



**BASELOK**<sup>TM</sup>  
BY INDUSTRIAL FABRICS, INC.

**GEOCELL**  
OVERVIEW

# **GEOCELL**

Proven Technology

## OVERVIEW

***Our products stand the test of time, and BaseLok™ GeoCell is no exception.***

Geocells were invented in the early 80's and patented by the United States Army Corps of Engineers. The early use of the technology was for the construction of roads over soft soils for military use. Today, BaseLok™ GeoCell is not only used for base stabilization, but also for erosion control of slopes and channels as well as in construction of retaining walls.

BaseLok™ GeoCell is made from high density polyethylene (HDPE) and manufactured in the USA. HDPE has been used for the most demanding industrial products since 1955. The three-dimensional cells impede lateral movement of the infill material, increasing structural strength and locking in materials for erosion protection. The cell walls are perforated to allow water flow through the system, creating improved root zone between cells for vegetated applications. On concrete filled GeoCells, the HDPE matrix becomes the form for the concrete. There is no need for wood forms or rebar. The panels are expanded and the concrete poured directly into the BaseLok™ GeoCell.

## APPLICATIONS

- BASE STABILIZATION
- SLOPE REINFORCEMENT
- CHANNEL PROTECTION
- RETAINING WALLS





**Cost-Effective**



**Multi-Purpose**



**Environmentally Friendly**



**Efficient and Easy**



## **TEAM SUPPORT**

- 39 years as a leader in the geosynthetic industry
- 25 years of experience with geocells
- Design assistance
- Complete project evaluation
- Project specific value engineered designs reviewed by professional geotechnical engineers
- On site installation and site assessment assistance

## **BENEFITS**

- 100% manufactured in the USA
- Complete installation accessories
- Meets or exceeds industry standards



# BASE STABILIZATION

## BASELOK™ GEOCELL BASE STABILIZATION - UNPAVED ROADS

**BaseLok™ GeoCell is a confinement system that performs better than conventional crushed stone sections, and it provides an expedient construction technique for access roads over soft ground without being adversely affected by wet weather conditions.**

### HOW DOES THE THREE-DIMENSIONAL GEOCELL WORK?



BaseLok™ GeoCells impede lateral movement of the infill material by distributing the load to surrounding cells. The confinement reduces the stress on the underlying subgrade which effectively reduces the required base thickness, extends the service life of the section, reduces operational costs and minimizes maintenance.

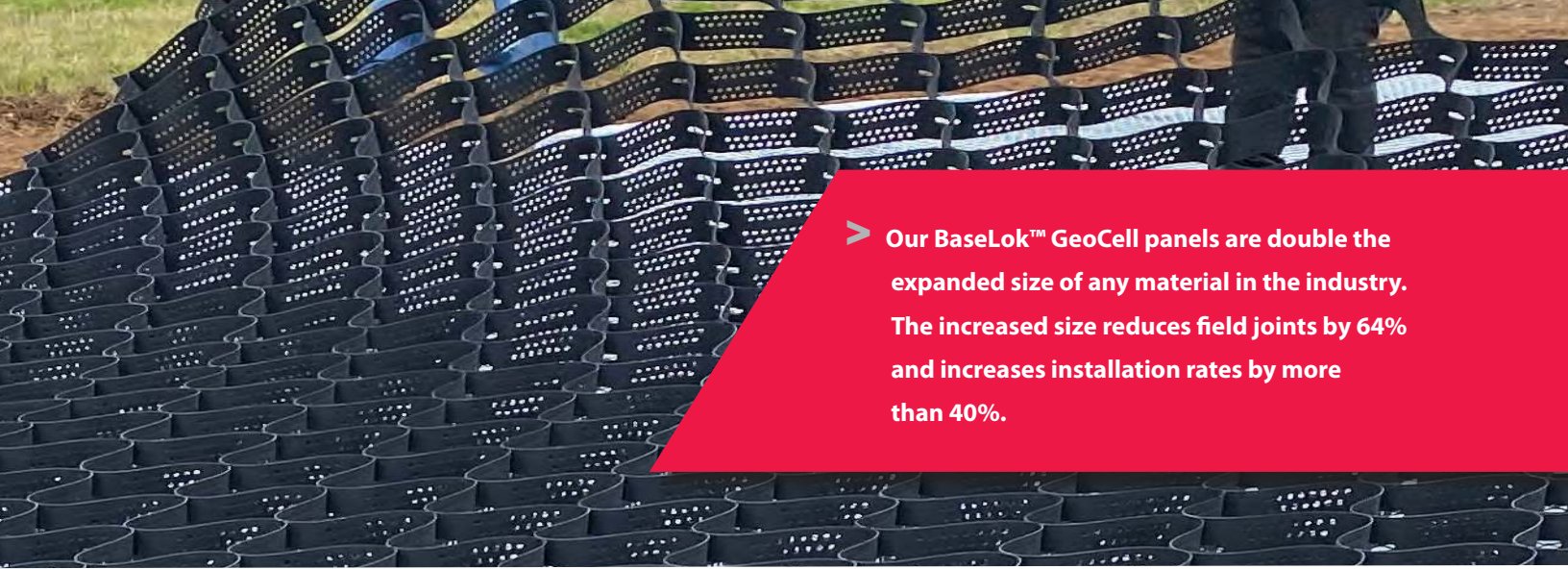
BaseLok™ GeoCells also dramatically increase the shear resistance of infill materials, allowing the use of lower quality infill materials to carry the loads.

BaseLok™ GeoCell panels are light weight and can be deployed and installed by a five man crew. The most common BaseLok™ GeoCell for this application is our GC30 with a panel expansion of 17.85' (5.44 m) x 27.4' (8.35 m) (489 SF / 45.4 m<sup>2</sup>). 25,000 SF (2,322 m<sup>2</sup>) can be installed per day and ready for immediate use. Custom lengths available.

### BASE APPLICATIONS

- Haul Roads
- Rig Pads
- Laydown Yards
- Pipe Yards
- Parking Lots





➤ **Our BaseLok™ GeoCell panels are double the expanded size of any material in the industry. The increased size reduces field joints by 64% and increases installation rates by more than 40%.**

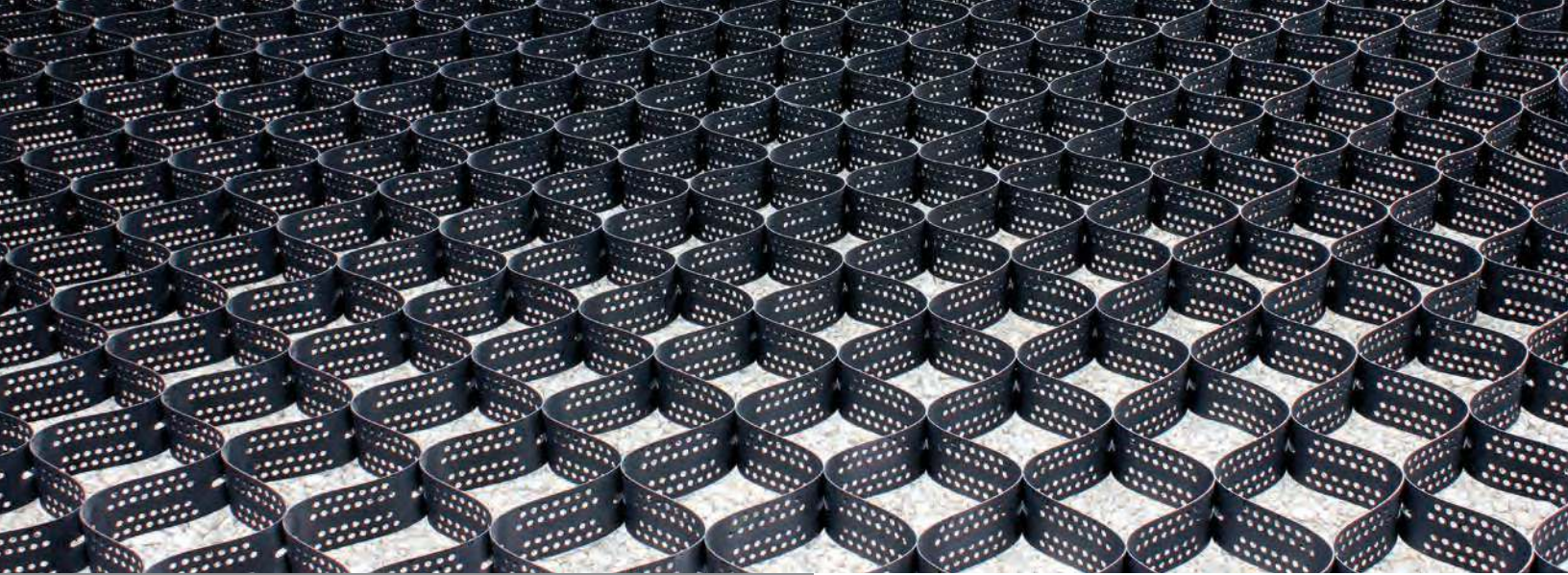
## PAVEMENT STRENGTHENING

Early failure is common in paved areas due to weakening of the granular base course and progressive lateral displacement. BaseLok™ GeoCell confines the fill material under pavement structures, reducing the depth of the layer and increasing the structural number below the pavement layer. The greater structural number reduces the asphalt layer and increases the life of the asphalt, reducing maintenance costs on both rigid and flexible pavements.

## DESIGN ASSISTANCE

The superior effectiveness of our BaseLok™ GeoCell is made even better thanks to our BaseLok™ team's proficiency and technical support. We believe a solution is more than just a product we manufacture or sell; you deserve an attentive and knowledgeable team of professionals working alongside you every step of the way. Our experienced engineers and sales team are fully equipped to cater to your every need, no matter the project.



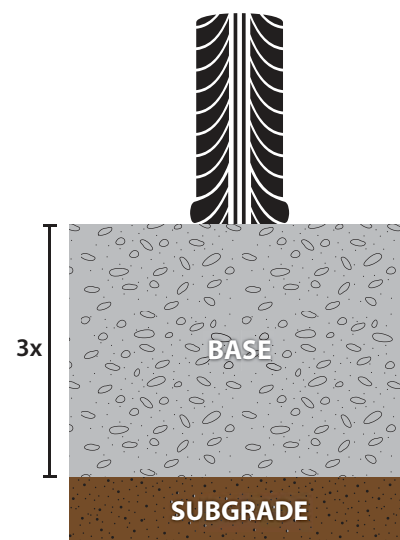
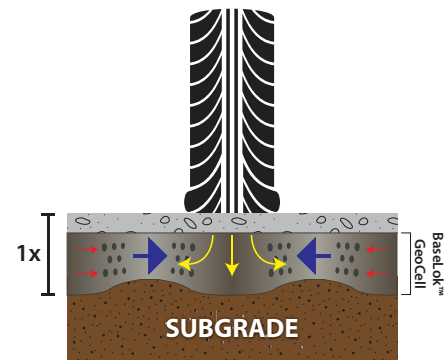


## ADVANTAGES

- Complete design review.
- Use of on site materials significantly reduce cost.
- On site installation assistance.
- Project specific value engineered designs reviewed by Professional Engineers.
- Construction possible on soils with CBR's less than 1.
- Maintenance cost reduction 25% + on surface & equipment.
- GeoCell confinement allows for the reduction of the base layer.
- Reduction of typical excavation depth.
- Immediate access to areas once BaseLok™ GeoCells are filled.
- GeoCell panels are easy to install without specialized equipment and their extra-large, one-piece panels increase installation rates by 40% +.
- GeoCells can handle H-20 load design.

## CUSTOMIZATION

- BaseLok™ GeoCell panels can be manufactured to cover the width of the road or area to be stabilized. Evaluation of the soil conditions, traffic and equipment requirements will determine cell depth and aperture for the application. BaseLok™ GeoCell can be manufactured with depths of 3" (7.5 cm), 4" (10 cm), 6" (15 cm) or 8" (20 cm) to meet specific project needs.

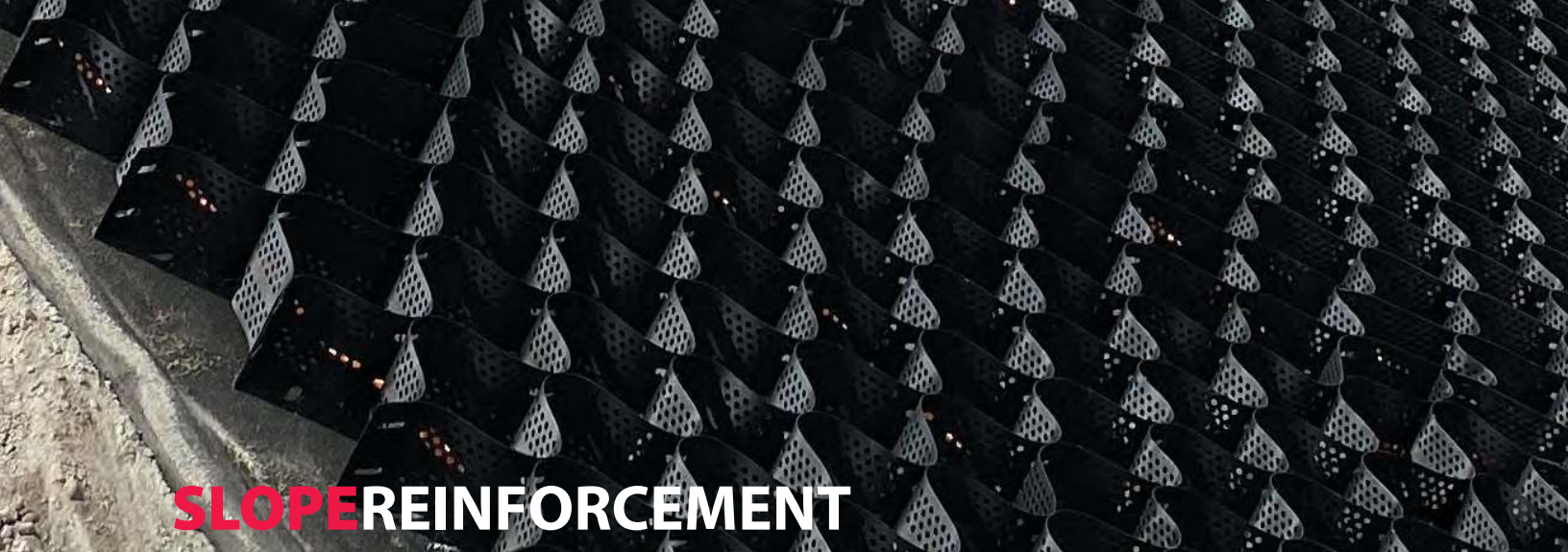




## INSTALLATION PROCEDURES - BASE STABILIZATION



- 1| Prepare subgrade based on engineer's specification. Install geotextile, biaxial grid or FabGrid™ per engineers' specification.
- 2| Typical installation crew is comprised of five (5) laborers and one (1) supervisor. No specialized equipment is required.
- 3| Choose the direction of the expansion of the panels based on geometry of the area.
- 4| Panels are joined with a pneumatic stapler and galvanized staples or with our one-piece BaseLok™ Cable Locks. Before expansion, panels can be pre-joined to cover greater areas per installation.
- 5| Panels need to be temporarily staked open until fill material is in place. Typical stakes are straight rebar or wood stakes that are 3 times the depth of the cell. Once the GeoCells are filled, the stakes can be removed and re-used. If stakes cannot be used, sandbags or fill material can be placed on perimeter cells.
- 6| Granular material is recommended: if using angular rock, assure that it is thoroughly graded and no more than 1/3 of cell depth. Rounded rock or organic materials are not recommended.
- 7| If panels are placed above grade, a dirt ramp should be built to allow the trucks to get on top of the expanded panels.
- 8| Once the fill material is on the expanded panels, the blade of the loader is used to push the infill material on the cells. Do not drive over unfilled cells. Over fill the cells by 2-3 inches and compact well with a smooth vibratory roller.



# SLOPE REINFORCEMENT

## BASELOK™ GEOCELL SLOPE REINFORCEMENT

On slope applications, BaseLok™ GeoCells can be filled with angular rock, concrete or with vegetated soil. The GeoCells confine the infill material, creating a stable layer protecting the slope from erosion.

BaseLok™ GeoCells a flexible system that will contour to the sub-grade of a slope, reducing preparation time. When filled with vegetated soil or rock, the system is permeable reducing water runoff.

BaseLok™ GeoCell is the perfect system to protect impervious and fragile geomembrane liners. It can be installed directly over the liner without the use of stakes and filled with concrete for impact and puncture protection or filled with soil and vegetated to create a natural landscape.

## SLOPE REINFORCEMENT APPLICATIONS

- Slopes/ Embankments
- Pond Slopes
- Containment Berms
- Geomembrane Protection
- Shoreline Protection
- Landfill Caps





> **BaseLok™ GeoCell is a confinement system that can be used on slopes creating a stabilized and permeable layer. We offer an engineered system complete with anchoring components.**

## ADVANTAGES

- Design assistance.
- Site Assessments: Project specific value engineered designs reviewed by Professional Engineers including specifications.
- Site support.
- All installation materials provided.
- Anchoring tendons can be pre-installed at manufacturing facility.
- Construction possible on slopes greater than 1:1.
- For shore protection, the GeoCell allows for the use of a smaller aggregate vs costly rip rap.
- On a concrete application the individual blocks become a flexible system that can conform to sub-grade settlement.
- When filled with vegetative soil or aggregate, BaseLok™ GeoCell becomes a permeable system that reduces water runoff.

## CUSTOMIZATION

- BaseLok™ GeoCell panels can be manufactured to cover the length of the slope to be protected. Evaluation of the soil conditions and geometry of the slope will determine appropriate cell depth for the application as well as anchoring requirements.
- BaseLok™ GeoCell can be manufactured with depths of 3" (7.5 cm), 4" (10 cm), 6" (15 cm) or 8" (20 cm) to meet specific project needs. We offer a full system review with complete anchoring system and components.





## INSTALLATION PROCEDURES - SLOPE REINFORCEMENT

- 1| Consult with design engineer to determine specific anchoring method.
- 2| Stakes are typically used on slope less than or equal to 3H:1V. Tendon systems or twist anchors are usually used on slopes steeper than 3H:1V.
- 3| Installation can typically be carried out with five (5) laborers and one (1) supervisor.
- 4| Create a smooth and unvarying surface before application of the GeoCell. Some applications might require a non-woven fabric based on project parameters.
- 5| Panels are joined with a pneumatic stapler and galvanized staples or with our one-piece BaseLok™ Cable Locks.
- 6| Panels will need to be either pre-cut or joined depending on the length of the slope. Prepare pre-cut or pre-connect panels at the top of the slope.
- 7| If the project design requires tendons, feed the tendons through the collapsed panel and attach one end to the dead man anchor in the anchor trench. Pull the tendons down the slope to the toe of the slope.
- 8| Place a minimum of one cell inside the anchor trench and stake every other cell inside the anchor trench. Stretch the panel(s) down the slope and stake every other cell at the bottom.
- 9| With the tendons through the panel, tie the tendon to the cell wall or to a load displacement washer every 3-6 cells depending on project requirement. Pre-threaded panels that are already tied to load displacement washers can also be purchased.
- 10| Proceed joining and expanding adjacent panels.
- 11| Backfill the anchor trench each day after the day's final panel is secured. Panels can be filled once the anchor trench is thoroughly backfilled. When filling the cells, work from the top down. Do not drop fill material more than 3' (1 m) from GeoCell panel.



# CHANNEL PROTECTION

## ADVANTAGES

- Design assistance.
- On site installation assistance.
- Value engineering review.
- Complete anchoring systems provided.
- Permeable system.
- Reduces formation of rills by confining top layer of the material and protection from sheet flow.
- When filled with top soil, creates a layer for vegetation and healthy root zone.
- BaseLok™ GeoCell can be filled with angular rock, vegetated soil or concrete.
- On channel applications multiple infill materials can be used on the same panel based on flows. For example, the bottom can be filled with concrete to withstand high flows (+20 ft/s (6 m/s)) and transition to vegetated soil on the walls to provide a natural appearance.
- Angular rock is used for velocities up to 10 ft/s (3 m/s), vegetated soil up to 20 ft/s (6 m/s). and concrete for velocities greater than 20 ft/s (6 m/s).
- On applications with a geomembrane liner, the BaseLok™ GeoCell will protect the fragile liner, increasing factors of safety and longevity of the system.
- On applications with a geomembrane liner, it allows for a soil and vegetated top layer, creating a natural perimeter to a synthetically lined channel.
- Channel protection with stacked layers replacing gabion baskets. GeoCell panels can be filled with aggregate or concrete for high flows and transition to vegetated soil.
- Allows for the use of a smaller confined aggregate vs large and costly rip rap.
- On a concrete infill, eliminates the use of wood forms and rebar.
- On a concrete application, the individual blocks become a flexible system that can conform to subgrade settlement.

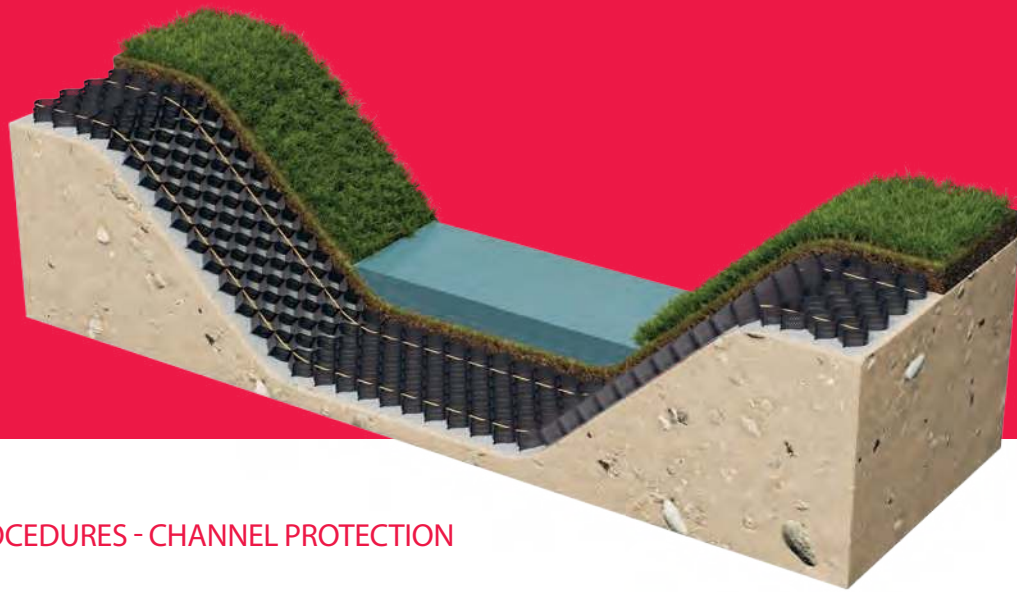
## BASELOK™ GEOCELL CHANNEL PROTECTION

The GeoCells can be installed on slopes as steep as 60 degrees and on channels with flow velocities greater than 25 ft/s (7.6 m/s) depending on infill material.



## CHANNEL PROTECTION APPLICATIONS

- Geomembrane Lined Channel Protection
- Storm Water Channels
- Ditch Protection
- Spillways
- Shoreline Protection
- Concrete Channels



## INSTALLATION PROCEDURES - CHANNEL PROTECTION

- 1| Consult with design engineer to determine specific anchoring method.
- 2| Anchoring will be based on channel geometry, area lined (full channel or only slopes) and flow velocities. Stakes are typically used on slope less than 3H:1V. Tendon systems or twist anchors are usually used on slopes steeper than 3H:1V.
- 3| Installation can typically be carried out with five (5) laborers and one (1) supervisor.
- 4| Create a smooth and unvarying surface before application of the GeoCell. Install a non-woven fabric or geomembrane liner based on project requirements.
- 5| When connecting panels, use a pneumatic stapler with galvanized staples, or you may also use BaseLok™ Cable Locks.
- 6| Panels will need to be either precut or joined together depending on the length of the slopes or cross section of the channel. Precut or pre-connect panels at the top of the slope to cover the slope if the slope is the only section being lined or calculate length based on the full cross section of the channel.
- 7| If a tendons system is being used, feed the tendon through the collapsed GeoCell panel and attach one end to the dead man anchor in the anchor trench. Have enough tendon to reach the opposite side anchor. Enough tendon will be needed to tie to the cell walls or the load displacement washers. A single tendon length should be used along the full cross section of the channel.
- 8| Place a minimum of one cell inside the anchor trench and stake in place every other cell. Stretch the panel(s) down the slope and stake at the bottom of the slope every other cell, or if the full channel is lined, also across the bottom and up the opposite slope area. Anchoring the panels at the bottom of the slopes impedes bridging of the GeoCell panel on the transition from slope to bottom of the channel.
- 9| Tie the tendon to the cell wall or a load displacement washer every 3-6 cells. Pre-threaded panels already tied to load displacement washers can also be purchased. Proceed joining and expanding adjacent panels.
- 10| Backfill the anchor trench each day after the day's final panel is secured. Panels can be filled once the anchor trench is thoroughly backfilled. Fill material is dependent on the flow velocities of the channel. When filling the cells, work from the top down. Do not drop fill material more than 3' (1 m) from GeoCell.

# RETAINING WALLS

## BASELOK™ GEOCELL RETAINING WALLS

For retaining walls, BaseLok™ GeoCells can be used for both cut and fill applications. The flexible HDPE panels are custom made to the front to back dimensions required by the project engineer. The panels are 6" (15 cm) or 8" (20" cm) tall and typically expand 2.85' (0.87 m) into the wall. The walls are further reinforced using a BaseLok™ uniaxial grid embedded further into the wall every 3-4 layers of GeoCell. The GeoCells can be easily installed around curves and pipes or other structures.

BaseLok™ GeoCell panels are constructed with the front facing strip colored green or tan to blend in with the surroundings. The GeoCell panels can be stacked to create a 90 degree wall, or they can be stair stepped at every layer to create 3-4 (7-10 cm) inches of exposed cell for vegetation. BaseLok™ GeoCells are the perfect green wall solution.

### RETAINING WALL APPLICATIONS

- Gravity Walls
- Reinforced Steepened Slopes
- Vegetated Wall
- Non-Vegetated Walls
- Blast Protection Walls
- Highway Embankments
- Channel Wall Protection
- Gabion Replacement
- MSE Block Wall Replacement



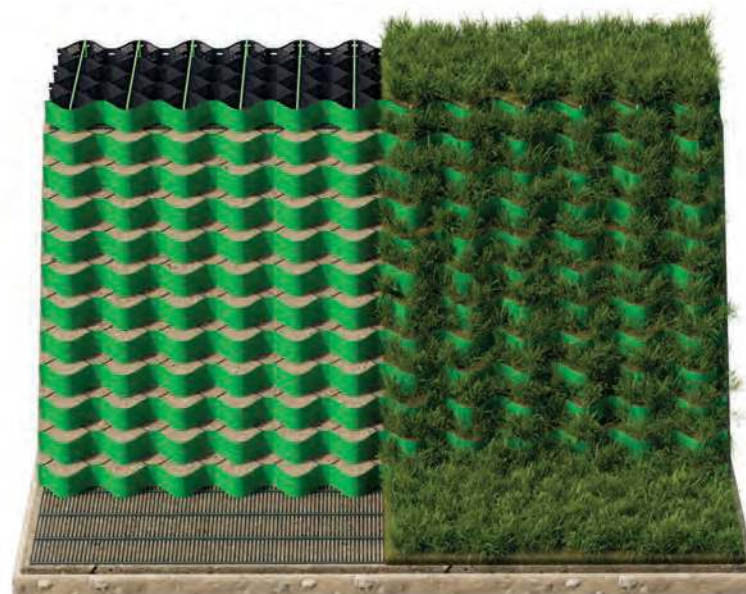
### ADVANTAGES

- GeoCell panels can be filled with on site soils. No need for rock or other expensive materials.
- BaseLok™ GeoCell walls are flexible and contour to curves, around structures and are capable to adjust to settlement.
- With our professional engineered recommendations and use of various reinforcing geosynthetic materials, walls can be built in excess of 50 feet (15 m) in height.
- BaseLok™ GeoCell walls are permeable and qualify for LEED® Green Building Credits.
- Front fascia strip can be green or tan to match surroundings.
- Installation +30% faster than conventional wall systems.
- Does not require heavy equipment for installation.
- GeoCell panels are portable and can be carried by hand to installation area.
- Installation crew of five (5) laborers and one (1) supervisor.



## INSTALLATION PROCEDURES - RETAINING WALLS

- 1| Smoothness, firmness of the subgrade as well as proper drainage and discharge are based on requirements set by the project engineer.
- 2| Geotextile or uniaxial geogrid may be necessary - consult with engineer. Generally, it will be applied at the base and every 3-4 layers of the GeoCell. The panel layout for the GeoCell should be determined before installation commences.
- 3| Installation can typically be carried out between five (5) laborers and one (1) supervisor.
- 4| When pre-connecting panels, use a pneumatic stapler and galvanized staples. You may also use BaseLok™ Cable Locks.
- 5| When using uniaxial grid to reinforce the wall system, embed each layer between 60%-110% of the height of the wall based on requirements set by the project engineer.
- 6| When filling each panel, use a rebar spreader bar to hold the cells open. Upon filling each panel, remove the stretcher bars for reuse. Each cell should be overfilled by roughly 2" (5 cm) before compacting. Apply and compact fill material behind the cells.
- 7| Make sure each GeoCell layer is aligned directly above the layer below. Leave roughly 3-4 inches (7 -10 cm) between layers when working with vegetated layers. Depending on application specifics, concrete or angular rock can be used to fill the frontmost cell. Organic soil can also be used as filler when dealing with vegetated surfaces.

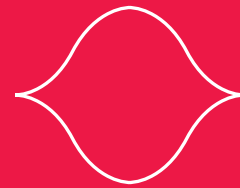




**GC20**  
8.8" X 10.2"  
(224 mm x 259 mm)



**GC30**  
11.3" x 12.6"  
(287 mm x 320 mm)



**GC40**  
18.7" x 20"  
(475 mm x 508 mm)

## SELECTION GUIDE

Base Stabilization			
Application	Cell Aperture	Cell Depth	Other Materials
Light Applications Trails, Bike Lanes, ATV Trails & Foot/Horse Paths	GC20	3" (7.5 cm) or 4" (10 cm)	6 oz non woven fabric
Non-Industrial Passenger Vehicles & Light Industrial	GC20 or GC30	3" (7.5 cm) or 4" (10 cm)	6 oz non woven fabric
Industrial 18-Wheelers, Oil & Gas, Mining & Heavy Industrial	GC30	4" (10 cm), 6" (15 cm) or 8" (20 cm)	6 oz non woven fabric, FabGrid™
Heavy Applications, Fire Trucks & H-20 Loading	GC20 or GC30	6" (15 cm) or 8" (20 cm)	FabGrid,™ high strength woven fabric
Subbase Stabilization	GC40	6" (15 cm) or 8" (20 cm)	Non woven fabric, geomembrane

Slopes			Channels			
Slope Steepness	Cell Aperture	Cell Depth	Flow Velocity	Cell Aperture	Cell Depth	Infill Material
6:1, 5:1 or less	GC40	3" (7.5 cm) or 4" (10 cm)	Up to 10 ft/s (3 m/s)	GC20 or GC30	3" (7.5 cm) 4" (10 cm) or 6" (15 cm)	Angular Rock
4:1	GC20 or GC30	3" (7.5 cm) or 4" (10 cm)				
3:1	GC30	4" (10 cm) or 6" (15 cm)	Up to 20 ft/s (6 m/s)	GC20 or GC30	3" (7.5 cm) 4" (10 cm) or 6" (15 cm)	Vegetated Soil
2:1	GC20 or GC30	6" (15 cm)				
1:1 or steeper	GC20 or GC30	6" (15 cm) or 8" (20 cm)	Over 20 ft/s (6 m/s)	GC30 or GC40	3" (7.5 cm) 4" (10 cm) or 6" (15 cm)	Concrete

Retaining Walls <sup>1</sup> (GC30)	
Cell Embedment	Panel Expansion <sup>2,3</sup>
3 cells	17.85' (5.44 m) x 2.63' (0.80 m)
4 cells	17.85' (5.44 m) x 3.5' (1.07 m)
5 cells	17.85' (5.44 m) x 4.38' (1.33 m)
6 cells	17.85' (5.44 m) x 5.26' (1.6 m)

<sup>1</sup> Cell depth 6" (15 cm) or 8" (20 cm)

<sup>2</sup> Custom front to back dimensions available upon request

<sup>3</sup> Front Strip solid and black, green or tan in color

**BASELOK™**  
by Industrial Fabrics, Inc.

***GEOCELL***

**Corporate**

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Customer should verify with the product manufacturer that customer has the most current **BASELOK™ GEOCELL** specifications for the product ordered or purchased. The **BASELOK™ GEOCELL** system can be used in the application described in our literature and on our website, provided proper installation and engineering principles are followed. Professional engineering should be consulted before installation of **BASELOK™ GEOCELL** units to assure appropriate design and use. ALL EXPRESSED OR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. **BASELOK™** is a trademark of Industrial Fabrics, Inc.

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