



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



JUL 19 2024

DEPARTMENT ORDER)
NO. 125)
Series of 2024)
d 7/19/2024

**SUBJECT: Specification on the Use of
Conditional Item 635 (2) –
Composite Crack-Prevention
Geogrid in Asphalt Overlay**

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**, previously Item 715A and amended to Item 635 (2), to prevent the development of surface distress such as cracks in asphalt pavement subject to the specification hereto attached. A Certificate of Conditional Approval (CCA) has been issued by this Department, accrediting the use of Composite Crack-Prevention Geogrid in DPWH projects and shall be given a warranty period of one (1) year pursuant to Section 3.3 of the Department Order No. 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 the date of expiration of the CCA.

This Order shall supersede Department Order No. 91, Series of 2023 and shall take effect immediately.

MANUEL M. BONOAN
Secretary

Department of Public Works and Highways
Office of the Secretary



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- Encl.: (1) Specification on the Use of Conditional Item 635 (2) - Composite Crack-Prevention Geogrid in Asphalt Overlay
(2) Certificate of Conditional Approval for Composite-Crack Prevention Geogrid

14.1.4 ACDG/JDV/RPF

Specification on the Use of Conditional Item 635 (2) – Composite Crack-Prevention Geogrid in Asphalt Overlay

635 (2).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.

635 (2).2 Material Requirements

635 (2).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 635 (2).1.

Table 635 (2).1 Physical Requirements of Composite Crack-Prevention Geogrid

| Property | Requirements | Test Method |
|---|---|--------------------|
| Product | Geogrid with a thin nonwoven geotextile | - |
| Raw | Geogrid (PET) | - |
| Coating | Bituminous | - |
| Weight, Min. | 270 g/m ² | - |
| Geogrid Ultimate tensile strength, Min. (MD/CMD) | 50/50 kN/m | ASTM D6637 |
| Geogrid Tensile strength at 3 % strain, Min. (MD/CMD) | 12/12 kN/m | - |
| Strain at nominal tensile strength, Min. (MD/CMD) | 12/12 % | ASTM D6637 |
| Mesh size of the geogrid (approx.) | 40 x 40 mm | - |
| Heat resistance of Geogrid, Min. | Up to 190 °C | - |

Note:

MD – Machine Direction

CMD – Cross-Machine Direction

ASTM D6637, Single or Multi-Rib Tensile Test of Geogrids

635 (2).2.2 Sampling and Testing

The product shall be subject to sampling and testing procedures in accordance with the methods given in Table 635 (2).1.

635 (2).2.3 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.

635 (2).3 Construction Requirement

635 (2).3.1 Product Marking

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

635 (2).3.2 Shipment and Storage

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.

635 (2).3.3 Quality Control

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

635 (2).3.4 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.

635 (2).4 Method of Measurement

The area to be paid for under this Item shall be the number of square meters (m²) of asphalt pavement placed, compacted and accepted based on the thickness and density of the cores taken in accordance with Subsection 307.3.10, Acceptance, Sampling and Testing.

635 (2).5 Basis of Payment

The accepted quantity determined as provided in Section 635 (2).4, Method of Measurement shall be paid for at the Contract price per unit of measurement, for the item listed below.

Payment shall be made under:

| Pay Item Number | Description | Unit of Measurement |
|------------------------|------------------------------------|----------------------------|
| 635 (2) | Composite Crack Prevention Geogrid | Square Meter |