



COOP LIVE
Q31 - EXTERNAL PLANTING

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Co-op Live

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Q31 EXTERNAL AND INTERNAL PLANTING

GENERAL

110 WORKS INCLUDED

1. Scope of Works: This section of the Specification, when read in conjunction with the Design Drawings, provides particular requirements with respect to the works, which include the following:
 - a. Soft Planting Works.
2. Particular Interfaces
 - a. Complete the Detailed Design of all interfaces with adjoining trades prior to commencement of manufacture.
 - b. Ensure that all interfaces are fully co-ordinated prior to commencement.
3. Related Documents and Sections: Examine the Design Drawings and the Contract Documents for requirements that directly affect or are affected by Work of this Section. Other Documents and Sections that directly relate to work of this Section include, but are not limited to:
 - a. The Preliminaries, general provisions of the Contract, including General and Supplementary Conditions, and Architectural General Requirements Specification Sections.

111 APPLICABLE DESIGN RESPONSIBILITY

1. Design & Build Procurement Routes
 - a. Appoint a specialist sub-contractor to complete the Detailed Design maintaining at all times the intent portrayed on the Design Drawings whereby the Architect's role post-novation or during subsequent design stages shall be limited to checking compliance with quality, design and visual intent only.

112 TENDER SUBMITTALS

1. Tender Response
 - a. Provide tender submittals in accordance with the requirements of SUBMITTALS clauses of the A Section of the Specification.
 - b. Submit a design response with the Tender proposal, to include all profiles of typical conditions, with dimensions.
 - c. The Tender design response shall include:
 - 1). Samples where specified.
 - 2). List of Tests included.
 - 3). QA/ QC programme.
 - 4). List of proposed Working Drawings.
 - 5). Summary of deviations from the Specification.
 - 6). Outline technical specifications reflecting proposed materials/ systems, etc.
 - 7). A list of proposed suppliers and sub-contractors intended to be used.
2. General

- a. The following submittals pertinent to planting shall be submitted:
 - 1). Catalogue data and literature of manufacturers and suppliers.
 - 2). Manufacturers certified analysis of all standard products. The certificate of origin for all chemicals and pesticides shall clearly state that the product is used in the manufacturer's country.
 - 3). Certificates confirming the origin, size, age of all plant materials and that the same are free from insects and disease.
 - 4). A method statement for fertiliser application.
 - 5). A Plant Procurement Schedule within 14 days of the start of the Contract. This schedule shall identify the source of every plant species to be included in the works. The schedule shall be documented with the listing of names and locations of all nurseries, growers and plant material sources.
 - 6). A weekly work schedule for review before work is started. The schedule shall identify tasks to be completed on a weekly basis and the anticipated schedule for completing the tasks. The Contractor will then modify and submit the schedule on a weekly basis identifying tasks completed, tasks to be completed, problems encountered and recommendations additional to a monthly report contains all the above in details.
- b. O+M Submittals
 - 1). Refer to clause series 317 hereunder.

113 SAMPLES

1. Pre-contract Samples: Sufficient samples of the following, including relevant trade literature and technical specifications, shall be provided in accordance with SUBMITTALS clauses of the A Section:
 - a. 300mm length of the proposed drainage pipe.
2. Post Contract Samples: In accordance with SUBMITTALS clauses of the A Section, post contract samples of the following shall be provided:
 - a. 300mm x 300mm sample of the proposed filter layer.
 - b. Soil and fertiliser sample requirements: Samples of materials shall be submitted for review in accordance with the list below. For standard products, the manufacturer's analysis will be acceptable. For all other materials, analysis is to be provided by recognised laboratories.
 - 1). Soil mix.
 - 2). Peat.
 - 3). Fertiliser.
 - 4). Soil conditioner.

114 MOCK-UPS, PROTOTYPES AND QUALITY BENCHMARKS

1. Mock-ups: Provide mock-ups in accordance with SUBMITTALS clauses of the A Section:
 - a. Not required.

2. Prototypes: Provide prototypes in accordance with SUBMITTALS clauses of the A Section:
 - a. Not required.
3. Benchmark Requirements: The following quality benchmarks shall be provided in accordance with SUBMITTALS clauses of the A Section:
 - a. The first delineated and fully completed site furniture as accepted by the Architect.

115 TESTING

1. Test Requirements: Provide details of all tests undertaken on materials supplied for use within the works and supply copies of test results to the Architect immediately they become available and not less than 10 days prior to commencement of the works.

PRODUCTS

210 PERFORMANCE REQUIREMENTS

1. Comply with the general performance of PERFORMANCE REQUIREMENTS AND DATA clauses of the A Section and the following specific performance requirements.
2. Durability
 - a. The works shall perform throughout its design life without failure resulting from defects in design, materials or workmanship. Failure shall be defined as breakage, disengagement of components, reduction in performance or unacceptable change in appearance.
3. Sustainability
 - a. Refer to Section A.600 series SUSTAINABILITY clause, determine and evaluate the applicability of the specified requirements including BREEAM Credit Requirements to the works specified in this Section of the Specification. Comply with all relevant requirements.

211 EXTERNAL SYSTEMS

1. Type EXT-501 Root Barrier - Type 1
 - a. Description: Root barrier.
 - b. Nominal Size: 1mm thickness.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
 - 2). Reference: Reroot 1000.
2. Type EXT-502 Root Barrier - Type 2
 - a. Description: Root barrier.
 - b. Nominal Size: 2mm thickness.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
 - 2). Reference: Reroot 2000.

3. Type EXT-505 Root Director
 - a. Description: Root director.
 - b. Nominal Size: 1805 x 1805 x 500mm.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
 - 2). Reference: RD1400A RootDirector.
4. Type EXT-511 Tree Anchor System - Deadman Fixed
 - a. Description: Deadman fixed tree anchorage system.
 - b. Type: Tree anchoring system to deadman.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
5. Type EXT-512 Tree Anchor System - Slab Fixed
 - a. Description: Slab fixed tree anchorage system.
 - b. Type: Tree anchoring system to slab.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
6. Type EXT-521 Root Rain Irrigation/ Aeration System
 - a. Description: Root rain irrigation/ aeration system.
 - b. Type: To be confirmed.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
 - 2). Reference: To be confirmed.
7. Type EXT-525 Root Space Structure
 - a. Description: Root space structure.
 - b. Type: Root space structure 1 module depth.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
 - 2). Reference: To be confirmed.
8. Type EXT-533 Drainage Layer
 - a. Description: Drainage layer.
 - b. Type: Drainage layer with geotextile protection mat.
 - c. Nominal Size: 85mm thickness.
 - d. Indicative Product:
 - 1). Manufacturer: Polypipe.

- 2). Reference: Permavoid drainage layer w/ geotextile protection mat.
9. Type EXT-535 Natural Aggregate - Loose
 - a. Description: Loose natural aggregate.
 - b. Nominal Size: 3 - 5mm.
 - c. Indicative Product:
 - 1). Manufacturer: GreenBlue Urban, or acceptable equivalent.
 - 2). Reference: To be confirmed.
 10. Type EXT-537 Separation Layer
 - a. Description: Separation layer.
 - b. Type: Geotextile separation mat.
 - c. Indicative Product:
 - 1). Manufacturer: To be confirmed.
 - 2). Reference: To be confirmed.
 11. Type EXT-541 Green Screen
 - a. Description: Green screen.
 - b. Type: Pre-grown green panel fixed on the retaining wall.
 - c. Pruning: April-September growing season once per year.
 - d. Indicative Product:
 - 1). Manufacturer: Mobliane, or acceptable equivalent.
 - 2). Reference: Green Screen.
 12. Type EXT-543 Living Wall
 - a. A proprietary lightweight, semi-hydroponic, biodegradable, modular panel living wall system.
 - b. The system comprises the following constituent elements:
 - 1). Metal carrier profile.
 - 2). System-compatible insulation layer.
 - 3). PVC layer.
 - 4). Fytotextile layer.
 - 5). Polyamide layer.
 - c. Irrigation: Automated. Refer to the Services Engineer's Documentation.
 - d. Fire performance: BS 476: Part 6 and Part 7.
 - e. Plant species: Refer to Planting Schedule.
 - f. The system shall be installed by the contracting division of the manufacturer or where this provision is not available, by an approved or licensed specialist.

- g. Indicative product:
 - 1). Manufacturer: Mobilane.
 - 2). Reference: Livepanel.
- 13. Type EXT-545 Mulch
 - a. Description: Mulch.
 - b. Type: Mulch at 1m³ of material per 12m².
 - c. Nominal Size: 50mm thick over the topsoil.
 - d. Indicative Product:
 - 1). Manufacturer: Melcourt, or acceptable equivalent.
 - 2). Reference: Bark Nuggets.
- 14. Type EXT-561 Proposed Tree
 - a. Description: Proposed tree.
 - b. Type: To be confirmed.
 - c. Indicative Product:
 - 1). Manufacturer: Deepdale Trees Ltd.
 - 2). Reference: Refer to Planting Schedule.
- 15. Type EXT-565 Proposed Shrub
 - a. Description: Proposed shrub.
 - b. Type: Refer to Planting Schedule.
 - c. Indicative Product:
 - 1). Manufacturer: To be confirmed.
 - 2). Reference: To be confirmed.
- 16. Type EXT-568 Proposed Planting
 - a. Description: Proposed planting.
 - b. Type: Refer to Planting Schedule.
 - c. Indicative Product:
 - 1). Manufacturer: To be confirmed.
 - 2). Reference: To be confirmed.
- 17. Type EXT-571 Proposed Wildflower Mix
 - a. Description: Proposed wildflower mix.
 - b. Type: Refer to Planting Schedule.
 - c. Indicative Product:
 - 1). Manufacturer: To be confirmed.

- 2). Reference: To be confirmed.

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INTERNAL SYSTEMS

1. Type LIN-961 Internal Living Wall Lining System - Branding
 - a. Bespoke vegetation wall lining assembly incorporating a selection of panel mounted moss vegetation, fixed to concealed support system.
 - b. Configuration/ dimension: As indicated on the Design Drawings.
 - 1). Moss shall be arranged to a degree of compaction to match accepted sample.
 - 2). Thickness shall include required gap to ensure prolonged moss life.
 - c. As a minimum, the system shall comprise the following constituent elements:
 - 1). Well-preserved moss vegetation, species to match accepted sample.
 - 2). Moisture and fire resistant moss carrier boards.
 - 3). Moss life preserver, discreetly positioned.
 - d. Fixing: Discreet mechanical fixing.
 - e. Make provision for perimeter LED tape and neon effect signage to be accommodated as indicated on the Design Drawings.
 - f. The system shall be installed by the contracting division of the manufacturer or where this provision is not available, by an approved or licensed specialist.
 - g. Indicative product: Naturemoss or acceptable equivalent, by Innerspace Cheshire.
2. Type LIN-962 Internal Living Wall Lining System - Branding (Shallow)
 - a. Bespoke vegetation wall lining assembly with limited depth located above floor level, incorporating a selection of panel mounted moss vegetation, fixed to concealed support system. The system shall generally be as Type LIN-961 except for the following:
 - 1). The system is located immediately above finished floor level and hence subject to impact.
 - 2). The system shall be located immediately behind a gabion screen as indicated on the Design Drawings and specified in Section L31.
 - 3). The system is of limited width as opposed to being having long length that requires numerous panels installed side by side, and may thus require less stringent reaction-to-fire rating.
 - 4). The overall depth is restricted owing mainly to the limited available room needed for adjacent door to swing open.

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MATERIALS

1. Root Barriers
 - a. Conformance: BS EN ISO 10319 and BS EN ISO 12236.
 - b. Puncture resistance: 4.5kN.
 - c. Minimum density: 350g/m².
 - d. Life expectancy: Not less than 7 years.

2. Tree Anchors
 - a. In accordance with BS 3998.
3. Drainage Layer
 - a. Conformance: BS 7533.
 - b. Base material: Polypropylene.
 - c. Vertical compressive strength: Not less than 700kN/m².
 - d. Minimum density: 9kg/m².
 - e. Volumetric void ratio.
4. Geotextile Separating Layers
 - a. Conformance: BS EN 13251.

EXECUTION

310 PLANTING GENERALLY

1. Climatic Conditions
 - a. The work shall be carried out while soil and weather conditions are suitable for the relevant operations. Plants moved in warm weather conditions shall be sprayed and watered regularly.
 - b. Planting shall not be carried out when persistent drying winds are likely to occur or soil is waterlogged or excessively dry.
2. Protection Mesh
 - a. Planters shall be subject to the application of a protective metal mesh concealed between the mulch layer and topsoil at the offset front planting as indicated on the Design Drawings.
 - b. The mesh shall be retained by secure fixings and removable to enable maintenance activities.
 - c. The mesh serves the dual function of use within the planter but additionally as a vermin screen below the timber decking. As a consequence the system Type EXT-539 is specified within Section Q55 of the Specification.
3. Chemicals Generally
 - a. Chemicals shall only be used where specified and accepted.
 - b. Only chemicals on the current list of the Agricultural Chemicals Approval Scheme shall be used.
 - c. When near water, drainage ditches or land drains comply with DEFRA's Code of Practice (formerly the Ministry of Agriculture, Fisheries and Food).
4. Machines and Tools: Only machinery and tools suitable for the Site conditions and the work to be carried out shall be used. Hand tools shall be used around trees, plants and in confined spaces where it is impracticable to use machinery.
5. Irrigation: Water shall be provided from the irrigation system, which shall be fully commissioned before planting begins.
6. Drought Conditions: If the water supply is or is likely to be restricted by emergency legislation:

- a. Inform the Architect without delay and ascertain the availability and additional cost of water from an alternative source.
 - b. If shrub planting has not been carried out, do not do so until instructed.
 - c. If shrub planting has been carried out, obtain instructions on supply of water.
- 7. Notice to the Architect: Make advance arrangements with the Architect to give him the opportunity of being present during:
 - a. Setting out.
 - b. Application of fertiliser.
 - c. Planting of shrubs.
 - d. Planting of trees into previously dug pits.
- 8. Setting Out: Clearly mark the position of all trees and the boundaries of shrub beds as set out on the Design Drawings. Invite the Architect to inspect and approve the setting out before digging tree pits or starting planting work.
- 9. Use of Chemicals Generally
 - a. A certified operator shall be used to take appropriate safety precautions and to comply with all relevant statutory legislation.
 - b. The Architect shall be notified of any intention to apply chemicals, of the product to be used and of the dose rates. Permission to do so shall be received from the Architect.
 - c. All empty or unwanted containers and chemicals shall be disposed of, including unused diluted tank mixture, in a safe way in accordance with all relevant statutory legislation. Disposal shall be off Site unless prior arrangements have been made.

311 MAINTENANCE DURING GROWING ON PERIOD

- 1. General
 - a. The health, quality and achievement of the plant prior to delivery to Site shall be monitored. In particular, it shall be ensured that the plant material to be grown is lined out at centres appropriate to the full achievement of the plant, allowing for lateral as well as vertical growth. It shall also be ensured that the roots have been properly prepared for lifting and long-term plant development.
 - b. The supply nursery shall be visited every three months with provision made for the Architect to accompany also. The quality and health of the plant material shall, at the time, be checked.
- 2. Wildflower Mix - Specific Requirements
 - a. Climatic Conditions
 - 1). The work shall be carried out while soil and weather conditions are suitable for the relevant operations. Plants moved in warm weather conditions to be sprayed and watered regularly.
 - 2). Planting is not to be carried out when persistent drying winds are likely to occur or when soil is waterlogged or excessively dry.
 - b. Machines and Tools: Only machinery and tools suitable for the Site conditions and the work to be carried out are to be used. Hand tools shall be used around trees, plants and in confined spaces where it is impracticable to use machinery.
 - c. Irrigation: Water shall be provided from the irrigation system, which is to be fully commissioned before planting begins.

d. Drought Conditions

- 1). If the water supply is or is likely to be restricted by emergency legislation, inform the Landscape Architect without delay and ascertain the availability and additional cost of water from an alternative source.
 - 2). If planting has not been carried out, do not do so until instructed.
 - 3). If planting has been carried out, obtain instructions on supply of water.
- e. Notice to the Architect: Make advance arrangements with the Landscape Architect to give them the opportunity of being present during:
- 1). Setting out.
 - 2). Application of fertiliser.
 - 3). Planting.
- f. Setting Out: Clearly mark the position of all planting beds as set out on the Design Drawings. Invite the Landscape Architect to inspect and accept the setting out before starting planting work.
- g. Use of Chemicals Generally

- 1). Chemicals shall only be used where specified and accepted.
- 2). Only chemicals on the current list of the Agricultural Chemicals Approval Scheme shall be used.
- 3). When near water, drainage ditches or land drains shall comply with DEFRA's Code of Practice (formerly the Ministry of Agriculture, Fisheries and Food).
- 4). A certified operator shall be used to take appropriate safety precautions and to comply with relevant statutory legislation.
- 5). The Landscape Architect is to be notified of any intention to apply chemicals, of the product to be used and of the dose rates. Permission to do so is to be received from the Landscape Architect.
- 6). All empty or unwanted containers and chemicals shall be disposed of, including unused diluted tank mixture, in a safe way in accordance with all relevant statutory legislation. Disposal shall be off Site unless prior arrangements have been made.

312 STORAGE

1. General

- a. Plants that are not to be planted on the day of delivery to Site shall be stored by accepted methods as recommended by the supply nursery.
- b. Plants awaiting planting shall not at any time be exposed to drying winds, sun or drought.
- c. Plants so stored shall not be subject to any extra cost. Any losses, damage or vandalism to the material whilst so stored shall be the sole responsibility of the Contractor.
- d. The location of stored stock shall be agreed with the Architect.

313 PROTECTION OF PLANT MATERIAL

1. Generally

- a. Trees/ shrubs/ plants shall be supplied with protection in accordance with BS 3936 All plants shall be adequately and carefully packed and protected to survive transport to Site without damage.
 - b. Particular care shall be taken to ensure that roots are not allowed to dry out, and all plants shall be protected by damp straw, moss, sacking or the like.
2. Protect Existing Grass: During planting operations, existing grass shall be protected by laying boards or tarpaulins. Excavated material shall not be placed directly on to grass.
3. Protection Generally: The work and plants shall be protected from damage by weather, traffic and other causes.
4. Surplus Material: Subsoil, stones, debris, wrapping material and prunings shall be removed from Site.
5. Storage - Wildflower
 - a. Plants that are not to be planted on the day of delivery to Site shall be stored by accepted methods as recommended by the supply nursery.
6. Plants awaiting planting are not at any time to be exposed to drying winds, sun or drought.
7. Plants so stored are not to be subject to any extra cost. Any losses, damage or vandalism to the material whilst so stored, shall be the sole responsibility of the Contractor.
8. The location of stored stock shall be agreed with the Landscape Architect.

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PLANTING TREES

1. Generally
 - a. Orientation: Before lifting, the north side of trees shall be marked to ensure that orientation is the same where replanted.
 - b. Trees shall be planted upright, unless otherwise instructed, in the centre of a pit and at the original soil depth.
 - c. Damage to roots, bark or branches shall be removed during pruning and wounds over 25mm diameter treated with fungicidal sealant. The Architect has the right to reject any tree where pruning has resulted in the loss of the natural form of the tree and where extensive damage may result in the death of the tree.
 - d. Non-perishable containers and rootball wrappings shall be removed prior to planting. Non-galvanised wire mesh cages and timber frames may be left in situ during planting.
 - e. The area shall be thoroughly watered to field capacity immediately after planting, using a low-pressure hose.
 - f. When planting trees in grass, a 800mm diameter circle shall be cut and subsequently maintained from the sward. Arisings shall be removed from Site.
2. Anti-desiccants: All plants shall be dipped in or thoroughly sprayed with anti-desiccant before delivering to Site. Apply again soon after planting. Do not apply in rainy weather. Full coverage of the underside of the foliage shall be ensured.
3. Semi-mature Specimen Trees
 - a. Semi-mature trees shall be in an advanced state of growth, ranging in height as shown in the schedules. They shall be healthy, self-supporting, of good form and strain, with vigorous stems and well-balanced heads.

- b. Where a standard form is specified, it shall have a clear stem height of no more than 2.4m and a minimum girth of 20cm at 1m above the ground level.
- c. Where multi-stemmed or bushy trees are specified, they shall be branched to the ground with a form typical of the species.
- d. Sizes and form as scheduled.
- e. Preparation and transplanting shall be to BS 4043 unless specified otherwise in this clause.
- f. Pits:
 - 1). The appropriate sized holes shall be made, based on the following rootball sizes:
 - a). Rootballs up to 1000mm diameter and 750mm deep: 1500 x 1500 x 1000mm deep.
 - b). Rootballs 1100-1500mm diameter and 750mm deep: 2000 x 2000 x 1000mm deep.
 - c). Rootballs over 1500mm diameter and 750mm deep: Pit 500mm wider and 250mm deeper than rootball.
 - 2). Break up the base of the pit to a depth of 400mm.
 - 3). Ensure that the sides of the pit are rough and not smeared in clay soil areas.
 - 4). Acceptance of excavated pits shall be sought prior to planting.
 - 5). Backfill material: As below.
 - 6). Backfill in layers not exceeding 250mm depth consolidating material to remove air pockets.
 - 7). Support all trees as shown in the schedules.
 - 8). Anchor system shall be as below.
- 4. Large Trees: It shall be noted that the larger trees may require planting by crane, therefore full allowance shall be made for this item of works. Any such works shall be carried out in full accordance with the recommendations of the supplier. The supply of all sundry items such as tree collars, etc. shall be allowed for. Any damage incurred to existing road surfaces or similar shall be made good at the Contractor's expense and to the full acceptance of the Architect.
- 5. Advanced Nursery Stock Specimen Trees: The advanced stock specimen trees shall be:
 - a. In accordance with BS 3936, size categories as scheduled.
 - b. Transplanted to BS 8545, unless otherwise specified in this clause.
 - c. Pits shall not be less than 1200mm diameter x 850mm deep. Where necessary these dimensions shall be increased to ensure that pits are at least 250mm deeper and 500mm wider than the root system when fully spread. The bottom of pits shall be to a depth of 200mm. The pit sides shall be rough and not smeared in clay areas.
 - d. Backfill material shall be as below.
 - e. Rootballed trees shall have firm backfilling material around the rootball in 150mm layers, taking care not to disturb the roots.

- f. All trees shall be supported as shown in the schedules.
 - g. Anchor system shall be as below.
6. Backfilling Material: The following backfill materials shall be thoroughly mixed prior to planting the trees:
- a. Semi-mature Trees:
 - 1). 80% Topsoil.
 - 2). 20% Farmyard manure.
 - 3). Fertiliser.
 - 4). Ameliorants.
 - b. Advanced Nursery Stock:
 - 1). 80% Topsoil.
 - 2). 20% Farmyard manure.
 - 3). Fertiliser.
 - 4). Ameliorants.
 - c. Nursery Stock:
 - 1). 80% Topsoil.
 - 2). 20% Farmyard manure.
 - 3). Fertiliser.
 - 4). Ameliorants.
 - d. Quantities/ rates of application of fertilisers and ameliorants shall be in accordance with the manufacturer's written recommendations based on the soil analysis.
7. Tree Guying, Underground Method
- a. Support all trees as shown in the Specification using an anchor system.
 - b. It shall be ensured that the Site conditions are suitable for using the anchor system.

315 PREPARATION OF PLANTING BEDS

- 1. Weed Control: Planting beds shall be treated with a suitable accepted herbicide complying with the manufacturer's written recommendations.
- 2. Fertilisers and Ameliorants: Quantities/ rates of application of fertilisers and ameliorants shall be in accordance with the manufacturer's written recommendations based on the topsoil analysis.
- 3. Compost
 - a. Compost shall be farmyard manure/ other well-rotted organic material subject to acceptance.
 - b. It shall be spread over all planting areas at 1m³ of loosened material per 6m² prior to cultivation.

4. Cultivation
 - a. Any compacted topsoil shall be broken up to full depth.
 - b. A few days before planting, the top 300mm of all planting beds shall be cultivated by rotovating and/ or double digging. Leave the surface regular and even.
 - c. Undesirable material brought to the surface, including stones and clay balls larger than 50mm in any dimension, roots, tufts of grass and foreign matter, shall be removed.
5. Final Grading: When the topsoil is reasonably dry and workable it shall be graded to smooth, flowing contours, with falls for adequate drainage. All minor hollows and ridges shall be removed.
6. Edges: Unless otherwise stated, finished levels of topsoil, after settlement, shall be to:
 - a. 25mm for grass areas above adjoining paving or kerbs.
 - b. 25mm for shrub areas above adjoining paving or kerbs.
 - c. Not less than 150mm below the dpc of adjoining buildings.
 - d. 25mm higher for shrub areas than for adjoining grass areas.
 - e. Married in with adjoining soil areas.
7. Acceptance: The acceptance of the Architect shall be obtained for all levels and grading before grassing or planting.

316 PLANTING SHRUBS/ SEASONAL PLANTS

1. Evergreens: All shrubs shall be dipped in or sprayed with anti-desiccant before delivering to Site. Shrubs shall be sprayed with anti-desiccant soon after planting.
2. Planting Generally
 - a. Before planting, any non-perishable containers shall be removed. The Architect shall be advised of any damaged roots and instructions shall be obtained.
 - b. Plants shall be planted upright or well balanced with the best side to the front. Backfilling material shall be carefully packed around evenly spread roots or root ball and heeled well in.
 - c. Plants shall be watered thoroughly immediately after planting, using a fine rose.
 - d. The Architect shall be advised of any damage to shrubs resulting from planting operations and instructions shall be obtained.
 - e. After planting, forked and/ or raked soil shall be to a fine tilth with accepted cambers and with hollows.
3. After Planting: Grass edges of shrub beds in grass areas/ tree pits shall be cut to form a neat flowing margin.
4. Shrubs
 - a. Shrubs shall be to the relevant parts of BS 3936.
 - b. The ground cover shall be to the relevant parts of BS 3936.
 - c. Planting holes for shrubs shall be 150mm wider than container/ root spread and 400mm deep.
 - d. The planting holes for specimen shrubs shall be at least 300mm wider than the root spread and 150mm deeper than the root system. The bottom of the pit shall be broken up to a depth of 150mm.

- e. The finished level shall be at the original soil mark on shrubs and 25mm above the surrounding level to allow for settlement.
 - f. Spacing of Plants: Plants shall be positioned at spacings and in groupings as scheduled.
5. Seasonal Installations
- a. Plants shall be positioned in locations shown on the drawings and evenly placed to achieve even spacing. Planting holes shall be at least 150mm wider than the root spread.
 - b. Previous installations shall be lifted and the arisings shall be removed off Site prior to the planting of the new installation.
 - c. Base fertiliser shall be accepted by the Architect prior to use. It shall be applied to prepared beds prior to each installation in accordance with the manufacturer's written recommendations.
 - d. Surplus stock shall be held to replace any plants that fail immediately.
6. Identification of Plants: A plastic label clearly marked with species and variety shall be attached to each group of trees/ shrubs/ plants.

317 PROTECTION/ MAINTAINING/ MAKING GOOD DEFECTS

- 1. Protective Fencing: Newly planted areas shall be protected with 1.2m high chestnut pale fencing to BS 1722: Part 4. Fencing shall be maintained until planting is well established. It shall then be removed and the ground reinstated. Any damage to planting shall be made good until the area is accepted. The fencing shall remain the property of the Contractor.
- 2. Watering (Before Practical Completion): During the establishment of the plants ensure that the irrigation system is operated to maintain healthy growth.
- 3. Maintenance Before Practical Completion: Plants and planting areas shall be maintained in good condition and in accordance with the Post Completion Maintenance Requirements, undertaking all necessary operations up to the Practical Completion of this Contract.
- 4. Cleanliness: Soil shall be removed from all hard surfaces and grassed areas and the works shall be left in a clean tidy condition at Practical Completion.
- 5. Failures of Planting: Post Practical Completion, maintenance of the planting shall be carried out as specified in this Section. Any trees/ shrubs/ plants/ grass that are dead, dying or otherwise defective at the end of the 12 month Defects Liability Period shall be regarded as defects due to materials or workmanship not being in accordance with the Contract. They shall be replaced by equivalent trees/ shrubs/ plants/ grass at the next suitable planting season unless otherwise instructed. This shall not apply if the defects are caused by damage done by another party after Practical Completion.
- 6. Maintenance of Planted Areas Generally
 - a. Plants and planted areas shall be maintained in good condition up to the end of the Defects Liability Period.
 - b. Maintenance is to include watering, pruning, hedge cutting, dead heading of seasonal installations and immediate replacement of failed material, application of accepted chemicals to combat insect attack, disease and weeds, forking and hoeing of beds, firming plants and stakes, and removal of all rubbish.
 - c. Maintenance programme:
 - 1). Make visits as necessary to fulfil the requirements of the Specification.

- 2). Carry out provisional/ additional works within 14 days of receiving written instruction from the Architect or the Architect's representative.
 - 3). Give written notice to the Architect or the Architect's representative within 7 days to confirm completion of individual maintenance operations.
 - d. Replacement inspection shall be made by the Contractor. All trees, shrubs and other plants that are dead, have failed to show leaf, or are seen to be seriously retarded in growth to such a degree that they are below the standard originally specified, or that are in an unhealthy condition, shall be removed from the Site. These shall be replaced as soon as planting conditions permit during the normal planting season.
 - e. Replacement: If more than 10% of replacements fail to come into leaf in the following growing season they shall again be replaced in the appropriate season.
 - f. Damage caused by others shall be inspected after the planting at monthly intervals to ascertain the extent of any losses or damage resulting from vandalism or other causes. Any such damage shall be immediately brought to the attention of the Architect or the Architect's representative. Remedial works shall be carried out as instructed.
7. Maintenance during Growing on Period - Wildflower
- a. The health, quality and achievement of the plants prior to delivery to Site shall be monitored. In particular, ensure that the plant material to be grown is lined out at centres appropriate to the full achievement of the plant, allowing for lateral as well as vertical growth. Ensure also that the roots have been properly prepared for lifting and long-term plant development.
 - b. The supply nursery shall be visited every three months with provision made for the Landscape Architect to accompany also. At such time the quality and health of the plant material shall be checked.
 - c. Weeds must be controlled in the first year of meadow establishment. Keep the sward short in the first year until the end of June to reduce competition and stop in July and August to allow any wildflowers to seed. Remove all cut material to avoid smothering the sward. Where persistent weeds are a problem, spot treat with broad spectrum herbicide or dig-out.
 - d. Keep grass short until April/May in a summer flowering meadow and remove cuttings. The second cut should take place at the end of the flowering season during September/October (the flowering period may alter slightly according to climatic conditions and plant communities). Remove all cuttings. The site may require further cuts in the autumn period to remove untidy growth in an extended growing season.
8. Protection of Plant Material - Wildflower
- 1). Plants shall be supplied with protection in accordance with BS 3936 and BS 4043. All plants shall be adequately and carefully packed and protected to survive transport to Site without damage.
 - 2). Particular care is to be taken to ensure that roots are not allowed to dry out, and all plants are to be protected by damp straw, moss, sacking or the like.
9. Preparation of Planting Beds - Weed Control - Wildflower
- a. Planting beds shall be treated with a suitable accepted herbicide complying with the manufacturer's written recommendations.
10. Fertilisers and Ameliorants

- a. Quantities/rates of application of fertilisers and ameliorants shall be in accordance with the manufacturer's written recommendations based on the topsoil analysis.
11. Compost
 - a. Compost shall be farmyard manure/other well-rotted organic material subject to acceptance.
 - b. It shall be spread over all planting areas at 1m³ of loosened material per 6m² prior to cultivation.
12. Cultivation
 - a. Any compacted topsoil shall be broken up to full depth.
 - b. A few days before planting, the top 300mm of all planting beds shall be cultivated by rotovating and/or double digging. Leave the surface regular and even.
 - c. Undesirable material brought to the surface, including stones and clay balls larger than 50mm in any dimension, roots, tufts of grass and foreign matter, shall be removed.
13. Final Grading
 - a. When the topsoil is reasonably dry and workable it is to be graded to smooth, flowing contours, with falls for adequate drainage. All minor hollows and ridges shall be removed.
14. Edges: Unless otherwise stated, finished levels of topsoil, after settlement, shall be to:
 - a. 25mm for grass areas above adjoining paving or kerbs.
 - b. 25mm for shrub areas above adjoining paving or kerbs.
 - c. Not less than 150mm below the dpc of adjoining buildings.
 - d. 25mm higher for shrub areas than for adjoining grass areas.
 - e. Married in with adjoining soil areas.
15. Acceptance
 - a. Obtain the acceptance of the Landscape Architect for all levels and grading before grassing or planting.
16. Seasonal Plants - Evergreens
 - a. All planting shall be dipped in or sprayed with anti-desiccant before delivering to Site. Plants shall be sprayed with anti-desiccant soon after planting.
17. Seasonal Installations
 - a. Plants shall be positioned in locations shown on the Design Drawings and evenly placed to achieve even spacing. Planting holes shall be at least 150mm wider than the root spread.
 - b. Previous installations shall be lifted and the arisings removed off Site prior to the planting of the new installation.
 - c. Base fertiliser shall be acceptable to the Architect prior to use. It shall be applied to prepared beds prior to each installation in accordance with the manufacturer's written recommendations.
 - d. Surplus stock shall be held to replace any plants that fail immediately.
18. Watering/ Irrigation

- a. Sufficient water shall be applied to maintain healthy growth of trees/ shrubs/ plants.
 - b. During dry periods the crown of plants shall be thoroughly sprayed with water in early mornings or late evenings, but on no account in bright sunny weather.
- 19. Weed Control: Cultivation: All beds shall be kept clear of weeds by cultivating and using accepted herbicides. Beds shall be forked over as necessary to keep soil loose, with accepted cambers and no hollows.
- 20. Fertiliser: A top dressing of an accepted compound fertiliser shall be applied in accordance with the manufacturer's written recommendations and at the times and frequency recommended in writing by the manufacturer.
- 21. Pruning: Plants shall be pruned at appropriate times to remove dead, dying and diseased wood and suckers to promote healthy growth and natural shape and to encourage flowering. Cut ends exceeding 25mm diameter shall be dressed with fungicidal sealant.
- 22. Cutting Formal Clipped Shrubs: The tops and sides of shrubs shall be clipped using hand or mechanical shears as required to maintain box shape and to encourage dense growth.
- 23. Pest Control
 - a. Accepted pesticides shall be applied as necessary to control any insect or fungal attack.
 - b. Any signs of insect and/ or fungal attack shall be reported to the Architect. Accepted pesticides shall be applied immediately as instructed.
- 24. Cleanliness
 - a. All deleterious materials shall be removed from hard surfaces/ planting beds, and Site shall be maintained in a clean and tidy condition.
 - b. Litter removal: Litter/ tipped material shall be removed from planted areas during each visit for weed control.
- 25. Maintenance Instructions: Before the end of the Defects Liability Period a typewritten and bound maintenance specification for all works shall be submitted for the following five years.
- 26. Operations and Maintenance Manual
 - a. Instructions shall be furnished for year round care of installed plants. As a minimum, the manual will include the following:
 - 1). Irrigation details including water application rates and maintenance procedures.
 - 2). Fertilisation including fertiliser descriptions, application rates and application schedule.
 - 3). Salinity control including leaching methods and leaching programme monitoring.
 - 4). Pesticide/ fungicide/ herbicide applications including safety application rates, procedures, and schedules.
 - 5). Propagation and seasonal replacement of all flowers and flowerbeds.
 - 6). General maintenance including pruning, stakes and ties, replacement and clean-up, protective fencing and grading.

- 7). Equipment inventory including maintenance procedures and manufacturer's maintenance manual.
- 8). Landscape maintenance personnel requirements and job descriptions.

27. Maintenance of Wildflower Areas

- a. Areas are to be maintained to establish a healthy vigorous sward, free of moss, thatch, weeds, casts, discoloration, scorch, litter or leaves. Areas to be maintained in a tidy condition within specified height ranges. Where different mowing regimes are intended to provide varying character to the landscape, these shall be closely followed to ensure the design effects as planned.

28. Mowing/Cutting

- a. Mowing and cutting shall be undertaken using scythe method suitable for wildflower. Equipment intended for meadow grass or any machinery likely to compress, flatten or otherwise be deleterious to the healthy growth of the wildflower shall not be used.
- b. The annual growth should be controlled by mowing throughout the first year to minimise competition and weed seed production.
- c. Cutting should be frequent enough to disperse the cuttings, or if less frequent remove the cuttings. Where cornfield annuals or other annuals are sown with a meadow mixture as a 'nurse crop' cutting must be delayed until after flowering in July / August and arising, removed from site.
- d. Do not, however, wait for the annuals to set seed, and if the growth begins to collapse cut and remove as soon as possible or the perennial development will be compromised
- e. Mow the meadow in sections at different times from late June to the end of August. Do not cut meadows in May or early June to avoid disturbing nesting birds.
- f. Autumn cutting: Mow with a rotary flail or other suitable mower to 40-75mm. Cut at least twice from the time the hay is removed to the end of November, aiming to leave the grass short through winter. If any cut produces significant quantities of material this should be removed.
- g. Spring cutting: Mow with a rotary, flail or other suitable mower to 40- 75mm. For meadow grassland mow no later than the first week in May.

END OF SECTION