

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers cast-in-place concrete materials, reinforcing steel, forms, and finishing in conjunction with sanitary sewer pipeline construction.
- B. Use Class A Concrete in all manholes and other structures.
- C. Use Class B Concrete for bedding and encasement only.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting
- B. Section 02575 - Pavement Repair
- C. Section 02605 - Manholes
- D. Section 02730 - Sanitary Sewer Pipelines
- E. Section 02732 - Sanitary Sewer Service Lines

1.03 QUALITY ASSURANCE

ASTM C94	ASTM A82	ASTM A185	ASTM A615
ASTM A617	AASHTO M85	AASHTO T27	

1.04 SUBMITTALS

- A. Submit mix design, equipment details, and vendor name for field batched concrete.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Concrete: composed of Portland Cement; fine and coarse aggregate; water; and, an air entraining agent. Provide either Class A concrete or Class B concrete as described below.
- B. For Class A concrete use ready-mixed concrete; conform to ASTM C 94, latest edition; deliver and place within one hour after all materials have been placed in the mixing drum.
- C. For Class B concrete use ready-mixed or field mixed concrete.
- D. Proportion components, except water, by weight. Water may be measured by volume. One sack of Portland Cement consists of one cubic foot or 94 pounds. Proportion components to meet these requirements:
 - 1. Class A Concrete:
 - a. Minimum sacks of cement per cubic yard: six (6)
 - b. Slump range: 2 - 4 inches
 - c. Minimum 28 day compressive strength: 4000 PSI
 - d. Air Content: 4 - 7 percent
 - 2. Class B Concrete:
 - a. Minimum sacks of cement per cubic yard: five (5)
 - b. Slump range: 2 - 4 inches
 - c. Minimum 28 day compressive strength: 3000 PSI
 - d. Air Content: Not Applicable
- E. Cement: Portland Cement conforming to AASHTO M 85, Type I. Use Type III cement (high early strength) only if approved by the Little Rock Wastewater.
- F. Water: potable water free from injurious amounts of acids, alkalis, oils, sewage, vegetable matter and dirt.

- G. Air entraining agent: use in all Class A concrete; conform to AASHTO M 154; add to the mixing water in solution; proportion to provide four (4) to seven (7) percent air in the concrete.
- H. Fine aggregate: clean, hard, durable particles of natural sand free from injurious amounts of organic impurities; conform to the gradation requirements of AASHTO T 27.
- I. Coarse aggregate: clean, hard and durable crushed stone or washed gravel; reasonably well graded from course to fine; per AASHTO T 27.

2.02 REINFORCING STEEL

- A. Steel bars: deformed, conforming to ASTM A 615 or A 617.
- B. Steel wire: conform to ASTM A 82, Cold-Drawn Steel Wire for Concrete Reinforcement.
- C. Wire mesh: conform to ASTM A 185; gauge and mesh per plans.
- D. Submit reinforcing steel bars shop drawings for approval.
- E. All steel reinforcement: free from rust, scale, mortar, dirt, or other objectionable coatings.

PART 3 - EXECUTION

- A. Perform excavation per Section 02220 - Excavation, Backfilling, and Compacting.
- B. Build forms neat, square, and flat so concrete will have smooth finish when forms are pulled. Construct forms to provide finished concrete to dimensions shown on plans.
- C. Place reinforcing steel accurately in accordance with details shown on the plans and properly secure in position.
- D. Vibrate all structural concrete as it is placed using internal vibrators capable of transmitting vibration to the concrete at frequencies not less than 4,500 impulses per minute. Do not use form vibrators. Limit vibration to provide satisfactory

consolidation without causing segregation. Do not insert vibrator more than six (6) inches into the lower courses previously vibrated. Use vibrators in a substantially vertical position; insert at uniformly spaced points no farther apart than the visible effectiveness of the vibrator.

- E. Vibration is not required in manhole bases and pipe encasements; consolidate concrete in these places with a tamping rod so a dense void free mass is formed.
- F. Allow concrete to cure for at least 48 hours before stripping forms. If concrete is in a structural member, do not remove forms until the concrete can withstand safely all superimposed loads.
- G. On all exposed surfaces, including the inside surface of manholes, remove all fins and projections so the surface is smooth. Cut out and fill with grout any honeycombed areas. Extensive honeycombing is not allowable.

END OF SECTION 03300