

**SPECIFICATIONS - DETAILED PROVISIONS**  
**Section 02242 - Cement Stabilized Sand Bedding/Backfill**

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**SECTION 02242**  
**CEMENT STABILIZED SAND BEDDING/BACKFILL**

**PART 1 - GENERAL**

1.01 DESCRIPTION

Cement stabilized sand shall be used for backfill and bedding as called for by the plans and specifications, or as directed by the Engineer. This section provides for the use of cement-sand as bedding material around gravity sewer pipes constructed in open cut installations; for backfilling material around sewer pipes constructed in open cut installations, manholes, inlets, and drainage structures (if required), and for backfill in pavement sections.

**PART 2 - PRODUCTS**

2.01 CEMENT

Cement shall consist of Type I, II or V Portland Cement conforming to ASTM C 150.

2.02 SAND

Clean, durable sand containing not more than the following:

- A. Deleterious Materials
  - 1. Clay lumps, ASTM C 142; less than 0.5 percent.
  - 2. Lightweight pieces, ASTM C 123; less than 5.0 percent.
  - 3. Organic impurities, ASTM C 40; shall not show a color darker than the standard color.
- B. Plasticity Index  
Plasticity index shall be six (6) or less when tested in accordance with ASTM D 4318.
- C. Gradation Requirements

**ASTM C-33 Concrete Sand**

100% Passing - 3/8" Sieve  
Less than 5% Passing - No. 200 Sieve  
MINIMUM SAND EQUIVALENT OF 30

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2.03 WATER

Water shall be free of oils, acids, alkalies, organic matter or other deleterious substances.

2.04 SAND-CEMENT MIXTURE PRODUCT

Sand-cement mixture shall consist of the proper percentage of cement per cubic yard or per ton of sand with sufficient water to hydrate the cement. A minimum of one and one-half (1.5) sacks of cement per ton of sand will be required.

2.05 MIX DESIGN

Contractor shall provide a sample of the proposed dry mix to the Engineer for testing and approval prior to construction. These tests will be used to derive the Proctor curve.

**PART 3 - EXECUTION**

3.01 PLACEMENT

Cement stabilized sand shall be placed around HDPE pipelines where depth of cover exceeds 20 feet in a manhole reach unless otherwise stated. The cement stabilized sand bedding shall surround 42" and smaller HDPE pipe by a minimum of 12" on top and both sides and by 6" on the bottom. The cement stabilized sand bedding shall surround HDPE pipe larger than 42" by a minimum of 18" on top and both sides and by 12" on the bottom. Bedding shall be placed in 6" to 8" lifts with 3% moisture or less, and compacted mechanically to achieve ninety-five (95%) Standard Proctor Test (ASTM D 698). Sand cement mixture shall be brought to the level required by the plans if different than the aforesaid minimums.

3.02 PERFORMANCE

Sand-cement mixture shall produce a minimum unconfined compressive strength of one hundred pounds per square inch (100 psi) in forty-eight (48) hours when compacted to ninety-five (95%) Standard Proctor Test (ASTM D 698) without additional moisture control, cured (ASTM C 31, Item 9), and tested in accordance with ASTM C 31.

3.03 TESTING

Random samples of the product will be taken in the field by the Engineer and tested.

3.04 MEASUREMENT AND PAYMENT

Cost of cement stabilized sand will not be paid directly, but shall be considered incidental to various bid items offered in the proposal.

**END OF SECTION 02242**