C326S004 – NEQ Phase 2 Specification

Regent's Place NEQ Phase 2 Specification

Revision A

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EDCO Design London

Chartered Landscape Architects
Durham House, 4th Floor
Amity Grove
London SW20 0LQ

T 020 8944 9856
F 020 8946 3220
E enquiries@edcodesign.com
W www.edcodesign.com

Directors

David Coomes MA LA CMLI
Vicky Hill BA (Hons) Dip LA CMLI

Associates

Aniruddha Mokashi MSc UD GD Arch
Paul Whittle BSc (Hons) MLA CMLI

Company registration number: 5834794
Registered Office:
45A Cottenham Park Road,
London SW20 0SB

ISO 9001 REGISTERED FIRM

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C20 Demolition

To be read with Preliminaries/ General conditions

GENERAL REQUIREMENTS

110 DESK STUDY/ SURVEY

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
  - the structure or structures to be deconstructed/ demolished,
  - the site on which the structure or structures stand, and
  - the surrounding area.
- Report and method statements: Submit, describing:
  - Form, condition and details of the structure or structures, the site, and the surrounding area.
    Extent: Phase 2: As drawing C326D124 .
  - Type, location and condition of features of historical, archaeological, geological or ecological importance.
  - Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
  - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
  - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
  - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
  - Proposed programme of work, including sequence and methods of deconstruction/ demolition.
  - Details of specific pre-weakening required.
  - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
  - Arrangements for control of site transport and traffic.
  - Special requirements: none .
- Format of report: Eletronic and hard copy submitted to the client, landscape architect, architect and engineer .

120 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to existing slab.

130 GROUNDWORKS

- Old foundations, slabs and the like: Break out in locations and to the extents stated.
- Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.

140 BENCH MARKS

- Unrecorded bench marks and other survey information: Give notice when found. Do not remove marks or destroy the fabric on which they are found.

150 FEATURES TO BE RETAINED

- General: Keep in place and protect the following: As per drawing C326D110.

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION

210 SERVICES REGULATIONS

- Work carried out to or affecting new and/ or existing services: Carry out in accordance with the byelaws and/ or regulations of the relevant Statutory Authority.

220 LOCATION OF SERVICES

- Services affected by deconstruction/ demolition work: Locate and mark positions.
- Mains services marking: Arrange with the appropriate authorities for services to be located and marked.
  - Marking standard: In accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities' apparatus'.

230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

- General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

240 DISCONNECTION OF DRAINS

- General: Locate, disconnect and seal disused foul and surface water drains.
- Sealing: Permanent, and within the site.

250 LIVE FOUL AND SURFACE WATER DRAINS

- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
  - Protect; maintain normal flow during deconstruction/ demolition.
  - Make good any damage arising from deconstruction/ demolition work.
  - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: None.

270 SERVICES TO BE RETAINED

- Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.
- Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner.

DECONSTRUCTION/ DEMOLITION WORK

310 WORKMANSHIP

- Standard: Demolish structures in accordance with BS 6187.
- Operatives:
  - Appropriately skilled and experienced for the type of work.
  - Holding, or in training to obtain, relevant CITB Certificates of Competence.
- Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

320 GAS OR VAPOUR RISKS

- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.

330 DUST CONTROL

- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- Lead dust: Submit method statement for control, containment and clean-up regimes.

340 HEALTH HAZARDS

- Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.

350 ADJOINING PROPERTY

- Temporary support and protection: Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
- Defects: Report immediately on discovery.
- Damage: Minimize. Repair promptly to ensure safety, stability, weather protection and security.
- Support to foundations: Do not disturb.

360 STRUCTURES TO BE RETAINED

- Extent: As per drawings D101-D108.
- Parts which are to be kept in place: Protect.
- Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

370 PARTLY DEMOLISHED STRUCTURES

- General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
- Temporary works: Prevent overloading due to debris.
- Access: Prevent access by unauthorized persons.

380 DANGEROUS OPENINGS

- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- Access: Prevent access by unauthorized persons.

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

- Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
- Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

410 UNFORESEEN HAZARDS

- Discovery: Give notice immediately when hazards such as unrecorded voids, tanks, chemicals, are discovered during deconstruction/ demolition.
- Removal: Submit details of proposed methods for filling, removal, etc.

450 SITE CONDITION AT COMPLETION

- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: None.

MATERIALS ARISING

510 CONTRACTOR'S PROPERTY

- Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided.
- Action: Remove from site as work proceeds where not to be reused or recycled for site use.

520 RECYCLED MATERIALS

- Materials arising from deconstruction/ demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
- Evidence of compliance: Submit full details and supporting documentation.
  - Verification: Allow adequate time in programme for verification of compliance.

E
In situ concrete/Large precast concrete

E10
Mixing/casting/curing in situ concrete

E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

CONCRETE MIXES

101A SPECIFICATION

- For structural concrete see engineer's specification.

In other situations:

- Concrete generally: To BS 8500-2.
- Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.

315 AGGREGATES FOR EXPOSED VISUAL CONCRETE

- Limitations on contaminants: Free from absorbent particles which may cause 'popouts', and other particles such as coal and iron sulfide which may be unsightly or cause unacceptable staining.
- Colour: Consistent.
- Supply: From a single source and maintained throughout the contract.
- Samples: Submit on request.

415 ADMIXTURES

- Calcium chloride and admixtures containing calcium chloride: Do not use.

PROJECT TESTING/ CERTIFICATION

506 SAMPLE PANEL

- A sample panel of exposed concrete planter wall is to be constructed in good time before commencement of external works to allow for review by design team and any further samples to be undertaken to ensure good finish.

E41
Worked finishes to in situ concrete

E41 Worked finishes to in situ concrete

To be read with Preliminaries/ General conditions.

150A FINISHING

- For Structural concrete see Engineer's Specification

In other areas:

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

310A SMOOTH FLOATED FINISH

- Surface on completion: Even, with no ridges, steps day-joints, voids or exposed agregate.

M
Surface finishes

M40
Stone/concrete/quarry/ceramic tiling/mosaic

M40 Stone/concrete/quarry/ceramic tiling/mosaic

10 NATURAL STONE COVERING TO Planters Generally

- Type: cladding and coping.
- Stone:
  - Name (traditional): Lanhelin.
  - Petrological family: Granite.
  - Colour: Blue.
  - Origin: France.
  - Finish: Polished.
  - Supplier: Submit Proposals.
  - Quality: Free from vents, cracks, fissures, discoloration, or other defects deleterious to strength/ colour.
  - Size: As per Landscape Architect's Drawings.
  - Thickness: Cladding 50mm Thick / Coping 75mm Thick.
  - Other requirements: None.
- Background/ Base: In Situ Concrete Walls / Steel Frame Planters.
  - Preparation: None.
- Intermediate substrate: Not required.
- Bedding: To contractors details.
  - Reinforcement: Not applicable.
  - Adhesive: Not applicable.
- Joint width: 5mm.
- Grout: Black Mastic.
  - Type/ classification: Not applicable.
- Movement joints: to be confirmed on contractors shop drawings for approval.
- Accessories: Cladding & coping to be mechanically fixed to sub-contractors details
  Anti-Skateboard Studs to EDCO Drawings .

10A NATURAL STONE COVERING TO Planters on Residential Building

- Type: cladding and coping.
- Stone:
  - Name (traditional): Azul Espana.
  - Petrological family: Granite.
  - Colour: Grey.
  - Origin: Portugal/Spain.
  - Finish: Flamed.
  - Supplier: Submit Proposals.
  - Quality: Free from vents, cracks, fissures, discoloration, or other defects deleterious to strength/ colour.
  - Size: To Match Building Paving.
  - Thickness: Cladding 50mm Thick / Coping 75mm Thick.
  - Other requirements: None.
- Background/ Base: In Situ Concrete Walls / Steel Frame Planters.
  - Preparation: None.
- Intermediate substrate: Not required.
- Bedding: To contractors details.
  - Reinforcement: Not applicable.
  - Adhesive: Not applicable.
- Joint width: 5mm.
- Grout: Black Mastic.
  - Type/ classification: Not applicable.
- Movement joints: to be confirmed on contractors shop drawings for approval.
- Accessories: Cladding & coping to be mechanically fixed to sub-contractors details.

10B NATURAL STONE COVERING TO Bench Seats

- Type: cladding and coping.
- Stone:
  - Name (traditional): Lanhelin.
  - Petrological family: Granite.
  - Colour: Blue.
  - Origin: France.
  - Finish: Polished.
  - Supplier: Submit Proposals.
  - Quality: Free from vents, cracks, fissures, discoloration, or other defects deleterious to strength/ colour.
  - Size: As per Landscape Architect's Drawings.
  - Thickness: Cladding 50mm Thick / Coping 75mm Thick.
  - Other requirements: Bull Nosed Cladding as per drawings.
- Background/ Base: Steel Frames.
  - Preparation: None.
- Intermediate substrate: Not required.
- Bedding: To contractors details.
  - Reinforcement: Not applicable.
  - Adhesive: Not applicable.
- Joint width: 5mm.
- Grout: Black Mastic.
  - Type/ classification: Not applicable.
- Movement joints: to be confirmed on contractors shop drawings for approval.
- Accessories: Cladding & coping to be mechanically fixed to sub-contractors details.

11D NATURAL STONE CLADDING TO Giants Causeway Clad Blocks Option B

- Type: Stone Cladding to Landscape Architect's Drawings.
- Stone:
  - Name (traditional): Azul Espana to match existing.
  - Petrological family: Granite.
  - Colour: Grey.
  - Origin: Europe.
  - Finish: Flamed.
  - Supplier: submit proposals.
  - Quality: Free from vents, cracks, fissures, discoloration, or other defects deleterious to strength/ colour.
  - Size: As per Landscape Architect's Drawings.
  - Thickness: As per Landscape Architect's Drawings.
  - Other requirements: Slip/ Skid resistance (USRV): avg 75 USRV when tested in accordance with BS EN 1341:2001 and EN 7932:2003..
- Background/ Base: Steel frame to Engineer's Drawings.
- Joint width: Butt Joints within individual blocks 5mm between blocks.
- Grout: Colour Matched Mastic between blocks.
  - Type/ classification: Not applicable.
- Movement joints: None.
- Accessories: Lighting to MBLD specification. Fixings to frame to contractors specification..

30 FIXING GENERALLY

- Colour/ shade: Avoid unintended variations within tiles for use in each area/ room.
  - Variegated tiles: Mix thoroughly.
- Adhesive: Compatible with background/ base.
- Cut tiles: Neat and accurate.
- Fixing: Provide adhesion over entire background/ base and tile backs.
- Final appearance: Before bedding material sets, make adjustments necessary to give true, regular appearance to tiles and joints.
- Deviation of surface: Measure from underside of a 2 m straightedge with 3 mm thick feet placed anywhere on surface. The straightedge should not be obstructed by the tiles/ mosaics and no gap should be greater than 6 mm, i.e. a tolerance of $\pm$ 3 mm.
- Surplus bedding material: Clean from joints and face of tiles/ mosaics.

35 SETTING OUT

- Joints: True to line, continuous and without steps.
  - Joints on walls: Horizontal, vertical and aligned round corners.
  - Joints in floors: Parallel to main axis of space or specified features.
- Cut tiles: Minimise number, maximise size and locate unobtrusively.
- Joints in adjoining floors and walls: Align.
- Joints in adjoining floors and skirtings: Align.

Q
Paving/Planting/Fencing/Site furniture

Q10
Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

120 STONE 50mm Kerb to Taxi Rank

- Standard: To BS EN 1343.
- Supplier: Submit proposals.
- Types: Special.
- Stone type: Rustenburg.
- Size (width x height): 1495x276.25x150.
- Freeze/ Thaw resistance: Class 1 (resistant).
- Special shapes: Radius kerbs as per EDCO drawings.
- Finish: Flamed top, sawn sides and base.
- Bedding: Cement mortar.
- Joints generally: 5mm pointed and grouted to match paving.
- Sealant movement joints: As shown on EDCO drawings.
- Accessories: None.

121 STONE Raised Kerb to Council Highway Edge

- Standard: To BS EN 1343.
- Supplier: Submit proposals.
- Types: Rectangular with radiused exposed edges.
- Stone type: Granite to match TfL kerb spec.
- Size (width x height): 1495x300x250.
- Freeze/ Thaw resistance: Class 1 (resistant).
- Special shapes: Radius and Transition kerbs.
- Finish: Fine Picked on Exposed surfaces, sawn sides and base.
- Bedding: As shown on EDCO drawings.
- Joints generally: 5mm pointed and grouted to match paving.
- Sealant movement joints: As shown on EDCO drawings.
- Accessories: None.

122 STONE Flush Kerb to Council Highway Edge

- Standard: To BS EN 1343.
- Supplier: Submit proposals.
- Types: Special.
- Stone type: Granite to match TfL kerb spec.
- Size (width x height): 1495x300x150.
- Freeze/ Thaw resistance: Class 1 (resistant).
- Special shapes: Radius and Transition kerbs.
- Finish: Fine Picked top, sawn sides and base.
- Bedding: As shown on EDCO drawings.
- Joints generally: 5mm pointed and grouted to match paving.
- Sealant movement joints: As shown on EDCO drawings.
- Accessories: None.

170 LINEAR SLOT DRAINAGE CHANNEL SYSTEMS

- Manufacturer: Wade or similar and approved.
  - Product reference: Hidden Channel.
- Bore: As per Landscape Architect's drawings.
- Finish: As cast.
- Colour: Natural.
- Accessories: Endcaps - closing pieces and Inspection unit channels.
- Bedding: As per Landscape architect's Drawings.
- Joints generally: Drain unions as required.

312 FOOTWAY GRATINGS Basement Ventilation

- Manufacturer: Euroslot or similar and approved.
  - Product reference: Wedgewire Profile 300.
- Size: As per landscape architect's drawings.
- Material: Stainless steel, grade 304.
  - Finish: Bead blasted and electro polish.
  - Colour: Natural.
- Pattern: as per landscape architect's drawings.
- Fixings: to manufacturer's specification.
- Loading grade to BS EN 124: B125.

510 LAYING KERBS, EDGINGS AND CHANNELS

- Cutting: Neat, accurate and without spalling. Form neat junctions.
  - Long units (450 mm and over) minimum length after cutting: 300 mm.
  - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
- 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.
- 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

- 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

- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

547 BEDDING/BACKING OF UNITS ON FRESH CONCRETE RACES

- Standard: To BS 7533-6.

580 DRAINAGE CHANNEL SYSTEMS

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

620 ACCURACY

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

625 REGULARITY OF PAVED SURFACES

- Maximum undulation of (non-tactile) paving surface: 3 mm.
  - Method of measurement: Under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface).
- Difference in level between adjacent units (maximum):
  - Joints flush with the surface: Twice the joint width (with 5 mm max difference in level).
  - Recessed, filled joints: 2 mm.
    Recess depth (maximum): 5 mm.
  - Unfilled joints: 2 mm.
- Sudden irregularities: Not permitted.

Q25
Slab/brick/sett/cobble pavings

Q25 Slab/brick/sett/cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

110 NATURAL STONE SLAB PAVING SYSTEM Site Wide

- Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Granular sub-base: Not required.
  - Compacted thickness: Not applicable.
- Base: Screed to Falls.
  - Thickness: Minimum 50mm.
- Laying course: Ready mixed mortar.
  - Accessories: Primer for underside of flags or slabs and false jointed oversized slabs (Size and number to be determined by specialist sub-contractor on shop drawings) to prevent small slithers of stone at interfaces.
- Paving units: Azul Espana.
- Jointing: Ready mixed mortar.
  - Bond: To match existing.
- Accessories: None.

111 NATURAL STONE SLAB PAVING SYSTEM Detail Paving

- Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Granular sub-base: Not required.
  - Compacted thickness: Not applicable.
- Base: Screed to Falls.
  - Thickness: Minimum 50mm.
- Laying course: Ready mixed mortar.
  - Accessories: Primer for underside of flags or slabs and false jointed oversized slabs (Size and number to be determined by specialist sub-contractor on shop drawings) to prevent small slithers of stone at interfaces.
- Paving units: Evergreen.
- Jointing: Ready mixed mortar.
  - Bond: To match existing.
- Accessories: None.

127 PEDESTAL SUPPORTED PAVING SLAB/ FLAG SYSTEM To building upper levels.

- Preparation of existing base: To suppliers recomendations.
- Paving support: Pedestals as clause 480 .
- Paving units: Stone slabs.
- Accessories: None.

140 NATURAL STONE SETT PAVING SYSTEM Taxi Turnaround

- Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Granular sub-base: Not Requred.
  - Compacted thickness: Not applicable.
- Base: Screed to Falls.
  - Thickness: Minimum 50mm.
- Laying course: Stenitec Mortar.
  - Accessories: Primer for underside of Setts.
- Paving units: Azul Espana Granite.
- Jointing: Steintec Mortar.
  - Bond: Stretcher Bond.
- Accessories: Channels, as section Q10 and Kerbs, as section Q10.

141 NATURAL STONE SETT PAVING SYSTEM Vehicle Crossings

- Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Granular sub-base: Not Requred.
  - Compacted thickness: Not applicable.
- Base: Screed to Falls.
  - Thickness: Minimum 50mm.
- Laying course: Stenitec Mortar.
  - Accessories: Primer for underside of Setts.
- Paving units: Yorkstone.
- Jointing: Steintec Mortar.
  - Bond: Stretcher Bond.
- Accessories: Channels, as section Q10 and Kerbs, as section Q10.

SYSTEM PERFORMANCE

210 DESIGN - NATURAL STONE SLAB PAVING SYSTEM

- Design: Complete the design of the natural stone slab paving system in accordance with BS 7533-4.
  - Site category: III.
- Ground conditions: Existing Concrete Slab.
- Performance criteria: Submit drawings, technical information, calculations and manufacturers'
  literature.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

240 DESIGN - NATURAL STONE SETT PAVING SYSTEM

- Design: Complete the design of the natural stone sett paving system in accordance with BS 7533-7.
- Ground conditions: built on pre-laid concrete slabs.
- Performance criteria: to cope with pedestrian loadings medium delivery vehicles, taxis, and maintenance equipment, and emergency access use.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

PRODUCTS

310 NATURAL STONE SLABS Granite Pavers

- Standard: To BS EN 1341.
- Supplier: Submit proposals.
  - Product reference: Azul Espana.
  - Quarry: Submit proposals.
- Stone type: Granite.
- Finish: Flamed.
- Sizes: 745x745x40mm
  745x745x65mm For vehicle overrun
  300x600x50mm Commercial Terraces .
  - Plan dimension deviation class: P2 .
  - Diagonal deviation class: D2 .
  - Thickness deviation class: T2 .
- Arrises: Square .
- Freeze/ thaw resistance class: Submit Proposals .
- Flexural strength (MPa): >12MPa .
- Abrasion resistance (mm): 18 .
- Slip/ Skid resistance (USRV): >80 .
- Water absorption (% by mass): <0.35% .
- Petrographical description: No requirement .
- Surface treatment: None .

311B NATURAL STONE SLABS Performance Space Paving Option B - Grey Granite Pavers

- Standard: To BS EN 1341.
- Supplier: Submit proposals.
  - Product reference: Azul Espana.
  - Quarry: Submit proposals.
- Stone type: Granite.
- Finish: Flamed.
- Sizes: 745x745x40mm.
  - Plan dimension deviation class: P2.
  - Diagonal deviation class: D2.
  - Thickness deviation class: T2.
- Arrises: Square.
- Freeze/ thaw resistance class: Submit Proposals.
- Flexural strength (MPa): >12MPa.
- Abrasion resistance (mm): 18.
- Slip/ Skid resistance (USRV): >80.
- Water absorption (% by mass): <0.35%.
- Petrographical description: No requirement.
- Surface treatment: None.

312 NATURAL STONE SLABS Highway Footpaths

- Standard: To BS EN 1341.
- Supplier: Submit proposals.
  - Product reference: Highmoor Yorkstone.
  - Quarry: Submit proposals.
- Stone type: York Stone.
- Finish: Honed.
- Sizes: 745x745x80mm
  750x600x80mm .
  - Plan dimension deviation class: P2 .
  - Diagonal deviation class: D2 .
  - Thickness deviation class: T2 .
- Arrises: Square .
- Freeze/ thaw resistance class: Submit Proposals .
- Flexural strength (MPa): >8MPa .
- Abrasion resistance (mm): 28 .
- Slip/ Skid resistance (USRV): >80 .
- Water absorption (% by mass): <3% .
- Petrographical description: No requirement .
- Surface treatment: None .

313 NATURAL STONE SLABS Granite Pavers to Market Tower Podium

- Standard: To BS EN 1341.
- Supplier: Submit proposals.
  - Product reference: Azul Espana.
  - Quarry: Submit proposals.
- Stone type: Granite.
- Finish: Flamed.
- Sizes: 745x745x40mm
  745x745x65mm For vehicle overrun
  300x600x50mm Commercial Terraces .
  - Plan dimension deviation class: P2 .
  - Diagonal deviation class: D2 .
  - Thickness deviation class: T2 .
- Arrises: Square .
- Freeze/ thaw resistance class: Submit Proposals .
- Flexural strength (MPa): >12MPa .
- Abrasion resistance (mm): 18 .
- Slip/ Skid resistance (USRV): >80 .
- Water absorption (% by mass): <0.35% .
- Petrographical description: No requirement .
- Surface treatment: None .

320 TACTILE FLAGS AND SLABS Hazard Warning Strips

- Standard: To DD CEN/TS 15209.
- Material: Natural stone.
  - Manufacturer: Submit proposals.
    Product reference: Yorkstone.
- Recycled content: Not applicable.
- Nominal sizes: 400 x 400 mm.
- Colour: Natural.

321 TACTILE FLAGS AND SLABS Blister Paving

- Standard: To DD CEN/TS 15209.
- Material: Natural stone.
  - Manufacturer: Submit proposals.
    Product reference: Yorkstone.
- Recycled content: Not applicable.
- Nominal sizes: 400 x 400 mm.
- Colour: Natural.

330 NATURAL STONE SETTSTaxi Turnaround Paving

- Standard: To BS EN 1342.
- Supplier: Submit proposals .
  - Product reference: Azul Espana .
  - Quarry: Submit proposals .
- Stone type: Granite .
- Finish: Flamed .
- Sizes: 182.5x182.5x65mm .
  - Thickness deviation class: T2 .
- Special setts: None .
- Freeze/ thaw resistance class: Submit Proposals .
- Compressive strength (MPa): >12 .
- Abrasion resistance (mm): 18 .
- Slip/ Skid resistance (USRV): >80 .
- Water absorption (% by mass): <0.35% .
- Petrographical description: No requirement .
- Surface treatment: None .

331 NATURAL STONE SETTS Vehicle Crossings Paving

- Standard: To BS EN 1342.
- Supplier: Submit proposals.
  - Product reference: Highmore Yorkstone.
  - Quarry: Submit proposals.
- Stone type: Yorkstone.
- Finish: Honed.
- Sizes: 182.5x182.5x65mm.
  - Thickness deviation class: T2.
- Special setts: None.
- Freeze/ thaw resistance class: Submit Proposals.
- Compressive strength (MPa): >8MPa.
- Abrasion resistance (mm): 28.
- Slip/ Skid resistance (USRV): >80.
- Water absorption (% by mass): <3%.
- Petrographical description: No requirement.
- Surface treatment: None.

332 NATURAL STONE SETTS Raised Table Ramps

- Standard: To BS EN 1342.
- Supplier: Submit proposals.
  - Product reference: Grey Granite.
  - Quarry: Submit proposals.
- Stone type: Granite.
- Finish: Flamed.
- Sizes: 195x95x100mm.
  - Thickness deviation class: T2.
- Special setts: None.
- Freeze/ thaw resistance class: Submit Proposals.
- Compressive strength (MPa): >12MPa.
- Abrasion resistance (mm): 18.
- Slip/ Skid resistance (USRV): >80.
- Water absorption (% by mass): <0.3.5%.
- Petrographical description: No requirement.
- Surface treatment: None.

435 PRIMER FOR UNDERSIDE OF FLAGS AND SLABS Site wide

- Manufacturer: Submit proposals.
  - Product reference: Cement Slurry.

440 READY MIXED MORTAR Site Wide

- Type: Sand/Cement Semi-Dry Mix.
- Standard/ Performance requirements: Not applicable.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Consistency: Semi-Dry.

441 MORTAR JOINTING Site Wide

- Type: Grout.
- Standard/ Performance requirements: Not applicable.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Consistency: Moist Mix.

455 JOINT FILLER FOR MOVEMENT JOINTS Structural Movement Joints

- Type: Metal Edge Stainless Steel Movement Joint.
- Manufacturer: Movement Joints (UK) Ltd.
  - Product reference: 446/b-050/030.

456 JOINT FILLER FOR MOVEMENT JOINTS Intermediate Movement Joints

- Type: Metal Edge Stainless Steel Movement Joint.
- Manufacturer: Movement Joints (UK) Ltd.
  - Product reference: Deflex.

480 SUPPORT PEDESTALS To support paving slabs

- Manufacturer: Bauder.
  - Product reference: DPH Paving Pedestals.
- Type: Screwjack pedestal.
- Material: Recycled polypropylene.
- Dimensions: As drawing D933.
- Additional pedestals: Adjacent to perimeters.
- Accessories: 4.5mm spacer tabs.

EXECUTION

610 MATERIAL SAMPLES

- Samples representative of colour and appearance of designated materials: Submit before placing orders.
  - Designated materials: All Paving.

615 CONTROL SAMPLES

- Sample areas: Complete as part of the finished work.
  - Types of paving: Natural stone slab paving.
  - Location: To be agreed.
  - Size (minimum): 3.0 x 3.0 m.
  - Included features: Recessed manhole cover infill.
- Approval of appearance and surface: Obtain before proceeding.

620A ADVERSE WEATHER

- General:
  - Temperature: Do not lay or joint paving if the temperature is below 6°C on a falling thermometer or below 5°C on a rising thermometer.
  - Frozen Roadbase: Do not lay upon a roadbase surface which has not been protected from temperatures below 5°C for at least 24hrs prior to use
  - Frozen materials: Do not use. All materials must have been protected from temperatures below 5°C for at least 24hrs prior to use. Do not lay bedding on frozen or frost covered bases.
  - Frozen Water: Do not use. All water used for mixing mortars must be at a temperature not less than 5°C.
  - Do not apply mortars when ambient temperature exceeds 25°C and is rising.
  - Protect fresh mortar joints and/or bedding mortar from frost and rapid drying out until mortar has cured
- Paving with mortar joints and/ or bedding:
  - Protect from frost damage, rapid drying out and saturation until mortar has hardened.
- Paving laid and jointed in sand:
  - Stockpiled bedding sand: Protect from saturation.
  - Exposed areas of sand bedding and uncompacted areas of sand bedded paving: Protect from heavy rainfall.
  - Saturated sand bedding: Remove and replace, or allow to dry before proceeding.
  - Laying dry-sand 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.

625A LAYING PAVINGS - GENERAL

- Appearance: Smooth and even with regular joints and accurate to line, level and profile.
- Falls: To prevent ponding.
- Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
  - Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
- Slopes: Lay paving units upwards from the bottom of slopes.
- Paving units: Free of mortar and sand stains.
- Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.
- All Work must be carried out on the side of the unlaid face, at no time shall operatives stand, work or rest materials on freshly laid paving.
- The surface of the roadbase or supporting structure must be thoroughly cleaned.
- Priming mortar shall not be applied more than one minute prior to sett being laid upon bedding mortar

630A LEVELS OF PAVING

- Permissible deviation from specified levels:
  - Generally: ± 2 mm.
- Height of finished paving above features:
  - At gullies: +2 mm.
  - At drainage channels and kerbs: +2 mm.

635A REGULARITY OF PAVED SURFACES

- Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface):
- Difference in level between adjacent paving units (maximum): 2 mm.
- Sudden irregularities: Not permitted.

640 COLOUR BANDING

- General: Unless premixed by manufacturer, select from at least 5 separate packs in rotation to avoid colour banding.

645 PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- Mortar bedded pavings: Keep free from traffic after laying:
  - Pedestrian traffic (minimum): 24 hours.
  - Vehicular traffic (minimum): 7 days.
- Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 CEMENTITIOUS BASES AND SUB-BASES

- 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

- Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
- 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.
- Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
- Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
- Levels and falls: Accurate and within the specified tolerances.
- Drainage outlets: Within 0-10 mm of the required finished level.
- Features in sand bedded paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
- Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS 7533-4.

690 RECLAIMED NATURAL STONE Regent's Place Plaza

- Location/ Access: Regent's Place Plaza.
- Lifting/ Storage/ Protection: Stack neatly on pallets and shrink wrap in plastics sheeting and store securely off site.
- Preparation: Remove all traces of old mortar pointing, and submit samples of cleaned slabs.

715 LAYING FLAG AND SLAB PAVING - MORTAR LAYING COURSE AND JOINTING

- Standard generally: In accordance with BS 7533-4.
- Flag installation and cutting: To Interpave 'Concrete flag paving'.
- Laying course:
  - Nominal thickness: 60mm.
- Laying and jointing: Full reinforced semi-dry mix mortar bed with pointed and grouted joints in accordance with BS 5385-3:2007.
- Joint width (nominal): 5 mm.

810 PEDESTAL INSTALLATION

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

Q28
Topsoiling

Q28 Topsoiling

Q28 TOPSOILING

To be read with Preliminaries/General conditions.

GENERAL

110 APPROVAL OF THE WORKS

- Throughout the contract it will be necessary for the Landscape Architect to inspect or give approval or agreement to the Contractors proposal, working drawings, material samples, analyses, contract works as executed etc. Such approval or agreement shall in no way imply or be constructed as a relief or abatement of the contractors responsibility and liability for performance in accordance with this Specification.

111 WORKMANSHIP GENERALLY

- The whole of the works shall be carried out in a proper and thorough workmanlike manner to the satisfaction of the Landscape Architect and in accordance with the contract documents and good agricultural and horticultural practices. Only skilled machine operators shall be used who are used to the detailed nature of the works and to handling sensitive soils.

113 SITE SUPERVISION

- The Contractor is entirely responsible for the supervision, management, monitoring and co-ordination of his works. A high calibre site supervisor fully conversant with all aspects of the works shall be present on site at all times and shall be available for consultation with the Landscape Architect at any time during normal working hours.

115 WORK IN PREVIOUS PHASES

- The Contractor shall include in his price for matching in new works to achieve a continuous appearance with work executed previously, all to the complete satisfaction of the Landscape Architect.

117 PRIME RESPONSIBILITY

- The Contractor is responsible for the creation of new landforms shown on the contract drawings or as directed otherwise and for producing a soil profile that will be a high quality growing medium, in accordance with this Specification.

119 STANDARDS & CODES OF PRACTICE

- Where a British Standard or Code of Practise exists appropriate to any or all of the materials and any operation necessitated by the works of part thereof, such operations or materials shall comply with the latest edition of the British Standard or Code of Practice unless otherwise stated.

130 QUANTITIES

- Any quantities given by the Landscape Architect relating to topsoil / subsoil are approximate estimates only.

- Tenderers are deemed to have carried out their own quantifications and to have made provision for the importation of materials as required in accordance with the tender drawings and provisions of this Specification

140 INTERFACING WITH WORKS BY OTHERS

- The Contractor shall make allowances for construction and maintenance of temporary material stockpiles as may be necessary for the completion of the work. Size and location are subject to approval by the Landscape Architect

145 TESTS

- The Contractor shall at his own cost undertake such testing as necessary to ensure his compliance with the Specification. Records of such testing shall be made available for inspection by the Landscape Architect. Top soil PSD analysis shall be carried out first in accordance with categories as set out in clause Q28 340A. if soil is found to be within the parameters specified remain tests can be carried out and full report submitted for approval by LA

150 WEED CONTROL

- All subsoil and topsoil surfaces shall be maintained weed-free at all times. This applies to all areas of grading under this contract and to all stockpiles formed under this contract.

155 APPLICATION OF HERBICIDES, FUNGICIDES, PESTICIDES AND INSECTICIDES

- Spraying or spreading equipment shall be of an approved design and suitable for the type of terrain. Knapsack sprayers and other forms of portable equipment shall be used on banks and areas with difficult access. All spray equipment shall be fitted with a guard to prevent spray reaching grass beyond the extent of the works, existing trees and shrubs, or recent tree and shrub planting. Any grass, trees or shrubs damaged by chemicals shall be re-seeded or replaced and replanted by others entirely at the Contractor's expense to the Landscape Architect's Specification.

- Contractor shall undertake works in accordance with the (Food & Environment Protection Act 1985 (FEPA) & Control of Pesticides Regulations 1986 (COPR). Those specifying herbicides shall be BASIS registered and all individuals applying pesticides shall be required to hold relevant certificates of competence as required by COPR. Copies of certificates of competence shall be made available to CA for inspection before application of pesticides can take place Containers and other contaminated equipment shall be cleared from site after each days work and disposed of in accordance with FEPA & COPR legislation

- When supplying and using chemicals the Contractor shall ensure that the safety of all personnel within the site is completely catered for. The Contractor shall be held solely responsible for any claim from any third party

158 FUEL STORAGE

All fuel storage facilities are to be kept securely locked and shall have suitable protective bunds to prevent spillage or leakage, and shall be supplied with the requisite fire fighting and containment provisions.

Any materials which become contaminated shall be removed from site and replaced at no additional cost to this contract. The spillage of fuel or oil onto topsoil or cohesive subsoil will not be permitted under this contract. If it occurs the contaminated soil shall be executed to a depth of 1M and removed off site.

162 DEFECTS LIABILITY

- The Contractor shall be liable for all defects including compaction to cohesive subsoil and/or topsoil arising from his non-performance against this specification.

- The Contractor shall allow for physically protecting the subsoil surface and finished topsoil areas if necessary.

165 DAMAGE TO VEGETATION

- The Contractor shall not sever roots greater than 50mm diameter exposed during the works without the Landscape Architect's permission. If mass root fibre to trees and shrubs is encountered the Landscape Architect shall be notified immediately.

- In the event of damage being sustained to existing vegetation, an independent valuation of loss will be will be carried out and all monies shall be recovered from the Contractor.

- If compaction caused by the Contractor is suspected within the root zone of any existing trees, the Contractor shall allow for ripping radially from the stem of trees to the approval of the Landscape Architect and for fine grading and re-seeding as directed.

170 MACHINERY FOR CONSTRUCTION OF SUBSOIL AND TOPSOIL

- For the formation of cohesive subsoil landform under this contract and for the placing and grading of topsoil the Contractor shall only use machines with a loaded ground pressure not exceeding 0.8 kg/cm2. The Contractor shall demonstrate that all machines to be used in the works comply with this requirement. The Contractor shall submit all manufacturers' documents and additional calculations as necessary and as required by the Landscape Architect to prove compliance. Wheeled vehicles shall not traffic over soft landscape areas under any circumstances, accept in accordance with the specification.

- Where necessary the Contractor shall include for the fitting of flotation tyres so as to comply with this ground pressure requirement.

- The plant proposed for use by the Contractor must be suitable to achieve the Specification. The Contractor is responsible for selecting such plant to deal with the site conditions, landforms and profiles generally indicated on the drawings and which does not exceed the specified soil loading.

175 HANDLING OF MATERIALS

- The Contractor shall keep available soils (topsoil, subsoil and unclassified mixed materials) separate from each other and free from any contamination.

177 REJECTED MATERIALS

- Any materials which, in the opinion of the Landscape Architect, become mixed or damaged in any way shall be stripped, removed from site and replaced by the Contractor at no additional cost to this contract.

- Any materials brought to site which do not conform to this Specification shall be rejected and replaced at no additional cost to this contract.

179 DE-WATERING/TEMPORARY DRAINAGE

- The Contractor, where possible, shall bring about the rapid dispersal of any water shed onto or accumulated within the earthworks or completed formations from any source during construction to the approval of the Landscape Architect. Where necessary the Contractor shall provide temporary water courses, ditches, drains, pumping or other means to keep formation as dry as possible.

- Such provision shall include (where appropriate) the carrying out of works in such a manner that surfaces have at all times a sufficient minimum crossfall and longitudinal gradient to enable shedding of water and prevention of ponding.

185 SOIL MOISTURE

- If soil moisture conditions and weather conditions are such that in the Landscape Architect's opinion damage may be caused to the structure of the soil and/or the structure of prepared areas, he may suspend the works or part thereof until further notice without any extra payment to the Contractor.

  Note: Cohesive subsoil is sensitive to compaction and shall only be tipped, placed and shaped when relatively dry.

- The timing of each of the tillage/construction operations and the time between these operations is to be to the approval of the Landscape Architect and is dependent upon the state of soil breakdown, soil moisture, soil friability and prevailing weather conditions.

- Topsoil and cohesive subsoil shall be moved, placed, shaped, cultivated or trafficked only when their soil moisture content is sufficiently low, in the Landscape Architect's opinion, to prevent damage to the soil.

  Note: earthworks are generally possible only in the Summer months.

187 EXCEPTIONALLY INCLEMENT WEATHER

- The Contractor is advised that the ground is sensitive to inclement weather and he shall programme accordingly. No submissions will be entertained other than for exceptionally inclement weather.

188 RELEASE OF AREAS

- The Contractor may not start the works or proceed to the next stage of the works in a given location until the area has been inspected and released for work by the Landscape Architect.

300A TOPSOIL ANALYSIS

- Soil to be analysed: All imported and site won top soil .
- Soil analyst: Submit Proposals.
- Samples: Collect in accordance with BS 3882
- Submit originals of:
  - Declaration of analysis of nutrients, contaminants in accordance with CLEA requirements.
  - Report detailing soil analyst's recommendations.

340A IMPORTED TOPSOIL FOR For Courtyards

- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Source: Submit Proposals.
- Submit: Declaration of analysis including information detailing each of the relevant parameters given in BS 3882, clause 6 and table 2.
- Top Soil shall be imported and shall comply with the following criteria:

- Particle size distribution

0µ-20µ	< 5-30% m/m
20µ-50µ	< 65% m/m
50-2mm	< 85% m/m
2-20mm	< 20% m/m

- Organic Matter
  5 - 20% by weight

- PH
  pH 6.0-7.5

- Carbon :Nitrogen ratio
  <20:1

- Exchangeable sodium percentage
  <15%

- Chemical contaminates
  All heavy metals shall be within DETR and CLEA limits for the suitable end use of the top soil.

- Phytotoxic contaminates by soil pH

	<6.0	6.0-7.0	>7
Zn (Nitric acid extract)	<200 mg/kg	<200 mg/kg	<300 mg/kg
Cu (Nitric acid extract)	<100 mg/kg	<135 mg/kg	<200 mg/kg
NI (Nitric acid extract)	<60 mg/kg	<75 mg/kg	<110 mg/kg

- Plant nutrients

Nitrogen (total)	=> 0.15% m/m
Phosphorous (extractable)	16 - 100 mg/l
Potassium (extractable)	121- 900 mg/l
Magnesium (extractable)	51 - 600 mg/l

- Top Soil shall be free of all injurious & pernicious weeds

- If the sample fails to meet the specification, the Contractor shall (as directed by the CA) either: carry out any recommended amelioration, or find an alternative supply and carry out the above procedure.

360 NOTICE OF IMPORTING TOPSOIL

- Give notice: Before stripping topsoil for transfer to site.
- Notice period: 3 days.

370 SAMPLE LOAD OF IMPORTED TOPSOIL

- General: Deliver to site a sample load of not less than 5 m^3.
- Give notice: Allow CA to inspect before making further deliveries to site. Retain for comparison with subsequent loads.

380 CONTAMINATION

- General: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil, do not use subsoil contaminated with the above materials.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported.

420A SPREADING TOPSOIL

- Temporary roads/surfacing: Remove before spreading topsoil and rip area in accordance with clause 250A.
- Layers:
  - Depth (maximum): 150 mm.
  - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum) 150mm.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

430A LOOSE TIPPING OF TOPSOIL

- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation handling top soil in accordance with clauses 170, 175 & 187.
  Depths after settlement (minimum): 250mm

450 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Above adjoining paving or kerbs: 20 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 20 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

Q31
External planting

Q31 External planting

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/ REQUIREMENTS

118 SOIL CONDITIONS

- Soil for cultivating and planting: Moist, friable and (excepting aquatic/ marginal planting) not waterlogged.
- Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

120 CLIMATIC CONDITIONS

- General: Carry out the work while soil and weather conditions are suitable.
  - Strong winds: Do not plant.

125 TIMES OF YEAR FOR PLANTING

- Deciduous trees and shrubs: Late October to late March.
- Conifers and evergreens: September/ October or April/ May.
- Herbaceous plants (including marginal): September/ October or March/ April.
- Container grown plants: At any time if ground and weather conditions are favourable.
  - Watering and weed control: Provide as necessary.
- Dried bulbs, corms and tubers: September/ October.
- Colchicum (crocus): July/ August.
- Green bulbs: After flowering in spring.
- Wildflower plugs: Late August to mid November or March/ April.
- Aquatic plants: May/ June or September/ October.

130 MECHANICAL TOOLS

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

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting.

150 WATER RESTRICTIONS

- 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

- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Delivery of plants/ trees.
  - Planting shrubs.
  - Planting trees into previously dug pits.
  - Watering.
  - Visiting site during maintenance period.
- Period of notice: One week.

165 PREPARATION, PLANTING AND MULCHING MATERIALS

- General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Certification of source, analysis, suitability for purpose and absence of harmful substances: Submit.
  - Certified materials: Spent mushroom compost.
  - Give notice before ordering or using.

200 PLANTS/ TREES - GENERAL

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: Balanced with branch system.
  - Standard: The National Plant Specification.
- Species: True to name.
- Origin/ Provenance: Contractor's choice.
  Definition: Origin and Provenance have the meaning given in the National Plant Specification.

215 PLANTS/ TREES - SPECIFICATION CRITERIA

- Name, forms, dimensions, provenance and other criteria: As scheduled and defined in the National Plant Specification.

235 CONTAINER GROWN PLANTS/ TREES

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

245 LABELLING AND INFORMATION

- 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:
  - Full botanical name.
  - Total number.
  - Number of bundles.
  - Part bundles.
  - Supplier's name.
  - Employer's name and project reference.
  - Plant specification, in accordance with scheduled National Plant Specification categories.
- Additional information: Submit on request: Country of origin.

255 PLANTS/ TREES RESERVED AT SUPPLIER'S PREMISES

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

260 PLANT/ TREE SUBSTITUTION

- Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
  - Price.
  - Difference from specified plants/ trees.
- Approval: Obtain before making any substitution.

265 PLANT HANDLING, STORAGE TRANSPORT AND PLANTING

- Standard: To HTA 'Handling and establishing landscape plants'.
- Frost: Protect plants from frost.
- Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
- Plant packaging: Coextruded polyethylene bags with black interior and white exterior.
- Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped.
- Planting: Upright or well balanced with best side to front.

280 TREATMENT OF TREE WOUNDS

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

290 SURPLUS MATERIAL

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

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

305 WEED CONTROL FOR INVASIVE NON-NATIVE WEEDS

- Locations: All planting areas.
- General: Prevent weeds from seeding and perennial weeds from becoming established, by contractor's choice of herbicide.

375 CULTIVATION

- Compacted topsoil: Break up to full depth.
- Cultivation: Loosen, aerate and break up soil into particles of 2-8 mm.
  - Depth: 450 mm.
  - Timing: Within a few days before planting.
  - Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: As EDCO drawings.
- Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 50 mm.
- 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 TO SHRUB PLANTING

- Spacing: As per planting Plan.
- Density: As per plant schedule.

401 REGULAR PLANT LAYOUT TO HEDGE PLANTING

- Spacing: As per planting Plan.
- Density: As per plant schedule.

405 SHRUB PLANTING PITS

- Timing: Excavate 1-2 days (maximum) before planting.
- Sizes: Wide enough to accommodate roots when fully spread and 75 mm deeper than root system.
- Pit bottom improvement Not required.
- Backfilling material: Reuse excavated material..

420 CLIMBING PLANTS

- Planting: 150 mm clear of supporting structure (e.g. wall/ fence) with roots spread outward.
  - Branches: Lightly secured to supports.
- Climber supports: As per architect's drawings.
  - Base height: As per architect's drawings.
  - Extent: As per architect's drawings.
  - Centres: As per architect's drawings
  - Distance from wall: As per architect's drawings.
- Fixings: Contractor's choice.
  - Centres: 1 m.

470 FORMAL HEDGES

- Shrubs for hedges: Consistent in species, cultivar and clone to ensure a uniform hedge.
- Planting: In trenches large enough to take full spread of roots. Set out plants evenly.

476 SHRUB, HERBACEOUS AND BULB BACKFILLING MATERIAL FOR FLOWERING SHRUB PITS

- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required:
- Ameliorant/ Conditioner: Not required.
  - Application rate: Not applicable.
- Fertilizer: Not required.
  - Application rate: Not applicable.

480 AFTER PLANTING

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- 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.
- Top dressing: Not required.
  - Depth: Not applicable.

485 MULCHING PLANTING BEDS

- Material: Fine grade bark mulch.
  - Purity: Free of pests, disease, fungus and weeds.
  - Recycled content: None permitted.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 50 mm depth.
- Finished level of mulch: 30 mm below adjacent grassed or paved areas.

PLANTING TREES

505 TREE PITS

- Sizes: As Per EDCO drawings.
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 150 mm.
  - Treatment: Soil ameliorant worked into pit bottoms.
- Pit sides: Scarify.
- Backfilling material: Approved topsoil.
- Accessories:
  - Underground guying as EDCO drawings;
  - Tree pit drainage layer as EDCO drawings; and
  - Perforated plastics irrigation/ ventilation pipe.

512 TREE PIT ACCESSORIES

- Locations: Drummond Street and Longford Square.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Type: Perforated plastics irrigation pipe, 50 mm diameter, in circle above and around sides of rootball, with plastics cap.

515 TREE PIT DRAINAGE

- Depth of excavation: Increase from specified size to allow for aggregate layer, with base slightly falling to outlet.
- Aggregate layer: Clean gravel or broken stone, with no fines, graded 40 to 20 mm.
  - Depth: As per EDCO Drawings.
- Drainage pipes:
  - Type: Perforated plastics.
  - Diameter: 80 mm.
  - Position: Lay around perimeter of pit within aggregate layer.
  - Discharge: Connect to surface water drainage system to engineers spec.
- Geotextile filter:
  - Manufacturer: Terram.
  - Product reference: 1000.
  - Position: Lay over aggregate before installing tree or backfill.
- Completed pits: Test for free drainage before planting.

525 SEMIMATURE TREES

- Standard: Prepare roots and transplant to BS 4043.
- Backfilling material: As clause 585.
- Support: Dead man anchor rootball securing system.
- Protection: Not required.

586 TREE BACKFILLING MATERIAL

- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required.
- Ameliorant/ Conditioner: Not required.
  - Application rate: Not applicable.
- Fertilizer: Not required.
  - Application rate: Not applicable.

590 MULCHING TREES

- Material: Fine grade bark mulch.
  - Purity: Free of pests, disease, fungus and weeds.
  - Recycled content: None permitted.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 50 litres per tree position, 75 mm depth.
- Finished level of mulch: As per EDCO drawings.

PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS

710 MAINTENANCE

- Duration: Carry out the operations in the following clauses from completion of planting until the end of the defects liability period.
- Frequency of maintenance visits: In accordance with the agreed maintenance schedule.

720 FAILURES OF PLANTING

- Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.
  - Exclusions: Theft or malicious damage after completion.
  - Rectification: Replace with equivalent plants/ trees/ shrubs.
- Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
- Timing of making good: In accordance with an agreed defects rectification programme.

730 PROTECTIVE FENCING

- Fencing type: Contractor's choice.
  - Height: 1800 mm.
- Erection: On completion of planting.
- Removal: Fencing will remain the property of the Contractor. Remove and refill post holes following acceptance of rectified defects.

740 CLEANLINESS

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

750 PLANTING MAINTENANCE GENERALLY

- Weed control: Maintain weed free area around each tree and shrub.
  - Diameter (minimum): The larger of 1 m or the surface of original planting pit.
  - Keep planting beds clear of weeds: By maintaining full thickness of mulch and hoeing.
- 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.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards.
  - Broken or missing items: Replace.
  - Rubbing: Prevent.
  - Ties: Adjust to accommodate growth.
  - Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
  - Frequency of checks: At each scheduled maintenance visit.
- Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
- Trees: Spray crown when in leaf during warm weather.
  - Timing: After dusk.
- Watering: to ensure maintenance of healthy growth.

755 PLANTING MAINTENANCE - FERTILIZER

- Time of year: March or April.
- Fertilizer: Inorganic.
  - Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Application rate: To manufacturer's recommendations.

760 PLANTING MAINTENANCE - PRUNING

- General: Prune to promote healthy growth and natural shape.
  - Dead, dying, diseased wood and suckers: Remove.
  - Timing: In accordance with the agreed maintenance schedule.
  - Trees: Favour a single central leading shoot.
- Arisings: Remove.

780 MAINTENANCE INSTRUCTIONS

- 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 a schedule of any ongoing maintenance problems experienced during the rectification period.

790 FINAL MULCHING

- Timing: At end of the maintenance period.
- Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
- Planting beds: Remulch.
  Depth (minimum): 50 mm.
- Trees: Remulch.
  Depth (minimum): 50 mm.

Q37
Green roofs

Q37 Green roofs

To be read with Preliminaries/General conditions

GENERAL

130A EXTENSIVE GREEN ROOF Sedum Blanket

- Roof type: Pre-cultivated Sedum vegetation blanket..
  - Substrate: New Concrete Deck.
  - Slope: Flat.
- Waterproofing: To Architect's Specification.
- Thermal insulation: To Architect's Specification.
- Protection: Protection mat.
- Water Storage/Drainage:: Bauder DSE40 mm Drainage/storage board. Installation as clause 770.
- Growing medium: Bauder extensive substrate applied directly into the drainage board, to achieve a finished depth of 80 mm (at designated main roof areas - receiving a sedum blanket) Installation as clause 790A.
- Landscaping Depth: 140mm (excluding vegetation)..
- Vegetation Blanket Bauder Xero Flor XF301 sedum blanket, applied in standard length rolls 2m x 1 m. Installation as clause 800A
- Vegetation: Mainly Sedum with some moss and grasses.
- Accessories: 20 - 40 mm round washed pebble vegetation barrier provided at all abutments,
  around outlets and all protrusions.
  - Bauder Xero Flor organic fertiliser, apply as clause 850
  - Bauder Extensive Inspection chambers installed above all internal outlets. Installation as clause 830B
  -Bauder Steel Edge retaining profile.

131 EXTENSIVE GREEN ROOF To 9th and 11th Floor terraces

- Roof type: Native Grasses..
  - Substrate: New Concrete Deck.
  - Slope: Flat.
- Waterproofing: To Architect's Specification.
- Thermal insulation: To Architect's Specification.
- Protection: Protection mat.
- Water Storage/Drainage:: Bauder DSE40 mm Drainage/storage board. Installation as clause 770.
- Growing medium: Bauder extensive substrate applied directly into the drainage board, to achieve a finished depth of 300 mm Installation as clause 790A.
- Landscaping Depth: 300mm)..
- Vegetation: As per Plant Schedule.
- Accessories: 20 - 40 mm round washed pebble vegetation barrier provided at all abutments,
  around outlets and all protrusions.
  - Bauder Xero Flor organic fertiliser, apply as clause 850
  - Bauder Extensive Inspection chambers installed above all internal outlets. Installation as clause 830B
  -Bauder Steel Edge retaining profile.

PERFORMANCE

210 GENERAL DESIGN
- Green roof and associated features: Complete the detailed design.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- Performance criteria: Submit drawings, technical information, calculations and manufacturers'
literature .

PRODUCTS

350 DRAINAGE LAYER Under Extensive Green Roof
- Manufacturer: Bauder .
  - Product reference: Bauder DSE40 mm Drainage/storage board .
- Material: High Density polyethylene board .
  - Depth: 40mm .
- Infill: To Manufacturers recommendations .

390 EXTENSIVE GROWING MEDIUM To 9th and 11th Floor Terraces
- Manufacturer: Bauder .
  - Product reference: Extensive Substrate.
- Material: Lightweight growing material.
- Ameliorant/ conditioner: Not permited.
  - Coverage: Not applicable.
- Declaration of analysis: Submit.
  - Parameters: Organic content.

400A VEGETATION BLANKET Extensive Green Roof
- Manufacturer: Bauder .
  - Product reference: Bauder Xero Flor XF301 sedum blanket .
- Planting mix: 8-11 species .
  - Thickness: 80mm .
- Vegetation coverage (minimum): 100% at installation
  Min 75% at all other times.

420 EDGE RETAINING PROFILE To Extensive Green Roof
- Manufacturer: Bauder .
  - Product reference: Bauder SS40 Edge Trim .
- Material: Stainless steel .
- Height: 80mm .

430A INSPECTION CHAMBERS To Extensive Green Roof
- Manufacturer: Bauder .
  - Product reference: Bauder Inspection Chamber .
- Size: 300x300 .
  - Depth: 80mm .
- Access covers: Grating .
- Features: None .

440 VEGETATION BARRIER To abutments, around outlets and all protrusions
- Material: 20-40 mm washed pebble ballast .
- Depth: 100 mm .
- Width: 300 mm .

EXECUTION

710A INSTALLATION GENERALLY

- Preparation: Clear all surfaces of debris.
  - Timing: After certification of waterproof membrane integrity.
  - Surface condition: Visually inspect waterproof membrane, report any damage.
- Faults in waterproof membrane: Report.
- Contamination: Do not use materials detrimental to healthy plant growth.
- Storage: Do not overload waterproofing.
  - Point loads: Avoid on waterproofing.
- Outlets: Do not block.
  - Outlet grilles: Installed.

720 ADVERSE WEATHER

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

770A DRAINAGE LAYER INSTALLATION

- Extent: Continuous over entire roof area.
- Fitting: Loose laid over the protection layer. Boards to overlap and interlock by one cup profile at sides and ends and each row be laid staggered. The 'X' stamped impression on the highpoint of the cup moulding indicates where boards overlap .
- Upstands: Carefully cut to fit closely around penetrations and outlets.

780A FILTER MEMBRANE INSTALLATION

- Joints: Minimize.
  - Overlaps (minimum): 150mm .
- Fitting: Loose laid over drainage layer in accordance with manufacturer's recommendation .
- Upstands (soft landscaping): Extend up,between vegetation barrier and growing medium and trim flush with finished surface level.
- Upstands (Hard landscaping): Extend to top of perimeter abutments and trim flush just below finished surface level..

790A GROWING MEDIUM INSTALLATION

- Handling: Minimize.
  - Conditions: Handle in the driest condition possible. Do not handle or install when wet or frozen.
- Layers: Start by applying two equal layers, building up to required maximum depth
  - Sequence: Gently firm each layer before spreading the next. Allowance should be made for any settlement that may occur. Measuring stick markers of the correct depth must be used around the entire roof area to ensure that a uniform thickness of growing medium is achieved

800A VEGETATION BLANKET INSTALLATION

- Handling blankets:
  - Timing: Lay within 36 hours of lifting from growing position.
  - Method: laid manually – two-man operation
  - Excessive stacking: Not permitted.
  - Material loss (maximum): 3% of total surface area.
- Growing medium condition: Thoroughly watered.
- Laying blankets:
  - Dry, damaged, frosty or waterlogged blankets: Do not lay.
  - Orientation: Diagonal or perpendicular to slope of roof.
  - Joints: Stagger. Butt together or slightly overlap to prevent gaps. Do not stretch blankets.
  - Edges: Finish with whole blankets.
  - Consolidation: Not applicable.
- Dressing: Bauder Xero Flor substrate .
  - Application: Brush in to fill joints.
- Watering: Thorough, immediately after laying and dressing.
- Roll Size 2m x 1m

820 EDGE RETAINING PROFILE INSTALLATION

- Cutting: Neat, accurate and without spalling.
  - Junctions: vertical, secured using proprietary connectors.
- Position: True to line and level. Smooth continuous lines.
- Fixing: Manufacturer's standard .

830 INSPECTION CHAMBER INSTALLATION

- Location: Install centrally over drain outlet.
  - Orientation: Align parallel with adjacent features.
- Bedding: Proprietary support base .
- Backfill: to Manufacturers specification .
- Surround: Using 20/40 mm grade washed pebbles, the inspection chamber must be surrounded by a 300 mm vegetation barrier surround to prevent unwanted growth obstructing the drainage system. . .

850 FERTILISER

- Xero Flor organic slow release fertiliser must be applied at a rate of 80g/m² onto the newly laid XF301 sedum blanket. This is available from Bauder Ltd. Care must be taken to distribute the fertiliser evenly, through use of an approved applicator.
- The vegetation blanket should then be thoroughly saturated by the use of sprinklers so as to promote rapid establishment. It is the responsibility of the roofing contractor to liaise with the main contractor/ building owner to provide water to ensure that the vegetation mat does not dry out within the first month.

COMPLETION

910 INSPECTION

- Timing: Before handover.
  - Give notice (minimum): 3 days.

915 INITIAL WATERING

- It is the responsibility of the roofing contractor to liaise with the main contractor/ building owner to provide water to ensure that the vegetation mat does not dry out within the first month. An adequate mains supply of sufficient pressure must be available and operational prior to the sedum blanket being delivered and installed. Irrigation systems must be operational, but initial watering in of the fertiliser must be by surface mounted sprinklers. Refer to Manufacturer's Watering Guide document for detailed information on watering requirements.

916 POST INSTALLATION MAINTENANCE

- The installing contractor should price into the tender, the cost of carrying out postinstallation maintenance for a contract period to be agreed with the client's representative. Following the final maintenance visit and application of slow release fertiliser at the end of the agreed contract period, the responsibility for the ongoing maintenance of the green roof planting becomes the responsibility of the building owner.
- Period of maintenance contract: 12 months Defects liability plus additional 12 months maintenance.
- Scope of maintenance procedure: as per manufacturer's recommendations.

920 COMPLETION

- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.
- Outlets: Clean and clear of obstructions.
- Completed green roof: Protect from adjacent or high level working.

930 DOCUMENTATION

- Timing: Submit at handover.
- Contents:
  - Growing medium declaration of analysis.
  - Manufacturers' guarantees and warranties.
  - Procedures for maintenance of the green roof.
  - Record drawings showing the location of planting and associated features.
- Number of copies: 2 .

Q50
Site/street furniture/equipment

Q50 Site/street furniture/equipment

To be read with Preliminaries/ General conditions.

SITE AND STREET FURNITURE

210 CYCLE STANDS
- Manufacturer: Woodhouse.
  - Product reference: Geo Hoop Cycle Stand.
- Material: Stainless Steel.
  - Finish: Brushed.
  - Colour: None.
- Number of stands: As per Drawings.
- Accessories: None.
- Method of fixing: Proprietary anchored base.

262 TREE GRILLES Stainless Steel Tree Surrounds
- Manufacturer: Kent Stainless or similar and approved.
  - Product reference: bespoke as per landscape architect's drawings.
- Material: Stainless Steel.
  - Finish: Bead blasted and electro polished.
  - Colour: None.
- Size: as per landscape architect's drawings.
- Accessories/ Special requirements: Tree guard support brackets.
- Method of fixing: as per landscape architect's drawings.

263 VENTILATION GRILLES Regent's Place Plaza
- Manufacturer: Kent Stainless or similar and approved.
  - Product reference: Standard Grille 65% free Area.
- Material: Stainless Steel.
  - Finish: Bead blasted and electro polished.
  - Colour: None.
- Size: as per landscape architect's drawings.
- Method of fixing: to manufacturer's details.

264 VENTILATION GRILLES Site Wide
- Manufacturer: Kent Stainless or similar and approved.
  - Product reference: Standard Grille 65% free Area.
- Material: Steel.
  - Finish: Hot dip galvanized to BS EN ISO 1461.
  - Colour: None.
- Size: as per landscape architect's drawings.
- Method of fixing: to manufacturer's details.

350 NESTING BOXES Birds
- Manufacturer: Schwegler.
  - Product reference: Swift Box No. 17 Single.
- Material: Compressed Plant Fibres and Concrete.
  - Finish: As manufactured.
  - Colour: None.
- Accessories/ Special requirements: Adjustable fixing brackets.
- Method of fixing: Post-mounted.

350A NESTING BOXES Bats

- Manufacturer: Schwegler.
  - Product reference: Bat Tube 1FR.
- Material: Wood/Concrete.
  - Finish: As manufactured.
  - Colour: None.
- Accessories/ Special requirements: Adjustable fixing brackets.
- Method of fixing: Post-mounted.

INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN 1 or standard prescribed concrete not less than ST2.
- Admixtures: Do not use.
- Foundation holes: Neat vertical sides.
- Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

515 SETTING COMPONENTS IN CONCRETE

- Holes: 250 x 250 x minimum 300 mm deep.
- Components: Accurately positioned and securely supported.
- Concrete fill: Fully compacted as filling proceeds.
- Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
- Temporary component support: Maintain undisturbed for minimum 48 hours.

550 DAMAGE TO GALVANIZED SURFACES

- Minor damage in areas up to 40 mm^2 (including on fixings and fittings): Make good.
  - 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.
  - Thickness: Sufficient to provide a zinc coating at least equal to the original layer.

560 SITE PAINTING

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

R
Disposal systems

R12
Below ground drainage systems

R12 Below ground drainage systems

To be read with Preliminaries/ General conditions.

PRODUCTS

371 RODDING POINTS To Slot Drains

- Standards:
  - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
- Material: Stainless Steel.
- Manufacturer: Kent Stainless.
  - Product reference: Bespoke, as per landscape architect's drawings.
- Sizes: as per landscape architect's drawings.

372 RODDING POINTS To Planters

- Standards:
  - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
- Material: plastic.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Sizes: Submit proposals.

471 ACCESS COVERS AND FRAMES To covers

- Standard: To BS EN 124.
- Types: recessed Neoprene seal.
- Manufacturer: Kent Stainless or similar and approved.
  - Product reference: Submit proposals.
- Materials: stainless steel.
- Finishes: natural.
- Sizes: As per landscape architect's drawings.
- Loading grades to BS EN 124: C250.
- Edging trims: Stainless steel.
- Accessories: None.

EXECUTION

734 INSTALLING ACCESS POINTS AND GULLIES

- Bedding:
  - Material: Concrete (general).
  - Thickness (minimum): 100 mm.
- Surround:
  - Material: Not required.
  - Thickness (minimum): Not required.
  - Height: Not required.
- Backfilling: Not required.
  - Material: Not required.
  - Compaction: By hand in 100 mm layers.
- Setting out relative to adjacent construction features: Square and tightly jointed.
- Permissible deviation in level of external covers and gratings: +0 to -6 mm.
- Raising pieces (clay and concrete units): Joint with 1:3 cement:sand mortar.
- Exposed openings: Fit purpose made temporary caps. Protect from site traffic.

736 INSTALLING RODDING POINTS

- Bedding and surround:
  - Material: Concrete (general).
  - Thickness (minimum): 100 mm
- Permissible deviation in level of external covers and gratings: +0 to -6 mm.

776 EXPOSED OPENINGS IN INSPECTION CHAMBERS, ACCESS POINTS, FITTINGS AND EQUIPMENT

- General: Fit purpose made temporary caps. Protect from site traffic.

COMPLETION

901 REMOVAL OF DEBRIS AND CLEANING

- Preparation: Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.
  - Timing: Before cleaning, final testing, CCTV inspection if specified, and immediately before handover.
- Cleaning: Thoroughly flush pipelines with water to remove silt and check for blockages. Rod pipelines between access points if there is any indication that they may be obstructed.
- Washings and detritus: Do not discharge into sewers or watercourses.
- Covers: Securely replace after cleaning and testing.

S
Piped supply systems

S14
Irrigation

S14 Irrigation

To be read with Preliminaries/ General conditions.

PERFORMANCE

210A DESIGN AND DETAILING

- Requirement: Complete the design of the irrigation system.
- Proposals: Submit drawings (showing equipment positions and pipeline routes), technical information, calculations and manufacturer's literature. Pipes to be trace heated and insulated below slab to prevent freezing. Pipe Routes to M&E Engineers drawings
- General: Design the irrigation systems to comply with the relevant parts of BS 6700, BS 7562, BS EN 806-2 and -3 and BS EN 12484-4, and in accordance with HSE publication 'The control of legionella bacteria in water systems. Approved code of practice and guidance', water supply regulations and the requirements of the water supply undertaker.

EXECUTION

610 INSTALLATION GENERALLY

- Standard: In accordance with the relevant parts of BS 6700, BS 7562-5 and BS EN 12484-4, water supply regulations and the requirements of the water supply undertaker.
- Generally:
  - Fixing: Secure and neat in locations and depths suitable for the purpose.
  - Outlets and valves: Adequately support to prevent pipes being strained during operation.
  - Open ends of pipes: Temporarily seal with purpose made plugs or blanking caps to prevent ingress of dirt, insects or rodents during installation.
- Equipment, components and accessories:
  - Store in original packaging in dry conditions.
  - Where appropriate, securely fix parallel or perpendicular to the enclosing structure.
- Corrosion resistance: In locations where moisture is present or may occur, provide corrosion resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.
- Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.
- Access: Allow adequate space for inspection, servicing and maintenance.

611 INSTALLATION OF PUMPS

- Pipeline connections: Prevent transmission of pipeline forces to pump casing.
- Pipeline mounted pumps: Support on purpose made brackets lined with vibration absorbent material.
- Alignment: Align and balance to minimize vibration.
- Drive belts: Correctly tensioned.
- Access: Provide adequate space for service and maintenance.
- Identification plate: Engrave showing:
  - Manufacturer's name and address.
  - Serial number.
  - Duty and maximum head.
  - Speed.
  - Electrical loading.

612 PIPELINE INSTALLATION

- Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.
- Joints, bends and offsets: Minimize.
- Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.
- Electrical equipment: Install pipelines 150 mm (minimum) clear of electrical equipment. Do not run pipelines through electrical enclosures or above distribution boards, controllers or outlets.
- Insulation: Allow space around pipelines to fit insulation without compression.
- Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.
- Thermal expansion and contraction: Allow for thermal movement of pipelines. Isolate from structure. Prevent noise or abrasion of pipelines caused by movement. Sleeve pipelines passing through walls, floors or other building elements.

615 FITTING INSULATION TO EXTERNAL SUPPLY PIPELINES

- Location: Where exposed to air and where less than 750 mm below ground level.
- Installation:
  - Fixing: Securely and neatly in accordance with manufacturer's recommendations and with the split on 'blind' side of pipeline.
  - Over fittings and at supports: Continuous leaving no gaps.
  - Timing: Do not fit insulation until completion of testing.

630 SERVICE CONNECTIONS

- General: Covered elsewhere by a Provisional Sum.

COMPLETION

910 TESTING

- Standard: To BS EN 12484-5.
- Notice (minimum): 3 days.
- Condition of pipework and equipment prior to testing: Correctly installed, secure and clean.
- Pressure testing: Joints, fittings and components must be free from leaks and signs of physical distress when tested for at least 1 hour as follows:
  - Systems fed directly from the mains: Apply a test pressure equal to 1.5 times the maximum pressure to which the installation or relevant part is designed to be subjected in operation.
  - Systems fed from storage: Apply a test pressure equal to the pressure produced when the storage cistern is filled to its normal maximum operating level.
- Other test procedures: As recommended by the manufacturer and required by the water undertaker.
- Test results: Submit.

911 INSPECTION TESTING

- Standard: To BS 6700, clause 6.1.12.

912 FLUSHING AND DISINFECTION

- Standard: To BS 6700, clause 6.1.10.

920 COMMISSIONING

- Equipment: Check and adjust operation of equipment and controls.
- Outlets: Check operation of outlets for satisfactory rate of flow.

930 DOCUMENTATION

- Submit prior to completion:
  - Full technical description of each system installed.
  - Manufacturers' operating and maintenance instructions for all equipment and controls.
  - Manufacturers' guarantees and warranties.
  - Operating instructions for the system as a whole giving optimum settings for all controls.
  - Record drawings showing the location of circuits, fittings, pipes, apparatus and operating controls.
  - Electrical inspection and completion certificates.
- Number of copies: 2.

940 OPERATING TOOLS

- Tools: Supply tools for operation, maintenance and cleaning purposes.
- Keys: Supply keys for valves, vents and cabinets.

Z
Building fabric reference specification

Z11
Purpose made metalwork

Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

PRODUCTS

310 MATERIALS GENERALLY

- Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

FABRICATION

515 FABRICATION GENERALLY

- Contact between dissimilar metals in components: Avoid.
- Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
  - Moving parts: Free moving without binding.
- Corner junctions of identical sections: Mitre.

520 COLD FORMED WORK

- Profiles: Accurate, with straight arrises.

FINISHING

745 PREPARATION FOR APPLICATION OF COATINGS

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

780 GALVANIZING

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

Z21
Mortars

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

110 CEMENT GAUGED MORTAR MIXES

- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS

- Standard: To BS EN 13139.
- Grading: 0/2 (FP or MP).
  - Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):
    Lower proportion of sand: Use category 3 fines.
    Higher proportion of sand: Use category 2 fines.
- Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

160 CEMENTS FOR MORTARS

- Cement: To BS EN 197-1 and CE marked.
  - Types: Portland cement, CEM I.
    Portland limestone cement, CEM ll/A-L or CEM ll/A-LL.
    Portland slag cement, CEM II/B-S.
    Portland fly ash cement, CEM II/B-V.
  - Strength class: 32.5, 42.5 or 52.5.
- White cement: To BS EN 197-1 and CE marked.
  - Type: Portland cement, CEM I.
  - Strength class: 52.5.
- Sulfate resisting Portland cement:
  - Types: To BS 4027 and Kitemarked.
    To BS EN 197-1 fly ash cement, CEM ll/B-V and CE marked.
  - Strength class: 32.5, 42.5 or 52.5.
- Masonry cement: To BS EN 413-1 and CE marked.
  - Class: MC 12.5.

210 MAKING CEMENT GAUGED MORTARS

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