



PRESTO GEOSYSTEMS

GEOWEB®

EARTH RETENTION SYSTEM

INSTALLATION GUIDELINE



PRESTO GEOSYSTEMS®

670 N PERKINS STREET, APPLETON, WISCONSIN, USA 54914

PH: 1-920-738-1328 OR 800-548-3424 FAX: 1-920-738-1222

EMAIL: INFO@PRESTOGEO.COM WWW.PRESTOGEO.COM

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Table of Contents

Subgrade Preparation 1

Base Preparation 1

 Figure 1 Geotextile Placement 1

Installation of Geoweb® Footing Sections 1

 Figure 2 Stretcher Bars for Straight and Curved Wall Sections 1

 Figure 3 Stretcher Frame..... 1

 Figure 4 Stake Anchorage 1

Drainage, Fill Placement and Compaction 2

 Figure 5 Placing Infill 2

 Figure 6 Compacting Infill 2

 Figure 7 Leveling Infill..... 2

Layout and Installation of the Geoweb® Wall Sections 2

 Figure 8 Multi-layer Construction..... 2

 Figure 9 Geoweb® Gravity Wall 3

Layout of Structures with Stepped Base..... 3

 Figure 10 Layout of Structures with Stepped Base 3

Installation of Geosynthetic Reinforcement (Composite Geoweb® Walls) 4

 Figure 11 Composite Geoweb® Wall 4

Dimensions and Weights of Palletized Geoweb® Sections 4

 Table 1 V-Series Geoweb® Shipping Dimensions and Weights..... 4

Infill Volumes..... 5

 Table 2 Infill Volumes for the Geoweb® GW30V Wall Section 5

Tools and Equipment 5

 Table 3 Standard Construction Tools for Installation of the Geoweb® System 5

 Excavation and Materials Handling Equipment..... 5

 Compaction Equipment 5

Limited Warranty 5

Stretcher Frame & Bar Details 6

 Figure 12 Stretcher Frame & Bar Details 6



Subgrade Preparation

Geoweb® multi-layer walls are utilized to support both cut and fill retention situations. In either case, the subgrade soils that support the structure must be shaped, proof-rolled and trimmed prior to construction of the wall base. In some instances, this may require removal of weak or compressible native soils and replacement with suitable compacted fill.

Base Preparation

- Install the specified geotextile separation and drainage layer. See Figure 1.
- Place granular base material and compact to 95% of Standard Proctor Dry Density (SPD) using conventional equipment and methods. Note, a lesser density on some granular materials is acceptable.
- If a free-draining granular base (no fines) is specified, encapsulate the base material in a non-woven geotextile.

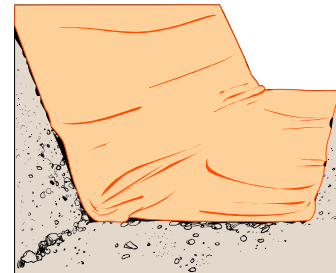


Figure 1 Geotextile Placement

Installation of Geoweb® Footing Sections

- **Option 1:** For both straight and curved wall alignments, insert a series of individual stretcher bars into the expanded Geoweb® section, position and fill. See Figure 2 and Figure 12.
- **Option 2:** Expand and fit the Geoweb® section over the dowels of a suitably dimensioned stretcher frame. See Figure 3 and Figure 12. Invert the frame and position the section to receive infill material. When the section is filled, remove the frame and repeat the process.
- **Option 3:** Expand the Geoweb® section into position and anchor with stakes. See Figure 4.

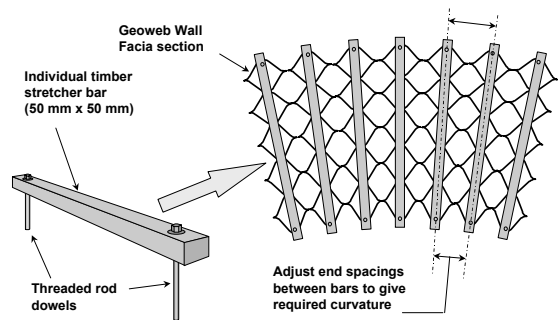


Figure 2 Stretcher Bars for Straight and Curved Wall Sections

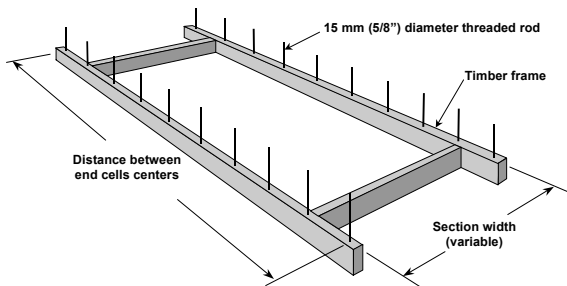


Figure 3 Stretcher Frame

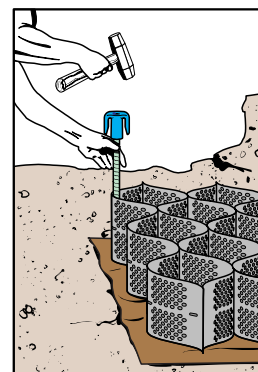


Figure 4 Stake Anchorage



Drainage, Fill Placement and Compaction

- Typical infilling, compaction and leveling procedures are shown below and apply to all Geoweb® layers. See Figure 5, Figure 6 and Figure 7.
- Install the specified subdrain and outlet pipes according to construction drawings, ensuring that a minimum gradient of 1% is maintained throughout.
- Ensure that the outlet discharge will not cause localized erosion that could undermine the wall.
- Overfill the Geoweb® section and backfill zone with granular material approximately 50 mm (2 in) above the cell walls.
- Compact infill and backfill material to 95% of SPD using conventional equipment and methods. Note, a lesser density on some granular materials is acceptable.
- After compaction of each lift, remove excess material to expose the top of the cell walls.

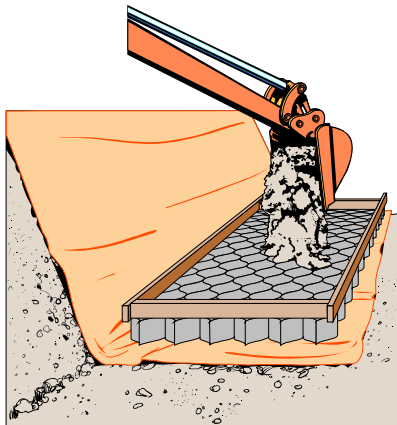


Figure 5 Placing Infill

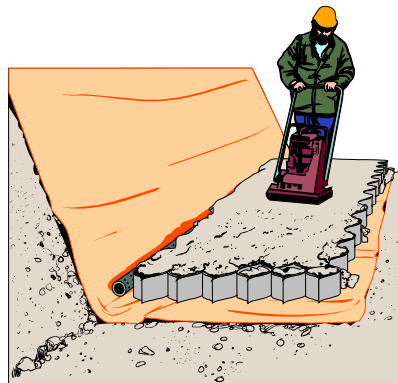


Figure 6 Compacting Infill

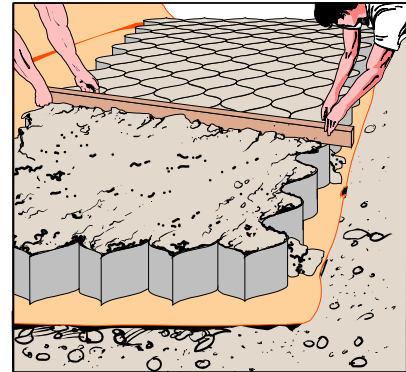


Figure 7 Leveling Infill

Layout and Installation of the Geoweb® Wall Sections

- For each wall layer, position each expanded Geoweb® wall section using either stretcher tools or stakes.
- Align and interleaf the ends of adjoining Geoweb® wall sections and ensure that the upper surfaces of adjoining sections are flush.
- Connect each of the interleafed end cells with a series of staples. Pneumatic staplers are available through Presto Geosystems and their authorized distributors/representatives.
- Overfill the Geoweb® wall sections with the specified infill material and level to approximately 50 mm (2 in) above the cell wall. (See above).

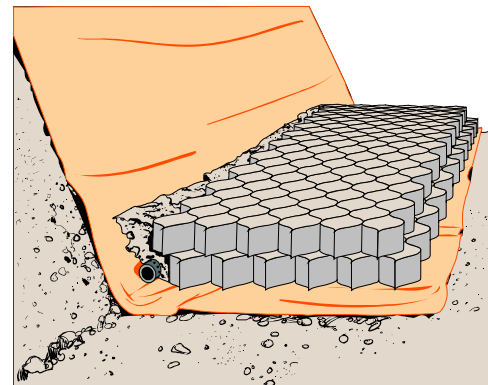


Figure 8 Multi-layer Construction



- The outer cells of Geoweb® walls are frequently infilled with topsoil to support a fully vegetated surface cover. A timber board can be placed over the outer cells during general infilling, then removed to allow topsoil infilling.
- Compact the infill material to 95% of SPD using conventional compaction equipment and methods. Note, a lesser density on some granular materials is acceptable.
- Use walk-behind compaction equipment to compact Geoweb® section infill. Avoid the use of heavy compaction equipment within 1 m (3 ft) of the wall sections.
- Outward lateral displacement of wall sections indicates that excessive compactive effort is being applied.
- When positioning subsequent layers, ensure 1) that the correct setback of each layer is maintained and 2) that accurate vertical alignment of outer cells is maintained.
- When working on curved walls, subsequent-layer-setback results in a radius change from layer-to-layer that eventually causes cell misalignment. When this is noticed, a correction layer is accomplished by having that layer setback of 15 mm (6 in).

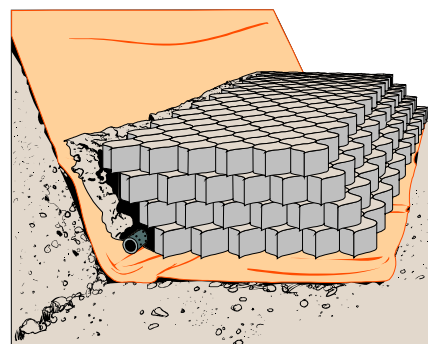


Figure 9 Geoweb® Gravity Wall

Layout of Structures with Stepped Base

Figure 10 illustrates a method of calculating horizontal offset dimensions when constructing a Geoweb® wall on a stepped base. The use of string-lines is recommended to control wall alignment in all situations.

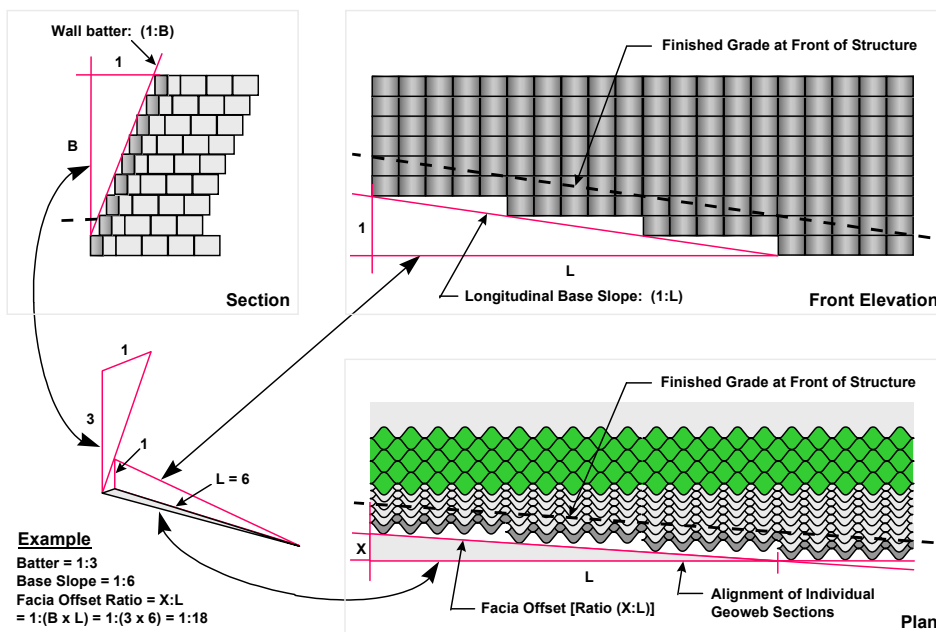


Figure 10 Layout of Structures with Stepped Base



Installation of Geosynthetic Reinforcement (Composite Geoweb® Walls)

Composite walls consist of a reinforced soil mass in combination with a stacked Geoweb® fascia system. The outer edge of each layer of synthetic sheet reinforcement, (geotextile or geogrid), extends between selected Geoweb® fascia layers. This creates a frictional connection between the components.

Standard installation procedures for this type of structure are as follows:

- Fill, compact and level successive layers of Geoweb® fascia sections and associated backfill in the manner previously described.
- At the designated fill elevations, lay pre-cut sections of geosynthetic reinforcement on the formation and temporarily secure in position with pins or hand-placed fill.
- The outer edge of the reinforcement should be positioned within 150 mm (6 in) of the front face of the Geoweb® fascia sections.
- Position and fill the next Geoweb® layer over the sheet reinforcement and with the proper setback and alignment.
- Manually tension the reinforcement by pulling it back from the infilled Geoweb® wall sections. The reinforcement can be pinned or held taut by hand.
- Place and compact backfill over the extended sheet reinforcement. Rubber-tired equipment can operate directly on the reinforcement using care to avoid sudden stops and sharp turns. Tracked equipment can operate within the reinforced backfill zone provided that a minimum 150 mm (6 in) lift of fill has been placed over the reinforcement layer.
- Continue the construction sequence for the balance of the work.

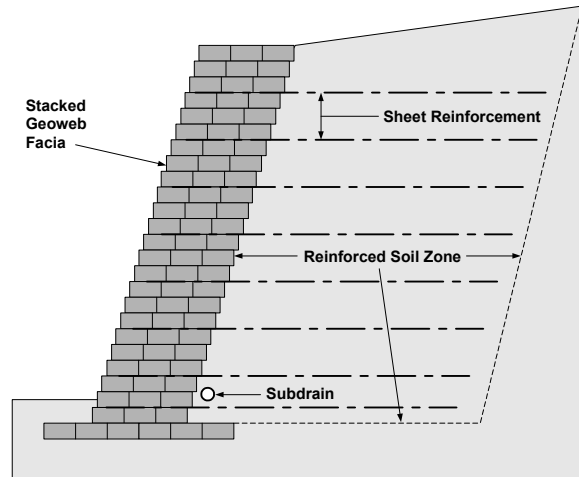


Figure 11 Composite Geoweb® Wall

Dimensions and Weights of Palletized Geoweb® Sections

Geoweb® sections are normally tri-folded and palletized for shipment to the site. Table 1 provides typical pallet dimensions and weights for a range of section and cell sizes.

Table 1 V-Series Geoweb® Shipping Dimensions and Weights

| Cell Depth | Pallet Dimensions | Minimum Weight | Maximum Weight |
|----------------------|-----------------------------------|-----------------------|-----------------------|
| 150 mm (6 in) | 1070 mm x 1070 mm (42 in x 42 in) | 360 kg (800 lb) | 660 kg (1,450 lb) |



Infill Volumes

Table 2 Infill Volumes for the Geoweb® GW30V Wall Section

| | |
|---------------------------------------|----------------------|
| Cell Depth | 150 mm (6 in) |
| Volume (m³ / 100 m² of area) | 15 m³ |
| Volume (yd³ / 100 yd² of area) | 16.7 yd³ |

Tools and Equipment

Installation efficiency is greatly 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

| Hand Tools | Power Tools | Concrete Finishing | Surveying Equipment |
|------------------------|--------------------------|---------------------------|-----------------------------|
| Shovels and spades | Heavy-duty drill | Bull floats | Surveyor's auto-level |
| Rakes and screed bars | Circular saw | Hand floats | Tripod and rod |
| Sledge hammers | Percussion hammer | Steel trowels | Laser beacons |
| Crowbars | Stanley-Bostitch stapler | Poker vibrators | Audio target receiver |
| Utility knives | SB103020 wire staples | Tamping rods | Survey stakes |
| Spikes, nails + lumber | Gas generator | | Markers + spray cans |
| Templates | Air compressor | | String-lines + spirit level |

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 skips. As a rule, the overall rate of installation relates directly to the speed and efficiency of infill placement and compaction.

Compaction Equipment

Compaction of Geoweb® section wall infill and backfill is normally carried out with walk-behind plate tampers and vibratory drum rollers. Large smooth-drum and sheepfoot riding compactors can be utilized for backfill compaction of large structures.

Limited Warranty

Presto Geosystems warrants each Geoweb® 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.

Presto makes no other warranties, express or implied, written or oral, including, but not limited to, any warranties or merchantability or fitness for any particular purpose, in connection with the Geoweb® system. In no event shall Presto be liable for any special, indirect, incidental or consequential damages for the breach of any express or implied warranty or for any other reason, including negligence, in connection with the Geoweb® system.

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