

Donald Insall Associates

Rochdale Development Agency

Touchstones Roof

RTAG.03

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Re-roofing

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C20 Demolition

Clauses

2 To be read with preliminaries/ general conditions

General requirements

110A Desk study/ survey

1. **Scope:** Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
 - 1.1. the structure or structures to be deconstructed/ demolished
 - 1.2. the surrounding area.
2. **Report and method statements:** Submit, describing:
 - 2.1. Form, condition and details of the structure or structures, the site, and the surrounding area.
 - 2.1.1. **Extent:** As drawing 5000
 - 2.2. Type, location and condition of features of historical, archaeological, geological or ecological importance.
 - 2.3. Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
 - 2.4. Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
 - 2.5. Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
 - 2.6. Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
 - 2.7. Proposed programme of work, including sequence and methods of deconstruction/ demolition.
 - 2.8. Details of specific pre-weakening required.
 - 2.9. Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
 - 2.10. Arrangements for control of site transport and traffic.

111 Importance of Building Fabric

1. The fabric must be worked on with great care, by specialists skilled in heritage work of the type outlined within this document. The expectation of the client is that workmanship and materials to be used will be of the highest quality. Contractors are reminded that it is an offence for anyone to do anything which causes, or is likely to result in, damage to a listed building. Persons causing damage to a listed building, other than that outlined within an approved Listed Building Consent or Certificate of Lawfulness, can be deemed to be causing criminal damage under the Criminal Damage Act 1971, which may result in prosecution.

120 Extent of deconstruction/ demolition

1. **General:** Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to levels as agreed on site with Conservation Architect/ as identified within submitted method statements.

140 Bench marks

1. **Unrecorded bench marks and other survey information:** Give notice when found. Do not remove marks or destroy the fabric on which they are found.

Services affected by deconstruction/ demolition

210 Services regulations

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

220A Location of services

1. **Services affected by deconstruction/ demolition work:** Locate and mark positions.
2. Remove as required, ensuring continuity of vital building services as specified by MEP
3. consultant.

260A Service bypass connections

1. **General:** Provide as necessary to maintain continuity of services to occupied areas of the site and to
2. keep vital building systems in place as specified by MEP consultant.

270A Services to be retained

1. **Damage to services:** Give notice immediately to CA and MEP consultant.
2. **Repairs to services:** Complete as directed, and to the satisfaction of the CA and MEP
3. consultant.

Deconstruction/ demolition work

310A Workmanship

1. **Standard:** Demolish structures in accordance with BS 6187.
2. **Operatives**
 - 2.1. Appropriately skilled and experienced for the type of work.
 - 2.2. Holding, or in training to obtain, relevant CITB Certificates of Competence.
3. **Site staff responsible for supervision and control of work:** Experienced working within
4. Listed buildings and in the assessment of risks involved and methods of
5. deconstruction/ demolition to be used.

330A Dust control

1. **General:** Reduce airborne dust in line with the accompanying protections schedule.
2. **Lead dust:** Submit method statement for control, containment and clean-up regimes.

340 Health hazards

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

360A Structures to be retained

1. **Extent:** As detailed on accompanying strip out drawings and within structural engineers information
2. **Parts which are to be kept in place:** Protect.

3. Interface between retained structures and deconstruction/ demolition: Cut away and strip
4. out with care as agreed with CA and detailed within method statements

370 Partly demolished structures

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

380 Dangerous openings

1. **General:** Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
2. **Access:** Prevent access by unauthorized persons.

390 Asbestos-containing materials – known occurrences

1. **General:** Materials containing asbestos are known to be present in: areas noted within asbestos report contained within tender documentation.
2. **Removal:** By contractor licensed by the Health and Safety Executive, and prior to otherworks starting in these locations

391 Asbestos-containing materials – unknown occurrences

1. **Discovery:** Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
2. **Removal:** Submit statutory risk assessments and details of proposed methods for safe removal.

410 Unforeseen hazards

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

450 Site condition at completion

1. **Debris:** Clear away and leave the site in a tidy condition.
2. **Other requirements:** Areas of demolition / strip out to be inspected and approved by CA prior to completion of works

Materials arising

510 Contractor's property

1. **Components and materials arising from the deconstruction/ demolition work:** Property of the Contractor except where otherwise provided.
2. **Action:** Remove from site as work proceeds where not to be reused or recycled for site use.

511 Employer's property

1. **Components and materials to remain the property of the Employer:** Items noted as to be retained and stored on site on accompanying strip out drawings
2. **Protection:** Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.

Ω End of Section

C40

Cleaning masonry/ concrete

General/ preparation

120 Related repair and remedial works

1. Related repair and remedial works are specified elsewhere. Ensure that the following work has been carried out before the cleaning work commences:

150 Electrical equipment and supplies

1. Ensure that all electrical supplies serving external equipment have been disconnected and that unless specified otherwise, fittings and associated cables have been removed

160 Protection

1. Surfaces not designated for cleaning: Prevent damage, including marking and staining.
2. Openings: Prevent ingress of water, cleaning agents and detritus.
 - 2.1. Vents and grilles: Seek instructions before sealing up.
3. Temporary mechanical fastenings
 - 3.1. In masonry: Locate in joints.
 - 3.2. In other surfaces: Seek instructions.
4. Additional protection: Leaded glass: Submit proposals

175 Control and disposal of wash water and detritus

1. Disposal: Safely. Obtain approvals from relevant Authority.
2. Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
 - 2.1. Water penetration: Ensure that water does not penetrate interior and damage finishes etc. Monitor interior of building and seek instructions if and when any sign of damp appear internally.
3. Above and below ground drainage systems: Keep free from detritus and maintain normal operation.

180 Cold weather

1. Cleaning procedures using water: Do not use when air temperature is at or below 5°C. Protect damp surfaces from frost.
2. Chemical cleaning agents: Do not use when surface temperatures are below those recommended by manufacturer.

190 Cleaning generally

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

- 4.2. Works to be inspected and approved in accordance with the requirements of the local planning authority.
5. Modifications to cleaning methods and materials: Seek instructions.

215 Record of cleaning works

1. **Written report:** Record cleaning methods and procedures used for each type of surface and deposit.
2. **Submission:** At completion of cleaning works.

230 Trial samples

1. **Trial sample reference:** Consult CA
 - 1.1. **Surface:** Gritstone
 - 1.2. **Location/ Size:** Trial samples of cleaning to be provided for. Allow 3 no. for each method circa 1sqm
2. **Records:** Maintain written and photographic records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

Products/ equipment

312 Surface biocides

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

342 Stone cleaning systems Torc

1. **Manufacturer:** [Stonehealth Ltd](#)
 - 1.1. **Contact details**
 - 1.1.1. **Address:** G4/5 Draycott Business Park
Cam
Dursley
Gloucestershire
GL11 5DQ
 - 1.1.2. **Telephone:** +44 (0)1453 540600
 - 1.1.3. **Web:** <https://stonehealth.com/>
 - 1.1.4. **Email:** info@stonehealth.com
 - 1.2. **Product reference:** [TORC Gentle Vortex Cleaning System \(With Auxiliary Pump\)](#)
2. **Cleaning operations**
 - 2.1. **Cleaning methods:** Gentle vortex cleaning system.
 - 2.2. **Rinsing:** As Cleaning schedule.
3. **Power supply:** Auxiliary pump.
4. **WaterConsumption:** 60 L/hour.
5. **Ambient temperature:** Not suitable for use below 5°C.
6. **Volume:** 3540 L/minute (125 CFM).
7. **Dry weight:** 240 kg.
8. **Pump:** 600 x 310 x 340 mm.
9. **Aggregate:** TBC on site with cleaning specialist prior to commencement of trials

352 Stone cleaning system Doff

1. Manufacturer: [Stonehealth Ltd](#)
 - 1.1. Contact details
 - 1.1.1. Address: G4/5 Draycott Business Park
Cam
Dursley
Gloucestershire
GL11 5DQ
 - 1.1.2. Telephone: [+44 \(0\)1453 540600](tel:+44(0)1453540600)
 - 1.1.3. Web: <https://stonehealth.com/>
 - 1.1.4. Email: info@stonehealth.com
 - 1.2. Product reference: [DOFF III Superheated Steam Cleaning System](#)
2. Output steam pressure: 100 bar.
3. Maximum temperature: 150°C.
4. WaterConsumption: 5 L/minute.
5. Power consumption: 1400 W.
6. Voltage: 110/115 V + 0/0V.
7. Fuel: Diesel / kerosene boiler fuel.
8. Hose: 45 m.
9. Dimensions: 680 x 630 x 1030 mm.
10. Dry weight: 127.5 kg.
11. Pressure: TBC on site with cleaning specialist prior to commencement of trials

Application

412 Removal of loosely adhered deposits

1. Timing: Before commencement of other cleaning methods.
2. Surfaces: Prevent damage, including abrasion.

422 Biocide application

1. Surfaces: Prevent damage, including abrasion.
2. Biocide treatment: Appropriate solutions to kill growths and inhibit further growths.
 - 2.1. Dead growths: Remove.

432 Tooling

1. Tooling of surfaces: Seek approval of CA
2. Skilled stone masons are required, to reduce the risk of surface and detail losses

442 Abrasive blocks

1. Types: Suitable grades of carborundum or gritstone.
2. Application: Lubricate with water. Remove detritus.
3. Abrasive power tools: Prohibited.

452 Abrasives cleaning

1. Surfaces: Minimize abrasion.
 - 1.1. Ingrained deposits: Seek instructions.

2. Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.
3. Detritus: Remove with clean water.

462 Water spray cleaning (mounted nozzles)

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

472 Pressurized water cleaning

1. Surfaces: Prevent damage, including abrasion.
2. Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

482 Steam cleaning

1. Surfaces: Prevent damage, including abrasion.
2. Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

520 Completion

1. Obtain CA's approval of cleaning to each area/ surface and before removal of temporary protection.
2. After removal of temporary protection, thoroughly clean all glazing, window frames, doors sills and other affected surfaces.
3. Check that all gutters, hoppers, downpipes and gullies are free from obstructions and debris arising from cleaning works
4. Give the CA 2 weeks notice before striking each stage of scaffolding, to allow for final inspections.

Ω End of Section

C41

Repairing/ renovating/ conserving masonry

Clauses

2 To be read with preliminaries/ general conditions

Generally/ preparation

110 Scope of work

1. **Schedule:** Refer to drawings for stonework to be repaired
2. **Records of masonry to be repaired:** Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.
3. **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.

111A Review of scope of repair work upon close inspection

1. Provide access scaffolding and artificial lighting to all areas where stone repair is to be made to enable the CA to make a close inspection: .
2. Provide attendance and inspect the work with the CA to confirm the nature and extent of the cutting out and preparation of voids as identified on the drawings.
3. Make a record of instructions given during inspections, which may either confirm or vary scope of work, and measure and record relevant details.
4. Prepare and submit details of instructions for confirmation.
5. Prepare schedules and drawings for use as basis of implementation work.

120 Site inspection

1. **Purpose:** To confirm type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
2. **Parties involved:** - Contract administrator;- Contractor's representative; and- Foreman mason
3. **Timing:** At the earliest opportunity and prior to placing any orders for new stone
4. **Instructions issued during inspection:** Confirm in writing, with drawings and schedules as required, before commencing work

125A Removal of fittings/ fixtures

1. External
2. **Items to be removed, and reinstated on completion of repair work:** Rainwater goods; lightning conductor tapes
 - 2.1. **Identification:** Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe refixing instructions, where applicable.
 - 2.2. **Treatment following removal:** As schedule
 - 2.3. **Storage:** Protect against damage, and store until required.
 - 2.3.1. **Storage location:** On-site
 - 2.4. **Reinstatement:** Refit in original locations using original installation methods.
3. **Items unsuitable or not required for reuse:** To be confirmed by CA
 - 3.1. **Disposal:** Obtain instructions
4. **Masonry fabric and surfaces:** Do not damage during removal and replacement of fittings/ fixtures.

130A Removal of plant growths from masonry

1. **Plants, root systems and associated soil/ debris:** Carefully remove from joints, voids and facework.
2. **Removal of roots:** Where growths cannot be removed completely without disturbing masonry seek instructions.
3. Do not remove lichen.
4. Use suitable biocides (multiple if necessary) specific to the purpose and use in accordance with manufacturer's recommendations. Protect adjacent areas of the building etc from unwanted spray. Biocide specification to be submitted for CA approval prior to commencement
5. **Hand tools only:** loppers, handsaws, wood or plastic scrapers, natural and/or brass wire brushes.

140 Record of work

1. **General:** Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings and photographs, as necessary.
2. **Specific records:** Photographs prior to commencement; record condition of the stone during and after removal; record the depth of the stone; photograph upon completion
3. **Documentation:** Submit on completion of the work.
 - 3.1. Number of sets: One electronic

Workmanship generally

112A Related work

1. is specified in the following sections:
 - 1.1. F21 - Natural Stone and Ashlar Walling/Dressings.
 - 1.2. Z21 - Mortars.

121A Recording to the approval of the CA

1. Clearly mark by appropriate means, the defective stones or parts of stones to be cut out.
2. Record by photograph or other approved method, stones to be cut out and/or missing stones to be reinstated, and the relationship of surrounding work. Note bond, joint size, style and texture of pointing and any special or unusual feature for replication.
3. Cross-reference identified and marked stones for cutting out and/or missing stones for reinstatement to drawings or photographs.

150 Power tools

1. **Usage for removal of mortar:** Not permitted

155 Putlog scaffolding

1. **Usage:** Not permitted

160 Protection of masonry units and masonry

1. **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.
2. **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

1. **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

1. **Retained masonry in the vicinity of repair works:** Disturb as little as possible.
2. **Existing retained masonry:** Do not cut or adjust to accommodate new or reused units.
3. **Retained loose masonry units and those vulnerable to movement during repair works:** Prop or wedge so as to be firmly and correctly positioned.

180A Workmanship

1. All banker mason and fixer mason work to be carried out by appropriately trained and experienced personnel, such as masons and qualified conservators. Details of each person's qualifications and experience should be forwarded to the architect before commencement on site.
2. **Sub-contracting:** sub-contractors to a specialist masonry contractor allowed; however sub-contracting banker and fixer mason work direct to the quarry / supplier is strictly not permitted.
3. Trainee and apprentices permitted subject to full supervision. The contractor shall be responsible for cost and programme implications for making good any defective work or work carried out not to the required standard.
4. **Comply with the clauses of the following that are relevant to this section, unless otherwise specified or shown on the drawings:**
 - 4.1. BS 5628-3: 2005.
 - 4.2. bs 8000: 2001 Part 3 Code of Practice for Masonry.

182A Protection

1. Store dressed stone clear of the ground, separate with resilient spacers; protect from adverse weather.
2. Prevent soiling, chipping and contamination by salts and other deleterious substances.
3. Prevent damage to stonework, particularly arrises and projecting features. Protect with suitable slats, boards etc and remove at Practical Completion.
4. Prevent staining and other disfigurement of stonework during the course of subsequent works.
5. Turn back scaffold boarding at night and during heavy rain.
6. **Provide all necessary protection to:**
 - 6.1. Surrounding work.
 - 6.2. Voids left after defective stones have been cut out and/or where stones are missing.
7. Areas of ancient/eroded stonework.

185 Adverse weather

1. **General:** Do not use frozen materials or lay masonry units on frozen surfaces.
2. **Air temperature:** Do not bed masonry units or repoint:
 - 2.1. 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.
 - 2.2. 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.
 - 2.3. In nonhydraulic lime:sand mortars in cold weather, unless approval is given.
3. **Temperature of the work:** Maintain above freezing until mortar has fully set.

4. **Rain, snow and dew:** Protect masonry by covering during precipitation, and at all times when work is not proceeding.
5. **Hot conditions and drying winds:** Prevent masonry from drying out rapidly.
6. **New mortar damaged by frost:** Rake out and replace.

186A Warm dry weather

1. In warm dry weather keep areas of work damp for a minimum of four hours before pointing and three days after.

Material/ production/ accessories

211A Ordering of stone

1. Calculate the quantities required, agree delivery dates and place a firm order for stone from the suppliers specified below promptly upon placement of contract.

215 Material samples

1. **Representative samples of designated materials:** Submit before placing orders.
 - 1.1. **Designated materials:** As clause 240
2. **Retention of samples:** Unless instructed otherwise, retain samples on-site for reference. Protect from damage and contamination.

220 Recording profiles

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

222A Working drawings

1. **Prepare drawings of carved and moulded stones and stone ridge tiles to be replaced to show:**
 - 1.1. Fixing details numbered to correspond to numbers on stones.
 - 1.2. Details and locations of accessories.
2. Provide a method statement to show how awkward and/or heavy stones (e.g. replacement ridge tiles) are to be handled and hoisted.
3. Submit copies of drawings to CA at least two weeks before required date for cutting stone before proceeding with cutting.
4. Hand approved set of drawings to CA on completion.

224A Guarantee

1. Obtain and submit written guarantee by suppliers that all new stone will be from the quarry and bed specified.

230 Inspection of drawings, templates, casts, etc.

1. **Timing:** Before starting production of masonry units associated with the following items: All moulded and carved ornamental work.
2. **Period of notice (minimum):** Two weeks

235A Inspection of masonry units

1. **General:** Before dispatch to site, inspect and check completed units for:

2. match with approved samples.
3. compliance with drawings and specification.
4. **Give notice:** At appropriate stages in production to allow inspection of masonry units before delivery to site.

240 Stone

1. **Standard:** To BS EN 771-6
2. **Supplier:** To be confirmed
3. **Type:** To match existing. Samples required for approval as 215
4. **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.
5. **Finish:** To match existing

245 Replacement stone units

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

247A Re-use of stone

1. Agree extent to which existing stone is to be retained for re-use in other than its existing location.
2. Remove all such stone; clean, overhaul, protect and store on site until required.

248A Carving

1. Supply sufficient stone, consistent in grain and colour, for carver to have ample scope for this work.
2. Carve stone to accurate clean profiles before or after building in, as agreed with the CA

249A Production

1. **Cut and dress stone so that:**
 - 1.1. Shaping, finishing and all sinkings and holes for fixing and lifting devices are completed after seasoning but before delivery to site.
 - 1.2. Finished surfaces match those of existing surrounding stones.
 - 1.3. Stone bond and joint lines are maintained.
 - 1.4. Meeting surfaces between adjacent stones are compatible with each other and free from hollow or rough areas.
 - 1.5. V-shaped sinkings and dowel holes correspond with those in new or existing stones that remain or are to be reincorporated, for filling with mortar to form joggles.
 - 1.6. Drill holes for dowels are of equal depth in adjacent stones and in core work.
 - 1.7. Joint size between stones matches adjacent work.
 - 1.8. Joint size within repaired stones is kept to a minimum.
 - 1.9. Mitred joints do not occur at corners.
 - 1.10. Natural bed is horizontal in plain walling and quoins stones, vertical and at right angles to wall face in projecting stones and at right angles to line of thrust in arches.

250 Stone orientation

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

252A Identification

1. Mark each stone, whether new, secondhand or re-used, clearly on an unexposed face to indicate the natural bed and, where known, its position in the finished work.

253A Inspection of the masonry joint

1. General: Before dispatch to site, inspect and check completed units for:
 - 1.1. Match with approved sample.
 - 1.2. Compliance with drawings and specification. Give notice at appropriate stages in production to allow inspection of masonry units before delivery to site.

255A Ashlar blocks/ dressings

1. Cutting and dressing stone:
 - 1.1. To true and regular surfaces, free from hollow or rough areas.
 - 1.2. Stone bond and joint lines are maintained.
 - 1.3. Meeting surfaces between adjacent stones are compatible with each other and free from hollow or rough areas.
 - 1.4. V-shaped sinkings and dowel holes correspond with those in new or existing stones that remain or are to be reincorporated, for filling with mortar to form joggles.
 - 1.5. Joint size between stones matches that of existing work.
 - 1.6. Joint size within repaired stones is kept to a minimum.
 - 1.7. Mitred joints are formed using 'mason's mitres'.

Dismantling/ rebuilding

310 Dismantling masonry for reuse

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

315A Preparing beds and backing

1. Remove all unwanted bedding and backing material, fixings and similar items from voids left where defective stones have been cut out and / or where stones are missing.
2. Rake and clean out cavities to provide sound hard surfaces for replacement stones.
3. Remove dust throughout by bristle brush and with a vacuum cleaner if necessary.

321A Removal of guano and carcasses

1. Make COSHH assessment of risks in connection with removal and submit with proposed method statement, to CA.
2. Remove all pigeon guano, carcasses and debris and dispose of all in sealed bags to site approved by local regulating authority. Vacuum clean all affected internal areas. Disinfect all fouled areas

with an appropriate disinfectant that is compatible and will not stain or cause an adverse reaction with the host fabric.

335A Bonding

1. Cut stones to full dimensions so that:
 - 1.1. Bond is maintained with both facework and with backing.

Replacements and insertions

330A Preparation for indent and whole block masonry repairs

1. **Defective material:** Cut out defective stones or parts of stones until structurally sound material is reached. Take care not to damage adjacent stones or surfaces to be retained. Fully cut out stones or parts of stones to be replaced with new, prior to cutting and dressing replacement stone, to ensure that new stone exactly matches the void into which it is to be set.
2. **Embedded existing ferrous and non-ferrous metal work:** Report when exposed.
 - 2.1. **Ferrous metal fixings such as iron cramps:** carefully remove and retain in the site office recording the location it was removed from; clean out joint of mortar and existing sealant.
 - 2.2. **Non-ferrous fixings such as copper dowels:** carefully remove and set aside for re-use if in sound condition. Retain any rejected fixings in the site office, recording the location it was removed from.
 - 2.3. **Redundant fixings such as old nails etc.** Remove ferrous fixings.
3. **Redundant timber plugs:** Remove and point up using lime mortar repair mix.
4. **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.

385A Laying replacement masonry units

1. **Exposed faces of new material:** Keep to agreed face lines.
2. **Accuracy:**
 - 2.1. **Courses:** Level and true to line.
 - 2.2. **Faces: angles and features:** Plumb
 - 2.3. **Setting out:** Achieve satisfactory junctions and joints with adjoining or built-in elements and components. Set out new stone back to the original building line. Provide discreet lime mortar weatherings on horizontal shelves formed as a result of this requirement.
3. **Joint surfaces:** Dampen to control suction as necessary.
4. **Exposed faces:** Keep clear of mortar and grout. **Absorbant stones:** Dampen in warm weather to reduce suction. Do not soak.
5. **Mortar joints:**
6. **Laying units:** On a full bed of mortar with all joints and voids filled.
7. **Distance pieces:** Use lead.
8. **Appearance:** Neat and consistent.
9. **Grout back faces of stonework** let into host building by grout injection.
10. **Cleanliness:** Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains not permitted.

390 Grouting joints

1. **Grout mix:** See Z21 Mortars
2. **Joints that cannot be fully filled with bedding mortar:** Grout thoroughly around replacement masonry units.

3. **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.

395A Stone indent repairs

1. **Preparation:**
 - 1.1. Cut out accurately. Undercut sides of pocket where necessary to provide space for bonding material. Prepare bed and backing as specified.
 - 1.2. For dressed work adjust the depth so that insert stands proud of existing stone for finishing in situ.
2. **Indents:**
 - 2.1. Ascertain the depth of the stone to be repaired.
 - 2.2. **Minimum depth of new stone for indent repairs:** 100mm. If the stone is less thick than 50mm or the material that would be left would be unstable, prepare for whole block replacement. If variation of the existing masonry design is necessary to provide structural stability, seek instruction.
 - 2.3. Where shown on the drawings cut to the smallest rectangular shape necessary to replace the defective area and provide a firm seating. Install accurately and securely. Otherwise cut out to the extents of the existing mortar joints.
 - 2.4. **Exposed faces:** Keep clear of bonding material.
3. **Existing joint widths:** Maintain. Do not bridge joints.

403A Fill deep holes

1. In existing masonry with small stones set in bedding mortar as section Z21.

405 Bonded dowels

1. **Description:** To all locations required
2. **Standard:** To BS EN 1090-1
3. **Dowels:** Reuse existing copper dowels if they are in suitable condition, length and diameter. New dowels to be a threaded austenitic steel in grade 316
4. **Adhesive:** As per section Z21
5. **Holes for dowels:** Suitably sized and accurately aligned in masonry background and in rear of replacement/ insert stone; clean and dry.
6. **Other requirements:** Do not use adhesive to bond stones at joints unless instructed.

410A Corroded embedded ferrous cramps

1. **Removal:** Cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
2. **Replacement:** Austenitic stainless steel in grade 316
3. **Bedding / adhesive:** As per section Z21.
4. **Sealant:** Molten lead.
5. **Requirement:** only remove and replace corroded embedded ferrous cramps where scheduled, instructed and/or if exposed during the course of other structural work.

420A Temporary distance pieces for joints in ashlar stonework

1. **Material:** Lead if not removed; plastic permitted only if removed.
2. **Purpose:** To provide well distributed support and ensure correct joint width.
3. **Removal:** When mortar/ grout is sufficiently strong to take loading without compression; and the distance piece is readily accessible without affecting the masonry or mortar joint.

Tooling/ dressing stone in situ

450A Weathering ledges at joints

1. Locations:
 - 1.1. Where stones project or are recessed and the ledge or pocket promotes the standing, pooling or ingress of water.
 - 1.2. To entire ledge on the top of chimney cornices.
2. **Requirement:** Carefully weather the ledge with lime mortar as specified. Supplement with bedded slate copings where scheduled.

451A Retained original masonry

1. It is not to be cut or adjusted in any way to accommodate new or re-used masonry, except with prior approval of the CA.

452A Brushing back of eroded/flaking mortar pointing

1. Brush back stone joints to remove loose and flaking mortar for inspection by CA. Smooth and compact underlying mortar by gently tamping with smooth rounded dowel.

455A Redressing of masonry

1. **Requirement:** Carefully remove loose scaling and powdering from stones back to sound stone.
2. **Method:** bristle brushes such as churn brushes, carborundum blocks. Do not use wire brushes.
3. Do not disturb sound crusts adjacent stonework.
4. Clean off stone face and adjacent areas with a churn bristle brush.

Mortar repairs

555 Float finish to mortar repairs

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

Crack repairs/ ties/ reinforcement

640 Pinning

1. **Description:** To pin fractured stone and for indent repairs
2. **Dowels/ Pins**
 - 2.1. **Standard:** To BS EN 1090-1
 - 2.2. **Type:** Austenitic stainless steel threaded rods
 - 2.3. **Diameter:** minimum 6 mm
 - 2.4. **Additional requirements:** Penetration into background not less than 100 mm. Provisionally allow 3 pins per stone
3. **Resin:** Low viscosity resin to approval
4. **Holes:** Drill carefully, sloping downwards into background. Remove drilling dust and debris and keep dry.
5. **Filling holes**
 - 5.1. Check that dowel lengths are correct before filling with resin.
 - 5.2. Use sufficient resin so that when the dowel is inserted the resin is dispersed to achieve an effective repair.

6. **Exposed faces:** Keep clean and free from resin stains. Use temporary plugging material and/ or isolating membranes as necessary.
7. **Clearances:** Keep ends of ties and resin back from face of masonry.
8. **Making good after resin has cured:** with either mortar as specified for lime mortar ashlar repairs or additionally with stone plugs

690 Making good to injection and insertion holes

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

692 Making good to tie and dowel insertion holes using core drilled plugs

1. **Plugs:** Cut plug from masonry face before drilling hole for each tie/ dowel. Where resulting plug is unusable, prepare plug from matching material.
 - 1.1. **Plug diameter:** Smallest practicable.
2. **Holes:** Clean.
3. **Method of securing plug:** hydraulic lime for core work
4. **Joints:** Fine and flush.
5. **Finished appearance:** Obtain approval for first one holes before completing remainder.

Grouting rubble filled cores

710 Preparation for grouting

1. **Grouting holes:** Drill in joints at horizontal and vertical centres to suit coursing and to achieve an effective distribution of grout so that, on completion, all voids in masonry are filled.
2. **Maximum height of each grout pour:** Regulate to prevent disruption to masonry.
3. **Open joints in masonry:** Seal with an approved temporary material to prevent leaking of grout. Leave weep holes every two or three courses to assist in flushing out dust and debris, and to prove effectiveness of grouting. Locate temporary seal back from facework to allow for specified repointing. Seek instructions if repointing precedes grouting.

712 Flushing out

1. **Timing:** Before grouting.
2. **Requirement:** Flush out core of masonry walls using clean water delivered under moderate pressure through grouting holes.

735 Pumped injection grouting

1. **Description:** To concealed joints behind repaired masonry blocks
2. **Grout mix:** see section Z21
3. **Injection grouting system:** Hand operated pump to approval
4. **Delivery pressure (subject to site trials):** 100 kPa

740 Application of grouting

1. **Grouting:** Continuous operation during each lift. Allow grout to set before commencing subsequent lifts.
2. **Monitoring:** Monitor grouting carefully and continuously at each delivery point (flow and delivery pressure), and at adjacent/ opposite wall faces, to ensure that there is an effective distribution of grout with no leaking, staining, or disruption to the masonry.

3. **Temporary seals:** Remove on completion of grouting and leave joints in a suitable condition for repointing.

Pointing/ repointing

809A Sample panels

1. Allow for providing up to four different sample panels of re-pointing on the host fabric, 600mm square, for each type of pointing mix required
2. Allow for altering the mortar mix for each sample and for each panel to dry out completely; so that the sample is representative of finished work.
3. Proceed with approved sample upon receipt of architects instruction.
4. Retain and protect samples until Practical Completion and ensure executed work match.

810A Preparation for repointing

1. Existing mortar: Working from top of wall downwards, remove mortar carefully, without damaging adjacent masonry or widening joints, to a minimum depth of twice joint thickness .
 - 1.1. **Loose or friable mortar:** Seek instructions when mortar beyond specified recess depth is loose or friable and/ or if cavities are found.
2. Gently work a fine hacksaw blade and or tungsten carbide chisels along joints and remove loose material.

815A Removal of hard pointing

1. Remove a sample section of hard mortar pointing in each area scheduled for removal in agreed location. Proceed upon architects instruction.
2. Carefully cut out hard mortar by picking with chisel to reveal original mortar joint; and or,
3. Drill fine holes along the centreline of especially hard mortar to loosen mortar; then pick out pointing with chisel.
4. Hammer and bolster not permitted; to avoid disturbance of existing sound fabric by impact vibrations.
5. Power tools not permitted.
6. Prepare any disfigured areas found to existing masonry and bricks by rubbing with a carbide stone or stone masonry tools. Carry out this work following preparation of a sample panel to redundant masonry and bricks.

840A Pointing with tools/ irons

1. Begin from top of wall. Immediately before repointing flush out joints with water to remove all dust and to control suction. Wet surface until it remains wet.
2. Thoroughly compact mortar to fill all voids and to ensure it adheres firmly to each side of joint. Iron mortar in with appropriate pointing tool (not trowel) of width to suit the joint width, keeping finished mortar face back from damaged and weathered arrises and to width of original joint.
3. Allow sufficient time for the re-pointing to be done without hurry.
4. **Face of masonry:** Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly. Wash and brush down surface to remove light staining as soon as it occurs.

850A Pointing with injection mortar

1. **General:** Inject mortar into joints so that they are fully filled with no voids.
2. **Face of masonry:** Keep clear of mortar. Finish joints neatly. Wash and brush down the surface to remove light staining as soon as it occurs.

3. Carry out operation when bedding and pointing mortar has set and a good bond has been acquired.

860A Brushed finish to joints

1. **Timing:** After initial mortar set has taken place remove laitance and excess fines by brushing, to give a coarse texture. Do not compact mortar. Lightly beat the pointing with a churn brush to reveal the aggregate.

Ω End of Section

C51 DIA

Repairing/ renovating/ conserving timber

General

110 Inspection

1. **Purpose:** To confirm nature and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work. Type of repairs to be specified following inspection and nature of defect understood.

120 Review of scope of repair work upon close inspection

1. Provide access scaffolding and artificial lighting to all areas where timber repair is to be made to enable the Conservation Architect to make a close inspection.
2. Provide attendance and inspect the work with the Conservation Architect to confirm the nature and extent of the cutting out and removal of timbers as identified on drawings. Specialist joiner carrying out works to attend.
3. Make a record of instructions given during inspections, which may either confirm or vary scope of work, and measure and record relevant details, as clause 135.
4. Prepare and submit details of instructions for confirmation.

130 Opening up

1. **Purpose:** To reveal previously concealed areas of structure or fabric not recorded during initial surveys.
2. **Extent:** To be agreed.
3. **Timing:** Give Conservation Architect 1 week notice before starting opening up.
4. **Retained building structure/ fabric:** Do not damage or destabilize.

135 Recording to the approval of the Conservation Architect

1. Clearly mark by appropriate means, the defective timbers or parts of timbers to be removed.
2. Record by photograph or other approved method, timbers to be cut out and/or missing timbers to be reinstated, and the relationship of surrounding work.
3. Cross-reference identified and marked timbers to drawings or photographs.

150 Timber procurement

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

165 Samples

1. All for 3 no.s of samples of each timber species required.
2. Submit samples of timber and obtain approval before proceeding with manufacture or repair.

3. Retain and protect approved samples on site until Practical Completion and ensure work matches with consultation of Conservation Officer.

Structural repairs/ alterations

206 Timber repairs

1. It is not intended to renew or straighten old and crooked structure but rather to set it in sound and healthy repair.
2. Repair timbers individually, as far as possible in position, with a minimum of replacement and renewal.
3. Resolve all "live" structural movement, and correct design of physical weaknesses.
4. Retain irregularities that are not unsound or unsafe.
5. Finish joints to ensure close contact of mating surfaces.

235 Jointing/fixing generally

1. Where not specified otherwise, select fixing and jointing methods and types, sizes and spacings of fastenings in compliance with section Z20 and to match existing where appropriate.
2. Fastenings to comply with relevant British Standards.

245 End joints

1. Do not use without approval from Conservation Architect.

250 Timber section repairs - external splice - Fleche repairs

1. Defective timber: Cut out to clean, regular profile.
2. Replacement timber: Softwood to match existing
3. Splice plates
 - 3.1. Material: Stainless steel
 - 3.2. Size: As per Structural Engineers details
4. Fixing to existing timber: As per Structural Engineers details

251 Timber section repairs - external splice - Windows

1. Defective timber: Cut out to clean, regular profile.
2. Replacement timber: Softwood to match existing
3. Splice plates
 - 3.1. Material: Stainless steel
 - 3.2. Size: As per Structural Engineers details
4. Fixing to existing timber: As per Structural Engineers details

255 Scarf joints

1. Where approved:
 - 1.1. Angle of slope to be not more than 1 in 6 and length of scarf not less than 500mm.
 - 1.2. Fix with mechanical fastenings so that permissible local timber stresses and capacity of fastenings are not exceeded.
 - 1.3. Arrange to provide a maximum gluing surface and ensure that direction of mating surfaces is matched.

Products

370 Hardwood for joinery repairs

1. **Description:** English Oak to match existing roof timbers. Samples to be provided as NBS C51/165
2. **Quality:** Generally to BS EN 942; free from decay and insect attack (except pinhole borers).

420 Stainless steel sections and plates for fleche splice repair

1. **Standard:** To BS EN 10088.
2. **Source:** Obtain steel from a source accredited to a national or internationally accepted quality standard.

450 Stainless steel bolt assemblies for works at fleche

1. **Bolts:** To BS EN ISO 3506-1.
2. **Nuts and washers:** To suit grade of bolt.
 - 2.1. **Washer size**
 - 2.1.1. **In contact with timber:** Diameter: 2 times bolt diameter; thickness: 0.2 times bolt diameter.
 - 2.1.2. **In contact with steel section/ plate (required when surface finish may be damaged by nut or bolt head rotating):** To BS 4320.

470 Nails

1. **Description:** Generally
2. **Standard:** As section Z20.
3. **Material:** Stainless Steel.

480 Screws

1. **Description:** Generally
2. **Standard:** As section Z20.
3. **Material:** Stainless Steel

Execution

107A Related work

1. Is specified in the following sections:
 - 1.1. G20 Carpentry/Timber Framing/First Fixing.
 - 1.2. Z10 Purpose Made Joinery.
 - 1.3. Z20 Fixings/Adhesives.

120A Review of scope of repair work upon close inspection

1. Provide access scaffolding and artificial lighting to all areas where timber repair is to be made to enable the Conservation Architect to make a close inspection.
2. Provide attendance and inspect the work with the Conservation Architect to confirm the nature and extent of the cutting out and removal of timbers identified on drawings.
3. Make a record of instructions given during inspections, which may either confirm or vary scope of work, and measure and record relevant details, as clause 135D.
4. Prepare and submit details of instructions on confirmation.

135A Recording to approval of the Conservation Architect

1. Clearly mark by appropriate means, the defective timbers or parts of timbers to be removed.
2. Record by photograph or other approved method, timbers to be cut out and/or missing timbers to be reinstated, and the relationship of surrounding work.
3. Cross-reference identified and marked timbers to drawings or photographs.

165A Samples

1. Submit samples of timber and obtain approval before proceeding with manufacture or repair.
2. Retain and protect approved samples on site until Practical Completion and ensure work matches.

206A Timber repairs

1. It is not intended to renew or straighten old and crooked structure but rather to set it in sound and healthy repair.
2. Repair timbers individually, as far as possible in position, with a minimum of replacement and renewal.
3. Resolve all 'live' structural movement, and correct design of physical weaknesses in strict accordance with the Structural Engineer's design.
4. Retain irregularities that are not unsound or unsafe. Finish joints to ensure close contact of mating surfaces.

600 Workmanship

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

603 Sequence of repair work

1. Remove unwanted timbers. Support remaining structure as clause 135 and support as per Structural Engineers instructions.
2. Carry out de-frassing and preservative treatment.
3. Repair existing and introduce new timbers.

605 Accuracy

1. Notwithstanding BS 8000 Part 5:1990, clause 3.2.1, comply with Preliminaries clause A33/340 and any required critical dimensions given in the Specification or on the drawings.

610 Temporary supports/ propping

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

620 Protection of timber and wood components before and during installation

1. **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.
2. **Handling:** Do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

650 Dimensions generally

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

685 Preservative treatment

1. Agree extent of treatment to existing timber with CA.
2. Carry out as much cutting and machining as possible before treatment.
3. Retreat all treated timber that is sawn along the length, ploughed, thickened, planed or otherwise extensively processed.
4. Treat timber surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.
5. Ensure preservative solution is compatible with wood priming paint, wood stain, sealants and adhesives to be used.

695 Selection and use of timber

1. Do not use timber members that are damaged, crushed or split beyond the limits permitted by their grading.
2. Ensure that notches and holes are not so positioned in relation to knots or other defects that the strength of members will be reduced.
3. Do not use scarf joints, finger joints or splice plates without approval from CA and SE.
4. Select timber with due regard to the particular purpose for which is to be used.

705 Cutting existing timber

1. Avoid where possible.
2. Obtain approval of dimensions and locations before cutting.

740 Removal of existing decorative/ protective finish

1. **Description:** All external timber to fleche
2. **Extent:** Remove completely back to bare wood.
3. **Method:** as M60

750 Cleaning dirty or stained wood

1. **Generally:** Scrub with neutral pH soap and clean, warm water.
2. **Old varnish:** Remove using mixture of turpentine (not turpentine substitute) and acetone in proportions determined by experiment, followed by washing down.

750 Cleaning dirty or stained wood

1. **Generally:** Scrub with neutral pH soap and clean, warm water.
2. **Old varnish:** Remove using mixture of turpentine (not turpentine substitute) and acetone in proportions determined by experiment, followed by washing down.

755 Retained timbers

1. Clean off superficial dirt and debris. Any historically interesting nails, fixings, features, artefacts or dated elements to be brought to the attention of the agent/client and/or the Recording Archaeologist.
2. Adapt or renew as required to accommodate new timbers.
3. Set aside removed metal items for the CA.

860 Moisture content checking

1. **Procedure:** Check moisture content of timber sections with an approved electrical moisture meter.
2. **Test results:** Keep records of all tests. If moisture content falls outside specified range, obtain instructions.

865 Moisture content

1. **Moisture content::** Moisture content of timber at time of erection to be not more than:
 - 1.1. **Under cover in generally unheated spaces::** 19%

870 Moisture content testing

1. **Procedure:** Test timber sections with an electrical moisture meter with deep probes. (A meter that has been carefully calibrated against oven drying tests or otherwise guaranteed by an independent testing authority).
2. **Test sample:** Test 5% but not less than 10 lengths of each cross-section in the centre of the length.
3. **Test results:** 90% of values obtained to be within the specified range. Provide records of all tests.

875 Protection

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

898 Damage

1. Report all damage to the CA in writing.
2. Obtain the approval of the CA before making good or replacing defective members or joints.

Completion

906 Inspection

1. Give CA reasonable opportunity to inspect structural timberwork before covering up with a notice of minimum 1 week.

Ω End of Section

F21 DIA

Natural stone ashlar walling/ dressings

Clauses

210D Related work

1. Is specified in the following sections:
2. C41 Repairing/ renovating/ conserving masonry
3. Z21 DIA Mortars

215D Review of scope of repair work upon close inspection

1. Provide access scaffolding and artificial lighting to all areas where stone repair is to be made to enable the CA to make a close inspection.
2. Provide attendance during inspections by the CA.
3. Make a record of instructions, which may either confirm or vary scope of work, given by CA during inspections and measure and record relevant details.
4. Prepare and submit details of instructions for confirmation by CA.
5. Prepare schedules and drawings for use as basis of implementation of work

223D Guarantee

1. Submit written guarantee by suppliers that all stone will be from the quarry and bed specified. Provide documentation from the quarry to substantiate

224D Quality

1. Select stone of similar density and of comparable quality to that to be replaced to match existing in shade, texture, finish and range of colour variation. Confirm with CA before proceeding.

230D Operatives

1. Cutting, dressing, laying and jointing of stone to be carried out by skilled masons. Provide evidence of previous experience and details of work previously carried out.

240D Stone samples

1. **Timing:** Before placing orders.
2. **Timing:** Obtain approval before placing orders.
3. **Submit:** Labelled samples of dressed stone or arrange for samples which represent the range of variation in appearance to be inspected.
4. Retain and protect approved samples on site until Practical Completion and ensure stones used in work match

241A Stone

1. Replacement stone to match existing

243D Carving

1. Select stone for carving consistent in grain and colour throughout for approval.
2. Agree with CA whether stone is to be carved before or after it is incorporated in building

302D Basic workmanship

1. Comply with the clauses of the following that are relevant to this section, unless otherwise specified or shown on drawings:
 - 1.1. BS 5628-3:2005.
 - 1.2. BS 8000:2001 Part 3 Code of Practice for Masonry.

305D Protection

1. Store dressed stone clear of the ground, separate with resilient spacers, protect from adverse weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances.
2. Prevent damage to stonework, particularly arrises and projecting features. Protect with suitable slats, boards, etc. and remove at Practical Completion.
3. Prevent staining and other disfigurement of stonework during the course of subsequent works.
4. Turn back scaffolding boards at night and during heavy rain.

310D Workmanship generally

1. Dampen stones and lay on a full even bed of mortar with all joints filled and approximately 5 mm wide. Use temporary lead or stainless steel distance pieces to ensure consistent joint width; remove when mortar is sufficiently strong.
2. Keep courses level and in line, and accurately plumb all wall faces, angles and features. Set out carefully to ensure satisfactory junctions and joints with adjoining or built in elements and components.
3. Keep stonework clean during construction and until Practical Completion. Ensure that no mortar encroaches on face when laying.
4. Turn back scaffolding boards at night and during heavy rain.

311D Working drawings

1. Prepare drawings of plinths, string courses, quoins, arches, cornice elements and moulded stones to show:
2. Fixing details numbered to correspond to numbers on stones.
3. Details and locations of accessories.
4. Provide a method statement to show how awkward stones are to be handled and hoisted.
5. Submit copies of drawings to CA at least two weeks before required date for cutting stone.
6. Obtain approval before proceeding with cutting.
7. Hand approved set of drawings to CA on completion.

312A Removal of moss and lichen

1. Remove as much moss growth as possible without damaging the stone beneath using knife blades, spatulae and stiff bristle or non ferrous phosphor bronze soft wire brushes.
2. Lichen is not to be removed..

314A Cramps

1. Replacement of corroding cramps:
2. Remove carefully all corroding and ferrous cramps where exposed.
3. Replace with appropriate keyed cramps in grade 316 stainless steel to BS 1449 Part 2 or BS 970 Part 4 to agreed design.
4. Allow for dog cramp pattern of cramp, 225mm long x 6mm diameter stainless steel threaded rod.
5. Bed cramps and dowels in approved epoxy resin.

316A Treatment of embedded ironwork

1. Reveal cramp by neatly cutting out a section of stone to be indented subsequently.
2. Remove as much rust as possible by chipping, brushing, hand sanding etc.
3. Apply proprietary rust converter to accessible parts of the cramp e.g. Fertan or similar.

317A Deeper embedding of cramps

1. Remove existing cramps.
2. Recut stone to receive new stainless steel cramps as specified/instructed of similar size as existing so that the top of the cramp is set down 25mm approx.

318A Resetting and realignment of stone

1. Scrape out mortar joints to stone.
2. Lever stone loose using timber shims etc. to protect the arrises and varved detail.
3. Clear backing and bedding mortar.
4. Reset stone to new line in lime mortar as specified using slate shims if necesasry.

319A Indented repairs

1. Carefully cut out defective area of stone to minimum depth of 100mm, to vertical and horizontal joints, sqauer to the face and with sharp arrises.
2. Use light hand tools, with prior approval, to minimise vibration.
3. Cut new stone sawn square to provide joint width no greater than 2mm, worked and finished to conform with existing detail.
4. Fix stone into position with minimum 5mm diameter stainless steel threaded pins secured in annulus of polyester or epoxy resin. Avoid getting resin on adjacent stone faces.
5. Point up with lime mortar finished flush with the face. Mortar colour to match stone as closely as poossible.

320A Lime mortar repairs

1. Generally
2. Prepare samples of mortar to match the various conditions of weathering and various stone colourson a piece of stone or tile to be judged on its wet and dry appearance.
3. Cut out the decayed areas undercutting the edges to provide key.
4. Wash out and sterilize the cavity with water and formalin.
5. Saturate the cavity with lime rich water from the top of the coarse stuff curing bin to prevent de-watering of the repair mortar.
6. Pre-wet the stone using industrial methylated spirits to enhance capilliary attarction.
7. Place the repair mortar compacting in layers not exceeding 10mm in thickness in any one application and having no feather edges.
8. Allow for each layer to dry out before rewetting and placing the next layer.
9. For cavities exceeding 12mm in depth and extending over 50mm square surface area, drill holes to take non ferrous or stainless steel reinforcement and set in epoxy mortar; allowing cover for reinforcement.
10. Finish repair to the required profile using a wood or felt covered float, or with a damp sponge or coarse cloth.
11. Follow joints, or tooling in the original work, forming joints for later pointing if appropriate.
12. Protect repairs against frost, rain and direct sunlight for 1 month after completion and keep it moist with dampened hessian for a fortnight to ensure slow drying.

324A Check existing in situ repairs

1. Check existing repair for hollowness and if defective carry out new in situ repair.

325A Replacement of in situ repairs

1. Cut out carefully defective repair undercutting the edges and keying in the recess generally.
2. Wash and sterilize the cavity with water and formalin.
3. Saturate the cavity with lime rich water from the top of the coarse stuff bin to prevent dewatering of the repair mortar.
4. Pre wet the stone using industrial methylated spirits to enhance capillary attraction.
5. Fill cavities with the specified lime mortar compacting in layers not exceeding 10mm in thickness, bringing it forward to form a continuous surface to conform with existing profile and texture.
6. Clean down thoroughly.

326A Pinning of stonework

1. Pinning of fractures to large blocks
2. Select locations for pins and using a 12mm diameter bit, drill with great care at an angle downwards into the stone at 150mm from the fracture to cross it at a depth of 150mm, depth of hole to be 50mm approx.
3. If necessary to effect a repair drill holes at 300mm centres approx or as agreed.
4. Clean dust from hole using suction and flushing out with a volatile solvent compatible with the resin adhesive.
5. Cut 10mm diameter stainless steel or phosphor bronze threaded rod to fit the hole so as to keep it 25mm back from the stone face.
6. If necessary apply 2 no coats of latex paint or modelling clay to the adjacent stone faces to prevent the resin from leaking out of interconnecting fissures.
7. Inject a low viscosity polyester or epoxy resin into the hole with a hypodermic syringe or gun allowing for the rod to be inserted and ensuring no air entrapped.
8. Any resin left on the face of the stone should be removed immediately with the appropriate solvent.
9. Point hole recess with lime mortar to match stone.

327A Pinning of fractures to small details

1. Select locations for pins and using a 8mm diameter bit, drill with great care at an angle downwards into the stone.
2. Clean dust from hole using suction and flushing out with a volatile solvent compatible with the resin adhesive.
3. Cut 6mm diameter stainless steel or phosphor bronze threaded rod to fit the hole so as to keep it 6mm back from the stone face.
4. If necessary apply 2 no coats of latex paint or modelling clay to the adjacent stone faces to prevent the resin from leaking out of interconnected fissures.
5. Inject a low viscosity polyester or epoxy resin into the hole for 2/3 of its depth with a hypodermic syringe ensuring no air is entrapped.
6. Any resin left on the face of the stone should be removed with the appropriate solvent.
7. Point hole with lime mortar to match above.

328A Laying generally

1. Turn back scaffold boards at night and during heavy rain.

385D Jointing

1. Finish exposed joints neatly as the work proceeds.

386A Stonework repointing spec

1. **Mortar:** As section Z21.
2. **Sand:** As section Z21.

401D Warm weather

1. In dry warm weather dampen areas of work for a minimum of four hours before pointing, and keep damp for three days afterwards

420D Damaged stone units

1. Repairs to damaged components must not be undertaken without approval. Such approval will not be given where components are badly damaged or where the proposed repair will impair appearance or performance.

Ω End of Section

G20 Carpentry/ timber framing/ first fixing

Clauses

2 To be read with preliminaries/ general conditions.

General

105 Timber procurement

1. Timber (including timber for wood-based products): Obtained from well managed forests/ plantations in accordance with:
 - 1.1. The laws governing forest management in the producer country or countries.
 - 1.2. International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
2. Documentation: Provide either in accordance with chain of custody certification scheme requirements:
 - 2.1. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
 - 2.2. Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
3. Chain of Custody Certification scheme:
 - 3.1. Other evidence:

160A Grading and marking of softwood

1. 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 'DG' (Dry-Graded).
2. Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
3. Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

Products

210 Structural softwood (graded direct to strength class)

1. Description: Structural timber post and bracings at fleche.
2. Grading standard: To BS EN 14081-1 and BS 4978, or other suitable national equivalent and so marked.
3. Strength class to BS EN 338: Structural Engineers specification
4. Treatment
 - 4.1. Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8
 - 4.1.1. Design service life: 60 years
 - 4.2. Flame retardant treatment: None required

270 Ungraded softwood

1. Description: For non structural hidden carcassing such as for supports to lead lined gutters

2. **Quality of timber:** Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
3. **Surface finish:** Sawn
4. **Treatment**
 - 4.1. **Preservative treatment:** Tanalised or double vacuum treated and cut ends are to be thoroughly treated before fixing
 - 4.2. **Design service life:** 60 years
 - 4.3. **Flame retardant treatment:** None required

275 Wood trim

1. **Description:** For any repairs to facias, bargeboards etc
2. **Species:** To match existing - for pricing purposes allow for douglas fir
3. **Standard:** To BS 1186-3.
 - 3.1. **Class:** 2
4. **Treatment:** Organic solvent impregnation to NBS section Z12 and Wood protection Association Commodity Specification C5
 - 4.1. **Design service life:** 60 years
5. **Fixing:** Stainless steel screws, rebated and pelleted
6. **Other requirements:** Undercut bottom edge of boards to form drip

Workmanship generally

401 Cross-section dimensions of structural softwood and hardwood

1. **Dimensions:** Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
2. **Tolerances:** The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
 - 2.1. **Tolerance class 1 (T1)** for sawn surfaces.
 - 2.2. **Tolerance class 2 (T2)** for further processed surfaces.

402 Cross-section dimensions of non-structural softwood

1. **Dimensions:** Dimensions in this specification and shown on drawings are finished sizes.
2. **Maximum permitted deviations from finished sizes:** As stated in BS EN 1313-1, clause 6 for sawn sections.

403 Cross-section dimensions of non-structural hardwood

1. **Dimensions:** Dimensions in this specification and shown on drawings are finished sizes.
2. **Maximum permitted deviations from finished sizes:** As stated in BS EN 1313-2:
 - 2.1. **Clause 6** for sawn sections.
 - 2.2. **Clause NA.3** for further processed sections.

420 Warping of timber

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

430 Selection and use of timber

1. **Timber members damaged, crushed or split beyond the limits permitted by their grading:** Do not use.

435 Notches, holes and joints in timber

1. Notches and holes
 - 1.1. General: Avoid if possible.
 - 1.2. Sizes: Minimum needed to accommodate services.
 - 1.3. Position: Do not locate near knots or other defects.
 - 1.4. In same joist: Minimum 100 mm apart horizontally.
 - 1.5. Notches in joists
 - 1.5.1. Position: Locate at top. Form by sawing down to a drilled hole.
 - 1.5.2. Depth (maximum): 0.15 x joist depth.
 - 1.5.3. Distance from supports: Between 0.1 and 0.2 x span.
 - 1.6. Holes in joists
 - 1.6.1. Position: Locate on neutral axis.
 - 1.6.2. Diameter (maximum): 0.25 x joist depth.
 - 1.6.3. Centres (minimum): 3 x diameter of largest hole.
 - 1.6.4. Distance from supports: Between 0.25 and 0.4 of span.
 - 1.7. Notches in roof rafters, struts and truss members: Not permitted.
 - 1.8. Holes in struts and columns: Locate on neutral axis.
 - 1.8.1. Diameter (maximum): 0.25 x minimum width of member.
 - 1.8.2. Centres (minimum): 3 x diameter of largest hole.
 - 1.8.3. Distance from ends: Between 0.25 and 0.4 of span.
2. Scarf joints, finger joints and splice plates: Do not use without approval.

440 Processing treated timber

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

450 Moisture content

1. Moisture content of wood and wood-based products at time of installation: Not more than:
 - 1.1. Covered in generally unheated spaces: 24%.
 - 1.2. Covered in generally heated spaces: 20%.
 - 1.3. Internal in continuously heated spaces: 20%.

451 Moisture content testing

1. Procedure: When instructed, test timber sections with an approved electrical moisture meter.
2. Test sample: Test 5% but not less than 10 lengths of each cross-section in the centre of the length.
3. Test results: 90% of values obtained to be within the specified range. Provide records of all tests.

510 Protection

1. Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

2. **Timber and components:** Store 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.
3. **Trussed rafters:** Keep vertical during handling and storage.

520 Exposed end grain protection

1. **Components:** Seal exposed end grain of the following before delivery to site:
2. Exposed rafter ends
3. **Sealer:** An extra coat of primer

530 Painted finishes

1. **Structural timber to be painted:** Primed as specified before delivery to site.

540 Clear finishes

1. **Structural timber to be clear finished:** Keep clean and apply first coat of specified finish before delivery to site.

550 Exposed timber

1. **Planed structural timber exposed to view in completed work:** Prevent damage to and marking of surfaces and arrises.

Jointing timber

570 Jointing/ fixing generally

1. **Generally:** Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

Erection and installation

770 Additional supports

1. **Provision:** Position and fix additional studs, noggings and/ or battens to support edges of sheets materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings
2. **Material properties:** Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

775 Bearings

1. **Timber surfaces which are to transmit loads:** Finished to ensure close contact over the whole of the designed bearing area.
2. **Packings:** Where provided, to cover the whole of the designed bearing area.
 - 2.1. **Crushing strength:** Not less than timber being supported.
 - 2.2. **In external or inaccessible locations:** Rot and corrosion proof.

780A Wall plates

1. To dormer windows
2. **Position and alignment:** To give the correct span and level for trusses, joists, etc.
3. **Bedding:** n/a - mechanically fixed or strapped to steel to structural engineers details.
4. **Joints:** At corners and elsewhere where joints are unavoidable use nailed half lap joints. Do not use short lengths of timber.

850 Inspection generally

1. Structural timber-work: Give reasonable notice before covering up.

Ω End of Section

H62 Natural slating

Clauses

2 To be read with preliminaries/ general conditions.

Types of slating

109 Reclaimed slates

1. **Supplier:** Contractors choice.
2. **Product:** Westmorland Green Slate.
3. **Type:** Best Grade Slates.
4. Slates to be sorted to match the colour, texture and thickness of the existing reclaimed slates being re-used on each individual roof slope. Allow for 75% reclaimed slates for re-roofing works.
5. Reslate with reused / reclaimed slates, replacing any sarking board split beyond viable reuse (fix with s/s nails). Main factors in reusing / using reclaimed slates as follows:
 - 5.1. A visual check should be made for any cracks, delamination, discolouration or pitting of the slates which may affect the strength and water-tightness of the slate. Any unsatisfactory slates should be rejected.
 - 5.2. If the back of the slates are powdery it is an indication of deterioration and the slate should be rejected.
 - 5.3. Each slate should be checked for soundness by tapping and the slate should 'ring true'. A dull sound would indicate a crack and the slate should be rejected.
 - 5.4. Any softened or damaged edges, on an otherwise sound slate, can be dressed down to produce a smaller slate if that size is still suitable for the roof design
 - 5.5. The existing nail holes must be examined for soundness and suitability for reuse. Any with holes with excessive spalling, or that have been damaged during lifting of the slates from the previous roof, should be rejected. Any slates with more than one set of nail holes should be rejected. Any slates with over large existing nail holes should be rejected
 - 5.6. Check that the existing holes of the correct gauge to maintain the required head-lap. If necessary, a re-holing regime showing how suitable head and side laps will be achieved, in accordance with BS 5534, will need to be demonstrated by the roofer. If a suitable regime cannot be provided then the slates should be rejected.
6. **Samples:** Provide representative samples of reclaimed slates to be used for each roof slope for approval by the Architect.
7. **Size:** To match existing.
8. **Head lap (minimum):** 70mm. If differs from existing, report to architect and seek instruction.

110 Roof slating for fleche roof

1. **Description:** at Fleche roof
2. **Substrate:** Sarking board on 70x100mm rafters at unknown centres
3. **Battens:** nailed straight onto sarking
 - 3.1. **Size:** 50 x 25 mm
 - 3.2. **Fixing:** as per clause 265
4. **Slates:**
 - 4.1. **Supplier:** Reclaimed slates
 - 4.1.1. **Product reference:** Westmorland Greenslate
 - 4.2. **Type:** As existing

- 4.3. Size: As existing
- 4.4. Head-lap (minimum): 70mm generally where roof pitches are 45 degrees and greater
- 4.5. Fixing: Two nails each slate.
- 5. Accessories: None

111 Roof slating for main roof

- 1. Description: at main roof
- 2. Substrate: Insulated sarking board on 70x100mm rafters at unknown centres
- 3. Underlay:
 - 3.1. Recycled content: None permitted
 - 3.2. Direction: Parallel to eaves.
 - 3.3. Head-lap (minimum): 150 mm
- 4. Counterbattens:
 - 4.1. Size: 38 x 19 mm
 - 4.2. Fixing: Allow for specialist fixing by Ancon or similar to suit sarking board
- 5. Battens:
 - 5.1. Size: 50 x 25 mm
 - 5.2. Fixing: as per clause 265
- 6. Slates:
 - 6.1. Supplier: Reclaimed slates
 - 6.1.1. Product reference: Westmorland Greenslate
 - 6.2. Type: As existing
 - 6.3. Size: As existing
 - 6.4. Head-lap (minimum): 70mm generally where roof pitches are 45 degrees and greater
 - 6.5. Fixing: Two nails each slate.
- 7. Accessories: None

112 Roof slating for main roof Zone 2

- 1. Description: at main roof
- 2. Substrate: Insulated sarking board on 70x100mm rafters at unknown centres
- 3. Underlay:
 - 3.1. Recycled content: None permitted
 - 3.2. Direction: Parallel to eaves.
 - 3.3. Head-lap (minimum): 150 mm
- 4. Counterbattens:
 - 4.1. Size: 38 x 19 mm
 - 4.2. Fixing: Allow for specialist fixing by Ancon or similar to suit sarking board
- 5. Battens:
 - 5.1. Size: 50 x 25 mm
 - 5.2. Fixing: as per clause 265
- 6. Slates:
 - 6.1. Supplier: Reclaimed slates
 - 6.1.1. Product reference: Westmorland Greenslate
 - 6.2. Type: As existing
 - 6.3. Size: As existing

6.4. **Head-lap (minimum):** 70mm generally where roof pitches are 45 degrees and greater

6.5. **Fixing:** Two nails each slate.

7. **Accessories:** None

160D Submit samples

1. Of each type of slate for approval before ordering. Keep samples on site for reference.
2. Delivered slates are to match approved samples.

Slating generally

210A Basic workmanship

1. Keep slates clean and dry until laid.
2. **Setting out:** To give true lines and regular appearance, fitting neatly at all edges, junctions and features.
3. Fix slate roofing to make the whole sound and weathertight at the earliest opportunity.
4. **Gutters and pipes:** Keep free of debris. Clean out at completion.

220B Removing existing slating

1. Extreme care is to be taken during the stripping of the existing slates to remove as many as possible without damage. A method statement is to be submitted for approval, followed by a trial area of stripping on site to test the methodology. Subsequent stripping in accordance with the agreed methodology is to be closely monitored by the main contractor to ensure the maximum number of slates are available for re-use.
2. Ladders and roof scaffold systems to have protective pads at all points of contact with the slate to ensure safe access to roof pitches without damaging slates.
3. Where slates are nailed, carefully remove nails using pads to protect existing slates, without splitting slates or enlarging nails holes. Do not lever out slate nails by lifting the tails of slates.
4. **General:** Carefully remove slates, battens, underlay, etc. with minimum disturbance of adjacent retained slating and being careful to minimise slate loss.
5. **Undamaged slates:** Set aside for reuse later on the same roof slope.

223A Stripping and recording of existing slates

1. When stripping the existing roofs record products and materials, technical and execution details, including defects and photograph them in context and detail. Distinguish between inherent defects and long term deterioration.. Record any laying techniques and other unusual details.
2. **Recording:** A course by course schedule of margins, head laps, side lap ranges, slate lengths, maximum and minimum widths and lath or batten gauges should be produced as the stripping takes place. The type and size of the various materials should be recorded as well as their condition and , if they have deteriorated, whether they need to be replaced or can be re-used.
3. **Photographing:** Slating should be photographed with three of four courses as appropriate raked back so that the lapping is shown. When photographing slating always included views straight on to the surface, and include a horizontal and vertical scale with 25mm bars to provide a record of the slate lengths, head and side laps and the lath gauges.

224A Sorting, selecting and stacking

1. Record slates from each course and roof for potentially re-using in the same course on same roof.
2. Discard any defective slates that do not 'ring' when tapped with a hammer or are showing signs of delamination or other defects.
3. Discard intrusive slates of different type, colour or thickness.

4. Discard slates that have softened, delaminated or cracked through their whole length; softening, delamination and other minor damage at the head, tail or edges may be re-dressed using hand tools.
5. The sound slates are to be carefully cleaned, sorted to length and thickness and arranged instacks for each course, the slates being stacked vertically on their heads (i.e. nail hole downwards). The length of each slate should be measured from the nail hole.
6. Undamaged slates: Set aside for reuse.
7. Slates should be re-dressed and re-holed where required. Excessively wide nail holes or nail holes which are not going to be used and which will compromise the weathertightness of the slate should be dressed out.

226 Suitability of existing substructure

1. Before commencement of slating, survey supporting structure/base, checking line, level and fixing points. Report immediately to the CA if the structure/base is unsuitable to receive slating.

236A Vapour permeable insulated underlay

1. Manufacturer: TLX
 - 1.1. Product reference: Gold
2. Standard: To BS EN 13859-1
 - 2.1. Reaction to fire: Class E
 - 2.2. Water vapour transmission (minimum): Manufacturer's standard
 - 2.3. Resistance to water penetration: Manufacturer's standard
 - 2.4. Tensile strength (minimum): Manufacturer's standard
 - 2.5. Tear resistance (minimum): Manufacturer's standard
 - 2.6. Other BS EN 13859 characteristics: None
3. Weight (mass per unit area): 900g/m²
4. Resistance to wind uplift: Greater than 2350 N/m²

240A Underlay

1. Lay in accordance with manufacturer's instructions.
2. Handle carefully to prevent tears and punctures, repair any which do occur with adhesive tape and cover with underlay patch tucked under the horizontal lap above.
3. Vertical laps (minimum): 100 mm wide, coinciding with supports. Securely fix using copper or aluminum extra large head felt nails.
4. Eaves: Where exposed, use an external grade (UV resistant) underlay or a proprietary eaves support product.
5. Where pipes and other components penetrate the underlay, use proprietary underlay seals or cut accurately and turn flanges up to give a tight, watershedding fit.
6. Ensure that underlay does not obstruct roof ventilation.

245 Battens/ counterbattens - treated

1. Timber: Sawn softwood.
 - 1.1. Species: In accordance with BS 5534, clause 4.11.1.
 - 1.2. Permissible characteristics and defects: Not to exceed limits in BS 5534, Annex D.
 - 1.3. Grading: Factory pre-graded with site check for grading of knots, wane, fissures and splits
 - 1.4. Moisture content at time of fixing and covering (maximum): 22%.
2. Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.

2.1. Type: As per BS 5534:2014, clause 4.11.3

259 Counterbattens on rafters

1. Fixing: Into rafters at not more than 300 mm centres.

265A Batten fixing

1. Setting out: Align parallel to ridge in straight horizontal lines to gauge of slates. Align on adjacent areas.
2. Batten length (minimum): Sufficient to span over three supports.
3. Joints in length: Square cut. Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
4. Additional battens: Provide where unsupported laps in underlay occur between battens.
5. Fixing: Each batten to each support. Splay fix at joints in length.
6. Fixing: Stainless steel annular ring shank nails.

272D Timber for slating substrate work

1. Timber: Sawn softwood, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
2. Moisture content at time of fixing and covering (maximum): 19%.
3. Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.

274 Slate fixing

1. For all roofs
2. Setting out: Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
3. Slate thickness: Consistent in any one course. Lay with thicker end as tail.
4. Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Do not use slates less than 150 mm wide.
5. Top course: Head fix short course to maintain gauge - screw fixing.
6. Fixing: Screw fix each slate twice through countersunk holes 20-25 mm from side edges.
 - 6.1. screw dimensions: Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.
7. Screw fixing - Screw fix each slate twice using stainless steel screws and stainless steel dished washers to suit the nail holes of the slates. Do not over tighten the screws. Sample fixing to be agreed with the Architect prior to commencement of the re-slating.
8. Slate widths for the main roof: Do not use slates widths less than 150mm other than as in 'in-band' and where doing so ensure that sidelap is maintained at all times and in accordance with BS5534: 2014 5.5.4.3

275A Slate fixing

1. Generally
2. Setting out: Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
3. Slate thickness: Consistent in any one course. Lay with thicker end as tail.
4. Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Do not use slates less than 150 mm wide.
5. Top course: Head-nail short course to maintain gauge.
6. Fixing: Centre nail each slate twice through countersunk holes 20-25 mm from side edges.

- 6.1. **Nails:** Copper clout to BS 1202-2 or aluminum clout to BS 1202-3.
- 6.2. **Nail dimensions:** Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.
7. **Slate widths generally:** Do not use slate widths less than 150mm other than as an 'in-hand' and where doing so ensure that side lap is maintained at all times and in accordance with BS5534

277D Preparation for random coursed slating

1. Sort slates into length and ensure there are sufficient slates to maintain a satisfactory diminishing bond over the whole roof area. Calculate batten gauge and set out battens accordingly.

279D Individual slate replacement

1. Where necessary to replace individual broken slates in completed work, replace as many as possible with pairs of nails in normal manner, and secure last-fixed row of slates with black stainless steel slate hooks over nails in boarding.

Roof slating edges/ junctions/ features

305 Generally

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

346A Ventilated eaves over fascia

1. **Fascia grilles and ventilator trays:**
 - 1.1. **Manufacturer:** Nicholson
 - 1.1.1. **Product reference:** Airtrak F10 with Aitrak EC eaves carrier
 - 1.2. **Fix to carry underlay, form drip into gutter and provide free passage of air over insulation.**
2. **Undercourse and first course slates:** Fix with tails projecting 50 mm over gutter or to centre of gutter, whichever dimension is the lesser.

525 Mitred hips

1. **Underlay:** Lay courses over hip.
 - 1.1. **Overlaps (minimum):** 150 mm.
2. **Hip slate fixing battens:** As slate suppliers recommendations
3. **Mitred slates:** Cut extra wide slates and fix to form a straight, close mitred junction.
4. **Soakers:** Interleave with mitred slates. Fix by turning down over head of mitred slates.

615A Metal valleys

1. **Lead as H71**
2. **Underlay:** Cut to rake. Dress over tilting fillets to lap onto metal valley. Do not lay under metal.
3. **Roof slates:** Cut extra wide slates adjacent to valley to fit neatly.
 - 3.1. **Valley width between slates:** 150 mm

660 Side abutments

1. **Underlay:** Turn up not less than 100 mm at abutments.
2. **Abutment slates:** Cut as necessary. Fix close to abutments.
3. **Soakers:** Interleave with abutment slates. Fix by turning down over head of abutment slates.

851D Perforations for pipes

1. Cut and fit slating around pipes, fix lead slate and dress down over slating.

Vertical slating edges/ junctions - Not Used

Ω End of Section

H71 DIA

Lead sheet fully supported roof and wall coverings/ flashings

Clauses

95A To be read with preliminaries/ general conditions

Types of leadwork

100 Lead sheet and strip

1. As clause 520, as follows unless otherwise stated or shown on drawings: drawing 2000,2100,2101,2200,2201,2202,2203,3301,3302,3303,3304
2. Location Code
3. Flat roof coverings 7 or 8
4. Pitched roof coverings 7
5. Wall coverings 6
6. Gutter linings 7 or 8
7. Cesspool linings 7 or 8
8. Soakers 4
9. Flashings and aprons 5
10. Ridge and hip coverings to slate roofs where bossing not required 5
11. Ridge and hip coverings to slate roofs where bossing is required 6
12. Valleys 6
13. Dormer cheeks 7
14. Aprons 5 or 6

100D Lead sheet and strip for Fleche works

1. As clause 520, as follows unless otherwise stated or shown on drawings: drawing 2810,2811,2820,2821
2. Location Code
3. Gutter linings 6
4. Soakers 5
5. Flashings and aprons 5
6. Lead Bat Vent 5
7. Fleche cheeks 7
8. Aprons 5

101 Lead sheet and strip Zone 2

1. As clause 520, as follows unless otherwise stated or shown on drawings: drawing RTAG.04 - 2000,2200,2201,2202,2203,3301,3302,2830,3300
2. Location Code
3. Flat roof coverings 6
4. Wall coverings 6
5. Gutter linings 7 or 6
6. Cesspool linings 7 or 8

7. Soakers 5
8. Flashings and aprons 5
9. Ridge and hip coverings to slate roofs where bossing not required 5
10. Ridge and hip coverings to slate roofs where bossing is required 6
11. Valleys 6
12. Dormer cheeks 7
13. Aprons 5

To be read with preliminaries/ general conditions

105D Laying leadwork generally

1. Where fall exceeds 1: 60 copper nail heads of upstands to top third of sheet, only, at 50mm centres.

131A Lead cladding

1. Dormer cheeks
2. Drawing reference(s): 3304
3. Substrate: Existing timber boarding
4. Preparation included in this section: As 651D
5. Underlay: BLM standard underlay as clause 648A
6. Type of Lead: Rolled lead sheet code 6 as clause 520.
7. Head detail: Nailed.
8. Bottom edge detail: Clipped using terne coated stainless steel clips.
9. Ventilation: Form a single vent hole and solder purpose made traingular vent in lead with inegral fly mesh.
10. Other requirement: Apply patination oil on completion.

131B Lead cladding for Fleche works

1. Fleche cheeks
2. Drawing reference(s): 2810,2811,2820,2821, RTAG.04-2830
3. Substrate: Existing timber boarding
4. Preparation included in this section: As 651D
5. Underlay: BLM standard underlay as clause 648A
6. Type of Lead: Rolled lead sheet code 7 as clause 520.
7. Head detail: Nailed.
8. Bottom edge detail: Clipped using terne coated stainless steel clips.
9. Ventilation: Form a single vent hole and solder purpose made traingular vent in lead with inegral fly mesh.
10. Other requirement: Apply patination oil on completion.

200A Lead gutter lining

1. Papapets and valleys
2. Drawing reference(s): 3301/3302/3303/3304
3. Substrate: New softwood boarding with penny gap as H71DIA 640 and 641. Gutter board support framing as G20.
4. Preparation included in this section: As clause 651D.

5. **Underlay:** Reinforced building paper laminate used within the construction industry, which meets the requirements of the highest grade of BS 1521 materials
6. **Type of lead:** code 7 or 8 as clause 520.
7. **Pretreatment:** Apply chalk slurry coat to underside of lead and allow to dry before laying, following by chalk paste coated after bossing before final fixing.
8. **Joints in deirection of fall:** Wood cored roll.
 - 8.1. **Spacing:** on centre line gutter.
9. **Maximum length of sheets including drips and over rolls:**
10. **Drips as clause 642 -** to be min 60mm high for code 7 and 8 lead; to be min. 55mm high for code 6 lead.
11. **Maximum width of sheets including upstands:** 850mm (code 6); 900mm (code 7); 1000mm (code 8).
12. **Outlet(s):** Catchpit to swan-neck or catchpit with outlet to external hopper head.
13. **Sacrificial flashing:** Code 5 lead flashing over ventilators with lead clips.
14. **Ventilation:** Refer to drawings.

200B Lead gutter lining for Fleche works

1. **Drawing reference(s):** 2810,2811,2820,2821
2. **Substrate:** New softwood boarding with penny gap as H71DIA 640 and 641. Gutter board support framing as G20.
3. **Preparation included in this section:** As clause 651D.
4. **Underlay:** Non woven crimped filament polyester needle punched underlay as clause 648A
5. **Type of lead:** code 6
6. **Pretreatment:** Apply chalk slurry coat to underside of lead and allow to dry before laying, following by chalk paste coated after bossing before final fixing.
7. **Joints in deirection of fall:** Wood cored roll.
 - 7.1. **Spacing:** on centre line gutter.
8. **Maximum length of sheets including drips and over rolls:**
9. **Drips as clause 642 -** to be min 55mm high for code 6 lead.
10. **Maximum width of sheets including upstands:** 850mm (code 6);
11. **Outlet(s):** Catchpit to swan-neck or catchpit with outlet to external hopper head.
12. **Sacrificial flashing:** Code 5 lead flashing over ventilators with lead clips.
13. **Ventilation:** Refer to drawings.

201 Lead gutter lining Zone 2

1. **Papapets and valleys**
2. **Drawing reference(s):** 2000,3300,3301/3302
3. **Substrate:** New softwood boarding with penny gap as H71DIA 640 and 641. Gutter board support framing as G20.
4. **Preparation included in this section:** As clause 651D.
5. **Underlay:** Reinforced building paper laminate used within the construction industry, which meets the requirements of the highest grade of BS 1521 materials
6. **Type of lead:** code 6 or 7 as clause 520.
7. **Pretreatment:** Apply chalk slurry coat to underside of lead and allow to dry before laying, following by chalk paste coated after bossing before final fixing.
8. **Joints in deirection of fall:** Wood cored roll.
 - 8.1. **Spacing:** on centre line gutter.

9. Maximum length of sheets including drips and over rolls:
10. Drips as clause 642 - to be min 60mm high for code 7 and 8 lead; to be min. 55mm high for code 6 lead.
11. Maximum width of sheets including upstands: 850mm (code 6); 900mm (code 7); 1000mm (code 8).
12. Outlet(s): Catchpit to swan-neck or catchpit with outlet to external hopper head.
13. Sacrificial flashing: Code 5 lead flashing over ventilators with lead clips.
14. Ventilation: Refer to drawings.

212D Parapet/valley/gutters linings

1. Where fall exceeds 1: 60 copper nail head of upstands to top third of sheet only at 50mm centres

215D Flat roof gutters

1. Form eaves and outlets of asphalt flat roofs where discharging into gutters or rainwater heads with code 6 lead apron 225mm girth in maximum 750mm lengths lapped 150mm.
2. Set lead in shallow rebate in roof edge boarding and welt back edge, so that it lies flush with top of general level of roof boarding, to receive asphalt.
3. Dress over back of gutter or into rainwater head. Copper nail apron to roof boarding at 50mm centres.

311D Verge flashing to asphalt covered roof

1. Drawing reference(s): 3301,3302,3303
2. Lead: Code 5 in lengths not exceeding 1000 mm.
3. End to end joints: Laps of not less than 100 mm.
4. Dimensions: Sufficient to dress 25 mm into gutter (allowing for gutter fall) and 100 mm over flat, with 25 mm welt at head.
5. Fixing: Copper nails at 150mm centres to screw-fixed softwood rebated batten.
6. Underlay: Building paper cut on line of underside of nosing batten.

312 Verge flashing to asphalt covered roof Zone 2

1. Drawing reference(s): 2000
2. Lead: Code 5 in lengths not exceeding 1000 mm.
3. End to end joints: Laps of not less than 100 mm.
4. Dimensions: Sufficient to dress 25 mm into gutter (allowing for gutter fall) and 100 mm over flat, with 25 mm welt at head.
5. Fixing: Copper nails at 150mm centres to screw-fixed softwood rebated batten.
6. Underlay: Building paper cut on line of underside of nosing batten.

322 Soakers for mitred hips for Fleche roof

1. Drawing reference(s): 2810,2811,2820,2821
2. Lead: Code 5 cut and dressed to shape for fixing by roofer.
3. Dimensions:
4. Length: Slate/tile gauge + lap + 25 mm.
5. Underlaps: Not less than 75 mm vertical height at any point.

322A Soakers for mitred hips

1. Drawing reference(s): 3301,3302,3303,3304

2. Lead: Code 5 cut and dressed to shape for fixing by roofer.
3. Dimensions:
4. Length: Slate/tile gauge + lap + 25 mm.
5. Underlaps: Not less than 75 mm vertical height at any point.

323 Soakers for mitred hips Zone 2

1. Drawing reference(s): 2000,3300,3301,3302,
2. Lead: Code 5 cut and dressed to shape for fixing by roofer.
3. Dimensions:
4. Length: Slate/tile gauge + lap + 25 mm.
5. Underlaps: Not less than 75 mm vertical height at any point.

410A Apron flashings

1. Generally
2. Lead: Code 5 or 6 in lengths not exceeding 1500 mm.
3. End to end joints: Laps of not less than 150 mm.
4. Dimensions:
5. Upstand: Not less than 100 mm.
6. Cover to abutment: Not less than 150mm
7. Fixing: Lead wedges into bed joint, clips to bottom edge at laps and 300mm centres back pointed in sealant as clause 715, 770 and 790.

410B Apron flashings for Fleche works

1. Generally
2. Lead: Code 5 in lengths not exceeding 1500 mm.
3. End to end joints: Laps of not less than 150 mm.
4. Dimensions:
5. Upstand: Not less than 100 mm.
6. Cover to abutment: Not less than 150mm
7. Fixing: Lead wedges into bed joint, clips to bottom edge at laps and 300mm centres back pointed in sealant as clause 715, 770 and 790.

411 Apron flashings Zone 2

1. Generally
2. Lead: Code 5 or 6 in lengths not exceeding 1500 mm.
3. End to end joints: Laps of not less than 150 mm.
4. Dimensions:
5. Upstand: Not less than 100 mm.
6. Cover to abutment: Not less than 150mm
7. Fixing: Lead wedges into bed joint, clips to bottom edge at laps and 300mm centres back pointed in sealant as clause 715, 770 and 790.

430A Cover flashings

1. Generally
2. Lead: Code 5 in lengths not exceeding 1500 mm.
3. End to end joints: Laps of not less than 150 mm.

4. Overlap to upstand: Not less than 75 mm.
5. Cover to roof: Not less than 75 mm.
6. Fixing: Welt top edge 12mm, turn 25mm into bed joint in masonry surfaces and fix with lead wedges, clips to bottom edge at laps and 300mm centres and back pointed in sealant as clause 715, 770 and 790. Dress over ventilator units where shown and secure at edge with single welt.

430D Cover flashings for Fleche works

1. Drawing reference(s): 2810,2811,2820,2821
2. Lead: Code 5 in lengths not exceeding 1500 mm.
3. End to end joints: Laps of not less than 150 mm.
4. Overlap to upstand: Not less than 50 mm.
5. Cover to roof: Not less than 75 mm.
6. Fixing: Welt top edge 12mm, turn 25mm into bed joint in masonry surfaces and fix with lead wedges, clips to bottom edge at laps and 300mm centres and back pointed in sealant as clause 715, 770 and 790.

431 Cover flashings Zone 2

1. Generally
2. Lead: Code 5 in lengths not exceeding 1500 mm.
3. End to end joints: Laps of not less than 150 mm.
4. Overlap to upstand: Not less than 75 mm.
5. Cover to roof: Not less than 75 mm.
6. Fixing: Welt top edge 12mm, turn 25mm into bed joint in masonry surfaces and fix with lead wedges, clips to bottom edge at laps and 300mm centres and back pointed in sealant as clause 715, 770 and 790. Dress over ventilator units where shown and secure at edge with single welt.

440A Soakers and step flashings

1. At abutments with masonry
2. Drawing reference(s): 3301,3302,3303,3304
3. Soakers:
4. Lead: Code 4 cut and dressed to shape for fixing by roofer.
5. Dimensions:
6. Length: Slate/tile gauge + lap + 25 mm.
7. Upstand: Not less than 75 mm.
8. Underlap: Not less than 100 mm.
9. Step flashings:
10. Lead: Code 5 in lengths not exceeding 1500 mm.
11. End to end joints: Laps of not less than 100 mm.
12. Cover: Overlap to soaker upstands of not less than 75 mm.
13. Fixing: Lead wedges at every course and back pointed in sealant as specified as clause 715A/770/790 (unless stated otherwise on drawings).

440B Soakers and step flashings

1. At abutments with main roof at Fleche
2. Drawing reference(s): 2810,2811,2820,2821
3. Soakers:
4. Lead: Code 5 cut and dressed to shape for fixing by roofer.

5. Length: Slate/tile gauge + lap + 25 mm.
6. Upstand: Not less than 75 mm.
7. Underlap: Not less than 100 mm.
8. Step flashings:
9. Lead: Code 5 in lengths not exceeding 1500 mm.
10. End to end joints: Laps of not less than 100 mm.
11. Cover: Overlap to soaker upstands of not less than 75 mm.
12. Fixing: Lead wedges at every course and back pointed in sealant as specified as clause 715A/770/790 (unless stated otherwise on drawings).

440C Soakers and step flashings Zone 2

1. At abutments with masonry at Zone 2
2. Drawing reference(s): 2000, 3302
3. Soakers:
4. Lead: Code 5 cut and dressed to shape for fixing by roofer.
5. Dimensions:
6. Length: Slate/tile gauge + lap + 25 mm.
7. Upstand: Not less than 75 mm.
8. Underlap: Not less than 100 mm.
9. Step flashings:
10. Lead: Code 5 in lengths not exceeding 1500 mm.
11. End to end joints: Laps of not less than 100 mm.
12. Cover: Overlap to soaker upstands of not less than 75 mm.
13. Fixing: Lead wedges at every course and back pointed in sealant as specified as clause 715A/770/790 (unless stated otherwise on drawings).

452A Single step and cover flashings

1. Generally.
2. Lead: Code 5 in lengths not exceeding 1500 mm.
3. Single step flashings:
4. End to end joints: Laps of not less than 50 mm.
5. Cover: Overlap to cover flashing upstands of not less than 65 mm.
6. Fixing: Lead wedges at every step.
7. Cover flashings:
8. End to end joints: Laps of not less than 100 mm.
9. Dimensions:
10. Upstand: Not less than 100 mm.
11. Cover to roof: Not less than 150 mm and over first full tile corrugation.
12. Fixing: Turn over head of tile and clip as clause 726D at not more than 500 mm centres along free edge. Plug and screw upstand to abutment in top third of each length only.

472D Chimney flashings to slate/plain tile roofs

1. Drawing reference(s): 3302, RTAG.04-3302
2. Front apron:
3. Lead: Code 5.

4. **Length:** Width of chimney up to maximum 1500 mm, plus not less than 150 mm underlap to each side flashing.
5. **Upstand:** Not less than 75 mm.
6. **Cover to roof:** Not less than 75 mm vertical height.
7. **Fixing:** Lead wedges into bed joint.
8. **Lead soakers:**
9. Code 4 cut and dressed to shape for fixing by roofer.
10. **Length:** Slate/tile gauge + lap + 25 mm.
11. **Upstand:** Not less than 75 mm.
12. **Underlap:** Not less than 100 mm.
13. **Step flashings:**
14. **Lead:** Code 5 in lengths not exceeding 1500 mm.
15. **End to end joints:** Laps of not less than 150 mm.
16. **Front end:** Turn 75 mm around chimney over apron.
17. **Cover:** Overlap to soaker upstands of not less than 75 mm.
18. **Fixing:** Lead wedges at every course.
19. **Back gutter:**
20. **Lead:** Code 5.
21. **Length:** Width of chimney up to maximum 1500 mm, plus not less than 150 mm overlap to each side flashing.
22. **Upstand:** Not less than 100 mm.
23. **Gutter sole:** Not less than 150 mm.
24. **Cover up roof** not less than 225 mm.
25. **Back gutter cover flashing:**
26. **Lead:** Code 5
27. **Length:** Width of chimney plus not less than 150 mm overlap to each side flashing.
28. **Cover:** Overlap to back gutter upstand of not less than 75mm.
29. **Fixing:** Lead wedges into bed joint.

482D Lead gutter flashings for asphalt work

1. **Lead:** Code 5 cut and dressed to shape for fixing by roofer.
2. **Maximum length** 1250mm, to allow 100mm lap at overlaps.
3. **Base:** 75mm welted at back edge.
4. **Downstand:** to fall into gutter and lap back edge minimum 25mm.

484A Parapet abutment ventilator

1. **Manufacturer:** Nicholson (www.nicholsonsls.com)
2. **Reference:** Airtrak AB1

484B Pitched Valley Ventilator

1. **Manufacturer:** Nicholson (www.nicholsonsls.com)
2. **Reference:** Airtrak PV10

486A Layboard vents in slate roof

1. **Manufacturer:** Nicholson (www.nicholsonsts.com).

2. **Reference:** LB-45 for roof pitches of 45 degrees and over; LB-30 for roofs between 30 and 45 degree pitch.
3. **Location:** Refer to drawings.
 - 3.1. Allow to fit to 25x50mm roof batten.

General requirements/ preparatory work

510 Workmanship generally

1. **Standard:** To BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Training Academy.
2. **Fabrication and fixing:** To provide a secure, free draining and completely weathertight installation.
3. **Operatives:** Trained in the application of lead coverings/ flashings. Submit records of experience on request.
4. **Preforming:** Measure, mark, cut and form lead prior to assembly wherever possible.
5. **Marking out:** With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
6. **Bossing and forming:** Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
7. **Solder:** Use only where specified.
8. **Sharp metal edges:** Fold under or remove as work proceeds.
9. **Finished work:** Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
 - 9.1. **Protection:** Prevent staining, discolouration and damage by subsequent works.

511A Approved firm

1. The lead sheet covering work is to be carried out by a firm with prior approval of the Architect, and must be a member of the Lead Contractors Association.

516D In situ welding

1. Is not permitted unless agreed daily in advance in writing with the CA and subject to completion and signing of a 'hot work permit' form and subject to compliance with its requirements.

520A Lead sheet

1. **Rolled to BS EN 12588:** 2006 Rolled Lead Sheet for Building Purposes.
2. **Identification:** Labelled to show thickness/code, weight and type.

521D Store

1. Lead sheets and lead strip clear of ground in a dry place on level surface. Protect surfaces and edges from distortion and damage, including impact, dust or moisture.

555D Layout

1. Agree setting out of joints, drips, and laps with the CA before beginning work.
2. Form welts and laps to provide cover in direction of flow and away from adjacent sloping roofs and rain water pipe outlets.

581D Replacement of existing lead

1. Must always 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.

587D Existing lead removed

1. The Contractor is to allow in their tender for collecting all lead that is not to be reinstated, for taking scrap lead to an authorised dealer and for obtaining a credit note for the lead which is to remain the property of the Employer.

595A Refurbishment of lead rainwater goods

1. **Type/locations:**
 - 1.1. Lead outlets.
 - 1.2. Lead hoppers.
 - 1.3. Lead rainwater pipes including all accessories and shoes.
2. **Workmanship/methodology:**
3. **1. Rainwater pipes:** Carefully remove and assess pipe sections for damage and deformation. All pipe sections to be repaired and refurbished unless sections are significantly damaged and/or the lead has thinned out in multiple areas where the longer term lifespan of the pipe is at risk. Localised thinning out of the lead may be patch repaired with new lead patches. Request inspection and agree with the Architect pipe section considered for replacement.
4. **2. Vertical Rear Seams:** It is anticipated that the original seams in the pipes have been molten lead drawn over flux and then finished with a flux to form a clean and even seam. Carefully fully cut open all the seams and re-form the seam. Re-form seam using flux as original methodology or use the upright Lapped Upright Seam method with filler rod. Avoid undercutting and substantial reduction of the original pipe diameter.
5. **3. Re-shaping:** Boss out any significant deformations where possible, whilst the seam is open. Prepare a timber former that accurately reflects the original shape of the downpipe; use a softwood or hardwood suitable for the purpose, but not oak. Drive the former through the pipe to reshape and iron any kinks, dents etc. Adapt and use the same procedure for any shoes. Reform spigot ends by bossing and re-form with timber formwork. Significant deformation of a pipe /accessory section is likely to warrant a like for like replacement in lead, to avoid defects such as thinning out of the lead sheet.
6. **4. Holes and Damage:** For small holes (including old fixing holes) and cuts both larger and small, weld in new in lead. For larger irregular holes and damage; prepare the damage by cutting the area of damage to a manageable shape with clean consistent edges; prepare a new sheet of lead to form a patch and weld in. Patches should be of the same thickness as the host lead. Fettle down any welds that will be visible on completion. Patinate the patch both sides with patination oil as specified prior to welding on.
7. **5. Attaching new sections and / or replacing sections:** Carefully cut away sections where shown on the drawings and prepare edges as for Holes and Damage. Weld on new section as per the methodology for welding on patches for Holes and Damage.
8. **6. Astragal mouldings:** Where these are found carefully remove where necessary to facilitate pipe repairs. Fully weld on existing moulds on completion - to top and bottom edges, with continuous welds. Fettle down welds to disguise them and blend them with the pipe and moulding. Patinate all faces with patination oil as specified.
9. **8. Cleaning of lead rainwater goods, hoppers and outlets:** Remove algae and organic staining by a suitable chemical cleaner that is suitable for use with lead; make preference for environmental and biodegradable proprietary products. Lightly abrade all surfaces with suitably fine grades of wet and dry paper, then apply patination oil as specified to all surfaces.
10. **9. Fixing Sleeves:** Remove existing and discard. Supply new from code 8 lead and weld on using continuous welds. Welds on the rear of the pipe do not need fettling.
11. **10. Fixings:** Clean out existing hole and prepare for new plugs. Use ash wall plugs formed bespoke for each existing fixing hole and fix using proprietary pipe nails used for fixing iron rainwater pipes. Neatly lap over the existing sleeve.

610D Suitability of bases

1. Laying of lead will be taken as joint acceptance by the Main Contractor and Sub-Contractor of the suitability of bases.
2. Before covering, inform CA if either the Main Contractor or Sub-Contractor find bases in anyway unsuitable.

640D Timber for use with leadwork

1. **Quality:** Planed, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
2. **Moisture content:** Not more than 19% at time of fixing and covering. Give notice if greater than 16%.
3. **Preservative treatment:** Organic solvent as section Z12 and Wood Protection Association Commodity Specification C8.

641D Roof boarding

1. Regularised European whitewood, free from wane, pitch pockets, decay and insect attack. Boards max. 150mm wide 20-25mm thick, butt-jointed with penny gaps. Sharp corners to be trimmed off and any high places planed.
2. **Moisture content:** not more than 19% at time of covering. Give notice if more than 16%.
3. Ensure that existing boards are securely fixed and acceptably smooth. Remove or fill any gross irregularities. Punch in any protruding fixings.

642D Drips

1. **Hardwood (not oak)** as BS EN 942: 2007, ex 50mm x required height, rebated to receive undercloak.

647D Underlay - paper

1. **Waterproof building paper** to BS 1521: 1972, Class A, Grade 1 F.

648A Underlay - non woven crimped filament polyester needle punched

1. BLM Standard Underlay.

650D Laying underlay

1. **Handling:** prevent tears and punctures.
2. Lay paper with 100mm lap across falls. Lay felt with butt joints.
3. Lay felt or paper loose on concrete or screed. Nail or staple underlay (felt or paper) to boarded surfaces sufficient to hold it in place until overlying materials secure it in place. To vertical, and steeply sloping surfaces, where rolls are not to be used, fix head of underlay at 150mm centres with copper clout nails. Continue around gutters and up abutments to flashing line.

651A Preparation of lead sheet

1. A single coat of ready mixed chalk enhanced emulsion is to be applied to the underside of all lead sheets, and allowed to dry prior to laying. Ready mixed chalk emulsion is available from Rowan Technologies, Urmston Road, Manchester (0161) 748 3644.

Fixing lead

705 Head fixing lead sheet

1. **Top edge:** Secured 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.
2. **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.

710A Fixings

1. **Nails to timber substrates:** Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
 - 1.1. **Shank type:** Annular ringed, helical threaded or serrated.
 - 1.2. **Shank diameter:** Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
 - 1.3. **Length:** Not less than 20 mm or equal to substrate thickness.
2. **Screws to concrete or masonry substrates:** Brass or stainless steel.
 - 2.1. **Diameter:** Not less than 3.35 mm.
 - 2.2. **Length:** Not less than 19 mm.
 - 2.3. **Washers and plastic plugs:** Compatible with screws and lead.

712A Leadwelded dots

1. Only where identified on drawings
2. Fix sheeting with 25mm long raised head brass screws and 10mm diameter tinned brass washers set in 50mm diameter x 10mm deep recesses in base. Cover with sheet lead welded all round, and wipe lead welding smooth.

713A Clips

1. Retain free edges of coverings and flashings with clips at laps and at maximum 750mm centres. Ensure there is a 3mm gap between the edge of the retained sheet and the internal radius of the clip to allow for expansion.
2. To lead pitched roofs allow for a minimum 6mm expansion gap between the edge of the lead roof sheet and the clip.

715A Clips

1. **Manufacturer:** Contractor's choice.
2. **Material:**
 - 2.1. **Lead clips:** Cut from sheets of same thickness/ code as sheet being secured.
 - 2.2. **Copper clips:**
 - 2.2.1. **Thickness:** 0.70 mm.
 - 2.2.2. **Temper:** BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere; dipped in solder if exposed to view.
 - 2.3. **Stainless steel clips:**
 - 2.3.1. **Thickness:** 0.71 mm.
 - 2.3.2. **Grade:** BS EN 10088-1, 1.4301(304) terne coated if exposed to view.
3. **Dimensions:**
 - 3.1. **Width:** 50 mm where not continuous.
 - 3.2. **Length:** To suit detail.
4. **Fixing clips:** Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm.

5. Fixing lead sheet: Welt clips around edges and turn over 25 mm.
6. Centres: max 350mm.

726D Clip fixings

1. Fix copper/lead clips to timber with copper clout nails to BS 1202 Part 2: 1974, 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.
2. Fix copper/lead clips to concrete, brickwork and stonework with brass or stainless steel screws to (superseded) BS 1210: 1963, 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.
3. Fix stainless steel clips to timber with 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.
4. Fix stainless steel clips to concrete, brickwork and stonework with stainless steel screws to (superseded) BS 1210: 1963, 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.

770 Wedge fixing into joints/ chases

1. Joint/ chase: Rake out to a depth of not less than 25 mm.
2. Lead: Dress into joint/ chase.
 - 2.1. Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
3. Sealant: One part neutral cure high performance silicon based product specifically formulated for use with lead sheet and flashings, such as Calder Lead Sheet Sealant or Leadmate.
 - 3.1. Application: As section Z22.

790 Screw fixing into joints/ chases

1. Joint/ chase: Rake out to a depth of not less than 25 mm.
2. Lead: Dress into joint/ chase and up back face.
 - 2.1. Fixing: Into back face with stainless steel screws and washers and plastics plugs at not more than 450 mm centres, at every change of direction, and with at least two fixings for each piece of lead.
3. Sealant: one -part, neutral cure, high performance, silicon based product specifically formulated for use with lead sheet and flashings, such as Clader Lead Sheet Sealant or Leadmate.
 - 3.1. Application: As section Z22.

Jointing lead

810 Forming details

1. Method: Bossing or leadwelding except where bossing is specifically required.
2. Leadwelded seams: Neatly and consistently formed.
 - 2.1. Seams: Do not undercut or reduce sheet thickness.
 - 2.2. Filler strips: Of the same composition as the sheets being joined.
 - 2.3. Butt joints: Formed to a thickness one third more than the sheets being joined.
 - 2.4. Lap joints: Formed with 25 mm laps and two loadings to the edge of the overlap.
3. Bossing: Carried out without thinning, cutting or otherwise splitting the lead sheet.
 - 3.1. Details where bossing must be used: To be confirmed on site - allow for bossing of decorative lead finials.

845A Wood cored roll joints with splash lap

1. **Wood core:**
 - 1.1. **Size:** 45 x 45 mm round tapering to a flat base 25 mm wide. For locations of over sized rolls - allow 60x60mm - to be confirmed on site.
 - 1.2. **Fixing to substrate:** Brass or stainless steel countersunk screws at not more than 300 mm centres.
2. **Undercloak:** Dress three quarters around core.
 - 2.1. **Fixing:** Nail to core at 150 mm centres for one third length of the sheet starting from the head.
3. **Overcloak:** Dress around core and extend on to main surface to form a 40 mm splash lap.

865 Drips without splash laps

1. **Underlap:** Dress into rebate along top edge of drip.
 - 1.1. **Fixing:** One row of nails at 50 mm centres on centre line of rebate.
2. **Overlap:** Dress over drip to just short of lower level.

880 Welled joints

1. **Joint allowance:** 50 mm overlap and 25 mm underlap.
2. **Copper or stainless steel clips:** Fix to substrate at not more than 450 mm centres.
3. **Overlap:** Welt around underlap and clips and lightly dress down.

957D Historic plumbers marks, graffiti etc

1. Prior to stripping, agree with the CA any historic marks and graffiti to be retained. Cut out any identified areas, allowing a margin of at least 50mm around mark. Burn retained sheet on to new lead in original location in accordance with the terms of the relevant hot works permit.

970 Patination oil

1. **Manufacturer:** British Lead.
 - 1.1. **Product reference:** Patination Oil.
2. **Location:** Apron flashings, flat roofs etc where water run off will discharge over slating of masonry.
3. **Application:** As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

Ω End of Section

J21

Mastic asphalt roofing/ insulation/ finishes

Clauses

2 To be read with preliminaries/ general conditions.

Types of coating/ paving

110 Warm deck roof coating

1. Description: RF02
2. Substrate: Assumed timber joists and deck
 - 2.1. Preparation: Remove existing asphalt; remove existing boards and firrings. Renew firrings and deck in plywood
3. Air and vapour control layer: 13 mm mastic asphalt to BS 6925, type R988/ B on loose laid, 50-70 g/m² glass fibre tissue, 50 mm minimum laps
4. Insulation: Warm deck roof insulation as clause 430
5. Overlay: Not required
6. Separating layer (loose laid): Reinforced bitumen sheathing felt
 - 6.1. Laps (minimum): 50 mm.
7. Coating: Mastic asphalt to BS 6925.
 - 7.1. Type: R988/ T25
 - 7.2. Application: 20 mm nominal thickness in two coats
8. Surface protection: Chippings
9. Accessories: None

180 Skirtings/ vertical work

1. Description: To parapet walls and abutments
2. Substrate: Stone
 - 2.1. Preparation: Roughen to provide key
3. Separating layer: Reinforced bitumen sheathing felt with 50 mm minimum laps
4. Keying: Not required
5. Coating: Mastic asphalt to BS 6925.
 - 5.1. Type: R988/ T25
 - 5.2. Application: 13 mm nominal thickness in two coats
 - 5.3. Height above finished roof level: 150 mm (minimum) preferred but restricted TBC on site when high level access available.
 - 5.4. Fillet profile: 45° angle, 40 mm minimum width on face.
6. Surface protection: Solar reflective paint
7. Accessories: Not required

185 Skirtings/ vertical work

1. Description: To parapet walls and abutments
2. Substrate: Stone
 - 2.1. Preparation: None required
3. Separating layer: Reinforced bitumen sheathing felt with 50 mm minimum laps

4. **Keying:** Expanded metal lathing to BS 8204-5, clause 5.4.
5. **Coating:** Mastic asphalt.
 - 5.1. **Manufacturer:** Contractor's choice
 - 5.1.1. **Product reference:** Submit proposals
 - 5.2. **Application:** 20 mm nominal thickness in three coats
 - 5.3. **Height above finished roof level:** 150 mm (minimum)
 - 5.4. **Fillet profile:** 45° angle, 40 mm minimum width on face.
6. **Surface protection:** Solar reflective paint
7. **Accessories:** Not required

Performance

240 Fire performance

1. **Classification:** AA when tested along with the substrate in accordance with BS 476-3. Must achieve Broof(t4) class rating. Must achieve third party accreditation BBA Agreement Certification or similar approved accreditation.

Products

325 Bonding compound

1. **Type:** Bitumen to BS EN 12591
2. **Manufacturer:** Contractor's choice
 - 2.1. **Product reference:** Submit proposals

330 Timber trims, etc

1. **Quality:** Planed. Free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).
2. **Moisture content at time of covering (maximum):** 22%.
3. **Preservative treatment:** As recommended for purpose by mastic asphalt manufacturer

360A Plywood overlay to timber deck

1. **Plywood:** To BS EN 636, section 8 (plywood for use in humid conditions).
 - 1.1. **Quality:** Naturally durable timber, free from preservatives.
2. **Thickness:** 19 mm

395 Air and vapour control layer

1. **Type:** Contractor's choice
2. **Manufacturer:** Submit proposals
 - 2.1. **Product reference:** Contractor's choice
3. **Thickness:** 1200 gauge
4. **Vapour resistance:** 1000 MN s/g

400 Separating layer (loose laid)

1. **Manufacturer:** Contractor's choice
 - 1.1. **Product reference:** Submit proposals
2. **Type:** Reinforced bitumen sheathing felt
 - 2.1. **Laps (minimum):** 75 mm

402 Mastic asphalt (roofing)

1. Manufacturer: Contractor's choice
 - 1.1. Product reference: Submit proposals
2. Type: To BS 6925, R988/T25
 - 2.1. Application: 20 mm nominal thickness in two coats

430 Warm deck roof insulation

1. Standard: Perlite board to BS EN 13169
2. Manufacturer: Contractor's choice
 - 2.1. Product reference: Submit proposals
3. Reaction to fire: Manufacturer's standard
4. Thermal conductivity (minimum): Manufacturer's standard
5. Thickness: 25 mm
6. Compressive strength (minimum): Manufacturer's standard
7. Other characteristics: None
8. Edges: Square

455 Sand for rubbing

1. Type: Clean, coarse sand from natural deposits, free from loam.
 - 1.1. Size: Passing a 600 micrometre sieve and retained on a 212 micrometre sieve.

475 Chippings and dressing compound

1. Type: Limestone
2. Size (minimum): 10-14mm nominal size
3. Dressing compound: To BS EN 12591.

495 Solar reflective paint

1. Manufacturer: Contractor's choice
 - 1.1. Product reference: Submit proposals
2. Colour: Grey

Execution generally

510 Adverse weather

1. General: Do not lay mastic asphalt in wet or damp conditions unless effective temporary cover is provided over working area. Contractor must show due diligence in Safe2Torch.
2. Unfinished areas of the roof: Keep dry.

520 Incomplete work

1. Daywork joints in warm roofs and edges of phased roofing: Adequately protected and fully weathertight.

525 Preparing edges of existing mastic asphalt

1. Single coat applications:
 - 1.1. Cut edges: Soften and clean.
2. Two coat applications:

- 2.1. **Cut edges:** Soften and remove half depth of softened material for minimum width of 75 mm.
- 2.2. **Jointing:** Lapped between new and existing material at prepared edges.
3. **Torching:** Not permitted.
4. **Timing:** Immediately prior to laying mastic asphalt.

540 Applying bonding compounds

1. **Roof sited boilers:** Not permitted
2. **Temperature of compound:** Suitable to achieve bond over the whole surface. Do not overheat.
3. **Heat sensitive insulation materials:** Use cold bituminous adhesive recommended by the insulation manufacturer.

Substrates/ air and vapour control layers/ warm deck roof insulation

610 Suitability of substrates

1. **Substrates generally:**
 - 1.1. **Secure, even textured, clean, dry and frost free.**
2. **Preliminary work:** Completed, including:
 - 2.1. **Chases (minimum):** 25 x 25 mm.
 - 2.2. **External angles:** Chamfered where required to maintain full thickness of mastic asphalt.
 - 2.3. **Formation of upstands and kerbs.**
 - 2.4. **Grading to correct falls.**
 - 2.5. **Movement joints.**
 - 2.6. **Penetrations/ Outlets.**
3. **Moisture content and stability of substrate:** Must not impair integrity of roof.

620 Removing existing mastic asphalt

1. **Areas to be removed:** As drawing 5000
2. **Existing roof:** Do not damage.
3. **Timing:** Only remove sufficient mastic asphalt as will be replaced and made weathertight on same day.

640 Fixing timber trims

1. **Fasteners:** Sherardized steel screws
2. **Fixing centres (maximum):** 600 mm

642 Keying to vertical/ sloping dense concrete

1. **Surface preparation:** Remove mould oil, clean and apply proprietary high bond primer or proprietary keying mix of cement:sand slurry incorporating a bonding agent.

670 Laying air and vapour control layer

1. **Attachment:** Secure.
 - 1.1. **Bond:** Continuous with no air pockets.
 - 1.2. **Appearance on completion:** Smooth.
2. **Side and head laps:** Seal using materials and method recommended by membrane manufacturer.
3. **Joints in second layer (if any):** Stagger by half a sheet.
4. **Upstands, kerbs and other penetrations:** Enclose edges of insulation. Fully seal at abutment by bonding or taping.

680 Laying warm deck roof insulation

1. Setting out:
 - 1.1. Long edges: Fully support and run at right angles to: direction of span
 - 1.2. End edges: Adequately support.
 - 1.3. Joints: Butt together.
 - 1.4. End joints: Stagger.
 - 1.5. Margin to walls, upstands, pipes and other projections (minimum): 25 mm
2. Bedding: Full bed of bonding compound.
3. Mechanical fixing: Determined by contractor
4. Completion: Boards must be in good condition, well fitting and stable.

690 Margin infill to angle fillets in warm deck roof

1. Infill material: Mastic asphalt when laying roofing

695 Separating layer

1. Give notice: Where it is or becomes apparent that a separating layer is required.

Asphalting

720 Delivery

1. Condition of mastic asphalt as delivered to site:
 - 1.1. Hot-prepared, do not remelt on site, or
 - 1.2. Blocks: Remelt on site, mix thoroughly, Temperature of material (maximum), 230°C.

730 Transporting

1. Transport distances: Minimize to avoid excessive cooling of molten mastic asphalt.
2. Buckets, barrows or dumpers used for mastic asphalt: Line with minimum quantity of fine inert dust. Use silica or similar acid resisting dust where acid resisting mastic asphalt is being used.

735A Localized heating

1. Blowlamps and gas torches: Use only types with controlled gradual heating during laying, removal and repair of mastic asphalt.
2. HOT WORK METHODOLOGY TO BE SUBMITTED TO ARCHITECT FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.

740 Laying mastic asphalt

1. Standard: To BS 8218.
2. Application:
 - 2.1. In bays to even thickness.
 - 2.2. Re-heated asphalt: Do not use.
3. External angles, junctions and tuck-ins: Maintain full thickness of asphalt.
4. Fillets at internal angles: Solid, fully fused to asphalt coating.
5. Previously laid coats: Protect whilst exposed.
6. Successive coats:
 - 6.1. Timing: Apply without delay and within same working period.
 - 6.2. Coats: Apply at right angles to preceding.

- 6.3. Stagger joints between bays in consecutive coats (minimum): 75 mm.
7. Condition of contact edges of previously laid bays: Warm and clean.
8. Blowing: Pierce and make good affected areas while mastic asphalt is still at working temperature.
9. Completion: During final floating operation, whilst asphalt is still warm, apply sand to horizontal surfaces and rub in well using wooden float. Remove surplus material.
10. Surface condition at completion: Smooth and free from imperfections. Firmly adhered, weatherproof and free draining.

750 Mastic asphalt skirtings and vertical work

1. Top edge: Tuck into 25 x 25 mm continuous splayed chase or groove.
2. External angles: Maintain full thickness of asphalt.
3. Splayed top: Form to shed water away from substrate.

Surfacing

870 Laying chippings

1. Condition of substrate: Clean.
2. Gravel guards: Fit to outlets.
3. Dressing compound: Hot or cold application. Evenly pour at 1.5 kg/m².
4. Chippings application (approximately): 16 kg/m².
5. Completion: Remove excess chippings without exposing asphalt.

880 Applying solar reflective paints

1. Number of coats: Two
 - 1.1. Coverage per coat (minimum): 4.5 m² /L
2. Surface coverage: Even and full.
3. Coats: Fully bonded.

Completion

910 Inspection

1. Interim and final roof inspections: Submit reports.

920 Electronic roof integrity test

1. Testing authority: The roofing contractor
2. Timing of test: Prior to completion
3. Condition of roof prior to testing:
 - 3.1. Complete to a stage where integrity can be tested.
 - 3.2. Surface: Clean.
4. Test results and waterproof integrity certificate: Submit on completion of testing.

940 Completion

1. Roof areas: Clean.
 - 1.1. Outlets: Clear.
2. Work necessary to provide a weathertight finish: Complete.
3. Storage of materials on finished surface: Not permitted.

4. **Completed mastic asphalt roof coating:** Do not damage. Protect from petroleum based solvents and other chemicals, traffic and adjacent or high level working.

Ω End of Section

L10

Windows/ rooflights/ screens/ louvres

Clauses

To be read with Preliminaries/ general conditions

1.

General

115 Timber procurement

1. Timber (including timber for wood-based products): Obtained from well-managed forests and/ or plantations, in accordance with:
 - 1.1. The laws governing forest management in the producer country or countries.
 - 1.2. International agreements such as the [Convention on International Trade in Endangered Species of wild fauna and flora \(CITES\)](#).
2. Documentation: Provide either in accordance with chain of custody certification scheme requirements:
 - 2.1. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
 - 2.2. Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
3. Chain of custody certification scheme: In accordance with [UK Timber Procurement Policy \(UKTPP\)](#), i.e. [FSC](#), [GiB](#) or [PEFC](#)
 - 3.1. Other evidence: [UK Timber Procurement Policy \(UKTPP\)](#), Category B

Products

205 Materials selection

1. Third-party certification: Submit proposals

460 To Zone 2 Framed rooflights Type A

1. Description: Rooflights to Zone 2
2. Manufacturer: [The Rooflight Co.](#)
 - 2.1. Contact details
 - 2.1.1. Address: Unit T1, Bourton Industrial Park
Bourton-on-the-Water
Gloucestershire
United Kingdom
GL54 2HQ
 - 2.1.2. Telephone: [+44 \(0\)1993 833155](tel:+44(0)1993833155)
 - 2.1.3. Web: <https://www.therooflightco.com>
 - 2.1.4. Email: hello@therooflightco.com
 - 2.2. Product reference: Submit proposals
3. Form: Pitched.
4. Size: As drawing 3300 and 2000
5. Product performance
 - 5.1. Whole window U-value: 1.4 W/m²K.

6. Frame
 - 6.1. Material: Stainless steel.
 - 6.2. Finish
 - 6.2.1. Coating: Polyester powder coating.
 - 6.2.2. Colour: To match existing
7. Glazing or infill
 - 7.1. Type: Insulating glass units.
 - 7.2. Construction: 4 mm SGG Planilux Toughened Outer, 16 mm 90% Argon Cavity, 4 mm SGG Planitherm One II (Low E) Toughened Inner.
 - 7.3. Colour: Clear.
8. Integral kerb: Insulated kerb to be formed on site.
9. Operation
 - 9.1. Type: Manual openings (out of reach).
 - 9.2. Control:
10. Accessories: Not required.
11. Standard: To BS EN1279-2.
12. Third-party certification: BSI Kitemark and KM 93754.

480 Roof windows

1. Description: Dormer Windows
2. Standard: To [BS EN 14351-1](#).
3. Manufacturer: Submit proposals
 - 3.1. Product reference: Submit proposals
4. Frame: Wood
 - 4.1. Finish: Painted
5. Thermal performance (U-value maximum): Manufacturer's standard
6. Fire performance (minimum): Manufacturer's standard
7. Glazing details: Manufacturer's standard
8. Insulating glass units incorporating low emissivity glass
 - 8.1. Beading: Manufacturer's standard
9. Flashings: By window manufacturer to suit Manufacturer's standard.
10. Accessories: Manufacturer's standard
11. Fixing: Manufacturer's standard

605 Wood louvres

1. Description: at Fleche F2
2. Manufacturer: Contractor's choice
3. Species: Manufacturer's standard
4. Fire performance: Reaction to fire to [BS EN 13501-1](#), Class A2
5. Number of louvre banks: One
6. Louvre blade pitch and angle: To match existing
7. Accessories/ other requirements: Stainless steel bird mesh
8. Fixing: Stainless Steel

Execution

710 Protection of components

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

730 Priming/ sealing

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

750 Building in

1. **General:** Not permitted unless indicated on drawings.
 - 1.1. Brace and protect components to prevent distortion and damage during construction of adjacent structure.

780 Fixing of wood frames

1. **Standard:** As [section Z20](#).
2. **Fasteners:** Stainless steel wood screws
 - 2.1. **Spacing:** When not pre-drilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.

820 Ironmongery

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

Ω End of Section

M60

Painting/clear finishing

Coating systems

112 Metal finish at Fleche Wrought iron finial

1. Manufacturer: Zinnser
 - 1.1. Product reference: ALLCOAT® Exterior Satin
2. Surfaces: Cast/Wrought Iron.
 - 2.1. Preparation: All surfaces to be prepared in accordance with Manufacturer's recommendations where appropriate - including but not limited to:
3. Application: in accordance with Manufacturer's recommendations
4. Colour: Contractor to select suitable grey RAL colour.

113 Paint to external metalwork at Fleche

1. Description: Brackets at Fleche
2. Manufacturer: Zinnser
 - 2.1. Product reference: ALLCOAT® Exterior Satin
3. Surfaces: Bare Metal
 - 3.1. Preparation: In accordance with manufacturer's data sheet and clauses 400A, 500 and 521
4. Initial coats: Metal Primer Zinc Phosphate
 - 4.1. Number of coats: 1
5. Undercoats: -
 - 5.1. Number of coats: -
6. Finishing coats: Metalshield Gloss
 - 6.1. Number of coats: 2
7. Colour: Grey to match existing.

118 Timber Decorative Paint at Fleche (Green)

1. Description: 3no coats Zinnser ALLCOAT® Exterior Satin applied strictly in accordance with manufacturers written recommendations and to specification described below.
2. Manufacturer: Zinnser
 - 2.1. Product reference: ALLCOAT® Exterior Satin
3. Primer: Timber – 1no coat Zinnser Cover Stain Primer or alternative approved appropriate stain blocking primer suitable for use on new and existing timber.
4. Application: Shake or stir well before using. Apply 3no coats with synthetic bristle brush, roller or sprayer. For airless spraying, use a .017" tip and high-medium (2000-2500 PSI) pressure. Ensure air and surface temperature are between 10° & 32°C and humidity is less than 85% during application and cure of the product. Avoid painting in direct sunlight and maintain a "wet edge" to avoid lapping.
5. Dry Time: At normal temperatures i.e. 21°C, ALLCOAT® Exterior Satin dries to recoat in 1 hour. Full adhesion and hardness develop in 7 days.
6. Coverage: Up to 12m2 per litre on non-porous surfaces. On porous surfaces coverage will be reduced e.g. sawn timber - 4-8m2 per litre. Planed timber - 8-12m2 per litre. Normal application is 2 coats, however an additional coat should be applied to areas of high exposure such as sills and fascia boards.
7. Clean Up: Clean application tools, spatters and spills immediately with warm water and liquid detergent; rinse with water. Dried paint on brushes can be removed with Zinnser BIN Brush

Cleaner. Follow equipment manufacturer's directions to clean spray equipment. Remove dried product with a household cleaner; such as Zinsser Universal Cleaner & Degreaser, rinse with water.

8. **Limitations:** Not intended for application to exterior floors, roofing, decks or any surface subject to water immersion or prolonged contact with water. Not suitable for application to bare PVDF Cladding, for advice on how to prepare PVDF please contact our Technical Support Team on 0191 4113166. Not suitable for application to unweathered Plastisol. New or unweathered powder coating or uPVC should be abraded and degreased thoroughly prior to applying Allcoat Exterior to aid adhesion.
9. **Drying:** Touch dry 1 hour, hard dry 4 hours at 20oC and 60% RH. Full cure achieved after 7 days. **Recoat:** 1 hour at 20oC and 60% RH. Note: Drying and recoat times will be extended at lower temperature and higher RH. **Spread Rate:** 10m² per litre per coat. **Volume Solids:** 40% Typical film thickness per coat: 40 microns **Gloss Finish Density:** 1.25 kg/litre **VOC:** 80g/l **Shelf life:** 2 years in unopened containers **Storage:** Store indoors at 5 – 25oC. Protect from frost.
10. **Colour:** Green (RAL 6028)

123A Paint to cast iron rainwater goods

1. **Description:** To cast iron rainwater goods
2. **Preparation:** As section 400; 440, 651. For existing pipes and gutters, remove and take to workshop to overhaul - completely remove all coatings.
3. **Manufacturer:** Dulux
 - 3.1. **Product reference:** Dulux Weathershield
4. **Surfaces:** Preprimed and sealed
 - 4.1. **Preparation:** In accordance with manufacturer's data sheet and clauses 400A. Completely remove existing painted coatings
5. **Initial coats:** Metal Primer Zinc Phosphate
 - 5.1. **Number of coats:** 2 @ 50um DFT per coat
6. **Finishing coats:** Metalshield Gloss
 - 6.1. **Number of coats:** 1 coat at ground level pre fitting. 1 coat post fitting while the rainwater goods are in place
7. **Colour:** Umbre Gray RAL 7022
8. **Inner surface of gutter:** Two coats black bitumen paint by IKO or similar approved, after receiving primer and gloss coats, applied in accordance with manufacturer's instructions.

124 Paint to aluminum rainwater goods

1. **Description:** To cast iron rainwater goods
2. **Preparation:** As section 400; 440, 651. For existing pipes and gutters, remove and take to workshop to overhaul - completely remove all coatings.
3. **Manufacturer:** Dulux
 - 3.1. **Product reference:** Dulux Weathershield
4. **Surfaces:** Preprimed and sealed
 - 4.1. **Preparation:** In accordance with manufacturer's data sheet and clauses 400A. Completely remove existing painted coatings
5. **Initial coats:** Metal Primer Zinc Phosphate
 - 5.1. **Number of coats:** 2 @ 50um DFT per coat
6. **Finishing coats:** Metalshield Gloss
 - 6.1. **Number of coats:** 1 coat at ground level pre fitting. 1 coat post fitting while the rainwater goods are in place
7. **Colour:** Umbre Gray RAL 7022

8. **Inner surface of gutter:** Two coats black bitumen paint by IKO or similar approved, after receiving primer and gloss coats, applied in accordance with manufacturer's instructions.

130 Gloss paint

1. **Description:** To external hardwood/softwood
2. **Manufacturer:** Zinsser UK
 - 2.1. **Product reference:** Allcoat Exterior Gloss
3. **Surfaces:** Preprimed and sealed
 - 3.1. **Preparation:** Ensure surfaces are clean and dry
4. **Initial coats:** As recommended by manufacturer
5. **Undercoats:** As recommended by manufacturer
6. **Finishing coats:** Full gloss

160 2 Part Epoxy filling at Fleche

1. **Manufacturer:** Rawlins, or Contractors Choice
 - 1.1. **Product reference:** Contractor's choice
2. **Surfaces:**
 - 2.1. **Preparation:** All surfaces to be clean, dry and free from oil and grease. Damaged areas as marked in Timber Specialists report and Conservation Architects drawings to be cut back to solid.
3. **Composition:** Styrene free, two-part polyester wood filler.
4. **Colour:** To match existing as clause M60.

Generally

215 Handling and storage

1. **Coating materials:** Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
2. **Materials from more than one batch:** Store separately. Allocate to distinct parts or areas of the work.

220 Compatibility

1. **Coating materials selected by contractor**
 - 1.1. Recommended by their manufacturers for the particular surface and conditions of exposure.
 - 1.2. Compatible with each other.
 - 1.3. Compatible with and not inhibiting performance of preservative/fire-retardant pretreatments.

280 Protection

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

Preparation

400A Preparation generally

1. **Standard:** In accordance with BS 6150.
2. Refer to any pre-existing CDM Health and Safety File.
3. Refer to CDM Construction Phase Plan where applicable.

4. **Suspected existing hazardous materials:** Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
5. **Preparation materials:** Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
6. **Substrates:** Sufficiently dry in depth to suit coating.
7. **Efflorescence salts:** Remove but do not wet efflorescence salts from surfaces. Repeat removal if efflorescence recurs.
8. **Dirt, grease and oil:** Remove dirt, grease and oil from surfaces. If contamination of surfaces/ substrates has occurred, obtain instructions before proceeding.
9. **Smooth surface irregularities:** Fill joints, cracks, holes and other depressions with stoppers/fillers worked well in and finished off flush with surface. Abrade to a smooth finish. Apply oil based stoppers/fillers after priming. Apply water based stoppers/fillers before priming unless recommended otherwise by manufacturer. Patch prime water based stoppers/fillers where applied after priming.
10. Remove dust and particles from dry and abrasive preparation of surfaces with vacuum cleaner. Remove residues from wet preparation of surfaces by rinsing with clean water and wiping dry.
11. **Doors, opening windows cupboards and other moving parts:**
 - 11.1. Ease, if necessary, before coating.
 - 11.2. Prime resulting bare areas.
12. Provide sufficient clean dust sheets and coverings to protect floors and all other surfaces. Exhibit 'wet paint' signs and provide protective barriers as required.
13. Use only non ferrous bristle brushes to clean surfaces.
14. Remove all dust by vacuum.
15. Remove wet abrasion by washing with clean water.

420 Fixtures and fittings

1. **Removal:** Before commencing work remove: Coverplates, grilles, wall clocks, and other surface mounted fixtures.
2. **Replacement:** Refurbish as necessary, refit when coating is dry.

425 Ironmongery

1. **Removal:** Before commencing work: Remove ironmongery from surfaces to be coated.
2. **Hinges:** Remove
3. **Replacement:** Refurbishment as necessary; refit when coating is dry.

430 Existing ironmongery

1. **Refurbishment:** Remove old coating marks. Clean and polish.

440 Previously coated surfaces generally

1. **Preparation:** In accordance with BS 6150, clause 11.5.
2. **Contaminated or hazardous surfaces:** Give notice of:
 - 2.1. Coatings suspected of containing lead.
 - 2.2. Substrates suspected of containing asbestos or other hazardous materials.
 - 2.3. Significant rot, corrosion or other degradation of substrates.
3. **Suspected existing hazardous materials:** Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.

4. Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
5. Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
6. Alkali affected coatings: Completely remove.
7. Retained coatings
 - 7.1. Thoroughly clean to remove dirt, grease and contaminants.
 - 7.2. Gloss-coated surfaces: Provide key.
8. Partly removed coatings
 - 8.1. Additional preparatory coats: Apply to restore original coating thicknesses.
 - 8.2. Junctions: Provide flush surface.
9. Completely stripped surfaces: Prepare as for uncoated surfaces.

461 Previously coated wood

1. Degraded or weathered surface wood: Take back to provide suitable substrate.
2. Degraded substrate wood: Repair with sound material of same species.
3. Exposed resinous areas and knots: Apply two coats of knotting.

471 Preprimed wood

1. Areas of defective primer: Take back to bare wood and reprime.

481 Uncoated wood

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

611 Wall coverings

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

622 Organic growths

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

651 Existing gutters

1. Dirt and debris: Remove from inside of gutters.
2. Defective joints: Clean and seal with suitable jointing material.

Application

711 Coating generally

1. Application standard: In accordance with BS 6150, clause 9.
2. Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
3. Surfaces: Clean and dry at time of application.
4. Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
5. Overpainting: Do not paint over intumescent strips or silicone mastics.

6. Priming coats
 - 6.1. Thickness: To suit surface porosity.
 - 6.2. Application: As soon as possible on same day as preparation is completed.
7. Finish
 - 7.1. Even, smooth and of uniform colour.
 - 7.2. Free from brush marks, sags, runs and other defects.
 - 7.3. Cut in neatly.
8. Doors, opening windows and other moving parts: Ease before coating and between coats.

720 Priming joinery

1. Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
2. End grain: Coat liberally allow to soak in, and recoat.

730 Workshop coating of concealed joinery surfaces

1. General: Apply coatings to all surfaces of components.

Ω End of Section

N16

Bird and vermin control systems

Clauses

2 To be read with preliminaries/ general conditions.

General

110 Bird control

1. Description: To window sills and transoms.
2. Species: Feral pigeon
3. System manufacturer: Contractor's choice
4. Detection: None
5. Prevention: Stainless steel spikes and net barriers
6. Other requirements: None
7. Samples: For approval by CA prior to commencement

System performance

210 General requirements

1. Standard: In accordance with BPCA members' information manual
 - 1.1. Documentation. Submit certification of training and experience for operatives.
2. Survey: Identify nature, source and extent of infestation and/ or damage.
3. Report content
 - 3.1. List pest species detected.
 - 3.2. **Factors affecting execution of the work:** Identify problematic site conditions and restrictions, including the presence of protected species.
 - 3.3. **Associated work:** Identify nature of repair and/ or replacement work required to building fabric in order to avoid re-infestation
 - 3.4. **Other contaminants:** Notify.
4. Control measures: Submit proposals for:
 - 4.1. Detection: Not required
 - 4.2. Prevention measures.
 - 4.3. Elimination and disposal.
5. Proposals: Include:
 - 5.1. Drawings, schedules, technical information, calculations and manufacturers' literature.
 - 5.2. Method statements.
 - 5.3. Maintenance procedures and logbook.
6. Mesh, nets, roost inhibitors, traps and guards: Capable of resisting temporary and permanent loads.

Products

320 Insect guard mesh

1. Manufacturer: [Nicholson STS Ltd](#)
 - 1.1. Contact details

Donald Insall Associates
15-08-2025

- 1.1.1. Address: Unit 13 Wireless
Station Park
Bassingbourn
Royston
Hertfordshire
SG8 5JH
- 1.1.2. Telephone: +44 (0) 1763 295828
- 1.1.3. Web: <https://www.nicholsonsts.com>
- 1.1.4. Email: info@nicholsonsts.com
- 1.2. Product reference: [AIRTRAK® IM Insect Mesh](#)
- 2. Material: Glass reinforced plastic (GRP).
- 3. Finish: Vinyl coated.
- 4. Length:
- 5. Width: 75 mm.
- 6. Mesh size: 3 x 3 mm

340 Roost inhibitors

- 1. Description: Spikes
- 2. Manufacturer: Contractors choice - for pricing purposes allow for Avipoint 'P20' medium stainless steel pigeon spikes
 - 2.1. Product reference: Submit proposals- submit samples for approval
- 3. Material: Stainless steel
 - 3.1. Number of rows: 1-allow for various widths (50mm - 125mm) leaving a 50mm gap to wall or glazing
 - 3.2. Special fixings: None - to be adhered to ledges and transomes using clear adhesive recommended by bird spike manufacturer

Fabrication

505 Fabrication generally

- 1. Design: Complete detailed design of items specified in this sub-section and obtain approval prior to commencing fabrication.
- 2. Shop drawings: Submit.
- 3. Structural calculations: Submit.
- 4. Frameworks: Assemble and brace, including temporary members required for installation.
- 5. Contact between dissimilar metals: Avoid.
- 6. Temporary support: Do not subject members to non-design loadings.

Execution

610 Workmanship generally

- 1. Preparation
 - 1.1. Water supplies: Do not contaminate.
 - 1.2. Existing building services and components: Protect, and leave undamaged.
- 2. Timing: Coordinate with other related trades.
- 3. Damaged building components: Obtain instructions.
- 4. Contaminants: Remove and leave affected area clean.
- 5. Coatings

- 5.1. Suitability of substrates: Sufficiently dry and sound, to suit coatings.
- 5.2. Preparation and application: As section M60, and in accordance with BS 6150.
- 6. Fasteners and adhesives: As section Z20.
 - 6.1. Material: Compatible with building components and substrate.
 - 6.2. Metals: Isolate dissimilar metals to avoid electrolytic corrosion.
- 7. Thermal and building movement: Allow for, where appropriate.
 - 7.1. Movement joints: Do not bridge.
- 8. Roost inhibitors, nets and mesh screens: Correctly fitted and tensioned.

620 Decontamination

- 1. Bird droppings and other detritus: Remove.
 - 1.1. Vermin contamination: Disinfect affected areas by fumigation.
- 2. Supplementary treatments: Carry out when instructed

Completion

940 Documentation

- 1. General: Submit:
 - 1.1. Manufacturer's maintenance instructions.
 - 1.2. Recommendations for measures to prevent re-infestation.
 - 1.3. General product information.
 - 1.4. Installation information.
 - 1.5. Guarantees, warranties, test certificates, record schedules and log books.
- 2. Number of copies: 3 copies in total - 1 for architect; 2 for client
- 3. Submission: 2 weeks prior to date when principal contractor expects work to be practically complete

Ω End of Section

P10

Sundry insulation/ proofing work

Types of insulation

140 Mineral wool slab insulation Type A

1. Between Rafters
2. Manufacturer: [ROCKWOOL Ltd](#)
 - 2.1. Contact details
 - 2.1.1. Address: ROCKWOOL Ltd
Wern Tarw
Pencoed
Bridgend
United Kingdom
CF35 6NY
 - 2.1.2. Telephone: +44 (0)1656 862621
 - 2.1.3. Web: <https://www.rockwool.com/uk/>
 - 2.1.4. Email: customersupportcentre@rockwool.com
 - 2.2. Product reference: [Flexi®](#)
3. General requirements: Insulation products generally.
4. Standard: To BS EN 13162.
5. Thickness: See drawings
6. Thermal conductivity (maximum): 0.035–0.038 W/mK.
7. Fire performance: To BS EN 13501-1, Euroclass A1 non-combustible.
8. Width:
9. Acoustical Performance: Achieves Part E.
10. Water vapour resistance: Negligible.
11. Length: 1200 mm.

320 Vapour-permeable sheets For RF01 and RF03

1. Manufacturer: [Don & Low Ltd \(Nonwovens\)](#)
 - 1.1. Contact details
 - 1.1.1. Address: Newfordpark House
Glamis Road
Forfar
Angus
United Kingdom
DD8 1FR
 - 1.1.2. Telephone: +44 (0)808 169 4444
 - 1.1.3. Web: <https://www.donlow.co.uk>
 - 1.1.4. Email: membranes@donlow.co.uk
 - 1.2. Product reference: Roofshield
2. Standard: BS EN 13859-1
 - 2.1. Characteristics: Reaction to fire: To BS EN 13501-1, Class B-s3, d0 or better
3. Installation requirements
 - 3.1. **Setting out:** Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.

- 3.2. **Method of fixing:** Galvanized large head nails at 300 mm centres into timber studs
- 3.3. **Joints:** Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
- 3.4. **Openings:** Membrane fixed to reveals.
- 3.5. **Bottom edges:** Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- 4. **Penetrations:** Sealed.

321 Non Insulated Breather Membrane For RF02

- 1. **Manufacturer:** DuPont™ Tyvek®
 - 1.1. **Contact details**
 - 1.1.1. **Address:** HERE
470 Bath Road,
Arno's Vale,
Bristol
Avon
United Kingdom
BS4 3AP
 - 1.1.2. **Telephone:** +44 (0) 117 452 9050
 - 1.1.3. **Web:** <https://www.dupont.co.uk/building.html>
 - 1.1.4. **Email:** tyvek.construction@dupont.com
 - 1.2. **Product reference:**
- 2. **Standard:** BS EN 13859-1
 - 2.1. **Characteristics:** Reaction to fire: To BS EN 13501-1, Class B-s3, d0 or better
- 3. **Installation requirements**
 - 3.1. **Setting out:** Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
 - 3.2. **Method of fixing:** Galvanized large head nails at 300 mm centres into timber studs
 - 3.3. **Joints:** Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
 - 3.4. **Openings:** Membrane fixed to reveals.
 - 3.5. **Bottom edges:** Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- 4. **Penetrations:** Sealed.

Ω End of Section

R10

Rainwater drainage systems

Clauses

2 To be read with preliminaries/ general conditions.

General

111A Gravity rainwater drainage system - overhauling existing cast iron rainwater goods

1. To be read in conjunction with:
2. Specification: Z11; M60 112 for redecoration.
3. Strip out elevation drawings.
4. Rainwater outlets: varies.
5. Gutters: cast iron
6. Pipework: cast iron - square and round sections - spigot and socket.
7. Below ground drainage: Refer to engineers specification and drawings.
8. Disposal: To surface water drainage.
9. Controls: Not applicable.
10. Accessories: Fixings and brackets: selant for gutters.

112A Repair works to cast iron gutters and downpipes

1. **General:** Record positions of gutters and downpipes to be removed. All cast iron rainwater and drainage goods are to be carefully dismantled including cast iron gutters, hoppers and brackets, and removed to workshop for full overhaul.
2. Where there is clear evidence that a downpipe has been replaced by a upvc/aluminum downpipe, this is to be reinstated with a new cast iron pipe; connections, outlet and brackets to match original detail.
3. Existing cast iron rainwater goods are to be cleaned to ensure a sound, clean, dry surface and free from dirt, grease and any other contamination. Any cracks, holes or open joints are to be filled with appropriate exterior filler. Allow for removal of rust or weak paint back to bare metal. Small areas of corrosion to be removed using a bronze wire brush and sandpaper before repainting. Do not use mechanical tools..
4. Lead downpipes to be recorded, removed and inspected for damage as H71-595. Repair where possible; replace like for like as necessary.
5. Reinstall down pipes and gutters on completion of repairs, re-using original fixing holes into masonry where possible.

113 Repair works to aluminum gutters and downpipes

1. **General:** Record positions of gutters and downpipes to be removed. All aluminum rainwater and drainage goods are to be carefully dismantled including aluminum gutters, hoppers and brackets, and removed to workshop for full overhaul.
2. Existing aluminum rainwater goods are to be cleaned to ensure a sound, clean, dry surface and free from dirt, grease and any other contamination. Any cracks, holes or open joints are to be filled with appropriate exterior filler. Allow for removal of rust or weak paint back to bare metal. Small areas of corrosion to be removed using a bronze wire brush and sandpaper before repainting. Do not use mechanical tools..
3. Lead downpipes to be recorded, removed and inspected for damage as H71-595. Repair where possible; replace like for like as necessary.

4. Reinstate down pipes and gutters on completion of repairs, re-using original fixing holes into masonry where possible.

System performance

210A Design

1. **Design:** Reinstatement of the existing rainwater drainage system. Localised areas where falls to gutters are altered and new outlets required.
2. **Standard:**
 - 2.1. To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
 - 2.2. To BS EN 12056-5, clauses 3, 4, 6 and 11.
3. **Proposals:** Submit drawings, technical information, calculations and manufacturers' literature.

221 Collection and distribution of rainwater

1. **General:** Complete, and without leakage or noise nuisance.

Products

315 Cast iron eaves gutters G.01 at RF01

1. **Manufacturer:** [Hargreaves Foundry Drainage Ltd](#)
 - 1.1. **Contact details**
 - 1.1.1. **Address:** Water Lane
South Parade
Halifax
West Yorkshire
United Kingdom
HX3 9HG
 - 1.1.2. **Telephone:** 01422 330607
 - 1.1.3. **Web:** <https://hargreavesfoundry.co.uk/>
 - 1.1.4. **Email:** sales@hargreavesfoundry.co.uk
 - 1.2. **Product reference:** [Premier Rainwater Cast Iron H16 Moulded Gutter](#)
2. **Standard:** To BS 460.
3. **Profile:** Cast Iron H16 Ogee Gutter - 150mm Primed H166401
4. **Joint type:** Manufacturer's standard.
5. **Finish:** Primer with rust inhibitors. To receive paint finish as M60

316 Brackets to G.01 and G.02 at RF01

1. **Manufacturer:** Longbottom Foundry
 - 1.1. **Contact details**
 - 1.1.1. **Address:** Bridge Foundry
Holmfirth
Huddersfield
HD9 7AW
 - 1.1.2. **Telephone:** 01484 682141
 - 1.1.3. **Web:** <https://longbottomfoundry.co.uk/>
 - 1.1.4. **Email:** <https://longbottomfoundry.co.uk/>
 - 1.2. **Product reference:** [Alumasc Rainwater Apex Heritage Cast Iron Beaded Half Round Gutter](#)
2. **Standard:** To BS 460.

3. **Profile:** To match Gutter G.01 and G.02 - H16 Ogee profile
4. **Finish:** Primer with rust inhibitors. To receive paint finish as M60

316 Cast iron eaves gutters G.02 at RF01

1. Manufacturer: [Hargreaves Foundry Drainage Ltd](#)
 - 1.1. Contact details
 - 1.1.1. Address: Water Lane
South Parade
Halifax
West Yorkshire
United Kingdom
HX3 9HG
 - 1.1.2. Telephone: [01422 330607](tel:01422 330607)
 - 1.1.3. Web: <https://hargreavesfoundry.co.uk/>
 - 1.1.4. Email: sales@hargreavesfoundry.co.uk
 - 1.2. Product reference: [Premier Rainwater Cast Iron H16 Moulded Gutter](#)
2. Standard: To BS 460.
3. **Profile:** Cast Iron H16 Ogee Gutter - 150mm Primed H166401
4. **Joint type:** Manufacturer's standard.
5. **Finish:** Primer with rust inhibitors. To receive paint finish as M60

360 Sealant for gutters

1. **Type:** Low modulus silicone sealant

375 Cast iron pipework - flexible couplings

1. Standard: To BS EN 877, Agrément certified.
2. Manufacturer: Hargreaves Foundry or equal and approved
 - 2.1. Product reference: Premier range - square section, or equal and approved
3. Coupling type: Push fit
4. Nominal size: 100mm Diameter
5. Finish as supplied: Anti rust primer, to receive paint finish as section M60
6. Brackets: Cast iron holderbats
 - 6.1. Fixings: Stainless steel screws into hw plugs in existing holes in masonry
 - 6.1.1. Size: To manufacturers recommendations
7. Accessories: Rainwater heads and shoes

475A Baloon guards for gutter outlets

1. Manufacturer: Submit proposals for approval
2. Product: Submit proposals for approval.
3. Size: To suit specific gutter outlet.
4. Material: Grade 316 stainless steel.

Custom made products - Not Used

Execution

600 Preparation

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

605 Installation generally

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

610 Fixing and jointing gutters

1. Joints: Watertight .
2. Brackets: Securely fixed.
 - 2.1. Fixings: To match existing unless otherwise stated. Gutters generally sit on stone corbels and presumably strapped to rafter feet. Allow to pack up where sat on stone corbels using slate or other approved
 - 2.1.1. Fixing centres: To match existing
 - 2.2. Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
3. Roofing underlay: Dressed into gutter.

615 Setting out eaves gutters - to falls

1. Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
2. Outlets: Align with connections to below ground drainage.

616 Setting out eaves gutters - level

1. Setting out: Level and as close as practical to the roof.
2. Outlets: Aligned with connections to below ground drainage.

630 Installing rainwater outlets

1. Fixing: Secure. Fix before connecting pipework.
 - 1.1. Method: As existing
2. Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 Fixing pipework

1. Pipework: Fix securely, plumb and/ or true to line.
2. Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.

3. Externally socketed pipes and fittings: Fix with sockets facing upstream.
4. Additional supports: Provide as necessary to support junctions and changes in direction.
5. Vertical pipes:
 - 5.1. Provide a loadbearing support at least at every storey level.
 - 5.2. Tighten fixings as work proceeds so that every storey is self supporting.
 - 5.3. Wedge joints in unsealed metal pipes to prevent rattling.
6. Wall and floor penetrations: Isolate pipework from structure.
 - 6.1. Pipe sleeves: As section P31.
 - 6.2. Masking plates: Fix at penetrations if visible in the finished work.
7. Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

640 Fixing vertical pipework

1. Bracket fixings: Plugged and screwed into masonry - re-use existing fixing holes wherever possible
2. Distance between bracket fixing centres (maximum): As existing where possible

645 Fixing low gradient pipework

1. Bracket fixings: Bolted into masonry
2. Distance between bracket fixing centres (maximum): 900 mm

650 Jointing pipework and gutters

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

660 Jointing external pipework

1. Jointing: Cold caulking compound

675 Cutting coated pipework and gutters

1. Cutting: Recoat bare metal.

Completion

910 Gutter test

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

920A Immediately before handover

1. Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system: Remove. Do not sweep or flush into the rainwater system.
2. Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

Ω End of Section

Z20

Fixings and adhesives

Clauses

2 To be read with preliminaries/ general conditions.

Products

310 Fasteners generally

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

320 Packings

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

340A Masonry fixings

1. Light duty: Plugs and stainless steel screws into mortar joints only (unless otherwise agreed with CA due to loading / fixing issues).
2. Heavy duty: As agreed with / specified by structural engineer.

350 Plugs

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

390A Adhesives generally

1. To be used only with prior agreement from CA
2. Standards
 - 2.1. Hot-setting phenolic and aminoplastic: To BS 1203.
 - 2.2. Thermosetting wood adhesives: To BS EN 12765.
 - 2.3. Thermoplastic adhesives: To BS EN 204.

Execution

610 Fixing generally

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

620 Fixing through finishes

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

630 Fixing packings

1. Function: To take up tolerances and prevent distortion of materials and components.

2. **Limits:** Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
3. **Locations:** Not within zones to be filled with sealant.

700 Applying adhesives

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

Ω End of Section

Z21 DIA Mortars

Cement gauged mortars

50D PROPORTIONS FOR LIME BASED MORTARS

1. Proportions and additional requirements for mortar materials to be based on trials as specified elsewhere.
2. For purposes of tender assume an NHL 3.5 hydraulic lime:sand mortar
NHL 3.5 hydraulic lime: sand mortar (1:3 mix) to match the colour of the existing mortar exactly.
Assume source of sand to be 1 part Leighton Buzzard and 1.5 parts Nosterfield sieved so that the particle size equates to one third of the particular joint into which the material is to be placed.

107D ADMIXTURES GENERALLY

1. Do not use in mortar unless specified or approved. Do not use calcium chloride or any admixtures containing calcium chloride. Admixtures, if specified, to be to BS EN 934-3:2003

Lime:sand mortars

323D SAND FOR SITE MADE LIME MORTAR

1. Standard: to BS EN 13139: 2002
2. Grading:
 - adjust according to thickness of joint
3. Sand for facework mortar:
 - obtain from one source.
 - Mix different loads if necessary to ensure consistency of colour and texture.
 - Sand to be sharp, angular and well-graded, with a good range of grain size from 2.36mm to 150µm.
 - Store different sands in different piles on clean hard bases that allow free drainage.
 - Avoid intermixing and contamination.

324D SITE PREPARED LIME:SAND FOR CEMENT GAUGED MORTARS

1. When pigment is not required, lime:sand may be prepared on site in lieu of ready-mixed material, using sand as specified in the type of coating clause(s), by:
Thoroughly mixing lime putty, ready prepared to BS EN 459-1:2001, with sand, or
Thoroughly mixing hydrated lime powder to BS EN 459-1:2001 with sand, first in the dry state and then with water. Keep for at least 16 hours before use and prevent from drying out.

325D SAND FOR CONSERVATION WORK

1. Clean, to BS EN 13139: 2002
2. Aggregate to match existing in colour, texture, grain size and grading. If necessary source from variety of suppliers. Architect to confirm sand type prior to samples.
3. Soft building sand may be added to achieve required colour or to improve workability up to 50% of total volume of sand.

330 Hydraulic limes

1. Manufacturer: [Saint-Astier®](#)
2. Contact details
 - 2.1. Address: 75 Cowcross Street
LONDON

United Kingdom
EC1M 6EL

- 2.2. Telephone: [+44 7534 806947](tel:+447534806947)
- 2.3. Web: www.stastier.co.uk
- 2.4. Email: contact_uk@saint-astier.com
- 3. Product reference: [Saint-Astier® NHL 3.5](#)
- 4. Type of hydraulic lime: Natural hydraulic lime.
- 5. Standard: To BS EN 459-1.
- 6. Designation: NHL 3.5.
- 7. Constituents: Manufacturer's standard.
- 8. Density: 0.65 kg/L.
- 9. Compressive strength - 7 days: 3 MPa.
- 10. Compressive strength - 28 days: 7 MPa.
- 11. Technical characteristics, other: Manufacturer's standard.

340D POZZOLANIC MATERIAL

- 1. Using respiratory protection, incorporate as dry powder with damp sand:lime mix, just before mix to be used, one of the following to approval of CA:
- 2. - Pozzolan: Polestar obtained from Rose of Jericho Ltd, Horchester Farm, Holywell, Dorchester, Dorset DT2 0LL. Tel: 01935 83676.
- 3. - Trass: Tubag trass lime obtained from Nimbus Conservation Ltd, Eastgate, Christchurch St East, Frome, Somerset BA11 1QD. Tel: 01373 474646
- 4. - Brick dust: 150 µm.
Colour _____ to CA approval.

410D POINTING SAMPLES TO MATCH EXISTING WORK

- 1. Prepare up to six sample tablets of varying mortar mixes to match colour, texture and profile of existing for approval.
- 2. Prepare samples in advance of site visit so that they can be inspected when dry.
- 3. Execute up to three sample areas of pointing in approved location(s) using approved mix.
- 4. Retain approved pointing sample for reference during the contract.

411D LIME:SAND MORTARS AND WINTER WORKING

- 1. During the period mid-October to April, refer to the CA for confirmation of mix type if high calcium (putty lime) mixes are specified.
- 2. Hydraulic lime mixes require greater care in winter than in summer. To achieve a satisfactory set, 96 hours of constant temperatures above 8-10°C are required. For mortar depths greater than 15 mm, this period is extended.
- 3. Application should not be undertaken when temperatures are below 5°C or are rising from this temperature unless a means of creating constant warm air behind sheeted protection is provided.
- 4. Precautions:
 - 4.1. Ensure bulk materials and mixing water temperature are above 5°C at the time of mixing.
 - 4.2. Provide three layers of protection whenever frost is likely. The following should be considered minimum recommendations:
 - 4.2.1. Hessian sacking; 12oz bleached, starch free hessian in contact with the working surface.
 - 4.2.2. Insulation: Either loose hessian sacks of hay or straw in 6 layers or minimum 4 layers of plastic bubble wrap laid or wrapped so that it may be removed when the temperature rises to 6°C to permit necessary air movement to the mortar.

- 4.2.3. Adjust the number of layers according to severity of frost anticipated.
- 4.2.4. Polythene sheeting or tarpaulin to shed water clear of the protective under layers.
- 4.3. Adequate protection from frost, including provision of warm air heating, remains the responsibility of the contractor.
- 4.4. Protect during frosty weather for a minimum of 5 days removing layers to allow air movement when temperatures are above 6°C and re-instating as the temperature drops.
- 5. Frost attack of hydraulic lime mortars will produce a powder with little or no strength. This should be removed for the depth of the damage and replaced with a fresh application.

Ω End of Section

Z22 Sealants

Clauses

2 To be read with preliminaries/general conditions.

Products

310 Joints

1. Description: To dormer windows as drawing 3303
2. Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

311 Joints to Window Repair

1. Description: Burnt Sand Mastic to Window Repair Drawings 2210,2211,2212,2213
2. Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

Execution

610 Suitability of joints

1. Presealing checks
 - 1.1. Joint dimensions: Within limits specified for the sealant.
 - 1.2. Substrate quality: Surfaces regular, undamaged and stable.
2. Joints not fit to receive sealant: Notify CA and submit proposals for rectification

620 Preparing joints

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

630 Applying sealants

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

Ω End of Section



Specification created using NBS Chorus