Abbey Area Phase 3

for Wates on behalf of Camden

Landscape External Works Specification

22-05-2023

ARP3-FAB-XX-XX-SP-L-900000 P02

Stage 4A - Technical Design

Document Control Sheet

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Revisions

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Contents

F10
Brick/ block walling

Types of walling

110 Clay facing brickwork

1. Description: External retaining brick walls WT3 & WT4
2. Bricks: To BS EN 771-1.
   - 2.1. Manufacturer: Nelissen or similar and approved to match Architectural brickwork specification
   - 2.2. Product reference:: Rosado brick or similar and approved to match Architectural brickwork specification
   - 2.3. Product size:: 215 x 102.5 x 65mm
   - 2.4. Colour: : Pink base with hues varying from yellow pink to red pink with light shadings
   - 2.5. Special shapes: Special cuts is required to the angular edge of the wall.
3. Mortar: As section Z21.
   - 3.1. Standard: To BS EN 998-2
   - 3.2. Mix:
4. Bond: Stretcher bond
5. Joints: Flush Joints to match Architectural brickwork specification

355 Feature Precast Concrete wall

1. Description: WT5
2. Blocks: To BS EN 771-3.
   - 2.1. Manufacturer: Evans Concrete or similar and approved
     - 2.1.1. Product reference: Bespoke Precast concrete
   - 2.2. Configuration: As drawing ARP3-FAB-ZZ-00-DE-L-908301
   - 2.3. Compressive strength
     - 2.3.1. Mean value: To manufacturer's details
     - 2.3.2. Characteristic value: To manufacturer's details
     - 2.3.3. Category: To manufacturer's details
   - 2.4. Freeze/ thaw resistance: To manufacturer's details
   - 2.5. Thermal properties: To manufacturer's details
   - 2.6. Recycled content: To manufacturer's details
   - 2.7. Work sizes (length x width x height): As drawing ARP3-FAB-ZZ-00-DE-L-908301
     - 2.7.1. Tolerance category: To manufacturer's details
   - 2.8. Special shapes: As drawing ARP3-FAB-ZZ-00-DE-L-908301
   - 2.9. Additional requirements: As drawing ARP3-FAB-ZZ-00-DE-L-908301
3. Mortar: As section Z21.

Testing

400 Hard landscaping materials specification

1. Minimum BRE ‘Green Guide to Specification' online rating: A or A+

Workmanship generally

430 Conditioning of clay bricks and blocks

1. Bricks and blocks delivered warm from manufacturing process: Do not use until cold.
2. Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

440 Conditioning of concrete bricks/ blocks

1. Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
2. Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
3. Avoidance of suction in concrete bricks/ blocks: Do not wet.
    3.1. Use of water retaining mortar admixture: Submit details.

500 Laying generally

1. Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
2. AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
3. Clay block joints
    3.1. Thin-layer mortar: Lay blocks on a full bed.
    3.2. Interlocking perpends: Butted.
4. Bond where not specified: Half-lap stretcher.
5. Vertical joints in brick and concrete block facework: Even widths. Plumb at every fifth cross joint.

535 Height of lifts in walling using cement-gauged or hydraulic lime mortar

1. Quoins and advance work: Rack back.
2. Lift height (maximum): 1.2 m above any other part of work at any time.
3. Daily lift height (maximum): 1.5 m for any one leaf.

540 Height of lifts in walling using thin-layer mortar

1. Quoins and advance work: Rack back.
2. Lift height (maximum): 1.3 m above any other part of work at any time.

545 Levelling of separate leaves

1. Locations for equal levelling of cavity wall leaves: As follows:
    1.1. Every course containing vertical twist type ties or other rigid ties.
    1.2. Every third tie course for double triangle/ butterfly ties.
    1.3. Courses in which lintels are to be bedded.

560 Coursing brickwork

1. Gauge: Four brick courses including bed joints to 300 mm.

561 Coursing brickwork with existing

1. Gauge: Line up with existing brick courses.

580 Laying frogged bricks

1. Single frogged bricks: Frog uppermost.
2. Double frogged bricks: Larger frog uppermost.
3. Frog cavity: Fill with mortar.

610 Support of existing work

1. Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.

615 Brickwork to receive asphalt dpc

1. Substrate: Mortar bed finished flush, smooth and level.

620 Block bonding new walls to existing

1. Pocket requirements: Formed as follows:
    1.1. Width: Full thickness of new wall.
    1.2. Depth (minimum): 100 mm.
    1.3. Vertical spacing
        1.3.1. Brick to brick: 4 courses high at 8 course centres.
        1.3.2. Block to block: Every other course.
2. Pocket joints: Fully filled with mortar.

635 Jointing

1. Profile: Consistent in appearance.

645 Accessible joints not exposed to view

1. Jointing: Struck flush as work proceeds.

671 Fire-stopping

1. Avoidance of fire and smoke penetration: Fit tightly between cavity barriers and masonry. Leave no gaps.

690 Adverse weather

1. General: Do not use frozen materials or lay on frozen surfaces.
2. Air temperature requirements: Do not lay bricks/ blocks:
    2.1. In cement-gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
    2.2. In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising, or as manufacturer's/ supplier's recommendations.
    2.3. In thin-layer mortars when outside the limits set by the mortar manufacturer.
3. Temperature of walling during curing: Above freezing until hardened.
4. Newly erected walling: Protect at all times from:
    4.1. Rain and snow.
    4.2. Drying out too rapidly in hot conditions and in drying winds.

Additional requirements for facework

710 The term facework

1. Definition: Applicable in this specification to brick/ block walling finished fair.
    1.1. Painted facework: The only requirement to be waived is that relating to colour.

745 Masonry sample panels

1. Sampling frequency: A panel for each type and delivery of masonry unit.
2. Selection of masonry units: Reasonably representative of the average quality of the whole order to be delivered
3. Panel types
    3.1. Walling type: F10/110
        3.1.1. Location: TBC on site

3.1.2. Size: 1.5 x 1.5 m

3.1.3. Other requirements: None

750 Colour consistency of masonry units

1. Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
2. Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
3. Facing bricks should be blended on site from a minimum of three packs to ensure an even distribution of colour and texture variation.
4. Finished work: Free from patches, horizontal stripes and racking back marks.

760 Appearance

1. Brick/ block selection: Do not use units with damaged faces or arrises.
2. Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
3. Quality control: Lay masonry units to match relevant reference panels.
   3.1. Setting out: To produce satisfactory junctions and joints with built-in features and components.
   3.2. Coursing: Evenly spaced using gauge rods.
4. Lifts: Complete in one operation.
5. Methods of protecting facework: Submit proposals.

780 Ground level

1. Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.

790 Putlog scaffolding

1. Use: Not permitted in facework.

800 Toothed bond

1. New and existing facework in same plane: Bond together at every course to achieve continuity.

830 Cleanliness

1. Facework: Keep clean.
2. Mortar on facework: Allow to dry before removing with stiff bristled brush.
3. Removal of marks and stains: Rubbing not permitted.

Ω End of Section

L37
External stair, ramps, handrail and balustrades systems

General

110 Stair systems

1. Description: PT7
2. Type: Built in situ
3. Base/ Fabric: Concrete foundations to Engineer's detail and specification
4. Surface: PT7 Bricks as Q25 130
   4.1. Finish: Please refer to Q25 130
5. Unobstructed width: Please refer to ARP3-FAB-ZZ-00-DE-L-908200
6. Accessories: BT3 Handrail as L37 150

150 External steel handrails

1. Description: External handrails to brick steps BT2
2. Manufacturer:: Diva or similar and approved
3. Product description: : Bespoke steel handrails
4. Material: Steel
5. Rail dimensions:: 30mm diameter
6. Finish:: Powder coated to match Architect's metalwork RAL colour
7. Height above ground:: 1000mm, please refer to drawing ARP3-FAB-ZZ-00-DE-L-908502
8. Fixing method:: Baseplate fixed with anchor bolts onto steps concrete foundations to manufacturer's detail and design

System performance - Not Used

Products - Not Used

Fabrication

510 Fabrication generally

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

Execution

610 Loading

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

620 Concrete foundations generally

1. Standard: To BS 8500-2.
2. Concrete: Designated not less than GEN 1 or standard prescribed not less than ST2.

3. Admixtures: Do not use.
4. Foundation holes: Neat vertical sides.
5. Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

630 Setting components in concrete

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

650 Installation generally

1. Fasteners: To section Z20.
2. Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
3. Temporary support: Do not use finished work as temporary support or strutting for other work.
4. 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

1. Selection: Do not use damaged units.
2. Accuracy
   - 2.1. Courses: Level and true to line.
   - 2.2. Faces, angles and features: Plumb.
   - 2.3. Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.
3. Absorbent units: Dampen in warm weather to reduce suction.
4. Dowels: To manufacturer's specification
5. Mortar joints: To manufacturer's specification
   - 5.1. Laying: Full bed of mortar with all joints and voids filled.
   - 5.2. Temporary distance pieces: Lead or stainless steel. Remove when mortar is sufficiently strong.
   - 5.3. Appearance: Neat and consistent.
6. Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains, not permitted.
7. Cutting of reinforced units: Not permitted.

662 Adverse weather

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

670 Installation of tread inserts/ nosings

1. Treads: Fully cured, sound and level.
2. Fixing
   2.1. Location/ position: As drawing ARP3-FAB-ZZ-00-DE-L-908200

680 Site painting and staining

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

Completion

910 Inspection

1. Timing: Two weeks prior to date when principal contractor expects work to be practically complete
2. Period of notice (minimum): 3 working days.

920 Documentation

1. Contents
   1.1. Copies of structural design calculations/ test reports.
2. General product information.
   2.1. Installation information.
   2.2. Inspection and maintenance reports.
3. Number of copies: 3
4. Submission: Two weeks after request by contract administrator

Ω End of Section

Q10
Kerbs/ edgings/ channels/ paving accessories

Types of kerbs/edgings and channels

112A Highway road kerb

1. Description:: Highway road kerb ET1
2. Manufacturer: To Highway Engineer's design and specification
3. Finish: To Highway Engineer's design and specification
4. Colour: To Highway Engineer's design and specification

112B Flush Edging kerb

1. Description:: Flush kerb ET2A
2. Manufacturer: Marshalls or similar
3. Product reference:: RK0350000, bullnosed top concrete edging or similar
4. Size:: W=125mm, D=255mm, L=915mm
5. Finish: Smooth

112C Raised kerb

1. Description:: Raised kerb ET4
2. Manufacturer: Marshalls or similar
3. Product reference:: RK0150000, bullnosed concrete kerb or similar
4. Size:: W=150mm, D=305mm, L=915mm
   kerb to be 100mm above adjacent paving
5. Finish: Smooth

125 Recessed Reclaimed Salvaged Precast Panel Paving

1. Description: PT4
2. Location and access: Please refer to drawing ARP3-FAB-ZZ-00-DR-L-901000 for final locations. Please refer to drawing ARP3-FAB-ZZ-00-DR-L-908620 for cutting schedule to existing building facade.
3. Lifting, storage and protection: Please refer to contractors proposals for lifting, storage and protection throughout construction phase.
4. Preparation: Please refer to contractors proposals
5. Bedding: Please refer to drawing ARP3-FAB-ZZ-00-DR-L-908100 for details. Bedding to Engineer's specification
6. Size:: 1000x1000mm (depth of salvaged precast concrete panel paving to be confirmed once extracted from existing building facade)

180A Drainage channel systems with gratings

1. Description:: Channel drain DR1
2. Manufacturer: ACO or similar
   2.1. Product reference: ACO MultiDrain M100D or similar
3. Size: 135mm width, depth to Engineer's details and specification.
4. Bedding: Minimum 150mm thick ST4 concrete bed & surround to Engineer's details and specification.
5. Cover gratings: 23405, Heelguard ductile iron grate
   5.1. Fixings: To Manufacturer's recommendations
   5.2. Loading grade to BS EN 124-1: D400

180B Drainage channel systems with gratings

1. Description:: Channel drain DR2
2. Manufacturer: ACO or similar
   2.1. Product reference: ACO MultiDrain M100D Brickslot or similar
3. Size: To Engineer's details and specification.
4. Bedding: Minimum 150mm thick ST4 concrete bed & surround to Engineer's details and specification.
5. Cover gratings: 23465, Brickslot galvanised steel
   5.1. Fixings: To Manufacturer's recommendations
   5.2. Loading grade to BS EN 124-1: D400

191 Metal edging

1. Description:: Metal edging ET3
2. Manufacturer: Kinley Systems or similar and approved
   2.1. Product reference: Kinley Fort edging or similar and approved
3. Material:: Galvanised steel
4. Edging thickness:: 7mm
5. Edging height:: 100mm

250 Material samples

1. Samples representative of colour and appearance of designated materials: Submit before placing orders.
   1.1. Designated materials: all edgings and channels

Roads/paving accessories/ marking/ demarcation - Not Used

Laying

510 Laying kerbs, edgings and channels

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

520 Adverse weather

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

530 Concrete for foundations, races and haunching

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

540 Cement mortar bedding

1. General: To section Z21.
2. Mix (Portland cement:sand): 1:3.
   2.1. Portland cement: Class CEM I 42.5 to BS EN 197-1.

2.2. Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).

3. Bed thickness: 12-40 mm.

570 Channels

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

580 Drainage channel systems

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

590 Drainage channel systems with built in fall

1. Installation: Top of channels level, installed in correct sequence to form an even gradient without ponding or backfall. Commence laying from outlets.
2. Silt and debris: Removed from entire system immediately before handover.
3. Washings and detritus: Safely disposed without discharging into sewers or watercourses.

600 Radius kerbs/ channels

1. Usage: Radii of 15 m or less.

610 Angle kerbs

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

620 Accuracy

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

625 Regularity of paved surfaces

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

640 Tooled mortar joints

1. Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
   1.1. Joint width: 6 mm.

Ω End of Section

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

REVISED

Types of surfacing

110A Resin bound gravel REVISED

1. Description: Resin bound gravel to courtyard PT2a and PT2b
2. Supplier:: The ResinMill or similar
3. Product colour:: Sahara
4. Surface layer thickness:: 30mm
5. Subgrade improvement layer: To Engineer's detail and specification
6. Granular sub-base: To Engineer's detail and specification
7. Completion: Compact to produce a firm, regular surface, stable in use.

110B Self binding gravel REVISED

1. Description: Self binding gravel to tree pits to central courtyard PT5
2. Supplier:: CED Stone Group or similar
3. Product reference:: CEDEC Footpath Gravel or similar
4. Surface course:: Crushed aggregate sized below 6mm
5. Product colour:: Red
6. Surface layer thickness:: 50mm after compaction
7. Subgrade improvement layer: To Engineer's detail and specification
8. Granular sub-base: To Engineer's detail and specification
9. Completion: Compact to produce a firm, regular surface, stable in use.

110C Gravel strip

1. Description: Gravel strip to building façade PT8
2. Supplier:: CED Stone Group or similar
3. Product reference:: CED Quartz Gravel or similar
4. Size:: 20mm
5. Strip width: 300mm
6. Strip depth: 400mm
7. Completion: Compact to produce a firm, regular surface, stable in use.

270 Hard landscaping materials specification

1. Minimum 'BRE Green Guide to Specification' online rating: A or A+

Laying

315 Materials

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

320 Samples

1. Submit: Representative samples of all aggregates.

325 Blinding to sub-base

1. Type: Coarse sand to engineer's detail and specification
2. Laying: Compact. Seal interstices. Provide free drainage.
3. Compacted thickness: T Engineer's specification

330 Herbicide to paving Q23/

1. Description: Q23/110A
2. Type: Suitable for the application, location and conditions of use.
3. Weeds and moss: Grub up.
4. Application: As section A34, before surfacing.

340 Laying generally

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

350 Cold weather working

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

360 Drainage falls

1. Sealed surfaces
   1.1. Falls and cross falls (minimum): 1:40.
   1.2. Camber (minimum): 1:50.
2. Unsealed surfaces (minimum): 1:30.

380 Laying granular surfaces in pedestrian areas and cycle tracks

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

390 Protection from traffic and plant

1. Paved areas: Restrict access to prevent damage.

Completion - Not Used

Ω End of Section

Q24
Interlocking brick/ block roads/ pavings

Types of paving

110 Salvaged Concrete Paving

1. Description: Salvaged site-won feature paving PT4
2. Granular sub-base: To Engineer's details and specification
   2.1. Compacted thickness: To Engineer's details and specification
3. Laying course
   3.1. Material: In accordance with BS 7533-3.
   3.2. Method of screeding, in accordance with BS 7533-3:
4. Blocks: To BS EN 1338.
   4.1. Manufacturer: Salvaged concrete panel from site
   4.2. Sizes: Triangular shape with 1200mm length on each side, depth subject to site conditions
   4.3. Colour/ Finish: Retain the existing colour and finish
   4.4. Recycled content: Salvaged concrete panel from site
   4.5. Requirements:
      4.5.1. Freeze/ thaw resistance:
      4.5.2. Abrasion resistance:
      4.5.3. Slip/ Skid resistance:

120 Conventional clay paver paving

1. Description: Clay brick paver PT1
2. Pavers: To BS EN 1344:
   2.1. Manufacturer: Wienerberger or similar and approved
      2.1.1. Product reference: WF Bruno or similar and approved
   2.2. Sizes: 200 x 50 x 85mm
   2.3. Special pavers: None
   2.4. Arrises: No requirement
   2.5. Colour/ Finish: Red/WF Bruno
   2.6. Unpolished slip/skid resistance: U3
   2.7. Bond:: Herringbone
3. Jointing
   3.1. Material: In accordance with BS 7533-3.
   3.2. Joint width: 2-5 mm.

160 Hard landscaping materials specification

1. Minimum BRE 'Green Guide to Specification' online rating: A or A+

Execution

200 Execution generally – concrete block and clay paver paving

1. Standard: In accordance with BS 7533-3.

205 Execution generally – natural stone paving

1. Standard: In accordance with BS 7533-7, as relevant to flexible (non-rigid) laying and construction.

2. Subgrade, sub-base and roadbase presentation: Tight and dense surface, to prevent loss of laying course material into it during construction and use.
3. Joint filling: Do not work in damp conditions. Top joints up at the earliest opportunity.

211 Colour banding

1. General: Unless premixed by manufacturer, select blocks/ pavers/ setts from at least 3-5 separate packs in rotation, to avoid colour banding.

220 Samples

1. General: Before ordering, submit samples of clay and natural stone blocks/ pavers/ setts that are representative of colour and appearance.

230 Control samples

1. General: Carry out sample area of finished work:
    1.1. Location: TBC
    1.2. Size (minimum): 1.5 x 1.5 m
    1.3. Features to be included: Edging and Junction with building facade
2. Give notice: When ready for inspection.
3. Timing: Obtain approval of appearance before proceeding.

240 Adverse weather

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

325 Drainage holes in existing bases

1. Location: Impervious layers of existing road/ paving.
2. Drainage: Form regular grid of holes, through base and any additional build up, down to sub-base:
    2.1. Spacing in both directions: To Engineer's detail and specification
    2.2. Minimum clear opening: To Engineer's detail and specification
    2.3. Do not weaken or excessively disturb road/ paving.
3. Completion
    3.1. Remove jagged or protruding edges.
    3.2. Fill holes with To Engineer's detail and specification. Ram down to form flush smooth surface.

335 Planing and repairs to existing bases

1. Existing macadam/ asphalt surfaces: Plane to required levels.
2. Repairs: To Engineer's detail and specification
3. Building up to required levels: To Engineer's detail and specification

450 Laying geotextile sheet for conventional paving

1. Location: Immediately below laying course.
2. Jointing: To Engineer's detail and specification
3. Laying: Fit neatly at edge restraints and other features that interrupt the sand laying course, e.g. drainage fittings, channels, manholes and kerbs.
    3.1. Edge detail: Turn sheet up to form an upstand against features.
        3.1.1. Height (minimum): Thickness of sand laying course.

485 Laying blocks/ pavers/ setts

1. Setting out: Start from an edge restraint.
2. Cutting: Cleanly, accurately and vertically, without spalling. Do not mark or damage visible surfaces.

3. Cut edges: Turn inwards where possible; do not position against edge restraints or other features.
4. In situ mortar or concrete infill: Do not use
5. Compaction: Vibrate to produce thoroughly interlocked paving of even overall appearance with regular joints and accurate to line, level and profile. Do not mark or damage paving units, kerbs and adjacent work.
    5.1. Concrete blocks and clay pavers: In accordance with BS 7533-3, Annex F, to site category required for laying course material.

495 In situ surrounds to obstructions

1. Locations: Where agreed on site
2. Material: C35 air entrained concrete in accordance with BS 7533-3, clause 5.4.3.2.
3. Shape and size: Rectangular, 100 mm (minimum) all round obstruction.
4. Thickness (minimum): Combined depth of blocks/ pavers/ setts and sand laying course.
5. Colour: To approval
6. Timing: Lay and allow to cure in advance of laying blocks/ pavers/ setts.

500 Regularity of paved surfaces

1. 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)
    1.1. Precast concrete paving blocks and clay pavers for flexible pavements: 10 mm.
2. Difference in level between adjacent paving units (maximum): 2 mm.
3. Sudden irregularities: Not permitted.

505 Regularity of paved surfaces

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

Completion

600 Sealer/ Stabilizer for new blocks and setts

1. Surface preparation: Ensure sand joints are completely dry and free from contamination
2. Sealer/ Stabilizer
    2.1. Manufacturer: Submit proposals
        2.1.1. Product reference: Submit proposals
    2.2. Application: To dry paving.
        2.2.1. Method: To manufacturer's recommendations
        2.2.2. Number of coats: 1
        2.2.3. Coverage: As per manufacturer's recommendations

615 Completion of paving

1. Final compaction of the surface course: In accordance with BS 7533-3.
2. Vacuum cleaning machines: Not allowed.

Ω End of Section

Q25
Slab/ brick/ sett/ cobble pavings

General

120 Concrete flag paving system to Highways

1. Description: PT3
2. Subgrade improvement layer: To Highways detail and specification
   2.1. Compacted thickness: To Highways detail and specification
3. Granular sub-base: To Highways detail and specification
   3.1. Compacted thickness: To Highways detail and specification
4. Base: To Highways detail and specification
   4.1. Thickness: To Highways detail and specification
5. Laying course: To Highways detail and specification
   5.1. Accessories: To Highways detail and specification
6. Paving units: Concrete Flag paving to Highways detail and specification
7. Jointing: To Highways detail and specification
   7.1. Bond: To Highways detail and specification
8. Accessories: To Highways detail and specification

130 Rigid brick paving system

1. Description:: PT7
2. Subgrade improvement layer: To Engineer's detail and specification
   2.1. Compacted thickness: To Engineer's detail and specification
3. Granular sub-base: To Engineer's detail and specification
   3.1. Compacted thickness: To Engineer's detail and specification
4. Base: To Engineer's detail and specification
   4.1. Thickness: To Engineer's detail and specification
5. Paving units: Rosado brick or similar and approved to match Architectural brickwork specification
6. Bedding and jointing: Jointing and mortar to match Architect's specification
   6.1. Bond: Please refer to ARP3-FAB-ZZ-00-DE-L-908200
7. Accessories: BT3 Handrail as L37

140 Natural stone sett paving system to Highways

1. Description: PT6
2. Subgrade improvement layer: To Highways detail and specification
   2.1. Compacted thickness: To Highways detail and specification
3. Granular sub-base: To Highways detail and specification
   3.1. Compacted thickness: To Highways detail and specification
4. Base: To Highways detail and specification
   4.1. Thickness: To Highways detail and specification
5. Laying course: To Highways detail and specification
   5.1. Accessories: To Highways detail and specification
6. Paving units: Natural stone granite setts to Highways detail and specification
7. Jointing: To Highways detail and specification
   7.1. Bond: To Highways detail and specification

8. Accessories: To Highways detail and specification

190 Hard landscaping materials specification

1. Minimum BRE 'Green Guide to Specification' (online) rating: A or A+

System performance

220 Design – concrete flag paving system

1. Design: Complete the design of the concrete slab paving system in accordance with BS 7533-4.
    1.1. Site category: all
2. Ground conditions: To Highways detail and specification
3. Performance criteria: To Highways detail and specification
4. Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

230 Design – rigid brick paving system

1. Design: Complete the design of the rigid brick paving system in accordance with Brick Development Association Design Note 8.
2. Ground conditions: To Engineer's detail and specification
3. Performance criteria: To Engineer's detail and specification
4. Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

240 Design – natural stone sett paving system

1. Design: Complete the design of the natural stone sett paving system in accordance with BS 7533-7.
2. Ground conditions: To Highways detail and specification
3. Performance criteria: To Highways detail and specification
4. Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

Products

315 Concrete flags

1. Description: PT3
2. Standard: To BS EN 1339.
    2.1. Manufacturer: To Highways Engineer's design
        2.1.1. Product reference: To Highways Engineer's design
3. Recycled content: To Highways Engineer's design
4. Colour: To Highways Engineer's design
    4.1. Finish: To Highways Engineer's design
    4.2. Nominal sizes: To Highways Engineer's design
5. Arrises: To Highways Engineer's design
6. Water absorption and freeze/ thaw resistance class: To Highways Engineer's design
7. Bending strength class: To Highways Engineer's design
8. Abrasion resistance class: To Highways Engineer's design
9. Slip/ Skid resistance: To Highways Engineer's design
10. Breaking load class: To Highways Engineer's design

325 Bricks

1. Description: PT7
2. Manufacturer: Nelissen or similar and approved to match Architectural brickwork specification

2.1. Product reference: Rosado brick or similar and approved to match Architectural brickwork specification
3. Recycled content: Submit proposals
4. Sizes: 215 x 102.5 x 65mm
5. Special shapes: Please refer to drawing ARP3-FAB-ZZ-00-DE-L-908200 for details
6. Finish: Rosado brick or similar and approved to match Architectural brickwork specification
7. Colour: Rosado brick or similar and approved to match Architectural brickwork specification

330 Natural stone setts

1. Description: PT6
2. Standard: To BS EN 1342.
3. Supplier: To Highways Engineer's design
   3.1. Product reference: To Highways Engineer's design
   3.2. Quarry: To Highways Engineer's design
4. Petrographical description/ stone type: To Highways Engineer's design
5. Finish: To Highways Engineer's design
6. Sizes: To Highways Engineer's design
   6.1. Plan dimension and thickness deviation: To Highways Engineer's design
7. Special setts: To Highways Engineer's design
   7.1. Tolerances on undercut of sides: To Highways Engineer's design
   7.2. Tolerances on hewn and coarse textured face irregularities: To Highways Engineer's design
   7.3. Breaking strength: To Highways Engineer's design
8. Slip resistance: To Highways Engineer's design
9. Skid resistance: To Highways Engineer's design
10. Surface treatment: To Highways Engineer's design

365 Geotextile sheet

1. Description: To Engineer's detail and specification
2. Manufacturer: To Engineer's detail and specification
   2.1. Product reference: To Engineer's detail and specification
3. Recycled content: To Engineer's detail and specification

Execution

610 Material samples

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

615 Control samples

1. Sample areas: Complete as part of the finished work.
   1.1. Types of paving: Brick paving
   1.2. Location: TBC
   1.3. Size (minimum): 1.5 x 1.5 m
   1.4. Included features: Steps
2. Approval of appearance and surface: Obtain before proceeding.

620 Adverse weather

1. General

1.1. Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.

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

2. Paving with mortar joints and/ or bedding

2.1. Protect from frost damage, rapid drying out and saturation until mortar has hardened.

3. Paving laid and jointed in sand/ fine aggregate

3.1. Stockpiled laying course sand/ fine aggregate: Protect from saturation.

3.2. Exposed areas of unbound laying course and uncompacted areas of unbound paving: Protect from heavy rainfall.

3.3. Saturated unbound laying course: Remove and replace, or allow to dry before proceeding.

3.4. Laying dry sand/ fine aggregate jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

625 Laying pavings – general

1. Appearance: Smooth and even with regular joints and accurate to line, level and profile.
2. Falls: To prevent ponding.
3. Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.

3.1. Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.

4. Slopes: Lay paving units upwards from the bottom of slopes.
5. Paving units: Free of mortar and sand stains.
6. Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.

630 Levels of paving

1. Permissible deviation from specified levels

1.1. Generally: ± 6 mm.

2. Height of finished paving above features

2.1. At gullies: +6 to +10 mm.

2.2. At drainage channels and kerbs: +3 to +6 mm.

635 Regularity of paved surfaces

1. 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)

1.1. Precast concrete paving blocks and clay pavers for flexible pavements: 10 mm.

1.2. Precast concrete flags or natural stone slabs: 3 mm.

2. Difference in level between adjacent paving units (maximum): 2 mm.
3. Sudden irregularities: Not permitted.

640 Colour banding

1. General: Unless premixed by manufacturer, select from at least 3 separate packs in rotation to avoid colour banding.

645 Protection

1. Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
2. Materials storage: Do not overload pavings with stacks of materials.
3. Handling: Do not damage paving unit corners, arrises, or previously laid paving.
4. Mortar bedded pavings: Keep free from traffic after laying:

4.1. Pedestrian traffic (minimum): 4 days

4.2. Vehicular traffic (minimum): 10 days

5. Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 Cementitious bases and sub-bases

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

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

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

710 Laying flag and slab paving – sand/ fine aggregate laying course and jointing

1. Standard: In accordance with BS 7533-4.
2. Flag installation and cutting: PT3
3. Laying course

   3.1. Nominal thickness after compaction: To Highways Engineer's detail and specification
4. Joint width: 2-5 mm.

715 Laying flag and slab paving – mortar laying course and jointing

1. Standard generally: In accordance with BS 7533-4.
2. Flag installation and cutting: PT6
3. Laying course

   3.1. Nominal thickness: To Highways Engineer's detail and specification
4. Laying and jointing: To Highways Engineer's detail and specification
5. Joint width (nominal): To Highways Engineer's detail and specification

725 Laying rigid brick paving

1. Standard generally: In accordance with Brick Development Association Design Note 8.
2. Bedding and jointing method: Simultaneous bedding and jointing with stiff plastic mortar.
3. Cement slurry: Apply thin slurry (1-3 mm) of neat cement or 1:1 cement:soft sand over the freshly laid mortar bed immediately prior to laying bricks.
4. Laying: Wet bricks as necessary (but do not soak), butter joint faces and press down firmly to give a level surface with 10 mm regular joints.
5. Nominal thickness of bed: To Engineer's detail and specification

785 Tooled joints in mortar-bedded units

1. Joints: Completely filled with bedding mortar as work proceeds.

   1.1. Joint width: 5mm

1.2. Finish: Neat flush profile.

790 Tooled coloured joints in mortar-bedded units

1. Joints: Completely filled with bedding mortar as work proceeds.
   1.1. Joint width: 10mm
2. Pointing: 1:3 cement:sand mortar with pigment, colour to match Architect's proposals.
   2.1. Depth: 10 mm.

Completion

915 Completion of paving with dry sand or fine aggregate filled joints

1. Sand dressing: Leave a thin layer of dry jointing sand/ fine aggregate over the paving until opened to public access
2. Final compaction of the surface course: In accordance with BS 7533-3.
3. Vacuum cleaning machines: Not allowed.

Ω End of Section

Q28
Topsoil and soil ameliorants

System outline

115 Topsoil system for turfing and seeding

1. Description: For all PL1 areas
2. Composition
   - 2.1. Topsoil: Imported topsoil to BS 3882
   - 2.2. Ameliorants: Sanitized and stabilized composted materials
   - 2.3. Accessories: None

135 Planting bed topsoil system

1. Description: For shrub planting beds
2. Composition
   - 2.1. Topsoil: Imported topsoil to BS 3882
   - 2.2. Ameliorants: Sanitized and stabilized composted materials
   - 2.3. Accessories: Mycorrhizal inoculant

140 Planting bed soil system for Rain Garden

1. Description: For shrub planting beds with rain garden
2. Composition
   - 2.1. Topsoil: Imported Rain Garden Soil
   - 2.2. Manufacturer:: Bourne Amenity or similar and approved
   - 2.3. Accessories: Mycorrhizal inoculant

145 Planting pit backfilling topsoil system

1. Description: For Tree Pits
2. Composition
   - 2.1. Topsoil: Imported topsoil to BS 3882
   - 2.2. Subsoil:: Imported Subsoil to BS 8601
   - 2.3. Ameliorants: Organic materials and slow release fertilizer
   - 2.4. Accessories: Mycorrhizal inoculant

155 Mulching Layer

1. Description: For soft landscape planting beds (not rain garden)
2. Composition
   - 2.1. Material: 50mm depth ornamental bark mulch, Melcourt or similar approved

156 Gravel Layer to Rain Gardens

1. Description: Gravel layer for rain gardens
2. Composition
   - 2.1. Material: CED Stone Group Quartz Gravel or similar approved
   - 2.2. Size:: 20mm
   - 2.3. Depth:: 75mm

Products

300 Preparation materials generally

1. Purity: Free of pests and disease.
2. Foreign matter: On visual inspection, free of fragments and roots of aggressive weeds, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
3. Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
    3.1. Corrosive, explosive or flammable.
    3.2. Hazardous to human or animal life.
    3.3. Detrimental to healthy plant growth.
4. Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
5. Objectionable odour: None.
6. Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

305 Permitted materials

1. Materials: Composted green/ food waste certified to PAS 100 De-inked waste paper sludge
2. Give notice: before ordering or using.
3. Declaration of compliance in accordance with BS EN 13650: Not required

310 Materials not permitted

1. Materials: Products containing peat

314 Imported subsoil

1. Description: For all planting purposes
2. Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. Standard: To BS 3882.
4. Classification: Multipurpose
    4.1. Soil textural class to BS 3882, Figure 1: Sandy loam
5. Source: Contractor's choice
    5.1. Product reference: Submit proposals

315 Imported topsoil

1. Description: For all planting purposes
2. Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. Standard: To BS 3882.
4. Classification: Multipurpose
    4.1. Soil textural class to BS 3882, Figure 1: Sandy loam
5. Source: Contractor's choice
    5.1. Product reference: Submit proposals

316 Imported topsoil to BS 3882 for Urban Tree Pits

1. Description: For Urban tree pits
2. Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. Standard: To BS 3882.

4. Classification: Specific purpose - Urban Tree Soil for Cellular Structural Tree Pit
    4.1. Soil textural class to BS 3882, Figure 1: Sandy loam
5. Source: Contractor's choice
    5.1. Product reference: Submit proposals

317 Imported subsoil for tree pits

1. Description: For tree pits
2. Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. Standard: To BS 3882.
4. Classification: Tree Subsoil
    4.1. Soil textural class to BS 3882, Figure 1: Sandy loam
5. Source: Contractor's choice
    5.1. Product reference: Submit proposals

318 Imported Rain Garden Soil

1. Description: For all shrub planting purposes within rain garden
2. Quantity: Provide as necessary to make up any deficiency of the rain garden soil.
3. Source: Bourne Amenity or similar and approved
    3.1. Product reference: Rain Garden Soil or similar and approved. (This material acts in a similar way to the Bio retention soil blend.)
    3.2. SHC Rate:: 102mm/hr
    3.3. Organic Matter:: 4.7% (LOI)
    3.4. Total Porosity:: 45.8%

360 Sanitized and stabilized composted materials certified to PAS 100

1. Description: For all planting purposes
2. Standard: In accordance with PAS 100
3. Source: Contractor's choice
    3.1. Product reference: Submit proposals
4. Horticultural parameters
    4.1. pH (1:5 water extract): 7.0-8.7
    4.2. Electrical conductivity (maximum, 1:5 water extract): 200 mS/m
    4.3. Moisture content (m/m of fresh weight): 35-55%.
    4.4. Organic matter content (minimum): 25%
    4.5. Grading (air dried samples): 95% passing 25 mm and 90% passing 10 mm screen mesh apertures
    4.6. Carbon:Nitrogen ratio (maximum): 20:1.
5. Texture: Friable.
6. Objectionable odour: Not permitted.
7. Compost Certification Scheme certification: Not required
8. Declaration of analysis: Submit.
9. Additional analyses: Not required
10. Samples: Not required

380 Mycorrhizal inoculant

1. Description: For all tree pits and planting beds
2. Manufacturer: Contractor's choice

2.1. Product reference: Submit proposals

405 Inorganic fertilizers

1. Description: For all plating areas
2. Manufacturer/ source: Vitex or similar and approved
   2.1. Product reference: Q4 or similar and approved
3. Standard: In accordance with the Fertiliser Industry Assurance Scheme (FIAS)
4. Purpose: General purpose fertilizer
5. Type: NPK (macronutrient)
6. Availability to plants: Controlled release

Execution

610 Topsoil analysis

1. Soil to be analysed: Imported topsoil
2. Soil analyst: Tim O'Hare Assoicates
3. Samples: Collect in accordance with BS 3882.
4. Submit
   4.1. Declaration of analysis: In accordance with BS 3882, clause 6 and Table 1.
   4.2. Additional analysis: Phytotoxic and CLEA elements
   4.3. Report detailing soil analyst's recommendations.

620 Importing topsoil

1. Give notice: Before stripping topsoil for transfer to site.
   1.1. Notice period: 5 days

625 Sample loads

1. Description: FOR IMPORTED TOPSOIL
2. Deliver to site a sample load: of 5 kg
3. Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
   3.1. Notice period: 7 days

630 Documentation for imported topsoil

1. Description: For all planting purposes
2. Timing: Submit at handover.
3. Contents
   3.1. Full description of all soil components.
   3.2. Record of source for all soil components.
   3.3. Record drawings showing the location and depth of all soils by type and grade.
   3.4. Declaration of analysis: in accordance with BS 3882, clause 6 and Table 1.
4. Number of copies: Two

635 Documentation for compost and composted materials

1. Timing: Submit at handover.
2. Contents
   2.1. Full description of all compost components.
   2.2. Record of source for all compost components.

2.3. Analyst's report for each test carried out.
2.4. Declaration of compliance: in accordance with PAS 100 and BSI PD CR 13456.
2.5. Quality Compost Protocol certification: Required
3. Number of copies: Two

650 Notice

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

655 Mechanical tools

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

660 Grading subsoil for:

1. Description: All planting area where topsoil will be spread
2. Standard: In accordance with BS 8601.
3. General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
4. Areas of thicker topsoil: Excavate locally.
5. Avoid compaction.
6. Excess subsoil: Remove.

670 Inspecting formations

1. Give notice: Before spreading topsoil for planting beds.
2. Notice period: 7 days

690 Topsoil storage heaps

1. Location: According to Site manager's direction
2. Height (maximum): To Agronomist Specification
3. Width (maximum): To Agronomist Specification
3.1. Formation: Loose tip and shape from the side only, without running machinery on the heap at any time.
4. Protection
4.1. Do not place any other material on top of storage heaps.
4.2. Do not allow construction plant to pass over storage heaps.
4.3. Prevent compaction and contamination, by fencing and covering as appropriate.

700 Grading of topsoil

1. Topsoil condition: Reasonably dry and workable.
2. Contours: Smooth and flowing, with falls for adequate drainage.
2.1. Hollows and ridges: Not permitted.
3. Give notice: If required levels cannot be achieved by movement of existing soil.

705 Handling topsoil

1. Standard: In accordance with BS 3882.

2. Aggressive weeds: Give notice and obtain instructions before moving topsoil.
3. Plant: Select and use plant to minimize disturbance, trafficking and compaction.
4. Contamination: Do not mix topsoil with:
   4.1. Subsoil, stone, hardcore, rubbish or material from demolition work.
   4.2. Other grades of topsoil.
5. Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
6. Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall, or when the moisture content is greater than the plastic limit.

710 Spreading topsoil on:

1. Description: All grassed areas
2. Standard: In accordance with BS 3882.
3. Temporary roads/ surfacing: Remove before spreading topsoil.
4. Layers
   4.1. Depth (maximum): 150 mm.
   4.2. Gently firm each layer before spreading the next.
5. Depth after firming and settlement: 150 mm
6. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

710A Spreading topsoil on planting areas:

1. Description: All planting areas
2. Standard: In accordance with BS 3882.
3. Temporary roads/ surfacing: Remove before spreading topsoil.
4. Layers
   4.1. Depth (maximum): 150 mm.
   4.2. Gently firm each layer before spreading the next.
5. Depth after firming and settlement: 300 mm
6. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

715 Loose tipping of topsoil

1. Standard: In accordance with BS 3882.
2. General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

720 Finished levels of topsoil after settlement

1. In relation to adjoining paving, kerbs or hard surfaces: 50 mm below
2. In relation to dpc of adjoining buildings: Not less than 150 mm below.
3. In relation to adjacent grass areas: 25 mm above
4. Seeded areas: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
5. Within root spread of existing trees and shrubs to be retained: Do not dig or cultivate.
6. Adjoining soil areas: Marry in.
7. Thickness of turf or mulch: Included.

805 Applying soil ameliorant

1. Description: For flowering shrubs

2. Type: Organic materials
3. Fully incorporate into topsoil to a depth of 150 mm.
4. Application: Spread evenly.
   4.1. Timing: Apply prior to cultivation.
   4.2. Rate: To suit soil report recommendations
5. Timing: Prior to cultivation.
6. Other requirements: None

820 Applying general fertilizer

1. Description: To Shrub beds
2. Application: Spread evenly, carefully incorporating below mulch materials.
   2.1. Timing: Immediately before cultivation.
   2.2. Application rate: As to manufacturer's recommendations
   2.3. Other requirements: None

840 Applying mycorrhizal inoculant

1. Description: For tree and planting pits
2. Depth: To maintain contact with root system

845 Applying loose mulch

1. Description: FOR PLANTING BEDS
2. Timing: Immediately after planting
3. Preparation: Ensure that soil is thoroughly moistened, applying water where necessary
4. Coverage of mulch (minimum)
   4.1. Planting beds (depth): 50 mm depth
   4.2. Planting Beds to rain garden: 75mm depth
   4.3. Trees: 75 mm depth
   4.4. Container planting: 50 mm depth
5. Finished level of mulch: 30 mm below adjacent grassed or paved areas

Completion

905 Applying maintenance fertilizer to soil

1. Description: TO PLANTING BEDS
2. Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
3. Time of year: March or April
4. Application: Evenly spread, carefully incorporating below mulch materials.
5. Rate: To manufacturer's recommendations

920 Applying mulch

1. Timing: At end of the rectification period
2. Watering: Ensure that soil is thoroughly moistened prior to mulching, applying water where necessary.
3. Planting beds: Re-mulch.
   3.1. Depth (minimum): as per Q28 845
4. Trees: Remulch.
   4.1. Depth (minimum): as per Q28 845
5. Container planting: Remulch.

5.1. Depth (minimum): as per Q28 845

Ω End of Section

Q30
Seeding/ turfing

General information/requirements

115 Seeded and turfed areas

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

120 Climatic conditions

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

145 Watering

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

150 Water restrictions

1. 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

1. Give notice before
    1.1. Setting out.
    1.2. Applying herbicide.
    1.3. Applying fertilizer.
    1.4. Preparing seed bed.
    1.5. Seeding or turfing.
    1.6. Visiting site during maintenance period.
2. Period of notice: 2 working days

170 Setting out

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

Preparation

210 Herbicide

1. Description: FOR ALL GRASSED AREAS
2. Type: Suitable for suppressing perennial weeds.
3. Timing: Allow fallow period before cultivation.
    3.1. Duration: 1 week

Seeding - Not Used

Turfing

400 Cultivated turf PL1

1. Description: PL1
2. Supplier: Wildflower Turf Limited or similar and approved
   2.1. Product reference: WFT Species Rich 26 or similar and approved
3. Properties of soil used for turf production: Peat-free, well drained sandy loam

420 Delivery and storage

1. Timing: Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist.
2. Frosty weather or waterlogged ground: Do not lift turf.
3. Delivery: Arrange to avoid need for excessive stacking.
4. Stacking height (maximum): 1 m.
5. Dried out or deteriorated turf: Do not use.
6. Certification
   6.1. Standard: To BS 3969.
   6.2. Declaration: Species mix, including percentage of specified species

430 Turfing generally

1. Time of year: Autumn or early winter
2. Timing of laying
   2.1. Spring and summer: Within 18 hours of delivery.
   2.2. Autumn and winter: Within 24 hours of delivery.
3. 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.
4. Working access: Planks laid on previously laid turf. Do not walk on prepared bed or newly laid turf.
5. Jointing: Laid with broken joints, well butted up. Do not stretch turf.
6. Edges: Whole turfs, trimmed to a true line.
7. Adjusting levels: Remove high spots and fill hollows with fine soil.
8. Consolidating: Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers.
9. Dressing, brushed well in to completely fill all joints: None
10. Watering: Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below.

440 Turfing on banks exceeding 30° slope

1. Turf configuration: Diagonal or horizontal.
2. Securing turfs
   2.1. Fixings: Pointed softwood pegs, 200 mm long x 25 mm square
   2.2. Frequency of fixings: Every second row
3. 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

1. Newly planted tree pits: Neatly cut away around individual trees.
   1.1. Diameter: 800 mm

1.2. Tree pit surface: As per Q28 mulching

Protecting/cutting

510 Protective fencing

1. Fencing type: Chestnut pale fencing to BS 1722-4
   1.1. Height: 1.1 m
2. Erection: On completion of seeding/ turfing.
3. Removal: After grass is well established. Fencing will remain the property of the Contractor

530 First cut of grassed areas

1. Timing: When grass is reasonably dry.
   1.1. Height of initial growth: 40-75 mm
2. Preparation
   2.1. Debris and litter: Remove.
   2.2. Stones and earth clods larger than 25 mm in any dimension: Remove
3. Height of first cut: 50 mm
4. Mower type: Contractor's choice
5. Arisings: Remove from site

590 Cleanliness

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

Maintenance

610 Failures of seeding/ turfing

1. Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
2. Defective materials or workmanship: Areas that have failed to thrive.
   2.1. Exclusions: Theft or malicious damage.
3. Method of making good: Recultivation and reseeding/ returfing.
4. Timing of making good: Submit proposals

620 Maintaining

1. Description: PL1
2. Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
3. Maximum height of growth at any time: 75 mm
4. Preparation: Before each cut remove all litter and debris.
5. Cutting: As and when necessary to a height of 25 mm.
   5.1. Arisings: Remove
6. Bulb planting areas: Do not cut until bulb foliage has died down.
7. Trimming: All edges.
   7.1. Arisings: Remove.
8. Weed control: Substantially free of broad leaved weeds.
   8.1. Method: Application of a suitable selective herbicide.
9. Stones brought to the surface: Remove regularly.

9.1. Size: Exceeding 25 mm in any dimension.

10. Areas of settlement: Make good.
11. Watering: As per maintenance specification

Ω End of Section

Q31
External planting

General information/ requirements

112 Site clearance generally

1. General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
2. Stones: Remove those with any dimension exceeding 100 mm.
3. Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
4. Vegetation: Clear scrub to ground level by flail mowing and remove arisings; retain and protect trees indicated on drawings
5. Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
6. Additional requirements: Remove remnants of old elements and check with site manager

118 Soil conditions

1. Soil for cultivating and planting: Moist, friable and (except in aquatic/ marginal planting) not waterlogged.
2. 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

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

125 Times of year for planting

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

130 Mechanical tools

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

145 Watering

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

150 Water restrictions

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

160 Notice

1. Give notice before
    1.1. Setting out.
    1.2. Applying herbicide.
    1.3. Applying fertilizer.
    1.4. Delivery of plants/ trees.
    1.5. Planting shrubs.
    1.6. Planting trees into previously dug pits.
    1.7. Watering.
    1.8. Visiting site during maintenance period.
2. Period of notice: Two working days

170 Soil requirements

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

200 Plants/ Trees – general

1. Condition: Materially undamaged, sturdy, healthy and vigorous.
2. Appearance: Of good shape and without elongated shoots.
3. Hardiness: Grown in a suitable environment and hardened off.
4. Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
5. Budded or grafted plants: Bottom worked.
6. Root system and condition: Balanced with branch system.
    6.1. Standard: The National Plant Specification
7. Species: True to name.
8. Origin/ Provenance: Grown in the United Kingdom for at least one growing season, unless otherwise approved
9. Definition: Origin and Provenance have the meaning given in the National Plant Specification.

216 Plants/ Trees – specification criteria

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

225 Bulbs/ Corms/ Tubers

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

235 Container grown plants/ Trees

1. Growing medium: With adequate nutrients for plants to thrive until permanently planted.
2. Plants: Centred in containers, firmed and well watered.

3. Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
4. Hardiness: Grown in the open for at least two months before being supplied.
5. Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

245 Labelling and information

1. General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
    1.1. Full botanical name.
    1.2. Total number.
    1.3. Number of bundles.
    1.4. Part bundles.
    1.5. Supplier's name.
    1.6. Employer's name and project reference.
    1.7. Plant specification, in accordance with scheduled National Plant Specification categories.
2. Additional information: Submit on request: Country of origin and biosecurity information.

246 Labelling and information

1. Standard: To BS 3936.

255 Plants/ Trees reserved at supplier’s premises

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

260 Plant/ Tree substitution

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

265 Plant handling, storage transport and planting

1. Standard: To CPSE 'Handling and establishing landscape plants'.
2. Frost: Protect plants from frost.
3. Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
4. Plant packaging: Black polyethylene bags
5. Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped
6. Planting: Upright or well balanced with best side to front.

280 Treatment of tree wounds

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

285 Protection of existing grass

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

290 Surplus material

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

Plant containers

292 Prefabricated plant containers

1. Manufacturer:
    1.1. Product reference:
2. Material:
3. Dimensions/ Shape:
4. Lining:
5. Accessories:

Preparation of planting beds/ planting materials - Not Used

Planting shrubs/ herbaceous plants/ bulbs

401 Regular plant layout

1. Description: TO ALL BEDS
2. Spacing: As drawing ARP3-FAB-ZZ-00-DE-L-908700
3. Density: As plant schedule

415 Antidesiccant for conifers/ Evergreens

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

435 Climbing plants used as ground cover

1. Planting
    1.1. Canes or other supports: Remove.
    1.2. Arrangement: Spread stems.
2. Fixing: Pinned to ground to ensure good contact.

445 Planting bulbs/ Corms/ Tubers

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

470 Formal hedges

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

480 After planting

1. Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
2. Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
3. Top dressing: Mulching and top dressing system, as section Q28
   3.1. Depth: 50 mm

Planting trees

500 Tree planting

1. Standard: Prepare trees and transplant in accordance with BS 4428

505 Tree pits in soft landscape

1. Manufacturer:: GreenBlue Urban Ltd. or similar and approved
2. Sizes: Please refer to drawing ARP3-FAB-ZZ-00-DE-L-908701
3. Tree Package includes:: -RootRain Metro (Q31/513)
   -Guying System to made ground (Q31/526).
   -ReRoot (Q31/510)
4. Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
5. Excavated material: Remove arisings
6. Pit bottoms: Excavate with slightly raised centre: Break up base to a depth of 300 mm.
   6.1. Treatment: Not required
7. Pit sides: Scarify.
8. Backfilling material: Proprietary tree backfilling material, as section Q28

505A Tree pits in hard landscape

1. Manufacturer:: GreenBlue Urban Ltd. or similar and approved
   1.1. Product Reference:: Arborsystem or similar and approved
2. Sizes: Please refer to drawing ARP3-FAB-ZZ-00-DE-L-908702
3. Tree Package Includes:: GBU3110

   ROOTSPACE @ 1200mm DEPTH (2 UNIT DEEP) C/W TWIN WALLED GEONET & OPEN REINFORCING MESH - GBURS61A

   ROOTRAIN ARBORVENT CAST ALUMINUM TRAFFICABLE AERATION INLET WITH 150mm SQUARE TOP AND MANIFOLD - RRARBV150B

   TWIN WALLED STRUCTURAL GEONET (INCLUDED IN ITEM) SEE NOTE - GLTWGNA

   20mm OPEN REINFORCING MESH (INCLUDED IN ITEM) SEE NOTE - GRN20A

   ARBORGUY ANCHORPLATE STRAPPED ANCHOR SYSTEM - SASAP12A

   ROOTFORM MODULAR ROOT MANAGEMENT SYSTEM 1500mm x 1500mm x 400mm
4. Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
5. Excavated material: Remove arisings
6. Pit bottoms: Excavate with slightly raised centre: Break up base to a depth of 200 mm.
   6.1. Treatment: Not required

7. Pit sides: Scarify.
8. Backfilling material: Proprietary tree backfilling material, as section Q28

510 Tree pit root barriers

1. Manufacturer: GreenBlue Urban Ltd. or similar and approved
   1.1. Product reference: ReRoot or similar and approved
2. Thickness: 1mm
3. Barrier depth: 1000mm
4. Foil liner: Not required
5. Top of root barrier in relation to finished topsoil level: Flush
6. Installation: With sides vertical. Remove all sharp objects adjacent to barrier.

512 Tree pit ventilation accessories

1. Locations: To all tree pits within paved areas
2. Manufacturer: GreenBlue Urban Ltd. or similar and approved
   2.1. Product reference: Arborvent Double Inlet aeration system with cast inlets or similar and approved
3. Type: Submit proposals
4. Pipe diameter: 60 mm
5. Inlet: Cast aluminium
6. Installation
   6.1. Pipe: 2x pipes connected to Stratacell structure 1500m from centre of tree pit
   6.2. Top cap of inlet: Flush with finished surround level.
   6.3. Backfill material: Carefully compact in layers.

513 Tree pit root ball irrigation accessories

1. Locations: To all tree pits
2. Manufacturer: GreenBlue Urban Ltd or similar and approved
   2.1. Product reference: RootRain Metro or similar and approved
3. Type: Submit proposals
4. Pipe diameter: 35 mm
5. Ring diameter: 2500 mm
6. Inlet: Cast aluminium
7. Installation
   7.1. Pipe: Lay in loop above root ball with slight fall away from inlet pipe. Trim length to ensure a close fit in the tree pit. Connect both ends of pipe securely into plastics tee junction on inlet.
   7.2. Top cap of inlet: Protruding slightly above finished surround level.
   7.3. Backfill material: Carefully compact in layers.

515 Tree pit drainage in Hard landscape

1. Locations: To tree pits within to paved areas
2. Depth of excavation: Increase from specified size to allow for aggregate layer, with base slightly falling to outlet.
3. Aggregate layer: Clean gravel or broken stone, with no fines, graded 40 to 20 mm.
   3.1. Depth: 200 mm
4. Drainage pipes
   4.1. Type: Perforated plastics to Engineer's details
   4.2. Diameter: 100 mm

4.3. Position: Lay around perimeter of pit within aggregate layer.

4.4. Discharge: Connect to positive outlet as Engineer's details

5. Geotextile filter

5.1. Manufacturer: Contractor's choice

5.1.1. Product reference: Submit proposals

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

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

515A Tree pit drainage in Soft Landscape

1. Locations: To tree pits within to soft landscape areas
2. Depth of excavation: Increase from specified size to allow for aggregate layer, with base slightly falling to outlet.
3. Aggregate layer: Clean gravel or broken stone, with no fines, graded 40 to 20 mm.

3.1. Depth: 300 mm

4. Drainage pipes

4.1. Type: Perforated plastics to Engineer's details

4.2. Diameter: 100 mm

4.3. Position: Lay around perimeter of pit within aggregate layer.

4.4. Discharge: Connect to positive outlet as Engineer's details

5. Geotextile filter

5.1. Manufacturer: Contractor's choice

5.1.1. Product reference: Submit proposals

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

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

520 Cellular structural soil system

1. Locations: To all tree pits within paved areas
2. Manufacturer: GreenBlue Urban Ltd. or similar and approved

2.1. Product reference: RootSpace and co-ordinating accessories or similar and approved

3. Geotextile membrane: Install on top of structural soil system prior to installation of hard surfacing and Install below structural soil system prior to installation of modular cells
4. Installation: Ensure all void spaces are filled with lightly compacted growing medium prior to installation of further layers or sub-bases.

526 Underground guying for trees in soft landscape

1. Description: Trees in soft landscape
2. Manufacturer: GreenBlue Urban or similar and approved

2.1. Product reference: ArborGuy strapped anchor system or similar and approved

3. Anchoring system: 3no. timber dead-man anchors
4. Installation: Ensure tree is positioned correctly and vertically prior to tightening guy line tensioners.

526A Underground guying for trees in hard landscape

1. Description: Trees in hard landscape
2. Manufacturer: GreenBlue Urban or similar and approved

2.1. Product reference: ArborGuy strapped anchor system or similar and approved

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

Woodland/ matrix/ buffer zone planting

617 Removing trees and hedges

1. Identification: Clearly mark trees and hedges to be removed.
2. Work near retained trees: Where canopies overlap, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
3. Arisings: Remove.
4. Tree stumps: Remove mechanically to a minimum depth of 300 mm below ground level

635 Notch planting in uncultivated ground

1. Notching: Make a vertical 'I', 'L', 'T' or 'H' notch.
   1.1. Depth: To accommodate full depth of roots.
2. Planting: Plant tree, close notch with root collar at ground level and firm the soil.

645 Planting in turf

1. Preparation: Cut and upturn a turf of minimum 500 mm square.
2. Notching: Make a vertical slit from the centre of the turf, to the side away from the prevailing wind.
   2.1. Depth: To accommodate full depth of roots.
3. Planting: Plant tree, close notch with root collar at ground level and firm the soil.

680 Setting out

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

Protecting/ maintaining/ making good defects

710 Maintenance

1. Duration: Carry out the operations in the following clauses from completion of planting until the end of the rectification period.
2. Frequency of maintenance visits: Fortnightly during growing season

720 Failures of planting

1. Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.
   1.1. Exclusions: Theft or malicious damage after completion.
   1.2. Rectification: Replace with equivalent plants/ trees/ shrubs.
2. Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
3. Timing of making good: During the next suitable planting season

740 Cleanliness

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

750 Planting maintenance generally

1. Weed control: Maintain weed free area around each tree and shrub.
   1.1. Diameter (minimum): The larger of 1 m or the surface of original planting pit.
   1.2. Keep planting beds clear of weeds: By hoeing and by maintaining full thickness of mulch

2. Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
3. Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
4. Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
5. Trees: Spray crown when in leaf during warm weather.
    5.1. Timing: After dusk.
6. Tree accessories: Check condition of stakes, ties, guys, guards and irrigation and ventilation systems.
    6.1. Broken or missing items: Replace.
    6.2. Loose stakes: Re-firm in the ground or replace as necessary to provide support to the tree.
    6.3. Loose guys: Re-firm anchor points and adjust as necessary to provide support to the tree.
    6.4. Ties: Adjust to accommodate growth and prevent constriction or abrasion.
    6.5. Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
    6.6. Frequency of checks: At each scheduled maintenance visit
7. Watering: As required for healthy establishment, depending on weather conditions

760 Planting maintenance – pruning

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

780 Maintenance instructions

1. General: Before end of the maintenance period, submit printed instructions recommending procedures to be established by the Employer for maintenance of the planting work for one full year: Provide a schedule of any ongoing maintenance problems experienced during the rectification period.

790 Final mulching

1. Timing: At end of the maintenance period.
2. Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
3. Planting beds: Remulch.
4. Depth (minimum): 50 mm
5. Trees: Remulch.
6. Depth (minimum): 75 mm

Ω End of Section

Q40
Fencing REVISED

Fencing systems

220A Steel fencing BT1

1. Description: External steel railings BT1
2. Manufacturer: Diva or similar and approved
3. Product reference:: Bespoke ornamental railings
4. Height: 1800mm above wall
5. Vertical infills:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908500/908501
6. Infill top:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908500/908501
7. Support posts:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908500/908501
8. Centre of posts:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908500/908501
9. Finish:: Powder Coated to match Architect's Metalwork RAL colour
10. Colour:: Powder Coated to match Architect's Metalwork RAL colour
11. Method of setting posts:: Baseplates with anchor bolts to manufacturer's details

220B Steel gate G1 REVISED

1. Description: External ornamental steel gate G1
2. Manufacturer: Diva or similar or similar and approved
3. Product reference:: Bespoke ornamental steel gate
4. Height: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908502
5. Vertical infills:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908502
6. Infill top:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908502
7. Finish:: Powder coated to match Architect's Metalwork RAL colour
8. Colour:: Powder coated to match Architect's Metalwork RAL colour
9. Method of setting posts:: To To manufacturer's details and recommendations

220C Steel gate G2

1. Description: External steel gate G2
2. Manufacturer: Diva or similar or similar and approved
3. Product reference:: Bespoke steel gate
4. Height: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
5. Vertical infills:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
6. Infill top:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
7. Finish:: Powder coated to match Architect's Metalwork RAL colour
8. Colour:: Powder coated to match Architect's Metalwork RAL colour
9. Method of setting posts:: To To manufacturer's details and recommendations

220D Steel fencing BT4

1. Description: External steel railings BT4
2. Manufacturer: Diva or similar and approved
3. Product reference:: Bespoke ornamental railings
4. Height: 1800mm. Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
5. Vertical infills:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503

6. Infill top:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
7. Support posts:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
8. Centre of posts:: Please refer to drawings ARP3-FAB-ZZ-00-DE-L-908503
9. Finish:: Powder Coated to match Architect's Metalwork RAL colour
10. Colour:: Powder Coated to match Architect's Metalwork RAL colour
11. Method of setting posts:: Baseplates with anchor bolts to manufacturer's details

440 Boundary protection materials specification

1. Minimum BRE 'Green Guide to Specification Online' rating: A or A+

Gates, posts and stiles - Not Used

Accessories - Not Used

Execution

710 Installation generally

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

715 Competence

1. Operatives: Contractors must employ competent operatives.
2. Qualifications: Submit certification of training.
    2.1. NHSS Sector Scheme 2A sub categories: Not required
    2.2. NHSS Sector Scheme 2C sub categories: Not required

720 Setting posts in concrete

1. Standard: To BS 8500-2.
2. Mix: Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
3. 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.
4. Admixtures: Do not use.
5. Holes: Excavate neatly and with vertical sides.
6. Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
7. Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

730 Exposed concrete foundations

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

740 Setting posts in earth

1. Holes: Excavated neatly, with vertical sides and as small as practicable to allow refilling.
2. Filling: Position posts/ struts and replace excavated material, well rammed as filling proceeds.

750 Driven posts

1. Damage to heads: Minimize.
    1.1. Repair: Neatly finish post tops after installation.

766 Arris rails

1. Fixing
    1.1. Rail end section: Shaped to adequately fill the post mortice or recess.
    1.2. Recessed posts: Rails bolted to each post.
    1.3. Top rails: Fixed at both ends using One 8 mm diameter bolt .
2. Rails with split ends: Replace.

780 Making good galvanized surfaces

1. 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.
2. Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

790 Site painting

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

Completion

910 Cleaning

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

920 Fixings

1. All components: Tighten.
    1.1. Timing: Before handover.

930 Gates

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

Ω End of Section

Q50
Site/ street furniture/ equipment REVISED

Gates, barriers and parking controls - Not Used

Site and street furniture

210 Cycle stands

1. Description:: London cycle stands FT4
2. Manufacturer: Furnitubes or similar
   2.1. Product reference: Transport Cycle Stands, TRL600 or similar
3. Type: London Cycle Stands
4. Material: Stainless steel
   4.1. Finish: G304 or G316 bright polished
   4.2. Colour:
5. Size: : 750mm x 750mm
6. Tube diameter: : 50mm
7. Accessories: Reflective tape
8. Method of fixing: Bolted

212 Cargo cycle store

1. Description: Cargo cycle store/hangar FT5
2. Manufacturer: Falco or similar
   2.1. Product reference: FalcoPod-Cargo hangar or similar
3. Material: Recyclable hot-dip galvanised steel
   3.1. Finish: Powder coated
   3.2. Colour: RAL 3007 black red
4. Size:: 2475mm length, 2070mm width, 1410mm height
5. Method of fixing: Bolted

220A Benches FT1 REVISED

1. Description: Bench without backrest FT1
2. Manufacturer: Vestre or similar
   2.1. Product reference: 609 Vroom seat straight end with 600 Vroom new backrest or similar
3. Material: Wood and steel
   3.1. Finish: Linseed oil proofed Nordic pine
   Hot-dip galvanised and powder-coated steel
   3.2. Colour: RAL 3012 Beige red for steel
4. Size: H=440mm, W=2182mm, D=600mm
5. Method of fixing: Bolted

220B Benches FT2 REVISED

1. Description: Bench with backrest FT2
2. Manufacturer: Vestre or similar
   2.1. Product reference: 617 Vroom seat straight end with 400 Vroom new backrest or similar
3. Material: Wood and steel

3.1. Finish: Linseed oil proofed Nordic pine
Hot-dip galvanised and powder-coated steel

3.2. Colour: RAL 3012 Beige red for steel

4. Size: H=808, W=1687, D=552
5. Method of fixing: Bolted

240 Litter bins FT3

1. Description: Litter bins FT3
2. Manufacturer: Vestre or similar
   2.1. Product reference: 642 Vroom litter bin 80 litres or similar
3. Material: Hot-dip galvanised and powder-coated steel
   3.1. Finish: Hot-dip galvanised and powder-coated steel
   3.2. Colour: RAL 3007 Black red
4. Size: : H=1000mm, W=400mm, D=300mm
5. Method of fixing: Freestanding

Installation

510 Concrete foundations generally

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

515 Setting components in concrete

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

520 Setting in earth

1. Holes: As small as practicable.
2. Components being fixed: Accurately positioned and securely supported.
3. Buried depth (minimum): To Engineer's detail and specification
4. Earth refill: Well rammed as filling proceeds.

530 Preservative treated timber

1. Surfaces exposed by minor cutting and drilling: Treated by immersion or with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.
2. Heavily worked sections: Re-treat.

540 Building in to masonry walls

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

545 Erection of timber and prefabricated structures

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

550 Damage to galvanized surfaces

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

560 Site painting

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

Ω End of Section

Q52
Play and sports equipment REVISED

General

115 Playground

1. Description: To communal private gardens
2. Equipment: As drawing ARP3-FAB-ZZ-00-DR-L-901000 & ARP3-FAB-ZZ-00-DR-L-902010

System performance - Not Used

Products

320 Balance beam PE3

1. Description: Balancing beam PE3
2. Standard: To BS EN 1176-1.
3. Manufacturer: Timberplay or similar
   3.1. Product reference: Straight Balancing Beam or similar
4. Age range: Kindergarten children, schoolchildren and young people
5. Materials: natural timber to manufacturer's details
6. Length: 3000mmn
7. Height: 350mm
8. Method of fixing: To manufacturer's recommendations

321 Stepping logs PE4

1. Description: Stepping logs PE4
2. Standard: To BS EN 1176-1.
3. Manufacturer: Duncan & Grove or similar
   3.1. Product reference: TT.2.01 Stepping Stumps or similar
4. Age range: 2+
5. Materials: Natural robinia
6. Height: Varies, to manufacturer's recommendations
7. Diameters: : Varies, to manufacturer's recommendations
8. Method of fixing: To manufacturer's recommendations

322 Hammock PE5

1. Description: Hammock PE5
2. Standard: To BS EN 1176-1.
3. Manufacturer: Duncan & Grove or similar
   3.1. Product reference: HA.1.01
4. Age range: 2+
5. Materials: Hardwood with stainless steel, wire reinforce polypropylene rope
6. Area required:: 5.5m x 3.9m
7. Height: 1500mm
8. Method of fixing: To manufacturer's recommendations

340A Play hut type 1 PE1

1. Description: Hut combination play equipment PE1

2. Standard: To BS EN 1176-1.
3. Manufacturer: Timberplay or similar
   3.1. Product reference: Hut Combination 214, Order No. 2.12141 or similar
4. Age range: Recommended for kindergarten children
5. Components: 1 Small Platform Hut with roof with steel feet, 2 walls, 2 benches and 1 table, Order No. 3.14350

   1 Fall protection, Order No. 3.13161
   1 Inclined Climbing Net, Order No. 3.69124
   1 Bridge 2m, Order No. 3.66425
   1 Support Frame for Bridge, Order No. 3.66364
   1 End Frame for ramps with steel feet, Order No. 3.66416
6. Materials: Natural timber, to manufacturer's details
   6.1. Finish: To manufacturer's recommendations
   6.2. Colour: To manufacturer's recommendations
7. Highest platform height: 980mm
8. Method of fixing: To manufacturer's recommendations

340B Play hut type 2 PE2

1. Description: Play hut type 2 PE2
2. Standard: To BS EN 1176-1.
3. Manufacturer: Timberplay or similar
   3.1. Product reference: Large Timber House on Stilts or similar, Order No. L4.10400
4. Age range: Recommended for kindergarten children, schoolchildren
5. Materials: Non-impregnated mountain larch
   5.1. Finish: To manufacturer's recommendations
   5.2. Colour: To manufacturer's recommendations
6. Highest platform height: 600mm
7. Method of fixing: Anchored

361 Play boulders PE6

1. Description: Play boulders PE6
2. Manufacturer:: CED Stone Group or similar
3. Product reference:: 227-334-1 Gabbro Boulders or similar
4. Standard: To BS EN 1176-1.
5. Materials: Naturally rounded rocks
   5.1. Finish: To manufacturer's details
6. Size: length & width: 200mm - 500mm
7. Height: Maximum 500mm
8. Method of fixing: To manufacturer's details

362 Play tree trunk PE7

1. Description: Play tree trunk PE7
2. Manufacturer:: Ashwell Timber or similar
3. Product reference:: Reclaimed timber
4. Standard: To BS EN 1176-1.
5. Materials: Natural timber
   5.1. Finish: To manufacturer's details

6. Size: Varies, to manufacturer's details
7. Height: Varies, to manufacturer's details
8. Method of fixing: To manufacturer's details

363 Timber platform PE8

1. Description: Timber platform for play PE8
2. Manufacturer:: Woodscape or similar
3. Product reference:: Raised Boardwalk
4. Standard: To BS EN 1176-1.
5. Materials: Naturally very durable hardwood
   5.1. Finish: To manufacturer's details
6. Size: 2500mmx 1500m
7. Height: 250-450 above ground
8. Method of fixing: To manufacturer's details

Execution

710 Play equipment installation generally

1. Standard: To manufacturer’s written instructions provided in accordance with BS EN 1176-1.

720 Concrete foundations generally

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

725 Setting components in concrete

1. Holes: To Engineer's and or manufacturer's detail and specification
2. Components: Accurately positioned and securely supported.
3. Concrete fill: Fully compacted as filling proceeds.
4. Concrete foundations exposed to view: Finished to weathering profile to shed water and trowel smooth.
5. Temporary component support: Maintain undisturbed for minimum 48 hours.

730 Setting components in earth

1. Holes: As small as practicable.
2. Components being fixed: Accurately positioned and securely supported.
3. Buried depth (minimum): To Engineer's and or manufacturer's detail and specification
4. Earth refilling: Well rammed as filling proceeds.

740 Preservative treated timber

1. Surfaces exposed by minor cutting and drilling: Treated by immersion or with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

750 Damage to galvanized surfaces

1. Minor damage in areas up to 40 mm² (including on fixings and fittings): Make good.
   1.1. Materials: Low melting point zinc alloy repair rods or powders made for this purpose or at least two coats of zinc-rich paint to BS 4652.

1.2. Thickness: Sufficient to provide a zinc coating at least equal to the original layer.

760 Site painting

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

Completion

910 Inspection

1. Standard: In accordance with equipment manufacturer's maintenance and inspection instructions
2. Timing: 2 weeks after request by contract administrator
3. Period of notice (minimum): 3 working days.

920 Cleaning

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

930 Testing

1. Standard: To BS EN 1176-1.

940 Labels

1. Standard: To BS EN 1176-1
2. Labels: Provide permanent labelling on all types of play equipment.
3. Location: Where visible when erected on site.

950 Documentation

1. Standard: To BS EN 1176-1
2. Contents
    2.1. Copies of test reports.
    2.2. General product information.
    2.3. Installation information.
    2.4. Inspection and maintenance information.
3. Number of copies: 2
4. Submission: 2 weeks after request by contract administrator

970 Operating tools

1. Tools: Supply tools required for operation, maintenance and cleaning purposes.

980 Retensioning ropes

1. Description: Where required to play items
2. Timing: In accordance with equipment manufacturer's maintenance and inspection instructions
3. Period of notice (minimum): 3 working days

Deleted clauses

355 Salvaged Precast Panel Structure PE9 DELETED

Ω End of Section

Z10
Purpose made joinery

To be read with preliminaries/ general conditions.

110 Fabrication

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

120 Cross section dimensions of timber

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

130 Preservative treated wood

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

140 Moisture content

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

250 Finishing

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

Ω End of Section

Z11
Purpose made metalwork

To be read with preliminaries/ general conditions.

310 Materials generally

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

320 Steel long and flat products

1. Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 10025-1.
2. Fine grain steels, including special steels: To BS EN 10025-3 and -4.
3. Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.

360 Coated steel flat products

1. Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10346 and BS EN 10143.
2. Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10346.
3. Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10346.
4. Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10346.
5. Organic coated flat products: To BS EN 10169.

400 Stainless steel products

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

410 Aluminium alloy products

1. Designations
    1.1. Designation system, chemical composition and forms: To BS EN 573-1, -2, -3 and -5.
    1.2. Temper designations: To BS EN 515.
2. Sheet, strip and plate: To BS EN 485-1 to -4.
3. Cold drawn rods, bars and tubes: To BS EN 754-1 and -2.
4. Extruded rods, bars, tubes and profiles: To BS EN 755-1 and -2.
5. Drawn wire: To BS EN 1301-1, -2 and -3.
6. Rivet, bolt and screw stock: To BS 1473.
7. Structural sections: To BS 1161.

Fabrication

515 Fabrication generally

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

520 Cold formed work

1. Profiles: Accurate, with straight arrises.

527 Welding

1. Description: General
2. Welding procedures
   2.1. Method and standard: TIG or MIG welding to BS EN 1011-4
   2.2. Welding Procedure Specification (WPS): Not required
3. Preparation
   3.1. Joint preparation: Clean thoroughly.
   3.2. Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
4. Jointing
   4.1. Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
   4.2. Dissimilar metals: Welding not permitted
   4.3. Strength requirements: Welds to achieve design loads.
   4.4. Heat straightening: Obtain approval
   4.5. Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
   4.6. Tack welds: Use only for temporary attachment.
   4.7. Jigs: Provide to support and restrain members during welding.
   4.8. Filler plates: Obtain approval
   4.9. Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater.
   4.10. Weld terminations: Clean and sound.

530 Stainless steel fabrication

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

Finishing

710 Finishing welded and brazed joints visible in complete work

1. Standard: To BS EN ISO 8501-3.
   1.1. Preparation grade: P3
2. Butt joints: Smooth, and flush with adjacent surfaces.
3. Fillet joints: Neat.
4. Grinding: Grind smooth where indicated on drawings.

745 Preparation for application of coatings

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

780 Galvanizing

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

Completion - Not Used

Ω End of Section

Z20
Fixings and adhesives

Products

310 Fasteners generally

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

320 Packings

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

340 Masonry fixings

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

350 Plugs

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

360 Anchors

1. Types
   1.1. Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
   1.2. Adhesive or chemical
      1.2.1. For use in substrate where expansion of anchor would fracture substrate.
      1.2.2. For use in irregular substrate where expansion anchors cannot transfer load on anchor.
   1.3. Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.

390 Adhesives

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

410 Powder actuated fixing systems

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

Execution

610 Fixing generally

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

620 Fixing through finishes

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

630 Fixing packings

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

640 Fixing cramps

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

670 Pelleted countersunk screw fixing

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

680 Plugged countersunk screw fixing

1. Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
2. Plugs: Glue in to full depth of hole.
3. Finished level of plugs: Projecting above surface.

690 Using powder actuated fixing systems

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

700 Applying adhesives

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

Ω End of Section

Z21
Mortars

Cement gauged mortars

110 Cement gauged mortar mixes

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

115 Mortar mixes for WT brickwork

1. Specification: Please refer to Architect's specification

120 Sand for site made cement gauged masonry mortars

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

160 Cements for mortars

1. Cement: To BS EN 197-1 and CE marked.
    1.1. Types: Portland cement, CEM I.
        1.1.1. Portland limestone cement, CEM II/A-L or CEM II/A-LL.
2. Portland slag cement, CEM II/B-S.
3. Portland fly ash cement, CEM II/B-V.
    3.1. Strength class: 32.5, 42.5 or 52.5.
4. White cement: To BS EN 197-1 and CE marked.
    4.1. Type: Portland cement, CEM I.
    4.2. Strength class: 52.5.
5. Sulfate resisting Portland cement
    5.1. Type: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
6. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
    6.1. Strength class: 32.5, 42.5 or 52.5.
7. Masonry cement: To BS EN 413-1 and CE marked.
    7.1. Class: MC 12.5.

180 Admixtures for site made cement gauged mortars

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

190 Retarded ready to use cement gauged mortar

1. Standard: To BS EN 998-2.
2. Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
    2.1. Type: CL 90S.
3. Pigments for coloured mortars: To BS EN 12878.
4. Time and temperature limitations: Use within limits prescribed by mortar manufacturer.

4.1. Retempering: Restore workability with water only within prescribed time limits.

Lime:sand mortars - Not Used

Ω End of Section

Z31
Powder coatings REVISED

To be read with preliminaries/ general conditions.

120 Powder coating materials REVISED

1. Selected manufacturer: Submit details before commencement of powder coating including:
   1.1. Name and contact details.
   1.2. Details of accreditation schemes.
   1.3. Technical data of product including current Agrément certificates.

210 Working procedures

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

220 Powder coating applicators

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

225 Guarantees

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

230 Control samples

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

2.5. Gloss level.

240 Qualicoat quality assurance system

1. Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
   1.1. Designated components: all

250 Component design

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

310 Pretreatment of aluminium components

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

320 Pretreatment of steel components

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

430 Extent of powder coatings

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

435 Application of powder coatings

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

440 Performance and appearance of powder coatings

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

450 Aluminium alloy fabrications

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

460 Steel fabrications

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

470 Fixings

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

480 Damaged components – repair or replacement

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

510 Protection

1. Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
2. Protective coverings must be
   2.1. Resistant to weather conditions.
   2.2. Partially removable to suit building in and access to fixing points.
3. Protective tapes in contact with powder coatings must be
   3.1. Low tack, self adhesive and light in colour.
   3.2. Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.
4. Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 Documentation

1. Submit the following information for each batch of powder coated components
   1.1. Supplier.
   1.2. Trade name.

1.3. Colour.
1.4. Type of powder.
1.5. Method of application.
1.6. Batch and reference number.
1.7. Statutory requirements.
1.8. Test certificates.
1.9. Maintenance instructions.

540 Completion

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

Ω End of Section

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