

Missouri Certifications

All certification are for FIVE YEARS.

Aggregate Technician

The Aggregate Technician certification is abbreviated as **AT**: This certificate covers field and laboratory work, and includes sampling aggregates, reducing sample to testing size, washing of materials finer than 200 sieve, sieve analysis of fine and coarse aggregates, moisture content of aggregates, MoDOT method for deleterious content of aggregates, and flat and elongated particles in coarse aggregates. Aggregate Technician is a prerequisite for Superpave QC/QA, HMA Aggregate, Binder Ignition, Aggregate Specific Gravity, and T85 Absorption certifications. Aggregate Specific Gravity covers the laboratory work for specific gravity and absorption of coarse and fine aggregate and includes a MoDOT TM81 method using an automatic vacuum sealing method. The prerequisite for this class is Aggregate Technician.

Test Methods for Aggregate Technician Certification:

AASHTO T2/ASTM D75 - Sampling of Aggregates
AASHTO R76/ASTM C702 - Reducing Samples of Aggregate to Testing Size
AASHTO T11/ASTM C117 - Materials Finer than 200
AASHTO T27/ASTM C136 - Sieve Analysis of Fine and Coarse Aggregates
AASHTO T255/ASTM C566 - Total Moisture Content of Aggregates by Drying
MoDOT TM 71 - Deleterious Content of Aggregates
ASTM D4791 - Flat & Elongated particles in Coarse Aggregate
AASHTO T84/ASTM C128 - Specific Gravity and Absorption of Fine Aggregate
AASHTO T85/ASTM C127 - Specific Gravity and Absorption of Coarse Aggregate
MoDOT TM81 - Specific Gravity & Absorption of Aggregate Using Automatic Vacuum Sealing Method

Bituminous Technician

The Bituminous Technician certification is abbreviated as **BT**: This certificate covers field and laboratory work, and includes sampling of bituminous materials, sampling paving mixtures, reducing sample of HMA to testing size, moisture content of HMA by oven method, bulk specific gravity of compacted bituminous material, percent air voids in compacted dense and open bituminous paving mixtures, and two MoDOT methods one for determining the asphalt content of a bituminous mixture by nuclear method, and the other is the measurement of air, surface or bituminous mixture temperatures. Bituminous Technician is a prerequisite for QC/QA and HMA aggregate certifications.

Test Methods for Bituminous Technician Certification:

AASHTO T40 - Sampling Bituminous Materials
AASHTO T168 - Sampling Bituminous Paving
AASHTO R47 - Reducing Samples of HMA to Testing Size
AASHTO T329 - Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method
AASHTO T166/T331 - Bulk Specific Gravity of Compacted Bituminous Materials
AASHTO T269 - Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixture
MoDOT TM 54 - Determining the Asphalt Content of a Bituminous Mixture
MoDOT TM 20 - Measurement of Air, Surface or Bituminous Mixture Temperature

Soil Density

The Soil Density certification is abbreviated as **SD**: This certificate covers field and laboratory work, and includes the laboratory determination of moisture content of soils, moisture-density relations of soils, density and moisture content of soil and soil aggregate by nuclear methods, and moisture offset factor for a nuclear gauge, a MoDOT method for a one-point moisture-density relations test for soils which is identical to AASHTO T272 except the family of curves is provided.

Test Methods for Soil Density Certification:

AASHTO T265 - Laboratory Determination of Moisture Content of Soils

AASHTO T99 – Moisture-Density Relations of Soils

MoDOT TM40 - A One-Point Moisture-Density Relations Test for Soils

AASHTO T310 – In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

MoDOT TM35 - Moisture Offset Factor for a Nuclear Gauge

Concrete Field

The Concrete Field certification is abbreviated as **CF**: This certificate covers field and laboratory work, and includes the measurement of air, surface, or bituminous mixture temperature determinations, sampling of freshly-mixed concrete, temperature of freshly-mixed Portland cement concrete, slump of hydraulic cement concrete, air content of freshly-mixed concrete by the pressure method, making and curing of concrete test specimens in the field, unit weight, Yield, and Air Content of Concrete, Air-Content of Freshly Mixed Concrete by the Volumetric Method.

Test Methods for Concrete Field Certification:

MoDOT TM20 - Measurement of Air, Surface, or Bituminous Mixture Temperature

AASHTO R60/ASTM C172 - Sampling of Freshly Mixed Concrete

ASTM C1064 - Temperature of Freshly Mixed Portland cement Concrete

AASHTO T119/ASTM C143 - Slump of Hydraulic Cement Concrete

AASHTO T152/ASTM C231 - Air Content of Freshly Mixed Concrete by the Pressure Method

AASHTO T23/ASTM C31 - Making and Curing of Concrete Test Specimens in the Field

AASHTO T121M/ASTM C138 – Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

AASHTO T196M/ASTM C173 – Test for Air Content of Freshly Mixed Concrete by the Volumetric Method

Concrete Strength

The Concrete Strength certification is abbreviated as **CS**: This certificate covers field and laboratory work, and includes obtaining and testing drilled cores for concrete, measuring length of drilled concrete cores, capping of cylindrical concrete specimens bounded and unbonded, compressive strength of cylindrical concrete test specimens, and flexural strength of concrete.

Test Methods for Concrete Strength Certification:

AASHTO T24/ASTM C42 - Obtaining and Testing Drilled Cores and Sawed Beams for Concrete

AASHTO T148/ASTM C174 - Measuring Length of Drilled Concrete Cores

AASHTO T231/ASTM C617 - Capping of Cylindrical Concrete Specimens

AASHTO T22/ASTM C39 - Compressive Strength of Cylindrical Concrete Test Specimens

AASHTO T97/ASTM C78 - Flexural Strength of Concrete (using Simple Beam with Third-Point Loading)

ASTM C1231 – Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens

HMA AGGREGATE

The HMA Aggregate certification is abbreviated as **HMA** (HAT): This certificate covers the laboratory work for consensus testing which includes plastic fines in graded aggregate and soils by use of the sand equivalent test, un-compacted void content of fine aggregate, and determining the percentage of fractured particles in course aggregates. The prerequisite for this certification is Aggregate Technician.

Test Methods for HMA Aggregate Certification:

- AASHTO T176 - Plastic Fines in Graded Aggregate and Soils by Use of the Sand Equivalent Test
- AASHTO T304 - Uncompact Void Content of Fine Aggregate
- AASHTO T5821 - Determining the Percentage of Fractured Particles in Coarse Aggregate

SUPERPAVE QC/QA

The Superpave QC/QA certification is abbreviated as **SP**: This certificate covers field work, laboratory work, plant operations, random sampling, temperature-viscosity relations, field verification, quality level analysis, record keeping, exchange of data /test results, contract administration, record keeping, introduction to Superpave mix designs, plant operations, job mix formula interpretation, Tensile strength ratio, Mixture conditioning of HMA specimens by gyratory compactor, asphalt binder content of HMA by ignition oven, theoretical maximum specific gravity and density of hot mix asphalt. This certification will take a week to complete, re-certification will take two days. The prerequisites for this certification are Aggregate Technician and Bituminous Technician.

Test Methods and Practice for Superpave QC/QA Certification:

- Introduction to Superpave Mix Design Overview
- Plant Operations
- Random Sampling
- Temperature-Viscosity Relations
- Field Verification
- Job Mix Formula Interpretation
- QC/QA Overview and Hot Mix Quality Control Plan Sampling Hot Mix
- AASHTO R30 - Standard Practice for Mixture Conditioning of HMA AASHTO R 30
- AASHTO T312 - Preparing and Determining the Density of HMA Specimens by Means of the Gyratory Compactor
- AASHTO T209 - Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
- AASHTO T308 - Determining the Asphalt Binder Content of HMA by Ignition Oven
- Tensile Strength Ratio
- Quality Level Analysis
- Record Keeping and Exchange of Data/Test Results
- Contract Administration

TSR

The TSR Tensile Strength Ratio certification is abbreviated as **TSR**: This certificate covers the laboratory work for testing the resistance of compacted bituminous mixtures to moisture induced damaged. The prerequisite for this certification is Aggregate Technician.

Test Method for TSR Certification:

AASHTO T283 - Tensile Strength Ratio

Binder Ignition

The Binder Ignition certification is abbreviated as **BI**: This certificate covers the laboratory work for determining the asphalt binder content of hot mix asphalt by the ignition method. The prerequisite for this certification is Superpave QC/QA.

Test Method for Binder Ignition Certification:

AASHTO T308: Determining the Binder Content of HMA by the Ignition Oven Method

International Index Roughness (IRI) Profile Profiling Basics

The International Index Roughness (IRI) Profiling Basics certification is abbreviated as **IRI**: This certificate covers the operation, calibration of the instrument, and the basics of determining the surface profile using the international roughness index.

Test Method and Practice for IRI Certification:

Profiling Equipment

Profiler Set-up

Profiler Sensitivity

Profiler Operation

MoDOT TM59 - Determination of the Surface Profile using the International Roughness Index

Plasticity Index

The Plasticity Index certification is abbreviated as **PI**: This certificate covers the laboratory work for aggregate base preparation for testing the plastic index of soils, as well as determining the plastic limit, plastic index, and liquid limit of soils.

Test Methods for Plasticity Index Certification:

MoDOT TM79 - Aggregate Base Prep for PI

AASHTO T90 - Determining the Plastic Limit & Plastic Index of Soils

AASHTO T89 - Determining the Liquid Limit of Soils

Compressive Strength

The Compressive Strength certification is abbreviated as **CM**: This certificate covers the laboratory work for capping cylindrical concrete specimens and testing the compressive strength of concrete specimens.

Test Methods for Compressive Strength Certification:

AASHTO T231 - Capping Cylindrical Concrete Specimens

AASHTO T22 - Compressive Strength of Cylindrical Concrete Test Specimens

Field Density

The Field Density certification is abbreviated as **FD**: This certificate covers the field work only, for density and moisture content of soil and soil aggregate by nuclear methods (shallow depth), and gauge operations, principles, safety, security, and emergency procedures. Prerequisite in Radiation Safety may be required.

Test Methods for Field Density Certification:

- AASHTO T310 - Density and Moisture Content of soil and Soil Aggregate by Nuclear Methods (Shallow Depth)
- AASHTO TM35 - Gauge Operation, Principles, Safety, Security, and Emergency Procedures