GEOSYSTEMS
GLOBAL LEADER • GLOBAL PARTNER

creating
sustainable
environments™

GEOWEB®
load support

APPLICATION OVERVIEW

our commitment:
providing the highest quality
products/solutions

eco-economic solutions for load support

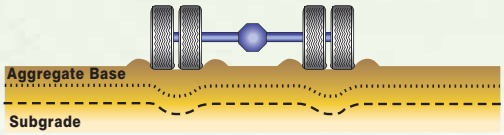
GEOWEB®

the GEOWEB® *system*

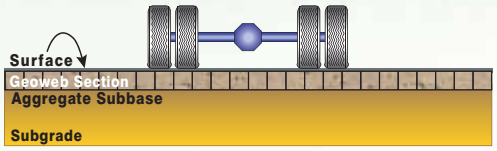
LOW-COST LOAD SUPPORT SOLUTIONS

The Presto Geoweb® load support system is a highly effective, economical solution to unacceptable road, parking, and yard surface problems that result from subgrade material failure or base material instability. Under concentrated or distributed loads, the three-dimensional cellular structure confines infill material and controls shearing, lateral and vertical movement of the infill material.

As a base stabilization system under pavement, the Geoweb material significantly improves pavement life cycle costs. When confined, **base material requirements can be reduced by 50% or more** by substantially reducing the loading on sub-surface soils. As a result, reduced excavation and granular infill needs reduce overall installation cost.



UNCONFINED GRANULAR PAVEMENT SYSTEM



THE GEOWEB GRANULAR PAVEMENT SYSTEM

As a surface stabilization system, the Geoweb structure distributes surface pressures for dynamic and static loading, controlling rutting and **reducing long-term maintenance requirements and costs**. Using permeable infill with a high porosity, the system offers environmental and stormwater management benefits.

With topsoil/aggregate infill, the Geoweb material can create a vegetated surface that supports occasional loads.

GEOWEB® *system benefits*

- Produces a stiff base with high flexural strength; acts like a semi-rigid slab by distributing loads laterally.
- Minimizes impact of differential and overall settlement even on low-strength subgrades.
- Increases effective structural number, reducing fill depth requirement by 50%.
- May allow use of poor-quality granular fills in place of more costly imported materials.
- With permeable infill, reduces stormwater runoff and effectively performs as an on-site stormwater retention/detention "basin" storage, reducing need and costs for stormwater ponds.

TYPICAL APPLICATIONS:

- Permanent and temporary site access roads
- Permeable, load-supporting surfaces
- Intermodal/port facilities
- Transportation/storage yards
- Roadway shoulders (vegetated or porous aggregate)
- Stabilized base for asphalt/modular block pavements
- Stabilized drainage layer
- Railroad track ballast / subballast structures
- Trails and walkways
- Boat ramps and low water crossings
- Pile cap structures
- Foundation mattresses & pipeline protection
- Trench inverts
- Driveable vegetated surfaces

RESULTS SUPPORTED BY RESEARCH

Test results from numerous research initiatives confirm the benefits of confined aggregate within the Geoweb cellular confinement 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.
- Distributes load between pilings, reducing intersoil stress by 40%.

key application areas

The Geoweb® system creates a stabilized structural support system, providing considerable benefits to unstable soils in key areas:

1. Base Stabilization under Paved Surfaces/Subsurfaces
2. Surface Stabilization for Unpaved Permeable Surfaces
3. Load Distribution System over Weak Soils
4. Flexible Concrete Mat

1 *base stabilization*
UNDER PAVED SURFACES/SUBSURFACE

As base support, the Geoweb® load support system creates a stabilized layer under asphalt, concrete or modular block pavement that holds up under heavy, repeated traffic. The system acts like a semi-rigid slab, distributing loads laterally and reducing subgrade contact pressures.

Selection of infill materials for base stabilization is determined by anticipated load characteristics and overall performance requirements. The system is especially effective in soft-soil areas where substantial pavement problems and regular maintenance costs exist or are anticipated as a result.

STABILIZING BASE MATERIALS WITHIN THE THREE-DIMENSIONAL GEOWEB® SYSTEM:

- Requires 50% or less base material when material is confined to achieve the same load support requirements.
- Minimizes load-related deformation and settlement, and reduces pavement degradation and cracking typically associated with soft subgrades.
- Allows the use of lower quality sand and aggregate materials, even over soft subgrades.
- Proven solution for challenging soft-soil stability problems.

2 *surface stabilization*
FOR UNPAVED AND PERMEABLE SURFACES

With permeable infill, the Geoweb® surface stabilization system provides a cost-effective alternative to hard surface pavements with many environmental benefits. By confining aggregate infill, the system improves the load distribution characteristics of unpaved roads and pavement areas, reducing long-term maintenance requirements and costs.

Grass pavement systems offer structural support and the desirable aesthetics of green space, ideal for infrequent traffic requirements.

STABILIZING INFILL MATERIALS WITHIN THE GEOWEB SYSTEM:

- Distributes pressures from dynamic and static loadings throughout the system, reducing lateral and vertical displacement of the infill and undesirable surface rutting.
- With aggregate infill, performs double duty as a load support system and an on-site water detention/retention storage "basin"; may eliminate requirements and costs for on-site stormwater containment systems.
- Reduces stormwater surface runoff, maximizes groundwater replenishment.
- Creates a cooler surface, reducing the heat island effect associated with hard surface pavements.
- Contributes to green building LEED® credits for stormwater management and reducing heat island effect

3 *load distribution system*
OVER WEAK SOILS

The Geoweb® system creates a stabilized base layer, significantly reducing excavation and base material requirements, especially over low-strength subgrades. The system minimizes load deformation and settlement and is especially effective when constructing pavements in coastal or soft-soil areas where infill material requirements and costs are high.

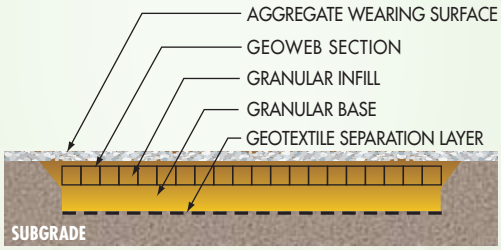
4 *flexible concrete mat*

Flexible concrete-filled Geoweb® mats are quickly created for applications such as boat ramps, low water crossings, or as flexible cover mats for utility protection.

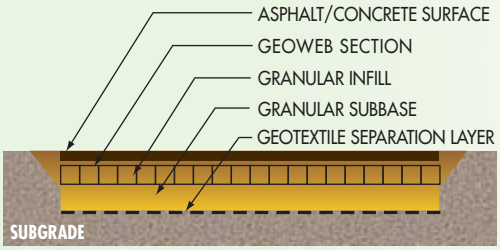
key components

The complete Geoweb® load support system application may include some or all of the following:

- Geoweb sections
- Cell infill materials
- Geotextile separation layer
- ATRA® Key connection device
- ATRA® Anchors
- Geocomposite drainage materials
- Integral polymeric tendons
- Fasteners



SURFACE STABILIZATION SYSTEM



BASE STABILIZATION SYSTEM

size options

Geoweb® sections are available in various cell sizes, cell depths and section lengths to address specific project needs. Load support system details are influenced by the characteristics of subsoil strength, applied load, available granular infill and surface type. Generally, the heavier the applied load and/or the poorer the quality of subsoils, the greater the required cell depth.

integral system components

The following components may be integrated to facilitate and expedite construction or to meet engineering requirements:

ATRA® ANCHORS

In load support applications, anchors are typically not part of the permanent design requirements but rather used to aid construction. Used with 1/2 inch rebar stakes or 10-12 mm dia. rods, ATRA® Anchors are easier to drive than J-hook stakes, improving installation productivity. (1)

When specific conditions dictate permanent anchoring an engineering array of surface anchors may be used.

ATRA® KEY CONNECTION DEVICE

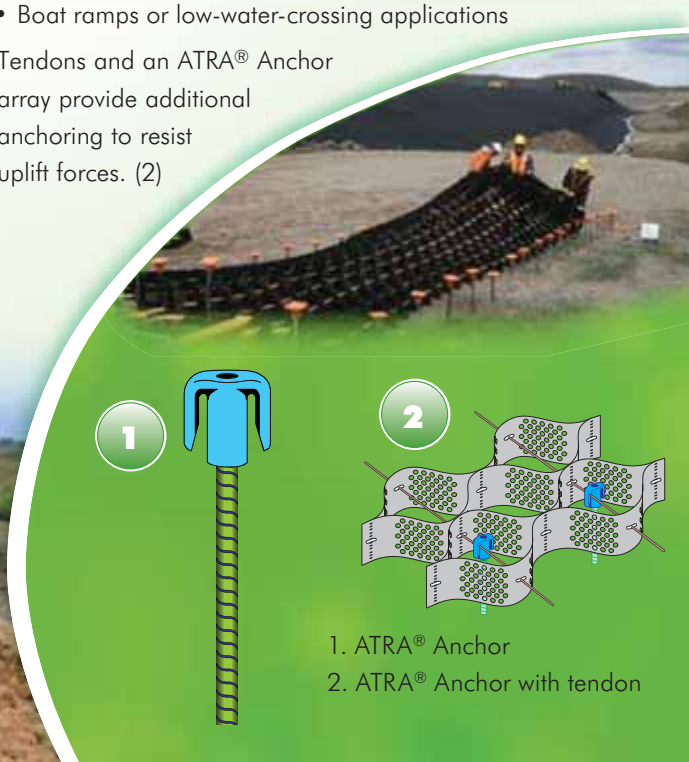
For quick and easy connection of Geoweb® sections, the exclusive ATRA® key connection device reduces contractor installation costs and provides a three-times-stronger connection of Geoweb sections.

TENDONS

Tendons may be required for providing additional hold-down and stability in the following applications:

- Traffic loadings on a grade
- Wet or saturated soil conditions on trails or access roads through wetlands
- Boat ramps or low-water-crossing applications

Tendons and an ATRA® Anchor array provide additional anchoring to resist uplift forces. (2)



1. ATRA® Anchor
2. ATRA® Anchor with tendon

comprehensive tools and services

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

TOOLS:

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

SERVICES:

Project Evaluation Service: We provide engineering analysis of 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 and our worldwide network of knowledgeable distributors/representatives are committed to helping you apply the most cost-efficient solutions to your load support requirements. 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.

LEADING-EDGE INNOVATION

Presto is the original developer of the cellular confinement technology and leads the industry in research and development resulting in meaningful product improvements, innovative features, advanced engineering methodologies, proven field results and ultimately long-term solutions to challenging problems.

UNSURPASSED QUALITY

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

- Quality management system certified to ISO 9001:2000 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.

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