

Truckcell® Porous grassed surface

Structural Design, installation and maintenance guidance

Truckcell is a recycled plastic cellular porous paving solution for use in Sustainable Drainage Systems (SuDS). Truckcell is suitable for a wide range of trafficked applications where a stabilised, free-draining grass surface is required and where high vehicle loads are expected. Typical applications include: coach and truck parks, emergency access, and maintenance routes. Considerations relating to the movement and attenuation of water within the porous pavement are not covered in this document. This document is intended to be a summary presenting typical solutions. Contact ABG for detailed site specific advice.

Typical construction detail

Truckcell® 80

Recycled plastic cellular paver infilled with grass seeded topsoil

Paving edge restraint

Various options

Sub-base

DTP Type 3 open-graded granular aggregate (typical). Sub-base thickness (D) from Table 1

Sub-base stabilisation

ABG Abgrid geogrid (typical)

Bedding layer

Clean, coarse 7-10mm angular aggregate

Upper filter/separator geotextile

ABG Terrex NW9 geotextile

80mm
10-20mm
D
(See Table 1)

Lower filter/separator geotextile

ABG Terrex NW9 geotextile (typical)

Subgrade

Technical Specification

System	Truckcell® 80
Surface finish	Standard
Material	100% recycled and recyclable plastic
Colour	Grey
Paving unit size	80mm x 400mm x 600mm
Coverage rate	4.17 blocks per m ²
Cell dimension	103mm x 103mm (nominal)
Cell wall thickness	40mm (nominal)
Weight	9kg/unit
Load bearing capacity	SLW60 – Vehicles up to 60t gross weight
Connection & interlock	Integral tongue & groove
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: 3-14mm particle size, with greater proportion in 7-10mm range, and in accordance with Table A.3 of BS 7533-13
Bedding layer thickness	A level & uniform layer thickness: 10mm - 20mm maximum
Cell infill material	Grass seeded good quality, free-draining, friable top-soil with no contaminants or oversized debris
Cell infill thickness	Installed surface to be level with top of cells
Upper filter/separator geotextile	ABG Terrex NW9 non-woven geotextile 1.1mm thick, 120g/m ² , zero breakthrough head
Sub-base material	DTP Type 3 or a drained Type 1, or BS 7533-13 4/20 or 4/40 (Ref. Note C)
Sub-base thickness	Refer to Table 1 for typical thickness 'D' in millimetres (mm)
Sub-base stabilisation	Typically Abgrid 20/20 or 30/30 geogrid (see Table 1). Alternative options may be suitable (Ref. Note B)
Lower filter/separator geotextile	ABG Terrex NW9 non-woven geotextile 1.1mm thick, 120g/m ² , zero breakthrough head

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Structural design, installation and maintenance guidance for grass surfaces

TRUCKCELL® INSTALLATION PROCESS

The following generic guidance must be read in conjunction with the specific project specification within the contract documents and the design notes below.

1. Install the specified lower filter/separator geotextile and sub-base stabilisation onto the prepared subgrade formation.
2. Install the specified sub-base and edge restraints.
3. Install the upper filter/separator geotextile on top of the sub-base.
4. Install the specified bedding layer to a uniform thickness.
5. Ensure an accurate right-angled Truckcell laying pattern by setting-out the site using string-lines. Check the lines regularly for accuracy. Start installing the Truckcell pavers. Wherever possible start laying from a right angled corner and progress across the site in rows. The pavers can be installed in a width or lengthwise orientation and cross-bonded if required or appropriate to fit the site. When installing the interlocking type pavers (80mm deep) ensure that the male/female connectors are fully located together. Use protective gloves to avoid abrasions.
6. Truckcell pavers can be cut to fit around obstructions & curves using a hand or power saw. Wherever possible avoid using small cut-pieces less than one-third original size.
7. When installed, fill the paver cells loosely to the finished level (top of cells) with the specified cell infill. Remove excess soil from the surface of the pavers and do not overfill. A single pass with a light vibrating plate machine or roller may be used to firmly bed the pavers and settle the soil, but do not compact the soil. Do not vibro-roll. It is preferable that the soil is left just below the top of the cells to aid quality grass growth and reduce traffic abrasion. The surface may be trafficked by slow moving plant during the cell-filling process, but care must be taken not to displace the unfilled pavers.
8. Apply the grass seed at the supplier's recommended rates.
9. The surface may be trafficked immediately after the pavers are filled. However, it is strongly advised that the grass is allowed to establish fully, then mown 2 or 3 times, prior to regular use.
10. 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

- A. Advice on subgrade CBR% strengths, ground conditions, and construction over weak ground is available from ABG.
- B. Alternative ABG stabilisation geosynthetics may be used in lieu of ABG Abgrid geogrid. These include ABG Gridtex Type 2 high-strength woven geotextile or ABG Abweb geocells. If the sub-base stabilisation is omitted, the total sub-base layer thickness ('D' on Table 1) is typically increased by a minimum of 50%.
- C. A permeable open-graded (reduced-fines) aggregate is recommended, such as DTp Type 3 low-fines roading aggregate, or BS 7533-13:2009 SuDS aggregate (4/20 or 4/40). However, where a conventional DTp Type 1 sub-base is to be used, it is essential that a drainage system such as ABG Fildrain is incorporated. Specific advice is available from ABG.
- D. Maximum sub-base particle size should match minimum sub-base thickness but must not exceed 75mm diameter. For sub-base thicknesses of around 100mm, a minimum 37.5mm particle size should be adopted to allow effective installation of the Abgrid.
- E. Typical paving edge restraint solutions include: concrete, timber, railway sleepers, steel and heavy-duty plastic.
- F. The sub-base must be overlaid by a Terrex NW9 geotextile to provide separation, enhanced water treatment function and prevent migration of the bedding layer.
- G. To provide a stable bedding layer for Truckcell, the bedding layer must not be sand.
- H. The paver fill material should be suitable for healthy grass growth. Amenity grass seed mixture should contain hard wearing, low fertility and/or drought tolerant species with a low percentage of clover content if acceptable.
- I. The maximum advised gradient for vehicular trafficked applications is 8% (1:12) 5°.
- J. When designed in accordance with the recommendations, Truckcell 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.
- K. All stated dimensions & weights are nominal and in accordance with manufacturing +/- tolerances.
- L. The recommendations in this document are only suitable for use with ABG products.

Table 1: Truckcell® typical DTp Type 3 sub-base thickness (D) requirements - refer to specific construction drawing

Vehicle Load and frequency	CBR strength of subgrade soil (%) (see Table 2)	DTp Type 3 sub-base thickness (D, mm)	ABG Abgrid Geogrid
Light vehicles only with emergency HGV access	≥6	100	20/20
	=4 < 6	100	20/20
	=2 < 4	120	30/30
	=1 < 2	220	30/30
Light vehicles with one HGV per week	≥6	125	20/20
	=4 < 6	150	20/20
	=2 < 4	200	30/30
	=1 < 2	325	30/30
Light vehicles with 10 HGVs per week	≥6	165	20/20
	=4 < 6	200	20/20
	=2 < 4	275	30/30
	=1 < 2	425	30/30
Regular HGV access	≥6	200	20/20
	=4 < 6	250	20/20
	=2 < 4	350	30/30
	=1 < 2	500	30/30

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

CBR (%)	DCP Result ¹ (Sandy Soils)	HSV Result ¹ (Clayey Soils)	Tactile (Clayey Soils)	Visual (Clayey or Sandy Soils)
<1	<1	<30kPa	Easily indented by fingers	Adult standing will sink >30mm
1 - 2	<1	30-60kPa	Indented by strong finger/thumb pressure	Adult walking sinks 10-30mm
2 - 4	1 - 2	60-120kPa	Cannot be indented by thumb pressure	Utility truck ruts 10-25mm
5 - 7	2 - 3	120-200kPa	Can be indented by thumb nail	Loaded construction vehicle ruts by 25mm
>8	>3	>200kPa	Difficult to indent by thumb nail	Loaded construction vehicle ruts by <10mm

Note

1. DCP results are expressed as blows per 100mm penetration. HSV results are expressed as "undrained shear strength" or C_u