Civil-Tex

Geosynthetics & Engineering

GUIDE SPECIFICATION & INSTALLATION - PetroGrid™ 4582PF-100

GLASS GRID/PAVING FABRIC COMPOSITE PAVEMENT INTERLAYER

DESCRIPTION - This work shall consist of furnishing and placing a glass grid / paving fabric reinforcement composite as a full width or strip interlayer over existing pavement prior to placement of an asphalt concrete overlay. The composite shall be installed as indicated on the plans and contract documents.

MATERIAL REQUIREMENTS - The composite paving material shall consist of a nonwoven paving fabric bonded to an epoxy coated glass fiber structural grid. The composite shall be **PetroGrid™ 4582PF-100** or approved equal, and shall meet the physical properties of the product specified on Table 1 below.

PetroGrid 4582PF-100			
Property	Test Method	American Standard	Metric
Unit Weight (Grid/Fabric)	ASTM D-5261-92	16 oz/yd^2	550 g/m^2
Tensile Strength by the single strand method[1]	ASTM D 6637-01	560 lbs/in	100 kN/m
Ultimate Elongation	ASTM D 6637-01	< 5 %	< 5 %
Strength at 2% Strain [1]	ASTM D 6637-01	280 lb/in	50 kN/m
Grid Junction Strength [1]	GSI/GG-2	18 lbs	80 N
Peel Strength [1]	ASTM-D-413	10 lbs/ft	146 N/m
Aperture Size[2] MD/XD	-	.80/.80 in	20/20 mm
Melting Point	ASTM D-276	Over 425° F	Over 218° C
Nonwoven Paving Fabric [3]			
Property	Test Method	American Standard	Metric
Grab Tensile [1]	ASTM-D-4632	101 lbs	450 N
Elongation [1]	ASTM-D-4632	50 %	50 %
Asphalt Retention	ASTM-D-6140	0.20 gal/yd^2	0.90 l/m^2
Weight	ASTM-D-5261	4.1 oz/yd^2	140 g/m^2

Notes: 1 Minimum average roll values 2 Tested with grid adhered to fabric 3 Centerline to Centerline 4 Width is grid plus 3" fabric edge
5 Meets AASTO M-288

Tack Coat: Uncut asphalt cement is strongly preferred for the tack coat. An asphalt emulsion may be used if approved by the Engineer. The Contractor shall follow the special recommendations of the paving composite manufacturer when an asphalt emulsion is used. The use of cutbacks or emulsions that contain solvents shall not be permitted.

USE - The paving composite interlayer system uses a paving fabric as a moisture barrier within a pavement and as a stress absorbing membrane interlayer. Also, it uses a glass fiber structural grid interlocks with the overlay providing structural reinforcement to resist cracking in the overlay.

CONSTRUCTION AND INSTALLATION REQUIREMENTS - The paving composite interlayer system is installed in much the same way as an unreinforced paving fabric system.

Shipping and Storage: The paving composite shall be kept dry and wrapped such that it is protected from the elements during shipping and storage. If stored outdoors, the composite shall be elevated and protected with a waterproof cover.

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 composite shall be placed when weather conditions are not suitable, in the opinion of the Engineer.

Surface Preparation: The pavement surface shall be dry and cleaned of all dirt and oil to the satisfaction of the Engineer. Cracks wider than 1/8 inch (3 mm) wide shall be cleaned and filled with suitable bituminous material approved by the Engineer. Potholes and locally failed and cracked pavement sections shall be repaired as directed by the Engineer. If milling or existing rough pavement exists, then a leveling course shall be placed prior to installation of the paving composite interlayer system.

Tack Coat Application: The tack coat shall be applied using a calibrated distributor spray bar. Hand spraying, squeegee and brush application may be used only in locations where the distributor truck cannot reach. The tack coat shall be uniformly applied at a rate sufficient to saturate the paving fabric and to bond the fabric to the existing pavement surface. The tack coat application rate shall be 0.23 to 0.27 gallons per square yard (1.05 to 1.2 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. The temperature of the tack coat shall be sufficiently high to permit a uniform spray pattern. Asphalt cements shall sprayed at temperatures between 290° (143.5 °C) and 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). The tack coat shall be applied only as far in advance of paving composite installation as is appropriate to ensure a tacky surface at the time of paving composite placement. Traffic shall not be allowed on the tack coat. Excess tack coat shall be cleaned from the pavement.

Paving Composite Placement: The paving composite 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. Unlike traditional paving fabric, this composite cannot be stretched or continuously placed around curves. The paving composite must be cut and realigned to place on curves. Paving composite shall not be installed in areas where the overlay asphalt concrete 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 composite. Composite wrinkles severe enough to cause folds shall be slit and laid flat. Brooming and/or rubber-tire rolling will be required to maximize paving composite contact with the pavement surface. Additional hand-placed tack coat may be required at overlaps and repairs as required by the Engineer. Turning and braking of the paver and other vehicles shall be done gradually and kept to a minimum to avoid movement and damage to the paving composite. Damaged composite shall be removed and replaced with the same type of composite and a tack coat.

All areas with paving composite placed must be paved the same day. No traffic except necessary construction traffic will be allowed to drive on the paving composite.

Joints and Overlaps: At joints, composite rolls shall overlap by 2 inches (51 mm) to 6 inches (152 mm). 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. Excess material shall be cut and removed to ensure that overlaps of adjacent rolls do not exceed 6 inches (152 mm). A uniform application of tack coat shall be applied between all fabric overlaps.

Overlay Placement: Asphalt overlay construction shall closely follow composite placement. Excess tack coat that bleeds through the paving composite shall be removed by broadcasting hot mix or sand on the paving composite. Excess sand or hot mix should be removed before beginning the paving operation. In the event of rainfall on the paving composite prior to the placement of the asphalt overlay, the paving composite must be allowed to dry completely before the overlay is placed. Overlay asphalt thickness shall meet the requirements of the contract drawings and documents. The minimum compacted thickness of the first lift of overlay asphalt concrete over PetroGrid™ shall not be less than 1.5 inches (38 mm).

MEASUREMENT AND PAYMENT - The paving composite interlayer will be measured by the square yard (square meter). The accepted quantities of paving composite will be paid for at the contract unit price per square yard (square meter) in place.