

**Station Hill Reading
Plot E & F**

Landscape Specifications

Production Date: September 2019
Status: Contract
Document No: SHR-LDA-SB-XX-SP-L-600-001
Document Rev. No. C01

1.0 INTRODUCTORY INFORMATION

1.1. General Information

- o The materials and workmanship section of this specification have been prepared utilising the National Building Specification framework adapted by LDA Design.
- o The design, fabrication and performance requirements specified are intended to establish a minimum performance level and general principles. The sub-contractor shall be responsible for achieving or surpassing the design criteria for all components.
- o The Contract Landscape Architectural Drawings to be read in conjunction with this document are listed within the Drawing Register SHR-LDA-SB-ZZ-DR-L-100-001.
- o Refer to Project Engineer's and Project Architects drawings and specifications for :
 - Formation levels,
 - Foundations,
 - Bases and Sub-bases, including roof insulation
 - Drainage (except greenroof drainage mats) and waterproofing
 - Electrical and lighting information,
 - Information relating to services and utilities,
 - Structural and architectural features, including balustrades, copings and grilles/channels.
 - Wayfinding signage, statutory signage
- o Soil Science to be provided by Specialist Soil Scientist.

1.2. Measurements

Final measurements are to be taken on site before placing orders. Any discrepancies to the measurements stated in the design drawings and/or the specifications have to be brought to the Landscape Architect's attention immediately for clarification.

1.3. Specification Clauses

Any discrepancies in specification clause numbering, cross references, and drawing references have to be brought to the attention of the Landscape Architect for clarification. Specification clauses that have been amended from the standard clause might contain a letter suffix – these are not necessarily contained in cross references in other specification clauses or the drawings.

1.4. Single sources

Where a choice of manufacturer or source of supply is allowed for any particular product or material, the whole quantity required to complete the work must be of the same type, manufacture and/or source.

1.5. Site drawings

The Contractor will carefully maintain one set of drawings on site for the duration of the contract.

1.6. Samples & Mock-ups

The Contractor shall allow for the following mock ups, to be typically 2 x 2m and not located as part of finished work:

- Friars Walk paving pattern, including linear banding, slot drain, and raised linear planter edge condition
- Garrard Street paving including linear banding, flush planter edge and typical kerb
- Podium terrace planter edge with and without timber seat edge, with adjacent resin bound and unit pavers
- Podium lawn single and two-tier timber edge at lawn
- Roof terrace composite timber decking, seatwall, and artificial turf
- Roof terrace composite timber grow-your-own planter edge with storage bench
- Moveable furniture samples
- Material samples of all visible elements. Refer to specific requirements in the respective specification sections

1.7. Plant Material selection

The Contractor shall allow for the inspection and tagging trips for trees, specimen shrubs and hedging from UK and Continental nurseries as appropriate.

2.0 SCHEDULE OF REVISIONS

Revision	Date	By	Ch'd	Notes
C01	09/09/2019	SL	CI	CONTRACT ISSUE

Table of Contents

Title		Page
F21	Natural stone/ashlar walling/dressings	2
L37	External stair, ramps, handrail and balustrades systems	4
M60	Painting/clear finishing	8
Q05	Biodiversity and environmental conservation	9
Q10	Kerbs/ edgings/ channels/ paving accessories	10
Q20	Granular sub-bases to roads/pavings	15
Q21	In situ concrete roads/ pavings/ bases	16
Q22	Asphalt roads/ pavings	17
Q23	Gravel/ Hoggin/ Woodchip/ Resin bound roads/ paving/ overlays	18
Q25	Slab/brick/sett/cobble pavings	24
Q26	Special surfacings/ pavings for sport/ general amenity	33
Q28	Topsoil and growing media	35
Q30	Seeding/turfing	39
Q31	External planting	46
Q35	Landscape maintenance	60
Q37	Green roofs	73
Q40	Fencing	80
Q41	Barriers/ guardrails	83
Q50	Site/street furniture/equipment	86
Q55	External decks, boardwalks and bridges	90
S14	Irrigation	92
V91	Electrical systems - landscape	93
Z10	Purpose made joinery	94
Z11	Purpose made metalwork	95
Z20	Fixings and adhesives	97
Z21	Mortars	99
Z22	Sealants	102
Z31	Powder coatings	103

F21 Natural stone/ashlar walling/dressings

To be read with Preliminaries/ General conditions.

TYPES OF WALLING/ DRESSINGS

110A ASHLAR PLANTER EDGE TYPE 02.

- Stone: To BS EN 771-6.
 - Name (traditional): Granite.
 - Petrological family: Granite.
 - Colour: Dark Grey.
 - Origin: Submit proposals.
 - Finish: Split Face.
 - Supplier: Marshalls or equal and approved.
 - Product reference: Kreuzberg or equal and approved
 - Unit dimension tolerances: Category D2.
 - Compressive strength:
 - Mean value (minimum): Supplier's standard.
 - Characteristic value (minimum): Supplier's standard.
 - Category: Supplier's standard.
 - Open porosity: Supplier's standard.
 - Additional requirements: Supplier's standard.
 - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: Steintec Tuffbed or equal and approved.
 - Sand: Supplier's standard.
 - Additional requirements: None.
- Bond: As shown on drawings.
- Joints: Flush.
 - Width: 10 mm.
 - Pointing: As clause 390.
- Other requirements: 2no. stainless steel dowels per unit required.

120 HARD LANDSCAPING MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: refer to BREEAM assessment.

GENERAL/ PRODUCTION

250 CUTTING AND DRESSING OF STONE

- Timing: After seasoning but before delivery to site.
- Accuracy:
 - Exposed and joint surfaces: Square, true planes free from hollow or rough areas.
 - Dimensions: Maintain specified joint widths.
- Orientation for natural bed of stones: Appropriate to properties of stones and positions in walling/ dressings.

260 IDENTIFICATION OF STONE UNITS

- Marking: Clearly and indelibly on concealed faces to indicate the natural bed and position in the finished work.

LAYING AND JOINTING

300 REFERENCE PANELS

- General: Complete areas of specified walling types and obtain approval of appearance before proceeding.
- Walling type:
 - Location: Friars Walk Planter edger .
 - Size: 2m length .
 - Features: stepping stone edge comprising 3 wall heights as details 2a-c on drawing SHR-LDA-SB-GF-DR-L-500-231 .

315 ADVERSE WEATHER

- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature: Do not lay stones:
 - In cement gauged mortars: At or below 3°C and falling or below 1°C and rising.
 - In hydraulic lime:sand mortars: At or below 5°C and falling or below 3°C and rising.
- Temperature of walling during curing: Above freezing until mortar hardened.
- Newly erected walling: Protect at all times from:
 - Rain and snow.
 - Drying out too rapidly in hot conditions and in drying winds.

325 LAYING GENERALLY

- Stone selection: Do not use units with damaged faces or arrises.
- Accuracy:
 - Courses: Level and true to line.
 - Faces, angles and features: Plumb.
 - Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.
- Absorbent stones: Dampen in warm weather to reduce suction. Do not soak.
- Mortar joints:
 - Laying: Full bed of mortar with all joints and voids filled.
 - Temporary distance pieces: Lead or stainless steel. Remove when mortar is sufficiently strong.
 - Appearance: Neat and consistent.
- Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains not permitted.

330A WALLING BELOW GROUND LEVEL

- Extent of facework below finished level of adjoining ground or external works (minimum): 50 mm.

350 ONE PIECE SILLS/ THRESHOLDS

- Bed joints: Leave open except under:
 - End bearings.
 - Masonry mullions.
- Pointing on completion: Mortar to match adjacent work.

390 POINTING

- Joint preparation: Rake out to depth of 7-10 mm as work proceeds. Remove debris. Dampen surface.
- Mortar application: Neat and consistent.

L37 External stair, ramps, handrail and balustrades systems

GENERAL

- 110 STAIR SYSTEMS PLOT F BACK OF HOUSE AREA
- Type: Built in situ.
 - Base/ Fabric: to Structural Engineer's design.
 - Surface: Precast concrete step units.
 - Finish: Riven.
 - Unobstructed width: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Accessories:
 - Balustrade system;
 - 'Corduroy' hazard warning surface as section Q25 ; and
 - Handrail system.
- 150 HANDRAIL SYSTEMS TO STAIRS
- System manufacturer: Contractor's choice.
 - Material: Austenitic stainless steel.
 - Cross section: 42.4mm handrail.
 - Finish: Not required.
 - Height (to upper surface of handrail):
 - Above pitch line: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Above landing: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Accessories: Balustrade system.
- 160 BALUSTRADE SYSTEMS TO STAIRS
- System manufacturer: Contractor's choice.
 - Guarding:
 - Material: Metal panels.
 - Finish: Polyester powder coated, as section Z31.
 - Rail:
 - Cross section: Submit proposals.
 - Material: Steel, as section Z11.
 - Finish: Polyester powder coated, as section Z31.
 - Height (to upper surface of rail):
 - Above pitch line: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Above landing: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Accessories: Handrail system.

SYSTEM PERFORMANCE

- 210 DESIGN OF STAIR SYSTEM
- Inclusive design: Complete detailed design in accordance with Building Regulations (Eng) Approved Document M and BS 8300:2009; highlight discrepancies and outcomes.
 - Structure and associated features: Complete detailed design to BS EN 1991-1-1.
 - Structural performance criteria:
 - Dead loads (maximum): As loading schedule.
 - Imposed loads (maximum):
 - Activity/ Occupancy loading: As loading schedule.
 - Point loads (maximum): As loading schedule.
 - Other performance criteria: Fit for its intended purpose.
 - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

220 DESIGN OF BALUSTRADE SYSTEM

- Inclusive design: Complete detailed design in accordance with Building Regulations (Eng) Approved Document M.
- Structure and associated features: Complete the detailed design in accordance with BS 8300.
- Structural performance criteria:
 - Horizontal uniformly distributed line loads on balustrade or handrail (maximum): 1.5 kN/m.
- Other performance criteria: Fit for its intended purpose.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

PRODUCTS

310 PRECAST CONCRETE STEP UNIT PLOT F BACK OF HOUSE STEPS

- Manufacturer: Marshalls or equal and approved.
 - Product reference: Urbex.
- Standard: To BS EN 771-2 and -3.
- Size:
 - Surface width: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Going: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
 - Rise: As drawing SHR-LDA-SB-ZZ-DR-L-500-412.
- Colour: Grey.
- Finish: Riven.
 - Slip resistance value of integral tread - water wet (minimum): PTV of 40 to BS 7976.
 - Slip resistance value of integral nosing - water wet (minimum): Not applicable.
 - Colour of integral nosing: Not applicable.
- Accessories: applied nosing.

420 APPLIED STAIR NOSINGS TO PRECAST CONCRETE STEP UNIT

- Standard: In accordance with BS 8300.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Material: Aluminium with pre-bonded carborundum insert.
- Size - outer dimensions (rise x going): 55 x 55 mm.
- Profile: Square nosing.
- Slip resistance value - water wet (minimum): PTV of 40 to BS 7976 to riser and tread.
- Colour:
 - Channel/ Frame: Mill finish.
 - Inserts: Black.
- Accessories: Edge sealant as manufacturer's recommendations.

FABRICATION

510 FABRICATION GENERALLY

- Design: Complete the detailed design and obtain approval prior to commencing fabrication.
- Shop drawings: Submit.
- Structural calculations: Submit.
- Frameworks: Assemble and brace, including temporary members required for installation.
- Contact between dissimilar metals: Avoid.
- Fixings: Fully bolt together. Tighten bolts.
- Temporary support: Do not subject members to non-design loadings.

EXECUTION

610 LOADING

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

620 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Concrete: Designated not less than GEN 1 or standard prescribed 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.

630 SETTING COMPONENTS IN CONCRETE

- Holes: 250 x 250 x minimum 300 mm deep.
- Components: Accurately positioned and securely supported.
- Concrete fill: Compact as filling proceeds.
- Concrete foundations exposed to view: Finished to weathering profile to shed water and trowel smooth.
- Temporary component support: Maintain undisturbed for minimum 48 hours.

650 INSTALLATION GENERALLY

- Fasteners: To section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use finished work as temporary support or strutting for other work.
- Applied finishes: Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as finish manufacturer's recommendation before application.

660 INSTALLATION OF MANUFACTURED STONE ELEMENTS

- Selection: Do not use damaged units.
- Accuracy:
 - Courses: Level and true to line.
 - Faces, angles and features: Plumb.
 - Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.
- Absorbent units: Dampen in warm weather to reduce suction.
- Dowels: Resin fix 10 mm diameter stainless steel rods, two per horizontal element, one per vertical element.
- Mortar joints: 6 x 6 mm recess, filled flush with colour matched mortar.
 - Laying: Full bed of mortar with all joints and voids filled.
 - Temporary distance pieces: Lead or stainless steel. Remove when mortar is sufficiently strong.
 - Appearance: Neat and consistent.
- Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains, not permitted.
- Cutting of reinforced units: Not permitted.

662 ADVERSE WEATHER

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

670 INSTALLATION OF TREAD INSERTS/ NOSINGS

- Treads: Fully cured, sound and level.
- Fixing:
 - Location/ position: In accordance with BS 8300.
 - Fixings: As manufacturer's recommendations.
 - Centres: As manufacturer's recommendations.

COMPLETION

910 INSPECTION

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

915 SLIP RESISTANCE TESTING

- Surfaces to be tested: L37/ to be agreed with Contract Administrator.
 - Surface condition: Dry and wet.
- Timing: As agreed with contract administrator.
- Period of notice (minimum): 3 working days.
- Test standard: To BS 7976.
 - Testing authority: A UKAS accredited laboratory.
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract administrator.
 - Report: Submit.
 - Format: As required under BS 7976.

920 DOCUMENTATION

- Contents:
 - Copies of structural design calculations/ test reports.
 - General product information.
 - Installation information.
 - Inspection and maintenance reports.
- Number of copies: include in H&S file.
- Submission: Two weeks prior to date when principal contractor expects work to be practically complete.

M60 Painting/clear finishing

- 16 DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE TO ALL TIMBER FURNITURE AND FENCES
 - Manufacturer: Osmo or equal and approved.
 - Product reference: UV-protection Oil.
 - Surfaces: timber slats and wood fences.
 - Preparation: allow 6 weeks weathering, sand and degrease.
 - Initial coats: as manufacturer's recommendation.
 - Number of coats: 1 minimum, and as recommended by manufacturer.
 - Finishing coats: as manufacturer's recommendation.
 - Number of coats: 1 minimum, and as recommended by manufacturer.

- 25 SURFACES NOT TO BE COATED
 - composite timber .

- 30 PREPARATION GENERALLY
 - Standard: In accordance with BS 6150.
 - Refer to any pre-existing CDM Health and Safety File and CDM Construction Phase Plan where applicable.
 - Risk assessment and method statement for hazardous materials: Prepare for operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
 - Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
 - Substrates: Sufficiently dry in depth to suit coating.
 - Efflorescence salts, dirt, grease and oil: Remove.
 - Surface irregularities: Provide smooth finish.
 - Organic growths and infected coatings:
 - Remove with assistance of biocidal solution.
 - Apply residual effect biocidal solution to inhibit regrowth.
 - Joints, cracks, holes and other depressions: Fill with stoppers/ fillers. Provide smooth finish.
 - Dust, particles and residues from preparation: Remove and dispose of safely.
 - Doors, opening windows and other moving parts:
 - Ease, if necessary, before coating.
 - Prime resulting bare areas.

- 37 WOOD PREPARATION
 - General: Provide smooth, even finish with lightly rounded arrises.
 - Degraded or weathered surface wood: Take back surface to provide suitable substrate.
 - Degraded substrate wood: Repair with sound material of same species.
 - Heads of fasteners: Countersink sufficient to hold stoppers/ fillers.
 - Resinous areas and knots: Apply two coats of knotting.
 - Defective primer: Take back to bare wood and reprime.

Q05 Biodiversity and environmental conservation

To be read with Preliminaries/General condition.

SYSTEM OUTLINE

- 110 HABITAT CREATION BAT AND BIRD BOXES, BUG HOTELS.
- Habitat type: Bat roosts, Bird Habitat, Invertebrate Habitat.
 - Location: As Wildlife Installation Plan SHR-LDA-SB-ZZ-DR-L-100-110.
 - Surveys required:
 - Prior to work commencing: Not required.
 - Scope of work: Nesting boxes and bug hotels, as section Q50.
 - Source data provided for reference/ verification: Ecological Management Plan WIE14788-100-R-7-3-3-EMP.
- 120 HABITAT MANAGEMENT AND ENHANCEMENT SITEWIDE.
- Generally: Refer to the Ecological Management Plan WIE14788-100-R-7-3-3-EMP.
 - Habitat type: as EMP.
 - Designation: None.
 - Location: As Wildlife Installation Plan SHR-LDA-SB-ZZ-DR-L-100-110.
 - Surveys required:
 - Prior to work commencing: Not required.
 - During establishment phase: Not required.
 - Scope of work:
 - Topsoil, growing media and ameliorants, as section Q28;
 - Tree/ shrub planting, as section Q31 ;
 - Control of invasive species, as section Q35;
 - Trimming established hedges, as section Q35;
 - Landscape maintenance generally, as section Q35; and
 - Nesting boxes, as section Q50.
 - Source data provided for reference/ verification: Ecological Management Plan

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

112A PRECAST CONCRETE EDGE TYPE 01 CONSERVATION KERB 125MM UPSTAND

- Manufacturer: Marshalls or equal and approved
 - Product reference: Conservation kerb
- Standard: To BS EN 1340.
- Recycled content: Submit proposals.
- Designations: BN Kerb, bullnosed.
- Size (width x height x length): 255 wide x205 high x915mm long.
- Special shapes: External radius kerbs as shown on drawings, dropper kerbs.
- Finish: Exposed aggregate.
- Colour: Grey.
- Bending strength: to Civil Engineer's requirements.
- Weathering resistance: Class 3.
- Abrasion resistance: to Civil Engineer's requirements.
- Slip/ skid resistance: PTV to BS 7976-2 of 45 (water) wet.
- Bedding: to Civil Engineer's requirements.
- Joints generally: Dry, 2-3 mm gap.
- Sealant movement joints: Not required.
- Accessories: Submit proposals.

113 PRECAST CONCRETE EDGE TYPE 03 CONSERVATION KERB FLUSH

- Manufacturer: Marshalls or equal and approved
 - Product reference: Conservation kerb
- Standard: To BS EN 1340.
- Recycled content: Submit proposals.
- Designations: CS1 Channel, square.
- Size (width x height x length): 255 wide x125 high x915mm long.
- Special shapes: External radius kerbs as shown on drawings, dropper kerbs.
- Finish: Exposed aggregate.
- Colour: Grey.
- Bending strength: to Civil Engineer's requirements.
- Weathering resistance: Class 3.
- Abrasion resistance: to Civil Engineer's requirements.
- Slip/ skid resistance: PTV to BS 7976-2 of 45 (water) wet.
- Bedding: to Civil Engineer's requirements.
- Joints generally: Dry, 2-3 mm gap.
- Sealant movement joints: Not required.
- Accessories: Submit proposals.

114 PRECAST CONCRETE DISHED CHANNEL TO PLOT E WEST PERIMETER

- Manufacturer: Marshalls or equal and approved
 - Product reference: Dish Channel
- Standard: To BS EN 1340.
- Recycled content: Submit proposals.
- Designations: CD Channel, dish.
- Size (width x height x length): 305 wide x 90 high x 915mm long.
- Special shapes: none.
- Finish: As cast.
- Colour: Natural.
- Bending strength: No requirement.
- Weathering resistance: No requirement.
- Abrasion resistance: No requirement.
- Slip/ skid resistance: PTV to BS 7976-2 of 40 (water) wet.
- Bedding: to Civil Engineer's requirements.
- Joints generally: butt jointed.
- Sealant movement joints: Not required.
- Accessories: Submit proposals.

170 LINEAR SLOT DRAINAGE CHANNEL SYSTEMS

- Manufacturer: Aco.
 - Product reference: Brickslot.
- Bore: to Civil Engineer's requirements.
- Finish: galv. steel.
- Colour: Natural.
- Accessories: to Civil Engineer's details and specifications.
- Bedding: to Civil Engineer's details and specifications.
- Joints generally: to Civil Engineer's details and specifications.

180 DRAINAGE CHANNEL SYSTEMS WITH GRATINGS

- Manufacturer: Aco.
 - Product reference: to Civil Engineer's specifications.
- Size: to Civil Engineer's details and specifications.
- Type of fall: to Civil Engineer's specifications.
- Finish: to Civil Engineer's details and specifications.
- Colour: to Civil Engineer's details and specifications.
- Accessories: to Civil Engineer's details and specifications.
- Bedding: to Civil Engineer's details and specifications.
- Joints generally: to Civil Engineer's details and specifications.
- Cover gratings: ductile iron, heel safe.
 - Fixings: Locking bars and bolts.
 - Loading grade to BS EN 124: D400.
 - Finish/ Colour: Black.

200A METAL EDGING FLUSH METAL EDGING

- Manufacturer: Kinley or equal and approved.
 - Product reference: AluExcel.
- Size: varies, as drawings.
- Type/ Material: Aluminium.
 - Finish: Standard.
 - Colour: Standard.
- Accessories: as manufacturer's requirements.
- Bedding: As drawings.
- Joints: butt jointed with connector.

250 MATERIAL SAMPLES

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

LAYING

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.

540 CEMENT MORTAR BEDDING

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

547 BEDDING/BACKING OF UNITS ON FRESH CONCRETE RACES

- Standard: To BS 7533-6.

550 KERB DOWELS

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

560 HAUNCHING DOWELS

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

- 570 CHANNELS
- Installation: To an even gradient, without ponding or backfall.
 - Lowest points of channels: 6 mm above drainage outlets.
- 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.
- 590 DRAINAGE CHANNEL SYSTEMS WITH BUILT IN FALL
- Installation: Top of channels level, installed in correct sequence to form an even gradient without ponding or backfall. Commence laying from outlets.
 - Silt and debris: Removed from entire system immediately before handover.
 - Washings and detritus: Safely disposed without discharging into sewers or watercourses.
- 600 RADIUS KERBS/CHANNELS
- Usage: Radii of 15 m or less.
- 610 ANGLE KERBS
- Usage: Internal and external 90° changes of direction.
 - Cutting of mitres: Not permitted.
- 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.
- 630 NARROW MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
 - Joint width: 3 mm.
- 640 TOOLED MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
 - Joint width: 6 mm.

641 TOOLED COLOURED MORTAR JOINTS

- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and raked out to a depth of 10 mm for pointing.
 - Joint width: 6 mm.
- Pointing: Joints refilled and tooled to a neat flush profile.
 - Pointing mortar: 1:3 cement:sand.
 - Pigment colour: Colour match to kerbs.

650 SEALANT MOVEMENT JOINTS

- Joint filler: Compressible cellular rubber or plastics compatible with specified sealant.
- 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.
- Joint width: 10 mm.
- Sealant: Submit proposals.
 - Colour: Colour match to kerbs.
- Sealant application: As section Z22.

Q20 Granular sub-bases to roads/pavings

To be read with Preliminaries/ General conditions.

100 REQUIREMENTS:

- Refer to Civil Engineer's specifications.

Q21 In situ concrete roads/ pavings/ bases

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

- 115A PAVING WITH EMBEDDED METAL (DESIGNATED CONCRETE) TO SERVICE YARD.
- Refer to Civil Engineer's specifications.

Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

- 110A ASPHALT CONCRETE PAVING TO GARRARD STREET, MERCHANTS PLACE, AND FRIAR STREET CARRIAGEWAYS (S278 AREAS)
- Refer to Civil Engineer's specifications.

Q23 Gravel/ Hoggin/ Woodchip/ Resin bound roads/ paving/ overlays

To be read with Preliminaries/ General conditions.

TYPES OF SURFACING

160A LOOSE GRAVEL GRAVEL BORDER TO SEDUM GREEN ROOFS

- Drawing reference: SHR-LDA-SB-ZZ-DR-L-500-171
- Subgrade improvement layer: Not required.
 - Compacted thickness: Submit proposals.
- Geotextile: Sheet.
 - Manufacturer: Radmat or equal and approved.
 - Product reference: Submit proposals.
- Granular sub-base: not required.
 - Compacted thickness: not applicable.
- Blinding to sub-base: Not required.
- Gravel: Loose laid and raked to uniform thickness.
 - Type: round washed pea pebbles.
 - Source: Submit proposals.
 - Colour: Pink, Red, Grey mix.
 - Size: 20-40mm.
 - Thickness: As drawing.

220A PROPRIETARY RESIN BOUND CHIPPINGS Paving Type 08 AT PLOT E COURTYARD

- Subgrade: installed over concrete slab to Structural Engineer's design, and waterproofing to Architect's design.
 - thickness: to Architect's requirements.
- Protection: Submit proposals.
- Drainage Mat:
 - Manufacturer: Radmat or equal and approved
 - Product reference: D25 or equal and approved
- Geotextile: [Sheet].
 - Manufacturer: [Radmat or equal and approved].
 - Product reference: [G12 or equal and approved].
- Granular sub-base: well compacted 4/20 4/40 graded crushed concrete to paving supplier's requirements.
 - Compacted thickness: to achieve required levels, and as drawing SHR-LDA-BE-GF-DR-L-500-141.
- Base course: SureCell Geocellular modular plastics storage units, 52mm high, infilled with 4-10mm crushed aggregate.
- Surface course:
 - Manufacturer: SureSet UK Ltd; sureset.co.uk.
 - Product reference: Permeable Resin Bound Paving.
 - Slip/ skid resistance: PTV to BS 7976-2 of >40 (water) wet.
 - Binder: SureSet ProResin aliphatic PU.
 - Chippings: Natural Aggregate.
 - Colour: Blue Granite.
 - Aggregate size: 6-10mm.
 - Mix ratio (binder:aggregate): to Manufacturer's proposals.
- Application: Thoroughly mixed and uniformly spread.
 - Spreading rate: to Manufacturer's proposals.
 - Thickness: as detail drawings; 24mm min. for 6mm aggregate, 28mm min. for 10mm aggregate .
 - 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.
 - Movement Joints: To Manufacturer's recommendations
 - Accessories: flush metal edging between different paving types / colours.

- 221B PROPRIETARY RESIN BOUND CHIPPINGS Paving Type 09 AT PLOT E COURTYARD
- Subgrade: installed over concrete slab to Structural Engineer's design, and waterproofing to Architect's design.
 - thickness: to Architect's requirements.
 - Protection: Submit proposals.
 - Drainage Mat:
 - Manufacturer: Radmat or equal and approved
 - Product reference: D25 or equal and approved
 - Geotextile: [Sheet].
 - Manufacturer: [Radmat or equal and approved].
 - Product reference: [G12 or equal and approved].
 - Granular sub-base: well compacted 4/20 4/40 graded crushed concrete to paving supplier's requirements.
 - Compacted thickness: to achieve required levels, and as drawing SHR-LDA-BE-GF-DR-L-500-141.
 - Base course: SureCell Geocellular modular plastics storage units, 52mm high, infilled with 4-10mm crushed aggregate.
 - Surface course:
 - Manufacturer: SureSet UK Ltd; sureset.co.uk.
 - Product reference: Permeable Resin Bound Paving.
 - Slip/ skid resistance: PTV to BS 7976-2 of >40 (water) wet.
 - Binder: SureSet ProResin aliphatic PU.
 - Chippings: Natural Aggregate.
 - Colour: Sterling.
 - Aggregate size: 6-10mm.
 - Mix ratio (binder:aggregate): to Manufacturer's proposals.
 - Application: Thoroughly mixed and uniformly spread.
 - Spreading rate: to Manufacturer's proposals.
 - Thickness: as detail drawings; 24mm min. for 6mm aggregate, 28mm min. for 10mm aggregate .
 - 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.
 - Movement Joints: To Manufacturer's recommendations
 - Accessories: flush metal edging between different paving types / colours.

222 PROPRIETARY RESIN BOUND CHIPPINGS Paving Type 13 AT PLOT E LEVEL 01 TERRACES

- Subgrade: installed over inverted roof insulation and waterproofing to Architect's design.
 - thickness: to Architect's requirements.
- Protection: Submit proposals.
- Drainage Mat:
 - Manufacturer: Radmat or equal and approved
 - Product reference: D25 or equal and approved
- Geotextile: [Sheet].
 - Manufacturer: [Radmat or equal and approved].
 - Product reference: [G12 or equal and approved].
- Granular sub-base: well compacted 4/20 4/40 graded crushed concrete to paving supplier's requirements.
 - Compacted thickness: to achieve required levels, and as drawing SHR-LDA-BE-01-DR-L-500-151.
- Base course: SureCell Geocellular modular plastics storage units, 52mm high, infilled with 4-10mm crushed aggregate.
- Surface course:
 - Manufacturer: SureSet UK Ltd; sureset.co.uk.
 - Product reference: Permeable Resin Bound Paving.
 - Slip/ skid resistance: PTV to BS 7976-2 of >40 (water) wet.
 - Binder: SureSet ProResin aliphatic PU.
 - Chippings: Natural Aggregate.
 - Colour: Safari.
 - Aggregate size: 6-10mm.
 - Mix ratio (binder:aggregate): to Manufacturer's proposals.
- Application: Thoroughly mixed and uniformly spread.
 - Spreading rate: to Manufacturer's proposals.
 - Thickness: as detail drawings; 24mm min. for 6mm aggregate, 28mm min. for 10mm aggregate .
 - 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.
 - Movement Joints: To Manufacturer's recommendations
 - Accesories: flush metal edging between different paving types / colours.

223 PROPRIETARY RESIN BOUND CHIPPINGS Paving Type 14 AT PLOT E LEVEL 01 TERRACES

- Subgrade: installed over inverted roof insulation and waterproofing to Architect's design.
 - thickness: to Architect's requirements.
- Protection: Submit proposals.
- Drainage Mat:
 - Manufacturer: Radmat or equal and approved
 - Product reference: D25 or equal and approved
- Geotextile: [Sheet].
 - Manufacturer: [Radmat or equal and approved].
 - Product reference: [G12 or equal and approved].
- Granular sub-base: well compacted 4/20 4/40 graded crushed concrete to paving supplier's requirements.
 - Compacted thickness: to achieve required levels, and as drawing SHR-LDA-BE-01-DR-L-500-151.
- Base course: SureCell Geocellular modular plastics storage units, 52mm high, infilled with 4-10mm crushed aggregate.
- Surface course:
 - Manufacturer: SureSet UK Ltd; sureset.co.uk.
 - Product reference: Permeable Resin Bound Paving.
 - Slip/ skid resistance: PTV to BS 7976-2 of >40 (water) wet.
 - Binder: SureSet ProResin aliphatic PU.
 - Chippings: Natural Aggregate.
 - Colour: Apollo Red.
 - Aggregate size: 6-10mm.
 - Mix ratio (binder:aggregate): to Manufacturer's proposals.
- Application: Thoroughly mixed and uniformly spread.
 - Spreading rate: to Manufacturer's proposals.
 - Thickness: as detail drawings; 24mm min. for 6mm aggregate, 28mm min. for 10mm aggregate .
 - 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.
 - Movement Joints: To Manufacturer's recommendations
 - Accessories: flush metal edging between different paving types / colours.

270 HARD LANDSCAPING MATERIALS SPECIFICATION

- Minimum 'BRE Green Guide to Specification Online' rating: refer to BREEAM Assessment.

LAYING

315 MATERIALS

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

320 SAMPLES

- Submit: Representative samples of all chippings.

325 BLINDING TO SUB-BASE

- Type: per resin bound paving supplier.
- Laying: Compact. Seal interstices. Provide free drainage.
- Compacted thickness: to resin bound paving supplier's requirements.

340 LAYING GENERALLY

- Channels, gullies, etc: Keep clear.
- Finished surfaces:
 - Lines and levels: To prevent ponding.
 - Overall texture: Even.
 - State at completion: Clean.

350 COLD WEATHER WORKING

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

360A DRAINAGE FALLS

- Sealed surfaces:
 - Falls and cross falls (minimum): 1:40.
 - Camber (minimum): 1:50.
- Unsealed / permeable surfaces (minimum): 1:60.

380 LAYING GRANULAR SURFACES IN PEDESTRIAN AREAS

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

390 PROTECTION FROM TRAFFIC AND PLANT

- Paved areas: Restrict access to prevent damage.

COMPLETION

400 SLIP RESISTANCE TESTING

- Surfaces to be tested: to Contract Administrator's requirements.
 - Surface condition: Dry and wet.
- Timing: As agreed with contract administrator.
- Period of notice (minimum): 3 working days.
- Test standard: To BS 7976.
 - Testing authority: A UKAS accredited laboratory.
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract administrator.
 - Report: Submit.
 - Format: As required under BS 7976.

Q25 Slab/brick/sett/cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

127 PEDESTAL SUPPORTED PAVING SLAB/ FLAG SYSTEM TO PLOT E LEVEL 01 TERRACES.

- Preparation of existing base: Submit proposals.
- Paving support: Pedestals as clause 480 .
- Paving units: Concrete slabs.
- Accessories: Submit proposals.

190 HARD LANDSCAPING MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: Submit proposals.

PRODUCTS

315A CONCRETE FLAGS PAVING TYPE 01 - TO GARRARD STREET

- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshall.co.uk.
 - Product reference: Modal or equal and approved.
- Recycled content: Submit proposals.
- Colour: 50%Charcoal grey Granite, 50% Indian Granite.
 - Finish: Textured.
 - Nominal sizes: 400x200x80mm high.
- Arrises: Chamfered to manufacturer's standard.
- Freeze/ thaw resistance: =1 kg/m²..
- Bending strength class: manufacturer's standard.
- Abrasion resistance: =23 mm.
- Slip/ Skid resistance: PTV >45.
- Breaking load class: manufacturer's standard.

316 CONCRETE FLAGS PAVING TYPE 02 - TO GARRARD STREET

- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshall.co.uk.
 - Product reference: Modal or equal and approved.
- Recycled content: Submit proposals.
- Colour: Light Granite.
 - Finish: Smooth.
 - Nominal sizes: 400x400x80mm high.
- Arrises: Chamfered to manufacturer's standard.
- Freeze/ thaw resistance: =1 kg/m²..
- Bending strength class: manufacturer's standard.
- Abrasion resistance: =23 mm.
- Slip/ Skid resistance: PTV >45.
- Breaking load class: manufacturer's standard.

- 317 CONCRETE FLAGS PAVING TYPE 05 - TO FRIARS WALK
- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshalls.co.uk.
 - Product reference: Modal or equal and approved.
 - Recycled content: Submit proposals.
 - Colour: 33%Silver Grey Granite, 33% Indian Granite, 34% Light Granite.
 - Finish: Textured.
 - Nominal sizes: 400x200x80mm high.
 - Arrises: Chamfered to manufacturer's standard.
 - Freeze/ thaw resistance: $\approx 1 \text{ kg/m}^2$.
 - Bending strength class: manufacturer's standard.
 - Abrasion resistance: $\approx 23 \text{ mm}$.
 - Slip/ Skid resistance: PTV >45 .
 - Breaking load class: manufacturer's standard.
- 318 CONCRETE FLAGS PAVING TYPE 06 - TO FRIARS WALK
- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshalls.co.uk.
 - Product reference: Modal or equal and approved.
 - Recycled content: Submit proposals.
 - Colour: Charcoal Grey Granite.
 - Finish: Smooth.
 - Nominal sizes: 400x400x80mm high.
 - Arrises: Chamfered to manufacturer's standard.
 - Freeze/ thaw resistance: $\approx 1 \text{ kg/m}^2$.
 - Bending strength class: manufacturer's standard.
 - Abrasion resistance: $\approx 23 \text{ mm}$.
 - Slip/ Skid resistance: PTV >45 .
 - Breaking load class: manufacturer's standard.
- 319 CONCRETE FLAGS PAVING TYPE 07 - TO FRIARS WALK
- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshalls.co.uk.
 - Product reference: Modal or equal and approved.
 - Recycled content: Submit proposals.
 - Colour: Light Granite.
 - Finish: Smooth.
 - Nominal sizes: 400x400x80mm high.
 - Arrises: Chamfered to manufacturer's standard.
 - Freeze/ thaw resistance: $\approx 1 \text{ kg/m}^2$.
 - Bending strength class: manufacturer's standard.
 - Abrasion resistance: $\approx 23 \text{ mm}$.
 - Slip/ Skid resistance: PTV >45 .
 - Breaking load class: manufacturer's standard.
- 320 TACTILE FLAGS AND SLABS CORDUROY PAVING TO STAIRS
- Standard: To DD CEN/TS 15209.
 - Material: Precast concrete.
 - Manufacturer: Marshalls or equal and approved.
 - Product reference: Hazard Warning Tactile Standard.
 - Recycled content: Submit proposals.
 - Nominal sizes: 400 x 400 x50mm high.
 - Colour: Dark Grey.
 - Type of surface: Rib – type R1.

- 321 TACTILE BLOCKS BLISTER PAVING TO CROSSINGS
- Standard: To DD CEN/TS 15209.
 - Material: Precast concrete.
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Recycled content: Submit proposals.
 - Nominal sizes: 200 x 100 x80mm high.
 - Colour: Dark Grey at Garrard Street/Merchants Place carriageway crossing and Garrard Street garage entry crossover. Colour at relocated Friar Street crossing (S278 scope) to be agreed with RBC. I.
 - Type of surface: Blister – type B1.
- 322 CONCRETE FLAGS PAVING TYPE 12 - TO PLOT E LEVEL 01 TERRACES
- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshall.co.uk.
 - Product reference: Modal or equal and approved.
 - Recycled content: Submit proposals.
 - Colour: Indian Granite.
 - Finish: Smooth.
 - Nominal sizes: 800x400x50mm high.
 - Arrises: Chamfered to manufacturer's standard.
 - Freeze/ thaw resistance: $\approx 1 \text{ kg/m}^2$.
 - Bending strength class: manufacturer's standard.
 - Abrasion resistance: $\approx 23 \text{ mm}$.
 - Slip/ Skid resistance: PTV >45 .
 - Breaking load class: manufacturer's standard.
- 323 CONCRETE FLAGS PAVING TYPE 10 - BACK OF HOUSE AREAS
- Standard: To BS EN 1339.
 - Manufacturer: Marshalls or equal and approved; marshall.co.uk.
 - Product reference: Urbex or equal and approved.
 - Recycled content: Submit proposals.
 - Colour: Natural.
 - Finish: Riven.
 - Nominal sizes: 450x450x50mm high.
 - Arrises: Square.
 - Freeze/ thaw resistance: Manufacturer's standard..
 - Bending strength class: Manufacturer's standard.
 - Abrasion resistance: Manufacturer's standard.
 - Slip/ Skid resistance: PTV >40 .
 - Breaking load class: Manufacturer's standard.
- 325 BRICKS PAVING TYPE 04 TO FRIAR STREET FOOTWAY
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Recycled content: Submit proposals.
 - Sizes: to match existing footway brick paving.
 - Special shapes: as needed to match existing footway brick paving .
 - Finish: to match existing footway brick paving.
 - Slip/ Skid resistance: PTV >40 .
 - Colour: Red, to match existing footway brick paving.

- 335 CONCRETE SETTS PAVING TYPE 17 TO MERCHANT PLACE FOOTWAY
- Manufacturer: Marshalls or equal and approved.
 - Product reference: Modal.
 - Recycled content: Submit proposals.
 - Colour: 50%Charcoal Grey Granite, 50% Indian Granite.
 - Finish: Textured.
 - Sizes: 200x100x80mm high.
 - Slip/ Skid resistance: PTV to BS 7976-2 of 45.
 - Integral accessories: None.
- 336 CONCRETE SETTS PAVING TYPE 03 TO GARRARD STREET VEHICLE CROSSOVERS
- Manufacturer: Marshalls or equal and approved.
 - Product reference: Modal.
 - Recycled content: Submit proposals.
 - Colour: 50%Charcoal Grey Granite, 50% Mid Grey Granite.
 - Finish: Textured.
 - Sizes: 200x100x80mm high.
 - Slip/ Skid resistance: PTV to BS 7976-2 of 45.
 - Integral accessories: None.
- 365A GEOTEXTILE SHEET - BELOW SAND LAYING COURSE
- to Civil Engineer's requirements
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Recycled content: Submit proposals.
- 390A SAND FOR FLEXIBLE LAYING COURSE AND JOINTING OF CONCRETE FLAG PAVING TO ALL FLAG PAVING EXCEPT WHERE EPOXY MORTARED AT DRAINAGE CHANNELS AND MANHOLE COVER TRAYS.
- Laying course material to Civil Engineer's requirements.
 - Standard: To BS 7533-4, unbound construction laying course and jointing material.
 - Purity: Free from deleterious salts, contaminants, lime and cement.
 - Procurement: Obtain from one source and ensure consistent grading.
- 420A FINE AGGREGATE FOR LAYING COURSE OF CONCRETE SETT PAVING
- Laying course material to Civil engineer's requirements.
 - Material: Laying course sand to BS 7533-4.
- 425 FINE AGGREGATE FOR JOINTING CONCRETE SETT PAVING
- Material: kiln-dried jointing sand.
- 435 PRIMER FOR UNDERSIDE OF FLAGS AND SLABS TO MORTAR SET VEHICULAR PAVING TYPE 03
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- 440A READY MIXED MORTAR TO PAVING TYPE 03
- Laying course to Civil engineer's requirements.
 - Type: to Civil engineer's requirements.
 - Standard/ Performance requirements: In accordance with BS 7533-7 and BS 7533-10.
 - Manufacturer: to Civil engineer's requirements.
 - Product reference: to Civil engineer's requirements.
 - Consistency: to Civil engineer's requirements.

470 SEALER/ STABILIZER SOLUTION FOR BLOCKS AND SETTS

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

480 SUPPORT PEDESTALS To support paving slabs

- Manufacturer: Kinley or equal and approved.
- Product reference: SpiraPave Pedestals for heights <119mm, VersiJack for >119mm.
- Type: Telescopic.
- Material: Recycled polypropylene.
- Dimensions: to achieve finish levels shown on drawings. Provide for installation on top of sloped insulation layer.
- Additional pedestals: Submit proposals.
- Accessories: Spacer tabs, rubber shims, slope correctors, joist system to Contractor's choice.

EXECUTION

610 MATERIAL SAMPLES

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

615 CONTROL SAMPLES

- Sample areas: Complete as part of the finished work.
- Types of paving:
 - Concrete slab paving;
 - Brick paving; and
 - Concrete sett paving.
- Location: to be agreed on site.
- Size (minimum): 3.0 x 3.0 m.
- Included features: Recessed manhole cover infill, channel, edging.
- Approval of appearance and surface: Obtain before proceeding.

620 ADVERSE WEATHER

- General:
 - 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.
 - Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
- 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.

625 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.

630 LEVELS OF PAVING

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

635 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):
 - Precast concrete paving blocks and clay pavers for flexible pavements: 10 mm.
 - Precast concrete flags or natural stone slabs: 3 mm.
- Difference in level between adjacent paving units (maximum): 2 mm.
- Sudden irregularities: Not permitted.

637 REGULARITY OF PAVED SURFACES

- 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.
- Joints between paving units or utility access covers:
 - 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).
 - 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.
 - Unfilled joints: difference in level between adjacent units to be no greater than 2 mm.
- Sudden irregularities: Not permitted.

640 COLOUR BANDING

- General: Unless premixed by manufacturer, select from at least 3 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): 2 days.
 - Vehicular traffic (minimum): 14 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.

660 DRAINAGE HOLES IN EXISTING BASES

- Location: Impervious layers of existing road/ paving.
- Drainage: Form regular grid of holes, through base and any additional build up, down to sub-base:
 - Spacing in both directions: 500 mm.
 - Minimum clear opening: 30 mm.
 - Do not weaken or excessively disturb road/ paving.
- Completion: Remove jagged or protruding edges. Fill voids with 2-8 mm pea gravel Ram down to form flush smooth surface.

665 PLANING AND REPAIRS TO EXISTING BASES

- Existing macadam/ asphalt surfaces: Plane to required levels.
- Repairs: Cut out to remove ruts and cracks over 25 mm wide and Cut out depressions, fill to match existing surface and compact.
- Building up existing surfaces to required levels: to Civil Engineer's requirements.

670 LAYING GRANULAR LAYER OVER EXISTING BASES

- Thickness to Civil Engineer's requirements.
- Compaction: to Civil Engineer's requirements.
- Blinding: to Civil Engineer's requirements.

675 LAYING GEOTEXTILE SHEET EDGING STRIPS

- Location: Immediately below sand laying course, abutting features which interrupt the laying course, including:
 - Perimeters/ Edge restraints/ Kerbs.
 - Other types of paving.
 - Drainage fittings, e.g. channels and manholes.
- Edge detail: Turn sheet up to a height not less than thickness of sand bedding to form an upstand fitted neatly against features.
- Width: 500 mm.
- Jointing: Lap by 500 mm.

680 LAYING GEOTEXTILE SHEET PATCHES OVER DRAINAGE HOLES

- Laying: Lay geotextile patches on the base, centred over each hole.
 - Size of patch: to Civil Engineer's requirements.

685 LAYING GEOTEXTILE SHEET OVERLAYS

- Location: Immediately below sand bedding course.
- Laying: Fit neatly at edge restraints and other features that interrupt sand bedding course, e.g. drainage fittings, channels, manholes and kerbs.
- Edge detail: Turn sheet up to form an upstand against features, height not less than thickness of sand bedding.
- Width: to Civil Engineer's requirements.
- Jointing: Lap by to Civil Engineer's requirements.

710 LAYING FLAG AND SLAB PAVING - SAND LAYING COURSE AND JOINTING

- Standard: In accordance with BS 7533-4.
- Flag installation and cutting: To Interpave 'Concrete flag paving'.
- Laying course:
 - Nominal thickness after compaction: to Civil Engineer's requirements.
- Joint width: 2-5 mm.

735 LAYING CONCRETE SETT PAVING - MORTAR BEDDED

- Laying: Spread and level a bed of mortar. Individually lay and hammer down the setts so that tops are level, leaving joints open.
- Laying course:
 - Nominal thickness after compaction: to Civil Engineer's requirements.
- Jointing: Fill joints and finish neatly. Clean mortar from face of setts before it sets.
- Joint width (nominal): 10 mm.
 - Recess mortar joints below sett surface by: 2 mm.

740 LAYING CONCRETE SETT PAVING - FINE AGGREGATE BEDDING AND JOINTING

- Laying: to Civil Engineer's requirements.
- Jointing: 3mm sand swept joints.

785 TOOLED JOINTS IN MORTAR BEDDED UNITS

- Joints: Completely filled with bedding mortar as work proceeds.
 - Joint width: 10 mm.
 - Finish: Neat flush profile.

805 CLEANING EXISTING BLOCKS AND SETTS

- Area: Footpaths .
- Application:
 - Method: Contractor's choice.
 - Dosage: Contractor's choice.
- Sand jointed paving: Do not displace jointing sand during cleaning process.

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.

COMPLETION

- 915 COMPLETION OF PAVING WITH DRY SAND OR FINE AGGREGATE FILLED JOINTS
- Sand dressing: Leave a thin layer of dry jointing sand over the paving, sweep clean before practical completion.
 - Final compaction of the surface course: In accordance with BS 7533-3.
 - Vacuum cleaning machines: Not allowed.
- 930 SLIP RESISTANCE TESTING
- Surfaces to be tested: as agreed with contract administrator.
 - Surface condition: Dry and wet.
 - Timing: As agreed with contract administrator.
 - Period of notice (minimum): 3 working days.
 - Test standard: To BS 7976.
 - Testing authority: A UKAS accredited laboratory.
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract administrator.
 - Report: Submit.
 - Format: As required under BS 7976.

Q26 Special surfacings/ pavings for sport/ general amenity

To be read with Preliminaries/ General conditions.

IMPACT ABSORBING SURFACINGS FOR PLAY AREAS

301 EXTENT OF IMPACT ABSORBING SURFACING

- General: Lay impact absorbing surfacing as indicated on drawings.

350A SYNTHETIC GRASS SURFACING

- Drawing reference: SHR-LDA-SB-ZZ-DR-L-500-161 and SHR-LDA-SB-ZZ-DR-L-500-261
- Sub-base: inverted roof insulation.
 - Thickness: varies.
- Drainage board: 25mm Radmat DCM25 drainage board or equal and approved, with G12 geotextile filter fleece or equal and approved
- Base: sand blinding layer .
 - Thickness: varies.
- Impact absorbing layer: 20mm shock pad to surface course manufacturer's recommendation.
- Surface course: Synthetic grass surface.
 - Standard: To BS EN 15330-1.
 - Manufacturer: EasiGrass or equal and approved.
 - Product reference: Easi-Chelsea.
 - Pile: 40mm
 - Health and safety:
 - Substance known to be toxic or carcinogenic on skin contact or released as vapour or dust during normal use: Not permitted.
 - Ignitability:
 - Radius of ignition to BS 4790 (maximum): 35 mm.
 - Uniformity:
 - Level difference (maximum): 2 mm.
 - Separation at joints (maximum): 2 mm.
- Submit:
 - Critical fall height: not applicable.

ASSOCIATED ACCESSORIES

410A FLUSH EDGING TO SURFACING TYPE Q26/ 350A

- Material: aluminium edging, Kinley Exceledge or equal and approved.
 - Size: 5mm wide top, depth as required.
 - Fixings: Submit proposals.

EXECUTION

710A SYNTHETIC GRASS INSTALLATION

- Installation: Lay in continuous lengths across the width of the area with no cross joints.
- Joints:
 - Level differences (maximum): 2 mm.
 - Separation at joints and seams (maximum): 2 mm.
- Uniformity: No seams or textural variations.

COMPLETION

920 PLAY SURFACE TESTING

- Standard: To BS EN 1177 and BS 7188, where applicable.
- Testing body: A United Kingdom Accreditation Service (UKAS) independent laboratory.
- Timing: Within ten days of completing the surfacing works.
- Test results: Submit.

930 DOCUMENTATION

- General: For all types of surfacing, provide the following:
 - Name and contact details of installer.
 - Date of installation.
 - Name and contact details of manufacturer.
 - Type/ description/ reference of products used.
 - Manufacturer's recommended inspection and maintenance procedures to maintain safety and impact absorbing performance.
 - Manufacturer's recommended cleaning and maintenance methods, where relevant.

940 LABELLING

- Signs: Provide permanent labelling in approved locations on all types of surfacing stating: Manufacturer's name and contact details and product name.

Q28 Topsoil and growing media

To be read with Preliminaries/ General conditions.

110 GENERAL

This section will need to be read in conjunction with Appendix A which can be found at the end of this document

260 INSPECTING FORMATIONS

- Give notice: Before spreading topsoil for lawn areas and planting beds.
- Notice period: 7 days.

315 PREPARATION OF UNDISTURBED TOPSOIL

- Standard: In accordance with BS 4428.
 - Grading and cultivation: Prepare areas to receive soft landscaping as necessary to ensure that the topsoil is in a suitable state for cultivation operations specified in sections Q30 and/or Q31. .
- Hard ground: Break up with a ripper operated in transverse directions.
- Clearing: Remove visible roots and large stones with a diameter greater than 50 mm.
- Areas covered with turf or thick sward: Plough or dig over to full depth of topsoil.
- Fallow period (minimum): One month.
- Weed control: At appropriate times treat with a suitable translocated nonresidual herbicide.

335 SURPLUS TOPSOIL TO BE REMOVED

- Generally: Remove from site topsoil remaining after completion of all landscaping work.

337 IMPORTED LIGHTWEIGHT GROWING MEDIUM for intensive green roof areas

- Standard: To BS 3882.
- Classification: Lightweight Growing Medium for general planting on Intensive Roof Systems.
- Source:

Bauder Limited,
70 Landseer Road
Ipswich, Suffolk IP3 0DH
England
T: +44 (0)1473 257671
F: +44 (0)1473 230761
E: info@bauder.co.uk or similar approved..
- Product name: Bauder Intensive Substrate or similar approved.
- Technical Data:
 - Mineral component: recycled crushed brick and expanded clay shale
 - Organic component: composted pine bark
- Technical Performance:
 - Water storage ca. 35%Vol
 - Saturated weight ca. 1250kg/m:
 - pH value 6.5 - 7

- 338 IMPORTED TOPSOIL TO BS 3882 to soft landscape areas except turf and fine lawn areas
- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
 - Standard: To BS 3882.
 - Classification: Multipurpose.
 - Source: Contractor's choice.
- IMPORTED TOPSOIL (TO BS 3882)
- Imported topsoil has to fulfil the following:-
- Texture: (to BS 1377 : Part 2)
 - Sand (0.05-2.00 mm) max 75% min 20%
 - Silt (0.002 – 0.05 mm) max 60% min 5%
 - Clay (less than 0.002 mm) max 30% min 5%
 - Soil reaction: (to BS 1377: Part 3) pH5. 5-7.8)
 - Stone content: (dry sieving) less than 35% by dry weight of which the fraction 2-5mm must not exceed 20% by dry weight.
 - Maximum size of stone in any dimension: 50 mm.
 - Electrical conductivity: less than 1500 microsiemens per cm when expressed on a 1:2.5w/v soil: water extract.
 - Organic matter: (to BS 1377: Part 3) not less than 4. %.
 - Nitrogen (N): (Kjeldahal method) not less than 0.2%
 - Other nutrient levels (MAFF handbook RB 427)
 - Available phosphorous (P): not less than 45mg/kg
 - Available potassium (K): not less than 240mg/kg
 - Available magnesium (Mg): not less than 80mg/kg
 - Phytotoxic elements: (ICRCL 59/83 Table 3, Group B)
 - Total Copper (Cu): less than 130mg/kg
 - Total Nickel (Ni): less than 70mg/kg
 - Total Zinc (Zn): less than 300mg/kg
 - Water-soluble Boron (B): less than 3mg/kg
 - Zootoxic elements: (ICRCL 59/83 Table 3, Group A)
 - Total Arsenic (As): less than 40mg/kg
 - Total Cadmium (Cd): less than 15mg/kg
 - Total Chromium (Cr): less than 1000mg/kg
 - Total Lead (Pb): less than 2000mg/kg
 - Total Mercury (Hg): less than 20mg/kg
 - Submit: Declaration of analysis in accordance with BS 3882, Annex E.
 - Additional analyses: Not required .

339 HIGH PERMEABILITY TURF SOIL SPECIFICATION for lawn areas Plot E level 01 terrace and Plot F level 11 terrace

- Quantity: Provide as necessary to complete the work. Refer to drawings SHR-LDA-SB-01-DR-L-320-109, and SHR-LDA-SB-01-DR-L-320-111
- Standard: To BS 3882.
- Classification: [High Permeability Turf Soil].
- Source: [Submit proposals].
- Imported topsoil has to fulfil the following:-
 - Particles above 2.00mm None
 - Particles between 2.00 – 1.00mm Not to exceed 5%
 - Particles between 1.00 – 0.50mm Between 20% to 35%
 - Particles between 0.50 – 0.25mm Between 50% to 65%
 - Particles between 0.25 – 0.15mm Not to exceed 20%
 - Particles less than 0.15mm Not to exceed 10%
- Chemical Parameters:
 - pH: 6.- 8%
 - Electrical Conductivity (Water Extract): < 1500 µS/cm
 - Electrical Conductivity (CaSO₄ Extract): < 2800 µS/cm
 - Phosphorus: >18mg/l
 - Potassium: >120mg/l
 - Magnesium: >27mg/l
 - Organic Matter: 1.5 – 2.5%
 - Permeability: 150-300mm/hr
 - Bulk Density: 1.65 – 1.80g/cm³
 - Total Porosity 35-55%
 - Air-filled Porosity: 15-30%
 - Sulphate (water soluble) g/l <1.2
 - Total Sulphate mg/kg <2000
- Submit: Declaration of analysis in accordance with BS 3882, Annex E.
- Additional analyses: [Not required].

670 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.

680 TOPSOIL STORAGE HEAPS

- Location: to be agreed with Contract Administrator.
- Height (maximum): 2.0 m.
- Width (maximum): 3.0 m.
- Protection:
 - Do not place any other material on top of storage heaps.
 - Do not allow construction plant to pass over storage heaps.
 - Prevent compaction and contamination, by fencing and covering as appropriate.

- 690 HANDLING TOPSOIL
- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
 - Plant: Select and use plant to minimize disturbance, trafficking and compaction.
 - Contamination: Do not mix topsoil with:
 - Subsoil, stone, hardcore, rubbish or material from demolition work.
 - Other grades of topsoil.
 - Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
 - Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2.
- 706 SPREADING TOPSOIL all external soft landscape areas, planters, Intensive and single intensive Green Roof Areas
- Drawing Reference: SHR-LDA-SB-LG-DR-L-320-101 through -111
 - Temporary roads/surfacing: Remove before spreading topsoil.
 - Layers:
 - Depth: as shown on landscape detail drawings.
 - Topsoil to be spread in layers no greater than 150mm
 - Gently firm each layer before spreading the next.
 - Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.
- 715 LOOSE TIPPING OF TOPSOIL
- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.
- 910 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT
- Above adjoining paving or kerbs: 25 mm.
 - Below dpc of adjoining buildings: Not less than 150 mm.
 - Shrub areas: Higher than adjoining grass areas by 25 mm.
 - Within root spread of existing trees: Unchanged.
 - Adjoining soil areas: Marry in.
 - Thickness of turf or mulch: Included.
- 920 DOCUMENTATION
- Timing: Submit at handover.
 - Contents:
 - Full description of all soil components.
 - Record of source for all soil components.
 - Analyst's report for each test carried out.
 - Record drawings showing the location and depth of all soils by type and grade.
 - Supplier's declaration of compliance with BS 3882.
 - Number of copies: For inclusion into health and safety file.

Q30 Seeding/turfing

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

115 SEEDED AND TURFED AREAS

- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS

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

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

148 DRAINAGE TO SEEDING / TURFING AREAS

To project Engineer's details and specification.

150 WATER RESTRICTIONS

- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE

- Give notice before:
 - Setting out.
 - Applying herbicide.
 - Applying fertilizer.
 - Preparing seed bed.
 - Seeding or turfing.
 - Visiting site during maintenance period.
- Period of notice: 1 week.

170 SETTING OUT

- Boundaries: Mark clearly.
- Delineation: In straight lines or smoothly flowing curves as shown on drawings.

PREPARATION

205 PREPARATION 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: 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 such as chemical, biological and physical contaminants.
 - Biosolids from sewage sludge;
 - Composted animal manures;
 - Composted food waste;
 - Composted horticultural waste;
 - Composted sewage sludge;
 - De-inked waste paper sludge;
 - River dredgings;
 - Sanitized and stabilized compost; and
 - Spent mushroom compost.
 - Give notice: before ordering or using.

210 HERBICIDE FOR ALL GRASSED AREAS

- Type: Suitable for suppressing perennial weeds.
- Timing: Allow fallow period before cultivation.
 - Duration: As manufacturer's recommendation.

222 SOIL AMELIORANT/CONDITIONER FOR ALL GRASSED AREAS

- Type: As clause Q28/385B.
- Reference/ Description/ Grading: As clause Q28/385B.
- Samples: As clause Q28/385B.
- Application rate: As clause Q28/385B.
- Timing: Apply prior to cultivation.

226 COMPOST FOR ALL TURF AND FINE LAWN AREAS

- Type: Sanitized and stabilized compost.
- Standard: In accordance with PAS 100.
- Supplier: as clause Q28/356.
 - Product reference: as clause Q28/356.
- Standard: To PAS 100.
- Horticultural parameters:
 - pH (1:5 water extract): 7.0-8.7.
 - Electrical conductivity (maximum, 1:5 water extract): 200 mS/m.
 - Moisture content (m/m of fresh weight): 35-55%.
 - Organic matter content (minimum): 25%.
 - Grading (air dried samples): 99% passing 25 mm screen, and 90% passing 10 mm screen mesh aperture.
 - Carbon:Nitrogen ratio (maximum): 20:1.
- Texture: Friable.
- Objectionable odour: None.
- Composting Association certification: Required.
- Declaration of analysis: Submit
- Samples: Supply 5 kg sample before ordering.
- Application rate: 25 mm thick layer.
- Timing: Apply prior to cultivation.

- 231 PEAT
- Peat or products containing peat: Do not use.
- 260 GRADING
- Topsoil condition: Reasonably dry and workable.
 - Contours: Smooth and flowing, with falls for adequate drainage.
 - Hollows and ridges: Not permitted.
 - Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
 - Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 125 mm .
 - Give notice: If required levels cannot be achieved by movement of existing soil.
- 276 FERTILIZER FOR FINE LAWNS
- Type: Rolawn GroRight® Lawn Food.
 - Manufacturer: Rolawn Limited or similar approved
 Elvington
 York
 YO41 4XR
 Tel: 0845 604 6050
 Fax: 01904 608272 .
 - Product reference: as above .
 - Application: Before final cultivation and three to five days before seeding/ turfing.
 - Rate: Spread evenly at in accordance with manufacturers instruction .
- 280 FINAL CULTIVATION
- Timing: After grading and fertilizing.
 - Seed bed: Reduce to fine, firm tilth with good crumb structure.
 - Depth: 25 mm.
 - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
 - Remove surface stones/earth clods exceeding:
 General areas: 20 mm.
 Fine lawn areas: 10 mm.
 - Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
- 345 PRE-EMERGENT HERBICIDE FOR ALL GRASS AND FINE LAWN AREAS
- Standard: Pesticide Safety Directorate approved.
 - Product: propose product
 - Application rate: In accordance with manufacturer's written recommendation.
 - Timing: Immediately after sowing.
 - Pre-emergent Herbicide only to be applied where soil has not had the opportunity to lay fallow for at least 3 weeks.

TURFING

402 CULTIVATED TURF LAWN AREAS

- Supplier: Rolawn Limited or similar approved
Elvington
York
YO41 4XR
Tel: 0845 604 6050
Fax: 01904 608272 .
- Product reference: Rolawn Medallion® turf to BS3936 OR EQUAL AND APPROVED.
 - Roll dimensions. Turfmaster™ roll 533mm (21) x 24.39m (80') at a thickness of 12.5mm (1/2 inch)
 - Roll size: Standard roll - One square metre.
 - Palletised quantity: 86m²
 - Turf shall be free of netting.
 - Turfmaster™ rolls are harvested with netting wrapped around the soil surface to assist transportation. The netting should be removed during laying.
 - Typical sown see mixture:

"	Evita	Perennial Ryegrass	12.5%	
"	Sauvignon	Perennial Ryegrass	12.5%	
"	Cezanne	Slender Creeping Red Fescue	20%	
"	Leonora	Slender Creeping Red Fescue	15%	
"	Musica	Chewings Fescue		20%
"	Conni	Smooth Stalked Meadow Grass	10%	
"	Limousine	Smooth Stalked Meadow Grass	10%	Grown mixture:

 Independent composition analysis tests conducted by the STRI (Sport Turf Research Institute) .
- Properties of soil used for turf production: Well drained soil as specified in Section Q28 .

420 DELIVERY AND STORAGE

- Timing: Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist.
- Frosty weather or waterlogged ground: Do not lift turf.
- Delivery: Arrange to avoid need for excessive stacking.
- Stacking height (maximum): 1 m.
- Dried out or deteriorated turf: Do not use.

424 DRESSING FOR TURF FOR ALL GRASSED AREAS

- Supplier: Rolawn Limited or similar approved
Elvington
York
YO41 4XR
Tel: 0845 604 6050
Fax: 01904 608272 .
- Product reference: Rolawn Top Dressing .
- Additional analyses: Not required .
- Samples: Not required .
- Application rate: in accordance with manufacturers instruction .
- Timing: Apply immediately following laying of turfs..

430 TURFING GENERALLY

- Time of year: At anytime when the weather is mild and ground conditions moist and workable.
- Timing of laying:
 - Spring and summer: Within 18 hours of delivery.
 - Autumn and winter: Within 24 hours of delivery.
- Weather conditions: Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry.
- Working access: Planks laid on previously laid turf. Do not walk on prepared bed or newly laid turf.
- Jointing: Laid with broken joints, well butted up. Do not stretch turf.
- Edges: Whole turfs, trimmed to a true line.
- Adjusting levels: Remove high spots and fill hollows with fine soil.
- Consolidating: Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers.
- Dressing, brushed well in to completely fill all joints: as per Clause Q30/ 424 .
- Watering: Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below.

440 TURFING ON BANKS EXCEEDING 30° SLOPE

- Turf configuration: Diagonal or horizontal.
- Securing turfs:
 - Fixings: Pointed softwood pegs, 200 mm long x 25 mm square.
 - Frequency of fixings: Every fourth row.
- Removal of fixings: When turf is thoroughly self anchored by its roots. Make good any damage to grass until area is accepted.

450 TRIMMING TURF

- Newly planted tree pits: Neatly cut away around individual trees.
 - Diameter: as shown on detail landscape drawings.
 - Tree pit surface: Cover with specified mulch as per Section Q31.

460 MOWING TURF IMMEDIATELY AFTER LAYING

- Mow turf within as little as 3 days, provided this can be done without disturbing the turf.
- If turf is dislodged, replace it and allow the turf more time to establish before recommencing mowing.
- Never remove more than one third of the grass blade length.
- For the first few cuts remove just the top quarter of the grass blade.
- Over the next few cuts gradually lower the mowing height down to 25mm.
- Alternate the direction in which you mow the lawn.
- Clippings: remove

PROTECTING/CUTTING

530 FIRST CUT OF GRASSED AREAS

- Timing: When grass is reasonably dry.
 - Height of initial growth: 50 mm.
- Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 25 mm.
- Mower type: Cylinder.
- Arisings: Remove from site.

560 GRASS EDGING STRIPS Mild Steel Edging

- Manufacturer: as per Clause Q10/ 210.
 - Product reference: Mild Steel Edging as per Clause Q10/ 210).
- Timing: After grass has become established.
- Installation: In true straight lines or flowing curves.
 - Installation height: Flush.

590 CLEANLINESS

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

MAINTENANCE

605 MAINTENANCE

- Duration: Carry out the following operations from completion of seeding/ turfing until practical completion.

610 FAILURES OF SEEDING/TURFING

- Defective materials or workmanship: Areas that have failed to thrive.
 - Exclusions: Theft or malicious damage.
- Method of making good: Recultivation and reseeded/ returfing.
- Timing of making good: The next suitable planting season.

620 MAINTAINING LAWNS

- Maximum height of growth at any time: 35 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 15 mm.
 - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
 - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
 - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
 - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: as required in order to ensure a healthy and vigorous growth of the grass. Contractor to prevent any edges drying out avoiding shrinkage and exposing large gaps between the turfs..

630 SCARIFYING TO ALL FINE LAWN AREAS

- Timing: in August and prior to applying autumn fertilizer.
- Frequency: Annually
- Machinery: use power scarifier
- Scarify in order to remove thatch and dead moss.

635 AERATING TO ALL FINE LAWN AREAS

- Timing: in August, after lawn has been scarified and prior to applying autumn fertilizer.
- Frequency: Annually
- Machinery: adequate machinery
- Method: strive for an even 3- to 4-inch spacing between holes throughout the lawn. Make two passes in different directions. Make sure that the soil is slightly moist not too wet or too dry. Set the aerator to pull out cores about 3 inches long.

686 MAINTENANCE FERTILIZER FOR ALL GRASSED AREAS EXCEPT WILDFLOWER MEADOWS

- March application:
 - Manufacturer: Rolawn Limited or equal and approved
Elvington
York
YO41 4XR
Tel: 0845 604 6050
Fax: 01904 608272 .
Product reference: Rolawn GroRight® Lawn Food or similar approved .
 - Application rate: in accordance with manufacturers instruction .
- September application:
 - Manufacturer: Rolawn Limited or equal and approved
Elvington
York
YO41 4XR
Tel: 0845 604 6050
Fax: 01904 608272 .
Product reference: Rolawn GroRight® Lawn Food or similar approved .
 - Application rate: in accordance with manufacturers instruction .

690 VANDALISM FOR ALL FINE LAWN AREAS

- The contractor will meet the costs of reinstating any loss or damage resulting from malicious vandalism prior to Practical Completion (PC) being awarded.

700 PRACTICAL COMPLETION FOR ALL FINE LAWN AREAS

- Will be awarded when a healthy, uniform, weed free sward has been established to the satisfaction of the Contract Administrator (CA).

Q31 External planting

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/ REQUIREMENTS

100 SITE CLEARANCE GENERALLY

- Follow recommendations set out in BS4428:1989 Code of Practice for General Landscape Operations, unless stated otherwise within specification.

112 SITE CLEARANCE GENERALLY

- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with any dimension exceeding 25 mm.
- Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Vegetation: Clear scrub to ground level by flail mowing and remove arisings; retain and protect trees indicated on drawings.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Additional requirements: none.

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.

148 DRAINAGE OF EXTERNAL PLANTING AREAS

To project Engineer's details and specification.

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.

155 SLOW RELEASE FERTILISER

- Compound fertiliser: 'Enmag' slow release fertiliser or similar approved.
- Supplier: submit proposals.
- Application: Apply evenly over ornamental planting areas at 70gm/sq.m immediately before cultivation.

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: 1 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: Source, analysis, suitability for purpose and absence of harmful substances.
 - Give notice before ordering or using.

205 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 relevant parts of BS 3936.
- Species: True to name.

Tree supplier

1. Deepdale Nurseries (tel: 01767 262636)
2. Lorenz Von Ehren (tel: 0049 40 761 080)
3. Bruns-Pflanzen Export (tel: 0049 4403 6010)
4. Van Den Berk Nurseries (tel: 0181 788 3924)
5. Wyevale Nurseries (tel: 01432 352255)
6. Hillier Nurseries (tel: 01794 368733)

or equal and approved

Shrub/Hedging supplier

1. Johnsons of Whixley (tel: 01423 330234)
2. Tamar Nurseries (tel: 01945 464 383)
3. Wyevale Nurseries (tel: 01432 352255)
4. Tendercare Nurseries (tel: 01895 835544)

or equal and approved

Origin/ Provenance: Grown in the United Kingdom for at least one growing season, unless otherwise approved .

Definition: Origin and Provenance have the meaning given in the National Plant Specification.

210 PRE-DELIVERY INSPECTION

- The following are to be inspected by Landscape Architect before supplying to site, then clearly identified as being reserved for use on this project:
 - All semi mature trees
 - Typical example of transplants and feathered material
 - Typical example of shrubs and groundcover material.
- The contractor is responsible for monitoring the quality and health of plant material prior to delivery on site.
- Make all necessary arrangements and allow for all reasonable costs incurred by the Landscape Architect (LA) in carrying out inspections and any subsequent inspections where the initial proposed stock is considered to be unacceptable.
- The Landscape Architect (LA) reserves the right to reject plant material at any stage in the collection and delivery process.

220 PLANTS/ TREES - SPECIFICATION CRITERIA

- Name, forms, dimensions and other criteria: To the relevant part of BS 3936.
The following are to be inspected by the Contract Administrator (CA) / Landscape Architect before supplying to site, then clearly identified as being reserved for use on this project:
 - All semi-mature trees.
 - Typical example of standard trees, transplants and feathers.
 - Typical example of shrubs and groundcover material.
 - The contractor is responsible for monitoring the quality and health of plant material prior to delivery.
 - make all necessary arrangements and allow for all reasonable costs incurred by the Contract Administrator (CA) in carrying out inspections and any subsequent inspections where the initial stock has been considered to be unacceptable.
 - The CA reserves the right to reject plant material at any stage during the collection and delivery process.

225 BULBS/ CORMS/ TUBERS

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

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:
 - Date supplied and consignment details or reference;
 - Potting dates;
 - Propagation method and dates; and
 - Pruning dates.

246 LABELLING AND INFORMATION

- Standard: To BS 3936.

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.

270 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.
- Carefully lift, stack and protect plant material in such a way that breakage or damage by weight of plants above does not occur during loading, transit and unloading. Where open lorries are used to transport plants, each consignment must be completely and firmly covered with opaque sheeting to minimise draughts.
- Carefully prune any roots, branches or shoots, which are slightly damaged. If major damage occurs or if plants are found to be inadequately packaged, they will be rejected and replaced at no additional cost.

272 TEMPORARY STORAGE ON SITE

- After delivery, if planting cannot be carried out immediately, plants may be stored in their packaging, under cover and away from direct sunlight for a maximum of seven days where daytime air temperatures remain below 10°C.
- For longer periods, or if daytime temperatures are above 10°C, store plants in the following manner at no additional cost:
- Bare root plants will be heeled in by placing roots in a prepared trench and covering them with topsoil or suitable moisture retentive medium approved by the Contract Administrator (CA).
- Plants root wrapped in porous/non porous materials will be unwrapped and similarly heeled in.
- All plant bundles will be opened and plants loosely distributed within the medium to prevent mould and/or disease/ rotting.
- Rootballed plants will be stood upright with the ball immersed in topsoil or suitable moisture retentive medium e.g. straw.
Container grown plants will be stood closely together, upright, on well-drained weed free ground.
- Adequately support trees and other large stock to prevent from blowing over. Water plants as necessary to prevent from drying out.
- Protect plants from theft, damage and adverse weather conditions whilst so stored and make good any losses arising at no additional cost.

274 REMOVAL FROM TEMPORARY STORAGE

- Thoroughly water all plants prior to lifting/removing from containers. Roots of bare-rooted stock must be well moistened before removal from the heeling in medium.
- Do not expose unduly to the atmosphere roots of bare-rooted stock. During planting operations exposure should be for the minimum practical period. If at any time the surface of roots become dry, water immediately.
- Where specified, thoroughly soak roots of bare-rooted stock in a container of root dip/water solution immediately prior to planting.
- Contract Administrator (CA) reserves the right to reject any plants not adequately protected in the above manner described.

275 PERMANENT IDENTIFICATION OF PLANTS

- Location: All plants.
- Labels: Black plastics 75 mm x 100 mm with white weatherproof lettering attached to tree trunks at 1.5 m from ground level.
- Wording: Genus, species, variety, common name and month/ year date planted.

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.

292A PREFABRICATED PLANT CONTAINERS MOVABLE PLANTERS TO FRIAR STREET (S278 AREA)

- Drawing reference: SHR-LDA-SB-GF-DR-L-110-102 and SHR-LDA-SB-GF-DR-L-500-321
- Manufacturer: Streetlife or equal and approved
 - Web: www.streetlife.nl/en.
 - Product reference: ShrubTub or equal and approved.
- Size: 2000mm x 2000mm square x 1200mm high
- Finish: polyesterpowdercoated, RAL colour tbd to complement architectural metal finishes.
- Accessories: polystyrene insulation layer as drawing SHR-LDA-SB-GF-DR-L-500-321, drainage and water retention mat to clause Q37 341A with filter membrane to Q37 360, irrigation and aeration pipe to Q31; provide eyelets or holes in internal frame to secure tree guying system to Q31 513A

293A PREFABRICATED PLANT CONTAINERS MOVABLE PLANTERS TO GARRARD STREET AND GROUND LEVEL PLOT F

- Drawing reference: SHR-LDA-SB-LG-DR-L-110-101, SHR-LDA-SB-GF-DR-L-110-102 and SHR-LDA-SB-LG-DR-L-500-311
- Manufacturer: Streetlife or equal and approved
 - Web: www.streetlife.nl/en.
 - Product reference: ToneTub or equal and approved.
- Size: 1300mm x 1300mm square x 1200mm high
- Finish: polyesterpowdercoated aluminium, RAL colour tbd to complement architectural metal finishes.
- Accessories: drainage and water retention mat to clause Q37 341A with filter membrane to Q37 360, irrigation and aeration pipe to Q31; provide eyelets or holes in internal frame to secure tree guying system to Q31 513A

- 294A PREFABRICATED PLANT CONTAINERS MOVABLE PLANTERS WITH SEAT TO FRIARS WALK GROUND LEVEL
- Drawing reference: SHR-LDA-SB-GF-DR-L-110-102 and SHR-LDA-SB-GF-DR-L-500-331
 - Manufacturer: Streetlife or equal and approved
 - Web: www.streetlife.nl/en.
 - Product reference: Green Circular Bench or equal and approved.
 - Size: 2300mm diameter x 850mm high
 - Finish: polyester powdercoated aluminium, RAL colour tbd to complement architectural metal finishes, with FSC certified hardwood timber slats.
 - Accessories: drainage and water retention mat to clause Q37 341A with filter membrane to Q37 360, irrigation and aeration pipe to Q31; provide eyelets or holes in internal frame to secure tree guying system to Q31 513A
- 295 PREFABRICATED PLANT CONTAINERS MOVABLE PLANTERS TO PLOT E GROUND FLOOR COURTYARD AND LEVEL 06 TERRACE
- Drawing reference: SHR-LDA-SB-GF-DR-L-110-102, SHR-LDA-SB-06-DR-L-110-104
 - Manufacturer: Broxap or equal and approved
 - Web: www.broxap.com.
 - Product reference: BX60 Drum planter.
 - Size: 500mm diameter x 450mm high
 - Finish: fibreglass, RAL colour tbd to complement architectural metal finishes.
 - Accessories: drainage and water retention mat to clause Q37 341A with filter membrane to Q37 360; provide drainage holes

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

- 300 HERBICIDE TO CLEAR OVERGROWN BEDS
- Locations: All planting areas.
 - Type: Suitable for suppressing perennial weeds.
 - Timing: Allow fallow period before cultivation.
 - Duration (minimum): As manufacturer's recommendation.
- 305 WEED CONTROL Japanese Knotweed
- Locations: All planting areas.
 - General: Prevent weeds from seeding and perennial weeds from becoming established, in accordance with the Environment Agency 'Managing Japanese knotweed on development sites. The knotweed code of practice'.
- 306 WEED CONTROL FOR INVASIVE NON-NATIVE WEEDS OTHER THAN JAPANESE KNOTWEED
- Locations: All planting areas.
 - General: Prevent weeds from seeding and perennial weeds from becoming established, submit proposals'.
- 336 GENERAL FERTILIZER - SLOW RELEASE
- Locations: All planting areas.
 - Manufacturer: Vitagrow, PO Box 161, Southport, Lancashire, PR9 8GH, UK. Or similar approved
Tel: 01704 507777. Fax: 01704 507222 .
 - Product reference: 4-19-10 + 8%Mg + Trace Elements.
 - Application: Spread evenly. In granular form to give even distribution. Its nutrients are released over an extended period to aid the establishment of newly planted trees and shrubs, and for healthy root development.
 - Timing: Immediately before cultivation.
 - Rate: 70-140g per sq m (2-4 oz per sq yd).

341 PEAT

- Peat or products containing peat: Do not use.

375 CULTIVATION

- Compacted topsoil: Break up to full depth.
- Cultivation: Loosen, aerate and break up soil into particles of 2-8 mm.
 - Depth:
 - 150mm for amenity grass and wildflower areas
 - 300mm for groundcover and herbaceous planting areas
 - 450mm for small tree and shrub planting areas .
 - Timing: Within a few days before planting.
 - Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 25 mm above adjoining paving or kerbs .
- 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

400A RANDOM PLANT LAYOUT TO ALL HERBACEOUS PLANTING BEDS

- Spacing: Random groups of 3-11 plants of the same species..
- Density: As plant schedule.
- Setting Out: Set out each planting area for the Landscape Architect's inspection.
- Notice: 7 days.

402 PLANT LAYOUT Shrubs and Trees

- Spacing: as shown on soft landscape drawings.
- Density: as shown on soft landscape drawings. .

405 SHRUB PLANTING PITS

- Timing: Excavate 1 days (maximum) before planting.
- Sizes: 1.5 times deeper, wider and longer than roots, except where restricted by roof build-ups.
- Pit bottom improvement scarify.
- Backfilling material: as per Clause Q31/ 476.

415 ANTIDESICCANT FOR CONIFERS/ EVERGREENS

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Application: Dip before delivering to site. Spray soon after planting.
 - Do not apply in wet or frosty weather.
 - Ensure full coverage of underside of foliage.

418 MYCORRHIZAL INOCULANT

- Manufacturer: Biotechnica Services Ltd. Or similar approved
 4 Kings Road
 Reading England
 RG1 3AA
 Telephone + 44(0) 1189 515601
 Fax + 44 (0) 1189 589580
 e-mail info@biotechnica.co.uk .
 - Product reference: Mycortex .
- Application: Apply to roots of bare root plants before planting and backfilling in according to manufacturers specification.

420B CLIMBING PLANTS WIRE SYSTEM

- Planting: 150 mm clear of supporting structure (e.g. wall/ fence) with roots spread outward.
 - Branches: Lightly secured to supports.
- Climber supports: Tensile stainless steel wire system.
 - Manufacturer: TecniCable; www.tecni-cable.co.uk
 - Product reference: Tecni Pro Trellis
 - Size: 4mm cable
 - Base height: 300 mm above ground.
 - Extent: 450mm below bottom of slab of plot E groundfloor level.
 - Centres: 450 mm horizontal and 900mm vertical
 - Distance from wall: 100 mm.
- Fixings: Stainless steel screw eyes.
 - Centres: at each crossing and ends of wire.

435 CLIMBING PLANTS USED AS GROUND COVER

- Planting:
 - Canes or other supports: Remove.
 - Arrangement: Spread stems.
- Fixing: Pinned to ground to ensure good contact.

445 PLANTING BULBS/ CORMS/ TUBERS

- Depth: Top of bulb/ corm/ tuber at a depth of approximately twice its height, base in contact with bottom of hole.
- Backfilling: Finely broken soil. Lightly firm to existing ground level.
- Naturalized planting in existing grassed areas:
 - Scattering: Random. Plant bulbs/ corms/ tubers where they fall.
 - Planting: Neatly remove a plug of turf and replace after planting.

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

- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required:
- Ameliorant/ Conditioner: As clause Q28/356.
 - Application rate: As clause Q28/356.
- Fertilizer: As clause Q31/336.
 - Application rate: Apply evenly over all planting areas at 70g/sq. immediately before cultivation
 - This clause does not apply to any specimen, hedgerow and standard trees .

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: Sanitized and stabilized compost as per Clause Q28/ 356.
 - Depth: To bring levels up to surrounding levels.

485A MULCHING PLANTING BEDS

- Supplier: CPA Horticulture or equal and approved
- Material: Deluxe Pine Nuggets, 30-60mm size.
 - Purity: Free of pests, disease, fungus and weeds, 1% max. white wood
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 50 - 70 mm depth after settlement, refer to detail drawings.
- Finished level of mulch: 30mm below adjacent grassed or paved areas.

PLANTING TREES**500 ANTIDESICCANT FOR CONIFERS/ EVERGREENS**

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Application: Dip in or thoroughly spray before delivering to site. Spray again soon after planting.
 - Do not apply in wet or frosty weather.
 - Ensure full coverage of underside of foliage.

502 TREE PLANTING GENERALLY

- Trees to be planted upright. Collar not to be more than 70mm below surface.

506 TREE PITS IN HARD LANDSCAPE AREAS

- Sizes: As shown on detail landscape 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 250 mm unless stated otherwise on detail landscape drawings.
 - Treatment: Incorporate 25g of slow release fertiliser worked into the bottom of the tree pit as per clause Q31/155 .
- Pit sides: Scarify.
- Backfilling material: Topsoil and Subsoil to Q28.
- Accessories:
 - Tree grille as Q31/512B
 - Irrigation/ ventilation pipe as Q31/512C
 - Root barrier; as clause Q31/511
 - Tree pit drainage layer as Q31/ 517
 - Underground guying as Q31/ 513
 - Tree opening Infill as Q31/ 514
 - Rootcell system as Q31/518.

507 TREE PITS IN SOFT LANDSCAPE AREAS

Sizes: As shown on detail landscape 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 250 mm unless stated otherwise on detail landscape drawings. Pit bottom does not need to be broken up in situations where trees are planted immediately on top of a concrete slab (as part of an intensive green roof structure).
 - Treatment: Incorporate 25g of slow release fertiliser worked into the bottom of the tree pit as per clause Q31/155.
- Pit sides: Scarify.
- Backfilling material: topsoil and subsoil layers to Q28.
 - Tree backfilling material and method as per Clause Q28/337 for trees planted on top of structural concrete slab (intensive green roof system) and Clause Q28/338 for trees planted in open ground..
- Accessories:
 - Perforated plastics irrigation/ ventilation pipe; in accordance with clause Q31/512C
 - Root barrier; as clause Q31/511
 - Tree pit drainage layer as per Clause Q31/ 517
 - Underground guying as per Clause Q31/ 513.

511 TREE PIT ROOT BARRIERS REROOT ROOT BARRIERS

- Manufacturer:
 - GreenBlueUrban or equal and approved
 - Product reference: ReRoot 1000 or equal and approved.
- Roll depth: 1000 mm .
- Installation:
 - The top edge of the root barrier should finish 10 mm above any growing media (but below mulch layer), with the ribs facing the tree.
 - Roll ends are joined by interlocking two ribs and tape both sides with Greenleaf root barrier jointing tape.
- Tree pit root barrier to be installed with sides vertically.
- Tree pit root barrier only to be installed on side of tree pit, adjacent to any structures, services and utilities.

512B TREE PIT ACCESSORIES TREE GRILLE

- Locations: Friars Walk tree pit; refer to drawings SHR-LDA-SB-GF-DR-L-110-102 and SHR-LDA-SB-GF-DR-L-500-331.
- Manufacturer: GreenBlueUrban or equal and approved.
 - Product reference: Castle Tree grille or equal and approved.
- Size: 1500mm x 1500mm.

513A TREE PIT ACCESSORIES UNDERGROUND GUYING SYSTEM FOR ROOT BALL TREES AND LARGE SHRUBS

- Manufacturer:
 - GreenBlueUrban or equal and approved
 - www.greenblueurban.com
 - Product reference: ArborGuy
- Anchorage: GreenBlueUrban AnchorPlate. Where in movable planters, secure to internal planter frame instead..
- Guying: to Manufacturer's standard..
- Installation: in accordance with manufacturers recommendation.

514 TREE PIT ACCESSORIES TREE OPENING INFILL

- Manufacturer: submit proposals
 - Product: submit proposals
- Aggregate: 6-10mm silver-grey granite chippings
 - Material: Granite.
 - Depth: 100 mm.
- Accessories: Galvanised steel frame (Castle tree grille); air-pot ring to be installed 50mm offset from tree collar to allow future tree growth.
- Surface preparation and application:
 - Geotextile membrane (Terram 1000 or equal and approved) to be placed at the bottom of the area to be surfaced.
 - final surface to be smooth and flush to adjacent tree grille and air-pot ring.

517 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: 150 mm.
- Drainage pipes:
 - Type: Perforated plastics.
 - Diameter: 60 mm.
 - Position: Lay around perimeter of pit within aggregate layer.
 - Discharge: To engineers surface water drainage system.
- Geotextile filter:
 - Manufacturer: Terram. Or equal and approved
 - Product reference: TERRAM 1000.
 - Position: Lay in bottom of tree pit and over aggregate and perforated drainage pipe before installing tree or backfilling.
- Completed pits: Test for free drainage before planting.

518 MODULAR SUSPENDED PAVEMENT SYSTEM: for trees within hard landscape

- Drawing Reference: SHR-LDA-SB-LG-DR-L-110-101, SHR-LDA-SB-GF-DR-L-110-102, SHR-LDA-SB-LG-DR-L-500-312, and SHR-LDA-SB-GF-DR-L-500-331
Manufacturer: GreenBlueUrban or equal and approved
 - Product reference: RootSpace 400 or equal and approved
- Material: recycled HDPE
- Size: two layers of 500mm x 500mm x 400mm high units with 75mm RootSpace Airflow Lid
- Installation: in accordance with manufacturers recommendation.

519 TREE PIT ACCESSORIES IRRIGATION AND AERATION SYSTEM

- Manufacturer: GreenBlueUrban or equal and approved
 - Product reference: RootRain ArborVent
- Inlet in paving:
 - Type: Heavy cast LM6 grade aluminium inlet with anodized aluminium lid
 - Product reference: RootRain
 - Shape/ Size: 110mm square
- Inlet in soft landscape:
 - Type: fixed grid inlet with vandal resistant aluminium cap on retainer chain
 - Product reference: RootRain Civic
- Reducer: 80/60 mm HDPE with integral strengthening fins.
- Vertical pipe: 60 mm diameter PE perforated pipe.
- Tee section: heavy duty HDPE with non-return locking lugs to secure pipework.
- Pipe dimensions: 60 mm.
- Pipe diameters: 895-2400 mm. Contractor to use appropriate length depending on root ball size. A second pipe (2400mm length) and double inlets are required for trees in paved areas.
- Pipe to be installed in accordance with manufacturers recommendation.

586 TREE BACKFILLING MATERIAL

- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required.
- Ameliorant/ Conditioner: Not required.
 - Application rate: To manufacturer's/ supplier's recommendations.
- Fertilizer: Slow release.
 - Application rate: To manufacturer's/ supplier's recommendations.

590 MULCHING TREES

- Material: Ornamental bark mulch to Q31 485.
 - Purity: Free of pests, disease, fungus and weeds.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 50 mm depth.
- Finished level of mulch: 30 mm below adjacent grassed or paved areas.

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 rectification 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.

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. Any weed that manage to push through the mulch layer shall need to be removed by hand..
- 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: in accordance with agreed maintenance schedule.
- 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: ensure that sufficient water is applied at regular intervals in order to maintain healthy growth of the plants.

756 PLANTING MAINTENANCE - FERTILIZER

- Time of year: March or April.
- Fertilizer: in accordance with clause Q31/155.

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 defects liability period.

795 FINAL MULCHING

- Timing: twice a year.
- Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
- Planting beds: Remulch.
 - Depth (minimum): 50 mm post settlement.
- Trees: Remulch.
 - Depth (minimum): 50 mm post settlement.

Q35 Landscape maintenance

To be read with Preliminaries/ General conditions.

GENERALLY

100 MAINTENANCE GENERAL

- Duration: Carry out the operations in the following clauses from the time when practical completion for planting has been given throughout the defects liability period.
- Frequency of maintenance visits: The Contractor shall programme regular visits so as to carry out required maintenance operations and ensure that the site is kept clean in a tidy and weed free condition at all times. He shall allow for at least 24 visits during the growing season and 10 visits outside the growing season for all shrub and tree areas and at least 30 visits to cut the grass areas each year.
- The Contractor shall advise the PM in writing at least 48 hours prior to carrying out any maintenance visits.
- The Contractor shall keep full records of all maintenance visits indicating the date and time of all visits, the operations carried out, any machinery used for the operation, the number of staff employed during the visit and weather records at the time of the visit.
- The Contractor shall submit written details AT THE TIME OF TENDERING of the methods and frequency of maintenance and types of herbicides that they propose to use during the maintenance period.
- The Contractor shall immediately, upon discovery, report any note of vandalism or theft or suspicion of either to the PM.
- Upon completion of every visit the Contractor shall present a report slip for signature to the PM. Upon signature the report slips shall be forwarded to the PM. No claim for payment shall be met if the visit has not been so recorded.

102 MAINTENANCE VEHICLES / MACHINERY

- The Contractor is responsible for ensuring any maintenance vehicles and/or machinery do not interfere with or obstruct the client's day to day operations or cause any nuisance to the PM.
- Where vehicles are to be parked and/or moved about the client's land for maintenance purposes the PM shall be informed of the presence of those vehicles as necessary.

103 PESTS AND DISEASES

- The Contractor shall inspect monthly all planted areas, including trees, for any signs of pest or disease infection and shall report any such discovery to the PM.
- Upon discovery of such pest or disease the Contractor shall apply a suitable approved pesticide or other remedy in accordance with good horticultural practice.

104 FAILURE TO MAINTAIN

- In the event of the Contractor failing to maintain the work to the standard specified, the right is reserved to delete the remaining maintenance work from the contract and instruct another to complete the work without thereby vitiating the plant replacement guarantee embodied in this specification contract.

106 MAINTENANCE OBJECTIVES

- Location: Soft and hard landscape areas within site boundary.
 - Duration: 1 year from Practical Completion of the respective area..
- Aims:
 - Enhanced landscape quality;
 - Improved landscape visual amenity; and
 - Opportunities for recreation.

108 GENERAL PROCEDURES

- When employees are inspecting the Landscape Areas it should be noted that the general presentation of the site falls under their care. These inspections shall include but not be limited to the following:
 - Collection of all litter in whatever location;
 - Removal of all surface debris of whatsoever nature;-
 - Noting and reporting of any visible irrigation problems whether damage, too wet or dry.
 - Noting and subsequent reporting of disease or pest incidence-
 - Noting and subsequent reporting of any damage;-
 - Checking of signs and ensuring they are vertical and in the right position;
 - Checking conditions of all ancillary equipment i.e. Signs, Posts, Handrails & Guardrails; Fences;
 - Notice Boards; Pathways & edgings; Drainage Swales, Grilles & Gulleys.
 - Any other problem not listed;

110 NOTICE

- Give notice before:
 - Application of herbicide.
 - Application of fertilizer.
 - Watering.
 - Each site maintenance visit.
- Period of notice: 7 days.

120 BIRD NESTING SEASON

- The bird nesting season is from 1st February to 31st August
- No works will be undertaken on vegetation without first checking for nests/nest building during this season.
- prior approval of the Project Ecologist to be obtained no less than 7 days before any operation on areas that may contain nests/nest building during this season.

130 REINSTATEMENT

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

140 CONTROL OF MAMMALIAN PESTS

- Specialist firms: Submit proposals.
 - Method: Submit proposals.

155 WATERING

- Supply: it is likely that no site supply available, submit proposals.
- Quantity: Wet full depth of topsoil .
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As necessary for the continued thriving of all planting.

- 156 WATERING
- Supply: to be confirmed by the Employer.
 - Quantity: Wet to field capacity.
 - Application: Do not damage or loosen plants.
 - Compacted soil: Loosen or scoop out, to direct water to rootzone.
 - Frequency: As necessary for the continued thriving of all planting.
- 160 WATER RESTRICTIONS
- 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.
- 172 DISPOSAL OF ARISING
- General: Unless specified otherwise, dispose of arisings as follows:
 - Biodegradable arisings: Remove to recycling facility.
 - Grass cuttings: Remove to recycling facility.
 - Tree roots and stumps: Remove from site.
 - Shrub and tree prunings: Remove to recycling facility.
 - Litter and nonbiodegradable arisings: Remove from site.
 - All other arisings: Remove from site
- 180 CHIPPING OR SHREDDING
- General: Not permitted on site.
- 181 MECHANICAL EQUIPMENT
- General: Minimize.
 - Prohibited equipment: Litter vacuums.
 - Timing: Use of mechanical equipment allowed between the hours of 09:00 am and 5:30 pm only unless not otherwise stated by local authority.
- 190 LITTER
- Extraneous rubbish not arising from the contract work: Collect and remove from site.
- 195 PROTECTION OF EXISTING GRASS
- General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.
- 197 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
 - General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.
- 198 DEFECTS PERIODE
- Maintain trees and planted areas in good condition up to end of the Defects Liability Period which will operate for the following period(s) from the date of acceptance of Practical Completion:-

- Semi-mature and Mature Trees:	36 months
- Extra-Heavy Trees and Feathered Trees	36 months
- Shrubs/ Specimen Shrubs:	12 months
- Herbaceous and Groundcover plants	12 months
- Amenity Grass Areas	12 months
 - Throughout the Defects Liability Period make regular visits in order to maintain trees and planted areas in accordance with this specification.
 - Carry out provisional/ additional works within 14 days of receiving written instructions from the Contract Administrator (CA).

GRASSED AREAS

210 MAINTENANCE OF GRASSED AREAS

- General: Maintain turf in a manner appropriate to the intended use.
- Soil and grass:
 - Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
 - Waterlogging and compaction: Prevent.
 - Damage: Repair trampling, abrasion or scalping.
- Ornamental lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
 - Edges: Neat and well defined, in clean straight lines or smooth flowing curves.
- Litter and fallen leaves: Remove regularly to maintain a neat appearance.

211 MAINTENANCE OF GRASSED AREAS

- Standard: To BS 7370-3. Carry out maintenance appropriate to each category of turf, as follows:
 - Objectives: To BS 7370-3, table 6.
 - Programme: To BS 7370-3, clause 11.
 - Mowing methods: To BS 7370-3, table 3.

220 GRASS CUTTING GENERALLY

- Before mowing: Remove litter, rubbish and debris.
- Finish: Neat and even, without surface rutting, compaction or damage to grass.
- Edges: Leave neat and well defined. Neatly trim around obstructions.
- Adjoining hard areas: Sweep clear and remove arisings.
- Drought or wet conditions: Obtain instructions.

225 TREE STEMS

- Precautions: Do not use mowing machinery closer than 100 mm to tree stems. Use nylon filament rotary cutters and other hand held mechanical tools carefully to avoid damage to bark.

235 BULBS AND CORMS IN GRASSED AREAS

- Before flowering: Do not cut.
- Interval between end of flowering and start of grass cutting (minimum): Six weeks.

250 LEAF REMOVAL

- Operations: Collect fallen leaves.
- Special requirements: None.
- Disposal: Remove from site for recycling.

255 FIRST CUT OF Lawn

- Height of initial growth: 75 mm.
- Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: Gradually reduce the mowing height of the grass after establishment over three cuts until the specified mowing height of 25mm is achieved. .
- Mower type: Cylinder.
- Arisings: Remove.

260 MOWING LAWNS

- Grass height: Maintain between 25 and 50 mm.
- Arisings: Remove.

285 TOP DRESSING

- Location: All lawns.
- Timing: Following scarification and aeration.
- Material: Sandy loam.
- Supplier:
Rolawn Limited or similar approved
Elvington
York
YO41 4XR
Tel: 0845 604 6050
Fax: 01904 608272.
 - Product reference: Rolawn Top Dressing.
- Declaration of analysis: Submit.
- Additional analyses: Not required.
- Samples: Supply 5 kg sample before ordering.
- Application rate: 1-2 mm depth.

290 ROLLING

- Location: All lawns.
- Timing: After all risk of frost heave.
- Roller: Contractor's choice.
- Operations: Consolidate turf and reduce frost heave.

295 SPIKING

- Location: All lawns.
- Timing: As necessary to relieve compaction.
- Operations: Aerate the soil and improve surface water penetration.
- Depth (minimum): 75 mm into soil.

300 SCARIFYING

- Location: All lawns.
- Timing: Contractor's choice.
- Operations: Relieve thatch conditions and remove dead grass.
- Depth (maximum): Contractor's choice.
- Arisings: Remove.

309 EDGES TO SEEDED AREAS

- Location: Planting beds and around newly planted trees.
- Timing: After seeded areas are well established.
- Edges: Cut to clean straight lines or smooth curves. Draw back soil to permit edging.
- Arisings: Remove.

310 RE-FORMING GRASS EDGES

- Location: All edges.
- Edges: Draw back soil and re-form edges to clean straight lines or smooth flowing curves, sloping slightly back from vertical.

320 LEVELLING HOLLOWES AND BUMPS IN TURF

- Standard: To BS 7370-3, clauses 12.4 and 12.5.

330 SELECTIVE HERBICIDE

- Location: All lawns.
- Herbicide: Suitable for suppressing perennial weeds.
- Areas not to be sprayed: Bulb and corm planted areas when in leaf.

345 CONTROL OF JAPANESE KNOTWEED

- Operations: Spot treat in June and September during suitable weather conditions and when plants are growing vigorously.
- Herbicide: In accordance with the Environment Agency 'Code of Practice for the management, destruction and disposal of Japanese knotweed'.
- Application: In accordance with the Environment Agency 'Code of Practice for the management, destruction and disposal of Japanese knotweed'.
- Arisings: Remove.

355 FERTILIZER - SPRING APPLICATION

- as clause Q30/ 276.

381 REINSTATEMENT OF WORN OR DAMAGED LAWNS

- Worn or damaged areas: Make good by returfing or reseeding:
 - Returfing standard: To BS 7370-3, Clause 12.2.
 - Reseeding standard: To BS 7370-3, Clause 12.6.
- Turf or seed: To match existing in appearance and quality.
- Protection and watering: Provide as necessary to promote successful germination and/ or establishment.

495 THINNING AND CUTTING BACK OF HERBACEOUS AND GRASSES

- Plants to be thinned: contractor to submit proposals based on good practice.
- Standard: BS 7370-4, clause 3.5.17.1.
- Timing: Thin when foliage of adjacent plants has begun to touch. See also Maintenance & Management Matrix - Document No. 3437_DOC_906
- Roots:
 - Disturbance to adjacent plants: Minimise.
 - Soil: Refill holes with topsoil to leave an even graded surface.
 - Mulch: Maintain mulch as original specification.
- Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.

SHRUBS/TREES/HEDGES

501 ESTABLISHMENT OF NEW PLANTING

- Weed control:
 - Method: Keep planting beds clear of weeds by hand weeding or through and/ or suitable herbicides.
 - 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.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Trees: When in leaf, spray crowns during warm weather.
 - Timing: After dusk.
- Watering: to ensure a healthy grows.

502 ESTABLISHMENT OF NEW PLANTING - FERTILIZER

- Time of year: March or April.
- Type: as per Clause Q31/ 336 .
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
 - Application rate: As manufacturer's recommendations.

515 TREE GUY WIRES

- Inspection/ Maintenance times: Immediately after strong winds.
- Operations:
 - Replace or resecure loose or missing guy wires.
 - Adjust to suit stem growth and to provide correct and uniform tension.
- Removal: During spring when no longer required to support the tree.

520 REFIRMING OF TREES AND SHRUBS

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

535 TREE GRILLES

- Operations: Lift grilles, remove weeds, adjust levels as necessary and lightly compact. Refit grilles, refill interstices and lightly compact to correct level.
- - Material for making up levels and refilling: as original specification.

540 PRUNING GENERALLY

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

545 PRUNING OF EXCESSIVE OVERHANG

- Timing: As instructed.
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
- Special requirements: do not allow ground cover plants to overlap paths and lawns by more than 60mm.

547 SEPARATION OF PLANTS

Groups of plants, particularly shrubs and groundcover, to be cut back and thinned out at the edge of each group to avoid interlocking.

550 PRUNING OF EXCESSIVE HEIGHT

- Timing: As instructed.
- Operations: Remove excessive height As instructed.

555 PRUNING TREES AND SHRUBS

- Standard: To BS 7370-4.
- Special requirements: None.

570 FORMATIVE PRUNING OF YOUNG TREES

- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:
 - 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.
 - Remove duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Approved specialist contractor.

575 PRUNING ORNAMENTAL SHRUBS

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

580 PRUNING FLOWERING SPECIES OF SHRUBS AND ROSES

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

590 PRUNING PARTICULAR SPECIES

- Species to be pruned to separate specific instructions: Specimen trees around circular road to be maintained to a clear stem height of 3m.

602 TRIMMING RAPIDLY ESTABLISHING HEDGES

- General: Allow to reach planned height as rapidly as possible.
- Hedge Height: 1500mm unless stated otherwise on landscape detail drawings.
 - Form: Trim back lateral branches moderately.
- Timing: as instructed

605 TRIMMING SLOWLY ESTABLISHING HEDGES

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

620 REMOVAL OF DEAD PLANT MATERIAL

- 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

- Pruning: Remove excess growth, to ensure that signs, light fittings, doors and windows are kept clear at all times.
- Insecure growth: Attach to supporting wires or structures using Plastics clips.
- Supporting structures: Check and repair as necessary.

630 DEAD AND DISEASED PLANTS

- Removal: As soon as possible.
- Replacement: In the next suitable planting season.

- 637 REINSTATEMENT OF SHRUB/ HERBACEOUS AREAS
- Dead and damaged plants: Remove.
 - Mulch/ matting materials:
 - Carefully move to one side and dig over the soil, leaving it fit for replanting.
 - Do not disturb roots of adjacent plants.
 - Replacement plants:
 - 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.
 - Additional requirements: None.
 - Dressing: Slow release fertilizer:
 - Type: as per Clause Q30/ 276.
 - Application rate: As manufacturer's recommendations.
- 641 THINNING BY REMOVAL OF SURPLUS PLANTS
- Plants to be thinned: Herbaceous beds.
 - Standard: BS 7370-4.
 - Timing: When foliage of two separate plant species have begun to touch..
 - Roots:
 - Disturbance to adjacent plants: Minimise.
 - Soil: Refill holes with topsoil to leave an even graded surface.
 - Mulch: Maintain mulch as original specification.
 - Adjacent plants: Make good any minor damage immediately.
 - Plants for retention: Select plants with a strong healthy habit.
- 645 WEED CONTROL GENERALLY
- Weed tolerance: At all times, weed cover less than 5% and no weed to exceed 50 mm high.
 - Adjacent plants, trees and grass: Do not damage.
- 650 HAND WEEDING
- General: Remove weeds entirely, including roots.
 - Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
 - Completion: Rake area to a neat, clean condition.
 - Mulch: Reinstate to original depth.
- 657 HERBICIDE TO KILL REGROWTH
- Type: Suitable foliar acting herbicide to kill regrowth.
 - Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.
- 675 DIGGING OVER
- General: Dig over beds. Do not damage existing plants, bulbs and roots.
 - Depth of dig (minimum): 75 mm.
- 680 SOIL AERATION
- Compacted soil surfaces:
 - Prick up: To aerate the soil of root areas and break surface crust.
 - Size of lumps: Reduce to crumb and level off.
 - Damage: Do not damage plants and their roots.
- 687 SOIL LEVEL ADJUSTMENT
- Level of soil/mulch at edges of beds: Reduce to 30 mm below adjacent grass or hard surface.
 - Arisings (if any): Spread evenly over the bed.

690 MAINTENANCE OF LOOSE MULCH

- Thickness (minimum): 50 mm.
 - Top up: Every 3 months.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by hand weeding.

695 FERTILIZING ESTABLISHED TREES AND SHRUBS

- Time of year: Submit proposals.
- Type of fertilizer: as clause Q30/ 276.
- Application: Spread evenly.
 - Rate: As manufacturer's recommendations.

700 SNOW REMOVAL FROM SHRUBS/ TREES

- Standard: To BS 7370-4.
- Plants subject to snow removal: to be agreed.
- Timing: to be agreed.

TREE WORK

810 TREE WORK GENERALLY

- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Removing branches: Cut as Arboricultural Association Leaflet 'Mature tree management'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

815 ADDITIONAL WORK

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

820 PREVENTION OF WOUND BLEEDING

- Standard: To BS 3998, clause 8.

825 PREVENTION OF DISEASE TRANSMISSION

- Standard: To BS 3998, clause 9 and Appendix B.

830 CLEANING OUT AND DEADWOODING

- Remove:
 - Dead, dying, or diseased wood, broken branches and stubs.
 - Fungal growths and fruiting bodies.
 - Rubbish, wind blown or accumulated in branch forks.
 - Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
 - Other unwanted objects, e.g. tree houses, swings.
 - Climbing plants as schedule.

835 CUTTING AND PRUNING GENERALLY

- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
 - Chainsaws: Do not use on branches of less than 50 mm diameter.
 - Hand saws: Form a smooth cut surface.
 - Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- 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.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
Large branches: Remove only with prior approval.
 - Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

840 CROWN REDUCTION/ SHAPING

- General: Cut back selectively to lateral or sublateral buds or branches to retain flowing branch lines without leaving stumps.
- Operations: as agreed with Project Landscape Architect.

845 CROWN LIFTING

- Clearances: Remove branch systems to give clearance.
 - Height: As recommended by BS 7370-4, clause 3.7.2.3.
- 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

- Removing branches: Remove inward growing, crossing, rubbing, dead and damaged branches.
- Thinning: Selectively remove secondary and small live branch growth evenly throughout the crown.
 - Quantity: To be agreed with project Landscape Architect.
- Cutting: Make no cuts of more than 35 mm diameter.
 - Branches: Cut back to lateral or sublateral buds or branches without leaving stumps.
- Appearance: Leave a uniform and well balanced structure of branches and foliage.

855 CUTTING TREE ROOTS

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
 - The branch spread of the tree.
 - An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting:
 - Cutting: Make clean smooth cuts with a hand saw.
 - Wounds: Minimize. Avoid ragged edges.
 - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
 - Protection: Cover cut roots with clean sharp sand.
 - Material: Backfill with original topsoil.

860 REMOVING TREES, SHRUBS AND HEDGES

- Standards: To BS 3998, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
 - Removal: Remove mechanically to a minimum depth of 300 mm below ground level.
 - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
 - Material: Use as-dug material and/ or imported soil as required.
 - Finishing: Consolidate and grade to marry in with surrounding ground level.

865 BARK DAMAGE

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

870 CAVITIES IN TREES

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

HARD LANDSCAPE AREAS/FENCING**905 SNOW CLEARANCE**

Deicing: to be agreed with CA.

- Material: submit proposal. Material not to destroy hard landscape surfaces and soft landscape areas.
- Timing: as agreed with CA.
- Application rate: Spread evenly at a rate of as agreed with CA.

912 HARD SURFACES AND GRAVEL AREAS

- Herbicide: Apply a suitable foliar acting or residual herbicide. Allow recommended period for herbicide to take effect before clearing arisings.
- Hard surfaces: Remove litter, leaves and other debris.
- Surface gutters and channels: Remove mud, silt and debris.
- Drainage gullies: Empty traps and flush clean.
- Gravel areas: Remove weeds, litter, leaves and debris. Afterwards wet, roll and rake self binding aggregate surface and level off.
- Repairs to flexible bituminous pavings: In accordance with the original paving specification or BS 7370-2, clause 4.12.
- Stain removal: In accordance with BS 7370-2, table 4.

925 FENCING

- Fences: Inspect and repair to maintain its appearance and function.

930 GRAFFITI REMOVAL

- Method: to be agreed with CA.
- Subsequent treatment: to be agreed with CA.
 - Finish: to be agreed with CA.

Q37 Green roofs

To be read with Preliminaries/General conditions

GENERAL

- 110A INTENSIVE GREEN ROOF to Plot E Ground level courtyard, Plot E podiums, Plot E level 06 and plot F level 11 roof terrace herbaceous, shrub and tree planting areas
- Drawing reference: SHR-LDA-SB-GF-DR-L-110-102, SHR-LDA-SB-01-DR-L-110-103, SHR-LDA-SB-06-DR-L-110-104, SHR-LDA-SB-11-DR-L-110-106
 - Roof type: Inverted.
 - Substrate: concrete slab.
 - Slope: to Architect's/SE's design.
 - Waterproofing: to Architect's design.
 - Thermal insulation: Inverted roof insulation to Architect's proposals.
 - Protection: Submit proposals.
 - Moisture control layers: Moisture retention and drainage mat to clause 341A.
 - Growing medium: Topsoil and subsoil as section Q28.
 - Depth: As landscape drawings.
 - Vegetation: Planting as section Q31.
 - Accessories: Steel planter edges to clause and composite decking clad steel planters to Z11, drainage inspection chambers, automatic irrigation system.
- 120A SIMPLE INTENSIVE GREEN ROOF to Plot E Level 1 Podium and Plot F Level 11 Podium Lawns
- Drawing reference: SHR-LDA-SB-01-DR-L-110-103, SHR-LDA-SB-11-DR-L-110-106
 - Roof type: Inverted.
 - Substrate: concrete slab.
 - Slope: to Architect's/SE's design.
 - Waterproofing: to Architect's design.
 - Thermal insulation: Inverted roof insulation to Architect's proposals.
 - Protection: Submit proposals.
 - Moisture control layers: Moisture retention and drainage mat to clause 341A.
 - Growing medium: Topsoil as section Q28.
 - Depth: as landscape drawings.
 - Vegetation: Turfing as section Q30.
 - Accessories: steel/composite decking planter edges to Z11, drainage inspection chambers with infill tray, automatic subsurface irrigation system.

- 130A EXTENSIVE GREEN ROOF Sedum green roof to Plot E level 06, 10, 11 and 12, and Plot F ground floor and level 12
- Drawing reference: SHR-LDA-SB-GF-DR-L-110-102, SHR-LDA-SB-06-DR-L-110-104, SHR-LDA-SB-10-DR-L-110-105, SHR-LDA-SB-11-DR-L-110-106, SHR-LDA-SB-12-DR-L-110-107, AND SHR-LDA-SB-ZZ-DR-L-500-171
 - Roof type: Inverted.
 - Substrate: concrete slab..
 - Slope: to Architect's/SE's design..
 - Waterproofing: to Architect's design.
 - Thermal insulation: Inverted roof insulation to Architect's proposal.
 - Protection: Submit proposals.
 - Moisture control layers: Moisture retention and drainage mat to clause 340A.
 - Growing medium: Radmat GM 20 Extensive Growing Medium or equal and approved.
 - Depth: 80mm post settlement.
 - Vegetation: Vegetation blanket.
 - Accessories: Edge retaining profile, 300mm min. gravel border to Q23 around all edges and penetrations such as vent pipes, r/o's, roof lights, etc .
- 140A PAVING AND DECKING SYSTEMS Decking to Plot E level 06 and Plot F level 11 terraces
- Type: Composite Timber decking, as section Q55.
 - Paving support: Pedestals as clause 461A .
- 141A PAVING AND DECKING SYSTEMS Concrete flag paving to Plot E level 01 terraces
- Type: Concrete slabs, as section Q25.
 - Paving support: Pedestals as clause 460 .
- 142A PAVING AND DECKING SYSTEMS Resin bound paving to Plot E groundfloor courtyard and level 01 terraces
- Type: Resin-bound chippings, as section Q23.
 - Paving support: As drawing .

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 proposals .
- 255 MAXIMUM PERMITTED GREEN ROOF LOADS
- Dead loads:
 - Green roof layers: As loading schedule.
 - Imposed loads:
 - Activity: As loading schedule.
 - Vegetation: As loading schedule.
 - Allowance for additional loads during construction: As loading schedule.
 - Service loads: As loading schedule.
 - Requirement: Restrict site activities to ensure that design loads are not exceeded, or submit proposals for temporary supports.

PRODUCTS

- 300 INVERTED ROOF
- Refer to Architect's design and specifications for Inverted Roof Insulation, Water proofing layers, root barriers, slip layers, protection layers, and separation layers.

- 340A MOISTURE RETENTION AND DRAINAGE MAT Sedum green roof
- Manufacturer: Radmat or equal and approved .
 - Product reference: Reservoir Drainage Board D25 or equal and approved .
 - Material: recycled polystyrene .
 - Capacity: 13.5l/m² .
- 341A MOISTURE RETENTION AND DRAINAGE MAT Intensive and simple intensive green roofs
- Manufacturer: Radmat or equal and approved .
 - Product reference: Reservoir Drainage Board D40 or equal and approved .
 - Material: recycled polystyrene .
 - Capacity: 22.75l/m² .
- 360 FILTER MEMBRANE Sedum green roof
- Manufacturer: Radmat or equal and approved .
 - Product reference: G12 or equal and approved .
 - Material: Non-woven polypropylene fabric .
 - Mass: 200 g/m² .
- 400A VEGETATION BLANKET Sedum green roof
- Manufacturer: Radmat or equal and approved .
 - Product reference: MedO SedumPlus or equal and approved .
 - Planting mix: 16 species UK-grown sedum mix .
 - Thickness: 25mm .
 - Vegetation coverage (minimum): 80%.
- 420 EDGE RETAINING PROFILE to all sedum green roof perimeters
- Manufacturer: Radmat or equal and approved .
 - Product reference: GS gravel stops or equal and approved .
 - Material: Aluminium .
 - Height: As drawing SHR-LDA-SB-ZZ-DR-L-500-171 .
- 421 EDGE RETAINING PROFILE STEEL PLANTER EDGE TO INTENSIVE GREEN ROOFS
- Standard: to BS EN 1338
 - Manufacturer: Kinley Systems or equal and approved .
 - Product reference: Hi-Grade bespoke heavy duty landscape edging .
 - Material: Galv. steel .
 - Colour: polyester powdercoated, RAL tbd to complement architectural metalwork
 - Height: varies, as detail drawings .
 - Special shapes: as detail drawings.
 - Bedding: planter edge system to be self-supported, laid directly on drainage mat/filter fabric per the detail drawings. Submit proposals for any protection of drainage layer and any level adjustments required.
 - Joints generally: butt joints with no gaps. Adjacent panels to be flush and securely connected with concealed connector. Provide gaps formed as sliding joints at regular intervals per manufacturer's design to allow thermal expansion.
 - Accessories: concrete footings, brackets, connectors to Manufacturer's details; timber seats to Manufacturer's details and as drawings; allow for integration of linear LED lights in timber edge per lighting consultants drawings; integrated emergency lighting as required per electrical engineers drawings.
 - Submittals: full shop drawings of all planter edges and integrated benches.

- 422 EDGE RETAINING PROFILE COMPOSITE TIMBER CLAD STEEL PLANTER EDGE TO INTENSIVE GREEN ROOFS
- General: complete the design of the timber clad planter edges and seatwalls shown on the drawings.
 - Manufacturer: Submit proposals .
 - Material: Galv. steel substructure to Z11, composite timber to Q55 380 .
 - Colour: natural
 - Height: varies, as detail drawings .
 - Special shapes: as detail drawings.
 - Bedding: self supported substructure installed over drainage mat/filter fabric or insulation layer per the detail drawings. Submit proposals for any protection of drainage layer and any level adjustments required.
 - Joints generally: typical decking joints as detail drawings, decking cladding fixed with concealed clip system.
 - Accessories: galv. steel sheet to contain planting substrate; composite seat walls; allow for integration of linear LED lights in seat edges per lighting consultants drawings; integrated emergency lighting as required per electrical engineers drawings.
 - Submittals: full shop drawings of all planter edges and raised seatwalls.
- 430 INSPECTION CHAMBERS to extensive green roofs
- Manufacturer: Harmer or equal and approved .
 - Product reference: GR400 or equal and approved .
 - Material: PU .
 - Size: 400x400mm .
 - Depth: Submit proposals .
 - Access covers: Solid black plastics .
 - Features: Submit proposals .
- 450A ROOF DRAINAGE OUTLETS to Architect's/Engineer's design
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Material: Submit proposals.
 - Size: Submit proposals.
 - Fixing: Submit proposals.
- 460 SUPPORT PEDESTALS TO SUPPORT PAVING SLABS.
- Manufacturer: Kinley or equal and approved.
 - Product reference: SpiraPave Pedestals for heights <119mm, VersiJack for >119mm .
 - Type: Telescopic.
 - Material: Recycled polypropylene.
 - Dimensions: to achieve finish levels shown on drawings. Provide for installation on top of sloped insulation layer.
 - Additional pedestals: Submit proposals.
 - Accessories: Spacer tabs, rubber shims, slope correctors, joist system to Contractor's choice .

461A SUPPORT PEDESTALS TO SUPPORT DECKING MATERIALS.

- Manufacturer: Deeplas; deeplas.co.uk.
 - Product reference: DeeplasDeckSupport height adjustable pedestals and joist cradles.
- Type: Telescopic.
- Material: Manufacturer's standard.
- Dimensions: to achieve finish levels shown on drawings. Provide for installation on top of sloped insulation layer.
- Additional pedestals: Submit proposals.
- Accessories: Joist cradles, aluminium joists, joist connectors, spacer tabs, rubber shims, and slope correctors as required and to decking manufacturer's details. Galv. Steel frame support structure required for planter and seat edges.

EXECUTION**710 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.
 - Point loads: Avoid.
- 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.

760A MOISTURE RETENTION AND DRAINAGE MAT INSTALLATION

- Joints: Minimize.
 - Overlaps (minimum): Manufacturer's recommendation .
- Upstands: Fit closely around penetrations and outlets.

780 FILTER MEMBRANE INSTALLATION

- Joints: Minimize.
 - Overlaps (minimum): Manufacturer's recommendation .
- Fitting: Manufacturer's recommendation .
- Upstands: Extend to top of growing medium.

790 GROWING MEDIUM INSTALLATION

- Handling: Minimize.
 - Conditions: Handle in the driest condition possible. Do not handle or install when wet or frozen.
- Layers:
 - Depth (maximum): 150 mm.
 - Sequence: Gently firm each layer before spreading the next.

800 VEGETATION BLANKET INSTALLATION

- Handling blankets:
 - Timing: Lay within 36 hours of lifting from growing position.
 - 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. Secure with biodegradable pegs.
 - Edges: Finish with whole blankets.
 - Consolidation: Firm as laying proceeds to ensure full contact with the growing medium. Do not use rollers.
- Dressing: Growing medium .
 - Application: Brush in to fill joints.
- Watering: Thorough, immediately after laying and dressing.

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: Submit proposals .
- Backfill: Submit proposals .
- Surround: Growing medium where in soft landscape at courtyard and roof terraces; 300mm gravel border at sedum green roofs .

840 PEDESTAL INSTALLATION

- Ensure that surface to accept pedestals is 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.
- Overall movement tolerance (maximum): 3 mm.

COMPLETION**910 INSPECTION**

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

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.

930A 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: as agreed with Client .

Q40 Fencing

To be read with Preliminaries/ General conditions.

FENCING SYSTEMS

310A CLOSE BOARDED FENCING

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Standard: To BS 1722-5
- Height: 3000mm.
- Wood: Imported hardwood, FSC-certified Cumaru.
 - Treatment: Submit proposals.
 - Finish: Oil.
- Boards/ rails: Imported hardwood, FSC-certified Cumaru.
- Posts: Wood.
- Centres of posts (maximum): 2.4 m.
- Method of setting posts: Submit proposals.
- Accessories: None.
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-5.

340A STEEL VERTICAL BAR FENCING

- Drawing reference: SHR-LDA-SB-LG-DR-L-110-101, SHR-LDA-SB-GF-DR-L-110-102, SHR-LDA-SB-ZZ-DR-L-400-205, SHR-LDA-SB-LG-DR-L-500-211
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Standard: To BS 1722-9. Notify the Landscape Architect of any discrepancies and propose alternative dimensions where required for compliance.
- Height: 2000 mm.
- Verticals: 12x50mm flat bar.
- Centres of verticals: 100mm max..
- Posts: 100x100x5mm SHS.
 - Finish: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated, as section Z31.
 - Colour: RAL tbd, to complement architectural metalwork.
- Centres of posts (maximum): 2.8 m.
- Method of setting posts/ stays/ legs: Submit proposals.
- Accessories: Single leaf pedestrian gate to Q40 560, and as drawings.
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-9.

440 BOUNDARY PROTECTION MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: Refer to BREEAM Assessment.

GATES, POSTS AND STILES

560A STEEL GATES AND POSTS

- Manufacturer: Submit proposals.
- Standard:
 - Domestic gates: To BS 4092-1.
 - Steel palisade gates: To BS 1722-12.
 Notify the Landscape Architect of any discrepancies and propose alternative dimensions where required for compliance.
- Materials and workmanship: As section Z11.
- Finish: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated, as section Z31.
 - Colour: RAL tbd, to complement Architectural metalwork.
- Jointing: Welded.
- Fittings: Two hook and eye adjustable hinges, return spring, cushioned slam plate and a heavy duty automatic latch.
 - Manufacturer: Locinox or equal and approved.
- Finish: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated, as section Z31.
- Method of fixing: Submit proposals.
- Accessories: Locinox Lock with masterkey, to requirements set out in the sitewide security strategy; Locinox gate catcher; or equal and approved .

ACCESSORIES

EXECUTION

710 INSTALLATION GENERALLY

- Set out and erect:
 - Alignment: Straight lines or smoothly flowing curves.
 - Tops of posts: Following profile of the ground.
 - Setting posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
 - Fixings: All components securely fixed.

715 COMPETENCE

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
 - NHSS Sector Scheme 2A sub categories:
 - (a);
 - (b); and
 - (g).
 - NHSS Sector Scheme 2C sub categories: Not required.

720 SETTING POSTS IN CONCRETE

- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
- Alternative mix for small quantities: 50 kg Portland cement to 150 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability.
- Admixtures: Do not use.
- Holes: Excavate neatly and with vertical sides.
- Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
- Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

730 EXPOSED CONCRETE FOUNDATIONS

- Filling: Compact until air bubbles cease to appear on the upper surface.
- Finishing: Weathered to shed water and trowelled smooth.

770 SITE CUTTING OF WOOD

- General: Kept to a minimum.
- Below or near ground level: Cutting prohibited.
- Treatment of surfaces exposed by minor cutting and drilling: Two flood coats of solution recommended for the purpose by main treatment solution manufacturer.

780 MAKING GOOD GALVANIZED SURFACES

- Treatment of minor damage (including on fasteners and fittings): 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: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

790 SITE PAINTING

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

COMPLETION**910 CLEANING**

- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.

920 FIXINGS

- All components: Tighten.
 - Timing: Before handover.

930 GATES

- Hinges, latches and closers: Adjust to provide smooth operation. Lubricate where necessary.
 - Timing: Before handover.

Q41 Barriers/ guardrails

To be read with Preliminaries/ General conditions.

TYPES OF BARRIERS/ GUARDRAILS

110 PEDESTRIAN RESTRAINT SYSTEMS IN METAL

- Standard: To BS 7818.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Height above datum (minimum): 1100 mm.
- Rails and posts:
 - Material/ Protection: Steel, galvanized to BS EN ISO 1461 after fabrication.
- Infill:
 - Class C.
 - Type: Vertical, max. 100mm spacing between verticals.
 - Material/ Protection: Steel, galvanized to BS EN ISO 1461 after fabrication.
- Surface finish: Polyester Powder coating as section Z31.
 - Colour/ Texture: RAL tbd, to complement architectural metalwork.
 - Minimum film thickness: 40 micrometres.
- Foundations: Submit proposals.
- Fixings: Submit proposals.
 - Material for fixings: Similar material or coating to the connected items, or isolating washers/ bushes provided to prevent bimetallic corrosion.
 - Resistance to vandalism: High torque.
- Other requirements: Handrail system at stairs.
- Performance verification: Submit a certificate of the restraint system's conformity to BS 7818, issued by a United Kingdom Accreditation Service (UKAS) independent laboratory, prior to ordering materials.
- Production inspection of posts: Not required.

190A VEHICLE ACCESS POINT BARRIERS SERVICE YARD GATE

- Refer to Architect's drawings and specifications

PERFORMANCE/ INSPECTION/ TESTING

300A CONTRACTOR'S STRUCTURAL DESIGN

- Design responsibility: Guardrails to Plot F back of house area.
- Requirement:
 - Generally: to Structural Engineer's specifications. Submit drawings and schedules in accordance with the designated code of practice and to satisfy the performance criteria specified.
- Member sizes and locations: Submit proposals.
- Design and production information: detailed drawings and calculations.
- Timing of submissions: As Preliminaries.

330 VERIFICATION OF ANCHORAGES FOR PEDESTRIAN RESTRAINT SYSTEM

- Certification: Four weeks prior to installation, submit certificates from a United Kingdom Accreditation Service (UKAS) independent laboratory, stating that for tests in accordance with BS 5080-1, anchorages are capable of resisting the design loading.
- Tolerance: Certification must include the maximum tolerance of hole size and evidence that load can be supported when anchor is installed in holes having these tolerances.

340 SITE TESTING ANCHORAGES IN DRILLED HOLES FOR PEDESTRIAN RESTRAINT SYSTEM

- Test parapet posts: Install on site.
- Loading tests: To BS 5080-1.
 - Frequency of testing: One fixing at every fifth post.
- Anchorage loadings: Incrementally in tension to 10% above the nominal tensile load determined in accordance with design loading.
 - Load holding periods:
 - Incremental loads: Not less than 30 seconds.
 - Test loads: Not less than 5 minutes.
 - Readings: Take after applying load and at the end of the time intervals stated.
 - Movement: Total not to exceed 1 mm during test.
 - Any evidence of slip during loading shall constitute failure.
- Test results: Submit prior to full parapet installation.

INSTALLATION

405 COMPETENCE

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
 - UKAS Sector Scheme 2A sub categories: (b).
 - UKAS Sector Scheme 2C sub categories: Not required.

420 ALIGNMENT

- Erection: Fences/ barriers to present a flowing alignment. Tops of posts to follow ground profile.
- Tolerance: ± 30 mm of prescribed alignment and, within any 10 m length, ± 15 mm from the straight or required radius.

430 ERECTION GENERALLY

- Protection: Coat all internal and external surfaces of aluminium and steel posts below and up to 150 mm above ground level, with two coats of bituminous paint to BS 6949 type 2, unless other applied surface finish is specified.
- Prevention of electrolytic corrosion: Isolate dissimilar metals.
- Steel components: Do not drill, cut or weld after galvanizing.

480 CONCRETE FOUNDATIONS FOR POSTS

- Excavations: To have vertical sides. Dispose of all arisings. Blind excavation bottoms with a 50 mm layer of concrete.
- Concrete mix: To BS 8500-2, Designated mix not less than GEN 4 or Standard mix not less than ST5. Do not use admixtures.
- Placing concrete: Fill holes to the specified depth and fully compact. Do not backfill for at least four days.
- Temporary support to posts: Provide for a at least four days after placing concrete.

490 DAMAGE REPAIR TO GALVANIZED SURFACES

- Areas of repair: Minor damage, including fixings and fittings.
 - Total area of repair not to exceed 0.5% of total surface area.
 - Each area not to exceed 1000 mm².
- Renovation: Use low melting point zinc alloy repair rods or powders or at least two coats of zinc-rich paint to BS 4652.

510 PREPARATION FOR SITE PAINTING

- Preparation and application: As soon as possible after installation of barriers/ guardrails.

COMPLETION

900 DOCUMENTATION

- Contents:
 - General product information.
 - Installation information.
 - Inspection and maintenance reports.
- Number of copies: for inclusion in H&S file.
- Submission: Two weeks prior to date when principal contractor expects work to be practically complete.

Q50 Site/street furniture/equipment

To be read with Preliminaries/ General conditions.

GATES, BARRIERS AND PARKING CONTROLS

190B FIXED BOLLARDS TO FRIARS WALK

- Manufacturer: ATG Access or equal and approved.
 - Product reference: Stainless Steel Static Bollard.
- Material: Stainless steel.
 - Finish as delivered: Brushed.
 - Colour: None.
- Height above ground: 1000 mm.
- Sectional size: 114 mm diameter.
- Top: Flat.
- Special features: recess below top of bollard to match telescopic bollards visually.
- Method of fixing: Root, 300 mm below ground, set in concrete base.

194A TELESCOPIC BOLLARDS TO FRIARS WALK

- Manufacturer: ATG Access or equal and approved.
 - Product reference: Semi Automatic Security Bollard 114 1000.
- Type: Pneumatic.
- Material: Stainless steel.
 - Finish as delivered: Brushed.
 - Colour: None.
- Height above ground: 1000 mm.
- Special features: none.
- Supply: none.
- Controllers: none.
- Method of fixing: Manufacturer's standard.

SITE AND STREET FURNITURE

210A CYCLE STAND FRIAR STREET FOOTWAY (S278 AREA) AND GARRARD STREET FOOTWAY

- Manufacturer: Furnitubes International Ltd.
 - Web: www.furnitubes.com.
 - Email: sales@furnitubes.com.
 - Product reference: Sheffield Cycle Stand
- Type: SHE 600.
- Material/ Finish: Stainless steel, grade 1.4301 (304), satin polished.
- Fixing: Root fixed.
- Accessories: Tapper rail.

220 BENCHES TO GARRARD STREET FOOTWAY AND FRIARS WALK

- Manufacturer: Streetlife or equal and approved.
 - Product reference: Rough & Ready Balancer.
- Material: Steel and Wood.
 - Finish: Hot dip galvanized to BS EN ISO 1461 and As manufactured.
 - Colour: None.
- Size: 2.0 m long.
- Accessories/ Special requirements: provide armrests to one bench each at Garrard Street and Friars Walk; benches at Friars Walk supplied without galv. steel base and fixed to granite kerb; recess on underside of front slat to accommodate linear LED light..
- Method of fixing: Proprietary anchored bases and As drawings SHR-LDA-SB-GF-DR-L-500-231 and SHR-LDA-SB-LG-DR-L-500-311.

225A SEATS TO SHARED AMENITY TERRACES

- Provisional Sum to be agreed. Allow for 48 chairs.
- Manufacturer: Submit proposals.
 - Product reference: tbd.
- Material: Metal.
 - Finish: Submit proposals. Suitable for permanent outdoor use..
 - Colour: Submit proposals.
- Size: Submit proposals.
- Accessories/ Special requirements: Submit proposals. Chairs to be stackable and suitably wind resistant for use on roof terraces.
- Method of fixing: moveable.

230A TABLES TO SHARED AMENITY TERRACES

- Provisional Sum to be agreed. Allow for 12 tables.
- Manufacturer: Submit proposals.
 - Product reference: tbd.
- Material: Metal.
 - Finish: Submit proposals. Suitable for permanent outdoor use.
 - Colour: Submit proposals.
- Size: 800 x 800mm square.
- Accessories/ Special requirements: Submit proposals. Tables to be stackable and suitably wind resistant for use on roof terraces.
- Method of fixing: moveable.

235 LOUNGERS BEAN BAGS TO SHARED AMENITY TERRACES

- Provisional Sum to be agreed. Allow for 6 bean bags.
- Manufacturer: Fatboy.
 - Product reference: Buggle-Up.
- Material: Fabric.
 - Finish: Standard.
 - Colour: Red, Orange, Pink.
- Size: Standard.
- Accessories/ Special requirements: none.
- Method of fixing: moveable.

240A LITTER BINS TO FRIARS WALK PUBLIC REALM AND SHARED AMENITY TERRACES

- Provisional Sum to be agreed. Allow for 8 bins.
- Manufacturer: Broxap.
 - Product reference: Apollo 100 Hooded Floor Mounted.
- Material: Stainless steel.
 - Finish: As manufactured.
 - Colour: None.
- Accessories/ Special requirements: tbd.
- Method of fixing: bolt down, as agreed with Contract Administrator.

350 NESTING BOXES BAT BOX

- Manufacturer: Schwegler, Ibstock, or equal and approved.
 - Product reference: Schwegler 1FR Bat Tube where located in rendered wall, Ibstock Bat Box 'B', large red, where located in brick wall.
- Material: Woodcrete with integrated wooden panel(Schwegler 1FR), or brick (Ibstock B) .
 - Finish: to match wall finish.
 - Colour: to match wall colour (render or brick).
- Accessories/ Special requirements: Concealed, vandal proof fixings.
- Method of fixing: Wall-mounted, recessed.

351 NESTING BOXES SWIFT BOX

- Manufacturer: Schwegler, Ibstock, or equal and approved.
 - Product reference: Schwegler 16S, where located in rendered wall, or Ibstock Eco Habitat, where located in brick.
- Material: Woodcrete (Schwegler 16S), or brick (Ibstock Eco Habitat) .
 - Finish: to match wall finish.
 - Colour: to match wall colour (render or brick).
- Accessories/ Special requirements: Concealed, vandal proof fixings.
- Method of fixing: Wall-mounted, recessed.

352 NESTING BOXES BLACK REDSTART BOX

- Manufacturer: Schwegler 1HE.
 - Product reference: Schwegler 1HE.
- Material: Plant fibre and Woodcrete.
 - Finish: to match wall finish.
 - Colour: paint to match wall render colour.
- Accessories/ Special requirements: Concealed, vandal proof fixings.
- Method of fixing: Wall-mounted, recessed.

360 BUG HOTEL to Plot E terraces

- Manufacturer: Bug Hotel; bughotel.co.uk or equal and approved.
 - Product reference: Submit proposals.
 - Size: min. 600mm high x 300mm wide x 300mm deep.
- Material: Submit proposals.
 - Finish: Submit proposalsh.
 - Colour: Submit proposals.
- Accessories/ Special requirements: provide a min. of 4 compartments with crevices of different size and materials.
- Method of fixing: Submit proposals.

INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Concrete: to Engineer's Design.
- 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.

540 BUILDING IN TO MASONRY WALLS

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

545 ERECTION OF TIMBER AND PREFABRICATED STRUCTURES

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

550 DAMAGE TO GALVANIZED SURFACES

- Minor damage in areas up to 40 mm² (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.

Q55 External decks, boardwalks and bridges

To be read with Preliminaries/ General conditions.

GENERAL

110A DECK TO PLOT E LEVEL 06 TERRACE AND PLOT F LEVEL 11 TERRACE

- Base preparation: Not required.
- Structure, other than surfacing: Aluminium joists, joist cradles and pedestals, and steel frame as shown on drawings.
 - Fasteners: Submit proposals.
- Post setting: Steel frame to rest on inverted roof insulation.
- Surfacing: Composite deck boards.
 - Method of attachment: Deck board clips.
- Guarding: Balustrades to Architect's design.
- Edge protection: Not required.
- Accessories: Submit proposals.

PRODUCTS

350 STRUCTURAL STEEL SUBFRAME FOR RAISED COMPOSITE TIMBER-CLAD SEATWALLS AND PLANTERS

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Finish as delivered: Hot dip galvanized to BS EN ISO 1461.

380A DECK BOARDS TO DECKING AND COMPOSITE TIMBER-CLAD SEATWALLS AND PLANTERS

- Manufacturer: Deeplas.
 - Product reference: Twinson Solid Composite Decking.
- Material: Composite.
- Colour: Bark brown
- Treatment: Not required.
- Profile: Grooved on underside.
- Finished size: Manufacturer's standard.
 - Length: To suit deck design.
- Finish: None required.

395 SUPPORT PEDESTALS TO SUPPORT DECKING MATERIALS

- Manufacturer: Deeplas.
 - Product reference: Twinson decking pedestals.
- Type: Telescopic.
- Material: Recycled polypropylene.
- Dimensions: As required to achieve levels indicated on the drawings.
- Accessories: aluminium joists, joist connectors, rubber shims, spacer tabs.

FABRICATION

510 FABRICATION GENERALLY

- Design: Complete the detailed design and obtain approval prior to commencing fabrication.
- Shop drawings: Submit.
- Structural calculations: Submit.
- Frameworks: Assemble and brace, including temporary members required for installation.
- Contact between dissimilar metals: Avoid.
- Fixings: Fully bolt together. Tighten bolts.
- Temporary support: Do not subject members to non-design loadings.

EXECUTION

610 LOADING

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

657 INSTALLATION OF PEDESTALS

- Ensure that surface to accept pedestals is clean and free of debris.
- Setting out: Mark centre-point of pedestal on substrate surface, with guidelines to ensure square layout.
 - Orientation: Align parallel with adjacent features.
 - Spacing: Submit proposals.
 - Additional pedestals: Submit proposals.
- Overall movement tolerance (maximum): 3 mm.

665 INSTALLATION GENERALLY

- Fasteners and methods of fixing: As section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.

670 INSTALLATION OF SURFACING

- Heading joints: Kept to a minimum, and formed only as butt joints situated over joists.
- Length: Each board must span not less than two bays between joists with joints in adjacent boards staggered.
- Gaps between boards: 4-6 mm.

COMPLETION

950 DOCUMENTATION

- Contents:
 - General product information.
 - Installation information.
 - Inspection and maintenance reports.
- Number of copies: for Health and Safety file.
- Submission: 2 weeks prior to date when principal contractor expects work to be practically complete.

S14 Irrigation

To be read with Preliminaries/ General conditions.

GENERAL

110A IRRIGATION SYSTEM FOR EXTERNAL PLANTING BEDS

- Refer to Irrigation Specialist's Performance Specifications, document SHR-WWS-SB-ZZ-RP-M-100-101

V91 Electrical systems - landscape

To be read with Preliminaries/ General conditions.

GENERAL

110A LOW VOLTAGE SUPPLY

- Refer to Electrical Engineer's specifications.

115A EXTERNAL LIGHTING SYSTEM TO ALL EXTERNAL AREAS

- Refer to Specialist Lighting Consultant's specifications for decorative lighting
- Refer to Electrical Engineer's specifications for emergency lighting

120A SMALL POWER SYSTEM TO ALL EXTERNAL AREAS

- Refer to Electrical Engineer's specifications.

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

110 FABRICATION

- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
 - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Screws: Provide pilot holes.
 - Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
 - Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
 - Adhesives: Compatible with wood preservatives applied and end uses of timber.

120 CROSS SECTION DIMENSIONS OF TIMBER

- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
 - Softwood sections: To BS EN 1313-1:-
Clause 6 for sawn sections.
 - Hardwood sections: To BS EN 1313-2:-
Clause 6 for sawn sections.
Clause NA.3 for further processed sections.

130 PRESERVATIVE TREATED WOOD

- Cutting and machining: Completed as far as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

140 MOISTURE CONTENT

- Wood and wood based products: Maintained within range specified for the component during manufacture and storage.

250 FINISHING

- Surfaces: Smooth, even and suitable to receive finishes.
 - Arrises: Eased unless shown otherwise on drawings.
- End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry before assembly.

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.

527 WELDING STEEL COMPONENTS.

- Welding procedures:
 - Method and standard: Metal arc welding to BS EN 1011-1 and -2..
 - Welding Procedure Specification (WPS): Not required.
- Preparation:
 - Joint preparation: Clean thoroughly.
 - Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
- Jointing:
 - Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
 - Dissimilar metals: Not applicable.
 - Strength requirements: Welds to achieve design loads.
 - Heat straightening: Submit proposals.
 - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
 - Tack welds: Use only for temporary attachment.
 - Jigs: Provide to support and restrain members during welding.
 - Filler plates: Submit proposals.
 - Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater.
 - Weld terminations: Clean and sound.

FINISHING

710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK

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

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 14713-1 and -2. 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 8501-3.
 - Grade: St 2.

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

310 FASTENERS GENERALLY

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

320 PACKINGS

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

340 MASONRY FIXINGS

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

350 PLUGS

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

390 ADHESIVES GENERALLY

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

410 POWDER ACTUATED FIXING SYSTEMS

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

EXECUTION

610 FIXING GENERALLY

- 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.
- Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/ sleeves to avoid bimetallic corrosion.
- Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES

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

630 FIXING PACKINGS

- Function: To take up tolerances and prevent distortion of materials and components.
- Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
- Locations: Not within zones to be filled with sealant.

640 FIXING CRAMPS

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

670 PELLETED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
- Finished level of pellets: Flush with surface.

690 USING POWDER ACTUATED FIXING SYSTEMS

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

700 APPLYING ADHESIVES

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

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.
- 131 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
 - Standard: To BS EN 998-2.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
- 135 SITE MADE LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
 - Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.
- 160 CEMENTS FOR MORTARS
 - Cement: To BS EN 197-1 and CE marked.
 - Types:
 - Portland cement, CEM I.
 - Portland limestone cement, CEM II/A-L or CEM II/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 EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
 - To BS EN 197-1 fly ash cement, CEM II/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.

- 180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Other admixtures: Submit proposals.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.
- 190 RETARDED READY TO USE CEMENT GAUGED MASONRY MORTARS
- Standard: BS EN 998-2.
 - Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
 - Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
 - Retempering: Restore workability with water only within prescribed time limits.
- 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.

LIME:SAND MORTARS

- 310 LIME:SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.
- 320 SAND FOR LIME:SAND MASONRY MORTARS
- Type: Sharp, well graded.
 - Quality, sampling and testing: To BS EN 13139.
 - Grading/ Source: As specified elsewhere in relevant mortar mix items.
- 330 READY PREPARED LIME PUTTY
- Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.
 - Maturation: In pits/ containers that allow excess water to drain away.
 - Density of matured lime putty: 1.3-1.4 kg/litre.
 - Maturation period before use (minimum): Seek instructions.
- 335 READY PREPARED LIME PUTTY
- Manufacturer: Submit proposal.
 - Product reference: Submit proposal.
 - Maturation period before use (minimum): Seek instructions.
- 340 POZZOLANIC ADDITIVES FOR NONHYDRAULIC LIME:SAND MORTARS
- Manufacturer/ Supplier: Submit proposal.
 - Product reference: Submit proposal.
 - Mixing: Mix thoroughly into mortar during knocking up.
- 345 ADMIXTURES FOR HYDRAULIC LIME:SAND MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

- 360 MAKING LIME:SAND MORTARS GENERALLY
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
 - Contamination: Prevent intermixing with other materials, including cement.
- 370 SITE PREPARED NONHYDRAULIC LIME:SAND MORTARS
- Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.
 - Maturation period before use (maximum): Seek instructions.
- 380 READY TO USE NONHYDRAULIC LIME:SAND MORTARS
- Manufacturer: Submit proposal.
 - Product reference: Submit proposal.
 - Materials: Select from:
 - Lime putty slaked directly from quicklime to BS EN 459-1 and mixed thoroughly with sand.
 - Quicklime to BS EN 459-1 slaked directly with sand.
 - Maturation period before use (maximum): Seek instructions.
- 390 KNOCKING UP NONHYDRAULIC LIME:SAND MORTARS
- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.
- 400 MAKING HYDRAULIC LIME:SAND MORTARS
- Mixing hydrated hydraulic lime:sand: Follow the lime manufacturer's recommendations for each stage of the mix.
 - Water quantity: Only sufficient to produce a workable mix.
 - Working time: Within limits recommended by the hydraulic lime manufacturer.

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

310A JOINTS MOVEMENT JOINTS

- Manufacturer: Adshead Ratcliffe & Co. Ltd, Derby Road, Belper, Derbyshire, DE56 1WJ UK, Tel: 01773 826661 or equal and approved
- Product Reference: Arbosil XL 1099, silicone sealant or equal and approved
- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION

610 SUITABILITY OF JOINTS

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

620 PREPARING JOINTS

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

630 APPLYING SEALANTS

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

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: Submit proposals.
- Selected manufacturer: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.
 - Technical data of product including current Agrément certificates.

210 WORKING PROCEDURES

- Comply with the follow following standards.
 - Aluminium components: To BS 6496 or BS EN 12206-1.
 - Steel components: To BS EN 13438.
 - Safety standards: To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

220 POWDER COATING APPLICATORS

- Applicator requirements:
 - Approved by powder coating manufacturer.
 - Currently certified to BS EN ISO 9001.
 - Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
 - Applicator to use only one plant.
 - Selected applicator: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.

225 GUARANTEES

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

230 CONTROL SAMPLES

- Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
 - Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
 - Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
- Samples to include the following information:
 - Product reference.
 - Colour.
 - Reference number.
 - Name.
 - Gloss level.

235 INDEPENDENT INSPECTION AT PLANT

- Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that powder coating application complies with this specification.
 - Designated components: planter edges, gates and fences .
- Acceptance inspections: Carry out for each variation of colour and finish of each component work package at applicator's plant prior to any fabrication of units, in accordance with the following:
 - Where three or more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.
 - Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.
- Components failing inspection: Reprocess or replace and reinspect.
- Inspection reports: Independent Inspection Authority must submit copies.

240 QUALITY ASSURANCE SYSTEM

- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
 - Designated components: planter edges, gates and fences.

250 COMPONENT DESIGN

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

310 PRETREATMENT OF ALUMINIUM COMPONENTS

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

320 PRETREATMENT OF STEEL COMPONENTS

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

430 EXTENT OF POWDER COATINGS

- 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

- Surfaces to receive powder coatings: Free from dust or powder deposits.
- Powder colours: Obtain from one batch of one manufacturer.
- Commencement of powder coating: To be continuous from pretreatment.
- Jig points: Not visible on coated components.
- Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
- 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.
- Overcoating of components: Not acceptable.

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

- For aluminium components:
 - Standard: To BS 6496 or BS EN 12206-1.
- For steel components:
 - Standard: To BS EN 13438.
- Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
- Colour and gloss levels: To conform with approved samples.

450 ALUMINIUM ALLOY FABRICATIONS

- Units may be assembled:
 - Before powder coating.
 - From components powder coated after cutting to size.
 - Where approved, from components powder coated before cutting to size.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

460 STEEL FABRICATIONS

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

470 FIXINGS

- 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/ REPLACEMENT

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

510 PROTECTION

- Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
- Protective coverings: Must be:
 - Resistant to weather conditions.
 - Partially removable to suit building in and access to fixing points.
- Protective tapes in contact with powder coatings: Must be:
 - Low tack, self adhesive and light in colour.
 - 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.
- Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 DOCUMENTATION

- Submit the following information for each batch of powder coated components:
 - Supplier.
 - Trade name.
 - Colour.
 - Type of powder.
 - Method of application.
 - Batch and reference number.
 - Statutory requirements.
 - Test certificates.
 - Maintenance instructions.

540 COMPLETION

- Protection: Remove.
- Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.