



Webwall Earth Retaining Walls

A guide to the selection and specification of Webwall® vegetated Earth Retaining walls

abg | creative
geosynthetic
engineering

ABG Earth Retaining Structures

ABG provide a range of geosynthetic materials for the creation of green retaining structures and our designs incorporate some of the most innovative and sustainable solutions for the modern built environment. Our involvement in the design and construction of reinforced Earth Retaining structures began over 25 years ago when we enhanced modern design techniques and then developed and launched our own range of ground engineering solutions.

These ground-breaking systems include a comprehensive range of geocell webs, geogrids and soil erosion control mats for a multitude of Earth Reinforcement solutions.

Webwall[®], ABG's own cellular Earth Retaining wall system, was designed specifically as a sustainable green solution and provides a value engineered alternative to gabions, crib walls and other similar constructions.

Webwall[®] is a flexible, Earth Retaining system for cut-and-fill faces or noise/visual bunds that allows structures with near vertical faces to be built quickly and easily in a straight or curved profile. Webwall[®] offers cost savings over traditional Earth Retaining constructions and provides an aesthetically pleasing green, vegetated finish.

Webwall[®] is ideal for situations where site won materials are the preferred fill medium. The reuse of site won materials significantly reduces the cost of having to import structural fills and remove spoil off-site. The site carbon footprint is also reduced due to the fewer vehicle movements required. Construction of Webwall[®] is also fast, which is ideal for projects with tight construction programmes.

ABG's patented Webwall[®] geocells are backed up by our design service, plus advice on the selection of low maintenance planting; for example, prickly vegetation for security or maybe fruiting plants for an urban garden. We also offer an installation service in cooperation with our approved installers.



For ABG product datasheets, CAD details, design guidance & other technical information call **01484 852096** or email geotechnical@abgltd.com



Webwall® Benefits

Environmentally Beneficial Structures

By using site won fill and reducing import and export on-and-off site, installing a Webwall® system can greatly reduce the carbon footprint of the development, providing a sustainable and more environmentally friendly solution. Up to three BREEAM points are available with Webwall® depending upon the species planted.

SuDS Compliant Solutions

Webwall® can be used to create swales, ponds and other SuDS methods in line with current legislation to help meet the drainage requirements for the sustainable built environment.

Speed of Construction

Webwall saves project time and cost and can be built in a matter of days rather than weeks, without the need for large equipment such as cranes. This provides a considerable saving by improving programme time. ABG provides supervision to impart simple but necessary skills, or can offer a full installation service by an approved installer.

Flexibility

Webwall® offers great flexibility and can cope with the most challenging applications. It can be constructed to form straight lines, smooth curves or 90° bends and at the desired inclination to suit the site requirements.

Reinforced Soil Facing

Webwall® is the ideal facing for reinforced soil slopes and can be tailored to meet project specific requirements, allowing near vertical and higher walls to be constructed.

Turnkey Solutions

ABG are able to provide a single point supply, with supervision, installation and maintenance all in one package; including optional PI design to create a turnkey, retaining wall solution.



Webwall®

Webwall is a value engineered option offering an aesthetically pleasing finish with a reduced construction time and carbon footprint, utilising cheaper materials and lower labour costs.

The Webwall® structure is formed from horizontal layers of geocellular panels, each panel being expanded and filled, layer-by-layer, until the required height is achieved.

As the layers are positioned, the front half of the front cells are filled with topsoil and then vegetated, either through seeding or planting.

If the design requires, the structure can be reinforced with the integration of a geogrid. Webwall® can be constructed with a face angle (to the horizontal) up to 70° to ensure there is sufficient step-depth to allow successful planting, essential for the long-term protection of the wall fascia against UV light.

Fill Selection

Webwall® constructions are designed to use site arising materials or 'acceptable' fill as backfill behind the face panels and around the reinforcing elements (if used). This reduces the need for haulage and consumption of high quality granular materials. The maximum particle size of the construction fill materials should not exceed 75mm.

Applications

- Retaining structures
- Visual/noise barriers
- Vegetation faced walls
- Containment bunds
- Steepening bunds
- Steepening embankments
- Swale and channel construction
- Pond and detention basins



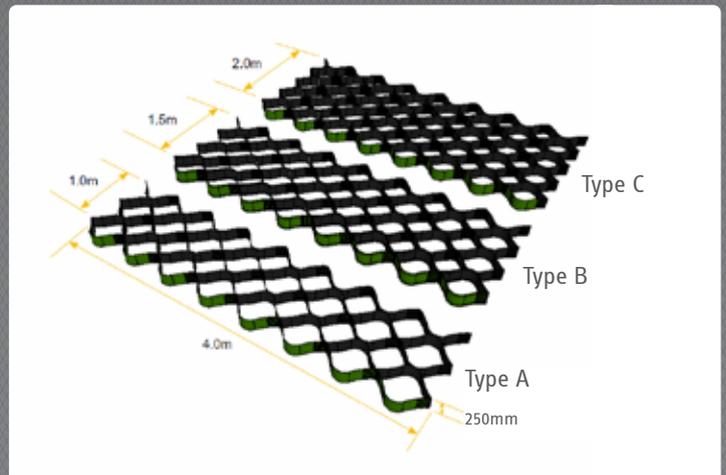
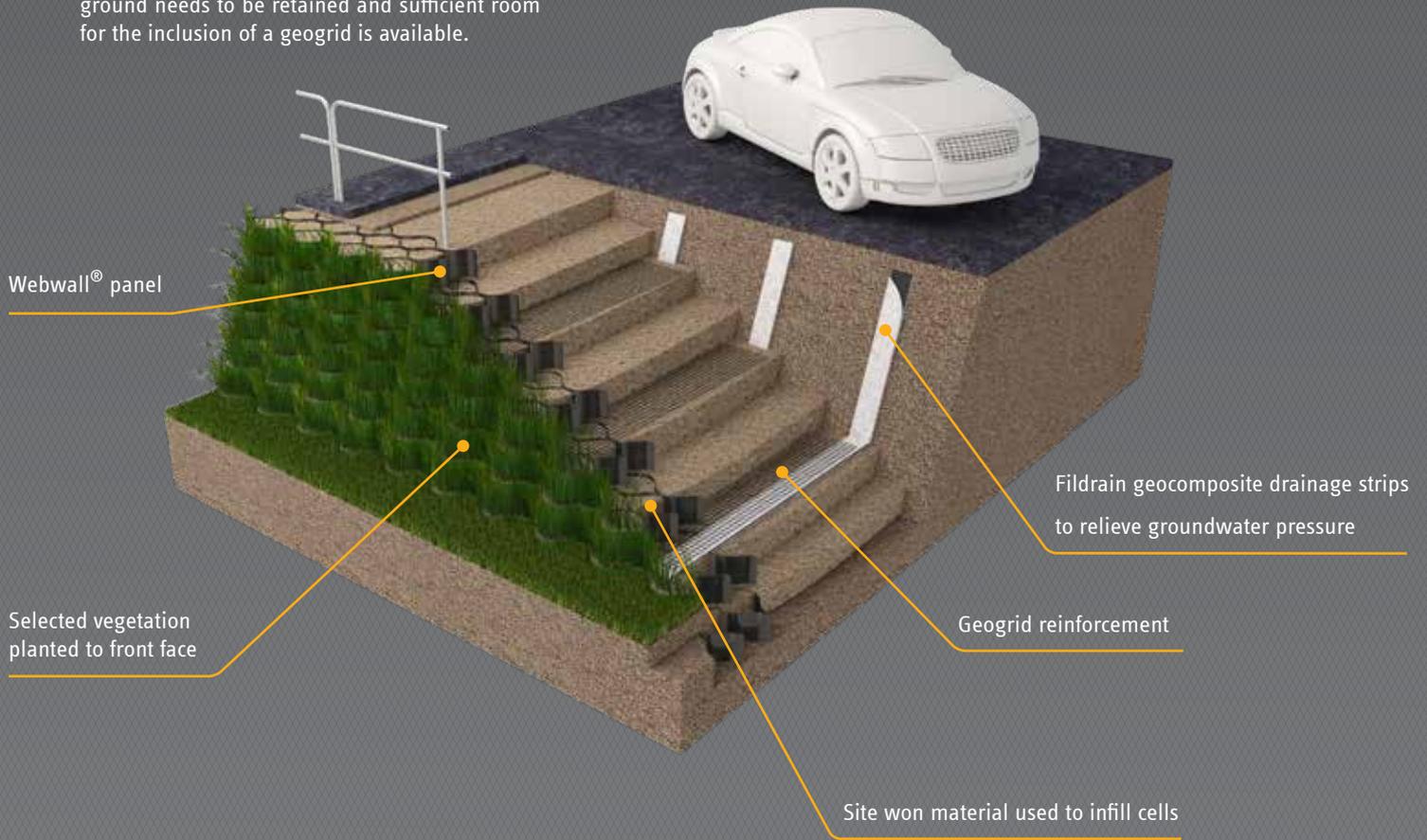
Unreinforced Webwall®

Webwall® constructed without a geogrid is economical up to 3m high. When constructed without a geogrid, a combination of Type A, B and C panels are used (see bottom right of the page below).

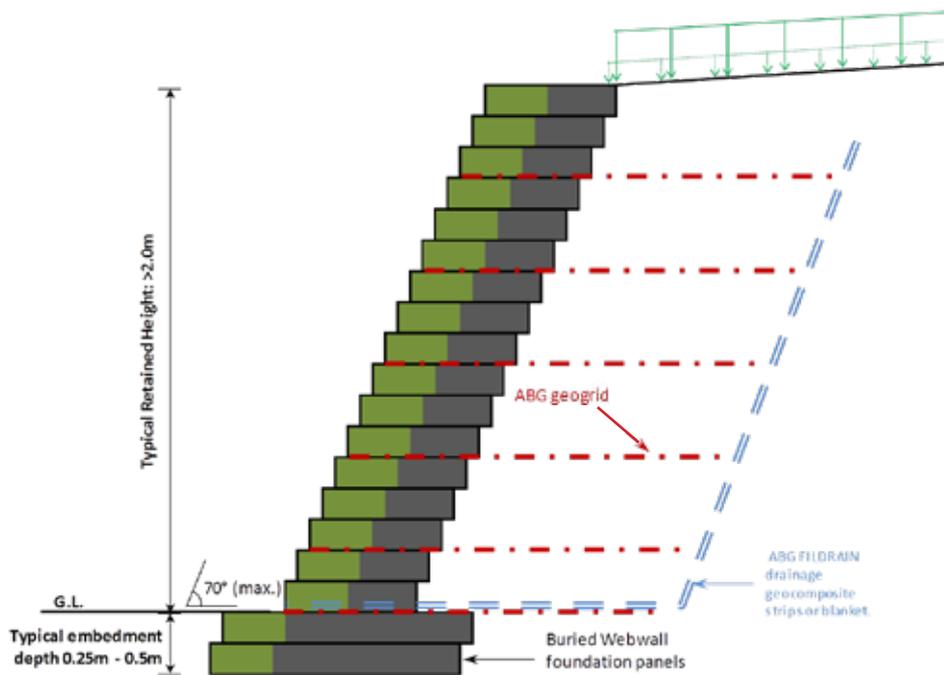


Reinforced Earth Retaining Webwall®

Webwall is reinforced using geogrids where high ground needs to be retained and sufficient room for the inclusion of a geogrid is available.



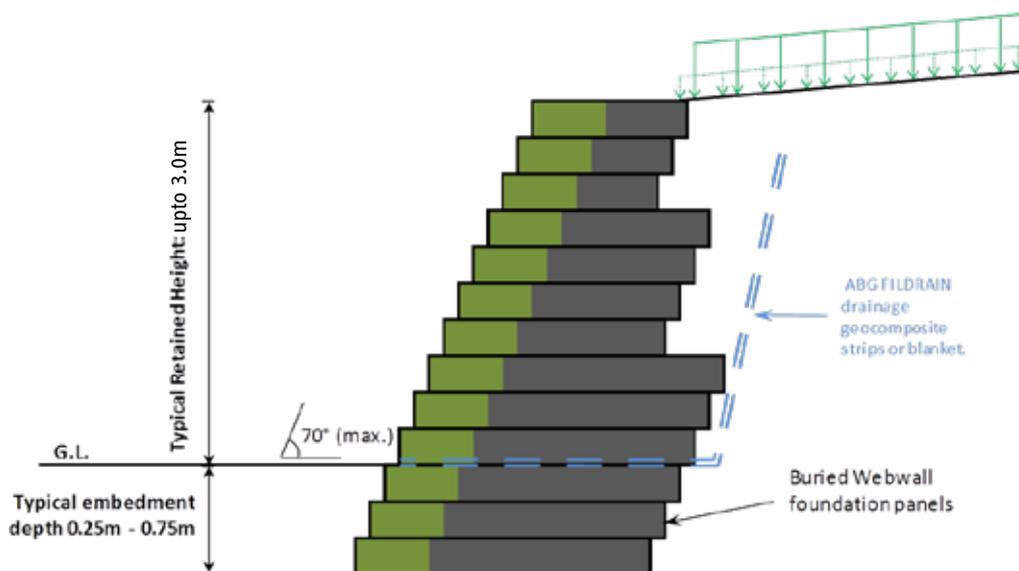
Reinforced Webwall®



Description: Narrower geocell panel may be applied in reinforced constructions. In these situations, geocells, along with the reinforced geogrid-filled soil mass, act as a single unit.

Advantages: Enables re-use of site soils.

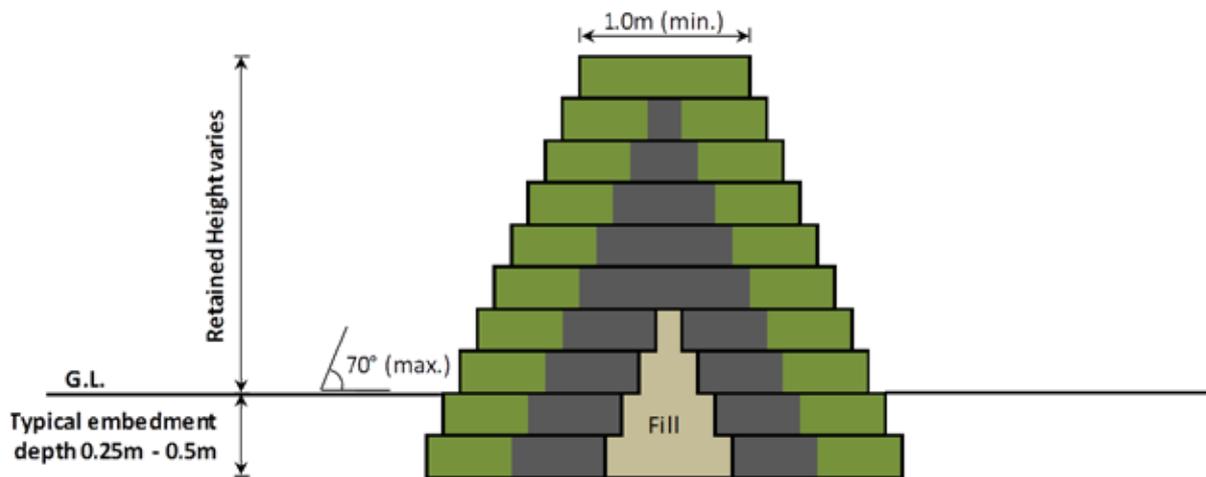
Unreinforced Webwall®



Description: ABG Webwall® panels of various sizes backfilled and compacted to create a semi-rigid block which retains soil.

Maximum Retained Height: Typically up to 3m at an angle of 70°.

Webwall® Bund



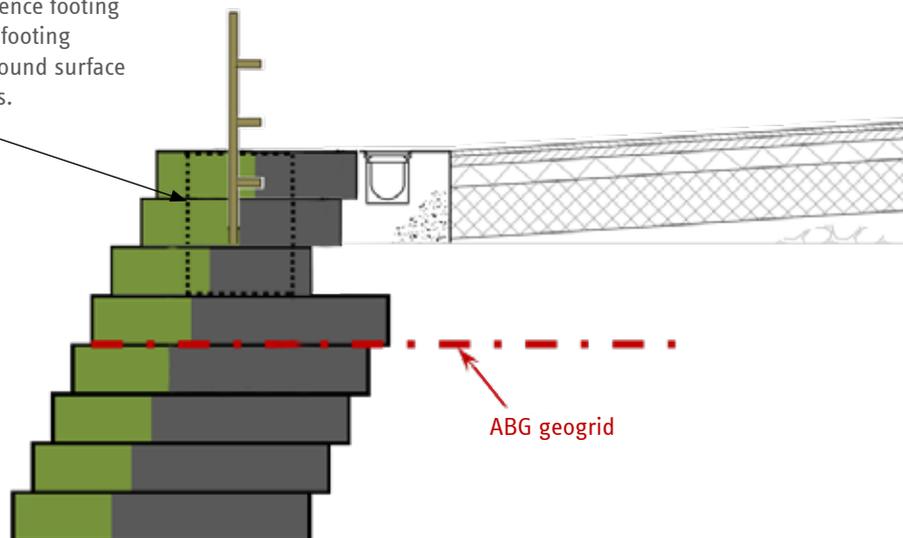
Description: ABG Webwall® panels are used to create a bund for the purposes of noise reduction, a visual bund or as a small dam for stormwater detention ponds.

Advantages: Webwall is a flexible system which can absorb differential settlement within itself.

Maximum Retained Height: Typically up to 3.0m at an angle of 70°. Greater heights can be achieved when reinforced with geogrid.

Fence Footing / Tree Rings

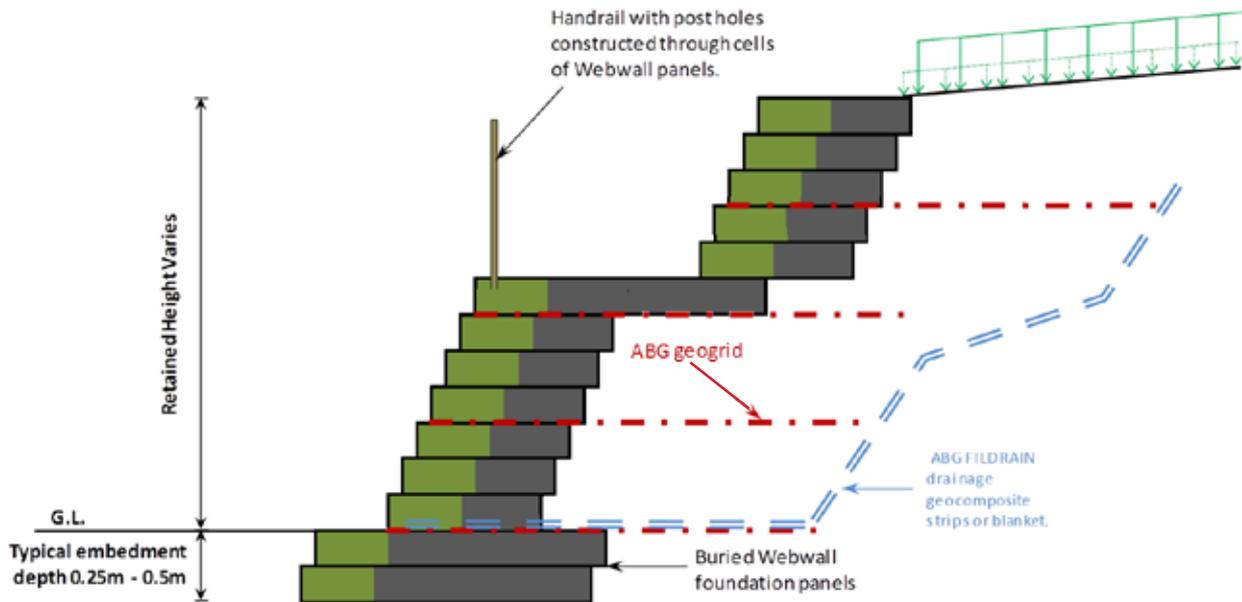
Concrete foundation for handrail / fence footing poured into Webwall® panels. The footing typically extends to 0.75m below ground surface as per the site specific requirements.



Description: Concrete footings for handrail / fencing can be constructed, capable of resisting horizontal impact loads. Similarly, concrete rings can be inserted to create tree pits, or for hedge planting.

Maximum Retained Height: n/a.

Tiered Webwall®

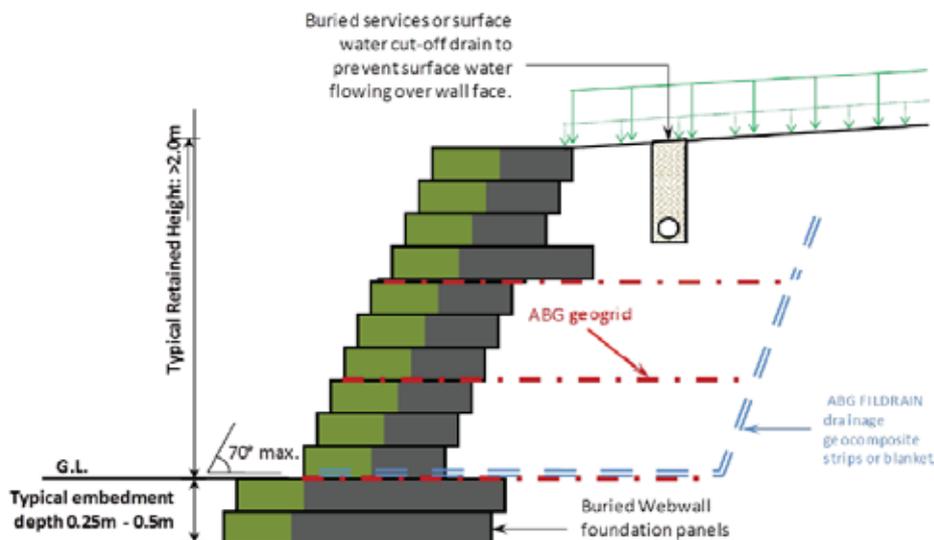


Description: ABG Webwall® panels can be arranged to form a terrace for pedestrian access with a handrail if required.

Maximum Retained Height: Varies depending on the set-back of the Webwall® panels and the ground conditions on site.

Advantages: Flexible design options allow any combination of corners, bends and gradients without requiring abrupt changes in angle or expensive connections.

Hybrid Webwall®

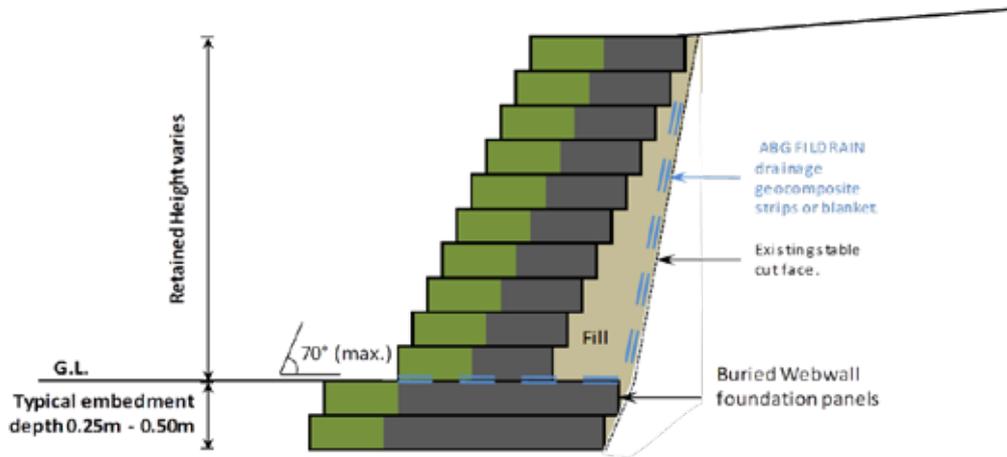


Description: A hybrid design incorporating a combination of both Reinforced Webwall® and Unreinforced Webwall®. Suitable where a geogrid cannot be installed due to the presence of a buried service.

Maximum Retained Height: Typically up to 6m at an angle of 70°.

Advantages: Allows the installation of buried services, drains or shallow foundations close to the crest of the Webwall® without interfering with the geogrid reinforcement and maintaining a uniform face to the wall.

Cutting Face Webwall®



Description: ABG Webwall® panels as fascia to cuttings.

Maximum Retained Height: Typically up to 5m. Greater heights can be achieved subject to site conditions.

Advantages: Cost effective and aesthetic solution, particularly useful for cut steep slopes.

Vegetated Webwall Examples





About ABG

ABG is a market leader in the design, development, manufacture and technical support of high performance geosynthetic systems for use in a wide range of civil engineering, environmental and sustainable building projects.

Formed in 1988, based in Meltham, in the heart of the Pennines, ABG have developed an excellent reputation for developing quality products and delivering outstanding service. The ability for rapid product development ensures that the most innovative, up to date and cost effective solution can be found for many engineering problems.

ABG's involvement in retaining walls goes back over 25 years and we have a complete range of products developed specifically for use in this technically demanding application.

Technical support is provided by our trained and experienced staff, many of whom are Chartered Civil Engineers. This extensive support extends to design, feasibility studies, cost advice and advice on meeting regulatory requirements.

ABG is active in developing and driving knowledge within our industry, including working with both international and local regulatory bodies on developing guidance and best practice in the use of innovative geosynthetics to solve complex engineering issues.

To discuss your project specific requirements contact:

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Associated Materials



Drainage of Earthworks

ABG Drainage Geocomposites for Earthworks

French drains and crushed stone drainage blankets are the traditional method of drainage for earthworks, but they can be extremely inefficient and costly when compared with modern alternatives such as Fildrain geocomposite. Fildrain comprises a cusped HDPE drainage core bonded to a filter geotextile and is available in strips or wide-width blankets.

As a cost effective alternative to French drains, Fildrain strips can be installed vertically in a narrow trench, or as a replacement to a stone blanket drainage, large rolls of Fildrain can be easily rolled out on site.

Excavated soil is re-used as backfill in both instances, reducing earthworks volume and wagon movements and yielding significant cost and carbon savings for the project.



Erosion Control on flood alleviation channel

ABG Erosamat & Erosawebs for erosion control of slopes

ABG has a complete range of products for erosion control of existing and newly formed steep slopes. Soil loss during heavy rain flow is a major concern for stability of the slope and the resulting silt pollution of local rivers. ABG will help select the appropriate solution, whether that is a light-weight or a heavy-duty biodegradable mat, a permanent erosion control mat or a geocell web which can provide veneer stability to the soil layers.



Geocell® sub-base stabilisation

Stabilisation of Haul Roads

Frequent trafficking by vehicles with heavy loads will result in ruts and constant regrading of the road. ABG has a range of solutions to stabilise the road, such that the minimum quantities of stone can be used that subsequently requires minimal maintenance. The solution could be based on a robust woven geotextile, a geogrid or a geocell web, whichever is the most economic and practical for each design situation.



Truckcell® porous paving system for HGV traffic

Porous Paving

Cellular porous paving systems have played a key role in managing flood risk for almost 30 years and infiltration control is recognised as an effective solution for sustainable drainage systems (SuDs). ABG offers a range of cellular porous paving systems to assist with flood control and ground-based attenuation. In addition to providing an aesthetically pleasing and cost effective solution, they also deliver a number of significant environmental benefits.



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