

Truckcell® - Porous Aggregate Surface

Structural design, installation and maintenance guidance



Product Description

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 angular aggregate

Paving edge restraint

Various options. Strong, deep kerbs well haunched with concrete on both sides. Detail available from ABG

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

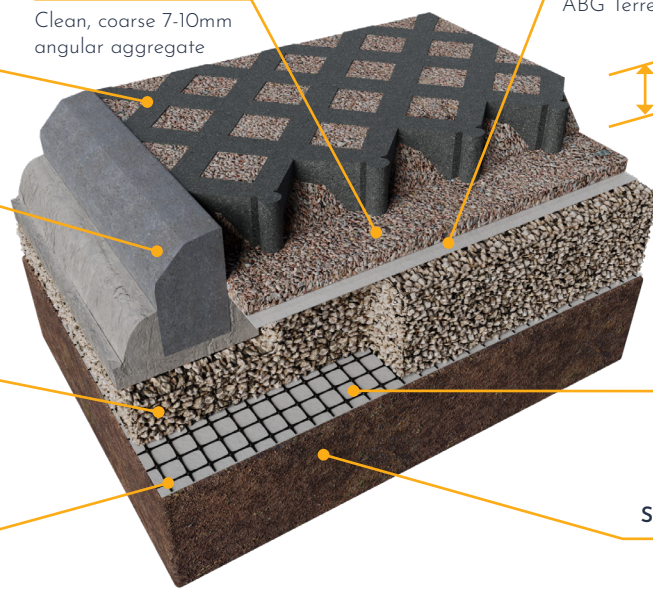
ABG Terrex NW9 geotextile

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

Lower filter/separator geotextile

ABG Terrex NW9 geotextile (typical)

Subgrade



Technical Specification

| System | Truckcell® 80 |
|-------------------------------------|---|
| Surface finish & compliance | Smooth finish. Compliant Part M (Building Regs) Equality Act (DDA) |
| Material | 100% recycled and recyclable plastic (Polyolefins) |
| Colour | Grey |
| Paving unit & pallet sizes | 80mm x 400mm x 600mm |
| Coverage rate | 4.17 blocks per m ² 80 blocks/pallet (19.2 m ²) 32 pallets/load (614m ²) |
| Cell dimension | 103mm x 103mm (nominal) |
| Cell wall thickness | 40mm (nominal) |
| Weight | 9kg/unit 37.5kg/m ² |
| Load & strength capacity | SLW60 - Vehicles: <60t gross weight & 10t (100kN) single wheel load. Compressive strength: 1,896 tons/m ² (18,600 kN/m ²) DIN Tested. |
| 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. Typical ≥ 2,500mm/hr for gravel |
| Cell infill material | Porous, clean angular aggregate: 5-14mm particle size, with greater proportion in the 10mm range, and in accordance with Table A.3 of BS 7533-13 |
| Cell infill thickness | Finished level with top of cells |
| Bedding layer material | Porous, clean angular aggregate: 5-14mm particle size, with greater proportion in the 10mm range, and in accordance with Table A.3 of BS 7533 13 |
| Bedding layer thickness | A level & uniform layer thickness: 10mm - 20mm maximum |
| Upper filter/separator geotextile | ABG Terrex NW9 non-woven geotextile 1.1mm thick, 120g/m ² , zero breakthrough head (optional, Ref. Note F) |
| Sub-base material | DTp Type 3 or a slotted pipe / fin 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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Truckcell Guide - Gravel - Rev.2.0

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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 & edge restraints: strong, deep kerbs, well haunched with concrete on both sides.
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. Fill the cells with the specified angular aggregate, so that the finished level is at the top of the cells. A single pass with a light vibrating plate machine or roller may be used to firmly bed the pavers and settle the fill. Top-up the cells with aggregate as required after settlement. It is preferable not to overfill the cells with aggregate. The use of rounded pea gravel/shingle is not recommended.
8. 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.
9. The surface may be trafficked immediately after the pavers are filled.
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. Edge restraints. Strong, deep concrete kerbs, well haunched both sides with concrete. Minimum sizes and haunch depths apply. Advice from ABG Technical.
- 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. Minimum 8% (1:12) 5° advised gradient for vehicle traffic applications.
- I. 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.
- J. Expansion: 1-2mm gaps left between units will accommodate temperature variation. Large areas: a 25mm soil filled gap should be left between Truckcell and non-trafficked kerbs.
- K. Line marking can be created using road paint and/or red brick setts cut to fit into cells.
- L. All stated Truckcell dimensions & weights are nominal and in accordance with manufacturing +/- 1.5% tolerances.
- M. Truckcell is not recommended for small wheeled fork-lift applications.
- N. 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 | 150 | 30/30 |
| | = 1 < 2 | Contact ABG | Contact ABG |
| Light vehicles with one HGV per week | ≥6 | 130 | 20/20 |
| | = 4 < 6 | 150 | 20/20 |
| | = 2 < 4 | 200 | 30/30 |
| | = 1 < 2 | Contact ABG | Contact ABG |
| Light vehicles with 10 HGVs per week | ≥6 | 150 | 20/20 |
| | = 4 < 6 | 200 | 20/20 |
| | = 2 < 4 | 280 | 30/30 |
| | = 1 < 2 | Contact ABG | Contact ABG |
| Regular HGV access | ≥6 | 200 | 20/20 |
| | = 4 < 6 | 250 | 20/20 |
| | = 2 < 4 | 350 | 30/30 |
| | = 1 < 2 | Contact ABG | Contact ABG |

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 thumbnail | Loaded construction vehicle ruts by 25mm |
| >8 | >3 | >200kPa | Difficult to indent by thumbnail | 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 Truckcell Guide - Gravel - Rev.2.0

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