Install: ABG Abgrid Geogrid

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. For any queries regarding the design, challenging ground conditions such as peat, swampland, or marshes, unusual installation challenges, or uncertainties, please consult ABG for additional guidance. The installer retains full responsibility for the installation. These **Abgrid** installation instructions reflect ABG's accumulated experience and align with modern construction procedures.

Description

Abgrid biaxial geogrids are manufactured from extruded polypropylene, which is perforated and worked bi-axially to form a grid of polymer ribs with a high degree of molecular orientation (**see Fig. 1**). The orientation continues through the integral junctions that offer the highest levels of engineering performance and quality standards. **ABG Abgrid** biaxial polypropylene geogrids provide multi-directional reinforcement and stabilisation for civil engineering applications; including granular sub-bases and capping layers in paved and unpaved roads, parking areas, working platforms, and railway ballasts, particularly in areas with weak or variable soils. When granular materials are compacted over these geogrids, the particles partially penetrate and lock into the geogrid apertures, forming a mechanical interlock. This interlock enhances load distribution, increases soil shearing resistance, improves compaction, and enables reduced material thickness, leading to quicker and more cost-efficient construction.

Additionally, **ABG Abgrid geogrids** are used to reinforce earth-retaining structures (e.g., Abslope EM, Abslope SM, or Webwall) and are applied in **landfill capping systems** to create reinforced **veneer covers**.

The stabilising benefits of a geogrid depend on its strength and its capacity to confine materials by interlocking with adjacent materials in contact with it. Proper installation is essential to achieve the optimal performance of a geogrid.

Supply & Storage

Abgrid geogrids are manufactured and supplied in various rolls widths, lengths and weights (**Table 1**). Abgrid geogrids may be stored uncovered, either parallel or cross-stacked, up to five rolls high (**see Fig. 2**). They should be stacked safely in a secure location on firm ground until ready to use on-site.

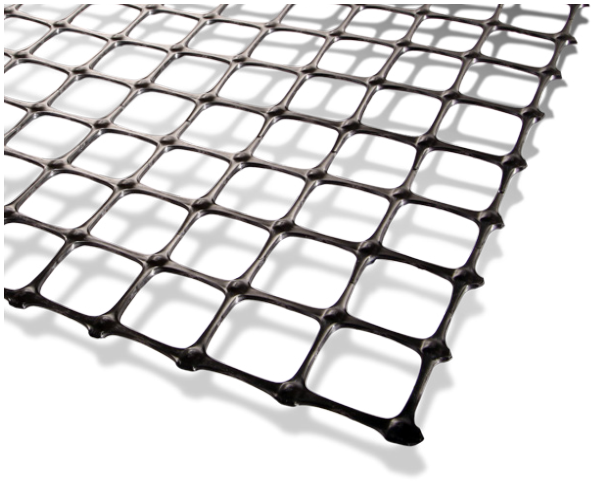

Fig. 1: ABG Abgrid biaxial geogrid

Table 1: ABG Abgrid roll width, length and weight

	Abgrid 20/20	Abgrid 30/30	Abgrid 40/40
Width (m)	3.95	3.95	3.95
Length (m)	50	50	30
Roll weight (kg)	43.5	65.5	59.5

Fig. 2: Storing Abgrid geogrid

ABG LTD
E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • www.abgltd.com
a Bontexgeo Group company

Install: ABG Abgrid Geogrid

Supply & Storage (cont.)

To ensure product integrity, it is advisable to avoid prolonged exposure to direct sunlight and to cover the rolls within a few weeks. For extended on-site storage, the geogrids should be covered or stored indoors.

Equipment Required

- Handheld power saw
- Suitable safety knife / sharp shears
- Metal pins
- Appropriate PPE (gloves*, eye protection, etc.)

*As per EN388, PPE 89/686/EEC directive

Subgrade preparation

Geogrids can be laid directly on in-situ grassed or vegetated level ground, unless the subgrade needs to be cut or filled to achieve the project-specific level (**see Fig. 3a**). Otherwise, the site should be cleared, grubbed, and stripped of topsoil, debris, and any unsuitable materials (**see Fig. 3b**). For very soft soils (CBR ≤ 0.5%), it may be advantageous to minimise disturbance to the subgrade, leaving root mats in place while cutting stumps and other vegetation as close to the ground surface as practical. For moderately competent soils (CBR > 2.0%), a light proof roll may help identify areas with unsuitable materials. Any voids, wheel ruts, or deep depressions must be filled or levelled.

Installation

Place the rolls of Abgrid in position, cut the roll bands, and manually unroll the material over the prepared surface (**see Fig. 4a** and **b**). Generally, the direction of laying will be specified in the contractor's or designer's documents. Depending on the geometry of the subgrade plan area, the geogrid can be laid either along the longer or shorter dimension. All geogrids should be laid slack-free, with tension applied by hand to ensure any mechanical joints are taut. On sloped surfaces, e.g., landfill caps, the geogrid should be unrolled from the apex of the slope. When using **ABG Abgrid** geogrids for reinforcing earth-retaining structures (e.g. **Abslope EM**, **Abslope SM** or **Webwall**) or creating reinforced veneer covers in landfill capping systems, ensure the polymer ribs are aligned with the tension direction of the geogrid's action. Small deposits of fill material will generally be required on top of the geogrid to hold it in position until the main fill is placed. No construction traffic may travel directly on the geogrid before the fill is placed.

Fig. 3a: Subgrade preparation

Fig. 3b: Subgrade preparation

Fig. 4a: Rolling out Abgrid geogrid

Fig. 4b: Rolling out Abgrid geogrid

ABG LTD
E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • www.abgltd.com
a Bontexgeo Group company

Placement and Overlapping

Geogrid stabilisation application

Unroll the geogrid in the direction of travel so that the roll is parallel with traffic patterns. For the continuous installation of geogrids, mechanical connections are generally not intended; instead, overlapping is preferred. Overlapping should be applied both lengthways and sideways in the direction of fill placement. This approach helps prevent the "peeling" of geogrids at overlaps during the advancement of fill spreading. **Table 2** provides a tentative guide for the recommended overlaps along the sides and ends of adjacent rolls. In multiple layer applications, for the second or third layers of geogrids, minimum 300mm overlaps are suggested.

To accommodate curves, geogrids should be cut and overlapped, with the overlaps meeting at least the minimum values specified in **Table 2**. Similarly, the geogrid should be cut to fit around manhole covers and other fixed protrusions. If specific conditions necessitate a mechanical joint, further guidance can be obtained from ABG Ltd.

Geogrid / Geotextile combinations

If a geogrid is to be applied on a very soft subgrade with a CBR of 0.5% or less, or if the groundwater table is very close to the formation level or subject to fluctuations during the design life, a layer of nonwoven geotextile (e.g., **ABG Terrex NW**) is required beneath the geogrid as a separator (**see Fig. 5**). For constructions involving multiple layers of geogrid, the geotextile is recommended only at the subgrade level.

For the installation of **ABG Terrex NW** geotextile refer to **ABG Terrex INSTALL**.

Earth slopes and retaining walls

In this application, geogrids provide reinforcement to the earth through their tensile strength and interface shear resistance. The geogrids are installed perpendicular to the face of the slope or wall. When biaxial geogrids are used, joints across (parallel to the face of the slope or wall) the direction of the tensile force are not permissible, since effective joints cannot be achieved. However, at the sides of the geogrids, no joints are necessary; simply abutting the geogrids is sufficient.

Table 2: Geogrid overlaps for different subgrade situations

Subgrade Strength CBR (%)	Geogrid overlap[1] (mm)	Direct Trafficking[2]
CBR ≤ 0.5	1,000	No
0.5 < CBR ≤ 1.0	500	No
1.0 < CBR ≤ 2.0	400	Limited
CBR > 2.0	300	Yes

[1]For unusual installation challenges like peat, swampland, or marshes, please contact ABG.

[2]Trafficking rubber-tyred equipment only.

Fig. 5: Application of ABG non-woven geotextile with Abgrid geogrid

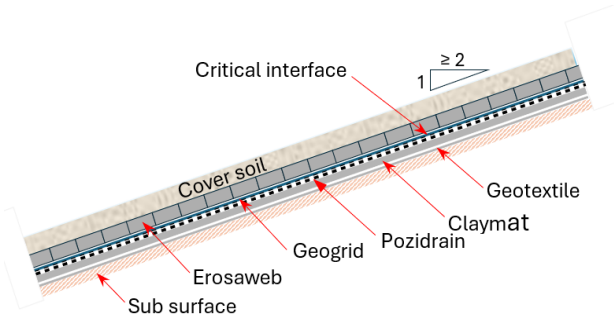

Fig. 6a: Typical landfill cap comprising geosynthetics

Geocomposite assisted Landfill cap Veneer

In this application, geogrids are used within the veneer geocomposite layers (**see Fig. 6a**) to take on tension through their tensile strength and interface shear resistance. It is recommended to avoid introducing any joints in the geogrids along the tension direction (across the slope). However, if unavoidable and the landfill cap slope angle is relatively shallow (shallower than 1V:2H), mechanical joints may be introduced. The geogrid unrolled from the upper hill must overlap the geogrid on the downhill section. A typical application of geogrid, where it is used as a tension element supporting Erosaweb cells infilled with cover soil, is illustrated in **Fig. 6a** and **6b.** For your project-specific issue please contact ABG Ltd.

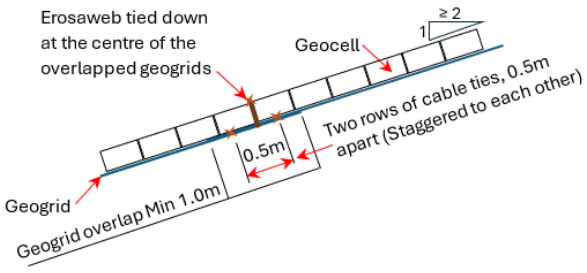

Fig. 6b: Geogrid overlap, jointing and tying with Erosaweb

Dumping and Compacting aggregates fill

Geogrid stabilisation application

For relatively competent subgrades (CBR > 2.0%), aggregate fill may be dumped directly onto the geogrid. Standard highway-legal, rubber-tyred trucks (e.g., end dumps and belly dumps) can be used to deposit the aggregate fill as they advance (**see Fig. 7**). The thickness of the dumped aggregate must be sufficient to prevent significant rutting under the wheel paths. A minimum post-compacted thickness of 150 mm for the initial lift of aggregate fill over the geogrid is required to support any tracked equipment. A lightweight, low ground pressure (LGP) dozer is recommended for evenly spreading the fill over the geogrid. The dozer blade should be gradually raised as each lift is pushed out over the geogrid (**see Fig. 8**). Care should be taken to properly align geogrid overlaps and to advance the aggregate fill in a shingle pattern.

Fig. 7: Dumping of aggregate fill on geogrid

For relatively soft subgrade conditions (CBR < 2.0%), a substantially thicker fill layer is required to prevent excessive rutting and / or bearing capacity failure of the underlying subgrade soils. Sudden turns, braking, starting, and stopping should be avoided.

In cases of very soft subgrades (CBR ≤ 0.5%), extreme caution is necessary to avoid overstressing the subgrade soil during and after fill placement. If severe rutting or pumping occurs under truck or dozer traffic, work must cease immediately. In such situations, a long-reach excavator is recommended to place the aggregate fill and rack the material to form a stable work platform. Construction may require multiple layers of geogrids. Consult your representative or a qualified geotechnical engineer for guidance when constructing over very soft subgrade soils.

Fig. 8: Dozer spreading aggregate

In all cases, a geogrid-stabilised ramp should be constructed at the site entrance to allow compaction equipment access.

ABG LTD
E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • www.abgltd.com
a Bontexgeo Group company

The Temporary Works Forum (TWf) guidance must be followed for proper compaction at each layer. Inadequate compaction can cause surface rutting under wheel loads which reduces the effective thickness of the fill and increases stress on the subgrade. As a result, the structural integrity of the platform is compromised, leading to potential safety hazards.

Earth slopes and retaining walls

In this application, the subsoil (foundation) is generally competent enough to support the load of compaction equipment. Including safety measures for working from height, the compaction requirements differ from those of geogrid stabilisation applications. For detailed guidance, refer to the application-specific ABG Installation Guide.

Geocomposite assisted landfill cap veneer

In veneer stability applications, geogrids are used to support other geosynthetic component(s) placed on top of them, which is then surcharged with cover soil. The process of dumping and compacting the cover soil requires a specialised method, including a bottom-up compaction procedure. For detailed guidance, refer to the application-specific ABG Installation Guide.

Special considerations

Reinstatement of geogrids

Geogrid sections that are heavily damaged during installation must be cut and removed. If geogrids become partially damaged during or after installation, repair them by patching the affected area with a newly cut piece of geogrid using the following measures:

- Remove the fill material from the surface of the damaged geogrid and clear the area around the damage
- The replacement geogrid piece should cover the damaged area and extend beyond it to overlap in all directions. For the extent of the overlaps, **Table 2** can be considered as a guide.

Aggregate particle size

In general, for geogrid-stabilisation applications, the preferred fill material is well-graded crushed aggregate with a maximum particle size of 90mm. Other granular fill materials may be acceptable, depending on the project contract specifications and drawings. The moisture content of the fill should preferably be dry of optimum, since wet fill is difficult to compact and may rut under wheel loading.

In applications where **Abgrid** is used in reinforced earth retaining structures as a reinforcing element (e.g., **Abslope EM**, **Abslope SM**, or **Webwall**), deviations from using aggregates may be acceptable (refer to Table 2: BS 8006-12010+A1:2016). However, the particle size of the fill should still not exceed 90mm to ensure ease of construction and compatibility of the fill materials.

Construction lift heights

The minimum post-compacted thickness of a layer of fill material should adhere to construction standards (e.g., BS 8006-1:2010+A1:2016 or BRE 470:2004 as applies), but it must not be less than 150mm. The uncompacted thickness of the fill material should not exceed 250mm.

COSHH

Abgrid geogrids pose no health hazards during handling or installation, but care should be taken when lifting and cutting.

Notes:

1. For additional advice on installation methods for a wide range of other applications, please contact the technical team at ABG Ltd.
2. This Installation Guide is applicable exclusively to **ABG Abgrid geogrid**.

ABG LTD
E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • www.abgltd.com
a Bontexgeo Group company