REFUSE

# APPENDIX

## TREE PROTECTION BARRIERS




The following pages illustrate barriers, ground protection and special surfacing to be used near protected trees as recommended by BS5837:2005

1. The final design must be site specific and detailed by an appropriately qualified expert.

All uprights should be fixed in position for the duration of the development activity as either scaffold tubes or wooden posts banged or dug into the ground and braced sufficiently to withstand the pressures of everyday site work.

2. The framework supported by the uprights must be suitable for firmly attaching either heras panels or heavy duty ply in a way that will not allow the facing to be easily moved.

3. Minimum barrier height is 2.3m unless otherwise agreed with council.

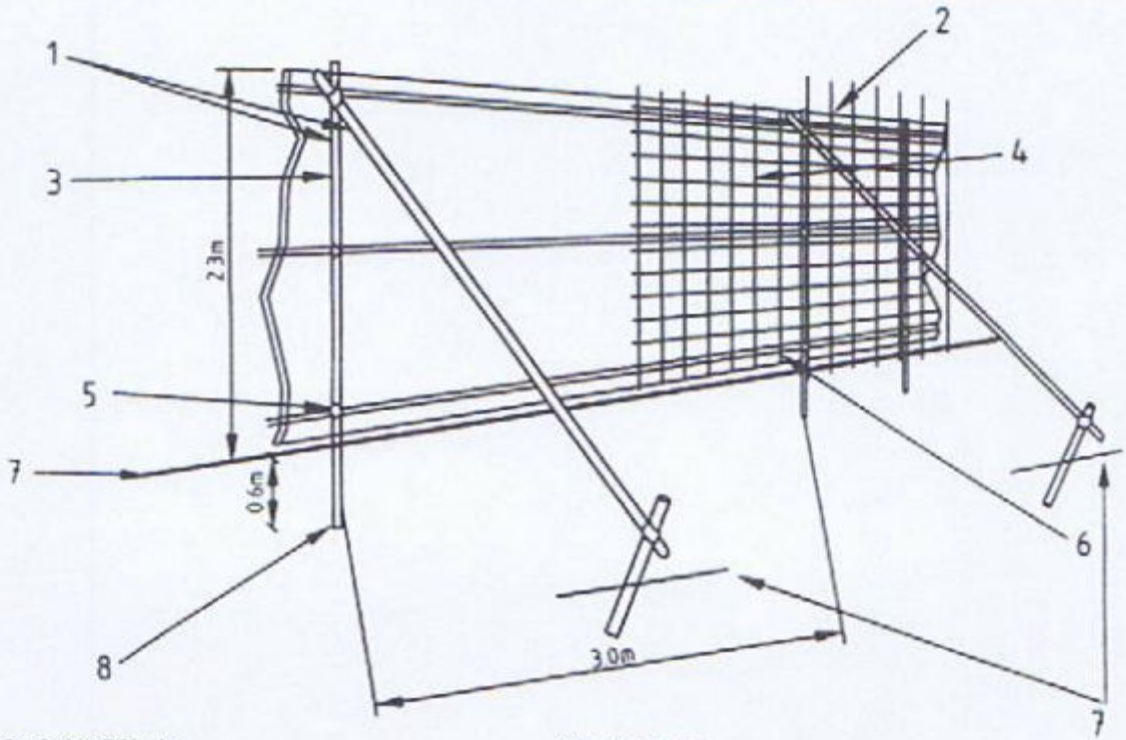
4. Inside the protective barrier, the following rules must be strictly observed:-

- No vehicular access
- No fires
- No storage of excavated debris, building materials or fuels
- No mixing of cement
- No service installation or excavation without written consent of council
- No excessive cultivation for landscape planting

5. Weather proof warning signs should be attached at regular intervals along the protective fencing the signs should say 'CONSTRUCTION EXCLUSION ZONE – KEEP OUT'

6. No barriers should be moved or temporarily dismantled without the written permission of the council.

7. Barrier condition to be regularly monitored to ensure it remains effective.




1. Standard scaffold poles
2. Uprights to be driven into the ground.
3. Panels secured to uprights with wire ties and where necessary standard scaffold clamps.
4. Weldmesh wired to the uprights and horizontals
5. Standard clamps
6. Wire twisted and secured on inside face of fencing to avoid easy dismantling
7. Ground level
8. Approx 0.6m driven into the ground

Figure 2 - Protective barrier

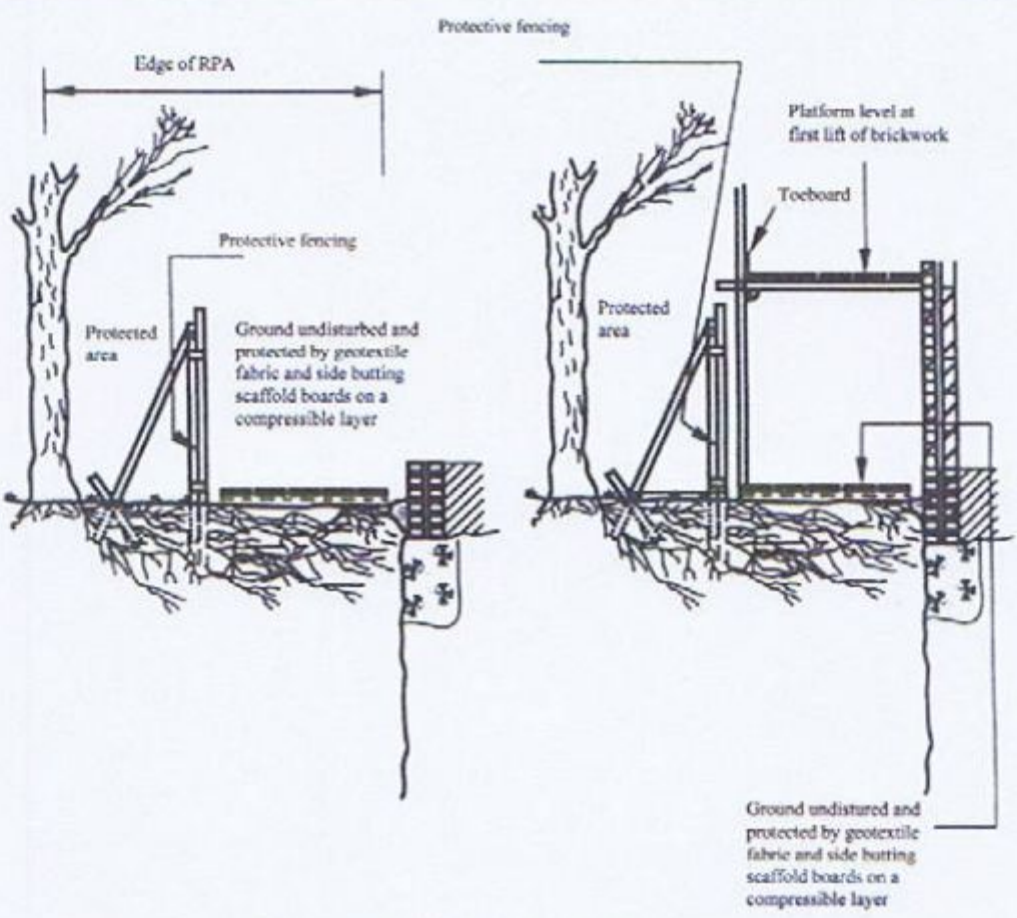
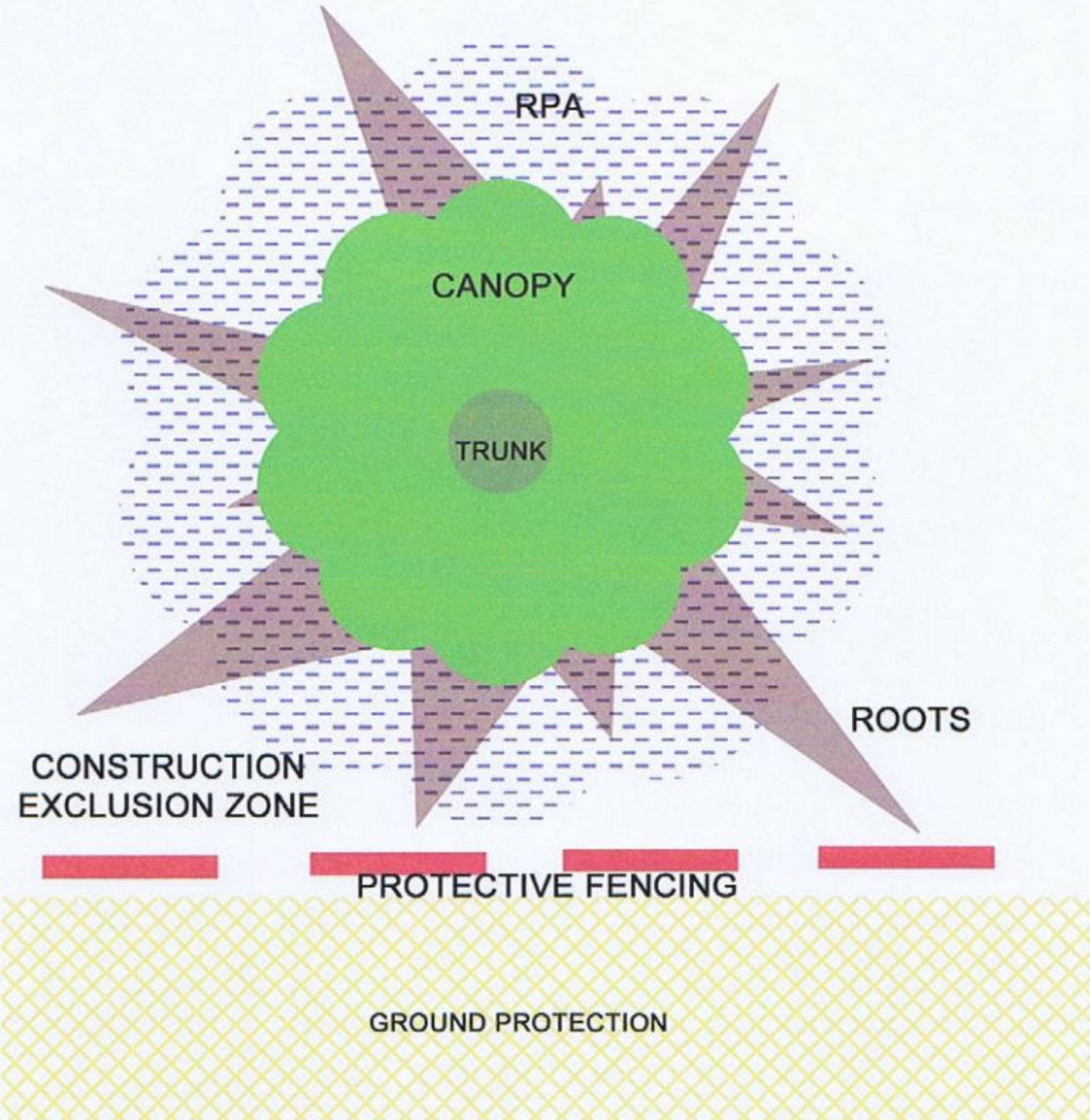



Figure 3 - Scaffolding within the RPA

# Root Protection Zone



# CONSTRUCTION OF DRIVEWAY UNDER THE CANOPY OF TREES

All digging should be carried out by hand retaining roots above 25mm in diameter. Any roots that need cutting should be cleanly cut and immediately covered with soil. All work to be done in accordance with British Standards BS5837:2005.

Existing soil level to be excavated by hand to a (maximum) depth of 50mm, removing loose-leaf litter layer. Foundations for new surfaces to be constructed above this level without further excavations ensuring that no damage is done to tree roots.

Geotextile membrane to be Terram 1000 (or similar approved) to be laid with no compaction of the existing soil.

150mm Geoweb infilled with 20-40mm no fines stone to be laid on Geotextile membrane).

Edging board to be surface mounted and fixed with timber pegs at 1m centres, avoiding tree roots. Level change, to be made up with topsoil over a minimum distance.

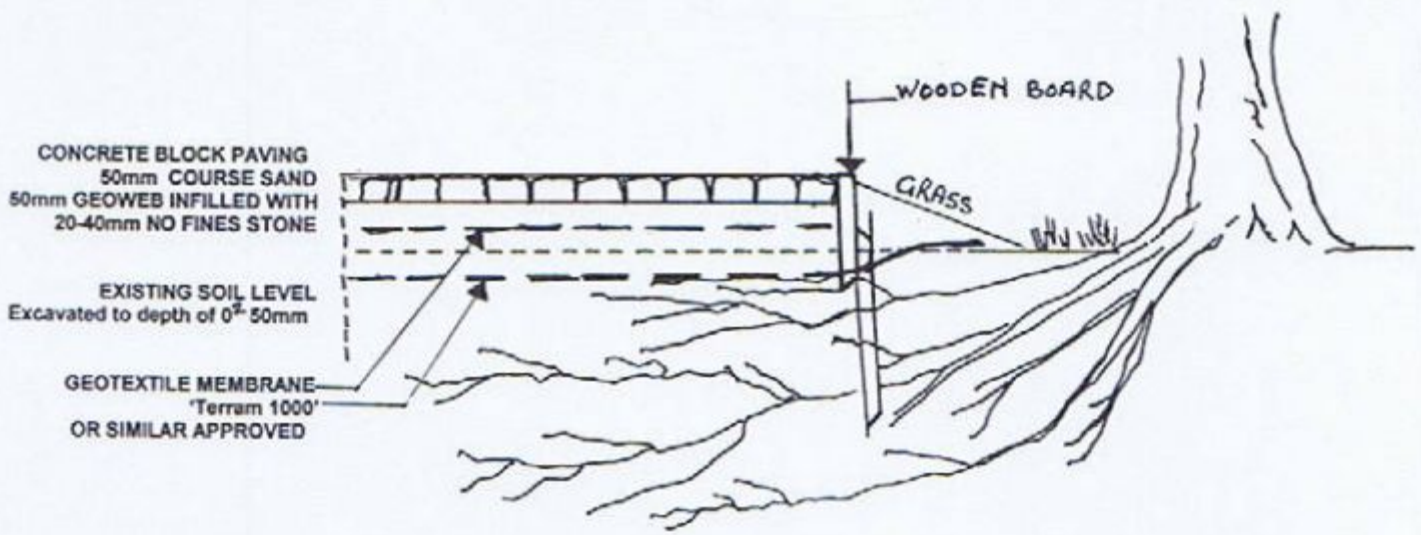
If the new driveway should cover over 20% of the RPA or be wider than 3m within it, it should be constructed to allow moisture infiltration and gaseous diffusion.

If the surface is to be concrete block pavers, they should be laid dry jointed onto a sharp sand foundation, to allow air and moisture to penetrate to the rooting area.

If the surface is to be gravel it should be land based, as any salt in the gravel will harm the trees. Binding gravels or hoggin should not be used due to their impermeable texture when consolidated.

If the surface is to be tarmac then it should be open textured tarmac, allowing moisture infiltration and gaseous diffusion.

If the surface is to be concrete, falls and openings should be provided for water and air to enter the soil. 50mm diameter holes should be made at regular spacing of 300-600mm and back fill the holes with no-fines gravel or aggregate.







NETLON

TURF SYSTEMS

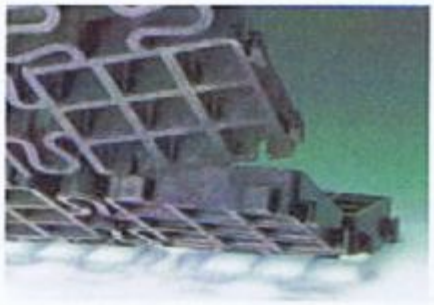
from

adp

# Netpave® 50

## benefits

- **HGV load bearing capability**
- **Resists deformation and fracture**
- **Easy installation with no pegging**
- **Conforms to irregular surfaces and gradients.**
- **Provides ideal source control for Sustainable Urban Drainage Systems (SUDS)**



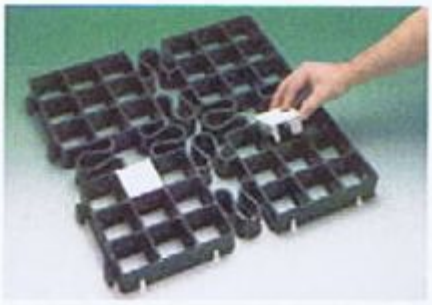
## technical data

Paver size: 500 x 500 x 50 mm deep (4 per m²)

Weight: 9 kg per m²

Load bearing: 150 tonnes per m²

Material: 100% recycled polyethylene



## suitability

- Permanent and overspill car parks
- Drives, paths and cycle routes
- Fire and service access roads.
- Helipads

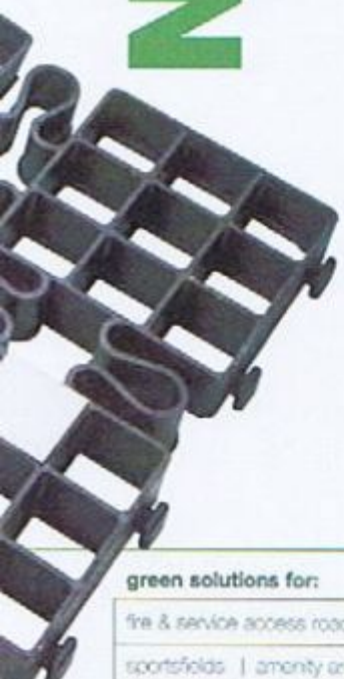


## installation

For full installation instructions and technical advice please contact Netlon Turf Systems at the address below.







Netlon Turf Systems is part of Conwed Plastics nv

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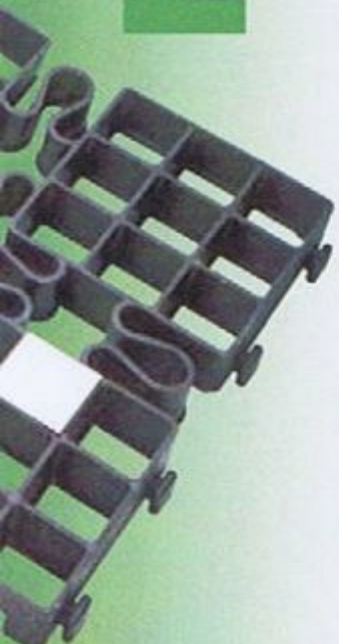
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**green solutions for:**

fire & service access roads | overspill parking | walkways | verges | SUDs
sportsfields | amenity areas | events areas | helipads | slopes

SURFACE SOLUTIONS
FOR GRASS & GRAVEL

# Netpave® 50



## Installation

1. Place paver units with dimpled face uppermost (flared base down) onto the prepared, well consolidated bedding layer. The leading edge of the pavers should have the fixing lugs exposed for quick and easy installation. No pegging is required. Edging boards or kerbs can be used where required, according to local soil conditions.
2. Connect the pavers using the lugs and slots, progressing over the area in rows. Use protective gloves to avoid abrasions.
3. Pavers can be cut using a hand or power saw to fit around obstructions and contours. Cut pieces which are less than half the original size should be avoided where possible.
4. Fill pavers with the specified proprietry rootzone. Finished levels should be 7-10mm below the top of the cells after settlement. Do not overfill the paver cells. A light vibrating plate can be used to consolidate the pavers and to settle the rootzone infill if required.
5. Rootzone must be a free-draining structurally sound sand:compost or sand:soil blend. This is a nominal proprietry blend of 60:40 or 70:30 ratio. Self blending is not recommended.
6. Carry out a normal seeding, fertilising and watering programme. A very light top dressing may be applied to just cover the seed and to provide adequate germination conditions. DO NOT OVERFILL.
7. The surface may be trafficked immediately, but it is preferable to allow the grass to fully establish prior to use.

**Note 1:** If ADP-Tensar geogrid is omitted, then the total sub-base layer thickness must be increased by 50%.

**Note 2:** Typical drainage details; 100mm diameter perforated pipe drain laid at minimum gradient 1:100, bedded on gravel in trench backfilled with 'DoT Type A' drainage stone, covered or wrapped with a geotextile fabric and leading to a suitable outfall or soakaway. Drains placed down centre or one edge of access routes up to 5m wide. Wider areas may require additional drains at 5m - 10m centres. Drainage design by specifier based on specific ground condtions on site. ADP Polybed may be considered for use as an alternative drainage product/system. Advice is available from ADP Limited.

**Note 3:** Specific advice onground conditions, CBR% and construction over ground with a CBR less than 1% is available from ADP Limited.

**Note 4:** A 'DoT Type 1' sub-base may be used, provided that an adequate drainage system is installed, or alternatively a porous/open-graded (reduced fines) sub-base layer, e.g as part of a Sustainable Urban Drainage System (SUDS) application. If a reduced fines sub-base layer is specified, this must be covered with either a geotextile filter membrane and/or a suitable clean gravel blinding layer, to avoid fine particles entering the sub-base layer.

**Note 5:** Rootzone bedding and paver fill must be a free-draining, structurally sound proprietry blend of sand:soil or sand:compost such as that used in sports/golf construction. This is normally identified as a 60:40 or 70:30 ratio blend and in-situ self-blending is NOT recommended. This type of rootzone is available from ADP Limited as "ADP Greens 5 Rootzone".

**Note 6:** Specific advice on Sustainable Urban Drainage Systems (SUDS) is available from ADP Limited.

**Note 7:** Maximum advised gradient for traffic applications is 12% (1:8) 7°. Specific advice for the use of Netpave 50 on slopes can be obtained from ADP Limited.

**Note 8:** Netpave 50 complies with BS8300:2001 - "Design of buildings and their approaches to meet the needs of disabled people" - Code of Practice.

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

| Consistency | Indicator | | | Strength | |
|---|---|---|---|---|---|
| | Tactile (feel) | Visual (observation) | Mechanical (test) | CBR | CU |
| | | | SPT | % | 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 | 75-150 |

The field guide is provided as a guideline for assessing the mechanical stabilisation requirements in commonly encountered field conditions. ADP accepts no responsibility for any loss or damage resulting from the use of this guide.

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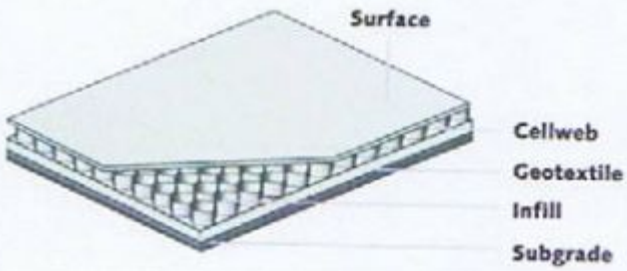
# CellWeb™



## CellWeb™ Confinement Systems

### Tree root protection

Because CellWeb™ reduces the need for excavation, this makes it ideal for stabilising access roads and car parks around tree root systems. What's more it reduces compaction of sub soils above the roots and promotes the migration of water and nutrients, ensuring the long-term preservation of the tree itself.




GEOSYNTHETICS

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# Method Statement

## For The Installation of Cellweb Tree Root Protection System.



When considering damage to tree roots, in applications of vehicular access and parking, the risk of oxygen depletion caused by compaction of subsoil's, site clearance damaging the root source and type of reinforcement are areas which need to be given due consideration.

**Other risk factors are:**

- Creating an impermeable surface
- Causing a rise in the water table due to construction
- Increasing ground level
- Contamination of subsoil's

## 1. Compaction

When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting traffic to be proposed:

- Californian Bearing ratio (CBR) – Standard test method for measuring soil strength
- Soil types
- Water table
- Maximum load (vehicles)
- Acceptable rut depth
- Reinforcement type — Cellweb Cellular Confinement
- Type and Depth of engineered infill material — Clean, angular. Usually 40mm to 20mm.

## 2. Dig (site strip)

Site stripping does damage some root structure prior to construction; however, the use of no-dig construction elevates the access road requiring edge protection.

## 3. No dig

| | |
|---|---|
| 3.1. Remove surface vegetation | Use a suitable herbicide suitable for the specific vegetation and not harmful to the tree root system |
| 3.2. Place geotextile separation filtration layer | Use a Fibretex F4M non woven Goetextile over the prepared sub-grade. Overlap dry joints by 300mm. |
| 3.3. Cellular Confinement System | The three dimensional cell structure, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system |
| 3.4. Edge restraint | A treated timber edging is usually acceptable. |

## 4. Cellular Confinement and Backfill Material.



Expand the Cellweb 2.56m wide panels to the full 8.1 metre length. Pin the Cellweb panels with staking pins to anchor open the cells and staple adjacent panels together to create a continuous mattress. Infill the Cellweb with a no fines angular granular fill (typically 40-20mm) within each open cell. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and geogrid-reinforced structures demonstrate a 50% reduction in construction thickness of the granular material.

## 5. Surfacing Options

**Block Paving:**
5.1. Lay second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections
5.2. Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.
5.3. Place block paviors as per manufacturers instructions.

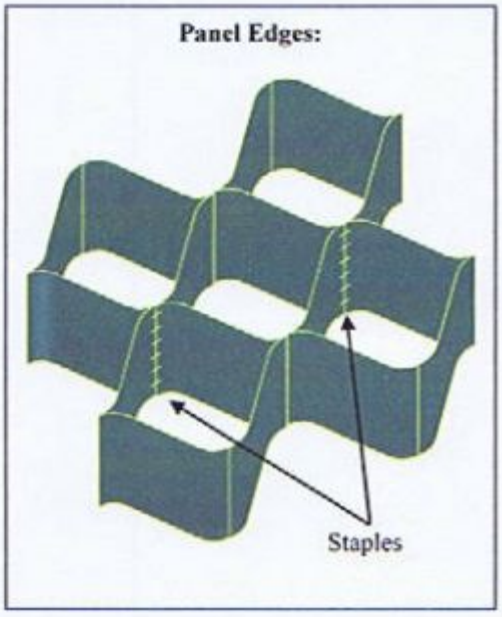
**Tarmac:**
Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.

**Loose Gravel:**
5.4. Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections
5.5. Place decorative aggregate to required depth
NOTE: A treated timber edge should be provided to restrict gravel movement.

**Grass Blocks:**
5.6. Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections
5.7. Place 50/50 rootzone bedding layer to the required depth
5.8. Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.
5.9. Seed as per architects instructions.
(Alternatively the Grass Blocks may be infilled with gravel.)

Below are illustrations of the correct stapling procedure for joining both edges and ends of panels together;

**Panel Edges:**




**Panel Ends:**

