

2.02 Reinforcing Steel

A. Reinforcing steel used in the construction of shafts shall conform to Section 503.

2.03 Concrete

A. Concrete used in the construction of shafts shall be Class 40 conforming to Section 502, except as here-in specified.

B. Classification:

Concrete Class in (100 psi) (28 day)	Minimum Cement Content, lb/cy	Max. Water to Cement (Plus Fly Ash) Ratio	Slump, In.	Air Content Percent
40	675	0.42	7-9	0-3

NOTE: Lithium or other mitigating measures may be required.

C. Fine aggregate for drilled shaft concrete Class 40 shall conform to the gradation specified in Section 703.02.

D. Coarse aggregate for drilled shaft concrete Class 40 shall conform to the Size 1 gradation specified in Section 703.03.

E. Water reducing/retarding admixture for concrete Class 40 is required and shall conform to ASTM C 494 Type D. .

2.04 Slurry

Slurry, if used, shall conform to one of the following:

A. Mineral Slurry

1. Mineral slurry shall conform to the following requirements:

Property	Test	Requirement
Density (pounds per cubic foot)	Mud Weight (Density) API 13B-1, Section 1	64 to 75
Viscosity (seconds/quart)	Marsh Funnel and Cup API 13b-1, Section 2.2	26 to 50
pH	Glass Electrode, pH Meter, or pH Paper	8 to 11
Sand Content (percent) -immediately prior to placing concrete	Sand API 13B-1, Section 5	4.0 max.

Quality control testing will be by the Contractor. Slurry temperature shall be at least 40°F when tested.

B. Synthetic Slurries

1. Synthetic slurries shall be used in conformance with the manufacturer's recommendations, the quality control plan specified in subsection 3.02.B.5, and these Special Provisions. The following synthetic slurries may be used:

Product

1. SlurryPro CDP

2. Super Mud

3. ShorePac GCV

Manufacturer

KB Technologies Ltd.
Suite 216, 735 Broad Street
Chattanooga, TN 37402

PDS Company
8140 East Rosecrans Ave.
Paramount, CA 90723

CETCO
1350 West Shure Drive
Arlington Heights, IL 60004

2. The sand content of synthetic slurry immediately prior to placing concrete shall be less than 2.0 percent, in accordance with API 13B-1, Section 5.

C. Water

1. Water may be used when casing is used for the entire length of the drilled hole in soils. Use of water without full-length casing may only be used with the approval of the Engineer.

2. The sand content in water immediately prior to placing concrete shall be less than 4.0 percent, in accordance with API 13B-1, Section 5.

2.05 Access Tubes for Crosshole Sonic Log (CSL) Testing

A. Access tubes for Crosshole Sonic Log (CSL) testing shall be steel pipe of 0.145 inches minimum wall thickness and at least 1 ½ inches inside diameter and not greater than 2 inches inside diameter.

B. The access tubes shall have a round, regular inside diameter free of defects and obstructions, including all pipe joints, in order to permit the free, unobstructed passage of 1 5/16 inches maximum diameter source and receiver probes used for the Crosshole Sonic Log (CSL) tests. The access tubes shall be watertight, free from corrosion with clean internal and external faces to ensure good bond between the concrete and the access tubes. The access tubes shall be fitted with watertight caps on the bottom and the top.

2.06 Grout; Grout for filling the access tubes at the completion of the Crosshole Sonic Log (CSL) tests shall conform to Section 506.03(H), Type B, Class 1.

Construction Requirements.