0126

Martha Schwartz Partners Limited

Maggie's

Maggie's Centre

007562-MSP-XX-ZZ-SP-L-0002

06-06-2023

Amended clauses:

Section Q37 – Clause 130A

Contents

E41
Worked finishes to in situ concrete

To be read with preliminaries/ general conditions.

120A Proprietary Microcement finish applied on in situ Seating wall (W01)

1. Description: Proprietary Microcement product
2. Manufacturer: Ideal Work Uk or equal and approved
3. Product reference:: Microtopping
4. Colour: Ideal Work natural white
5. Glossiness: 15% glossy
6. Abrasion resistance class to BS 8204-2: AR0.5/DF
7. Tolerances
    - 7.1. Surface regularity: As clause E05/???
    - 7.2. Level: Permissible deviation of wearing surface from datum (maximum): ±5 mm.
8. Finish: As per Manufacturer's specifications
    - 8.1. Additional surface treatment: Sealant as per Manufacturer's specifications
    - 8.2. Slip resistance (minimum): PTV 35
9. Curing: As per Manufacturer's specifications
10. Notes:: Structural movement joints on retaining wall to be carried through the Surface Finish.

120B Proprietary Microcement finish applied on in situ Retaining wall and staircase bottom steps (W03)

1. Description: Proprietary Microcement product
2. Manufacturer: Ideal Work Uk or equal and approved
3. Product reference:: Microtopping
4. Colour: Ideal Work natural white
5. Glossiness: 15% glossy
6. Abrasion resistance class to BS 8204-2: AR0.5/DF
7. Tolerances
    - 7.1. Surface regularity: As clause E05/???
    - 7.2. Level: Permissible deviation of wearing surface from datum (maximum): ±5 mm.
8. Finish: As per Manufacturer's specifications
    - 8.1. Additional surface treatment: Sealant, and Anti-Slip Finish as per Manufacturer's Specifications
    - 8.2. Slip resistance (minimum): PTV 42
9. Curing: As per Manufacturer's specifications
10. Notes:: Structural movement joints on retaining wall to be carried through the Surface Finish.

120C Proprietary Microcement finish applied on in situ concrete staircase threads and risers (W03) (A)

1. Description: Proprietary Microcement product
2. Manufacturer: Ideal Work Uk or equal and approved
3. Product reference:: Microtopping

4. Colour: Ideal Work dark grey to match building's facade colour
5. Glossiness: 15% glossy
6. Abrasion resistance class to BS 8204-2: AR0.5/DF
7. Tolerances
    7.1. Surface regularity: As clause E05/???
    7.2. Level: Permissible deviation of wearing surface from datum (maximum): ±5 mm.
8. Finish: As per Manufacturer's specifications
    8.1. Additional surface treatment: Sealant, and Anti-Slip Finish as per Manufacturer's Specifications
    8.2. Slip resistance (minimum): PTV 42
9. Curing: As per Manufacturer's specifications
10. Notes:: Structural movement joints on retaining wall to be carried through the Surface Finish.

140 Samples available for inspection

1. Samples:: Produce samples of Microcement products in all the specified colours and finishes.
2. Approval:: Obtain before proceeding with procurement.

150 Finishing

1. Timing: Carry out at optimum times in relation to setting and hardening of concrete.
2. Prohibited treatments to concrete surfaces
    2.1. Wetting to assist surface working.
    2.2. Sprinkling cement.

520 Surface sealer

1. Manufacturer: Ideal Work or as per Microcement product Manufacturer's recommendation
    1.1. Product reference: Ideal Work or as per Microcement product Manufacturer's recommendation
2. Substrate
    2.1. Moisture content: As recommended by sealer manufacturer. Test relative humidity to BS 8203, Annex A where required to verify suitability.
    2.2. Condition prior to application: Cured, clean and free from contaminants.
3. Application: Evenly to dry surfaces to form an effective seal but without a glossy finish.

525 Anti-Slip / Anti-Skid Finish

1. Manufacturer: Ideal Work or as per Microcement product Manufacturer's recommendation
    1.1. Product reference: Ideal Work or as per Microcement product Manufacturer's recommendation
2. Substrate
    2.1. Moisture content: As recommended by sealer manufacturer. Test relative humidity to BS 8203, Annex A where required to verify suitability.
    2.2. Condition prior to application: Cured, clean and free from contaminants.
3. Application: Evenly to dry surfaces to form an effective seal but without a glossy finish.

530 Slip resistance testing of wearing surfaces

1. Test: To BS 7976-2 using a Transport Research Laboratory (TRL) Pendulum.
    1.1. Timing: Give adequate notice.
    1.2. Test results: Provide reports in three copies.

Ω End of Section

L37
External stair, ramps, handrail and balustrades systems

General

110 Scope

1. Description: Landscape steps along the building fire exit
2. Type: Built in situ
3. Base/ Fabric: Reinforced concrete, as section E10 and E30
4. Surface: Proprietary Microcement Product
   - 4.1. Manufacturer:: Ideal Work UK
   - 4.2. Product Reference: : Rasico or equal and approved
   - 4.3. Material Code on Drawings: W02
   - 4.4. Colour: Argilla (Dark Grey)
   - 4.5. Finish: Slip-resistant/Anti-skid finish and Sealant as per Manufacturer's Specifications
   - 4.6. Slip resistance: : PVT 61
   - 4.7. Nominal thickness: : 4mm as per Manufacturer's Specifications
   - 4.8. Colour:: Dark grey - Anthracite
5. Unobstructed width: 1200mm
6. Accessories: Handrail system
7. Drawings: : 007562-MSP-XX-00-DR-L-0101 Landscape GA Plan;
   007562-MSP-XX-00-DR-L-0200 Levels and Drainage Strategy Plan;
   007562-MSP-XX-00-DR-L-0300 Hardscape and Paving Plan;
   007562-MSP-XX-00-DR-L-0500 Lighting Plan;
   007562-MSP-XX-00-DR-L-0780 External stairs Plan and sections 1/2;
   007562-MSP-XX-00-DR-L-0781 External stairs Plan and sections 2/2;

110A Material Samples

1. Before placing orders submit for approval representative samples (size TBC) and acceptable colour range of all Microcement finish included in this specification, as well as metal railings/upstands and handrail material.
   Ensure that delivered materials match sample(s). Benchmark samples are to be kept on site for comparison.

150A Handrail systems

1. Description: Powder coated handrail with integrated lighting
2. System manufacturer: Contractor's choice
3. Material: Galvanised steel
   - 3.1. Cross section: Nominal diametre 48mm, as drawing 007562-MSP-XX-00-DR-L-0781
   - 3.2. Colour: RAL 7022 - Umbra Grey
   - 3.3. Glossiness: 20%
   - 3.4. Finish: Powder coated
4. Height (to upper surface of handrail)
   - 4.1. Above pitch line: As drawing 007562-MSP-XX-00-DR-L-0780
5. Accessories: Integral lighting, as section V90

6. Fixings: : To contractors design. All fixing points to be hidden.Complete the design of the fixings to engineer's approval, in accordance with BS 8298 and to meet the requirements of this specification.
7. Contractor's Proposal:: Submit drawings, technical information, calculations and manufacturers' literature to Structural Engineer, Landscape Architect and PM for approval prior to proceeding. Period for review as per contract requirements.

System performance

210 Design

1. Description: OF STAIR SYSTEM
2. Inclusive design: Complete detailed design in accordance with BS 8300-1
3. Structure and associated features: Complete detailed design to BS EN 1991-1-1
4. Structural performance criteria
   - 4.1. Dead loads (maximum): As per Structural Engineers Specifications.
   - 4.2. Imposed loads (maximum)
     - 4.2.1. Activity/ Occupancy loading: As per Structural Engineers Specifications.
     - 4.2.2. Point loads (maximum): As per Structural Engineers Specifications.
5. Other performance criteria: responsibilities for detailed design of the structure, including calculations are part of the Contractor's Design.
6. Proposals: Submit drawings, technical information, calculations and manufacturers' literature to Structural Engineer, Landscape Architect and PM for approval prior to proceeding. Period for review as per contract requirements.

215 Slip Resistance

1. Slip resistance to comply with local authority requirements and, unless otherwise specified, comply with the following:
   - 1.1. Where required, the top surface to have a suitable slip resistance treatment to ensure that the surface retains non-slip characteristics when tested. This treatment to be visually acceptable as agreed with the Landscape Architect.
   - 1.2. Test samples with the specified finish wet and dry in both directions in accordance with the requirements of BS EN 1341
   - 1.3. Submit details of the treatment and testing to the Landscape Architect for acceptance. Testing procedures to be in accordance with an agreed recognised standard.

220 Design

1. Description: OF HANDRAIL SYSTEM
2. Inclusive design: Complete detailed design in accordance with Building Regulations (Eng) Approved Document M, volume 2
3. Structure and associated features: Complete the design to meet structural and safety requirements of BS 6180 and in accordance with BS 8300-2
4. Structural performance criteria
   - 4.1. Horizontal uniformly distributed line loads on balustrade or handrail (maximum): 0.74 kN/m
5. Proposals: Submit drawings, technical information, calculations and manufacturers' literature to LA, Structural Engineer, PM for approval.

Products - Not Used

Fabrication

510 Fabrication generally

1. Design: Complete the detailed design and obtain approval prior to commencing fabrication.
2. Shop drawings: Submit.
3. Structural calculations: Submit.
4. Frameworks: Assemble and brace, including temporary members required for installation.
5. Contact between dissimilar metals: Avoid.
6. Fixings: To Contractor's Design. All fixing to be hidden.
7. Temporary support: Do not subject members to non-design loadings.

Execution

610 Loading

1. Site activities: Restrict, to ensure that design loads are not exceeded, or submit proposals for temporary supports.

620 Concrete foundations generally

1. General: : To Engineer's Design and Specifications.
2. Standard: To BS 8500-2.
3. Concrete: Designated not less than GEN 1 or standard prescribed not less than ST2.
4. Admixtures: Do not use.
5. Foundation holes: Neat vertical sides.
6. Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

630 Setting components in concrete

1. Holes: Submit porposals to LA and Structural Engineer.
2. Components: Accurately positioned and securely supported.
3. Concrete fill: Compact as filling proceeds.
4. Concrete foundations exposed to view: Finished to weathering profile to shed water and trowel smooth.
5. Temporary component support: Maintain undisturbed for minimum 48 hours.

662 Adverse weather

1. General: Do not use frozen materials and do not lay on frozen surfaces.
2. Working limits: Do not lay blocks/ dressings:
   - 2.1. Cement gauged mortars: When the air temperature is at or below 3°C and falling or below 1°C and rising (unless mortar has a temperature of not less than 4°C when laid and work is thoroughly protected).
   - 2.2. Hydraulic lime:sand mortars: When the air temperature is at or below 5°C and falling or below 3°C and rising.
3. Temperature of the work: Maintain above freezing until mortar has fully set.
4. Newly erected work: Protect from precipitation; Prevent rapid drying in hot conditions.
5. Remedial work: Rake out and replace mortar damaged by frost.
   - 5.1. Damaged work: Rebuild.

680 Site painting and staining

1. Timing: Prepare surfaces and apply finishes as soon as possible after installing components.

Completion

910 Inspection

1. Timing: Give reasonable notice before covering up
2. Period of notice (minimum): 3 working days.

920 Documentation

1. Contents
   1.1. Copies of structural design calculations/ test reports.
2. General product information.
   2.1. Installation information.
   2.2. Inspection and maintenance reports.
3. Number of copies: As per Structural Engineer's Specifications
4. Submission: As per Structural Engineer's Specifications

Ω End of Section

Q10
Kerbs/ edgings/ channels/ paving accessories

Types of kerbs/edgings and channels

100 Scope

1. This section includes the provision of slot drains, drainage channels, kerbs and edging as illustrated on the Drawings.
2. Note that completion of the works requires co-ordination with other disciplines.
3. Working mock-ups of areas to be agreed with the client prior to construction.
4. Refer to engineer's drawings and specifications for the location and details of drainage channels, outlets, sumps and below ground drainage.

   Below a list of MSP relevant design documents and drawings:

   007562-MSP-XX-00-DR-L-0101 Landscape GA Plan;
   007562-MSP-XX-02-DR-L-0104 Sedum Roof GA Plan;
   007562-MSP-XX-00-DR-L-0200 Levels and Drainage Strategy Plan;
   007562-MSP-XX-00-DR-L-0300 Hardscape and Paving Plan;
   007562-MSP-XX-00-DR-L-0700 Building interface;
   007562-MSP-XX-00-DR-L-0701 Typical Planting and building interface;
   007562-MSP-XX-00-DR-L-0710 Paving and kerbs details 1/2;
   007562-MSP-XX-00-DR-L-0711 Paving kerbs details 2/2;
   007562-MSP-XX-00-DR-L-0770 Access covers details;
   007562-MSP-XX-00-DR-L-0785 Metal edging details;
   007562-MSP-XX-00-DR-L-0786 Walls B and C metal edging elevation;

109 Material Samples

1. Before placing orders submit for approval representative samples of all products, precast concrete kerbs, resin bound and drainage covers included in this specification. Ensure that delivered materials match samples. Benchmark samples are to be kept on site for comparison.
   For natural stone, provide recent (less than 18 months old) test data from an Independent Testing Authority (UKAS or similar approved) to demonstrate that each stone meets the guideline performance as per design requirements.
   Provide the names, petrological family, and location (source, quarry location) for each stone type.
   Provide Declaration of Performance (CE certification) for each stone type. Note this applies to every stone whether of European origin or not. Designated materials: all material contained in this section.

120 Proprietary precast concrete kerbs (K01; K02; K03)

1. Description: KERBS
2. Standard: To BS EN 1340.
3. Manufacturer: Submit proposals
   3.1. Product reference: Submit proposals; as per drawings.
4. Recycled content: Submit proposals
5. Designations: BN Kerb, bullnosed
6. Size (width x height x length): Varies

   Refer to drawings:
   007562-MSP-XX-00-DR-L-0101;
   007562-MSP-XX-00-DR-L-0300;
   007562-MSP-XX-00-DR-L-0710;
   007562-MSP-XX-00-DR-L-0711;

K01 – (Type 1) Rectangular / Curved – Flush with paving level .150 x 200 x 1200 mm
K02 - Drop – Transition between K01 (Type 1) and K03 (Type 3) - 150xvariesx1200mm (Maximum height 350mm).
K03 - (Tupe 3)Rectangular / Curved – Raised min 100mm above paving level - 150xvariesx1200mm (Maximum height 350mm).

Tolerances on overall width and height (nominal): Class 1.

7. Special shapes: Internal radius kerbs as shown on drawings External radius kerbs as shown on drawings Transition kerbs TL and TR as shown on drawings
8. Finish: Fair-faced concrete as per Manufacturer's Specifications
9. Colour: Light Grey
10. Bedding: Cement mortar as per Civil Engineer's Specifications.
11. Joints generally: Narrow mortar, 2-3mm gap +/- 1mm tolerance. Tooled coloured mortar
12. Freeze / Thaw Resistance: : Resistant
13. Special shapes:: Drop kerbs, curved.
14. Arrises:: None.
15. Sealant movement joints: As per Contractor's design.
16. Accessories: None

170 Linear slot drainage channel systems

1. Manufacturer: Aco or similar approved
    1.1. Product reference: Brickslot Stainless Steel Grating on Multi-Drain PPD - Load Class C250 - refer to engineer's specification.
2. Bore: As per Civil Engineer’s Specification.
3. Finish: Grade 1.4404 (316L) stainless steel
4. Colour: self-colour
5. Accessories: Endcaps - closing pieces; Endcaps - outlets;
Infill cover inspection unit to match adjacent resin bound paving - also refer to Engineer's Specifications.
6. Bedding: Cement mortar haunching
7. Joints generally: water-tight joints filled with flexible sealant.
8. Access cover: Recessed access box with matching cover infill

200 Inground French Drains

1. Description: In ground French drain
2. Manufacturer: Contractor's proposal
    2.1. Product reference: Contractor's choice
3. Size: As per Civil Engineer's specifications
4. Type/ Material: As per Civil Engineer's specifications
5. Accessories: Geotextile wrapping
6. Bedding: As per Civil Engineer's Specifications

250 Material samples

1. Samples representative of colour and appearance of designated materials: Submit before placing orders.
    1.1. Designated materials: Precast concrete kerbs; Metal edging;

Roads/paving accessories/ marking/ demarcation

301 Proprietary metal edging - E01

1. Description: Curved metal edging between fire exit pathway and planted areas / raingardens and to separate soil and gravel bed on the hillside along Building Wall C.

   Refer to drawings:
   007562-MSP-XX-00-DR-L-0300 Hardscape and Paving Plan;
   007562-MSP-XX-00-DR-L-0786 Metal Edge Elevations and Levels;
2. Manufacturer: Kinley or equal approved
3. Product reference: AluExcel
4. Dimensions:
   3mm thick x nominal 150mm x various lenghts
5. Type / Material: Aluminium / 316 stainless steel Edging - Flexible
6. Finish: Natural

301A Bespoke metal edging - E02

1. Description: Bespoke metal Edge and Fascia fixed onto existing concrete piles along Building Wall B.

   Refer to drawings:
   007562-MSP-XX-00-DR-L-0701 Building interface details 2/2;
   007562-MSP-XX-00-DR-L-0786 Metal Edge Elevations and Levels
2. Manufacturer: Contractor's choice
3. Dimensions: Various heights and lenght as per drawings. Thickness as per CDP.
4. Type / Material: Curved electropolished stainless steel Edging
5. Finish: TBC. Avoid sharp edges.

301B Proprietary metal edging - E03

1. Description: Proprietary metal edging between path and facade drain along Building Walls A and D and to frame Entrance Mats.

   Refer to drawings:
   007562-MSP-XX-00-DR-L-0300 Hardscape and Paving Plan;
   007562-MSP-XX-00-DR-L-0700 Building interface details 1/2;
2. Manufacturer: Contractor's choice
3. Dimensions: height - max standard depth provided by supplier, lenght - as per drawings. Thickness as per manufacturer's specifications.
4. Type / Material: Aluminium / 316 stainless steel as per manufacturer's recommendations
5. Finish: Natural. Avoid sharp edges.

312A Entrance Mats

1. Description: 316L Stainless Steel entrance Mat
2. Manufacturer: As per Architect's specifications
3. Size: Refer to Architect's drawings.
4. Material: As per Architect's specifications
5. Pattern: Heelproof; As per Architect's specifications
6. Fixings: As per Architect's specifications
7. Loading grade to BS EN 124-1: As per Architect's specifications

440 Infill access covers for new services

1. Covers: 316L Stainless Steel infill cover to take Resin Bound surface.
2. Manufacturer: Kent Stainless Steel; Product Reference: Kent Solo Paver ('lift out' option) Type: B125 for light vehicular use
   2.1. Accessories: double-seal, locking down bolt
3. Size: clear opening size as per access cover schedule (TBC)
4. Seating: Engineering bricks to BS 921, Class B, laid in 1:3 cement:sand mortar for new services - refer to engineers drawings and specifications
   Bedding and haunching to frame: solid, in 1:3 cement:sand mortar, square with joints in surrounding finishes - refer to engineers drawings and specifications. Cut back top of haunching to 30mm below top of cover
5. Infill: to be filled with adjacent paving material. Site measure to accurately maintain paving pattern.

441 Infill Access Covers for existing services

1. Existing concrete or stone filled covers to be taken up and replaced with access covers of the same size. Infill to match adjacent paving surface. Take up any existing identification markings and reuse.
2. Covers: stainless steel infill cover to take paviours or resin bonded surface
3. Manufacturer: Kent Stainless Steel; Product Reference: Kent Solo Paver ('lift out' option) Type: B125 for light vehicular use
   3.1. Accessories: double-seal, locking down bolt
4. Size: clear opening size as per existing service covers
5. Seating: Engineering bricks to BS 921, Class B, laid in 1:3 cement:sand mortar for new services - refer to engineers drawings and specifications
   Bedding and haunching to frame: solid, in 1:3 cement:sand mortar, square with joints in surrounding finishes - refer to engineers drawings and specifications. Cut back top of haunching to 30mm below top of cover
6. Infill: to be filled with adjacent paving material. Site measure to accurately maintain paving pattern.

Laying

510 Laying kerbs, edgings and channels

1. Cutting: Neat, accurate and without spalling. Form neat junctions.
   1.1. Long units (450 mm and over) minimum length after cutting: 300 mm.
   1.2. Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
2. Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
3. Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.

520 Adverse weather

1. Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

530 Concrete for foundations, races and haunching

1. Standard: To BS 8500-2.

2. Designated mix: Not less than GEN0 or Standard mix ST1.
3. Workability: Very low.

540 Cement mortar bedding

1. General: To section Z21.
2. Mix (Portland cement:sand): 1:3.
   2.1. Portland cement: Class CEM I 42.5 to BS EN 197-1.
   2.2. Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
3. Bed thickness: 12-40 mm.

547 Bedding/ Backing of units on fresh concrete races

1. Standard: To BS 7533-6.

550 Kerb dowels

1. Dowels: Steel bar to BS 4482.
   1.1. Size: 12 mm diameter, 150 mm long.
2. Installation of dowels: Vertically into foundation while concrete is plastic.
   2.1. Centres: To suit holes in kerbs.
   2.2. Projection: 75 mm.
3. Grouting of holes in kerbs: Filled with 1:3 cement:sand mortar finished flush.

560 Haunching dowels

1. Dowels: Steel bar to BS 4482.
   1.1. Size: 12 mm diameter, 150 mm long.
2. Installation of dowels: Vertically into foundation while concrete is plastic.
   2.1. Centres: 450 mm.
   2.2. Distance from back face of kerb: 50 mm.
   2.3. Projection: 75 mm.
3. Haunching: Rectangular cross section, cast against formwork, fully enclosing and protecting dowels.

570 Channels

1. Installation: To an even gradient, without ponding or backfall.
2. Lowest points of channels: 6 mm above drainage outlets.

580 Drainage channel systems

1. Installation: To an even gradient, without ponding or backfall. Commence laying from outlets.
2. Silt and debris: Removed from entire system immediately before handover.
3. Washing and detritus: Safely disposed without discharging into sewers or watercourses.

600 Radius kerbs/ channels

1. Usage: Radii of 15 m or less.

610 Angle kerbs

1. Usage: Internal and external 90° changes of direction.
2. Cutting of mitres: Not permitted.

620 Accuracy

1. Deviations (maximum)
   1.1. Level: ± 6 mm.
   1.2. Horizontal and vertical alignment: 3 mm in 3 m.

625 Regularity of paved surfaces

1. Maximum undulation of (non-tactile) paving surface: 3 mm.
   1.1. Method of measurement: Under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface).
2. Sudden irregularities: Not permitted.

630 Narrow mortar joints

1. Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
   1.1. Joint width: 3 mm.

650 Sealant movement joints

1. Description: Sealant movement joint to kerbs and concrete works where specified by Structural Engineer.
2. Joint filler: Compressible cellular rubber or plastics compatible with specified sealant.
3. Filler installation: Built in as work proceeds, extending through haunching and foundation. Filler positioned accurately to fully support sealant at the recommended depth below exposed faces of units.
4. Joint width: As per Civil Engineer's Specifications
5. Sealant: Submit proposals
   5.1. Colour: Colour match to kerbs / colour of adjacent finish.
6. Sealant application: As section Z22.

Ω End of Section

Q23
Gravel/ hoggin/ woodchip/ resin bound roads/ pavings/ overlays

Types of surfacing

170 Loose gravel overlay (P04)

1. Description: Building perimetre drainage, maintenance path.
2. Base: Loose Gravel Build-up to Civil Engineer's Specifications (Existing Concrete surface, insulation, filter fleece.
   2.1. Preparation: Geotextile
3. Gravel: Loose laid and raked to uniform thickness:
   3.1. Type: 8-16mm dark grey pebbles
   3.2. Source: CED or equal and approved
   3.3. Colour: Dark Grey
   3.4. Size: Graded 8-14 mm
   3.5. Thickness: As per drawings

   007562-MSP-XX-00-DR-L-0700 Building interface 1/2;
   007562-MSP-XX-00-DR-L-0701 Building interface 2/2;

171 Loose gravel overlay (P05) Sedum Roof

1. Description: Nominal 500mm strip around Sedum Roof perimetre and any upstand.
2. Base: Loose Gravel Build-up to Civil Engineer's Specifications (Existing Concrete surface, insulation, filter fleece.
   2.1. Preparation: Geotextile
3. Gravel: Loose laid and raked to uniform thickness:
   3.1. Type: White cobbles
   3.2. Source: CED or equivalent and approved.
   3.3. Colour: white
   3.4. Size: 20-40mm
   3.5. Thickness: min 50mm, as shown on drawings.
   3.6. Special provisions: :
      - Provide gravel to all upstands and internal / external abutments, rooflights, filter drains etc.
      - Provide Gravel surround to outlets, and any vertical penetrations.

226A (P01) Proprietary resin bound chippings (scattercoat to footpath)

1. Description: Proprietary resin bound chippings to ground floor footpaths.
2. Subgrade improvement layer: As per Civil Engineer's specifications.
3. Granular sub-base: Well compacted type 1 granular sub base.
   3.1. Compacted thickness: As per Engineer's drawings and specification
4. Water collection: Not required
5. Geotextile: As per manufacturer's recommendations.

6. Surface course
   6.1. Thickness:: 16mm for 3mm aggregate formulation
   6.2. Manufacturer: Addagrip Addabound - equal or approved
      6.2.1. Product reference: Resin bound aggregate paving – Addagrip Oyster AS-UV-OY3
   6.3. Slip/ skid resistance: As per product Specifications
   6.4. Binder: 70mm depth of AC14 or AC10 Open Surface asphalt concrete max 100/150 pen to BS EN13108-1:2006 (Bituminous Macadam)

      Evenly applied 2-part PU resin. As per manufactures recommendation
   6.5. Chippings: 3mm aggretates as per Manufacturer's Specifications
      6.5.1. Colour: white / grey
   6.6. Aggregate size: 1-3mm
7. Application: Thoroughly mixed and uniformly spread.
   7.1. Spreading rate: As per manufacturer's Specifications.
   7.2. Thickness: As per manufacturer's Specifications
   7.3. Compaction to all layers: By heavy roller or other appropriate means, adequate to resist subsidence or deformation of the completed roads/ pavings when in use.
   7.4. Application guidelines: :
      - Apply sealant to tarmac surface to manufacturer's recommendation. Allow to cure sufficiently and apply adhesive resin to manufacturer's recommendation. Overspread chippings.
      - Complete sample area, to form part of finished works, size 5 sqm, in advance of the remainder, in an approved location and obtain approval before proceeding.
      - Completion: Before trafficking, remove excess chippings.

Laying

315 Materials

1. Compatibility: Chippings suitable for use with respective binders/ emulsions/ resin/ epoxy.

320 Samples

1. Submit: Representative samples of all chippings and materials: Resin bound chippings, Loose gravel chippings.

330 Herbicide to paving Q23/

1. Description: Apply only if and when required.
2. Type: Suitable for the application, location and conditions of use.
3. Weeds and moss: Grub up.
4. Application: As section A34, before surfacing.

340 Laying generally

1. Channels, gullies, etc: Keep clear.
2. Finished surfaces
   2.1. Lines and levels: To prevent ponding.
   2.2. Overall texture: Even.
   2.3. State at completion: Clean.

350 Cold weather working

1. Frozen materials: Do not use.
2. Freezing conditions: Do not lay pavings.
3. Cold bituminous surface dressings: Do not apply when ambient temperature is below 10°C.
4. Other dressings or overlays: As manufacturers' recommendations.

380 Laying granular surfaces in pedestrian areas and cycle tracks

1. Permissible deviation from required levels, falls and cambers (maximum): ±12 mm.
2. General: Spread and level in 100 mm maximum layers. As soon as possible, compact each layer.
3. Dry weather: Lightly water layers during compaction.

390 Protection from traffic and plant

1. Paved areas: Restrict access to prevent damage.

Completion - Not Used

Ω End of Section

Q25
Slab/ brick/ sett/ cobble pavings

General

50 Scope

1. Paving to Roof Terrace.

   The specified paving is a concrete flag in stretcher bond on a pedestal system as the tight dimensions do not allow for a traditional build-up.
   The contractor is to prepare shop drawings including stone schedule for approval by LA.

105 Material samples

1. Before placing orders submit for approval representative samples (min 300 x 300mm) and acceptable colour range of all the materials included in this specification. Ensure that delivered material match sample(s). Benchmark samples are to be kept on site for comparison.

127A Pedestal supported paving slab/ flag system (P02)

1. Description: Paving slab / Flag system supported on pedestals
2. Material code on drawings:: P02
3. Supplier: : Marshalls
4. Product:: Modal Paving – Light Grey Granite
5. Nominal size: : 600x200mm
6. Finish:: Smooth
7. Joints: : 5mm
8. Bedding :: Pedestal supported flag system.
9. Preparation of existing base: Geotextile membrane and protective gravel as per Civil Engineer's design and Specifications
10. Paving support: Pedestals as clause 481
11. Paving units: Concrete Flags
12. Accessories: Sealer/ stabilizer
13. Relevant drawings:: 007562-MSP-XX-02-DR-L-0103 Roof Terrace Landscape GA Plan

215 Testing

1. If recent data is not available, we request the following tests are undertaken:
   1.1. Abrasion resistance in accordance with BS EN 14231, requirement less than 23mm Flexural strength in accordance with BS EN 12372- test values to inform the subcontractor's design
   1.2. Compressive strength in accordance with BS EN 1926- test values to inform the subcontractor’s design
   1.3. Density and porosity in accordance with BS EN 1936, requirement density >2560 kg/m3
   1.4. Water absorption in accordance with BS EN 13755, requirement 0.4% by weight max

System performance - Not Used

Products

440 Ready-mixed mortar

1. Description: Pre-mixed mortar for minor applications.

2. Type: Rapid strength mortar
3. Manufacturer: Steintech
   3.1. Product reference: Tuffbed
4. Consistency: As per Manufacturer's recommendation

450 Gravel filling

1. Description: FOR PRECAST CONCRETE AND GRAVEL PAVING SYSTEMS
2. Material: Refer to clause 171/Q23
3. Grading: Refer to clause 171/Q23

465 Sealant for movement joints

1. Description: Movement joints on concrete walls and external staircase.
2. Sealant
   2.1. Type: As per Civil Engineer's specifications
   2.2. Manufacturer: As per Civil Engineer's specifications
      2.2.1. Product reference: Submit proposals
   2.3. Colour: To match adjacent finish

481 Support pedestals to Roof Terrace Concrete Flags

1. Description: Support pedestals for Concrete Flags
2. Manufacturer: Bauder or equal and approved
   2.1. Product reference: DPH height adjustable pedestal or equal and approved.
3. Type: Submit proposals
4. Material: Recycled polypropylene
5. Dimensions: suitable to support paving, and as shown on drawings:
   007562-MSP-XX-02-DR-L-0103 Roof Terrace Landscape GA
   007562-MSP-XX-00-DR-L-0712 Paving and kerb details
6. Additional pedestals: Adjacent to perimeters
7. Accessories: mineral bedding mix (for added sound insulation and stability, plus layer of coarse sand for levelling.
8. Performance:: final paving needs to be firm, level, open jointed and free draining.

Execution

610 Material samples

1. Samples representative of colour and appearance of designated materials: Submit before placing orders.
   1.1. Designated materials: All pavings

615 Control samples

1. Sample areas: Complete as part of the finished work.
   1.1. Types of paving: All stone paving and concrete flag types
   1.2. Location: to be agreed
   1.3. Size (minimum): 1.5 x 1.5 m
   1.4. Included features: Edging; Recessed manhole cover infill
2. Approval of appearance and surface: Obtain before proceeding.

620 Adverse weather

1. General
    1.1. Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
    1.2. Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
2. Paving with mortar joints and/ or bedding
    2.1. Protect from frost damage, rapid drying out and saturation until mortar has hardened.
3. Paving laid and jointed in sand/ fine aggregate
    3.1. Stockpiled laying course sand/ fine aggregate: Protect from saturation.
    3.2. Exposed areas of unbound laying course and uncompacted areas of unbound paving: Protect from heavy rainfall.
    3.3. Saturated unbound laying course: Remove and replace, or allow to dry before proceeding.
    3.4. Laying dry sand/ fine aggregate jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

625 Laying pavings – general

1. Appearance: Smooth and even with regular joints and accurate to line, level and profile.
2. Falls: To prevent ponding.
3. Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
    3.1. Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
4. Slopes: Lay paving units upwards from the bottom of slopes.
5. Paving units: Free of mortar and sand stains.
6. Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.

627 Cutting of Slabs and Paving Flags generally

1. Paving slabs to be cut neatly around any poles, bins, bicycle rack, tree grilles, slot drains, uplighters etc
2. Paving units to be cut neatly and accurately, without spalling, with a masonry saw to give neat junctions with edgings and adjacent finishes
3. Where trimming of pavers is necessary, portions of less than a third of an entire paver are not permitted.

629 Oversized Slabs - Generally

1. Lay oversized slabs were cut leaves less than one third of original slab remaining.
2. Where intricate pattern stones sit against a building edge and produce overly small pavers, they can be cut from a single stone with false joints to give visual continuity to the pattern.

630 Levels of paving

1. Permissible deviation from specified levels
    1.1. Generally: ± 6 mm.
2. Height of finished paving above features
    2.1. At gullies: +6 to +10 mm.
    2.2. At drainage channels and kerbs: +3 to +6 mm.

637 Regularity of paved surfaces

1. Maximum undulations in the surface of pavings (except tactile paving surfaces) under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface): 3 mm.
2. Joints between paving units or utility access covers
   2.1. Joints flush with the surface: difference in level between adjacent units to be no more than twice the joint width (with a 5 mm max difference in level).
   2.2. Recessed, filled joints: difference in level between adjacent units to be no greater than 2 mm; the recess to be no deeper than 5 mm.
   2.3. Unfilled joints: difference in level between adjacent units to be no greater than 2 mm.
3. Sudden irregularities: Not permitted.

645 Protection

1. Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
2. Materials storage: Do not overload pavings with stacks of materials.
3. Handling: Do not damage paving unit corners, arrises, or previously laid paving.
4. Mortar bedded pavings: Keep free from traffic after laying:
   4.1. Pedestrian traffic (minimum): 4 days
5. Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 Cementitious bases and sub-bases

1. General: Protect from moisture loss, if not covered by another pavement course within 2 hours of completion.

655 Condition of sub-bases/ bases before spreading laying course

1. Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
2. Granular surfaces: Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
3. Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
4. Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
5. Levels and falls: Accurate and within the specified tolerances.
6. Drainage outlets: Within 0-10 mm of the required finished level.
7. Features in unbound paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
8. Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS 7533-4.

785 Tooled joints in mortar-bedded units

1. Joints: Completely filled with bedding mortar as work proceeds.
   1.1. Joint width: 6 mm
   1.2. Finish: Neat flush profile.

810 Pedestal installation

1. Surface to accept pedestals: Clean and free of debris.

2. Setting out: Mark centre-point of pedestal on substrate surface, with perpendicular guidelines to ensure square layout.
   2.1. Orientation: Align parallel with adjacent features.
   2.2. Spacing: To suit paving material and dimensions
3. Movement tolerance at perimeter of paver system (maximum): 5 mm.

820 Slip Resistance

1. Slip resistance to comply with local authority requirements and, unless otherwise specified, comply with the following:
   1.1. where required, the top surface to have a suitable slip resistance treatment to ensure that the surface retains non-slip characteristics when tested. This treatment to be visually acceptable as agreed in writing with the Landscape Architect.
2. Test samples with the specified finish wet and dry in both directions in accordance with the requirements of BS EN 1341.
3. Submit details fo the treatment and testing to the Landscape Architect for acceptance.
4. Testing procedures to be in accordance with an agreed recognized standard.

930A Finished Edge Condition

1. Make good all the edges with paving existing boundary.

Completion - Not Used

Ω End of Section

Q28
Topsoil and soil ameliorants

System outline

100 Scope

1. Scope:
    - Tree planting within Public Realm and Garden Path areas
    - Roof garden of Building
    - Sedum Mat Planting to roof

    Notes:

    - Tree planting (rootballed when possible) only permitted between Mid-September to Mid-November and Mid-February to Mid-April;
    - no planting permitted during freezing conditions.
    - Shrub and perennial planting (pot grown)only permitted during the growing season Mid-April to Mid-October.
    - Bulb planting only permitted September to October.

140 Soil Handling

1. It is essential to provide a structured, uncompacted soil profile for the successful establishment and subsequent growth of trees, shrubs and grass. Adequate soil structure is a key element for healthy plant growth to ensure aeration and drainage within the rootzone. Where heavy machinery and large volumes of soil are excavated and stored, soil structure can easily be destroyed by compaction.
2. As a general rule, to preserve soil structure and limit compaction, all soils shall only be moved and handled when friable and non-plastic in consistency (i.e. at least 5% below the soil's lower plastic limit), unless authorised by the landscape architect in writing.

155 Mulching and top dressing system

1. Description: Planted areas in general
2. Composition
    2.1. Material: As per Q31/485A

250 Topsoil Handling

1. All soils shall only be moved and handled when friable and non-plastic in consistency (i.e. at least 5% below the soil's lower plastic limit). It shall not be excavated, handled or trafficked if it has been exposed ta cumulative rainfall exceeding 100mm over the preceding 28days, when heavy rain is falling or immediately after, unless authorized by the landscape architect in writing. The Plastic Limit can be assessed in the field as the minimum moisture content at which soil can be rolled and moulded in a thin thread approximately 3mm in diametre without breaking or cracking.
2. When moving topsoil within the site or when stripping topsoil and importing on site:
    2.1. If aggressive weeds are present, obtain instructions from the landscape architect before moving topsoil
    2.2. Select and use plant to minimize disturbance, trafficking and compaction
    2.3. Avoid contamination by subsoil, stone, hardcore, rubbish or material from demolition work.
    2.4. Keep different grades of topsoil separate from each other when handling and stockpiling.

2.5. Inform landscape architect where the depth of topsoil is difficult to determine

2.6. Minimize multiple handling of topsoil. Use topsoil immediately after stripping wherever possible.

Products

300 Preparation materials generally

1. Purity: Free of pests, disease and fungus.
2. 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.
3. Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
   3.1. Corrosive, explosive or flammable.
   3.2. Hazardous to human or animal life.
   3.3. Detrimental to healthy plant growth.
4. Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
5. Objectionable odour: None.
6. 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

1. Materials: Products containing peat

312 Imported topsoil to BS 3882 for Garden Path - Embankment and Embankment Tree Pits

1. Description: All topsoil to be used for new tree planting shall comply in all respects to the requirements listed below.

   Visual Examination: the soil shall be free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter of material or substance that would render the topsoil unsuitable for use.
2. Quantity: Provide as necessary for tree pits and replacing first 450mm of existing substrate or make up any deficiency to obtain proposed levels.
3. Standard: To BS 3882.
4. Source: Bourne Amenity Ltd or equal and approved
5. Physical Parametres: Clay (less than 0.002mm) % (5 – 20)
   Silt (0.002 - 0.05mm) % (5 – 30)
   Sand (0.05 - 2.00mm) % (60 – 100)
   Permeability m/sec (10-6 - 10-7)
   Max. Stone Content (2 - 50mm) % by weight (35)
   Max. Stone Size in any dimension mm (50)
   Chemical Parameters
   pH value units (5.5 – 8.2)
   Electrical Conductivity (1:2.5 extract) uS/cm (<1500)
   Organic Matter % (3.0-6.0)
   Total Nitrogen % (>0.15)
   Extractable Phosphorus mg/l (>30)
   Extractable Potassium mg/l (>300)
   Extractable Magnesium mg/l (>80)
   Potential Contaminants
   Total Arsenic (As) mg/kg (<20)
   Total Cadmium (Cd) mg/kg (<1)

Total Chromium (Cr) mg/kg (<135)
Total Lead (Pb) mg/kg (<450)
Total Mercury (Hg) mg/kg (<8)
Total Selenium (Se) mg/kg (<35)
Total Copper (Cu) mg/kg (<130)
Total Nickel (Ni) mg/kg (<50)
Total Zinc (Zn) mg/kg (<300)
Water-Soluble Boron (B) mg/kg (<3)
Total Cyanide mg/kg (<20)
Total (mono) Phenols mg/kg (<3)
Sulphate (soluble) g/l (<1.2)
Sulphide (total) mg/kg (<25)
Sulphur (elemental) mg/kg (<500)
PAHs (USEPA16) mg/kg (<40)
TPH (C6-C40) mg/kg (<100)

312A Imported topsoil for use in Rain Gardens

1. Description: Topsoil suitable for use in SuDS tree pits. Non-compacted.
2. Quantity: As per drawings.
3. Standard: To BS 3882.
4. Source: GreenBlue urban or equal approved
   4.1. Product reference: ArborSoil Hydro
   4.2. Physical Parametres:: Clay (less than 0.002mm) and Silt (0.002 - 0.05mm) % (9)
   Very Fine Sand (0.05 - 0.15mm) and Fine Sand (0.15-0.25) % (21)
   Medium Sand (0.25 - 0.50mm) % (45)
   Coarse Sand (0.50-1.00) and Very Coarse Sand (1.00-2.00) % (25)
   Stones (2-6 mm) % (1.6)
   Organic Matter (LOI) % w/w (2.7)
   Chemical Parameters
   Ph (1:2.5 water extract) units (8.4)
   Exchangeable Sodium Percentage % (3.6)
   Total Nitrogen % (>0.15)
   Extractable Phosphorus mg/l (>30)
   Extractable Potassium mg/l (>300)
   Extractable Magnesium mg/l (>80)
   Potential Contaminants
   Total Arsenic (As) mg/kg (<20)
   Total Cadmium (Cd) mg/kg (<1)
   Total Chromium (Cr) mg/kg (<135)
   Total Lead (Pb) mg/kg (<450)
   Total Mercury (Hg) mg/kg (<8)
   Total Selenium (Se) mg/kg (<35)
   Total Copper (Cu) mg/kg (<130)
   Total Nickel (Ni) mg/kg (<50)
   Total Zinc (Zn) mg/kg (<300)
   Water-Soluble Boron (B) mg/kg (<3)
   Total Cyanide mg/kg (<20)
   Total (mono) Phenols mg/kg (<3)
   Sulphate (soluble) g/l (<1.2)
   Sulphide (total) mg/kg (<25)
   Sulphur (elemental) mg/kg (<500)
   PAHs (USEPA16) mg/kg (<40)
   TPH (C6-C40) mg/kg (<100)

313 Imported Lightweight topsoil for Roof Garden Planters

1. Description: All topsoil to be used for roof garden planting shall comply in all respects to the requirements listed below:

   Visual Examination: the soil shall be free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter of material or substance that would render the topsoil unsuitable for use.
2. Quantity: As per drawings.
3. Source: Bourne Amenity or similar and approved.
   3.1. Physical Parametres:: Clay (less than 0.002mm) % (5 – 20)
   Silt (0.002 - 0.05mm) % (5 – 30)
   Sand (0.05 - 2.00mm) % (60 – 100)
   Permeability m/sec (10-6 - 10-7)
   Max. Stone Content (2 - 50mm) % by weight (35)
   Max. Stone Size in any dimension .mm (50)
   Chemical Parameters
   pH value units (5.5 – 8.2)
   Electrical Conductivity (1:2.5 extract) uS/cm (<1500)
   Organic Matter % (4.0-10.0)
   Total Nitrogen % (>0.2)
   Extractable Phosphorus mg/l (>30)
   Extractable Potassium mg/l (>300)
   Extractable Magnesium mg/l (>80)
   Potential Contaminants
   Total Arsenic (As) mg/kg (<20)
   Total Cadmium (Cd) mg/kg (<1)
   Total Chromium (Cr) mg/kg (<135)
   Total Lead (Pb) mg/kg (<450)
   Total Mercury (Hg) mg/kg (<8)
   Total Selenium (Se) mg/kg (<35)
   Total Copper (Cu) mg/kg (<130)
   Total Nickel (Ni) mg/kg (<50)
   Total Zinc (Zn) mg/kg (<300)
   Water-Soluble Boron (B) mg/kg (<3)
   Total Cyanide mg/kg (<20)
   Total (mono) Phenols mg/kg (<3)
   Sulphate (soluble) g/l (<1.2)
   Sulphide (total) mg/kg (<25)
   Sulphur (elemental) mg/kg (<500)
   PAHs (USEPA16) mg/kg (<40)
   TPH (C6-C40). mg/kg (<100)

316 Imported Lightweight topsoil for Extensive Roof Planting - Sedum Mat to Building Roof

1. Description: Imported Lightweight topsoil for Extensive Roof planting
2. Material:: 100% recycled crushed brick and green waste compost
3. Depth:: as per Manufacturer's recommendation
4. Ameliorant / Conditioner: : Not required
5. Declaration of analysis: : Submit
6. Quantity: As per drawings.
7. Standard: To BS 3882. Annexes A-E
8. Source: Bauder or equal and approved
   8.1. Product reference: Bauder Extensive Green Roof Substrate or similar and approved.

8.2. Installation:: As per Manufacturer's recommendations.

318 Imported Subsoil for Garden Path - Embankment and embankment tree pits

1. Description: The washed sand to be used as backfill for the lower part of the tree pits shall comply in all respects to the requirements listed below.

   Visual examination:
   The sand shall be free from soil materials, brick and other building materials and wastes, hydrocarbons, plant matter, roots and rhizomes of perennial weeds and any other foreign matter or material or substance that would render the sand unsuitable for the proposed uses.

2. Physical parameters:
   Fines (<0.15mm) % (<10)
   Sand (0.15 - 2.00mm) % (>90)
   At least 50% of the sand fraction should be medium sand (0.25-0.5mm)
   Permeability m/sec (10-5 - 10-6)
   Max. Stone Content (2-50mm) % by weight (25)
   Max. Stone Size in any dimension mm (20)
   Chemical parameters
   pH value units (5.0-7.0)
   Electrical Conductivity (1:2.5 extract) uS/cm (<1500)
   Organic Matter % (<1.0)
   Chemical parameters
   Total Arsenic (As) mg/kg (<20)
   Total Cadmium (Cd) mg/kg (<1)
   Total Chromium (Cr) mg/kg (<135)
   Total Lead (Pb) mg/kg (<450)
   Total Mercury (Hg) mg/kg (<8)
   Total Selenium (Se) mg/kg (<35)
   Total Copper (Cu) mg/kg (<130)
   Total Nickel (Ni) mg/kg (<50)
   Total Zinc (Zn) mg/kg (<300)
   Water-Soluble Boron (B) mg/kg (<3)
   Total Cyanide mg/kg (<20)
   Total (mono) Phenols mg/kg (<3)
   Sulphate (soluble) g/l (<1.2)
   Sulphide (total) mg/kg (<25)
   Sulphur (elemental) mg/kg (<500)
   PAHs (USEPA16) mg/kg (<40)
   TPH (C6-C40) mg/kg (<100)

322 Imported Compost

1. The Green Compost to be used as a soil improver for all tree and shrub areas shall comply in all respects to the requirements listed below:
   Visual Examination: the soil shall be free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter of material or substance that would render the compost unsuitable for use.

   Chemical Parameters
   pH value units (7.5 – 8.2)
   Electrical Conductivity (1:2.5 extract) uS/cm (<1200)
   Moisture Content 35-45
   Bulk Density 450-550
   Organic Matter % 25-30
   C:N Ratio 15:1 - 20:1
   Total Nitrogen % 0.5-1.0

Ammonia mg/l 1.0-5.0
Nitrate mg/l 5-120
Total Phosphorus % 0.1-0.3
Phosphorus mg/l 4.0-30
Total Potassium % 0.5-0.9
Potassium mg/l 650-1200
Magnesium mg/l 10-30
Free Carbon trace

Potential Contaminants
Total Arsenic (As) mg/kg (<20)
Total Cadmium (Cd) mg/kg (<4)
Total Chromium (Cr) mg/kg (<500)
Total Lead (Pb) mg/kg (<200)
Total Mercury (Hg) mg/kg (<4)
Total Selenium (Se) mg/kg (<6)
Total Copper (Cu) mg/kg (<130)
Total Nickel (Ni) mg/kg (<50)
Total Zinc (Zn) mg/kg (<300)
Water-Soluble Boron (B) mg/kg (<3)
Total Cyanide mg/kg (<20)
Total (mono) Phenols mg/kg (<3)
Sulphate (soluble) g/l (<1.2)
Sulphide (total) mg/kg (<25)
Sulphur (elemental) mg/kg (<500)
PAHs (USEPA16) mg/kg (<40)
TPH (C6-C40) mg/kg (<100)

390 Fertilizers to be incorporated into soil / growing media

1. As required by soil analysis results
   • Type: Slow release fertilizer.
   • Source: Submit proposals.

400 Maintenance Fertilizers for public realm and roof garden planters

1. Type: Maintenance fertilizer.
   • Source: Submit proposals.
   - Product reference: Submit proposals.

Execution

610 Topsoil analysis

1. Soil to be analysed: Imported topsoil and topsoil stockpile
2. Soil analyst: Tim O'Hare Associates
3. Samples: Collect in accordance with BS 3882.
4. Submit
   4.1. Declaration of analysis: Full Analysis as clauses below.
   4.2. Report detailing soil analyst's recommendations.

610B Subsoil analysis

1. Soil to be analysed: Imported subsoil
2. Soil analyst: Tim O'Hare Associates
3. Samples: Collect in accordance with BS 3882.
4. Submit

4.1. Declaration of analysis: Full Analysis as clauses below.

4.2. Report detailing soil analyst's recommendations.

620A Importing topsoil

1. Give notice: Before importing topsoil, subsoil or compost to site, provide topsoil, subsoil or compost analysis report for the topsoil, subsoil or compost to be imported by the approved topsoil analyst as clause 610 to the landscape architect for written approval. No topsoil, subsoil or compost is to be brought on site without prior written approval by the landscape architect. Any topsoil, subsoil or compost brought on site without the landscape architect's approval will be deemed to have been brought in at the contractor's risk and the landscape contractor will be instructed to remove such material at his own expense unless instructions to the contrary are given in writing by the landscape architect. Upon receiving written approval proceed. Any sample receiving approval

   1.1. Notice period: 14 days.

622 Sampling and testing of all imported Top and Subsoils and Compost

1. Description: All imported topsoil that are to be used in this scheme is to be independently sampled and analysed prior to delivery to site by the approved analyst. One composite sample shouldbe taken from each source and for every 200 m3 of topsoil, subsoil or compost to be used.
   Each composite sample should be made up 10 No subsamples taken from evenly spaced locations across the stockpile. The subsamples should be mixed together and quartered down to form two 1 kg composite sample for top and subsoils and two litres for compost.
   The composite samples should be placed in a clean plastic bag(s) and labelled with the source reference, type of soil and date of sampling. One set of composite sample(s) should be sent to the approved soil analyst for sampling and analysis, the other set of composite samples is to be sent to the landscape architect for reference.
   Retain a sample of all approved top and subsoils on site as a standard against which future deliveries can be checked.

625A Testing of imported Topsoil

1. Description: Samples of each topsoil source that is proposed for use should be tested prior to delivery in accordance with the relevant topsoil specification. The following parameters should must
   be requested:
   1) Visual examination to record: Munsell colour, structure, consistency, stone size and shape, presence of any deleterious materials
   2) pH Value (RB427 Method)
   3) Electrical Conductivity (1:2.5 soil/water extract)
   4) Particle Size Analysis (clay, silt, 5 sands – UK Classification USDA Classification)
   5) Stone Content by % weight (>2mm, >20mm, >50mm)
   6) Total Nitrogen (Dumas Method)
   7) Extractable Phosphorus, Potassium & Magnesium (RB427 Method)
   8) Organic Matter (RB427 Method)
   9) Zootoxic Heavy Metals - As, Cd, Cr, Pb, Hg, Se
   10) Phytotoxic Heavy Metals – Cu, Ni, Zn, B
   11) Total Cyanide & Total (mono) Phenols
   12) Soluble Sulphate, Elemental Sulphur & Total Sulphide
   13) Speciated PAHs (USEPA 16 suite)
   14) TPH by GC-FID (C6-C40)
   In addition, topsoil to be used for tree pits, is to be tested for:
   15) Falling Head Permeability

   The results of analysis should be presented in an interpretive report to include a Certificate of Analysis, comments on the topsoil's suitability for use within the landscape scheme (tree pits, intensive and extensive roof garden planting) with respect to the parameters determined.
   A copy of this specification and the proposed planting list / drawings of the

scheme shall be provided for review by the soil scientist and for reference within the topsoil analysis report.
The report should either confirm that the specified treatments and soil additives are appropriate, or make recommendations for adjustments to the soil treatments as deemed necessary.

626 Testing of Compost

1. Description: Representative samples of each compost source that is proposed for use should be tested prior to delivery in accordance with the compost specification **clause 322** .
The results of analysis should be presented in an interpretive report to include a Certificate of Analysis, comments on the compost's suitability for re-use within
the landscape scheme with respect to the parameters determined. A copy of this specification and the proposed planting list / drawings of the scheme shall be provided for review by the soil scientist and for reference within the compost analysis
report. The report should either confirm that the specified compost application rates are appropriate, or make recommendations for adjustments to the application rates as deemed necessary.

628 Contaminations

1. Any topsoil or subsoil contaminated with materials that are corrosive, explosive, flammable, hazardous to human, animal or plant health or Controlled Waters should not be used. Any contaminated soil should be removed from site to a suitably licensed landfill site by a licensed waste carrier with the correct documentation and necessary approvals from the Environment Agency.

629 Herbicide Treatment

1. Any topsoil or subsoil contaminated with materials that are corrosive, explosive, flammable, hazardous to human, animal or plant health or Controlled Waters should not be used. Any contaminated soil should be removed from site to a suitably licensed landfill site by a licensed waste carrier with the correct documentation and necessary approvals from the Environment Agency.

630 Documentation for imported topsoil

1. Timing: Submit at handover.
2. Contents
    2.1. Full description of all soil components.
    2.2. Record of source for all soil components.
    2.3. Record drawings showing the location and depth of all soils by type and grade.
    2.4. Declaration of analysis: in accordance with BS 3882, clause 6 and Table 1.
3. Number of copies: Three

635 Documentation for compost and composted materials

1. Timing: Submit at handover.
2. Contents
    2.1. Full description of all compost components.
    2.2. Record of source for all compost components.
    2.3. Analyst's report for each test carried out.
    2.4. Declaration of compliance: in accordance with PAS 100 and BSI PD CR 13456.
    2.5. Quality Compost Protocol certification: Required
3. Number of copies: Three

650 Notice

1. Give notice before
    1.1. Setting out.
    1.2. Spreading topsoil.
    1.3. Applying herbicide.
    1.4. Applying fertilizer.
    1.5. Visiting site during maintenance period.
2. Period of notice: 2 weeks

655 Mechanical tools

1. Restrictions: Do not use within 100 mm of tree and plant stems. Do not damage adjacent planting.

660A Grading subsoil for:

1. Description: All planting beds
2. Standard: In accordance with BS 8601.
3. General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
4. Areas of thicker topsoil: Excavate locally e.g. tree pits.
5. Avoid compaction.
6. Excess subsoil: Remove.

665A Subsoil surface preparation for:

1. Standard: In accordance with BS 3882.
2. General: Excavate and/ or place fill to required profiles and levels, as section D20.
3. Loosening
    3.1. When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth
        3.1.1. Light and noncohesive subsoils: 300 mm
        3.1.2. Stiff clay and cohesive subsoils: 450 mm
        3.1.3. Rock and chalk subgrades: Lightly scarify to promote free drainage.
    3.2. Wet conditions: Do not loosen subsoils.
4. Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
5. Remove from site: Arisings, contaminants and debris
6. Notes: : To be fully effective, subsoiling shall be carried out when the soil is reasonably dry and friable to full depth of working, unless instructed by the landscape architect.
   Before spreading topsoil, all stones, fill material and other arisings and debris larger than 75mm shall be removed from the subsoil area.

670 Inspecting formations

1. Give notice: Before spreading topsoil for tree pits, planter beds, courtyard garden planting..
2. Notice period: 14 days

685 Surplus materials to be removed

1. Topsoil removal from site: Topsoil remaining after completion of all landscaping work
2. Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

690A Topsoil storage heaps

1. Location: As agreed with Contract Administrator; Topsoil and Subsoil to be stored away from contaminants.
2. Height (maximum): 1.0 m
3. Width (maximum): 5.0 m
   3.1. Formation: Loose tip and shape from the side only, without running machinery on the heap at any time.
4. Protection
   4.1. Do not place any other material on top of storage heaps.
   4.2. Do not allow construction plant to pass over storage heaps.
   4.3. Prevent compaction and contamination, by fencing and covering as appropriate.
   4.4. Notes: Topsoil and subsoil should be stored in an area of the site where it should not interfere
   with other site operations so that it can be left undisturbed during the construction process. Once the stockpile has been completed, the area shall be cordoned off with Heras fencing to prevent any disturbance or contamination by other construction activities.
   4.5. SITE CLEARANCE: : The area that is to be used for storing the topsoil or subsoil shall be cleared of vegetation and any waste arising from the development eg. building rubble and fill materials.

695 Cultivation

1. Compacted topsoil: Break up to full depth.
2. Tilth: Loosen, aerate, and break up topsoil to a tilth suitable for blade grading.
   2.1. Depth: 350 mm.
   Particle size (maximum): 10 mm.
   Timing: Within a few days before planting.
   Weather and ground conditions: Suitably dry.
3. Surface: Leave regular and even.
4. Levels: As drawing.
5. Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 50 mm.
6. Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.

700 Grading of topsoil

1. Topsoil condition: Reasonably dry and workable.
2. Contours: Smooth and flowing, with falls for adequate drainage.
   2.1. Hollows and ridges: Not permitted.
3. Finished levels after settlement:: 25 mm above adjoining paving, kerbs, manholes etc.
4. Blade grading:: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 400mm.
5. Give notice: If required levels cannot be achieved by movement of existing soil.

705A Handling topsoil

1. Standard: In accordance with BS 3882.
2. Aggressive weeds: Give notice and obtain instructions before moving topsoil.
3. Plant: Select and use plant to minimize disturbance, trafficking and compaction.
4. Contamination: Do not mix topsoil with:
   4.1. Subsoil, stone, hardcore, rubbish or material from demolition work.

4.2. Other grades of topsoil.

5. Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
6. Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall, or when the moisture content is greater than the plastic limit.

710A Spreading topsoil on:

1. Standard: In accordance with BS 3882.
2. Temporary roads/ surfacing: Remove before spreading topsoil.
3. Layers
   3.1. Depth (maximum): 150 mm.
   3.2. Gently firm each layer before spreading the next.
4. Depth after firming and settlement: as shown on drawings.
5. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.
6. Notes:: Topsoil shall be spread to smooth flowing contours with falls for adequate drainage and removing any minor hollows or ridges.
   If the topsoil is anaerobic when removed from the stockpile, the soil shall be spread and left unfirmed to allow it to re-aerate. Only when the soil has regained its brown colouration and lost its sour odour shall it be firmed.

715 Loose tipping of topsoil

1. Standard: In accordance with BS 3882.
2. 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.

810 Applying compost

1. Description: to areas to be agreed if the soil to be imported is deficient in organic matter but suitable in all other respects, compost can be used as a soil improver if agreed in writing by the landscape architect. The contractor must supply proof of the amount of compost supplied to site and incorporated into the agreed soil mix.
2. Locations:: as needed - location to be agreed.
3. Application rate for trees and shrubs: as needed, application rates to be agreed in writing prior to proceeding.
   3.1. Timing: Apply prior to cultivation.
4. Application rate for grass: not applicable.
5. Other requirements: sampling and analysis as per specification.

845 Applying loose mulch

1. Description: FOR PLANTING BEDS
2. Timing: Immediately after planting
3. Preparation: Clear all weeds Ensure that soil is thoroughly moistened, applying water where necessary
4. Coverage of mulch (minimum)
   4.1. Planting beds (depth): 75 mm depth
   4.2. Trees: Over an area of 1.2 x.1.2 m with the tree in the centre
   4.3. Container planting: 50 mm depth
5. Finished level of mulch: 30 mm below adjacent grassed or paved areas

Completion

905 Applying maintenance fertilizer to soil

1. Time of year: During March and May
2. Application: Evenly spread, carefully incorporating below mulch materials.
3. Rate: To suit soil report recommendations

910 Applying maintenance fertilizer to container planting

1. Locations: All planting Areas
2. Time of year: During March and May
3. Application: Evenly spread, carefully incorporating below mulch materials.
4. Rate: To suit soil report recommendations

Ω End of Section

Q31
External planting

General information/ requirements

10 Scope

1. Tree and understorey planting for:
    - Ground floor – Embankment, Raingardens and
    - Roof terrace - Intensive green roof planters
    - Rooftop - Extensive Green Roof

    Refer to Q28 for soil specification.

    Refer to
    007562-MSP-XX-00-DR-L-0900 Ground Floor Planting Plan;
    007562-MSP-XX-00-DR-L-0910 Ground Floor Tree Planting Plan;
    007562-MSP-XX-02-DR-L-0902 Roof Terrace Planting Plan;
    007562-MSP-XX-02-DR-L-0903 Extensive Green Roof Plan;
    007562-MSP-00-ZZ-SC-L-910 Planting Schedule;

15 Nurseries

1. To be approved by the LA
2. The Contractor must make allowance for nursery inspection visits by LA to inspect and tag trees, shrubs, climbers, groundcover and perennial planting.

20 Plant Material - Early Procurement

1. The intention is to select and mark at the earliest appropriate time all the plant material listed in the planting schedules for growing on to meet the specification and sizes shown in the schedules. These sizes must be achieved when the material is delivered to the site.
   The landscape subcontractor must provide a full list of nurseries which he will use to source, hold and grown on stock for the landscape architect's approval.
   Trees will be pre-ordered by the client and held in the nurseries, to be sold on to the contractor. The contractor is to view the stock in the nurseries prior to acceptance, and ascertain that all pruning and airpotting as per advance order specification and tree report has been carried out prior to accepting the stock.
   Rootballed stock is to be planted out into SpringRing airpots a minimum 6 months before planting at the supplying nursery. The contractor will need to instruct the supplying nurseries to Airpot the trees at an appropriate time to suit the construction programme .
   The landscape architect reserves the right to refuse stock that has been damaged in the nursery or transport or is otherwise in ill-health or deficient.
   The contractor must secure all shrubs and herbaceous stock at the start of the relevant planting season for inspection by the landscape architect. All stock to be in the contractor's nursery, clearly marked as being held for this project. The landscape architect reserves the right to refuse stock.
   The contractor is to reserve an additional 5% of all plant materials to account for plant failures and replacements.
   Materials, goods, and workmanship shall be of the best quality of their respective kind in accordance with the relevant European Community Standard, British Standard or Code of Practice and be suitable for their intended use.

30 Plant Quality

1. All plants must comply in all respects with the current relevant British Standards. All plants must originate from a suitable climatic zone within the EEC. The place of origin should be certified and the landscape contractor shall state whether raised from seed or propagated vegetatively.

40 Growing on, care and maintenance of all plants

1. All plant material will be grown on, cared for and maintained by the landscape contractor for the project until it is required.
   The landscape contractor shall maintain and keep all the plants in accordance with the highest standards of current horticultural practice. In particular, the landscape contractor shall:
   1.1. select, propagate, and grow on only the best quality material, and provide documentation to prove it comes from disease free accredited nurseries.
   1.2. water and feed all plant material properly and adequately
   1.3. protect all plant material from vermin and keep free from disease
   1.4. keep all plant material in such a way that there is sufficient space for the encouragement of crown, shoot, plant development and growth generally.
   1.5. pot into new containers all container grown material well before roots spiral, to encourage root and shoot development
   1.6. prevent any damage whatsoever to the plant material
   1.7. prepare all the plant material appropriate to size and species for transplanting, and removal from the nursery to the site as necessary.
   1.8. In the event of death, poor condition, disease, growth failure or loss of any single item of plant material, the landscape contractor shall immediately replace the plant with another of identical size and species at his cost.

50 Plant Storage

1. The contractor must provide secure and safe storage areas for all plant material in the nursery and once brought on site. The site storage area is to be agreed with the landscape architect.

112 Site clearance generally

1. General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
2. Stones: Remove those with any dimension exceeding 50 mm.
3. Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
4. Vegetation: Clear scrub to ground level by flail mowing and remove arisings; retain and protect trees indicated on drawings
5. Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.

118A Soil conditions

1. Soil for cultivating and planting: Moist, friable and not waterlogged.
2. Frozen or snow covered soil: do not plant into frozen or snow covered soil.
3. Additional requirements: : All soil handling and cultivation and planting operations must only be carried out when the soil is reasonably friable in consistency, ie when the moisture content is at least 5% below the soil's lower plastic limit, or more simply, do not cultivate or plant when the soil can be rolled into a thin 3mm diameter thread. Soil handling must be stopped during and after rainfall, and not be continued until it has dried out sufficiently.
   After final cultivation and prior to planting, the topsoil should possess a moderate to well developed granular fine to moderate blocky structure. The soil should not be excessively compacted and must be capable of free drainage once laid and lightly firmed.
   The soil must be well aerated and drained. No soil should possess anaerobic conditions, as defined by a sour odour and grey/olive colouration.

120 Climatic conditions

1. General: Carry out the work while soil and weather conditions are suitable.

1.1. Strong winds: Do not plant.

125A Times of year for planting

1. Deciduous trees and shrubs: while dormant and frost-free - mid-October to mid-November, Mid-February to Mid-April.
2. Conifers and evergreens: September/ October or April/ May.
3. Herbaceous plants (including marginal): during growing season - Mid-April to late August/ mid-September
4. Container grown plants: during growing season - Mid-April to late August/ mid-September
   4.1. Watering and weed control: Provide as necessary.
5. Dried bulbs, corms and tubers: September/ October.
6. Colchicum (crocus): July/ August.
7. Green bulbs: After flowering in spring.
8. Wildflower plugs: Late August to mid November or March/ April.
9. Aquatic plants: May/ June or September/ October.

130 Mechanical tools

1. Restrictions: Do not use within 100 mm of tree and plant stems.

145A Watering

1. General: : The contractor must provide all necessary water to the plant material. He is to allow for hand watering for 3 months unless automatic irrigation has been commissioned. He is to ensure installation of automatic irrigation system is coordinated with planting and fully operational within 3 months of planting.
   If automatic irrigation has not been commissioned within 3 months confirm remedial action.
   In the case of the tree planting within the public realm he must ensure that the watering point has been installed prior to planting and hand-water for 12 months. Additional hand watering must be provided if necessary.
2. Quantity: Wet full depth of topsoil.
3. Application: Even and without damaging or displacing plants or soil.
4. Frequency: As necessary to ensure estabishment and continued thriving of planting.
5. Irrigation inspection:: During all planting visits, inspect the soil to a depth of 400mm in all planting areas including tree pits. Immediately inform the landscape architect in writing if any areas are inadequately irrigated or conversely are suffering from excessive moisture, waterlogging or anaerobism.
6. Hand watering: : The contractor must provide hand watering twice a week during establishment if automatic irrigation is not available for whatever reason.

150 Water restrictions

1. General: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160 Notice

1. Give notice before
   1.1. Setting out.
   1.2. Applying herbicide.
   1.3. Applying fertilizer.
   1.4. Delivery of plants/ trees.

1.5. Planting shrubs.

1.6. Planting trees into previously dug pits.

1.7. Watering.

1.8. Visiting site during maintenance period.

2. Period of notice: Two weeks

165A Preparation, Planting and mulching materials

1. General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
2. Certification of source, analysis, suitability for purpose and absence of harmful substances. Submit:
   2.1. Certified materials: for each of the following materials submit a certificate giving supply source, content analysis, confirmation of suitability for purpose, and confirmation of absence of harmful substances: manufactured planting media, mulches, organic matter, imported compost.
   2.2. Give 5 days notice before ordering or using.

170 Soil requirements

1. Type
   1.1. Planted beds: Planting bed soil system, as section Q28
   1.2. Tree pits, shrub pits and other backfilling: Plant pit backfilling soil system, as section Q28
   1.3. External container planting: Container planting growing media system, as section Q28
   1.4. Mulch applied after planting: Mulching and top dressing system, as section Q28

200 Plants/ Trees – general

1. Condition: Materially undamaged, sturdy, healthy and vigorous.
2. Appearance: Of good shape and without elongated shoots.
3. Hardiness: Grown in a suitable environment and hardened off.
4. Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
5. Budded or grafted plants: Bottom worked.
6. Root system and condition: Balanced with branch system.
   6.1. Standard: The relevant parts of BS 3936
7. Species: True to name.
8. Origin/ Provenance: As plant schedule
9. Definition: Origin and Provenance have the meaning given in the National Plant Specification.

210 Trees Root System

1. adequate in relation to the size of the tree and be conducive to successful transplanting and growing on.

215 Plants/ Trees – specification criteria

1. Name, forms, dimensions, provenance and other criteria: As scheduled and defined in the National Plant Specification (available on CS Design Software Limited’s website).

216 Plants/ Trees – specification criteria

1. Name, forms, dimensions and other criteria: To the relevant part of BS 3936.

225 Bulbs/ Corms/ Tubers

1. Condition: Firm, entire, not dried out or shrivelled.
2. Health: Free from pests, diseases and fungus.
3. Handling: Remove from packaging immediately.
4. Storage: Permitted only when necessary.
   4.1. Location: Well ventilated, dark, covered, rodent proof container, away from exhausts and fruit.
   4.2. Duration: Minimum period.
   4.3. Temperature: 18-21°C.

235 Container grown plants/ Trees

1. Growing medium: With adequate nutrients for plants to thrive until permanently planted.
2. Plants: Centred in containers, firmed and well watered.
3. Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
4. Hardiness: Grown in the open for at least two months before being supplied.
5. Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

245 Labelling and information

1. General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
   1.1. Full botanical name.
   1.2. Total number.
   1.3. Number of bundles.
   1.4. Part bundles.
   1.5. Supplier's name.
   1.6. Employer's name and project reference.
   1.7. Plant specification, in accordance with scheduled National Plant Specification categories.
2. Additional information: Submit on request: Country of origin Date supplied and consignment details or reference Impact of pest/ disease Name or designation of rootstock of budded or grafted plants Potting dates Propagation method and dates Pruning dates Type of container.

246 Labelling and information

1. Standard: To BS 3936.

255 Plants/ Trees reserved at supplier’s premises

1. Types/ Species: As plant schedule
2. Predelivery inspection: Give notice.
3. Labelling: Identify inspected plants/ trees as reserved for use on this project.

260A Plant/ Tree substitution

1. Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
   1.1. Price.
   1.2. Difference from specified plants/ trees.
2. Approval: Obtain written approval by LA before making any substitution.

265A Plant handling, storage transport and planting

1. Standard: To CPSE 'Handling and establishing landscape plants'.
2. Frost: Protect plants from frost.
3. Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.Prevent damage to bark, main trunk and branch structure of trees by appropriate wrapping during delivery.
   Keep plant storage to a minimum
   Keep plants well watered during storage. Do not allow roots to dry out either during storage or transport.
4. Plant packaging: Black polyethylene bags
5. Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped
6. Planting: Upright or well balanced with best side to front.

280 Treatment of tree wounds

1. Cutting: Keep wounds as small as possible.
   1.1. Cut cleanly back to sound wood using sharp, clean tools.
   1.2. Leave branch collars. Do not cut flush with stem or trunk.
   1.3. Set cuts so that water will not collect on cut area.
2. Fungicide/ Sealant: Do not apply unless instructed.

285 Protection of existing grass

1. General: Protect areas affected by planting operations using boards/ tarpaulins.
   1.1. Excavated or imported material: Do not place directly on grass.
   1.2. Duration: Minimum period.

290 Surplus material

1. Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

Plant containers

292A Prefabricated plant containers

1. General: : The supply of the prefabricated plant containers is within the scope of the landscape subcontractor.
   Supply of drainage and growing media, planting and co-ordination with the irrigation subcontractor/ supplier is within the landscape subcontractor's scope.
2. Manufacturer: Logic or equal and approved
3. Material: Powder Coated galvanised steel
4. Dimensions/ Shape: curved walls, 2mm thick, faired externally with smooth corners and edges, Powder coated, RAL colour to match architectural roof garden rendering - submit sample of powder coating for approval.
5. Lining: Integral
6. Accessories: Automatic irrigation system as irrigation designers drawings and spec.

Preparation of planting beds/ planting materials

300A Herbicide

1. Description: Prevent need for weed killer through use of good nursery stock and imported soil, good

planting practices and mulching. Remove all annual weeds by hand. Report all instances of perennial weed infestation to the landscape architect and agree areas to be treated with weedkiller in writing.

2. Locations: To be agreed in writing - only to be applied if required.
3. Type: Suitable for supressing perennial weeds.
4. Timing: Allow fallow period before cultivation.
   4.1. Duration (minimum): As manufacturer's recommendation

305 Weed control for invasive non-native weeds

1. Locations: All planting areas
2. General: Prevent weeds from seeding and perennial weeds from becoming established, by hand weeding.

375 Cultivation

1. Compacted topsoil: Break up to full depth
2. Cultivation: Loosen, aerate and break up soil into particles of 2-8mm.
   2.1. Depth:350mm
   2.2. Timing: Within a few days before planting.
   2.3. Weather and ground conditions: Suitably dry.
3. Surface: Leave regular and even.
4. Levels: As shown on drawings.
5. Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 50mm.
6. Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.

Planting shrubs/ herbaceous plants/ bulbs

400 Random plant layout

1. Spacing: Random groups of 3-11 plants of the same species.
2. Density: As plant schedule

401 Regular plant layout

1. Spacing: In regular, staggered rows
2. Density: As plant schedule

405 Shrub planting pits

1. Timing: Excavate 1-2 days (maximum) before planting.
2. Sizes: Wide enough to accommodate roots when fully spread and 75 mm deeper than root system
3. Pit bottom improvement Break up to a depth of 150 mm, incorporating 25 g of slow release fertilizer per planting pit.

420 Climbing plants

1. Planting: 150 mm clear of supporting structure (e.g. wall/ fence) with roots spread outward.
   1.1. Branches: Lightly secured to supports.
2. Climber supports: Contractor's proposal.
   2.1. Base height: As drawing 007562-MSP-XX-02-DR-L-0750

2.2. Extent: As drawings
007562-MSP-XX-00-DR-L-0900;
007562-MSP-XX-02-DR-L-0902;

2.3. Centres: As drawings
007562-MSP-XX-00-DR-L-0900;
007562-MSP-XX-02-DR-L-0902

2.4. Distance from wall: As drawing
007562-MSP-XX-02-DR-L-0750

3. Fixings: Contractor's choice

3.1. Centres: 1 m

435 Climbing plants used as ground cover

1. Planting

1.1. Canes or other supports: Remove.

1.2. Arrangement: Spread stems.

2. Fixing: Pinned to ground to ensure good contact.

445 Planting bulbs/ Corms/ Tubers

1. Depth: Top of bulb/ corm/ tuber at a depth of approximately twice its height, base in contact with bottom of hole.
2. Backfilling: Finely broken soil. Lightly firm to existing ground level.
3. Naturalized planting in existing grassed areas

3.1. Scattering: Random. Plant bulbs/ corms/ tubers where they fall.

3.2. Planting: Neatly remove a plug of turf and replace after planting.

455A Planting sedum mat to building roof

1. Handling: Keep plants watered and in shade until planted. Do not allow to dry out.
2. Preparation: as per manufacturer's recommendations.
3. Planting sites:: Building roof; refer also to Q37-130A.
4. Planting: as per manufacturer's recommendations
5. Supplier:: Bauder or similar and approved.
6. Product Reference:: Sedum Blanket XF301 or similar and approved.
7. Substrate preparation: : to manufacturer's recommendations.

455B Planting shade tolerant Wildflower Turf to Embankment

1. Handling: Keep plants watered and in shade until planted. Do not allow to dry out.
2. Preparation: as per manufacturer's recommendations.
3. Planting sites: As shown in drawings.
4. Planting: As per manufacturer's recommendations.
5. Supplier:: Wildflower Turf Ltd.
6. Product Reference:: Wildflower Turf Roof WFT-Shade-41 (41 species)
7. Substrate preparation: to manufacturer's recommendations.
8. Fixing/ Jointing:: to manufacturer's recommendations.
9. Establishment/ Aftercare:: to manufacturer's recommendations

471 Naturalized hedges

1. Planting: In trenches large enough to take full spread of roots. Set out plants evenly.

472 Fencing support for new hedges

1. Type: Timber post and general pattern wire mesh, as section Q40
2. Standard:: To BS 1722-2.
3. Height:: 600 mm.
4. Timing: Before planting hedge.
5. Support: Lightly secure hedge plants to fence wires at appropriate intervals.

480 After planting

1. Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
2. Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
3. Pruning damaged branches: : Immediately after planting, prune as appropriate in accordance with BS
   3998 any damaged or broken branches, or to correct unacceptable or undesirable growth. Where noted
   on the schedule and to the extent appropriate to the species cut back to encourage growth ot BS 3998.
   Remove all canes and supporting material unless instructed otherwise in writing by the landscape architect. Dispose of all arisings, canes and supportive material, leaving the works in a clean and tidy state.
4. Top dressing: Not required

485A Mulching Planting Beds

1. Material: Ornamental bark mulch
2. Size: Mulch shall be graded bark chippings to the following specifications:
   - 2.1. Particle size: 5-40mm
   - 2.2. dust and fines content: nil
   - 2.3. pH level: 4.5-6
   - 2.4. Wood content: less than 5%
   - 2.5. Purity: Free of pests, disease, fungus, and weeds. Free from Methyl Bromide contamination. The mulch shall consist of only matured conifer bark mulch, which shall have been matured for a minimum of sixteen weeks to ensure volatile substances have evaporated. during stacking and prior to delivery to site, temperatures must have exceeded 50deg Celsius for a minimum of 14 continuous days followed by a further period of stabilization. the landscape contractor must ensure the mulch supplied is fit for its intended purpose. Sample must be supplied 14 days before delivery to site and must certify in writing his satisfaction with its fitness for its intended purpose.
   - 2.6. Recycled content: None permitted.
3. Preparation: Clear all weeds. Water soil thoroughly.
4. Coverage: 80mm depth.
5. Finished level of mulch: as shown on drawings.

Planting trees

500 Tree planting

1. Standard: Prepare trees and transplant in accordance with BS 8545

505 Tree pits

1. Sizes: As drawings
   007562-MSP-XX-00-DR-L-0740;
   007562-MSP-XX-00-DR-L-0741;
2. Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
3. Pit bottoms: Excavate with slightly raised centre: With slightly raised centre. Break up base to a depth of 200 mm.
   3.1. Treatment: Not required
4. Pit sides: Scarify.
5. Backfilling material: Tree soil as Q28 and as shown on detail drawings.
6. Accessories:: deadman underground guying system, geotextile, drainage layer, aeration and irrigation pipes etc.
7. Other requirements: : on sloped ground, Contractor to propose
   soil retention method at the top of tree pit where required.

510A Tree pit root barriers

1. Locations: Around existing utilities as per engineer's recommendation.
2. Manufacturer: Submit proposals.
   2.1. Product reference: Submit proposals
3. Installation: With sides vertical. Remove all sharp objects adjacent to barrier.

512 Tree pit irrigation and ventilation accessories

1. Locations: As drawing
   007562-MSP-XX-00-DR-L-0741
2. Manufacturer: Submit proposals
   2.1. Product reference: Submit proposals
3. Type: Submit proposals
4. Inlet: Submit proposals
5. Installation
   5.1. Pipe: Lay in loop above root ball with slight fall away from inlet pipe. Trim length to ensure a close fit in the tree pit. Connect both ends of pipe securely into plastics tee junction on inlet.
   5.2. Top cap of inlet: Protruding slightly above finished surround level.
   5.3. Backfill material: Carefully compact in layers.

515 Tree pit drainage

1. Locations: To all tree pits in planters.
2. Depth of excavation: Increase from specified size to allow for aggregate layer, with base slightly falling to outlet.
3. Aggregate layer: Clean gravel or broken stone, with no fines, graded 40 to 20 mm.
   3.1. Depth: 200 mm
4. Drainage pipes
   4.1. Type: Perforated plastics
   4.2. Diameter: Submit proposals
   4.3. Position: Lay around perimeter of pit within aggregate layer.
   4.4. Discharge: Connect to soakaway.
5. Geotextile filter

5.1. Manufacturer: Submit proposals

5.1.1. Product reference: Submit proposals

5.2. Position: Lay over aggregate before installing tree or backfill.

6. Completed pits: Test for free drainage before planting.

525 Semi-mature trees

1. Standard: Prepare roots and transplant to BS 4043.
2. Backfilling material: As clause 586A
3. Support: deadman underground guying system.
4. Protection: Not required.

526 Underground guying for trees

1. Description: ALL TREES
2. Manufacturer: Submit proposals

2.1. Product reference: Submit proposals

3. Anchoring system: Submit proposals
4. Installation: Ensure tree is positioned correctly and vertically prior to tightening guy line tensioners.

586A Tree backfilling material

1. Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required.
2. Ameliorant/ Conditioner: Not required.
3. Fertilizer: Not required.

Woodland/ matrix/ buffer zone planting

600 Woodland work generally

1. Services: Check for below and above ground services, including land drainage, in the vicinity. Give notice if they may be affected and obtain instructions before proceeding.
2. Safety: Comply with Arboriculture and Forestry Advisory Group Safety leaflets.

605 Existing vegetation/ Weed clearance

1. Surface vegetation clearance: Screef an area one metre diameter around each planting location
2. Arisings: Remove.

665 Setting out

1. Distance between trees: As drawing 007562-MSP-XX-00-DR-L-0500

680 Setting out

1. Planting density: As plant schedule
2. Layout: Random groups of no less than 3 or more than 7 of the same species, ensuring that no three plants are aligned in any one direction.

Protecting/ maintaining/ making good defects

710 Maintenance

1. Duration: Carry out the operations in the following clauses from completion of planting until the end of the rectification period.

2. Frequency of maintenance visits: Monthly during growing season and as necessary to fulfil the requirements of this specification.
   Notice: give 7 days' notice of the visits in writing, within a week of the maintenance visit, confirm in a written report all operations carried out at the maintenance visit to the landscape architect.

720 Failures of planting

1. Defects due to materials or workmanship not in accordance with the Contract: All plants, trees, shrubs that have failed to thrive during the rectification period will be regarded as defects due to materials, workmanship, or maintenance not in accordance with the contract. The landscape architect's assessment of any planting material not thriving will be final. Replace with equivalent plants/ trees/shrubs of the same specification. All such replacements will be carried out at the contractor's expense.
   1.1. Exclusions: Theft or malicious damage after completion.
   1.2. Rectification: Replace with equivalent plants/ trees/ shrubs.
2. Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
3. Timing of making good: the next suitable planting season in accordance with an agreed defects rectification programme.

740 Cleanliness

1. Soil and arisings: Remove from hard surfaces and grassed areas.
2. General: Leave the works in a clean tidy condition at completion and after any maintenance operations.

750 Planting maintenance generally

1. Weed control: Maintain weed free area around each tree and shrub.
   1.1. Diameter (minimum): The larger of 1 m or the surface of original planting pit.
   1.2. Keep planting beds clear of weeds: By hoeing
2. Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
3. Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
4. Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
5. Trees: Spray crown when in leaf during warm weather.
   5.1. Timing: After dusk.
6. Tree accessories: Check condition of stakes, ties, guys, guards and irrigation and ventilation systems.
   6.1. Broken or missing items: Replace.
   6.2. Loose stakes: Re-firm in the ground or replace as necessary to provide support to the tree.
   6.3. Loose guys: Re-firm anchor points and adjust as necessary to provide support to the tree.
   6.4. Ties: Adjust to accommodate growth and prevent constriction or abrasion.
   6.5. Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
   6.6. Frequency of checks: Every two weeks
7. Watering: Automatic irrigation; do not install planting if automatic irrigation is not available.

755 Planting maintenance - Fertilizer

1. Time of year: March or April.
2. Fertilizer: Slow release.

2.1. Manufacturer: Submit proposals.

2.2. Product reference: Submit proposals.

3. Application: Evenly spread, carefully incorporating below mulch materials.
4. Application rate: To manufacturer's recommendations.

760 Planting maintenance – pruning

1. General: Prune to promote healthy growth and natural shape.
   1.1. Dead, dying, diseased wood and suckers: Remove.
   1.2. Timing: As appropriate to the species
   1.3. Trees: Favour a single central leading shoot.
2. Arisings: Remove.

760A Planting maintenance - Pruning shrub mix to Garden path - Embankment

1. General: Prune to promote healthy growth and natural shape.
2. Dead, dying, diseased wood and suckers: Remove.
3. Timing: prune native shrub mix once a year in autumn .
4. Arisings: Remove.

780 Maintenance instructions

1. General: Before end of the maintenance period, submit printed instructions recommending procedures to be established by the Employer for maintenance of the planting work for one full year: Provide details of any special procedures to be carried out.

790 Final mulching

1. Timing: At end of the maintenance period.
2. Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
3. Planting beds: Remulch.
4. Depth (minimum): 75 mm
5. Trees: Remulch.
6. Depth (minimum): 75 mm

Ω End of Section

Q35
Landscape maintenance

Generally

105 Maintenance objectives

1. General: : This Section to be read in conjunction with the Landscape Maintenance Plan Document no. 007562-MSP-XX-ZZ-RP-L-0001.
2. Location: All planting beds
   2.1. Duration: Until the end of the Defect liability period.
3. Aims: Enhanced landscape quality
4. Restrictions: As described in the Landscape Maintenance Plan.
5. Results: Adequate establishment, in accordance with the grant scheme contract

110 Notice

1. Give notice before
   1.1. Application of herbicide.
   1.2. Application of fertilizer.
   1.3. Watering.
   1.4. Each site maintenance visit.
2. Period of notice: Two weeks

130 Reinstatement

1. Damage or disturbance to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstate to original condition.

155 Watering

1. Supply: Bib tap at ground floor and terrace floor for hand watering.
2. Quantity: Wet to field capacity
3. Application: Do not damage or loosen plants.
4. Compacted soil: Loosen or scoop out, to direct water to rootzone.
5. Frequency: As necessary for the continued thriving of all planting

160 Water restrictions

1. General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.

170 Disposal of arisings

1. General: Unless specified otherwise, dispose of arisings as follows:
   1.1. Biodegradable arisings: Compost on site
   1.2. Grass cuttings: Compost on site
   1.3. Tree roots and stumps: Remove from site
   1.4. Shrub and tree prunings: Compost on site
   1.5. Litter and nonbiodegradable arisings: Remove from site

180 Chipping or shredding

1. Not permitted on site.

190 Litter

1. Extraneous rubbish not arising from the contract work: Collect and remove from site.

197 Cleanliness

1. Soil and arisings: Remove from hard surfaces.
2. General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

Grassed areas

226 Tree stems

1. Precautions: Do not allow nylon filament rotary cutters and other mechanical tools closer than 100 mm to the stem of any tree. Complete operations close to stems using hand tools
2. Operations close to stems:: Complete using hand tools.

235 Bulbs and corms in grassed areas

1. Before flowering: Do not cut.
2. Interval between end of flowering and start of grass cutting (minimum): As agreed in the maintenance manual

250 Leaf removal

1. Operations: Collect fallen leaves.
2. Special requirements: Remove by hand raking
3. Disposal: Remove from site for recycling

Flower beds/ seasonal beddings

460 Beds of perennials or perennials and annuals

1. Plant supports: Stake and tie plants using Bamboo canes.
    1.1. Length: To suit plant height
    1.2. Maintain throughout the growing season.
2. Gaps in planting: Refill by replanting.
3. Watering
    3.1. New plants: Before and after planting out.
    3.2. Ongoing: As necessary for the continued thriving of all planting.
4. Operations at end of growing season
    4.1. Trim: Older flowering stems of herbaceous perennials.
    4.2. Remove: Redundant plant supports, litter, debris and arisings.
    4.3. Cultivate: Fork over the soil, taking care not to cause undue disturbance to plants.
    4.4. Top dress: Apply Sanitized and stabilized compost top dressing.

470 Flower beds generally

1. Operations
    1.1. Remove: Dead flower heads, fallen leaves, litter and debris.

1.2. Weeds: Thoroughly hand-weed.
1.3. Cultivate: Lightly hoe.
1.4. Trim: Clip grass edges.
2. Fungicide: Not required
3. Insecticide: Not required

490 Thinning by removal of surplus plants

1. Plants to be thinned: to be agreed as necessary towards the end of the defects period.
2. Standard: BS 7370-4, clause 3.5.17.1.
3. Timing: Thin when foliage of adjacent plants has begun to touch.
4. Roots
   4.1. Disturbance to adjacent plants: Minimize.
   4.2. Soil: Refill holes with topsoil to leave an even-graded surface.
   4.3. Mulch: Maintain mulch as original specification.
5. Adjacent plants: Make good any minor damage immediately.
6. Plants for retention: Select plants with a strong healthy habit.
7. Mature planting density: to suit selected planting; to be agreed with the CA and landscape architect.

Shrubs/ trees/ hedges

500 Establishment of new planting

1. Duration: One year
2. Weed control
   2.1. Method: Keep planting beds clear of weeds by Maintaining full thickness of mulch.
   2.2. Area: Maintain a weed-free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
3. Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
4. Watering: As schedule and when instructed

502 Establishment of new planting – fertilizer

1. Time of year: March or April.
2. Type: Organic
3. Spreading: Spread evenly. Carefully lift and replace any mulch materials.
   3.1. Application rate: As manufacturer's recommendations.

515 Tree guy wires

1. Inspection/ maintenance times: during each and every maintenance visit.
2. Operations
   2.1. Replace or resecure loose or missing guy wires.
   2.2. Adjust to suit stem growth and to provide correct and uniform tension.
3. Removal: below ground guy wires - leave in place

520 Refirming of trees and shrubs

1. Timing: After strong winds, frost heave and other disturbances.
2. Refirming: Tread around the base until firmly bedded.

3. Collars in soil at base of tree stems, created by tree movement: Break up by fork, avoiding damage to roots. Backfill with topsoil and refirm.

525 Tree guards

1. Loose or defective guards: Adjust, refix or replace to original specification and to prevent chafing.

537 Nesting wild birds

1. Survey: Before starting hedge or tree work during the period of February to August (inclusive), carry out a survey by a qualified ecologist and submit report
2. Accidental disturbance: Report immediately.

540 Pruning generally

1. Pruning: In accordance with good horticultural and arboricultural practice.
    1.1. Removing branches: Do not damage or tear the stem or bark.
    1.2. Wounds: Keep as small as possible and cut cleanly back to sound wood.
    1.3. Cutting: Make cuts above and sloping away from an outward-facing healthy bud, angled so that water will not collect on cut area.
    1.4. Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
2. Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well-balanced natural appearance.
3. Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
4. Disease or infection: Give notice if detected.
5. Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

545 Pruning of excessive overhang

1. Timing: Annually
2. Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
3. Special requirements: Allow ground cover plants to partially overlap paths and lawns

550 Pruning of excessive height

1. Timing: Annually
2. Operations: Remove excessive height Above 12 m.

555 Pruning trees and shrubs

1. Standard: To BS 7370-4.
2. Special requirements: Growth retardents not permitted

570 Formative pruning of young trees

1. Standard: Type and timing of pruning operations to suit the plant species.
2. Time of year: Do not prune during the late winter/ early spring sap flow period.
3. Young trees up to 4 m high
    3.1. Crown prune by removing dead branches and reducing selected side branches by one third to preserve a well-balanced head and ensure the development of a single strong leader.
    3.2. Remove duplicated branches and potentially weak or tight forks. In each case, cut back to live wood.

4. Whips or feathered trees: Do not prune.
5. Operatives: Approved specialist contractor

575 Pruning ornamental shrubs

1. General: Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour.
2. Suckers: Remove by cutting back level with the source stem or root.

580 Pruning flowering species of shrubs and roses

1. Time of year
    1.1. Winter flowering shrubs: Spring.
    1.2. Shrubs flowering between March and July: Immediately after the flowering period.
    1.3. Shrubs flowering between July and October: Back to old wood in winter.
    1.4. Rose bushes: Early spring to encourage basal growths and a balanced, compact habit.

605 Trimming slowly establishing hedges

1. Operations
    1.1. Timing: Cut back hard in June and September to encourage bushy growth down to ground level.
    1.2. Form: Allow to reach planned dimensions only by gradual degrees, depending on growth rate and habit.

620 Removal of dead plant material

1. Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

625 Climbing plants

1. Pruning: Remove excess growth, to ensure that signs, light fittings, doors and windows are kept clear at all times.
2. Insecure growth: Attach to supporting wires or structures using Stainless steel wire.
3. Supporting structures: Check and repair as necessary.

630 Dead and diseased plants

1. Removal: Within one week of notification
2. Replacement: Within two weeks

635 Reinstatement of shrub/ herbaceous areas

1. Dead and damaged plants: Remove.
2. Mulch/ matting materials
    2.1. Carefully move to one side and dig over the soil, leaving it fit for replanting.
3. Do not disturb roots of adjacent plants.
4. Replacement plants
    4.1. Use pits and plants: To original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
    4.2. Additional requirements: Submit details and cost of plants before ordering
5. Dressing: Slow-release fertilizer:
    5.1. Type: Submit proposals

5.2. Application rate: As manufacturer's recommendations

640 Thinning by removal of surplus plants

1. Plants to be thinned: As instructed towards the end of the defects liability period.
2. Standard: BS 7370-4.
3. Timing: As above
4. Roots
   4.1. Disturbance to adjacent plants: Minimize.
   4.2. Soil: Refill holes with topsoil to leave an even-graded surface.
   4.3. Mulch: Maintain mulch as original specification.
   4.4. Adjacent plants: Make good any minor damage immediately.
5. Plants for retention: Select plants with a strong healthy habit.
6. Mature planting density: TBC on site wiht the Landscape Architect.

645 Weed control generally

1. Weed tolerance: Weed to clear ground every two weeks
2. Adjacent plants, trees and grass: Do not damage.

650 Hand-weeding

1. General: Remove weeds entirely, including roots.
2. Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
3. Completion: Rake area to a neat, clean condition.
4. Mulch: Reinstate to original depth.

651 Hand-weeding to Sedum Roof

1. General: Twice a year, lightly handweed to remove all windblown seeds and weeds entirely, including roots.
2. Disturbance: Remove the minimum quantity of soil, and disturb sedum mats as little as possible.
3. Completion: Leave in a neat, clean condition.

657 Herbicide to kill regrowth

1. Type: Suitable foliar-acting herbicide to kill regrowth.
2. Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

665 Weed control with winter herbicide

1. Type: Suitable residual soil-acting herbicide.
2. Time of year: Unless otherwise agreed, complete before end of March.
3. Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

670 Weed control with summer herbicide

1. Type: Suitable foliar-acting herbicide.
2. Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

675 Digging over

1. General: Dig over beds. Do not damage existing plants, bulbs and roots.

1.1. Depth of dig (minimum): 150 mm

680 Soil aeration

1. Compacted soil surfaces
   1.1. Prick up: To aerate the soil of root areas and break surface crust.
   1.2. Size of lumps: Reduce to crumb and level off.
   1.3. Damage: Do not damage plants and their roots.

685 Soil level adjustment

1. Level of soil/mulch at edges of beds: Reduce to 50 mm below adjacent grass or hard surface.
   1.1. Arisings (if any): Remove for composting.

690 Maintenance of loose mulch

1. Thickness (minimum): 75 mm
   1.1. Top up: Twice per year
2. Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
3. Weeding: Remove weeds growing on or in mulch by Hand-weeding.

695 Fertilizing established trees and shrubs

1. Time of year: During February or March
2. Type of fertilizer: Organic
3. Application: Spread evenly.
   3.1. Rate: As manufacturer's recommendations

705 Winter leaf removal

1. Operations: Take down temporary leaf fences. Collect accumulations of drifted leaves from the vicinity and from planting beds.
2. Arisings: Compost on site

Green walls - Not Used

Tree work

810 Tree work generally

1. Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
2. Protection: Avoid damage to neighbouring trees, plants and property
3. Standard: To BS 3998.
4. Removing branches: Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
5. Appearance: Leave trees with a well-balanced natural appearance.
6. Chain saw work: Operatives must hold a certificate of competence.
7. Tree work: To be carried out by an approved member of the Arboricultural Association.

815 Additional work

1. Defective, diseased, unsafe or weak parts of trees additional to those scheduled for attention: Give notice if detected.

820 Prevention of wound bleeding

1. Standard: To BS 3998.

825 Prevention of disease transmission

1. Standard: To BS 3998.

830 Cleaning out and deadwooding

1. Remove
    1.1. Dead, dying or diseased wood, broken branches and stubs.
    1.2. Fungal growths and fruiting bodies.
    1.3. Rubbish, windblown or accumulated in branch forks.
    1.4. Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
    1.5. Other unwanted objects, e.g. tree houses, swings.
    1.6. Climbing plants: to be agreed at the end of the defect liability period.

835 Cutting and pruning generally

1. Tools: Appropriate, well maintained and sharp.
2. Final pruning cuts
    2.1. Chainsaws: Do not use on branches of less than 50 mm diameter.
    2.2. Hand saws: Form a smooth cut surface.
    2.3. Anvil type secateurs: Do not use.
3. Removing branches: Do not damage or tear the stem.
4. Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
5. Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
6. Large branches:
    6.1. Remove in small sections and lower to ground with ropes and slings.
7. Dead branches and stubs: When removing, do not cut into live wood.
8. Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
9. Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

845 Crown lifting

1. Clearances: Remove branch systems to give clearance.
    1.1. Height: As instructed by the Landscape Architect.
2. Removing branches: Remove whole branches back to the stem, or cut lower portions of branches back to lateral or sublateral buds or branches. Do not leave stumps.

850 Crown thinning

1. Removing branches: Remove inward-growing, crossing, rubbing, dead and damaged branches.
2. Thinning: Selectively remove secondary and small live branch growth evenly throughout the crown.
    2.1. Quantity: to be agreed.
3. Cutting: Make no cuts of more than 25 mm diameter.
    3.1. Branches: Cut back to lateral or sublateral buds or branches without leaving stumps.

4. Appearance: Leave a uniform and well-balanced structure of branches and foliage.

865 Bark damage

1. Wounds
    1.1. Do not attempt to stop sap bleeding.
    1.2. Bark: Remove ragged edges using a sharp knife.
    1.3. Wood: Remove splintered wood from deep wounds.
    1.4. Size: Keep wounds as small as possible.
2. Liquid or flux oozing from apparently healthy bark: Give notice.

870 Cavities in trees

1. Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay, and give notice.
2. Water-filled cavities: Do not drain.
3. Sound wood inside cavities: Do not remove.
4. Cavity openings: Do not cover

Water areas - Not Used

Hard landscape areas/ fencing

900 Snow clearance

1. Clearance: When instructed
2. De-icing: To footpaths
    2.1. Material: Avoid Grit and salt. Submit proposal.
    2.2. Timing: After snow clearance
    2.3. Application rate: Spread evenly at a rate of As manufacturer's recommendations.

910 Hard surfaces and gravel areas

1. Herbicide: Apply a suitable foliar-acting or residual herbicide. Allow recommended period for herbicide to take effect before clearing arisings.
2. Hard surfaces: Remove litter, leaves and other debris.
3. Surface gutters and channels: Remove mud, silt and debris.
4. Drainage gullies: Empty traps and flush clean.
5. Gravel areas: Rake over. Remove weeds, litter, leaves and debris, and level off.
6. Repairs to flexible bituminous pavings: In accordance with the original paving specification or BS 7370-2, clause 4.12.
7. Stain removal: In accordance with BS 7370-2, Table 4.

930 Graffiti removal

1. Method: Pressure wash
2. Subsequent treatment: Transparent, two-part anti-graffiti coating
    2.1. Finish: Matt

Ω End of Section

Q37
Green roofs

General

50 Scope

1. General: Intensive Green roof planters at accessible Roof Terrace level, Extensive sedum roof at non-accessible Rooftop.

110 Intensive green roof - Roof Terrace Level

1. Description: Intensive green roof to Roof Terrace level planters

   Refer to drawing:
   007562-MSP-XX-02-DR-L-0902;
   007562-MSP-XX-02-DR-L-0750;
2. Roof type: As per Architect's drawings and specifications
   2.1. Substrate: As per Architect's drawings and specifications
   2.2. Slope: As per Architect's drawings and specifications
3. Waterproofing: As per Architect's drawings and specifications
4. Thermal insulation: As per Architect's drawings and specifications
5. Protection: As per Architect's drawings and specifications
6. Moisture control layers: As per Architect's drawings and specifications
7. Growing medium: Green roof growing media system, as section Q28
   7.1. Depth: 450 mm
8. Vegetation: Planting, as section Q31
9. Accessories: Edge-retaining profile as per Clause 830/Z11

130A Extensive green roof - Rooftop Level

1. Description: Wildflower mat roof at roof top

   Refer to drawing:
   007562-MSP-XX-02-DR-L-0903;
   007562-MSP-XX-02-DR-L-0760;
2. Roof type: to architect's drawing and specification.
   2.1. Substrate: to architect's drawings and specifications.
   2.2. Slope: to architect's drawings and specifications.
3. Waterproofing: to architect's drawings and specifications.
4. Thermal insulation: to architect's drawings and specification.
5. Protection: to architect's drawings and specification.
6. Moisture control layers: Filter membrane: Bauder SDF Mat, or equal and approved; drainage layer as
   clause 350 .
7. Growing medium: Bauder Extensive Green Roof Substrate as clause Q28-316.
   7.1. Depth: as shown on drawing - min. 100mm.
8. Vegetation: Wildflower Mat - Landscape 34
9. Supplier : Wildflower Turf Ltd or equal and approved.
10. Accessories: Submit proposals.
11. Installation method::

1. Lay drainage and water retention board to the area of the green roof. Cut tightly to all vertical penetrations and internal and external abutments.
2. Install filter membrane to the reservoir board, all laps to be a minimum 300mm and at all abutments/ penetrations turn the filter membrane up to the finished depth of the growing media.
3. Provide a band of 20/40mm rounded gravel to all upstands and internal/external abutments, rooflights etc. Also provide a gravel surround to outlets and any vertical penetrations. The gravel can either be laid onto the engineered growing media or directly onto the filter fleece of the reservoir bed.
4. Should it be necessary, or if a hard edge is required, install an aluminium perforated gravel guard between the gravel and the roof garden. Make sure, when installed, the return leg is facing towards the perimeter gravel strip.
5. Install the extensive growing media to the depth shown on the landscape drawings (min. 100mm).
6. It is essential that the supporting build up of drainage layer, filter sheet and substrate is completed before installing the mats.
7. Prior to installing the Sedum mat, saturate the engineered growing media with water.
8. Lay and level the Sedum mat directly onto the growing media. Install the mats all in the same direction but ensure the end joints are staggered. Immediately afterward make certain the area of Sedum mat is once again saturated with water. Within the first four weeks of installation regularly water and NEVER allow the mat to dry out.
9. The optimum time to install the mats is later September/ early October and late March/ early April. Do not install if frost is likely. Do not water in direct sunlight for the first week.
10. During the second year of roof life, apply a Slow Release Fertilizer during early summer at a rate of 24g per sqm.
11. Automatic Irrigation installation to be co-ordinated with the installation of extensive green roof. The contractor is to allow for hand watering until the automatic irrigation system is fully operational. Irrigation to the sedum roof will be required for a minimum of 2 years while establishing.
12. Integrated green roof drainage system and connection as per engineer's specification and drawings.

Performance - Not Used

Products

350 Drainage layer

1. Manufacturer: Bauder or equal and approved
   1.1. Product reference: SDF Mat Drainage / Filtration Layer
2. Material: Geo-textile facings with thermally bonded UV resistant woven nylon loops in between
   2.1. Depth: 20mm
3. Infill: Not required

400 Vegetation blanket

1. Description: also refer to refer to Q31-455A
2. Manufacturer: Bauder or equal and approved
   2.1. Product reference: Bauder Sedum Blanket XF301
3. Planting mix: 14-17 Species
   3.1. Thickness: 34-44 mm
   3.2. Material:: Substrate and sedum plants, embedded in a nylon mesh, with a moisture retention fleece

4. Vegetation coverage (minimum): 85%.

420 Edge-retaining profile - E04

1. Description: Retaining edge. Also refer to
2. Manufacturer: Bauder or equal and approved
   2.1. Product reference: AL40 edge trim.
3. Material: aluminium perforated gravel guard
4. Height: Submit proposals

440 Fire breaks

1. Material: Washed Pea Shingles, 20-40 mm
2. Submit proposals
3. Depth: 100 mm
4. Width: 500 mm

Execution

710 Installation generally

1. Preparation: Clear all surfaces of debris.
   1.1. Timing: After certification of waterproof membrane integrity.
   1.2. Surface condition: Visually inspect waterproof membrane, report any damage.
2. Faults in waterproof membrane: Report.
3. Contamination: Do not use materials detrimental to healthy plant growth.
4. Storage: Do not overload.
   4.1. Point loads: Avoid.
5. Outlets: Do not block.
   5.1. Outlet grilles: Installed.

720 Adverse weather

1. Unfinished work: Secure from damage and wind uplift.
2. Conditions: Do not install or work with frozen materials.

770 Drainage layer installation

1. Extent: Continuous over entire roof area.
2. Fitting: Manufacturer's recommendation
3. Upstands: Fit closely around penetrations and outlets.

800 Vegetation blanket installation

1. Handling blankets
   1.1. Timing: Lay within 36 hours of lifting from growing position.
   1.2. Excessive stacking: Not permitted.
   1.3. Material loss (maximum): 3% of total surface area.
2. Growing medium condition: Thoroughly watered.
3. Laying blankets
   3.1. Dry, damaged, frosty or waterlogged blankets: Do not lay.
   3.2. Orientation: Diagonal or perpendicular to slope of roof.

3.3. Joints: Stagger. Butt together or slightly overlap to prevent gaps. Do not stretch blankets. Secure with biodegradeable pegs.

3.4. Edges: Finish with whole blankets.

3.5. Consolidation: Firm as laying proceeds to ensure full contact with the growing medium. Do not use rollers.

4. Dressing: 2-5 mm horticultural grit

4.1. Application: Brush in to fill joints.

5. Watering: Thorough, immediately after laying and dressing.

820 Edge-retaining profile installation

1. Cutting: Neat, accurate and without spalling.

1.1. Junctions: vertical, secured using proprietary connectors.

2. Position: True to line and level. Smooth continuous lines.

3. Fixing: Submit proposals

Completion

910 Inspection

1. Timing: Before handover.

1.1. Give notice (minimum): Three days.

920 Completion

1. General: Leave the works in a clean, tidy condition.

2. Surfaces: Clean immediately before handover.

3. Outlets: Clean and clear of obstructions.

4. Completed green roof: Protect from adjacent or high level working.

930 Documentation

1. Timing: Submit at handover.

2. Contents

2.1. Growing medium declaration of analysis.

2.2. Manufacturers' guarantees and warranties.

2.3. Procedures for maintenance of the green roof.

2.4. Record drawings showing the location of planting and associated features.

3. Number of copies: 3

Ω End of Section

Q50
Site/ street furniture/ equipment

Gates, barriers and parking controls

50 Scope

1. Public realm furniture:
   Street furniture such as cycle stands and litter bins are off-the shelf items.
   Refer to Z11- Purpose Made Metalwork.

190 Proprietary Lighting Bollards

1. Description: 1m high Lighting bollards
2. Manufacturer: Iguzzini
   2.1. Product reference: I-way
3. Material: Aluminium
   3.1. Finish as delivered: As manufactured, powder coated
   3.2. Colour: Black
4. Height above ground: 1000 mm
5. Sectional size: As per manufacturer's details
6. Special features: battery for safety lighting during power outage
7. Method of fixing: proprietary base plate and fixing on substrate

Site and street furniture

210 Cycle stands

1. Manufacturer: Vestre
   1.1. Product reference: City Litter Bin 70 litres.
2. Type: Single stands
3. Material: Extruded Aluminium
   3.1. Finish: powder coated as per Z11.
   3.2. Colour: RAL 9007 – Aluminium grey.
4. Accessories: None
5. Method of fixing: baseplate fixing below paving; cycle stand to be bolted onto concrete base with 4No. resin bonded M10 s/s threaded anchor rods as per manufacturer's recommendation.

240 Litter bins

1. Manufacturer: Vestre
   1.1. Product reference: City Litter Bin 70 litres.
2. Material: Hot dipped galvanised steel with applied powder coating by the metal works contractor as Z11.
   2.1. Finish: powder coated as per Z11.
   2.2. Colour: RAL 9007 – Aluminium grey.
3. Accessories/ Special requirements: None
4. Method of fixing: Base plate bolted to 400 x 400 x 400 mm concrete base 100 mm below paving surface

Installation

510 Concrete foundations generally

1. Standard: To BS 8500-2.
2. Concrete: To Civil Engineers's drawings and specifications
3. Admixtures: Do not use.
4. Foundation holes: Neat vertical sides.
5. Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

515 Setting components in concrete

1. Holes: as necessary to accommodate concrete foudnations
2. Components: Accurately positioned and securely supported.
3. Concrete fill: Fully compacted as filling proceeds.
4. Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
5. Temporary component support: Maintain undisturbed for minimum 48 hours.

540 Building in to masonry walls

1. Components being built in: Accurately positioned and securely supported. Set in mortar and pointed neatly to match adjacent walling.
2. Temporary support: Maintain for 48 hours (minimum) and prevent disturbance.

545 Erection of timber and prefabricated structures

1. Checking: 5 days (minimum) before proposed erection date, check foundations, holding down bolts, etc.
2. Inaccuracies or defects in prepared bases or supplied structures: Report immediately. Obtain instructions before proceeding.

550 Damage to galvanized surfaces

1. Minor damage in areas up to 40 mm² (including on fixings and fittings): Make good.
    1.1. Material: Low melting point zinc alloy repair rods or powders made for this purpose or at least two coats of zinc-rich paint to BS 4652.
    1.2. Thickness: Sufficient to provide a zinc coating at least equal to the original layer.

560 Site painting

1. Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

Ω End of Section

Z11
Purpose made metalwork

To be read with preliminaries/ general conditions.

5 Scope

1. Purpose made metalwork:
   1.1. Landscape Stairs Handrails - refer to Section L37
   1.2. Metal planters at Terrace Roof Level
   1.3. Utility access covers within public realm
2. Please note these are an off the-shelf product which the manufacturer will produce to bespoke dimension.
   The metal work contractor to complete the design drawings based on MSP design intent.
   Refer to Clause 830/Z11.

10 Preparation of drawings

1. The contractor shall include in his tender for the cost of preparing all necessary shop drawings for the complete work to comply with the drawings and details provided by the Landscape Architect and Engineers.
   The contractor shall submit a copy of each revision of shop drawings and calculations to the CA, the landscape architect and the structural
   engineer for approval, allowing 10 working days for each review.
   The shop drawings and calculations shall be deemed to have undergone an internal check and been updated as necessary prior to this release for approval.
   The contractor's drawing register indicating current revisions is to be kept on site along with a full set of current drawings.
   The contractor is responsible for the accuracy of the work and is deemed to have crosschecked all dimensions on site.
   Any inconsistencies or errors in the drawings not detected during the approval process will not relieve the contractor of his responsibilities and any approval is so restricted.
   The contractor shall supply immediately following approval, 1 copy of the approved final drawings to the contract administrator, landscape architect, quantity surveyor and structural engineer.

20 Material samples

1. Before placing orders submit for approval representative samples of the powder coated finish. Keep approved sample on site and ensure that delivered materials match approved sample.

310 Stainless steel products

1. Chemical composition and physical properties: To BS EN 10088-1.
2. Sheet, strip and plate: To BS EN 10088-2.
3. Semi-finished products bars, rods and sections: To BS EN 10088-3.
4. Wire: To BS EN 1088-3.
5. Tubes
   5.1. Welded circular: To BS EN 10296-2.
   5.2. Seamless circular: To BS EN 10297-2.

310A Materials generally

1. Grades of metals, section dimensions and properties: To appropriate British Standards. All stainless steel to be grade 316 unless otherwise specified. All select grades and sections to be appropriate for the purpose.

2. Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
3. Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

400A Design

1. The design is to be completed by the contractor.
   Material to be supplied in the longest sections practical. Other performance criteria: responsibilities for detailed design including calculations are part of the contractor's design.
   Submit preliminary fabrication and installation method statements and programme including time periods for design, material supply, fabrication, off-site testing, dry lays and mock-ups and installation.
   Proposal: Submit drawings, technical information, calculations, and manufacturer's literature to Structural Engineer, CA and Landscape Architect for approval prior to proceeding. Period for review as per contract requirements.

Fabrication

515A Fabrication generally

1. Inform Contract Administrator and Landscape Architect 10 day in advance of when fabrication is due to start. Do not fabricate steelwork for which the drawings have not been checked by the CA/ Landscape Architect and are not approved.
2. Before fabricating ensure surface conditions of steel which is to be coated complies with requirements specified for cleaning.
3. Grades of metals, section dimensions and properties to be to the appropriate British Standard. When not specified, select grades and sections appropriate for the purpose.
4. Unless specified otherwise, fasteners to be of the same metal as the component with matching coating or finish.
5. Contact between dissimilar metals in components: Avoid. Use neoprene separators to avoid contact between dissimilar metals, and between mild steel and external timber.
6. Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises. Moving parts: Free moving without binding.
7. Corner junctions of identical sections: Mitre.

520 Cold formed work

1. Profiles: Accurate, with straight arrises.

525A Fixings

1. complete the detailed design of the fixings to engineer's approval in accordance with BS 8298 and to meet the requirements of this specification.

527 Welding

1. Welding procedures
   1.1. Method and standard: TIG welding to BS EN 1011-3
   1.2. Welding Procedure Specification (WPS): Submit 3 copies before commencement of welding
2. Preparation
   2.1. Joint preparation: Clean thoroughly.
   2.2. Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
3. Jointing

3.1. Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
3.2. Dissimilar metals:
3.3. Strength requirements: Welds to achieve design loads.
3.4. Heat straightening:
3.5. Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
3.6. Tack welds: Use only for temporary attachment.
3.7. Jigs: Provide to support and restrain members during welding.
3.8. Filler plates: Obtain approval
3.9. Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater.
3.10. Weld terminations: Clean and sound.

530 Stainless steel fabrication

1. Guillotining or punching: Do not use for metal thicknesses greater that 10 mm.
2. Thermal cutting
   2.1. Carbonation in the heat affected zone: Remove, after cutting.
3. Bending
   3.1. Plates or bars: Cold bending radius not less than material thickness.
   3.2. Tubes: Cold bending radius not less than 2 x tube diameter.
4. Welding: In addition to general welding requirements:
   4.1. Protect adjacent surfaces from weld spatter.
   4.2. Pickle all welds before post fabrication treatments.
5. Protection: Provide protection to fabricated components during transit and on site.

530A Movement joints

1. Detail, manufacture and install the works to accommodate all movements of the substrates without damage or any reduction in the performance.
   Provide all necessary movement joints to accommodate the movements to which the metal is expected to be subjected, whether indicated on the Design Drawings or not. Show all movement joints on the Working Drawings, which shall be subject to acceptance by the engineer and CA/ landscape architect.
   The Contractor is responsible for ensuring that movement joint thicknesses are adequate and are coordinated with the panel/ metal dimensions and layout.

Finishing

710 Finishing welded and brazed joints visible in complete work

1. Standard: To BS EN ISO 8501-3.
   1.1. Preparation grade: P2
2. Butt joints: Smooth, and flush with adjacent surfaces.
3. Fillet joints: Neat.
4. Grinding: Grind smooth where indicated on drawings.

745 Preparation for application of coatings

1. General: Complete fabrication, and drill fixing holes before applying coatings.
2. Paint, grease, flux, rust, burrs and sharp arrises: Remove.

780 Galvanizing

1. Standard: To BS EN ISO 1461.
2. Preparation
   2.1. Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
   2.2. Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
   2.3. Welding slag: Remove.
   2.4. Component cleaning: To BS EN ISO 8501-3.
   2.5. Grade: St 2½

790 Inspection of metal work

1. Give 7 days notice to allow CA/ landscape architect to inspect the following:
   1.1. all fabricated mild steel metal work prior to galvanising
   1.2. all galvanised metal work prior to coating
   1.3. all stainless steel metal work prior to coating

800 Protection

1. Powder coated or bronze finish surfaces of components: Protect from damage during handling and installation or by subsequent site operations.
2. Protective covering: must be resistant to weather conditions, partially removable to suit building in and access to fixing points
3. Protective tapes in contact with powder coating or bronze finish must be low tack, self adhesive and light in colour. Applied and removed in accordance with tape and powder coating or bronze finish manufacturers recommendations. Do not use solvents to remove residues.
4. Inspection of protection: carry out monthly. Promptly repair any deterioration or deficiency.
5. Prevent over stressing of units during transit, handling, storage and fixing.
   Store units on level bearers and separate with resilient spacers.
   Prevent damage to units and any chipping, staining, marking or dirtying of surfaces which will be visible in the completed works.

810 Site damage repair / replacement

1. Damage to powder coating: rectify immediately any damage caused during handling and installation or by subsequent site operations. Submit proposal for extensive repair or replacement for CA/ landscape architect's approval.

830 Prefabricated plant containers (SF04)

1. Manufacturer: Logic [https://logic-bespoke.com/] or equal and approved
2. Product reference: Powder coated steel planter
3. Material: 2mm thick PPC Steel walls, faired externally with smooth corners and edges
4. Colour: RAL colour TBC
5. Sample: Submit for approval before proceeding with the procurement.
6. Dimensions / shape: as shown on drawing 007562-MSP-XX-02-DR-L-0103
7. Lining: Integral
8. Irrigation: Integrated automatic irrigation as per section S14; fabricator to allow for pipe and cable penetrations for lights and automatic irrigation supplies.

9. Accessories: Height adjustable feet and thermal insulation (25mm thick Celotex,s shown on drawings).
10. Special considerations: Please note lead time.

Completion

910 Documentation

1. Submit
   1.1. Manufacturer's maintenance instructions.
   1.2. Guarantees, warranties, test certificates, record schedules and log books.

920 Completion

1. Protection: Remove.
2. Cleaning and maintenance: Carry out in accordance with procedures detailed in powder coating or bronze coating manufacturer's and applicator guarantees.
3. Duration:: from removal of protection until Completion.

Ω End of Section

Z20
Fixings and adhesives

Products

310 Fasteners generally

1. Materials: To have:
   1.1. Bimetallic corrosion resistance appropriate to items being fixed.
   1.2. Atmospheric corrosion resistance appropriate to fixing location.
2. Appearance: Submit samples on request.

320 Packings

1. Materials: Noncompressible, corrosion proof.
2. Area of packings: Sufficient to transfer loads.

340 Masonry fixings

1. Light duty: Plugs and screws.
2. Heavy duty: Expansion anchors or chemical anchors.

350 Plugs

1. Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.

390 Adhesives

1. Standards
   1.1. Hot-setting phenolic and aminoplastic: To BS 1203.
   1.2. Thermosetting wood adhesives: To BS EN 12765.
   1.3. Thermoplastic adhesives: To BS EN 204.

410 Powder actuated fixing systems

1. Types of fastener, accessories and consumables: As recommended by tool manufacturer.

Execution

610 Fixing generally

1. Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.
2. Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/ sleeves to avoid bimetallic corrosion.
3. Appearance: Fixings to be in straight lines at regular centres.

620 Fixing through finishes

1. Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

630 Fixing packings

1. Function: To take up tolerances and prevent distortion of materials and components.
2. Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.

3. Locations: Not within zones to be filled with sealant.

640 Fixing cramps

1. Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
2. Fasteners: Fix cramps to frames with screws of same material as cramps.
3. Fixings in masonry work: Fully bed in mortar.

690 Using powder actuated fixing systems

1. Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
2. Operatives: Trained and certified as competent by tool manufacturer.

700 Applying adhesives

1. Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.
2. Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.
3. Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Ω End of Section

Z21
Mortars

Cement gauged mortars

110A Cement gauged mortar mixes

1. Specification: As 440/Q25, Steintech pre-mixed mortar.
2. Jointing:: All jointing to be a grade darker than adjacent finish colour
3. Samples:: Visible mortar colour options to be presented for approval by the Landscape architect prior to
undertaking work.

115 Epoxy mortar

1. Larcrete EM Epoxy Resin Mortar from Larsen or approved equivalent
2. Usage and application as per suppliers recommendations
3. To be used where the mortar is likely to be in contact with solvents or cleaning products.

180 Admixtures for site made cement gauged mortars

1. Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
2. Other admixtures: Submit proposals.
3. Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

200 Storage of cement gauged mortar materials

1. Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
2. Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
3. Bagged cement/ hydrated lime: Store off the ground in dry conditions.

210 Making cement gauged mortars

1. Batching: By volume. Use clean and accurate gauge boxes or buckets.
    1.1. Mix proportions: Based on dry sand. Allow for bulking of damp sand.
2. Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
    2.1. Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
3. Working time (maximum): Two hours at normal temperatures.
4. Contamination: Prevent intermixing with other materials.

Lime:sand mortars - Not Used

Ω End of Section

Z22
Sealants

Products

310 Joints

1. Description: for application on movent joints
2. Manufacturer: Submit proposals
   2.1. Product reference: Submit proposals
3. Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.
4. Fire performance
   4.1. Fire resistance: Manufacturer's standard
   4.2. Reaction to fire: Manufacturer's standard

Execution

610 Suitability of joints

1. Presealing checks
   1.1. Joint dimensions: Within limits specified for the sealant.
   1.2. Substrate quality: Surfaces regular, undamaged and stable.
2. Joints not fit to receive sealant: Submit proposals for rectification

620 Preparing joints

1. Surfaces to which sealant must adhere
   1.1. Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
   1.2. Clean using materials and methods recommended by sealant manufacturer.
2. Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
3. Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
4. Protection: Keep joints clean and protect from damage until sealant is applied.

630 Applying sealants

1. Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
2. Environmental conditions: Do not dry or raise temperature of joints by heating.
3. Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
4. Sealant profiles
   4.1. Butt and lap joints: Slightly concave.
   4.2. Fillet joints: Flat or slightly convex.
5. Protection: Protect finished joints from contamination or damage until sealant has cured.

Ω End of Section

Z31
Powder coatings

To be read with preliminaries/ general conditions.

120 Powder coating materials

1. Manufacturer: Obtain from one only of the following: Fabricator's choice.
2. Selected manufacturer: Submit details before commencement of powder coating including:
   2.1. Name and contact details.
   2.2. Details of accreditation schemes.
   2.3. Technical data of product including current Agrément certificates.

210 Working procedures

1. Comply with the follow following standards.
   1.1. Aluminium components: To BS 6496 or BS EN 12206-1.
   1.2. Steel components: To BS EN 13438.
   1.3. Safety standards: To British Coatings Federation 'Code of safe practice: Powder coating. Application of coating powders by electrostatic spraying'.
   1.4. Health and safety guidance: Health and Safety Executive 'Reducing risk associated with using coating powders - employers' web page.

220 Powder coating applicators

1. Applicator requirements
   1.1. Approved by powder coating manufacturer.
   1.2. Currently certified to BS EN ISO 9001.
   1.3. Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
   1.4. Selected applicator: Submit details before commencement of powder coating including:
      1.4.1. Name and contact details.
      1.4.2. Details of accreditation schemes.

225 Guarantees

1. Powder coating manufacturer and applicator guarantees
   1.1. Submit sample copies before commencement of powder coating.
   1.2. Submit signed project specific copies on completion of work.

230A Control samples

1. Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
   1.1. Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
   1.2. Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
   1.3. Where manual application is required, controlled samples should be coated and inspected for colour and gloss stability.
2. Samples to include the following information
   2.1. Product reference.
   2.2. Colour.

2.3. Reference number.
2.4. Name.
2.5. Gloss level.

230A Control samples for powder coated planters

1. Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
   1.1. Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
   1.2. Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
   1.3. Where manual application is required, controlled samples should be coated and inspected for colour and gloss stability.
2. Samples to include the following information
   2.1. Product reference.
   2.2. Colour.
   2.3. Reference number.
   2.4. Name.
   2.5. Gloss level.

250 Component design

1. Condition of components to be powder coated
   1.1. To comply with relevant recommendations of BS 4479-1, -3, and -4.
   1.2. Of suitable size to fit plant capacity.
   1.3. Of suitable thickness to withstand oven curing.

310 Pretreatment of aluminium components

1. Condition of components to be pretreated
   1.1. Free from corrosion and damage.
   1.2. All welding and jointing completed and finish off as specified.
   1.3. Free from impurities including soil, grease and oil.
   1.4. Suitable for and compatible with the pretreatment process.
2. Conversion coating requirements
   2.1. Chromate system: To BS 6496 or BS EN 12206-1.
   2.2. Chromate-free system: To BS EN 12206-1. Submit details before using.
3. Rinsing requirements: Use demineralized water. Drain and dry.

320 Pretreatment of steel components

1. Condition of components to be pretreated
   1.1. Free from corrosion and damage.
   1.2. All welding and jointing completed and finish off as specified.
   1.3. Free from impurities including soil, grease and oil.
   1.4. Suitable for and compatible with the pretreatment process.
2. Conversion coating requirements: To BS EN 13438.
3. Rinsing requirements: Use demineralized water. Drain and dry.

430 Extent of powder coatings

1. Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496 or BS EN 13438 performance requirements.

435 Application of powder coatings

1. Surfaces to receive powder coatings: Free from dust or powder deposits.
2. Powder colours: Obtain from one batch of one manufacturer.
3. Commencement of powder coating: To be continuous from pretreatment.
4. Components to be installed on site in order of application.
5. Jig points: Not visible on coated components.
6. Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
7. Stripping and recoating of components: Only acceptable by prior agreement of powder coating manufacturer. Stripping, pretreatment and powder coating are to be in accordance with manufacturer's requirements.
8. Overcoating of components: Not acceptable.

440A Performance and appearance of powder coatings

1. For aluminium components
   1.1. Standard: To BS 6496 or BS EN 12206-1.
2. For steel components
   2.1. Standard: To BS EN 13438.
3. Visual inspection after powder coating: Significant surface viewing distances to be 0.5m.
4. Colour and gloss levels: To conform with approved samples.

460 Steel fabrications

1. Unit assembly: Wherever practical, before powder coating.
2. Exposure of uncoated background metal: Not acceptable.
3. Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

470 Fixings

1. Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer’s recommendations.

480 Damaged components – repair or replacement

1. Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
2. Site damage: Submit proposals for repair or replacement.

510 Protection

1. Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
2. Protective coverings must be
   2.1. Resistant to weather conditions.
   2.2. Partially removable to suit building in and access to fixing points.
3. Protective tapes in contact with powder coatings must be

3.1. Low tack, self adhesive and light in colour.

3.2. Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.

4. Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 Documentation

1. Submit the following information for each batch of powder coated components

1.1. Supplier.

1.2. Trade name.

1.3. Colour.

1.4. Type of powder.

1.5. Method of application.

1.6. Batch and reference number.

1.7. Statutory requirements.

1.8. Test certificates.

1.9. Maintenance instructions.

540 Completion

1. Protection: Remove any protective coverings.
2. Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.

Ω End of Section

Specification created using NBS Chorus