

Abslope EM Reinforced Earth System

General Advice

These instructions should be read in conjunction with the contract specification and drawings. They are intended to provide guidance in normal installation situations and are addressed to the installer on site. If there are any questions related to the design, unusual installation challenges, or any doubt, consult ABG Technical Design Team for further advice. Please read all instructions before commencing construction work.

Description

The ABG Abslope EM system is an economical and structurally flexible sustainable earth retaining slope system developed for road embankment, acoustic bund, amenity slopes, land reclamation and housing developments to meet the demands of the Engineers, Architects and Developers. The system consists of proprietary **ABG geogrids** and **Erosamats**. Slopes can be constructed to a face angle of 45° to 26° or less. The reinforced fill and retained backfill will be as agreed and confirmed by the customer. As applies, it is the contractor's responsibility to comply with CDM 2015 and duly refer to the Designer's Risk Assessment and COSHH assessments.

Material Supply (delivered palletised to site) (Fig. 3)

- **ABG geogrids** - delivered wrapped in polyethylene and may be stored outside. The type & exact dimensions to be advised on the site specific drawings
- **Vegetation liner** - erosion control mat type & dimensions to be advised on site specific drawings
- **Abpins** - Biodegradable pegs - delivered in wooden boxes
- **Fildrain** - Drainage geocomposite specific to site (e.g. Fildrain 7DW NW8, 275mm width x 50m length). Delivered in roll format and may be stored outside



Fig. 1: Cut & prepare site to formation level



Fig. 2: A completed vegetated slope



ABG geogrid



Vegetation liner



Abpin 150LL



Fildrain

Fig. 3: Abslope EM reinforced earth system materials

Installation Guide

Abslope EM Reinforced Earth System

Manual handling instructions

Lift geogrid rolls with a boom / spreader bar or by means of lifting straps around the roll. A minimum of two people required for handling during construction.

Equipment Required

- Excavator for site preparation & backfilling
- Wacker plater or single drum vibrating roller
- Disc cutter tool for cutting geogrids to length
- Other general tools & PPE as required (safety knife, tape measure, shovels, laser and spirit levels, lump hammer, safety gloves)

Site Preparation and Installation

Step 1

The construction drawing produced by ABG must be carefully read and made available on site.

Step 2

Prepare the formation to the level and line according to the project drawings and contract documents. Creating stable benching (see Fig. 4) in the existing ground is the responsibility of the contractor. Note: The SOPs are not the responsibility of ABG.



Fig. 4: Prepared formation & benching

Step 3

Examine the formation ground for its suitability to support the bearing load from the proposed earth structure. Note: The competency and stability of the foundation soil needs to be confirmed by the customer's engineer, not the responsibility of ABG.

Step 4

Following the examination and as directed by the customer's engineer, the formation ground shall be proof rolled and improved prior to the commencement of the construction of the reinforced earth slope.

Step 5

Roll out the primary geogrid on the formation and position as shown on the contract drawings. The correct grade of primary geogrid needs to be identified from the label on the geogrid roll. Make sure that the geogrids are laid perpendicular to the alignment of the face of the slope and flat on the ground (Fig. 5a)

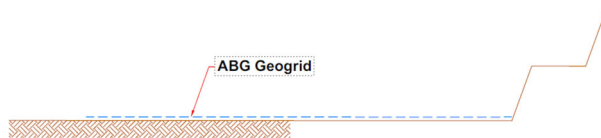


Fig. 5a: Primary geogrid is laid

Step 6

If specific to the project, any additional geocomposite (**Fildrain**) is required, cut to size and place under the geogrid at defined (by ABG) distances along the length of the slope and pin in place as necessary to the retained fill / soil face, as detailed in the ABG design drawings and document. (Fig. 5b)

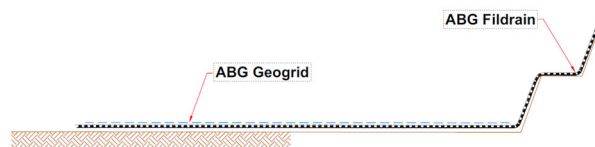


Fig. 5b: Drainage geocomposite Fildrain placed under

Abslope EM Reinforced Earth System

Site Preparation and Installation (cont.)

Step 7

All geogrids including secondary (biaxial) geogrids, if included in the design, need to be laid at correct levels, lengths and offset to maintain the correct alignment of the design face angle. (Fig. 6)

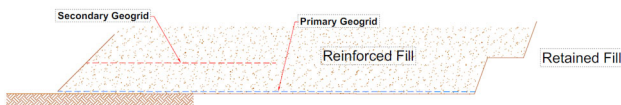


Fig. 6: Primary and Secondary geogrids

Filling and compaction

Step 1

Place and compact the selected reinforced fill, incorporating both primary and secondary geogrids, which is approved and confirmed for the ABG design. The fill needs to be placed using a plain, toothless excavator or dodger bucket. A minimum post compaction thickness of 150mm needs to be placed in a single lift, and compacted in accordance with Manual of Contract Documents for Highway Works, Volume 1, Series 600, Clause 612. (Fig. 6)

Step 2

The secondary geogrid needs to be cut to design width, typically 2m, and laid parallel with the alignment of the slope face.

Step 3

Compaction starts from the near end of the face, working away towards the tail of the geogrids. The compaction machinery must travel along the slope, not perpendicular to the slope.

Step 4

Repeat the compaction process in layers of defined lift heights up to the next geogrid level, and thus complete the construction up to the full design height. The overfilled (at the face and outside the geogrids) compacted soil needs to be trimmed using a plain excavator bucket to the design angle. Utmost care is required while trimming the face, not to over cut or structurally damage. See Fig. 7. Note: The contractor is responsible to check the slope geometry is built to an acceptable tolerance.

Step 5

Upon completion of the compacted reinforced fill, the slope face should be covered with suitable topsoil (in accordance with BS 3882) to help grow vegetation. The thickness of the topsoil can be a maximum of 100mm, or as indicated in the construction drawings. The topsoil should not be over-compacted.

Step 6

Selection of seeds for vegetation may vary according to the project specific need. For any specific vegetation requirement, the seeding can be done by scattering or hydro-seeding.

Step 7

The topsoil can now be covered with the supplied **Erosamat**. See Fig. 7. Roll down the mat from the crest and anchor at the crest and at the toe of the slope as shown in the construction drawing. To keep the **Erosamat** in contact with the underlying topsoil, it should be pinned using the supplied **Abpins** using the specified number per square metre. The **Erosamat** needs to be overlapped and pinned at the edges so as not to allow any topsoil to escape.

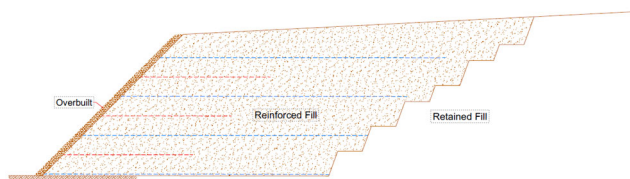


Fig. 7: Design height is built, overbuilt face to be trimmed.

Abslope EM Reinforced Earth System

Filling and compaction (cont.)

Step 8

Anchorage of the **Erosamat** at the toe and at the crest needs to be made by burying the mat tails in 250mm deep and 350mm wide trenches. See **Fig. 8**.

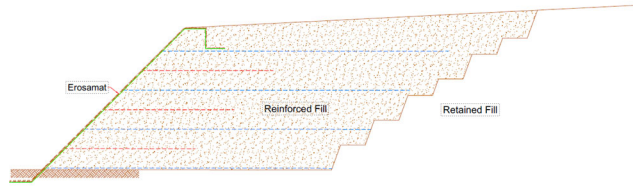


Fig. 8: Completed slope, trimmed face with Erosamat fitted.



Fig. 9: Completed slope awaiting to be seeded / greened

Notes

1. Contact the ABG technical design department if the type of the reinforced fill, retained backfill and/or compaction effort varies from that specified.
2. ABG will be pleased to advise on suitable species for vegetating the front face of the slope. Construction in an area where sufficient sunlight is not available, the slope face may require specific species of vegetation, and monitoring and maintenance over time to ensure that adequate coverage is provided by the plants.
3. Planting of any specific species on the face of the slope, as may be required by the customer, can be done by cutting the erosamat locally and planting in the topsoil.
4. If ABG Erosaweb is suggested on the slope face instead of Erosamat, ABG should be contacted for the Installation procedure.

Terms and Conditions

- The ABG Design Document provided should be consulted to understand all the project specific design notes / caveats and exclusions.
- The construction must be in accordance with the design provided. Unless prior notice is given to ABG, any alteration will invalidate the PI insurance cover.
- The contractor must assess all the risks associated with working from height, both for machinery and the operatives. The operatives to follow all construction site H&S rules as necessary.