

SECTION 02372
DRILLED CAISSONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope

1. Furnish and install cast-in-place reinforced concrete caisson shafts
 - a. Site preparation
 - b. Dewatering
 - c. Drilled shaft stabilization, casing
 - d. Preparation and placement of reinforcement and embedments
 - e. Placement of concrete

B. Additional Requirements Specified Elsewhere

1. Section 01340: Shop Drawings, Product Data and Samples
2. Section 01400: Quality Control

C. Related Requirements Specified Elsewhere

1. Section 02200: Earthwork
2. Section 03100: Concrete Formwork
3. Section 03200: Concrete Reinforcement
4. Section 03300: Cast-In-Place Concrete

1.2 QUALITY ASSURANCE

A. Coordinate review of drilled shaft prior to placement of reinforcing and concrete

B. Maintain dewatering in casing throughout course of construction until concrete is placed

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete Reinforcing: Refer to Section 03200

B. Cast-In-Place Concrete

1. 3,500 psi compressive strength at 28 days
2. Refer to Section 03300 for other requirements

PART 3 - EXECUTION

3.1 GENERAL

A. Equipment

1. Drilling equipment shall be of suitable capacity for the work required with fixed drilling leads for true vertical alignment
2. Casings
 - a. Steel casing shall be provided to prevent caving of shafts and as safety liners
 - b. Provide internal lighting as necessary to facilitate satisfactory inspection

3.2 DRILLING

- A. Drilling shall be done no earlier than four (4) hours before placement of concrete. Plank or other covers shall be used to cover the excavation until concreting. All holes shall be reinforced and filled with concrete the same day they are drilled
- B. A shaft liner shall be placed around the mouth of the shaft after drilling to prevent caving and provide safety for workmen and inspection. Excavations shall be kept dry by preventive grading and other necessary means until concrete is placed
- C. The excavations shall be inspected by the Soils Engineer prior to placing of concrete. Contractor shall provide necessary facilities and safety precautions to accommodate this inspection

3.3 REINFORCEMENT

- A. Refer to Section 03200 for requirements for reinforcing steel. The reinforcement shall be placed in conformance with the Drawings and with at least three (3) inches between the shaft sides and outside of reinforcement (ties). Use dense concrete chairs with embedded wire ties to center the reinforcing cages in the shaft

3.4 CONCRETE PLACEMENT

- A. Refer to Section 03300 for requirements for concrete and the placing thereof
- B. Perform all measures necessary to prevent the inclusion of soil or rock material in the concrete during placement
- C. Limit free-fall of concrete mix to a maximum of four (4) feet
 1. Use vertically suspended pumphines or tremies centered in the shaft to prevent segregation of concrete materials by falling through the reinforcing
- D. Maintain casing below the level of concrete placement and withdraw as shaft is filled
- E. Consolidate concrete in shaft in accordance with the requirements of Section 03300

- F. Take care to finish the caisson concrete at the specified elevation after the withdrawal of the casing pipe. Do not overfill or leave the top of caisson higher than specified

3.5 FIELD QUALITY CONTROL

- A. Sample and test concrete for quality control during placement as determined by Engineer and geotechnical and materials testing consultant
 - 1. Compressive Strength Tests: ASTM C 39; one set of four cylinders per drilled pier but not more than one set per truck. One specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required
- B. Bottom elevations, bearing capacities, and lengths of caissons as shown on drawings are estimated from available geotechnical data. Actual elevations and caisson lengths and bearing capacities will be determined by geotechnical engineering consultant from conditions found in excavations. Final evaluations and acceptance of data will be determined by Engineer

3.6 MEASUREMENT AND PAYMENT

- A. Basis of Bids: Bids shall be based on number of caissons, design length from top elevation to bottom of shaft and diameter of shaft as shown on drawings
- B. Basis for Payment: Payment for caissons will be made on actual net length of caissons in place and accepted. The actual length may vary to coincide with elevations where satisfactory bearing strata are encountered, and with actual bearing value of bearing strata determined by testing services, and with stability and characteristics of soil strata. Adjustments will be made on net variation of total quantities, based on design dimensions for shafts
- C. There will be no additional compensation for excavation, concrete fill, reinforcing, casings, or other costs due to unauthorized overexcavating of shafts. No payment will be made for rejected caissons
- D. Prices quoted include full compensation for labor, materials, tools, equipment, and incidentals required for excavation, trimming, shoring, casings, dewatering, reinforcement, concrete, and other items for complete installation
- E. Unit Prices: Unit prices for the following items, as set forth in Contract conditions and the Bid Form, will apply in event additions to or deductions from Work are required and authorized by written order from Engineer
 - 1. 12" diameter caisson overrun
 - 2. 12" diameter caisson underrun
 - 3. 18" diameter caisson overrun
 - 4. 18" diameter caisson underrun
 - 5. 24" diameter caisson overrun
 - 6. 24" diameter caisson underrun
 - 7. 30" diameter caisson overrun
 - 8. 30" diameter caisson underrun

9. 36" diameter caisson overrun
10. 36" diameter caisson underrun
11. 42" diameter caisson overrun
12. 42" diameter caisson underun

END OF SECTION