



## Bicester ECO Development

External Works: Tree Pit Specifications

**Hyder Consulting (UK) Limited**

5th Floor  
The Pithay  
All Saints Street  
Bristol BS1 2NL  
United Kingdom

Tel: +44 (0)117 372 1200

Fax: +44 (0)117 37

www.hyderconsulting.com



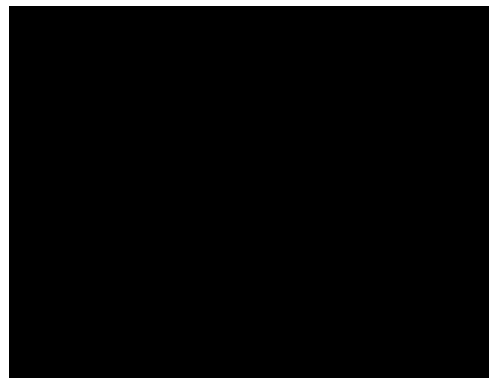
# Bicester ECO Development

## External Works: Tree Pit Specifications

**Author** A. Arnott

**Checker** A. Victory

**Approver** A Zorlutuna



**Report No** UA001881-701-1100 Tree Pit Specification

**Date** 1<sup>st</sup> October 2012

**Revision 2** 15<sup>th</sup> October 2012 – Minor amendments

**Revision 3** 17<sup>th</sup> December 2012 – Streetlife Tree Outline added

**Revision 4** 16<sup>th</sup> August 2013 – Streetlife tree outline removed, minor amendments

**Revision 5** 22<sup>nd</sup> August 2013 – Removal of resin bound related clauses, minor amendments

**Revision 6** 15<sup>th</sup> August 2014 – Mulch details amended and other minor changes in line with changes

**Revision 7** 27<sup>th</sup> October 2015 – Root barrier product update

## Table of Contents

Title		Page
Q20	Granular sub-bases to roads/pavings	2
Q28	Topsoil, growing media and ameliorants	4
Q31	External planting	7
Q50	Site/street furniture/equipment	9

## Q20 Granular sub-bases to roads/pavings

### GENERAL NOTE

Structural tree pit construction to be completed prior to commencement of adjacent road and paving surfacing works.

- 110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS
- Thicknesses: See sections:
    - Q23 Gravel/hoggin/woodchip roads/pavings.
- 145 PREPARATION AND COMPACTION OF SUBGRADES
- Timing: Immediately before placing sub-base.
  - Soft or damaged areas: Obtain instructions.
  - Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.
- 170 GEOTEXTILE FILTER/ SEPARATOR MEMBRANE TO RECYCLED GLASS TREE PIT
- Manufacturer: TERRAM 1000 OR SIMILAR APPROVED .
    - Product reference: TERRAM 1000 OR SIMILAR APPROVED .
  - Jointing: 300 mm overlap .
  - Protect from:
    - Exposure to light, except during laying (maximum five hours).
    - Contaminants.
    - Materials listed as potentially deleterious by geotextile manufacturer.
    - Damage, until fully covered by fill.
    - Wind uplift, by laying not more than 15 m before covering with fill.
  - Preparation: Remove humps and sharp projections and fill hollows before laying.
- 180 NOTICE
- Give notice: On completion of compaction of sub-base.
    - Period of notice: 2 working days.
- 210 HIGHWAYS AGENCY TYPE 1 UNBOUND MIXTURE FOR SUB-BASE
- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clauses 801 and 803.
    - Recycled aggregate: Permitted.
- 211 GRANULAR MATERIAL
- Quality: Of a known suitability for use in sub-bases, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA50 for the Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
    - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
    - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
    - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
    - Natural gravel.
    - Natural sand.
  - Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.

230 PLACING GRANULAR MATERIAL GENERALLY

- Preparation: Loose soil, rubbish and standing water removed.
- Structures, membranes and buried services: Ensure stability and avoid damage.

250 LAYING GRANULAR SUB-BASES TO TREE PITS

- General: Spread and levelled.
- Compaction:
  - Timing: As soon as possible after laying.
  - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

310A ACCURACY

- Permissible deviation from required levels, falls and cambers (maximum):
  - Subgrades:  
TREE PITS:  $\pm 10$  mm .
  - Sub-bases:  
TREE PITS: [ $\pm 5-10$  mm].

330 COLD WEATHER WORKING

- Frozen materials: Do not use.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

340 PROTECTION

- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
- Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

## **Q28 Topsoil, growing media and ameliorants**

### **SYSTEM OUTLINE**

- 110 TOPSOIL SYSTEM TREE PITS IN SOFT LANDSCAPED AREAS
- Topsoil: Site sourced topsoil .
  - Ameliorants: Composted materials.
  - Accessories: None.
- 120 GROWING MEDIA SYSTEM FOR ALL TREE PITS IN HARD LANDSCAPED AREAS
- Growing media: Imported urban tree soil - Greenleaf or similar approved. Refer to item 340.
  - Ameliorants: Fertilizer to be incorporated into soil/ growing media.
  - Accessories: None.

### **PRODUCTS**

- 300 PREPARATION MATERIALS GENERALLY
- Purity: Free of pests, disease, and fungus.
  - Foreign matter: On visual inspection, free of fragments and roots of aggressive weeds, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
  - Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
    - Corrosive, explosive or flammable.
    - Hazardous to human or animal life.
    - Detrimental to healthy plant growth.
  - Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
  - Objectionable odour: None.
  - Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.
- 310 MATERIALS NOT PERMITTED
- Materials: Products containing peat.
- 315 IMPORTED TOPSOIL TO BS 3882
- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
  - Standard: To BS 3882.
  - Classification: Multipurpose.
    - Grade: 2-4 mm.
  - Source: Submit proposals.
    - Product reference: Submit proposals.
- 340 SPECIAL IMPORTED TOPSOIL AND/ OR GROWING MEDIA FOR TREE PITS IN PAVED AREAS
- Type: Urban tree planting soil.
    - Grade: 0.6-2 mm.
  - Source: GREENLEAF (Web. [www.greenleaftrees.co.uk](http://www.greenleaftrees.co.uk) Tel. 01424 717797) OR SIMILAR APPROVED.
    - Product reference: URBAN TREE SOIL.

365 COMPOSTED MATERIALS 50MM LAYER TO TREE PITS IN SOFT LANDSCAPED AREAS

- Type: Composted bark and Composted biomaterial.
- Source: Contractor's choice.
  - Product reference: Contractor's choice.
- Horticultural parameters:
  - pH (1:5 water extract): 7.0-8.7.
  - Electrical conductivity (maximum, 1:5 water extract): 200 mS/m.
  - Moisture content (m/m of fresh weight): 35-55%.
  - Organic matter content (minimum): 25%.
  - Grading (air dried samples): 99% passing 25 mm screen, and 90% passing 10 mm screen mesh aperture.
  - Carbon:Nitrogen ratio (maximum): 20:1.
- Texture: Friable.
- Objectionable odour: None.

390 FERTILIZERS TO BE INCORPORATED INTO SOIL/ GROWING MEDIA FOR TREE PITS IN SOFT LANDSCAPED AREAS

- Type: General fertilizer.
- Source: Contractor's choice.
  - Product reference: Contractor's choice.

**EXECUTION**

610 TOPSOIL ANALYSIS

- Soil to be analysed: Imported topsoil.
- Soil analyst: CONTRACTOR.
- Samples: Collect in accordance with BS 3882.
- Submit:
  - Declaration of analysis:
    - Chemical analysis and contaminants;
    - Maximum stone content, stone size and pH value;
    - Nutrient content, pH value and textural classification; and
    - Phytotoxic and CLEA elements.
  - Report detailing soil analyst's recommendations.

625 SAMPLE LOADS FOR IMPORTED TOPSOIL

- Deliver to site a sample load: of 5 kg.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
  - Notice period: 2 days.

650 NOTICE

- Give notice before:
  - Setting out.
  - Spreading topsoil.
  - Applying herbicide.
  - Applying fertilizer.
  - Visiting site during maintenance period.
- Period of notice: Three working days.

655A MECHANICAL TOOLS

- Restrictions: Do not use within Root Protection Area of existing trees or 100mm of tree and plant stems.

- 660 GRADING SUBSOIL
- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
  - Areas of thicker topsoil: Excavate locally.
- 665 SUBSOIL SURFACE PREPARATION
- General: Excavate and/ or place fill to required profiles and levels, as section D20.
  - Loosening:
    - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
    - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
    - Rock and chalk subgrades: Lightly scarify to promote free drainage.
  - Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
  - Remove from site: Arisings, contaminants and debris and Builders rubble.
- 690 TOPSOIL STORAGE HEAPS
- Location: Throughout the site and in accordance with BS3882:2007- Specification for Topsoil and requirements for use.
  - Height (maximum): 1.0 m.
  - Width (maximum): 5.0 m.
  - Protection:
    - Do not place any other material on top of storage heaps.
    - Do not allow construction plant to pass over storage heaps.
    - Prevent compaction and contamination, by fencing and covering as appropriate.
- 705A HANDLING TOPSOIL  
ALL TOPSOIL HANDLING TO BE IN ACCORDANCE WITH BS3882:2007 SPECIFICATION FOR TOPSOIL AND REQUIREMENTS FOR USE
- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
  - Plant: Select and use plant to minimize disturbance, trafficking and compaction.
  - Contamination: Do not mix topsoil with:
    - Subsoil, stone, hardcore, rubbish or material from demolition work.
    - Other grades of topsoil.
  - Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
  - Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2.
- 715 LOOSE TIPPING OF TOPSOIL
- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.
  - Depths after settlement (minimum): 400 mm.
- 820 APPLYING GENERAL FERTILIZER SLOW RELEASE
- Locations: TREE PITS IN SOFT LANDSCAPED AREAS.
  - Application: Spread evenly, carefully incorporating below mulch materials.
    - Timing: Immediately before cultivation.
    - Application rate: 25 g/m<sup>2</sup>.
    - Other requirements: NONE.



## Q31 External planting

### GENERAL INFORMATION/ REQUIREMENTS

- 118 SOIL CONDITIONS
- Soil for cultivating and planting: Moist, friable and (excepting aquatic/ marginal planting) not waterlogged.
  - Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.
- 120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable.
    - Strong winds: Do not plant.
- 125A TIMES OF YEAR FOR PLANTING
- Deciduous trees and shrubs: Whilst plants are dormant - approx. late October to late March dependant on suitable climatic conditions.
  - Conifers and evergreens: September/ October or April/ May.
  - Herbaceous plants (including marginal): September/ October or March/ April.
  - Container grown plants: At any time if ground and weather conditions are favourable.
    - Watering and weed control: Provide as necessary.
  - Dried bulbs, corms and tubers: September/ October.
  - Colchicum (crocus): July/ August.
  - Green bulbs: After flowering in spring.
  - Wildflower plugs: Late August to mid November or March/ April.
  - Aquatic plants: May/ June or September/ October.
- 130 MECHANICAL TOOLS
- Restrictions: Do not use within 100 mm of tree and plant stems.
- 505 TREE PITS
- Sizes: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815 .
  - Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
  - Pit bottoms: With slightly raised centre. Break up to a depth of 200 mm.
    - Treatment: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.
  - Pit sides: Scarify.
  - Backfilling material: Tree backfilling material.
  - Accessories: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.
    - Underground guying;
    - Perforated plastics irrigation/ ventilation pipe; and
    - Root barrier.
- 510A TREE PIT ROOT BARRIERS
- Locations: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.
  - Manufacturer: Greenleaf or similar approved.
    - Product reference: Greenleaf Reroot 300 and 2000 or similar approved. Type and depth as determined on Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.
  - Installation: TO MANUFACTURER'S RECOMMENDATIONS

512 TREE PIT ACCESSORIES

- Locations: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.
- Manufacturer: GREENLEAF ARBORVENT OR SIMILAR APPROVED.
  - Product reference: GREENLEAF ARBORVENT OR SIMILAR APPROVED.
- Type: TO MANUFACTURER'S RECOMMENDATIONS.

535 STAKING GENERALLY

- Stakes: Softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.
  - Preservative treatment: Not required.
- Nails: To BS 1202-1, galvanized, minimum 25 mm long and with 10 mm diameter heads.
- Stake size (minimum): 75mm diameter.

565A LONG DOUBLE STAKING

- Staking: Drive stakes vertically at least 300 mm into bottom of pit on either side of tree position before planting.
  - Backfilling: Consolidate material around stakes.
- Height of stakes: Cut off just below lowest branch of tree.
- Cross bar: Wood, as stake.
  - Firmly fix on windward side of tree and as close as possible to stem.
- Ties: Greenleaf Naturetie or similar approved.
- Tying: Secure tree firmly but not rigidly to cross bar.

590 MULCHING TREES

- Material: Organic mulch.
  - Purity: Free of pests, disease, fungus and weeds.
  - Recycled content: 100% to BS EN ISO 14021.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.
- Finished level of mulch: As Drawings UA001881-701-800, UA001881-701-801 and UA001881-701-815.

790A FINAL MAINTENANCE

- Timing: At end of the maintenance period.
- Watering: Ensure that soil is thoroughly moistened prior to remulching/resurfacing, applying water where necessary.
- Planting beds: Remulch.
  - Depth (minimum): [75 mm].
- Resin bonded glass: Resurface glass/glass chippings where necessary in accordance with manufacturer's recommendations
- Trees: Remulch.
  - Depth (minimum): 75 mm.

## **Q50 Site/street furniture/equipment**

### **SITE/STREET FURNITURE/EQUIPMENT**

- 262 TREE GRILLES GREENLEAF CASTLE TREE GRILLE OR SIMILAR APPROVED - INFILL TO MATCH SURROUNDING PAVING. ADHERE TO SURROUNDING PATTERN AND COURSING
- Manufacturer: GREENLEAF.
    - Product reference: GREENLEAF CASTLE INTEGRATED TREE GRILLE 1.5M.
  - Material: Steel.
    - Finish: Hot dip galvanized to BS EN ISO 1461.
    - Colour: GALVANISED.
  - Size: 1500MM SINGLE TRAY CASTLE TREE GRILLE.
  - Accessories/ Special requirements: Concealed, vandal proof fixings and Irrigation hole with cover.
  - Method of fixing: ACCORDING TO MANUFACTURERS' RECOMMENDATIONS, DRAWING UA001881-701-800 AND DRAWING UA001881-701-815.