



Standard Practice for Inspection of Underground Precast Concrete Utility Structures¹

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1. Scope

1.1 This practice covers the inspection of underground precast concrete utility structures designed and manufactured in accordance with Practice **C857** and Specification **C858**.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

C31/C31M Practice for Making and Curing Concrete Test Specimens in the Field

C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens

C857 Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures

C858 Specification for Underground Precast Concrete Utility Structures

C1758/C1758M Practice for Fabricating Test Specimens with Self-Consolidating Concrete

3. Terminology

3.1 *Description of Term Specific to This Standard:*

3.2 *inspector*—as used in this practice, an individual assigned by the manufacturer or by the purchaser to perform an inspection.

4. Manufacturer's Responsibility

4.1 The manufacturer shall develop and use an effective quality control program that shall include material controls,

tests, and inspections as agreed upon between manufacturer and purchaser throughout the fabrication process.

4.2 The manufacturer's inspection records and associated test data shall be made available to the inspector.

4.3 The manufacturer shall notify the inspector of any changes in material, method of fabrication, or quality control procedure.

4.4 The manufacturer shall designate an individual as liaison to the inspector. He will sign the inspection activity reports, and when necessary, will be available to the inspector to discuss matters pertaining to inspection, fabrication, and quality control.

4.5 The manufacturer shall prepare sufficient concrete test cylinders to meet the purchaser's requirements for compressive strength. Test cylinders shall be prepared in accordance with Practice **C31/C31M** or **C1758/C1758M** and tested in accordance with Test Method **C39/C39M**. Results shall be entered in an inspection activity report.

4.6 The manufacturer, upon request, shall assemble (without grout) selected concrete component sections to form a complete structure assembly to determine that fit-up requirements are as specified.

4.7 The manufacturer shall provide marking according to purchaser requirements or according to Specification **C858**.

5. Inspector's Responsibility

5.1 The inspector shall familiarize himself with the manufacturer's quality control program.

5.2 The inspector shall determine that the fabrication of the precast units complies with drawings approved by the purchaser, including hardware and general requirements.

5.3 The inspector shall immediately report to the purchaser and manufacturer any component parts, complete structures, etc., not in compliance.

5.4 The inspector shall clearly indicate on the inspection activity report any fabrication problems encountered and solutions utilized.

6. Inspection Procedure

6.1 The inspector shall inspect forms, materials, and fabricated parts used in the product.

¹ This practice is under the jurisdiction of ASTM Committee **C27** on Precast Concrete Products and is the direct responsibility of Subcommittee **C27.10** on Utility Structures.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

6.2 During each inspection, the inspector shall examine complete units for all specified features that can be determined by visual observation.

6.3 The first section of each type of precast structure from any set of forms shall be assembled by the manufacturer without grout and the inspector shall check that fit-up requirements are as specified.

6.4 The inspector shall check that all materials conform to requirements of Specification **C858**.

7. Fabrication Inspection

7.1 Reinforcing Steel:

7.1.1 The inspector shall check all reinforcing steel to determine that it has been covered by mill reports, with data in reports conforming to designated standard, and has not been damaged. Material with kinks or bends not indicated on fabrication drawings shall not be used. Heating to bend material is not permitted.

7.1.2 All reinforcing steel shall be free of form release coatings and loose rust as specified in Specification **C858**, although a light film of red rust is not objectionable.

7.1.3 Reinforcing steel shall be checked for size, spacing, proper bends, and lengths in accordance with the drawings.

7.2 Assembled Reinforcing Inspection:

7.2.1 All material shall be properly spliced and located according to the drawings.

7.2.2 Reinforcing steel shall be secured in such a manner that shifting will not occur during handling of the cage or placing of concrete. All chairs, bolsters, braces, and spacers in contact with form and reinforcing rod shall be of material that will not deteriorate. The cage shall be properly positioned in the form to provide the specified concrete cover over the steel.

7.2.3 The inspector shall check electrical ground connections or any other special items as specified.

7.3 Hardware Inspection:

7.3.1 Hardware shall be inspected to ensure compliance with purchaser's specifications.

7.3.2 Hardware shall be placed and securely fastened at designated locations to prevent shifting or movement during concrete placing.

7.3.3 Hardware and other embedded items shall be free of form release coatings.

7.3.4 Threaded inserts and duct terminators shall be free of concrete and other foreign matter.

7.4 Concrete Inspection:

7.4.1 Concrete shall be placed to prevent segregation, voids or honeycombed areas. Placing of concrete shall be observed to ensure that it is being placed properly in accordance with applicable standards.

7.4.2 The inspector shall observe condition of concrete after the forms are removed. Surfaces shall be sound. Patching and finishing shall be permitted to remove minor honeycomb. Chips, voids, and through cracks shall be repaired by an acceptable method in accordance with Specification **C858**. Extensive voids, chips, through cracks, or deep honeycomb shall be referred to the design engineer or purchaser's engineer for method of repair or acceptability.

7.4.3 The inspector shall observe that specified curing is provided.

7.5 *Dimensions Inspection*—The inspector shall measure for overall dimensions (that is, length, width, height, wall thickness, and squareness, etc.) the first concrete section of each type produced from each form. The tolerances shall comply to the finished product in accordance to Specification **C858**.

8. Tests

8.1 The inspector shall check results of slump tests, if specified, for compliance to specifications.

8.2 The inspector shall review compressive strength data on product covered. If not to specified strength, the inspector shall have concrete tested by method and manner agreed upon between the manufacturer and purchaser.

9. Nonconforming Material

9.1 Material found not to be in conformance with Specification **C858** shall be rejected unless acceptance is authorized.

10. Evidence of Inspection and Reporting

10.1 Inspection documents, etc., shall be in accordance with the specifications.

10.2 Inspection records on products completed and shipped between inspections need only be prepared at the purchaser's request.

11. Keywords

11.1 inspection; inspector; precast concrete; utility structure; utility vault

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