SANDBAG HEADWALLS:

(4-19-05) (Rev 5-18-10) SP8 R31

Description

Construct sandbag headwalls for temporary pipes in accordance with the contract. Sandbag headwalls are only for temporary applications and removed when no longer needed. When a reinforced sandbag headwall is required, install reinforcing fabrics as shown on the plans.

Materials

Item	Section
Select Material	1016

Provide 8" long steel spikes approved by the Engineer or 24" long reinforcing bars meeting the requirements of reinforcing steel in accordance with Section 1070 of the *Standard Specifications*.

(A) Sandbags

Use acrylic sand bags meeting the requirements of the Federal Commercial Item Description A-A-52140A.

Use Class II, Type 1 or Class III Select Material to fill sandbags.

(B) Reinforcing Fabrics

Provide Type 2 Typical Certified Mill Test Reports in accordance with Article 106-3 of the *Standard Specifications* and minimum average roll values (MARV) in accordance with ASTM D4439 for fabric properties. For testing fabrics, a lot is defined as a single day's production.

Load, transport, unload and store reinforcing fabrics such that they are kept clean and free of damage. Identify, store and handle fabrics in accordance with ASTM D4873. Reinforcing fabrics with defects, flaws, deterioration or damage will be rejected. Do not leave fabrics uncovered for more than 7 days.

Use reinforcing fabrics meeting the requirements of Article 1056-1 of the *Standard Specifications*. The reinforcement direction (RD) is the direction perpendicular to the headwall face and the cross-reinforcement direction (CRD) is the direction parallel to the headwall face. Use woven polyester or polypropylene fabrics with properties meeting the following requirements:

Property	Test Method	Requirement (MARV)
Wide Width Tensile Strength @ Ultimate (RD)	ASTM D4595	Varies – 2400 lb/ft min
Wide Width Tensile Strength @ Ultimate (CRD)	ASTM D4595	1200 lb/ft min

Tear Strength	ASTM D4533	100 lb min
Puncture Strength	ASTM D6241	600 lb min
Permittivity	ASTM D4491	0.20 sec^{-1} min
Apparent Opening Size	ASTM D4751	20 US sieve min – 70 US sieve max
Ultraviolet Stability (retained strength)	ASTM D4355	70 %* min

*after 500 hours of exposure

Construction Methods

Install temporary pipes and excavate as necessary for sandbag headwalls in accordance with the contract. Notify the Engineer when foundation excavation is complete. Do not place sandbags or reinforcing fabrics until obtaining approval of the excavation depth and foundation material.

Fill sandbags such that when tied, the bags measure approximately 13" wide, 21" long and 4” to 5" thick. Place sandbags and connect bags with spikes or reinforcing bars as shown on the plans. Do not leave any gaps between sandbags and pipes. Erect sandbag headwalls as near to vertical as possible with no negative batter (headwall face leaning forward). Construct headwalls with a vertical and horizontal tolerance of 3” when measured with a 10 ft straight edge and an overall vertical plumbness (batter) and horizontal alignment of less than 6”.

Place reinforcing fabrics at locations and elevations shown on the plans and in slight tension free of kinks, folds, wrinkles or creases. Do not splice reinforcing fabrics in the RD. Seams are allowed in the CRD. Bond or sew adjacent reinforcing fabrics together or overlap fabrics a minimum of 18” with seams oriented perpendicular to the headwall face. Cover reinforcing fabrics with at least 3” of backfill.

Backfill sandbag headwalls in accordance with Section 235 of the *Standard Specifications* except do not backfill with rock, broken pavement or similar material. Use only hand operated compaction equipment within 3 ft of the sandbags. Do not damage reinforcing fabrics when placing and compacting backfill. Do not operate heavy equipment on reinforcing fabrics until they are covered with at least 10” of backfill. Repair or replace any damaged fabrics to the satisfaction of the Engineer.

After sandbag headwalls are no longer needed, remove headwalls and dispose of materials.

Measurement and Payment

Sandbag Headwalls will be measured and paid for in square feet. Sandbag headwalls will be measured as the exposed face area and no payment will be made for openings for temporary pipes in headwalls. The contract unit price for *Sandbag Headwalls* will be full compensation for furnishing labor, tools, equipment and materials, excavating, backfilling, providing sandbags filled with select material, stakes or reinforcing bars and reinforcing fabrics, removing headwalls, disposing of materials and any incidentals necessary to construct and remove sandbag headwalls in accordance with this provision.

Payment will be made under:

Pay Item	**Pay Unit**
Sandbag Headwalls	Square Foot