C41 REPAIRING/ RENOVATING/ CONSERVING MASONRY

To be read with Preliminaries/ General conditions.

GENERAL/ PREPARATION

110 SCOPE OF WORK

- Schedule: Replacing spalled red bricks to elevations, replacing and repairing stone sub-cills, patch repointing all elevations, reconstruction/repairs to chimney stacks and parapet walls.
- 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, Contractor's Representative and Conservation Officer.
- Timing: Minimum 5 working days before starting each section of work.
- Instructions issued during inspection: To be confirmed in writing with drawings and schedules as required, by the Contract Administrator.

125 REMOVAL OF FITTINGS/ FIXTURES

- Items to be removed, and reinstated on completion of repair work: As schedule
  - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe refixing instructions, where applicable.
  - Treatment following removal: Refurbish or repair as necessary (confirm proposals with CA).
  - Storage: Protect against damage, and store until required.
    Storage location: Submit proposals.
  - Reinstatement: Refit in original locations using original installation methods.
- Items unsuitable or not required for reuse: as schedule.
  - Disposal: approved method.
- Masonry fabric and surfaces: Do not damage during removal and replacement of fittings/ fixtures.

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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: Not permitted.

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.

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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 1m²; first stage approval – after preparation; second stage approval – after repointing.

MATERIALS/ PRODUCTION/ ACCESSORIES

215 MATERIAL SAMPLES
- Representative samples of designated materials: Submit before placing orders.
  - Designated materials: Brick, stone sub-cills, stone coping stones, sands for mortar repairs.
- 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.

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240 STONE
- Supplier: to approval
- Type: to match existing.
- 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.

265 SALVAGED AND SECOND HAND BRICKS
- Type: to match existing to approval of the CA and conservation officer.
- Condition:
  - Free from matter such as mortar, plaster, paint, bituminous materials and organic growths.
  - Sound, clean and reasonably free from cracks and chipped arrises.

DISMANTLING/ REBUILDING

310 DISMANTLING MASONRY FOR REUSE
- Masonry units to be reused: Remove carefully and in one piece.
  - Treatment: Clean off old mortar, organic growths and dirt, and leave units in a suitable condition for rebuilding.
  - Identification: Mark each unit clearly and indelibly on a concealed face, indicating its original position in the construction. Transcribe makings to drawings/ photographs.

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320 REBUILDING SECTION OF FRONT ELEVATION, PARAPET WALL, CHIMNEY STACKS
- Replacement materials: Brick, as clause 265
- Mortar: As section Z21.
  - Mix: 1:3 ready mixed non hydraulic lime putty: sand
  - Sand source/ type: well graded course sharp sand, two parts and one part fine sharp silver sand.
- Fixings: stainless steel dowels and cramps.
- Rebuilding: To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work/ backing masonry, as appropriate.
- Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Joints: Point to a neat flush joint to match original, recessed 1mm behind face of adjoining masonry following all irregularities, to form a neat joint.

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.

365 REPLACEMENT OF BRICKS WHERE SPECIFIED
- Bricks: Second hand bricks to match existing (as clause 265)
- Mortar: As section Z21.
  - Mix: 1:3 ready mixed non hydraullic lime putty sand
  - Sand source/ type: well graded course sharp sand, two parts and one part fine sharp silver sand.
- Joints: As of Clause 820.

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.

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390 GROUTING JOINTS
- Grout mix: 1:3 ready mixed non hydraulic lime putty sand.
- 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.

410 CORRODED METAL FIXINGS
- Removal: Cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
- Replacement: Compatible fixings, as clause 280 or 281.

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.

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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.

CRACK REPAIRS/ TIES/ REINFORCEMENT

610 MORTAR REPAIR OF CRACKS WHERE SPECIFIED

- Mortar: As section Z21.
  - Mix: 1:3 ready mixed non hydraulic lime putty; sand
  - Sand source/ type: well graded course sharp sand, two parts and one part fine sharp silver sand.
- 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.

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630 TIES

- Tie system manufacturer: Ancon or similar approved.
  - Product reference: as noted in specification.
- Type/ Diameter: stainless steel as noted on drawing.
- Grout: to approval.
- Holes: Drill carefully and accurately, in locations shown on drawings, to suit types and lengths of tie. Remove drilling dust and debris.
- Adjacent masonry: Do not damage during drilling. Keep cavities behind facings free from debris.
- Tie installation:
  - Expansion type anchor fixings: Set to the correct torque.
  - Bonded ties: Grouted.
  - Ends of ties: Keep back from face of masonry to allow for making good.
- Exposed masonry faces: Clean and free from grout/ mortar stains.
- Making good: to match existing.

650 LATERAL RESTRAINT TIES STAIINLESS STEEL

- Existing construction:
  - Wall type/ thickness: as existing.
  - Joist size/ spacing: as existing.
- Preparation:
  - Before inserting each tie, ensure that there are no service pipes, electrical cables or other obstruction in its path.
  - Remove dust and debris from holes through masonry.
- Tie system manufacturer: Ancon or similar approved.
  - Product reference: as noted in specification.
- Tie spacing:
  - as noted on drawings
- Tie Installation: Insert ties accurately and securely, and as near as practicable to mid depth of joists.
- Making good: to match existing.

655 SITE TESTING OF LATERAL RESTRAINT TIES

- Minimum pull out loads of tie fixings into joists:
  - In accordance with structural engineers recommendations
- Testing:

  - Notice: Give adequate notice of testing.
  - Initial tests: At commencement of tie installation, test the first 5 ties.
  - Subsequent tests: Apply test to 20%.
  - Test failures: Report, and seek instructions.
- Load testing equipment: Capacity of 0–15 kN, a current calibration test certificate and an adaptor to suit the type of tie.
- Test results: Submit on completion of satisfactory testing.

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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: to structural engineers recommendations.
- Joints: Fine and flush.
- Finished appearance: Obtain approval for first 5 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 19mm or twice width of joint. Under no circumstances are angle grinders or similar mechanical tools allowed. All mortar is to be carefully removed by hand where it is to be replaced.
  - 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 GENERALLY

- Preparation of joints: as of clause 810.
- Mortar: As section Z21.
  - Mix: 1:3 ready mixed non hydraulic lime putty; sand
  - Sand source/ type: The Lime Centre
- Joint profile/ finish: As of clause 320.

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.

860 BRUSHED FINISH TO JOINTS

- Timing: After initial mortar set has taken place remove laitance and excess fines by brushing, to give a coarse texture. Do not compact mortar.

C42 BRICK AND STONE CLEANING

100 PROTECTION

- Provide protection as necessary, including sheeting and temporary plastic gutters, to control run off and to avoid over washing or soaking of work below the areas being cleaned.
- Provide all necessary protection and sealing to open joints or to windows to prevent water penetration into the building.

120 CLEANING

- The cleaning shall be carried out using a JOS/TORC system, using a mixture of low air pressure, a little water and a safe inert fine granulate.
- Supplier: Stonehealth Ltd, 73 London Road, Marlborough, SN8 2AN.
    - +44 (0) 1453 540 600
    - info@stonehealth.com
- Just sufficient quantities of water should be sprayed onto the brickwork/stonework to keep it damp.
- Washing shall be assisted with soft bristle brushes.
- In areas of more severe staining, allow to experiment with calcium carbonated medium pressure abrasive system or to experiment with carful use of an alkaline cleaning agent.

C51 REPAIRING/ RENOVATING/ CONSERVING TIMBER

To be read with Preliminaries/ General conditions.

GENERAL

110 INSPECTION
- Purpose: To confirm nature 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: Minimum 5 working days before starting each section of work.
- Instructions issued during inspection: To be confirmed in writing, with drawings and schedules as required, by the CA.

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:
- 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: submit proposals.

STRUCTURAL REPAIRS/ ALTERATIONS

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: min 16mm.

- Fixing to existing timber: 4no bolts each side of joint.

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PRODUCTS

310 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS)
- Grading standard: To BS 4978, BS EN 14081-1 or other national equivalent and so marked.
- Strength class to BS EN 338: C24 or as noted on drawings.
- Treatment: Copper-organic impregnation to NBS section Z12 and Wood Protection Association Commodity Specification: C8.
  Service life: 40 years.

330 STRUCTURAL HARDWOOD (GRADED DIRECT TO STRENGTH CLASS)
- Grading standard: To BS 5756 and so marked.
- Strength class to BS EN 338: D30.
- Surface finish: Planed all round.
- Treatment: Copper-organic impregnation to NBS section Z12 and Wood Protection Association Commodity Specification: C8.
  Service life: 40 years.

350 UNGRADED SOFTWOOD FOR NON-STRUCTUAL USE
- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Sawn generally, regularised for battens.
- Treatment: Copper-organic impregnation to NBS section Z12 and Wood Protection Association Commodity Specification: C8.
  Service life: 40 years.

360 SOFTWOOD FOR JOINERY REPAIRS
- Species: To match existing
- Quality: Generally to BS EN 942; free from decay and insect attack (except pinhole borers).
  - Appearance class: Class J2.
- Treatment: Cooper – organic impregnation to Wood Protection Association Commodity Specification: C8.
- Moisture content on delivery: 13-19%.

370 HARDWOOD FOR JOINERY REPAIRS
- Species: To match existing.
- Quality: Generally to BS EN 942; free from decay and insect attack (except pinhole borers).
  - Appearance class: Class J2.
- Treatment: Cooper – organic impregnation to Wood Protection Association Commodity Specification: C8.
- Moisture content on delivery: 13-19%.

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380 STRUCTURAL PLYWOOD

- Standard: To the relevant national standards and quality control procedures specified in BS 5268-2 and so marked.
- Type: Canadian Douglas Fir
- Grade: Sheathing grade.
- Nominal thickness/ number of plies: As shown on the drawing(s).
- Finish: unsanded.
- Treatment: Copper-organic impregnation to NBS section Z12 and Wood Protection Association Commodity Specification: C8.
  Service life: 40 years.

420 METAL PLATE FASTENERS/GUSSETS

- Manufacturer: Expamet Building Products.
  - Grade: Product reference: BAT-U-Nail plate.
- Fasteners: Galvanised or sherardized square twist nails.
  - Size: Not less than sixe recommended by anchor manufacture.

430 ANCHORS

- Types:
  - Expansion: For use in substrate, loads to be supported and conditions expected in use.
  - Adhesive or chemical:
    For use in substrate where expansion of anchor would fracture substrate.
    For use in irregular substrate where expansion anchors cannot transfer load on anchor.
  - Cavity: For use where the anchor is retained by toggles of the plug locking into the inside face of the cavity.

440 BOLTED JOINTS

- Bolt spacing (minimum): To BS 5268-2, table 81.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more that 2mm larger.
- Washers: Placed under bolt heads and nuts that will be hidden or inaccessible in the completed building.
- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
  - Checking: At agreed regular intervals up to completion, tighten as necessary.

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450 BOLT/SCREWS ASSEMBILES
- Designation: As shown on drawings.
- Size: As shown on drawings
- Coating applied by manufacturer: As shown on drawings
- Nuts and washers: Material grade and finish to suit bolts.
- Washer dimensions: Diameter/side length of washers in contact with timber faces to be a minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.

460 BOLTED JOINTS WITH CONNECTORS
- Connectors: To BS EN 912.
  - Type and sixes: As shown on drawings.
  - Bolt hole: Where appropriate, sixe to suit bolt diameter.
  - Finish: Galvanised.
- Bolts and washers: To BS 5268-2.
- Connector location: Where not otherwise shown, spacings, end and edge distances to be not less than Standard values to BS 5268-2, Section 6.
- Centres of bolt holes: Not more than 2mm from positions shown on drawings.
- Assembly: Do not crush timber, deform washers or overstress bolts.

470 NAILS FOR GENERAL USE
- Type: Annular ringed shank
- Material: Steel.
  - Strength (minimum): Ultimate tensile strength 600N/mm^2
- Finish as delivered: Galvanised.

480 SCREWS FOR GENERAL USE
- Material: Steel.
- Finish as delivered: Galvanised.

490 COACH SCREWS FOR GENERAL USE
- Standard: German standard DIN571
- Material: Steel.
- Tensile strength (minimum): 550 N/mm^2.
- Finish as delivered: Galvanised.

540 RESIN GROUT/ ADHESIVE FOR SURFACE REPAIRS GENERALLY
- Type: Epoxy resin (joint filling).
- Manufacturer: Contractors choice.

C51

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.

660 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD
- General: Dimensions given on drawings and in schedules of work are finished sizes.
- Maximum permitted deviations from finished sizes:
  - Sawn surfaces:
    Thickness and widths ‹ 100 mm: -1, +3 mm.
    Thickness and widths › 100 mm: -2, +4 mm.
  - Further processed surfaces:
    Thickness and widths ‹ 100 mm: -1, +1 mm.
    Thickness and widths › 100 mm: -1.5, +1.5 mm.

670 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD AND HARDWOOD
- General: Dimensions given on drawings and in schedules of work are finished sizes.
- Maximum permitted deviations from finished sizes:

- Sawn surfaces:
  Thickness and widths ‹ 100 mm: -1, +3 mm.
  Thickness and widths › 100 mm: -2, +4 mm.
- Further processed surfaces: -0, +1.

C51

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.

700 WOOD COMPONENTS - AS DELIVERED FINISH
- Components to be primed: Timbe vault doors and frames.

710 REUSE OF TIMBER SECTIONS/ WOOD COMPONENTS
- Sections/ components scheduled to be removed but not reused in existing locations: Agree extent of retention for reuse elsewhere in the works.
  - Treatment following removal: Refurbishment and repair as necessary.
  - Storage: Protect against damage, and store until required.
    Storage location: Off site.
- Reuse: Adapt sections/ components, as necessary, and install in agreed locations.

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: Refurbish and repair and necessary.
  - Storage: Protect against damage, and store until required.
    Storage location: Off site.
  - Reinstatement: Refit in original locations using original installation methods.
- Items unsuitable or not required for reuse: Obtain instructions regarding disposal.

730 PARTIAL REMOVAL OF EXISTING DECORATIVE/ PROTECTIVE FINISH
- Extent: Remove minimum necessary to expose damaged or decayed wood. Feather the edge of remaining coating around repair site.
- Method: Submit proposals.

750 CLEANING DIRTY OR STAINED WOOD
- Generally: Scrub with neutral pH soap and clean, warm water.
- Old varnish: Remove using mixture of turpentine (not turpentine substitute) and acetone in proportions determined by experiment, followed by washing down.

C51

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 300mm of sound wood.
- Distance from face of support to cut end of existing timber: Obtain instructions if dimension exceeds 300mm.

770 REPAIR OF COMPRESSION MEMBERS - PIECING IN
- Defective wood: Remove only decayed or defective wood. Finish cut-outs to clean, regular profiles.
- Timber inserts: Cut accurately to fit. Glue and pin in place. Lie of grain to match as closely as possible that of parent timber.

780 REPAIR OF DISTORTED TIMBER MEMBERS
- Generally: Repair to shape that member has assumed.

790 PEGS FOR MORTISE AND TENON JOINTS IN STRUCTURAL TIMBER
- Wood species: Oak.
- Condition: Dry, preferably oven 'baked' before use.
- Shape: Round and tapered.
- Second hand pegs: Do not use.
- Peg holes: Slightly offset such that when pegs are driven home, sections being joined are pulled together.

800 CONDITION OF DOWELS TO BE BONDED INTO TIMBER
- Condition at time of installation:
  - Dowels generally: Free from corrosive pitting, loose millscale, loose rust and contaminants that may adversely affect dowels, adhesive, or bond between the two.
  - Carbon steel dowels: As above, and free from corrosive pitting, loose millscale and loose rust.

820 MAKING CONNECTORED JOINTS
- Connector location: Where not shown otherwise, spacings, end and edge distances to be not less than Standard values to BS 5268-2, Section 6.
- Bolt hole: As close as practical to nominal diameter of bolt, and not more than 2 mm greater.
- Centres of bolt holes: Not more than 2 mm from positions shown on drawings.
- Assembly: Do not crush timber, deform washers or overstress bolts.

830 CRITICAL DIMENSIONS FOR FASTENERS
- Critical dimensions: As of drawings in Appendix B.

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840 FIXING FRAMING ANCHORS AND CLEATS
- Before installation: Submit details if joint geometry prevents installation to manufacturer's recommendations.
- Installation: Secure using not less than number of fasteners recommended by manufacturer.

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.

920 DATING TIMBERS USED IN STRUCTURAL REPAIRS

- Principal replacement members: Mark by carving or branding with date of repair and, when appropriate, initials of carpenter, in characters 20-25 mm high.
- Location of marks: To be agreed.

D20 EXCAVATING AND FILLING

To be read with Preliminaries/ General conditions.

GENERALLY/ THE SITE

110 SITE INVESTIGATION
- Report: See sections C10/C11.

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.

CLEARANCE/ EXCAVATING

164 TREE ROOTS
- Protected area: Do not cut roots within precautionary protection area.
  - Size of area: as noted on drawings.
- Excavation in protected area:
  - Method: as directed by the Tree Preservation Officer.
  - 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: as directed by arboriculturalist.
- Backfill: as instructed.

260 INSPECTING FORMATIONS
- Give notice: Make advance arrangements for inspection of formations for paved area and new car park.
  - Notice (minimum): 5 days.
- Preparation: Just before inspection remove the last 150 mm of excavation.
- Trim to required profiles and levels, and remove.
- Loose material: Minor compaction permitted.
- Seal: Within 4 hours of inspection, seal formations with bedding materials.

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.

D20

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.

320 RECORDED FEATURES
- Recorded foundations, beds, drains, manholes, etc: works as per section 3 of specification.
- Contaminated earth: Remove and disinfect as required by local authority.

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.

350 EXISTING WATERCOURSES
- Diverted watercourses which are to be filled: Before filling, remove vegetable growths and soft deposits.

360 EXCESS EXCAVATION
- Excavation taken wider than required:
  - Backfill: with hardcore as Clause 710.
- Excavation taken deeper than required:
  - Backfill: with hardcore as Clause 710.

DISPOSAL OF MATERIALS

415 EXCAVATED TOPSOIL REMOVAL
- General: Remove from site.

441 SURPLUS SUBSOIL
- Remove all surplus subsoil 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.

D20

454 GROUND WATER LEVEL, SPRINGS 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.

FILLING

500 PROPOSED FILL MATERIALS
- Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
  - Type and source of imported fill.
  - Proposals for processing and reuse of material excavated on site.
  - Test reports as required elsewhere.
- Timing: At least 21 days before starting filling.

510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS
- General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
  - Frozen or containing ice.
  - Organic.
  - Contaminated or noxious.
  - Susceptible to spontaneous combustion.
  - Likely to erode or decay and cause voids.
  - With excessive moisture content, slurry, mud or from marshes or bogs.
  - Clay of liquid limit exceeding 80 and/ or plasticity index exceeding 55.
  - Unacceptable, class U2 as defined in the Highways Agency 'Specification for highway works', clause 601.

D20

520 FROST SUSCEPTIBILITY

- General: Except as allowed below, 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.
- Frost-susceptible fill: May only be used:
  - At depths below the finished ground surface greater than 350mm.
  - Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
  - Where frost heave will not affect structural elements.

530 PLACING FILL

- Surfaces of excavations and areas to be filled: Free from loose soil, topsoil, organic material, rubbish and standing water.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
- Adjacent structures, membranes and buried services:
  - Do not overload, destabilise or damage.
  - Submit proposals for temporary support necessary to ensure stability during filling.
  - Allow 14 days (minimum) before backfilling against in situ concrete structures.
- Layers: Place so that only one type of material occurs in each layer.
- Earthmoving equipment: Vary route to avoid rutting.

D20

710 HARDCORE FILLING

- Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111, and in any one layer only one of the following:
  - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
  - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - Crushed non-expansive slag.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Well-burned non-plastic colliery shale.
  - Natural gravel.
  - Natural sand.
- Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

F10 BRICK/ BLOCK WALLING

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

230 RECLAIMED BRICKS
- Reclaimed bricks: To match existing
  - Condition: Sound, free from mortar and deleterious matter.
  - Supplier/ Source: to be approved.
  - Format: To match existing/to suit size of opening.
- Mortar: As section Z21.
  - Mix: 1:3 ready mixed non hydraulic lime putty: sand.
  - Additional requirements: in accordance with structural engineers instructions.
- Bond: To match existing.
- Joints: Flush (slightly recessed 1mm behind face of adjoining masonry following all irregularities to form neat joint).

WORKMANSHIP GENERALLY

430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS
- Bricks 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 on a full bed.
  - 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.

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.

F10

645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW
- Jointing: Struck flush as work proceeds.

665 POINTING TO WALLING TYPE F10/230
- Joint preparation: Remove debris. Dampen surface.
- Mortar: As section Z21.
  - Standard: BS EN 998-2
  - Mix: 1:3 ready mixed non hydraulic lime putty: sand.
- Profile: Point leaving mortar flat, rough surface recessed 1mm behind face of adjoining masonry following all irregularities.

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.

740 FINISHED MASONRY WORK REFERENCE PANELS
- General: Before proceeding to construct the following walling types, construct panels as specified. Give notice when panels are dry.
- Selection masonry units: Reasonably representative of the average quality of the whole order to be delivered.
- Panel types:
  - Walling type: F10/230.
    Location: In good natural light.
    Size: 1.5 x 1.5m

F10

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.

F30 ACCESSORIES/ SUNDRY ITEMS FOR BRICK/ BLOCK/ STONE WALLING

To be read with Preliminaries/ General conditions.

160 AIR BRICKS IN EXTERNAL WALLING

- Manufacturer: cast iron air brick company tel: 01507 602004
- Product reference: to match original
- Apertures: Decorative heavyweight or to match original
- Work sizes: 215mm x 65mm x 50mm

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.

650 POINTING IN FLASHINGS
- Joint preparation: Free of debris and lightly wetted.
- Pointing mortar: As for adjacent walling.
- Placement: Fill joint and finish flush.

660 PINNING UP TO SOFFITS
- Top joint of loadbearing walls: Fill and consolidate with mortar.

PROPRIETARY SILLS/LINTELS/COPINGS/DRESSINGS

721 NATURAL STONE SILLS LAID IN HYDRAULIC LIME:SAND MORTAR
- Standard: To BS 5642-1.
- Manufacturer: Albion stone plc – tel: 01737 771772.
  - Product reference: purpose made to match existing.
- Dimensions: As shown on drawings/to match existing.
- Finish: Portland (to be approved – samples to be provided).
- Mortar for bedding/ jointing: Hydraulic lime:sand as section Z21.
- Mix: NHL 3.5.
- Joints: Flush.
- Bedding one piece sills: Leave bed joints open except under end bearings and masonry mullions. On completion, point to match adjacent work.

F30

761 NATURAL STONE COPINGS LAID IN HYDRAULIC LIME:SAND MORTAR

- Standard: To BS 5642-2.
- Manufacturer: Albion Stone plc.
  - Product reference: purpose made to match existing.
- Dimensions: As shown on drawings.
- Finish: Twice weathered and throated .
- Mortar for bedding/ jointing: Hydraulic lime:sand as section Z21.
  - Sand source/ type: silver sand.
  - Mix: NHL3.5
- Joints: Full and finished flush.
- Placement: Lay on a full bed of mortar to line and level.

G20 CARPENTRY/ TIMBER FRAMING/ FIRST FIXING

To be read with Preliminaries/ General conditions.

GENERAL INFORMATION/REQUIREMENTS

105 TIMBER PROCUREMENT

Timber (including timber for wood based products):Obtained from well managed forests/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, or
- Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

150 STRENGTH GRADING OF TIMBER

- Grader: A company currently registered under a third party quality assurance scheme operated by a certification body approved by the UK Timber Grading Committee.

160 GRADING AND MARKING OF SOFTWOOD

Timber of a target/finished thickness less than 100 mm and not specified for wet exposure: graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).

- Timber graded undried (green) and specified for exposure conditions to be clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections to be re-graded to approval and marked accordingly.

210 GRADED SOFTWOOD FOR POSTS

- strength graded to BS 4978 or BS EN 14081-1 or other national equivalent and so marked.
- Strength class to BS EN 338: SC4
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8.
- Type/desired service life: 60 years
- Moisture content at time of erection: As clause 450.

G20

230 GRADED SOFTWOOD FOR STRUCTURAL TIMBERS GENERALLY
- Strength graded to the appropriate standard or rules for the specified grade and so marked.
- Grade: SC4
- Preservative treatment: As section Z12 and British Wood Preserving and
- Damp-proofing Association Commodity Specification C8.
- Type/desired service life: 60 years.
- Moisture content at time of erection: As clause 450.
- To include rafters, joists, purlins and collars and structural partitions.

270 UNGRADED SOFTWOOD FOR FRAMING AND NON LOAD BEARING USE
- Moisture decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: sawn
- Preservative treatment: As section Z12 and British Wood Preserving and
- Damp-proofing Association Commodity Specification C8.
- Type/desired service life: 60 years.
- Moisture content at time of erection: As clause 450.

275 WROT TIMBER FOR FASCIAS & OTHER LOCATIONS
- Quality of timber and fixing: To BS 1186: Part 3
- Species: Whitewood
- Class: 2
- Moisture content at time of fixing: 13 to 19%.
- Preservative treatment: As section Z12 and British Wood Preserving and
- Damp-proofing
- Moisture content at time of erection: As clause 450

WORKMANSHIP GENERALLY

401 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND POPLAR TIMBER
- Dimensions: on drawings are target sizes as defined in BS EN 336.
- The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 5.3:
- Tolerance class 1 (T1) for sawn surfaces.
- Tolerance class 2 (T2) for further planed surfaces.

402 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD TIMBER
- Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes: As stated in BS EN 1313: Part 1
- Clause 6 for sawn sections.
- Clause NA.2 for further processed sections.

G20

403 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL HARDWOOD TIMBER
- Dimensions in this specification and shown on drawings are finished sizes.
- Maximum permitted deviations from finished sizes to be as stated in BS EN 1313-2:
- Clause 6 for sawn sections.
- Clause 8.3 for further processed sections.

420 WARPING OF TIMBER:
The amount of bow, spring, twist and cup in a piece of timber of specified grade must not exceed the limits set down in BS 4978 or BS EN 14081-1 for softwood or BS 5756 for hardwood.

430 SELECTION AND USE OF TIMBER
- Do not use timber members damaged, crushed or split beyond the limits permitted by their grading
- Ensure that notches and holes are not so positioned in relation to knots or other defects that the strength of members will be reduced.
- Do not use scarf joints, finger joints and splice plates without approval.

440 PROCESSING TREATED TIMBER
- Carry out as much cutting and machining as possible before treatment.
- Retreat all treated timber which is sawn along the length, ploughed, thickness, planed or otherwise extensively processed.
  Treat timber surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended by main treatment solution manufacturer.

450 MOISTURE CONTENT of timber at time of erection to be not more than:
- Covered in generally unheated spaces: 24%.
- Covered in generally heated spaces: 20%.
- Internal in continuously heated spaces: 20%.

510 PROTECTION
- Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- Store timber and components under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.
- Arrange sequence of construction and cover timber as necessary during and after erection to ensure that specified moisture content is not exceeded.
- Keep trussed rafters vertical during handling and storage.

520 SEAL exposed end grain of the following with clear end grain sealer before delivery to site.

G20

530 PAINTED FINISHES
- Structural timber which is to be painted to be primed as specified before delivery to site.

540 CLEAR FINISHES
- Structural timber to be clear finished, to be kept clean and first coat of specified finish applied before delivery to site.

550 EXPOSED TIMBER
- Prevent damage to and marking of surfaces and arises of planed structural timber which will be exposed to view in completed work..

JOINTING TIMBER

570 JOINTING/ FIXING GENERALLY
- Where not specified otherwise, select fixing and jointing methods and types, sizes and spacings of fasteners in compliance with section Z20. Fasteners to comply with relevant British Standards.

571 NAILED JOINT: Use not less than two rails and approved screw nailing unless specified otherwise. Drive nails fully in without splitting or crushing the timber.

572 SCREWED JOINTS: accurately located and pre-drill holes. The hole to be shank to be of the same diameter and the pilot hole to be about half the diameter of the shank.

- Insert screws with a screwdriver, do not hammer. The too of countersunk screws to be not more than 1mm below the surface of the timber.

575 WASHERS: Plain to BS 4320, spring to BS 4464. Material and finish to match bolts. Dimension when secured directly on timber surfaces unless specified otherwise.

580 FRAMING ANCHORS
- Manufacturer and reference(s) Bat type AL+C
- Material/ finish: mild steel/galvanised.
- Fix anchors securely using not less than the number of nails recommended by the anchor manufacturer.
- Nails to be not less than 30 x 3.75 mm galvanized or sherardized square twist
- unless otherwise recommended.

G20

630 BOLTED JOINTS
- Locate holes accurately and drill to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- Place washers under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
- Tighten bolts so that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
- Check: at agreed regular intervals up to Practical Completion and tighten as
- Necessary to prevent slackening of joints.

770 ADDITIONAL SUPPORTS
- Where not shown on drawings, position and fix additional studs, noggings or battens for appliances, fixtures, edges of sheets, etc. in accordance with manufacturers' recommendations.
- All additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

780 WALL PLATES: Ensure that wall plates are:
- Positioned and aligned to give the correct span and level for trusses, joists, etc.
- Fully bedded in fresh mortar.
- In lengths of not less than 3 m with half lap joints.

784 INSTALLING JOISTS GENERALLY
- Position at equal centres not exceeding designed spacing and true to level.
- Installed bowed joists with positive camber.
- Position end joists approximately 50 mm from masonry walls.

786 INSTALLING JOISTS ON HANGERS
- Bed hangers directly on and hard against supporting construction. Do not use packs or bed on mortar.
- Cut joists to leave not more than 6 mm gap between ends of joists and back of hanger.
- Rebate joists to hangers with a nail in every hole.

795 TRIMMING OPENINGS
- When not specified otherwise, trimmers and trimming joists to be not less than 25 mm wider than general joists.

G20

830 LATERAL RESTRAINT STRAPS
- Manufacturer and reference: BAT M305
- Material/ finish: mild steel galvanised.
- Size: not less than 30 x 5 mm cross section, 150 mm cranked end and 1200 mm long.
- Fix straps to top of joists/ rafters/ ties at not more than 900mm centres and as shown on drawings.
- Ensure that cranked end cast into brickwork with concrete pad.
- Fix noggings and packs beneath straps which span joist/ rafters/ ties running
- parallel to wall. Noggings and packs to fit tightly, be not less than three quarters of joist/rafter/tie depth and at least 38 mm thick.
- Notch joists so that straps fit flush with surface. Do not notch rafters/ ties.
- Fix straps to joists/rafters/ties with not less than four 50 mm x 8 gauge sherardized countersunk screws per strap, evenly spread.

840 STRUTTING
- Type: One of the following:
  - Herringbone strutting: At least 38 x 38 mm softwood.
  - Solid strutting: At least 38 mm thick softwood and at least three quarters of joist depth.
- Fixing: Between joists as follows:
  - Joist spans of 2.5 to 4.5 m: One row at centre span.
  - Joist spans over 4.5 m: Two rows equally spaced.
  - Strutting must not project beyond top and bottom edges of joists.
- Outer joists: Blocked solidly to perimeter walls.
- Where strengthening existing floors allow for taking up existing floor boarding to facilitate works and refix on completion.
- Fixing of strutting - tightly wedged between floor joists and nailed thereto.

ROOF STRUCTURE REPAIRS

860 RAFTER RENEWAL: Strip out defective rafters as instructed by CA and renew using 50mm x same depth as adjoining softwood treated rafter notched over existing wallplate and spiked thereto.

870 WALLPLATE REPAIR: strip out section of defective wallplate and renew using pre treated softwood plate size to match existing, bedded on lead cored bituminous felt

dpc, scarfed into existing and bolted to existing structure using coach bolts and galvanised straps. Refix rafters and all other timbers thereto.

880 SOFTWOOD STRUTS: where specified.
- Provide and build in pair 125 x 50mm pre treated softwood struts between purlin and central spine partition, notched and spiked thereto.

G20

890 SOFTWOOD COLLARS: where specified.
- Provide and build in pre treated softwood collar notched over purlin and securely spiked thereto.

900 EAVES SOFFIT VENTILATORS:
- Manufacturer and reference: to be approved by CA
  Type: circular
  Colour: white
- Fix ventilators in accordance with manufacturer's recommendations to provide the equivalent of a continuous opening of not less than 600 mm for full length of eaves.
- Ensure that ventilators are not blocked by insulation at eaves.

910 EAVES SOFFIT VENTILATION:
- Fix soffit board(s) to leave a continuous ventilation opening not less than 10mm wide for full length of eaves.
- Fix a 3 to 4 mm mesh screen across the opening to prevent large insect entry.
- Ensure that the ventilation path is not blocked by insulation at eaves.

960 FASCIA/BARGE/SOFFIT REPAIRS
- Material: softwood
- Colour: white/black to match existing
- Size - to match existing
- Support timber - softwood to provide adequate support.
- Piece into repair new sections to match existing.

H31 METAL PROFILED/ FLAT SHEET CLADDING/ COVERING

To be read with Preliminaries/General conditions.

TYPE(S) OF SYSTEM/EQUIPMENT

120 Metal Roof Walkway

Latchways Roof Walkway and Access Systems

Roof access walkway

Manufacturer: Latchways plc., Hopton Park, Devizes Wiltshire SN10 2JP Tel: +44 (0)1380 732700 Fax: +44 (0)1380 732701 E-mail: spec@latchways.com Web: www.latchways.com
Product reference: Latchways WalkSafe stepped system and Access System
Components:
Walkway surface: Anti-slip PVC-U planks
Colour: Brown
Support members: 50mm PVC-U cushion bearers.
Fixing: Kalzip Standing Seam non-penetrative fixing clamp

- Latchways WalkSafe has been awarded Agrément Certificate No 99/3608.

- The Health and Safety Executive recommends a minimum width of 430mm, or 600mm if materials are to be carried along a walkway.

- The bespoke fixing kit supplied by Latchways allows non-penetrative fixing of the walkway panels. Designed to be used across the seams at an angle up to 6 degrees before levelling is required and up to 15 degrees running parallel to the seams.

- The walkway can also be supplied in a step format when required to be running up or down a roof slope greater than 15 degrees.

- Consult Latchways Plc. technical literature for details. Latchways can also provide a design and specification advisory on the most appropriate walkway solution for each specific application and it is recommended that they are consulted early in the design process.

H62 NATURAL SLATING

To be read with Preliminaries/ General conditions.

TYPES OF SLATING

110 ROOF SLATING AS SCHEDULED

- Base: Existing rafters at approx 450 mm centres.
- Pitch: To be not less than 20°.
- Underlay: DuPont Tyvek Supro breathable underlay felt. Lay as clause 240, directly over rafters.
  Minimum horizontal lap: 150 mm.
- Counter battens: As clause 245, to match existing (allow 38x25mm).
  Fixing: As clause 255, using 65 mm x 3.35 mm galvanised nails.
- Battens: As clause 245, size 38 x 19mm for rafters not exceeding 45°.
  Fixing: As clause 255, using 65 mm x 3.35 mm galvanised smooth round nails.
- Slates: To BS 680: Part 2.
  Supplier and reference: Blue Natural Welsh slate (samples to be provided for approval by the Conservation Officer prior to ordering)
  Type: To BS 680: Part 2.
  Grade A 5 mm thick.
  Size: To match existing.
  Fixing: As clause 275, minimum end lap.
  45° = 65mm.
  30-45° = 75mm.
  25-30° = 100mm.
  20-25° = 130mm.

120 VERTICAL SLATING AS SCHEDULED

- Base: 19mm external quality WBP plywood.
- Underlay: reinforced to BS 8747 type 1F.
  Lay as clause 240, directly over boarding including counter battens.
  Minimum horizontal lap: 150mm.
- Battens: As clause 245, size 38 x 19mm.
  Fixing: As clause 265, using 65 x 3.35 mm galvanised nails.
- Slates: To BS 680: Part 2
  Supplier and reference: Natural New Welsh blue slates.
  Type: To BS 680: Part 2.
  Grade: A 5.5 mm thick.
  Size 610 x 305 mm or to match existing.
  Fixing: As clause 275, minimum end lap: 75 mm.

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200 ROOFING GENERALLY

- Where roof coverings are to be renewed, strip off existing roof coverings and clear away debris.
- Following remedial works to timbers, clean down rafters, de-nail and leave ready to receive roof coverings.

205 REPLACEMENT OF EXISTING COVERINGS

- Roof must be left watertight at the end of each working day.
- Provide and maintain temporary waterproof covering to ensure that there is no damage to the existing base and building. Note: a temporary roof must be provided.

SLATING GENERALLY

210 BASIC WORKMANSHIP: Keep slates clean and dry until laid. Set out to give true lines and regular appearance, fitting neatly at all edges, junctions and features. Fix slate roofing to make the whole sound and weathertight at the earliest opportunity. Repair any defects as quickly as practicable to minimise damage and nuisance. Keep gutters and pipes free of debris and clean out at completion.

220 EXISTING NATURAL SLATING: Carefully remove slates, battens, underlay, etc. the minimum necessary to carry out alterations, ensuring minimum disturbance of adjacent slates.

240 UNDERLAY

- Handle carefully to prevent tears and punctures and repair with adhesive tape any which do occur.
- Lay parallel to eaves, maintaining consistent tautness to minimise gaps.
- Vertical laps not less than 100 mm wide, coinciding with supports.
- Horizontal laps of the dimensions specified. Fix with galvanised steel, copper or aluminium extra large head felt nails.
- Where pipes and other components penetrate the underlay, use proprietary underlay seals or cross out neatly and accurately and turn flanges up to give a tight, water shedding fit.
- Ensure that underlay does not obstruct roof ventilation.

245 BATTENS/ COUNTERBATTENS

- Sawn softwood, species to BS 5534: Part 1, clause 11.3.
  Grading: To BS 4978, clause 5 or 9.
  Moisture content: not more than 22% at time of fixing.
- Preservative treatment: CCA or OS double vacuum as section Z 12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8.
- Fix as specified below.

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255 COUNTERBATTENS ON RIGID SARKING

- Fix at centres coinciding with rafters/trusses marking positions of latter at top edges and eaves before laying underlay.
- Fix through rigid sarking into rafters/trusses at not more than 300 mm centres.

265 BATTENS ON TIMBER SUPPORTS:

- To be in straight horizontal lines, aligned on adjacent areas, with no batten less than 1200 mm long.
- Joints to be square cut, buffed centrally on supports and must not occur more than once in any group of four battens on any one support.
- Provide an additional batten where an unsupported lap in the underlay occurs between battens.
- Fix each batten to each support, splay nailing at ends.

275 SLATE FIXING

- Lay with an even overall appearance with slightly open butt joints and tails of slates aligned.
- Use slates of consistent thickness in any one course laid with thicker end as tail.
- Use extra wide slates at ends of courses to maintain bond and ensure that cut slates are as large as possible. Do not use half slates or slates less than 150mm wide.
- Centre fix each slate with two copper nails to BS 1202: Part 2, 2.65 x 25mm long for 19 mm thick battens, 30 mm long for 25 mm thick battens, through countersunk holes 20-25 mm from side edges. Fix slates wider than width and a third with three nails.
  At sprocketed changes of pitch increase length of nails as necessary to ensure full penetration of battens.

290 MORTAR BEDDING/ POINTING

- Mortar: As section Z21, St Astier NHL 5.
  Do not use in wet or frosty conditions or when imminent.
- Concrete and clay tile accessories to be bedded must be wetted and surface water allowed to drain before fixing.
- Finish neatly as work proceeds and remove any residue.

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ROOF SLATING EDGES/ JUNCTIONS/ FEATURES

305 GENERALLY

- Form using the specified fittings and accessories; do not improvise without approval.
  Cut slates: Cut only where necessary, with an appropriate tool, to give neat, clean fitting joints and straight, clean edges.
- Fix edge slates and fittings securely to neat, true lines.
- Ensure that all flashings (specified in another section) are fixed with or immediately after the slating, and are neatly dressed down..

325 FIRE SEPARATING WALLS

- Ensure that separating wall is cut on the rake 25 mm to 50 mm below top of adjacent rafters.
- Fill space over top of the wall with layer(s) of mineral fibre quilt so that, when underlay and battens are laid it is lightly compressed. Tuck edges of quilt between edges of wall and adjoining rafters.
- Lay 300 mm wide pads of mineral fibre quilt thick enough to seal all gaps and cut to fit snugly between battens. Fix in position with continuous self-adhesive tape from ridge to eaves before slating.
- At boxed eaves completely seal air paths in the plan of the separating wall with wire reinforced mineral fibre, 50 mm thick, nailed to rafter and carefully cut to shape.

445 MORTAR BEDDED VERGES WITH BEDDED UNDERCLOAK

- Ensure that gable wall is brought up to correct level.
- Bed undercloak of slates sloping away from and projecting 40-50 mm beyond face of wall on mortar identical to that used in gable walling and point neatly. Undercloak to be level with underside of slating battens.
- Carry underlay over undercloak and trim off 25 mm short of verge edge.
  - Projection beyond face of wall: 38-50 mm.
  - Bedding: On mortar identical to that used in gable walling.
- Bed edge of verge slates flush with undercloak on 75 mm wide bed of mortar as clause 290. Point to a neat, struck weathered profile giving 5 mm overhang of verge slates. Ensure mortar is not displaced or cracked by mechanical fixing of slates.

455 MORTAR BEDDED VERGE WITH NAILED UNDERCLOAK

- Ensure that gable wall is brought up to level of underside of slating battens..
- Nail undercloak of slates on top of underlay sloping away from roof and projecting 40 mm beyond face of brickwork.

- Bed edge of verge slates flush with undercloak on 75 mm wide bed of mortar as clause 290. Point to a neat struck weathered profile giving 5 mm overhang of verge slates. Ensure mortar is not displaced or cracked by mechanical fixing of slates.

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555 MORTAR BEDDED TILE HIP

- Lay a strip of underlay at least 600mm wide over hip, overlapping general underlay.
- Hip irons: To BS 5534, Part 1, clause 12 but of stainless steel, fixed to hip rafters with stainless steel screws.
- Hip tiles: Red clay.
- Cut slates to fit closely at junction. Make weathertight with edges and joints of hip tiles solidly bedded in mortar as clause 290.
- Shape first hip tile neatly to align with corner of eaves and fill end with mortar and slips of tile finished flush.

615 LEAD VALLEY

- Ensure that valley board, plywood valley sheathing and tilting fillets provide full support for lead gutter (specified in another section).
- Cut underlay to rake and dress over tilting fillets to lap onto lead gutter. Ensure that underlay is not laid under lead.
- Cut extra wide slates neatly to form a gap 80 mm wide centred on gutter.

635 MITRED VALLEY

- Ensure that bearers or boards provide continuous support for ends of slating battens on each side of valley.
- Cover valley with a strip of underlay 1mm wide, under lapping general underlay.
- Cut extra wide slates and interleave with lead soakers (specified in another section) to form straight, weathertight, close mitred junction. Fix soakers by nailing to battens at top edge.
  Wide and / or extra long slates as necessary to maintain bond and specified lap.

660 SIDE ABUTMENT

- Turn underlay at least 100 mm up abutment.
- Cut slates as necessary and interleave with lead soakers (specified in another section) to form a close weathertight abutment. Fix soakers by turning down over head of each slate.
- Ensure that stepped lead apron flashing (specified in another section) is dressed closely over soakers with a lap of at least 50 mm.

670 TOP EDGE ABUTMENT

- Turn underlay at least 100 mm up abutment.
- Finish slating with head-nailed short course.
- Ensure that lead flashing (specified in another section) is dressed down close to slates to retain the top course against wind uplift.

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675 TOP EDGE VENTILATED ABUTMENT
- Ensure provision of air gap at abutment in accordance with ventilator manufacturer's recommendations.
- Finish slating with head-nailed short course.
  Abutment ventilator: Glidevale.
- Ensure that lead flashing (specified in another section) is dressed closely over the abutment ventilator and / or slates.

690 ROOF WINDOW
- Turn underlay up against window surround and cover with integral flashings / soakers all around.
- Cut slates as necessary and fit closely both sides.

740 MORTAR BEDDED TILE RIDGE
- Lay a length of underlay over ridge overlapping general underlay by not less than 150 mm.
- Finish slating with head nailed short course.
- Ridge tiles: red clay to approval of CA.
  Ridge terminals to match original.
- Make weathertight with edges and joints of ridge tiles solidly bedded in mortar as clause 290.
- Fill ends of ridges at gables with mortar and slips of tile finished flush.

780 MORTAR BEDDED TILE MONO-RIDGE
- Carry underlay over apex by at least 150 mm.
- Finish slating with a head nailed short course to maintain gauge.
- Mono-ridge tiles: red clay to match existing.
- Make weathertight with sloping edge and joints solidly bedded in mortar as clause 290, vertical face fixed to ridge board with stainless steel screws with neoprene washers-.
- Fill ends of ridges at gables with mortar finished flush.

810 JUNCTIONS: Fix a lead saddler (specified in another section) to provide a weathertight detail at each:
At brickwork junctions to dormers.

840 ROOF SLOPE VENTILATORS
- Ventilator slates: natural slate in line vents to approval of CA.
- Fix with underlay seal (if any), to ventilate roof space, as follows to meet Building Regulation requirements positioned both at high and low level if no eaves vents are present at 2m centres to each slope.

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VERTICAL SLATING EDGES/ JUNCTIONS

910 BOTTOM EDGE
- Fix timber fillet to base to tilt eaves course slates into correct vertical plane.
- Dress underlay over timber fillet.
- Dress a lead flashing (specified in another section) over timber fillet, under lapping underlay and secure behind the bottom slating batten.
- Fix additional battens for under eaves course.
- Fix slates with tails neatly aligned.

930 SIDE ABUTMENT
- Chase the abutment wall and insert a stepped lead flashing (specified in another section). Return flashing at least 75 mm behind slating, overlapping underlay and battens and turn back to form a vertical well.
- Cut slates (never less than 150 mm wide) neatly to abutment.

950 ANGLES WITH SOAKERS
- Cut slates (never less than 150 mm wide) to form a straight, close mitre at angle. Interleave with lead soakers (specified in another section) fixed by nailing to battens at top edge, to form a weathertight junction.

960 JUNCTION WITH ROOF VERGE
- Fix additional slating batten parallel to and below verge.
- Splay cut extra wide slates at ends of courses to angle of verge rake. Fix to batten with cut edge parallel to and below verge.
- Cut adjacent slates to fit neatly.

H71 LEAD SHEET COVERINGS/FLASHINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF LEADWORK

110 LEAD ROOFING TO FLAT ROOF AREAS: where indicated including dormer roofs
- Base: new plywood decking - 25mm external quality WBP
- Underlay: Building Paper, BS:1521 Class A.
- Type of lead: milled as clause 550, code 5
- Longitudinal joints: wood cored rolls as clause 740
  Spacing: 600mm
- Eaves detail: cut off roll with welted apron, bossed end to wood cored roll
- Cross joints: with splash lap as clause 780
  Spacing: as existing
- Other requirements: upstand and flashings to roof access hatch where applicable.

150 LEAD DORMERS:
- Base: 18mm external quality WBP plywood
- Underlay: Building Paper, BS:1521 Class A.
- Type of lead: milled as clause 550, code 5
- Joints in top/sill: wood cored rolls
  Joints in cheeks: welted joints
- Intermediate fixings in cheeks: None - laps only
  Note: Dormer cheeks to be renewed in natural Welsh slate where existing.

210 LEAD GUTTER LINING:
- Base: 18mm external quality exterior WBP plywood
- Underlay: Building Paper, BS:1521 Class A.
- Type of lead: milled as clause 550, code 6
- Longitudinal joints: rolls
  Spacing: LDA guidelines not to be exceeded.
- Cross joints: Drips as clause 780
- Steps: Minimum 60mm.

220 PITCHED LEAD VALLEY GUTTER LINING:
- Underlay: Building Paper, BS:1521 Class A.
- Type of lead: milled as clause 550, code 5 in lengths not exceeding 2000mm and with laps of not less than 150 mm.
- Fixing: Dress lead sheet over, and beyond, tilting fillets and welt edges. Nail top edge of each sheet. Dress bottom end neatly into eaves gutter.

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225 PITCHED LEAD VALLEY GUTTER LINING:
- Underlay: Building Paper, BS:1521 Class A.
- Type of lead: milled as clause 550, code 5 in lengths not exceeding 2000mm and with laps of not less than 150 mm (to LDA guidelines).
- Fixing: Dress lead sheet into shallow valley box gutter. Nail top edge only of each sheet. Dress bottom end neatly into eaves gutter. Dress lead roofing sheets over each side of gutter lining, forming laps of not less than 100 mm.

310 APRON FLASHINGS TO DORMERS
- Lead: Code 4 in lengths not exceeding 1000 mm.
- End to end joints: Laps of not less than 100 mm.
- Dimensions:
  Upstand: Not less than 75 mm.
  Cover to abutment: Not less than 150 mm.
- Fixing: copper nibbed shanked nails

320 COVER FLASHINGS GENERALLY
- Lead: Code 4 in lengths not exceeding 1200 mm.
- End to end joints: Laps of not less than 100 mm.
  Cover to roof: Overlap to upstand of not less than 75mm
- Fixing: Lead wedge at every course.

329 SOAKERS AND STEP FLASHINGS GENERALLY
- Soakers:
  Lead: Code 3 cut and dressed to shape for fixing by roofer.
  Dimensions:
  Length: Slate/tile gauge + lap + 25 mm.
  Upstand: Not less than 75 mm.
  Underlap: Not less than 100 mm.
- Step flashings:
  Lead: Code 4 in lengths not exceeding 1000 mm.
  End to end joints: Laps of not less than 100 mm.
  Cover : Overlap to soaker upstands of not less than 65 mm.
  Fixing: Lead wedges at every course.

350 LEAD BACK GUTTERS TO CHIMNEYS:
- Lead: code 5 in length not exceeding 1500mm
  Fixing: fix in position before slating fixed as 320 with lead dressed 200mm up under slate extending 150mm around gullies.

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360 CHIMNEY FLASHINGS:

- Front apron:
  Lead: Code 4
  Dimensions:
  Length: Width of chimney plus not less than 150 mm underlap to each side flashing.
  Upstand: Not less than 75 mm.
  Cover to roof: Not less than 150 mm.
  Fixing: Lead wedges into bed joint.
- Soakers:
  Lead: Code 3 cut and dressed to shape for fixing by roofer.
  Dimensions:
  Length: Slate/tile gauge + lap + 25 mm.
  Upstand: Not less than 75 mm.
  Underlap: Not less than 100 mm.
- Step flashings:
  Lead: Code 4 in lengths not exceeding 1500 mm.
  End to end joints: Laps of not less than 100 mm.
  Front end: Turn 75 mm around chimney over apron.
  Cover: Overlap to soaker upstands of not less than 65 mm.
  Fixing: Lead wedges at every course.
- Back gutter:
  Lead: Code 4
  Dimensions:
  Length: Width of chimney plus not less than 100 mm overlap to each side flashing.
  Upstand: Not less than 100 mm.
  Gutter sole: Not less than 150 mm.
  Cover up roof not less than 225 mm.
- Back gutter cover flashing:
  Lead: Code 4
  Dimensions:
  Length: Width of chimney plus not less than 100 mm overlap to each side flashing.
  Cover: Overlap to back gutter upstand of not less than 75 mm.
  Fixing: Lead wedges into bed joint.

365 CHIMNEY DAMP PROOF COURSE:

- Position: Level with top edge of front apron
- Lead: Code 4 fully coated with high build bitumen based paint on surfaces to be embedded.

- Dimensions: Plan area of chimney plus laps on all perimeters: turned up 50 mm against stack in roof void, turned down 50 mm over stack externally, through flue lining and turned up 25 mm all round internally.
- Bedding: Lay on a thin even bed of wet mortar. Without delay bed next layer of overlying construction and finish joint neatly.

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370 LEAD SLATES:
- Lead: Code 4 cut and dressed to shape for fixing by roofer.
- Dimensions:
  Base: Not less than 400 x 400 mm
  Upstand: Not less than 150 mm, to fit pipe and at angle to suit roof pitch.

380 VERTICAL TILING/SLATING BOTTOM EDGE LASHINGS:
- Lead: Code 4 in lengths not exceeding 1500 mm.
- End to end joints: Laps of not less than 100 mm.
- Width to be adequate for underlap to underlay, dressing over tilting fillet, and welted drip or straight cut bottom edge.
- Cut and dress to shape for fixing by tiler/slater.

385 VERTICAL TILING/SLATING TOP EDGE FLASHINGS:
- Lead: Code 4 in lengths not exceeding 1500 mm.
- End to end joints: Laps of not less than 100 mm.
- Width to be adequate for underlap to abutment and dressing down over tiles/slates not less than 150 mm.
- Cut and dress to shape for fixing by tiler/slater.

390 VERTICAL TILING/SLATING SIDE ABUTMENT STEP FLASHINGS:
- Lead: Code 4 in lengths not exceeding 1500 mm.
- End to end joints: Laps of not less than 100 mm.
- Width to be adequate for not less than 75 mm underlap with welted edge to tiles/slates and not less than 50 mm cover to abutment.
- Cut and dress to shape for fixing by tiler/slater.

395 VERTICAL TILING/SLATING ANGLE SOAKERS:
- Lead: Code 3.
- Dimensions:
  Length: Tile/slate gauge + lap + 25 mm
  Underlaps: Not less than 150 mm at any point.
- Cut and dress to shape for fixing by tiler/slater.

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410 RIDGE/HIP ROLLS TO LEAD ROOFS:

- Core: Rounded timber as clause 650.
  Size: 50 x 50 mm tapering to a flat base 30 mm wide. Fix to ridge/hip board with brass or stainless steel screws at not more than 600 mm centres.
- Capping: Lead of the same code as the roof, in lengths not exceeding 1200mm. Intersections with rolls in the roofing to be lead welded.
  Laps: Not less than 150 mm for ridges, 100 mm for hips.
  Cover: Dress roofing sheets up roll. Wings of capping to extend not less than 75 mm on to roof.
- Fixing: Nail each sheet at under lapping end and secure wings with one copper or stainless steel clip as clause 720 per roofing bay and at each lap.

GENERAL REQUIREMENTS/PREPARATORY WORK

510 WORKMANSHIP GENERALLY:

- Cut, joint and dress lead neatly and accurately, to provide fully waterproof coverings/flashings, free from ripples, kinks, buckling and cracks.
- Comply with BS 6915 and current good practice as described in the latest editions of 'The Lead Sheet Manual' published by the Lead Sheet Association, unless specified or agreed otherwise.
- Do not use scribers or other sharp instruments to mark out lead.
- Use solder only where specified.
- Ensure that finished lead work is fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.

516 IN SITU LEADWELDING: is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

520 LAYOUT: agree setting out of joints, drips and laps with the CA before commencing work.

550 LEAD SHEET: Colour marked for thickness and weight and of the type and code specified:

- Milled, to BS 1178, or
- Machine cast, to BS 1178 in respect of general quality, chemical composition and tolerance on thickness, or
- Sand cast, from lead complying with BS 1178 and free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes. Thickness(es) as BS 1178 but with a tolerance of +/-10%.

570 EXISTING LEAD TO BE REMOVED will become the property of the Contractor. The scrap value of such lead must be estimated by the Contractor, itemised separately in the tender, and set against the tender sum.

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580 REPLACEMENT OF EXISTING LEAD must be carried out in small sections at a time to reduce the risk of weather damage to a minimum. Provide and maintain temporary waterproof coverings to ensure that there is no damage to the existing base and building.

610 SUITABILITY OF BASES:
- Bases to be dry and free of dust, debris, grease and other deleterious matter.
- Laying of lead will be taken as joint acceptance by the Main Contractor and Subcontractor of the suitability of bases.

620 PREPARATION OF EXISTING TIMBER BASES: Inform CA of any defective boards and comply with instructions for replacement. Ensure that all boards are securely fixed. Punch in any protruding fastenings and plane or sand as necessary to achieve an even surface.

650 TIMBER FOR USE WITH LEADWORK:
- Planed, free from wane, pitch pockets, decay and insect attack except pinhole borers.
- Moisture content: Not more than 22% at time of covering.
- Preservative treatment: CCA as section Z12 and British Wood Preserving Association Commodity Specification C8.

FIXING/JOINTING LEAD

710 HEAD FIXING LEAD SHEET:
- Where not specified otherwise, secure top edge of lead sheets with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
- Sheets less than 500 mm deep may be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

715 FIXINGS:
- Where not specified otherwise, fix lead sheet to timber substrates with:
  Copper clout nails to BS 1202:Part 2, table 2, with annular ring, helical ring or serrated shank, length not less than 20 mm, shank diameter not less than 3.35 mm and head diameter not less than 8 mm, or
  Stainless steel (austenitic) clout nails with annular ring, helical ring or serrated shank, length not less than 19 mm, shank diameter not less than 2.65 mm and head diameter not less than 8 mm.

- Where not specified otherwise, fix lead sheet to concrete or masonry substrates with:
  Brass or stainless steel screws to BS 1210, table 3, length not less than 19 mm and diameter not less than 3.35 mm, with washers of the same material and plastics plugs of length and diameter to suit screws.

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720 CLIPS:
- Generally 50 mm wide where not specified to be continuous, length to suit detail.
- Lead clips to be cut from sheets of same code as sheet being secured.
- Copper clips to be cut from 2 mm thick sheet to BS 2870, temper grade 1/4H, dipped in solder if exposed to view.
- Stainless steel clips to be cut from 2 mm sheet to BS 1449:Part 2, grade 304, terne coated if exposed to view.
- Unless specified otherwise fix each clip with two fastenings not more than 50 mm from edge of lead sheet. Clips welted around edges of sheets to be turned over 25 mm.

724 CONTINUOUS CLIPS:
- Width to suit detail.
- Lead continuous clips to be cut from code 4 sheet.
- Copper continuous clips to be cut from 0.7 mm thick sheet to BS 2870.
- Stainless steel continuous clips to be cut from 0.38mm thick sheet to BS 1449:Part 2, grade 304.
- Unless specified otherwise fix at 100 mm centres. Welt edge of lead sheet around continuous clip and dress down.

730 WOOD CORED ROLL JOINTS WITHOUT SPLASH LAP:
- Core: 45 x 45 mm rounded timber as clause 650 tapering to a flat base 25 mm wide. Fix to base with brass or stainless steel countersunk screws at not more than 300 mm centres.
- Dress undercloak half way around core.
- Fix copper or stainless steel clips as clause 720, to the roll at not more than 450 mm centres. Ensure that clip fixing does not restrict thermal movement of the undercloak.
- Dress overcloak around core with edge welted around ends of clips, finishing 5 mm clear of main surface.

740 WOOD CORED ROLL JOINTS WITH SPLASH LAP:
- Core: 45 x 45 mm rounded timber as clause 650 tapering to a flat base 25 mm wide. Fix to base with brass or stainless steel countersunk screws at not more than 300 mm centres.
- Dress undercloak three quarters around core and fix with nails at 150 mm centres for a distance of about one third the length of the panel starting from the head of the sheet.

- Dress overcloak around core and extend on to main surface to form a 40 mm splash lap.

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770 WELTED JOINTS:
- Form with a 50 mm overlap, 25 mm underlap and copper or stainless steel clips as clause 720 at not more than 450 mm centres.
- Welt overlap and clips around underlap, loosely turn over and lightly dress down.

780 DRIPS WITH SPLASH LAPS:
- Dress underlap into rebate along top edge of drip and fix with one row of nails at 50 mm centres on centre line of rebate.
- Dress overlap over drip and form a 40 mm splash lap.

781 DRIPS WITH SPLASH LAPS:
- Dress underlap up full height of drip upstand. Fix to lower level base with two rows of nails 25 mm and 50 mm from face of drip, at 75 mm centres in each row, evenly spaced and staggered. Seal over nails with a soldered or lead welded dot.
- Dress overlap over drip and form a 75 mm splash lap. Secure with lead clips as clause 720, lead welded to underlap, with not less than one per bay.

790 DRIPS WITHOUT SPLASH LAPS:
- Dress underlap into rebate along top edge of drip and fix with one row of nails at 50 mm centres on centre line of rebate.
- Dress overlap over drip to just short of lower level.

JOINTING LEAD

810 FORMING DETAILS
- Method: Bossing or lead welding except where bossing is specifically required.
- Lead welded seams: Neatly and consistently formed.
  - Seams: Do not undercut or reduce sheet thickness.
  - Filler strips: Of the same composition as the sheets being joined.
  - Butt joints: Formed to a thickness one third more than the sheets being joined.
  - Lap joints: Formed with 25 mm laps and two loadings to the edge of the overlap.
- Bossing: Carried out without thinning, cutting or otherwise splitting the lead sheet.
  - Details where bossing must be used: Not applicable .

830 STANDING SEAM JOINTS
- Joint allowance: 100 mm overlap, 75 mm underlap and copper or stainless steel clips at not more than 750 mm centres.
- Forming joint: Welt overlap and clips around underlap, loosely turn over to form a standing seam of consistent cross section.

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840 WOOD CORED ROLL JOINTS WITHOUT SPLASH LAP
- Wood core:
  - Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
  - Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
- Undercloak: Dress half way around core.
- Copper or stainless steel clips: Fix to core at not more than 450 mm centres. Do not restrict thermal movement of the undercloak.
- Overcloak: Dress around core with edge welted around ends of clips, finishing 5 mm clear of main surface.

845 WOOD CORED ROLL JOINTS WITH SPLASH LAP
- Wood core:
  - Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
  - Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
- Undercloak: Dress three quarters around core.
  - Fixing: Nail to core at 150 mm centres for one third length of the sheet starting from the head.
- Overcloak: Dress around core and extend on to main surface to form a 40 mm splash lap.

847 HOLLOW ROLL JOINTS
- Joint allowance: 125 mm overcloak and 100 mm undercloak.
- Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
- Overcloak: Welt with clips around undercloak to form a roll of consistent cross section.

862 DRIPS WITH SPLASH LAPS
- Underlap: Dress up full height of drip upstand.
  - Fixing: Two rows of nails to lower level substrate, 25 mm and 50 mm from face of drip. At 75 mm centres in each row, evenly spaced and staggered. Seal over nails with a soldered or leadwelded dot.
- Overlap: Dress over drip and form a 75 mm splash lap.
  - Fixing: Lead clips, leadwelded to underlap, with not less than one per bay.

865 DRIPS WITHOUT SPLASH LAPS
- Underlap: Dress into rebate along top edge of drip.
  - Fixing: One row of nails at 50 mm centres on centre line of rebate
- Overlap: Dress over drip to just short of lower level.

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880 WELTED JOINTS
- Joint allowance: 50 mm overlap and 25 mm underlap.
- Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
- Overlap: Welt around underlap and clips and lightly dress down.

970 PATINATION OIL
- Manufacturer: Calder – Tel : 01244 390 093 .
  - Product reference: Patination Oil.
- Location: All new and existing external Lead work.
- Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

J41 REINFORCED BITUMEN MEMBRANE ROOF COVERINGS

To be read with Preliminaries/ General conditions.

620 RENEWING EXISTING COVERINGS
- Areas to be renewed: Patch repairs to areas on 1-6 Stone Buildings
- Substrate: Do not damage.
- Timing: Remove only sufficient coverings as will be renewed and made weathertight on same day.

625 REMOVING EXISTING COVERINGS
- Mechanical stripping
- Exposed substrate: Do not damage.

630 MAKING GOOD EXISTING REINFORCED BITUMEN MEMBRANE ROOF COVERING
- Existing items to be removed: Locations of new mansafe system posts as indicated in drawing no.5382-07 Rev.B
- Dust, dirt, debris, moss, plants and grease: Remove.
- New materials and accessories: Compatible with existing.
- Blisters: Star cut, dry out and rebond.
- Defective areas of bitumen membrane: Cut back to substrate and dry out. Patch level with existing covering with layers of matching bitumen membrane, lapped not less than 100 mm onto existing membrane.
- Cracked and split bitumen membrane: Cut back to substrate 150 mm wide at cracks and splits and dry out. Insert 150 mm wide strip of matching bitumen membrane, bonded to substrate at edges only. Fully bond a layer of bitumen membrane over strip, lapped minimum 100 mm onto existing bitumen membrane at edges.
- Stress failure at edge trims: Cut back bitumen membrane to substrate. Secure ends of edge trims. Patch level with existing surface with layers of matching bitumen membrane.

- Detached bitumen membrane at upstands: Repair, re-adhere and protect with additional layer of matching bitumen membrane if necessary.
- Defects at penetrations: Cut out, clean, prime and reseal.

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.

K10 PLASTERBOARD DRY LININGS/ PARTITIONS/ CEILINGS

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING

245 CEILING LINING ON TIMBER NOGGINS
- Background: New and existing joists (see section G20)
- Linings: Gyproc Wall Board Duplex (with ivory face paper finish) 15mm thickness.
  - Fixings: Drywall Timber Screws (British Gypsum). Minimum penetration 25mm. 38mm screw. Install fixings not closer than 13mm from cut edges and 10mm from bound edges (all in accordance with British Gypsum data sheet DS-003-02).
- Finishing: Skim coat plaster (see clause 680).
  - Primer/ Sealer: Not required.
  - Accessories: Galvanised steel angle and edge beads.

INSTALLATION

335 ADDITIONAL SUPPORTS
- Framing: Accurately position and securely fix to give full support to:
  - Partition heads running parallel with, but offset from main structural supports.
  - Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
  - Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

435 DRY LININGS GENERALLY

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Cutting plasterboards: Neatly and accurately without damaging core or tearing paper facing.
  - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
- Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 CEILINGS
- Sequence: Fix boards to ceilings before installing dry lined walls and partitions.
- Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.
- Two layer boarding: Stagger joints between layers.

K10

505 INSTALLING MINERAL WOOL INSULATION
- Fitting insulation: Closely butted joints and no gaps. Use fasteners to prevent slumping or displacement.
- Services:
  - Electrical cables overlaid by insulation: Sized accordingly.
  - Ceilings: Cut insulation around electrical fittings, etc.

510 SEALING GAPS AND AIR PATHS
- Location of sealant: To perimeter abutments and around openings.
  - Pressurized shafts and ducts: At board-to-board and board-to-metal frame junctions.
- Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.
  - Gaps greater than 6 mm between floor and underside of plasterboard: After sealing, fill with jointing compound.

555 FIRE STOPPING AT PERIMETERS OF DRY LINING SYSTEMS
- Material: Tightly packed mineral wool or intumescent mastic/ sealant.
- Application: To perimeter abutments to provide a complete barrier to smoke and flame.

560 JOINTS BETWEEN BOARDS
- Tapered edged plasterboards:
  - Bound edges: Lightly butted.
  - Cut/ unbound edges: 3 mm gap.

- Square edged plasterboards: 3 mm gap.
- Square edged fibre reinforced gypsum boards: 5 mm gap.

565 VERTICAL JOINTS
- Joints: Centre on studs.
  - Partitions: Stagger joints on opposite sides of studs.
  - Two layer boarding: Stagger joints between layers.

570 HORIZONTAL JOINTS
- Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.
- Two layer boarding: Stagger joints between layers by at least 600 mm.
- Edges of boards: Support using additional framing.
  - Two layer boarding: Support edges of outer layer.

580 INSULATION BACKED PLASTERBOARD
- General: Do not damage or cut away insulation to accommodate services.
- Installation at corners: Carefully cut back insulation or plasterboard as appropriate along edges of boards to give a continuous plasterboard face, with no gaps in insulation.

K10

610 FIXING PLASTERBOARD TO TIMBER
- Fixing to timber: Securely at the following centres (maximum):
  - Nails: 150 mm.
  - Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles.
  - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
  - Bound edges: 10 mm.
  - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of timber supports (minimum): 6 mm.

630 FIXING INSULATION BACKED PLASTERBOARD WITH ADHESIVE SPOTS
- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive spots and mechanical fastenings.
- Adhesive spot spacings to each board: Four vertical rows, at 400 mm centres in each row.
- Adhesive spot diameters (minimum): 25 mm.
- Mechanical fasteners: Nailable plugs in locations recommended by board manufacturer.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

- Sudden irregularities: Not permitted.
- Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.
  - Tapered edge joints:
    Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
  - External angles:
    Permissible deviation (maximum) for both faces: 4 mm.
  - Internal angles:
    Permissible deviation (maximum) for both faces: 5 mm.

670 SEAMLESS JOINTING TO PLASTERBOARDS

- Cut edges of boards: Lightly sand to remove paper burrs.
- Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of paper tape, fully bedded.
- Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
- Finishing: Apply jointing compound. Feather out each application beyond previous application to give a flush, smooth, seamless surface.
- Nail/ screw depressions: Fill with jointing compound to give a flush surface.
- Minor imperfections: Remove by light sanding.

K10

680 SKIM COAT PLASTER FINISH

- Plaster type: Thistle Board Finish Plaster (British Gypsum).
  - Thickness: 2 mm.
- Joints: Fill and tape except where coincident with metal beads.
- Finish: Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

695 INSTALLING BEADS/ STOPS

- Cutting: Neatly using mitres at return angles.
- Fixing: Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
- Finishing: After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads exposed to view.

725 REPAIRS TO EXISTING PLASTERBOARD

- Filling small areas with broken cores: Cut away paper facing, remove loose core material and fill with jointing compound.
  - Finish: Flush, smooth surface suitable for redecoration.
- Large patch repairs: Cut out damaged area and form neat hole with rectangular sides. Replace with matching plasterboard.
  - Fixing: Use methods to suit type of dry lining, ensuring full support to all edges of existing and new plasterboard.

- Finishing: Fill joints, tape and apply jointing compound to give a flush, smooth surface suitable for redecoration.

L10 WINDOWS/ ROOFLIGHTS/ SCREENS/ LOUVRES

To be read with Preliminaries/ General conditions.

GENERAL INFORMATION/ REQUIREMENTS

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.

120 SITE DIMENSIONS
- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.

125 STRIPPING OUT: Carefully strip out rooflights specified for replacement and clear away from site. Allow for making good brickwork to reveals, including removal as necessary and making good to match existing on completion.

210 TIMBER WIDNOWS: Double hung sash
- Manufacturer and reference: box sash Georgian style purpose made to match original, including upper and lower double hung sashes, 25mm thick inner and outer box linings, pulley styles, backings, pullies, weights, staff beading, parting beading, ex. 63mm ogee moulded architraves, 25mm thick glazing beadand glazing bars to match existing.
- Timber species: Redwood.
- Moisture content on delivery: 16% +/-3
- Glazing details: single glazed.
- Ironmongery/Accessories: weather sealed, pullies, chubb opening restrictors. "D" handles, locks both sides of windows to restrict opening to 100mm.
- Finish as delivered: not primed.
- Fixing: Galvanised fixing cramps at 450mm centres.
- Cill: 32mm bull nosed softwood window board.

L10

'PRODUCTS'

460 ROOFLIGHTS
- Manufacturer: The Rooflight Company (Headquarters, Manufacturing and Distribution Centre, Wychwood Business Centre, Milton Road, Shipton-Under Wychwood, Oxfordshire, OX7 6XU 01993 833155).
- Product reference: Conservation Rooflights and Plateau Rooflights (all sized to suit existing openings).
- Type:
- Frame: Aluminium.
  - Colour: Dark grey
- Kerb: incorporated in unit (B5 00A13)
- Glazing details: double glazed unit
- Fixing: Fix rooflight in place, to supporting structure, by screw, sealer cap and washer.
- Opening device: Chrome plated telescopic pole winder size to suit opening location

480 ROOF WINDOWS
- Manufacturer: The Rooflight Company (Headquarters, Manufacturing and Distribution Centre, Wychwood Business Centre, Milton Road, Shipton-Under-Wychwood, Oxfordshire, OX7 6XU 01993 833155).
  - Product reference: Conservation Rooflight
- Glazing details: Double glazed unit
- Flashings: (see section H71 320-360).
- Fixing: Galvanised steel brackets screwed to rafters and trimmers.
- Opening device: Chrome plated telescopic pole winder size to suit opening location.

INSTALLATION

710 PROTECTION 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
- Timber surfaces inaccessible after installation: Prime or seal as specified before fixing components.

750 BUILDING IN
- General: Not permitted unless indicated on drawings.
- Brace and protect components to prevent distortion and damage during construction of adjacent structure.

760 REPLACEMENT WINDOW INSTALLATION
- Standard: To BS 8213-4.

L10

765 WINDOW INSTALLATION GENERALLY
- Installation: Into prepared openings.
- Distortion: Install windows without twist or diagonal racking.

770 DAMP PROOF COURSES IN PREPARED OPENINGS
- Location: Ensure correct positioning in relation to window frames. Do not displace during fixing operations.

780 FIXING OF WOOD FRAMES
- Standard: As section Z20.
- Fasteners: Galvanised fixing cramps.
  - Spacing: When not predrilled or specified otherwise, position fasteners not more that 150mm from ends of each jamb, adjacent to each hanging point of opening lights and at maximum 450mm centres.

782 FIXING OF ALUMINIUM FRAMES
- Standard: As section Z20.
- Fasteners: galvanised fixing cramps
  - Spacing: When not predrilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

810 SEALANT JOINTS
- Sealant:
  - Manufacturer: Dow Corning.
    Product reference: 797.
  - Colour: white.
  - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 IRONMONGERY
- Fixing: 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 Practical Completion and ensure correct functioning.

L20 DOORS/ SHUTTERS/ HATCHES

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.

112 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: Forest Stewardship Council

115 FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES
- Evidence of fire performance: Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements for fire resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

120 NON FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES
- Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

150 SITE DIMENSIONS
- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: Vault doors and door to roof of no. 11 New Square.

L20

PRODUCTS

230 WOOD FLUSH DOORS (to roof no. 11 New Square) External
- Manufacturer: To be agreed
- Facings: Sanded finish primed and ready for painting
- Lippings: Concealed hardwood lipping to all sides of door.
- Preservative treatment: Required
- Finish as delivered: Primed for painting
- Glazing/ Infill details: Detailed section L40. Ensure compliance with safety requirements of BS 6262-4.

270 WOOD DOORS TO NEW SQUARE VAULTS – FRAMED, LEDGED AND BRACED
- Materials: Generally to BS EN 942.
  - Species: Softwood as table NA1
  - Appearance class: J2
- Panels: Bonding quality to BSEN 13986: 2004, Table 5
- Assembly:
  - Adhesive: Phenol based (thermosetting) adhesive, in accordance with BS EN 301
  - Joinery workmanship: As section Z10.
  - Accuracy: To BS 4787-1.
- Preservative treatment: Required.
- Moisture content on delivery: 13-19%
- Finish as delivered: Primed for painting.

330 WOOD DOOR FRAMES TO VAULT OPENINGS AND TO OPENING TO ROOF OF NO.11 NEW SQUARE
- Materials: Generally to BS EN 942.
  - Species: Softwood as table NA1
  - Appearance class: J40
- Assembly:
  - Adhesive: Phenol based (thermosetting) adhesive, in accordance with BS EN 301.
  - Joinery workmanship: As section Z10.
- Preservative treatment: Organic solvent as section Z12 and WPA Commodity Specification C5.
- Moisture content on delivery: 13-19%
- Finish as delivered: Primed for painting.
- Fixing: Plugged and screwed as Section Z20.

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: Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

L20

730 PRIMING/ SEALING
- Wood surfaces inaccessible after installation: Primed or sealed as specified before fixing components.

740 CORROSION PROTECTION
- Surfaces to be protected:
- Protective coating: Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
  - Timing of application: Before fixing components.

760 BUILDING IN
- General: Not permitted unless indicated on drawings.

770 DAMP PROOF COURSES ASSOCIATED WITH BUILT IN WOOD FRAMES
- Method of fixing: To backs of frames using galvanized clout nails.

790 FIXING OF WOOD FRAMES
- Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

809 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS
- Installation: By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

820 SEALANT JOINTS
- Sealant:
  - Manufacturer: Dow corning – Tel: 01676 528000
    Product reference: Silicone Building Sealant ref: 795.
  - Colour: White.
  - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 FIXING IRONMONGERY GENERALLY
- Fasteners: Supplied by ironmongery manufacturer.
  - Finish/ Corrosion resistance: To match ironmongery.
- Holes for components: No larger than required for satisfactory fit/ operation.
- Adjacent surfaces: Undamaged.
- Moving parts: Adjusted, lubricated and functioning correctly at completion.

L20

840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES
- General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
- Holes for through fixings and components: Accurately cut.
  - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
  - Lock/ Latch cases for fire 60 doors requiring › 60 minutes integrity performance: Coated with intumescent paint or paste before installation.

850 LOCATION OF HINGES
- Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
- Third hinge: Where specified, positioned with centre line 250mm below centre line of top hinge.
- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

L30 STAIRS/ LADDERS/ WALKWAYS/ HANDRAILS/ BALUSTRADES

To be read with Preliminaries/ General conditions.

310 PROPRIETARY

Manufacturer: Latchways Fall protection plc, Hopton Park, Devizes, Wiltshire, SN10 2JP
Tel: +44 (0)1380 732700
Email: info@latchways.com

- Product: Versirail Freestanding safety guardrail system, Folding option available; contact Latchways.

Uprights:
Profile: Straight; 1150 mm high. Recommended for folding guardrail applications.
- Maximum centres:
  Between uprights: 2m (folding)

Connecting elements:
- Junction part; connects lengths linearly.
- T junction; connects handrail elements to form right angled connections

Handrails:
- 40 mm diameter aluminium
- Lengths:
  -3 m or 6 m. Powder coating only available to 3 m lengths.

Corner sections:
- 45° -45° corner section; for use where upright must be positioned directly in corner (at 45°).
- 90° corner section; for use where right angles are required in handrails.
- Corner sections between 45° and 175° can be fabricated to order by stipulating angle. required.

End parts:
- Closure bend; for use where handrail terminates but cannot be attached to building. Connects handrail to kneerail. Can also form designated opening in rail. Requires installation of an upright with two counterweights (22030-00 for single counterweight; 22031-00 for additional counterweight).
- Wall end piece; for termination at supporting wall, parapet or other structure. Fixing is by4no. M5 diameter screws.

Access gates:
- Only compatible with straight vertical uprights. Can be installed anywhere along the guardrail.
- Width can vary 340–1170 mm.
- Held closed by spring-loaded mechanism.
- Additional counterweights (22030-00) required either side of gate.

Maximum centres:
- Between hand and kneerail and parapet/ kickboard: 500 mm.

Kickboards:
- Required where there is no parapet or where height of parapet is less than 100mm.
- Supplied with attaching kit.

Finishes:
Denoted by reference suffix.
- Powder coat to RAL colour -'RAL'. Give RAL colour reference as separate item
- RAL colour 9005

INSTALLATION

610 MOISTURE CONTENT

- Temperature and humidity: Monitor and control internal conditions to achieve specified moisture content in wood components at time of 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: 9am – 5pm.
  - Period of notice (minimum): 1 week

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 1748-1-1 for borosilicate glass.
  - BS EN 1748-2-1 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.

L40

TYPES OF GLAZING

210 PUTTY FRONTED SINGLE GLAZING

- Pane material: 6mm clear float glass, 6.4mm laminated glass to all glazing below 800mm
- Surround: Primed softwood.
  - Sealer: As clause M60/130.
- Type of putty: Linseed oil putty to BS 544.
- 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 sealer 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.

260 BEAD FIXED SINGLE GLAZING

- Pane material: 6.4mm clear laminated glass to BS 6206 to all glazing below 800mm
- Surround/ bead: primed softwood
  Sealer: as clause M60/130
  Type of putty: Linseed oil putty to BS 544
  Glass installation and putty: as 210
  - Glass: Located centrally in surround using setting and location blocks.

M20 PLASTERED/ RENDERED/ ROUGHCAST COATING

To be read with Preliminaries/ General conditions.

TYPES OF COATING

200 GYPSUM PLASTER ON CEMENT BASED UNDERCOAT(S):
- Location: internal walls
- Background: Brick/blockwork
  Preparation: raked joints
- Undercoat(s): One of the following mixes, in each case using sand to BS 1199, type A:
- Cement:lime:sand, using OPC cement and ready-mixed lime:sand to BS 4721.
- Masonry cement:sand.
  Mix designation: 1:4
  Thickness (excluding dubbing out): 10mm
- Final coat: Gypsum plaster to BS 1191:Part 1, Class B.
  Proprietary reference: thistle multi finish
  Thickness: 5 mm
  Finish: smooth steel trowel
- Accessories: plaster angle beads

280 SKIM COAT ON PLASTERBOARD
- Location: Ceilings and partitions
- Background: Timber joists and studs
- Plasterboard backing: British Gypsum
- Skim coat(s): Board finish plaster to BS 1191:Part 1, Class B.
  Thickness: 5 mm applied in 2 coat(s).
  Finish: Smooth as clause 780.

310 LIME:SAND EXTERNAL RENDER
- Substrate: Existing brickwork.
  - Preparation: Brush clean and prepare as clause 556.
- Lime manufacturer: The Lime Centre.
  - Product reference/ Type: St Astier Hydraulic NHL 3-5, (NHL 5 at roof level).
- Undercoats:
  - Mix: 2:5.
    Sand: To BS EN 13139, grading to approval.
  - Thickness: First coat 8-12mm and second coat 6-10 mm.
- Final coat:
  - Mix: As undercoat.
    Sand: as for undercoat.
  - Thickness: As existing.
  - Finish: To match existing.
- Accessories: Beads, stops.

- Other requirements: Finish render flush with raised margins at quoins and windows.

410 BASIC WORKMANSHIP: Comply with the clauses of BS 8000:Part 10 which are relevant to this section.

445 MIX PROPORTIONS: Except where stated otherwise, mix proportions for rendering and cement based plaster undercoats are to be in accordance with the following designations:

Mix type	Mix designation				
	1	2	3	4	5
Cement:lime: sand	1:¼:3	1:½:4 to 1:½:4½	1:1:5 to 1:1:6	1:2:8 to 1:2:9	1:3:10 to 1:3:12
Cement: premixed lime & sand (proportion of lime to sand given in brackets)	1:3 (1:12)	1:4 to 1:4½ (1:9)	1:5 to 1:6 (1:6)	1:8 to 1:9 (1:4½)	1:10 to 1:12 (1:4)
Cement:sand (using plasticizer)	-	1:3 to 1:4	1:5 to 1:6	1:7 to 1:8	-
Masonry cement:sand	-	1:2½ to 1:3½	1:4 to 1:5	1:5½ to 1:6½	-

450 CEMENT: As specified in the type of coating clause(s).
- Where Portland cement is specified Portland blastfurnace cement or Portland pulverized-fuel ash cement may be used as an alternative.
- Where Portland cement, Portland blastfurnace cement, Portland pulverized-fuel ash cement or Sulphate-resisting Portland cement is specified use Class 42.5 or 52.5 material as defined by the appropriate British Standard.
- All cements must comply with the appropriate British Standard and be licensed under the BSI Kitemark scheme for cement.

475 ADMIXTURES: Do not use, other than air-entraining and water- retaining admixtures, unless specified or approved.

M20

480 MIXING:

- Proportions of specified mixes are by volume and for damp sand. Adjust proportions if dry or saturated sand is used.
- Do not use mortar-mill type mixers for mixing gypsum plasters.

481 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): 90 days.
- Storage: Prevent drying out or wetting. Protect from frost.

492 HAIR REINFORCEMENT

- Proportions (approximate): 5 kg hair to 1 m^3 of coarse stuff.
- Condition: Clean, free from grease and other impurities. Well teased before adding to the mix.
- Distribution: Evenly throughout with no balling into lumps.
- Storage period for haired mortar (maximum): Four weeks.

495 MIXING

- Render mortars (site-made):
  - Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on damp sand. Adjust for dry sand.
  - Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
- Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
- Contamination: Prevent intermixing with other materials.

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 detriment when air temperature is below 3°C.

PREPARING SUBSTRATES

510 KEYING/BONDING: Prepare backgrounds as specified for the type of coating to be applied. Where not specified, comply with BS 8000:Part 10, clause 2.2.2.2. Methods other than those specified may be submitted for approval.

M20

515 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: Cut out to a width of 75mm (minimum)
- Dust and loose material: Remove from exposed substrates and edges.

566 REMOVING DEFECTIVE EXISTING PLASTER
- Plaster for removal: Detached, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
  - Hollow, detached areas: Remove where detachment is more than 300 x 300mm.
- Stained plaster: Remove carefully.
- Removing defective plaster. Cut back to a square, sound edge.
- Faults in substrate (structural deficiencies, damp, etc.): Submit proposals.
- Cracks:
  - Fine hairline cracking/ crazing: Leave.
  - Other cracks: Cut out to a width of 75m (minimum)
- Dust and loose material: Remove from exposed substrates and edges.

M20

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 substrates: Established drying conditions. Leave walls to dry for as long as possible before plastering.
- Dust and loose material: Remove from exposed substrates and edges.

BACKINGS/ BEADS/ JOINTS

605 GYPSUM PLASTERBOARD BACKINGS
- Type: To BS EN 520
  - Core density (minimum): 650 kg/m³.
- Exposed surface and edge profiles: Suitable to receive specified plaster finish.

607 PROPRIETARY GYPSUM PLASTERBOARD BACKINGS
- Manufacturer: British Gypsum
- Exposed surface and edge profiles: Suitable to receive specified plaster finish.

610 FIXING PLASTERBOARD BACKINGS TO TIMBER
- Fixings, accessories and installation methods: As recommended by board manufacturer.
- Fixing: At the following centres (maximum):
  - Nails: 150 mm.
  - Screws to partitions/ walls: 300 mm. Reduce to 200 mm at external angles.
  - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
  - Bound edges: 10 mm.
  - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of supports (minimum): 6 mm.
- Nail/ screw heads: Set below surface. Do not break paper or gypsum core.

M20

612 JOINTS IN PLASTERBOARD BACKINGS
- Ceilings:
  - Bound edges: At right angles to supports and with ends staggered in adjacent rows.
  - Two layer boarding: Stagger joints between layers.
- Partitions/ walls:
  - Vertical joints: Centre on studs. Stagger joints on opposite sides of studs.
    Two layer boarding: Stagger joints between layers.
  - Horizontal joints:
    Two layer boarding: Stagger joints between layers by at least 600 mm. Support edges of outer layer.
- Joint widths (maximum): 3 mm.

630 BEADS/ STOPS FOR INTERNAL USE
- Material: Galvanized steel to BS 13658-1.

636 BEADS/ STOPS FOR EXTERNAL USE
- Material: Galvanised steel to BS 13914-1: 2005

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 JUNCTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES
- Locations: Where defined movement joints are not required. Where dissimilar solid substrate materials are in same plane and rigidly bonded or tied together.
- Crack control materials:
  - Isolating layer: Building paper to BS 1521.
  - Metal lathing: 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 substrate material (column, beam, etc. with face width not greater than 450 mm):
  - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrate.
  - Lathing: 100 mm (minimum) beyond edges of isolating layer.

M20

659 PLASTERBOARD JOINTS
- Joints and angles (except where coincident with metal beads): Reinforce with continuous lengths of jointing tape.

INTERNAL PLASTERING

710 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 out: Prevent excessively rapid or localized drying out.

715 FLATNESS/ SURFACE REGULARITY
- Sudden irregularities: Not permitted.
- Deviation of plaster surface: Measure from underside of a straight edge placed anywhere on surface.
  - Permissible deviation (maximum) for plaster not less than 13 mm thick: 3 mm in any consecutive length of 1800 mm.

720 DUBBING OUT
- General: Correct substrate inaccuracies.
- New smooth, dense concrete and similar surfaces: Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.
- Thickness of any one coat (maximum): 10 mm.
- Mix: As undercoat.
- Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each coat.

725 UNDERCOATS GENERALLY
- General: Rule to an even surface. Cross scratch to provide a key for the next coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.
- Undercoats gauged with Portland cement: Do not apply next coat until drying shrinkage is substantially complete.

778 WOOD FLOAT FINISH
- Appearance: An even overall texture. Finish with a dry wood float as soon as wet sheen has disappeared.

M20
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.

820 DUBBING OUT FOR RENDERING
- General: Correct substrate inaccuracies.
- Thickness of any one coat (maximum): 16 mm.
  - Total thickness (maximum): 20 mm, otherwise obtain instructions.
- Mix: As undercoat.
- Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Comb surface of each coat.

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.

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): 4 days
  - 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.

885 CURING AND DRYING NONHYDRAULIC LIME RENDER
- General: Prevent premature setting and uneven drying of each coat.
- Curing coatings: Keep each coat damp by covering with sheeting hung clear of coating. Spray with water until sufficiently firm.
  - Sheeting: Damp hessian and polyethylene sheeting.
- Shrinkage: Thoroughly consolidate/ scour each coat one or more times as necessary to control shrinkage.

M51 EDGE FIXED CARPETING

To be read with Preliminaries/ General conditions.

TYPES OF CARPETING

110 CARPETING
- Location: 3rd floor of no.7 Stone Buildings
- Base: Existing concrete floor .
  - Preparation: Clean thoroughly.
- Fabricated underlay: Duralay.
- Underlay to BS 5808 and BS EN 14499:
  - Manufacturer: Duralay

  Product reference: Duralay Treadmore
  - Thickness: 8mm.
  - Tog rating: 1.03
  - Impact sound reduction: 32db

- Carpet:
  - Manufacturer: Wilton Carpets .
  - Tel: 01722 746000

    Web: www.wiltoncarpets.com

  Product reference: Axminster Range .
  - Type: To be Agreed
  - BS EN 1307 classification:
- Method of fixing: Carpet gripper.
- Methods of fixing at openings / free edges: Threshold Bars .

150 CARPETING FOR STAIRS
- Location: Common internal stairwell at no.7 Stone Buildings
- Base: As recommended by Manufacturer
- Carpet:
  - Manufacturer: Wilton Carpets.
  - Tel: 01722 746000

    Web: www.wiltoncarpets.com

- Product reference: Axminster Range .
  - Type: To be Agreed
  - BS EN 1307 classification:
- Method of fixing: To be agreed.

GENERAL/ PREPARATION

210 WORKMANSHIP GENERALLY
- Finished carpeting: Tightly seamed, accurately fitted, neatly and securely fixed, smooth and evenly tensioned.

250 CARPET LAYOUT – PRE-ORDER REQUIREMENTS
- Setting out: Agree seam locations and pattern.

290 CONDITIONING CARPET
- Requirements: As recommended by manufacturer.

310 CONDITION OF WORKS PRIOR TO LAYING
- General requirements:
  - All other specified internal works to be completed.

315 NOTIFICATION OF COMMENCEMENT
- Give notice: Before laying is due to start.
  - Period of notice (minimum): 2 weeks.
  - Notification and agreement with occupiers required before works.

320 ENVIRONMENT
- Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.

330 SUITABILITY OF BASES
- General: Commencement of laying carpeting will be taken as acceptance of suitability of bases.

371 PLYWOOD UNDERLAY
- Standard: Manufactured to an approved national standard.
- Bonding quality: To BS EN 314-2, class 1.
- Appearance: To BS EN 635, class 2.
- Finish: Sanded .
- Thickness: 6mm

- Substrate: Existing floor boards securely fixed and acceptably level with no gross irregularities or protruding fasteners.
- Laying sheets:
  - Cross joints: Staggered and not coincident with joints in base.
  Joint width: 0.5–1 mm.
- Fasteners: 25 mm ringed shank or twisted shank nails or divergent staples.
  - Location: Commencing at the centre of one side of each sheet, at 150 mm grid centres over the area of each sheet and at 100 mm centres along perimeter, set in 12 mm from edge.
  - Placement: Driven with heads set flush with surface and not projecting through the underside of base. Not deformed.

LAYING CARPETING

470 LAYING CARPET GENERALLY
- Appearance of laid carpet: Pieces of the same carpet type capable of being seen together to be of consistent appearance with pile lying in the same direction.
- Carpet perimeter: Accurately and closely fitted leaving no gaps. Edges turned down and secured to grippers.
- Carpet tension: Even, and such that carpet lies flat and will not ruck, ripple or become slack.
- Doorways and recesses: Cut carpet in. Do not piece in without prior approval.

480 POWER STRETCHING
- General: Power stretch carpets greater than 5 metres in any dimension.

490 DOORWAYS
- Carpet joint: On centre line of door leaf.
- Finish: Threshold Bars are required.

530 LAYING STAIR CARPET WITH GRIPPER
- Shifting allowance: Provide a minimum additional length of carpet equivalent to one tread and riser. Conceal by substituting for underlay at top or bottom of stairs.
- Gripper locations:
  - One on each tread and each riser, close to intersection.
  - To edge of each winder over 300 mm deep and abutting a wall.
  - Along a landing over 300 mm deep and abutting a wall.
- Pile direction: Towards bottom of stairs and perpendicular to nosings.

570 COMPLETION
- Debris: Remove stay tacks and cut away partly loose warp and face yarns.
- Surface irregularities and tension: Check and make necessary tension adjustments.

580 WASTE
- Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

M52 DECORATIVE PAPERS/FABRICS

To be read with Preliminaries/General conditions.

110 COVERING FOR WALLS where indicated
- Background: original plaster
  Preparation: strip off existing coverings, fill and rub down
  Treatment: size
- Adhesive: approved
- Lining: 1400 grade paper.
  Other requirements: Class "O" surface spread of flame.

112 COVERING FOR CEILINGS where indicated
- Background: original plaster
- Preparation: fill, rub down
- Treatment: size
- Adhesive: approved
- Lining: 1400 grade paper.

113 COVERING FOR WALLS: communal areas
- Background: original plaster
- Preparation: strip off existing coverings – Fill and rub down.
- Treatment; size
- Adhesive: approved
- Below dado: heavy duty anaglypta pattern to be advised
- Above dado: lining paper good quality heavy duty 1400 grade paper
- Finish painted emulsion
- Dado: gloss

211 HANDLING AND STORAGE:
- Coverings must be delivered and kept in sealed and labelled wrappings until ready for use.
- Wherever possible coverings must be from one manufacturing batch/shade. Inform CA if coverings from more than one batch/shade are to be used, store separately and allocate to distinct parts or areas of the work.
- Store coverings to avoid damage to ends of rolls.

M52

310 PREPARATION GENERALLY:

- Materials used in preparation must be types recommended by their manufacturers and the covering manufacturer for the situation and background being prepared.
- Backgrounds must be sufficiently dry in depth to suit the covering to be hung.
- Remove efflorescence salts from backgrounds. Repeat removal if efflorescence recurs.
- Clean off dirt, grease and oil from backgrounds. If contamination of backgrounds has occurred, obtain instructions before proceeding.
- Smooth background irregularities. Fill cracks, joints, holes and other depressions with stoppers/fillers worked well in and finished off flush with surface. Abrade to a smooth finish.
- Remove dust particles from dry abrasive preparation of backgrounds.
- Remove residues from wet preparation of backgrounds by rinsing with clean water, wiping and allowing to dry.

340 COATED BACKGROUNDS:

- When removing or partially removing coatings, use methods which will not damage the background or adversely affect subsequent coverings.
- Carefully remove all loose, flaking or otherwise defective areas to a firm edge.
- Completely remove water soluble coatings.
- Where significant rot, corrosion or other degradation of backgrounds is revealed, obtain instructions before proceeding.
- Thoroughly clean retained coatings with appropriate detergent solutions or solvents to remove all dirt, grease and contaminants. Abrade gloss coated backgrounds when still wet to provide a key.
- Coatings retained on backgrounds must be compatible with adhesive(s); carry out tests if necessary.

350 PAPER/FABRIC COVERED BACKGROUNDS:

- Remove existing coverings by wet or dry stripping.

- Wash exposed backgrounds with clean warm water to remove all traces of old adhesive and size and allow to dry.

360 VINYL COVERED BACKGROUNDS: Where these are to be stripped, the paper backing may be retained as a lining if in good condition and firmly adhering. Stick down any lifting edges and corners.

M52

370 TREATMENT OF ORGANIC GROWTHS:
- Remove all loose growths and infected coatings/ decorations.
- Apply appropriate biocidal solution to growth areas and surrounding surfaces.
- Scrape or brush off all dead growth. Remove infected materials immediately to ensure that no other areas become infected.
- Apply appropriate residual effect biocidal solution to inhibit re-establishment of growths.
- Biocides must be approved and registered by the Health and Safety Executive (HSE) and listed in the current 'Reference Book 500', Part B, as surface biocides.

420 HANGING GENERALLY:
- All joints must be truly vertical and/or horizontal, straight and fully adhered.
- Finished coverings must be securely adhered, smooth and free of air bubbles, wrinkles, gaps, tears, adhesive marks and stains.

460 ADHESIVE: When not specified otherwise, type to be as recommended by the covering manufacturer or, in the absence of such recommendation, type to be approved.

480 LININGS:
- When not specified otherwise, select type and weight to suit covering and background.
- Hang lengths with butt joints; do not overlap.
- Hang lengths transversely to direction of covering.
- Leave to dry for 24 hours before hanging covering.

490 COVERINGS:
- Selvedged coverings to be trimmed to a true straight edge before hanging, unless manufacturer recommends overlap joints.

- Hang wall coverings vertically unless specified otherwise.
- Hang ceiling coverings parallel to the main window wall unless specified otherwise.
- Isolate any metallic foil/fabric coverings from electrical contact.

500 JOINTS IN COVERINGS:
- Hang lengths with neat butt joints generally.
- Hang lengths with neat overlapped joints only when permitted by the covering manufacturer where butt joints are impractical.
- Hang lengths in one piece generally. Cross joints are only permitted where single lengths are impractical.

M52

520 SHADING:
- Use lengths in the sequence they are cut from the roll.
- Check each length for colour match before hanging.
- Do not reverse alternate lengths unless recommended by the covering manufacturer.
- Check for shade variation after hanging the first three lengths. Inform the CA of any variation before proceeding.

M60 PAINTING/ CLEAR FINISHING

To be read with Preliminaries/ General conditions.

COATING SYSTEMS

110 EMULSION PAINT
- Manufacturer: Dulux
  - Product reference: Water based egg shell.
- Surfaces: Plaster walls and ceilings.
  - Preparation: As of clause 400 and 440.
- Initial coats: Dulux primer.
- Undercoats: Dulux Trade Undercoat
  - Number of coats: 1 coat
- Finishing coats: 2 full coats.

130 GLOSS PAINT
- Manufacturer: Dulux
  - Product reference: Dulux Trade Weathershield Exterior High Gloss.
- Surfaces: External timber window frames and glazing bars, external doors and external shutters.
  - Preparation: Remove existing paint as clauses 400, 440 and 461.
- Primer: To all bare wood apply Dulux Trade Wood Primer.
  - Number of coats: 1
- Undercoat: Weathershield Exterior Flexible Undercoat.
  - Number of coats: 2
- Finishing coats: Brush applied.
  - Number of coats: 2 coats.

111 VINYL SILK PAINT
- Manufacturer: Dulux water based egg shell
- Surface(s): plaster walls and ceilings
- Preparation: as clause 400
- Initial coat(s): Mist
- Finishing coats: 2 full coats
- Colour to be selected

114 WOOD STAIN
- Weathershield ultimate wood stain.
- Surface: Previously stained/varnished wood.
- Preparation: As clause 400.
- Number of coats: 2

M60

115 METAL PAINT
- Manufacturer: Hammerite Smooth
- Surface(s): pipework, metal components, railings.
- Preparation: as clause 400
- Initial coat(s): primer
- Finishing coats: 2 undercoats, 1 full gloss coat

170 MASONRY COATING TO EXTERNAL RENDERING AND PREVIOUSLY PAINTED BRICKWORK
- Manufacturer: Dulux
  - Product reference: Dulux Trade Weathershield Smooth Masonry Paint.
- Surfaces: External rendered surfaces
  - Preparation: As of clause 440
- Finishing coats: 2 finishing coats.

171 MASONRY COATING TO LIGHTWELL WALLS
- Manufacturer: Dulux
- Product reference: Dulux Trade Weathershield Maximum Exposure Smooth Masonry Paint.
- Surfaces: Exposed brick light well walls.
- Preparation: As of clause 440.

GENERAL

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. Allocate to distinct parts or areas of the work.

240 SURFACES NOT TO BE COATED
- Internal window joinery, fixtures and fittings (unless otherwise specified).

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.

M60

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: Timber shutters, all door and window furniture, all fittings as directed by CA.
- Replacement: Refurbish as necessary, refit when coating is dry.

425 IRONMONGERY
- Removal: Before commencing work remove ironmongery from surfaces to be coated.
- Hinges: Remove.
- Replacement: Refurbish as necessary; refit when coating is dry.

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

M60

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 barewood and reprime.

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.

M60

570 UNCOATED MASONRY/ RENDERING
- Loose and flaking material: remove.
- Extension works detailed in Section M20/556.

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

590 UNCOATED PLASTERBOARD
- Depressions around fixings: Fill with stopper/ filler.

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.

631 PREVIOUSLY PAINTED WINDOW FRAMES
- Paint encroaching beyond glass sight line: Carefully remove. Note: a large number of the windows have paint encroaching onto the glazing by several millimetres which will require careful removal before redecoration.
- 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 harden.
  - Seal and coat as soon as sufficiently hard.

640 EXTERNAL POINTING TO EXISTING FRAMES
- Defective sealant pointing: Remove.
- Joint depth: Approximately half joint width; adjust with backing strip if necessary.
- Sealant:
  - Manufacturer: Dow Corning

Product reference: 791 T weather proofing sealant.
- Preparation and application: As section Z22.

M60 APPLICATION

711 COATING GENERALLY
- Application: 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
- After priming, apply one coat undercoat to all surfaces of external joinery components which will be concealed when fixed in place.

740 CONCEALED METAL SURFACES
- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.

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

760 VARNISHING WOOD

- Thin first coat with white spirit in accordance with manufacturers recommendations. Brush well in avoiding aeration and lay off. Apply further coats of varnish, rubbing down lightly between coats along the grain.

770 EXTERNAL DOORS
- Bottom edges: Prime and coat before hanging doors.

M60

780 BEAD GLAZING TO COATED WOOD
- Before glazing: Apply first two coats to rebates and beads.

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

N25 PERMANENT ACCESS AND SAFETY EQUIPMENT

To be read with Preliminaries/General conditions.

TYPE(S) OF SYSTEM/EQUIPMENT

N25/210 GUIDED TYPE FALL ARREST SYSTEM

Location: Estate Wide

Manufacturer and reference: Latchways plc, Hopton Park, Devizes, Wiltshire, SN10 2JP

- Ref: 210 Guided Type Fall Arrest System; Latchways ManSafe System.

- Latchways Mansafe Class B1 System.

- System to be CE marked and hold EC Declarations of Conformity.

- Anchorage device: Latchways mansafe®. End anchors to be made from stainless steel and use either a single M16 or 2 M12 fixing bolts. Typical end anchor loadings are 10 – 15kN, but can be further controlled through the spacing of intermediate brackets and the inclusion of inline energy absorbers. System design must be verified by the Latchways software programme.

System support brackets made from 316 marine grade stainless steel can be fixed into virtually any structure, including masonry, brick and block work and structural steel.

The intermediate brackets use a single M12 fixing point, and are usually spaced approximately 6 – 10 metres apart, depending on system design. The Transfastener passes freely over the intermediate supports, keeping the user attached at all times

- Overall system length: 1,089 metres comprising runs fixed to timber rafters using cleat and cross arm fixing detail. System to provide access for gutter clearance, roof access and general roof maintenance.
- Intermediate support spacing:, Between 6 and 10m - as designed by the Latchways approved installer to meet the requirements of the Latchways ManSafe design software.
- System to be installed in accordance with BS 7883 by the system manufacturer or a installer approved by the system manufacturer and verified by the system manufacturer.
- On completion of the installation, system to be inspected and fully tested and a test certificate covering a period of 12 months to be issued. Notice showing date and period of validity of the test certificate to be attached to the system at each access point
- Five complete sets of Personal Protective Equipment PPE to be supplied with the system. Set to comprise:

1 no. Removable Transfastener – Part number 85085
1 no. Latchways Personal Rescue Device (Size t.b.c)

1 no. Energy absorbing lanyard (Length t.b.c.)
All to be supplied in a suitable PPE storage holdall
- Structural anchors: Type recommended by the system manufacturer to suit the structure/fabric into which they will be fixed.

N25/210 GUIDED TYPE FALL ARREST SYSTEM

Location: Estate Wide

Manufacturer and reference: Latchways plc, Hopton Park, Devizes, Wiltshire, SN10 2JP
- Ref: 210 Guided Type Fall Arrest System; Latchways ManSafe for approved Bituminous Membrane Roofing To Various Decks.

- Latchways Constant Force Class B1 Restraint System.

- System to be CE marked and hold EC Declarations of Conformity.

- Anchorage device: Latchways Constant Force™ post for approved Bituminous Roofing for mechanical attachment through the insulation to various decks in accordance with our data sheet 65619-98-4 and
Weathering to be strictly in accordance with Manufacturers recommendations
- Overall system length: 549 metres. System to provide access for roof light cleaning, roof inspection and gutter cleaning.
- Intermediate support spacing:, Between 6 and 10m - as designed by the Latchways approved installer to meet the requirements of the Latchways ManSafe design software.
- System to be installed in accordance with BS 7883 by the system manufacturer or a installer approved by the system manufacturer and verified by the system manufacturer.
- On completion of the installation, system to be inspected and fully tested and a test certificate covering a period of 12 months to be issued. Notice showing date and period of validity of the test certificate to be attached to the system at each access point
- Five complete sets of Personal Protective Equipment PPE to be supplied with the system. Set to comprise:
1 no. Removable Transfastener – Part number 85085
1 no. Latchways Personal Rescue Device (Size t.b.c)
1 no. Energy absorbing lanyard (Length t.b.c.)
All to be supplied in a suitable PPE storage holdall
- Structural anchors: Type recommended by the system manufacturer to suit the structure/fabric into which they will be fix

GENERAL REQUIREMENTS

N25/320 INFORMATION TO BE PROVIDED AFTER ACCEPTANCE OF TENDER:

Submit to the CA within 2 weeks of appointment the following particulars:

- Detailed drawings to fully describe fabrication and installation.
- A detailed fabrication, installation and testing programme compliable with the main contract master programme.
- Proposed fixing anchor details relevant to the structural design and construction of the building.

DESIGN/PERFORMANCE REQUIREMENTS

N25/430 SAFETY:

The equipment as installed must have no irregularities/ projections capable of inflicting personal injury. Finished surfaces and edges of all accessible parts must be regular and smooth.

N25/460 ASSESSMENT/TESTING OF FIXING POINTS FOR ANCHOR DEVICES:

Fixed in accordance with BS EN 795.

N25/510 FABRICATION AND ASSEMBLY GENERALLY:

All fabrication is carried out in the workshop. Limited assembly and drilling of the roof is required on site. Obtain approval for any reassembly on site.
Dissimilar metal surfaces will be isolated to prevent electrolytic corrosion.

N25/520 PROTECTION AND HANDLING:

Protect all assembled items against damage, corrosion and disfigurement during handling, installation and subsequent site operations.
Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

N25/530 SUITABILITY OF STRUCTURE/FABRIC:

Before commencing installation carry out a visual and geometrical survey of the supporting building structure and fabric. Report immediately to the CA if structure/fabric will not allow the required accuracy or security of erection/ fixing.

N25/550 FIXINGS, INSERTS AND BOLTS

All mechanical are to be supplied by Latchways installer.

N/25/560 FIXINGS FOR SECURING EQUIPMENT

Must be capable of adequate three dimensional adjustment to accommodate building structure/fabric irregularities.

N25/570 FIXING ANCHOR INSTALLATION:

Site drill into structure/fabric only in approved locations.
Distance between all fixing devices and edges of supporting material to be not less than recommended by Latchways.

N25/610 IDENTIFICATION AND REGISTRATION LABEL(S) FOR GUIDED FALL ARREST SYSTEM

- Provide and fix to each system a permanent label giving:
- Name and/or reference code of site and system
- Maximum number of users to be attached at any time
- Date of installation / last inspection
- PPE requirements
- Whether the system is an arrest or restraint system
- Label(s) to be located in positions such that they can be easily read.

N25/640 MARKING OF ANCHOR DEVICES:

- Provide on or near each anchor device a label or other clear marking giving:
- Maximum number of personnel that may be attached to the device at any one time
- Requirements for energy absorbers, ground clearance, etc.
- Where an anchor device is intended solely for use with personal protective equipment, this restriction must be indicated by pictogram or other suitable marking on or near the device.

N25/820 OPERATING INSTRUCTIONS:

One complete set of ManSafe User instructions to be supplied with the system.

N25/830 OPERATING AND MAINTENANCE MANUAL:

Before practical completion provide for inclusion in the Building Manual printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate. The information must include:

- Instructions for assembling/erecting equipment for use
  Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew
  Servicing and planned maintenance procedures, including assembly

instructions where maintenance necessitates dismantling of machinery parts
- List of replacement parts, with references
- Recommended procedures for testing equipment.

P10 SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions.

110 EAVES ROOF VENTILATORS FOR EXISTING ROOFS
- As of Section H62
- Eaves free air space (minimum): As recommended in BRE Report 262.

125 INSULATION LAID BETWEEN CEILING TIES/ JOISTS
- Material: Rockwool Rolls – Mineral Wool
- Standard: TO BS EN 13162.
- Manufacturer: Rockwool limited – Tel : 01656 862 621.
  - Product reference: Rockwool Roll.
- Recycled content: 50% minimum to BS EN ISO 14021.
- Thickness: 100mm (100mm laid between ceiling joists and 170mm laid at right angles to ceiling joists).
- Installation requirements:
  - Installation standard: TO BS 5803 -5.
  - Joints: Butted, no gaps.
  - Insulation at perimeter: Carried over wall plates.
  - Service holes: Sealed, and debris removed before laying insulation.
  - Eaves ventilation: Unobstructed.
  - Water cistern platforms : Not applicable.

135 INSULATION LAID ACROSS CEILING TIES/ JOISTS
- Material: Rockwool Rolls – mineral wool
- Standard: TO BS EN 13162
- Manufacturer: Rockwool Limited Tel : 01656 862 621
  - Product reference: Rockwool Rolls
- Recycled content: 50% minimum to BS EN ISO 14021.
- Thickness: 170 mm.
- Installation requirements:
  - Installation standard: TO BS 5803 -5.
  - Insulation widths: Widest practical.
  - Laid direction: At right angles to ties/ joists.
  - Joints: Butted, no gaps.
  - Insulation: Fitted neatly around rafter ends and extended over wall plates.
  - Service holes: Sealed, debris removed before laying insulation.
  - Eaves ventilation: Unobstructed.
  - Water cistern platforms: Not applicable.

P10

140 INSULATION FITTED AT RAFTER LEVEL TO DORMERS AND SLOPING SOFFITS

- Manufacturer: Kooltherm Kingspan K7 70mm.
  - Product reference: Celotex XR4000 (Product code dependent on thickness)
- Location: Between rafters and face of rafter.
- Material: Rigid polyisocyanurate.
- Thickness: Layer 70mm K& between rafters.
- Installation requirements:
  - General: Insulation to be friction fitted between rafters with no gaps.
  - Joints: Butted, no gaps.
  - Fasteners: Used where necessary to retain insulation and/ or prevent slumping.
  - Vapour control facing (if specified): Fit insulation with facing on warm side. Staple overlap (if provided) to underside of rafters; tape joints between adjacent overlaps using vapour impermeable adhesive tape.
  - Air space above insulation: Not restricted.
  - Eaves ventilation: Unobstructed.

170 INSULATION TO LOFT ACCESS HATCHES

- Manufacturer: Celotex
  - Product reference: Celotex XR 4000 (as of clause 140).
  - Laying: Cut to fit, with no gaps, and fix securely.
- Edges of hatch: Seal with an approved compressible draught excluder.

185 RIGID INSULATION TO SLOPING SOFFITS:

- Manufacturer and reference: Celotex double R thermal sheeting tel: 0208 579 0811
  Thickness: 75 mm
  Boards to be cut tight to rafters and pushed down to soffit to ensure minimum 50mm airflow above - allow for fixing all necessary softwood noggins to ensure air gap maintained.

310 VAPOUR CONTROL LAYER FIXED TO TIMBER STUDS/ JOISTS/ FRAMING

- Material: Breathable roofing felt.
- Manufacturer: Tyvek
  - Product reference: Tyvek breathable roofing membrane.
- Minimum vapour resistance: 250 MN s/s.
- Moisture content of timber at time of fixing (maximum): 20%.
- Installation requirements:
  - Setting out: Joints minimized.

  - Method of fixing: Staples at 250 mm centres maximum along all supports. Membrane not sagging.
  - Joints: At supports only, lapped 150 mm minimum.
  - Openings: Membrane fixed to reveals.
- Joints and edges: Sealed with double sided tape with vapour resistivity not less than the vapour control layer.
- Penetrations: Sealed.

P10

320 BREATHER MEMBRANE

- Manufacturer: Visqueen Building Products – Tel : 01685 840 672.
- Installation requirements:
  - Setting out: Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
  - Method of fixing: Refer to manufacturer.
  - Joints: Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
  - Openings: Membrane fixed to reveals.
  - Bottom edges: Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- Penetrations: Sealed.

P21 DOOR/ WINDOW IRONMONGERY

To be read with Preliminaries/ General conditions.

PRE-TENDER

10 QUANTITIES AND LOCATIONS

- Quantities and locations of ironmongery are detailed in drawings? In Appendix?
- Fixing: As sections L10 and L20.

GENERAL

140 SAMPLES

- General: Before placing orders with suppliers submit labelled samples of the following: door thumb latch (for vault doors)
  - Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

170 IRONMONGERY FOR FIRE DOORS

- Relevant products: Ironmongery fixed to, or morticed into, the component parts of a fire resisting door assembly.
- Compliance: Ironmongery included in successful tests to BS 476-22 or BS EN 1634-1 on door assemblies similar to those proposed.
  - Certification: BS
- Melting point of components (except decorative non functional parts): 800°C minimum.

180 CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Standard: To DD 171.
  - Category of duty of doors: Medium duty.
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
  - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
- Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

P21

DOOR HANGING DEVICES

310 SINGLE AXIS DOOR HINGES TO EXTERNAL ROOF DOOR TO NOS.1-6 Stone Buildings
- Standard: To BS EN 1935.
  - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Manufacturer: Hafele
  - Product reference: To be agreed
- Type: Ball bearing butt hinge
- Size: To be agreed
- Material/ finish: Brass
- Hinge grade: 7

320 DOOR HINGES TO VAULT DOORS
- Manufacturer: The Door Knocker Company (01694 751757).
  - Product reference: 15 inch Iron T Hinges
- Type: Traditional T Hinge
- Size: 15 inch.
- Material/ finish: Blackened iron.

DOOR SECURING DEVICES

515 DOOR LOCKS TO VAULT DOORS AND ROOF DOOR TO NO.1-6 Stone Buildings
- Standard: To BS EN 12209.
- Manufacturer: Chubb or similar approved
  - To be agreed
- Type: 5 lever mortice deadlock.
- Material/ finish: Polished brass
- Keying: Master keyed for each property.

540 DOOR LATCHES TO EXTERNAL VAULT DOORS
- Standard: To BS EN 12209.
- Manufacturer: Kirk Patrick Traditional Ironwork
  - Product reference: Thumb latch 1145
- Material/ finish: Blackened iron
- Latch spring strength: Select to prevent unsprung lever handles drooping.

P21

DOOR FURNITURE

620 DOOR KNOBS TO EXTERNAL DOOR TO ROOF OF NO.1-6 Stone Buildings
- Standard: To BS EN 1906.
- Manufacturer: Kirk Patrick traditional ironmongery.
  - Product reference: Door knob 155
- Style: Mortice
- Size: 63 x 38
- Material/ finish: Blackened iron
- Mounting: Integral plate – screw fix

641 PULL HANDLES TO EXTERNAL DOOR TO ROOF OF NO.1-6 Stone Buildings
- Manufacturer: Kirk Patrick Traditional Ironwork
  - Product reference: pull handle
- Standard: To BS 8424.
- Diameter: 50mm
- Material/ finish: Blackened iron
- Mounting: Integral back plate with screws.

710 ESCUTCHEONS TO EXTERNAL VAULT DOORS
- Manufacturer: Kirk Patrick Traditional Ironwork
  - Product reference: Escutcheon 1402 with cylinder latch cover 1486.
- Material/ finish: Blackened iron.
- Usage: To all external vault doors.

Q10 KERBS/ EDGINGS/ CHANNELS/ PAVING ACCESSORIES

To be read with Preliminaries/ General conditions.

TYPES OF KERBS, EDGINGS AND CHANNELS

110 PROPRIETARY PRECAST CONCRETE KERBS (to new Great Hall parking area)
- Standard: To BS EN 1340.
- Manufacturer: Marshalls
  - Product reference: Conservation kerb 255 x 205mm
- Recycled content: 48.3%
- Designations: square
- Size (width x height x length): 255 x 205 x 915
- Special shapes: 1:9 gradient drop kerbs (LH and RH) – as shown on drawing 10 Rev A, Appendix B.
- Finish: As manufactured
- Colour: Silver grey
- Bedding: As recommended by manufacturer
- Joints generally: Dry mortar

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.

Q10

545 PROPRIETARY BEDDING
- Product reference: Laying Course: 6mm open graded crushed rock.
- Bed thickness: 60mm.

547 BEDDING/ BACKING OF UNITS ON FRESH CONCRETE RACES
- Standard: To BS 7533-6.

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

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.

640 TOOLED MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
  - Joint width: 6 mm.

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: Q.

120 CHECKING OF SUBGRADES
- Anticipated subgrade conditions:
  - Soil type: To be established in soil analysis test.
  - Plasticity index: To be established in soil analysis test.
  - CBR (minimum): To be established in soil analysis test.
  - Depth below formation level to groundwater table: To be established in soil analysis test.
- Subgrade variation: If material appears to vary from anticipated conditions, or if there are extensive soft spots, report condition and await instruction before proceeding.
- Submit: Results and obtain instructions before proceeding.

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: Excavate and replace with sub-base materials, compacted in layers 300mm (maximum) thick.
- 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.

150 SUBGRADES FOR VEHICULAR AREAS
- Preparation and treatment: To Highways Agency 'Specification for highway works', clauses 616 and 617.

180 NOTICE
- Give notice: After preparation of sub-grades.
  - Period of notice: 3 days.

Q20

211 GRANULAR MATERIAL

- Quality: Of a known suitability for use in sub-bases, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA_{50} for the Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
  - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
  - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Natural gravel.
  - Natural sand.
- Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.

215 COARSE GRADED AGGREGATE FOR PERMEABLE PAVING SUB BASE

- Material: 20mm Open Graded Crushed Rock.
  - Standard: To BS EN 13242
  - Aggregate size: 20mm particle size.
  - Grading: Aggregate with void ratio of 30-32%.
- Testing:
  - Materials: Provide suppliers certificates for grading and specified properties.
- Laying: Compaction trial to be carried out. Lay sub-base in 100-150mm thick layers and lightly compact to ensure maximum density and aggregate interlock without crushing individual particles or unacceptably reducing the void ratio.
- Protection: Prevent damage by traffic and contamination by mud and soil.

220 FROST SUSCEPTIBLE GRANULAR MATERIAL

- Definition (non frost susceptible material): To Highways Agency 'Specification for highway works' clause 801.8.
- Depth of frost susceptible material below final surface of paving (minimum): 450mm.
- Testing: Test materials used if required and supply certificates.

230 PLACING GRANULAR MATERIAL GENERALLY

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

Q20

241 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS
- Proposals: Well in advance of starting work submit details of:
  - Maximum depth of each compacted layer.
  - Type of plant.
  - Minimum number of passes per layer.
- General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
- At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.
- Defective areas: Remove loose, segregated or otherwise defective areas to the full thickness of the layer and lay and compact new material.
- Sub-base surface after compaction and immediately before overlaying: Uniformly well closed and free from loose material, cracks, ruts or hollows.

250 LAYING GRANULAR SUB-BASES
- General: Spread and levelled.
- Compaction:
  - Timing: As soon as possible after laying.
  - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

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: + 20 mm.
    Footways and recreation areas: +12 mm.

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.

Q25 SLAB/ BRICK/ SETT/ COBBLE PAVINGS

To be read with Preliminaries/ General conditions.

GENERAL

110 NATURAL YORK STONE PAVING
- Subgrade improvement layer: Not required.
- Granular sub-base: 20mm open graded crushed rock. (DTp1 aggregate).
  - Compacted thickness: 150mm
- Laying course: 10:1 sand/cement mix (60mm).
- Paving units: Natural York stone slabs 90mm thick (size to match adjacent paving).
- Jointing: 4:1 mortar mix (brushed into joints and then pressed/packed into joints).
  - Bond: As adjacent paving.

150 CONCRETE SETT PAVING SYSTEM TO GREAT HALL/LIBRARY CAR PARK
- Subgrade improvement layer: As of Section Q20.
  - Compacted thickness: To be confirmed By Structural Engineer after soil analysis. .
- Granular sub-base: 20mm open graded crushed rock .
  - Compacted thickness: To be confirmed by Structural Engineer after soil analysis. .
- Laying course: See clause 420.
- Paving units: Textured Granite Aggregate Setts (details clause 335).
- Jointing: See clause 425.
  - Bond: Random Course

PRODUCTS

335 CONCRETE SETTS TO GREAT HALL/LIBRARY CAR PARK
- Manufacturer: Marshalls
  - Product reference: Mistral Priora – Permeable paving system.
- Colour: Silver grey.
- Finish: As manufactured.
- Sizes: 160x240mm (large block type)
- Slip/ Skid resistance: As manufactured.
- Integral accessories: Kerbs
- Bond pattern: Random

Q25

390 SAND FOR FLEXIBLE LAYING COURSE AND JOINTING OF CONCRETE FLAG PAVING
- Standard: To BS 7533-4, unbound construction laying course and jointing material.
- Purity: Free from deleterious salts, contaminants, lime and cement.
- Procurement: Obtain from one source and ensure consistent grading.

420 FINE AGGREGATE FOR LAYING COURSE OF CONCRETE SETT PAVING
- Material: 6mm open graded crushed rock .

425 FINE AGGREGATE FOR JOINTING CONCRETE SETT PAVING
- Material: 6mm open graded crushed rock .

EXECUTION

615 CONTROL SAMPLES
- Sample areas: Complete as part of the finished work.
  - Types of paving: Marshalls 'Mistral Priora' permeable paving slabs (silver grey)
  - Location: For Great Hall/Library Car park
  - Size (minimum): 160 x 240mm .
  - Included features: Sample of Marshalls 'Conservation Kerb' (silver grey).
- Approval of appearance and surface: Obtain before proceeding.

Q25

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.

Q25

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.

640 COLOUR BANDING

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

645 PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- 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.

Q25

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.

710 LAYING FLAG AND SLAB PAVING - SAND LAYING COURSE AND JOINTING
- Standard: In accordance with BS 7533-4.
- Flag installation and cutting: To Interpave 'Concrete flag paving'.
- Laying course:
  - Nominal thickness after compaction: 60mm .
- Joint width: 2-5 mm.

740 LAYING CONCRETE SETT PAVING - FINE AGGREGATE BEDDING AND JOINTING
- Laying: 6mm open graded crushed rock.
- Jointing: 6mm open graded crushed rock

COMPLETION

915 COMPLETION OF PAVING WITH DRY SAND OR FINE AGGREGATE FILLED JOINTS
- Sand dressing: 60mm open graded crushed rock

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

R10 RAINWATER DRAINAGE SYSTEMS

To be read with Preliminaries/ General conditions.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM
- Pipes, Fittings and Accessories: To BS460.
- Gutters: Type: To match existing.
- Size: To match existing.
- Pipework: Cast iron (see clause 375).
- Accessories: To match existing.
- Method of fixing: Brackets with non-ferrous screws at 1.83m centres.

SYSTEM PERFORMANCE

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

PRODUCTS

380 CAST IRON PIPEWORK – EXTERNAL USE
- Standard: To BS EN 877, Agrément certified.
- Manufacturer: Alumasc Exterior Building Products Ltd, White House Works, Bold Road, Sutton Street, Merseyside WA9 4JG. Tel: 01744 648400. Email: info@alumasc-exteriors.co.uk.
  - Product reference: Heritage cat iron rainwater system
- Accessories: To match existing.
- Size: To match existing.
- Finish: Painted finish.
- Colour: RAL9005 700 Black
- Fixings: Fixed to the wall at 1.83m centres through the eaves integral to the pipe or via separate brackets.

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.

R10

605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- 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.
  - Install pipework/gutters to ensure the complete discharge of rainwater from the building without leaking.

630 INSTALLING RAINWATER OUTLETS

- Ensure outlets are securely fixed before connecting new pipework.
- Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 FIXING PIPEWORK

- Pipework: Fix securely at specified centres, plumb and/ or true to line.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently. Make changed in direction of pipe runs where shown on drawings unless otherwise approved.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
  - Provide a loadbearing support at least at every storey level.
  - Tighten fixings as work proceeds so that every storey is self supporting.
- Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.
- Provide for thermal and building movement when fixing and jointing and ensure that clearance are not reduced as fixing proceeds.
- Isolate pipework from structure when passing through walls or floors and sleeve pipes.

R10

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: Mechanically jointed to BS 416 part 2.

675 CUTTING COATED PIPEWORK AND GUTTERS

- Cutting: Recoat bare metal.

690 ELECTRICAL CONTINUITY – PIPEWORK

- Joints in metal pipes with flexible couplings: Clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

R11 ABOVE GROUND FOUL DRAINAGE SYSTEMS

To be read with Preliminaries/ General conditions.

GENERAL

115 ABOVE GROUND FOUL DRAINAGE SYSTEM
- Sanitary and floor drainage outlets: Cast iron.
- Waste pipework: Cast iron.
- Discharge stack and branch pipework: Cast iron.
- Disposal: To existing below ground drainage.

PRODUCTS

330 CAST IRON PIPEWORK – FLEXIBLE COUPLINGS FOR EXTERNAL DISCHARGE STACKS.
- Standard: To BS EN 877.
- Manufacturer: Saint Gobain Parn UK
  - Product reference: Time saver BS 416
- Coupling type: Heritage couplings with ears.
- Nominal sizes: To match existing.
- Finish: Factory pre-painted gloss black.
- Brackets: GT48 (angle iron)
  - Fixings: Stainless steel
    Size: 40x40mm
- Accessories: GT01, GT45, GT24, GT00, GT06.

375 AIR ADMITTANCE VALVES
- Standard: To BS EN 12380 or Agrément certified.
- Minimum air flow rate: To BS EN 12056-2.
- Manufacturer: Saint Gobain Parn UK
  - Product reference: Orifice Air Valve (size to suit pipe diameter).

R11

EXECUTION

601 INSTALLATION GENERALLY
- Standard: To BS EN 12056-5.
- Components: From the same manufacturer for each type of pipework.
- 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.
- Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
- Protection:
  - Purpose made temporary caps: Fit to prevent ingress of debris.
  - Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.

605 PIPE ROUTES
- General: The shortest practical, with as few bends as possible.
  - Bends in wet portion of soil stacks: Not permitted.
  - Routes not shown on drawings: Submit proposals before commencing work.

610 FIXING PIPEWORK
- Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.
- 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 load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.
- Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
  - Masking plates: Fix at penetrations if visible in the finished work.
- Expansion joint sockets: Fix rigidly to the building.
- Fixings: Allow the pipe to slide.

615 FIXING VERTICAL PIPEWORK
- Bracket fixings: 6T48 (angle iron)(Saint Gobain Parm UK)
- Distance between bracket fixing centres (maximum): 1 bracket per length.

R11

630 JOINTING PIPEWORK – GENERALLY
- General: Joint with materials, fittings and techniques that will make effective and durable connections.
- Jointing differing pipework systems: With adaptors intended for the purpose.
- Cut ends of pipes: 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: Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove from joints.

680 ELECTRICAL CONTINUITY
- Joints in metal pipes with flexible couplings: Make with clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

695 DISCHARGE AND VENTILATING STACKS
- Terminations: Perforated cover or cage that does not restrict airflow.
  - Material: Metal.

700 INSTALLING AIR ADMITTANCE VALVES
- Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).
- Connection to discharge stack: Allow removal for rodding, e.g. ring seal.
- Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

COMPLETION

905 PIPEWORK AIRTIGHTNESS TEST
- Preparation:
  - Open ends of pipework: Temporarily seal using plugs.
  - Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.

915 PREHANDOVER CHECKS
- Temporary caps: Remove.

- Permanent blanking caps, access covers, rodding eyes, floor gratings and the like: Secure complete with fixings.

R11

920 SUBMITTALS
- Manufacturer's instructions for grease traps: Handover at completion.

V90 ELECTRICAL SYSTEMS – DOMESTIC

To be read with Preliminaries/ General conditions.

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, thicknessed, 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.

Z12 PRESERVATIVE TREATMENT

To be read with Preliminaries/ General conditions.

110 TREATMENT APPLICATION
- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 COMMODITY SPECIFICATIONS
- Standard: Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.

160 ORGANIC SOLVENT PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: _____ .
    Product reference: _____ .
  - Application: Double vacuum + low pressure impregnation, or immersion.
- Moisture content of wood:
  - At time of treatment: As specified for the timber/ component at time of fixing.
  - After treatment: Timber to be surface dry before use.
  - After treatment: Timber to be surface dry before use.

610 MAKING GOOD TO PRESERVATIVE TREATMENT ON SITE
- Preservative solution: Compatible with off-site treatment.
- Application: In accordance with preservative manufacturer's recommendations.

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.

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

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

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

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

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

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

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

Z21 MORTARS

To be read with Preliminaries/ General conditions.

131 LIME BASED MORTARS: Sand to be clean, well graded course sharp sand, two parts and one part fine sharp silver sand, to BS1200 unless specified otherwise.
Sand for facework: Mortar to be from one source, different loads to be mixed as necessary to ensure consistency of colour and texture.
Water: Water shall be from mains supply (compliance to BS3748).
Lime mortar: Hydraulic NHL 3.5 natural hydraulic lime available from St Astier for general areas

Hydraulic NHL 5 for chimneys and parapet walls

210 MAKING MORTAR:
Keep plant and banker boards clean at all times.
Measure materials accurately by volume using clean gauge boxes.
Proportions of mixes are for dry sand; allow for bulking if sand is damp.
Mix ingredients thoroughly to a consistency suitable for the work and free from lumps.
Mix mortar dry for a couple of minutes to homogenise and then continue mixing adding water slowly until workability is achieved, approximately 12 minutes.

NOTE: The best results are achieved by adding the water slowing. The mortar should be more like a dough than a slurry. The longer the final mixing time, the more workable the mortar will be.
A small addition of lime putty (10% of the weight of the NHL binder) can be made. This is to achieve immediate workability and reduce the mixing time. It is not necessary and it is left to the users preference. If putty is added, this should be done before the full level of water is added as putty contains water and adding it when the mix complete would produce a mortar that is too wet.
St Astier NHL mortars can be re-worked for up to 24 hours.
When preparing an NHL mortar for later use, place it on a board after mixing and cover it to avoid contact with possible rain or sun. When re-mixing add the least possible water, (in some cases it is not necessary to add any).

Z21

220 POINTING PREPARATION

Joints should be thoroughly cleaned from top to bottom after previous wetting of wall. Use brushes, low pressure compressed air or wash out joints with a hose. Remove all loose materials and dust. All existing mortar should be removed from joints without causing any damage to arises. Mortar should be raked out by hand. Rake out joint to a clean square face, minimum 18mm deep or twice width of joint; whichever is the greater.
Ensure mortar is of correct consistency – never re-point over wet mortar.
After raking out, adjust suction and remove dust by cleaning down with medium pressure water.

230 POINTING

Prepare three sample panels with pointing for approval by the Contract Administrator and the Conservation Officer.
Firmly press mortar into joints to fill complete cavity, taking care to avoidsmearing face of brickwork.
Point brickwork, leaving mortar with flat, rough surface recessed 1mm behind face of adjoining masonry following all irregularities. Achieve this by working over surface with flat, wooden tool or stipple with stiff brush after initial set has taken place, leaving aggregate slightly exposed.
The Contractor's attention is drawn to the need to compress lime mortars, unlike traditional cement based mortar.
Point brickwork with tools a suitable width to prevent mortar being deposited on face. After initial set, iron in with tools which are narrower than the joint width.
Clean off adjacent faces of brickwork/flint with clean wet sponge, moving towards the joint and compress mortar to leave 1mm behind face of adjacent mortar.
In new work, finish as the work proceeds with neat recessed joints, as described above.

240 PROTECTION

Cover work on completion with Hessian sheet and polythene - the polythene must not come into contact with the work. A record of minimum and maximum temperatures below the covers must be taken daily, to avoid rapid drying and consequent high shrinkage, especially in hot or windy weather conditions keep all work damp by repeatedly applying a fine mist of clean coatable water, if necessary, several times a day, until the mortar has hardened.

Z22 SEALANTS

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.

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.