



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
CENTRAL OFFICE
Manila

097-13 DPWH

08-04-2023

AUG 02 2023

DEPARTMENT ORDER)
NO. 91)
Series of 2023)

**SUBJECT: Standard Specification on the Use of
Conditional Item 715A – Composite
Crack-Prevention Geogrid in Asphalt
Overlay**

dt 8/4/2023

In line with the continuing efforts to upgrade the construction technology thru the adoption of successful research studies, this Department Order has approved the use of **Composite Crack-Prevention Geogrid in Asphalt Overlay** to prevent the development of surface distress such as cracks in asphalt pavement subject to the specification hereto attached. A Certificate of Conditional Approval has been issued by this Department, accrediting the use of Composite Crack-Prevention Geogrid in DPWH projects with less than one (1) kilometer long per lane provided that the product shall be strictly supervised by the proponent, together with the representative from the Bureau of Research and Standards, and shall be given a warranty period of one (1) year pursuant to Section 3.3 of the Department Order 189, Series of 2002, from July 17, 2023 to July 16, 2028.

This Specification will be conditionally included in the Project and Contract Management Application (PCMA) for ready use in various DPWH projects until its date of expiration.

MANUEL M. BONOAN
Secretary

Department of Public Works and Highways
Office of the Secretary



WIN3U01890

- Encl.: (a.) Standard Specification on the Use of Conditional Item 715A - Composite Crack-Prevention Geogrid in Asphalt Overlay
(b.) Certificate of Conditional Approval for Composite-Crack Prevention Geogrid

14.1.4 JDV/MGM/MLC

Standard Specification on the Use of Conditional Item 715A – Composite Crack-Prevention Geogrid in Asphalt Overlay

715A.1 Description

This item covers the use of composite material made of bitumen-coated high-modulus polyester (PET) geogrids and polypropylene (PP) non-woven geotextile in Hot Mix Asphalt (HMA) overlay to retard, if not completely prevent, the propagation of reflective cracking in asphalt surface.

715A.2 Material Requirements

715A.2.1 Physical Requirements

The composite crack-prevention geogrid shall be made of high-modulus polyester (PET) yarns with low creep properties firmly attached to a thin polypropylene (PP) non-woven geotextile and both covered with bitumen. The composite material shall be arranged in such a way to allow proper aggregate interlock between the asphalt layers and shall have a bituminous finish (50% min. bituminous content) to ensure a good bond with the asphalt layers.

The composite crack-prevention geogrid shall conform to the physical requirements of Table 1.

Table 1
Physical Requirements of Composite Crack-Prevention Geogrid

Property	Test Method	Unit	Requirements (min.)
Product	-		Geogrid with a thin nonwoven geotextile
Raw	-		Geogrid (PET)
Coating	-		Bituminous
Weight	-	g/m ²	270
Geogrid Ultimate tensile strength	ASTM D 6637	kN/m	50/50 (MD/CMD)
Geogrid Tensile strength at 3 % strain	-	kN/m	12/12 (MD/CMD)
Strain at nominal tensile strength	ASTM D 6637	%	12/12 (MD/CMD)
Mesh size of the geogrid (approx.)	-	mm	40 x 40
Heat resistance of Geogrid	-	°C	Up to 190

MD – Machine Direction

CMD – Cross-Machine Direction

715A.3 Sampling and Testing

The product shall be subject to sampling and testing procedures in accordance with the methods given in Table 1.

715A.4 Certification

715A.4.1 Manufacturer's Certificate

The manufacturer shall file with the purchaser a certificate stating the name of the manufacturer, the composition of the fibers, and other pertinent information so as to fully describe the composite crack-prevention geogrid. The manufacturer shall include in the certification a guarantee stating that the composite crack-prevention geogrids that are furnished meet the requirements of the specification. The certificate shall be attested to by a person having legal authority to bind the company. Either mismarking or misinterpretation by the manufacturer shall be a reason to discontinue acceptance under these specifications. Notice sent to the manufacturer by the purchaser regarding the discontinuance of acceptance will be considered to be noticed to all wholesalers, jobbers, distributors, agents, and other intermediaries handling the manufacturer's product.

715A.5 Quality Control

The composite crack-prevention geogrid manufacturer is responsible for establishing and maintaining a quality control program so as to assure compliance with the requirements of this specification

715A.6 Shipment and Storage

715A.6.1 During periods of shipment and storage, the product shall be protected from direct sunlight, ultra-violet rays, temperatures greater than 60 °C, mud, dust, and debris. To the extent possible, the product shall be maintained wrapped in a heavy-duty protective covering. Each shipping document shall include a notation certifying that the composite geogrid is in accordance with the manufacturer's certificate and guarantee previously filled with the purchaser.

715A.6.2 Product Marking

Label the composite crack-prevention geogrid and its container with the manufacturer's name, trade name, lot number, and quantity.

715A.7 Installation

The existing surface on which the composite crack-prevention geogrid is to be placed shall be cleaned of any loose or deleterious materials by brooming or other approved means. Cracks exceeding 3 mm in width shall be filled with suitable crack fillers. The filler shall be allowed to cure prior to composite crack-prevention geogrid placement. Potholes shall be properly repaired as directed by the Engineer.

The rate of application of the bituminous tack coat used to bond the existing pavement surface and the composite crack-prevention geogrid shall be approved by the Engineer.

The composite crack-prevention geogrid shall be laid on the prepared surface while being unrolled and not suspended in the air. As directed by the Engineer, wrinkles or folds in excess of 25 mm (1 inch) shall be laid flat. Brooming and/or pneumatic rolling shall be required to maximize composite crack-prevention geogrid contact with the pavement surface.

Overlap of paving geosynthetic joints shall be sufficient to ensure full closure of the joint, but should not exceed 150 mm (6 inches) in the transverse direction and 250 mm (10 inches) in the longitudinal direction. If installed on bends and curves, the composite crack-prevention geogrid shall be cut to shorter lengths and laid with overlaps. The length of the pieces depends on the radius of the curve. To prevent the overlap from being lifted during the laying of asphalt pavement, the end of the preceded roll shall be placed over the beginning of the current roll. Immediately after the laying of composite crack-prevention geogrid, bituminous asphalt pavement laying shall commence without any delay.

The installation of composite crack-prevention geogrid shall be supervised and approved by the supplier. A certificate shall be issued by the supplier stating that the installation of the composite crack-prevention geogrids conformed to the installation guidelines.

715A.8 Method of Measurement

The composite crack-prevention geogrid shall be measured by the number of square meters from the asphalt pavement lines shown on the plans, or from the asphalt pavement lines established in writing by the Engineer.

715A.9 Basis of Payment

The quantities determined as provided above shall be paid for at the contract price per unit of measurement, respectively, for each pay item listed below.

Payment shall be made under:

Pay Item No.	Description	Unit of measurement
715A	Composite Crack Prevention Geogrid	Square Meter

CERTIFICATE OF CONDITIONAL APPROVAL

This is to certify that

COMPOSITE CRACK-PREVENTION GEOGRID

Supplied by

Bowman Technologies Inc.

Unit 701 Common Goal Tower, Finance St., Madrigal Business Park,
Alabang, Muntinlupa City

Sercon Engineering Services

Purok 2, Sto. Tomas City, Batangas

is duly accredited for use in DPWH infrastructure projects as crack-prevention in hot mix asphalt (HMA) overlay subject to its specifications (hereto attached) pursuant to the provisions of Department Order No. 189, series of 2002.

This accreditation shall remain in force until expiry date printed below or until such time that the Product Accreditation is issued, subject to its compliance with the requirements of the aforementioned Department Order.

Conditional Approval Number : **0031**
Date Issued : **July 17, 2023**
Valid Until : **July 16, 2028**


MAXIMO L. CARVAJAL

Undersecretary for Information Management
and Technical Services