

# GEOWEB®

## Cellular Confinement System

General Brochure



QUALITY - SUPPORT - EXPERTISE







*For the most advanced soil stabilization technology today, rely on the proven Presto GEOSYSTEMS® GEOWEB® cellular confinement system for solving challenging soil stability problems.*

## ***genuine* GEOWEB®**

### **THE ORIGINAL CELLULAR CONFINEMENT SYSTEM**

Presto GEOSYSTEMS® is the original developer of the geocell technology and leads the industry in research and development. The result is meaningful product improvements, innovative features, advanced engineering methodologies and proven field results that provide the

most cost-effective and long-term solutions to soil stabilization problems. Innovations continue today to provide you with sustainable, high-performing and lowest-cost solutions.

### **HIGH-QUALITY PRODUCTS AND SOLUTIONS**

With Presto GEOSYSTEMS®, you'll receive the same high quality products, solutions and support that you did over 30 years ago. GEOWEB® sections are manufactured from high-quality polyethylene to achieve consistent and maximum seam strength and overall

system performance. Quality is assured because the complete manufacturing process adheres to a quality management system that is certified to ISO 9001:2008 and CE standards.

### **HIGH PERFORMANCE SOIL STABILIZATION**

The GEOWEB® system significantly improves the performance of soils by confining and stabilizing them in the system's high-strength network of interconnected cells. The three-dimensional system is an economic and effective solution to challenging soil stability problems in load support, slope, channel, and shoreline protection, and vegetated retaining wall/earth retention applications.

### **PRESTO'S VALUE SERVICES**

- **DESIGN SUPPORT:** A complementary project evaluation service is available to support your project designs.
- **CONSTRUCTION SUPPORT:** Contractor training or site supervision is available to support your project installations.

### **INFILL OPTIONS**

A variety of infill materials can be used based upon details of the specific project/problem:

- topsoil with various selected vegetation
- aggregates from sand and gravel to larger rock or stone
- concrete of various strengths and surface finishes
- on-site available fill
- combinations of the above to meet project conditions





# GEOWEB®

## CHANNEL PROTECTION

The GEOWEB® system provides a wide variety of economical, flexible protection treatments for open channels and hydraulic structures. The system provides stability and protection of channels exposed to erosive conditions ranging from low-to-high flows either intermittent or continuous.

- Greatly improves the hydraulic performance of conventional protection materials such as aggregate, rip-rap and vegetation by confining them within the cellular structure.
- With concrete infill, is a flexible and long-lasting armored channel lining, at a lower cost than articulating block systems.
- Can be designed for specific site conditions based upon compatibility with local environmental, ecological and aesthetic requirements, maximum anticipated flow, and associated hydraulic stresses.
- Surface roughness and hydraulic efficiency of the lining system can be changed to control flow.
- Subgrade drainage requirements and deformation potential within the structure can be addressed.



### TYPICAL APPLICATIONS

- swales and drainage ditches
- storm water diversion or containment
- process water channels or containment
- spillways/down chutes/drop structures
- culvert outfalls
- intermittent or continuous/low-to-high flow channels



### *channel, slope, and shoreline*

- Perforations facilitate parallel slope drainage of the infilled cell. In saturated conditions, the removal of excess water increases infill friction, reducing down slope sliding forces, resulting in a more stable system.
- In vegetated systems, perforations allow roots to grow from cell-to-cell creating greater vegetative stability against short-term hydraulic events.



# GEOWEB®

## SLOPE & SHORELINE PROTECTION

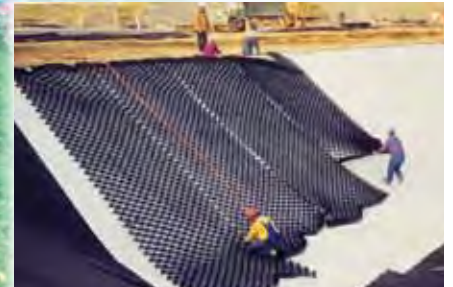
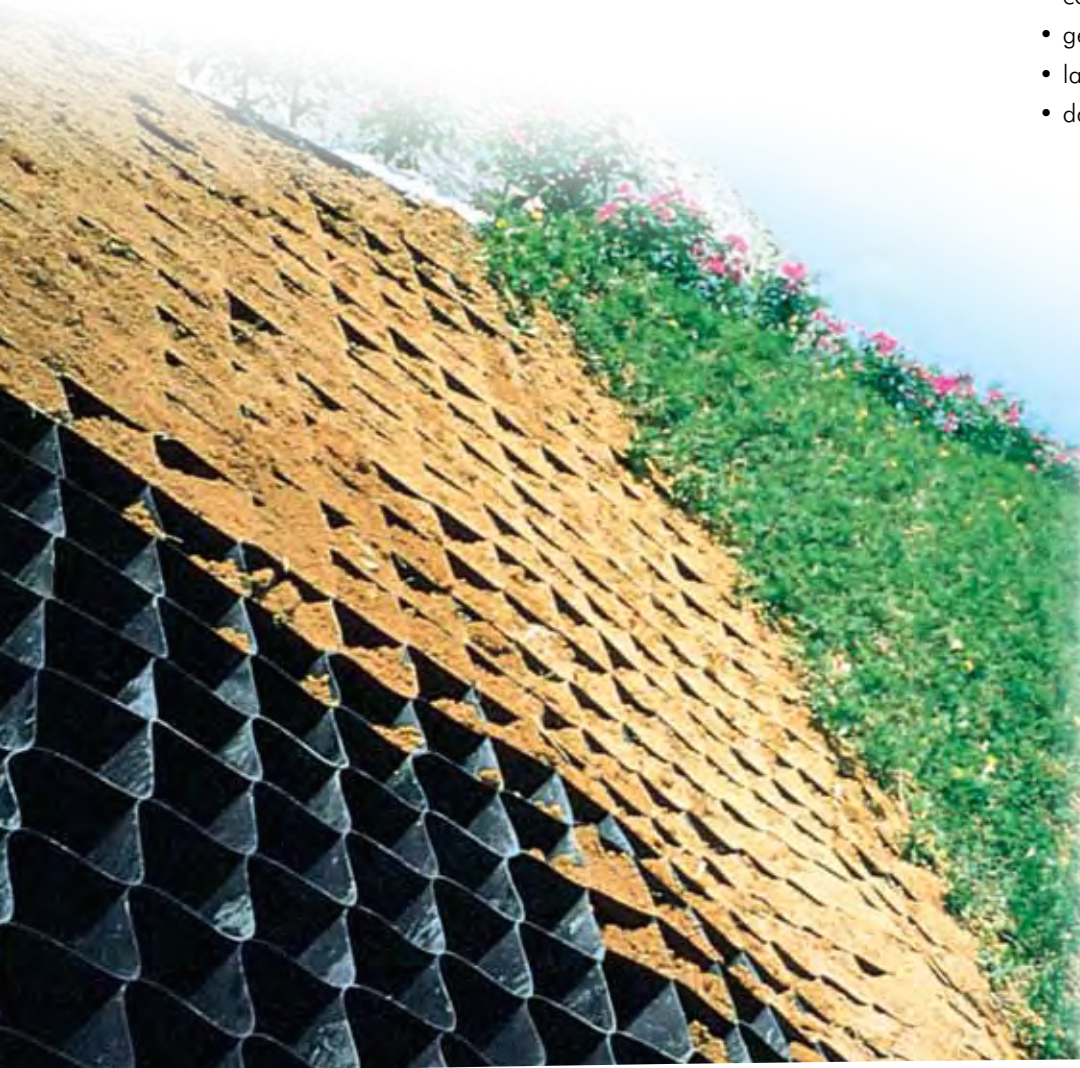
The GEOWEB® slope and shoreline protection system confines, reinforces and restrains the upper soil layer and infill controlling down-slope movement and slippage due to hydrodynamic and gravitational forces.

- Provides effective slope protection and structural confinement of topsoil/vegetation and granular materials such as sand, gravel and larger rock or stone.
- Becomes a flexible concrete mat with built-in expansion joints when cells are infilled with concrete.
- Creates additional stability by integrating tendons on steeper slopes and shoreline embankments or when a geomembrane or hard soil/rock surface prevents anchoring with stakes.
- Allows embankments to be steeper than when unconfined, reducing use of valuable land space.



### TYPICAL APPLICATIONS

- cut or fill embankment slopes
- shoreline revetments
- abutment protection
- storm water/waste water lagoons
- containment dikes and levees
- geomembrane protection
- landfill linings and covers
- dam faces and spillways



- With aggregate infill, perforations create greater frictional resistance between infill materials and the textured/perforated cell wall, resulting in greater resistance to hydraulic scour.

- With concrete infill, perforations allow infill to interlock with the cell walls, increasing frictional resistance, creating a better armored slope.

*benefits of*



# GEOWEB®

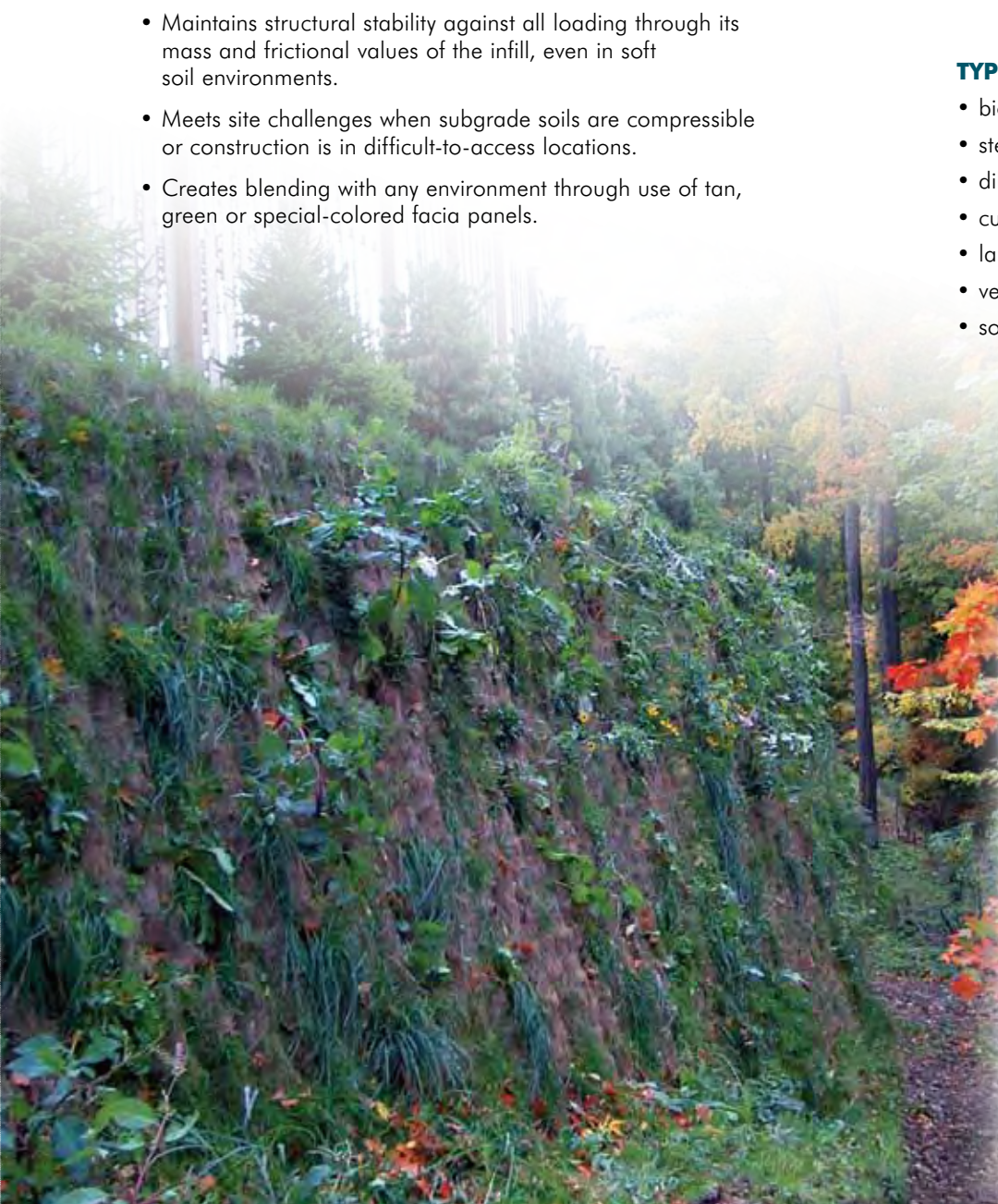
## RETAINING WALLS/EARTH RETENTION

The GEOWEB® system, when layered, becomes an economical retaining wall system meeting all project-specific structural requirements. The system allows for construction flexibility and provides aesthetics through a completely vegetated face. Horizontal terraces are formed where vegetation can flourish in the exposed outer cell infill. The system captures rainwater and controls groundwater evaporation, creating a more natural environment for vegetation.

- Maintains structural stability against all loading through its mass and frictional values of the infill, even in soft soil environments.
- Meets site challenges when subgrade soils are compressible or construction is in difficult-to-access locations.
- Creates blending with any environment through use of tan, green or special-colored fascia panels.

### TYPICAL APPLICATIONS

- bioengineered walls
- steepened embankments
- dike and levee protection
- culvert headwalls
- landscape development walls
- vegetated channel structures
- sound barriers



### *earth retention*

- Perforations improve frictional interaction between the textured/perforated cell wall, creating greater back wall friction, potentially reducing horizontal destabilizing forces and increasing vertical stabilizing forces.
- Perforations create a better full-wall drained system that significantly reduces hydrostatic forces, resulting in more economical wall designs.

# *perforations*



# GEOWEB®

## LOAD SUPPORT

The GEOWEB® load support system stabilizes the selected infill and provides economical solutions to unstable surface or base problems in three key areas: 1) a load distribution system over weak soils, 2) base stabilization for paved surfaces and 3) surface stabilization for unpaved surfaces.

- Significantly minimizes surface rutting.
- Distributes loads laterally and reduces vertical deflection and subgrade contact pressures.
- Controls shearing and lateral movement of the coarse and permeable infill material.
- With open aggregate infill, reduces storm water runoff and creates on-site water detention/retention basin.
- In most cases, the GEOWEB® system doubles the effective structural number for load support, reducing base requirements by half.

### TYPICAL APPLICATIONS

- site access roads
- permeable, load-supporting surfaces
- roadway shoulders
- intermodal/port facilities
- transportation/storage yards
- stabilized drainage layer
- trails and walkways
- track ballast and subballast structures
- stabilized base for asphalt or modular block pavements
- boat ramps/low water crossings
- foundation mattresses and pipeline protection



### *load support*

- Perforations and a textured surface increase the friction angle between aggregate infill and the cell wall, generating better aggregate lockup and greater overall load distribution.
- Perforations facilitate lateral cell-to-cell drainage of excessive ground and surface water, reducing the negative effects of trafficking over saturated soils.

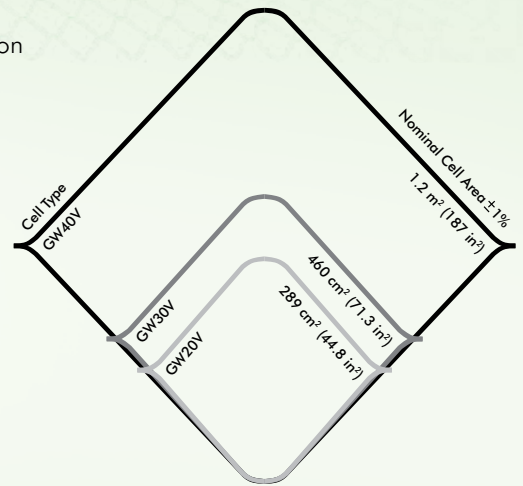


# GEOWEB® system standard sizes

GEOWEB® sections are available in various cell types and depths, and section lengths to most economically meet project requirements.

Cell Type	Section Width	Section Length Range	
		Cells Long: 18, 21, 25, 29, 34	
	Variable	Minimum	Maximum
GW20V	7.7 ft–9.2 ft (2.3 m–2.8 m)	12.0 ft (3.7 m)	27.3 ft (8.3 m)
GW30V		15.4 ft (4.7 m)	35.1 ft (10.7 m)
GW40V		25.4 ft (7.7 m)	58.2 ft (17.8 m)

<b>Available cell depths</b>	3 in (75 mm), 4 in (100 mm), 6 in (150 mm), 8 in (200 mm)
Cell size and depth are determined by the details of the application, problem or desired solution. Refer to the GEOWEB® material specification for more information.	



GEOWEB CELL SIZES

## system components & contractor tools

The following components may be part of the overall GEOWEB® solution to meet engineering requirements and to facilitate and expedite construction:

### TENDONS

Tendons may be required and are available in various tensile strengths to meet design requirements.

- Provide additional stability against gravitational, hydrodynamic, and buoyancy forces.
- Effective with high flows, or when a geomembrane underlayer or hard soil/rock prevents anchoring with stakes.

### ATRA® ANCHORS

Contractor-friendly ATRA® Anchors reduce time and material costs during installation of the GEOWEB® system. (1)

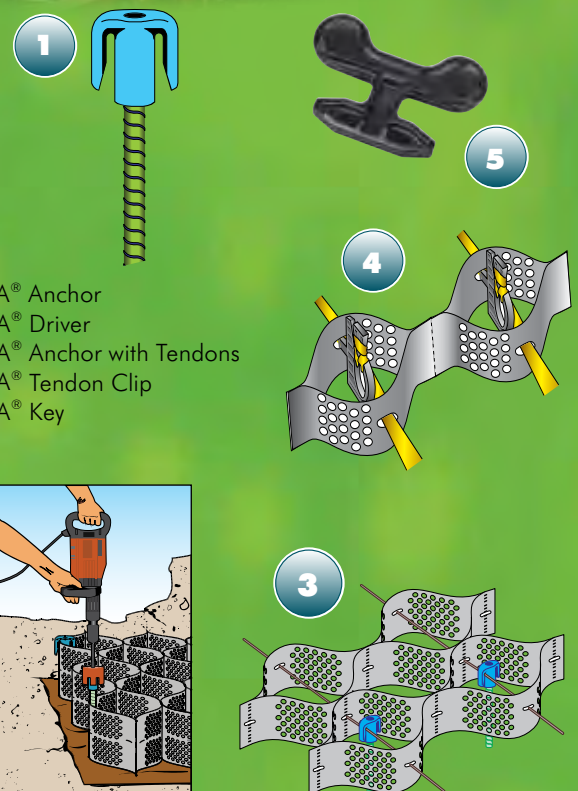
- Easier to drive than J-hook stakes; improves installation productivity and uses less material.
- The ATRA® Driver makes driving anchors easy and fast, and causes less stress on workers. (2)
- Tendons and an ATRA® Anchor array provide additional anchoring to resist sliding and/or uplift forces. (3)

### ATRA® TENDON CLIP

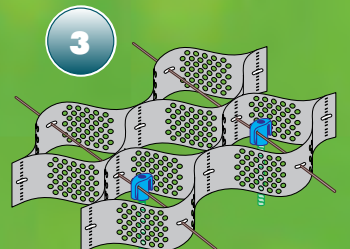
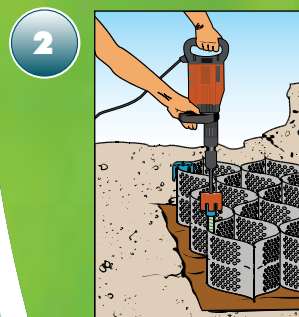
The ATRA® Tendon Clip is an efficient load-transfer device to transfer loads from the GEOWEB® cell wall to the tendon. Fully engaged clips allow easier preassembly. (4)

### ATRA® KEY CONNECTION DEVICE

Designed for quicker connection of GEOWEB® sections, the exclusive ATRA® key device reduces contractor installation cost and provides three-times-stronger connections than staples. (5)



1. ATRA® Anchor
2. ATRA® Driver
3. ATRA® Anchor with Tendons
4. ATRA® Tendon Clip
5. ATRA® Key



# comprehensive tools and services

Presto GEOSYSTEMS® and its distributors/representatives offer the most-complete services in the industry to support project design and installation requirements.

## TOOLS:

- Technical resources binder
- Engineering analysis/technical overviews
- SPECMAKER® specification development tool
- Project case studies
- Detailed construction instructions

## SERVICES:

**Project Evaluation Service:** We analyze specific project needs and provide recommended preliminary designs for each project.

**Construction Services:** Qualified on-site field support specialists can be available for construction training, and start-up installation supervision.



## PRESTO GEOSYSTEMS® COMMITMENT — To provide the highest quality products and solutions.

Presto GEOSYSTEMS® is committed to helping you apply the best solutions to your soil stabilization problems. Our solutions-focused approach to solving problems adds value to every project. Rely on the leaders in the industry when you need a solution that is right for your application. Contact Presto GEOSYSTEMS® or our worldwide network of knowledgeable distributors/representatives for assistance.

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## UNSURPASSED QUALITY

Presto's commitment to quality begins with manufacturing and continues through final installation.

- Quality management system certified to ISO 9001:2008 and CE certification.
- Sections manufactured from high-quality polyethylene provide consistent and maximum seam weld strength.
- Materials engineered to established geosynthetic industry guidelines.
- Sections backed by a 10-year limited warranty.

Distributed by Geofabrics Australasia Pty Ltd

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