
DMS - 7340**QUALIFICATION PROCEDURE FOR MULTI-PROJECT FABRICATION
PLANTS OF PRECAST CONCRETE MANHOLES AND INLETS****EFFECTIVE DATE: AUGUST 2004**

7340.1. Description. This Specification will govern for approving multi-project fabrication plants (as defined in Item 424, "Precast Concrete Structures [Fabrication],") that produce precast concrete manholes and inlets per Item 465, "Manholes and Inlets."

7340.2. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of multi-project fabrication plants conforming to the requirements of this Specification. Precast concrete manholes and inlets produced by fabricators appearing on the MPL, entitled "[Manhole and Inlet Fabrication Plants \(Multi-Project\)](#)," require no further inspection and testing unless deemed necessary by the Department project engineer or CST/M&P.

7340.3. Qualification Procedure.

- A. Qualification Request.** Request plant approval by submitting a written request to the Texas Department of Transportation, Construction Division, Materials and Pavements Section (CP51), 125 East 11th Street, Austin, Texas 78701-2483.

The request should include the following:

- company name,
- physical and mailing addresses,
- contact person, phone number, and email address,
- list of products to be evaluated for qualification purposes, and
- written plant quality control procedures as required in this Specification.

- B. Evaluation.** CST/M&P will review the qualification request documentation. If the qualification request includes the required information, CST/M&P will perform an initial Department-directed plant audit to ensure compliance with this Specification.

- 1. Qualification.** If the audit verifies compliance with this specification, the Department will list the fabrication plant on the MPL. CST/M&P reserves the right to perform additional audits (announced or unannounced) at its discretion for the plant to remain on the MPL as an approved fabrication plant of precast concrete manholes and inlets.
- 2. Failure.** Plants that fail to qualify under this Specification may not furnish precast concrete manholes or inlets for Department projects.

C. Random Inspection and Testing. The Department reserves the right to inspect, sample, and test precast concrete manholes and inlets at any time to ensure compliance with Item 465, “Manholes and Inlets,” and this Specification. Provide facilities and access to allow for inspection of materials, the process of fabrication, and the finished manholes and inlets.

D. Disqualification. Any fabricator that fails to comply with the requirements of this specification is subject to removal from the MPL, is prohibited from furnishing product to Department projects for a minimum of 30 days from the date of disqualification, or as determined by CST/M&P.

Causes for disqualification include, but are not limited to:

- repetitive poor quality and workmanship of precast concrete manholes and inlets,
- falsification or incomplete documentation,
- not following approved quality control procedures, or
- shipping product that does not meet specifications.

E. Re-Qualification. Once the disqualification period established by CST/M&P has elapsed, the fabricator may begin the re-qualification process.

7340.4. Quality Control and Production Procedures. Submit and maintain the following written quality control and production procedures for acceptance that include the following, at minimum, to ensure product compliance with Department specifications:

- procedures for maintaining and cleaning forms;
- procedures for storing reinforcing steel (reference Section 440.3.C, “Storage”);
- inspection procedures to verify that proper reinforcing steel cages are constructed (reference ASTM C 478, “Standard Specification for Precast Reinforced Concrete Manhole Sections” for precast machine-made units);
- procedures for properly positioning reinforcing steel during casting (reference Section 440.3.E, “Placing,” for precast formed units and reference ASTM C 478 for precast machine-made units);
- proposed concrete mix designs, including trial batch data for each design (reference Section 421.4.A, “Classification and Mix Design,” and Section 421.4.B, “Trial Batches,” for precast formed units and reference ASTM C 478 for precast machine-made units);
- proposed casting worksheet for each cast date per mix design (must include the concrete mix design used, units that were cast, concrete slumps, air temperature, concrete placement temperature, and compressive strength test results);
- concrete mixing and delivering procedures (reference Section 421.4.E, “Mixing and Delivering Concrete,” for precast formed units);
- mixing, delivering, placing, and testing procedures for self-consolidating concrete when used (approval will be based on following the current Precast/Prestressed Concrete Institute [PCI] “Interim Guidelines for the Use of Self-Consolidating Concrete in PCI Member Plants”);

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- procedures for maintaining concrete placing temperature within specified limits (reference Section 420.4.G.1, “Placing Temperature,” for precast formed units);
 - concrete consolidation procedures (reference Section 420.4.G.9, “Consolidation,” for precast formed units);
 - procedures for finishing unformed surfaces;
 - procedures for protecting concrete from inclement weather during placement (reference Item 420 for precast formed units);
 - procedures for removing units from forms to prevent damage;
 - concrete curing procedures (reference Section 420.4.J “Curing,” for precast formed units and reference ASTM C 478 for precast machine-made units);
 - storage procedures for precast manholes and inlets;
 - procedures for reviewing and repairing damaged units;
 - dimensional inspection procedures to ensure compliance with the plans and any approved shop drawings (reference dimensional tolerances in ASTM C 478 for precast machine-made units);
 - procedures for minimizing repetitive damage to units such as concrete grout leakage, open texture, honeycombing, and spalling;
 - procedures for marking each unit (must include at least the cast date, piece mark, and name or trademark of the plant);
 - procedures for marking approved units (this marking must not be placed on units until all specification requirements have been met);
 - list of welding shops that produce the supplied welded steel grates and frames along with their Welding Procedure Specifications (WPSs) and welding personnel certifications per the AWS D1.1 Structural Welding Code-Steel (reference Section 471.2.A, “Welded Steel Grates and Frames”);
 - procedures for maintaining Department material inventory; and
 - designated Quality Control personnel and their certifications (must provide QC personnel meeting the certification requirements of Article 7340.7 to perform testing as specified in Table 1.)

Submit updated procedures for approval when requesting changes to the approved Quality Control and Production Procedures.

7340.5. Documentation. At a minimum, maintain and make available to the Department the following documentation:

- approved shop drawings (when used);
- certifications and shipping invoices for concrete component materials;
- mill test reports and shipping invoices for reinforcing steel (reinforcing steel must be furnished by Department approved mills – reference Section 440.2.A, “Approved Mills”);

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- mill test reports and certifications for frames, grates, rings, and covers (Reference Section 471.2.C, “Documentation.” Copies of these mill test reports and certifications must also accompany shipments to the project site along with a completed Material Statement Form D-9-USA-1 – reference Section 6.1.A, “Buy America.”);
 - mill test reports and certifications for furnished supports and steps (Reference Section 465.2.E, “Cast Iron or Aluminum.” Copies of these mill test reports and certifications must also accompany shipments to the project site along with a completed Material Statement Form D-9-USA-1 for steel and iron items – reference Section 6.1.A, “Buy America.”);
 - galvanizing certifications for galvanized steel and iron items (must also accompany shipments to the project site along with a completed Material Statement Form D-9-USA-1 – reference Section 6.1.A, “Buy America.”);
 - certifications for jointing materials, when used;
 - aggregate test results;
 - absorption test results for precast machine-made units (absorption testing to be performed at least once a year per concrete mix design);
 - completed casting worksheets;
 - Department material inventory records;
 - certifications for approved repair materials;
 - an NRMCA certification or a signed and sealed professional engineer inspection report for concrete plants and mixing equipment to be used (reference Section 421.3.A, “Concrete Plants and Mixing Equipment,” for precast formed units);
 - for volumetric mixers, test data for Tex-472-A and a certification of compliance with ASTM C 685 (reference Section 421.3.A.2 “Volumetric Mixers” for precast formed units);
 - calibration records for concrete plant scales (reference Section 421.3.A.1, “Scales”);
 - an annual inspection report for truck mixers and agitators when used (reference Section 421.3.A.3, “Agitators and Truck and Stationary Mixers” for precast formed units);
 - calibration records for compression testing machines and other equipment; and
 - approved welding personnel certifications and approved welding procedure specifications (WPSs) for welding shops that supply welded steel grates and frames.

7340.6. Quality Control Personnel. Provide an adequate number of qualified personnel to perform the testing in Table 1. QC personnel must be independent of production personnel and must be certified as follows or qualified by a Department-recognized equivalent written and performance testing program. Personnel performing these duties are subject to Department approval.

A. Quality Control Supervisor (On Site).

- Current ACI Concrete Field Testing Technician – Grade I and
- Current ACI Concrete Laboratory Testing Technician – Grade I.

B. Quality Control Technicians (On Site).

- Current ACI Concrete Field Testing Technician – Grade I for QC personnel performing fresh concrete testing per Table 1 (some of these tests may be performed by QC personnel qualified by the Department for the particular test);
- Current ACI Concrete Laboratory Testing Technician – Grade I for QC personnel performing aggregate testing per Table 1 (some of these tests may be performed by QC personnel qualified by the Department for the particular test); and
- Current ACI Concrete Laboratory Testing Technician – Grade I or current ACI Concrete Strength Testing Technician for QC personnel performing Tex-418-A (may be performed by QC personnel qualified by the Department for this test).

Table 1
Contractor Minimum Material QC Sampling and Testing Frequencies

Material	Test Method	Frequency
Fine Aggregate	Sieve Analysis ¹ per Tex-401-A	1 per 500 cu. yd. or fraction thereof
	Fineness Modulus ¹ per Tex-402-A	1 per 500 cu. yd. or fraction thereof
	Sand Equivalent ¹ per Tex-203-F	1 per 500 cu. yd. or fraction thereof
	Specific Gravity and Absorption ¹ per Tex-403-A	1 per 6 months and when the material source changes
	Unit Weight ¹ per Tex-404-A	1 per 6 months and when the material source changes
	Moisture Content ^{1 or 2} per Tex-409-A or Tex-425-A	1 per day ³
Coarse Aggregate	Sieve Analysis ¹ per Tex-401-A	1 per 500 cu. yd. or fraction thereof
	Decantation ¹ per Tex-406-A	1 per 500 cu. yd. or fraction thereof
	Specific Gravity and Absorptions ¹ per Tex-403-A	1 per 6 months and when the material source changes
	Unit Weight ¹ per Tex-404-A	1 per 6 months and when the material source changes
	Moisture Content ^{1 or 2} per Tex-409-A	1 per day ³
Concrete	Slump ^{2 or 4} per Tex-415-A	1 from first concrete batch, 1 from the concrete batch for the compressive strength cylinders, and 1 from another concrete batch ⁵
	Temperature ^{2 or 4} per Tex-422-A	1 from first concrete batch, 1 from the concrete batch for the compressive strength cylinders, and 1 from another concrete batch ⁵
	Unit Weight ⁴ per Tex-417-A	1 per month and when a new mix design is established ⁶
	Making Test Cylinders ^{2 or 4} per Tex-447-A	1 set per mix design per cast date minimum
	Compressive Strength ^{1, 2, or 7} per Tex-418-A	1 set per mix design per cast date minimum

1. Test to be performed by QC personnel with current ACI Concrete Laboratory Testing Technician – Grade I certification.

2. Test to be performed by QC personnel qualified by the Department for this particular test.

3. When aggregate weighing hoppers or storage bins are equipped with properly maintained electric moisture probes for continuous moisture determination, moisture tests per Tex-409-A or Tex-425-A are not required daily. Electric moisture probes, however, must be calibrated weekly against Tex-409-A to detect changes of at least 1% in the free moisture content.

4. Test to be performed by QC personnel with current ACI Concrete Field Testing Technician – Grade I certification.

5. Per mix design per cast date.

6. When the fresh unit weight of concrete varies from the established value by more than ± 2 lb. per cu. ft., the air content must be checked first to determine if air content has changed from initial mix design. If air content is correct, check aggregate unit weight, gradation, moisture content, and specific gravity and that the mix proportions have not changed. Verify the fresh unit weight of concrete after adjustments have been made.

7. Test to be performed by QC personnel with current ACI Concrete Strength Testing Technician certification.