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# DMS-6240

## Geogrid for Base / Embankment Reinforcement

Effective Date: July 2017



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### 1. DESCRIPTION

This Specification governs the materials, composition, quality, sampling, testing, and Quality Monitoring Program (QMP) for synthetic geogrid. Install geogrid in accordance with the lines and grades shown on the plans. Two grades of geogrid, Types 1 and 2, are specified for different loads.

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### 2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

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### 3. DEFINITIONS

- 3.1. **Geogrid**—a synthetic planar structure formed by a regular network of integrally connected polymeric tensile elements with apertures designed to interlock with the surrounding fill material. Geogrid is used for the reinforcement of roadway base or embankment materials. Other uses are in accordance with the governing Specification and the plans.
- 3.2. **Producer**—a manufacturer of any of the products covered by this Specification or a company that sells its product under a private label agreement with a manufacturer.

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### 4. MATERIAL PRODUCER LIST

The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled “[Geogrid for Base / Embankment Reinforcement](#),” require no further sampling and testing before use, unless deemed necessary by the Project Engineer or CST/M&P.

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### 5. BIDDERS' AND SUPPLIERS' REQUIREMENTS

The Department will only purchase or allow on projects those products listed by producer and product code or designation shown on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

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### 6. PRE-QUALIFICATION PROCEDURE

- 6.1. **Independent Testing.** Prospective producers must have an independent laboratory test their material in accordance with the requirements listed in Section 8.
- 6.2. **Pre-Qualification Request.** Submit a request for evaluation under DMS-6240 to [DMS\\_Prequal@txdot.gov](mailto:DMS_Prequal@txdot.gov).

Include the following information in the request:

- company name;
- physical and mailing addresses;
- contact person, phone number, and email address;
- product name and designation;
- independent laboratory test report with test data showing compliance of the material with all requirements listed in this Specification; and
- name of product manufacturer, if private labeling.

6.3. **Pre-Qualification Sample.** CST/M&P will contact producers and request samples for evaluation. Submit sample to the Texas Department of Transportation, CST/M&P (CP51), 9500 North Lake Creek Parkway, Austin, TX 78717.

Submit all materials for pre-qualification at no cost to the Department.

6.4. **Evaluation.** CST/M&P will notify prospective bidders and suppliers after completion of material evaluation.

6.4.1. **Qualification.** If approved for Department use, CST/M&P will accept the product to the QMP and add it to the MPL.

Report changes in the composition or in the manufacturing process of any material to CST/M&P. Significant changes reported by the producer, as determined by the Director of CST/M&P, may require a re-evaluation of performance. The Department reserves the right to conduct whatever tests it deems necessary to identify a pre-qualified material and determine if there is a change in the composition, manufacturing process, or quality that may affect its durability or performance. In case of variance, the Department's tests will govern.

6.4.2. **Failure.** Producers not qualified under this Specification will neither be accepted to the QMP nor added to the MPL and may not furnish materials for use on Department projects.

Producers failing to qualify may submit a request for re-evaluation after 3 months have elapsed from the date of the original request. CST/M&P may modify this time limit at its discretion. In the request for re-evaluation, document the cause of the issue and corrective action taken.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing, and amounts due will be billed to the producer.

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## 7. QUALITY MONITORING REQUIREMENTS

CST/M&P will re-qualify materials in the QMP every 2 years.

7.1. **Quality Monitoring (QM) Sample.** Submit a sample of each pre-qualified material to CST/M&P every 2 years for testing. Include with the sample a recent test report from an independent laboratory showing compliance with the requirements of Article 8.

Submit samples and test reports at least 1 month before the beginning of the pre-qualification period to allow sufficient time for testing. Late submittals may cause delayed posting on the MPL.

7.2. **Quality Control (QC) Test Reports.** Producers accepted to the QMP must perform their own QC testing to verify compliance with this Specification. Testing is required for every material that is pre-qualified under the QMP.

Suppliers who private label geogrid may keep QC reports from the material manufacturer, but these records must be readily available for inspection by Department representatives. Producers must maintain a complete record of all QC test reports for the previous and current calendar year.

- 7.3. **Periodic Evaluation.** The Department reserves the right to conduct random sampling and testing of pre-qualified materials to verify performance and Specification compliance and to perform random audits of documentation. Department representatives may sample material from the project site and the warehouse. Sampling will be in accordance with Tex-735-I, and testing will be in accordance with Tex-621-J.

Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the QMP and the MPL. In case of variance, the Department's tests will govern.

- 7.4. **Disqualification.** Causes for disqualification and removal from the QMP and the MPL may include, but are not limited to:

- falsification of documentation,
- producer fails to report any change in material composition or manufacturing process to CST/M&P,
- material fails to meet the requirements of this Specification as a result of periodic evaluation,
- producer fails to comply with the documentation requirements of this Specification, or
- producer has unpaid charges for failing samples.

CST/M&P will remove disqualified producers from the QMP and the MPL and will not allow submission of material for re-qualification for 12 months, at the discretion of the Department.

- 7.5. **Re-Qualification.** Once the disqualification period established by CST/M&P has elapsed, producers disqualified and removed from the MPL may begin the re-qualification process by submitting a request in accordance with Section 6.2, including additional documentation identifying the cause of the problem and corrective action taken. The re-qualification process will then follow all subsequent Sections of Articles 6 and 7.

The Department normally bears the costs of sampling and testing; however, the disqualified producer will bear the costs associated with re-qualification. The Director of CST/M&P will assess this cost at the time of re-evaluation, and amounts due will be billed to the producer.

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## 8. MATERIAL REQUIREMENTS

- 8.1. **General Requirements.** The structure should be capable of maintaining dimensional stability during placement and under normal construction traffic.

The geogrid must be resistant to damage during construction, including ultraviolet degradation, and it must have long-term resistance to chemical and biological degradation caused by the materials being reinforced.

- 8.2. **Physical Requirements.** The geogrid must meet the requirements listed in Table 1 when tested in accordance with Tex-621-J.

**Table 1  
Geogrid Requirements**

Property	Type 1	Type 2	
Aperture Size, mm (in.)	25–51 (1.0–2.0)	25–51 (1.0–2.0)	
Percent Open Area, %	70 Min	70 Min	
Thickness, mm (in.)			
MD ribs	0.77 (0.03) Min	1.27 (0.05) Min	
CMD ribs	0.64 (0.025) Min	1.15 (0.045) Min	
Junctions	1.50 (0.06) Min	2.54 (0.10) Min	
Junction Efficiency, % of rib ultimate tensile strength			
MD & CMD	90 Min	90 Min	
Aperture Shape	Square or Rectangular	Square or Rectangular	Equilateral Triangular
Ribs per Node	4	4	6
Tensile Modulus @ 2% elongation <sup>1</sup> , N/m (lb./ft.)		-	
MD & CMD	204,260 (14,000) Min	291,000 (20,000) Min	175,080 (12,000) Min

1. Determined as a secant modulus without offset allowances.

Note—MD and CMD do not necessarily refer to the machine (warp) and cross machine (fill) directions in the manufacturing process. They refer, for drawn products, to the more (CMD) or less (MD) highly drawn ribs where the aperture dimensions are unequal.

**9. PACKAGING AND IDENTIFICATION**

9.1. **Packaging.** Package the geogrid in rolls of the length and width specified on the plans, as directed by the Engineer, or as specified in the purchase order awarded by the State.

Each roll should be one continuous piece packaged in a suitable sheath, wrapper, or container to protect the geogrid from damage due to ultraviolet light, moisture, and normal storage and handling.

9.2. **Identification.** Identify each roll with a tag or label securely affixed to the outside of the roll on one end. List the following information on the label:

- unique roll number, serially designated,
- lot or control number,
- name of producer,
- style or catalog description of product, and
- roll width and length.

**10. MEASUREMENT AND PAYMENT**

10.1. **Procurement by the State.** Measurement and payment for all materials governed by this Specification will be in accordance with the conditions prescribed in the purchase order awarded by the State.

10.2. **Contracts.** Measurement and payment for all materials governed by this Specification and utilized in the performance of work specified in the Contract will be considered subsidiary to the governing bid item in the Contract.

**11. ARCHIVED VERSIONS**

Archived versions are available.