

This guide specification has been prepared by Propex Operating Company, LLC ("Propex") to assist design professionals in the preparation of a specification section covering nonwoven geosynthetic as an interlayer above fatigued concrete pavement and beneath a concrete pavement overlay to provide a bond breaker and to retard reflective cracking. It may be used as the basis for developing either a project specification or an office master specification. Since it has been prepared according to the principles established in the Manual of Practice published by The Construction Specifications Institute (CSI) including the use of section numbers and titles from the 2004 Edition of MasterFormat, this guide specification may be used in conjunction with most commercially available master specifications sections with minor editing.

The following should be noted in using this guide specification:

•Optional text requiring a selection by the user is enclosed within brackets, e.g.: "Section [01 33 00] [____]."

•Items requiring user input are enclosed within brackets, e.g.: "Section [____ - ____]."

•Optional paragraphs are separated by an "OR" statement, e.g.:

**** OR ****

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1 GENERAL

1.1 SECTION INCLUDES

Edit the following paragraph to suit project requirements.

- A. This specification is applicable to the use of a nonwoven geotextile providing a bondbreaker between a fatigued, existing concrete pavement surface and a new concrete pavement overlay as well as between cement treated base and new concrete pavement.
- B. The function of the paving fabric is to act as a bondbreaker and stress relieving membrane within the pavement structure.
- C. The specification is not intended to describe fabric membrane systems specifically designed for pavement joints and localized (spot) repairs.

1.2 RELATED SECTIONS

Edit the following paragraphs to coordinate with other sections of the Project Manual.

- A. Section [31 20 00 – Earth Moving] [____].
- B. Section [32 12 16 - Asphalt Paving] [____].
- C. Section [32 01 16 - Flexible Paving Rehabilitation] [____].

1.3 UNIT PRICES

Include the following article only for unit price contracts or lump sum contract with unit price adjustments. Delete for lump sum contracts.

- A. Method of Measurement: By the square meter (or square yard as indicated in contract documents) including seams, overlaps, and wastage.
- B. Basis of Payment: By the square meter (or square yard - as indicated in contract documents) installed.

1.4 REFERENCES

The following article assumes that the date of each reference standard will be the latest edition as of the date of the project specification. This provision must be defined in Division 1; coordinate with Division 1 statements.

- A. American Association of State Highway and Transportation Officials (AASHTO) "Standard Specification for Geotextile Specification for Highway Applications" Designation M 288-05.
- B. American Society for Testing and Materials (ASTM):
 - 1. D 123 – Standard Terminology Relating to Geotextiles
 - 2. D 276 - Method for Identification of Fibers in Textiles (Melting Point).
 - 3. D 4354 - Practice for Sampling of Geosynthetics for Testing.
 - 4. D 4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
 - 5. D 4439 - Terminology for Geotextiles.
 - 6. D 4533 - Test Method for Index Trapezoid Tearing Strength of Geotextiles.
 - 7. D 4595 – Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
 - 8. D 4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 9. D 4759 - Practice for Determining the Specification Conformance of Geosynthetics.
 - 10. D 4873 - Guide for Identification, Storage, and Handling of Geotextiles.
 - 11. D 5199 - Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
 - 12. D 5261 - Test Method for Measuring Mass per Unit Area of Geotextiles.
 - 13. D 5493 – Standard Test Method for Permittivity of Geotextiles Under Load
 - 14. D 6574 – Standard Test Method for Determining the (In-Plane) Hydraulic Transmissivity of a Geosynthetic by Radial Flow
 - 15. G 173 – Standard Tables for Reference Solar Spectral Irradiances: Direct Normal and Hemispherical on 37° Tilted Surface
- C. Geosynthetic Accreditation Institute - Laboratory Accreditation Program (GAI-LAP).

1.5 DEFINITIONS

- A. Minimum Average Roll Value (MARV): Property value calculated as typical minus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed value reported.
- B. Maximum Average Roll Value (MaxARV): Property value calculated as typical plus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will be below the value reported.
- C. Typical Roll Value: Property value calculated from average or mean obtained from test data.

1.6 SUBMITTALS

Edit the following to coordinate with Division 1.

- A. Submit under provisions of Section [01 33 00] [____]:

1. Certification:

- a) The Contractor shall provide the Engineer a certificate stating the name of the geotextile manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the geotextile.
- b) The Manufacturer shall demonstrate transparency of their manufacturing process by showing traceability of the product from origin of raw material through finished good.
- c) The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request.
- d) The manufacturer's certificate shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the manufacturer's quality control program. A person having legal authority to bind the Manufacturer shall attest to the certificate.

2. Manufacturing Quality Control (MQC) test results shall be provided upon request.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Geotextile labeling, shipment and storage shall follow ASTM D 4873.
- B. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
- D. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of geotextile material must be discarded before installation.
- F. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperatures in excess of 71 deg C (160 deg F) and any other environmental condition that might damage the geotextile.

1.8 QUALITY ASSURANCE SAMPLING, TESTING, AND ACCEPTANCE

A. Geotextile:

1. Geotextiles shall be subject to sampling and testing to verify conformance with this specification. Sampling for testing shall be in accordance with ASTM D 4354.
2. Acceptance shall be in accordance with ASTM D 4759 based on testing of either conformance samples obtained using Procedure A of ASTM D 4354, or based on manufacturer's certifications and testing of quality control samples obtained using Procedure B of ASTM D 4354.

B. Sewn Seams (if required):

1. For seams that are to be sewn in the field, the Contractor shall provide at least a 2 meter (6 ft) length of sewn seam for sampling by the Engineer before the geotextile is installed.
2. For seams that are sewn in the factory, the Engineer shall obtain samples of the factory seams at random from and roll of geotextile that is to be used on the project.
3. If seams are to be sewn in both directions, samples of seams from both directions shall be provided.
4. For seams that are field sewn, the seams sewn for sampling shall be sewn using the same equipment and procedures as will be used for the production seams.
5. The Contractor along with the sample of the seam shall submit the seam assembly description. The description shall include the seam type, sewing thread, and stitch density.

6. Do not expose geosynthetics to elements over 14 days between installation and placement of cover.

2 PRODUCTS

2.1 MANUFACTURERS

- A. Propex Operating Company, LLC, Chattanooga, Tennessee, 37416, USA, Phone (800) 621-1273.

Edit the following to coordinate with Division 1.

- B. Substitutions: Under provisions of Section [01 25 00] [_____].

2.2 MATERIALS

- A. Geotextile Interlayer (Paving Fabric):
 1. White polypropylene, staple fiber, needlepunched nonwoven geotextile.
 2. Resistant to ultraviolet degradation.

Include the following for Reflectex®.

3. Minimum Average Roll Values:

Property	Test Method	Units	Property Requirement
Mass/Unit Area	ASTM D 5261	g/m ² (oz/yd ²)	510 (15.0)
Thickness (min.) 2 kPa Pressure	ASTM D 5199	mm (mil)	3.0 (120)
Thickness (min.) 20 kPa Pressure	ASTM D 5199	mm (mil)	2.5 (100)
Thickness (min.) 200 kPa Pressure	ASTM D 5199	mm (mil)	1.0 (40)
Wide Width Tensile Strength (min.)	ASTM D 4595	kN/m (lb/ft)	10.0 (685)
Wide Width Elongation (Max.)	ASTM D 4595	%	130
Total Heat/Solar Reflectance	ASTM G 173-03	%	80
Water Permeability in Normal Direction 2 kPa Pressure (min.)	ASTM D 5493	cm/s (in/s)	0.01 (0.004)
Water Permeability in Normal Direction 20 kPa Pressure (min.)	ASTM D 5493	cm/s (in/s)	0.05 (0.020)
Water Permeability in Normal Direction 200 kPa Pressure (min.)	ASTM D 5493	cm/s (in/s)	0.02 (0.008)
Weather Resistance (min.)	ASTM D 4355	% Strength Retained	70
Alkali Resistance	EN 13249, Annex B	-	>97% Polypropylene

4. QUALITY CONTROL

- a) Manufacturing Quality Control (MQC): Testing shall be performed at a laboratory accredited by GAI-LAP for tests required for the geotextile, at frequency exceeding ASTM D 4354.
- b) All supplied geotextiles shall include certificates of analysis for all specified properties

- c) Testing laboratories shall be compliant and certified to the ISO 9001:2008 quality system standard.

3 EXECUTION

3.1 PREPARATION

- A. Patch any potholes or excessively disturbed areas of the existing surface
- B. Fill any large cracks or spalling areas
- C. Smooth surface by filling in any large dips or rutting
- D. Sweep surface clean before placing reflective concrete interlayer geotextile. Excessive debris may damage fabric.

3.2 FABRIC PLACEMENT

- A. Reflective concrete interlayer geotextile may be rolled out by machine or by hand with minimum wrinkling. As directed by the Engineer, wrinkles or folds in excess of 25 mm (1 in) shall be slit and laid flat.
- B. Reflective concrete interlayer geotextile shall be placed no more than 5 days prior to paving as prolonged exposure to the elements may cause damage.
- C. Overlap of geotextile joints shall be 15-25 cm (6 -10 in), and no overlap shall exceed three layers thick.
- D. Overlaps shall be directed away from the direction of paving to reduce chance of damage during the paving process.
- E. Free edges shall extend a minimum of 10 cm (4 in) into a designed drainage area.
- F. Panels should be fixed into place with nails on 2m (6 ft) centers max. The nails should be driven through 5-7.5 cm (2 – 3 in) galvanized washers. Use nail length as indicated by Engineer.
- G. Removal and replacement of geotextile that is damaged will be the responsibility of the Contractor.

3.3 PROTECTION

- A. Reflective concrete interlayer geotextile may be dampened, but not soaked, during installation to minimize concrete bleed through.
- B. If vehicle traffic is present on the road or slow paving is expected, place no more than 200 m (650 ft) before the paving process.
- C. If vehicle traffic is present, tight turns, sudden braking, and acceleration should be avoided.
- D. If the geotextile is to be placed through an intersection or other high volume traffic area, the fabric should be placed immediately before the paving process in order to minimize the amount of traffic on the geotextile.

END OF SECTION