ITEM 944

CEMENT STABILIZED SAND – BASE COURSE

944.1 Description. This item specifies cement stabilized sand to be used as a foundation and base under concrete paving and shall be constructed as herein specified in conformity with the typical sections shown on the plans and to the lines and grades as established, or as directed by the Engineer. The work shall consist of furnishing all plant equipment, labor, materials and performance of all operations to secure a compacted base course.

944.2 Materials. Cement shall be Type I Portland cement conforming to ASTM C150.

Sand shall be clean durable sand containing not more than the following:

A. Deleterious Materials

Clay lumps, when tested in accordance with ASTM C142 shall be less than 0.5 percent.

Lightweight pieces, when tested in accordance with ASTM C123 shall be less than 5.0 percent.

Organic impurities when tested in accordance with ASTM C40, shall not show a color darker than the standard color.

B. The plasticity index shall be six (6) or less when tested in accordance with ASTM D4318.

C. Sand shall be free of organic matter and deleterious substances and shall meet the following gradation requirement.

Square Sieve Size	Percent Passing, By Weight
3/8"	100%
No. 200	5 -30%

Water shall be clean and clear, free of oils, acids, alkalis, organic matter or other deleterious substances and shall conform to the requirements of ASTM C94.

944.3 Sand-cement Mixture Product. The mixture shall consist of not less than 1.5 sacks of Portland cement per ton of material mixture as placed. The mixture shall contain sufficient water to hydrate the cement.

The cement, sand and water shall be mixed in a pug mill type mixer, which meets the approval of the Engineer. It shall be mixed for a minimum period of two minutes per batch.

944.4 Placing. The sand cement mixture shall be placed on the sub-grade prepared as per the specifications for untreated sub-grade. The sand cement mixture shall be placed in one (6) inch lift and compacted in a manner that will

thoroughly fill all voids. Hand operated vibratory tampers may be used for compaction or a motorized steel vibratory drum roller.

Materials not placed and compacted within four (4) hours after mixing shall be rejected. Do not place or compact sand-cement mixtures in standing or free water.

The Engineer shall have the option to require in-place density tests to be taken at each location, each day, to test the placement of backfill material. If the Engineer requires testing, the City of Deer Park shall furnish laboratory services. In-place densities shall be determined in accordance with ASTM D2922 or ASTM D1556.

944.5 Performance. The sand cement mixtures shall produce a minimum unconfined compressive strength of one hundred pounds per square inch (100 psi) in forty eight hours, when compacted to ninety five percent (95%) of Standard Proctor density (ASTM Method D558), without additional moisture control and when cured in plastic bags at a temperature of 73.4º F. at plus or minus 3º F. and tested in accordance with ASTM D1633.

Random samples of the delivered product will be taken in the field at the direction of the Engineer and tested at the City of Deer Park's expense. A minimum of one (1) sample per week shall be taken at random to represent a production that is less than one hundred (100) tons per week. Two (2) samples per week shall be taken at random to represent a production greater than one hundred (100) tons per week. The Engineer shall have the option to obtain additional samples for testing.

944.6 Notification. The Testing Laboratory's representative will notify the City of Deer Park, Engineer, Contractor and material supplier by facsimile of all tests indicating results falling below specified strength requirements.

944.7 Measurement. Cement stabilized sand shall be measured by the ton of 2,000 pounds. Measurement shall be made by tickets delivered to the Engineer. The dray tickets shall indicate the tare, gross and net weight of the load and the location of delivery.

If no separate Bid Item is provided on the Proposal, then "Cement Stabilized Sand Base Course" is considered a subsidiary item for construction of the Project and there will be no separate measurement.

944.8 Payment.

A. Where the bid sheet specifies FOB the job, materials shall be transported to the job site specified on the bid sheet, and paid for by the ton of 2,000 pounds. which unit price shall include all costs of materials, furnished, hauled, dumped, spread, shaped, and compacted.

B. When the Project Manual, plans or other specifications indicate the use of cement stabilized sand is incidental to another pay item, no direct payment for the material will be made.

If no separate Bid Item is provided on the Proposal for “Cement Stabilized Sand Base Course”, then include cost of same in Contract prices bid for item of which it is a component.

END OF ITEM 944