

# Certifications Offered and Class Description NDDOT Technician Certification Program

October 28, 2013

---

## **Class Descriptions**

### **Introduction to Asphalt**

This is an introductory class that covers basic information on liquid asphalt, asphalt mix and aggregates. It is taught entirely in a classroom. *This class is optional.* This class is recommended for individuals with little to no experience with materials testing or working on construction projects. An open-book, self-graded exam is given. (8 hours)

### **Asphalt Pavement Inspection**

This is an asphalt pavement inspection class for the contractor's paving staff as well as individuals working for the "Engineer" performing inspection duties. The class is taught entirely in the classroom and covers subjects such as asphalt plants, pavers, roller types and operations, specification requirements, and agency and industry roles and responsibilities, plus an overview of project documentation and diaries.

For individuals working on the "Engineer" side please be aware that this class is not intended to provide instruction on general inspection but rather what is unique on an asphalt paving project. A written examination is offered at the completion of the class.

This is the only class required to obtain Asphalt Inspection certification as required by the QC/QA program. If you do not have working experience in construction, it is recommended that you also attend the Introduction to Asphalt class. This class is a prerequisite for certification as an Asphalt Mix Controller. (24 hours)

## **Aggregate Tester and Asphalt Mix Tester**

Classes are held at a local hotel/conference center with portions of the class held at the NDDOT Materials and Research office.

The format or length can vary slightly but all Aggregate Testing and Asphalt Mix Testing classes include the tests, procedures and forms commonly used. The classes are intended for individuals that have prior testing experience and plan to work in the role as a QC/QA field tester for aggregate and asphalt paving projects. Math skills are needed.

### **Aggregate Testing**

This class is intended for the individual requesting certification as an Aggregate Tester. All tests and procedures included in our aggregate certification are included. Options are given to students for which tests they request certification.

Presentation on tests and specifications, video demonstration of tests and procedures, laboratory demonstration and the associated worksheets and forms are included. A written exam and performance exam is offered. (16 to 20 hours) Class size is limited.

# Certifications Offered and Class Description NDDOT Technician Certification Program

October 28, 2013

---

*An Aggregate Testing class is a pre-requisite to the Asphalt Mix Testing for Testers class if certification as a tester is desired.*

*Classes listed as Aggregate Testing (only) will provide a slightly slower pace and allow more time for demonstration, practice and worksheets calculations. Individuals attending an Aggregate (only) class are often those that have little to no testing experience or that may work for an aggregate producer.*

## **Asphalt Mix Testing**

This class is intended for individuals requesting certification as an Asphalt Mix Tester that also plan to work in a field lab. This class includes presentation on the test methods and test procedures ran on the asphalt mix during production and how to compare results to the project test targets or ranges.

The class includes video demonstration, discussion, and laboratory demonstration. A written and performance examination is offered at the completion of the class. (16 hours) Class size is limited.

***It is highly recommended that anyone attending aggregate testing and asphalt mix testing classes and requesting certification at the completion of the class, have prior materials testing experience.***

A performance exam is offered at the completion of class; however, if you are not familiar with test procedures, we recommend that you allow yourself time to practice the tests and procedures before attempting to complete the performance exam. The performance exam may be completed by appointment, at a later date.

## **Aggregate and Asphalt Mix Testing – for Mix Controllers**

Completing an Aggregate and Asphalt Mix Testing class is a prerequisite for the Asphalt Mix Controller class. This class is not a tester certification class but is offered because some individuals in the role of Asphalt Mix Controller do not perform the tests or procedures themselves but need to have an understanding of the testing process.

The class is taught entirely in the classroom. A video demonstration of all aggregate and asphalt tests and procedures and the associated worksheets is included. (24 hours)

***Please note:*** *Individuals attending this or any of the asphalt or aggregate classes has the option of requesting certification as an Aggregate Sampling Technician.*

# Certifications Offered and Class Description NDDOT Technician Certification Program

October 28, 2013

---

## **Asphalt Mix Controller**

This class is taught entirely in the classroom and covers a number of topics including blending aggregates as part of creating asphalt mix designs, creating asphalt mix designs to meet the desired characteristics, understanding field test data and quality control graphs. Other topics include evaluating trends of the production mix and recognizing and understanding asphalt mix quality during the paving process. A higher level of math skills is necessary. A large part of the class involves calculations and algebraic style equations.

The responsibilities of an Asphalt Mix Controller in the field can vary depending on whether the person works for the contractor or for the Engineer. This class will provide an overview of the roles of both the contractor's employee as well the individual working in the role for the Engineer.

***Please note: It is strongly suggested that anyone that attends this class have field experience, a thorough understanding of the principles of asphalt paving and math skills.***

A written examination is offered at the completion of the class. (28 hours)

## **Certification Renewal**

Certification renewal classes are required every five years after certification is achieved.

**Asphalt Pavement Inspection Certification Renewal** -This is a 6 hour class for certification renewal for Asphalt Pavement Inspectors. The class will include specification updates, address any common field issues and provide information on new practices or trends in asphalt paving. A written exam is offered at the completion of the class.

**Aggregate and Asphalt Certification Renewal** - This is an 8-hour certification renewal class that covers the requirements for Aggregate Testers, Asphalt Mix Testers and Asphalt Mix Controllers. The class will provide an overview of tests and common testing errors. *(It will not provide a complete review of every test.)* Specification changes or any common field issues will be included. An update on new practices or trends will be included. A written exam is offered at the completion of the class.

***Please note: If you wish to renew your "Tester" certification it is expected that you have been recently testing.***

Individuals that are certified as "Testers" are also required to complete the hands-on performance exam that demonstrates your ability to run all tests you are renewing certification. This is in addition to attending the classroom portion. Performance exams are scheduled by appointment.

# Certifications Offered and Class Description NDDOT Technician Certification Program

October 28, 2013

---

## **Certifications Offered and which Classes are Needed**

### **Five Year Certifications**

**Asphalt Pavement Inspector (API)** - requires successful completion of the Asphalt Pavement Inspection class. (Required for QC/QA Asphalt Paving)

**Asphalt Mix Controller (AMC)** - requires successful completion of three classes; Asphalt Pavement Inspection, Asphalt Mix Controller and Aggregate and Asphalt Mix Testing for Mix Controllers\*. (Required for QC/QA Asphalt Paving)

*\*Please note that if your goal is for certification as Aggregate Tester, Asphalt Mix Tester and Asphalt Mix Controller you should attend a testing class that offers a performance exam and certification rather than the classroom-only version of the class.*

*Also if your goal is to obtain a general understanding of aggregate and asphalt testing, but you do not plan to run the tests yourself, then the three-day Aggregate and Asphalt Testing for Mix Controller class will provide that information. You will be able to request the Aggregate Sampler certification after the three-day class.*

**Aggregate Tester** - requires successful completion of an Aggregate Testing class and performance exam of each test or procedure. There are four choices for aggregate tester certification. Aggregate Field Lab or Aggregate Designer is required for an individual responsible for working in a construction field lab on a QC/QA asphalt paving project. Aggregate Field/Gradation and Aggregate Sampler certifications are also offered.

Aggregate testers may work on an asphalt paving project or any project that requires aggregate testing.

**Asphalt Mix Tester** - requires successful completion of Aggregate Testing and Asphalt Mix Testing classes, plus a performance exam of each test or procedure. This certification is required for an individual responsible for working in a construction field lab on a QC/QA asphalt paving project.

**Aggregate Sampling Technician** – requires attending any one of the aggregate or asphalt classes offered, reviewing the test procedures and associated instructional videos and completing a separate written and performance exam.

# Certifications Offered and Class Description NDDOT Technician Certification Program

October 28, 2013

---

## **Concrete and Soil Certifications**

**Soils Field Tester** - requires successful completion of the Soils testing class which includes a performance exam of each procedure.

**Concrete** – American Concrete Institute Field Testing Technician – Grade 1 is equivalent to Concrete Field Tester certification. When the class schedule is posted it will be available at this web site: <http://www.ndconcrete.com/>

## **One-Year Certifications**

Many of the individual test methods and tests are available as a one-year certification. This level of certification is intended for new or temporary employees. It is not a substitution for the 5-year certification required to run a QC/QA field lab on an asphalt paving project.

## **Tests Required for Certifications**

### **Aggregate Sampling Technician (*new in 2013*)**

- T 2 - Sampling of Aggregates
- T 248 - Reducing Samples of Aggregate to Testing Size

### **Aggregate Field/Gradations**

- T 2 - Sampling of Aggregates
- T 11 - Materials Finer Than No. 200 Sieve in Mineral Aggregate
- T 27 - Sieve Analysis of Fine and Coarse Aggregate
- T 248 - Reducing Samples of Aggregate to Testing Size
- T 255 - Total Moisture Content of Aggregate

### **Aggregate Field Lab (*minimum needed for QC/QA field lab*)**

- T 2 - Sampling of Aggregates
- T 11 - Materials Finer Than No. 200 Sieve in Mineral Aggregate
- T 27 - Sieve Analysis of Fine and Coarse Aggregate
- T 248 - Reducing Samples of Aggregate to Testing Size
- T 255 - Total Moisture Content of Aggregate
- T 113 - Lightweight Pieces in Aggregate
- T 176 - Sand Equivalent Test
- T 304 - Fine Aggregate Angularity
- ASTM D 4791 - Flat or Elongated Particles in Coarse Aggregate
- NDDOT 4 - Fractured Particles in Coarse Aggregate

Certifications Offered and Class Description  
NDDOT Technician Certification Program

October 28, 2013

---

**Aggregate (Mix) Designer**

T 2 - Sampling of Aggregates  
T 11 - Materials Finer Than No. 200 Sieve in Mineral Aggregate  
T 27 - Sieve Analysis of Fine and Coarse Aggregate  
T 248 - Reducing Samples of Aggregate to Testing Size  
T 255 - Total Moisture Content of Aggregate  
T 113 - Lightweight Pieces in Aggregate  
T 176 - Sand Equivalent Test  
T 304 - Fine Aggregate Angularity  
ASTM D 4791 - Flat or Elongated Particles in Coarse Aggregate  
NDDOT 4 - Fractured Particles in Coarse Aggregate  
T 84 - Specific Gravity and Absorption of Fine Aggregate  
T 85 - Specific Gravity and Absorption of Coarse Aggregate  
T 89 - Determining the Liquid Limit of Soils  
T 90 - Determining the Plastic Limit and Plasticity Index of Soils  
NDDOT 3 - Shale, Hard Iron Oxide

**Asphalt Mix Tester (needed for QC/QA field lab)**

T 245 - Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus  
T 166 - Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens, Method A  
T 209 - Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures  
T 312 - Preparing and Determining Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor  
NDDOT 5 - Sampling and Splitting Field Verification Hot Mix Asphalt (HMA) Samples

The tests and procedures are available in the Field Sampling and Testing Manual.

The manual is available at: <http://www.dot.nd.gov/divisions/materials/testingmanual.htm>

# Certifications Offered and Class Description NDDOT Technician Certification Program

October 28, 2013

---

## Other Classes Offered

### **Soils Field Tester**

This class will cover the six soils tests and procedures commonly ran in the field. Also included are worksheets or forms for recording test data. This class is intended for individuals with the goal of becoming a certified Field Soil Tester.

A written exam and hands-on performance exam are offered at the end of the class. Successful completion of this class will result in a 5-year certification as a Soils Field Tester. (14 hours\*)

### **Soils Field Tester**

T 99 & 180 - Moisture-Density Relations of Soils

T 191 - Density In-Place by the Sand Cone Method

T 217 - Determination of Moisture in Soil by Means of Calcium Carbide Gas Pressure Moisture Tester (Speedy)

T 265 - Laboratory Determination of Moisture Content of Soils

ASTM D 2167 - Density of Soil in Place by the Rubber-Balloon Method

ASM D 4643 - Microwave Method of Drying Soils