Civil-Tex

Geosynthetics & Engineering

PAVING FABRIC - GUIDE SPECIFICATION & INSTALLATION

DESCRIPTION

This work shall consist of furnishing and placing an asphalt overlay paving fabric beneath a pavement overlay or between pavement layers to provide a moisture barrier membrane and a stress absorbing interlayer.

MATERIAL REQUIREMENTS

Paving Fabric: shall be a staple fiber, needle-punched, nonwoven material consisting of at least 85 percent by weight polyolefins, polyesters or polyamides. The paving fabric shall be resistant to chemical attack, rot and mildew and shall have no tears or defects that will adversely alter its physical properties. The fabric shall be specifically designed for pavement applications and be heat-set on one side to reduce tack coat bleed-through and to minimize fabric pick-up by construction equipment during installation. The fabric shall meet the physical requirements specified in Table 1 or approved by an expert Engineer. This specification satisfies the requirement for a paving fabric as recommended in AASHTO M 288, national guideline specifications.

TABLE 1 PHYSICAL REQUIREMENTS OF PAVING FABRIC [1,2,3] (AASHTO M 288)

Property	Test Method	Minimum Average Roll Value (English)	Minimum Average Roll Value (Metric)
Unit Weight	ASTM-D-5261	4.1 oz/yd^2	140 g/m^2
Tensile Strength	ASTM-D-4632	101 lbs	0.450 kN
Elongation	ASTM-D-4632	50 %	50 %
Melting Point	ASTM-D-276	300 ^{o}C	149 ^{o}C
Asphalt Retention	ASTM-D-6140	0.20 gal/yd^2	0.90 l/m^2

NOTES

[1]Certification of conformance from paving fabric manufacturer may be required

[2]All numerical values represent minimum average roll values (average of test results from any sampled roll in a lot shall meet or exceed the minimum values) in the weaker principal direction. Lot shall be sampled according to ASTM D 4354-89, “Practice for Sampling of Geosynthetics for Testing.”

[3]Conformance of paving fabrics to specification property requirements shall be determined in accordance with ASTM D 4759-88, “Practice for Determining the Specification Conformance of Geosynthetics.”

Tack Coat: The tack coat used to impregnate the fabric and bond the fabric to the pavement is typically the same grade asphalt cement as used in the hot mix asphalt. A cationic or anionic emulsion may be used as approved by the Engineer. The Contractor shall follow the recommendations and limitations of the paving fabric manufacturer when an asphalt emulsion is used. The use of cutbacks or emulsions that contain solvents shall not be permitted.

CONSTRUCTION AND INSTALLATION REQUIREMENTS

Shipping and Storage: The paving fabric shall be kept dry and wrapped such that it is protected from the elements during shipping and storage. If stored outdoors, the fabric shall be elevated and protected with a waterproof cover. The paving fabric shall be labeled in accordance with ASTM D 4873-88, "Standard Guide for Identification, Storage, and Handling of Geotextiles."

Weather Limitations: The air and pavement temperatures shall be at least 50° F (10° C) and rising for placement of asphalt cement and shall be at least 60° F (16° C) and rising for placement of asphalt emulsion. Neither asphalt tack coat nor paving fabric shall be placed when weather conditions are not suitable, in the opinion of the Engineer.

Surface Preparation: The pavement surface shall be dry and thoroughly cleaned of all dirt and oil to the satisfaction of the Engineer. Cracks 1/8 inch (3mm) wide or greater shall be cleaned and filled with suitable bituminous material or by a method approved by the Engineer. Crack-filling material shall be allowed to cure prior to placement of paving fabric. Potholes and other pavement distress shall be repaired. Repairs shall be performed as directed by the Engineer.

Tack Coat Application: The tack coat shall be applied using a calibrated distributor spray bar. Hand spraying, squeegee and brush application may be used in locations where the distributor truck cannot reach. Every effort shall be made to keep hand application to a minimum. The tack coat shall be applied uniformly to the prepared, clean, dry pavement surface. The tack coat application rate must be sufficient to saturate the fabric and to bond the fabric to the existing pavement surface. The tack coat application rate shall be 0.22 to 0.28 gallons per square yard (1.0 to 1.3 liters per square meter) as required by the roadway surface and environmental conditions. When using emulsions, the application rate must be increased as directed by the Engineer to offset the water content of the emulsion. Within street intersections, on steep grades or in other zones where vehicle braking is common, the normal application rate shall be reduced by about 20 percent as directed by the Engineer, but to not less than 0.20 gallons per square yard (0.9 liters per square meter).

The temperature of the tack coat shall be sufficiently high to permit a uniform spray pattern. For asphalt cements, the minimum temperature shall be 290° F (143° C). To avoid damage to fabric, distributor tank temperatures shall not exceed 325° F (163° C). For asphalt emulsions, the distributor tank temperatures shall be maintained between 130° F (55° C) and 160° F (71° C).

The target width of the tack coat application shall be equal to the paving fabric width plus 4 - 6 inches (101 - 152 mm). Tack coat application shall be wide enough to cover the entire width of fabric overlaps. The tack coat shall be applied only as far in advance of paving fabric installation as is appropriate to ensure a tacky surface at the time of paving fabric placement. Traffic shall not be allowed on the tack coat. Excess tack coat shall be cleaned from the pavement.

Paving Fabric Placement: The paving fabric shall be placed onto the tack coat using mechanical or manual laydown equipment capable of providing a smooth installation with a minimum amount of wrinkling or folding. The paving fabric shall be placed before the asphalt cement tack coat cools and loses its tackiness. Paving fabric shall not be installed in areas where the first lift of overlay asphalt tapers to a minimum compacted thickness of less than 1.5 inches (38 mm).

When asphalt emulsions are used, the emulsion shall be allowed to cure properly such that essentially no water moisture remains prior to placing the paving fabric. Wrinkles severe enough to cause folds shall be slit and laid flat. Brooming and/or rubber-tire rolling will be required to maximize paving fabric contact with the pavement surface. Additional hand-placed tack coat may be required at overlaps and repairs as required by the Engineer.

Turning of the paver and other vehicles shall be done gradually and kept to a minimum to avoid movement and damage to the paving fabric. Abrupt starts and stops shall also be avoided. Damaged fabric shall be removed and replaced with same type of fabric and a tack coat. **Unless otherwise approved by the Engineer, no traffic except necessary construction traffic must be allowed to drive on the paving fabric.**

Joints and Overlaps: At joints, fabric rolls shall overlap by 1 inch to 6 inches (25 to 152mm). End joints and joints from repair of wrinkles should be made to overlap or "shingle" in the direction that the pavement overlay will be placed. Overlaps of adjacent rolls may be as great as 6 inches to accommodate variations between the width of the roadway and paving fabric. Excess fabric shall be cut and removed to ensure that overlaps of adjacent rolls do not exceed 6 inches (152 mm). Additional tack coat shall be applied between all fabric overlaps. Any locations that do not have additional tack for the overlaps shall be corrected by manual placement of tack coat prior to overlay construction.

Overlay Placement: Asphalt overlay construction shall closely follow fabric placement. All areas in which paving fabric has been placed will be paved during the same day. Excess tack coat that bleeds through the paving fabric shall be removed by broadcasting sand on the paving fabric. Excess sand should be removed before beginning the paving operation. In the event of rainfall on the paving fabric prior to the placement of the asphalt overlay, the paving fabric must be allowed to dry before asphalt concrete is placed. Overlay asphalt thickness shall meet the requirements for the contract drawings and documents. The minimum compacted thickness of the first lift of overlay asphalt over the installed Petromat® paving fabric shall not be less than 1.5 inches (38 mm).

METHOD OF MEASUREMENT

Paving Fabric: The paving fabric will be measured by the square yard (square meters).

Tack Coat: Tack coat will be measured by the gallon (liter).

BASIS OF PAYMENT

Paving Fabric: The accepted quantities of paving fabric will be paid for at the contract unit price per square yard (square meter).