

Sports

An introduction to ABG's geosynthetic ranges for sports sector infrastructure

Sports Sector Infrastructure



Geosynthetics play a critical role in modern sports infrastructure by upgrading the durability, drainage and safety of playing surfaces. They are used in natural turf, artificial grass pitches, golf courses and access areas to enhance traditional soil and aggregate layers.

ABG manufacture high flow and easy to install sports pitch drainage systems that offer reduced depth build ups and save on the volume of crushed stone required.

ABG's permeable paving, ground reinforcement and vegetated slope systems are also available for sports facilities to provide car park construction, entrance roads, emergency access routes and landscaping.

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Synthetic Grass Sports Pitch Drainage System

Pozidrain offers many advantages over traditional pipe and gravel based systems. It is compatible with synthetic grass sport pitch surfaces and provides drainage, separation, reinforcement and capping - all-in-one product.



Eliminate lateral drains

Replace lateral crushed stone drainage trenches with a slim profile and easy to install drainage geocomposite layer.

To guarantee an effective playing surface, all artificial pitches should incorporate a drainage layer to collect and drain rainwater.

Using a geocomposite as a drainage layer offers many advantages over traditional stone drainage solutions:

- Pozidrain consists of a high performance single cuspated HDPE core with a geotextile filter thermally bonded on both sides to form an efficient drainage layer that offers an environmentally friendly alternative to traditional aggregate methods.
- Using Pozidrain eliminates the need for lateral drains entirely. This means no digging into the formation, not having to remove site spoil and negates the need to import drainage stone and geotextile.
- Pozidrain is manufactured in three formats for sports pitch drainage, including the ability to fully attenuate the pitch area to the depth of the drainage stone layer.

High drainage capacity

Pozidrain offers high drainage capacity that exceeds the flow performance of a 400mm layer of typical drainage stone. The Pozidrain filter fabric pore size is designed to prevent clogging and provide reliable long term performance.

Impermeable back

The core in Pozidrain is formed from impermeable HDPE which, when laid across the entire area, practically prevents water from percolating through to the sub-formation. This helps improve the CBR of the sub-formation for a more stable and consistent playing surface.

During installation, adjacent sheets of Pozidrain SKL are placed with the flat selvedge of the core overlapped and sealed with double sided Abseal butyl tape.

When used on contaminated land Pozidrain SKL provides a capping system to isolate the contamination below and provides a combined drainage sheet and impermeable membrane.

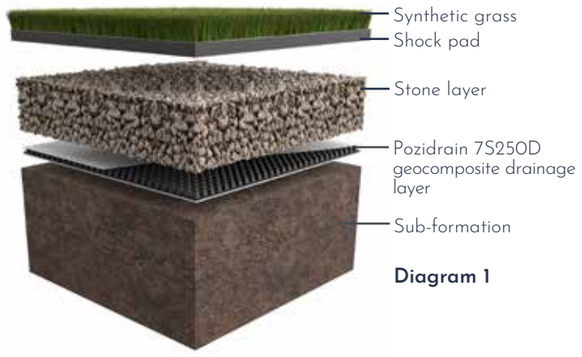


Diagram 1

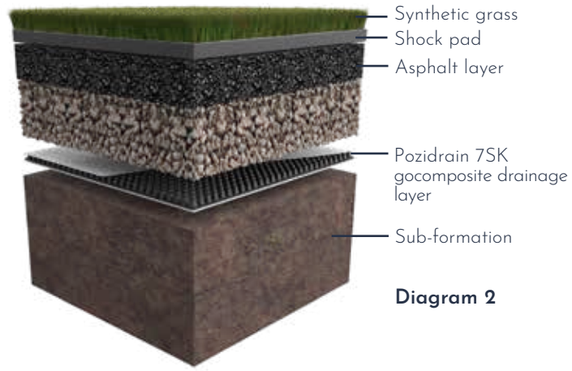


Diagram 2



Separation

Using Pozidrain provides separation between backfill material and sub-formation, or in case of contaminated land, between clean backfill and contaminated sub-formation.

Reinforcement

The tensile strength of Pozidrain provides reinforcement that can help control differential settlement across the playing surface. It also ensures that loading is spread evenly over the entire area, essential for achieving consistency in sports pitch surfaces.

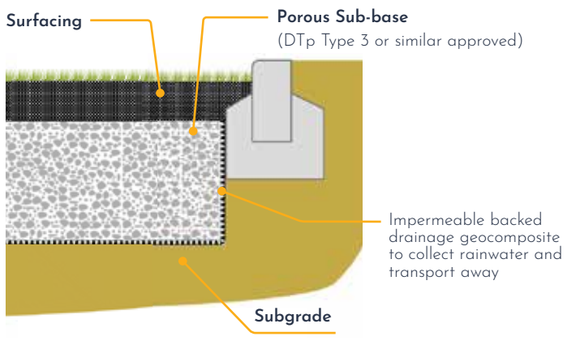
Rapid installation

Typically Pozidrain is supplied in large 4.4m x 100m rolls for rapid installation across large areas.

Pozidrain virtually eliminates the requirement for trench and pipe drainage systems, further accelerating the construction programme.

Attenuation Design

In addition to a pitch surface drainage layer, Pozidrain can also be installed to collect and drain rainwater as part of a SuDS attenuation design.



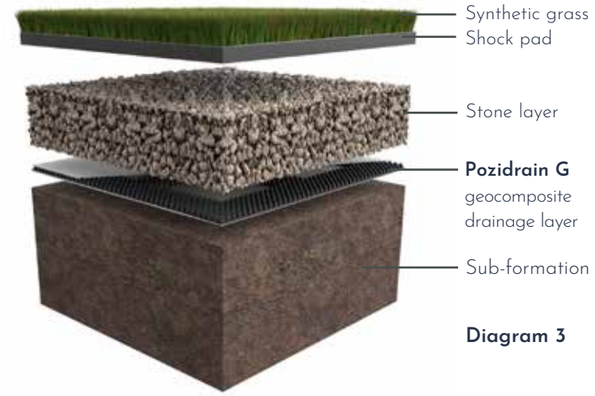


Diagram 3



Grass Sports Pitch Drainage

Turfdrain is a high performance drainage system that facilitates the rapid drainage of rainwater away from the playing surface.

It consists of a dimpled plastic core completely wrapped in a highly permeable geotextile filter fabric. It is specifically designed to replace traditional methods of creating drainage channels utilising perforated pipe and filter stone. The special outer textile wrap, with zero break through head, prevents the system from clogging.

Turfdrain is just 25mm wide and can be easily installed in trenches as narrow as 35mm wide. This results in less disturbance of the playing surface than encountered with laying pipes and gravel, and involves less materials to remove from the site. The slit trenches are backfilled with sharp sand and provide long-term drainage performance. The narrow trench installation technique means that the playing surface can be put back into use immediately after installation.

Turfdrain is suitable for use in all existing grass surfaces; including playing fields and amenity areas, football, rugby and cricket pitches, lawns and golf course fairways.

Technical support including design advice is available through the ABG in-house Design Team, many of whom are chartered engineers with broad drainage expertise.

Benefits of Turfdrain

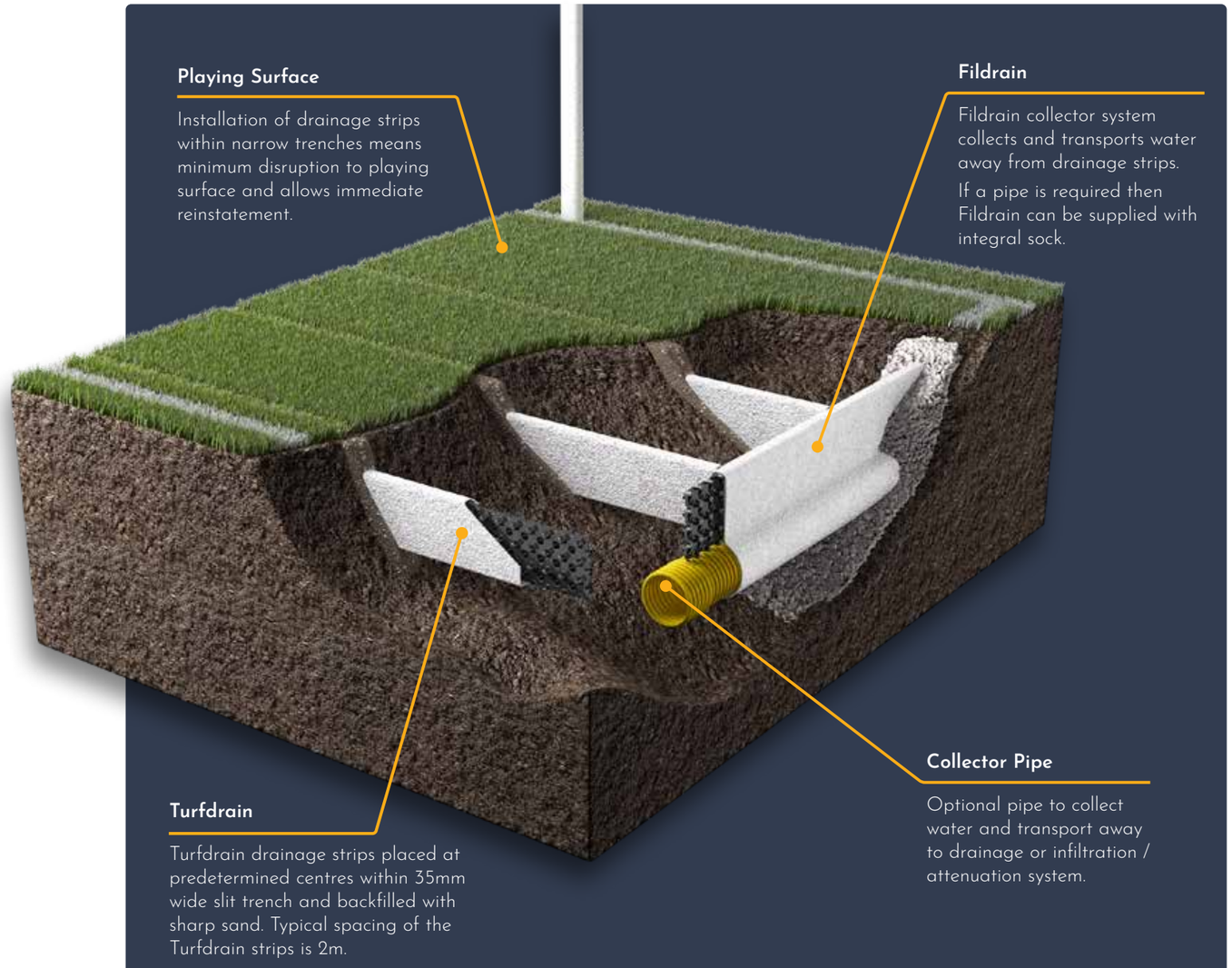
- Turfdrain is compact, lightweight and can be carried by hand; allowing installation in hard to access areas and minimising vehicle movements on the playing surface
- Using Turfdrain greatly reduces material movements both to and from site
- Playing surfaces can be put back into action almost as soon as installation is complete
- Turfdrain is quick and simple to install
- High crush strength means Turfdrain can be installed in shallow trenches, resulting in less disruption and less material to remove from site
- Turfdrain requires little or no gradient to perform effectively
- Offers a cost effective solution to the efficient drainage of sports pitches and other amenity areas.

SAPCA MEMBER

ABG are Manufacturer and Supplier members of Sports and Play Construction Association (SAPCA)



Turfdrain is installed into a narrow trench which is then backfilled with sand, allowing the playing area to be put back into action immediately.



Turfdrain Specification

		25SX125	25SX150	25SX300
Material • Core • Filter textile		Perforated Single Cuspate (HDPE) Needle-punched, nonwoven polypropylene (PP)		
Strip depth	mm	125	150	300
Pore size	µm	120	120	120
Breakthrough head	mm	0	0	0
Permeability (@50mm head)	$l/m^2 \cdot s$	115	115	115
In-plane water flow at 20 kPa confining pressure and HG = 1.0	$l/m \cdot s$	1.5	1.8	3.6
Crush strength	kPa	240	240	240

Data contained in this table is indicative only and should not be used for final design. Please contact ABG on 01484 852096 or by email on enquiries@abgltd.com to discuss your project specific requirements.

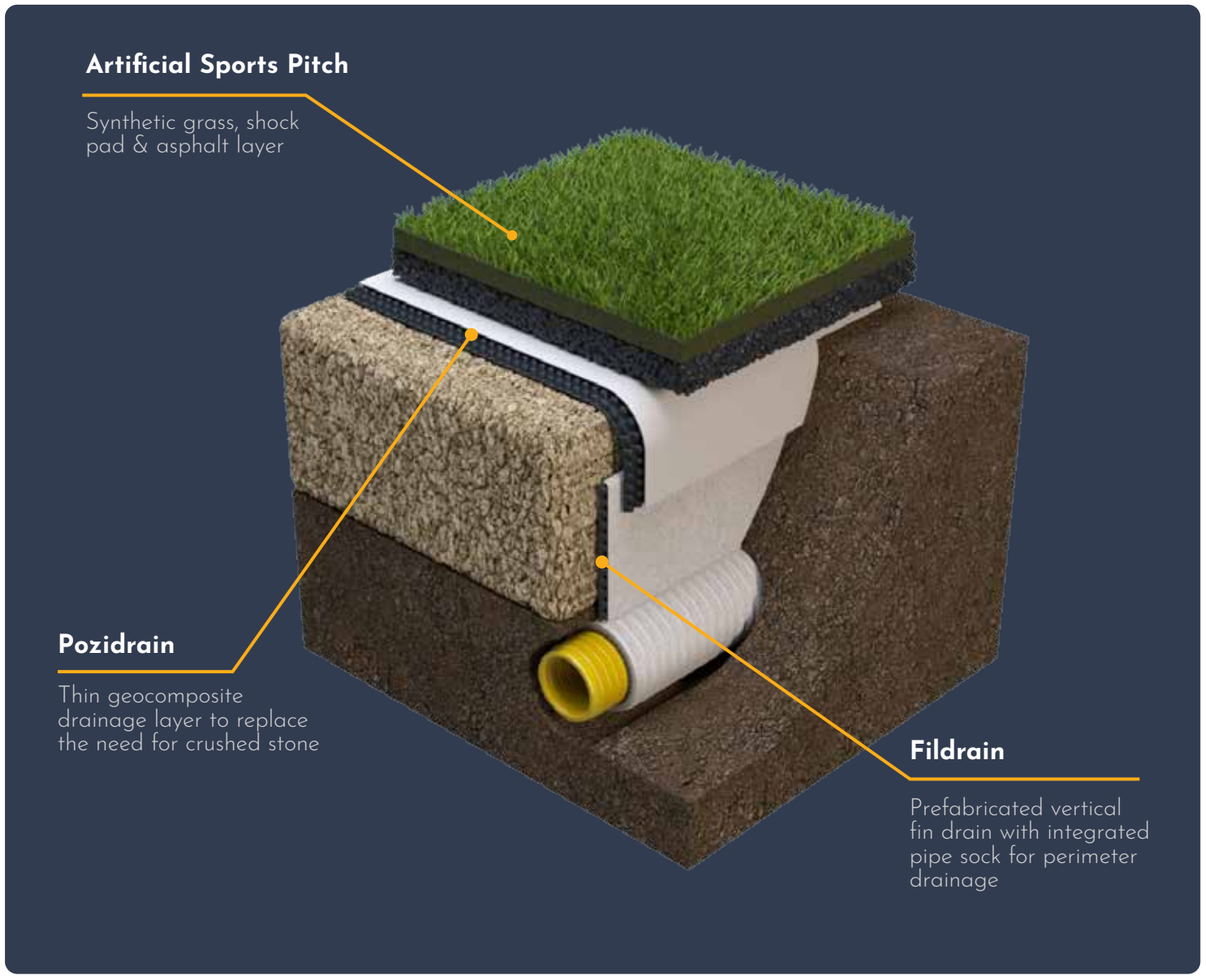
Perimeter drainage

Fildrain is a geocomposite drainage system designed to collect and channel water to a carrier pipe for transportation to a suitable discharge point. It is usually specified as a direct replacement to traditional crushed stone drainage design.

Fildrain geocomposite comprises a cuspated HDPE core which is wrapped in, and thermally bonded to, a nonwoven geotextile.

Fildrain has a flow capacity many times that of traditional crushed stone due to the unique open structure created by the dimpled core profile, allowing unhindered water flow.

Fildrain is used in every situation that crushed stone drainage can be used and also where stone drainage is impractical, such as vertically behind geomembrane liners.



Sports pitch stabilisation

Abgrid is a range of standard grade geogrids suitable for sports pitch stabilisation applications. It is manufactured from extruded polypropylene (PP) which is then punched and drawn to form a monolithic geogrid with strength in two directions (biaxial).

Key Features

- **Interlocking Apertures**

Openings (apertures) in the grid allow crushed stone, gravel, or rootzone soil to strike through, creating a tight mechanical interlock between the aggregate and the grid.

- **Lateral Restraint**

By confining the sub-base particles, the geogrid prevents lateral movement and rutting under dynamic athletic loads or maintenance equipment.

- **Enhanced Drainage**

They maintain a free-draining structural foundation that prevents waterlogging, puddles and mud during heavy winter rainfall.

Key Benefits

- **All-Weather Playability**

Reduces match cancellations and surface compaction by stabilising weak subgrades.

- **Reduced Aggregate Depth**

Increases bearing capacity to decrease the overall thickness of the required granular sub-base layers.

- **Erosion Control**

Prevents soil displacement and surface degradation on natural grass, hybrid systems and surrounding embankments.



The quality of the all-weather sports pitch subbase is very important to achieving a level playing field and keeping surface irregularities within set tolerances.

A geogrid stabilised subbase with a geocomposite drainage layer provides a high performance system for maintaining a flat and safe field and minimising pitch irregulaties.

ABG's Design Team will assess the current CBR values of the pitch area, and advise on the appropriate Abgrid and Pozidrain layers to deliver a quality sports pitch construction and playing surface.

ABGRID

Access Routes and laydown areas

Our geogrid range and design service is available for ground stabilisation, aggregate reduction, load transfer and laydown area applications.

The combination of ribs and corresponding nodes allows loads to be transferred through the geogrid structure, whilst allowing a positive interlock through the apertures of the reinforced materials.

The Abgrid range offers high tensile stiffness at low strains, combined with excellent resistance to construction damage and environmental exposure.

Abgrid is both quick and simple to install and facilitates a reduction in the required fill thickness, offering savings in material movements around the site. Using Abgrid also improves the resistance to surface rutting which offers long-term maintenance savings.

Note: When using a geogrid on a subgrade with a CBR of less than 3%, we recommend including a separation geotextile to prevent fines migration and to improve the system performance.



Crushed Stone

Well graded crushed stone. Exact specification will depend on project requirements and local availability.

Abgrid

Abgrid geogrid laid horizontally within stone layers to provide reinforcement. Specific grade requirements can be advised by ABG Design Team.

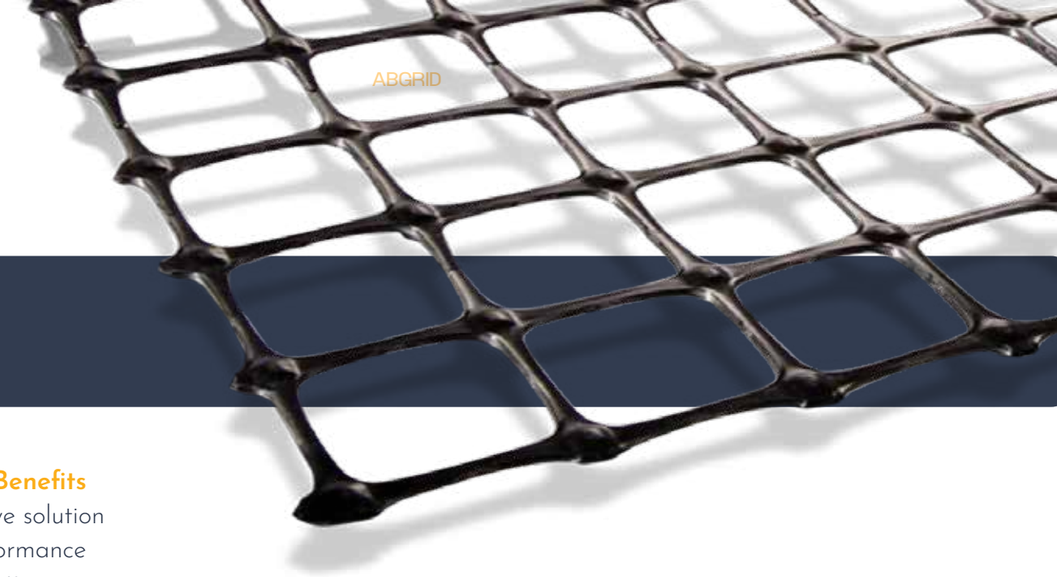
Terrex NW

Positioned to prevent fines migration on subgrades with a CBR of less than 3%.

Prepared Subgrade

Sub-base prepared in accordance with engineers requirements and installation guide.

ABGRID



Features and Benefits

- Cost effective solution
- Proven performance
- Easy installation
- Robust
- Quality assured

Typical Applications

- Sports pitch access routes
- Unpaved roads and carparks
- Forestry roads
- Temporary works
- Piling platforms
- Shallow reinforced slopes



Property	Unit	20/20	30/30	40/40
Colour		Black	Black	Black
Aperture size	mm	39 x 39	40 x 41	38 x 38
Tensile Strength MD/CD	kN/m	20	30	40
Force at 2% Elongation MD/CD	kN/m	7	11	14
Force at 5% Elongation MD/CD	kN/m	15	21	28
Roll Dimension	m	3.95 x 50	3.95 x 50	3.95 x 50

Please contact ABG on 01484 852096 or by email at enquiries@abgltd.com to discuss your requirements. Data is for indication only. Full datasheet containing test data, methods and tolerances is available on request.

Terrex Nonwoven Geotextile

The Terrex range consists of needle-punched and heat-treated nonwoven geotextiles designed to offer optimum performance per unit weight in a wide range of applications. The range comprises three different grades of geotextiles suitable for separation, reinforcement and protection applications.

The mechanical and hydraulic properties of Terrex geotextiles make them the ideal choice for straight-forward separation and filtration applications.



Terrex SNW offers high performance needle punched polypropylene geotextiles that have been developed to offer outstanding performance at minimum weight. When compared to other needle punched geotextiles of similar weight the SNW shows superior puncture resistance.

Terrex NW / SNW Features & Benefits

- Uniform tensile strength in all directions
- Range of CBR puncture strengths
- Excellent water flow normal to the plane
- Consistent pore opening size
- Reduces fill materials

Applications

- Separator under sports pitches
- Separation and strengthening under access roads
- Filter medium in french drains





Gridtex Woven Geotextile

Gridtex is a high performance reinforcement geotextile engineered for strengthening a wide range of soils. It is capable of fulfilling many of the functions of a geogrid, whilst at the same time offering all the benefits of a woven geotextile. Gridtex has an extremely high surface friction that interacts fully with adjacent aggregate materials without the necessity for the interlock required with a geogrid.

Reinforcing the aggregate layers allows the use of a thinner construction depth, offering cost savings on the project as well as reducing the environmental impact. Gridtex has equivalent capacity at low strain to geogrid products with similar strength grading, however, the increased ultimate tensile strength provides additional security to the construction.

Gridtex is particularly advantageous in construction over soft or fine grained subsoils where it can provide both reinforcement and separation. Gridtex provides cost effective tensile reinforcement for base courses, where the wide roll width is particularly useful for the construction of wide access roads.

Crushed Stone

Well graded crushed stone. Exact specification will depend on project requirements and local availability.

Gridtex

Gridtex laid directly on prepared sub-grade and beneath the required cover material is a function of sub-grade conditions and stone grade. ABG Design Department can advise on suitable grade.



Sub-grade

Prepared in accordance with engineers requirements and installation guide.



Truckcell Plus

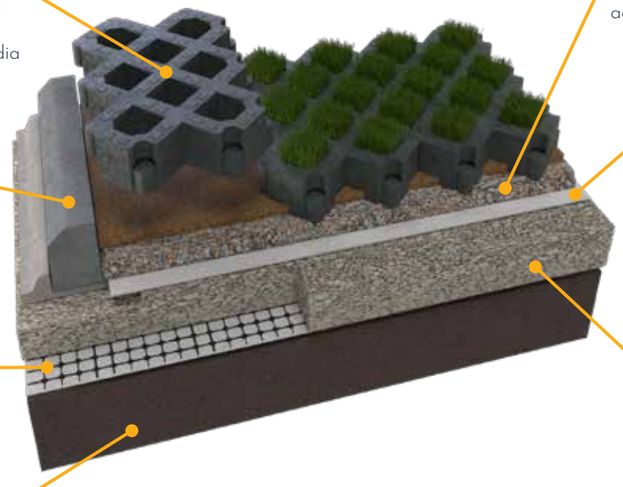
Truckcell™ Plus is a heavy-duty cellular paving system designed for intensive usage and high load traffic applications. Manufactured from recycled and recyclable polymeric waste material, the cells can either be filled with topsoil and seeded, or filled with gravel to provide a robust structural surface.

Why Truckcell™ Plus

- Suitable for HGV / SLW 60 vehicles (up to 60 tonne gross weight and 10 tonne wheel loads)
- Offers significant cost advantages over precast and in-situ concrete systems
- A range of gravel & grass infill options to suit aesthetic requirements
- Lightweight and easy to install – complies with HSE manual handling limit
- High void area and insulating properties to encourage healthy grass growth

Applications

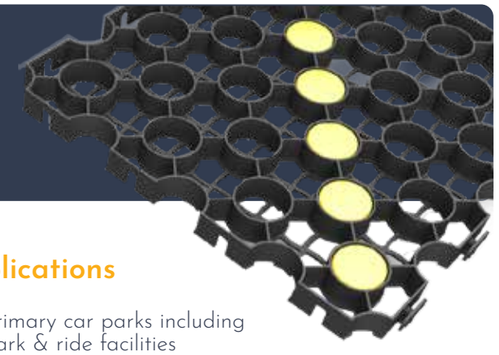
- Truckstops & general HGV parking areas
- Emergency access routes
- Verge reinforcement
- Highway widening
- Service yards
- Coach parks and bus routes



Surface water (SuDS) infiltration option shown, but attenuation and containment options are also suitable. Sub-base depth may be reduced by use of ABG Abweb. Graphic for illustration purposes only. Refer to ABG Design Guidance Notes for detailed design information or contact ABG Ltd.

Sudspave

Sudspave is a system of interlocking cellular plastic paving units designed for the stabilisation of trafficked grass or gravel surfaces. Suitable applications include car parks, emergency and maintenance vehicle access roads, cycle paths and pedestrian areas.

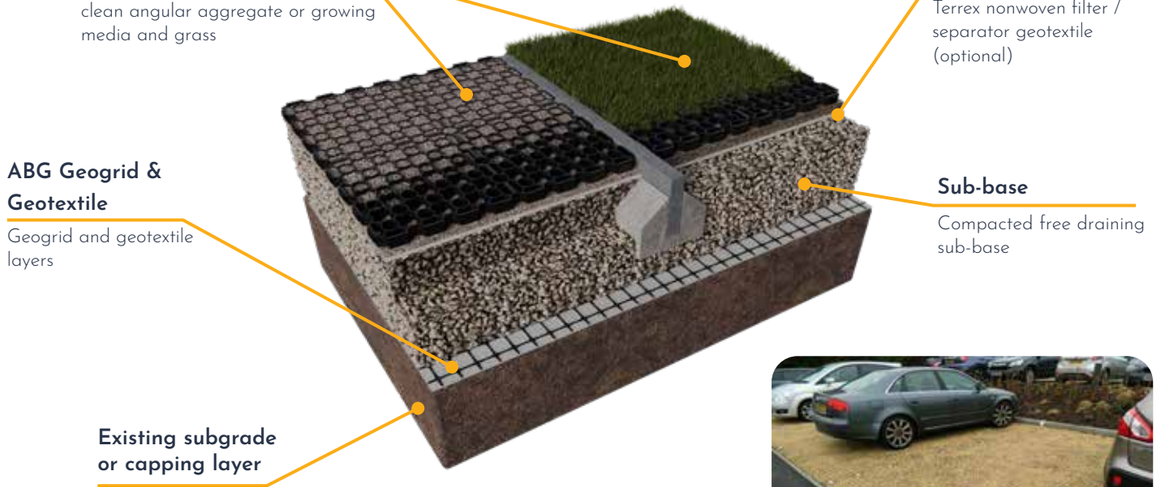


Why Sudspave™

- Sudspave® is a cellular porous paving system designed to create a range of natural reinforced gravel and grass surface options to suit project loadings - from pedestrian up to occasional HGV traffic.
- Sudspave® provides a structural and hydraulic design for the overall pavement structure, leading to reduced construction depths and installation times.
- Sudspave® is manufactured from a unique combination of LDPE / HDPE material, providing flexibility to accommodate a wide range of climatic conditions and for long-term freeze thaw durability.
- Sudspave® is supplied in pre-connected 1m² panels to facilitate ease of installation and rapid project completion. Pinning of the system is not generally required.

Applications

- Primary car parks including park & ride facilities
- Overflow / overspill car parks
- Event parking
- Pedestrian & cycle paths
- Golf course buggy routes
- Equestrian facilities
- Infiltration trenches
- Laybys





Attenuation ponds & swales

Erosion control products are suitable for surface protection and protecting the structural stability of soils in attenuation pond construction. Included in the range are biodegradable and non-biodegradable erosion mats and three dimensional geocells used for retaining soils on embankments:

- Comprehensive product range of environmentally friendly erosion control materials, including biodegradable as well as permanent turf reinforcement mats.
- Erosion control mats are designed to provide surface protection from the damaging effects of wind and rain, and enhance the structural stability of newly cut slopes.
- Geocellular options available to protect the structural stability of soils, retaining earth onto slopes and promoting the growth of vegetation, whilst also allowing the free passage of water.

Typical applications:

- Erosion Protection
- Surface Control
- Soil Retention Systems
- Steep Slope Construction



Erosaweb® geocell is designed for the reinforcement of weak soils and has many applications, including the retention of soil onto steep embankments. The cells of the geocell retain the fill material whilst still permitting water to drain through.



Erosamat Types 1 and 2 products are a range of biodegradable and intermediate life-span turf reinforcement matting options. The jute and coir materials provide a dense mesh of fibres to absorb the impact of rainfall and reduce run-off velocity. The matting protects the soil until the vegetation has germinated and a root system has established.

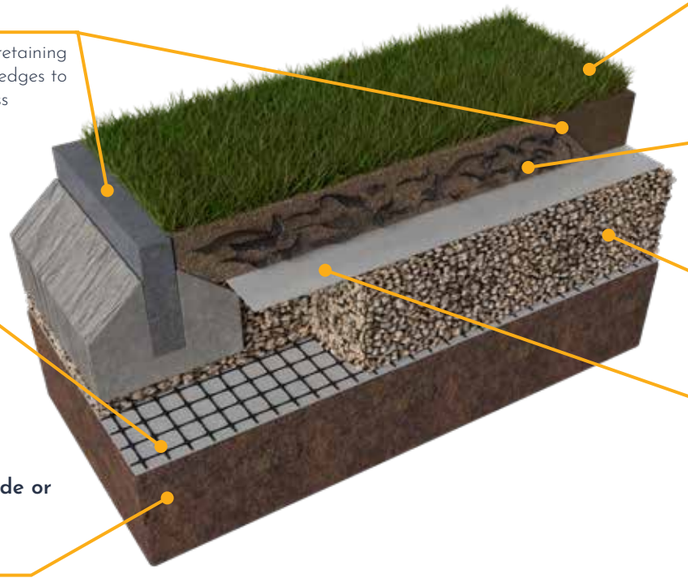


Erosamat Type 3 is a range of permanent turf reinforcement matting products for the protection of grass roots as they establish onto steep slopes and for specification in high flow velocity conditions. The sheet is made up of a thermally bonded matrix of polypropylene fibres that create a tough, flexible and long lasting erosion control mat.



Advanced Turf

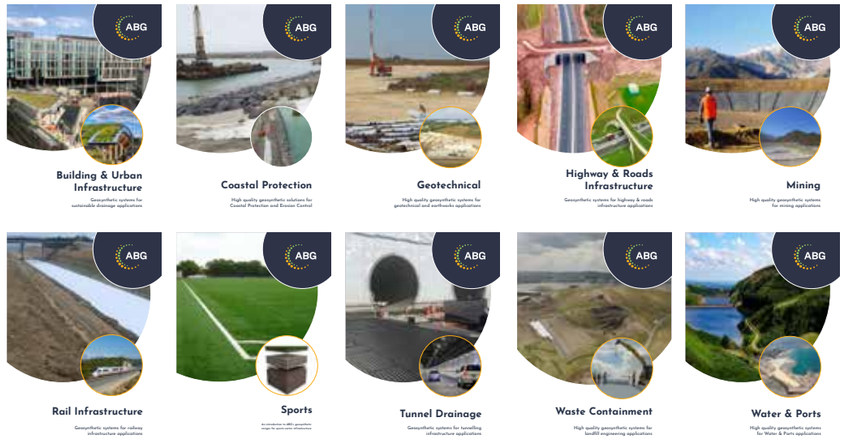
Advanced Turf® is a patented rootzone reinforcement system that brings unrivalled resilience, durability and health to natural grass access routes. It provides an aesthetic, SuDS compliant and free-draining surface capable of sustaining occasional heavy vehicle loadings.





Market Sectors & Design Solutions

Our Design department has many years' experience in sports pitch drainage and stabilising playing surface subgrades, unpaved roads and car parks over very weak CBR subgrades. We are able to offer cost-benefit advice on which solution is best suited to your project, utilising one – or a combination of – geocomposites, geogrids, geocells and geotextiles that deliver a lower carbon footprint.



Our Market Sectors





A range of project assessment forms are now also available to complete on our website to assist with your project design @ **abg-geosynthetics.com/design-solutions**



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