

CONSTRUCTION SPECIFICATION

95. GEOTEXTILE

1. SCOPE

This work shall consist of furnishing all materials, equipment, and labor necessary for the installation of geotextiles.

2. QUALITY

Geotextiles shall conform to the requirements of Material Specification 592 and this specification.

3. STORAGE

Prior to use, the geotextile shall be stored in a clean dry location, out of direct sunlight, not subject to extremes of either hot or cold temperatures, and with the manufacturer's protective cover undisturbed. Receiving, storage, and handling at the job site shall be in accordance with the requirements listed in ASTM D 4873.

4. SURFACE PREPARATION

The surface on which the geotextile is to be placed shall be graded to the neat lines and grades as shown on the drawings. The surface shall be reasonably smooth and free of loose rock and clods, holes, depressions, projections, muddy conditions and standing or flowing water (unless otherwise specified in Section 7 of this specification).

5. PLACEMENT

Prior to placement of the geotextile, the soil surface will be reviewed for quality assurance of the design and construction. The geotextile shall be placed on the approved prepared surface at the locations and in accordance with the details shown on the drawings and specified in Section 7 of this specification. The geotextile shall be unrolled along the placement area and loosely laid, without stretching, in such a manner that it will conform to the surface irregularities when material or gabions are placed on or against it. The geotextile may be folded and overlapped to permit proper placement in designated area(s).

Method 1 The geotextile shall be joined by machine sewing using thread material meeting the chemical requirements for the geotextile fibers or yarn. The sewn overlap shall be six (6) inches and the sewing shall consist of two (2) parallel stitched rows at a spacing of approximately one (1) inch and shall not cross (except for any required re-stitching). The stitching shall be a lock-type stitch. Each row of stitching shall be located a minimum of two (2) inches from the geotextile edge. The seam type and sewing machine to be used shall produce a seam strength, in the specified geotextile, that provides a minimum of 90-percent of the tensile strength in the weakest principal direction of the geotextile being used, when tested in accordance with ASTM D 4884. The seams may be factory or field sewn.

The geotextile shall be temporarily secured during placement of overlying materials to prevent slippage, folding, wrinkling, or other displacement of the geotextile. Unless otherwise specified, methods of securing shall not cause punctures, tears or other openings to be formed in the geotextile.

Method 2 The geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified), and secured against the underlying foundation material. Securing pins, approved and provided by the geotextile manufacturer, shall be placed along the edge of the panel or roll material to adequately hold it in place during installation. Pins shall be steel or fiberglass formed as a “U”, “L”, or “T” shape or contain “ears” to prevent total penetration through the geotextile. Steel washers shall be provided on all but the “U” shaped pins. The upstream or up-slope geotextile shall overlap the abutting down-slope geotextile. At vertical laps, securing pins shall be inserted through the bottom layers along a line through approximately the mid-point of the overlap. At horizontal laps and across slope laps, securing shall be inserted through the bottom layer only. Securing pins shall be placed along a line approximately two (2) inches in from the edge of the placed geotextile at intervals not to exceed 12 feet unless otherwise specified. Additional pins shall be installed as necessary and where appropriate, to prevent any undue slippage or movement of the geotextile. The use of securing pins will be held to the minimum necessary. Pins are to remain in-place unless otherwise specified.

Should the geotextile be torn or punctured, or the overlaps or sewn joint disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be removed and restored to the original approved condition. The repair shall consist of a patch of the same type of geotextile being used and overlaying the existing geotextile. When the geotextile seams are required to be sewn, the overlay patch shall extend a minimum of one (1) foot beyond the edge of any damaged area and joined by sewing as required for the original geotextile except that the sewing shall be a minimum of six (6) inches from the edge of the damaged geotextile. Geotextile panels joined by overlap shall have the patch extend a minimum of two (2) feet from the edge of any damaged area.

Geotextile shall be placed in accordance with the following applicable specification according to the use indicated in Section 7:

- a. Slope Protection The geotextile shall not be placed until it can be anchored and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered geotextile from a height greater than three (3) feet.
- b. Subsurface Drains The geotextile shall not be placed until drainfill or other material can be used to provide cover within the same working day. Drainfill material shall be placed in a manner that prevents damage to the geotextile. In no case shall material be dropped on uncovered geotextile from a height greater than five (5) feet.

- c. Road Stabilization The geotextile shall be unrolled in a direction parallel to the roadway centerline in a loose manner permitting conformation to the surface irregularities when the roadway fill material is placed on its surface. In no case shall material be dropped on uncovered geotextile from a height greater than five (5) feet. Unless otherwise specified, the minimum overlap of geotextile panels joined without sewing shall be 24 inches. The geotextile may be temporarily secured with pins recommended or provided by the manufacturer, but they shall be removed prior to placement of the permanent covering material.

6. MEASUREMENT AND PAYMENT

Method 1 For items of work for which specific unit prices are established in the contract, the quantity of geotextile for each type placed within the specified limits will be determined to the nearest specified unit by measurements of the covered surfaces only, disregarding that required for anchorage, seams, and overlaps. Payment will be made at the contract unit price. Such payment will constitute full compensation for the completion of the work.

Method 2 For items of work for which specific unit prices are established in the contract, the quantity of geotextile for each type placed with the specified limits will be determined to the nearest specified unit by computing the area of the actual roll size, or partial roll size installed. The computed area will include the amount required for overlap, seams, and anchorage as specified. Payment will be made at the contract unit price. Such payment will constitute full compensation for the completion of the work.

Method 3 For items of work for which specific lump sum prices are established in the contract, the quantity of geotextile will not be measured for payment. Payment for geotextiles will be made at the contract lump sum price and will constitute full compensation for the completion of the work.

All Methods The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 7 of this specification.