

NAYLOR
ENVIRONMENTAL

Sustainable Urban Drainage Systems SuDS



Porous Paving for
Grass and Gravel

email: sales@naylor.co.uk web: www.naylor.co.uk



AdPave
(40mm) General Duty system

HGVGrid
(75mm) Heavy Duty System

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AdPave & Systems

HGVGrid

Sustainable Urban Drainage systems (SuDS) are an integral part of the fight against flooding.

Porous Paving provides the practicality of allowing both general and heavy vehicles to use surfaces whilst facilitating the free passage of stormwater to infiltrate the ground beneath.



The SuDS Concept

Naylor AdPave and Naylor HGVMat are both key products within a sustainable urban drainage system (SuDS). The porous paving allows the efficient attenuation, infiltration and treatment of stormwater runoff at or near its source, in accordance with current Best Management Practices (BMPs). They are ideal products for grass and gravel reinforcement.

The Products

Made from 100% recycled material, the Naylor AdPave and the Naylor HGVMat are modular units which work in conjunction with neighbouring units to create an exceptionally durable, permanently porous, high load bearing structure when infilled with either grass or natural aggregate.

Applications

Naylor AdPave is a general duty system suitable for general use such as car parks, driveways, verges and Park & Ride parks, whereas the Naylor HGVMat is designed for emergency access routes, coach and lorry parks etc.

Applications

	AdPave	HGVGrid
Park & Ride Schemes	✓	✗
Commercial Car Parks	✓	✓
Overflow Car Parks	✓	✗
Helipads	✗	✓
Paths & Bridleways	✓	✓
Light Aircraft Taxiways	✓	✓
Domestic Driveways	✓	✗
Bank Stabilisation	✓	✓
Caravan Parks	✓	✓
Emergency Access	✓	✓
Verge Reinforcement	✓	✓
Equestrian	✓	✗
Coach, HGV & Truck Parks	✗	✓

SuDS - The Principle

SuDS are physical structures built to receive surface water runoff, normally in the form of infiltration or attenuation solutions. They also provide treatment of surface water by sedimentation, filtration, absorption and bio-degradation. Research shows that up to 80% of sediment; 60% of phosphorous and; 80% of nitrogen can be removed from rainwater through porous paving, together with substantial levels of heavy metals and hydrocarbons.

Design Details - SUDS Associated with porous paving:

Attenuation - Used when direct infiltration is not appropriate and when water storage is required.

This shows Naylor AdPave, infilled with grass or natural aggregate, installed on a layer of sand/grit on a Naylor GT geotextile separation/filtration layer. Beneath this is a voided sub-base wrapped in an Naylor GM Geomembrane. Collected runoff is discharged via an appropriate Naylor storage device (Naylor Aquavoid®) positioned within or below the sub-base and sealed where it exits the geomembrane storage reservoir.

Infiltration - Used whenever possible, subject to appropriate soil conditions and environmental considerations.

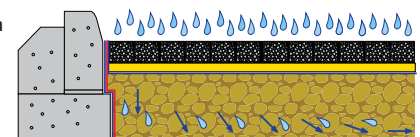
This shows Naylor AdPave infilled with grass or natural

aggregate, installed on a layer of sand/grit on a Naylor GT geotextile separation/filtration layer. Beneath this is a sub-base which is encapsulated within another Naylor GT geotextile separation/filtration layer.

Collected runoff is allowed to permeate naturally, through the geotextile separation/filtration layer, into the subgrade eliminating the need for a positive discharge facility.

Typical Attenuation System

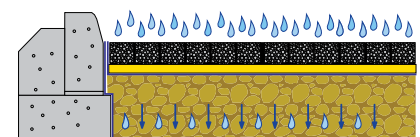
Rainfall enters porous AdPave surface



Water passes through porous surface and is directed by the geomembrane to storage or sewer

Typical Infiltration System

Rainfall enters porous AdPave surface



Water passes through porous surface and is allowed to infiltrate into sub grade

AdPave

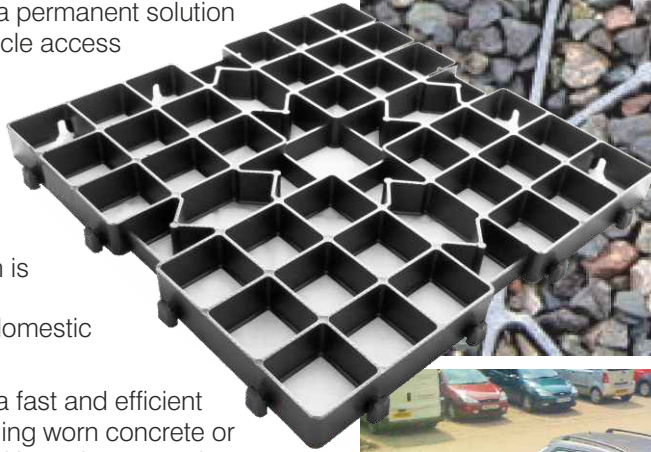
(40mm) General Duty system

This UK Manufactured clip-together cellular paving system can be gravel-filled or alternatively can be filled with a suitable growing media and seeded to create an aesthetically pleasing grass surface.

AdPave provides a permanent solution for parking or vehicle access routes.

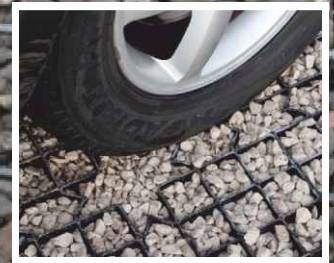
However, it can also be used as a temporary solution on top of existing grassed areas. The system is suitable for both commercial and domestic applications.

AdPave provides a fast and efficient method of upgrading worn concrete or tarmac surfaces without the expensive removal of the existing surface. When filled with decorative gravel the structural 'cells' in the pavers create an attractive and exceptionally hard wearing surface and eliminate the problem of gravel 'migration'. The cells can, alternatively be filled with soil and then seeded to produce a natural grass surface with the strength to handle all kinds of pedestrian and vehicular traffic.



Suitable for

- Park & Rides
- Car Parks
- Emergency Access Roads
- Grass Verges
- Vehicular Hard Standings
- Under Bridge Abutments
- Sports & Leisure Facilities
- Holiday Complexes
- Sheltered Accommodation
- Equestrian



HGVGrid

(75mm) Heavy Duty System

Made from 100% recycled plastic, Naylor HGVGrid is very high strength modular system, able to withstand the vigours of regular HGV traffic movements whilst providing an exceptionally durable porous surface. Filled with either grass or gravel it allows for the creation of a SuDs infiltration scheme in the most challenging circumstances. The Naylor HGVGrid sets the standard for heavy duty porous paving; the unique "A" section distributes the load equally and enables units to stack efficiently producing over 25m² on a standard pallet. The HGVGrid pavers are 600mm x 600mm x 75mm thick (2.78 per m²) and weigh just 10.7kg so are well within the HSE manual handling limits. The unique and innovative male female connection between units prevents uplift – even under extreme loads.

Benefits:

Suitable for SLW60 load category; lightweight & easy to install; 100% recycled polymers; flexible and crack resistant; non-toxic and low cell permeability ensures grass remains hydrated; over 95% grass/gravel at surface and the interlock system prevents lifting of units.



Suitable for

- Park & Rides
- Car Parks
- Emergency Access Roads
- Vehicular Hard Standings
- Light Aircraft Taxiways
- Verge Reinforcement
- Lay-bys
- Bus & Coach Parks
- Lorry/Truck Parks
- Farm Yards





Product Data	AdPave	HGVGrid
Product Code	65101	65132
Nominal Size	0.5m x 0.5m	0.6m x 0.6m
Depth of Unit	40mm	75mm
Locking Method	4 lugs per side	Unit Interlock - prevents uplift
Unit Weight	1.6Kg	10.7Kg
Colour	Black	Light Grey (concrete colour)
Infiltration Rate	>5,000mm/hr	>4,000mm/hr
Lateral Drainage Void Ratio	>12%	>20%
Infill Surface Area	>90%	>63%
Compressive Strength (Filled)	3,600kN/m2	10,000kN/m2
Pallet Size	1m x 1m x 1.2m	1.2m x 0.8m x 2.2m
Pallet Quantity & Weight	120 No (30m2), 210Kg	70 No (25.2m2), 760Kg

Special Applications

Slopes

Naylor AdPave grid units can be laid on slopes of up to 15 degrees without additional staking. Where the Naylor AdPave is used on the underside of a bridge abutment (e.g. to comply with the HSE recommended limits) every unit should be staked and the sand bed stabilised with a 12:1 cement mix on the 40 - 45 degree slope.

Disabled Parking Bays:

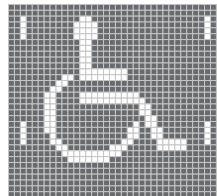
Naylor AdPave is suitable for installation within disabled access areas. A disabled bay sign can easily be created using 130 of the Demarcation Blocks. (data sheet available on request).

HGV Areas:

Although the Naylor AdPave system is able to withstand slow moving HGV's (roadside lay-bys etc) for areas subject to regular power assisted turning areas and other areas subject to regular HGV traffic the Naylor HGVGrid should be utilised.

Demarcation Blocks

These are available for the Naylor AdPave grid system and are used to delineate parking spaces within car parking areas. Four individual blocks are used to form a simple "T" or alternatively this "T" can be extended to create a series of dotted lines running the length of the parking bay (see photo) requiring eighteen blocks per bay.



Paving Surfaces - Installation

Subgrade: Excavate to formation level, providing a minimal (1:30 - 1:100) fall to the drainage system if non SuDs. Compact the subgrade using either a vibrating roller or plate, making good any soft spots.

Sub-base for Infiltration Surfaces: Install the designed depth of sub-base in 200mm layers (must be free draining for SuDs schemes), compacting each layer (vibratory plate, type DVP 75/22"). Overlay the sub-base with a GT1900 geotextile (essential to prevent migration), overlapping joints by 200mm.

Bedding Layer: Lay, screed and compact to a 30mm depth of bedding material (5mm grit for HGVGrid, sharp sand for AdPave). For grass reinforcement mix the bedding layer 4:1 with a good quality top soil to ensure good root growth.

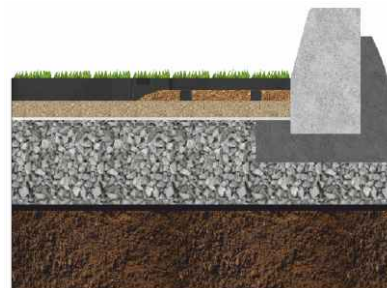
Wearing Course: Naylor AdPave & HGVGrid should be laid on a 45 degree laying face locating the locking lugs with adjacent units. Units should be tamped down and the specified root zone or natural aggregate infilled to the top surface to create a permanently porous, high load bearing structure.

For Gravel Fill: Angular (not rounded) aggregate (5-15mm) should be used if adjacent to schools should ideally be 10mm single sized crushed rock.

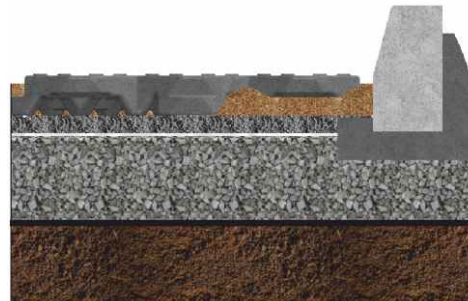
For Grass Fill: Fill the units with a good quality topsoil to the top and allowed to settle; grass seeding followed by a top dressing with a slow release fertiliser will ensure good grass growth. Water the seeded area regularly and keep traffic of the area for six weeks.

Maintenance: Gravel fill - Occasionally sweep any overfill back into the units - if gravel is sinking check for the presence of geotextile. Grass fill - Once established the area can be trafficked and mown as normal. If infill appears to be sinking top up with loam mix and check for presence of geotextile.

AdPave



HGVGrid



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For further information contact

Tel 01226 794135 Fax 01226 791531

E-mail sales@naylor.co.uk

Web: www.naylor.co.uk