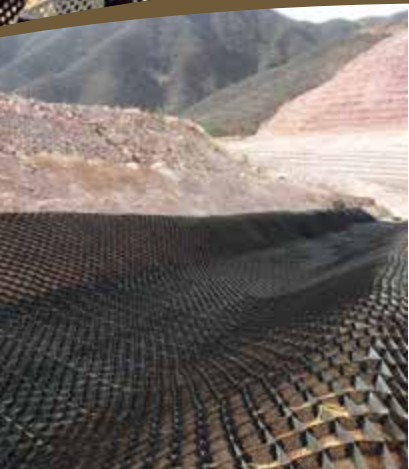


**PRESTO**



# **GEOWEB<sup>®</sup>**

Soil Stabilization System



The Most Complete Geocell System



# HDPE GEOWEB®

## STRENGTH AND FLEXIBILITY PERFECTED.

For the most advanced soil stabilization technology today, rely on the world's most proven and strong HDPE geocell system—GEOWEB®—for solving challenging soil stability problems.



### GENUINE GEOWEB®

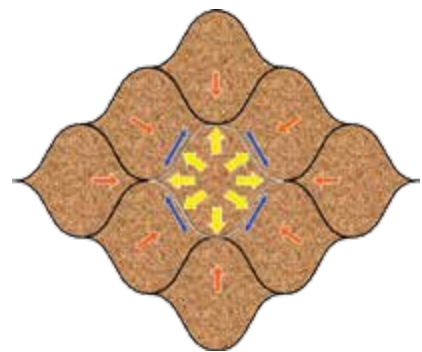
#### ADVANCING GEOCELL TECHNOLOGY

Presto Geosystems® introduced the 'geocell' soil confinement technology to the civil market in the late 1980s and continues to develop more applications and features to solve soil stability challenges in load support, slope & channel protection, and wall solutions.

### GEOWEB® WORKS

#### HIGH DENSITY GIVES HIGH PERFORMANCE

The technology of cellular confinement is powerful, yet simple. Through a network of 3D interconnected cells, infill is confined and resistant to movement. The GEOWEB® system 'transforms' infill through confinement—providing strength and stabilization to cohesionless soils for a host of applications—from roadways to steep embankments.





## PRESTO GEOWEB® WHAT SETS US APART

### FOCUSED ON INNOVATION

We respond to the industry's need for stronger designs and faster installations through ongoing testing and research. The result is product advancements and innovative, integral system accessories that offer completely engineered solutions. **The GEOWEB® system is the only geocell to offer a complete design and construction solution.**

### WE KNOW GEOCELLS

Product performance and reliability have been the foundation of the GEOWEB® product's success since inception in the early 1980s. Engineers across the globe have collaborated with us on thousands of design solutions. The experience gained from so many installations in challenging applications and soil environments translates to value on each and every project. **We simply offer experience that no other manufacturer can provide.**

### VIRGIN HDPE IS BEST

Presto's GEOWEB® system is only made with the best quality virgin High Density Polyethylene (HDPE) material. Why HDPE? HDPE delivers a **perfect balance of strength and flexibility**—as well as consistent performance characteristics allowing it to withstand the most demanding project applications. GEOWEB® 3D HDPE geocells offer assurance that can only come with a 35-year proven track record simply not offered by other fabric-based or blended and recycled polymer materials. HDPE is the most accepted and proven cellular confinement material for a reason—**HDPE GEOWEB® geocells are proven to work.**

### PROVEN & ACCREDITED QUALITY

To ensure our customers receive the highest, consistent quality each and every time, we manufacture the GEOWEB® system to ISO and CE quality standards. Consistent weld strength and maximum seam strength are critically important to system performance.

**We are committed to our quality programs.**

- ISO 9001:2015 International/Standards
- CE marking based on conformance with EU harmonized standards

### RESEARCH-BACKED DESIGN METHODOLOGY

With design modeling tools developed from our research, and product-leading advancements, we offer engineers unique design options to solve site challenges not available with other systems.

Our **free project evaluation** is a value service offered to ensure projects are designed to perform. We offer certainty—backed by performance testing.

### LARGEST NETWORK OF LOCAL SUPPORT

Our knowledgeable distributors and representatives are well trained and ready to support each project. They provide general and technical presentations to engineers. They support local contractors at pre-construction meetings and with training—even on-site installation support. **Our network is the largest and most knowledgeable in the industry.**

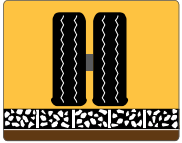


# GEOWEB® APPLICATIONS

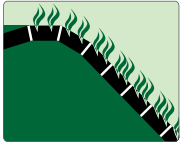
The 3D GEOWEB® system is suitable for a variety of applications to solve soil stability problems and to deliver more economic solutions than conventional materials.

## FOUR KEY GEOWEB® APPLICATIONS

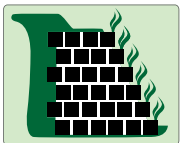
The GEOWEB® system is a versatile solution for a wide range of site applications:



LOAD SUPPORT



SLOPE PROTECTION



RETAINING WALLS



CHANNEL SUPPORT



## ECO-FRIENDLY & ECONOMICAL

Presto's GEOWEB® system minimizes environmental impact and offers cost-effective means for creating sustainable, long-term solutions that hold up over time.

- Reduced life-cycle costs
- Environmentally friendly
- Sustainability
- Aesthetically pleasing

## INFILL OPTIONS

Infill type varies from vegetation to aggregate and hard-armored concrete.







## MARKETS & INDUSTRIES

We partner with engineers, architects, contractors and owners around the globe. Our solutions solve soil challenges in diverse areas of site construction.

### INFRASTRUCTURE

General Site Construction

### MINING

Site Access/Haul Roads  
Slope Reclamation  
Channel Armoring  
Basin Containment  
Tailings Containment

### OIL & GAS

Site Access Roads  
Oil Pads / Work Platforms



### RAILROAD & INTERMODAL

Ballast Reinforcement  
Bridge Approaches, Crossings, Diamonds  
Intermodal & Port Stabilization  
Embankment & Channel Protection



### STORMWATER & WASTEWATER

Stormwater Conveyance Channels  
Basin Containment  
Geomembrane Protection



### TRANSPORTATION

Unpaved Access Roads  
Roadbase & Shoulder Stabilization  
Embankment Stabilization  
Stormwater Channels



### UTILITIES & ELECTRICAL TRANSMISSION

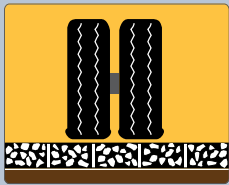
Maintenance Roads  
Transmission Substations



### WIND ENERGY

Access Roads  
Staging Areas





## System Components

ATRA® Key Connection

### APPLICATIONS:

Site Access Roads  
 Oil Platforms  
 Mine Haul Roads  
 Road Shoulders  
 Intermodal Yards  
 Port Facilities  
 Permeable Parking Areas



## UNPAVED GEOWEB® LOAD SUPPORT ROADS, SHOULDERS & PERMEABLE PAVEMENTS

Unstable surface problems for access roads, road shoulders and pavement areas can be restored with the GEOWEB® system. The 3D structural system with confined infill creates a stable pavement layer designed to support frequent and heavy traffic. Maximum benefit can be gained where soft soils are present, where inexpensive quality infill is unavailable or where traditional reinforcement methods are difficult to construct.

With permeable infill, the system becomes a low-environmental impact porous pavement that reduces stormwater runoff, and performs like a stormwater 'basin' storing stormwater for natural infiltration.

### STABILIZING FILL MATERIALS WITHIN THE 3D GEOWEB® SYSTEM:

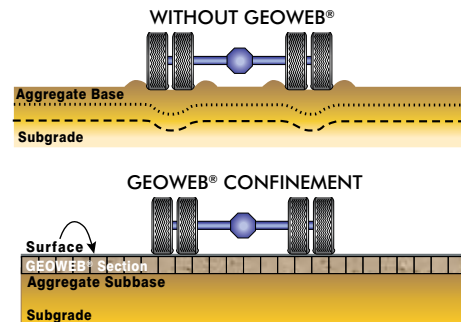
- controls shear, lateral and vertical movement.
- increases the effective structural number, reducing fill requirements and costs by 50%.
- allows lower-quality, less costly on-site infill materials.
- significantly minimizes surface rutting and maintenance requirements.

### COMPARED TO PLANAR GEOGRID SYSTEMS:

The GEOWEB® system delivers advantages compared to geogrids, especially in soft-soil areas. The benefit with the 3D GEOWEB® system is immediate and works on the principal of hoop strength. Geogrids require tension to activate, initiated by partial deformation.

### GEOWEB® OUT-PERFORMS GEOGRIDS:

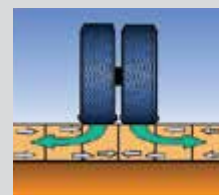
- requires less aggregate depth
- offers faster cycle times
- uses locally-available fill (even sand)
- stabilizes the whole pavement layer
- protects from rutting
- creates a load-bearing porous pavement

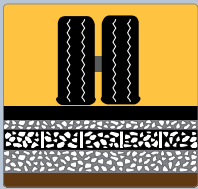


## RESULTS SUPPORTED BY RESEARCH

Test results from numerous research initiatives confirm the benefits of confined aggregate within the GEOWEB® system vs. unconfined aggregate.

- Reduces thickness and weight of structural support elements by **50 percent or more**.
- Allows subgrade materials to **withstand more than 10 times** the number of cyclic-load applications before accumulating the same amount of permanent deflection.
- Provides **over 30% stress reduction** when supporting aggregate under pavement.





## System Components

ATRA® Key Connection

### APPLICATIONS:

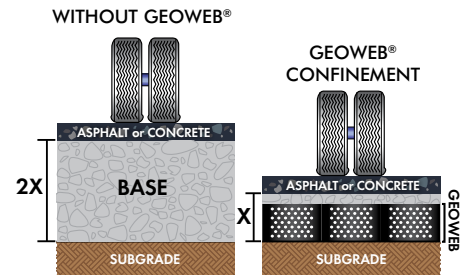
Pavement Base Stabilization  
 Drainage Layer  
 Rail Ballast Reinforcement



## PAVED GEOWEB® LOAD SUPPORT STABILIZATION UNDER ASPHALT OR CONCRETE SURFACES

A stabilized load-supporting base layer under asphalt, concrete or modular block pavements is created with the GEOWEB® system that holds up under heavy, repeated traffic. Infill material type and depth is determined by anticipated load characteristics and overall performance requirements.

Base stabilization with the GEOWEB® system is especially effective in soft-soil areas with chronic pavement problems and regular maintenance costs.



### STABILIZING BASE MATERIALS WITHIN THE 3D GEOWEB® SYSTEM:

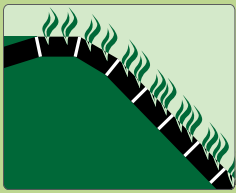
- reduces base materials by 50% or more.
- minimizes load-related deformation and settlement, and reduces pavement degradation and cracking common with soft subgrades.
- allows the use of lower quality granular infill, even over soft subgrades.

### OVER-EXCAVATION ALTERNATIVE

When faced with unsuitable soils requiring full depth removal, the GEOWEB® system is also an over-excauation alternative—significantly reducing excavation.







## System Components

ATRA® Key Connection

**If Required:** Anchors, Tendons  
& ATRA® Tendon Clip Load  
Transfer Support System

### APPLICATIONS:

Cut or Fill Embankment Slopes  
Shoreline Revetments  
Abutment Protection  
Landfill Linings & Covers  
Stormwater Basins  
Wastewater Lagoons  
Dikes and Levees  
Dam Faces & Spillways



## GEOWEB® SLOPE PROTECTION SLOPE & SHORELINE EROSION CONTROL & ARMORING

A stable environment for embankment materials is created by the 3D GEOWEB® system. The 3D structure prevents severe erosion problems and offers deep earth solutions not delivered by 2D surface treatments. Benefits of 3D GEOWEB® confinement include long-term sustainability, reinforcement of the upper soil layer and resistance to erosive conditions and sliding forces.

Soil confinement allows embankments to be designed steeper than when material is unconfined, reducing use of valuable land space.



### SUSTAINABLE VEGETATION:

The system reinforces vegetation and increases the resistance to erosive forces with deep in-soil protection.



### PERMEABLE AGGREGATE:

Confinement in the GEOWEB® structure allows smaller, less-expensive aggregate to be used on steeper slopes than when unconfined.

### HARD-ARMORED CONCRETE:

With concrete infill, the GEOWEB® system is a less costly, flexible alternative to articulating block systems or bag systems.



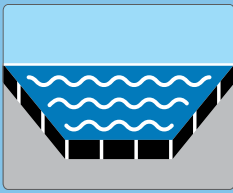
### GEOMEMBRANE PROTECTION:

The system offers effective cover protection for impervious geomembranes. A tendoned-anchoring system offers structural support and protects the integrity of the liner.



Designed for additional stability by integrating tendons on steeper slopes or when a geomembrane or hard soil/rock surface prevents anchoring with stakes.





## System Components

ATRA® Key Connection

### If Required:

Anchors, Tendons & ATRA®  
Tendon Clip Load Transfer  
Support System

### APPLICATIONS:

Swales & Drainage Ditches  
Stormwater Diversion or  
Containment  
Process Water Channels  
Containment Spillways



# GEOWEB® CHANNEL PROTECTION

## CHANNEL EROSION CONTROL & ARMORING STORMWATER CONVEYANCE; RIP RAP REPLACEMENT

Channels exposed to erosive conditions can be designed with the GEOWEB® system and appropriate infill to withstand even the highest velocities. Designed to resist hydraulic stresses of intermittent or continuous high-flow channels.

### VEGETATED CHANNELS:

Replaces costly rip-rap with more attractive, more economical, and lower-maintenance single or tiered vegetated systems. Effective in low-flow and low-to-high intermittent channels.

With a TRM, the vegetated GEOWEB® system can withstand velocities as high as **30 ft/sec (9 m/sec)** and 16 psf shear stresses. Ideal for drainage ditches, swales and stormwater channels.

### HARD-ARMORED CHANNELS:

#### Aggregate Protection

Aggregate confined in the GEOWEB® system is far more stable than when unconfined. Compared to larger rip rap that is expensive and difficult to handle, GEOWEB® channels allow smaller, more economical rock fill—even waste rock—to be used in low-to-challenging flow conditions.

#### GEOWEB® CHANNEL RESEARCH RESULTS

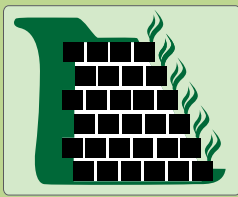
- The GEOWEB®/TRM system withstands 30 ft/sec (9 m/sec) velocity flow.
- Doubles resistance to shear stress and velocity for TRMs and ECBs.
- Reduces rip rap sizing by up to 10 times.

#### Concrete Protection

Concrete-filled GEOWEB® channels are ideal where conditions create severe hydraulic stresses. Concrete is poured into the GEOWEB® system onsite, creating an easy-to install, flexible—yet hard-armored system more economical than pre-formed concrete systems. Exact concrete depths are assured with no chances for “over pours” or “under pours”.







## System Components

ATRA® Key Connection

### APPLICATIONS:

Reinforced Slopes  
Gravity Walls  
Reinforced Retaining Walls  
Multi-Layered Channel Systems



## GEOWEB® RETAINING WALLS NATURALLY-VEGETATED EARTH RETENTION STRUCTURES

GEOWEB® Retaining Walls create natural aesthetics through vegetation in the outer fascia. The system's inherent flexibility benefits projects with challenging site conditions such as soft subgrades, difficult access and space constraints. GEOWEB® walls may be designed as either gravity or reinforced retaining walls.

### STRUCTURAL BENEFITS

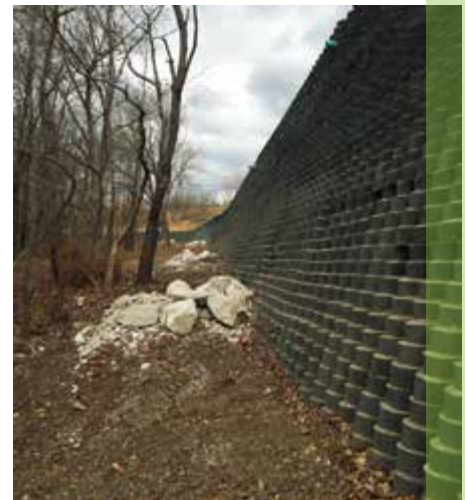
The GEOWEB® system creates economical and structurally sound retaining walls that perform well when exposed to differential settlement in soft-soil environments. GEOWEB® retaining walls have been exposed to severe earthquakes without sustaining damage.

### ECONOMIC BENEFITS

- Allows use of less expensive on-site infill materials.
- Faster installation than MSE block walls speeds project completion timeline.
- Compact sections are easier to handle, transport and construct—even in difficult access or remote locations.

### ENVIRONMENTAL BENEFITS

Open-celled horizontal terraces create a natural environment for sustainable vegetation, allow rainwater to collect through the wall fascia and minimize runoff. The highly-permeable wall surface is a natural Low Impact Development (LID)/Best Management Practice (BMP) for reducing runoff and managing stormwater on site.



Where vegetation is not desired, GEOWEB® walls support aggregate infill or concrete grout.



### FREE DESIGN SOFTWARE

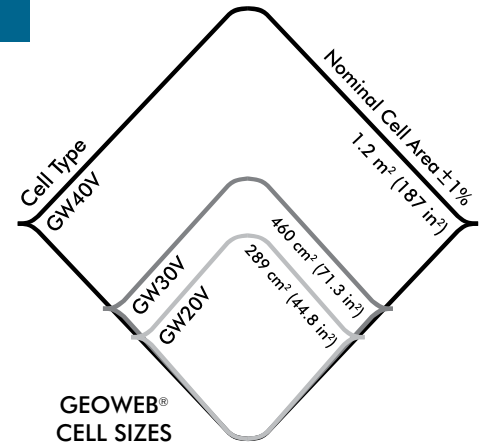
Presto offers licensed MSE software to design GEOWEB® retaining walls and reinforced slopes.



# 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	
	Variable	Minimum	Maximum
GW20V	7.7 ft–9.2 ft (2.3 m–2.8 m)	Cells Long: 18, 21, 25, 29, 34	
GW30V		12.0 ft (3.7 m)	27.3 ft (8.3 m)
GW40V		15.4 ft (4.7 m)	35.1 ft (10.7 m)
		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.			



## DESIGN & CONSTRUCTION ACCESSORIES

GEOWEB® solutions are designed and installed with our integral components for increased strength, long-term performance, and speed of installation.

Our customers receive the industry's **'most complete geocell system'**.

### ATRA® KEY CONNECTION DEVICE

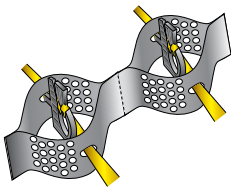


Designed for quicker connection of GEOWEB® sections, the weather and corrosion-resistant ATRA® key device reduces installation costs and provides 3X stronger and 3X faster connections than staples.

ATRA® Keys are inserted through adjoining GEOWEB® cell walls, turned and locked for the most secure connections.



### ATRA® TENDON CLIPS & TENDONS



ATRA® Tendon Clips are efficient load-transfer devices to transfer loads from the GEOWEB® cell wall to the tendon. Fully engaged clips allow preassembly.

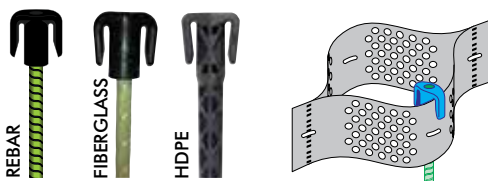
Tendons suspend the GEOWEB® material over geomembranes, hard surfaces, or steep slopes without anchors. Presto uses industry-leading tendons, as tendon type and density are critical to design strength.



### ATRA® ANCHORS & DRIVERS

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

- Three styles are available, including corrosion-resistant.
- The ATRA® Driver makes driving anchors easy and fast, and causes less stress on workers.







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