



8/9/19

## ALDOT-405 CERTIFICATION AND QUALIFICATION PROGRAM FOR CONCRETE TECHNICIANS AND CONCRETE LABORATORIES

### 1. Scope

- 1.1. This program establishes the requirements necessary for concrete certifications required for personnel inspecting, testing, and managing the production, placement, finishing, and quality control of concrete operations for the Alabama Department of Transportation, herein referred to as ALDOT or as the Department.
- 1.2. This program also establishes the requirements necessary for concrete laboratories to design and test concrete mixes to be used on ALDOT projects.

### 2. Referenced Documents

#### 2.1. ALDOT Procedures:

- ALDOT-170 Procedure Method of Controlling Concrete Operations for Structural Portland Cement Concrete

#### 2.2. AASHTO Standards:

- T 22 Compressive Strength of Cylindrical Concrete Specimens
- T 23 Making and Curing Concrete Test Specimens in the Field
- T 24 Obtaining and Test Drilled Cores and Sawed Beams of Concrete
- T 97 Flexural Strength of Concrete (Using Simple Third Point Loading)
- T 119 Slump of Hydraulic-Cement Concrete
- T 121 Density (Unit Weight), Yield, and Air Content of Concrete
- T 141 Sampling Freshly Mixed Concrete
- T 152 Air Content of Freshly Mixed Concrete by the Pressure Method
- T 231 Capping Cylindrical Concrete Specimens
- T 309 Temperature of Freshly Mixed Hydraulic-Cement Concrete
- M 201 Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes

#### 2.3. ASTM Standards:

- C 192 Making and Curing Concrete Test Specimens in the Laboratory
- C 1231 Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders

### 3. Program Administration

- 3.1. A Certification Board and a Working Task Force will administer the certification program for concrete technicians and qualification program for concrete laboratories.
- 3.2. Membership of the Certification Board will consist of the following:
  - 3.2.1. ALDOT Materials and Tests Engineer, Chairman
  - 3.2.2. ALDOT Deputy Director of Operations
  - 3.2.3. ALDOT Construction Engineer
  - 3.2.4. An Area Operations Engineer appointed by the Materials and Tests Engineer.

3.2.5. Industry Representative appointed by the Alabama Concrete Industries Association.

3.3. Membership of the Working Task Force will consist of the following:

3.3.1. ALDOT Concrete Engineer, Chairman for concrete technician certifications  
ALDOT Physical Laboratory Manager, Chairman for concrete laboratory qualifications

3.3.2. ALDOT Bridge Construction Engineer

3.3.3. Industry Representative appointed by the Alabama Concrete Industries Association

3.4. Potential ALDOT Concrete Technicians must be approved by the members of the Working Task Force and Certification Board.

#### **4. Types of Concrete Technician Certifications**

4.1. ALDOT Concrete Technician

4.1.1. Required for Department, its consultants, and industry personnel responsible for any inspecting and testing of concrete.

4.1.2. The technician shall be qualified to inspect concrete operations and to perform quality control testing on concrete.

4.1.3. The technician shall be knowledgeable on basic concrete technology.

4.1.4. Industry personnel certified as Concrete Technicians are qualified to batch concrete for the Department.

4.2. ACI Concrete Strength Testing Technician

4.2.1. Required for Department, its consultants, and industry personnel responsible for testing concrete specimens for compressive and flexural strength.

4.2.2. The technician shall have the knowledge and ability to properly perform, record, and report results of testing of cylindrical concrete specimens for compressive strength and concrete beam specimens for flexural strength.

4.2.3. The technician shall be knowledgeable on capping cylindrical concrete specimens and unbonded caps for concrete cylinders.

4.3. Precast Quality Control Technician and Precast Quality Assurance Inspector

4.3.1. Required for Department, its consultants, and industry personnel responsible for inspecting the manufacturing of precast non-prestressed concrete bridge members.

4.3.2. The technician shall be knowledgeable on quality control and quality assurance operations related to the manufacturing of precast non-prestressed concrete bridge members.

4.3.3. The technician shall be proficient in reading shop drawings related to the manufacturing of precast non-prestressed concrete bridge members.

4.4. Prestressed Quality Control Technician and Prestressed Quality Assurance Inspector

4.4.1. Required for Department, its consultants, and industry personnel responsible for inspecting the manufacturing of prestressed concrete bridge members.

4.4.2. The technician shall be knowledgeable on quality control and quality assurance operations related to the manufacturing of prestressed concrete bridge members.

4.4.3. The technician shall be proficient in reading shop drawings related to the manufacturing of prestressed concrete bridge members.

## 5. Concrete Technician Certification Requirements

### 5.1. ALDOT Concrete Technician:

5.1.1. The Department will grant certification as ALDOT Concrete Technician only to those applicants meeting the following requirements:

- A current American Concrete Institute (ACI) Concrete Field Testing Technician – Grade I certification.

5.1.2. The expiration date of the ALDOT Concrete Technician certification will coincide with that of the ACI certification.

### 5.2. ACI Concrete Strength Testing Technician:

5.2.1. ALDOT requires certification as ACI Concrete Strength Testing Technician and will accept applicants meeting the following requirement:

- A current ACI Concrete Strength Testing Technician certification.

### 5.3. Precast Quality Control Technician and Precast Quality Assurance Inspector:

5.3.1. ALDOT will grant certification as Precast Quality Control Technician or Precast Quality Assurance Inspector only to those applicants meeting both of the following requirements:

- A current ALDOT Concrete Technician certification.
- A current Precast/Prestressed Concrete Institute (PCI) Level II certification or a current National Precast Concrete Association (NPCA) Level I certification.

5.3.2. Both certifications shall be maintained concurrently during the valid period of the Precast Quality Control Technician or the Precast Quality Assurance Inspector certification.

### 5.4. Prestressed Quality Control Technician and Prestressed Quality Assurance Inspector:

5.4.1. ALDOT will grant certification as Prestressed Quality Control Technician or Prestressed Quality Assurance Inspector only to those applicants meeting both of the following requirements:

- A current ALDOT Concrete Technician certification.
- A current PCI Level II certification.

5.4.2. Both certifications shall be maintained concurrently during the valid period of the Prestressed Quality Control Technician or Prestressed Quality Assurance Inspector certification.

## 6. Types of Concrete Laboratories

6.1. Laboratories must be either AASHTO accredited or ALDOT qualified to perform concrete mix designs or testing of concrete mix designs to be used on Department projects.

6.2. Laboratories designing and testing concrete mixes to be used on Department projects for OTHERS shall be AASHTO accredited laboratories. Only laboratories performing concrete mix designs or testing for themselves shall be ALDOT qualified.

### 6.3. AASHTO Accredited Laboratory

6.3.1. Industry laboratories may elect to have AASHTO accreditation for performing and testing concrete mix designs to be used on Department projects. If an industry laboratory elects

to be AASHTO accredited then the laboratory must meet the requirements set forth in Article 7.1 and 7.2.

#### 6.4. ALDOT Qualified Laboratory

6.4.1. An ALDOT Qualified Laboratory is inspected and qualified by personnel from ALDOT and must meet the requirements set forth in Article 7.1 and 7.3

6.4.2. ALDOT Qualified Laboratories shall request qualification on one or both of the following two options at the time of the qualification request.

- OPTION 1 – Design concrete mixes as outlined in ALDOT-170 and perform tests to determine the fresh properties of concrete from designed mixes.
- OPTION 2 – Make, handle, store, cure, and test cylindrical and beam concrete specimens used for compressive and flexural strength determination of concrete from designed mixes.

### 7. Concrete Laboratory Requirements

#### 7.1. General Requirements:

7.1.1. Request for a concrete laboratory to be qualified shall be made in writing and submitted to the Materials and Tests Engineer, attention Physical Laboratory Manager.

7.1.2. Laboratories qualified on the bases of AASHTO accreditation will be waived the laboratory inspection, described in Section 9., provided that the accreditation is maintained current and the required personnel certifications are current. AASHTO accreditation documents shall be submitted with the written request for laboratory qualification.

7.1.3. Personnel from the Physical Testing Laboratory of the Bureau of Materials and Tests will perform the inspections required for ALDOT Qualified Laboratories that select to be qualified by the Department.

7.1.4. Upon request by ALDOT, laboratories that are AASHTO accredited may be used to perform acceptance testing for the Department on those areas where the laboratory holds accreditation. Only the Bureau of Materials and Tests Engineer can authorize the use of AASHTO accredited laboratories for acceptance testing.

#### 7.2. AASHTO Accredited Laboratory:

7.2.1. AASHTO Accredited Laboratories shall have on staff at least one ALDOT Concrete Technician and one ACI Concrete Strength Testing Technician.

7.2.2. Copies of technician certifications must be submitted with the written request for laboratory qualification.

7.2.3. AASHTO Accredited Laboratories shall be capable of performing concrete mix designs following the requirements outlined in ALDOT-170 and hold accreditation on the following test procedures:

- AASHTO T 22
- AASHTO T 23
- AASHTO T 24
- AASHTO T 97
- AASHTO T 119

- AASHTO T 121
- AASHTO T 141
- AASHTO T 152
- AASHTO T 231
- AASHTO T 309
- AASHTO M 201
- ASTM C 192
- ASTM C1231

7.3. ALDOT Qualified Laboratory:

- 7.3.1. ALDOT Qualified Laboratories shall have on staff at least one ALDOT Concrete Technician or one ACI Certified Concrete Strength Testing Technician. The type of certified technician required shall depend on the option selected for qualified procedures.
- 7.3.2. Copies of technician certifications must be submitted with the written request for laboratory qualification.

## 8. Concrete Laboratory Documentation

- 8.1. ALDOT Qualified Laboratories shall submit the following minimum documentation at the time of the written request for laboratory qualification and must be available any time the Department requests it:
- 8.1.1. Manual of standard operating procedures to include Quality Control and Quality Assurance Programs and procedures to address technical complaints.
- 8.1.2. Record of personnel training, evaluations, and experience.
- 8.1.3. Inventory of all testing equipment to include the following:
- Equipment descriptions
  - Equipment brand names and models
  - Equipment identification numbers, serial numbers and inventory numbers
  - Equipment calibration and verification records
  - Equipment maintenance and repair records
- 8.1.4. A current library of ALDOT, AASHTO and ASTM test methods.
- 8.1.5. Laboratory test reports with the following minimum information:
- Name and address of the laboratory.
  - Identification of test report.
  - Date test is performed.
  - Date report is issued.
  - Identification of specimen(s) tested.
  - Identification of the standard test method used.
  - Notation of all known deviations from the standard test method.
  - Requirements of the standard test method not performed by the laboratory.
  - Technician name and certification number.
  - A system of records that permits verification of any issued report.

8.2. Personnel from the Bureau of Materials and Tests will review the documentation prior to the initial laboratory inspection for qualification, and prior to any laboratory re-qualification inspection.

## 9. ALDOT Qualified Laboratory Inspection

9.1. Personnel from the Bureau of Materials and Tests will conduct initial laboratory qualification inspections and laboratory re-qualification inspections every two years. The inspection will consist of a review of documentation, testing equipment, and testing procedures.

9.2. AASHTO accredited laboratories will be waived the laboratory qualification inspection provided that the accreditation is maintained current and the required personnel certifications are current.

9.3. The following equipment will be inspected during the laboratory inspection process. The actual equipment required shall depend on the selected option chosen in Item 6.3.2. Equipment will be checked for proper operation, compliance with standard specifications, and verified for accuracy.

- Compressive strength testing machine
- Moist cabinets, moist rooms and water storage tanks for curing cylinders
- Capping plates
- Alignment devices
- Melting pots for sulfur mortars
- Unbonded caps
- Concrete mixer
- Type “B” pressure meters
- Slump cone molds
- Unit weight measure
- Temperature measuring devices
- Wire sieves
- Cylinder molds
- Weighing balances
- Tamping rods
- Strike off bars and plates
- Hand tools (mallet, trowel, scoops, etc)

9.4. The following list of procedures may be observed during the laboratory inspection process. The actual observed procedures will depend on the selected procedures indicated at the time of the laboratory qualification request. Only certified technicians shall perform the following procedures. The type of technician performing a procedure will depend in the procedure itself.

- AASHTO T 22
- AASHTO T 24
- AASHTO T 97
- AASHTO T 119
- AASHTO T 121
- AASHTO T 141
- AASHTO T 152
- AASHTO T 231
- AASHTO M 201
- ASTM C 192

- ASTM C1231

## **10. Fees and Travel Expenses**

- 10.1. A qualification fee of \$500.00 shall accompany the request for laboratory qualification.
- 10.2. AASHTO accredited laboratories will be waived the qualification fee of \$500.00.
- 10.3. All out of state laboratories which are located more than eight hours travel by automobile will be required to pay for the Department's per diem and transportation. Expenses shall include meals, lodging, and mileage rates for Department vehicles. If multiple laboratories are inspected on the same trip, all expense costs will be proportionally divided.
- 10.4. All fees and expenses shall be made by check, payable to the Alabama Department of Transportation prior to any inspection.
- 10.5. All correspondence, certification requests, laboratory qualification requests, fees, and expenses shall be mailed to the following address

Materials and Tests Engineer  
3704 Fairground Road  
Montgomery, AL 36110

## **11. Certification and Qualification**

- 11.1. Personnel meeting all the qualifications for any of the types of concrete certifications will be certified as such upon recommendation by the Working Task Force and approval by the Certification Board.
- 11.2. Concrete certifications are valid for a period of five years provided all pre-required certifications are maintained current.
- 11.3. Laboratories meeting all the qualifications for either type of concrete laboratory will be qualified as such upon recommendation by the Working Task Force and approval by the Certification Board.
- 11.4. Laboratory qualifications are valid for a period of two years provided personnel certifications are maintained current.

## **12. Decertification and Disqualification**

- 12.1. Abuse or neglect of the responsibilities of the concrete certifications or laboratory qualification is grounds for disciplinary action.
- 12.2. Charges or accusations shall be made in writing to the Working Task Force, which will investigate them.
- 12.3. Members of the Working Task Force will meet any time an accusation of abuse or neglect is received.
- 12.4. Disciplinary actions will be implemented upon recommendation of the Working Task Force and approval of the Certification Board.
- 12.5. Disciplinary actions will range from written reprimand to suspension of certification or qualification.
- 12.6. Suspension will be a minimum of six months, plus six months probation, to permanent revocation of certification or qualification rights.
- 12.7. Falsification of records will result in revocation of certification or qualification and the matter may be forwarded to other parties for additional actions.
- 12.8. Laboratories with non-working equipment or improper procedures will have their qualification temporarily suspended until corrections to the equipment or procedures are made.

### **13. Recertification and Requalification**

13.1. Personnel seeking recertification shall meet the requirements of Section 5 of this procedure.

13.1.1. Personnel may apply for reinstatement of a revoked certification after a period of not less than 2 years from the date of revocation.

13.2. Laboratories seeking re-qualification shall meet the requirements of Section 7 of this procedure.