



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

NICHOLAS J. TENNYSON
SECRETARY

September 23, 2015

Memo

To: Division Engineers

From: Chris Peoples, P.E.
State Materials Engineer

A handwritten signature in black ink, appearing to read "Chris Peoples", written over the printed name.

Subject: New Training Class: Nuclear Density Testing – Base, Select and FDR
Materials (MAT 370)

In order to improve training and certification efficiency we will be offering a new training class beginning in 2016. Nuclear Density Testing – Base, Select and FDR Materials (MAT 370) is designed to train personnel in the proper procedures for performing nuclear density acceptance testing for base materials (i.e. ABC and CTBC), Select Materials, and Full Depth Reclamation (FDR).

We felt this type of class will be the most effective method to address the following:

- CEI personnel needing extensive training in NCDOT testing procedures
- Development of new construction methods such as FDR operations
- Improve consistency and reduce confusion
- Utilize training staff in a more efficient manner

Technicians with an ABC Nuclear Density Certification expiring in 2016 or individuals that do not have a valid ABC Nuclear Density Certification must complete this course prior to completing a Field Certification/Assessment in order to perform density acceptance testing on base, select or FDR materials. To successfully complete this class, a student must attend the lecture and complete an open book written examination with a minimum passing score of 80. Students will be given one hour to complete the exam portion.

The classes will be held regionally across the state and a schedule of classes will be sent out this fall for the 2016 calendar year. A copy of a general description and class agenda has been attached. Should you have any additional questions please contact Mehdi Haeri or Jim Sawyer at 919-329-4150.

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cc: Mr. Greg Perfetti, PE
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Mr. Jack Cowsert, PE
Mr. Randy Pace, PE
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**North Carolina Department of Transportation
Materials and Tests Unit – GeoMaterials Laboratory**

Course Description

Course Name: Nuclear Density Testing Base, Select, and FDR Materials

Course Code: MAT 370

Total Length of Class: 6 hours

PDH: 4.5 hours

Registration Fee: \$50.00

Certification Length: 5 years

General 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. After completing the class the individual will be entered in HiCAMs with a "Pending" status. In order to obtain an "Active" status the individual must be Field Certified by a Technical Trainer from the GeoMaterials Laboratory.

As required by the Department's Radioactive Materials License all DOT personnel must have successfully completed the Nuclear Safety and Hazardous Materials class prior to ordering a personal dosimetry (film badge). A film badge is required while transporting, operating, or handling a nuclear density gauge. When scheduling a nuclear density field certification please allow two weeks for ordering and delivery of a film badge for the employee. During the field certification process for Department personnel the Technical Trainer will review testing procedures and nuclear safety procedures stated in Department's radioactive materials license. This process will include observation of testing procedures and handling of a nuclear gauge to ensure compliance with rules and regulations.

Consultant Engineering Firms must follow rules and regulations stated in their specific radioactive materials license. During the field certification process for consultants the Technical Trainer will review and observe testing procedures required by the Department but will not review nuclear gauge safety procedures.

Course Agenda

Introduction.....	8:00 – 8:05 (5 min)
Ethics / Falsification.....	8:05 – 8:15 (10 min)
General Requirements.....	8:15 – 8:25 (10 min)
Target Density Methods.....	8:25 – 9:25 (1 hr)
Nuclear Density Measurements	
Gauge Parameter Setup.....	9:25 – 9:35 (10 min)
Break.....	9:35 – 9:45 (10 min)
Test Procedures.....	9:45 – 10:15 (30 min)
Review.....	10:15 – 10:45 (30 min)
Full Depth Reclamation (FDR)	
Overview of FDR.....	10:45 – 10:55 (10 min)
FDR Operations.....	10:55 – 11:00 (5 min)
Break.....	11:00 – 11:10 (10 min)
FDR Oversight.....	11:10 – 11:15 (5 min)
Lessons Learned.....	11:15 – 11:20 (5 min)
Acceptance Sampling & Testing.....	11:20 – 11:45 (25 min)
Maintenance of Nuclear Gauge.....	11:45 – 11:50 (5 min)
Break (for Lunch).....	11:50 – 12:50 (1 hr)
Question and Answer.....	12:50 – 1:00 (10 min)
Examination.....	1:00 – 2:00 (1 hr)