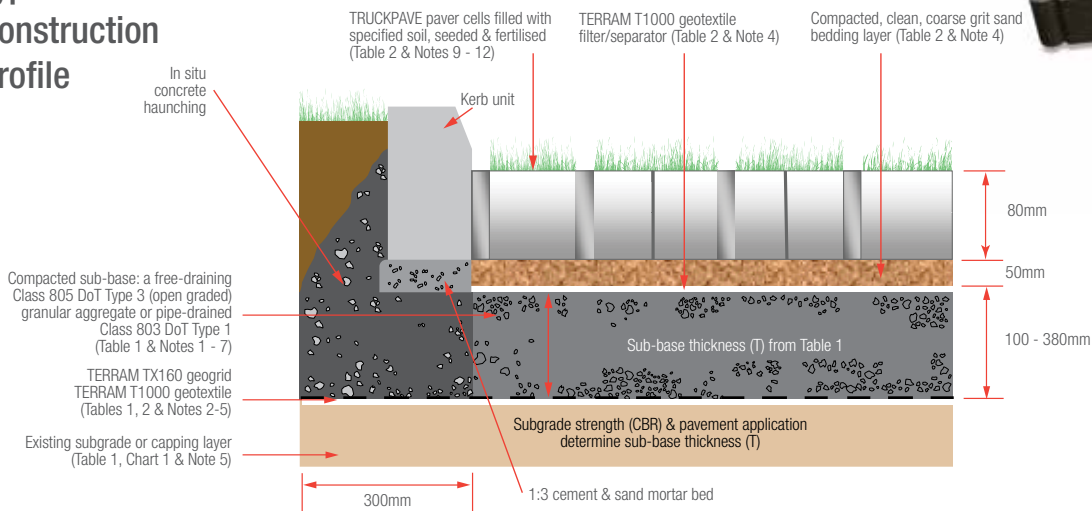


## SPECIFICATION, DESIGN & INSTALLATION GUIDANCE For Grassed Surfaces



### Typical Construction Profile



### Installation method for grassed surfaces

1. Having set-out the site, install the specified geotextile, geogrid, sub-base type and layer thickness and any drainage according to the proposed application and site sub-grade soil conditions.
2. Securely install and fix the edge retention as appropriate and according to specification: concrete, steel or plastic kerbs, heavy duty timber or pinned railway sleepers.
3. Install the TERRAM T1000 geotextile filter/separator layer onto sub-base surface, overlapping joints by minimum 150mm.
4. Install a uniform, level & well compacted 50mm thick bedding layer of coarse grit sand.
5. Place the paving units: Wherever possible start laying from a right angled corner and progress uniformly across the site in rows. The units can be installed in a width or lengthwise orientation and cross-bonded if appropriate to fit the site. When installing the interlocking type blocks (80mm thick) ensure that the male/female connectors are fully located together. Use protective gloves to avoid abrasions.
6. 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 free-draining, soil. Remove excess soil from the surface of the pavers and do not overfill the cells. 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. It is preferable that the soil is left just below the top of the cells to aid quality grass growth and reduce its abrasion by traffic. The surface may be trafficked by slow moving plant during the cell-filling process, but care must be taken not to displace the open-celled grids with heavy treaded or tracked machinery, nor compact the soil during this operation.
8. Apply the specified amenity grass seed and fertiliser at the recommended rates.
9. The surface may be trafficked immediately after the cells are filled if absolutely necessary, but it's strongly advised that the grass is allowed to fully establish and have been cut 2-3 times prior to routine use.
10. Occasional seasonal fertiliser applications will help to maintain a healthy sward which is able to sustain good wear tolerance.

## Design notes for grassed surfaces

- Note 1 A free-draining Class 805 DoT Type 3 (opengraded) reduced fines sub-base is preferred, especially where a SUDS (Sustainable Urban Drainage System) is proposed. A low permeability Class 803 DoT Type 1 may be considered, but an adequate and functioning drainage system MUST be installed within this sub-base variation. To prevent collapse of the construction profile edges when trafficked, the sub-base profile must extend beyond the edge-line of the pavement layer by a minimum equivalent length (mm) to that of the specified sub-base thickness (mm) (T).
- Note 2 If a TERRAM TX160 geogrid layer is omitted from the specification, the total granular sub-base (GSB) layer thickness (T) must be increased by minimum 50%. The use of alternative geogrids will influence the required sub-base layer thickness according to manufacturer's recommendations.
- Note 3 Use of TERRAM TX160 geogrid. If construction traffic axle loads will be greater than 60kN (approx 6t), minimum sub-base thickness over TERRAM TX160 geogrid shall be 150mm. 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 a TERRAM TX160 grid.
- Note 4 Where the preferred DoT Type 3 (opengraded) sub-base is specified, the TERRAM T1000 geotextile separator MUST ALWAYS be installed over the sub-base to avoid the 50mm sand bedding layer leaching away. The sand bedding must be clean, coarse-grained sand free from silts & clays: it must NOT be soft building sand or silver sand.
- Note 5 Specific advice on soil CBR% strength, ground conditions, capping-layers & construction over weak ground with a CBR less than 1% is available from TERRAM. N.B. CBR% = California Bearing Ratio, a measurement of subgrade soil strength.
- Note 6 Where a low-permeability DoT Type 1 sub-base is specified, sub-surface drainage MUST be provided, typically consisting: 100mm diameter perforated pipe drains leading to a suitable outfall or soakaway and laid at minimum gradient 1:100, pipes bedded on clean gravel in trench backfilled with DoT Type 'A' drainage aggregate. Drainage trenches must interface cleanly with the bedding layer profile and be covered or fully wrapped with a TERRAM T1000 geotextile filter. Drains installed down centre or one edge of areas up to maximum 5m wide. Larger areas may require additional main and lateral drains at 5m - 10m centres. Drainage design to be determined by the specifier based on known site criteria.
- Note 7 Drainage outfall detail for a Sustainable Urban Drainage System (SUDS) application employing DoT Type 3 (open graded) reduced-fines sub-base will vary according to each site, but generally allows for water attenuation within the construction profile and/or infiltration to the subgrade by omitting extensive trench & pipe systems within the sub-base layer. The type of SUDS design (attenuation or infiltration) will depend upon the underlying ground conditions and not all sites are suitable for infiltration. Weak and low-permeability cohesive sub-grades are generally unsuitable for infiltration SUDS.
- Note 8 The use of edge restraints is required. These, heavy-duty concrete, steel or plastic kerbs, timber edging or railway sleepers, must be strong and firmly fixed.
- Note 9 The paver fill material should be good quality, free-draining friable top-soil suitable for grass growth and with no contaminants or oversized debris. Amenity grass seed mixture should contain hard wearing, low fertility and/or drought tolerant species with option of a low percentage of clover content if acceptable.
- Note 10 Maximum advised gradient for traffic applications: 8% (1:12) 5°.
- Note 11 TRUCKPAVE pavers comply with BS8300:2009 - Design of buildings and their approaches to meet the needs of disabled people - Code of Practice. (ISBN 978 0 580 57419) & Building Regulations Document 'M' section 6.

*Specific advice on the use of TRUCKPAVE pavers on steep slopes, drainage suitability and Sustainable Urban Drainage Systems (SUDS) applications, can be obtained from TERRAM. TRUCKPAVE pavers are intended for use in low-speed traffic applications only.*

## For Grass Surfaces

**Table 1: Typical Sub-base Thickness (Tx) Requirements - refer to construction profile overleaf**

APPLICATION/LOAD	CBR (%) STRENGTH OF SUBGRADE SOIL (see Chart 1)	SUB-BASE MINIMUM THICKNESS (T) mm (see Notes 1 - 7)		TERRAM GEOGRID (see Notes 2 - 3)
		incl geogrid	excl geogrid	
Fire trucks, Coaches, HGV access	≥6	100	150	TX160
	= 4 < 6	120	180	TX160
	= 2 < 4	190	285	TX160
	= 1 < 2	380	570	TX160
Light vehicle access and overspill car parking	≥6	100	150	TX160
	= 4 < 6	100	150	TX160
	= 2 < 4	135	200	TX160
	= 1 < 2	260	390	TX160

**Table 2: Paving Grid Specification**

Description	Data
Product	TRUCKPAVE
Material	100% recycled mixed polymers
Colour	Grey
Paver dimensions (plan)	600mm x 400mm
Paver depth	80mm
Nominal internal cell size	100mm x 100mm
Structure Type	Rigid-walled, open cells
Cell wall thickness	40mm
Weight (Nominal)	9 kg/paver - (37.5kg/m <sup>2</sup> )
Load bearing capacity (filled)	< 60 tonnes gross vehicle weight < 20 tonnes single axle
Crush Resistance (unfilled)	< 1500 tonnes/m <sup>2</sup> (15,000 kN/m <sup>2</sup> )
Open cell %	50%
Connection type	Tongue & Groove (TP80)
Chemical resistance	Excellent
UV resistance	High
Toxicity	Non Toxic

### Supplementary information

Bedding layer	50mm thick, clean, coarse grit sand (see Note 4)
Paver fill (seed bed)	Good quality, free-draining, friable top-soil with no contaminants or oversized debris (see Note 9)
Grass seed	35 - 50g/m <sup>2</sup> amenity-blend, low-maintenance seed to specification
Fertiliser	Pre-seeding fertiliser followed up with appropriate seasonal fertiliser
Sub-base type	Class 805 DoT Type 3 (open graded) (see Table 1 & Notes 1-7)
Sub-base reinforcement	TERRAM TX160 geogrid (see Table 1 & Notes 2, 3). Specification on request
Geotextile filter/separator layer(s)	TERRAM T1000 geotextile

**Chart 1: Field guidance for estimating sub-grade strengths**

Consistency	Indicator			Strength	
	Tactile (feel)	Visual (observation)	Mechanical (test) SRT	CBR (%)	CU (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	75-100

This field guide is provided as an aid to assessing the mechanical stabilisation requirements in commonly encountered site conditions. TERRAM accepts no responsibility for any loss or damage resulting from the use of this guide.

The information contained herein is, to the best of our knowledge, accurate in all material respects. However, since the circumstances and conditions in which such information and the products mentioned herein can be used may vary and are beyond our control, no representation or warranty, express or implied, of any nature whatsoever is or will be made and no responsibility or liability is or will be accepted by us, any of our affiliates or our or their respective directors, officers, employees or agents in relation to the accuracy or completeness or use of the information contained herein or of any such products and any such liability is hereby expressly excluded to the maximum extent permitted by law.