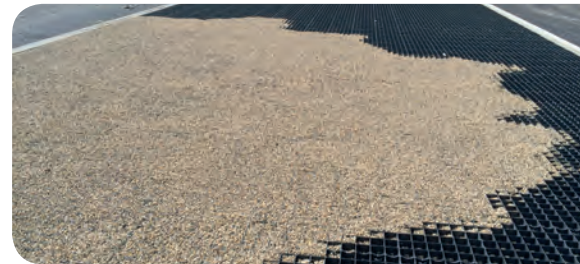
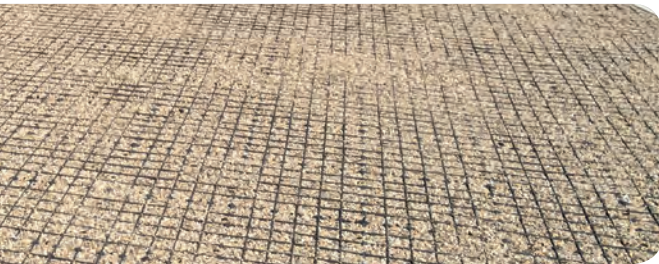


Plastic Permeable Paving



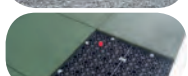
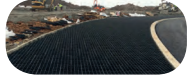
Product Range

Plastic Permeable Paving

Product Range



Introduction	Page 3
FlowBlock	4 - 5
SlimBlock	6 - 7
GS Pro	8 - 9
Gravel Pro	10 - 11
InfraWeb Cellular Confinement System	12
Sustainable Drainage	13
Rubber Paving Tiles	14
Synthetic Grass Paving Tiles	15
Installation and Maintenance	16
Case Study - Whitby Park & Ride	17
Design Service and Installation Support	18
Other Products	19











Introduction

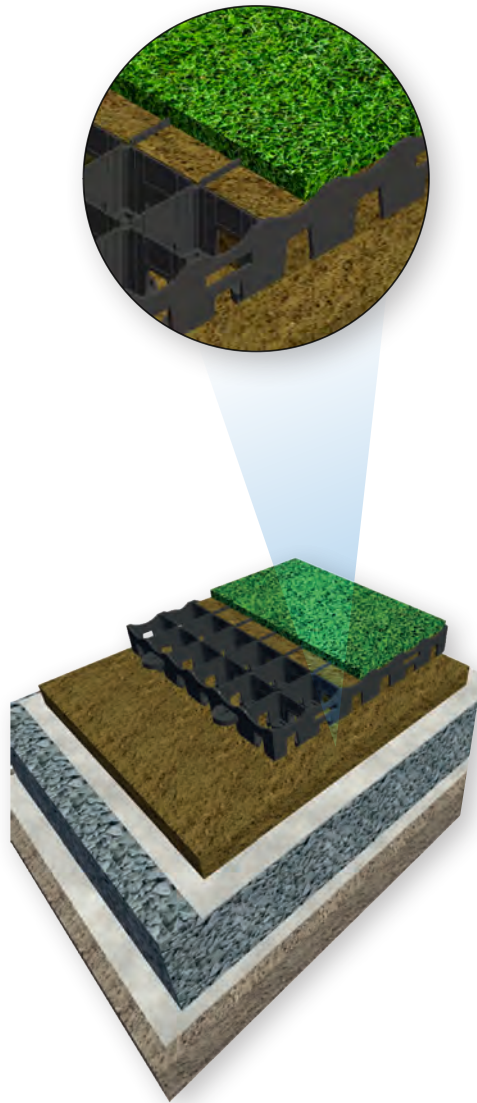
Infra Green offer plastic permeable paving systems to cover a wide range of applications from simple footpaths and temporary car parking to fully engineered grass and gravel paving systems for heavy goods vehicle parking areas.

The benefits of Infra Green's paving systems include:

- High strength units
- High percentage of open cell area for infill
- Mechanical Interlock
- Demarcation blocks available
- Recycled and Recyclable
- Range of colours available
- Quick simple installation
- Prevention of ground erosion
- High water infiltration
- SuDS Compliant

Product Selector

Product	Applications							
	 Footpath	 Driveway	 Play Areas	 Car Parking	 HGV Parking	 Gravel Paving	 Grass Paving	 SUDS
FlowBack	✓	✓	✗	✓	✓	✓	✓	✓
SlimBlock	✓	✓	✗	✓	✗	✓	✓	✓
GS Pro	✓	✓	✗	✓	✗	✓	✓	✓
Gravel Pro	✓	✓	✗	✓	✗	✓	✗	✓
Rubber Paving Tiles	✓	✗	✗	✗	✗	✗	✗	✓
Synthetic Turf Paving Tiles	✓	✗	✓	✗	✗	✗	✗	✗



FlowBlock

FlowBlock is a high strength, modular permeable paving and grass protection system. The 500mm x 500mm units are manufactured 75mm thick for heavy duty applications such as HGV access and intensively trafficked areas. The system can be infilled with grass or gravel depending upon the aesthetic requirements of the site.

Applications

- Footpaths and Cycleways
- Bridleways
- Driveways
- Caravan hardstanding
- Emergency access roads
- Verge reinforcement
- General maintenance access
- Helipads
- HGV parking
- Sustainable Drainage Systems (SuDS)

Technical Specifications

Product:	FlowBlock
Material:	Recycled HDPE/LDPE
Unit Size:	500 x 500 x 75mm (+2/-2%)
Wall Thickness:	5mm
Unit Weight:	2.3 Kg per unit
Open Area:	> 86%
Colour:	Black or Green
Interlock System:	Mechanical with Fixing Pin
Tensile Connection:	Min. 3kN/m
Accessories:	Fixing Pins
Pallet Size:	60 units (approx. 15m ²)

Paving Finishes

Grass Infill

The FlowBlock system is ideal for use with a grass finish. Typically a 60/40 rootzone mix is placed in the units and seeded with the appropriate mix according to the application.

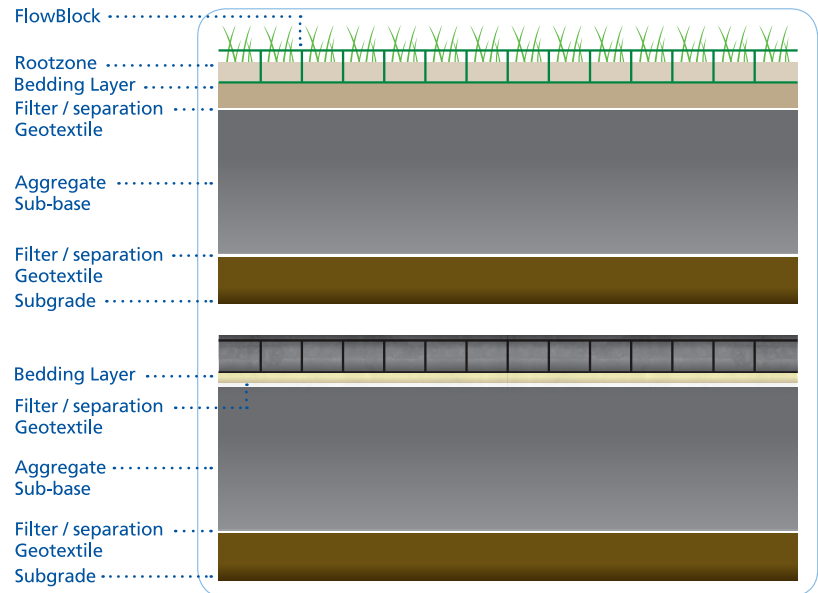
This system should not be trafficked for 4 to 6 weeks to allow germination of the grass seed. Alternatively a rootzone mix can be placed in the units and turf rolled into the filled units.

Gravel Infill

Where a harder wearing surface is required, a gravel infill is an ideal and attractive alternative to grass. The FlowBlock is available in two colours, Black or Green.

Note: The FlowBlock system can be installed on an open graded aggregate or MOT type 1 sub-base layer depending upon the site specific hydraulic / drainage and structural design requirements.

Typical Installation Detail



Product and site specific installation method statements available upon request via civils@polypipe.com



SlimBlock

SlimBlock is a high strength modular paving system manufactured from recycled plastic. The 500mm x 500mm units can be infilled with grass or with gravel depending upon the aesthetic requirements of the site.

Applications

- Footpaths and Cycleways
- Bridleways
- Driveways
- Caravan hardstanding
- Emergency access roads
- Verge reinforcement
- General maintenance access
- Helipads
- Drainage channels
- Sustainable Drainage Systems (SuDS)

Technical Specifications

Product:	SlimBlock
Material:	Recycled HDPE/LDPE
Unit Size:	500 x 500 x 75mm (+2/-2%)
Wall Thickness:	3mm
Unit Weight:	1.6 Kg per unit
Open Area:	> 86%
Colour:	Black or Green
Interlock System:	Mechanical with Fixing Pin
Tensile Connection:	Min. 3kN/m
Accessories:	Fixing Pins
Pallet Size:	92 units (approx. 23m ²)

Paving Finishes

Grass Infill

The SlimBlock systems are ideal for use with a grass finish. Typically a 60/40 rootzone mix is placed in the units and seeded with the appropriate mix according to the application.

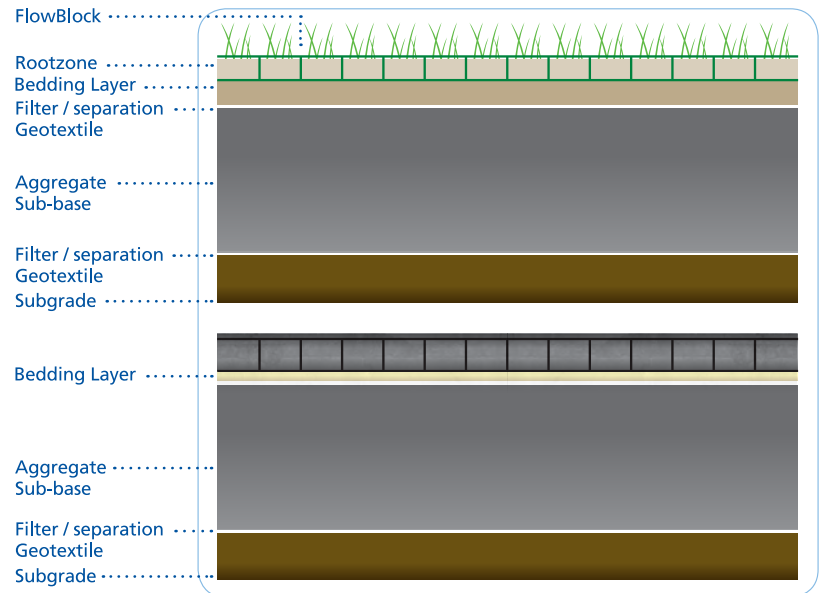
This system should not be trafficked for 4 to 6 weeks to allow germination of the grass seed. Alternatively a rootzone mix can be placed in the units and turf rolled into the filled units.

Gravel Infill

The SlimBlock can be filled with gravel to create an attractive, hard wearing surface. The SlimBlock is available in two colours, Black or Green.

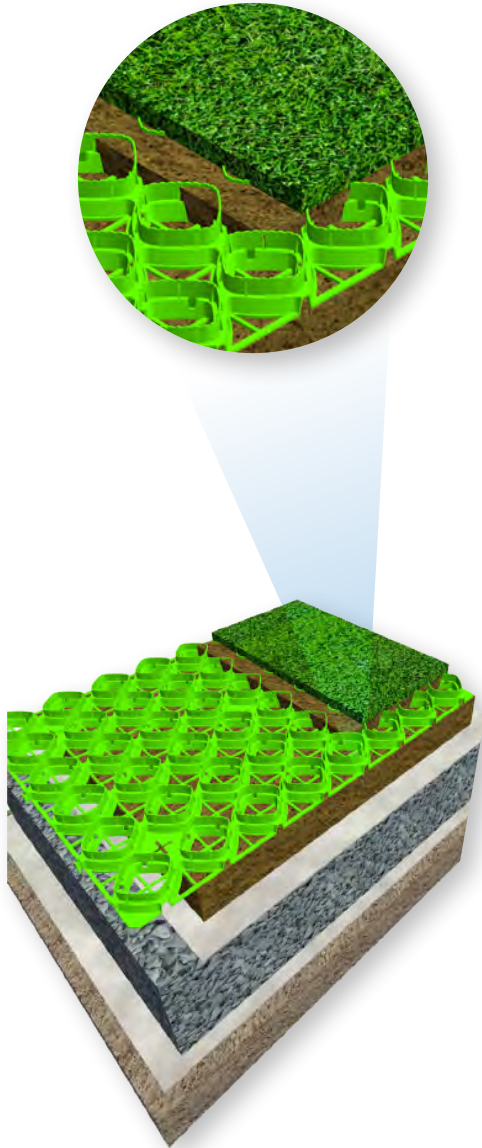
Note: The SlimBlock system can be installed on an open graded aggregate or MOT type 1 sub-base layer depending upon the site specific hydraulic / drainage and structural design requirements.

Typical Installation Detail



Product and site specific installation method statements available upon request via civils@polypipe.com





GS Pro

GS Pro Panels are manufactured from high-quality polypropylene. The GS Pro has double cell walls, to provide extra strength, and also has a unique panel connection system which limits both horizontal and vertical expansion, making the GS Pro easy and efficient to install.

Applications

- Footpaths and Cycleways
- Bridleways
- Driveways
- Caravan hardstanding
- Emergency access roads
- Verge reinforcement
- General maintenance access
- Helipads
- Drainage channels
- Sustainable Drainage Systems (SuDS)

Technical Specifications

Product:	GS Pro
Material:	Polypropylene
Unit Size:	600 x 800 x 35mm (0.48m ²)
Wall Thickness:	-
Unit Weight:	1.55 Kg per unit
Open Area:	> 94%
Colour:	Black or Green (Other colours available on special order)
Interlock System:	Panel connection system integral to paver
Tensile Connection:	-
Accessories:	Democration blocks and gorund pegs
Pallet Size:	1000 units (approx. 48m ²)

Paving Finishes

Grass applications

The GS Pro can be installed with a grass finish. Typically a 60/40 rootzone mix is placed in the units and seeded with the appropriate mix according to the application.

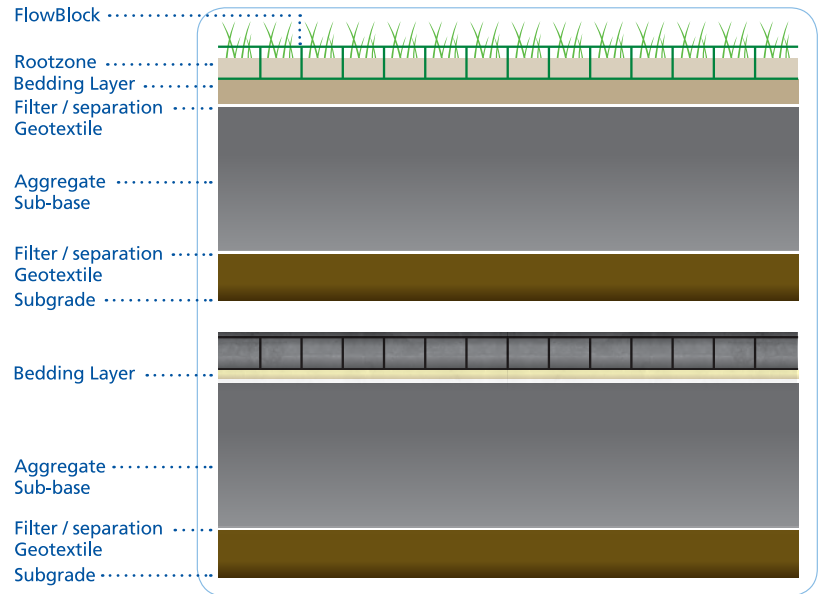
This system should not be trafficked for 4 to 6 weeks to allow germination of the grass seed.

Gravel applications

The GS Pro can be filled with gravel to create an attractive, hard wearing surface.

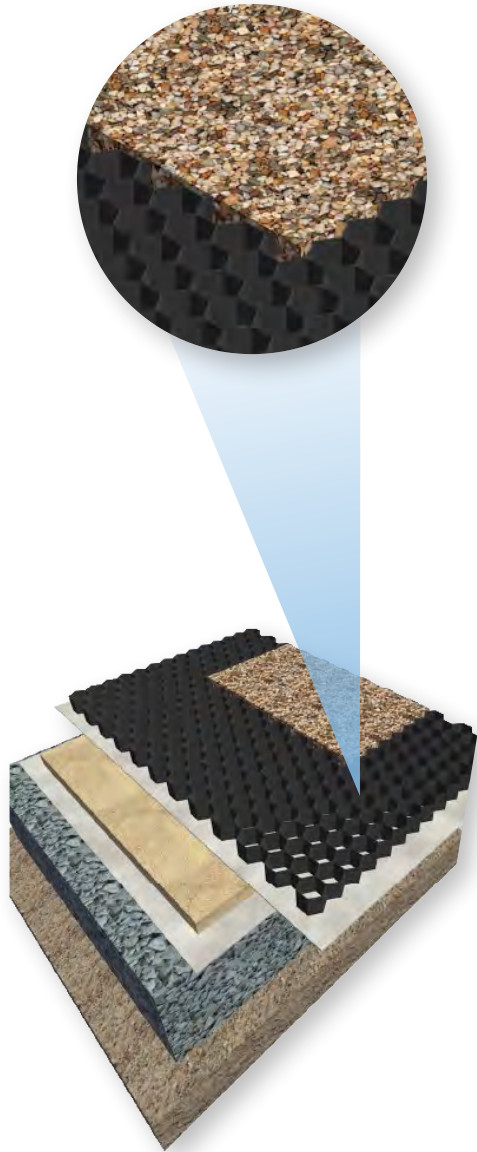
Note: The GS Pro system can be installed on an open graded aggregate or MOT type 1 sub-base layer depending upon the site specific hydraulic / drainage and structural design requirements.

Typical Installation Detail



Product and site specific installation method statements available upon request via civils@polypipe.com





Gravel Pro

The **Gravel Pro** is 40mm deep and manufactured using an injection moulding technique and grains of virgin polypropylene. The hexagonal shape of the product combines to form a strong cell and ultrasound welding ensures extreme internal strength, especially in the horizontal direction. A geotextile attached to the underside of the Gravel Pro sheet removes the need to separately lay a geotextile fleece under the plates before filling.

Applications

- Footpaths and Cycleways
- Bridleways
- Driveways
- Caravan hardstanding
- Verge reinforcement
- General maintenance access
- Drainage channels
- Sustainable Drainage Systems (SuDS)

Technical Specifications

Product:	Gravel Pro
Material:	Polypropylene
Unit Size:	2400 x 1200 x 40mm (2.88m ²)
Wall Thickness:	1.5
Unit Weight:	6.7 Kg per unit
Open Area:	> 90%
Colour:	White or Black (Other colours available on special order)
Interlock System:	-
Tensile Connection:	-
Accessories:	-
Pallet Size:	50 units (approx. 144m ²)

Paving Finishes

Gravel applications

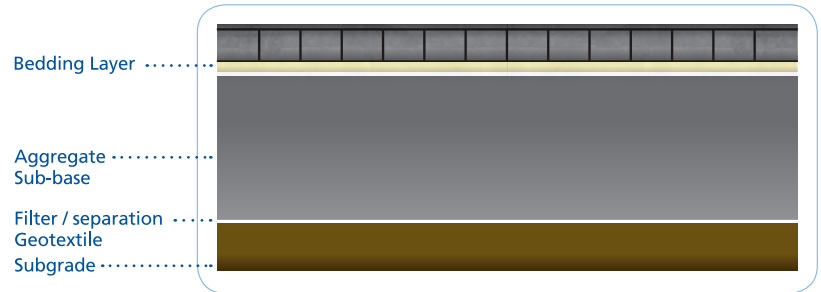
Gravel Pro is easy to install and the Gravel Pro sheets can be cut to fit any shape required.

The Gravel Pro must be infilled with aggregate, it is not suitable for applications where a grass finish is required. It is recommended that a sand layer is placed underneath the Gravel Pro sheet to ensure that the sheets can be laid level.

To finish off the installation of Gravel Pro, it is suggested that you leave a layer of aggregate 10 – 20mm above the level of the cell wall.
10m² of Gravel Pro will require approximately 1000Kg of gravel.

Note: The Gravel Pro system can be installed on an open graded aggregate or MOT type 1 sub-base layer depending upon the site specific hydraulic / drainage and structural design requirements.

Typical Installation Detail



Product and site specific installation method statements available upon request via civils@polypipe.com



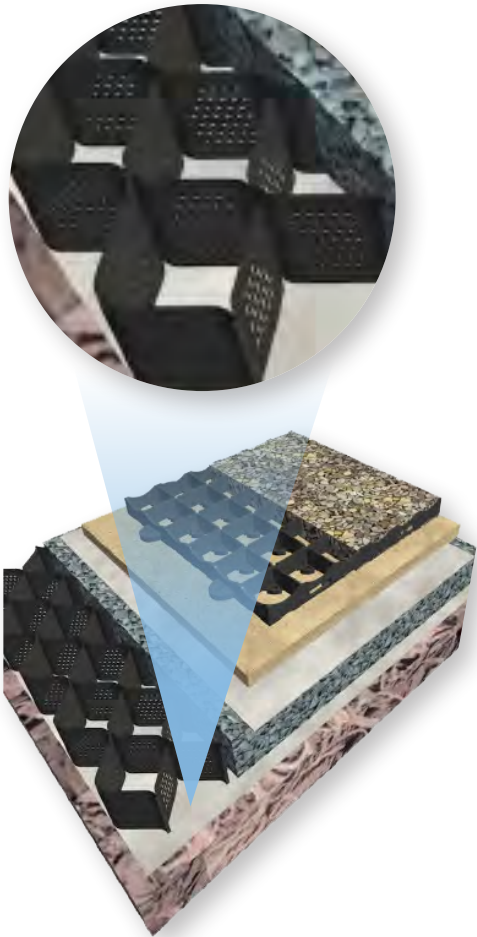
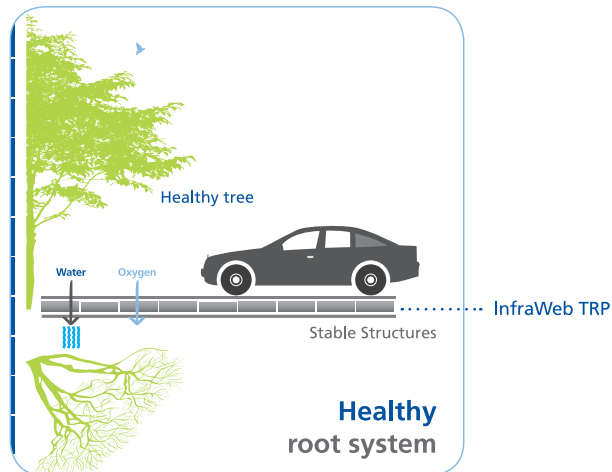
Gravel Pro Cellular Confinement System

For Soft Ground Conditions &
Heavy Duty Applications

When building on soft ground or where heavy loadings are expected, an InfraWeb cellular confinement system can be introduced to improve the sub-base strength whilst keeping excavation and overall construction depths to a minimum.

The InfraWeb system is also used for **Tree Root Protection** around existing trees on development sites. The system is available in five depths 50mm, 75mm, 100mm, 150mm and 200mm.

- No dig solution
- Reduces compaction of subsoil around tree roots
- Dissipates vertical loads
- Reduces sub-base thickness
- Allows clean angular stone to be used within the cells
- Allows air and moisture transfer



Sustainable Drainage Soakaway / Infiltration Systems

Infra Green's range of plastic paving products can be used to create the ideal porous paving system. The system is placed on a free draining sub-base and is lined with a geotextile for infiltration applications. The flow rate through the system is approx 40,000mm per hour.

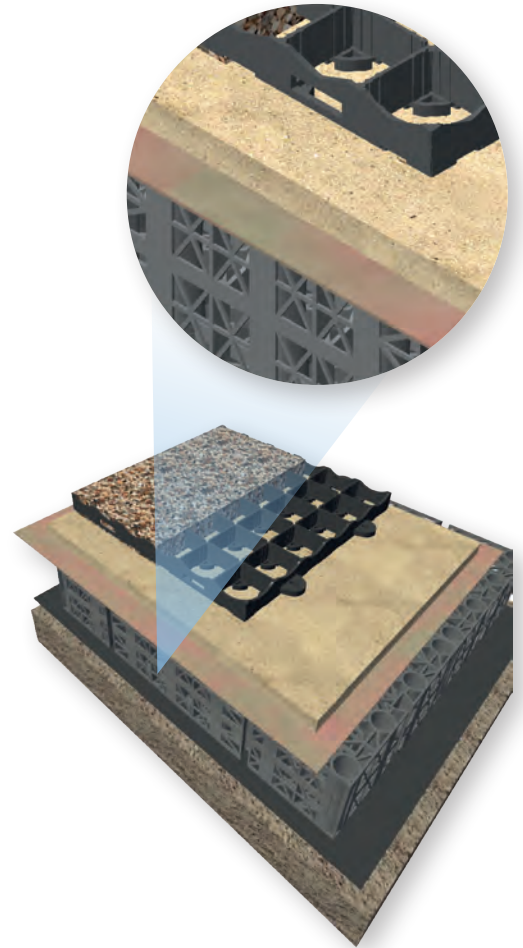
Water quality can be improved as water filters down through the aggregate layers and by the use of specialist geotextile filters such as Permafilter Geotextile. Permafilter Geotextile has been specially designed to retain hydrocarbon pollutants.

Permafilter Geotextile comprises non-woven, needle punched geotextile made from a proprietary blend of modified polyester fibres. The textile has a weight of 300g/m².

The entrapped pollutants are either removed or reduced to levels suitable for discharge into controlled waters.

Water Storage / Attenuation Systems

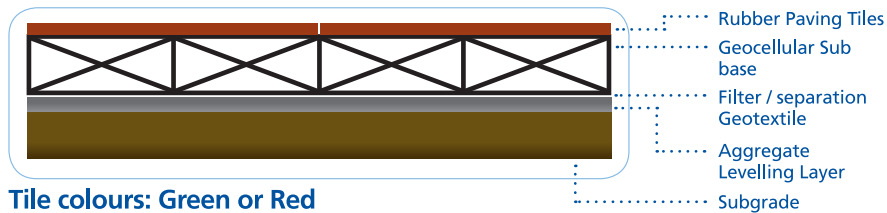
Infra Green's plastic paving products can be used in conjunction with Permavoid, a high strength sub-base replacement system that locks together and sits within the pavement construction acting as a sub-base and providing shallow, stormwater attenuation.



Rubber Paving Tiles

Infra Green's porous rubber tile paving system is a high performance surfacing and water storage layer in a single product. The tiles are a composite product combining a permeable rubber surfacing and a geocellular sub-base layer.

Typical Installation Detail

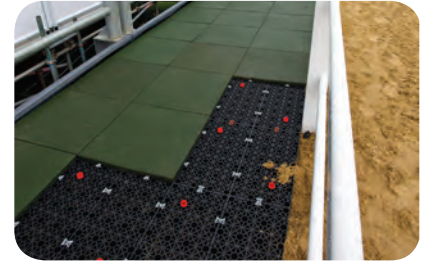


Features & Benefits

- Excellent drainage characteristics
- Water Storage:
 - 85mm thick sub-base provides 81 litres of water storage per m²
 - 150mm thick sub-base provides 142 litres of water storage per m²
- Extremely strong and can be trafficked and used for car parking
- 100% recycled product
- Lightweight sub-base reduces the need for imported aggregate
- Rapid installation
- Modular, to fit any design layout
- Reusable - easy to take apart, clean and re-use.
- Ideal for temporary installations

Applications

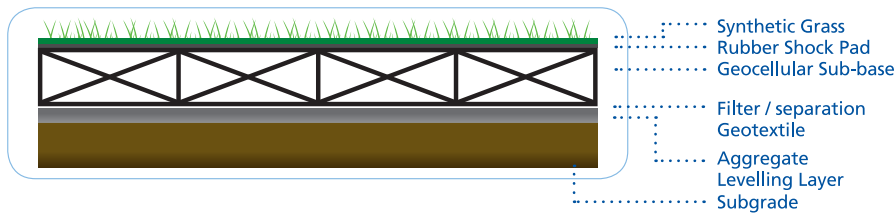
- Footpath and Cycleways
- Play Areas
- Balcony Flooring/Drainage
- Temporary Event Flooring
- Car Parking
- Rainwater Re-use



Synthetic Grass Paving Tiles

Infra Green's synthetic grass paving tiles are a high performance surfacing and water storage layer in a single product. The tiles are a composite product combining a synthetic turf surfacing and a geocellular sub-base layer.

Typical Installation Detail



Features & Benefits

- Excellent drainage characteristics
- Water Storage:
 - 85mm thick sub-base provides 81 litres of water storage per m²
 - 150mm thick sub-base provides 142 litres of water storage per m²
- Extremely strong and can be trafficked and used for car parking
- 100% recycled product
- Lightweight sub-base reduces the need for imported aggregate
- Rapid installation
- Modular, to fit any design layout
- Reusable - easy to take apart, clean and re-use. Ideal for temporary installations

Applications

- Footpath and Cycleways
- Play Areas
- Balcony Flooring/Drainage
- Temporary Event Flooring
- Rainwater Re-use



Installation and Maintenance

General installation guidance for plastic paving

Sub-base - A suitable sub-base should be designed to accommodate the expected loadings. Existing ground conditions should be taken into account prior to designing the sub-base. An open graded aggregate or Type 1 sub-base is acceptable depending on ground conditions and final application. Typically a 200mm deep open graded aggregate or a 150mm deep Type 1 sub-base is placed in accordance with the Specification for Highways Works. If the site conditions dictate, the introduction of an InfraWeb cellular confinement system can be used to reduce the sub-base thickness.

Bedding / levelling layer for Grass infilled paving - To maintain grass growth in the paving cells a 30-50mm bedding layer of rootzone 60/40 mix is required and ideally the total thickness of the rootzone should be 100mm.

Bedding / levelling layer for Gravel infilled paving - A 20mm to 30mm deep 5mm single sized grit or sharp sand bedding/levelling layer should be used beneath the plastic paving units.

Infill for Grass Applications - For a grass finish a rootzone mix and grass seed are placed within the units. Alternatively a rootzone mix can be placed in the units and turf rolled into the filled units.

Infill for Gravel Applications - Typically a 10mm to 14mm angular aggregate is used as infill. The colour of the aggregate infill is to suit client's requirements. To finish off the installation it is suggested that a 10 – 20mm thick layer of aggregate is left above the level of the cell wall.

For detailed, product and project specific installation instructions please contact our technical department on 01509 615100 or email, civils@polypipe.com. Infra Green provide guidelines for installation with every product order.

Allowing for expansion - It is important to allow for expansion of the plastic paving cells and create extra space when dealing with obstacles such as concrete strips, trees, poles etc. Expansion relief strips should be incorporated around the perimeter of the installations and where kerb lines run within the installation. The expansion relief strip shall be in the form of a 100mm aggregate strip.

Detailed product and project specific installation method statements are available on request.

Maintenance

With a grass surface maintaining the long term appearance of the area will depend on the maintenance regime. We suggest regular cutting with conventional equipment and fertilising twice per year. With gravel paving virtually no maintenance is required. Perennial weeds may appear over time but these can be easily treated with a weed killer annually. If required the aggregate infill can be topped up over time.

Case Study Whitby Park & Ride



Project

Whitby Park & Ride

North Yorkshire County Council successfully applied for government funding to provide a facility to reduce the traffic congestion in the Centre of Whitby by the approval of a new Park and Ride Scheme. The 450 space facility just off Guisborough Road in Whitby will also be able to accommodate the expected increase in numbers of visitors attracted to the historic coastal town.

Client

North York C. C.

The designers had to choose between a hard paved surfacing or select a paving system that is more environmentally in keeping with the surrounding landscape. A porous paving system using a recycled plastic gravel block was specified which would remove the need for conventional drainage systems and to provide an aesthetically pleasing finish to the car park.

Main Contractor

AE Yates

The client and contractor contacted Infra Green and decide to choose SlimBlock as their preferred product. The 500mm x 500mm x 50mm SlimBlock units were selected due to their ease of installation, load bearing capacity, aesthetic appearance, mechanical interlocking and durability.

Products

SlimBlock 6500m²

Installation began in March 2014 with 6500m² of SlimBlock units being supplied by Infra Green Limited. Our technical team assisted the contractor with the sub-base and bedding design details to ensure optimum efficiency of the Porous Paved Car Park.

The fully functional Park and Ride Scheme was opened in August 2014.



Design Service and Installation Support

Infra Green has expertise in the design of landscaping systems. We offer a free design service for specifiers and developers including site visits to determine product selection, project specific drawings and installation support for contractors.

Please contact our technical team at...
civils@polypipe.com

Other products by **InfraGreen** solutions

Infra Green offer a range of cellular confinement systems to cover a wide range of applications including erosion control, ground stabilisation, retaining walls and tree root protection.

Infra Green's full product range includes:

- InfraWeb cellular confinement systems
- ArborRaft tree planting systems
- TreeBox HP tree planting systems
- Tree soils and rootzones
- Turf protection
- Geotechnical products
- Drainage systems for sports fields and play areas
- Lightweight base systems for rooftop sports and play areas

For further information on any of our products, please contact our office on 01509 615100 or email civils@polypipe.com



InfraWeb TRP



ArborRaft



TreeBox HP



Sports Pitch



Rooftop Sports and Play areas

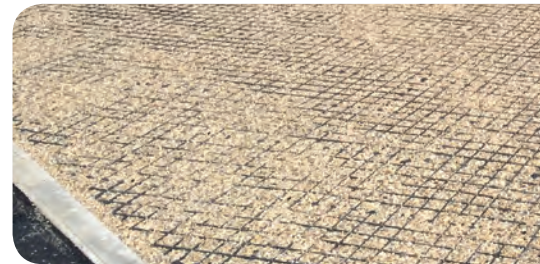
Infra Green can offer:

- Design services
- Onsite support
- Stock holding
- Next day delivery



Creating Green Infrastructure

Plastic Permeable Paving Product Range



Polypipe InfracGreen
Charnwood Business Park
North Road, Loughborough
Leicestershire
LE11 1LE
Tel: 01509 615100
Fax: 01509 615215
Email: civils@polypipe.com
www.polypipe.com/greeninfrastructure