

SECTION 31 6320
DRILLED CONCRETE PIERS AND SHAFTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 WORK INCLUDED

Drilled shaft cast-in-place concrete piers with reinforcing steel.

1.03 RELATED WORK

- A. Information Available to Bidders - Subsurface Investigation: Log of borings.
- B. Section 01 40 00 - Testing Laboratory Services.
- C. Section 02 20 00 - Earthwork.
- D. Section 03 20 00 - Concrete Reinforcement: Specifications for concrete reinforcement.
- E. Section 03 30 00 - Cast-In-Place Concrete: Specifications for concrete.

1.04 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01 30 00.
- B. Indicate reinforcing requirements.

1.05 PIER MEASUREMENT

- A. Bids shall be based on pier depths from existing grades as indicated on the drawings and shall state unit prices per foot, including drilling, reinforcing and concrete for depths greater or less than those indicated on the drawings. Adjustment shall be based on the cumulative total of pier depths greater or less than plan depths multiplied by the applicable unit price.
- B. Bids shall state unit prices per foot for casing of piers. Adjustment shall be based on the cumulative total depths multiplied by the unit price applicable.

1.06 PROJECT RECORD DOCUMENTS

Accurately record shaft diameter, depths of piers, bearing depths, depth to bearing stratum, Bearing stratum material, penetration into bearing stratum, and condition of pier excavations.

1.07 TESTING AND QUALITY CONTROL

Refer to Section 01 40 00 for testing and quality control by Owner's Testing Agency.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete Materials and Mix:
 - 1. Specified in Section 03 30 00.
 - 2. Using minimum compressive strength of 3000 psi, in place, at 28 days.
 - 3. When casing is required, air entrained.
- B. Reinforcement: Specified in Section 03 20 00.
- C. Steel Casings: This inside diameter shall not be less than the nominal size of shaft as scheduled.

PART 3 EXECUTION

- A. Drilled concrete shafts shall be excavated to the dimensions and elevations shown on the drawings. Shafts shall be bored plumb to a tolerance of 1-1/2 inches off vertical for depths up to and including 12 feet plus an additional tolerance of 0.05 inches per foot for depths in excess of the first 10 feet. Refer to General Notes.

- B. Casings shall be required for shaft excavations when such provision is necessary to prevent caving of the material or when necessary to shut off water.
- C. Upon completion of drilling, the excavation shall be free from accumulated seepage water and all loose material.
- D. Pier excavations shall not be opened that cannot be filled with concrete before the end of the same workday.
- E. Allow inspection of pier shafts prior to reinforcing steel and concrete placement.

3.02 PLACING REINFORCEMENT AND CONCRETING

- A. Promptly after excavation of each hole steel reinforcement shall be placed accurately in the shaft and concrete placed to the elevations as indicated on the drawings.
- B. Place reinforcing steel in accordance with Section 03 20 00.
- C. Place concrete in accordance with Section 03 30 00.
- D. Place concrete in holes over 10 feet deep with a tremie.
- E. Concrete placement shall be continuous until shaft is filled. Cold joints in piers will not be permitted.
- F. Hold steel reinforcement in position in shaft during entire concrete placing operations.
- G. Top of piers shall be finished smooth and level.
- H. Place any dowels and anchor bolts after concrete placement is complete and before concrete has attained its initial set. Placement support for dowels as necessary.

END OF SECTION