

METHODS OF SAMPLING AND TESTING**MT 421-09****METHOD OF SAMPLING GEOSYNTHETICS (Construction Fabric and Geogrid)****1 Scope:**

- 1.1 This method covers the sampling of Geosynthetics. Geosynthetics generally fall into one of the following categories; woven and non-woven Geotextiles, Geogrids, Geocomposites, Geomembranes and Geosynthetic Clay Liner (GCL).

2 Description:

- 2.1 *Geotextiles* are permeable materials comprised of fibers or yarns combined into planar textile structures. The majority are either woven or non-woven (as described below) and are used for strength, separation, drainage, filtration and erosion control purposes.

Woven – Geotextile that are typically made of monofilament, multifilament or fibrillated yarns.

Non-woven – Geotextile that is manufactured using a process in which synthetic polymer fibers are continuously extruded and spun. The fibers or filaments are then connected by needle punching or heat bonding.

- 2.2 *Geogrid* consists of polymer mats constructed either of coated yarns or punched and stretched polymer sheets that allow interlocking of surrounding geomaterials and are commonly used for soil reinforcement.
- 2.3 *Geocomposites* generally consist of a geonet or a cusped or dimpled polyethylene drainage core wrapped in a geotextile and are often used as edge drains, wall drains, vertical drains (wick drains), and sheet drains.
- 2.4 *Geomembranes* consist of impervious polymer sheets that are typically used to line ponds, ditches, and landfills.
- 2.5 *Geosynthetic Clay Liners (GCL)* are manufactured hydraulic barriers consisting of sodium bentonite clay sandwiched and bonded between two geotextiles or attached with an adhesive to a geomembrane. Overlaps self-seal when the sodium bentonite hydrates. GCL's are commonly used to control vertical or horizontal infiltration of moisture.

3 Referenced Documents:

- 3.1 **AASHTO:**
M288 – Geotextile Specification for Highway Applications

ASTM:
D4354 – Sampling of Geosynthetics for Testing

MT Geotechnical Manual

4 Sample:

- 4.1 Prior to installation of the geosynthetic the following requirements are necessary to insure proper selection for each type of application:

- 4.1.1 The contractor shall submit to the EPM two copies of a notarized manufacturer's certificate of compliance signed by a legally authorized official of the manufacturer and notarized. The

4 Sample: (continued)

certification shall represent physical and chemical test results that were performed on a representative lot of material being used by the department.

- 4.1.2** In addition to certifications, a sample for Acceptance testing is required.
- 4.1.3** All sampling of geosynthetics, will be done at the project and witnessed by the EPM or his designee, for each type of application, i.e., geotextiles: separation, stabilization, subsurface drainage (Class A, B, or C) permanent erosion control (Class A, B, or C), silt fence (stabilized or unstabilized), geogrids, geocomposites GCL's and geomembranes. Compare the manufacturer's certificate of compliance to the specifications for the proposed application to ensure product compliance prior to acceptance and installation. Submit samples with certifications to the Materials Bureau for testing.
- 4.1.4** The size of sample for each application will be a minimum 4 foot wide strip cut across the full roll taken from a wrap of geosynthetic not exposed to sunlight or abrasion (see Note 1).
- 4.1.5** Frequency of sampling shall be one sample for every 10,000 square yards (8,000 m²) of application.
- 4.1.5.1** Each new roll used will be checked for variance of lot number and then, if necessary, resampled and submitted to the Materials Bureau for testing. (See Note 2)
- 4.1.5.2** The direction of roll must be identified on the sample.

Note 1 - The sample must be cut so that the cut edge is perpendicular to the roll (machine) direction. It is important to identify the roll direction on the sample, as the direction of failure in the fabric must be identified.

Note 2 - Label the sample with the manufacturer's lot number and identification of fabric type, grade or product name, date of sampling, project number and sample number.

5 Shipment and Storage:

- 5.1** Each geosynthetic roll shall be wrapped with a material that will protect the geosynthetic, including the ends of the roll, from damage due to shipment, direct sunlight, ultra-violet radiation and contaminants. The protective material shall be maintained during shipping and storage.
- 5.2** During storage, geosynthetic rolls shall be elevated off of the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or bases, flames including welding sparks, temperatures in excess of 160° F (71° C), and other environmental conditions that may damage the physical properties of the geosynthetic.

6 Specifications:

- 6.1** For basis of acceptance and testing requirements refer to the Standard Specifications for Road and Bridge Construction. Since the Materials Bureau has a strict acceptance policy, proper sampling and correct submittal is essential.