

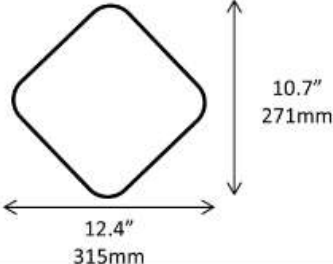
# SlopeGrid®



Carthage Mills' Slope Grid consists of a 3D matrix of interconnected cells which form a blanket to protect the earth. Slope Grid prevents erosion, soil migration, and damaging shifting forces caused by water and wind. Slope Grid can also be planted to enhance the natural beauty of the environment and further fortify the slope. This restoration of natural vegetation enables root growth to secure the slope.

# Slope Grid FACTS

## Cell Detail

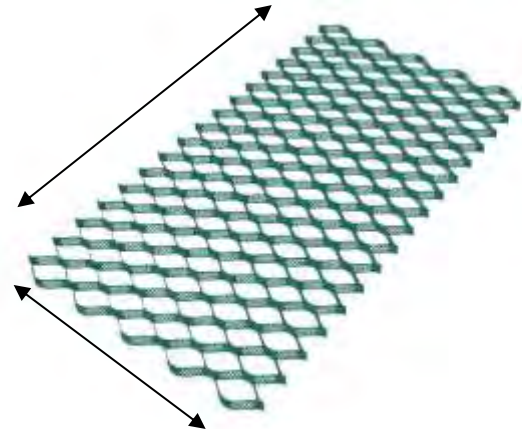
Cell Dimensions	Manufactured Cell Depths
	4" 100 mm
	6" 150 mm
	<b>Weld Distance</b> 17" (432mm $\pm$ 2.5 mm)
	<b>Expanded Unit Dimensions</b> 8' x 29' 2.4m x 8.7m

## Material Specifications

Properties	Test Method	Test Value
Material Composition	ASTM D1505	Polymer; Virgin HDPE Density: 0.9574 g/cm <sup>3</sup>
Nominal Sheet Thickness	ASTM D5199	1.45 mm
Environmental Stress Cracking	ASTM D1693	3500 Hrs.
Stabilizer	ASTM D297-13	1.55% carbon black
Short Term Seam Peel Strength	4" (100 mm) 6" (150 mm)	1542N 2170N
Long Term Seam Peel Strength	A 100 mm (4 inch) wide section sample shall support a (160 lb.) load for a period of 7 days (168 hrs.) minimum in a temperature controlled environment undergoing a temperature change on a 1 hour cycle from ambient room temperature to (130° F)	

## Product Description

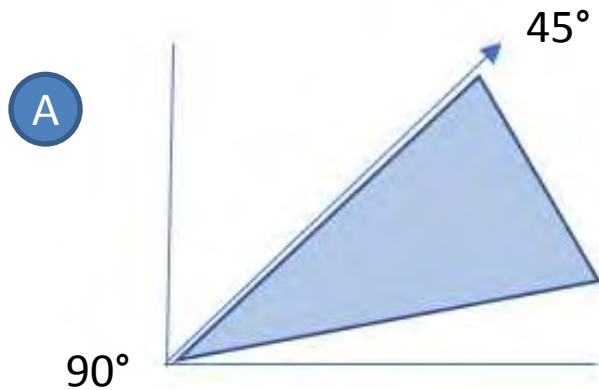
Item Code	Cell Depth	Expanded Unit Dimensions	Area/Unit	Max Pallet Qty
SLP-4	4" (100 mm)	8' x 29' (2.4m x 8.7m)	232 SF	18 units
SLP-6	6" (150 mm)	8' x 29' (2.4m x 8.7m)	232 SF	12 units



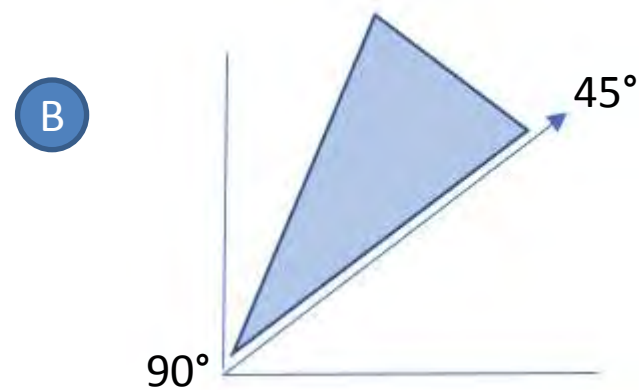
**ONE UNIT = 8' x 29' = 232 sf**  
**Available in 4" or 6" cell depths**

# What accessories do I need?

**NOTE:** Carthage Mills assumes no liability, expressed or implied, for the design of how and where to install Slope Grid. It is highly recommended that a qualified engineer evaluate the site and provide advice on which products to use and how to use them. We can only provide general guidelines which could work in most situations. Many factors should be considered including soil conditions, water flow, slope angle, history of slope conditions, weight in infill in cells, etc.



If your slope is not very steep, perhaps below 45°, then you can likely use rebar J hooks to keep the Slope Grid pinned to the earth.



If your slope is steep, perhaps greater than 45°, then you should use earth anchors, tendons, rebar J hooks and u-bolts to keep the Slope Grid pinned to the earth.

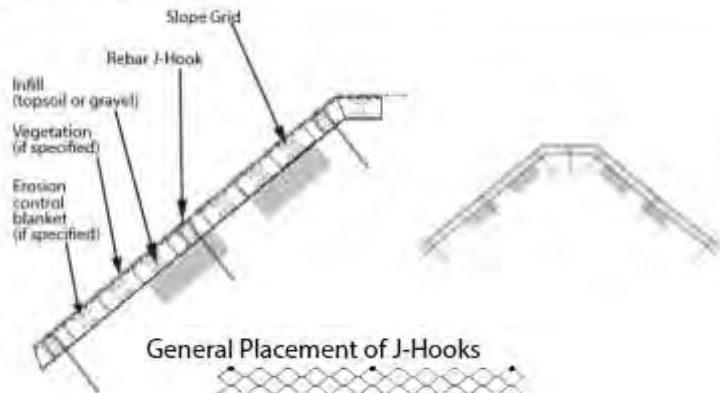




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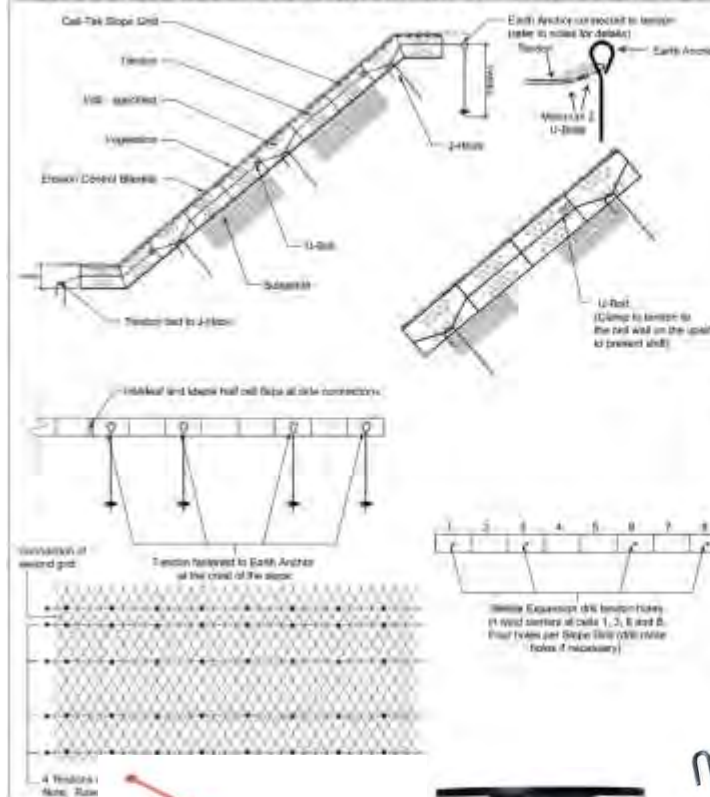
A

## SLOPE GRID



B

## SLOPE GRID - VEGETATED SLOPE with CABLING



### Notes:

1. Anchoring / Tension: Earth anchors and tendons vary in size and break strengths. Refer to detailed charts: earth anchors (chart 1) tendons (chart 2).
2. Slope Grid varies between 4' 8\" and 4' 10\" depth. Choose proper cell depth depending on degree of slope and conditions, hydraulic forces in your region.
3. Vegetation: include a turf/reinforced mat to erosion control blanket. This will prevent wash out until vegetation is established.
4. Connection: Connect one grid with barbed wire mesh.
5. Infill: Slope Grid can be filled with topsoil, gravel, stone or concrete. Choose an infill which is suitable to withstand the applicable hydraulic conditions.
6. In cases where soils are so poor that there is a concern that the soil will slump down behind the Slope Grid, you may want to install a non-erectible geotextile as an underpinning. In this case you will need to cut holes where vegetation roots as barriers or their as being installed so that the roots can grow through. If you want to plant the entire area with grass, do not install fabric. It is unlikely the vegetation will survive with a non-erectible geotextile barrier because the roots will not have enough room to grow.

### Earth Anchor (Forged, Galvanized, Helix Anchor)

EA-1 48\" 4,000 lb. breaking strength

### Rebar J-Hooks (94 rebar)

JHR18 18\" H

JHR24 24\" H

### Tendons (Galvanized Steel Anchor Cabling)

GAC-A 3/16\" 3700 lb. break strength

GAC-B 1/4\" 6100 lb. break strength

### U-Bolts (Drop Forged, Galvanized Wire Rope Clip)

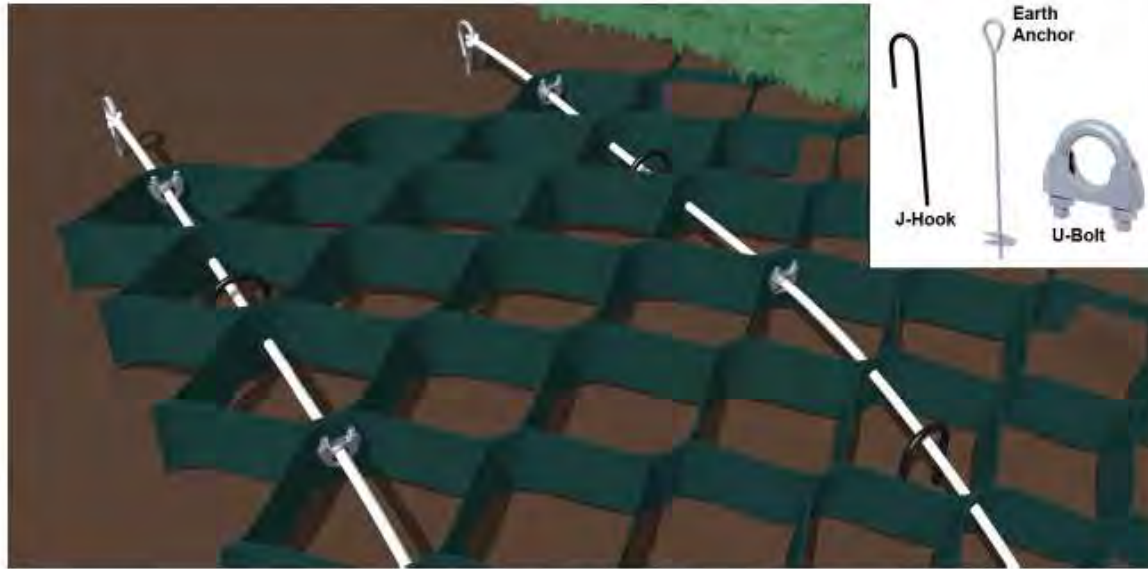
UBOLT-A 3/16\"

UBOLT-B 1/4\"



# Accessories

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This system consists of the geocellular Slope Grid, Earth Anchors, Tendons, Rebar J Hooks and U-Bolts. See page 2 for additional details.

Earth Anchors are used to secure the system at the top of the slope.

Galvanized Aircraft Cabling is used as a Tendon that stretches through the system in rows at certain intervals and prevents the Grid from sliding down the slope.

U-Bolts act as 'stops' to prevent the Grid from sliding along the Tendons and also as fasteners to the Earth Anchors at the top and to the Rebar J Hooks at the bottom.

Rebar J Hooks are used to keep tension on the tendons and to secure the Grid at the bottom of the slope.

# Accessories – continued



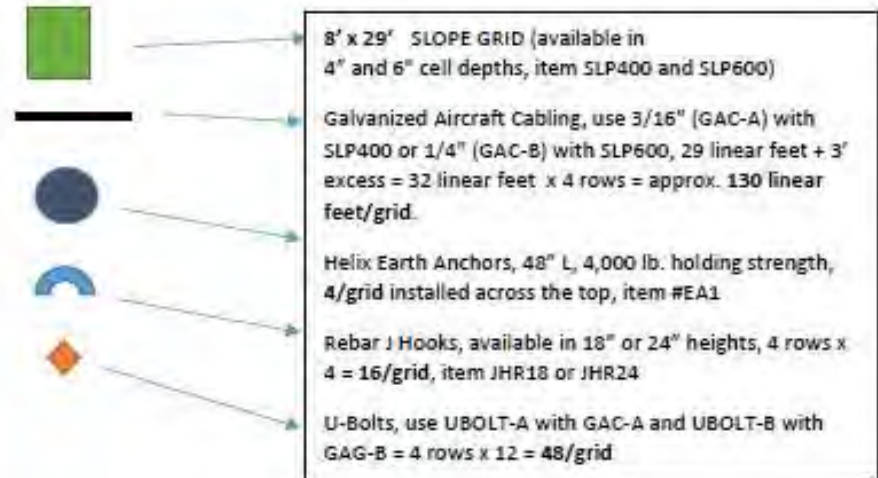
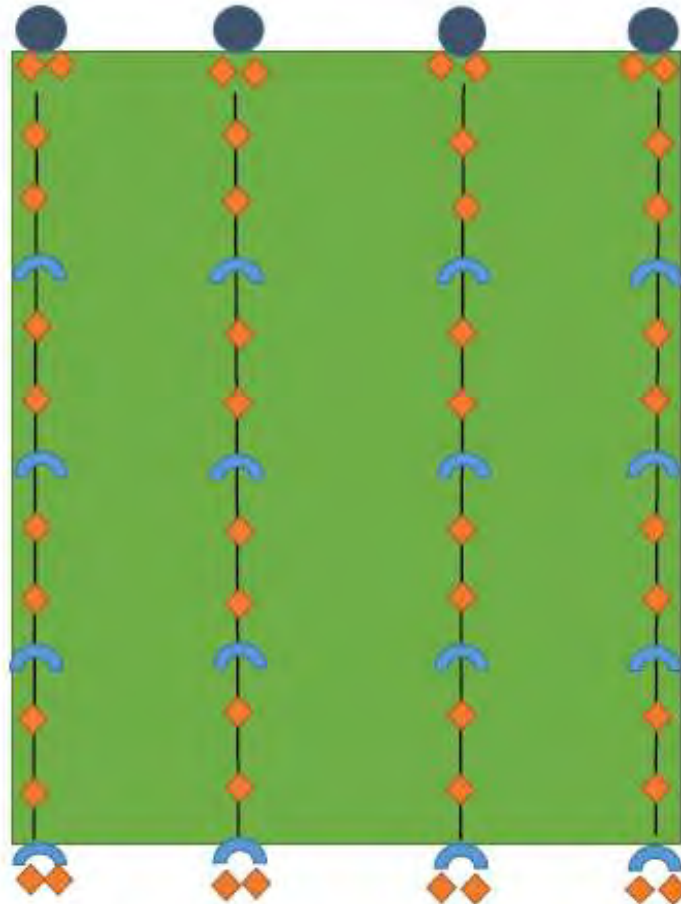
J HOOK ENGAGED TO TENDON FOR TENSION

**UNDERLAYMENT:** If you are filling the cells with aggregates such as gravel or rocks of any size install a non-woven geotextile fabric below the grid. This will keep the stones in the cells and prevent them from migrating down into the earth over time. If you are filling the cells with soil and planting vegetation on top then generally, you do not install a non-woven geotextile underlayment because it would inhibit root growth. In some rare cases where soils are so poor that there is concern that the soil will slump down behind/below the Slope Grid, you may want to install a non-woven geotextile as an underlayment. In this case, you will need to cut holes where vegetation such as bushes or trees are being installed so that the roots can grow deeper. If you plan to plant the entire area with grasses, for example, do not install a fabric. It's unlikely the vegetation will survive with a non-woven geotextile barrier because the roots will not have enough room to grow.

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# General guide for earth anchors, tendons, J-hooks, and u-bolts\*

Slope Grid Installation Design (8' x 29')  
Install 8' side across the top of the slope



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# Choosing Tendon Strength

SLOPE GRID CELL DEPTH	TENDONS	U-BOLTS
4" cell	3/16" - 3,700 lbs. break strength (GAC-A)	3/16" (U-BOLT A)
6" cell	1/4" - 6,100 lbs. break strength (GAC-B)	1/4" (U-BOLT B)



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# Do I need an underlayment?



If you are filling the cells with aggregates (gravel/rocks) then install a non-woven geotextile fabric below the grid. This will keep the stones in the cells and prevent them from migrating down into the earth over time.



If you are filling the cells with soil and planting vegetation, generally, you should not install an underlayment because it would inhibit root growth. In some rare cases where soils are so poor that there is concern the soil will slump down behind or below the Slope Grid, you may want to install a non-woven geotextile fabric underlayment. In this case you will need to cut holes where vegetation such as bushes or trees are being installed so that the roots can grow deeper.

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# Biodegradable Blankets

For vegetated slopes we high recommend the use of a biodegradable blanket. This allows plants the time to take root and flourish. The blanket prevents surface erosion of top soil during this time.

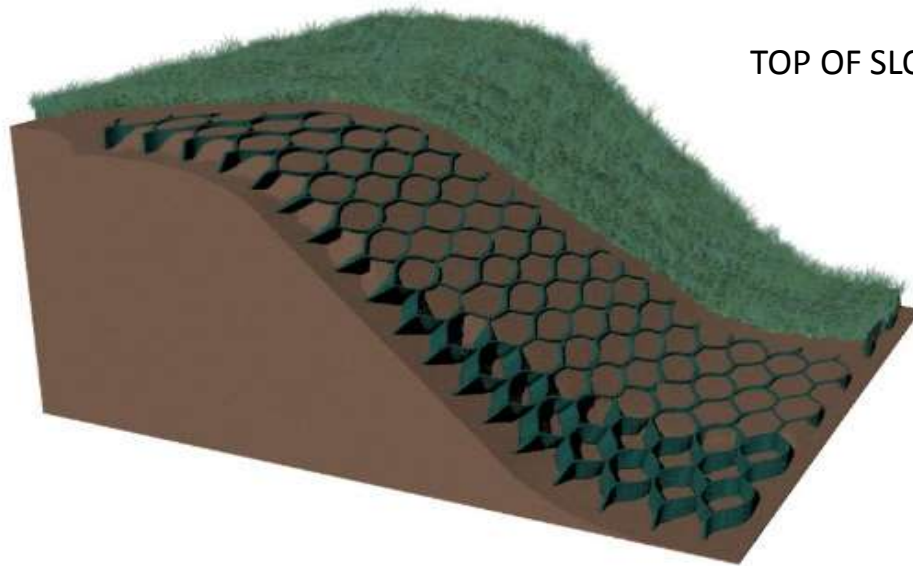
## 100% Coconut Fiber + 2 Organic Jute Nets = Biodegradable Erosion Control Blanket

CFB is made with uniformly distributed 100% coconut fiber and two organic jute nets securely sewn together with biodegradable thread. The CFB has functional longevity of approximately 24 months, but will vary depending on soil and climatic conditions, and is suitable for slopes 1:1 and medium to high flow channels.



# Correct Cell Direction

Slope Grid consists of long strips that are welded together at intervals. The long strips need to be parallel to the hillside.



TOP OF SLOPE →

**CORRECT DIRECTION FOR CELLS:**



**INCORRECT DIRECTION FOR CELLS:**

← TOP OF SLOPE

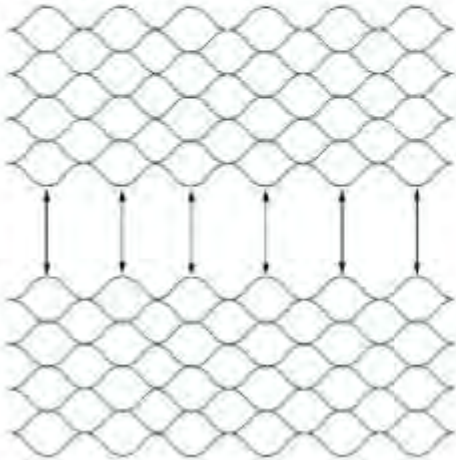




# Connecting Grids

**Multiple geocellular grids must be connected to each other to create a continuous matrix of cells. See instructions below. They can be connected “cell wall to cell wall” or “weld end to weld end”, the result is the same.**

Connection Type 1 - Cell Wall to Cell Wall



Connection Type 2 - Weld End to Weld End

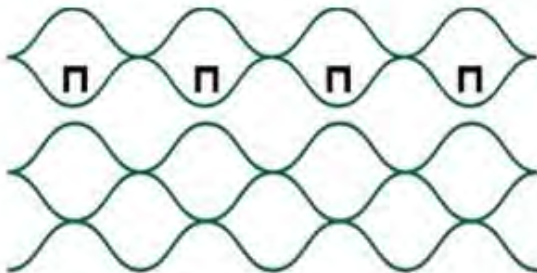


Pneumatic  
Stapler



**Staple at 1" intervals to create a seam**

Type 1 - Cell Wall Connection



Type 2 - Weld End Connection



- Use heavy  
duty staples



# BASIC INSTALLATION GUIDE

The following slides contain basic installation instructions for a steep vegetated slope.

Clear debris.



# BASIC INSTALLATION GUIDE

Install a row of Earth Anchors at the crest of the slope





# BASIC INSTALLATION GUIDE

Drill holes in collapsed grid for tendons (galvanized steel aircraft cabling).



**Tip** – Sharpen end of tendon before threading through holes in grid.



# BASIC INSTALLATION GUIDE





# BASIC INSTALLATION GUIDE

Fasten U-Bolts



# BASIC INSTALLATION GUIDE





# BASIC INSTALLATION GUIDE

Drape it down  
the hillside...

Be safe!  
Tether  
workers with  
rope.



TIP: Temporarily stake  
the spools of tendons to  
the crest of the slope.



# BASIC INSTALLATION GUIDE

Connect one grid to another with  
pneumatic stapler.





# BASIC INSTALLATION GUIDE

Install u-bolts and J hooks at predetermined intervals throughout each column of tendons.



# BASIC INSTALLATION GUIDE

Fill cells with topsoil, install biodegradable coconut fiber mat and plants.





# BASIC INSTALLATION GUIDE

Call with any questions!



*Courtesy of  
King Cuts Landscaping*



*See more information about Slope Grid at*

*<https://carthagemills.com/geocells-cellular-confinement-systems.php>*

***800-543-4430***