



INSTALLATION GUIDELINES

TREE ROOT PROTECTION

GCC/TECHCELL-TRP/0618/V001

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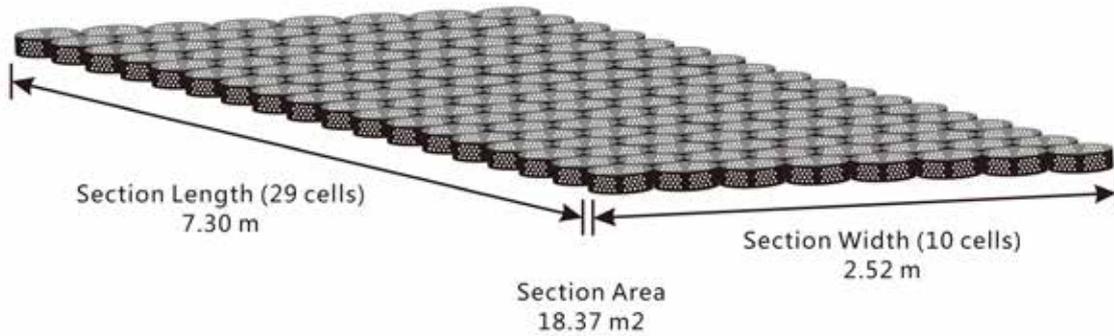
TECHCELL TREE ROOT PROTECTION

INTRODUCTION

The following is offered as a guideline only to assist with the installation of Techcell cellular confinement systems. No responsibility is taken nor warranty offered by Technical Civils Solutions upon adoption of these guidelines.

PRODUCT DESCRIPTION

Techcell is a ground strengthening and erosion control system comprising an HDPE cellular confinement web formed from factory connected strips of HDPE. The strips are textured and usually perforated to allow for groundwater movement but may also be non-perforated if required. The product is manufactured and delivered in panels comprising numerous cells (see below). Panels are manufactured in standard widths and lengths as detailed below but dimensions can be adjusted on request, for example to suit a particular road width or slope length (subject to order quantity).



DELIVERY

Techcell is typically supplied in panels of dimensions of 2.52m x 7.30m with depths of 75mm, 100mm, 150mm and 200mm. However because Techcell is delivered in its 'closed' condition it packs very efficiently on wooden pallets or as a compact bundle for smaller quantities.



The label on each panel will indicate the height and expanded panel dimensions of the web (eg. TECHCELL 200 - 2.52m x 7.30m indicates a depth of 200mm, expanded panel of 2.52m long by 7.30m wide)

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CUTTING THE TECHCELL

Expand the panel and if necessary cut to the required dimensions using a knife or disc saw. The length of the web is best cut to size after expanding the web. The width can be cut to size before expanding the web by noting the cell diameter and counting the number of cells which, when multiplied by the cell diameter, gives the overall width required.

NOTE: Cuts must be at least 25mm from the welds so as not to compromise welded joints.

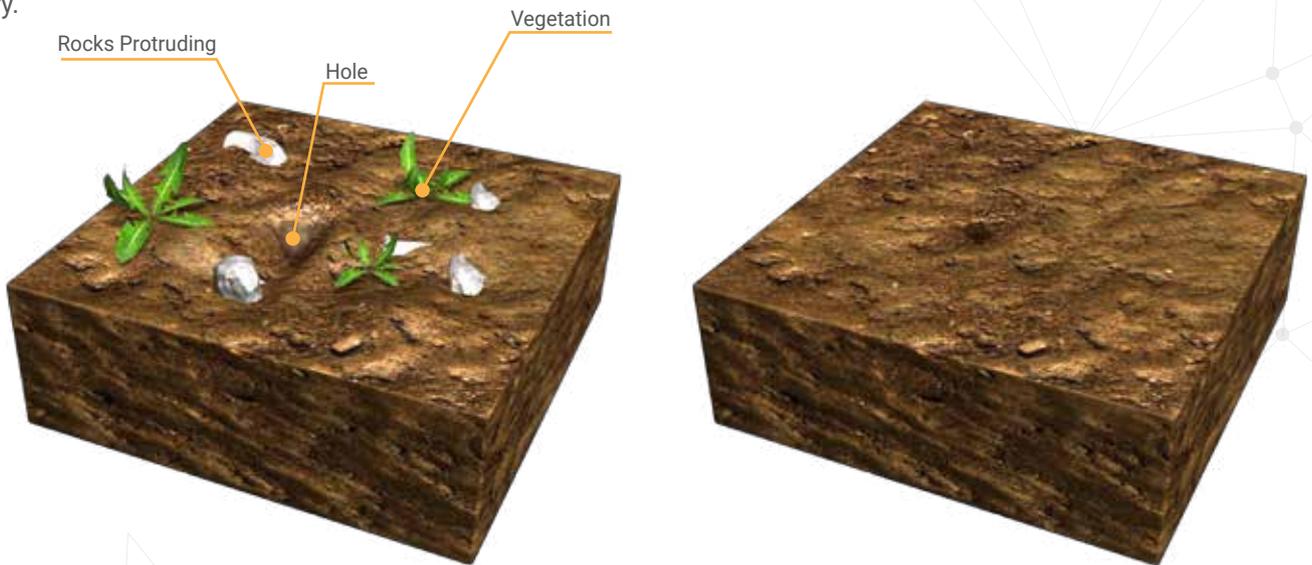
TREE ROOT PROTECTION (TRP) APPLICATIONS

Techcell when used in a Tree Root Protection (TRP) application may also be referred to as a 'No Dig' solution as excavation is generally prohibited and any that is permitted should be strictly controlled so as to prevent damage to tree roots. Soil compaction is similarly generally prohibited during the construction phase within TRP areas. Prior to ANY excavation being performed it is recommended that approval of the proposed construction method and equipment is sought from the relevant Local Authority department, typically the Arboricultural Officer.

- British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012)
- Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12)



The formation should be prepared by the careful removal any debris from the area such as large rocks and any voids should be filled to level. This should preferably be done using hand tools. DO NOT compact or proof-roll the formation level with any machinery.



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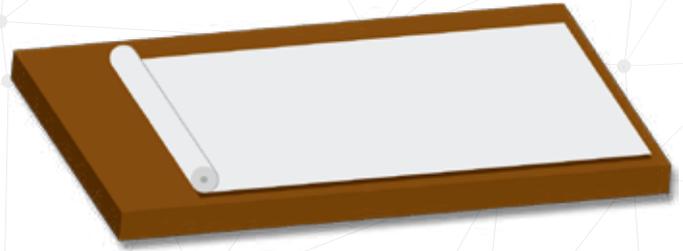
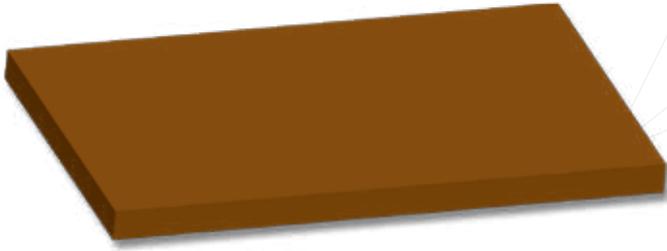
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A robust geotextile separator such as TNW3000F should be laid on the formation before placement of the Techcell, overlapping by 300mm at roll edges. Edge restraints, if required, should be installed as per the scheme engineers details, typically a timber, metal or plastic edging.



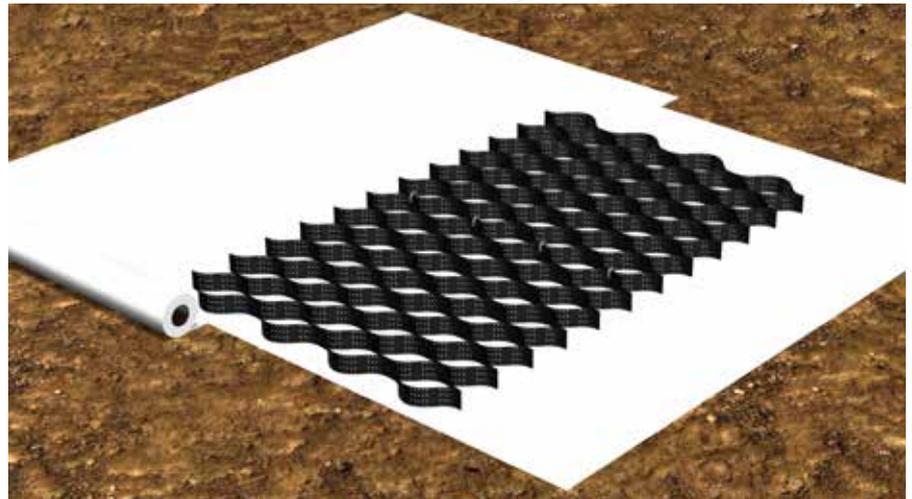
PLACEMENT OF THE TECHCELL

Place one end of the web into position and pin the first edge cell. Manually stretch the opposite edge until the total required panel width is achieved (as stated on the label) and pin the edge cell into position. Repeat with each cell until every cell along both edges of the web is pinned into position. The pins may be hammered fully below the top of the web if required permanently as part of the works or alternatively to a depth just sufficient to hold the web temporarily until the stone infill is placed. Temporary pinning is usually sufficient.



Ideally, when expanded the cells should be symmetrical and not distorted in any direction.

When placing adjoining panels the projecting cells on the edge of one panel can be placed into the indents at the edge of the other next. It is recommended that adjoining panels are stapled together using the P35 stapler and staples.



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FILLING THE TECHCELL

IMPORTANT: the selection and placement of the aggregate infill is **where the procedure for TRPs varies significantly from the standard case.**

For TRP applications the Techcell is typically filled with either 4mm - 20mm or 20mm - 40mm clean angular crushed stone to the top of the Techcell. This open stone facilitates that passage of water and air through the stone layer to help maintain the soil conditions beneath.



Typical examples of suitable clean angular gravel.

The infill material should not be compacted by mechanical compaction equipment as the passage of in service traffic is generally considered to be sufficient and the narrowly graded stone is generally considered to be largely 'self-compacting'.

Overlay the TECHCELL with the specified surfacing layers. Examples of final surfaces are permeable block paving, porous asphalt, Techpave permeable polymer paving etc. Should the overlay be asphalt it is recommended that the Techcell is covered with at least 50mm of the infill aggregate to prevent heat damage. If the layer immediately above the TECHCELL is to be a finer soil (eg grit sand layer) then another separation geotextile is required to prevent the finer soil from dissipating into the clean open stone infill below.

NOTE: For root protection areas the final surface must be permeable.

IMPORTANT: If the surface immediately above the Techcell is to be trafficked, either during the construction phase or with in service traffic after completion, it is important to maintain a protective cover of a minimum of 50mm of aggregate above the Techcell. Otherwise the traction from vehicle tyres will damage and may eventually dislodge the Techcell.

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