

SECTION 03300

CONCRETE FOR UTILITY CONSTRUCTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Work of this Section includes, but is not limited to:
 - 1. Cast-in-place cement concrete construction
 - 2. Reaction and support blocking
 - 3. Cradles and encasement
- B. Related Work Specified Elsewhere
 - 1. Trenching, Backfilling & Compaction: Section 02221
 - 2. Manholes: Section 02601

1.02 QUALITY ASSURANCE

- A. Reference Standards
 - 1. Pennsylvania Department of Transportation:
Publication 408 (2000) Specifications
 - 2. American Society for Testing and Materials (ASTM):
 - C31 Making and Curing Concrete Test Specimens in the Field
 - C39 Test for Compressive Strength of Cylindrical Concrete Specimens
 - C42 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - C172 Sampling Fresh Concrete

1.03 SUBMITTALS

- A. Certificates
 - 1. Submit certification from the concrete producer attesting that the cement concrete conforms to Section 704, Publication 408 Specifications for the class of concrete being used.
 - 2. Submit certified results of compressive strength tests performed by an independent testing laboratory.
- B. Shop Drawings

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1. Submit detailed shop drawings of reinforcing steel.

PART 2 PRODUCTS

2.01 CEMENT CONCRETE

- A. Ready-mixed, conforming to Section 704, Publication 408 Specifications.

1. Requirements for State approved batch plants, design computations and plant inspection shall not apply. The acceptability of concrete will be based on conformance with the Cement Concrete Criteria specified below and the results of the specified tests.

- B. Cement Concrete Criteria

1. Class A

- a. 28-day compressive strength: 3300 psi

- b. Slump: 1 to 3 inches

2. Class C

- a. 28-day compressive strength: 2000 psi

- b. Slump: 2 to 6 inches

3. High Early Strength

- a. 3-day compressive strength: 3000 psi

- b. Slump: 1 to 3 inches

4. Cement Factor and Maximum Water-Cement Ratio conforming to Table A, Section 704.1(b), PaDOT Publication 408 Specifications.

2.02 REINFORCEMENT STEEL

- A. Reinforcement Bars

1. New billet-steel conforming to Section 709.1, Publication 408 Specifications.

2. Deformed, Grade 40

- B. Steel Wire Fabric

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1. Conforming to Section 709.3, Publication 408 Specifications

2.03 GROUTS

A. General

1. All grouting as indicated or noted on the Drawings, in other sections of the specification or obviously required to perform the work shall be non-shrink grout.
2. Grout in general shall be non-metallic type unless specifically noted on the Drawings or in other sections of the specifications to be a metallic type.
3. Grouting shall be in strict compliance with the directions contained in the manufacturer's current catalog or instructions provided with the product.
4. The grout manufacturer shall make available at no cost, upon 72 hours notification, the services of a qualified full-time field representative to aid in assuring proper use of the product under job conditions.

B. Non-metallic Type.

1. Non-metallic grout shall be Masterflow 713 Grout (pre-mixed) as manufactured by Master Builders.

C. Epoxy Based Grouts shall be a 2 component, moisture insensitive epoxy adhesive, such as Sikadur 32 Hi-Mob by Sika Corporation.

PART 3 EXECUTION

3.01 CONSTRUCTION

- A. Comply with Section 1001, Publication 408 Specifications for construction requirements including formwork, curing, protection and finishing of cement concrete.
- B. Excavate and shape trench bottoms and sides to accommodate thrust block forms, encasement, manhole bases, inlets and vaults.
- C. Support pipe, valves and fittings at the required elevation with brick or concrete block. Do not use earth, rock, wood, or organic material as supports.
- D. Construct manhole bases, reaction and support blocking, cradles, encasements, and miscellaneous mass concrete of Class C concrete.
- E. Provide spacers, chairs, bolsters, ties and other devices for properly placing, spacing, supporting and fastening reinforcement in place.

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- F. Place concrete utilizing all possible care to prevent displacement of pipe or fittings. Return displaced pipe or fittings to line and grade immediately.
- G. Insure tie rods, nuts, bolts and flanges are free and clear of concrete.
- H. Do not backfill structures until concrete has achieved its initial set, forms are removed, and concrete work is inspected by the Owner.
- I. Perform backfilling and compaction as specified in Section 02221.

3.02 FIELD TESTS OF CONCRETE DURING CONSTRUCTION

- A. Test each 50 cubic yards or fraction thereof of each class of concrete for compressive strength. Retain an independent testing laboratory to test cylinders.
 - 1. Sample concrete in accordance with ASTM C172
 - 2. Prepare and cure two test cylinders in accordance with ASTM C31.
 - 3. Test cylinders in accordance with ASTM C39
- B. If test cylinders fail to meet strength requirements, the Owner may require additional core tests in accordance with ASTM C42 at the expense of the Contractor.

*** END OF SECTION ***