SECTION 648 - PERMEABLE SEPARATOR

648.01 Description. This work includes furnishing and placing a geotextile for use as a permeable separator. The Contractor shall design the permeable separator to allow passage of water while retaining the soil without clogging. This specification does not address reinforcement applications that require an engineered design.

648.02 Materials. Materials shall conform to the following:

Aggregates for Subbase	703.17
Geotextiles For Permeable Separator Applications	716.02

648.03 Construction Requirements.

(A) Geotextile Packaging and Storing. The Contractor shall furnish the geotextile rolls with suitable wrapping for protection against moisture, and extended ultra-violet exposure prior to placement. The Contractor shall identify, store, and handle each roll according to ASTM D 4873. If stored outdoors, the Contractor shall also elevate and protect them with a waterproof cover.

(B) Site Preparation. The Contractor shall prepare the installation site by clearing and grading the area as required. The Contractor shall remove sharp objects, boulders, cobbles, cut trees and shrubs. Removal of top soil and vegetation mat is not necessary.

(C) Installation. The Contractor shall unroll the geotextile smoothly on the prepared subgrade in the direction of construction traffic. The Contractor shall not drag the fabric across the subgrade. The Contractor shall remove wrinkles and folds in the fabric by stretching and anchoring as required. The Contractor shall:

(1) overlap the geotextile a minimum of three (3) feet at longitudinal and transverse joints, or

(2) sew the geotextile by an accepted method with nine (9) inch overlap at sheet intersections.

The Contractor requires sewing if the subgrade soils have a CBR of less than one (1) percent. The Contractor shall hold the geotextile in place before subbase placement by pins, staples, or piles of suitable fill. On curves, the Contractor shall fold or cut the geotextile to conform to the curve with appropriate overlap. The fold or overlap shall be in the direction of construction. The Contractor shall hold fold or overlap in place as prescribed above.

(1) **Sewn Seams.** Both factory and field sewn seams shall conform to the strength requirements for the geotextile specified. The seams includes two parallel rows of stitching. The two rows of stitching shall be 0.5 inch ± 0.25 inch apart and shall not cross, except the restitching. The stitching shall be a lock- type stitch. If the Contractor uses a flat or prayer seam (Type SSa-2), the minimum seam allowance (minimum distance from the geotextile edge to the stitch line nearest to that edge) shall be one and a half (1-1/2) inches. The minimum seam allowance for other seam types shall be one (1) inch. The seam, stitch type, and the equipment used to do the stitching shall be as recommended by the manufacturer of the geotextile and accepted by the Engineer. The Contractor shall sew the seams so that the Engineer can inspect the seam readily.

(2) **Geotextile Exposure Following Placement.** Exposure of geotextiles to the elements between lay down and cover shall be a maximum of five (5) days to minimize damage potential.

(3) **Subbase Placement.** The Contractor shall place the subbase by end dumping onto the geotextile from the edge of the geotextile or over previously placed subbase aggregate.

On subgrades having a CBR of less than one (1) percent, the Contractor shall spread the subbase aggregate simultaneously with dumping. The Engineer will not allow traffic directly on the geotextile. Construction equipment shall not make sudden stops, starts, or turns on the subbase material. The Contractor shall spread the subbase material from the back-dumped pile using a motor grader or bulldozer. The Contractor shall place the subbase material on the geotextile so that a minimum of twelve (12) inches of material will be between the vehicle or equipment tires or tracks and the geotextile. If lift thicknesses are less than twelve (12) inches, the Contractor shall limit the construction vehicles in size and weight so that rutting in the initial lift above the geotextile is not greater than three (3) inches deep. The Contractor shall limit the compaction of first lift above the geotextile to placement, spreading and compaction equipment only. The Engineer will not allow vibratory compaction on the first lift. The Contractor shall use a smooth drum roller to get the specified density.

For very soft subgrade soils with CBR less than three (3) percent, the first lift of compaction over the geotextile shall require a compaction level of five (5) percent less than the required specification density. The Contractor shall fill the ruts occurring during construction with additional subbase material and compact the subbase to the specified density.

(4) Damage Repair. If the Contractor tears or punctures the geotextile or disturbs the overlaps or sewn joint, the Contractor shall remove the backfill material around the damaged or displaced area and repair or replace the damaged area at no cost to the State. The repair includes a patch of the same type of geotextile used for the intended application. The patch shall overlap the existing geotextile a minimum of three (3) feet from the edge of the damaged area. The Contractor shall repair the damaged sheets by sewing. The Contractor shall replace and compact the removed subbase material to the specified density.

648.04 Method of Measurement. The Engineer will measure geotextile permeable separator by the square yards from the payment lines shown in the contract or ordered by the Engineer. This excludes seam and sewing overlaps.

648.05 Basis of Payment. The Engineer will pay for the accepted quantities of geotextile permeable separator by the contract unit price per square yard. The price shall be full compensation for packaging; storing; preparing the surface; installing the fabric; sewing; overlapping; furnishing labors, equipment, tools, materials, and incidentals necessary to complete the work.

The Engineer will make payment under:

Pay Item	**Pay Unit**
Permeable Separator	Square Yard

The Engineer will pay excavation and backfill under Section 203 - Excavation and Embankment.

The Engineer will pay aggregate subbase course under Section 305 - Aggregate Base Course.

SECTION 649 - (UNASSIGNED)