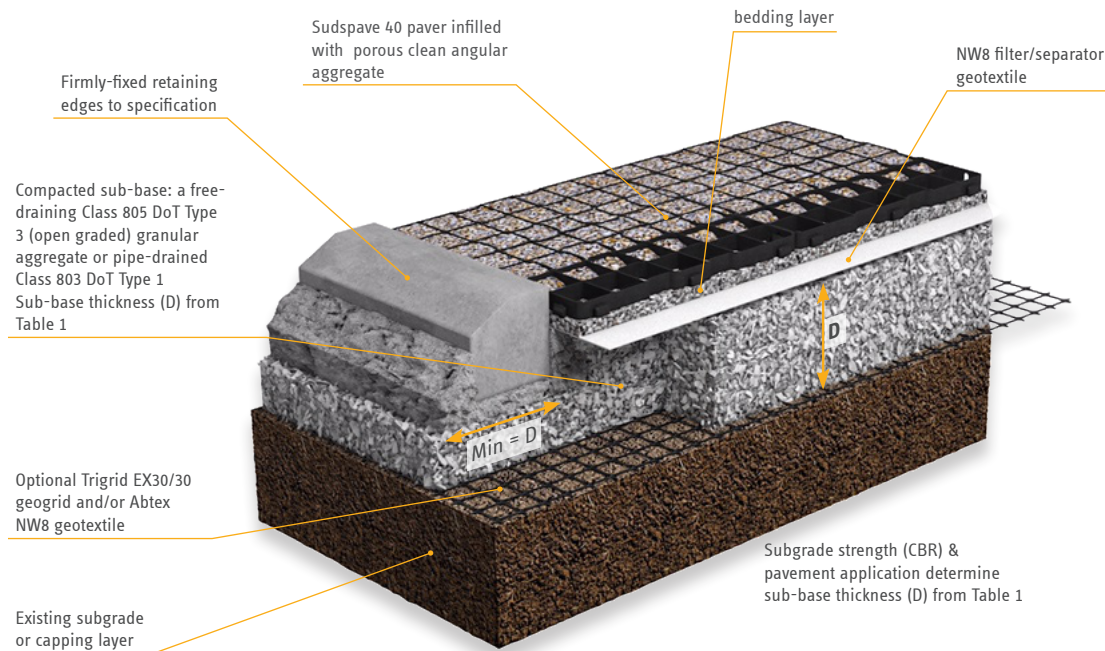


Design, installation and maintenance guidance for gravel surfaces

Sudspave® 40 cellular paving is suitable for a wide range of trafficked applications and landscaped areas where a confined, free-draining gravel surface is required. Typical applications include: car parks, emergency access, maintenance routes, cycle paths, pedestrian and disabled access.



Technical specification

System	Sudspave®
Colour	Black
Paving unit size	500mm x 500mm x 40mm (nominal)
Coverage rate	4 units per m ² panel (nominal) - supplied pre-connected
Cell dimension	49 sequentially irregular cells : 45-68mm x 45-68mm (nominal) per unit
Cell structure	Robust flexural contoured walls
Paving unit footprint	Open structured with load bearing crossbars
Weight	1.4kg/paving unit & 5.6kg/m ² panel (nominal)
Compressive strength (filled)	3000kN/m ² ≈ 300 tonnes/m ² (nominal)
Permissible axle load	210kN/axle
Connection & interlock	Positive self-locking T-shaped lug and clip-slot mechanism
Flexure & expansion	In-built flexural cell design
Parking bay & line markers	White mouldings (204mm x 68mm) slot into 3 cells - 4 No./lm (other colours on request)
Chemical resistance	Excellent
UV stability	High resistance to colour & strength degradation
Infiltration capacity	Limited by the permeability of the specified infill material
Bedding layer material	Porous, clean angular aggregate : 3mm - 14mm particle size, with greater proportion in 7mm - 10mm range
Bedding layer thickness	A uniform layer 10mm - 30mm thick maximum
Cell infill material	Porous, clean angular aggregate : 3mm - 14mm particle size, with greater proportion in 7mm - 10mm range
Upper Filter/Separator Geotextile (optional)	ABG Terrex NW8 Geotextile. 1mm thick - 100g/m ² - 8kN/m ²
Sub-base type	DoT Type 3, Type 1x, Type 4/40 or Type 1 (with appropriate drainage)
Sub base thickness	100mm - 350mm : Refer to Table 1 for thickness 'D' in millimetres (mm)
Sub-base reinforcement (optional)	Abgrid Geogrid (Refer to Table 1)
Lower filter/separator geotextile (optional)	ABG Terrex NW8 Geotextile. 1mm thick - 100g/m ² - 8kN/m ²
Sub-base attenuation (optional)	Geomembrane containment system and geotextile protection (optional)

Sudspave® 40

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abg creative geosynthetic engineering

Sudspave 40 installation process

The following generic guidance must be read in conjunction with the specific project specification within the contract documents

1. Install the specified optional Geogrid/Geotextile/Geomembrane onto the prepared sub-grade formation.
2. Install the specified sub-base layer and optional drainage (Refer to Table 1 & 2 for sub-base and subgrade advice).
3. Install any edge restraints which may be specified.
4. Install the optional 'upper filter/separator' geotextile on top of the sub-base layer.
5. Install the specified angular aggregate bedding layer to a uniform thickness.
6. Ensure an accurate right-angled Sudspave laying pattern by setting-out the site using pins and string-lines. Check the lines regularly for accuracy.
Start installing the pre-assembled Sudspave panels (4 units/m²) by placing the webbed face downwards onto the bedding layer. Place the panels with the T-shaped lugs facing in the direction of laying on the two leading edges, with the clip-slots on the reverse-edges.
7. Progress across the site in rows by slotting panels together in a downward motion, ensuring that the 6 self-lock clips-slots engage fully with the T-shaped lugs on adjacent panels.
Avoid starting more than 2 new rows of panels prior to completing the row which is in progress. Avoid installing in a diagonal pattern too far ahead of completed rows.
Regularly check and adjust the completed leading edge to ensure that it is straight. It is recommended that protective gloves are worn to avoid abrasions during installation.
8. If individual unit separation becomes necessary, the self-lock clips are designed to be disengaged by pulling paving units gently away from each other whilst applying upward or downward pressure.
9. Panels can be cut to fit around obstructions and curves using a hand-saw or disc-saw. The use of cut-pieces which do not have integral lugs and self-lock clips, should be avoided wherever possible. However, where it is necessary to employ small or irregularly shaped cut-pieces to fit around obstacles, these should be securely attached to adjacent panels using industrial strength cable ties.
10. Installation of car parking bay/line marker inserts is best carried out prior to filling the cells with rootzone. The oblong markers will fit in all cells except where they cross adjacent paving unit joints where they will need to be cut into individual cell sized units. Where inserts have been cut-down or in applications where they are prone to vandalism, it may be necessary to secure them in place with glue.
11. Fill the cells with the specified angular aggregate, so that the final level will be to the top of the cells. If placing the panels and filling the cells simultaneously, it is important to keep fill material and vehicles a safe distance away from the leading edge to avoid distortion of the leading edge. Do not drive vehicles on the installed panels until the cells have been filled with aggregate. Unless it is a specific design requirement, do not over-fill or surcharge the cells.
12. Following initial settlement and trafficking, it may be necessary to top-up the aggregate within the cells.
13. A routine management and maintenance programme to keep the surface in good condition and free of debris and weed growth, will help to sustain the porosity, quality and longevity of the system.

Notes

- Note 1. If the Abgrid (Geogrid) is omitted, the total sub-base layer thickness ('D' on Table 1) is typically increased by a minimum of 50%
- Note 2. Sub-base attenuation utilising a Geomembrane and optional geotextile protection, is typically necessary to create a water storage facility and/or a groundwater protection function. Encapsulation of the structural layers beneath the surfacing also provides a rainwater re-use facility.
- Note 3. Typical paving edge restraint solutions include: concrete, timber, steel and plastic kerbs/edgings.
- Note 4. A permeable open-graded (reduced-fines) Sustainable Drainage System (SuDS) sub-base layer such as Dot Type 1x, Type 3 or Type 4/40, is preferred. However, where a conventional DoT Type 1 sub-base is to be installed, it is recommended that a drainage system is incorporated to assist in the mitigation of issues associated with saturation.
This drainage system would typically comprise of a network of perforated pipes or Geocomposites, with design advice available from ABG Ltd.
- Note 5. Advice on CBR% strengths, ground conditions, construction over weak ground and drainage is available from ABG Ltd. CBR% = California Bearing Ratio: an indicative measurement of subgrade soil strength.
- Note 6. The SuDS permeable sub-base can be overlain by an upper geotextile e.g. ABG Terrex NW8, to provide separation and an enhanced water treatment function.
- Note 7. Aggregate for the bedding layer and cell infill should be clean, free-draining, hard (Moh >6) and structurally sound material, having a 3mm-14mm particle size range of which the greater proportion of material is in the 7mm-10mm range. The use of rounded (pea-shingle), oversized, undersized and low permeability aggregates or site-won materials is not recommended
- Note 8. The maximum advised gradient for vehicular trafficked applications is generally 12% (1:8) 7°. For Disabled access applications, a maximum of 8% (1:12) 5° is suggested.
- Note 9. When designed in accordance with the recommendations, Sudspave complies with BS8300:2009 : "Design of buildings and their approaches to meet the needs of disabled people" - Code of Practice (ISBN 9780 580 57419) & Building Regulations Document 'M' Section 6.

Table 1: Geogrid selection

Application/Load	CBR (%) strength of subgrade soil (Table 2)	(D) DoT sub-base thickness (mm) (see notes)	Abgrid Geogrid
Fire truck and occasional HGV access	≥6	125	20/20
	=4 < 6	175	20/20
	=2 < 4	275	20/20
	=1 < 2	475	20/20
Light vehicle access and overspill car parking	≥6	100	20/20
	=4 < 6	150	20/20
	=2 < 4	225	30/30
	=1 < 2	350	40/40

Table 2: Field guidance for estimating sub-grade shear strengths

Consistency	Tactile	Visual	Mechanical (SPT)	CBR (%)	CU (kN/m ²)
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