

## **Guidance for Use of Protective Cover in Cell Liner**

### **Design and Construction in Oklahoma**

#### **General**

The protective cover is provided to prevent penetration of the liner and clogging of the drainage layer.

#### **Materials**

The protective cover material will have less than 5% fines (passing no. 200 sieve) and hydraulic conductivity of at least  $1 \times 10^{-3}$  cm/sec. Protective cover shall contain nothing that could penetrate the geomembrane liner. Alternative materials such as foundry sand will be evaluated on a case-by-case basis.

#### **Thickness**

Protective cover should have a minimum thickness of 12 inches. To prevent the penetration of the liner, a minimum thickness of 24 inches is required if geonet is used for the drainage layer.

#### **Testing**

Grain size distribution (ASTM D 422) to the No. 200 sieve must be performed every 1600 cubic yards of protective cover. Hydraulic conductivity (ASTM D 2434) must also be performed every 1600 cubic yards of protective cover.

#### **Placement**

Place protective cover in a single lift with no compaction.

#### **References**

1. Indiana Dept. of Environmental Management, "Design Standards for Protective Layer," OLQ General ID#0010-02-SW, January 24, 2000
2. Sowers, G. B. and Sowers, G.F., "Introduction to Soil Mechanics and Foundations, 3<sup>rd</sup> Edition," 1970, pp. 19, 73, &177
3. Koerner, R.M., "Designing with Geosynthetics, 2<sup>nd</sup> Edition," Prentice Hall, Englewood Cliffs, New Jersey, 1990, pp.121-122
4. Ohio EPA, "DSIWM Guidance No. 0155: Required Protective Layers and Recommended Sorted Waste Layers," April 3, 1998.

**References (Continued)**

5. Ohio EPA, "DSIWM Guidance No. 0629: Placement of Geotextile Filter Layers," September 4, 1998.
6. ASTM D 2434-68 "Standard Test Method for Permeability of Granular Soils (Constant Head)," Reapproved 1994
7. Richardson, G.N. and Zhao, A. "Design of Lateral Drainage Systems for Landfills," Proceedings: Geosynthetics for Advanced Solutions, October 28, 1999, Houston, TX p.13