

Surface
Solutions
for Grass
& Gravel

Design and installation guidance for **Gravel Surfaces**

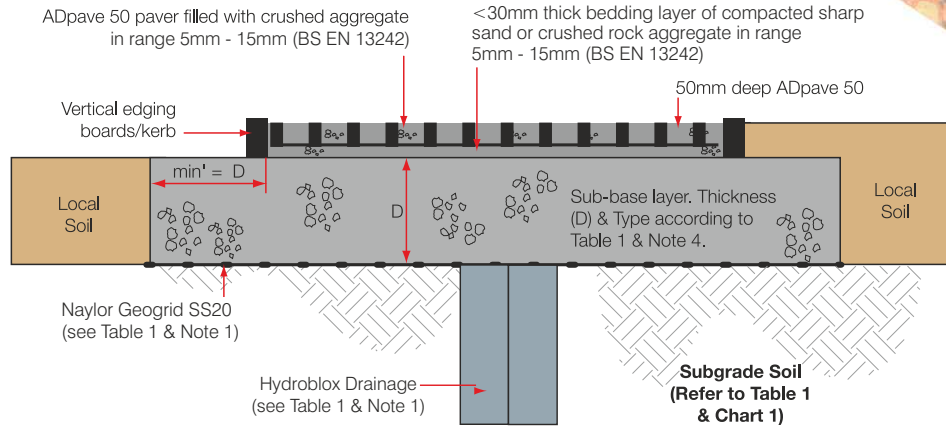


Table 1: Typical Sub-base (D) Thickness Requirements

Application/Load	CBR (%) strength of subgrade soil (see Chart 1)	(D) DoT sub-base thickness (mm) (see Note 4)	Naylor Geogrid (see Note 1)
Fire truck and occasional HGV access	> 6	125	SS20
	4 - 6	175	SS20
	2 - 4	275	SS30
	1 - 2	475	SS30
Light vehicle access and overspill car parking	> 6	100	SS20
	4 - 6	150	SS20
	2 - 4	225	SS30
	1 - 2	350	SS30

Paver type	ADpave 50	
Specifications	Material	100% recycled polyethylene
	Paver unit size	500mm x 500mm x 50mm (4 per m ² , pre-connected)
	Nominal cell size	63mm x 63mm (internal). Approx. 85% open cell/m ²
	Weight	8.5kg/m ²
	Load bearing capacity	150 tonne/m ² (crush resistance)
	Flexure	Individual pavers capable of articulating about central axes.
	Connection type	'T' lugs and slots.
	Colour	Black
	Markers	White mouldings are available to identify areas such as parking bays and routes. These square inserts clip into the top of paver cells. 12 per continuous linear metre.
	Chemical resistance	Excellent
	UV resistance	High
Bedding layer	5 - 15mm crushed aggregate or sharp sand	20mm - 30mm thick bedding layer
Paver fill	5 - 15mm crushed aggregate (BS EN 13242)	To top of paver cells
Sub-base type	DoT Type 1 or a Porous Sub-base (SUDs)	'D' thickness in mm (Table 1 & Note 4)
Base reinforcement	Naylor SS20 or SS30 biaxial geogrid	see Note 1 & Table 1

Installation

1. Place paver units with dimpled face uppermost (flared base down) onto the prepared sub-base + bedding layer (see Note 4). The leading edge of the pavers should have the fixing lugs exposed for quick easy installation. No pegging is required. Edging boards or kerbs are recommended, to aid gravel retention.
2. Connect the pavers using the lugs and slots, progressing over the area in rows. Use protective gloves to avoid abrasions.
3. Pavers can be cut using a hand or power saw to fit around obstructions and contours. Cut pieces which are less than half the original size should be avoided where possible.
4. Fill the pavers to the top of the cells with the specified crushed aggregate. If required, use a light vibrating plate to consolidate the crushed aggregate into the cells. Top up cells with crushed aggregate as necessary. Fully rounded pea gravel is not recommended.
5. If the area is to be used as horse paddock, cover the area with a 50-100mm thick layer of fine sand/mulch.
6. The surface may be trafficked immediately.

Note 1: If Naylor Environmental Geo-grid is omitted, then the total sub-base layer thickness must be increased by a minimum 50%.

Note 2: Typical drainage details: Double row of Naylor Hydroblox irrigation system to be inserted into subgrade below geogrid to transport water to outlet. Units do not require a geotextile surround and are placed down the centre or one edge of access routes up to 5m wide. Units can be placed at 5m centres to drain larger areas. Advice is available from Naylor Environmental.

Note 3: Specific advice on ground conditions, CBR% and construction over ground with a CBR less than 1 % is available from Naylor Environmental.

Note 4: A 'DoT Type 1' sub-base may be used, provided that an adequate drainage system is installed, or alternatively a porous/open-graded (reduced fines) sub-base layer, e.g as part of a Sustainable Urban Drainage System (SUDS) application. If a reduced fines sub-base layer is specified, this must be covered with either a geotextile filter membrane and/or a suitable clean gravel blinding layer, to avoid fine particles entering the sub-base layer.

Note 5: Specific advice on Sustainable Urban Drainage Systems (SUDS) is available from Naylor Environmental.

Note 6: Maximum advised gradient for traffic applications is 15% (1:7) 7°. Specific advice for the use of ADpave 50 on slopes can be obtained from Naylor Environmental.

Note 7: ADpave 50 complies with BS8300:2001 - "Design of buildings and their approaches to meet the needs of disabled people" - Code of Practice.

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Chart 1: Field guidance for estimating sub-grade strengths

Consistency	Indicator			Strength	
	Tactile (feel)	Visual (observation)	Mechanical (test)	CBR	CU
			SPT	%	kN/sqm
Very Soft	Hand sample squeezes through fingers	Man standing will sink >75mm	<2	<1	<25
Soft	Easily moulded by finger pressure	Man walking sinks 50-70mm	2-4	Around 1	Around 25
Medium	Moulded by moderate finger pressure	Man walking sinks 25mm	4-8	1-2	25-40
Firm	Moulded by strong finger pressure	Utility truck ruts 10-25mm	8-15	2-4	40-75
Stiff	Cannot be moulded but can be indented by thumb	Loaded construction vehicle ruts by 25mm	15-30	4-6	75-150

This Field guide is provided as a guideline for assessing the mechanical stabilisation requirements in commonly encountered field conditions. Naylor Environmental accepts no responsibility for any loss or damage resulting from the use of this guide.

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