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.

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.

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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.

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.

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.

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%.

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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.

470 NAILS FOR GENERAL USE
- Type: Annular ringed shank
- Material: Steel.
  - Strength (minimum): Ultimate tensile strength 600N/mm²
- 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/mm².
- 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.

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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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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.

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.

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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.

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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.

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.

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.

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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.

H71

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.

H71

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.

H71

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.

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.

135 INSULATION LAID ACROSS CEILING TIES/ JOISTS

- 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.

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.

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.