

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:

Geo Ground Grid

PART 1. GENERAL

1. Section includes

A. Cellular confinement system Geo Ground Grid 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 Geo Ground Grid.
- **E.** Certificate of compliance: submit manufacturer's certificate of compliance indicating Geo Ground Grid 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 Geo Ground Grid. 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: Geo Ground Grid 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: 11-5/8th inches wide by 11-5/8th inches long
 - 3. Nominal Expanded Cell Area: 127.692 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: 1532 feet

B. Material Properties

- 1. Material: 100% recycled, Modified polyethylene (PPE).
- 2. Polymer Density, ASTM D 1505: 0.95-0.965 g/cm³ (58.4-60.2 lb/ft³).
- 3. Environmental Stress Crack Resistance, ASTM D 5394 >400 hours.
- 4. Minimum Carbon Black Content, ASTM D 1603: 1.5 percent weight.
- Nominal Sheet Thickness, ASTM D 5199: 1.25mm (60 mils) plus 10 percent, minus 5 percent if textured.
- 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 cm² (140 to 200 per in²).
- 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 Geo Ground Grid.
- 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 Geo Ground Grids. 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 Geo Ground Grid 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 Geo Ground Grid in accordance with manufacturer's instructions indicated on the drawings.
- B. Anchor Geo Ground Grid 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 Geo Ground Grid 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 Geo Ground Grids.

- F. Overfill expanded Geo Ground Grid 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 Geo Ground Grids to minimum of 95 percent SPDD.
- H. Manually rake and machine finish concrete infill material.

End Of Section