



**VODALAND**  
REINVENTING THE ENVIRONMENT

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**Vodaland**

3120 Riverport Tech Center Dr.  
Maryland Heights, MO 63043

**Product guide Specification**

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat*, *sectionFormat*, and *PageFormat*, Contained in the *CSI Manual of Practice*.

The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings.

**Section 02375**

**CELLULAR CONFINEMENT SYSTEM:  
GeoCell**

## **PART 1. GENERAL**

### **1. Section includes**

- A. Cellular confinement system GeoCell for slope protection, earth retention, channel protection and load support

### **1.2 Related sections**

- A. Section 02300 - Earthwork
- B. Section 02315 - Excavation and Fill: Infill material.
- C. Section 02330 - Embankment.
- D. Section 02340 - Soil Stabilization: Geotextiles
- E. Section 02370 - Erosion and Sedimentation Control.
- F. Section 03300 - Cast-in-place Concrete: Concrete infill.

### **1.3. References**

- B. ASTM D 1505 - Standard test method for density of plastics by the density gradient technique.
- C. ASTM D 1603 - Standard test method for carbon black in olefin plastics.
- D. ASTM D 5394 - Standard test method for environmental stress-cracking of ethylene plastics.
- E. ASTM D 5199 - ASTM D 5199 -Standard test method for measuring the nominal thickness of geo-synthetics.
- F. US Army Core of Engineers (USACE) Technical Report GL-86-19, Appendix A.

### **1.4 Submittals**

- A. Comply with Section 01330 - submittal procedures.
- B. Product Data: Submit manufacturer's product data and installation instructions.
- C. Shop drawings: Submit manufacturer's shop drawings, indicating dimensions, cell depth, and system components.
- D. Samples: Submit manufacturer's sample of GeoCell.
- E. Certificate of compliance: submit manufacturer's certificate of compliance indicating GeoCell comply with specified requirements.
- F. Quality Assurance Certification: Submit manufacturer's ISO 9001:2000 quality assurance certification.
- G. Warranty: Submit manufacturer's standard warranty.

### **1.5 Quality Assurance**

- A. Manufacturer's field representative qualifications: Experienced in cellular confinement system installation.
- B. Installer's Qualifications: Experienced in cellular confinement system installation
- C. Pre-installment meeting: Convene pre-installment meeting [2 weeks] before start of installation of GeoCell. Require attendance of parties directly affecting work of this section, including contractor, engineer, installer, and manufacturer's representative. Review preparation, installation, and coordination with other work.

### **1.6 Delivery, Storage, and Handling**

- A. Delivery: deliver materials to site in manufacturers original, unopened pallets and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions.
- C. Handling: Protect materials during handling and installation to prevent damage.

## **Part 2        Products**

### **2.1 Manufacturer**

- A. Vodaland, 3120 Riverport Tech Center Dr. , Maryland Heights, MO 63043 (314)  
717-1551

### **2.2 Cellular Confinement System**

- A. Model: GeoCell 8750-M (2"), 8710-M (4"), and 8720-M (8")
1. Cell Depth 2 inches, 4 inches, or 8 inches
  2. Nominal Expanded Cell Size: 11-5/8<sup>th</sup> inches wide by 11-5/8<sup>th</sup> inches long
  3. Nominal Expanded Cell Area: 127.69<sup>2</sup> inches
  4. Nominal Expanded Section : 9 feet by 17 feet
  5. Cells per section: 20 cells long by 8 cells wide
  6. Nominal Expanded Section Area: 153<sup>2</sup> feet
- B. Material Properties
1. Material: 100% recycled, Modified polyethylene (PPE).
  2. Polymer Density, ASTM D 1505: 0.95-0.965 g/cm<sup>3</sup> (58.4-60.2 lb/ft<sup>3</sup>).
  3. Environmental Stress Crack Resistance, ASTM D 5394 >400 hours.
  4. Minimum Carbon Black Content, ASTM D 1603: 1.5 percent weight.
  5. Nominal Sheet Thickness, ASTM D 5199: 1.25mm (60 mils) plus 10 percent, minus 5 percent if textured.
  6. If textured the polyethylene strip shall be textured with a multitude of rhomboidal (diamond shape) indentions. The rhomboidal indentions shall have surface density of 22 to 31 per cm<sup>2</sup> (140 to 200 per in<sup>2</sup>).
- C. Cell Wall: Solid.
- D. Cell Wall Perforated.

1. Horizontal Rows: 10-mm diameter holes, 16.6 mm on center.
2. Stagger horizontal rows and separate 8.3 mm relative to hole centers.
3. Edge of Cell Wall to Nearest Edge of Perforations: 7.93 mm.
4. Centerline of Weld to Nearest Edge of Perforations: 27.9 mm minimum.
5. Perforations Remove: 12 percent plus or minus 1 percent of cell wall area.

## **2.3 Accessories**

### **A. J-Hooks:**

1. Material with sufficient strength to support and anchor GeoCell.
2. Steel Reinforced Bars: Galvanized
  - Diameter: [10 mm (0.375 inch)] [12 mm (0.500 inch)] [16 mm (0.625 inch)] [20 mm (0.75 inch)] [As indicated on the drawings].
  - Length: As indicated on drawings.
  - Hook: [180-degree bend] [45-degree bend] [As indicated on the drawings].

### **B. Tendons:**

1. Tensile Strength: Sufficient to support total theoretical load.
2. Material: High-tenacity, [polypropylene] fibers woven into webbing.

## **2.4 Infill Materials**

- A. Infill Materials: [Sand] [Granular fill] [Top Soil] [Soil mix] [Top soil and sand mix] [Gravel] Crushed stone] [Concrete]

## **2.5 Other Geosynthetic Components**

- A. Non-woven Geo-textiles: as specified in section 02340

## **PART 3 EXECUTION**

### **3.1 Examination**

- A. Examine area to receive GeoCells. Notify Engineer if area is not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

### **3.2 Preparation**

- A. Prepare site by removing vegetative cover, debris, and unacceptable soils from area where GeoCells will be installed.
- B. Replace removed soils with acceptable materials.
- C. Complete earthwork, including toe-in trenches when required for slope or channel lining applications, as specified in section 02300.
- D. Install non-woven Geo-Textiles as specified in section 02340 (if necessary).

### **3.3 Installation**

- A. Install GeoCell in accordance with manufacturer's instructions indicated on the drawings.
- B. Anchor GeoCell sections as necessary to resist sliding due to gravitational forces and sheet flow.
- C. Ensure top edges of adjoining cell walls are flush with each other and in proper alignment.
- D. Deliver infill material to GeoCell from top of slope or channel to bottom in accordance with manufacturer's instructions.
- E. Limit drop height of infill material to a maximum of 1 m (3 feet) to prevent damage to GeoCells.

- F. Overfill expanded GeoCell sections by 25 to 50 mm (1 to 2 inches) to allow for settling and compaction, when using granular infill materials.
- G. Compact granular infill materials to top of GeoCells to minimum of 95 percent SPDD.
- H. Manually rake and machine finish concrete infill material.

**End Of Section**