

Special Specification 3094

Polymeric Composite Paving Geogrid for Asphalt Pavement Overlay Reinforcement



1. DESCRIPTION

Furnish and install a high strength polymeric composite paving interlayer (the reinforcement material), within the pavement structure to provide mitigation against reflective crack propagation and added structural capacity. The reinforcement material must be composed of a polymeric grid structure (geogrid) that is covered by a polymeric textile fabric (geotextile) on one or both sides.

- 1.1. **Project Meeting Requirement.** Before installing the reinforcement material, schedule a pre-construction meeting with the manufacturer's representative, prime contractor and paving interlayer subcontractors (installer). Notification of the meeting date and times must be sent out at least two weeks before the scheduled meeting.

A manufacturer's representative must be present, at minimum, for the first day of installation and available upon request by the Engineer throughout the length of the project duration required for the installation of the reinforcement material.

2. MATERIALS

- 2.1. **Polymeric Composite Paving Geogrid.** Furnish reinforcement material that conform to the requirements shown in Table 1. The reinforcement material must be bituminous coated. Glass reinforcements will not be considered for this specification. Provide a copy of the manufacturer's technical data sheet at the pre-construction meeting or no later than 5 working days before to installation.

Table 1
Polymeric Composite Paving Geogrid Properties

Property	Test Method	Min	Max
Mass/Unit Area, oz./sq. yd.	ASTM D 5261	8	
Aperture Size, in. (nominal)	Measured		1.5 x 1.5
Tensile Strength (Single Rib Test), lb./ft. Machine Direction (MD) Cross-Machine Direction (CMD)	ASTM D 6637 (Method A)	3,425 3,425	
Tensile Strength at 3% Strain (Single Rib Test), lb./ft. Machine Direction (MD) Cross-Machine Direction (CMD)	ASTM D 6637 (Method A)	835 835	
Elongation at Break (Single Rib Test), %	ASTM D 6637 (Method A)		12
Identification of Fibers, °F	ASTM D 276	490	
Asphalt Retention, Gal/sq. yd.	ASTM D-6140	0.10	
Residual Tensile Strength After Installation Damage Testing	EN ISO 10722	>75%	
Bituminous Coating Fraction (% by weight)	Measured	22	30

Provide a certificate at the time of tender to verify that the coating is bituminous, including physical properties of the asphaltic emulsion from the sourced terminal supplier. The mass of bituminous coating per unit area must be measured by weighing a coated and uncoated geogrid samples. The bituminous coating fraction is the ratio between the weight of bituminous coating and the weight of intact (coated) geogrid without backing fabric.

- 2.2. **Manufacturer and Installer.** The manufacturing facility of the reinforcement material must be ISO 9001 registered, and a certificate of compliance must be provided with the tender offer, specifically, a quality management certificate pursuant to EN ISO 9001:2018 or current year certification covering the development, production, assessment, sale and application technology of geosynthetics and technical textiles.

The manufacturer must provide a list of not less than 5 public tendered project installations completed in the United States within the past 3 years, to include but not limited to the following minimum information: Project name, location, volume of material installed, and representative contact information. In addition, the manufacturer must provide documentation that a minimum of 1 million sq. yd. of the reinforcement material has been produced within the past 12 mo. This information must be provided at the time of tender offer.

The installer must provide a list of not less than 5 public tendered project installations completed in the United States within the past 3 yr. to include but not limited to the following minimum information: Project name, location, volume of material installed, and representative contact information.

- 2.3. **Storage and Handling.** Store the reinforcement material in accordance with the manufacturer's recommendations in a dry covered condition free from dust, dirt, and moisture exposure.
- 2.4. **Tack Coat.** Furnish AC-20-5TR or AC-15P that meets the requirements of Item 300, "Asphalts, Oils, and Emulsions." Other tack coats will be allowed when approved by the Engineer. The Engineer will obtain at least one sample of the tack coat binder per project in accordance with Tex-500-C, Part III, and test it to verify compliance with the specification. The Engineer will obtain the sample from the asphalt distributor immediately before use. Technical data specifications must be submitted at the preconstruction meeting.

3. SAMPLING AND TESTING

- 3.1. Sampling of the reinforcement material is performed in accordance with Tex-735-I, "Sampling Construction Fabrics." The Engineer will take one sample from every 100 rolls or fraction thereof every 100,000 SY which every least to the highest frequency. If the end of the rolls is damaged, such end portion should be removed and the sample should be taken from undamaged portions of the roll. A second sample from the same roll will be taken when requested by the Contractor. The Department will test the material to verify specification compliance. The Engineer will stop placement if failing results are obtained and request corrective action or replacement of the material.

4. CONSTRUCTION

- 4.1. **Surface Preparation.** Prepare the surface by removing raised pavement markers and dirt, sand, leaves, and other loose impediments from the surface before placing any material. The surface must be dry before applying tack coat binder. All vegetation and organic material must be removed from the existing surface before tack coat placement. All pavement defects must be corrected as directed or as shown on the plans.

Do not begin work when in the judgement of the Engineer weather conditions may not be suitable for paving. The air temperature must be 50°F and rising for placement of the asphalt tack coat or at the discretion of the Engineer.

- 4.2. **Tack Coat.** Apply a uniform tack coat at the manufacturer's recommended application rate for the existing pavement conditions. Apply the tack coat in a uniform manner to avoid streaks and other irregularities and or patterns. Apply a thin, uniform tack coat to all contact surfaces of curbs, structures, and all joints. Apply tack coat to an area four inches wider than the reinforcement material, and wide enough to cover any overlaps.
- 4.3. **Reinforcement Material Placement.** Place the reinforcement material directly onto the tack coat with minimum folds or wrinkles. As directed by the Engineer, wrinkles or folds more than 1 in. must be slit and laid flat or pulled out in the direction of paving. Apply additional tack coat as needed to repaired areas, or to any other areas as directed by the Engineer, to achieve an adequate bond to the substrate. Remove and replace

damaged material that has excessive cuts, tears and or any other apparent damage, in accordance with the manufacturer's recommendations, at the contractor's expense.

Broadcast clean sand or loose asphalt concrete mix to blot any excess tack coat that bleeds through the reinforcement material upon installation. Remove excess sand from the interlayer before placing the HMA overlay. Do not power broom the reinforcement material as this may cause tearing and damage to the material surface.

Do not allow traffic, except necessary and required construction traffic and emergency vehicles, on the reinforcement material, unless approved by the Engineer. If traffic is permitted on the reinforcement material by the Engineer, lightly broadcast clean sand over the reinforcement material ensuring to remove the sand before paving.

Place the reinforcement material directly onto the tack coat, with the textile fabric in contact with the tack coat and the grid facing up to the new asphalt.

Construct overlaps at 4 to 6 in. longitudinally and 6 to 10 in. transversely (end to end). Overlaps must be tacked sufficiently such that the overlapping material will not become loose during paving.

5. MEASUREMENT

- 5.1. **Tack Coat.** Tack coat material will be measured in gallons at the applied temperature by strapping the distributor tank before and after road application.
- 5.2. **Polymeric Composite Paving Geogrid** The reinforcement material will be measured and paid for by the square yard of roadway on which it is placed.

6. PAYMENT

- 6.1. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit prices in the bid documents. This price is full compensation for cleaning the existing pavement, furnishing, preparing, hauling and placing all materials; for all labor, tools, equipment and incidentals necessary to complete the work.