



PRESTO | GEOSYSTEMS®

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GEOWEB® GEOCELLS

LOAD SUPPORT SYSTEM

INSTALLATION GUIDELINES



PRESTO GEOSYSTEMS

670 N PERKINS STREET, APPLETON, WISCONSIN, USA 54914

920-738-1328 or 800-548-3424 | INFO@PRESTOGEO.COM | WWW.PRESTOGEO.COM

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Subgrade Preparation

GEOWEB Load Support applications are generally classified as follows and illustrated in Figure 1 - Figure 5:

1. Unpaved areas including but not limited to site access/roads, platforms, intermodal yards, and road shoulders.
2. Base and subbase stabilization of pavement structures.
3. Sub ballast stabilization.
4. Pipeline support on soft soils.
5. Structural spread footings.

The extent and nature of subgrade preparations depend on the sub grade strength and specification requirements.

- Paved roads, railroads, and structural footings require accurate grading, shaping, and proof-rolling of the subgrade soils.
- Provides adequate slope to enhance drainage.

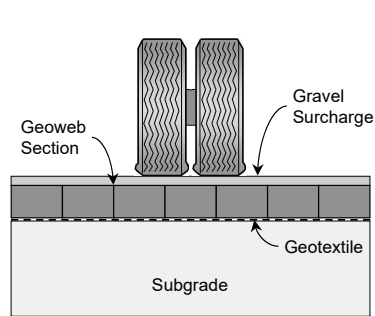


Figure 1 Unpaved

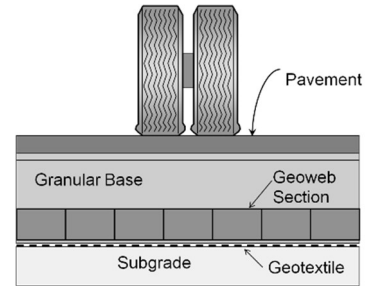


Figure 2 Flexible & Rigid Pavement

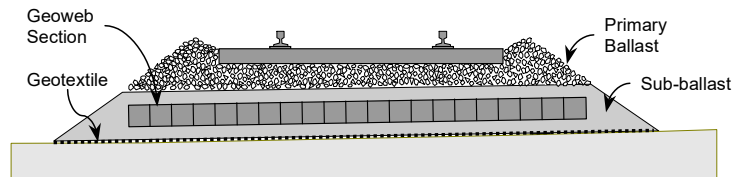


Figure 3 Sub Ballast Stabilization

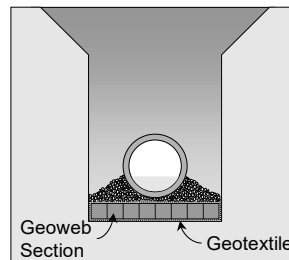


Figure 4 Pipeline Support

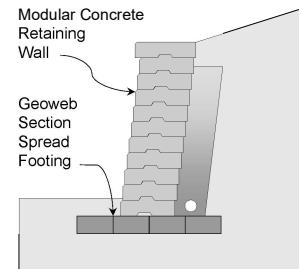


Figure 5 Spread Footing

Geotextile Underlayer

- Most load support applications involve a non-woven or enhanced woven geotextile separator layer at the subgrade surface. When required, the geotextile is critical to the performance of the load support system. Non-woven geotextiles provide separation. Enhanced woven geotextiles provide separation, filtration, drainage, and reinforcement.
- The geotextile shall be installed in accordance with Manufacturer's recommendations including overlaps. The overlap shall be based on sub grade CBR and AASHTO M288 requirements. Refer to Figure 6.

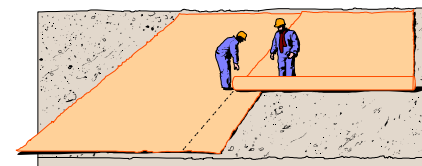


Figure 6 Geotextile Placement

Installation of GEOWEB® Sections

- **Option 1:** Expand the specified GEOWEB section into position and anchor with stakes. See Figure 7. When ATRA® Anchors are used, ensure the ATRA arm is hooked over the cell-wall. See Figure 8.
- Specialized driving tools are available through Presto Geosystems' authorized distributors and representatives to speed driving of ATRA anchors.
- **Option 2:** Expand and manually fill selected perimeter cells prior to machine infilling. See Figure 9.
- **Option 3:** Expand and fit the GEOWEB section over the dowels of a suitably dimensioned stretcher frame. Invert the frame and position the section to receive infill material. When the GEOWEB section is filled, remove the frame, and repeat the process. See Figure 10.

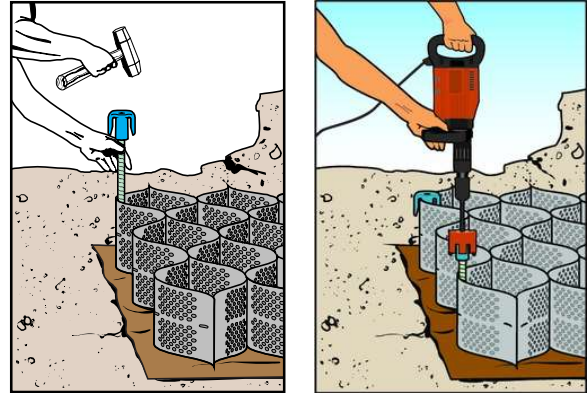


Figure 7 Stake Anchorage

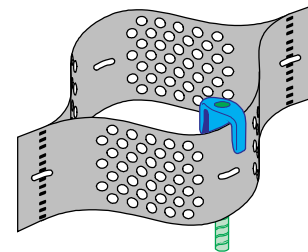


Figure 8 ATRA® Anchor Placement Option

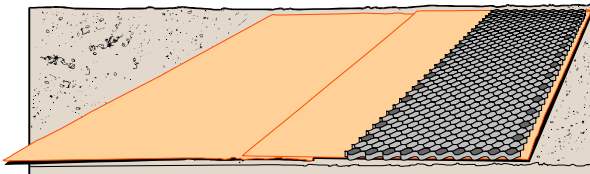


Figure 9 Infilling Perimeter Cells

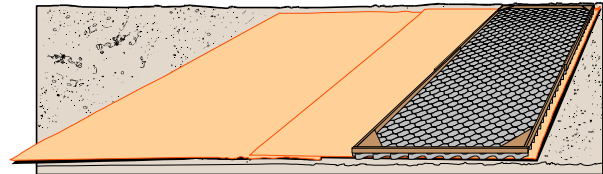


Figure 10 Use of Stretcher Frame

Installation of GEOWEB® Sections on Curves

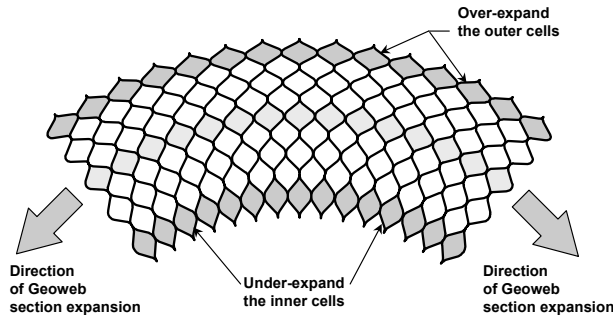


Figure 11 Curved Expansion of Section

Method 1: GEOWEB sections can be adapted to cover curved areas by varying the degree of cell expansion across the width of individual sections. See Figure 11.

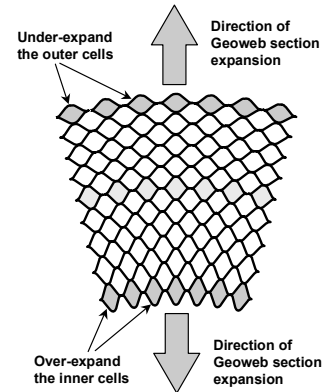


Figure 12 Tapered Expansion of Section

Method 2: Vary the degree of cell expansion along the length of a section. See Figure 12.

Connecting GEOWEB® Sections



Figure 13 ATRA Key Connection Device

- Verify that the expanded dimensions of each GEOWEB section are correct.
- Interleaf sides and abut ends of adjoining sections, ensuring that the upper surfaces of adjoining sections are flush.
- Connect each of the interleafed and abutted cells with the ATRA key connection device. Position the ATRA key through the I-slots of overlapping sections (side-to-side), or where cells connect (end-to-end), and turn the ATRA key to “lock” in position. See Figure 13.
- When GEOWEB sections are connected end-to-end, under-expand a few rows of the adjoining section to allow easy placement of the ATRA keys before fully expanding the connecting section. For easiest placement, insert the key completely through one cell before inserting through the adjoining cell. Adjoining sections should also be fully connected prior to infilling.
- The use of the ATRA keys provides a permanent connection that significantly reduces construction time and offers cost-savings compared to metal staples or zip ties.
- The ATRA key connection device is available through Presto Geosystems and their authorized distributors and representatives.

Placement and Compaction of GEOWEB® Infill

- Place fill into expanded cells with suitable material handling equipment such as a front-end loader or excavator. See Figure 14 and Figure 15.
- Limit drop-height of infill material to prevent panel distortion.
- Overfill GEOWEB sections and compact to provide a minimum 2 in. (50 mm) above the cell walls before trafficking wear surface.
- Compact infill material to the specified density with conventional compaction equipment. See Figure 16. See Compaction Equipment on page 5 for limitations.



Figure 14 Fill Placement with Loader

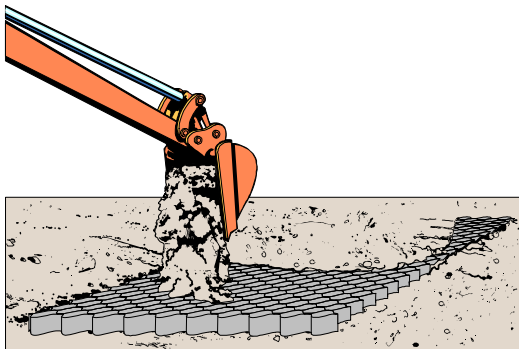


Figure 15 Fill Placement with Excavator

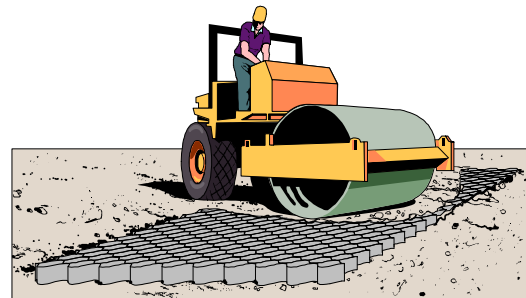


Figure 16 Infill Compaction

Upon completion of the installation, ensure that an aggregate wear surface of at least 2 in. (50 mm) is always maintained above the GEOWEB cell walls.

Unbound aggregate surfacing must be graded and maintained as required to maintain the wear surface.

Rounded stone is not recommended for infill due to lack of lock-up.

Dimensions and Weights of Palletized GEOWEB Sections

GEOWEB sections are tri-folded and palletized for shipment to the site. Table 1 provides typical pallet dimensions and weights.

Table 1 GEOWEB Shipping Dimensions and Weights

Cell Depth	Pallet Dimensions	Minimum Weight	Maximum Weight
4 in. (100 mm)	42 in x 42 in (1070 mm x 1070 mm)	880 lb (400 kg)	1,600 lb (730 kg)
6 in. (150 mm)	42 in x 42 in (1070 mm x 1070 mm)	800 lb (360 kg)	1,450 lb (660 kg)
8 in. (200 mm)	42 in x 42 in (1070 mm x 1070 mm)	880 lb (400 kg)	1,600 lb (730 kg)

Infill Volumes

Table 2 Infill Volumes for GEOWEB Sections

Cell Depth	4 in. (100 mm)	6 in (150 mm)	8 in (200 mm)
Volume (m³ / 100 m² of area)	10.0 m ³	15 m ³	20.0 m ³
Volume (yd³ / 100 yd² of area)	11.1 yd ³	16.7 yd ³	22.2 yd ³

Tools and Equipment

Installation efficiency is improved by the appropriate choice of construction equipment and tools. The following guidelines apply to most GEOWEB system applications. Non-standard tools and equipment may provide additional benefits in some situations.

Table 3 Standard Construction Tools for Installation of the GEOWEB System

<i>GEOWEB Components</i>	<i>Power Tools</i>	<i>Concrete Finishing</i>	<i>Surveying Equipment</i>
ATRA Tendon & Anchors	Heavy-duty drill	Bull floats	Surveyor's auto-level
ATRA Key Connection Device	Circular saw	Hand floats	Tripod and rod
<i>Hand Tools</i>	Percussion hammer	Steel trowels	Laser level
Shovels and spades		Concrete vibrators	Audio target receiver
Rakes and screed bars		Tamping rods	Survey stakes
Sledgehammers			Markers + spray cans
Crowbars			Stringlines
Utility knives			
Spikes, nails + lumber			
Templates			

Excavation and Materials Handling Equipment

Conventional excavators, front-end loaders, mini-excavators, and skid-steer loaders, equipped with smooth-edged buckets, are normally employed for the installation of GEOWEB systems. Infilling of GEOWEB sections can also be carried out with conveyors, chutes, and rock slingers. As a rule, the overall rate of installation relates directly to the speed and efficiency of infill placement and compaction.

Compaction Equipment

When building a load support system over a very soft subbase, a wave may occur during the compaction process. If the wave continues while compacting, full compaction will not be obtained. To remedy this situation, the use of lighter compaction equipment is required.

Limited Warranty

Presto Geosystems warrants each GOWEB® section which it ships to be free from defects in materials and workmanship at the time of manufacture. Presto's exclusive liability under this warranty or otherwise will be to furnish without charge to Presto's customer at the original f.o.b. point a replacement for any section which proves to be defective under normal use and service during the 10-year period which begins on the date of shipment by Presto. Presto reserves the right to inspect any allegedly defective section in order to verify the defect and ascertain its cause.

This warranty does not cover defects attributable to causes or occurrences beyond Presto's control and unrelated to the manufacturing process, including, but not limited to, abuse, misuse, mishandling, neglect, improper storage, improper installation, improper alteration, or improper application.

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