

ALDOT-352-87
QUALIFICATION PROGRAM FOR PORTLAND CEMENT CONCRETE PRODUCERS

1. Scope

- 1.1. This program establishes the requirements necessary for qualification of Portland Cement Concrete Producers to supply concrete to the Alabama Department of Transportation, herein referred to as ALDOT or the Department. Qualified producers of Portland cement concrete will be placed on List I-7, "*PORTLAND CEMENT CONCRETE PRODUCERS*", in the Materials, Sources and Devices with Special Acceptance Requirements (MSDSAR) manual.
- 1.2. The Quality Control of concrete produced for Department projects will be the responsibility of the producer. The Department will be responsible for monitoring and enforcing this program and Quality Assurance.
- 1.3. This procedure outlines the Concrete Producer's initial qualification requirements and maintenance requirements to remain active in the Department's MSDSAR manual.
- 1.4. This procedure also outlines guidelines to help ensure all Portland cement concrete supplied to the Department, whether directly or through its contractors and subcontractors, meets Department specifications.
- 1.5. Unless specified differently in ALDOT procedures and/or specifications, American Association of State Highway and Transportation Officials (AASHTO) specification M 157 requirements for quality of concrete shall be met for concrete supplied to a Department project.

2. Referenced Documents

- 2.1. ALDOT Standard Specifications for Highway Construction – (Web link: [ALDOT SPECIFICATIONS](#)):
 - Section 501 Structural Portland Cement Concrete
 - Section 801 Coarse Aggregate
 - Section 802 Fine Aggregates
 - Section 806 Mineral Admixtures
 - Section 807 Water
 - Section 808 Air Entraining Additives
 - Section 809 Chemical Admixtures for Concrete
 - Section 815 Cement
- 2.2. ALDOT Procedures – (Web link: [ALDOT PROCEDURES](#)):

- ALDOT - 170 Method of Controlling Concrete Operations for Structural Portland Cement Concrete
- ALDOT – 253 Rapid Drying of Soil and Aggregate Samples for Field Tests
- ALDOT - 355 General Information Concerning Materials, Sources and Devices with Special Acceptance Requirements
- ALDOT – 405 Certification and Qualification Program for Concrete Technicians and Concrete Laboratories

2.3. BMT Forms – (Web link: [BMT FORMS](#)):

- BMT – 10 Notice Stamp for Acceptance (Aggregates)
- BMT – 75 Concrete Mix Design
- BMT – 95 Concrete Plant Checklist
- BMT – 122 Concrete Batch Ticket
- BMT - 196 Concrete Plant Certification Program

2.4. AASHTO/ASTM Standards:

- M 157/C 94 Standard Specification for Ready-Mixed Concrete
- T 119/C 143 Slump of Hydraulic Cement Concrete
- T 152/C 231 Air Content of Freshly Mixed Concrete by the Pressure Method
- T 255/C 566 Total Evaporable Moisture Content of Aggregate by Drying

2.5. The Department’s MSDSAR manual – (Web link: [MSDSAR](#))

3. Producer Initial Qualification Requirements

- 3.1. In order to supply ALDOT projects, whether directly or through contractors and subcontractors, concrete producers must be qualified by ALDOT and listed on List I-7.
- 3.2. Any producer wishing to supply Portland cement concrete for use in ALDOT projects shall submit to the Materials & Tests Engineer the following documentation:
 - 3.2.1. A written request to be considered for inclusion on List I-7.
 - 3.2.2. A copy of the National Ready Mix Concrete Association (NRMCA) Plant Certification. All concrete delivery vehicles must be NRMCA certified with a current certification card displayed for ALDOT inspection.

- 3.2.3. A completed BMT-196 form. This form must be notarized and signed by an officer of the company who has responsibility for the overall operation of the facility and supplying concrete for Department projects.
- 3.2.4. A copy of the plant's Quality Control Plan (QCP). See Section 6 below.
- 3.2.5. Required fees as per ALDOT - 355.
- 3.2.6. A written request to schedule a plant inspection. A plant inspection will only be scheduled after the Department receives the items listed in Articles 3.2.1 through 3.2.5.
- 3.2.7. After all qualification requirements have been satisfied, the Materials & Tests Engineer will submit a letter to the Product Evaluation Board recommending approval of the plant to be placed on List I-7.

4. Producer Re-Qualification Requirements

- 4.1. Producers shall be re-qualified by the Product Evaluation Board on an annual basis and each time the plant is relocated.
- 4.2. Qualified plants shall maintain NRMCA Plant Certification and shall submit a copy of the certification every time the plant is required to be re-qualified.
- 4.3. Qualified plants shall submit a newly completed BMT-196 every time the plant is required to be re-qualified.
- 4.4. Qualified plants shall submit an updated copy of the QCP every time the plant is required to be re-qualified and when any significant change is made.
- 4.5. Fees as per ALDOT-355. Although plants will be inspected multiple times throughout the year, only one re-evaluation fee will be charged, which will be collected during the December inspection.
- 4.6. Qualified plants shall employ personnel certified by the Department as outlined in ALDOT-405.
- 4.7. Any producer removed from List I-7 and wanting to be reinstated will be required to meet all requirements listed above in Section 3.

5. Concrete Production

- 5.1. Any concrete supplied to Department projects must be produced at approved plants currently listed on List I-7.
- 5.2. Certified Concrete Technicians, as required by the Department, shall conduct all concrete testing and inspections. Concrete batching operations must be done under the direction of a Certified Concrete Technician, as required by the Department.

- 5.3. All plants shall employ at least one full-time certified ALDOT Concrete Technician that is proficient in concrete technology and has a sound knowledge of Department Specifications and Procedures.
- 5.4. Plants shall only produce Department concrete when ALDOT certified personnel are present.
- 5.5. Concrete production facilities and Quality Control equipment shall be maintained in proper working condition and calibrated as outlined in the plant's approved QCP.
- 5.6. Plants must be staffed and operated in a manner that ensures concrete is produced in accordance with Department Specifications and Procedures.
- 5.7. Plants supplying to an ALDOT project shall be required to maintain concrete production schedules at the convenience of the Engineer and Contractor. The Engineer may, at random intervals, assign a Department inspector to observe batching and mixing techniques.
- 5.8. Concrete supplied to Department projects may only be delivered by vehicles currently certified by the NRMCA and have a current certification card displayed in a conspicuous location for inspection by Department personnel.

6. Producer Quality Control Plan

- 6.1. Each producer of Portland cement concrete shall submit a Quality Control Plan to the Materials & Tests Engineer for review and approval. The QCP shall include, but not be limited to, the following:
 - 6.1.1. A statement summarizing the producer's Quality Control Program.
 - 6.1.2. Procedures for controlling and monitoring concrete quality.
 - 6.1.3. Name, mailing address, plant address and telephone number of company.
 - 6.1.4. Name of key plant personnel and specific duties, i.e., general manager, quality control manager and certified technicians.
 - 6.1.5. If applicable, name, address, telephone number and services of the independent testing laboratory.
 - 6.1.6. List of testing equipment for "in-house" testing.
 - 6.1.7. Documentation of calibration at proper frequency for any in-house equipment.
- 6.2. The producer shall update the Quality Control Plan at least annually, and any time there is a significant change in personnel, production, materials or Quality Control Procedures. Updates shall be submitted to the Materials & Tests Engineer for review of completeness.

7. Materials

- 7.1. Concrete mixes shall be approved as specified in ALDOT-170 and Section 501 of the Department's specifications.
- 7.2. Materials used in the production of Portland cement concrete shall meet the requirements of appropriate Sections of Department Specifications and only be purchased from approved sources found on the following respective MSDSAR lists: :
 - List I-1 for Section 801 – Coarse Aggregate and Section 802 – Fine Aggregate
 - List I-2 for Section 815 - Cement
 - List I-3 for Section 806 - Mineral Admixtures
 - List II-1 for Sections 808 and 809 - Chemical Admixtures
 - Water shall meet the requirements found in Section 807
- 7.3. The producer must maintain all documentation necessary to substantiate the purchase and use of all approved materials for at least three (3) years. The documentation shall be available to the Department upon request.

8. Responsibilities

- 8.1. The Concrete Producer shall be responsible for, but not limited to:
 - 8.1.1. Producing concrete, which meets all applicable Department Specifications and Procedures.
 - 8.1.2. Employing certified personnel to fulfill the concrete plant's responsibility of testing and accurately proportioning concrete.
 - 8.1.3. Ensuring only ALDOT approved materials are incorporated into any concrete supplied to a Department project.
 - 8.1.4. Notifying the Materials & Tests Engineer and the respective Area Materials Engineer within 30 days of the closure of any approved plant.
- 8.2. The ALDOT Certified Concrete Technician at the concrete plant shall meet the requirements set forth in ALDOT-405 and will be responsible for, but not limited to, the following tasks:
 - 8.2.1. Adhering to the plant's Quality Control Program.
 - 8.2.2. Batching concrete from the approved mix design.
 - 8.2.3. Performing gradation on aggregates.
 - 8.2.4. Determining Fineness Modulus.
 - 8.2.5. Determining Working Fineness Modulus.

- 8.2.6. Determining moisture in aggregates.
- 8.2.7. Checking the temperature of cement.
- 8.2.8. Checking the temperature of concrete.
- 8.2.9. Determining batch weight corrections.
- 8.2.10. Transmitting certified delivery tickets.
- 8.2.11. Performing slump test.
- 8.2.12. Determining the air content of concrete.
- 8.2.13. Determining the unit weight of concrete.
- 8.2.14. If applicable, performing compression testing of concrete cylinders.
- 8.2.15. Completing and transmitting all required documentation.
- 8.3. ALDOT Area Materials Personnel will be responsible for the following:
 - 8.3.1. Conducting concrete plant inspections and documenting on form BMT-95.
 - 8.3.2. Monitoring the producer's Quality Control Program.
 - 8.3.3. Maintaining complete files for all qualified concrete plants.
 - 8.3.4. Collecting annual re-qualification documents from all qualified concrete plants located within their respective Area and submitting same to the Materials & Tests Engineer during the first month of each year. These documents will be collected during the December inspection and are listed in Section 4 of this procedure. The Area inspector shall retain a copy of the BMT - 196 and forward the original to the Materials & Tests Engineer.
 - 8.3.5. Area Materials Engineers will accept or reject approved concrete mix designs for concrete to be placed on Department projects within their respective Area.

8.4. ALDOT Central Concrete Section will be responsible for the following:

- 8.4.1. Administering the Qualification Program for Portland Cement Concrete Producers and monitoring its effectiveness.
- 8.4.2. Maintaining the approved list of Portland Cement Concrete Producers.
- 8.4.3. Submitting new producers to the Product Evaluation Board for approval.
- 8.4.4. Initiating actions to remove from List I-7 any producer which fails to adhere to requirements given in this procedure.
- 8.4.5. Assisting in the identification and solution of problems related to concrete.
- 8.4.6. Approving all concrete mix designs.

9. Plant Inspections

- 9.1. All plants must be inspected prior to initial qualification and re-qualifications. Annual re-qualification inspections will be conducted in December.
- 9.2. Plants that supply the Department on a monthly basis will be inspected once per month.

10. Laboratory Requirements

- 10.1. All plants shall maintain a laboratory containing equipment necessary to conduct aggregate gradations, aggregate moisture contents, slump, air content and temperature on fresh concrete and any other equipment necessary to perform Quality Control and testing required by the Department.
- 10.2. Requests to use a single laboratory to serve more than one plant may be requested in writing from the Materials & Tests Engineer.
- 10.3. If applicable, plants shall maintain a laboratory meeting the requirements of ALDOT-405.
- 10.4. This procedure does not cover the ALDOT qualification requirements necessary to perform concrete mix designs and hardened concrete testing, which is covered in ALDOT – 405.

11. Required Testing

- 11.1. Production of the required aggregate gradation in the mix will be the responsibility of the concrete producer.
- 11.2. Gradation tests on both coarse and fine aggregate shall be made once before Department concrete production begins and then at least once for every 500 yd³ (400 m³) of total concrete production that takes place while Department concrete is being produced.
- 11.3. Plants which have a total concrete production of less than 500 yd³ (400 m³) in a one week period will be required to perform one gradation test per week and it shall be performed immediately

before that week's production of Department concrete is begun. Additional gradation tests may be required by the Department.

- 11.4. Checks for aggregate moisture determination shall be performed before batch operations begin and then as often as it is necessary to compensate for moisture changes in the aggregate.
- 11.5. Moisture in the aggregates shall be determined in accordance with either AASHTO T 255 or ALDOT – 253. Requests to use an alternate method approved by AASHTO and/or ASTM may be requested in writing from the Materials & Tests Engineer.
- 11.6. The use of an accurate automatic moisture indicating device (such as a moisture probe) will be allowed, provided its accuracy can be demonstrated by an alternate method of moisture determination and proven accurate within acceptable range.
- 11.7. Tests for slump and air content will be performed whenever necessary to check or to adjust the mix for slump or air content requirements.
 - 11.7.1. The slump test must be performed according to AASHTO T 119 (ASTM C 143).
 - 11.7.2. The air content test must be performed according to the pressure method in AASHTO T 152 (ASTM C 231).
- 11.8. Temperature checks, of both cement and concrete, shall be performed at least once a day and as often as necessary to insure compliance with the Department Specifications.

12. Documentation

- 12.1. It will be the responsibility of the certified personnel at each concrete plant to ensure all required documentation is properly completed, submitted and maintained.
- 12.2. The producer must maintain all documentation necessary to substantiate the quality, purchase and use of all Department concrete for at least three (3) years. The documentation shall be available to the Department upon request.
- 12.3. BMT Forms and Worksheets are provided by the Department and are available in the Testing Manual, which is located in the Materials and Tests section of the Department's website . (Web link: [BMT FORMS](#))
- 12.4. The required minimum documents to be maintained at the concrete plant are:
 - 12.4.1. A copy of the current NRMCA plant certification
 - 12.4.2. Copies of all NRMCA delivery vehicle certification cards
 - 12.4.3. Copies of all scale calibration certificates and all calibration documentation for applicable Quality Control equipment
 - 12.4.4. Notice Stamp for Acceptance of Aggregates (BMT-10):
BMT-10 forms received with aggregate shipments shall be maintained on file to

document the sources of all aggregates used in the production of concrete supplied to the Department and shall be made available to the Department upon request.

12.4.5. Approved Concrete Mix Design (BMT-75):

Each plant shall maintain a file containing concrete mix designs for all concrete supplied to the Department.

12.4.6. Concrete Plant Checklist (BMT-95):

Plant inspections shall be documented on form BMT-95 by Area Materials or Project Personnel. The Materials & Tests Engineer, or authorized representative, may conduct random and unannounced visits to approved concrete plants in List I-7. Each plant shall maintain a file containing copies and documentation detailing all actions taken to correct noted deficiencies.

12.4.7. Concrete Delivery Ticket (BMT-122):

All plants shall have a system for transmitting with each delivery of concrete a form BMT-122, which documents specification requirements. Authorized plant personnel shall complete this form and certify the data to be correct. Each plant shall maintain a file containing copies for all concrete supplied to the Department.

Note: Concrete producers using computerized batch systems may incorporate the contents of the BMT-122 into their long-form batch tickets. The batch ticket must contain designated spaces for all fields on the BMT-122, and must include carbon copies for distribution to the contractor, project inspector and concrete plant. The producer shall submit a draft copy of a batch ticket to the Materials & Tests Engineer for approval prior to use, and any time a change is made to the ticket.

12.4.8. Concrete Plant Qualification Program (BMT-196):

Each plant shall maintain a file containing copies of all BMT-196 forms submitted to the Department.

12.4.9. Test Reports:

All plants will maintain records of compliance testing performed by the Certified Concrete Technician. These records will include, but not be limited to the following: Aggregate moisture determination, gradation checks, aggregate correction factors, Fineness Modulus determinations, temperature checks on cement and concrete, slump tests, air content tests and equipment performance tests.

12.4.10. Plant Diary:

Certified Concrete Technicians shall maintain a plant diary with entries on, but not limited to the following: dates concrete is supplied to the Department, data from performing responsibilities listed in this procedure (specifically Article 8.2), any equipment failures, any process control changes differing from the standard operating procedures, etc.

12.5. Reference material to be maintained at the plant includes but is not limited to:

12.5.1. Alabama Department of Transportation Specifications (current edition).

- 12.5.2. A copy of applicable AASHTO or ASTM specifications.
- 12.5.3. All applicable Alabama Department of Transportation Procedures.
- 12.5.4. Copies of any Supplemental Specifications or Special Provisions which apply to the concrete to be produced.
- 12.5.5. Certified technicians operating the plant and participating in Quality Control Operations must have “immediate” access to the reference materials listed above in Article 12.5.1 through Article 12.5.4 in either electronic or printed format.

13. Revocation of Source

- 13.1. Any producer found to be in violation of Department Specifications and Procedures may be removed from List I-7 and will not be allowed to supply concrete to the Department.
- 13.2. Any producer who has allowed their NRMCA certification to expire will be removed from List I-7 the business day following the NRMCA Certification expiration date. It is the responsibility of the producer to ensure the Department is provided a copy of the current NRMCA certification.
- 13.3. Any producer determined to be in deliberate violation of Department Specifications and Procedures will be removed from List I-7 and may be permanently disqualified from supplying concrete to the ALDOT. Examples include, but are not limited to, the following:
 - Use of non-specification materials.
 - Use of materials from non-approved sources.
 - Supplying concrete to an ALDOT project which does not conform to the mix design approved by the Department.
 - Falsification of reports, test results, records, etc.
 - Failing to meet specification requirements.
- 13.4. Producers not permanently disqualified by the Department may apply to be reinstated three months after removal, provided that the cause for removal has been corrected to the satisfaction of the Department. A plant that has been removed and then reinstated will be placed on a probationary status for no less than six months and may be required to perform additional Quality Control practices.