Cantilever Balcony Supports - Lot 2 - Walk-Up Blocks

16 February 2017

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Demolition/ Alteration/ Renovation

C10
Site survey

C10 Site survey

To be read with Preliminaries/ General conditions.

SURVEYS

115 PRELIMINARY SURVEY On receipt of the order to proceed

- Qualifications of survey author: Contractor's choice.
- Area to be surveyed: The extended site being in the ownership of the client - e.g., an order for work to Block 2 -9 Bassett Green Court would require a preliminary inspection of the land upon which Blocks 2 -9, 10 - 15, 16 - 25, 26 - 31 and 32 - 41 are situated .
- Objectives:
  - Visible or suspected hazards: Record general positions/ forms of visible/ suspected hazards, including asbestos containing products, overhead cables and particularly difficult vehicular access, .
  - Designation of areas within/ adjacent to site: Record boundaries/ type of designation within, or adjacent to, the site, including the extent of the estate, vehicular and pedestrian routes and routes necessary to for the access of maintenance plant such as lawn mowers - access to the grounds maintenance contractor is to be maintained through out the works.
  - Protected habitats/ species outside designated areas: Record general positions of sightings or evidence of species including suspected protected European/ UK animal species.
- Methodology:
  - Specific requirements: Do not use intrusive survey techniques. Avoid disturbing natural features or wildlife.
  - Permissible survey techniques: Contractor's choice.
- Reference data: The following information is provided: as orders are raised a location plan will be issued for each site to be included in the Contract .
- Preliminary survey report: Submit.
  - Timing: Submit proposals including the preferred location for site set up and vehicular access at the earliest opportunity.

125 SITE SURVEY TOPOGRAPHIC AND RADAR

- Qualifications of survey author: Contractor's choice.
- Area to be surveyed: In connection with Stage One of the Works, the area of the site applying to the individual block being that occurring below and 1m beyond the area of the balcony and associated stairs and bridges and to include a level survey of the soffit and the upper surface to the balcony and stairs.
- Site datum: Datum point to be determined by Contractor via temporary bench mark.
- Objectives:
  - General: Establish/ record positions, dimensions and levels including pavements, landlord's and tenants fixtures and fittings likely to affect the works and to mark up on site the proposed portion for foundation pads to posts. The levels to the concrete soffit are required to assist in the pre-fabrication design of the new welded steel support framework so that shims are kept to a maximum of 10mm depth. The level survey to the upper surface of the balcony is to ensure that the new roofing system is designed to correct falls to achieve efficient discharge of rainwater into the existing rainwater outlets. The Contractor's roofing specialist is to provide the design for CA approval The radar survey is required to accurately plot underground services and other obstructions likely to affect the placement of columns. .
  - Features: Record positions, dimensions and levels including
    - the underground rainwater drainage system from all gulleys to the first inspection chamber including cover and invert levels
    - access covers;
    - fences;
    - gates and stiles;
    - gullies;
    - isolated trees; and
    - kerbs
    - Fixtures such as handrails, sheds key boxes etc .
- Methodology: Do not use intrusive survey techniques. Avoid disturbing natural features or wildlife.
  - Permissible survey techniques: Contractor's choice.
- Control points: Establish and record measuring stations/ targets to facilitate future remeasuring.
  - Standards: To BS 5964-1 and -2.
    Type: Contractor's choice.
- Dimensional accuracy:
  - Angular: Contractor's choice.
  - Horizontal: Contractor's choice.
  - Vertical: Contractor's choice.
- Source data for reference/ verification: The following information is provided: None.
- Site survey report: Submit.
  - Timing: Submit proposals.

COMPLETION

915A DOCUMENTATION - ELECTRONIC - FOR ALL SURVEYS DRAWINGS TO BE AUTOCAD NOTE: THERE ARE NO EXISTING DRAWINGS

- Storage medium: Submit files electronically in DWG and PDF format.
- File naming: By address.

C11
Site investigation

C11 Site investigation

250 TRIAL PITS AND TRENCHES

- Purpose: To determine the presence of asbestos containing materials or other likely obstruction to the construction of the concrete pad foundations to all columns - the trial pits are effectively the excavation necessary to the formation of the pad foundations and are to be formed in advance of the main body of the works so as to provide time for the notification and disposal of asbestos containing material and amendments to the design where found necessary. .
- Locations: To the locations identified on the drawings for the placement of concrete pad foundations to support the new steel posts to the front of the balcony or other location determined by the result of the radar survey previously undertaken by the contractor. .
- Full depth: As drawings.
- Hand dig: Contractor's choice.
- Minimum trench width: As drawings.
- Minimum base area of pits: As drawings.
- Protection: Contractor's choice.
- Backfill material: Submit proposals.
- Reinstatement: Submit proposals.

C20
Demolition

C20 Demolition

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS

110 DESK STUDY/ SURVEY

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

120 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to levels indicated or as otherwise shown on the drawings.

130 GROUNDWORKS

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

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION

210 SERVICES REGULATIONS

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

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

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

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

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

260 SERVICE BYPASS CONNECTIONS
- General: Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction/ demolition is taking place and to adjoining sites/ properties.
- Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.

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

DECONSTRUCTION/ DEMOLITION WORK

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

320 GAS OR VAPOUR RISKS
- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.

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

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

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

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

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

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

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

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

450 SITE CONDITION AT COMPLETION
- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: None.

MATERIALS ARISING

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

C40
Cleaning masonry/ concrete

C40 Cleaning masonry/ concrete

To be read with Preliminaries/ General conditions.

GENERAL/ PREPARATION

110 SCOPE OF WORK
- Clean off calcium deposits, staining and all paint to soffit & fascia of first floor concrete slab at walkways .

142 REMOVAL OF FITTINGS
- Timing: Before commencement of cleaning work.
- Disturbance to surfaces: Minimize.
- Items for disposal: Electrical conduit, light fittings & clips as per services specification.
- Items to be kept for reuse: None.

160 PROTECTION
- Surfaces not designated for cleaning: Prevent damage, including marking and staining.
- Openings: Prevent ingress of water, cleaning agents, and detritus.
  - Vents and grilles: Seek instructions before sealing up.
- Temporary mechanical fastenings:
  - In masonry: Locate in joints.
  - In other surfaces: Seek instructions.
- Additional protection: Submit proposals .

175 CONTROL AND DISPOSAL OF WASH WATER AND DETRITUS
- Disposal: Safely. Obtain approvals from relevant Authority.
- Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
- Above and below ground drainage systems: Keep free from detritus and maintain normal operation.

190 CLEANING GENERALLY
- Operatives: Appropriately trained and experienced for each type of cleaning work.
  - Evidence of training: Submit on request.
- Control of cleaning: Confine cleaning processes and materials to designated areas. Prevent wind drift.
- Detritus: Remove regularly. Dispose of safely.
- Monitoring: Frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved, seek instructions.
- Modifications to cleaning methods and materials: Seek instructions.

215 RECORD OF CLEANING WORKS
- Written report: Record cleaning methods and procedures used for each type of surface and deposit.
  - Content: Relevant attributes of cleaning methods used including:
    Equipment and settings.
    Dwell times.
    Number of applications.
    Ambient temperatures.
- Additional documentation: None.
- Submission: At completion of cleaning works.

PRODUCTS/ EQUIPMENT

312 SURFACE BIOCIDES
- Types: Registered by the Health and Safety Executive (HSE) and listed on the HSE website under non-agricultural pesticides.
- Compatibility with surface: Free from staining or other harmful effects.

322 ABRASIVE CLEANING EQUIPMENT
- Manufacturer/ Supplier: Submit proposals.
  - Product reference: Submit proposals.
- Nozzle types: Submit proposals.
- Abrasives: Submit proposals.

APPLICATION

412 REMOVAL OF LOOSELY ADHERED DEPOSITS
- Timing: Before commencement of other cleaning methods.
- Surfaces: Prevent damage, including abrasion.

432 TOOLING
- Tooling of surfaces: Not permitted.

442 ABRASIVE BLOCKS
- Types: Suitable grades of carborundum or gritstone.
- Application: Lubricate with water. Remove detritus.
- Abrasive power tools: Prohibited.

452 ABRASIVES CLEANING
- Surfaces: Minimize abrasion.
  - Ingrained deposits: Seek instructions.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.
- Detritus: Remove with clean water.

472 PRESSURIZED WATER CLEANING
- Surfaces: Prevent damage, including abrasion.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

C41
Repairing/ Renovating/ Conserving masonry

C41 Repairing/ Renovating/ Conserving masonry

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION

110A SCOPE OF WORK
- Schedule: Minor miscellaneous repair to brickwork and pointing to elevations affected by rusted balustrade fixings.

120 SITE INSPECTION
- Purpose: To confirm type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
- Parties involved: Contract administrator and Contractor's representative.
- Timing: At least 2 working days before starting each section of work.
- Instructions issued during inspection: To be confirmed by the CA.

130 REMOVAL OF PLANT GROWTHS FROM MASONRY
- Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
- Removal of roots: Where growths cannot be removed completely without disturbing masonry seek instructions.
- Unwanted plants close to masonry: Where removal of root system is not possible or desirable, cut through stem as close to the ground as possible. Remove bark from stump and apply herbicide paste. Leave stump to wither.

WORKMANSHIP GENERALLY

150 POWER TOOLS
- Usage for removal of mortar: Permitted only with prior approval.

155 PUTLOG SCAFFOLDING
- Usage: Not permitted.

160 PROTECTION OF MASONRY UNITS AND MASONRY
- Masonry units: Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points, where provided.
- Masonry: Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking on facework. Protect using suitable nonstaining slats, boards, tarpaulins, etc. Remove protection on completion of the work.

165 STRUCTURAL STABILITY
- General: Maintain stability of masonry. Report defects, including signs of movement that are exposed or become apparent during the removal of masonry units.

170 DISTURBANCE TO RETAINED MASONRY
- Retained masonry in the vicinity of repair works: Disturb as little as possible.
- Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
- Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.

180 WORKMANSHIP
- Skill and experience of site operatives: Appropriate for types of work on which they are employed.
  - Documentary evidence: Submit on request.

185 ADVERSE WEATHER
- General: Do not use frozen materials or lay masonry units on frozen surfaces.
- Air temperature: Do not bed masonry units or repoint:
  - In cement gauged mortars when ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected.
  - In hydraulic lime:sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising.
  - In nonhydraulic lime:sand mortars in cold weather, unless approval is given.
- Temperature of the work: Maintain above freezing until mortar has fully set.
- Rain, snow and dew: Protect masonry by covering during precipitation, and at all times when work is not proceeding.
- Hot conditions and drying winds: Prevent masonry from drying out rapidly.
- New mortar damaged by frost: Rake out and replace.

190 CONTROL SAMPLES
- General: Complete an area of each of the following types of work, and arrange for inspection before proceeding with the remainder: Repointing - undertake sample area no less than 500 x 500mm for approval.

MATERIAL/ PRODUCTION/ ACCESSORIES

215 MATERIAL SAMPLES
- Representative samples of designated materials: Submit before placing orders.
  - Designated materials: None.
- Retention of samples: Unless instructed otherwise, retain samples on site for reference. Protect from damage and contamination.

220 RECORDING PROFILES
- Profiles: Take measurements from existing masonry units, as instructed, to allow accurate matching of replacements.
- Recording in situ: If there are no suitable joints to allow use of inserts, seek instructions.
- Drawings and templates: Prepare as necessary. Templates must be clearly and indelibly marked to identify use and location.

260 BRICKS
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Size: To match existing.
- Special shapes: None.
- Recycled content: Submit proposals.

DISMANTLING/ REBUILDING

REPLACEMENTS AND INSERTIONS

365 REPLACEMENT OF BRICKS to walkway elevation where damaged by handrail and other fixings related to the balcony
- Bricks: Clay as clause 260.
- Mortar: As section Z21.
  - Mix: As section Z21.
  - Sand source/ type: Well graded crushed stone to approval.
- Fixings: Not required.
- Joints: To match existing.
- Other requirements: None.

390 GROUTING JOINTS
- Grout mix: As section Z21.
- Joints that cannot be fully filled with bedding mortar: Grout thoroughly around replacement masonry units.
- Grouting: Keep grout back from exposed face to allow for the depth of pointing, using an approved temporary sealing material. Prevent grout staining exposed face.

CRACK REPAIRS/ TIES/ REINFORCEMENT

610 MORTAR REPAIR OF CRACKS Mortar repair of cracks to walkway elevation where cracked/damaged
- Mortar: As section Z21.
  - Mix: Submit proposals.
  - Sand source/ type: Submit proposals.
- Preparation: Clean out cracks to remove debris, dust and dirt. Dampen recesses, as necessary, to control suction.
- Applying mortar: Press well into cracks so that they are fully filled. Ensure that mortar does not encroach upon exposed faces. Finish mortar flush with masonry face.
- Other requirements: Grout deep voids as clause 720.

POINTING/ REPOINTING

810 PREPARATION FOR REPOINTING
- Existing mortar: Working from top of wall downwards, remove mortar carefully, without damaging adjacent masonry or widening joints, to a minimum depth of twice joint thickness
.
  - Loose or friable mortar: Seek instructions when mortar beyond specified recess depth is loose or friable and/ or if cavities are found.
- Raked joints: Remove dust and debris.

820 POINTING to walkway area where required
- Preparation of joints: As clause 810.
- Mortar: As section Z21.
  - Mix: Submit proposals.
  - Sand source/ type: Crushed stone fine pointing sand to approval.
- Joints profile/ finish: to match existing.
- Other requirements: Grout deep voids as clause 720.

840 POINTING WITH TOOLS/ IRONS
- General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled.
- Face of masonry: Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.

C42
Repairing/ Renovating/ Conserving concrete

C42 Repairing/ Renovating/ Conserving concrete

To be read with Preliminaries/General conditions.

GENERAL

105 INFORMATION REQUIRED WITH TENDER
- Details of repair system including manufacturer and product references; data sheets; third party product certification, methods and products for cleaning surfaces prior to investigation of concrete condition, proposals for reducing noise and vibration, proposals for sequence of repairs..

150 CONCRETE REPLACEMENT REPAIRS WALKWAYS
- Location: External floor slab soffits, staircases and exposed areas of beams..
- Concrete removal:
  - Extent: Loose concrete and severely cracked concrete.
  - Limitations on removal: Up to 50mm beyond sound concrete..
  - Method: Hand or power tools to suit circumstances..
- Reinforcement replacement:
  - Extent: As directed..
  - Jointing: Tying wire..
- Reinforcement treatment: In accordance with chosen repair..
- Concrete replacement: In accordance with chosen repair..
- Finish: As existing..
- Other requirements: As directed..

155 CRACK REPAIRS WALKWAYS
- Location: External floor slab soffits, staircases, and exposed areas of beams..
- Crack types/ widths: Up to 9mm..
- Primary function: Sealing against water and other adverse agents..
- Grouting material: As chosen repair system..
- Application method: Pressure injection..
  - Finish: Flush..
- Other requirements: As directed..

PRODUCTS

305 PROPRIETARY REPAIR SYSTEMS
- Products: Compatible and supplied by the same manufacturer as part of a total repair system.

310 REPAIR MORTAR
- Type: Concrete reinstatement mortar..
- Manufacturer: Fosroc or similar approved..
  - Product reference: Renderoc HB or similar approved..

315 PROTECTIVE COATING TO REINFORCEMENT
- Type: Zinc rich primer..
- Manufacturer: Fosroc or similar approved..
  - Product reference: Nitoprime Zinc Rich or similar approved..

320 LEVELLING/ SMOOTHING COATS
- Type: Fairing coat..
- Manufacturer: Fosroc or similar approved..
  - Product reference: Renderoc FC or similar approved..

340 CRACK/ VOID SEALING GROUTS
- Type: Resin injection grout..
- Manufacturer: Fosroc or similar approved..
  - Product reference: Nitofil TH or similar approved..

342 JOINT SEALING
- Type: Silicone sealing.
- Manufacturer: Fosroc or similar approved..
  - Product reference: Hilastic 44 or similar approved. .

345 PROTECTIVE COATINGS FOR CONCRETE
- Type: Water based protective coating..
- Manufacturer: Fosroc or similar approved..
  - Product reference: Dekguard W or similar approved..
- Colour: To match existing..

360 REINFORCEMENT GENERALLY
- Standards:
  - Steel: To BS 4449; BS 4482; BS 4483.
  - Stainless steel: To BS 6744.
- Strength grades: Subject to site investigation..
- Cutting and bending: To BS 8666.
- Suppliers: Firms holding a valid certificate of approval issued under a product certification scheme operated by a third party certification body with appropriate Category 2 accreditation from the United Kingdom Accreditation Service (UKAS).

EXECUTION

605 EXECUTION GENERALLY
- Standard: To BS EN 1504-10.
- Operatives' skill and experience: Appropriate for the types of preparation and application.
  - Evidence: Submit on request.

610 QUALITY CONTROL DURING APPLICATION OF REPAIR SYSTEM
- Tests/ Observations: By Engineer and maufacturer..
  - Frequency: On trial samples..
  - Criteria: To ensure ongoing compliance with manufacturer's recommendations..

615 QUALITY CONTROL ON COMPLETED HARDENED REPAIR SYSTEM
- Tests/ Observations: By Engineer and manufacturer..
  - Frequency: On trial samples..
  - Criteria: To check for early failure..

625 REMOVAL OF FITTINGS/ ATTACHMENTS
- Extent: The area of repair and any fittings/ attachments that could impede or be damaged by access.
- Removal methods: Minimize damage to concrete/ reinforcement and to fittings/ attachments that are to be retained for reuse.
- Items for disposal: As directed..
- Items for refixing after completion of repair work: As directed..
  - Storage: Prevent damage.
- Other requirements: As directed..

630 CLEANING CONCRETE SURFACES
- Extent: To reveal surface condition and aid investigation work. Minimize disruption to concrete surfaces and materials. Leave no harmful residual cleaning agents.
- Methods: Wire brushing or jet washing..

635 TEMPORARY SUPPORTS/ PROPPING
- Standard: To BS 5975.
- General: Prevent damage and overstressing to any part of structure during repairs.
- Bearings for temporary supports/ propping: Suitable to carry loads throughout repair operations.
- Location/ Extent of propping: Submit proposals.

640 EXTENT OF CONCRETE REMOVAL FOR REINFORCEMENT TREATMENT/ REPLACEMENT
- Generally: The minimum necessary to allow treatment/ replacement, and to achieve thorough compaction of replacement material.
- Edges of retained concrete: No undercutting or feather edges. Maintain edge angle within 90-135° or, where replacement material is spray applied, 110-135°.
  - Cutting: Prevent damage to reinforcement.
- Removal of carbonated/ contaminated concrete: As directed..
- Gap to expose full profile of bar: 10 mm..
- Length of continuous uncorroded reinforcement to be exposed (minimum): 50 mm or, where reinforcement is to be replaced, 50 mm beyond the end of lap or joint.

645 CLEANING REINFORCEMENT
- Standard of cleaning: to bright steel in accordance with system manufacturer's recommendations..

660 PREPARATION OF CONCRETE SUBSTRATES
- Soundness: Remove loose or otherwise defective material and repair significant cracks and gaps.
- Preparation:
  - Roughening for key: Scabbling; thorugh and even to permit full aggregate interlock..
  - Wetting of substrate: As recommendations replacement material manufacturer..
- Condition immediately before placing replacement material:
  - Cleanliness: Free from loose material, with no debris, tying wire clippings, and other matter that could adversely affect bond.
  - Surface condition: As recommendations from replacement material manufacturer..

665 FORMWORK FOR RECASTING

- Generally: Accurately and robustly constructed to produce finished concrete to the required dimensions.
  - Formed surfaces: Free from twist and bow.
  - Intersections, lines and angles: Square, plumb and true.
- Joints in forms: Secure forms tight against existing concrete. Prevent loss of grout and formation of steps.

670 GROUTING CRACKS/ VOIDS

- Substrates: Clean. Keep free of detritus.
- Pressure: Minimum necessary to fill cracks completely. Leave no voids and prevent disruption to structure.

675 CURING CONCRETE/ MORTAR

- Requirement: Keep surface layers of concrete/ mortar moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete/ mortar.
  - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
  - Top surfaces: If covering is removed for finishing operations, replace it immediately afterwards

COMPLETION

715 INSPECTION AND RECORDING OF LOCATION AND EXTENT OF REPAIRS

Locations of proposed repairs are to be inspected and agreed by Engineer prior to commencement of work.

Once broken out repairs are to be inspected, checked and measured by the Engineer prior to filling.

When completed, repairs are to be inspected and approved by the Engineer.

- Repair record forms :
  - Content : Unique repair reference number for cross - referencing to record drawings ; details of repair including diemsnions and explanatory sketches ; agreements and special requirements.
  - Copies : Two.
  - Source of record forms : Employer's standard.

- Record drawings : Required.

C51
Repairing/ Renovating/ Conserving timber

C51 Repairing/ Renovating/ Conserving timber

To be read with Preliminaries/ General conditions

GENERAL During the course of the project it is foreseeable that some minor miscellaneous repair and replacement of joinery items will be required where affected by the works, e.g., fascias, tenants fixtures, doors and frames to stores and meter cupboards. Wherever possible these will be dealt with by the Client's separate appointed external redecoration and repair contractor, either before or after this contract.. By exception, such repair will be instructed under this contract.

130 OPENING UP
- Purpose: To reveal previously concealed areas of structure or fabric not recorded during initial surveys.
- Extent: To be agreed.
- Timing: Give notice before starting opening up.
  - Period of notice: At least two working days.
- Retained building structure/ fabric: Do not damage or destabilize.

150 TIMBER PROCUREMENT
- Timber (including timber for wood based products): Obtained from well managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

160 TIMBER SUPPLIER
- Supplier: Contractor's choice.

220A TIMBER SECTION REPAIR - INTERNAL REINFORCEMENT
- Defective timber: Cut out defective areas.
- Reinforcement:
  - Type: Stainless steel dowels.
  - Number/ size: Drawing to be submitted by contractor and approved by CA.
  - Spacers: Submit proposals.
- Slots in existing members:
  - Location: Cut in side at one third and two thirds section depth.
  - Size: Drawing to be submitted by contractor and approved by CA.
- Replacement timber: Softwood to match existing.
  - Sectional profiles of mating surfaces: To match cut ends of existing timber.
  - Holes/ slots for reinforcement:
    Location: To suit slots in existing member.

240 END REPAIRS - LAP
- Defective timber: Cut out.
- Lap member: Timber.
  - Size: As detailed on drawing by contractor submitted to CA for approval.
- Fixing to existing timber: As detailed on drawing by contractor submitted to CA for approval.

250 TIMBER SECTION REPAIRS - EXTERNAL SPLICE
- Defective timber: Cut out to clean, regular profile.
- Replacement timber: Softwood to match existing.
- Splice plates:
  - Material: Timber.
  - Size: As instructed by CA.
- Fixing to existing timber: As instructed by CA.

360 SOFTWOOD FOR JOINERY REPAIRS Use for joinery not subject to considerable structural loading and which will be concealed in the completed work
- Species: To match existing.
- Quality: Generally to BS EN 942; free from decay and insect attack (except pinhole borers).
  - Appearance class: Class J2 for glazing beads, drip mouldings and the like. J30 or better for all other members. Knots on arrises not permitted where exposed to view..
- Treatment: None required.
- Moisture content on delivery: 13-19%.

370 HARDWOOD FOR JOINERY REPAIRS timber for repairs to items such as windows, framed doors, stairs balusters, generally
- Species: As existing.
- Quality: Generally to BS EN 942; free from decay and insect attack (except pinhole borers).
  - Appearance class: Class J2 for glazing beads, drip mouldings and the like. J30 or better for all other members. Knots on arrises not permitted where exposed to view.
- Treatment: as directed by CA.
- Moisture content on delivery: 13-19%.

470 NAILS FOR GENERAL USE
- Standard: As section Z20.
- Type: Wire .
- Material: Steel.
  - Strength (minimum): Ultimate tensile strength 600 N/mm².
- Finish as delivered: Galvanized.

480 SCREWS FOR GENERAL USE
- Standard: As section Z20.
- Material: Stainless steel.
- Tensile strength (minimum): 550 N/mm².
- Finish as delivered: Galvanized.

EXECUTION

600 WORKMANSHIP
- Skill and experience of site operatives: Appropriate for types of work on which they are employed.
  - Documentary evidence: Submit on request.

610 TEMPORARY SUPPORTS/ PROPPING

- General: Provide adequate temporary support at each stage of repair work to prevent damage, overstressing or uncontrolled collapse of any part of the structure.
- Bearings for temporary supports/ propping: Suitable to carry loads throughout repair operations.

620 PROTECTION OF TIMBER AND WOOD COMPONENTS BEFORE AND DURING INSTALLATION

- Storage: Keep dry, under cover, clear of the ground and with good ventilation. Support sections/ components on regularly spaced, level bearers on a dry, firm base.
- Handling: Do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

650 DIMENSIONS GENERALLY

- Site dimensions: Take as necessary before starting fabrication.
  - Discrepancies with drawings: Report without delay and obtain instructions before proceeding.

680 WARPING OF TIMBER

- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978 or BS EN 14081-1 for softwood, or BS 5756 for hardwood.

690 PROCESSING TREATED TIMBER

- Cutting and machining: Carry out as much as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

720 TEMPORARY REMOVAL AND REINSTATEMENT OF FITTINGS/ FIXTURES

- Items to be removed, and reinstated on completion of repair work:
  - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and refixing instructions, where applicable.
  - Treatment following removal: As instructed by CA.
  - Storage: Protect against damage, and store until required.
    Storage location: On site.
  - Reinstatement: Refit in original locations using original installation methods.
- Items unsuitable or not required for reuse: Obtain instructions regarding disposal.

760 REPAIR OF MEMBERS - CUTTING OUT MEMBERS

- Extent of timber removal: Cut out full cross section of member where wood is defective or decayed, plus 300 mm of sound wood.
- Distance from face of support to cut end of existing timber: Obtain instructions if dimension exceeds 300 mm.
- Joint profile: Plain scarf joint at 1 in 12 to grain with single 40mm step .

850 ADHESIVE JOINTS

- Moisture content of sections to be joined: Within 5% of equilibrium moisture content for conditions of service, and differing from each other by not more than 3%.
- Surfaces to be bonded: Close fitting, structurally sound, dry, and free from contamination by dirt, dust, grease or other deleterious substances.

860 MOISTURE CONTENT CHECKING
- Procedure: When instructed, check moisture content of timber sections with an approved electrical moisture meter.
- Test results: Keep records of all tests. If moisture content falls outside specified range obtain instructions.

870 MOISTURE CONTENT TESTING
- Procedure: When instructed, test timber sections with an electrical moisture meter with deep probes, that has been carefully calibrated against oven drying tests or otherwise guaranteed by an independent testing authority.
- Test sample: Test 5% but not less than 10 lengths of each cross-section in the centre of the length.
- Test results: 90% of values obtained to be within the specified range. Provide records of all tests.

COMPLETION

910 MECHANICALLY FASTENED JOINTS
- General: Inspect accessible bolted, coach screwed and timber pegged joints and tighten fasteners if necessary.
  - Timing: On Completion and at end of Defects Liability Period or Rectification Period.

C90
Alterations - spot items

C90 Alterations - spot items

GENERAL

110 DESCRIPTIONS
- Location of spot item descriptions: Schedule of work.

120 EMPLOYER'S PROPERTY
- Components and materials arising from alterations that are to remain the property of the Employer: None.
  - Protection: Maintain until items listed above are removed by the Employer or reused in the Works, or until the end of the Contract.
- Special requirements: The temporary metal propping installed at most sites by the Client remains the property of the Client and is to be carefully dismantled and securely stored on site for collection by others when confirmed that ti is safe to do so by the Contract Administrator .

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

D
Groundwork

D20
Excavating and filling

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

150 EXISTING SERVICES, FEATURES AND STRUCTURES
- Services: See section A12 for locations.
- Site features to be retained: See section A12 for details.
- Structures: See section A34 for details of protection.

155 INITIAL SITE SURVEY AND EXCAVATIONS
It is known that services are present in the ground close to or at the location of the proposed new foundations.
It therefore may be necessary to adjust the position of the foundations to avoid the services and to provide a bridging detail as shown on the drawings.
Contamination may also be present, e.g asbestos.
In the event that asbestos is discovered, the Engineer / Client shall be notified immediately, and this must be dealt with in accordance with all relevant legislation, the Client's relevant procedures, and to the satisfaction of the Client and all other relevant legislative bodies..
To avoid any delays arising from unknown services or asbestos, the contractor will be required to excavate for the foundations at the start of work on each block or area to survey for the presence of services and / or asbestos.
To avoid unecomomical working and temporary backfilling of excavations, the excavations shall be concreted to form the permanent foundations immediately wherever possible.
Where services are located, the foundations shall be repositioned in agreement with the Engineer and ,if necessary, the relevant authorities, using the bridging detail or other detail as necessary.

CLEARANCE/EXCAVATING

164 TREE ROOTS
- Protected area: Do not cut roots within precautionary protection area.
  - Size of area: TBC by arboriculturist..
- Excavation in protected area:
  - Method: By hand..
  - Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
- Outside protected area: Give notice of roots exceeding 25 mm and do not cut without approval.
- Cutting:
  - Make clean smooth cuts with no ragged edges.
  - Pare cut surfaces smooth with a sharp knife.
  - Treatment of cut roots: In accordance with arboriculturists requirements..
- Backfill: As dug material, enriched with fertilizer etc. as directed by arboriculturist. .

170 REMOVING SMALL TREES, SHRUBS, HEDGES AND ROOTS
- Identification: Clearly mark trees to be removed.
- Small trees, shrubs and hedges: Cut down
- Roots: Grub up and dispose of without undue disturbance of soil and adjacent areas
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

250 PERMISSIBLE DEVIATIONS FROM FORMATION LEVELS
- Beneath mass concrete foundations: ±25 mm.
- Beneath ground bearing slabs and r.c. foundations: ±15 mm.
- Embankments and cuttings: ±50 mm.
- Ground abutting external walls: ±50 mm, but such as to ensure that finished level is not less than 150 mm below dpc.

260 INSPECTING FORMATIONS
- Give notice: Make advance arrangements for inspection of formations for foundations and filling formations.
  - Notice (minimum): 3 days.
- Preparation: Just before inspection remove the last 150 mm of excavation.
- Trim to required profiles and levels.
  - Loose material: Remove.
- Seal: Within 4 hours of inspection, seal formations with concrete.

265 INSPECTING FORMATIONS IN SAND AND GRAVEL
- Notice for inspection (minimum): 3 days.
- Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels and mechanically compact formation.
- Seal: Within 4 hours of inspection, seal formations with concrete.

267 INSPECTION OF FORMATIONS IN SHRINKABLE SOILS
- Inspect formation: For signs of conducting and fine moisture absorbing roots.
- Give notice: If significant quantities of roots are visible in the formation or in the bottom 75 mm of the walls of the excavation.

270 FOUNDATIONS GENERALLY
- Give notice if:
  - A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.
  - The formation contains soft or hard spots or highly variable material.

276 FOUNDATION BEARING
- Requirement: Foundations are designed to bear on:
  - Safe bearing capacity (minimum): 50 kN/m2.
- Give notice: If the material at the design depth of the foundation does not comply with this description, or contains soft or hard spots or highly variable material.

290 FOUNDATIONS IN MADE UP GROUND
- Depth: Excavate down to a natural formation of undisturbed subsoil.
- Discrepancy: Give notice if this is greater or less than depth given.

310 UNSTABLE GROUND
- Generally: Ensure that the excavation remains stable at all times.
- Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
- Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

330 UNRECORDED FEATURES
- Give notice: If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.

DISPOSAL OF MATERIALS

415 EXCAVATED TOPSOIL REMOVAL
- General: Remove from site.

441 SURPLUS SUBSOIL
- Excavated material: Stockpile in temporary storage heaps.
- Retained material: Spread and level surplus subsoil on site.
  - Locations: All bases. .
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.
- Remaining material: Remove from site.

450 WATER
- Generally: Keep all excavations free from water until:
  - Formations are covered.
  - Below ground constructions are completed.
  - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

454 GROUND WATER LEVEL, SPRING OR RUNNING WATER
- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

457 PUMPING
- General: Do not disturb excavated faces or stability of adjacent ground or structures.
- Pumped water: Discharge without flooding the site or adjoining property.
- Sumps: Construct clear of excavations. Fill on completion.
  - Locations: Submit proposals .

520A FROST SUSCEPTIBILITY
- Fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.8.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
  - Fine grained soil with a plasticity index less than 20%.
  - Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
  - Crushed chalk.
  - Crushed limestone fill with average saturation moisture content in excess of 3%.
  - Burnt colliery shale.

D30
Piling

D30 Piling

To be read with Preliminaries/ General conditions.

TENDERING

GENERAL

120 PILING GENERALLY
This section provides a very basic specification for piling. It has been included to cover the possibility that, in a very small number of locations, piled foundations may be required due to adverse ground conditions or obstructions by underground services preventing the use of traditional pad foundations. In this event, additional or revised drawings will be provided to show the requirements for piles, including loadings. It is anticipated that pile loads will not exceed 50 kN compression, and that some form of mini pile would be suitable. The type of pile is to be agreed withe the Engineer at the time.

130 PILES
- Standard: To SPERW, sections B2-B6, as appropriate to the pile type.
- Permitted types: Contractor's choice. Note, it is anticipated that driven steel tube piles may be the most suitable, due to the relatively small loads required. However, other methods may be adopted if the Contractor considers these to be more practical and economic. .
- Project specification: Submit proposals to cover the SPERW requirements in clause B1.2 and listed under this heading for the chosen pile type.
- Other requirements: None.

210 CONTRACTOR DESIGN
- Structural requirements:
  - Generally: As section B50.
  - Modifications: None.
- Design responsibility:
  - Piles: Complete design of piles in accordance with the designated code of practice to satisfy specified performance criteria.
  - Other: None.
- Pile layout: Refer to drawings.
- Performance criteria for piles: Refer to drawings.
- Other requirements: None.
- Submission of information: As required by SPERW, table B1.1 and elsewhere, as appropriate for the pile type, materials and tests specified.
  - Amendments to requirements specified in SPERW for information required:
    Prior to commencing design: None.
    Prior to commencing the works: Confirmation that installation of piles will not damage adjacent structures/ services.

EXECUTION

610 METHOD STATEMENT
- Requirement: Submit proposed method of installation to achieve the design parameters, including:
  - Details of equipment.
  - Programme showing sequence and resources.
  - Confirmation that performance requirements for load and settlement will be achieved.

615 RECORDS AND SUBMISSION OF INFORMATION DURING THE WORKS

- Generally: As required in SPERW, tables B1.1, B1.6 and elsewhere, as appropriate for the pile types, materials and tests specified.
- Amendments to requirements: None.

685 EXCAVATED MATERIAL

- Disposal: Contractor's responsibility.

E
In situ concrete/Large precast concrete

E05
In situ concrete construction generally

E05 In situ concrete construction generally

To be read with Preliminaries/General conditions.

220A STRUCTURAL DESIGN PROVIDED
- Description: STAIRCASES AND BASES ETC..
- Requirements:
  - Generally: As shown on drawings.
  - Additional requirements: None.
- Production/ execution records: In accordance with the designated code of practice..

221 STRUCTURAL DESIGN PROVIDED

- Standards:
  - Design to BS8110-1 and -2.
  - Drawings to BS EN ISO 4157-1
  - Reinforcement Schedules: to BS8666
- Finished Product: To comply with the requirements of the design standard.
  - Additional Requirements: n/a
- Production / Execution Records : n/a

223 STRUCTURAL DRAWINGS AND SCHEDULES
- Standards:
  - Drawings: To Standard methods of detailing concrete' published by The Institution of Structural Engineers.
  - Reinforcement schedules: To BS 8666.

225 TEMPERATURE RECORDS
- Requirement: Throughout period of concrete construction record:
  - Daily: Maximum and minimum atmospheric shade temperatures.
  - Under adverse temperature conditions: Temperature at commencement and end of placing.
- Equipment: Contractor's choice .
  - Location: In the shade, close to the structure.

235 OPENINGS, INSERTS AND FIXINGS
- Requirement: Collate all information.
- Submit: Details where openings, inserts and fixings can only be accommodated by adjustments to reinforcement.
- Locate reinforcement: To ensure specified minimum cover at openings and inserts and to be clear of fixing positions.

290 ACCURACY OF CONSTRUCTION
- Setting out: To BS 5964-1.
- Geometrical tolerances: To BS EN 13670, Tolerance Class 1.
  - Conflicts: Notwithstanding tolerances specified elsewhere, do not exceed requirements for compliance with the designated code of practice.
  - Substitution of alternative requirements: none.

410 IN SITU CONCRETE CONSTRUCTION - SUPERVISION/ CHECKING
- Standard: To BS EN 13670, Execution Class 1.

430 SURFACE CRACKING Visible Concrete

- Method of measurement: graduated magnifying devices, templates and feeler gauges. .
- Critical crack width: 0.3 mm .
- Action: Should cracks occur that are wider than the critical crack width:
  - Survey: Frequency and extent of such cracks and investigate cause.
  - Report: Findings together with recommendations for rectification.

E10
Mixing/casting/curing in situ concrete

E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

CONCRETE

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

105 DESIGNATED CONCRETE MASS CONCRETE FOUNDATIONS
- Designation: GEN3.
- Fibres: Not required..
- Aggregates:
  - Size (maximum): 20 mm..
  - Coarse recycled aggregates: Not permitted..
  - Additional aggregate requirements: None..
- Special requirements for cement/ combinations: None..
- Consistence class: S3..
- Chloride class: Cl 1.0.
- Admixtures: None..
- Additional mix requirements: None.

108 DESIGNATED CONCRETE REINFORCED CONCRETE ABOVE GROUND
- Designation: RC32/40.
- Reinforcement: High Yield Steel strength grade B500B .
- Aggregates:
  - Size (maximum): 20 mm.
  - Coarse recycled aggregates: Not permitted.
  - Additional aggregate requirements: None.
- Special requirements for cement/ combinations: None.
- Consistence class: S3.
- Chloride class: Cl 0.40.
- Admixtures: Concrete producer's choice.
- Additional mix requirements: None.

MATERIALS, BATCHING AND MIXING

215 READY-MIXED CONCRETE
- Production plant: Currently certified by a body accredited by UKAS to BS EN 45011 for product conformity certification of ready-mixed concrete .
- Source of ready-mixed concrete: Obtain from one source if possible . Otherwise, submit proposals .
  - Name and address of depot: Submit before any concrete is delivered .
  - Delivery notes: Retain for inspection .
- Declarations of nonconformity from concrete producer: Notify immediately .

221 INFORMATION ABOUT PROPOSED CONCRETES
- Submit when requested:
  - Details listed in BS 8500-1, clause 5.2.
  - Additional information: None..

225 CHANGES TO SPECIFICATION
- Changes to specification of fresh concrete (outside concrete producer's responsibility): Pro hibited.

230 INTERRUPTION OF SUPPLY DURING CONCRETING
- Elements without joints: Where elements are detailed to be cast in a single pour without joints, make prior arrangements for a back-up supply of concrete.
- Elsewhere:
  - Preparation: Manage pour to have a full face, and have materials available to form an emergency construction joint while concrete can still be worked.
  - Before pour is completed: Submit location and details of joint, make proposals for joint preparation.

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

490 PROPERTIES OF FRESH CONCRETE
- Adjustments to suit construction process: Determine with concrete producer . Maintain conformity to the specification .

PROJECT TESTING/ CERTIFICATION

505 PROJECT TESTING OF CONCRETE - GENERAL
- Testing: To BS 8500-1, Annex B.
  - Nonconformity: Obtain instructions immediately.
- Recording: Maintain complete correlated records including:
  - Concrete designation.
  - Sampling, site tests, and identification numbers of specimens tested in the laboratory.
  - Location of the parts of the structure represented by each sample.
  - Location in the structure of the batch from which each sample is taken.

508 REGULAR PROJECT TESTING OF CONCRETE
- Tests: Compressive strength.
- Sampling:
  - Point: At point of discharge from delivery truck.
  - Rate: 4 Cubes per concrete delivery.
- Other requirements: Cubes for early stage strength testing to be stored under same conditions as concrete in members.

520 TESTING LABORATORY
- Laboratory: Accredited by UKAS or other national equivalent.
  - Name and UKAS reference number: Submit well in advance of making trial mixes or concrete for use in the works.

530 TESTS RESULTS
- Submission of reports: Within one day of completion of each test.
  - Number of copies: Three.
- Reports on site: A complete set, available for inspection.

550 BROKEN CUBES FROM FAILED STRENGTH TESTS
- Nonconformity: Keep separately the pieces of each cube which fail to meet the conformity requirements for individual results.
- Period for keeping cubes: Obtain instructions.

PLACING/ COMPACTING/ CURING AND PROTECTING

610 CONSTRUCTION/ SEQUENCE/ TIMING REQUIREMENTS
- For RC Staircases. .

620 TEMPERATURE OF CONCRETE
- Application: For RC Staircases..
- Objective: Limit maximum temperature of concrete to minimize cracking during placing, compaction and curing. Take account of:
  - High temperatures and steep temperature gradients: Prevent build-up during first 24 hours after casting. Prevent coincidence of maximum heat gain from cement hydration with high air temperature and/ or solar gain.
  - Rapid changes in temperature: Prevent during the first seven days after casting.
- Proposals for meeting objective: Submit.

630 PREMATURE WATER LOSS
- Requirement: Prevent water loss from concrete laid on absorbent substrates .
  - Underlay: Select from:
    Polyethylene sheet: 250 micrometres thick .
    Building paper: To BS 1521, grade B1F .
  - Installation: Lap edges 150 mm .

635 CONSTRUCTION JOINTS NOT PERMITTED
- Location: Not permitted to any concreting works unless agreed with Engineer. .

648 ADVERSE TEMPERATURE CONDITIONS
- Requirement: Submit proposals for protecting concrete when predicted ambient temperatures indicate risk of concrete freezing or overheating.

650 SURFACES TO RECEIVE CONCRETE
- Cleanliness of surfaces immediately before placing concrete: Clean with no debris, tying wire clippings, fastenings or free water .

660 INSPECTION OF SURFACES
- Notice: Give notice to allow inspections of reinforcement and surfaces before each pour of concrete.
  - Period of notice: Obtain instructions.
- Timing of inspections: When reinforcement and formwork are ready for concreting.

670 TRANSPORTING
- General: Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability . Protect from heavy rain .
- Entrained air: Anticipate effects of transport and placing methods in order to achieve specified air content .

680 PLACING

- Records: Maintain for time, date and location of all pours.
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
- Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum), unless otherwise specified. Do not place against frozen or frost covered surfaces.
- Continuity of pours: Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
- Discharging concrete: Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes.
- Thickness of layers: To suit methods of compaction and achieve efficient amalgamation during compaction.
- Poker vibrators: Do not use to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast-in accessories and at vertical joints.

690 COMPACTING

- General: Fully compact concrete to full depth to remove entrapped air. Continue until air bubbles cease to appear on the top surface.
  - Areas for particular attention: Around reinforcement, under void formers, cast-in accessories, into corners of formwork and at joints.
- Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete.
- Methods of compaction: To suit consistence class and use of concrete.

720 VIBRATORS

- General: Maintain sufficient numbers and types of vibrator to suit pouring rate, consistency and location of concrete .
- External vibrators: Obtain approval for use .

730 PLASTIC SETTLEMENT

- Settlement cracking: Inspect fresh concrete closely and continuously wherever cracking is likely to occur, including the top of deep sections and at significant changes in the depth of concrete sections .
  - Timing: During the first few hours after placing and whilst concrete is still capable of being fluidized by the vibrator .
- Removal of cracks: Revibrate concrete.

810 CURING GENERALLY

- Requirement: Keep surface layers of concrete moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete.
  - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
  - Top surfaces: Cover immediately after placing and compacting. If covering is removed for finishing operations, replace it immediately afterwards.
- Surface temperature: Maintain above 5°C throughout the specified curing period or four days, whichever is longer.
- Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep records on site, available for inspection.

811 COVERINGS FOR CURING

- Sheet coverings: Suitable impervious material .
- Curing compounds: Selection criteria:
  - Curing efficiency: Not less than 75% or for surfaces exposed to abrasion 90% .
  - Colouring: Fugitive dye .
  - Application to concrete exposed in the finished work: Readily removable without disfiguring the surface .
  - Application to concrete to receive bonded construction/ finish: No impediment to subsequent bonding .
- Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with impervious sheeting held clear of the surface and sealed against draughts at perimeters and junctions .

812 PREVENTING EARLY AGE THERMAL CRACKING

- Deep lifts or large volume pours: Submit proposals for curing to prevent early age thermal cracking, taking account of:
  - Temperature differentials across sections .
  - Coefficient of thermal expansion of the concrete .
  - Strain capacity of the concrete mix (aggregate dependent) .
  - Restraint .

818 CURING PERIODS GENERALLY

- Minimum periods: When not otherwise indicated, to BS EN 13670 Annex F 8.5.

840 PROTECTION

- Prevent damage to concrete, including:
  - Surfaces generally: From rain, indentation and other physical damage .
  - Surfaces to exposed visual concrete: From dirt, staining, rust marks and other disfiguration .
  - Immature concrete: From thermal shock, physical shock, overloading, movement and vibration .
  - In cold weather: From entrapment and freezing expansion of water in pockets, etc .

E20
Formwork for in situ concrete

E20 Formwork for in situ concrete

To be read with Preliminaries/ General conditions.

GENERALLY/ PREPARATION

110 LOADINGS
- Requirement: Design and construct formwork to withstand the worst combination of the following:
  - Total weight of formwork, reinforcement and concrete.
  - Construction loads including dynamic effects of placing, compacting and construction traffic.
  - Wind and snow loads.

132 PROPPING
- General: Prevent deflection and damage to the structure. Carry down props to bearings strong enough to provide adequate support throughout concreting operations.
- Method statement: Submit proposals for prop bearings and sequence of propping/ repropping and backpropping.
  - Timing of submission: To be agreed between the permanent works designer and the temporary works coordinator. .

170 WORK BELOW GROUND - FOUNDATIONS
- Casting vertical faces against faces of excavation: Permitted providing the face of the excavation is stable..
  - Requirements: Submit proposals for maintaining stability of excavated faces and preventing contamination of concrete by loose soil.

CONSTRUCTION

310 ACCURACY
- General requirement for formwork: Accurately and robustly constructed to produce finished concrete in the required positions and to the required dimensions.
- Formed surfaces: Free from twist and bow (other than any required cambers).
- Intersections, lines and angles: Square, plumb and true.

315 SUBSTRUCTURE FORMWORK AND UNDERSLAB INSULATION
- Cutting: Neat and accurate to edges, and around penetrations and downstands.
- Laying: Tightly butted and fully supported on firm, even substrate.
- Vertical faces: Stiffen as necessary to act as shutter.
- Formwork/ insulation surfaces: Protect from indentation by spacers and other items.
- Joints in formwork/ insulation and with edge structure and penetrations: Seal to prevent penetration of concrete.
- Concrete placement: Restrain formwork/ insulation against movement.

320 JOINTS IN FORMS
- Requirements including joints in form linings and between forms and completed work:
  - Prevent loss of grout, using seals where necessary.
  - Prevent formation of steps. Secure formwork tight against adjacent concrete.

330 INSERTS, HOLES AND CHASES
- Positions and details:
  - Dimensioned on drawings provided on behalf of the Employer: Do not change without consent.
  - Undimensioned or from other sources: Submit proposals.
- Positioning relative to reinforcement: Give notice of any conflicts well in advance of placing concrete.
- Method of forming: Fix inserts or box out as required. Do not cut hardened concrete without approval.

350 FORM TIES
- Metal associated with form ties/ devices: Prohibited within cover to reinforcement. Compatible with reinforcement metal.

470 RELEASE AGENTS
- Use: All formwork.
- General: Achieve a clean release of forms without disfiguring the concrete surface.
- Product types: Compatible with formwork materials, specified formed finishes and subsequent applied finishes. Use the same product throughout the entire area of any one finish.
- Protection: Prevent contact with reinforcement, hardened concrete, other materials not part of the form face, and permanent forms.

480 SURFACE RETARDERS
- Use: Obtain approval.
- Reinforcement: Prevent contact with retarder.

STRIKING

510 STRIKING FORMWORK
- Timing: Prevent any disturbance, damage or overloading of the permanent structure.

521 MINIMUM PERIOD FOR RETAINING FORMWORK/ TEMPORARY SUPPORTS IN POSITION
- Concrete strength at time of formwork removal (minimum): 66% of 28 day strength.
- Assumptions: None.
  - Before removing formwork: Submit proposals if assumptions will not be realised.
- Method to be used in assessing early age strength of concrete: Submit proposals.

FORMED FINISHES

610 BASIC FINISH
- Location: Faces below ground level.
- Finish: Faces fully compacted and cover to reinforcement provided.

620 PLAIN FINISH

- Location: Staircases and Balcony Slabs.
- Finish: Even and dense. Arrange formwork panels in a regular pattern as a feature of the surface.
- Permissible deviation of surfaces:
  - Sudden irregularities (maximum): 3 mm.
  - Gradual irregularities (maximum): 3 mm, when measured from the underside of a 1 m straightedge, placed anywhere on surface.
- Variations in colour:
  - Permitted: Those caused by impermeable formwork linings.
  - Not permitted: Those caused by contamination or grout leakage.
- Surface blemishes:
  - Permitted: Blowholes less than 10 mm in diameter and at an agreed frequency.
  - Not permitted: Voids, honeycombing, segregation and other large defects.
- Formwork tie holes: In a regular pattern and filled with matching mortar.

750 ARRISES, MARGINS AND JUNCTIONS

- Requirements:
  As drawings.

E30
Reinforcement for in situ concrete

E30 Reinforcement for in situ concrete

To be read with Preliminaries/ General conditions.

REINFORCEMENT

110 QUALITY ASSURANCE OF REINFORCEMENT
- Standards:
  - Reinforcement: To BS 4449, BS 4482, BS 4483 or BS 6744.
  - Cutting and bending: To BS 8666.
- Source of reinforcement: Companies holding valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels (CARES).

140 PLAIN BAR REINFORCEMENT
- Standard: To BS 4482.
  - Strength grade: 250.

150 RIBBED BAR REINFORCEMENT
- Standard: To BS 4449.
  - Strength grade: B500B.

210 STANDARD FABRIC REINFORCEMENT
- Standard: To BS 4483.
- Strength grade: B500B.

WORKMANSHIP

310 CUTTING AND BENDING REINFORCEMENT
- General: To schedules and to BS 8666.
- Bending on site, including minor adjustments: Obtain instructions.

320 PROTECTION OF REINFORCEMENT
- Dropping from height, mechanical damage and shock loading: Prevent.
- Cleanliness of reinforcement at time of pouring concrete: Free from corrosive pitting, loose mill scale, loose rust and contaminants which may adversely affect the reinforcement, concrete, or bond between the two.

425 LAPS NOT DETAILED ON DRAWINGS
- Laps in bar reinforcement (minimum): 40 x bar diameter.
- Laps in fabric reinforcement (minimum): 32 x mesh bar diameter.
  - Laps at corners: Avoid four layer build-up.

451 FIXING REINFORCEMENT
- Standard: To BS 7973-1 and -2.
- Installation: In addition to any spacers and chairs shown on drawings or schedules, provide adequate support, tie securely and maintain the specified cover.
- Tying:
  - Wire type: 16 gauge black annealed. Use stainless steel wire for stainless steel reinforcement.
  - Ends of tying wire: Prevent intrusion into the concrete cover. Remove loose ends.
- Compatibility of metals: Prevent contact between ordinary carbon steel and stainless or galvanized reinforcement.

470 TOLERANCES ON COVER

- Tolerance (maximum): 5mm. .
- Checking specified cover dimensions: Before concreting check that cover dimensions will be achieved.

510 RUST STAINING

- Staining of surfaces of concrete which will be exposed to view in the finished work: Prevent.

F
Masonry

F10
Brick/ block walling

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

110 CLAY FACING BRICKWORK ABOVE DPC

- Bricks: To BS EN 771-1.
  - Manufacturer: Submit proposals.
  - Product reference: To match existing.
  - Recycled content: Contractor's choice.
  - Special shapes: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: Coloured mortar to match existing.
- Bond: To match existing.
- Joints: Approved.
- Features: To match existing.

170 CALCIUM SILICATE FACING BRICKWORK ABOVE DPC

- Bricks: To BS EN 771-2.
  - Manufacturer: Submit proposals.
    Product reference: To match existing.
  - Special shapes: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: None.
- Bond: To match existing.
- Joints: To match existing.
- Features: To match existing.

215 CONCRETE FACING BRICKWORK ABOVE DPC

- Bricks: To BS EN 771-3.
  - Manufacturer: To be submitted by contractor.
    Product reference: To be agreed.
  - Configuration: Group 1.
  - Compressive strength:
    Mean value: Not applicable.
    Characteristic value: Not applicable.
    Category: I.
  - Freeze/ Thaw resistance: Not applicable.
  - Recycled content: Contractor's choice.
  - Work sizes (length x width x height): 215 x 100 x 65 mm.
    Tolerance category: Not applicable.
  - Special shapes: None.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: None.
- Bond: To match existing.
- Joints: Flush.
- Features: None.

WORKMANSHIP GENERALLY

430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS AND CLAY BLOCKS
- Bricks and blocks delivered warm from manufacturing process: Do not use until cold.
- Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS
- Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
- Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
- Avoidance of suction in concrete bricks/ blocks: Do not wet.
  - Use of water retaining mortar admixture: Submit details.

500 LAYING GENERALLY
- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
- Clay block joints:
  - Thin layer mortar: Lay blocks on a full bed.
  - Interlocking perpends: Butted.
- Bond where not specified: Half lap stretcher.
- 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
- Quoins and advance work: Rack back.
- Lift height (maximum): 1.2 m above any other part of work at any time.
- Daily lift height (maximum): 1.5 m for any one leaf.

560 COURSING BRICKWORK
- Gauge: Four brick courses including bed joints to 300 mm.

561 COURSING BRICKWORK WITH EXISTING
- Gauge: Line up with existing brick courses.

580 LAYING FROGGED BRICKS
- Single frogged bricks: Frog uppermost.
- Double frogged bricks: Larger frog uppermost.
- Frog cavity: Fill with mortar.

635 JOINTING
- Profile: Consistent in appearance.

665 POINTING TO BRICKWORK ABOVE DPC
- Joint preparation: Remove debris. Dampen surface.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: Coloured mortar to match existing.
- Profile: Approved.

690 ADVERSE WEATHER
- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay bricks/ blocks:
  - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
  - In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
  - In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
  - Rain and snow.
  - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

710 THE TERM FACEWORK
- Definition: Applicable in this specification to all brick/ block walling finished fair.
  - Painted facework: The only requirement to be waived is that relating to colour.

750 COLOUR CONSISTENCY OF MASONRY UNITS
- Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
- Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
- Finished work: Free from patches, horizontal stripes and racking back marks.

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

780 GROUND LEVEL
- Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.

800 TOOTHED BOND
- New and existing facework in same plane: Bond together at every course to achieve continuity.

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

F30
Accessories/ sundry items for brick/ block/ stone walling

F30 Accessories/ sundry items for brick/ block/ stone walling

To be read with Preliminaries/ General conditions

110 CONCRETE FILL TO BASE OF CAVITY
- Concrete generally: To BS EN 206-1 and BS 8500-2.
  - Designated concrete: GEN 1.
    Workability: High.
- Extent: Maintain 75 mm between top of fill and external ground level and a minimum of 225 mm between top of fill and ground level dpc.
- Placement: Compact to eliminate voids.

120 CLEANLINESS
- Cavity base and faces, ties, insulation and exposed dpcs: Free from mortar and debris.

130 PERPEND JOINT WEEP HOLES
- Form: Open perpend joint.
- Locations: Through outer leaf immediately above base of cavity, at cavity trays, stepped dpcs and external openings. 75 mm above top of cavity fill at base of cavity.
- Provision: At not greater than 1000 mm centres and not less than two over each opening.

132 PERPEND JOINT PLASTICS WEEP HOLES
- Manufacturer: Nearest match .
  - Product reference: Nearest match .
- Locations: Through outer leaf immediately above base of cavity, at cavity trays, stepped dpcs and external openings.75 mm above top of cavity fill at base of cavity.
- Provision: At not greater than 1000 mm centres and not less than two over each opening.

160 AIR BRICKS IN EXTERNAL WALLING
- Standard: To BS 493, class 1.
- Manufacturer: Nearest match .
  - Product reference: Nearest match .
- Apertures: Nearest match .
- Work sizes: Nearest match .
- Material/ Colour: Nearest match .
- Placement: Built in with no gaps at joints.

171 VENTILATION DUCTS IN EXTERNAL WALLING
- Manufacturer: Nearest match .
  - Product reference: Nearest match .
- Placement: Across cavity, sloping away from inner leaf. Full mortar joints to seal cavity.
- Protection from water penetration to inner leaf: Where barrier is not integral to duct, form stepped dpc cavity tray with stop ends above duct, extending 150 mm on each side.

175 CAVITY VENTILATORS
- Manufacturer: Nearest match .
  - Product reference: Nearest match .
- Material/ colour: Nearest match .
- Number and location: To match existing .

INSTALLATION OF DPCS/ CAVITY TRAYS

415 HORIZONTAL DPCS
- Placement: In continuous lengths on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.
- Width: At least full width of leaf unless otherwise specified. Edges of dpc not covered with mortar or projecting into cavity.
- Overlying construction: Immediately cover with full even bed of mortar to receive next masonry course.
- Overall finished joint thickness: As close to normal as practicable.

435 STEPPED DPCS IN EXTERNAL WALLS
- External walls on sloping ground: Install dpcs not less than 150 mm above adjoining finished ground level.

445 SILL DPCS
- Form and placement: In one piece and turned up at back when sill is in contact with inner leaf.

455 COPING/ CAPPING DPCS
- Placement: Bed in one operation to ensure maximum bond between masonry units, mortar and dpc.
- Dpcs crossing cavity: Provide rigid support to prevent sagging.

465 SEALING DPCS GENERALLY
- Overlaps and junctions: Seal with Adhesive recommended by dpc manufacturer .

475 SITE FORMED CAVITY TRAYS
- Requirements to prevent downward ingress of water:
  - Profiles: To match those shown on drawings. Firmly secured.
  - Joint treatment: Use unjointed wherever possible, otherwise lap at least 100 mm and seal to produce a free draining and watertight installation.
  - Horizontal cavity trays: Support using cavity closer.
  - Sloping cavity trays: Prevent sagging.
  - Cleanliness: Free from debris and mortar droppings.

485 CAVITY TRAYS OVER OPENINGS AND OTHER CAVITY BRIDGINGS
- Length: To extend not less than 150 mm beyond ends of lintels/ bridgings.

515 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - FLUSH
- Treatment at face of masonry: Finish flush and clear of mortar at the following locations: G enerally .

560 VERTICAL DPCS GENERALLY
- Form: In one piece wherever possible.
  - Joints: Upper part overlapping lower not less than 100 mm.

570 JAMB DPCS AT OPENINGS
- Joint with cavity tray/ lintel at head: Full underlap.
- Joint with sill/ horizontal dpc at base: Full overlap.
- Projection into cavity: Not less than 25 mm.
- Relationship with frame: In full contact.

580 JAMB DPCS TO BUILT IN TIMBER FRAMES

- Fixing: Securely fastened to back of frame.
  - Fasteners: Galvanized clout nails or staples.

G
Structural/Carcassing metal/timber

G10
Structural steel framing

G10 Structural steel framing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS/ INFORMATION

110A CONTRACTOR'S DESIGN OF JOINTS All Steelwork

- Design concept: Refer to drawings..
- Design responsibility: Design connections and detail steelwork and connections.
  - Other responsibilities: None.
- Structural requirements:
  - Design: Complete in accordance with the designated code of practice to satisfy specified performance criteria.
  - Connections: All connections to steelwork to be based on the principles of the details shown on the drawings, but modified as necessary to suit individual circuimstances.
    All steelwork is exposed to view and therefore a high quality of detailing, finishes and workmanship is required to make the steelwork and in particular the joints visually pleasing.
    All welds are to have a smooth,consistent, regular profile, and are to be continous around corners etc.
    All bolt ends are to have plastic caps finished to match the main steelwork..
  - Fixings to foundations and walls: As drawings.
  - Additional requirements: Joints have been designed to minimise movement of the structure, and in particlular the balustrades and their components. Where welded joints are shown on the drawings, substituion of other methods of jointing will not be permitted.
    All steelwork is to be galvanised as below and powder coated as described elsewhere in the drawings and documents.
- Design and production information: As Preliminaries section A31..

113 SURVEY BY CONTRACTOR

Prior to commencement of fabrication drawings for each block, the Contractor shall survey each block to determine the levels and falls of the balcony slabs.
It is intended that the steelwork shall be erected with all handrails and beams level within normal tolerances.
The level of the balcony slabs is known to vary within each block and it is essential that the steelwork fabrication takes account of this.
The principal dimensions are shown on the drawings, but the height of balustrade posts may need to be adjusted to suit the differences in the level of the slab and to maintain a clear height of 1100 mm above the finished floor level at the edge of the slab.
Generally all steelwork has to be set out from a datum point at the lowest point of the slab on each block.
Survey information to comprise CAD drawings in .dwg format to include location plans, plans and levels.

115 DESIGN CONSTRAINTS - GENERAL

- Members forming bracing systems or girders of lattice construction: Unless detailed or instructed otherwise, position so that their lines of action intersect at a point.
- Bolts:
  - Diameter (minimum): 16 mm.
  - Number per connection (minimum): Two, unless otherwise indicated.
  - Other requirements: Choose bolt dimensions to ensure that threads do not occur in shear plane of joint..
- Punching of bolt holes: Not permitted.
- Welds: At least 6 mm fillet.
- Other constraints: See drawings..

117 DESIGN CONSTRAINTS - STEELWORK TO BE GALVANIZED

- Steel grades: Do not use steel downgraded from a higher specification.
- Detail design: Avoid details that will increase the risk of initiating liquid metal assisted cracking (LMAC).
  - Particular restrictions: None.
- Other requirements:
  - Drill holes for bolts;
  - Grind exposed cut edges and notches; and
  - Seal vent and drainage holes in hollow sections using non - ferrous plugs.

123A DRAWINGS AND CALCULATIONS PREPARED BY CONTRACTOR

- Information required: As submission schedule.
- General arrangement drawings: Submit before preparing calculations. Clearly identify:
  - Individual steel members.
  - Conflicts with other work.
  - Proposed changes to contract drawings.
- Member and joint calculations: Submit before preparing fabrication drawings.
- Allow 10 working days for review of drawings and calculations.

125 SPECIFICATION STANDARD

- Standard: Comply with latest edition of National Structural Steelwork Specification (NSSS).
  - Additional requirements: None.
  - Document availability: For the duration of the work, at fabrication shop and on site.
- References to Engineer in NSSS: For the purpose of this contract, interpret such references as being to the person named in section A10 as Consulting Structural Engineer .
  - Exceptions: None.

130 GENERAL STEEL SECTIONS AND PLATES Generally

- Standard: To BS EN 10025-2.
- Grade: S275J0.
  - Options: None.
- Source: Obtain steel from a source accredited to a national or internationally accepted quality standard.
- Other requirements: Steel to be galvanised to have a carbon equivalent value not exceeding 0.44.

135 HOLLOW STEEL SECTIONS Generally

- Standard: To BS EN 10210-1.
- Grade: S355J2H.
  - Options: None.
- Source: Obtain steel from a source accredited to a national or internationally accepted quality standard.
- Other requirements: Steel to be galvanised to have a carbon equivalent value not exceeding 0.44.

FABRICATION

180 NOTIFICATION OF COMMENCEMENT
- Notice: Give notice before fabrication is due to start.
  - Period of notice (minimum): Five working days .

195 HARD STAMPING
- Usage: Not permitted except as indicated on drawings.

215 HOLLOW SECTIONS
- Insides of sections: Debris and moisture removed before sealing ends and openings.

225 STEELWORK TO BE GALVANIZED
- Cutting, drilling and shop welding: Complete before galvanizing.
- Vent and drain holes: Provide as necessary.
  - Locations: Submit proposals.
  - Sealing: Required, submit proposals .

256 SITE WELDING
- Usage: Not Permitted.

BOLT ASSEMBLIES

302 NON-PRELOADED BOLT ASSEMBLIES
- Designation: Black bolts to BS 4190, grade 8.8 .
  - Threading: To suit design criteria..
- Nuts and washers: To suit grade of bolt, as NSSS, clause 2.3.
- Coating applied by manufacturer: Galvanized.
- Other requirements: Specialist bolts shall be used where necessary to connect into hollow sections, and shall be galvanised.

305 PROPRIETARY ANCHORS
- Manufacturer: Hilti or similar approved..
  - Product reference: HIT-HY-70 and HIT-HY-200 or similar approved..
- Anchor type: Resin Anchors..
- Material: Galvanised Carbon steel..

370 GALVANIZED COATING TO BOLT ASSEMBLIES
- Standard: To BS 7371-6.
- Galvanizing: Applied by fastener manufacturer. Passivated and lubricated if no additional coatings are specified. Nuts tapped after galvanizing.
- Use/location: Generally..

390 SEALED HOLLOW SECTIONS
- Holes: Sealed to prevent access of moisture.
  - Method of sealing: Submit proposals..

ERECTION

405A ERECTION METHOD STATEMENT

- To be submitted at least 14 days before erection of steelwork, including the provision of drawings if required.
  Details to include : -
  -Method and sequence of erection.
  -Type of craneage/lifting and time required.
  -Calculation of erection stresses where appropriate.
  -Details of any temporary works including fixing details needed for stability during erection prior to the stability being achieved by the permanent works design. These details should include all temporary propping/bracing proposals that are to be utilised during erection.

410 PRE-ERECTION CHECKS

- Scope: At least 7 days before proposed erection start date, check the following:
  - Foundations and other structures to which steelwork will be attached: Accuracy of setting out.
  - Holding down bolts: Position, protruding length, slackness and condition.
- Inaccuracies and defects: Report without delay.
- Permission to commence erection: Obtain.

425 MODIFICATIONS

- Steelwork: Do not modify without approval.
- Temporary fabrication/ erection attachments: Remove and "Make Good" finishes to the original specification.

440 COLUMN BASES

- Levels: Adjust using steel shims or folding wedges no larger than necessary.
- Location of shims/ wedges: Position symmetrically around perimeter of base plate. Do not use a single central pack.
- Give notice: If space beneath any column base is outside specified limits for bedding thickness.
- Accuracy of erection: Check, and correct errors before filling and bedding beneath bases and carrying out other adjacent work.

441 MORTAR FILLING/ BEDDING OF COLUMN BASES

- Bedding thickness range: 25 - 40 mm..
- Bolt pockets: Completely filled with neat cement slurry.
- Spaces beneath base plates: Completely filled as follows:
  - Spaces 0-25 mm deep: Obtain instructions.
  - Spaces 25-50 mm deep: 1:1 cement:sand mortar, just fluid enough to pour. Tamped well as filling proceeds. Provide temporary shuttering as necessary.
  - Spaces 50-80 mm deep: 1:2 cement:sand mortar, just damp, tamped well against properly fixed supports as filling proceeds.
- Cement: Portland cement BS EN 197-1 - CEM I 42.5 or 52.5.
- Sand: To BS EN 12620, grade 0/4 or 0/2 (MP).
- Additives: Non - shrink grout..

443 PROPRIETARY FILLING/ BEDDING OF COLUMN BASES
Bedding thickness range: 25 - 40mm..

- Preparation: Concrete surfaces scarified to provide a good mechanical key.
- Bolt pockets and spaces beneath base plates: Completely filled with non - shrink grout..

447 BONDED ANCHORS
- Holes: Clean and free from dust at time of installing anchor.
- Permeable sleeves: Use in conditions where otherwise the loss of bonding agent would be unacceptably high.
- Other requirements: As manufacturers recommendations..

PROTECTIVE COATINGS

521 ALTERNATIVE MANUFACTURERS
- Short list of manufacturers: Obtain coating materials from one only of the following: Contractor's choice.
- Selected manufacturer: Submit details before ordering materials.

550 POST-GALVANIZING INSPECTION
- Inspector: Submit, on request, evidence of training and competence in visual inspection for liquid metal assisted cracking.
- Components for which visual inspection is not required (procedure PGI-0): Not applicable..
- Components requiring additional inspection:
  - Procedure PGI-2A: None..
  - Procedure PGI-2B: None..
- Timing: Before erection of steelwork or application of other coatings.
- Action in event of non compliance:
  - Submit: Full records of all post-galvanising inspections, drawing attention to any erected components that are required to be quarantined.
  - Procedure PGI-3: Carry out on all quarantined components, and submit report.
  - Sites of suspected defects: Remove zinc coating by grinding back to bright metal for a distance of not less than 50 mm around each defect and from a similar area on opposite face of member and inspect.
  - Remedial actions: Submit proposals.

PROTECTIVE COATING SYSTEMS

625 GALVANIZING TO BLAST CLEANED STEEL
- Use/ location: All Steelwork.
- Preparation: Blast cleaning to BS EN ISO 8501-1, preparation grade Sa2½ using chilled angular iron grit grade G24 to give a coarse surface profile, followed by chemical cleaning.
- Galvanizing: To BS EN ISO 1461.
  - Minimum mean coating thickness: 140 micrometres.
- All steelwork to be powder coated in accordance with section Z31.

PREPARATION FOR PAINTING

725 MANUAL CLEANING OF NEW STEELWORK
- Preparation: Remove fins, burrs, sharp edges, weld spatter, loose rust and loose scale.
- Surface finish: Clean but unpolished to BS EN ISO 8501-1, grade St 2.
- Finishing: Thoroughly degrease and clean down. Remove any consequent rusting back to grade St 2. Prime without delay.

760 GALVANIZED FASTENERS
- Treatment: After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.

PAINTING

810 ENVIRONMENTAL CONDITIONS

- General requirements prior to starting coating work:
  - Surfaces: Unaffected by moisture or frost.
  - Steel temperature: At least 3°C above dew point, with conditions stable or improving, and not high enough to cause blistering or wrinkling of the coating.
  - Relative humidity: Below 85%.

815 COATINGS

- Surfaces to be coated: Clean, dust free and suitably dry. Previous coats to be adequately cured.
- Multiple coats of same material: Use different tints to assist checking of complete coverage.
- Penultimate coat: Colour recommended by paint manufacturer to suit top coat colour.
- Finish required: Smooth and even, of uniform thickness and colour, free from defects.

850 JUNCTIONS WITH CONCRETE

- Exposed steelwork partially embedded or encased in concrete: Apply two coats of bituminous coating locally to the steel/concrete junction.
- Bituminous coating: To BS 6949, type 1, class A..

H
Cladding/Covering

H20
Rigid sheet cladding

H20 Rigid sheet cladding

To be read with Preliminaries/General conditions.

TYPE(S) OF SHEET CLADDING

150A SHEET CLADDING Glass Balcony Panels
- Support structure: New Steel Framework and posts.
- Board/ Sheet:
  - Manufacturer: Contractor's Choice.
  - Material: Toughened Glass to BS EN 12150.
  - Thickness: 10mm.
  - Finish/ Colour: Clear.
  - Fasteners: To Structural Engineer's design and in strict accordance with the laminated panle manufacturer's or glass manufacturer's requirements. Fasteners shall be of stainless steel, and shall be isloted from the galvensied steel tabs by suitable isolating washersor similar..
    Number and location: As per drawings. The Contactor must ensure that the type of fixing used and the spacing between fixings is in strict accordance with the manufacturers requirements for the type and thickness of the glass used..
    Manifestation is required to all balcony end panels i.e., to prevent impact by birds flying along the balcony length.
    The panels shall also comply with the requirements of BS 6180 and BS 6399 Pts 1 & 2 in respect of structural loadings and be able to safely span the specified distance between fixings as shown on the drawings.

155A SHEET CLADDING Decorative high pressure compact laminate to EN 438 - 6: 2005
- Support structure: New Steel Framework and posts.
- Board/ Sheet:
  - Manufacturer: Contractor's Choice.
    Product reference: See the attachment below labelled DHPCL DATA SHEET for the minimum performance data requirements .
  - Material: Decorative high pressure compact laminate to EN 438 - 6: 2005 of thickness suitable to use and consisting of wood based fibres (paper and/or wood) impregnated with thermosetting resins and surface layers on both sides having decorative colours or designs. An Electron Beam Cured (EBC) transparent top coat layer is to be included to enhance weather and light protecting properties. These components are to be bonded with simultaneous application of heat ($\geq$ 150 degrees C / $\geq$ 302 degrees F) and high specific pressure ($\geq$ MPa) to obtain a homogeneous non-porous material with increased density and integral decorative surface. The panels are to be of appropriate fire retardancy for their use. .
  - Thickness: To the manufacturer's recommended minimum thickness for use as a balcony panel and to the dimensions and fixing centres required by the design drawings .
  - Finish/ Colour: To be available in all commonly available RAL colours to both sides of the panel .
  - Fasteners: To the manufacturer's requirements for use as balcony side restraint panels .
    Number and location: To the positions and centres shown on the design drawings .
    Other requirements: The panels must comply in all respects with British Standard requirements for use as a balcony side restraint panel, including hard body and soft body and spread of flame limitations.The panels shall also comply with the requirements of BS 6180 and BS 6399 Pts 1 & 2 in respect of structural loadings and be able to safely span the specified distance between fixings as shown on the drawings. . .

J
Waterproofing

J31
Liquid applied waterproof roof coatings

J31 Liquid applied waterproof roof coatings

To be read with Preliminaries/ General conditions.

TYPES OF COATING

PRODUCTS

315 TIMBER TRIMS
- Quality: Planed, free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).
- Moisture content at time of covering (maximum): 22%.
- Preservative treatment: As recommended for purpose by waterproof coating manufacturer .

352 CARRIER MEMBRANE
- Type: As recommended by roof coating manufacturer.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.

353A WATERPROOF COATING Balcony Walkways
- Type: Cold Applied Liquid Roofing Walkway System is to be to the same or better standard than one of the four generic specification, LAC 1, LAC 2, LAC 3 and LAC 4, attached to these preambles. These are derived from four leading manufacturers and suppliers in the cold applied roofing industry. The Contractor must confirm the generic specification (LAC 1, LAC 2, LAC 3 or LAC 4)) that he has allowed for in his tender and submit proof of full compliance with that specification. This element of the bid will be particularly scrutinised when assessing the Quality of the submission. .
- Manufacturer: Agrément certified - minimum 15 year pre-paid manufacturer's insurance backed guarantee for workmanship and materials. The specialist manufacturer will be expected to prepare a particular specification for each address that -
  Is suitable for use on a fire escape balcony and meets the requirement of the Building Regulations in this respect
  Is installed by one of the manufacturer's quality approved suppliers
  Is regularly inspected by the manufacturer for quality standard and accordance with the specification
  That fully meets the particular requirements of rainwater discharge and detailing given in section 12 of the Specification
  That thoroughly excludes rainwater penetration from the concrete balcony slab for a minimum of 15 years and is certified as complete by the manufacturer and evidence of Guarantee is provided to the Client prior to handover of the Works. .
  - Product reference: Submit proposals.
- Primer: To the manufacturer's requirements.
- Application: To the manufacturer's requirements.
- Reinforcement: To the manufacturer's requirements.
- Colour: Dark Grey or other standard range colour to be offered to the Client for selection - see previously completed addresses given in section 1 of the specification .
- Minimum dry film thickness: The thickness will vary according to the manufacturer's method for achieving the required falls. .
- Surface protection: To the manufacturer's requirements, including quartz granule. typically 5 Kg/m2 for 0.7 - 1.22mm aggregate. When dry apply a clear coat sealer.

355 PERIMETER TRIMS
- Type: GRP - to the system manufacturer's recommendations. To include an extended depth to the front of the balcony to extend the full depth of the slab .
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Colour: Black.
- Size: As required at the sample blocks to be priced in section 1 of the specification .
- Lengths (maximum): 3 m.

357 PIPE COLLARS
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Size: As required.

385A WALKWAY PROTECTIVE COATING
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
  - Width: To fully protect the goings and trafficked walkway surfaces to the balcony .
  - Colour: Grey - As Sample blocks given in Section 1.2 of the specification.
  - Additives: Spar or other aggregate as required by the manufacturer to achieve the appearance and non-slip performance required for such situation.

EXECUTION GENERALLY

410 ADVERSE WEATHER
- Do not apply coatings:
  - In wet conditions or at temperatures below 5°C, unless otherwise permitted by coating manufacturer.
  - In high winds (speeds > 7 m/s), unless adequate temporary windbreaks are erected adjacent to working area.
- Unfinished areas of roof: Keep dry.

420 SUITABILITY OF SUBSTRATE
- Substrates generally:
  - Secure, clean, dry, smooth, free from frost, contaminants, loose material, voids, protrusions and organic growths.
  - Compatible with coating system.
- Preliminary work: Complete, including:
  - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability: Must not impair integrity of roof.

EXISTING SUBSTRATES

510 REMOVING EXISTING COVERINGS
- Mechanical stripping: Only expected where necessary to meet the specialist manufacturer's requirements.
- Exposed substrate: Do not damage.

515 EXISTING FLASHINGS
- General: Raise flashings to clean surfaces to receive coatings.
- Timing: Leave raised during coating application and lower only after full curing.
- Damaged lengths: Replace with new, specified in another section: Abutment details to be formed in accordance with the system manufacturer's requirements and the new system is to be taken up the wall to 150m above the finished surface level and inserted into the horizontal brick joint to the depth required by the system manufacturer but not less than 10mm.

520 PRELIMINARY POWER WASH TO EXISTING COVERINGS
- Timing: Before renewing existing coverings, water jet clean all areas. Allow to dry.

525 RENEWING EXISTING SUBSTRATES/ COVERINGS
- Areas to be renewed: Submit proposals.
- Timing: Remove only sufficient substrates/ coverings, as will be renewed and made weathertight on same day.

530 MAKING GOOD EXISTING LIQUID APPLIED WATERPROOF COATINGS
- General: Inspect for adherence and repair defective areas in accordance with proposed coating manufacturer's recommendations.

540 MAKING GOOD EXISTING MASTIC ASPHALT COVERING
- Defective areas: Soften and carefully cut out.
- Hammers, chisels, etc.: Do not use to cut cold mastic asphalt.
- Substrate: Dry out.
- Separating membrane: Make good.
- Mastic asphalt: Patch level with existing surface in two coats, the top coat lapped minimum 75 mm onto existing mastic asphalt and to half its depth.

555 MAKING GOOD EXISTING CEMENTITIOUS SLABS/ SCREEDS
- Loose surfaces, sharp edges and projections: Remove.
- Hollow surfaces, voids and cracks: Fill with cement based repair mortar.

560 EXISTING EDGE TRIMS
- Fasteners: Check security. Replace as necessary.
- Existing coverings: Cut out from edge trim recess sufficient to accommodate coatings.

565 EXISTING GUTTERS/ OUTLETS
- Dirt, debris and build up of previous coverings/ coatings: Remove to restore free flow of water.

570 EXISTING CRACKS/ GAPS
- General: Rake out, clean and make good with sealants or repair systems recommended by coating manufacturer.

575 FINAL POWER WASH TO EXISTING COVERINGS
- General: Water jet clean all areas. Allow to dry.

580 STERILIZATION TREATMENT TO EXISTING COVERINGS
- Preliminary work: Complete including making good and cleaning down.
- Biocidal solution: Apply to all areas previously subject to organic growth. Allow to dry.

660 FIXING PERIMETER TRIMS
- Setting out: 3 mm clear from wall or fascia.
- Fasteners: To manufacturer's requirements.
  - Fixing: 30 mm from ends and at 300 mm (maximum) centres.
- Jointing sleeves: Fixed one side only.
  - GRP: Butt ends.
  - Aluminium: 3 mm gaps between ends.
- Corners pieces: Purpose made.

ROOF WALKWAY COATING SYSTEM

710 ADHESION TESTS
- Requirement: Carry out a trial coating to determine priming requirements and/ or system suitability.
- Nature of test: As recommended by the system manufacturer .
- Test results: Submit and arrange for inspection.

720 APPLYING PRIMERS/ CONDITIONERS
- Coverage per coat (minimum): As recommended by the system manufacturer.
- Surface coverage: Brushed well in to ensure local or full area coverage according to type.
- Coats: Allow to dry before overcoating.

730 LAYING CARRIER MEMBRANE
- Bond: As recommended by the system manufacturer.
- Mechanical fixing: As recommended by the system manufacturer.

740 MOVEMENT JOINTS IN SUBSTRATE
- Debonding tape: Apply over movement joints.
- Reinforcement strip: Apply over debonding tape.
- Bedding: Preliminary coating application.
- Joints: Lap in length.
- Bond: Continuous over whole surface, with no air pockets.
- Condition at completion: Smooth.

750 PRELIMINARY LOCAL REINFORCEMENT
- Reinforcement strip: Apply to junctions at upstands, penetrations and outlets, joints and fixings in discontinuous unit substrates.
  - Bedding: Preliminary coating application.
  - Joints: Lap in length.
  - Bond: Continuous over whole surface, with no air pockets.
  - Condition at completion: Smooth.

760A APPLICATION OF ROOF WALKWAY COATINGS
- Thickness: Monitor by taking wet/ dry film thickness readings.
- Continuity: Maintain full thickness of coatings around angles, junctions and features.
- Rainwater outlets: Form with watertight joints.
- Drainage systems: Do not allow liquid coatings to enter piped rainwater or foul systems.
- Edge trims: Apply coatings over horizontal leg of trim and into recess.

SURFACING

890 APPLYING WALKWAY PROTECTIVE COATING
- Coverage per coat (minimum): As recommended by the system manufacturer.
- Surface coverage: Even and full.

COMPLETION

910 INSPECTION
- Coating surfaces: Check when cured for discontinuities.
  - Defective areas: Apply another coating.

940 COMPLETION
- Roof areas: Clean.
  - Outlets: Clear.
  - Flashings: Dressed into place.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed coatings: Protect against damage.

L
Windows/Doors/Stairs

L30
Stairs/ ladders/ walkways/ handrails/ balustrades

L30 Stairs/ ladders/ walkways/ handrails/ balustrades

To be read with Preliminaries/ General conditions.

PRELIMINARY INFORMATION/ REQUIREMENTS

107 COMPLETION OF DESIGN To Structural Engineer's design
- Requirement: Complete the detailed design to satisfy specified performance criteria and coordinate with the detailed design of related and adjacent work.
  - Standard: To Building Regulations (E&W) Approved Document M.
- Structural requirements: As section B50.
- Additional requirements: None.
- Design and production information: As Preliminaries section A31.
- Timing of submissions: As Preliminaries section A31.

130 SITE DIMENSIONS
- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
  - Designated items: Balustrade either supported from new metal beam separate to balcony or from the balcony itself, as per the parameters in the Structural Engineer's typical drawings and the elevation drawings to be issued in relation to each block with the Order.

COMPONENTS

270 STAIRS Concrete Precast or Insitu where necessary to replace existing
- Component material, grade, finish as delivered:
  - Treads: Ceramic Tile.
    Slip resistance value of integral tread – water wet (minimum): To comply with building regulations .
    Slip resistance value of integral nosing – water wet (minimum): To comply with building regulations.
    Colour of integral nosing: To match existing.
  - Risers: To match existing.
  - Strings: To match existing.
  - Newels: To match existing.
  - Guarding: To match existing.
  - Handrails: To Structural Engineer's drawings and specification.
    Lower handrail: Not required.
- Workmanship:
  - Joinery: N/A.
  - Metalwork: To Structural Engineer's drawings and specification.
- Other requirements: To Structural Engineer's drawings and specification.

550 PURPOSE MADE BALUSTRADES As per Structural Engineer's drawings and specification.

- Component material, grade and finish as delivered:
  - Guarding: Minimum10 mm toughened glass, Class A to BS 6206 or Decorative High Density Composite Laminate given in Section H above .
  - Handrails: As per Structural Engineer's drawings and specification. . Lower handrail: Not required.
- Workmanship:
  - Joinery: Not applicable.
  - Metalwork: To section Z11.
- Other requirements: As per Structural Engineer's drawings and specification.The panels shall also comply with the requirements of BS 6180 and BS 6399 Pts 1 & 2 in respect of structural loadings. .
- Fixing: As per Structural Engineer's drawings and specification .
  - Centres: As per Structural Engineer's drawings and specification .

560 PROPRIETARY BALUSTRADES Contractor's choice to match Structural Engineer's design and specification on drawings S001 to S007

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Component material and finish as delivered:
  - Guarding: As per Structural Engineer's drawings and specification. .
  - Handrails: As per Structural Engineer's drawings and specification. . Lower handrail: Not required.
- Other requirements: As per Structural Engineer's drawings and specification and particularly to withstand thermal expansion and contraction .
- Fixing: As per Structural Engineer's drawings and specification. .
  - Centres: As per Structural Engineer's drawings and specification. .

570 PURPOSE MADE HANDRAILS Contractor's choice to match Structural Engineer's design and specification on drawings S001 to S007

- Component material, grade and finish as delivered:
  - Handrails: As per Structural Engineer's drawings and specification. .
  - Brackets: As per Structural Engineer's drawings and specification. .
- Workmanship:
  - Joinery: Not applicable.
  - Metalwork: To section Z11.
- Other requirements: As per Structural Engineer's drawings and specification S001 to S007 and particularly to withstand thermal expansion and contraction .
- Fixing: As per Structural Engineer's drawings and specification. The handrails shall also comply with the requirements of BS 6180 and BS 6399 Pts 1 & 2 in respect of structural loadings. .
  - Centres: As per Structural Engineer's drawings and specification. .

580 PROPRIETARY HANDRAILS Contractor's choice to match Structural Engineer's design and specification on drawings S001 to S007

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Component material and finish as delivered:
  - Handrails: As per Structural Engineer's drawings and specification. .
  - Brackets: As per Structural Engineer's drawings and specification. .
- Other requirements: As per Structural Engineer's drawings and specification and particularly to withstand thermal expansion and contraction .
- Fixing: As per Structural Engineer's drawings and specification. .
  - Centres: As per Structural Engineer's drawings and specification .

INSTALLATION

620 PRIMING/SEALING/PAINTING
- Surfaces inaccessible after assembly/installation: Before fixing components, apply full protective/decorative treatment/coating system.

630 CORROSION PROTECTION OF DISSIMILAR MATERIALS
- Components/ substrates/ fasteners of dissimilar materials: Isolate using washers/ sleeves or other suitable means to separate materials to avoid corrosion and/ or staining.

640 INSTALLATION GENERALLY
- Fasteners and methods of fixing: To section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
- Applied features (finishes, inserts, nosings and the like): Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as applied feature manufacturer's recommendations before application.

COMPLETION

910 INSPECTION
- Timing: Two weeks after request by Contract Administrator.
- Period of notice (minimum): 5 working days.

L40
General glazing

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

150 WORKMANSHIP GENERALLY
- Glazing generally: To BS 6262.
- Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
- Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
- Materials:
  - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
  - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.

152 PREPARATION
- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.

155 GLASS GENERALLY
- Standards: To BS 952 and relevant parts of:
  - BS EN 572 for basic soda lime silicate glass.
  - BS EN 1096 for coated glass.
  - BS EN 1748-1 for borosilicate glass.
  - BS EN 1748-2 for ceramic glass.
  - BS EN 1863 for heat strengthened soda lime silicate glass.
  - BS EN 12150 for thermally toughened soda lime silicate safety glass
  - BS EN 12337 for chemically strengthened soda lime silicate glass.
  - BS EN 13024 for thermally toughened borosilicate safety glass.
  - BS EN ISO 12543 for laminated glass and laminated safety glass.
- Panes/ sheets: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
  - Edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

165 HEAT SOAKING OF THERMALLY TOUGHENED GLASS
- Standard: BS EN 14179.
  - Holding period (minimum): 8 hours.
  - Mean glass temperature: 290° ± 10°C.
- Certified evidence of treatment: Submit.
- Designated locations: Balcony panels.

610 WINDOW FILM

- Type: External Quality Manifestation .
- Manufacturer: Contractor's Choice .
  - Product reference: Contractor's Choice .
- Colour: Grey .
- Application: Carried out by a firm approved by the film manufacturer in accordance with manufacturer's recommendations.
  - Evidence of applicator's competence and experience: Submit on request.
  - Sample area: Complete as part of the finished work, in an approved location and obtain approval of appearance before proceeding.
  - Ambient air temperature at time of application: Above 5°C.
- Installed film: Fully adhered to the glass with no peeling, and free from bubbles, wrinkles, cracks or tears.
- Further contact with applied films: Avoid until bonding adhesive has cured.
- Cleaning and maintenance instructions: Submit copies.

630 MANIFESTATION Necessary to end balcony panels only

- Design: Simple design to be agreed.
  - Art work: To be prepared by contractor and submitted for approval.
  - Media: CDRom.
- Technique: Applied film.

M
Surface finishes

M10
Cement based levelling/ wearing screeds

M10 Cement based levelling/ wearing screeds

To be read with Preliminaries/General conditions.

TYPES OF SCREED

140 PROPRIETARY POLYMER MODIFIED LEVELLING SCREEDS Suitable for use to build up levels on external walkways including asphalt, sand cement and concrete slab

- Substrate: In situ concrete slab.
- Screed manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Screed construction: Fully bonded.
- Thickness:
  - Nominal: As required to form falls required by the specialist roofing manufacturer .
  - Minimum: 6 mm .
  - Maximum: 40 mm .
- Mix: To screed manufacturer's recommendations.
- In situ crushing resistance (ISCR) category: A (1 mm maximum indentation).
  - Mass of test weight: 4 kg.
- Flatness/ Surface regularity class: SR2.
- Finish: To required standard of roofing manufacturer.
  - To receive: Cold applied;ied roofing system.
- Other requirements: To be laid to form falls necessary to achieve complete discharge of rainwater from the surface to the the rainwater outlets all as required by teh cold applied roofing system manufacturer.

GENERALLY/ PREPARATION

210 SUITABILITY OF SUBSTRATES

- General:
  - Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
  - Sound and free from significant cracks and gaps.
- Concrete strength: In accordance with BS 8204-1, Table 2.
- Cleanliness: Remove plaster, debris and dirt.
- Moisture content: To suit screed type. New concrete slabs to receive fully or partially bonded construction must be dried out by exposure to the air for minimum six weeks.

215 SURFACE HARDNESS OF SUBSTRATES TO RECEIVE POLYMER MODIFIED WEARING SCREEDS

- General: Substrates must restrain stresses that occur during setting and hardening of wearing screeds.
- Test for surface hardness: To BS EN 12504-2 using a rebound hammer with compliance values selected from the following:

Screed thickness	Rebound hammer value
15 mm or less	Greater than 25
Greater than 15 mm	Greater than 30

- Report: Submit details of areas where substrates surface hardness does not comply with these values.

220 PROPRIETARY LEVELLING/ WEARING SCREEDS
- General: Materials, mix proportions, mixing methods, minimum/ maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
- Standard: To BS 8204-3.

250 CONDUITS UNDER FLOATING SCREEDS
- Haunching: Before laying insulation for floating screeds, haunch up in 1:4 cement:sand on both sides of conduits.

260 FULLY BONDED CONSTRUCTION
- Preparation: Generally in accordance with BS 8204-1.
- Removing mortar matrix: Shortly before laying screed, expose coarse aggregate over entire area of hardened substrate.
- Texture of surface: Suitable to accept screed and achieve a full bond over complete area.
- Bonding coat: Manufacturer's standard.

BATCHING/MIXING

302 CEMENTS
- Cement types: In accordance with BS 8204-1, clause 5.1.3.

305 AGGREGATES
- Sand: To BS EN 13139.
  - Grading limits: In accordance with BS 8204-1, Table B1.
- Coarse aggregates for fine concrete levelling screeds:
  - Standard: BS EN 12620.
  - Designation 4/10.
- Lightweight aggregates: In accordance with BS 8204-1, Annex A.

306 PROPRIETARY POLYMER MODIFIED SCREEDS
- Cement types: In accordance with BS 8204-3.
- Sand: To BS EN 13139:
  - Grading limits: 0/2 mm (MP) category 1.
- Aggregates: In accordance with BS 8204-3.

307 ADMIXTURES
- Standard: In accordance with BS 8204-1, Table 1.
- Calcium chloride: Do not use in admixtures.

310 BATCHING WITH DENSE AGGREGATES
- Mix proportions: Specified by weight.
- Batching: Select from:
  - Batch by weight.
  - Batch by volume: Permitted on the basis of previously established weight:volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.

330 MIXING
- Water content: Minimum necessary to achieve full compaction, low enough to prevent excessive water being brought to surface during compaction.
- Mixing: Mix materials thoroughly to uniform consistence. Mixes other than no-fines must be mixed in a suitable forced action mechanical mixer. Do not use a free fall drum type mixer.
- Consistency: Use while sufficiently plastic for full compaction.
- Ready-mixed retarded screed mortar: Use within working time and site temperatures recommended by manufacturer. Do not retemper.

335 IN SITU CRUSHING RESISTANCE (ISCR)
- Standards and category: In accordance with BS 8204-1, table 4.
  - Testing of bonded and unbonded screeds: To Annex D.
  - Testing of floating levelling screeds: To Annex E.

340 ADVERSE WEATHER
- Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
- Hot weather: Prevent premature setting or drying out.

LAYING

345 LEVEL OF SCREED SURFACES
- Permissible deviation: (allowing for thickness of coverings): To comply with the roofing manufacturer's reqirements.

350 SCREEDING TO FALLS
- Minimum screed cover: Maintain at the lowest point.
- Falls: Gradual and consistent.
  - Gradient (minimum): To the roofing manufacturer's requirement .

355 FLATNESS/ SURFACE REGULARITY OF FLOOR SCREEDS
- Standard: In accordance with BS 8204-1, Table 5.
- Test: In accordance with BS 8204-1, Annex C.
- Sudden irregularities: Not permitted.

375 COMPACTION OF SCREEDS
- General: Compact thoroughly over entire area.
- Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

382 STAIR SCREEDS
- Construction: Fully bonded to treads, risers and landings.
- Risers: Form using fine finish formwork.
- Wearing screed surfaces: Make good with compatible cement:sand mix. Wood float. When hardened remove laitance.

405 JOINTS IN LEVELLING SCREEDS GENERALLY
- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
- Daywork joints: Form with vertical edge.

415 BAY JOINTS IN BONDED WEARING SCREEDS
- Bay sizes:
  - Area (maximum): 15 m².
  - Length:breadth ratio (maximum): 3:2.
- Location of bay joints: Submit proposals.

FINISHING/CURING

510 FINISHING GENERALLY
- Timing: Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
- Prohibited treatments to screed surfaces:
  - Wetting to assist surface working.
  - Sprinkling cement.

530 SMOOTH FLOATED FINISH
- Finish: Even texture with no ridges or steps.

540 TROWELLED FINISH TO LEVELLING SCREEDS
- Floating: To an even texture with no ridges or steps.
- Trowelling: To a uniform, smooth but not polished surface, free from trowel marks and other blemishes, and suitable to receive specified flooring material.

650 CURING
- General: Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight. As soon as screed has set sufficiently, closely cover with polyethylene sheeting.
- Curing period (minimum): Keep polyethylene sheeting in position for period recommended by screed manufacturer.
- Drying after curing: Allow screeds to dry gradually. Do not subject screeds to artificial drying conditions that will cause cracking or other shrinkage related problems.

700 ABRASION TESTING OF WEARING SCREEDS
- Test method: To BS EN 13892-4.

M20
Plastered/ Rendered/ Roughcast coatings

M20 Plastered/ Rendered/ Roughcast coatings

To be read with Preliminaries/ General conditions.

TYPES OF COATING

160 PROPRIETARY CEMENT GAUGED RENDER MINOR REPAIRS IN CONNECTION WITH REDECORATION OF STAIR WELLS

- Substrate: Original masonry construction.
  - Preparation: Rake out joints for key .
- Manufacturer: Contractor's choice.
- Undercoats:
  - Product reference: Submit proposals.
  - Thickness (excluding dubbing out and keys): To match existing.
- Final coat:
  - Product reference: Contractor's choice.
  - Thickness: To match existing.
  - Finish: To match existing.
- Accessories: Stop beads where necessary to match existing.

497 COLD WEATHER

- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
- Internal work: Take precautions to enable internal coating work to proceed without damage when air temperature is below 3°C.

PREPARING SUBSTRATES

510 SUITABILITY OF SUBSTRATES

- Soundness: Free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

541 BONDING AGENT APPLICATION

- General: Apply evenly to substrate to achieve effective bond of plaster/ render coat. Protect adjacent surfaces.

556 REMOVING DEFECTIVE EXISTING RENDER

- Render for removal: Detached, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Removing defective render: Cut out to regular rectangular areas with straight edges.
  - Horizontal and vertical edges: Square cut or slightly undercut.
  - Bottom edges to external render: Do not undercut.
  - Render with imitation joints: Cut back to joint lines.
- Cracks:
  - Fine hairline cracking/ crazing: Leave.
  - Other cracks: Obtain instructions.

  Dust and loose material: Remove from exposed substrates and edges.

568 EXISTING DAMP AFFECTED PLASTER/ RENDER
- Plaster affected by rising damp: Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.
- Perished and salt contaminated masonry:
  - Mortar joints: Rake out.
  - Masonry units: Submit proposals.
- Faults in substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.
- Drying out substrate: Established drying conditions. Leave walls to dry for as long as possible before plastering.
- Dust and loose material: Remove from exposed substrate and edges.

636 BEADS/ STOPS FOR EXTERNAL USE
- Material: Stainless steel to BS EN 10088-1, grade 1.4301.

640 BEADS/ STOPS GENERALLY
- Location: External angles and stop ends, except where specified otherwise.
- Corners: Neat mitres at return angles.
- Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
  - Beads/ stops for external render: Fix mechanically.
- Finishing: After coatings have been applied remove surplus material, while still wet, from surfaces of beads/ stops exposed to view.

646 CRACK CONTROL AT JUNTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES
- Locations: Where defined movement joints are not required. Where dissimilar solid substrates materials are in same plane and rigidly bonded or tied together.
- Crack control materials:
  - Isolating layer: Building paper to BS 1521.
  - Metal lathing: Externally: Stainless steel ribbed expanded metal.
- Installation: Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
- Width of installation over single junctions:
  - Isolating layer: 150 mm.
  - Lathing: 300 mm.
- Width of installation across face of dissimilar substrates material (column, beam, etc. with face width not greater than 450 mm):
  - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrates.
  - Lathing: 100 mm (minimum) beyond edges of isolating layer.

EXTERNAL RENDERING

810 APPLICATION GENERALLY
- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  - Accuracy: Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Drying: Prevent excessively rapid or localized drying out.

840 UNDERCOATS GENERALLY
- General: Rule to an even surface. Comb to provide a key for the next coat. Do not penetrate the coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.

856 FINAL COAT - PLAIN FLOATED FINISH
- Finish: Even, open texture free from laitance.

861 FINAL COAT - SCRAPED FINISH
- Finish: Scraped to expose aggregate and achieve an even texture.

866 FINAL COAT - ROUGHCAST (HARLING) FINISH
- Finish: Left as cast with an even thickness and texture.

880 CURING AND DRYING
- General: Prevent premature setting and uneven drying of each coat.
- Curing coatings: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
  - Curing period (minimum): As render manufacturer's recommendations.
  - Final coat: Hang sheeting clear of the final coat.
- Drying: Allow each coat to dry thoroughly, with drying shrinkage substantially complete before applying next coat.
- Protection: Protect from frost and rain.

M40
Stone/ concrete/ quarry/ ceramic tiling/ mosaic

M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic

To be read with Preliminaries/ General conditions.

TYPES OF TILING/ MOSAIC

110 TILING TO Replace damaged external floor tiles to stairs occurring as part of the Works to fix new handrail posts

- Tiles: To match existing.
  - Manufacturer/ Supplier: Submit proposals.
    Product reference: Submit proposals.
  - Colour: To match existing.
  - Finish: To match existing.
  - Size: To match exiling.
  - Thickness: To match exiling.
  - Slip potential:
    Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS EN 13036-4: Manufacturer's standard.
    Surface roughness (Rz) (minimum) BS 1134: Manufacturer's standard.
    SlipSTD class: Manufacturer's standard.
  - Recycled content: Submit proposals.
- Background/ Base: Cement:sand rendering.
  - Preparation: To manufacturer's requirement.
- Intermediate substrate: Not required.
- Bedding: To manufacturer's requirement.
  - Reinforcement: Not applicable.
  - Adhesive to BS EN 12004: Contractor's choice.
- Joint width: To match existing.
- Grout: To match existing.
  - Type/ classification: Not applicable.
  - Admixture: None.
- Movement joints: None.
- Accessories: None.

PREPARATION

310 EXISTING BACKGROUNDS/BASES GENERALLY

- Efflorescence, laitance, dirt and other loose material: Remove.
- Deposits of oil, grease and other materials incompatible with the bedding: Remove.
- Tile, paint and other nonporous surfaces: Clean.
- Wet backgrounds: Dry before tiling.

320 EXISTING CONCRETE/SCREEDS

- Loose or hollow portions: Cut out.
- Making good: To tile manufacturer's Requirement.

330 EXISTING PLASTER

- Defective areas: Remove plaster that is loose, soft, friable, badly cracked or affected by efflorescence. Cut back to straight horizontal and vertical edges.
- Making good: Use plaster or nonshrinking filler.

370 NEW IN SITU CONCRETE
- Backgrounds/ bases to be tiled: Remove mould oil, surface retarders and other materials incompatible with bedding.

450 PREPARING CONCRETE BASES FOR UNBONDED BEDDING - WITHOUT SEPARATING LAYER
- Surface finish: Smooth.
- Surface preparation: Before laying mortar bed, dampen lightly.

460 SMOOTHING UNDERLAYMENT
- Type: Recommended by adhesive manufacturer.
- Condition: Allow to dry before tiling.

FIXING

510 FIXING GENERALLY
- Colour/ shade: Unintended variations within tiles for use in each area/ room are not permitted.
  - Variegated tiles: Mix thoroughly.
- Adhesive: Compatible with background/ base. Prime if recommended by adhesive manufacturer.
- Use of admixtures with cementitious adhesives: Only admixtures approved by adhesive manufacturer.
- Cut tiles: Neat and accurate.
- Fixing: Provide adhesion over entire background/ base and tile backs.
- Final appearance: Before bedding material sets, make adjustments necessary to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
- Surplus bedding material: Clean from joints and face of tiles without disturbing tiles.

550 FLATNESS/ REGULARITY OF TILING/ MOSAICS
- Sudden irregularities: Not permitted.
- Deviation of surface: Measure from underside of a 2 m straightedge with 3 mm thick feet placed anywhere on surface. The straightedge should not be obstructed by the tiles and no gap should be greater than 6 mm, i.e. a tolerance of $\pm$ 3 mm.

560 LEVEL OF TILING ACROSS JOINTS
- Deviation (maximum) between tile surfaces either side of any type of joint:
  - 1 mm for joints less than 6 mm wide.
  - 2 mm for joints 6 mm or greater in width.

M60
Painting/ clear finishing

M60 Painting/ clear finishing

To be read with Preliminaries/ General conditions.

COATING SYSTEMS

110A EMULSION PAINT TO PREVIOUSLY PAINTED PLASTER SURFACES
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Surfaces: Internal Stairs Ceilings where previously treated with emulsion paint .
  - Preparation: Ensure surfaces are sound, dry and free from all defective or poorly adhering material,dirt, grease, wax or oil. Scrape back to a firm edge all areas of poorly adhering or defective coatings and rub down to feather broken edges. Wash down with a suitable detergent solution to remove dirt chalking paint, corrosion products and other contaminants. Rinse off with clear water and allow to dry. Rub down paintwork with a suitable abrasive to remove nibs, feather existing paint edges and provide a mechanical key. .
  - Number of coats Two.

130 GLOSS PAINT TO EXTERNAL SOFTWOOD
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Surfaces: Preprimed and sealed.
  - Preparation: Degrease and abrade to provide key.
- Initial coats: As recommended by manufacturer.
  - Number of coats: As recommended by manufacturer.
- Undercoats: As recommended by manufacturer.
  - Number of coats: Two.
- Finishing coats: Full gloss.
  - Number of coats: One.

170 MASONRY COATING TO COCRETE BALCONY SURFACES INCLUDING THE SOFFIT AND TO PREVIOUSLY RENDERED SURFACES IN CONNECTION WITH INTERNAL STAIRWELLS .
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Surfaces: As specified.
  - Preparation: Remove loose and spalled material and wash down.
- Initial coats: Silicon based primer.
  - Number of coats: As Manufacturer's instructions.
- Undercoats: As recommended by manufacturer.
  - Number of coats: One.
- Finishing coats: Silicate masonry paint.
  - Number of coats: Two.

GENERAL

210 COATING MATERIALS
- Manufacturer: Obtain materials from any of the following:
  Dulux.
- Selected manufacturers: Submit names before commencement of any coating work.

215 HANDLING AND STORAGE
- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
- Materials from more than one batch: Store separately.

280 PROTECTION
- 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

PREPARATION

400 PREPARATION GENERALLY
- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
  - Apply before priming unless recommended otherwise by manufacturer.
  - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
  - Ease, if necessary, before coating.
  - Prime resulting bare areas.

420 FIXTURES AND FITTINGS
- Removal: Before commencing work remove: Miscellaneous fixings such as CCTV cameras and hanging baskets .
- Replacement: Refurbishment as necessary, refit when coating is dry.

425 IRONMONGERY
- Removal: Before commencing work remove ironmongery from surfaces to be coated.
- Hinges: Do not remove.
- Replacement: Refurbish as necessary; refit when coating is dry.

430 EXISTING IRONMONGERY
- Refurbishment: Remove old coating marks. Clean and polish.

440 PREVIOUSLY COATED SURFACES GENERALLY
- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos or other hazardous materials.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Significant rot, corrosion or other degradation of substrates.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Retained coatings:
  - Thoroughly clean to remove dirt, grease and contaminants.
  - Gloss coated surfaces: Provide key.
- Partly removed coatings:
  - Additional preparatory coats: Apply to restore original coating thicknesses.
  - Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

461 PREVIOUSLY COATED WOOD
- Degraded or weathered surface wood: Take back to provide suitable substrate.
- Degraded substrate wood: Repair with sound material of same species.
- Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED WOOD
- Areas of defective primer: Take back to bare timber.

481 UNCOATED WOOD
- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
- Resinous areas and knots: Apply two coats of knotting.

490 PREVIOUSLY COATED STEEL
- Defective paintwork: Remove to leave a firm edge and clean bright metal.
- Sound paintwork: Provide key for subsequent coats.
- Corrosion and loose scale: Take back to bare metal.
- Residual rust: Treat with a proprietary removal solution.
- Bare metal: Apply primer as soon as possible.
- Remaining areas: Degrease.

500 PREPRIMED STEEL
- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.

511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL
- White rust: Remove.
- Pretreatment: Apply one of the following:
  - 'T wash'/ mordant solution to blacken whole surface.
  - Etching primer recommended by coating system manufacturer.

521 UNCOATED STEEL - MANUAL CLEANING
- Oil and grease: Remove.
- Corrosion, loose scale, welding slag and spatter: Remove.
- Residual rust: Treat with a proprietary removal solution.
- Primer: Apply as soon as possible.

541 UNCOATED ALUMINIUM/ COPPER/ LEAD
- Surface corrosion: Remove and lightly key surface.
- Pretreatment: Etching primer if recommended by coating system manufacturer.

552 UNCOATED PVC-U
- Dirt and grease: Remove. Do not abrade surface.

570 UNCOATED MASONRY/ RENDERING
- Loose and flaking material: Remove.

580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Key lightly.

611 WALL COVERINGS
- Retained wall coverings: Check that they are in good condition and well adhered to substrate.
- Previously covered walls: Wash down to remove paper residues, adhesive and size.

622 ORGANIC GROWTHS
- Dead and loose growths and infected coatings: Scrape off and remove from site
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

651 EXISTING GUTTERS
- Dirt and debris: Remove from inside of gutters.
- Defective joints: Clean and seal with suitable jointing material.

APPLICATION

711 COATING GENERALLY
- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
  - Thickness: To suit surface porosity.
  - Application: As soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES
- General: Apply coatings to all surfaces of components.

731 SITE COATING OF CONCEALED JOINERY SURFACES

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
  - Components: External door frames.
  - Additional coatings: One undercoat.

Q
Paving/Planting/Fencing/Site furniture

Q10
Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS/CHANNELS

110 PROPRIETARY PRECAST CONCRETE EDGINGS AND CHANNELS
- Standard: To BS EN 1340.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Recycled content: Submit proposals.
- Designations: CD Channel, dished and EF Edging, flat top.
- Size (width x height x length): To match existing.
- Special shapes: None.
- Finish: As cast.
- Colour: Natural.
- Bedding: Cement mortar.
- Joints generally: Narrow mortar.
- Sealant movement joints: Not required.
- Accessories: None

180 DRAINAGE CHANNEL SYSTEMS WITH GRATINGS
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Size: Submit proposals.
- Type of fall: Submit proposals.
- Finish: Submit proposals.
- Colour: Submit proposals.
- Accessories: Casting in anchors.
- Bedding: Submit proposals.
- Joints generally: Submit proposals.
- Cover gratings: Galvanized steel, slotted.
  - Fixings: Hexagon head bolts with black moulded polypropylene protective cover caps.
  - Loading grade to BS EN 124: A15.
  - Finish/ Colour: Grey.

LAYING

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

530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING
- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

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

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

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

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

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

630 NARROW MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
  - Joint width: 3 mm.

Q20
Granular sub-bases to roads/ pavings

Q20 Granular sub-bases to roads/ pavings

To be read with Preliminaries/ General conditions.

110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS
- Thicknesses: See sections:
  - Q21 In situ concrete roads/ pavings/ bases.

130 HERBICIDES
- Type: Contractor's choice.
- Application: To subgrade of footpath.

140 EXCAVATION OF SUBGRADES
- Final excavation to formation/ subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Give notice.
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION AND COMPACTION OF SUBGRADES
- Timing: Immediately before placing sub-base.
- Soft or damaged areas: Obtain instructions.
- Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

230 PLACING GRANULAR MATERIAL GENERALLY
- Preparation: Loose soil, rubbish and standing water removed.
- Structures, membranes and buried services: Ensure stability and avoid damage.

310 ACCURACY
- Permissible deviation from required levels, falls and cambers (maximum):
  - Subgrades:
    Roads and parking areas: +20 -30 mm.
    Footways and recreation areas: ± 20 mm.
  - Sub-bases:
    Roads and parking areas: Not applicable.
  - Footways and recreation areas: ± 12 mm .

320 SURFACES TO RECEIVE SAND BEDDING FOR PAVING TO SECTION Q24.
- Blind surface: As necessary before compaction to ensure that surface is tight and dense enough to prevent laying course sand being lost into it during construction or use.
- Material: Sand.

330 COLD WEATHER WORKING
- Frozen materials: Do not use.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

340 PROTECTION

- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
- Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

Q21
In situ concrete roads/ pavings/ bases

Q21 In situ concrete roads/ pavings/ bases

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

110 UNREINFORCED PAVING (DESIGNATED CONCRETE) TO DISTURBED CONCRETE PAVED AREAS.

- Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Geotextile filter: Not required.
- Granular sub-base: Highways Agency Type 2 unbound mixture, as section Q20.
  - Compacted thickness: Submit proposals.
- Separation membrane: Polyethylene sheet 125 micrometres thick, edges lapped 300 mm.
- Concrete: To BS 8500-2.
  - Designation: PAV1.
  - Fibres: Not required.
  - Aggregate:
    Size (maximum): 10 mm.
    Coarse recycled concrete aggregate: Not permitted.
    Additional aggregate requirements: None.
  - Consistence class: Contractor's choice.
  - Additional mix requirements: None.
- Slab thickness (minimum): 100 mm.
- Finish: Tamped.

LAYING CONCRETE

310 TRANSPORTING CONCRETE

- General: Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability. Protect from heavy rain.
- Entrained air: Anticipate effects of transport and placing methods in order to achieve specified air content.
- Placing: Use suitable walkways and barrow runs for traffic over reinforcement and freshly placed concrete.

320 LAYING CONCRETE GENERALLY

- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction. After discharge from the mixer do not add water or retemper.
- Temperature of concrete at point of delivery:
  - In hot weather (maximum): 30°C.
  - In cold weather (minimum): 5°C.
- Cold weather:
  - Do not use frozen materials.
  - Do not place concrete against frozen or frost covered surfaces.
  - Do not place concrete when air temperature is below 3°C on a falling thermometer. Do not resume placing until rising air temperature has reached 3°C.
- Surfaces on which concrete is to be placed: Free from debris and standing water.
- Placing in final position: Place in one continuous operation up to construction joints.
  - Do not place concrete simultaneously on both sides of movement joints.
- Spreading: Spread and strike off with surcharge sufficient to obtain required compacted thickness.
- Adjacent work: Form neat junctions and prevent damage. Keep clean all channels, kerbs, inspection covers, etc.

330 COMPACTING
- General: Fully compact concrete to full depth (until air bubbles cease to appear on the surface) especially around reinforcement, cast-in accessories, into corners and at joints.
- Poker vibrators: Do not use to make concrete flow into position. Do not allow to come into contact with fabric reinforcement.
- Wet formed joint grooves: Rectify any irregularities by means of a vibrating float.
- Finish: A dense, even textured surface free from laitance or excessive water.
  - Excess concrete: Remove from top of groove formers.

340 MANHOLE COVER AND GULLY GRATING FRAMES
- General: Set frames in independent concrete slabs placed over, but slightly larger than, exterior of manhole shaft or gully pot and any concrete surround.
- Positioning of joints in main slab: Set out so that manhole/ gully slabs are adjacent to a main transverse joint, wherever possible.
- Joints: Separate the independent slabs from main slabs with 25 mm thick joint filler board. Set board 20 mm below top of slab to form a sealing groove.

350 LEVELS
- Lines and levels of finished surface: Smooth and even, with regular falls to prevent ponding.
- Finished surfaces: Within ±6 mm of required levels (+6 or -0 mm adjacent to gullies and manholes).

360 SURFACE REGULARITY
- General: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge (with feet) placed anywhere on the surface to be not more than 5 mm.
- Sudden irregularities: Not permitted.

SURFACE FINISH

520 TAMPED FINISH
- Method: Tamp surface with edge of a board or beam to give an even texture of parallel ribs.
- Direction: To match surround.

530 BRUSHED FINISH
- Direction: To match surround.
- Texture depth: Approximately 1 mm with finished surface having an overall even texture.

CURING/ PROTECTION/ FINISHING

610 CURING
- General: Immediately after completion of surface treatment prevent evaporation from surface and exposed edges of slabs for a minimum period of seven days.
- Early curing:
  - Cover with waterproof sheeting held clear of surface. Seal against draughts at edges and junctions.
  - Do not apply sprayed compounds or sheets in direct contact until surface is in a suitable state and will not be marked.
- Coverings for curing: Contractor's choice of:
  - Impervious sheet material.
  - Resin based aluminized curing compound containing a fugitive dye and with an efficiency index of 90% when tested to BS 7542.
  - Sprayed plastics film.

660 PROTECTION

- Prevent damage to concrete:
  - From rain, indentation, physical damage, dirt, staining, rust marks and other disfiguration.
  - From thermal shock.
  - In cold weather, from freezing expansion of water trapped in pockets, etc.
  - By use as a building platform or for storing, mixing or preparing materials.

Q22
Asphalt roads/ pavings

Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

150 LIGHT DUTY MASTIC ASPHALT PAVING TO FOOTWAYS
- System manufacturer: Submit proposals.
- Standard: To match existing.
- Subgrade improvement layer: Not required.
- Preparatory work: Scrabble back affected surface to take 20mm top coat repair to falls and with keyed edges.
- Granular sub-base: Submit proposals.
- Base: Submit proposals.
- Surface course: Submit proposals.
  - Manufacturer: Submit proposals.
  Product reference: Submit proposals.
- Surface finish: To match existing.
- Edge restraints: To match existing.
- Embedded features: To match existing.
- Surface features: To match existing.
- Other requirements: None.

180 SURFACE TREATMENT TO EXISTING PAVING TO FOOTWAYS
- Base: Existing asphalt concrete.
- Preparation: Cut out depressions, fill to match existing surface and compact.
- Surface to receive dressing: Clean and dry. All patching complete.
- Binder: Bitumen emulsion.
- Finish: Submit proposals.
  - Slip/ skid resistance: Submit proposals.

195 HARD LANDSCAPING MATERIALS SPECIFICATION
- Minimum BRE 'Green Guide to Specification Online' rating: Contractor's choice .

PREPARATORY WORK/ REQUIREMENTS

210 TIMBER EDGING TO FOOTWAY
- Softwood board:
  - Size: 38 x 150 mm.
  - Fixing: Galvanized nails into softwood pegs.
- Softwood pegs:
  - Size: 50 x 50 x 450 mm long.
  - Fixing: Drive into ground.
  - Centres: 900 mm.
- Preservative treatment: Submit proposals.
  - Type: Submit proposals.

LAYING

310 LAYING GENERALLY

- Preparation: Remove all loose material, rubbish and standing water.
- Adjacent work: Form neat junctions. Do not damage.
- Channels, kerbs, inspection covers etc: Keep clean.
- New paving:
  - Keep traffic free until it has cooled to prevailing atmospheric temperature.
  - Do not allow rollers to stand at any time.
  - Prevent damage.
  - Lines and levels: With regular falls to prevent ponding.
  - Overall texture: Smooth, even and free from dragging, tearing or segregation.
  - State on completion: Clean.

330 LEVELS

- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, clause 5.2.

360 UNCOATED CHIPPINGS FOR SURFACE TREATMENT

- Chippings: Clean aggregate to BS EN 13043 and PD 6682-2, size 2.8/6.3, grading category Gc85/15.
  - Type/ Source: Submit proposals.
  - Colour: Submit proposals.
- Binder:
  - Cutback bitumen to BS EN 12591 or bitumen emulsion to BS 434-1.
  - Do not use cut-back bitumen at temperatures below 15°C.
  - Do not use modified binders without prior approval.
  - Application:
  - Binder application rate: In accordance with TRL Road Note 39. Adjust rate for modified binders in accordance with manufacturer's instructions.
  - Coverage: 100–105% shoulder to shoulder to BS 598-1.
  - Compaction: Roll. Do not crush chippings.
- Completion:
  - Before trafficking, remove excess chippings.
  - Carry out further removal of loose chippings disturbed by traffic as necessary.

COMPLETION

Q25
Slab/ brick/ sett/ cobble pavings

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

120 CONCRETE FLAG PAVING SYSTEM MISCELLANEOUS REPAIRS TO AFFECTED SURFACES

- Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Granular sub-base: Submit proposals.
  - Compacted thickness: 150 mm.
- Base: Not required.
  - Thickness: Not required.
- Laying course: Sand.
  - Accessories: None.
- Paving units: Concrete flags to match existing.
- Jointing: To match existing.
  - Bond: To match existing.
- Accessories: Channels, as section Q10 and Kerbs, as section Q10.

PRODUCTS

315 CONCRETE FLAGS To match existing

- Standard: To BS EN 1339.
  - Manufacturer: Submit proposals.
    Product reference: Submit proposals.
- Recycled content: Submit proposals.
- Colour: To match existing.
  - Finish: To match existing.
  - Nominal sizes: To match existing.
- Arrises: To match existing.
- Water absorption and freeze/ thaw resistance class: To match existing.
- Bending strength class: To match existing.
- Abrasion resistance class: To match existing.
- Slip/ Skid resistance: To match existing.
- Breaking load class: To match existing.

EXECUTION

610 MATERIAL SAMPLES

- Samples representative of colour and appearance of designated materials: Submit before placing orders.
  - Designated materials: Concrete slab paving .

620 ADVERSE WEATHER

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

625 LAYING PAVINGS - GENERAL

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

630 LEVELS OF PAVING

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

635 REGULARITY – TO BS 7533

- Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface):
  - Precast concrete paving blocks and clay pavers for flexible pavements: Maximum variation in gap under a 3 m straight edge: 10 mm; difference in level between adjacent paving units (maximum): 2 mm.
  - Precast concrete flags or natural stone slabs: 3 mm; Difference in level between adjacent paving units (maximum): 2 mm.
- Sudden irregularities: Not permitted.

645 PROTECTION

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

650 CEMENTITIOUS BASES AND SUB-BASES

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

655 CONDITION OF SUB-BASES/ BASES BEFORE SPREADING LAYING COURSE

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

COMPLETION

915 COMPLETION OF PAVING WITH DRY SAND OR FINE AGGREGATE FILLED JOINTS

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

Q28
Topsoil and soil ameliorants

Q28 Topsoil and soil ameliorants

To be read with Preliminaries/ General conditions.

SYSTEM OUTLINE

110 NATURALLY OCCURING TOPSOIL SYSTEM FOR FLOWERING SHRUBS AND GRASSES AREAS
- Topsoil: Imported topsoil to BS 3882.
- Ameliorants: None.
- Accessories: None.

PRODUCTS

300 PREPARATION MATERIALS GENERALLY
- Purity: Free of pests and disease.
- 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.
- Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
- Objectionable odour: None.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

315 IMPORTED TOPSOIL TO BS 3882
- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Standard: To BS 3882.
- Classification: Multipurpose.
  - Grade: Within the parameters of 'sandy loam' textural class.
- Source: Contractor's choice.
  - Product reference: Contractor's choice.

660 GRADING SUBSOIL
- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Loosening:
  - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Areas of thicker topsoil: Excavate locally.
- Avoid over compaction.

665 SUBSOIL SURFACE PREPARATION

- General: Excavate and/ or place fill to required profiles and levels, as section D20.
- Loosening:
  - Light and noncohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
- Remove from site: Arisings, contaminants and debris and builders rubble.

685 SURPLUS MATERIALS TO BE REMOVED

- Topsoil: Remove from site excess topsoil.
- Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

715 LOOSE TIPPING OF TOPSOIL

- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

720 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Above adjoining paving or kerbs: 20 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 50 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

Q30
Seeding/ turfing

Q30 Seeding/ turfing

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

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

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

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

146 WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: When instructed.

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

160 NOTICE
- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Preparing seed bed.
  - Seeding or turfing.
  - Visiting site during maintenance period.
- Period of notice: 2 working days.

PREPARATION

212 SEED BED CLEANING BEFORE SOWING ALL GRASSED AREAS
- Operations: As seed supplier's recommendations

280 FINAL CULTIVATION
- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
  - Depth: 25 mm.
  - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
  - Remove surface stones/earth clods exceeding:
    General areas: 10 mm .
    Fine lawn areas: 10 mm.
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

SEEDING

310 GRASS SEED FOR ALL GRASSED AREAS
- Mixture: 35% Chewings fescue, 35% Slender red fescue, 20% Smooth stalked meadow grass, 10% Brown top bent.
- Application rate: 20-35 g/m².

319 QUALITY OF SEED FOR ALL GRASSED AREAS
- Freshness: Produced for the current growing season.
- Certification: Blue label certified varieties.
  - Standard: EC purity and germination regulations.
  - Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
- Samples of mixtures: Submit when requested.

330 SOWING
- General: Establish good seed contact with the root zone.
- Method: Manually broadcast, raked and rolled.
  - Distribution: 2 equal sowings at right angles to each other.

335 GRASS SOWING SEASON
- Grass seed generally: April to October.

340 PRE-EMERGENT HERBICIDE FOR ALL GRASSED AREAS
- Standard: Pesticide Safety Directorate approved.
- Application rate: In accordance with manufacturer's written recommendation.
  - Timing: Immediately after sowing.

352 EDGES TO SEEDED AREAS ADJACENT TO PLANTING BEDS AND TREE PITS
- Timing: After seeded areas are well established.
- Edges: Clean straight lines or smooth curves.
  - Mulch and soil: Draw back to permit edging.
- Arisings: Remove.
- Completion: Respread soil and mulch.

TURFING

400 CULTIVATED TURF FOR ALL GRASSED AREAS
- Supplier: Contractor's choice.
  - Product reference: Contractor's choice.
- Properties of soil used for turf production: Submit proposals.

420 DELIVERY AND STORAGE

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

428 COMPOST DRESSING FOR TURF

- Type: Sanitized and stabilized compost.
- Supplier: Contractor's choice.
  - Product reference: Contractor's choice.
- Standard: To PAS 100.
- Horticultural parameters:
  - pH (1:5 water extract): 7.0-8.7.
  - Electrical conductivity (maximum, 1:5 water extract): 200 mS/m.
  - Moisture content (m/m of fresh weight): 35-55%.
  - Organic matter content (minimum): 25%.
  - Grading (air dried samples): 100% passing screen mesh aperture of 5 mm.
  - Carbon:Nitrogen ratio (maximum): 20:1.
- Texture: Friable.
- Objectionable odour: None.
- Composting Association certification: Not required.
- Declaration of analysis: Submit.
- Additional analyses: Not required.
- Samples: Not required.
- Application rate: 2 kg/m².
- Timing: Apply prior to cultivation.

429 DRESSING FOR TURF

- Type: Silica sand.
- Supplier: Contractor's choice.
  - Product reference: Contractor's choice.
- Declaration of analysis: Submit.
- Additional analyses: Not required.
- Samples: Not required.
- Application rate: 2 kg/m².
- Timing: Apply prior to cultivation.

430 TURFING GENERALLY

- Time of year: To be agreed .
- Timing of laying:
  - Spring and summer: within 18 hours of delivery.
  - Autumn and winter: within 24 hours of delivery.
- Weather conditions: Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry.
- Working access: Planks laid on previously laid turf. Do not walk on prepared bed or newly laid turf.
- Jointing: Laid with broken joints, well butted up. Do not stretch turf.
- Edges: Whole turfs, trimmed to a true line.
- Adjusting levels: Remove high spots and fill hollows with fine soil.
- Consolidating: Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers.
- Dressing, brushed well in to completely fill all joints: 35% Finely sifted topsoil, 35% Compost, 30% Sand .
- Watering: Thoroughly water completed turf immediately after laying. Check that water has penetrated to the soil below.

CUTTING MAINTENANCE

530 FIRST CUT OF GRASSED AREAS

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

610 FAILURES OF SEEDING/TURFING

- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
- Defective materials or workmanship: Areas that have failed to thrive.
  - Exclusions: Theft or malicious damage.
- Method of making good: Recultivation and reseeding/ returfing.
- Timing of making good: The next suitable planting season.

620 MAINTAINING GENERAL GRASSED AREAS

- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
- Maximum height of growth at any time: 25 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 15 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: When instructed.

680 MAINTENANCE FERTILIZER FOR ALL GRASSED AREAS EXCEPT WILDFLOWER MEADOWS

- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
- March application: 15:10:10 Spring turf fertilizer at 35 g/m².
- September application: 5:10:10 Autumn turf fertilizer at 50 g/m².

Q40
Fencing

Q40 Fencing

To be read with Preliminaries/ General conditions.

GATES AND GATE POSTS

550 WOOD GATES: Allow for replacing a wood palisade ledge and braced gate between existing posts/brick reveals approximate dimensions 1800 X 900mm.

- Manufacturer: Contractor's choice.
- Standard: To BS 5709.
- Wood: Contractor's choice.
- Treatment: As section Z12 and Wood Protection Association Commodity Specification C3.
  - Type: None.
  - Finish: Paint, as section M60.
- Adhesive: Synthetic resin to BS EN 301, type 1.
- Workmanship: As section Z10.
- Fittings: Two tee hinges, return spring and a thumb latch.
  - Finish: Primed for painting.
- Method of fixing: Submit proposals.
- Accessories: Submit proposals.

570 GATES

- Manufacturer: The contractor is to allow for an open slatted soft wood ledge and braced gate 1800 high by 900 wide fitted to an opening in a screen brick wall .
  - Product reference: Submit proposals.
- Sizes: To match existing.
- Posts: To match existing.
- Finish as delivered: Primed for painting.
- Fittings: Two tee hinges, return spring and a thumb latch.
  - Finish: Primed for painting.
- Method of fixing: Submit proposals.
- Accessories: None.

770 SITE CUTTING OF WOOD

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

R
Disposal systems

R10
Rainwater drainage systems

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

SYSTEM PERFORMANCE

210 DESIGN
- Design: Complete the design of the rainwater drainage system.
- Standard: To BS EN 12056-3, clauses 3-7 and National Annexes.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

221 COLLECTION AND DISTRIBUTION OF RAINWATER
- General: Complete, and without leakage or noise nuisance.

PRODUCTS

350 PVC-U GUTTERS
- Standard: To the relevant parts of BS EN 607 and BS EN 1462, Kitemark certified.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Recycled content: None permitted.
- Profile: To match existing.
- Nominal size: 100 mm.
- Colour: Black.
- Brackets: Galvanized steel top rafter type.
  - Fixings: Stainless steel screws.
    Size: 25 x 4 mm.
- Accessories: Gutter stop ends.

360 SEALANT FOR GUTTERS
- Type: Low modulus silicone sealant.

365 PROPRIETARY RAINWATER OUTLETS
- Manufacturer: To match existing.
  - Product reference: Contractor's choice.
- Roof construction: Generally existing central ridge concrete tile roof with concrete tiles discharging into eaves gutter fixed to fascia.
  - Roof insulation thickness: N/A.
- Type of grate/ Fittings: To match existing.
- Outlet: Type and direction to suit pipework with suitable adaptors and connections.
- Accessories: N/A.

420 PVC-U PIPEWORK - EXTERNAL
- Standard: To BS EN 12200-1, Kitemark certified.
- Manufacturer: To match existing.
  - Product reference: Contractor's choice.
- Recycled content: None permitted.
- Section: To match existing.
- Nominal size: DN75.
- Colour: Black.
- Brackets: PVC-U clips, black.
  - Fixings: Stainless steel screws.
    Size: 25 x 4 mm.
- Accessories: Access fittings.

EXECUTION

600 PREPARATION
- Work to be completed before commencing work specified in this section:
  - Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
  - Painting of surfaces which will be concealed or inaccessible.

605 INSTALLATION GENERALLY
- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Protection:
  - Fit purpose made temporary caps to prevent ingress of debris.
  - Fit access covers, cleaning eyes and blanking plates as the work proceeds.

610 FIXING AND JOINTING GUTTERS
- Joints: Watertight .
- Brackets: Securely fixed.
  - Fixings: Screwed into softwood fascia board .
    Fixing centres: 450 mm .
  - Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
- Roofing underlay: Dressed into gutter.

615 SETTING OUT EAVES GUTTERS - TO FALLS
- Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
- Outlets: Align with connections to below ground drainage.

640 FIXING VERTICAL PIPEWORK
- Bracket fixings: Plugged and screwed into masonry.
- Distance between bracket fixing centres (maximum): 900 mm.

650 JOINTING PIPEWORK AND GUTTERS

- General: Joint with materials and fittings that will make effective and durable connections.
- Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.
- Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove.

660 JOINTING EXTERNAL PIPEWORK

- Jointing: Solvent welded.

COMPLETION

910 GUTTER TEST

- Preparation: Temporarily block all outlets.
- Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

Z
Building fabric reference specification

Z20
Fixings and adhesives

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

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

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

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

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

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

410 POWDER ACTUATED FIXING SYSTEMS
- Types of fastener, accessories and consumables: As recommended by tool manufacturer.

EXECUTION

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

620 FIXING THROUGH FINISHES
- Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

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

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

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

680 PLUGGED COUNTERSUNK SCREW FIXING
- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Plugs: Glue in to full depth of hole.
- Finished level of plugs: Projecting above surface.

690 USING POWDER ACTUATED FIXING SYSTEMS
- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

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

Z21
Mortars

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

110 CEMENT GAUGED MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

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

131 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 998-2.
- Lime: Nonhydraulic to BS EN 459-1.
  - Type: CL 90S.
- Pigments for coloured mortars: To BS EN 12878.

135 SITE MADE LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
- Lime: Nonhydraulic to BS EN 459-1.
  - Type: CL 90S.
- Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.

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

180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride, ethylene glygol and any admixture containing calcium chloride.

190 RETARDED READY TO USE CEMENT GAUGED MASONRY MORTARS
- Standard: BS EN 998-2.
- Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
  - Type: CL 90S.
- Pigments for coloured mortars: To BS EN 12878.
- Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
  - Retempering: Restore workability with water only within prescribed time limits.

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

LIME:SAND MORTARS

310 LIME:SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

320 SAND FOR LIME:SAND MASONRY MORTARS
- Type: Sharp, well graded.
  - Quality, sampling and testing: To BS EN 13139.
  - Grading/ Source: As specified elsewhere in relevant mortar mix items.

345 ADMIXTURES FOR HYDRAULIC LIME:SAND MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
- Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

360 MAKING LIME:SAND MORTARS GENERALLY
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: Prevent intermixing with other materials, including cement.

Z22
Sealants

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

310 JOINTS Joints Construction
- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION

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

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

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

Z31
Powder coatings

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

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

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

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

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

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

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

430 EXTENT OF POWDER COATINGS

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

435 APPLICATION OF POWDER COATINGS

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

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

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

450 ALUMINIUM ALLOY FABRICATIONS

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

460 STEEL FABRICATIONS

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

470 FIXINGS

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

480 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT

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

510 PROTECTION

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

535 DOCUMENTATION

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

540 COMPLETION

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