SECTION S207 – GEOTEXTILES AND GEOGRIDS

S207-1 DESCRIPTION

Work consists of installation of geotextile and geogrid materials as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

S207-2 MATERIALS

S207-2.01 Pavement Crack and Joint Repair

Polyester fiber fabric is to be heavy-duty, high strength, heat bonded geotextile composite membrane specifically fabricated for use to repair and waterproof pavement cracks and joints.

Polyester fiber fabric is to meet following properties:

Property	Test Method	Value
Mastic Density	ASTM D70	80 pound/cubic foot
Weight	-	0.80 pound/square foot
Thickness	ASTM D1777	0.135 inches
Absorption	ASTM D517	1% maximum
Brittleness	ASTM D517	Pass
Mastic Softening Point	ASTM D36	210°F minimum
Cold Flexibility	ASTM D146 (modified)	pass at 200°F
Heat Stability	2 inch x 5 inch specimen hung vertically for 2 hours at 190°F	no dripping or delamination
Puncture Resistance	ASTM D154	450 pounds minimum
Elongation	ASTM D412, Die C	20% minimum
Tensile Strength	ASTM D412, Die C	2000 pound/square inch minimum

S207-2.02 Pavement Reinforcement

Pavement reinforcement material is to be either biaxial or triaxial geogrid.

Biaxial geogrid is to be punched and drawn from polypropylene sheet specifically fabricated for use as pavement reinforcement, and has high tensile strength in two directions, perpendicular to each other. Biaxial geogrid is to be as manufactured by Tensar, or any biaxial material listed on *NYSDOT Technical Services-Materials-Approved List*, or approved equivalent.

Triaxial geogrid is to be punched and drawn from polypropylene sheet specifically fabricated for use as pavement reinforcement, and is oriented in three substantially equilateral directions, with ribs having high degree of molecular orientation which continues in part through mass of integral node. Triaxial geogrid is to be TriAx TX5 or TriAx TX7 as manufactured by Tensar, or any triaxial material listed on *NYSDOT Technical Services-Materials-Approved List*, or approved equivalent.

TriAx TX5 is to be used for light and medium duty asphalt pavement sections, TriAx TX7 for modified and heavy duty asphalt pavement sections.

S207-2.03 Pavement Undercut Stabilization

Pavement undercut stabilization material is to be either triaxial geogrid or polypropylene geotextile.

Triaxial geogrid is to be punched and drawn from polypropylene sheet specifically fabricated for use as pavement undercut stabilization, and is oriented in three substantially equilateral directions, with ribs having high degree of molecular orientation which continues in part through mass of integral node. Triaxial geogrid is to be TriAx TX160 as manufactured by Tensar, or any triaxial material listed on *NYSDOT Technical Services-Materials-Approved List*, or approved equivalent.

Polypropylene geotextile is to be composed of high-tenacity polypropylene yarns specifically fabricated for use as pavement undercut stabilization, and is woven into stable network such that yarns retain their relative position. Polypropylene geotextile is to be Mirafi 500X as manufactured by TenCate, or any geotextile material listed on *NYSDOT Technical Services-Materials-Approved List*, or approved equivalent.

S207-2.04 Subsurface Drainage

Geotextile fabric for subsurface drainage is to be 100 per cent staple polyester and polypropylene non-woven needle-punched geotextile fabric designed for long-term passage of water into subsurface drain system, as per AEF 480HS as manufactured by American Engineering Fabrics Inc., FX-40HS as manufactured by Carthage Mills, 140NC as manufactured by Mirafi/TenCate, or approved equivalent.

Geotextile fabric for subsurface drainage is to meet following minimum average roll values:

Property	Test Method	Value
Thickness	ASTM D1777	60 mils
Tensile Strength	ASTM D4632	80 pounds
Elongation @ break	ASTM D4632	50%
Trapezoidal Tear	ASTM D-4533	30 pounds
Apparent Opening Size	ASTM D-4751	60 sieve maximum
Permittivity	ASTM D-4491	2.00 Sec-1
Water Flow Rate	ASTM D-4491	140 gallons/minute/square foot
UV Resistance @ 500 hours	ASTM D-4355	70%

S207-2.05 Tack Coat

Tack coat is to be diluted or straight tack coat mix in accordance with Section S407 Tack Coat.

S207-3 CONSTRUCTION DETAILS

S207-3.01 General

Materials are to be protected from exposure to sunlight during transport and storage.

Materials are to be installed in accordance with manufacturer's latest instructions and as approved by Project Manager. After placement, material is not to be left uncovered for more than one week.

Traffic or construction equipment is not permitted to be directly on material.

Material which becomes torn or damaged due to Contractor’s operations is to be replaced or patched at Contractor’s expense. Patch is to extend 3 feet beyond perimeter of tear or damage.

S207-3.02 Pavement Crack and Joint Repair

Pavement surface upon which fabric is to be placed is to be cleaned and kept cleaned of all extraneous materials. Cracks that are larger than 1-1/4 inch in width, and all holes, are to be thoroughly cleaned of all dirt and loose material, and filled with an acceptable asphalt concrete material.

Tack coat is to be applied uniformly by either power spray units or pour pots. It is important when applying tack coat to remember that edges of fabric are to be well bonded to pavement surface.

In warm weather conditions (60°F and rising), tack coat is to be applied at rate of 0.10 gallons per square yard. In cold weather conditions (45°F and rising), tack coat is to be applied at rate of 0.10 to 0.20 gallons per square yard. In no case is rate of application to exceed 0.20 gallons per square yard.

Width of tack coat application on pavement surface is width of fabric plus 2 to 3 inches. Tack coat is not to be applied no further in advance of fabric placement, than what can be accomplished without losing adhesive abilities of tack coat. In cold weather, advance application distance is to be no more than 5 feet.

In certain applications high solids emulsion may be used as tack coat, but caution must be exercised to let emulsion break prior to embedment of fabric. When using an emulsion tack, overspray area must not exceed 2 inches.

Where transverse and longitudinal joints meet, fabric may be butted or overlapped. Overlapping is mandatory on bridge decks, or where intentional waterproofing is desired. Where overlapping is used, additional tack coat is required to bond two fabric areas together.

Prior to applying asphalt overlay, small amounts of washed sand may be used to blot excess asphalt to facilitate movement of traffic or construction equipment over fabric. If fabric sticks to paver or truck tire, hot mix asphalt can be sanded out on fabric ahead of paver. Hot mix asphalt overlay may be placed immediately after placement of fabric.

S207-3.03 Pavement Reinforcement and Undercut Stabilization

Subgrade is to be finish graded before placement of material.

If tensioning or joining methods are not employed, subbase course material can be back dumped from trucks riding on top of material. Subbase course material is to be bladed onto material in such manner that subbase course material rolls ahead onto geotextile.

If ruts are created in subbase course fill due to construction traffic, fill ruts with additional subbase course material, do not blade adjacent subbase course material into rut.

Rip-rap or stone filling is not to be dropped onto geotextile material from heights that are greater than 12 inches.

Overall undercut section will be to eliminate soft or otherwise undesirable subgrade material, to depth AOBPM.

S207-3.04 Subsurface Drainage

Geotextile fabric for subsurface drainage is to be placed to conform loosely to shape of trench, and folded over top of filter material to produce minimum overlap of 12 inches.

S207-4 METHOD OF MEASUREMENT

S207-4.01 Pavement Crack and Joint Repair; Pavement Reinforcement and Undercut Stabilization

Quantity to be measured for payment will be number of square yards of material installed as computed from payment limits shown on plans.

Measurement and separate payment is not to be made for material that is used for overlaps, seams, patches or repairs.

S207-4.02 Subsurface Drainage

Quantity to be measured for payment will be number of square yards of material installed as computed from payment limits shown on plans, including overlap.

S207-5 BASIS OF PAYMENT

S207-5.01 General

Unit price bid for all items includes cost of: furnishing, storing, installing, cutting, seams, overlapping and joining material; and furnishing all labor, material and equipment necessary to complete work.

S207-5.02 Pavement Crack and Joint Repair

Unit price bid also includes cost of: furnishing and placing asphaltic materials; crack-filler; tack coat; cleaning, repairing, filling joints and cracks.

Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
S207.10	Pavement Crack and Joint Repair	Square Foot
S207.11	Pavement Reinforcement – Biaxial Geogrid	Square Yard
S207.12	Pavement Reinforcement – Triaxial Geogrid for Light and Medium Duty Asphalt Pavement	Square Yard
S207.13	Pavement Reinforcement – Triaxial Geogrid for Modified and Heavy-Duty Asphalt Pavement	Square Yard
S207.14	Pavement Undercut Stabilization – Triaxial Geogrid	Square Yard
S207.15	Pavement Undercut Stabilization – Polypropylene Geotextile	Square Yard
S207.16	Subsurface Drainage	Square Yard

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