

Terram Cellular System for Erosion Protection - Terram Geocell

Application

Steep slopes, river banks, ditches, spillways, and other exposed areas are often prone to damage caused by erosion due to wind or water.

Terram Cellular System can help to prevent erosion by confining soils and aggregates to within the cell structure.

Varying degrees of protection can be afforded by selecting alternative in-fill materials. Seeded topsoil provides protection for less exposed areas. Protection may be increased by introducing vegetation such as small shrubs. For greater protection, a granular in-fill can be used in certain circumstances.

Appropriate in-fills can also be chosen to give a desired surface appearance.

The standard Terram Cellular System for erosion protection, Geocell is normally suitable for use on slopes with an incline of up to 45 degrees (1:1 Slopes). If the slope angle is greater than 45 degrees, additional considerations need to be given to the design of the cellular system and the standard Geocell may not be suitable. In these instances please contact us for further assessment.

Dimensions

Please see Geocell data sheet for the product dimensions.

Installation

(a) Planning of Installation

It is advised that adequate planning and 'design' of the installation is undertaken before commencement of site work. Each site is unique and particular precautions for ensuring a successful installation may differ from site to site.

When planning installation, attention should be given to ensuring that all equipment and tools required for installation are available. In addition, sufficient personnel (with the necessary skills) should be employed on the installation work. Adequate precautions should also be taken to ensure the safety of personnel. Some of the other matters to consider when planning installation include:

- Desired shapes and sizes of the cells
- Methods for compacting the slope surface (during surface preparation)
- Methods for fixing Terram Geocell to the installation surface
- Anchoring details, to prevent excessive down-slope movement of Geocell
- Methods for filling the cells
- Methods for compacting the in-fill material into the cells, if required.

Flexible Lining Products is a trading style of Greentech Ltd.

Rabbit Hill Business Park, Great North Road, Arkendale, Knaresborough HG5 0FF

UK. Tel: +44 (0)1423 332100

Fax: +44 (0)1423 332101

Email: sales@green-tech.co.uk

Web: www.green-tech.co.uk

This list is by no means exhaustive and the designer should include all other necessary considerations. If planned correctly, the installation of Geocell should be a trouble-free experience.

(b) Site Preparation

Geocells perform better when installed on even, well-prepared surfaces. Prior to installing Geocell, it is advised that the slope surface is made level and even. Any sharp objects and stones that are much larger than (or significantly different in shape and angularity from) the intended fill material (i.e material to be placed in the cells) should be removed. If necessary, to achieve a level surface, compaction of the slope surface should be undertaken.

If required, a suitable geotextile may be used as a separator between the geocell and the slope surface.

(c) Expanding the Cells, Fixing and Anchoring Geocell is supplied flat in panel form.

On site it must be expanded and tailored to the desired dimensions and shapes. To achieve optimum results, it is advised that Geocell is expanded to the pre-designed shapes and sizes.

If no pre-designed shapes and sizes are available, it may be advisable to expand Geocell such that a uniform shape and size of the cells is maintained throughout.

Nevertheless, Geocell is flexible enough to go around trees or other structures on the installation surface and some variations in cell shapes and sizes may be necessary when installing the product around obstacles.

To enable Geocell to be expanded and installed with ease, it is often necessary to secure the product along one side of the slope, using a suitable fixing method. Terram can supply fixing pins which may be used during installation (see Figure 1 below). Ultimately, the fixing pin selection is the designer's responsibility. Once the product has been fixed on one side, it can then be expanded, along the length of the slope, until the desired cell shapes and sizes are achieved.

If the Geocell panel is too long, it can be cut to size using a pair of scissors. However, if more than one panel of Terram Geocell is to be installed on the same surface the panels can be joined together by stapling and further pinning. Further details of this method can be supplied by Terram if required.

To retain the cell shapes and sizes, before in-filling, Geocell needs to be pinned down to the installation surface using appropriate methods. It is advised that the product is pinned down at every single cell around the perimeter and at staggered 1m centres down and across the slope, as shown in Figure 2 opposite.

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In order to prevent excessive movement down the slope, due to the weight of the in-fill material, it is often necessary to anchor Geocell to resist the downward forces. It is advised that anchoring methods and details of anchors are considered prior to installation.

Adequate anchoring of Geocell may be achieved by fixing or weighing down cells at the crest (top) of the slope. It is however advised that the designer specifies the most appropriate method of anchoring Geocell. Terram would be pleased to offer further design suggestions on certain projects if necessary.

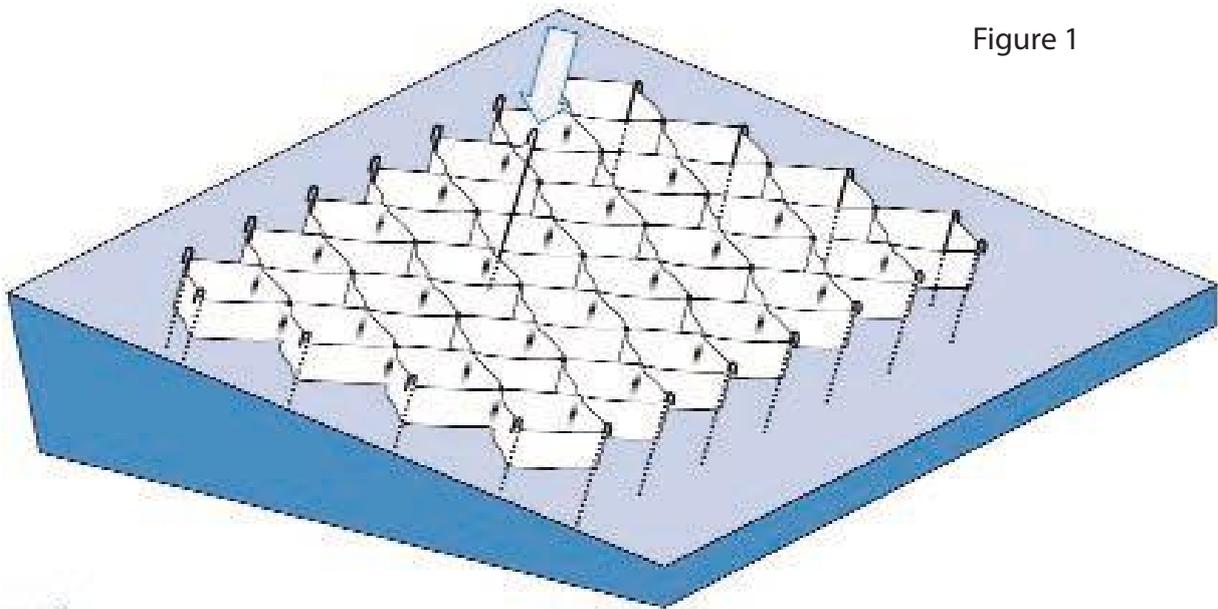


Figure 1

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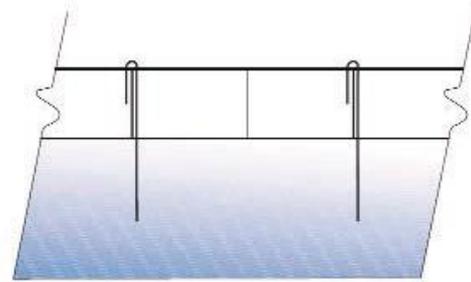
(d) Infilling of Cells

After Geocell has been fixed and anchored in place, in-filling of the cells may be carried out. For general convenience, it may be advisable to commence in-filling from the toe (bottom) of the slope. The in-filled cells, at the lower part of the slope, will provide a platform for in-filling the upper cells.

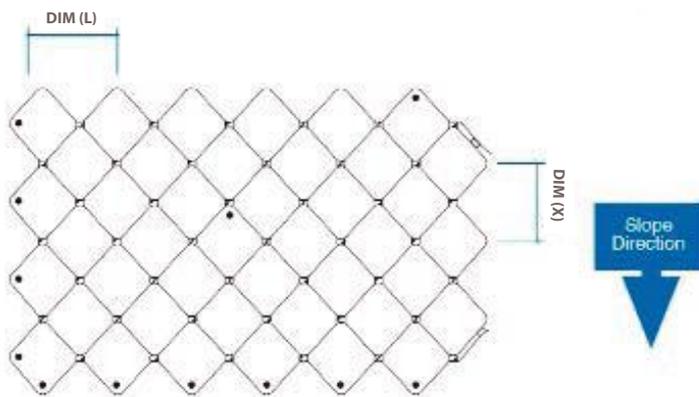
If required, the in-fill can be compacted into place using an appropriate method, which should not damage the fabric of Geocell.

It is very important to ensure that Geocell is completely covered, after in-filling. Prolonged exposure to sunlight will directly affect the product longevity.

This guide is provided by Terram Limited to assist in the installation of Geocell for erosion control on slopes. The document is not a design manual and should not be used as a substitute for proper planning and design of installation of Geocells.



Cross section of installed Geocell



Plan View of Installed Eroc cell
DIM (L) = 10m (Panel Length)
DIM (X) = 7m (Panel Width)

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