

Thetford British Legion Specification

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C40 Cleaning masonry/ concrete

To be read with Preliminaries/ General conditions.

GENERAL/ PREPARATION

110 SCOPE OF WORK

- Atmospheric soiling: Reduce using water spraying and plain poulticing (for heavy soiling under projections. Biological growths and vegetation: Remove. Submit proposals for biocides. .

120 RELATED REPAIR AND REMEDIAL WORKS

- Work to be carried out before cleaning work: Pointing to cracks and joints in masonry, as section C41.

142 REMOVAL OF FITTINGS

- Timing: Before commencement of cleaning work.
- Disturbance to surfaces: Minimize.
- Items for disposal: Brackets and Metal clips.
- Items to be kept for reuse: Nameplate and Sign.

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.

230 TRIAL SAMPLES

- Trial sample reference: TS001.
 - Surface:
 - Clay brick;
 - Limestone; and
 - Reconstituted stone.
 - Location/ Size: TBA.
 - Type of soiling:
 - Atmospheric soiling;
 - Biological growths; and
 - Bird droppings.
 - Cleaning methods: ;
 - Pressurized water;
 - Steam; and
 - Water spray.
- Records: Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

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.

332 WATER SPRAY (MOUNTED NOZZLES)

- Equipment:
 - Spray/ Nozzle types: Submit proposals.
 - Nozzles: Position and direction adjustable, relative to surfaces and profiles.
 - Controls: Submit proposals.

342 PRESSURIZED WATER CLEANING EQUIPMENT

- Manufacturer: Thermatech or equivalent.
 - Product reference: Submit proposals.
- Operational pressure: Submit proposals.
- Nozzles: Submit proposals.

352 STEAM CLEANING EQUIPMENT

- Manufacturer: Thermatech or equivalent .
 - Product reference: 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: As trial sample.

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.

462 WATER SPRAYED CLEANING (MOUNTED NOZZLES)

- Surfaces: Minimize water run-off. Prevent damage.
- Adjustment of washing cycle and nozzle positions: Regularly to achieve optimum cleaning performance.

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.

482 STEAM 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

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION

110 SCOPE OF WORK

- Schedule: Stone repairs, brickwork repairs and repointing.
- Records of masonry to be repaired: Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.
- Identification of masonry units to be removed, replaced or repaired: Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced. Transcribe markings to drawings/ photographs.

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 or Employer's Representative and Contractor's representative.
- Timing: At least 10 working days before starting each section of work.
- Instructions issued during inspection: Confirm in writing, with drawings and schedules as required, before commencing work.

125 REMOVAL OF FITTINGS/ FIXTURES

- Items to be removed, and reinstated on completion of repair work: Pipe brackets, signage, external power and lighting cables.
 - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe refixing instructions, where applicable.
 - Treatment following removal: Refit or replace.
 - 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: Redundant cable clips.
 - Disposal: off site.
- Masonry fabric and surfaces: Do not damage during removal and replacement of fittings/ fixtures.

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.

140 RECORD OF WORK

- General: Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings and photographs, as necessary.
- Specific records: Elevation drawings or marked up digital photographs.
- Documentation: Submit on completion of the work.
 - Number of sets: Two.

WORKMANSHIP GENERALLY

150 POWER TOOLS

- Usage for removal of mortar: Not permitted.

155 PUTLOG SCAFFOLDING

- Usage: Permitted only with prior approval.

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 – for each different type of mix/ pointing profile/ finish prepare sample areas of approximately one square metre; first stage approval – after preparation; second stage approval – after repointing; Repairs to stonework - one insert to pedestals.

MATERIAL/ PRODUCTION/ ACCESSORIES

210 ADVANCE REGISTRATION

- Material registered in advance by the Employer: Obtain from the supplier named in Preliminaries section A56.
 - Ordering: Supersede the Employer's registration and take over responsibility by an order to the supplier covering price, supply and delivery to suit the progress of the work.

215 MATERIAL SAMPLES

- Representative samples of designated materials: Submit before placing orders.
 - Designated materials: Dressed stone.
- 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.

240 STONE

- Supplier: Submit proposals for approval.
- Type: TBC - price on basis of Ketton stone.
- Quality: Free from vents, cracks, fissures, discolouration, or other defects that may adversely affect strength, durability or appearance. Thoroughly seasoned, dressed and worked in accordance with shop drawings prepared by the supplier.
- Finish: Tooled to match existing.

245 REPLACEMENT STONE UNITS

- Sizes and profiles: To match existing masonry. Maintain existing joint widths.
- Sinkings for fixings, joggles and lifting devices: Accurately aligned and positioned in relation to existing masonry.
- Marking: Mark each block/ dressing clearly and indelibly on a concealed face to indicate the natural bed and position in the finished work.

250 STONE ORIENTATION

- Orientation of natural bed:
 - In plain walling: Horizontal.
 - In projecting stones and copings: Vertical and perpendicular to wall face.
 - In arches: Perpendicular to line of thrust.

260 BRICKS

- Manufacturer: Bulmer Brick Company.
 - Product reference: Not applicable.
- Size: To be determined on site.
- Special shapes: Plinth bricks and corbel courses.
- Recycled content: Contractor's choice.

281 FIXINGS FOR REPLACEMENT STONEWORK C41/340

- Type: Submit proposals.
- Material: Austenitic stainless steel.
- Size, strength and number: As necessary to resist loads likely to occur during the life of the building, and to prevent lateral displacement or pulling apart of the construction.

REPLACEMENTS AND INSERTIONS

330 PREPARATION FOR REPLACEMENT MASONRY

- Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
- Existing metal fixings, frame members, etc: Report when exposed.
- Redundant metal fixings: Remove.
- Recesses: Remove projections and loose material; leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather if units are not to be placed immediately.

340 REPLACEMENT OF STONE PEDESTALS TO PRINCIPLE ELEVATION

- Stone: See C41/240.
- Bedding depths: Not less than 100mm.
- Mortar: As section Z21.
 - Mix: site mixed lime putty or hot lime mortar with aggregate to achieve as close a match to original mortar as is possible.
 - Sand source/ type: Contractor.
- Fixings: Bonded dowels as clause 405.
- Joints: Flush.
- Other requirements: None.

350 STONE INSERTS PEDESTALS

- Stone: See C41/240.
- Finish: Flush and to match existing.
- Preparation and insertion: As clause 395.
- Mortar: As section Z21.
 - Mix: site mixed lime putty or hot lime mortar with aggregate to achieve as close a match to original mortar as is possible.
 - Sand source/ type: Contractor.
- Fixings: Replacement cramps as clause 410.
- Joints: Very fine.
- Other requirements: None.

365 REPLACEMENT OF BRICKS PLINTH COURSE and GENERAL FACE WORK

- Bricks: Clay as clause 260.
- Mortar: As section Z21.
 - Mix: site mixed lime putty or hot lime mortar with aggregate to achieve as close a match to original mortar as is possible.
 - Sand source/ type: Well graded crushed stone to approval.
- Fixings: Not required.
- Joints: Flush.
- Other requirements: None.

385 LAYING REPLACEMENT MASONRY UNITS

- Exposed faces of new material: Keep to agreed face lines.
- Faces, angles and features: Align accurately. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
- Joint surfaces: Dampen to control suction as necessary.
- Laying units: On a full bed of mortar, all joints filled.
- Exposed faces: Keep clear of mortar and grout.

390 GROUTING JOINTS

- Grout mix: Nonhydraulic lime with pozzolanic admixture; mix subject to site trials.
- 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.

395 STONE INSERTS

- Pockets to receive inserts:
 - Cut out accurately. Undercut sides of pocket where necessary to provide space for bonding material.
 - Adjust depth so that insert stands proud of existing stone for finishing in situ.
 - Clean out thoroughly.
- Inserts: Cut to the smallest rectangular shape necessary to replace the defective area and provide a firm seating. Install accurately and securely.
 - Exposed faces: Keep clear of bonding material.
- Existing joint widths: Maintain. Do not bridge joints.

405 BONDED DOWELS FOR STONE INSERTS

- Dowels: Austenitic stainless steel.
- Adhesive: Epoxy resin.
- Holes for dowels: Suitably sized and accurately aligned in masonry background and in rear of replacement/ insert stone; clean and dry.
- Other requirements: Do not use adhesive to bond stones at joints unless instructed.

410 CORRODED FIXINGS

- Removal: Cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
- Replacement: Compatible fixings as clause 405.

TOOLING/ DRESSING STONE IN SITU

450 WEATHERING LEDGES AT JOINTS

- Locations: Where stones project or are recessed.
- Requirement: Carefully weather the ledge, to approval.
- Method: Suitably graded carborundum blocks or tooling as appropriate.

455 DESCALING STONE

- Requirement: Carefully remove loose scaling and powdering from stones to the extent agreed.
- Method: Suitable bristle brushes or carborundum blocks. Do not use wire brushes.

458 REDRESSING STONE

- Requirement: Carefully dress back stones to the extent agreed.
- Method: Suitably graded carborundum blocks or tooling as appropriate.

MORTAR REPAIRS

510 PREPARATION FOR MORTAR REPAIRS

- Repair area: Scribe area of masonry to be removed using straight horizontal and vertical lines parallel to joints. Where repair area abuts joints, maintain existing joint widths and do not bridge joints.
- Decayed masonry: Cut back carefully to a minimum depth of 20 mm to a sound background. Where the depth of removal exceeds 50 mm, seek instructions.
- Precautions: Do not weaken masonry by removing excessive material. Do not damage adjacent masonry.
- Top and vertical reveals of repair area: Undercut.

515 REINFORCEMENT FOR MORTAR REPAIRS

- Material: Austenitic stainless steel, phosphor bronze or copper alloy wire, 3 mm diameter.
- Armatures: Form to suit profiles of mortar repair and provide effective reinforcement.
- Cover to reinforcement: Not less than 18 mm.
- Installation: Drill holes into background to receive reinforcement, and bond firmly with a suitable epoxy resin.

520 MORTAR REPAIRS COLUMN BASE MOULDINGS

- Undercoats: As section Z21.
 - Mix: Compatible with masonry.
 - Sand source/ type: Sand:stone dust mix; proportions determined by site trials.
 - Building up: In layers where necessary, each layer not exceeding 12 mm.
- Finishing coat: To match approved samples.
 - Mix: Compatible with masonry.
 - Sand source/ type: Sand:stone dust mix; proportions determined by site trials.
 - Finished thickness: 7 mm.
 - Finish: Scraped back as clause 550 or floated as clause 555, to approval.
- Reinforcement: Not required.

540 APPLYING MORTAR

- Surfaces to receive mortar: Clean, and free from dust and debris. Dampen to control suction.
- Applying coats: Build up in layers to specified thickness. Apply mortar firmly, ensuring good adhesion with no voids. Form a mechanical key to undercoats by combing or scratching to produce evenly spaced lines.
Allow each layer to achieve an initial set before applying subsequent coats. Prevent each layer from drying out rapidly by covering immediately with plastics sheeting and/ or dampening intermittently with clean water.
- Finishing mortar coat: Form accurately to required planes/ profiles, and finish flush with adjacent masonry.
- Protection: Protect completed repairs from adverse weather until mortar has set.

550 SCRAPED FINISH TO MORTAR REPAIRS

- Procedure: Finish final coat of repair mortar proud of existing masonry face. When mortar is set, but not too hard, scrape back to required face line using fine saw blade or other suitable means, to achieve required finish.

555 FLOAT FINISH TO MORTAR REPAIRS

- Finish: Use a wood float and/ or a felt faced float to give an even overall texture. Do not use steel floats.

CRACK REPAIRS/ TIES/ REINFORCEMENT

620 RESIN INJECTION REPAIR OF CRACKS WINDOW CILLS

- Resin injection system manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Preparation: Clean out cracks to remove debris, dust and dirt. Secure loose masonry units.
- Exposed faces: Keep clean and free from stains.
- Resin application: Use methods recommended by system manufacturer to fully bond masonry.
- Completion: After resin has cured, remove temporary crack plugging material and protective coatings.
- Pointing to cracks and injection holes: Compatible filler recommended by resin manufacturer, colour match to approval.

640 PINNING CRACKED CILLS

- Dowels/ Pins:
 - Type: Austenitic stainless steel threaded rods.
 - Diameter: 6 mm.
 - Additional requirements: None.
- Resin: Low viscosity resin to approval.
- Holes: Drill carefully, sloping downwards into background. Remove drilling dust and debris and keep dry.
- Filling holes:
 - Check that dowel lengths are correct before filling with resin
 - Use sufficient resin so that when the dowel is inserted the resin is dispersed to achieve an effective repair.
- Exposed faces: Keep clean and free from resin stains. Use temporary plugging material and/ or isolating membranes as necessary.
- Clearances: Keep ends of ties and resin back from face of masonry.
- Making good after resin has cured: Either mortar as clause 690 or stone plugs as clause 692.

690 MAKING GOOD TO INJECTION AND INSERTION HOLES

- Preparation: Clean out holes thoroughly.
- Repair mortar: To match existing masonry units/ joints in colour and texture. Fill holes and finish mortar neatly and flush with surrounding masonry.
- Finished appearance: Obtain approval for first few holes before completing the remainder.

692 MAKING GOOD TO TIE AND DOWEL INSERTION HOLES USING CORE DRILLED PLUGS

- Plugs: Cut plug from masonry face before drilling hole for each tie/ dowel. Where resulting plug is unusable, prepare plug from matching material.
 - Plug diameter: Smallest practicable.
- Holes: Clean.
- Method of securing plug: A spot of epoxy resin and nonhydraulic lime:sand mortar.
- Joints: Fine and flush.
- Finished appearance: Obtain approval for first few holes before completing remainder.

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 30 mm.
 - 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 BRICKWORK

- Preparation of joints: Carefully brush away loose mortar and Dampen joints, as necessary, to control suction.
- Mortar: As section Z21.
 - Mix: site mixed lime putty or hot lime mortar with aggregate to achieve as close a match to original mortar as is possible.
 - Sand source/ type: Crushed stone fine pointing sand to approval.
- Joints profile/ finish: To match existing.
- Other requirements: None.

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.

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

110 CLAY FACING BRICKWORK TO EXTERNAL WALLS

- Bricks: To BS EN 771-1.
 - Manufacturer: The Bulmer Brick and Tile Company Ltd, 01787 269232.
 - Product reference: Submit proposals.
 - Recycled content: Submit proposals.
 - Special shapes: As per shedule of works.
- Mortar: As section Z21.
 - Standard: Not applicable.
 - Mix: site mixed lime putty or hot lime mortar with aggregate to achieve as close a match to original mortar as is possible.
 - Additional requirements: None.
- Bond: To match existing.
- Joints: To match existing.
- Features: To match existing.

230 RECLAIMED BRICK FACING BRICKWORK TO EXTERNAL WALLS

- Reclaimed bricks: To match existing .
 - Condition: Sound, free from mortar and deleterious matter.
 - Supplier/ Source: Submit proposals and samples .
 - Format: To match existing .
- Mortar: As section Z21.
 - Standard: Not applicable.
 - Mix: As F10/110 .
 - Additional requirements: None .
- Bond: To match existing .
- Joints: To match existing.
- Features: To match existing .

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.

- 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 perpend: 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.
- 545 LEVELLING OF SEPARATE LEAVES USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR
- Locations for equal levelling of cavity wall leaves: As follows:
 - Every course containing vertical twist type ties or other rigid ties.
 - Every third tie course for double triangle/ butterfly ties.
 - Courses in which lintels are to be bedded.
- 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.
- 610 SUPPORT OF EXISTING WORK
- Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.
- 635 JOINTING
- Profile: Consistent in appearance.
- 645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW
- Jointing: Struck flush as work proceeds.

665 POINTING TO ALL WALLING

- Joint preparation: Remove debris. Dampen surface.
- Mortar: As section Z21.
 - Standard: Not applicable.
 - Mix: As F10/110.
 - Additional requirements: None.
- Profile: To match existing.

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.

790 PUTLOG SCAFFOLDING

- Use: Not permitted in facework.

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.

H32 Plastics profiled sheet cladding/covering

To be read with Preliminaries/ General conditions.

- 120 PLASTICS Covering to Courtyard
- Support structure: Structural grade timber, sizes to be determined on site
 - Pitch: As existing.
 - Spanning form: Single.
 - System type: Single skin..
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Fragility class to ACR(M)001: C.
 - Accessories: None.
 - Primary sheet fasteners type: Self drilling and tapping carbon steel case hardened, zinc plated, chromate dipped screw with assembled galvanized steel/ EPDM elastomer faced sealing washer and integral plastic cap, colour BS ??????
 - Fastener profile location: Crown.
 - Number of fasteners per sheet width:
 - Eaves and end laps: 150mm.
 - Intermediate supports: as manufacturer's recommendations.
 - End laps size (minimum): 150 mm.
 - Sealing: Not required.
 - Side laps:
 - Sealing: Not required.
 - Stitching: Not required.
 - Maximum unsupported overhang: 150 mm.
 - Special features: None.
- 191 WATER PENETRATION
- Requirement: Under site exposure conditions moisture must not penetrate onto internal surfaces, or into cavities not designed to be wetted
- 210 PAINTING STRUCTURE
- Sequence: Paint outer surface of supporting structure before fixing cladding/ covering.
- 213 FASTENERS
- Unspecified fasteners: Recommended for the purpose by the cladding/ covering manufacturer.
- 217 ACCESSORIES
- Unspecified accessories: Recommended for the purpose by the cladding/ covering manufacturer.

230 FIXING SHEETS GENERALLY

- Cut edges: Clean true lines.
- Sheet orientation: Exposed joints of side laps away from prevailing wind unless shown otherwise on drawings.
- Fastener hole location: At regular intervals in straight lines and not less than 50 mm from edges of sheets and fittings.
- Crown fixing: For sheets with a profile depth greater than 20 mm support crowns at primary fixings with profile fillers.
- Debris: No dust or foreign matter to be present within construction.
- Fasteners torque: Sufficient to correctly compress washer.
- On completion: Fixings to be watertight and sheets secure with no buckling or distortion.

320 ABUTMENTS

- Junctions with flashings: Watertight and neatly dressed.

340 SAFETY SIGNS

- Fixing locations of signs: Roof level.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Material: Aluminium with polyester powder coated base, screen printed graphics.
- Signs description:
 - Warning sign as BS EN ISO 7010 code W001 with supplementary text sign, lettering 'DANGER Fragile roof'.
 - Mandatory sign as BS EN ISO 7010 code M001 with supplementary text sign, lettering 'Use crawling boards'.

H62 Natural slating

To be read with Preliminaries/ General conditions.

TYPES OF SLATING

- 105 ROOF SLATING Localised repairs only
- Substrate: TBC.
 - Pitch: As existing.
 - Underlay: As existing.
 - Recycled content: None permitted.
 - Direction: Parallel to eaves.
 - Head-lap (minimum): As existing.
 - Battens:
 - Size: 50 x 25 mm.
 - Fixing: Copper nails.
 - Slates:
 - Supplier: Submit proposals.
Product reference: Submit proposals.
 - Type: Welsh heather-grey.
 - Size: As existing.
 - Head-lap (minimum): As existing.
 - Fixing: Two nails each slate.
 - Accessories: None.

SLATING GENERALLY

- 210 BASIC WORKMANSHIP
- General: Fix slating and accessories to make the whole sound and weathertight at earliest opportunity.
 - Setting out: To true lines and regular appearance, with neat fit at edges, junctions and features.
 - Fixings for slating accessories: As recommended by manufacturer.
 - Gutters and pipes: Keep free of debris. Clean out at completion.
- 220 REMOVING EXISTING SLATING
- General: Carefully remove slates, battens, underlay, etc. with minimum disturbance of adjacent retained slating.
 - Undamaged slates: Set aside for reuse.

- 240 UNDERLAY
- Handling: Do not tear or puncture.
 - Laying: Maintain consistent tautness.
 - Vertical laps (minimum): 100 mm wide, coinciding with supports and securely fixed.
 - Fixing: Galvanized steel, copper or aluminium 20 x 3 mm extra large clout head nails.
 - Eaves: Where exposed, use an external grade (UV resistant) underlay or a proprietary eaves support product.
 - Penetrations: Use proprietary underlay seals or cut underlay to give a watertight fit around pipes and components.
 - Ventilation paths: Do not obstruct.
- 245 BATTENS/ COUNTERBATTENS - TREATED
- Timber: Sawn softwood.
 - Species: In accordance with BS 5534, clause 4.11.1.
 - Permissible characteristics and defects: Not to exceed limits in BS 5534, Annex D.
 - Grading: Fully factory pre-graded in accordance with BS 5534.
 - Moisture content at time of fixing and covering (maximum): 22%.
 - Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
 - Type: Contractor's choice.
- 265 BATTEN FIXING
- Setting out: Align parallel to ridge in straight horizontal lines to gauge of slates. Align on adjacent areas.
 - Batten length (minimum): Sufficient to span over three supports.
 - Joints in length: Square cut. Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
 - Additional battens: Provide where unsupported laps in underlay occur between battens.
 - Fixing: Each batten to each support. Splay fix at joints in length.
- 275 SLATE FIXING
- Setting out: Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
 - Slate thickness: Consistent in any one course. Lay with thicker end as tail.
 - Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Do not use slates less than 150 mm wide.
 - Top course: Head-nail short course to maintain gauge.
 - Fixing: Centre nail each slate twice through countersunk holes 20-25 mm from side edges.
 - Nails: Copper clout to BS 1202-2 or aluminium clout to BS 1202-3.
 - Nail dimensions: Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.
- 290 MORTAR BEDDING/ POINTING
- Mortar: As section Z21, 1:3 cement:sand, with plasticizing admixtures permitted.
 - Bond strength providing resistance to uplift: In accordance with BS 5534.
 - Weather: Do not use in wet or frosty conditions or when imminent.
 - Preparation of concrete and clay tile accessories to be bedded: Wet and drain surface water before fixing.
 - Appearance: Finish neatly as work proceeds and remove residue.

ROOF SLATING EDGES/ JUNCTIONS/ FEATURES

305 GENERALLY

- Fittings and accessories: As recommended by slate supplier, do not improvise.
 - Exposed fittings and accessories: To match slate colour and finish.
- Cut slates: Cut only where necessary, to give straight, clean edges.
- Flashings: Fix with or immediately after slating. Form neatly.

J41 Reinforced bitumen membrane roof coverings

To be read with Preliminaries/ General conditions.

TYPES OF COVERING

- 110 BUILT-UP REINFORCED BITUMEN MEMBRANE WARM DECK ROOF COVERING Over Female and Male WCs
- Substrate: Plywood deck, assumed.
 - Preparation: Remove existing waterproof covering.
 - Vapour control layer: Reinforced bitumen membrane to BS 8747, class S1P1.
 - Insulation: Rigid urethane foam board.
 - Overlay to insulation: Not required.
 - Waterproof covering:
 - System manufacturer: Submit proposals.
 - First layer: Agrément certified SBS modified bitumen membrane, polyester reinforced.
Attachment: Partial bonding.
 - Intermediate layer: Agrément certified SBS modified bitumen membrane, polyester reinforced.
Attachment: Pour and roll bonding .
 - Top layer/ Capsheet: Agrément certified SBS modified bitumen membrane, polyester reinforced.
Colour: Grey.
Attachment: Pour and roll bonding .
 - Flashings and detail work: Additional layer of SBS modified bitumen membrane, mineral surfaced.
 - Surface protection: Not required.
 - Accessories: Not required.

PRODUCTS

- 325 BONDING COMPOUNDS
- Type: Oxidized bitumen, grade recommended by bitumen membrane manufacturer.
 - Restriction: For heat sensitive insulation materials, use cold bonding compounds.
- 327 BONDING COMPOUND
- Type: Cold bonding bitumen.
 - Manufacturer: As for bitumen membrane.
 - Product reference: Submit proposals.
 - Restriction: For heat sensitive insulation materials, use cold bonding compound.
- 330 TIMBER TRIMS, ETC
- 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: Copper Quaternary Ammonium (CQA).

335 ANGLE FILLETS

- Material: Treated timber.
 - Size (minimum): 50 x 50 mm, triangular in section.
- Restriction: Fillets under torch-on bitumen membranes to be non-combustible.

395 VAPOUR CONTROL LAYER

- Type: Flexible reinforced bitumen membrane.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Thickness: Submit proposals.
- Vapour resistance: 1000 MNs/g.

420 RIGID URETHANE FOAM WARM DECK ROOF INSULATION

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Standard: Rigid polyurethane foam (PU) board to BS EN 13165.
 - Reaction to fire: Euroclass E, flame retardant boards.
 - Thermal conductivity (minimum): Manufacturer's standard.
 - Thickness: 120 mm.
 - Compressive strength (minimum): Manufacturer's standard.
 - Other characteristics: None.
- Edges: Square.
- Facing: Foil.

EXECUTION GENERALLY

515 ADVERSE WEATHER

- General: Do not lay coverings in high winds, wet damp conditions or in extremes of temperature unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry. Protect edges of laid membrane from wind action.

520 INCOMPLETE WORK

- End of working day: Provide temporary seal to prevent water infiltration.
- On resumption of work: Cut away tail of membrane from completed area and remove from roof.

540 APPLYING BONDING COMPOUNDS

- Roof sited boilers: Not permitted.
- Temperature of compound: Suitable to achieve bond over whole surface. Do not overheat.
- Heat sensitive insulation materials: Use cold bituminous adhesive or overlays recommended by the insulation manufacturer.
- Application: Materials and method as bitumen membrane manufacturer's recommendations.

SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION

610 SUITABILITY OF SUBSTRATES

- Substrates generally: Secure, clean, dry, smooth, and free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete including:
 - Grading to correct falls.
 - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
 - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability of substrate: Must not impair roof integrity.

620 RENEWING EXISTING COVERINGS

- Areas to be renewed: Over Female and Male WCs.
- Substrates: Do not damage.
- Timing: Remove only sufficient coverings as will be renewed and made weathertight on same day.

625 REMOVING EXISTING COVERINGS

- Mechanical stripping: Not permitted.
- Exposed substrate: Do not damage.

640 FIXING TIMBER TRIMS

- Fasteners: Sherardized steel screws.
- Fixing centres (maximum): 600 mm.

670 LAYING VAPOUR CONTROL LAYER

- Attachment: Securely bond or nail to substrate.
- Side and end laps: 75 mm minimum, fully bitumen sealed.
- Joints in second layer (where applicable): Stagger by half a sheet.
- Penetrations: Fully seal using bonding or taping methods recommended by manufacturer.
- Edges of insulation at roof edges, abutments, upstands, kerbs, penetrations and the like: Enclose, with vapour control layer:
 - Dressed up sufficiently, providing 50 mm (minimum) seal when overlapped by the roof covering; or
 - Turned back 150 mm (minimum) over the insulation and sealed down.

680 LAYING WARM DECK ROOF INSULATION

- Setting out:
 - Long edges: Fully support and run at right angles to existing boards.
 - End edges: Adequately support.
 - Joints: Butt together.
 - End joints: Stagger.
- Bedding: Full bed of bonding compound.
- Mechanical fixing: Not required.
- Protection to exposed edges of insulation: Reduced thickness treated timber batten, outer edge chamfered at changes in level.
- Completion: Boards must be in good condition, well fitting and stable.

690 LAYING OVERLAY TO WARM DECK ROOF INSULATION

- Setting out: Stagger to break joint with insulation.
 - Joints: Butt together.
- Bedding: Full bed of bonding compound.
- Mechanical fixing: Not required.

WATERPROOF MEMBRANES/ ACCESSORIES

710 LAYING REINFORCED BITUMEN MEMBRANES GENERALLY

- Direction of laying: Unrolled up the slope.
 - Where practicable, install so that water drains over and not into laps.
- Side and end laps: As recommended by bitumen membrane manufacturer.
- Head and side laps: Offset.
Intermediate and top layer/ capsheet: Fully bond.
- Successive layers: Apply without delay. Do not trap moisture.
- Strips of bitumen membranes for 'linear' details: Cut from length of roll.
- Completed coverings: Firmly attached, fully sealed, smooth, weatherproof and free draining.

730 PARTIAL BONDING OF REINFORCED BITUMEN MEMBRANE

- Venting first layer: Loose lay, align and cut to length. Do not carry up angle fillets and vertical surfaces or through details.
 - Long edges: Overlap minimum 50 mm.
 - Ends: Butt together.
- Intermediate layer: Fully bond to first layer and through to substrate.

745 COLD APPLIED ADHESIVE BONDING OF REINFORCED BITUMEN MEMBRANES

- Bond: Full over whole surface, with no air pockets.

747 SELF-ADHESIVE BONDING OF REINFORCED BITUMEN MEMBRANES

- Bond: Full over whole surface, with no air pockets.

750 LAYING MINERAL FACED REINFORCED BITUMEN MEMBRANES

- Lap positions and detailing of ridges, eaves, verges, hips, abutments, etc: Submit proposals.
- Setting out: Neat, with carefully formed junctions.
- Lap bonding: Carry out only at prefinished margins or prepared 'black to black' edges.
- Excess bonding compound at laps: Remove whilst still warm.

775 SKIRTINGS AND UPSTANDS

- Angle fillets: Fix by bitumen bonding or nailing.
- Venting first layer of bitumen membrane: Stop at angle fillet. Fully bond in bitumen for 300 mm around perimeters. Overlap onto upstand with strips of BS 8747, class S1P1 bitumen membrane, fully bonded.
- Other layers of bitumen membrane: Carry in staggered formation up upstand, with each layer fully bonded. Where practicable, carry top layer over top of upstand.
- Upstands:
 - At ends of rolls: Form with bitumen membrane carried up without using separate strip.
 - Elsewhere: Form with matching strips of bitumen membrane, maintaining laps.
 - Additional fixing of bitumen membranes: As recommended by bitumen membrane manufacturer.

780 WELTED DRIPS

- Material: Agrément certified SBS modified bitumen membrane, polyester reinforced.
 - Length: Form using maximum length strips.
 - Height at external gutter (minimum): 75 mm.
- Welt tail: Nail to face of drip batten. Fold neatly.
- Welt: Bond together, carry minimum 100 mm onto roof. Overlap with top bitumen membrane.

785 FIXING PERIMETER TRIMS

- First/ Intermediate layers bitumen membrane: Lay over roof edge upstand. Project free edge 25 mm from wall or fascia.
- Trim:
 - Setting out (minimum): 3 mm clear from wall or fascia.
 - Fasteners: stainless steel woodscrews.
 - Fixing: 30 mm from ends and at 300 mm (maximum) centres.
 - Jointing sleeves: Fix one side only.
 - Corner pieces: Purpose made.
- Completion:
 - Contact surfaces: Prime.
 - Joints: Cover with 150 mm long pads of bitumen membrane, bonded to trim.
- Completion of bitumen membrane:
 - Top layer/ Capsheet: Butt joint to rear edge of trim.
 - Cover strip: Fully bond to trim and top layer/ capsheet of bitumen membrane. Carry over roof edge upstand and lap 75 mm onto roof.
Cover strip material: As top layer/ capsheet bitumen membrane.

COMPLETION

910 INSPECTION

- Interim and final roof inspections: Submit reports.

940 COMPLETION

- Roof areas: Clean.
- Outlets: Clear.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed membrane: Do not damage. Protect from chemicals, traffic and adjacent or high level working.

L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

GENERAL

110 EVIDENCE OF PERFORMANCE

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

115 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.
- Certification scheme:
 - UK Timber Procurement Policy Category A evidence certification scheme;
 - Forest Stewardship Council (FSA); or
 - Programme for the Endorsement of Forest Certification (PEFC).
 - Other evidence: None.

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: All replacement joinery .

PRODUCTS

250 WOOD WINDOWS

- Standard: To BS 644.
- Manufacturer: A firm currently registered under a third party quality assurance scheme.
- Exposure category to BS 6375-1/ Design wind load: 1200 Pa.
- Operation and strength characteristics: To BS 6375-2.
- Timber: Generally to BS EN 942.
 - Species: Softwood as table NA.1.
 - Appearance class: J10 for glazing beads, drip mouldings and the like. J40 or better for all other members.
 - Moisture content on delivery: 12-19%.
- Preservative treatment: Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life 30 years.
- Finish as delivered: Prepared and primed as section M60.
- Thermal performance (U-value maximum): 1.6 W/m²K.
- Glazing details: Site.
 - Beading: External.
- Ironmongery/ Accessories: Re-use or match existing.
- Fixing: Frame fixings or straps to existing masonry.

EXECUTION

710 PROTECTION OF COMPONENTS

- General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
- Stored components: Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

730 PRIMING/ SEALING

- Wood surfaces inaccessible after installation: Prime or seal as specified before fixing components.

760 REPLACEMENT WINDOW INSTALLATION

- Standard: To BS 8213-4.

765 WINDOW INSTALLATION GENERALLY

- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
 - Minimum: 3mm.
 - Maximum: 5mm.
- Distortion: Install windows without twist or diagonal racking.

780 FIXING OF WOOD FRAMES

- Standard: As section Z20.
- Fasteners: Stainless steel wood screws.
 - Spacing: When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.

810 SEALANT JOINTS

- Sealant:
 - Manufacturer: Submit proposals.
Product reference: Submit proposals.
 - Colour: White.
 - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 IRONMONGERY

- Fixing: In accordance with any third party certification conditions applicable. Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
- Checking/ Adjusting/ Lubricating: Carry out at completion and ensure correct functioning.

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

- 130 REMOVAL OF GLASS/ PLASTICS FOR REUSE
- Existing glass/ plastics and glazing compound, beads, etc: Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris.
 - Deterioration of frame/ surround: Submit report on defects revealed by removal of glazing.
 - Affected areas: Do not reglaze until instructed.
 - Reusable materials: Clean glass/ plastics, beads and other components that are to be reused.
- 150 WORKMANSHIP AND POSITIONING GENERALLY
- Glazing generally: In accordance with BS 6262 series.
 - 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; ensure compliance with any certified installation requirements.
- 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): 2 hours.
 - Mean glass temperature: $290^{\circ} \pm 10^{\circ}\text{C}$.
- Certified evidence of treatment: Submit.
- Designated locations: All.

TYPES OF GLAZING

210 PUTTY FRONTED SINGLE GLAZING All

- Pane material: 4mm clear toughened glass.
- Surround: Softwood.
 - Sealer: Paint primer.
- Type of putty: Linseed oil.
- Thermal performance (U-value maximum): As glazing insert.
- Glass installation:
 - Glass: Located centrally in surround using setting and location blocks, and secured with glazing sprigs/ cleats/ clips at 300 mm centres.
 - Finished thickness of back bedding after inserting glazing (minimum): 1.5 mm.
 - Front putty: Finished to a smooth, neat triangular profile stopping 2 mm short of sight line. Surface lightly brushed to seal putty to glass and left smooth with no brush marks.
- Sealing putty: Seal as soon as sufficiently hard but not within 7 days of glazing. Within 28 days apply either:
 - The full final finish, suitably protected until completion and cleaned down and made good as necessary, or
 - Two coats of primer applied locally to the compound, to be followed nearer completion with the full specified finish.
- Opening lights: Keep in closed position until putty has set sufficiently to prevent displacement of glazing when opened.

M60 Painting/ clear finishing

To be read with Preliminaries/ General conditions.

COATING SYSTEMS

- 130 GLOSS PAINT TO EXTERNAL SOFTWOOD, Windows, Doors, Fascias and Soffits, Rainwater Goods and Vents
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Surfaces: Untreated, pre-primed and previously coated.
 - Preparation: Degrease and abrade to provide key and Remove existing gloss paint .
 - Initial coats: As recommended by manufacturer.
 - Number of coats: One.
 - Undercoats: As recommended by manufacturer.
 - Number of coats: Two.
 - Finishing coats: Full gloss.
 - Number of coats: One.
- 160 DECORATIVE WOODSTAIN VARNISH PRESERVATIVE TO PLYWOOD BOARDINGS and COURTYARD FASCIAS subject to survey
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Surfaces: Previously Coated.
 - Preparation: Degrease and rub down to provide key.
 - Initial coats: As recommended by manufacturer.
 - Number of coats: One.
 - Finishing coats: As recommended by manufacturer.
 - Number of coats: Two.

GENERAL

- 210 COATING MATERIALS
- Manufacturer: Obtain materials from any of the following: Akzo Nobel or Johnstone's Trade.
 - 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.
- 240 SURFACES NOT TO BE COATED
Masonry, stonework, ironmongery .
- 250 SURFACES TO BE CLEANED BUT NOT COATED
Glazing .

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.
- Refer to any pre-existing CDM Health and Safety File.
- Refer to CDM Construction Phase Plan where applicable.
- 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: Kick plates, back plates, roses .
- 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.
- 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.
- 631 PREVIOUSLY PAINTED WINDOW FRAMES
- Paint encroaching beyond glass sight line: Remove.
 - Loose and defective putty: Remove.
 - Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.
 - Finishing:
 - Patch prime, reputty as necessary, and allow to set.
 - Seal and coat as soon as fully set.

640 EXTERNAL POINTING TO EXISTING FRAMES

- Defective sealant pointing: Remove.
- Joint depth: Approximately half joint width; adjust with backing strip if necessary.
- Sealant:
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Preparation and application: As section Z22.

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: Built in window frames.
 - Additional coatings: One undercoat.

751 STAINING WOOD

- Primer: Apply, if recommended by stain manufacturer.
- Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

770 EXTERNAL DOORS

- Bottom edges: Prime and coat before hanging doors.

780 BEAD GLAZING TO COATED WOOD

- Before glazing: Apply first two coats to rebates and beads.

790 LINSEED OIL PUTTY GLAZING

- Setting: Allow putty to set for seven days.
- Sealing:
 - Within a further 14 days, seal with a solvent-borne primer.
 - Fully protect putty with coating system as soon as it is sufficiently hard.
 - Extend finishing coats on to glass up to sight line.

P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

PRE-TENDER

10 QUANTITIES AND LOCATIONS

- Quantities and locations of ironmongery are to be determined by contractor .
- Fixing: As sections L10 and L20.

GENERAL

120 IRONMONGERY RANGE SELECTED BY CONTRACTOR

- Source: Single coordinated range.
- Notification: Submit details of selected range, manufacturer and/ or supplier.
- Principal material/ finish: Polished brass or to match existing.
- Items unavailable within selected range: Submit proposals.

140 SAMPLES

- General: Before placing orders with suppliers submit labelled samples of the following: sash window catches .
 - Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

WINDOW HANGING DEVICES

370 WINDOW HINGES Submit proposals

- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
- Type: Stormproof .
- Size: to be determined by joinery supplier .
- Material/ finish: Polished brass .

395 BOXED SASH HANGING FITTINGS New sash windows

- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
- Axle pulleys: 56 mm ball bearing brass wheel, polished brass faceplate .
- Cords/ Chains: Waxed cotton sash cord .
- Weights: Lead .
 - Matched to weights of glazed sashes.
- Other requirements: None .

WINDOW SECURING DEVICES

- 592 SASH FASTENERS Replacement joinery
- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Type: Submit proposals .
 - Size: Submit proposals .
 - Material/ finish: Polished brass .
 - Additional requirements: Style to match existing .
- 593 SASH SCREWS Replacement joinery
- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Type: Submit proposals .
 - Size: Submit proposals .
 - Material/ finish: Polished brass .
 - Additional requirements: Style to match existing .

WINDOW FURNITURE

- 940 SASH LIFT HANDLES Replacement Joinery
- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Type: Style to match original .
 - Size: Manufacturer's standard .
 - Material/ finish: Polished brass .

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

- 110 NATURAL STONE SLAB PAVING SYSTEM External Steps
- Subgrade improvement layer: Not required.
 - Compacted thickness: Not applicable.
 - Granular sub-base: Not applicable.
 - Compacted thickness: Not applicable.
 - Base: Submit proposals.
 - Thickness: Submit proposals.
 - Laying course: Submit proposals.
 - Accessories: Submit proposals.
 - Paving units: Natural stone slabs.
 - Jointing: Site mixed mortar.
 - Bond: Not applicable.
 - Accessories: None.

PRODUCTS

- 310 NATURAL STONE SLABS FOR STEPS
- Standard: To BS EN 1341.
 - Supplier: Submit proposals.
 - Product reference: Submit proposals.
 - Quarry: Submit proposals.
 - Petrographical description/ stone type: York Stone.
 - Finish: Fine textured.
 - Sizes: to be determined on site.
 - Plan dimension deviation class: No requirement.
 - Diagonal deviation class: No requirement.
 - Thickness deviation class: No requirement.
 - Arrises: Bevelled.
 - Breaking strength: No requirement.
 - Slip resistance: No requirement.
 - Skid resistance: No requirement.
 - Surface treatment: None.

EXECUTION

- 610 MATERIAL SAMPLES
- Samples representative of colour and appearance of designated materials: Submit before placing orders.
 - Designated materials: Natural stone materials for steps.

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.

637 REGULARITY - TO BS 8300

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

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): Not applicable.
- 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.

695 SITE MIXED MORTAR FOR STEPS

- Mix: Lime putty mortar.
- Consistency: Workable.
- Admixtures: None.

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM

- Rainwater outlets: Submit proposals.
- Gutters: Aluminium and Cast iron.
- Pipework: Aluminium and Cast iron, spigot and socket, sealed.
- Below ground drainage: Not applicable.
- Disposal: To surface water drainage.
- Controls: Not applicable.
- Accessories: None.

SYSTEM PERFORMANCE

210 DESIGN

- Design: Complete the design of the rainwater drainage system.
- Standard:
 - To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
 - To BS EN 12056-5, clauses 3, 4, 6 and 11.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

221 COLLECTION AND DISTRIBUTION OF RAINWATER

- General: Complete, and without leakage or noise nuisance.

PRODUCTS

311 ALUMINIUM GUTTERS

- Standard: Agrément certified.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Profile: Ogee.
- Type/ Thickness: Cast.
- Nominal size: 100 mm.
- Finish: Polyester powder coating.
- Colour: Black.
- Brackets: Fascia type.
 - Fixings: Stainless steel screws.
 - Size: 30 x 4 mm.
- Accessories:
 - Jointing clips;
 - Leaf guards; and
 - Stop ends.

- 360 SEALANT FOR GUTTERS
- Type: Rubberised or low modulus silicone.
- 370 ALUMINIUM PIPEWORK
- Standard: Agrément certified.
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Type/ Thickness : Cast.
 - Section: Round.
 - Nominal size: 76 mm.
 - Finish: Polyester powder coating.
 - Colour: Black.
 - Brackets: Extruded aluminium pipe clips coated as pipes.
 - Fixings: Stainless steel screws.
Size: 30 x 4 mm.
 - Accessories: Rainwater shoes.
- 375 CAST IRON PIPEWORK - FLEXIBLE COUPLINGS
- Standard: To BS EN 877, Agrément certified.
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Coupling type: Push fit.
 - Nominal size: DN70.
 - Finish as supplied: Anti rust primer, to receive paint finish as section M60.
 - Brackets: Cast iron holderbats.
 - Fixings: Stainless steel screws.
Size: 30 x 4 mm.
 - Accessories: Hopper.

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: 900 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.

635 FIXING PIPEWORK

- Pipework: Fix securely, plumb and/ or true to line.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
- Vertical pipes:
 - Provide a loadbearing support at least at every storey level.
 - Tighten fixings as work proceeds so that every storey is self supporting.
 - Wedge joints in unsealed metal pipes to prevent rattling.
- Wall and floor penetrations: Isolate pipework from structure.
 - Pipe sleeves: As section P31.
 - Masking plates: Fix at penetrations if visible in the finished work.
- Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

640 FIXING VERTICAL PIPEWORK

- Bracket fixings: Plugged and screwed into masonry.
- Distance between bracket fixing centres (maximum): 1200 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.

675 CUTTING COATED PIPEWORK AND GUTTERS

- Cutting: Recoat bare metal.

COMPLETION

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

U90 General ventilation - domestic

To be read with Preliminaries/ General conditions.

GENERAL

- 140 MECHANICAL SUPPLY VENTILATION Service existing AC systems only
- Air inlet terminals: Not applicable.
 - Fan units: Not applicable.
 - Air ductwork: Not applicable.
 - Air ductwork accessories: Not applicable.
 - Air supply terminals: Not applicable.
 - Controls: Check existing.
 - Completion: Recommissioning and certificate.

COMPLETION

- 910 COMMISSIONING
- Ventilation system: Balance airflow using methods recommended by the system manufacturer.
 - Performance: As existing.
 - Operation: Examine ductwork for leakage. Test the operation of fans, equipment, controls and sensors. Verify correct operation. Submit report.
- 920 OPERATION AND MAINTENANCE
- Operating and maintenance instructions: Submit copies of manufacturers' operating and maintenance instructions for equipment and controls.
 - Tools: Supply tools for operation, maintenance and cleaning purposes, including keys for valves and vents.

V90 Electrical systems - domestic

To be read with Preliminaries/General conditions.

SYSTEM PERFORMANCE

- 210 DESIGN OF LOW VOLTAGE ELECTRICAL INSTALLATION GENERALLY
- Design and detailing: Complete for the electrical installation.
 - Standards: In accordance with BS 7671 and the requirements of the electricity distributor.
 - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 275 SMALL POWER SYSTEM DESIGN
- Purpose: Replacement external electrical enclosure only.
 - Small power outlets: Provide to serve the building and its equipment.
 - Room: Roof level.
 - Outlets: TBA.
 - Fixed equipment: Provide supplies.
- 280 EARTHING AND BONDING DESIGN
- Earthing, main bonding, supplementary bonding and protective conductors: In accordance with BS 7430.

PRODUCTS

- 310 PRODUCTS GENERALLY
- Standard: In accordance with BS 7671.
 - CE Marking: Required.
- 410 CABLES GENERALLY
- Approval: British Approvals Service for Cables (BASEC) certified.
 - Cable sizes not stated: Submit proposals and calculations.
- 420 PROTECTIVE CONDUCTORS
- Type: Cable conductors with yellow/ green sheath.
- 430 ELECTRICAL ACCESSORIES
- Standards:
 - Generally: To BS 5733.
 - Switches: To BS EN 60669-1.
 - Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Finish: Submit proposals .
 - Mounting: Surface.

EXECUTION

610 ELECTRICAL INSTALLATION GENERALLY

- Standard: In accordance with BS 7671.

630 INSTALLING SWITCHGEAR

- Clearance in front of switchgear (minimum): 1 m.
- Labelling: Permanently label each way, identifying circuit function, rating and cable size.

645 INSTALLING CABLE TRAY

- Support: Submit proposals.
- Access: Provide space encompassing cable trays to permit access for installing and maintaining cables.
- Supports and fasteners: Avoid contact between dissimilar metals. Use corrosion resistant components in locations where moisture may occur.
- Cutting: Along an unperforated line. Minimize. Make good edges. Treat surface as the tray.

655 INSTALLING STEEL CONDUIT AND FITTINGS

- Fixing: Fix securely. Fix boxes independently of conduit.
- Conduit drainage: Provide drainage outlets at lowest points.
- Location: Position vertically and horizontally in line with equipment served and parallel with building lines. Locate where accessible.
- Jointing:
 - Number of joints: Minimize.
 - Lengths of conduit: Maximize.
 - Cut ends: Remove burrs and plug.
 - Movement joints in structure: Manufactured expansion coupling.
 - Threaded steel conduits: Tightly screw to ensure electrical continuity, with no thread showing.
 - Conduit connections to boxes and items of equipment, other than those with threaded entries: Earthing coupling/ male brass bush and protective conductor.
 - Changes of direction: Circular conduit boxes.
- Connections to boxes, trunking, equipment and accessories: Screwed couplings, adaptors, connectors and glands: Attach, rubber bushes at open ends.
- Mounting and support: Submit proposals .

675 PARTIAL INSTALLATION

- Equipment to be installed only: REPLACEMENT ENCLOSURE FOR EXTERNAL SUPPLIES.
- Provide power supplies and final connections to the following equipment: As existing.
- Containment: Provide for the following: As existing.
 - Draw cords: Required.
 - Proposals: Submit.

680 CABLE ROUTES

- Cables generally: Conceal wherever possible.
 - Concealed cable runs to wall switches and outlets: Align vertically with the accessory.
- Exposed cable runs: Submit proposals.
 - Orientation: Straight, vertical and/ or horizontal and parallel to walls.
- Distance from other services running parallel: 150 mm minimum.
 - Heating pipes: Position cables below.

685 INSTALLING CABLES

- General: Install cables neatly and securely. Protect against accidental damage, adverse environmental conditions, mechanical stress and deleterious substances.
- Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.
- Jointing: At equipment and terminal fittings only.
- Cables passing through walls: Sleeve with conduit bushed at both ends.
- Cables surrounded or covered by insulation: Derate.

705 INSTALLING ARMOURED CABLE

- Temperature: Do not start installation if cable or ambient temperature is below 0°C, or has been below 0°C during the previous 24 hours.
- Galvanized steel guards: Fit where cables are vulnerable to mechanical damage.
- Earthing: Bond armour to equipment and main earthing system.
- Connections to apparatus: Moisture proof, sealed glands and PVC shrouds.

710 INSTALLING PVC SHEATHED CABLE

- Temperature: Do not install cables if ambient temperature is below 5°C.

720 INSTALLING ELECTRICAL ACCESSORIES AND EQUIPMENT

- Location: ROOF LEVEL.
- Arrangement: Coordinate with other wall or ceiling mounted equipment.
- Positioning: Accurately and square to vertical and horizontal axes.
- Alignment: Align adjacent accessories on the same vertical or horizontal axis.
- Mounting: Surface .
- Mounting heights (finished floor level to underside of equipment/ accessory): As existing or higher to suit new warm roof construction.

760 EQUIPMENT LABELLING

- Electrical equipment: Install labels indicating purpose.
- Voltage warning notices:
 - Location: Apply to equipment when the voltage exceeds 230 V.
 - Format: To BS EN ISO 7010 W012, include warnings of the voltage present.
- Distribution boards and consumer units: Card circuit chart within a reusable clear plastic cover. Fit to the inside of each unit. Include typed information identifying the outgoing circuit references, their device rating, cable type, size, circuit location and details. Label each outgoing way corresponding to the circuit chart.
- Sub-main cables: Label at both ends with circuit reference using proprietary cable marker sleeves.

COMPLETION

810 FINAL FIX

- Accessory faceplates, luminaires and other equipment: Fit after completion of building painting.

820 CLEANING

- Electrical equipment: Clean immediately before handover.
- Equipment not supplied but installed and electrically connected: Clean immediately before handover.

830 INSPECTION AND TESTING GENERALLY

- Standard: In accordance with BS 7671.
- Notice before commencing tests (minimum): 24 hours.
- Labels and signs: Fix securely before system is tested.
- Certificates: Submit.
 - Number of copies: PDF .

880 DOCUMENTATION

- Timing: Submit at practical completion.
- Contents:
 - Full technical description of each system installed.
 - Manufacturers' operating and maintenance instructions for fittings and apparatus including re-lamping instructions for luminaire types. Identify hazardous lamps that require specialist disposal.
 - Recommended frequency of testing and inspection, both for electrical safety and for matters such as the corrosion and security of lighting columns and luminaire fixings.
 - Manufacturers' guarantees and warranties.
 - As-installed drawings showing circuits and their ratings and locations of fittings and apparatus.
 - List of normal consumable items.

890 MAINTENANCE

- Servicing and maintenance: Undertake.
 - Duration: None.

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

110 FABRICATION

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

120 CROSS SECTION DIMENSIONS OF TIMBER

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

130 PRESERVATIVE TREATED WOOD

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

140 MOISTURE CONTENT

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

250 FINISHING

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

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 PELLETTED 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.

700 APPLYING ADHESIVES

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

Z21 Mortars

To be read with Preliminaries/ General conditions.

LIME:SAND MORTARS

- 310 LIME:SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.
- 320 SAND FOR LIME:SAND MASONRY MORTARS
- Type: Sharp, well graded.
 - Quality, sampling and testing: To BS EN 13139.
 - Grading/ Source: As specified elsewhere in relevant mortar mix items.
- 330 READY PREPARED LIME PUTTY
- Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.
 - Maturation: In pits/ containers that allow excess water to drain away.
 - Density of matured lime putty: 1.3-1.4 kg/litre.
 - Maturation period before use (minimum): Seek instructions.
- 335 READY PREPARED LIME PUTTY
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Maturation period before use (minimum): Seek instructions.
- 340 POZZOLANIC ADDITIVES FOR NONHYDRAULIC LIME:SAND MORTARS
- Manufacturer/ Supplier: Contractor's choice.
 - Product reference: Contractor's choice.
 - Mixing: Mix thoroughly into mortar during knocking up.
- 345 ADMIXTURES FOR HYDRAULIC LIME:SAND MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.
- 360 MAKING LIME:SAND MORTARS GENERALLY
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
 - Contamination: Prevent intermixing with other materials, including cement.
- 370 SITE PREPARED NONHYDRAULIC LIME:SAND MORTARS
- Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.
 - Maturation period before use (maximum): Seek instructions.

390 KNOCKING UP NONHYDRAULIC LIME:SAND MORTARS

- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.

400 MAKING HYDRAULIC LIME:SAND MORTARS

- Mixing hydrated hydraulic lime:sand: Follow the lime manufacturer's recommendations for each stage of the mix.
 - Water quantity: Only sufficient to produce a workable mix.
- Working time: Within limits recommended by the hydraulic lime manufacturer.