Each discipline includes a battery of industry standards which is determined by the HCMTP in cooperation with the Oklahoma Department of Transportation (ODOT) Technical Advisory Committee. A list of the standards required for each discipline can be found at oktechcert.org~~/Brochure.htm.~~ These requirements are periodically reviewed to assess the need for additions, deletions, or changes in nomenclature or relevance.

Certifications are categorized according to discipline. As of FY 2023 the disciplines are:

Aggregates – Key Elements

This module is designed to equip technicians with the knowledge and skills required to perform critical tests on aggregate materials used in construction projects across Oklahoma. Participants will learn to conduct standard procedures such as sieve analysis to determine particle size distribution, fracture testing to assess aggregate durability, and sand equivalency testing to evaluate the cleanliness and quality of fine aggregates.

In addition to these core tests, the module covers other responsibilities and procedures required by current state and project specifications for aggregate materials. Emphasis is placed on understanding material properties, proper documentation, and compliance with quality control standards.

The course also features hands-on training using AASHTO sampling and testing procedures, giving students practical experience with field and laboratory equipment, sample preparation, and data interpretation. This training ensures technicians are fully prepared to perform aggregate testing accurately and in compliance with regulatory and industry standards.

1. AASHTO R 90
Sampling Aggregate Products (Fine and Coarse Aggregates)

2. AASHTO R 76
Reducing Field Samples of Aggregate to Testing Size (Fine and Coarse Aggregates)

3. AASHTO T 255
Total Moisture Content of Aggregate by Drying (Fine and Coarse Aggregates)

4. AASHTO T 11
Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing

5. AASHTO T 27
Sieve Analysis of Fine and Coarse Aggregates

Asphalt Materials – Key Elements

This advanced module provides an in-depth discussion of aggregate production, testing procedures, and methods for combining aggregates to meet project specifications. It covers all relevant Quality Control/Quality Assurance (QC/QA) testing standards, including AASHTO and Oklahoma Department of Transportation (ODOT) procedures. Specialized methods such as Superpave mix design and Texas gyratory compaction are also included.

Students will gain practical knowledge of how aggregate blends are formulated to achieve target gradations and performance characteristics required for asphalt and concrete applications. Emphasis is placed on understanding material variability, compliance with specifications, and proper sampling techniques.

Completion of the Aggregates module is strongly recommended before enrolling, as it provides the foundational knowledge necessary for success in this course.

With the exception of Construction Inspector Training classes, all training modules are specifically designed to prepare students for certification. Hands-on experience is a critical component of technician training; therefore, students will have the opportunity to practice each procedure using the actual equipment and supplies required by the applicable standards. Whenever possible, activities are conducted under conditions that closely replicate real-world field or laboratory environments to ensure readiness for certification and job performance.

1. OHD L-65
Sampling Asphalt Mixtures

2. AASHTO R 47
Reducing Samples of Hot Mix Asphalt to Testing Size Using a Mechanical Splitter

3. OHD L-5
Testing Liquid Asphalt Cement (AC)

4. OHD L-26 (Part 1 & 2)
Ignition Oven Method

5. AASHTO T 209
Maximum Specific Gravity of Bituminous Paving Mixtures (Rice Test)

6. AASHTO T 30
Mechanical Analysis of Extracted Aggregate

7. AASHTO T 176 (Parts 1 & 2)
Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

8. OHD L-14 / AASHTO T 166
Bulk Specific Gravity of Compacted Asphalt Mixtures

9. OHD L-14 Method 2
In-Place Density Using Nuclear Gauge (Nuc Gage)

10. OHD L-45
Specific Gravity and Unit Weight Using Vacuum Sealing Method

11. AASHTO T 312
Superpave Gyratory Compactor

12. ASTM D 8225
IDEAL-CT (Cracking Tolerance Index)

Concrete Materials (Includes ACI Extension) – Key Elements

This module provides comprehensive coverage of Portland Cement Concrete (PCC) as it relates to both paving and structural construction projects. Topics include all critical phases of concrete handling, such as production, transportation, placing, curing, and field/laboratory testing to ensure material performance and compliance with specifications.

Students will explore the fundamentals of concrete **mix design**, including the selection and proportioning of materials to achieve desired strength, durability, and workability. The course also addresses the role of **admixtures**, **cement fineness**, **batching methods**, and techniques for making **trial mix adjustments** to optimize concrete performance under varying jobsite conditions.

A major focus is placed on AASHTO procedures for sampling and testing fresh and hardened concrete, ensuring students are fully prepared to conduct quality control and quality assurance testing in the field. Hands-on training with industry-standard equipment allows students to practice sampling, slump testing, air content measurement, temperature checks, unit weight determination, and strength testing procedures. This practical experience is essential for certification and successful application in real-world concrete construction environments.

1. AASHTO R 60
Sampling Freshly Mixed Concrete

2. AASHTO T 309
Temperature of Freshly Mixed Hydraulic-Cement Concrete

3. AASHTO T 119
Slump of Hydraulic Cement Concrete

4. AASHTO R 100
Making and Curing Concrete Test Specimens in the Field

5. AASHTO T 121
Density (Unit Weight), Yield, and Air Content of Fresh Concrete

6. AASHTO T 152
Air Content of Freshly Mixed Concrete by the Pressure Method

7. AASHTO T 196
Air Content of Freshly Mixed Concrete by the Volumetric Method

8. AASHTO T 22
Compressive Strength of Cylindrical Concrete Specimens

9. Type B Air Meter Calibration

Materials Sampling & Testing – Key Elements

This comprehensive course is specifically designed for construction inspectors seeking to earn their Materials Sampling & Testing certification. It provides in-depth instruction and hands-on training in the proper procedures for sampling and testing construction materials, with a primary focus on concrete.

The curriculum thoroughly covers all tests outlined in the Concrete Materials section, ensuring that students are well-versed in industry-standard practices. In addition, the course includes training in Random Sampling techniques and key AASHTO (American Association of State Highway and Transportation Officials) procedures, including R 90 (Sampling of PCC), R 67 (Sampling Bituminous Materials), R 97 (Sampling Aggregate Products), and T 310 (In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods).

Students will also become familiar with the Oklahoma Department of Transportation (OHD) testing standards, including OHD L 5 (Sampling Fresh Concrete) and OHD L 14, Method II (Sampling and Testing Aggregates). By the end of the course, participants will be prepared to confidently perform required tests in the field and meet the certification requirements for materials sampling and testing.

With the exception of the Construction Inspector Training classes, training modules focus on preparing students for certification. It is essential for new technicians to gain hands-on experience with the equipment and supplies needed for each standard. Each student should have opportunities to practice procedures under conditions that closely simulate field or laboratory environments, as practically possible in an educational setting.

1. AASHTO R 90
Sampling Aggregates

2. AASHTO R 60
Sampling Freshly Mixed Concrete

3. OHD L-65
Sampling Asphalt Mixtures

4. AASHTO T 310
In-Place Density and Moisture of Soils by Nuclear Methods

5. OHD L-5
Sampling Liquid Asphalt (AC)

6. OHD L-14 (Asphalt)
Nuclear Density of Asphalt Pavement

7. AASHTO T 152
Air Content of Fresh Concrete by Pressure Method

8. **Pressure Meter Calibration

9. AASHTO T 196
Air Content by Volumetric Method (Roll-a-Meter)

10. AASHTO T 119
Slump of Hydraulic Cement Concrete

11. AASHTO R 100
Making and Curing Concrete Cylinders in the Field

12. AASHTO T 309
Temperature of Fresh Concrete

13. AASHTO T 121
Unit Weight (Density), Yield, and Air Content of Concrete

14. AASHTO T 22
Compressive Strength of Cylindrical Concrete Specimens

<u>Profilograph Operator – Smoothness Testing Equipment</u>

A two-day class instructing students in the proper assembly, operation, and maintenance of contemporary smoothness testing equipment. Covers specifications, ODOT special provisions, and interpretation of test results.

Technicians must demonstrate proficiency in the following key areas related to operating the profilograph (or other smoothness testing devices):

1. Machine Assembly

2. Entering Settings

3. Vertical Verification

4. Bounce Test

5. Horizontal Calibration

6. Speed and Line Control

7. Data Exporting

Soils Mechanics – Key Elements

This module introduces the fundamental soil tests commonly used in earthwork construction quality control programs. It emphasizes the importance of soil characterization and proper testing techniques in ensuring the stability and performance of soil-based structures.

Key topics include compaction quality control procedures, which are essential for achieving the required soil density and strength, as well as methods for soil modification to improve workability and engineering properties. The course also covers detailed instruction in standard laboratory and field test procedures, including:

- **Atterberg Limits** (Liquid Limit, Plastic Limit, and Plasticity Index) for evaluating soil consistency and classification
- **Compaction testing** using Proctor methods to determine optimal moisture content and maximum dry density
- **Relative density** testing for cohesionless soils
- **In-place density methods**, including sand cone and nuclear gauge testing, to assess compaction in the field

Students will gain both theoretical knowledge and hands-on experience with the equipment and procedures required for each test, preparing them for certification and effective performance in soil quality control roles.

1. AASHTO T 87
Dry Preparation of Disturbed Soils and Soil-Aggregate Samples for Test

2. AASHTO T 88
Particle Size Analysis of Soils

3. AASHTO T 89
Determining the Liquid Limit of Soils

4. AASHTO T 90
Determining the Plastic Limit and Plasticity Index of Soils

5. ASTM D1140
Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing

6. AASHTO T 99
Moisture–Density Relations of Soils Using a 2.5 kg (5.5 lb) Rammer and a 305 mm (12 in) Drop (Standard Proctor Test)

7. AASHTO T 224
Correction for Coarse Particles in the Soil Compaction Test

8. AASHTO T 85
Specific Gravity and Absorption of Coarse Aggregate

9. AASHTO T 310
In-Place Density and Moisture of Soil and Soil–Aggregate by Nuclear Methods (Shallow Depth)

10. AASHTO T 272
Family of Curves – One Point Method

11. AASHTO M 145
Classification of Soils and Soil–Aggregate Mixtures for Highway Construction Purposes

Construction Inspector Training (No certifications for these discipline.)

To ensure our technicians are fully prepared to meet industry standards, hands-on training is essential. While the Construction Inspector Training classes lay the foundation, it is the practical experience with equipment and supplies that truly solidifies their skills. Providing each student with opportunities to practice procedures in conditions that closely mimic real-world field or laboratory environments will empower them to perform confidently and competently in their roles.

- **ACIT Asphalt Construction Inspector Training**
- **AMD1 Asphalt Mix Design Level 1**
    1. **AASHTO T 84 – Specific Gravity and Absorption of Fine Aggregate**
    2. **AASHTO T 85 – Specific Gravity and Absorption of Coarse Aggregate**
    3. **AASHTO T 304 – Uncompacted Void Content of Fine Aggregate (Fine Aggregate Angularity)**
    4. **ASTM D 4791 – Flat, Elongated, or Flat and Elongated Particles in Coarse Aggregate**
    5. **OHD L-18 – Determining Fractured Faces of Coarse Aggregate**
    6. **AASHTO T 283 – Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage (Moisture Susceptibility)**
    7. **OHD L-44 – Permeability of Asphalt Mixtures**
- **AMD2 Asphalt Mix Design Level 2**
- **BCIT Bridge Construction Training**
- **EWIC Earthwork Inspector Course**
- **PCCP Portland Cement Concrete Pavement**