

725 - ABUTMENT DRAINAGE SYSTEMS

SECTION 725

ABUTMENT DRAINAGE SYSTEMS

725.1 DESCRIPTION

Install the abutment drainage system specified in the Contract Documents.

For an abutment strip drain, install a geocomposite drainage system consisting of a prefabricated abutment strip drain, and perforated and non-perforated underdrain pipes, as designated in the Contract Documents.

For an abutment aggregate drain, install a geocomposite drainage system consisting of geotextile enclosed aggregate materials layered with base coarse reinforcement and perforated and non-perforated underdrain pipes, as designated in the Contract Documents.

BID ITEMS

Abutment Strip Drain  
Abutment Aggregate Drain

UNITS

Square Yard  
Cubic Yard

725.2 MATERIALS

Provide materials that comply with the applicable requirements.

Abutment Strip Drain .....	<b>DIVISION 1700</b>
Geotextile Fabric.....	<b>DIVISION 1700</b>
Perforated Pipe for Underdrains .....	<b>DIVISION 1900</b>
Non-Perforated Pipe for Underdrains .....	<b>DIVISION 1900</b>
Geosynthetics (Class 2 Subsurface Drainage) .....	<b>DIVISION 1700</b>
Geosynthetics (Base Course Reinforcement) .....	<b>DIVISION 1700</b>
Geofoam .....	<b>DIVISION 1700</b>
Aggregate for Structures and Pipe Backfill* .....	<b>DIVISION 1100</b>
*Specified in the Contract Documents	

725.3 CONSTRUCTION

**a. General.** Construct abutment drainage systems according to the Contract Documents.

**b. Abutment Strip Drain.** Clean the surfaces against which the geocomposite drains will be placed. Remove all soil, debris and irregularities that will prevent intimate contact between the surface and the drain.

Install the geocomposite drains either vertically or horizontally, according to the Contract Documents. Secure the geocomposite drains using metal stick clips or adhesives. When a waterproofing membrane is included in the Contract Documents, do not use nails to attach the geocomposite drain, unless the waterproofing membrane is self-healing.

Form all joints and splices according to the manufacturer’s recommendations.

Cover all exposed edges of the geocomposite drainage core with geotextile filter fabric. Tuck and secure a minimum of 4 inches of fabric behind the core. This may be done by utilizing the excess fabric at the ends, or using a 12-inch strip of fabric in the same manner, taping it to the exposed fabric 8 inches in from the edge with a continuous strip of 3-inch, waterproof plastic tape and folding the remaining 4 inches over and tucking behind the core edge.

If the fabric is torn, perforated or ripped, patch it with a second layer of fabric having a 4-inch overlap, and secure the edges with 3-inch waterproof plastic tape. Replace damaged core sections.

Place the underdrain pipes as shown on the Contract Documents. Separate the fabric from the core. Wrap it around the circumference of the perforated underdrain pipe and tuck it behind the core.

**c. Abutment Aggregate Drain.**

- If the abutment area was over-excavated, replace the over-excavated area with aggregate for structures and pipe backfill to the limits of the excavation shown in the Contract Documents. Compact aggregate to Type B compaction, SECTION 205. This work will be performed at no additional cost to KDOT.

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- After installing the Bridge Backwall Protection System (constructed and paid for according to **SECTION 724**), grade, shape and compact the cohesive soils to the dimensions shown in the plans.
- Shape and secure the geofoam to the previously placed Bridge Backwall Protection System without damaging the geofoam. Protect the geofoam from damage due to hydrocarbons (gas, diesel, solvents, etc.) and sunlight.
- Place the Class 2 Subsurface Drainage geosynthetic between the geofoam and the limits of the excavation with enough material to fully enclose and overlap at the top 3.0 feet and to fold and enclose the ends. Secure folds, any seams or splices and overlaps by sewing or manufacture's approved methods.
- Place the perforated 4-inch pipe as shown in the plans. Verify that any couplers are secured, that the slope is correct and in the intended direction.
- Place the first lift of aggregate so that there is 8 inches of aggregate above the pipe, level the aggregate and compact to Type B compaction, **SECTION 205**, using a hand operated plate compactor or other means approved by the Engineer. If the granular material cannot be shaped and compacted, as shown in the plans, then wrap 3.0 feet of the ends of each lift with Class 2 Subsurface Drainage Geosynthetic.
- Place the Base Coarse Reinforcement geosynthetic on compacted aggregate without gaps or sags and to the limits shown in the plans. Using the same methods above, successively place aggregate and Base Coarse Reinforcement geosynthetic in 12 inch lifts to the dimensions shown on the plans.
- Overlap the Class 2 Subsurface Drainage Geosynthetic a minimum of 3 feet on the top of the completed fill. Fold ends of the Class 2 Subsurface Drainage geosynthetic to enclose the fill and cut an opening, at the correct elevation, allowing the 4-inch pipe to exit the contained fill, but not the retained aggregate. Secure the lap, folds or any splices by sewing or by other methods approved by the manufacturer.
- Place Class 2 Subsurface Drainage geosynthetic over geofoam and enclosed aggregate as shown in the plans. Place and compact to soil cap material to the limits shown in the Contract Documents. Use material with a Unified Soil Classification of ML or CL. Compact to Type A compaction, MR-90, **SECTION 205**.

When shown on the plans, taper the contained aggregate, Base Course Reinforcement geosynthetic, and Class 2 Subsurface Drainage geosynthetic at the edge of the roadway. Fold, wrap and secure to create shape shown on the plans. Terminate the geofoam at limits shown in the plans. Perform work outside these limits shown on the plans according to the Contract Documents.

**d. Backfill.** Do not damage the abutment drainage system when backfilling the structure. Use backfill soils with a liquid limit of less than 50.

### 725.4 MEASUREMENT AND PAYMENT

The Engineer will measure abutment strip drains by the square yard to the limits shown in the Contract Documents.

The Engineer will measure abutment aggregate drains by the cubic yard to the limits shown in the Contract Documents.

Payment for "Abutment Strip Drain" and "Abutment Aggregate Drain" at the contract unit price is full compensation for the specified work. All other associated work is subsidiary.