence, SC 29501, Phone: (843) 407-4091, Fax (843) 407-4044, www.steeljoist.org.
- Carpentry and Building Construction, 2010 or 2016 (Student Edition), John L. Feirer and Mark D. Feirer, McGraw-Hill, www.mheducation.com
- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products
- Roofing Construction & Estimating, 1995, Atcheson, Daniel, Craftsman Book Company, P.O. Box 6500, Carlsbad, CA 92018, (800) 829-8123, <a href="https://www.craftsman-book.com">www.craftsman-book.com</a>
- Instructional Manual for Training and Certification of Field Personel for Unbonded Post-Tensioning, 3<sup>rd</sup> Edition, 2003, Post-Tensioning Institute, 8601 North Black Canyon Highway, Suite 103, Phoenix, AZ 85021, (602) 870-7540, www.post-tensioning.org
- Modern Masonry Brick, Block, Stone, Clois E. Kicklighter, 8th edition (2015). The Goodheart-Willcox Company, (800) 323-0440, www.g-w.com

- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- North Carolina Administrative Code, Title 15A, Chapter 4 Sedimentation Control, including the latest amendments, Sedimentation Control Commission, Archdale Building, 512 N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611, http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
   le/Chapter\_113A/Article\_4.html
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org
- SDI Manual of Construction with Steel Deck, 2016, 3rd Edition, Steel Deck Institute, (847) 458-4647, www.sdi.org

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#### (PU) COMMUNICATIONS

#### **SCOPE OF WORK**

his classification covers the installation of the following: (i) all types of pole lines, and aerial and underground distribution cable for telephone systems; (ii) aerial and underground distribution cable for cable TV and master antenna TV systems

capable of transmitting R.F. signals; (iii) underground conduit and communication cable including fiber optic cable; and (iv) microwave systems and towers, including foundations and excavations where required, when the microwave systems are being used for the purpose of transmitting R.F. signals; and installation of PCS or cellular telephone towers and sites.

# of Questions	% Required to Pass	Time Allowed
45	70	120 minutes

Subject Area	# of Items
MATV and Cable TV systems	7
Antennas	7
Foundations and Sitework	8
Steel Erection	8
Safety	6
Erosion and Sedimentation Control	2
One Call	2
Underground Cabling	2
Liens	1
Licensing and Regulations	2

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com

The following reference materials <u>are not</u> allowed in the examination center:

- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- Antenna Toolkit, 2<sup>nd</sup> Edition, 2001, Joe Carr, Butterworth-Heinemann (Reed Publishing), 313 Washington Street, Newton, MA 02158-1626, (781) 221-2212, www.bh.com

- North Carolina Administrative Code, Title 15A, Chapter 4 Sedimentation Control, including the latest amendments, Sedimentation Control Commission, Archdale Building, 512 N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611, http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4 Sedimentation Pollution Control Act of 1973, including the latest amendments, Sections 113A-50 to 113A-67, inclusive, www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic le/Chapter 113A/Article 4.html
- Design and Control of Concrete Mixtures, 16th edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- Modern Welding, 2013, 11th Edition, Althouse/Turnquist/ Bowditch/Bowditch, 978-1-60525-795-2, Goodheart-Willcox Company, Inc., 18604 West Creek Dr., Tinley Park, IL 60477-6243, (800) 323-0440, www.g-w.com
- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products
- Data, Voice, and Video Cabling, 3rd Edition, 2009, The Fiber Optic Association, Jim Hayes and Paul Rosenberg, www.cengage.com
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

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#### (S) CONCRETE CONSTRUCTION

#### **SCOPE OF WORK**

This classification covers the construction and installation of foundations, pre-cast silos and other concrete tanks or receptacles, prestressed components, and gunite applications, but excludes bridges, streets, side-walks, curbs, gutters, driveways, parking lots, and highways.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Safety	5
Concrete Earthwork	3
Concrete	11
Concrete Reinforcement	9
Concrete Formwork	10
Concrete Cutting	3
Pre-cast Pre-stressed Concrete	4
Laws and Regulations	2
Liens	1
General Building Code Requirements	2

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This examination is OPEN BOOK.

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- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- North Carolina State Building Code: Building Code 2018 http://shop.iccsafe.org/north-carolina-state-building-codebuilding-code-2018-1.html

- ACI 318-14: Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute, (248) 848-3700, www.concrete.org
- North Carolina State Building Code: Administrative Code and Policies, 2018 http://shop.iccsafe.org/state-and-localcodes/north-carolina/north-carolina-state-building-codeadministrative-code-and-policies-2018-1.html

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- SP-4 Formwork for Concrete, 2014, 8th Edition, David W. Johnston, American Concrete Institute, https://www.concrete.org/store.aspx
- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- Sawcutting Joints in Concrete, Bruce A. Suprenant, January 1995, Concrete Construction Magazine, (773) 824-2400,
  - https://www.concreteconstruction.net/magazine/1995/january/
- Sawcutting Concrete Flatwork, Rosalie Johnston, June 1994, Concrete Construction Magazine, (773) 824-2400, <a href="https://www.concreteconstruction.net/magazine/1994/j">https://www.concreteconstruction.net/magazine/1994/j</a> une/
- Taking the Tedium Out of Cutting, January 1981, Concrete Construction Magazine, (773) 824-2400, <a href="https://www.concreteconstruction.net/magazine/1981/january/">https://www.concreteconstruction.net/magazine/1981/january/</a>
- Tips for Cutting Concrete, July 1987, Concrete Construction Magazine, (773) 824-2400, <a href="https://www.concreteconstruction.net/magazine/1987/july/">https://www.concreteconstruction.net/magazine/1987/july/</a>
- Erectors' Manual Standards and Guidelines for the Erection of PreCast Concrete Products, 2<sup>nd</sup> Edition, 1999, Precast/Prestressed Concrete Institute (PCI), (312) 786-0300, info@pci.org
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, <a href="https://www.nascla.org">www.nascla.org</a>. (See order form at the end of this bulletin.)
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org
- Placing Reinforcing Bars, Recommended Practices, 2011, 9th edition, Author- Concrete Reinforcing Steel Institute, Publisher- Concrete Reinforcing Steel Institute, 933 North Plum Grove Rd, Schaumburg, IL 60173, Phone (800) 328-6306, www.crsi.org

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## (PU) ELECTRICAL -- AHEAD OF POINT OF DELIVERY

#### **SCOPE OF WORK**

This classification covers the construction, installation, alteration, maintenance, or repair of an electrical wiring system, including sub-stations or components thereof, which is or is intended to be owned, operated and maintained by an electric power supplier, such as a public or private utility, a utility cooperative, or any other properly franchised electric power supplier, for the purpose of furnishing electrical services to one or more customers.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Transformers	6
Electrical Knowledge	6
Conductors	7
Overhead Lines	5
Underground Lines	3
Equipment and Safety	10
Grounding Methods	3
Service Drops and Laterals	1
Poles and Structures	3
Electric Supply Stations	3
Laws and Regulations	2
Liens	1

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This examination is OPEN BOOK.

### The following reference materials <u>are</u> allowed in the examination center:

- National Electrical Safety Code 2017, Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017-2394, (732) 981-0060.
- Lineman's and Cableman's Handbook, Shoemaker and Mack, 13<sup>th</sup> edition (2017), www.amazon.com.
- National Electrical Code, 2008, National Fire Protection Association, 1 Batterymarch, Quincy, MA 02269-9101, (800) 344-3555, www.nfpa.org or the National Electrical Code Handbook
- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com

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- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- American Electricians' Handbook, 16th Edition, 2013, McGraw-Hill, (800) 262-4729, <a href="mailto:shop.mcgraw-hill.com">shop.mcgraw-hill.com</a>
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

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#### (PU) FUEL DISTRIBUTION

#### **SCOPE OF WORK**

This classification covers the construction, installation, alteration, maintenance, or repair of systems for distribution of petroleum fuels, petroleum distillates, natural gas, chemicals, and slurries through pipeline from one station to another. It includes all excavating, trenching, and backfilling in connection therewith. It covers the installation, replacement and removal of above ground and below ground fuel storage tanks.

# of Questions	% Required to Pass	Time Allowed	
60	70	120 minutes	

#### CONTENT OUTLINE

Subject Area	# of Items
Excavation	10
Tank and Vaults	12
Piping. Pumps, and Controls	11
Troubleshooting and Maintenance	2
Safety and Fire Prevention	8
Leak Detection and Monitoring Systems	3
Erosion and Sedimentation Control	3
One Call	2
Laws and Regulations	2
Liens	1
Gas	6

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- NFPA 30, Flammable and Combustible Liquids Code, 2015 or earlier, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169, (800) 344-3555, www.nfpa.org
- NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages, 2015 or earlier, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169, (800) 344-3555, www.nfpa.org
- Recommended Practices for Installation of Underground Liquid Storage Systems (RP100), 2017, Petroleum Equipment Institute, 6514 East 69th Street, Tulsa, OK 74133, (918) 494-9696, www.pei.org
- Recommended Practices for Installation of Aboveground Storage Systems for Motor-Vehicle Fueling (RP200), 2013, Petroleum Equipment Institute, (918) 494-9696, www.pei.orgRecommended Procedure for Testing Electrical Continuity of Fuel-Dispensing Hanging Hardware (RP400), 2002, Petroleum Equipment Institute6514 East 69th Street, Tulsa, OK 74133, (918) 494-9696, www.pei.org
- ASME Code for Pressure Piping B31.8 Gas Transmission and Distribution Piping Systems, 2014, American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10065, (800) 843-2763, www.asme.org

### The following reference materials <u>are not</u> allowed in the examination center:

- North Carolina Administrative Code, Title 15A, Chapter 4 Sedimentation Control, including the latest amendments, Sedimentation Control Commission, Archdale Building, 512 N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611, http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
   le/Chapter\_113A/Article\_4.html
- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)

- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products.
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

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#### (H) GRADING AND EXCAVATING

#### SCOPE OF WORK

This classification covers the digging, moving and placing of materials forming the surface of the earth, excluding air and water, in such a manner that the cut, fill, excavation, grade, trench, backfill, or any similar operation can be executed with the use of hand and power tools and machines commonly used for these types of digging, moving, and material placing. It covers work on earthen dams and the use of explosives used in connection with all or any part of the activities described in this Subparagraph. It also includes clearing and grubbing, and erosion control activities.

# of Questions	% Required to Pass	Time Allowed
45	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
General Knowledge and Regulations	9
Excavating and Grading	18
Safety - Code of Federal Regulations	6
Lien Law	1
Licensing and Regulations	2
One Call	3
Erosion and Sedimentation Control	6

#### **REFERENCE LIST**

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- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- North Carolina Standard Specifications for Roads and Structures, 2018, North Carolina Department of Transportation, 1500 Mail Service Center, Raleigh, NC 27612, (877) 368-4968, <a href="https://connect.ncdot.gov/resources/Specifications/StandSpecLibrary/2018%20Standard%20Specifications%20for%20Roads%20and%20Structures.pdf">https://connect.ncdot.gov/resources/Specifications/StandSpecLibrary/2018%20Standard%20Specifications%20for%20Roads%20and%20Structures.pdf</a>

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- North Carolina General Statutes Chapter 113A, Article 4
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- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/

- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
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#### **HIGHWAY CONTRACTOR**

#### **SCOPE OF WORK**

This classification covers all highway construction activity including: grading, paving of all types, installation of exterior artificial athletic surfaces, relocation of public and private utility lines ancillary to the principal project, bridge construction and repair, culvert construction and repair, parking decks, sidewalks, curbs, gutters and storm drainage. It also includes installation and erection of guard rails, fencing, signage and ancillary highway hardware; covers paving and grading of airport and air-field runways, taxiways, and aprons, including the installation of fencing, signage, runway lighting

and marking; and work done under the specialty classifications of S(Boring and Tunneling), S(Concrete Construction), S(Marine Construction), S(Railroad Construction), and H(Grading and Excavating).

# of Questions	% Required to Pass	Time Allowed	
90	70	265 minutes	

#### **CONTENT OUTLINE**

Subject Area	# of Items
Paving - Asphalt	12
Piles	5
Excavation and Grading	8
Concrete Paving	3
Safety	5
One-Call	3
Traffic Control	2
Concrete	6
Metals Including Concrete Reinforcement	5
Erosion and Sedimentation Control	4
Tunneling	8
Railroad Construction	8
Marine Construction	6
Licensing	2
Liens	1
Business and Law	7
Sports Fields	5

#### **REFERENCE LIST**

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This examination is OPEN BOOK.

### The following reference materials <u>are</u> allowed in the examination center:

- Sports Fields Design, Construction and Maintenance, Second Edition, 2010, John Wiley & Sons, Inc. (800) 762-2974, www.wiley.com
- Contractor's Guide to Business, Law and Project
   Management North Carolina General Contractors Edition,
   10<sup>th</sup> Edition, National Association of State Contractors
   Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix,
   Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587 9625, www.nascla.org. (See order form at the end of this
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- North Carolina Standard Specifications for Roads and Structures, 2018, North Carolina Department of Transportation, 1500 Mail Service Center, Raleigh, NC 27612, (877) 368-4968,

- https://connect.ncdot.gov/resources/Specifications/Stand SpecLibrary/2018%20Standard%20Specifications%20for%20R oads%20and%20Structures.pdf
- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- Construction Planning, Equipment, and Methods, 8th Edition, Peurifoy, Robert L., P.E., McGraw-Hill, P.O. Box 182605, Columbus, OH 43218-2605, (800) 338-3987, www.McGraw-hill.com.
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- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- Hot-Mix Asphalt Paving Handbook (MAPH-2), 2000, AASHTO Publications, 444 North Capitol Street, NW, Suite 249, Washington, DC 20001, (202) 624-5800, ashto@aashto.org
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org
- Placing Reinforcing Bars, Recommended Practices, 2011, 9th edition, Author- Concrete Reinforcing Steel Institute, Publisher- Concrete Reinforcing Steel Institute, 933 North Plum Grove Rd, Schaumburg, IL 60173, Phone (800) 328-6306, www.crsi.org
- Instructional Manual for Training and Certification of Field Personel for Unbonded Post-Tensioning, 3<sup>rd</sup> Edition, 2003, Post-Tensioning Institute, 8601 North Black Canyon Highway, Suite 103, Phoenix, AZ 85021, (602) 870-7540, www.post-tensioning.org
- Jacked Tunnel Design and Construction, 1998, Boscardin, Marco D., American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400, (800) 548-2723, www.asce.org.

 The Practical Guide to Railway Engineering, 3rd Edition, 2019, Division of Coastal Management, NC Department of Environmental Resources, Raleigh, NC, www.arema.org/practical\_guide.htm

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#### (S) INSULATION

#### **SCOPE OF WORK**

This classification covers the installation alteration or repair of materials classified as insulating media used for the non-mechanical control of temperatures in the construction of residential and commercial buildings. It does not include the insulation of mechanical equipment and ancillary lines and piping.

# of Questions	% Required to Pass	Time Allowed
40	70	90 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
General Knowledge and Principles	10
Liens	1
Insulation types and properties	15
Radiant and reflective barriers, vapor retarders	7

Safety	5
Laws and regulations	2

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- North Carolina Energy Code, 2018, North Carolina Department of Insurance, 325 N. Salisbury Street, Raleigh, NC 27611, (919) 647-0029, www.ncdoi.com

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- Insulation Handbook, 2001, Bynum, Richard T., McGraw-Hill, P.O. Box 182605, Columbus, OH 43218, (800) 338-3987, www.McGraw-hill.com.
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

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#### (S) INTERIOR CONSTRUCTION

#### **SCOPE OF WORK**

This classification covers the installation of accoustical ceiling systems and panels, drywall partitions (load bearing and non-load bearing), lathing and plastering, flooring and finishing, interior recreational surfaces, window and door installation, and installation of fixtures, cabinets and millwork. It includes the removal of asbestos and replacement with non-toxic substances.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Asbestos Removal	6
Windows and Doors	3
Framing - Wood and Metal	7
Finish Carpentry and Millwork	7
Drywall and Plaster	15
Flooring and Finishes	5
Acoustical Ceilings	2
Laws and Regulations	2
Liens	1
Permits and Inspections	2

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The following reference materials <u>are</u> allowed in the examination center:

- North Carolina State Building Code: Building Code 2018 http://shop.iccsafe.org/north-carolina-state-building-code-building-code-2018-1.html
- North Carolina State Building Code: Administrative Code and Policies, 2018 http://shop.iccsafe.org/state-and-localcodes/north-carolina/north-carolina-state-building-codeadministrative-code-and-policies-2018-1.html

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- Gypsum Construction Handbook, 7th edition, 2014, United States Gypsum Company (USG), RS Means Publishing, 700 Longwater Drive, Norwell, MA 02061, 800-334-3509, Fax: 800-632-6732, http://rsmeans.reedconstructiondata.com/
- Builders Guide to Floors, 1997, Peter Fleming, McGraw-Hill, P.O. Box 182605, Columbus, OH 43218-2605, (800) 338-3987, www. McGraw-hill.com
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- Finish Carpenter's Manual, Jim Tolpin, 1993, Craftsman Book Company, (800) 829-8123, www.craftsman-book.com
- Asbestos: Engineering Management and Control, 1988, Kenneth Cherry, Lewis Publishers, Inc., 121 South Main Street, Chelsea, MI 48118
- 29 CFR 1910.1001 Asbestos, Occupational Safety and Health Administration, 800-321-6742 or 919-779-8560, https://www.osha.gov/pls/publications/publication.html
- Respiratory Protection Frequently Asked Questions, Occupational Safety and Health Administration, 800-321-6742 or 919-779-8560, www.osha.gov/dte/library/respirators/faq.html
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- Plastering Skills, 1984, F. Van Den Branden & Thomas L. Hartsell, L., American Technical Publishers, Inc., 1155 W. 175th St., Homewood, IL 60430, (800) 323-3471
- The Complete Illustrated Guide to Furniture and Cabinet Construction, 2001, Andy Rae, 1-56158-402-9, The Taunton Press, 63 South Main St., P.O. Box 5506, Newtown, CT 06470-5506

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#### (S) MARINE CONSTRUCTION

#### **SCOPE OF WORK**

This classification covers all marine construction and repair activities and all types of marine construction in deep-water installations and in harbors, inlets, sounds, bays, and channels; it covers dredging, construction and installation of pilings, piers, decks, slips, docks, and bulkheads. It does not include structures required on docks, slips and piers.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
CAMA Regulated Areas	7
Small Docks	7
Pile Driving	12
Concrete	7
Concrete Reinforcement	7
Safety	5
Laws and Regulations	2
Liens	1
Erosion and Sedimentation Control	2

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- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- The Dock Manual: Designing, Building, Maintaining, 1999, Max Burns, Storey Books, Pownal, VT 05261, (800) 793-9396, www.storey.com
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- Placing Reinforcing Bars, Recommended Practices, 2011, 9th edition, Author- Concrete Reinforcing Steel Institute, Publisher- Concrete Reinforcing Steel Institute, 933 North Plum Grove Rd, Schaumburg, IL 60173, Phone (800) 328-6306, www.crsi.org
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board

for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

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#### (S) MASONRY CONSTRUCTION

#### **SCOPE OF WORK**

This classification covers the installation, with or without the use of mortar or adhesives, of the following: (i) brick, concrete block, gypsum partition tile, pumice block, or other lightweight and facsimile units and products common to the masonry industry; (ii) installation of fire clay products and refractory construction; and (iii) installation of rough cut and dressed stone, marble panels and slate units, and installation of structural glazed tile or block, glass brick or block, and solar screen tile or block.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Safety	5
Concrete Block	16
Brick	12

Specialty Masonry	4
Mortar and Grout	8
Laws and Regulations	2
Liens	1
General Building Code Requirements	2

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This examination is OPEN BOOK.

### The following reference materials <u>are</u> allowed in the examination center:

- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- North Carolina State Building Code: Building Code 2018 <a href="http://shop.iccsafe.org/north-carolina-state-building-code-building-code-2018-1.html">http://shop.iccsafe.org/north-carolina-state-building-code-building-code-2018-1.html</a>
- ACI 530/530.1-11 or ACI 530/530.1-13 (2011 or 2013):
   Building Code Requirements and Specification for Masonry Structures and Companion Commentaries, American Concrete Institute, (248) 848-3700, www.concrete.org
- North Carolina State Building Code: Administrative Code and Policies, 2018 http://shop.iccsafe.org/state-and-localcodes/north-carolina/north-carolina-state-building-codeadministrative-code-and-policies-2018-1.html

### The following reference materials <u>are not</u> allowed in the examination center:

- Modern Masonry Brick, Block, Stone, Clois E. Kicklighter, 8th edition (2015). The Goodheart-Willcox Company, (800) 323-0440, www.g-w.com
- Contractor's Guide to Business, Law and Project Management North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, <a href="https://www.nascla.org">www.nascla.org</a>. (See order form at the end of this bulletin.)
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#### (S) METAL ERECTION

#### **SCOPE OF WORK**

This classification covers: (i) the field fabrication, erection, repair and alteration of architectural and structural shapes, plates, tubing, pipe and bars, not limited to steel or aluminum, that are or may be used as structural members for buildings, equipment, and structure; and (ii) the layout, assembly and erection by welding, bolting or riveting such metal products as curtain walls, tanks of all types, hoppers, structural members for buildings, towers, stairs, conveyor frames, cranes and crane runways, canopies, carports, guard rails, signs, steel scaffolding as a permanent structure, rigging, flagpoles, fences, steel and aluminum siding, bleachers, fire escapes, and seating for stadiums, arenas, and auditoriums.

# of Questions	% Required to Pass	Time Allowed
65	70	150 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Metal Roofing and Siding	5
Reinforcing Steel	8
Safety - OSHA Subpart R	7
Safety - General	6
Steel Decks	7
Steel Joists and Girders	15
Welding	6
Bolting	3

Laws and Regulations	2
Liens	1
Metal Fencing	5

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- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- Specification for Structural Joints Using ASTM A325 or A490 Bolts, 2004, Research Council on Structural Connections, C/O American Institute of Steel Construction, Inc., One East Wacker Drive, Suite 3100, Chicago, IL 60601-2001, www.boltcouncil.org/educbull.htm

### The following reference materials <u>are not</u> allowed in the examination center:

- Profiled Sheet Roofing and Cladding A Guide to Good Practice, 3rd Edition, 1999, The National Federation of Roofing Contractors Publications Ltd., 29 West 35th Street, New York, NY 10001, <a href="https://www.nfrc.co.uk">www.nfrc.co.uk</a>
- Placing Reinforcing Bars, Recommended Practices, 2011, 9th edition, Author- Concrete Reinforcing Steel Institute, Publisher- Concrete Reinforcing Steel Institute, 933 North Plum Grove Rd, Schaumburg, IL 60173, Phone (800) 328-6306, www.crsi.org
- Technical Digest No. 9 Handling and Erection of Steel Joists and Joist Girders, 3rd Edition, 2008, Steel Joint Institute, 234 W. Cheves Street, Florence, SC 29501, Phone: (843) 407-4091, Fax (843) 407-4044, www.steeljoist.org.
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org
- SDI Manual of Construction with Steel Deck, 2016, 3rd Edition, Steel Deck Institute, (847) 458-4647, www.sdi.org
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)

- Modern Welding, 2013, 11<sup>th</sup> Edition, Althouse/Turnquist/ Bowditch/Bowditch/Bowditch, The Goodheart-Willcox Company, Inc., 18604 West Creek Dr., Tinley Park, IL 60477-6243, (800) 323-0440, www.g-w.com
- Fences and Retaining Walls, 1990, William McElroy, Craftsman Book Company, P.O. Box 6500, Carlsbad, CA 92018, (800) 829-8123, www.craftsman-book.com

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#### (PU) PUBLIC UTILITIES CONTRACTOR

#### **SCOPE OF WORK**

This classification includes operations that are the performance of construction work on water and wastewater systems and on the subclassifications of facilities set forth in G.S. 87-10(b)(3). The Board may issue a license to a public utilities contractor that is limited to any of the subclassifications set forth in G.S. 87-10(b)(3) for which the contractor qualifies. A public utilities contractor license covers work done under the specialty classifications of S(Boring and Tunneling), PU(Communications), PU(Fuel Distribution), PU(Electrical—Ahead of Point of Delivery), PU (Water Lines and Sewer Lines), PU(Water Purification and Sewage Disposal), and S(Swimming Pools).

# of Questions	% Required to Pass	Time Allowed
100	70	240 minutes

Subject Area	# of Items
Excavation and Grading	6
Electrical Power Distribution	15
Fuel Distribution	12
Swimming Pools	4
Concrete and Concrete Reinforcement	12
Shotcrete and Gunite	4
Water and Sewer Piping	12
Communication Systems	3
Boring and Tunneling	4
Erosion and Sedimentation Control	2
Safety	8
Liens	1
Licensing	2
Business and Law	7
One Call	2
Welding	6

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- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- North Carolina Administrative Code Title 15A Subchapter 18C: Water Supplies, including the latest amendments, http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2018%20-%20environmental%20health/subchapter%20c/sub
- Public Swimming Pools North Carolina Department of Environmental Health and Natural Resources, Title 15A, Subchapter 18A, Sec. 2500 NC Administrative Code, <a href="http://reports.oah.state.nc.us/ncac/title%2015a%20-">http://reports.oah.state.nc.us/ncac/title%2015a%20-</a> %20environmental%20quality/chapter%2018%20-

#### %20environmental%20health/subchapter%20a/subchapter%2 0a%20rules.pdf

- Recommended Practices for Installation of Aboveground Storage Systems for Motor-Vehicle Fueling (RP200), 2013, Petroleum Equipment Institute, (918) 494-9696, www.pei.org
- Recommended Procedure for Testing Electrical Continuity of Fuel-Dispensing Hanging Hardware (RP400), 2002, Petroleum Equipment Institute6514 East 69th Street, Tulsa, OK 74133, (918) 494-9696, www.pei.org/shopping
- ASME Code for Pressure Piping B31.8 Gas Transmission and Distribution Piping Systems, 2014, American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10065, (800) 843-2763, www.asme.org
- National Electrical Safety Code, 2017, Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017-2394, (732) 981-0060,
- Lineman's and Cableman's Handbook, Shoemaker and Mack, 13<sup>th</sup> edition (2017), www.amazon.com.
- DIPRA Installation Guide for Ductile Iron Pipe, 2007 (revised 2012), Ductile Iron Research Association, www.dipra.org
- Concrete Pipe & Box Culvert Installation, 2007 edition, American Concrete Pipe Association, 1303 West Walnut Hill Lane, Suite 305, Irving, Texas 75308-7216, <a href="https://www.concrete-pipe.org">www.concrete-pipe.org</a>

### The following reference materials <u>are not</u> allowed in the examination center:

- North Carolina Administrative Code, Title 15A, Chapter 4
   Sedimentation Control, including the latest amendments,
   Sedimentation Control Commission, Archdale Building, 512
   N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611,
   http://reports.oah.state.nc.us/ncac/title%2015a%20%20environmental%20quality/chapter%2004%20%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
   le/Chapter\_113A/Article\_4.html
- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org
- Jacked Tunnel Design and Construction, 1998, Marco D. Boscardin, American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400, (800) 548-2723, www.asce.org
- Erectors' Manual Standards and Guidelines for the Erection of PreCast Concrete Products, 2<sup>nd</sup> Edition, 1999, Precast/Prestressed Concrete Institute (PCI), (312) 786-0300, info@pci.org
- Modern Welding, 2013, 11<sup>th</sup> Edition, Althouse/Turnquist/Bowditch/Bowditch/Bowditch, 978-1-60525-795-2, The Goodheart-Willcox Company, Inc., 18604 West Creek Dr., Tinley Park, IL 60477-6243, (800) 323-0440, www.g-w.com
- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org

 Guide to Shotcrete, 2016 or 2022, American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333, (248) 848-3700,

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#### (S) RAILROAD CONSTRUCTION

#### **SCOPE OF WORK**

This classification covers the building, construction and repair of railroad lines including: (i) the clearing and filling of rights-of-way; (ii) shaping, compacting, setting, and stabilizing of road beds; (iii) setting ties, tie plates, rails, rail connectors, frogs, switch plates, switches, signal markers, retaining walls, dikes, fences, and gates; and (iv) Construction and repair of tool sheds and platforms.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Erosion and Sedimentation Control	2
Track Construction	16
Concrete Railway Structures	15

Safety	7
Sitework	5
One Call	2
Laws and Regulations	2
Liens	1

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- 49CFR Part 213 Track Safety Standards; Part 214 Railroad Workplace Safety; and Part 236 Rules, Standards, and Instructions Governing the Installation, Inspection, Maintenance, and Repair of Signal and Train Control Systems, Devices, and Appliances, (866) 512.1800, <a href="http://bookstore.gpo.gov">http://bookstore.gpo.gov</a>

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- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
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- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, <a href="https://www.nascla.org">www.nascla.org</a>. (See order form at the end of this bulletin.)
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- The Practical Guide to Railway Engineering, 3rd Edition, 2019, Division of Coastal Management, NC Department of Environmental Resources, Raleigh, NC, www.arema.org/practical\_guide.htm

- Manual for Railway Engineering, Chapter 8, Concrete Structures and Foundations, latest available downloadable PDF; American Railway Engineering and Maintenance of Way Association (AREMA), 8201 Corporate Drive, #1125, Landover, MD 20785, (301) 459-3200, https://www.arema.org/AREMA\_MBRR/Publications/AREMA \_MBRR/AREMAStore/Store\_Main.aspx?hkey=6ce24fb6-52f8-448c-8a89-0af85c32e405
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#### RESIDENTIAL CONTRACTOR

#### **SCOPE OF WORK**

This classification covers all construction activity pertaining to the construction of residential units which are required to conform to the residential building code adopted by the Building Code Council pursuant to G.S. 143-138; all site work, driveways, sidewalks, and water and wastewater systems ancillary to the aforementioned structures and improvements; and the work done as part of such residential units under the specialty classifications of S(Insulation), S(Interior

Construction), S(Masonry Construction), S(Roofing), S(Swimming Pools), and S(Asbestos).

# of Questions	% Required to Pass	Time Allowed
90	70	210 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Site work, Footings and Foundations	12
Concrete and Concrete Reinforcement	10
Masonry	7
Carpentry	11
Associated Construction trades, including Energy Conservation and Drywall	8
Roofing	6
Estimating, Plan Reading and General Residential Code Requirements	16
OSHA Safety	4
Licensing and Business and Law	10
Special Construction Zones (wind and coastal) and Erosion and Sedimentation Control	6

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- North Carolina State Building Code: Residential Code 2018 (http://shop.iccsafe.org/state-and-local-codes/north-carolina/north-carolina-state-building-code-residential-code-2018-1.html
- North Carolina State Building Code: Administrative Code and Policies, 2018 http://shop.iccsafe.org/state-and-local-

codes/north-carolina/north-carolina-state-building-code-administrative-code-and-policies-2018-1.html

The following reference materials are <u>not</u> allowed in the examination center:

- Carpentry and Building Construction, 2010 or 2016 (Student Edition), John L. Feirer and Mark D. Feirer, McGraw-Hill, www.mheducation.com
- Roofing Construction & Estimating, 1995, Atcheson, Daniel, Craftsman Book Company, P.O. Box 6500, Carlsbad, CA 92018, (800) 829-8123, www.craftsman-book.com.
- Modern Masonry Brick, Block, Stone, Clois E. Kicklighter, 8th edition (2015). The Goodheart-Willcox Company, (800) 323-0440, www.g-w.com
- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products.
- The Contractor's Guide to Quality Concrete Construction, 2005, American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333, (248) 848-3700, www.aciint.org.
- BCSI: Guide to Good Practice for Handling, Installing, Restraining, and Bracing of Metal Plate Connected Wood Trusses, 2013 Edition Updated March 2015, Structural Building Components Association and Truss Plate Institute, (608) 274-4849, <a href="https://www.sbcindustry.com">www.sbcindustry.com</a>
- North Carolina Administrative Code, Title 15A, Chapter 4 Sedimentation Control, including the latest amendments, Sedimentation Control Commission, Archdale Building, 512 N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611, http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
   le/Chapter\_113A/Article\_4.html
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Post-It flags

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#### (S) ROOFING

#### **SCOPE OF WORK**

This classification covers the installation and repair of roofs and decks on residential, commercial, industrial, and institutional structures requiring materials that form a water-tight and weather-resistant surface. The term "materials" for purposes of this Subparagraph includes cedar, cement, asbestos, clay tile and composition shingles, all types of metal coverings, wood shakes, single ply and built-up roofing, protective and reflective roof and deck coatings, sheet metal valleys, flashings, gravel stops, gutters and downspouts, and bituminous waterproofing.

# of Questions	% Required to Pass	Time Allowed
60	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Safety	5
Roofing - Substrate	6
Roofing - Steep	18
Roofing Repairs	4
Roofing - Elastomeric	6
Roofing - Built - up Bituminous	6
Business and Law	7
Sheet Metal and Flashing	3
Licensing	2
Liens	1
General Building Code Requirements	2

#### **REFERENCE LIST**

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- North Carolina State Building Code: Building Code 2018 http://shop.iccsafe.org/north-carolina-state-building-code-building-code-2018-1.html
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
- North Carolina State Building Code: Administrative Code and Policies, 2018 http://shop.iccsafe.org/state-and-localcodes/north-carolina/north-carolina-state-building-codeadministrative-code-and-policies-2018-1.html
- NRCA Roofing Manual: Steep Slope Roof Systems, 2025, National Roofing Contractors Association, (847) 299-9070, http://www.nrca.net
- NRCA Roofing Manual: Metal Panel and SPF Roof Systems, 2024, National Roofing Contractors Association, (847) 299-9070, http://www.nrca.net
- NRCA Roofing Manual: Membrane Roofing Systems, 2023, National Roofing Contractors Association, (847) 299-9070, http://www.nrca.net

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- Roofing Construction & Estimating, 1995, Atcheson, Daniel, Craftsman Book Company, P.O. Box 6500, Carlsbad, CA 92018, (800) 829-8123, www.craftsman-book.com
- Laws and Regulations Applicable to General Contracting in the State of North Carolina, North Carolina Licensing Board for General Contractors, P.O. Box 17187, Raleigh, NC 27619-7987, (919) 571-4183, www.nclbgc.org

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#### **(S) SWIMMING POOLS**

#### **SCOPE OF WORK**

This classification covers the construction, service, and repair of all swimming pools. It includes: (i) excavation and grading; (ii) construction of concrete, gunite, and plastic-type pools, pool decks, and walkways, and tiling and coping; and (iii) installation of all equipment including pumps, filters and chemical feeders. It does not include direct connections to a sanitary sewer system or to portable water lines, nor the grounding and bonding of any metal surfaces or the making of any electrical connections.

# of Questions	% Required to Pass	Time Allowed
60	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Filtration/Circulation Systems	15
Maintenance and Operation	10
Accessories and Associated Trades	8
Concrete, Shotcrete and Gunite	10
Design	10
Laws and Regulations	2
Liens	1
One Call	2
Erosion and Sedimentation Control	2

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- Public Swimming Pools North Carolina Department of Environment and Natural Resources, Title 15A, Subchapter 18A, Sec. .2500, NC Administrative Code, https://ehs.dph.ncdhhs.gov/docs/rules/294306-9-2500.pdf
- Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities (NSF/ANSI/CAN 50-2023) https://webstore.ansi.org/standards/nsf/nsfansi502023e

The following reference materials are <u>not</u> allowed in the examination center:

- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, <a href="https://nc811.org/literature/">https://nc811.org/literature/</a>
- Guide to Shotcrete, 2016 or 2022, American Concrete Institute, PO Box 9094 Farmington Hills, MI 48333, (248) 848-3700.
- The Contractor's Guide to Quality Concrete Construction, 2005, American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333, (248) 848-3700, www.aciint.org
- The Ultimate Pool Maintenance Manual: Spas, Pools, Hot Tubs, Rockscapes and Other Water Features, 2007, Tamminen, Terry, McGraw-Hill, P.O. Box 182605, Columbus, OH 43218-2605, (800) 338-3987, www.mcgraw-hill.com
- ANSI/NSPI-1 Standard for Public Swimming Pools, 2003, National Spa and Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314, (703) 838-0083, www. nspi.org
- ANSI/NSPI-5 American National Standard for Residential Inground Swimming Pools, 2003, National Spa and Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314, (703) 838-0083, www.nspi.org
- ANSI/NSPI-2 Standard for Public Spas, 1999, National Spa and Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314, (703) 838-0083, www. nspi.org
- ANSI/NSPI-3 Standard for Permanently Installed Residential Spas, 1999, National Spa and Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314, (703) 838-0083, www.nspi.org
- Certified Pool-Spa Operators Handbook, 2006, National Swimming Pool Foundation, 10803 Gulfdale Suite 300, San Antonio, TX 78216, (516) 623-3447, <a href="https://www.nspf.com">www.nspf.com</a>
- North Carolina Administrative Code, Title 15A, Chapter 4 Sedimentation Control, including the latest amendments, Sedimentation Control Commission, Archdale Building, 512 N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611, http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2004%20-%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
   Sedimentation Pollution Control Act of 1973, including the
   latest amendments, Sections 113A-50 to 113A-67, inclusive,
   www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArticle/Chapter\_113A/Article\_4.html
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)

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#### (S) SIGN/BILLBOARD

#### Launching 12/1/2025

# of Questions	% Required to Pass	Time Allowed
40	70	90 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
General Code Requirements	3
Laws and Regulations	2
Liens	2
One Call (Excavation Regulations)	3
General Concrete	5
Concrete Reinforcement	3
Concrete Formwork	3
Steel Erection and Metals	5
Welding	4
Rigging	2
OSHA Safety	8

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- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, https://nc811.org/literature/
- Design and Control of Concrete Mixtures, Steven H. Kosmatka and William C. Panarese, 17th Edition, 2021, Portland Cement Association, (847) 966-6200, www.cement.org
- Placing Reinforcing Bars, 2022, 10th Edition, Concrete Reinforcing Steel Institute, (800) 328- 6306, www.amazon.com
- SP-4 Formwork for Concrete, 2014, 8th Edition, David W. Johnston, American Concrete Institute, https://www.concrete.org/store.aspx
- Modern Welding, 2020, 12th Edition, Althouse/Turnquist/Bowditch/Bowditch/Bowditch, The Goodheart-Willcox Company, Inc., 18604 West Creek Dr., Tinley Park, IL 60477-6243, (800) 323-0440, https://www.g-wonlinetextbooks.com/modern-welding
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, U.S. Government Printing Office, (866) 512-1800 or https://www.osha.gov/laws-

<u>regs/regulations/standardnumber/1926</u> OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, www.psionlinestore.com, (866) 589-3088

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#### (PU) WATER LINES AND SEWER LINES

#### **SCOPE OF WORK**

This classification covers construction work on water and sewer mains, water service lines, and house and building sewer lines, as defined in the North Carolina State Building Code, and covers water storage tanks, lift stations, pumping stations, and appurtenances to water storage tanks, lift stations and pumping stations. It includes pavement patching, backfill and erosion control as part of such construction.

# of Questions	% Required to Pass	Time Allowed
45	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Safety	6
General Knowledge	3
Underground Utilities-Concrete Pipe Installation	10
Underground Utilities-Ductile Pipe Installation	10
Excavating and Grading	9
Liens	1
Erosion and Sedimentation Control	2
One-Call	2
Laws and Regulations	2

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- DIPRA Installation Guide for Ductile Iron Pipe, 2007 (revised 2012), Ductile Iron Research Association, <u>www.dipra.org</u>
- Concrete Pipe & Box Culvert Installation, 2007 edition, American Concrete Pipe Association, 1303 West Walnut Hill Lane, Suite 305, Irving, Texas 75308-7216, www.concretepipe.org

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- North Carolina Excavation Safety Guidelines, 2022 or later, 811 or (800) 632-4949, <a href="https://nc811.org/literature/">https://nc811.org/literature/</a>
- North Carolina Administrative Code, Title 15A, Chapter 4
   Sedimentation Control, including the latest amendments,
   Sedimentation Control Commission, Archdale Building, 512
   N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611,
   http://reports.oah.state.nc.us/ncac/title%2015a%20%20environmental%20quality/chapter%2004%20%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
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  latest amendments, Sections 113A-50 to 113A-67, inclusive,
  www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
  le/Chapter\_113A/Article\_4.html
- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
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## (PU) WATER PURIFICATION AND SEWAGE DISPOSAL

#### **SCOPE OF WORK**

This classification covers the performance of construction work on water and wastewater systems; water and wastewater treatment facilities; and all site work, grading, and paving of parking lots, driveways, sidewalks, and curbs and gutters which are ancillary to such construction of water and wastewater treatment facilities. It covers the work done under the specialty classifications of S(Concrete Construction), S(Insulation), S(Interior Construction), S(Masonry Construction), S(Roofing), and S(Metal Erection) as part of such work on water and wastewater treatment facilities.

# of Questions	% Required to Pass	Time Allowed
50	70	120 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Safety	6
Shotcrete	5
Concrete	8
Concrete Reinforcement	7
Excavation and Grading	7
Water Regulations	2
Laws and Regulations	4
Liens	1
One Call	2
Erosion and Sedimentation Control	2
Formwork	6

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- North Carolina Administrative Code Title 15A Subchapter 18C: Water Supplies, including the latest amendments, <a href="http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2018%20-%20environmental%20quality/chapter%2018%20-%20environmental%20health/subchapter%20c/subchapter%20c%20rules.pdf</a> or order direct from WestGroup at (800) 762-5272 or online at <a href="www.westgroup.com/">www.westgroup.com/</a>

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- Contractor's Guide to Business, Law and Project Management - North Carolina General Contractors Edition, 10<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), 23309 N. 17th Drive, Phoenix, Arizona 85027, Telephone: (623) 587-9519, Fax: (623) 587-9625, www.nascla.org. (See order form at the end of this bulletin.)
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   N. Salisbury Street, P.O. Box 27687, Raleigh, NC 27611,
   http://reports.oah.state.nc.us/ncac/title%2015a%20%20environmental%20quality/chapter%2004%20%20sedimentation%20control/chapter%2004%20rules.pdf
- North Carolina General Statutes Chapter 113A, Article 4
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  www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArtic
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- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products
- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement

- Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org
- Guide to Shotcrete, 2016 or 2022 American Concrete Institute, P.O. Box 9094 Farmington Hills, MI 48333, (248) 848-3700
- Placing Reinforcing Bars, Recommended Practices, 2011, 9th edition, Concrete Reinforcing Steel Institute, 933 North Plum Grove Rd, Schaumburg, IL 60173, Phone (800) 328-6306, www.crsi.org
- SP-4 Formwork for Concrete, 2014, 8th Edition, David W. Johnston, American Concrete Institute, https://www.concrete.org/store.aspx

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Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may be tabbed/indexed with permanent tabs only. Reference books may not have removable tabs. The following is a list of tabs that can be placed on pages in code or reference books when taking North Carolina general contractor exams, as per PSI the examination vendor for the North Carolina Licensing Board. These tabs stick onto pages and will tear the page if you try to remove them. This is only a sample list. As long as the tabs are not easily removed from the pages are the criteria for acceptable tabs.

#### Acceptable Tabs

Permanent Plastic Tabs
Redi-Tag Self-Stick Permanent Adhesive Index Tabs
Unacceptable Tabs
Post-It Index Flags
Post-It Flags

References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers (loose or attached) with their approved references. Any additional materials will be removed from the references and confiscated.

#### (S) WIND TURBINE

#### **SCOPE OF WORK**

This classification covers the construction, installation, and repair of wind turbines, wind generators, and wind power units. It includes assembly of blades, generator, turbine structures, and towers. It also includes ancillary foundation work, field fabrication of metal equipment, and structural support components.

# of Questions	% Required to Pass	Time Allowed
40	70	90 minutes

#### **CONTENT OUTLINE**

Subject Area	# of Items
Installation of Wind Turbines	6
Maintenance and Troubleshooting of Wind Turbines	4
Generators	5
Gearboxes and Direct-Drive Systems	5
Structures and Towers	5
Ancillary Foundation Work (Site and Concrete)	6
Hoisting	2
Fundamental Electrical	3
Safety	4

#### REFERENCE LIST

The reference material listed below was used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, you can base your answers on later editions of references as they become available. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- Introduction to Wind Principles 2011, Thomas E. Kissell, Prentice Hall
- North Carolina Occupational Safety and Health Standards for the Construction Industry, with latest available amendments, North Carolina Department of Labor, Division of Occupational Safety and Health, Bureau of Education, Training and Technical Assistance, 111 Hillsborough Street, Raleigh, NC 27601-1092 (if you are planning to pick up the reference, you must call first), 919-807-2875 or 800-NC-LABOR, www.nclabor.com
- ASME B30.5-2007, Mobile and Locomotive Cranes, American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10065, (800) 843-2763, www.asme.org
- ASME B30.10-2009, Hooks, American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10065, (800) 843-2763, www.asme.org
- Pipe and Excavation Contracting, Dave Roberts, 2011, Craftsman Book Company, (800) 829-8123, www.craftsmanbook.com/products
- Design and Control of Concrete Mixtures, 16<sup>th</sup> edition, 2016, Steven H. Kosmatka, William C. Panarese, Portland Cement Association, 5420 Old Orchard Road, Skokie, Il 60077-1083, 847-966-6200, www.portcem.org

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- **△** Call the PSI Online store toll-free at (866) 589-3088

Note: prices are available online at www.psionlinestore.com

Guide to Business, Law and Project Management - North Carolina General Contractors Edition
Carpentry and Building Construction
Handbook of Rigging
American Electricians' Handbook
Construction Planning, Equipment, and Methods
The Ultimate Pool Maintenance Manual: Spas, Pools, Hot Tubs, Rockscapes and Other Water Features
Design and Control of Concrete Mixtures
Diseño y Control de Mezclas de Concreto
Pipe & Excavation Contracting
Modern Masonry - Brick, Block, Stone
Roofing Construction & Estimating
Lineman's and Cableman's Handbook
Modern Refrigeration and Air Conditioning
Modern Welding

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