North Carolina Department of Transportation
Division of Highways
Materials and Tests Unit – Field Operations Section
Summary of Certification Courses

GeoMaterials Training Courses

Course Name: **Aggregate Sampling (Roadway)**
Certificate: ABC Sampling Technician
Course Code: MAT 210
Length of Class: 4 hours
PDH Credits: 2 hours
Registration Fee: $100.00
Self-study Option Fee (renewal only): $25.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: None
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course instructs technicians and engineers in the proper sampling procedures for Roadway Acceptance (RA) for federally funded projects and Roadway Informational (RI) samples for state funded projects. Aggregate materials include ABC, CTBC, Stabilizer Aggregate, and Class IV Material. To maintain or renew this certification a self-study option is available for a fee of $25.00. When completing the self-study option, the technician is responsible for studying and preparing for the written examination.

Course Name: **Conventional Density**
Certificate: Conventional Density Technician
Course Code: MAT 230
Length of Class: 2 days
PDH Credits: 8.75 hours
Registration Fee: $200.00
Self-study Option Fee (renewal only): $25.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: None
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course instructs technicians and engineers in the proper conventional density acceptance testing procedures for acceptance of embankment, subgrade, chemically stabilized subgrade, etc. To maintain or renew this certification a self-study option is available for a fee of $25.00. When completing the self-study option, the technician is responsible for studying and preparing for the written examination.
Independent Assurance (IA) Requirements:

Course Name: **Borrow Pit Sampling**
Certificate: Borrow Pit Sampling Technician
Course Code: MAT 410
Total Length of Class: 4 hours
PDH Credits: 2.5 hours
Registration Fee: $100.00
Self-study Option Fee (renewal only): $25.00
Retest Fee (retake due to failure): $50.00
Pre-requisites: None
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper procedures for sampling a proposed borrow pit. To maintain or renew this certification a self-study option is available for a fee of $25.00. When completing the self-study option, the technician is responsible for studying and preparing for the written examination.

Course Name: **Chemical Stabilization - Subgrade/Base QA Field**
Certificate: QA Chemical Stabilization Technician
Course Code: GEO 156
Length of Class: 4 hours
PDH Credits: N/A
Registration Fee: $100.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Chemical Stabilization – Essentials (GEO 155)
Conventional Density (MAT 230)
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper sampling and testing procedures for acceptance of chemical stabilized subgrades/bases (i.e., lime or cement-treated). The certification applies only to CEI personnel working on a Design Build Project.

Course Name: **Nuclear Safety and Hazardous Materials** (NCDOT Personnel only)
Certificate: Nuclear Safety and Hazardous Materials Training
Course Code: MAT 250
Length of Class: 8 hours
PDH Credits: 5.5 hours
Registration Fee: N/A
Pre-requisites: None
Certification Length: Indefinite (must complete refresher training every 3 years if actively receiving film badge)
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in safety procedures, rules, and regulations regarding radioactive and hazardous materials. The course is for NCDOT employees only and is required by the Department's Radioactive Materials License. NCDOT personnel actively receiving a film badge must also complete refresher training every 3 years (USDOT requirement).

Course Name: **QMS Density Gauge (Asphalt)**
Certificate: QMS Density Gauge Technician
Course Code: MAT 380
Length of Class: 7 hours
PDH Credits: 6.0 hours
Registration Fee: $100.00
Self-study Option Fee (renewal only): $25.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: None
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course is a part of the QMS Program for asphalt and instructs technicians and engineers in performing nuclear or non-nuclear density acceptance testing for asphalt mixes. To maintain this certification a self-study option is available for a fee of $25.00. The technician is responsible for studying and preparing for the written examination. To operate a nuclear density gauge, the individual must also complete a Nuclear Safety and Hazardous Materials (MAT 250) class and demonstrate proficiency with handling, transporting, and operating a nuclear density gauge.

Course Name: **Nuclear Density Testing - Base, Select, and FDR Materials**
Certificate: ABC Nuclear Density Technician
Course Code: MAT 370
Length of Class: 6 hours
PDH Credits: 4.5 hours
Registration Fee: $100.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: None
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course is designed to instruct technicians and engineers in performing nuclear density acceptance testing for base (i.e., ABC or CTBC), select, or FDR materials. To operate a nuclear density gauge, the individual must also complete a Nuclear Safety and Hazardous Materials (MAT 250) class and demonstrate proficiency with handling, transporting, and operating a nuclear density gauge.

Concrete Training Courses

Course Name: **Concrete Field Technician**
Certificate: Concrete Testing Technician (Testing)
Course Code: MAT 100
Length of Class: 3 days
PDH Credits: N/A
Registration Fee: $500.00
Retest Fee (retake due to failure):
NCDOT Written Exam $250.00
ACI Written Exam $250.00
ACI Field Performance Exam $200.00
Pre-requisites: None (first time attendees should complete OJT training prior to attending)
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course instructs technicians and engineers in the procedures for performing field acceptance tests of concrete. The course has two parts:

- NCDOT session (covering DOT specification requirements)
- ACI Concrete Field Technician Grade 1 session.

The ACI session requires successful completion of two separate exams:

- ACI Field Performance Examination
- ACI Written Examination

Successful completion of both parts (NCDOT and ACI) is required to perform concrete acceptance testing/sampling for NCDOT projects. Students attending the course for the first time must complete the requirements on the OJT checklist form: Concrete Field Technician Certification PRE-REQUISITE MEMO and FORM For New Attendees Attached.pdf (ncdot.gov)
Refer to the *Concrete School Policies* posted on the Materials and Tests website for more information.

Course Name: **Concrete Batch Technician**
Certificate: Concrete Batch Technician (Batching)
Course Code: MAT 110
Length of Class: 2 days
PDH Credits: N/A
Registration Fee: $200.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Concrete Field Technician Class (MAT 100) (pre-requisites not required for re-certification)
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper procedures for batching concrete. Successful completion of the Concrete Field Technician course (MAT 100) is a pre-requisite to attend. Refer to the *Concrete School Policies* posted on the Materials and Tests website for more information.

Course Name: **Volumetric Concrete Batch Technician**
Certificate: Volumetric Concrete Batch Technician
Course Code: MAT 110V
Length of Class: 1 day
PDH Credits: N/A
Registration Fee: $150.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Concrete Field Technician Class (MAT 100) or
Concrete Batch Technician (MAT 110)
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in proper procedures for Volumetric Concrete mobile mixer calibration, verification, operation. Successful completion of the Concrete Field Technician course (MAT 100) or Concrete Batch Technician (MAT 110) is a pre-requisite to attend. Refer to the *Concrete School Policies* posted on the Materials and Tests website for more information.

Course Name: **Portland Cement Concrete Pavement (PCCP)**
Certificate: Portland Cement Concrete Pavement Technician
Course Code: MAT 130
Length of Class: 2 days
PDH Credits: N/A
Registration Fee: $200.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Concrete Field Technician Class (MAT 100)
Certification Length: 5 years

Course Description: This course instructs technicians and engineers in the proper procedures to perform inspection and acceptance of concrete pavement operations. Successful completion of the Concrete Field Technician course is a pre-requisite to attend. Refer to the *Concrete School Policies* posted on the Materials and Tests website for more information. These courses are scheduled when projects utilize concrete pavement and requested by the Construction Unit. To request a PCCP course contact the local Materials and Tests Section Materials Specialist.

Course Name: **Portland Cement Concrete Pavement (PCCP)**
Certificate: Portland Cement Concrete Pavement Field Technician
Course Code: MAT 131
Length of Class: Field Certification on project site
Registration Fee: N/A
Retest Fee (retake due to failure): N/A
Pre-requisites: Concrete Field Technician Class (MAT 100)
Portland Cement Concrete Pavement Class (MAT 130)
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This field certification confirms technicians and engineers possess proficiency in molding concrete beams and performing the flexural strength test. Successful completion of the Concrete Field Technician course (MAT 100) and Portland Cement Concrete Pavement (MAT 130) is a pre-requisite to complete the field certification. Refer to the *Concrete School Policies* posted on the Materials and Tests website for more information. These field certifications are scheduled when projects utilize concrete pavement and requested by the Construction Unit. To request a field certification, contact the local Materials and Tests Section Materials Specialist.

Course Name: **Concrete Mix Design**
Certificate: Concrete Mix Design Technician
Course Code: MAT 120
Length of Class: 3 days
PDH Credits: N/A
Registration Fee: $150.00
Retest Fee (retake due to failure) $50.00
Pre-requisites (for initial certification): ACI Concrete Field-Testing Technician – Grade 1
Concrete Batch Certification (MAT 110)
(pre-requisites not required for re-certification)
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper procedures for the design and submittal of concrete mix designs that meet NCDOT Standard Specifications. Successful completion of the Concrete Batch course and ACI Concrete Field-Testing Technician course within the previous 5 years is a pre-requisite to attend. Refer to the *Concrete School Policies* posted on the Materials and Tests website for more information.

Course Name: ACI **Concrete Strength Testing**
Certificate: ACI Concrete Strength Testing Technician
Course Code: MAT 150
Length of Class: 2 days
PDH Credits: N/A
Registration Fee: $200.00
Retest Fee (retake due to failure) $100.00
Pre-requisites (for initial certification): None
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper procedures for performing strength testing of concrete cylinders based on the ACI certification standards.

Aggregate Sampling and Testing Courses (QC/QA Aggregate Sampling and Testing Program)

Course Name: **QC/QA Aggregate Sampling**
Course Code: MAT 400
Length of Class: 1 day
PDH Credits: N/A
Registration Fee: $100.00
Retest Fee (retake due to failure): $50.00
Pre-requisites: None
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course is part of the Aggregate QC/QA Program and instructs technicians and engineers in obtaining coarse and fine aggregate samples at quarries, sales yards, or other stockpiled aggregate locations.

Course Name: **QC/QA Aggregate Testing**
Course Code: MAT 405
Length of Class: 1 day
PDH Credits: N/A
Registration Fee: $100.00
Retest Fee (retake due to failure): $50.00
Pre-requisites: QC/QA Aggregate Sampling Certification and completion of a field evaluation by a representative from the Geomaterials Laboratory
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course is part of the Aggregate QC/QA Program and instructs technicians and engineers in performing acceptance tests on coarse and fine aggregate. Students are required to complete an on-site field evaluation demonstrating proficiency in aggregate testing techniques and hold a valid Aggregate QC/QA Sampling certification to obtain this Aggregate QC/QA Testing certification.

Asphalt Courses (QMS Program)

Course Name: **Introduction to Asphalt** (offered online through Stanly Community College)
Course Code: CON-250
Length of Class: 12 hours (online)
PDH Credits: N/A
Registration Fee: $100.50
Pre-requisites: N/A
Certification Length: Indefinite
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course introduces technicians and engineers to asphalt paving practices and materials and is a pre-requisite for other asphalt training courses. Stanly Community College continuing education program offers this course online and additional information is provided at Introduction to Asphalt | Stanly Community College - North Carolina
Additional information is also provided either on the Materials and Tests website or in the latest edition of the Asphalt QMS Manual.

Course Name: **QMS Roadway Technician**
Course Code: MAT 535
Length of Class: 2 days
PDH Credits: 6.0 hours
Registration Fee: $250.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Introduction to Asphalt Course
Additional Training: Complete and submit QMS Roadway OJT packet 10 Day OJT Checklist Full Packet.pdf (ncdot.gov) (first time attendees only)
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper procedures for monitoring and inspecting asphalt pavement operations. Successful completion of the OJT checklist packet is required to attend the course for the first time. Visit the Materials and Tests website or review the latest edition of the Asphalt QMS Manual for additional information

Course Name: **QMS Roadway Technician** (offered online through Stanly Community College)
Course Code: MAT 535-T
Length of Class: 12 hours (online)
PDH Credits: N/A
Registration Fee: $250.50
Retest Fee (retake due to failure) $50.00
Pre-requisites: Introduction to Asphalt Course
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course is conducted online through Stanly Community College and is designed to instruct technicians and engineers in the proper procedures for monitoring and inspecting asphalt pavement operations. Additional information is provided at Stanly Community College website QMS Roadway Technician | Stanly Community College - North Carolina. This online option is only available for personnel needing to renew their QMS Roadway Technician certification (not an option for first time attendees). Visit the Materials and Tests website or review the latest edition of the Asphalt QMS Manual for additional information.

Course Name: **QMS Level I Plant Technician**
Course Code: MAT 525
Length of Class: 2 days
PDH Credits: 7.0 hours
Registration Fee: $250.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Introduction to Asphalt Course
Additional Training: Complete and submit QMS Level I OJT packet QMS Plant Level 1 Tech OJT Full Packet.pdf (ncdot.gov) (first time attendees only)
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course instructs technicians and engineers in the proper procedures for asphalt production, sampling, and testing for compliance with the NCDOT Standard Specifications and the QMS program. Successful completion of the OJT checklist packet is required to attend the course for the first time. Visit the Materials and Tests website or review the latest edition of the Asphalt QMS Manual for additional information.

Course Name: **QMS Level II Plant Technician**
Course Code: MAT 530
Length of Class: 2 days
PDH Credits: 7.0 hours
Registration Fee: $250.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: Minimum of one year with a valid QMS Level I Technician
Additional Training (recommended): Completion of an approved Mix Design Course (offered by Trimat, NCSU, Clemson, etc.)
Certification Length: 5 years
Independent Assurance (IA) Requirements:

- Completion of annual IA Field Assessment for active field technicians or…
- Completion of training class
- IA split sample

Course Description: This course instructs technicians and engineers in the proper procedures for making mix adjustment and asphalt mix problem. Visit the Materials and Tests website or review the latest edition of the Asphalt QMS Manual for additional information.

Course Name: **QMS Asphalt Mix Design Technician**
Course Code: MAT 580
Length of Class: 1.5 days
PDH Credits: N/A
Registration Fee: $250.00
Retest Fee (retake due to failure) $50.00
Pre-requisites: QMS Level I or Level II Technician or completion of Level I OJT and enrollment in a Level I class, or equivalent experience as determined by the Asphalt Mix Design Engineer
Additional Training (recommended): Completion of an approved Mix Design Course (offered by Trimat, NCSU, Clemson, NCAT, etc.)
Completion of Aggregate Consensus Properties Checklist
Certification Length: 5 years
Independent Assurance (IA) Requirements: No IA required.

Course Description: This course instructs technicians and engineers in the proper procedures for making mix adjustments and solving asphalt mix problems. Visit the Materials and Tests website or review the latest edition of the Asphalt QMS Manual for additional information.

Bridge Coatings and Welding Certifications

Course Name: **Bridge Coating Inspection – Level I**
Course Code: MAT 800
Length of Class: 2 days
PDH Credits: 10 hours
Registration Fee: $150.00
Retest Fee (retake due to failure): N/A
Pre-requisites: None
Priority: Department personnel then CEI firms with a current contract to perform field coating inspections
Certification Length: 3 years

Course Description: This course prepares Project Engineers and Inspectors for field coatings inspection projects on North Carolina bridges. The course highlights the requirements of the NCDOT *Standards Specifications* and applicable Project Special Provisions.

Course Name: **Field Welding Inspection**
Course Code: MAT 700
Length of Class: 1 day
PDH Credits: 5.25 hours
Registration Fee: $50.00
Retest Fee (retake due to failure): N/A
Pre-requisites: None
Certification Length: 3 years

Course Description: This course familiarizes project personnel with NCDOT and American Welding Society (AWS) specifications that pertain to field welding on bridges and other structures and assemblies.

Course Name: **Field Welder Certification Program**
Course Code: N/A
Length of Class: 4 hours
PDH Credits: N/A
Registration Fee: Refer to program manual
Retest Fee (retake due to failure): Refer to program manual
Pre-requisites: None
Certification Length: 5 years

Course Description: This program is maintained to ensure qualified personnel are performing the welding operations on NCDOT projects and applies to all welding whether temporary or permanent. Refer to the program manual provided on the Materials and Tests website for more information NCDOT Field Welder Test Program.pdf