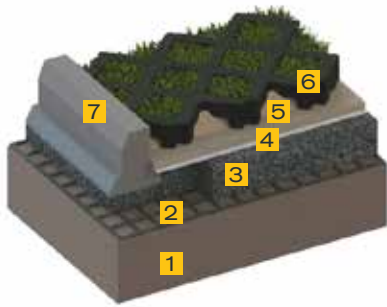


# INSTALLATION INSTRUCTIONS

## GRASSED SURFACES

### INSTALLATION BUILD-UP



LAYER	MATERIAL	THICKNESS
1. Sub-grade	Existing subgrade or capping layer	-
2. Reinforcement	Optional E'GRID 3030 geogrid and/or MultiTrack geotextile	-
3. Compacted Sub-base	Free-draining Class 805 DoT Type 3 (open graded) granular aggregate or; Pipe-drained Class 803 DoT Type 1 Sub-base thickness from table 1	See table 1
4. Separation	MultiTrack 1000	-
5. Bedding layer	Compacted, clean, coarse grit sand bedding layer	20mm
6. Paver	CellTrack HD	100mm or 120mm
7. Retaining edge	e.g kerb or edging stone	

### INSTALLATION INSTRUCTIONS

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 optional geogrid, geotextile and/or geomembrane onto the prepared subgrade formation.
2. Install the specified sub-base layer and optional drainage.
3. Install any edge restraints which may be specified. Timber, plastic or concrete kerbing are all suitable.
4. Install the filter/separator geotextile on top of the subbase layer.
5. Install the specified sand bedding layer to a uniform thickness.
6. Ensure an accurate right-angled CellTrack HD laying pattern by setting-out the site using string-lines. Check the lines regularly for accuracy. Start installing the CellTrack HD 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 pavers, ensure that the male/female connectors are fully located together. Use protective gloves to avoid abrasions.
7. CellTrack HD 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.
8. 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

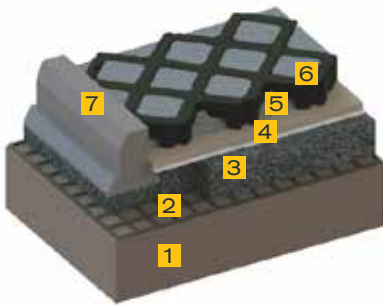


must be taken not to displace the open-celled grids with heavy-treaded or tracked machinery, nor compact the soil during this operation.

9. Apply the grass seed and fertiliser at the recommended rates.
10. The surface may be trafficked immediately after the cells are filled but should be avoided if at all possible. It is strongly advised that the grass is allowed to establish fully then mown 2 or 3 times prior to regular use.
11. 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

## GRAVEL SURFACES

### INSTALLATION BUILD-UP



LAYER	MATERIAL	THICKNESS
1. Sub-grade	Existing subgrade or capping layer	-
2. Reinforcement	Optional E'GRID 3030 geogrid and/or MultiTrack geotextile	-
3. Compacted Sub-base	Free-draining Class 805 DoT Type 3 (open graded) granular aggregate or; Pipe-drained Class 803 DoT Type 1 Sub-base thickness from table 1	See table 1 in design notes
4. Separation	MultiTrack 1000	-
5. Bedding layer	Compacted, clean, coarse grit sand bedding layer	20mm
6. Paver	CellTrack HD	100mm or 120mm
7. Retaining edge	e.g kerb or edging stone	

## INSTALLATION INSTRUCTIONS

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 optional geogrid, geotextile and/or geomembrane onto the prepared subgrade formation.
2. Install the specified sub-base layer and optional drainage.
3. Install any edge restraints which may be specified. Timber, plastic or concrete kerbing are all suitable.
4. Install the filter/seperator geotextile on top of the subbase layer.
5. Install the specified sand bedding layer to a uniform thickness
6. Ensure an accurate right-angled CellTrack HD laying pattern by setting-out the site using string-lines. Check the lines regularly for accuracy. Start installing the CellTrack HD 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 pavers ensure that the male/female connectors are fully located together. Use protective gloves to avoid abrasions.
7. CellTrack HD 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.
8. When installed, fill the paver cells loosely to the finished level (top of cells) with the specified angular gravel/aggregate. Remove excess gravel 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 gravel, but do not compact the gravel. It is preferable that the gravel is left just below the top of the cells to 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 gravel during this operation.
9. 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.

# DESIGN NOTES

Note 1: If the optional geogrid is omitted, the total sub-base layer thickness ('D' on Table 1) is typically increased by a minimum of 50%. Selecting an alternative geogrid will require a redesign of the sub-base thickness.

Note 2: Use of E'GRID 30/30 geogrid. If construction traffic axle loads will be greater than 60kN (approximately 6 tonnes), minimum sub- base thickness over the geogrid shall be 150mm. Maximum sub-base particle size should match minimum subbase 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 geogrid.

Note 3: 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.

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 essential 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 drainage geocomposite.

Note 5: CBR% = California Bearing Ratio: an indicative measurement of subgrade soil strength. Specialist advice should be sought from a suitably qualified person for high load or critical applications.

Note 6: The SuDS permeable sub-base must be overlaid with a Multitrack 1000 geotextile to provide separation, enhanced water treatment function and prevent migration of the sand bedding layer. The sand bedding must be a clean, coarse-grained sand free from silts & clays: it must not be soft building sand or silver sand.

Note 7: 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 8: The maximum advised gradient for vehicular trafficked applications is 8% (1:12) 5°.

Note 9: When designed in accordance with the recommendations, CellTrack HD 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' Sec. 6

APPLICATION/ LOAD	CBR (%)	DOT SUB-BASE THICKNESS (MM) (D)	GEOGRID
Fire truck and occasional HGV access	≥ 6	100	E'GRID 3030
	=4 < 6	120	E'GRID 3030
	=2 < 4	190	E'GRID 3030
	=1 < 2	380	E'GRID 3030
Light vehicle access and overspill car parking	≥ 6	100	E'GRID 3030
	=4 < 6	100	E'GRID 3030
	=2 < 4	135	E'GRID 3030
	=1 < 2	260	E'GRID 3030

Table 1: Typical sub-base thickness (D) requirements - refer to specific construction drawing



	TACTILE	VISUAL	MECHANICAL (SPT)	CBR (%)	CU (kN/m <sup>2</sup> )
Very soft	Hand sample squeezes through fingers	Man standing will sink > 75mm	<2	<1	<25
Soft	Easily moulded by finger pressure	Man walking sinks 50-75mm	2-4	1	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, can be indented by thumb	Loaded construction vehicle ruts by 25mm	15-30	4-6	75-100

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

