2050

Atelier Mb Ltd

King Street Chambers

Materials and Workmanship

Planning Issue

13-08-2024

Roof finish replacement

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C20
Demolition

To be read with preliminaries/ general conditions.

10 Extent of deconstruction/ demolition

1. General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to …….

20 Features to be retained

1. General: Keep in place and protect the following: …….

30 Services disconnection arranged by contractor

1. General:
2. Arrange with the appropriate authorities and responsible private organizations for disconnection of services, and removal of fittings and equipment owned by those authorities prior to starting deconstruction or demolition

31 Services disconnection arranged by employer

1. General: The employer will arrange with the appropriate authorities and responsible private organizations for disconnection of services, and removal of fittings and equipment owned by those authorities prior to deconstruction or demolition, as follows: …….
2. Timing: Do not start deconstruction or demolition until disconnections are completed.

35 Live foul and surface water drains

1. Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
2. Other requirements:

50 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 Construction Skills certification of competence.
3. Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction and demolition to be used.

55 Site hazards

1. Precautions: Prevent fire or explosion caused by gas and vapour from tanks, pipes, etc.
2. Dust:
   - 2.1. Lead dust: Submit method statement for control, containment and clean-up regimes.
3. Site operatives and general public: Protect from health hazards associated with vibration, dangerous fumes and dust arising during the course of the works.

70 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.

78 Unforeseen hazards

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

90 Contractor's property

1. Components and materials arising from the deconstruction and demolition work:
2. Action:

91 Employer's property

1. Components and materials to remain the property of the employer:
2. Protection:
3. Specific limitations:

95 Recycled materials

1. Materials arising from deconstruction and demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
2. Evidence of compliance: Submit full details and supporting documentation.
   2.1. Verification: Allow adequate time in programme for verification of compliance.

Ω End of Section

C41
Repairing/ renovating/ conserving masonry

Generally/ preparation

110 Scope of work

1. Schedule: Making good of masonry following stripping out, repointing to chimney and exposed brickwork visible from the roof.
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.

130 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. Unwanted plants close to masonry: Where removal of root system is not possible or desirable, cut through stem as close to the ground as possible. Remove bark from stump and apply herbicide paste. Leave stump to wither.

140 Record of work

1. General: Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings and photographs, as necessary.
2. Specific records:
3. Documentation: Submit on completion of the work.
   3.1. Number of sets:

Workmanship generally

155 Putlog scaffolding

1. Usage:

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.

180 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.

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.

190 Control samples

1. General: Complete an area of each of the following types of work, and arrange for inspection before proceeding with the remainder: …….

Material/ production/ accessories

215 Material samples

1. Representative samples of designated materials: Submit before placing orders.
   1.1. Designated materials:
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.

230 Inspection of drawings, templates, casts, etc.

1. Timing: Before starting production of masonry units associated with the following items: …….
2. Period of notice (minimum):

260 Bricks

1. Standard: To BS EN 771-1.
2. Manufacturer: Submit proposals
   2.1. Product reference:

3. Size: to match existing

Dismantling/ rebuilding - Not Used

Replacements and insertions

330 Preparation for replacement masonry

1. Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
2. Existing metal fixings, frame members, etc.: Report when exposed.
3. Redundant metal fixings: Remove.
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.

365 Replacement of bricks

1. Description: Damaged bricks
2. Bricks: Clay, as clause 260
3. Mortar: As section Z21.
   3.1. Standard: Not applicable
   3.2. Mix: 1:2.5 NHL 3.5 hydraulic lime:sand
   3.3. Sand source/ type: Well graded crushed stone to approval
4. Fixings: Not required
5. Joints: Double-struck

385 Laying replacement masonry units

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

410 Corroded fixings

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

Tooling/ dressing stone in situ

450 Weathering ledges at joints

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

Mortar repairs

510 Preparation for mortar repairs

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

520 Mortar repairs

1. Description:
2. Undercoats: As section Z21.
    2.1. Standard:
    2.2. Mix:
    2.3. Sand source/ type:
    2.4. Building up: In layers where necessary, each layer not exceeding 12 mm.
3. Finishing coat: To match approved samples.
    3.1. Standard:
    3.2. Mix:
    3.3. Sand source/ type:
    3.4. Finished thickness:
    3.5. Finish:
4. Reinforcement:

540 Applying mortar

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

550 Scraped finish to mortar repairs

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

555 Float finish to mortar repairs

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 - Not Used

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.

720 Hand grouting

1. Description:
2. Grout mix:
3. Method: Direct grout into open joints using clay cups formed against masonry surface. Pour grout to refusal; allow to set; break off excess mortar and brush down masonry face.

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

810 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 30mm.
    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. Raked joints: Remove dust and debris.

820 Pointing

1. Description: Repointing and making good.
2. Preparation of joints: Rake out existing mortar. Carefully brush away loose mortar. Dampen joints, as necessary, to control suction
3. Mortar: As section Z21.
    3.1. Standard: Not applicable
    3.2. Mix: 1:2.5 NHL 3.5 hydraulic lime:sand
    3.3. Sand source/ type: Crushed stone fine pointing sand to approval

4. Joint profile/ finish: Recessed back from weathered arrises to retain original joint widths. Brushed finish, as clause 860
5. Other requirements:

840 Pointing with tools/ Irons

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

860 Brushed finish to joints

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.

Ω End of Section

G20
Carpentry/ timber-framing/ first fixing

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: Forest Stewardship Council (FSC), Grown in Britain (GiB) or Programme for the Endorsement of Forest Certification (PEFC)
   3.1. Other evidence: None

160 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 wet-graded and specified for installation at higher moisture contents: graded at an average moisture content above 20% and unmarked.
3. Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

Products

230 Structural softwood (strength class not specified)

1. Description: FOR STRUCTURAL USE GENERALLY
2. Species: European redwood
3. Grading standard: To the appropriate BS EN 14081-1-compliant standard.
   3.1. Grade: SS to BS 4978
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: 30 years
   4.2. Flame-retardant treatment: None required

270 Ungraded softwood

1. Description: For timber fillets, steps and supports
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: Regularized
4. Treatment

4.1. Preservative treatment: None required

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, BS 4978 and BS EN 844 for softwood

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 of 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): Three 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): Three 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, thicknessed, 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 ten 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. Sealer:

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.

630 Bolted joints

1. Bolt spacings (minimum): To BS EN 1995-1-1, section 8.5.

2. Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter, and not more than 2 mm larger.
3. Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
4. Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
    4.1. Checking: At agreed regular intervals up to completion. Tighten as necessary.

640 Bolted joints with connectors

1. Connectors: To BS EN 912.
    1.1. Types and sizes: As shown on drawings.
    1.2. Bolt hole: Where appropriate, size to suit bolt diameter.
    1.3. Manufacturer:
        1.3.1. Product reference:
    1.4. Finish:
2. Bolts and washers: To BS EN 1995-1-1.
3. Connector location: Where not otherwise shown, spacings, end and edge distances are to be not less than standard values to BS EN 1995-1-1, section 8.9 for split-ring and shear plate connectors, and BS EN 1995-1-1, section 8.10 for toothed plate connectors.
4. Centres of bolt holes: Not more than 2 mm from positions shown on drawings.
5. Assembly: Do not crush timber, deform washers or overstress bolts.

650 Glued joints

1. Adhesive:
    1.1. Compatibility: Where relevant, obtain manufacturer's confirmation that adhesive is compatible with preservative/ flame-retardant treatment.
2. Glued structural components: Fabricated to BS 6446 in clean, controlled workshop conditions.
3. Anticipated equilibrium moisture content of timber in service:

670 Anti-corrosion finishes for fasteners

1. Galvanizing: To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
2. Sherardizing: To BS 7371-8, Class 1.
3. Zinc plating: To BS EN ISO 4042 and passivated.

Erection and installation

740 Pre-erection checking

1. Timing: Not less than ten days before proposed erection start date.
2. Checklist
    2.1. Foundations and other structures to which timber structure will be attached: Check for accuracy of setting out.
    2.2. Holding down bolts: Check for position, protruding length, condition and slackness.
3. Inaccuracies and defects: Report without delay.
4. Erection: Obtain permission to commence.

750 Modifications/ Repairs

1. Defects due to detailing or fabrication errors: Report without delay.

2. Methods of rectification: Obtain approval of proposals before starting modification or remedial work.
3. Defective/damaged components: Timber members/ components may be rejected if the nature and/or number of defects would result in an excessive amount of site repair.

760 Temporary bracing

1. Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

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.

780 Wall plates

1. Position and alignment: To give the correct span and level for trusses, joists, etc.
2. Bedding: Fully in fresh mortar.
3. Joints: At corners and elsewhere where joints are unavoidable use nailed half-lap joints. Do not use short lengths of timber.

784 Joists generally

1. Centres: Equal, and not exceeding designed spacing.
2. Bowed joists: Installed with positive camber.
3. End joists: Positioned approximately 50 mm from masonry walls.

786 Joists on hangers

1. Hangers: Bedded directly on and hard against supporting construction. Do not use packs or bed on mortar.
2. Joists: Cut to leave not more than 6 mm gap between ends of joists and back of hanger. Rebated to lie flush with underside of hangers.
3. Fixing to hangers: A nail in every hole.

790 Standard joist hangers

1. Description:
2. Standard: To BS EN 845-1.
3. Size and type: To suit joist, design load and crushing strength of supporting construction.
4. Material/ finish:

795 Trimming openings

1. Trimmers and trimming joists: When not specified otherwise, not less than 25 mm wider than general joists.

800 Trussed rafter installation

1. Erection: To Trussed Rafter Association (TRA) Technical handbook. Site installation guide and TRA Product data sheet PD3.
2. Trusses generally: Do not modify without approval.
3. Damaged trusses: Do not use.
4. Fixing: With truss clips. Bottom chords of standard trusses and rafters of raised tie trusses bearing fully on wall plates.
    4.1. Bottom chords of standard trusses: Do not fix to internal walls until roofing is complete and cisterns are installed and filled.
5. Tolerances: To NA to BS EN 1995-1-1.

850 Inspection generally

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

860 Bolted joint inspection

1. Timing: Inspect all accessible bolts at the end of the defects liability period and tighten if necessary.

Ω End of Section

H62
Natural slating

Types of slating

105 Natural slates For Pitched Roofs

1. Description: Replacement roof slating
2. Substrate: Existing trussed rafters at 600 mm centres
3. Pitch: 30º and 45º approx.
4. Underlay: Vapour-permeable underlay as clause 235
   - 4.1. Recycled content: Contractor's choice
   - 4.2. Direction: Parallel to eaves.
   - 4.3. Head-lap (minimum): 150 mm
5. Battens
   - 5.1. Size: 50 x 25 mm
   - 5.2. Fixing: 65 x 3.35 mm galvanized annular ring shank nails
6. Slates
   - 6.1. Supplier: Welsh Slate
     - 6.1.1. Contact details
       - 6.1.1.1. Address: Penrhyn Quarry
         Bethesda
         Bangor
         Gwynedd
         United Kingdom
         LL57 4YG
       - 6.1.1.2. Telephone: +44 (0)1248 600656
       - 6.1.1.3. Web: www.welshslate.com
       - 6.1.1.4. Email: enquiries@welshslate.com
     - 6.1.2. Product reference: Welsh Slate Penrhyn Heather Blue Natural Roofing Slate (500 x 250 mm)
   - 6.2. Slate type
     - 6.2.1. Source: Welsh.
     - 6.2.2. Colour: Heather blue.
   - 6.3. Slate size
     - 6.3.1. Length (minimum): 400 mm.
     - 6.3.2. Width (minimum): 300 mm.
   - 6.4. Standards
     - 6.4.1. Product specification: To BS EN 12326-1.
     - 6.4.2. Methods of test: To BS EN 12326-1.
   - 6.5. Properties
     - 6.5.1. Water absorption: <0.25%.
   - 6.6. Grade:
   - 6.7. Roof pitch: 25°.
   - 6.8. Head-lap: 50/ 150 mm.
   - 6.9. Fixing: Copper/ aluminium clout nails.
   - 6.10. ThermalConductivity: 2.0 W/m·K.

7. Fixing: Two nails each slate.
8. Accessories:

120 Natural Vertical Slates

1. Description: Replacement Vertically hung slates
2. Substrate: existing timber battens
3. Underlay: Vapour-permeable underlay to BS EN 13859, Class W1
   - 3.1. Recycled content: Contractor's choice
   - 3.2. Fixing: Parallel to bottom edge.
   - 3.3. Horizontal lap (minimum): 100 mm.
4. Battens
   - 4.1. Size: 50 x 25 mm
   - 4.2. Fixing: 65 x 3.35 mm galvanized annular ring shank nails
5. Slates
   - 5.1. Supplier: Welsh Slate
     - 5.1.1. Contact details
       - 5.1.1.1. Address: Penrhyn Quarry
         Bethesda
         Bangor
         Gwynedd
         United Kingdom
         LL57 4YG
       - 5.1.1.2. Telephone: +44 (0)1248 600656
       - 5.1.1.3. Web: www.welshslate.com
       - 5.1.1.4. Email: enquiries@welshslate.com
     - 5.1.2. Product reference:
   - 5.2. Slate type
     - 5.2.1. Source: Welsh
     - 5.2.2. Colour: Heather Blue.
   - 5.3. Slate size
     - 5.3.1. Length (minimum): 400 mm.
     - 5.3.2. Width (minimum): 250 mm.
   - 5.4. Standards
     - 5.4.1. Product specification: To BS EN 12326.
     - 5.4.2. Methods of test: To BS EN 12326 and achieves W1-T1-S1 (highest classification).
   - 5.5. Properties
     - 5.5.1. Type: Flat.
     - 5.5.2. Dimensional tolerances: Complies (< +/- 5 mm).
     - 5.5.3. Nominal thickness and individual thickness variation: Complies (< +/- 35%).
     - 5.5.4. Characteristic modulus of rupture (Transverse): 45 MPa.
     - 5.5.5. Characteristic modulus of rupture (Longitudinal): 49 MPa.
     - 5.5.6. Water absorption: Code W1.
     - 5.5.7. Freeze-thaw resistance: Low water absorption allows it to withstand freeze-thaw cycling.
     - 5.5.8. Thermal cycle test: Code T1.
     - 5.5.9. Carbonate content: Complies (≤ 5%).

5.5.10. Sulfur dioxide exposure test: Code S1.

5.5.11. Non-carbonate carbon content (maximum): Complies (≤ 2%).

5.6. Type:

5.7. Size:

5.8. Head-lap (minimum): 44.5 mm

5.9. Fixing: Two nails each slate.

6. Accessories:

Performance

205 Hygrothermal design

1. Interstitial condensation within roof construction: Determine risk as recommended in BS 5250 and BS EN ISO 13788.
2. Air and vapour control layer: Provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

Slating generally

210 Basic workmanship

1. General: Fix slating and accessories to make the whole sound and weathertight at earliest opportunity.
2. Setting out: To true lines and regular appearance, with neat fit at edges, junctions and features.
3. Fixings for slating accessories: As recommended by manufacturer.
4. Gutters and pipes: Keep free of debris. Clean out at completion.

220 Removing existing slating

1. General: Carefully remove slates, battens, underlay, etc. with minimum disturbance of adjacent retained slating.
2. Undamaged slates: Set aside for reuse.

240 Underlay

1. Handling: Do not tear or puncture.
2. Laying: Maintain consistent tautness.
3. Vertical laps (minimum): 100 mm wide, coinciding with supports and securely fixed.
4. Fixing: Galvanized steel, copper or aluminium 20 x 3 mm extra-large clout head nails.
5. Eaves: Where exposed, use an external grade (UV resistant) underlay or a proprietary eaves support product.
6. Penetrations: Use proprietary underlay seals or cut underlay to give a watertight fit around pipes and components.
7. Ventilation paths: Do not obstruct.

245 Battens/ counter battens

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

265 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.

270 Battens fixed to masonry

1. Setting out: In straight horizontal lines. Align on adjacent areas.
2. Batten length (minimum): 3 m.
3. Fixing centres (maximum): 400 mm.

272 Timber for slating substrate work

1. Timber: Sawn softwood, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
    1.1. 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:

275 Slate fixing

1. Setting out: Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
2. Slate thickness: Consistent in any one course. Lay with thicker end as tail.
3. 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.
4. Top course: Head-nail short course to maintain gauge.
5. Fixing: Centre nail each slate twice through countersunk holes 20-25 mm from side edges.
    5.1. Nails: Copper clout to BS 1202-2 or aluminium clout to BS 1202-3.
    5.2. Nail dimensions: Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.

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.

325 Fire-separating walls

1. Separating walls: Completely fill space between top of wall and underside of slates with mineral wool quilt to provide fire-stopping.

2. Boxed eaves: Completely seal air paths in plane of separating wall with wire-reinforced mineral wool, not less than 50 mm thick, fixed to rafters and carefully cut to shape fire-resisting board and quilt to provide fire-stopping.

345 Ventilated eaves with integrated grilles tray

1. Fascia grilles and ventilator trays
   1.1. Manufacturer:
      1.1.1. Product reference:
   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.

535 Lead roll hips

1. Underlay: Lay courses over hip.
   1.1. Overlaps (minimum): 150 mm.
2. Hip slates: Cut close to timber roll and fix to form a straight junction.

615 Lead lined valleys

1. Underlay: Cut to rake. Dress over tilting fillets to lap onto metal valley. Do not lay under metal.
2. Roof slates: Cut extra wide slates adjacent to valley to fit neatly.
   2.1. Valley width between slates: 125 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.

670 Top edge abutments

1. Underlay: Turn up not less than 100 mm at abutments.
2. Top slate courses: Fix close to abutments.

690 Roof windows

1. Underlay: Turn up not less than 100 mm at window surrounds under integral flashings/ soakers.
2. Roof slates: Cut as necessary and fix closely all round.

730 Lead roll ridges

1. Underlay: Lay courses over ridge.
   1.1. Overlap (minimum): 150 mm.
2. Top slate courses: Fit close to timber roll.

870 Sundry accessories

1. …….

Vertical slating edges/ junctions

910 Bottom edges

1. Slating substrate work: Fix timber tilting fillet to support bottom course of slates in correct vertical plane. Fix flashing to tilting fillet.

2. Underlay: Dress over flashing.
3. Undercourse and bottom course slates: Fix with tails neatly aligned.

920 Top edges

1. Top slate courses: Fix under abutment and make weathertight with flashings dressed down not less than 150 mm.

930 Side abutments

1. Slating substrate work: Chase abutment wall and insert stepped flashing.
   1.1. Flashing: Return not less than 75 mm behind slating, overlapping underlay and battens. Turn back to form a vertical welt.
2. Abutment slates: Cut and fix neatly.

950 Angles with soakers

1. Angle slates: Cut extra wide slates and fix to form a straight, close mitred junction.
2. Soakers: Interleave with angle slates. Fix by nailing to battens at top edge.

Ω End of Section

H71
Lead sheet fully supported roof and wall coverings/ flashings

Types of leadwork

205 Insurance and warranties

1. Requirements and testing:
2. Additional requirements:

209 Gutter lining – box, parapet, tapered and flat roof valley

1. Substrate: 18mm Marine plywood as clause K11/816 on new or existing rafters and timber fillets at 450 mm centres max.
   1.1. Preparation: Make good surfaces following stripping out.
2. Sheet underlay: Building paper to BS 1521, Class A1
3. Type of lead: Rolled to BS EN 12588
   3.1. Thickness: 2.50 or 2.65 mm (Code 6)
4. Pretreatment: Apply thin coating of patination oil to underside of lead and allow to dry before laying
5. Joints in direction of fall: Wood-cored roll
   5.1. Spacing: On centre line of gutter or as agreed on site
6. Cross joints: 60mm drip steps with 75mm splash lap
   6.1. Spacing: 2250 mm max.
7. Outlets: Catch pit with lead-welded flashing to internal rainwater pipe
8. Accessories:
   8.1. Proprietary ventilators: Glidevale Protect
   2 Brooklands Road
   Sale
   Cheshire
   M33 3SS
   Tel: 0161 905 5700
   glidevaleprotect.com
   8.2. Product reference: FV250

230 Valley gutter lining to slate/ tile roofs

1. Sheet underlay: Building paper to BS 1521, Class A1
2. Substrate: Marine Plywood as Clause K11/816
   2.1. Thickness: 18mm
3. Type of lead: Rolled to BS EN 12588
   3.1. Thickness: 2.50 or 2.65 mm (Code 6)
4. Pretreatment: Apply thin coating of patination oil to underside of lead and allow to dry before laying
5. Laying: Over and beyond tilting fillets
6. Lengths: Not more than 1500 mm.
   6.1. Cross joints: Lapped not less than 150 mm.
7. Fixing: Welt edges. Nail top edge of each sheet. Dress bottom end neatly into eaves gutter

250 Weathering to

1. Description: Parapets and cornices

2. Substrate: Stone
3. Sheet underlay: Building paper to BS 1521, Class A1
4. Type of lead: Rolled to BS EN 12588
   4.1. Thickness: 2.50 or 2.65 mm (Code 6)
5. Joints: Welted
   5.1. Spacing: 2000 mm maximum
6. Edge details: Welted drip at front, upstand at rear with tuck in
7. Fixing: Lead clips at 500 centres and continuous clip for cornice
8. Accessories: Fixing of lightning conductor strips

310 Ridge/ hip rolls to lead roofs

1. Core: Rounded timber.
   1.1. Size: 45 mm high x 45 mm wide
   1.2. Shape: Tapered to a flat base 30 mm wide
   1.3. Fixing: To Ridge/ hip board with brass or stainless steel countersunk screws at not more than 600 mm centres.
2. Roof covering: Dress roofing sheets up roll to form 35 mm upstand.
   2.1. Fixing: Nail each sheet at underlapping end.
3. Lead capping
   3.1. Thickness: As roof covering.
   3.2. Lengths: Not more than 1500 mm.
   3.3. Wings: Extend not less than 75 mm on to roof.
   3.4. Laps in length: Not less than 150 mm for ridges, 100 mm for hips.
4. Fixing: Secure wings with one copper or stainless steel clip per roofing bay and at each lap.

315 Ridge/ hip rolls to slate roofs

1. Clips: At capping laps and not more than 500 mm.
   1.1. Fixing: Nail to top of ridge/ hip board before fixing core. Nail each side not more than 50 mm from edge of capping (drill slates as necessary).
2. Core: Rounded timber.
   2.1. Size: 45 mm high x 45 mm wide
   2.2. Shape: Tapered to a flat base 30 mm wide.
   2.3. Fixing: To ridge/ hip board with brass or stainless steel screws at not more than 600 mm centres, with base not less than 5 mm above slates.
3. Lead capping
   3.1. Thickness: 2.50 or 2.65 mm (Code 6)
   3.2. Lengths: Not more than 1500 mm.
   3.3. Hip capping: Nail head of each length around core.
   3.4. Laps: Not less than 150 mm for ridges, 100 mm for hips.
   3.5. Cover: Wings of capping to extend not less than 150 mm on to roof.

410 Apron flashings

1. Description: AT LEAN-TO TOP ABUTMENT
2. Lead
   2.1. Thickness: 2.00 or 2.24 mm (Code 5)
3. Dimensions

3.1. Lengths: Not more than 1500 mm.
3.2. End to end joints: Laps of not less than 100 mm.
3.3. Upstand: Not less than 75 mm.
3.4. Cover to abutment: Not less than 150 mm.
4. Fixing: Lead wedges into bed joint, clips to bottom edge at laps and 500 mm centres

420 Cover flashings

1. Description: cover flashing to gutter abutment to parapet
2. Lead
2.1. Thickness: 2.00 or 2.24 mm (Code 5)
3. Dimensions
3.1. Lengths: Not more than 1500 mm.
3.2. End to end joints: Laps of not less than 100 mm.
3.3. Cover: Overlap to upstand of not less than 75 mm.
4. Fixing: Lead clips at 500 mm centres

440 Soakers and step flashings

1. Description: At side abutment
2. Lead soakers
2.1. Thickness: 1.75-2.00 mm (Code 4)
2.2. Dimensions
2.2.1. Length: Slate/ tile gauge + lap + 25 mm.
2.2.2. Upstand: Not less than 75 mm.
2.2.3. Underlay: Not less than 100 mm.
2.3. Fixing: By roofer.
3. Lead step flashings
3.1. Thickness: 2.00 or 2.24 mm (Code 5)
3.2. Dimensions
3.2.1. Lengths: Not more than 1500 mm.
3.2.2. End to end joints: Laps of not less than 100 mm.
3.2.3. Cover: Overlap to soaker upstands of not less than 65 mm.
3.3. Fixing: Lead wedges at every course.

441 Soakers and step flashings At junction with vertical slates

1. Description: At side abutment
2. Lead soakers
2.1. Thickness: 1.75-2.00 mm (Code 4)
2.2. Dimensions
2.2.1. Length: Slate/ tile gauge + lap + 25 mm.
2.2.2. Upstand: Not less than 75 mm.
2.2.3. Underlay: Not less than 100 mm.
2.3. Fixing: By roofer.
3. Lead step flashings
3.1. Thickness: 2.00 or 2.24 mm (Code 5)
3.2. Dimensions

3.2.1. Lengths: Not more than 1500 mm.
3.2.2. End to end joints: Laps of not less than 100 mm.
3.2.3. Cover: Overlap to soaker upstands of not less than 65 mm.
3.3. Fixing: Recessed, screwed and sealed at mortar joints

472 Chimney flashings to slate/ plain tile roofs

1. Lead front apron
   1.1. Thickness: 2.00 or 2.24 mm (Code 5)
   1.2. Dimensions
      1.2.1. Length: Width of chimney plus not less than 150 mm underlap to each side flashing.
      1.2.2. Upstand: Not less than 75 mm.
      1.2.3. Cover to roof: Not less than …….
   1.3. Fixing: Lead wedges into bed joint.
2. Lead soakers
   2.1. Thickness: 1.25 or 1.32 mm (code 3).
   2.2. Dimensions
      2.2.1. Length: Slate/ tile gauge + lap + 25 mm.
      2.2.2. Upstand: Not less than 75 mm.
      2.2.3. Underlap: Not less than 100 mm.
3. Lead step flashings
   3.1. Thickness: 2.00 or 2.24 mm (Code 5)
   3.2. Dimensions
      3.2.1. Lengths: Not more than 1500mm.
      3.2.2. End to end joints: Laps of not less than 100 mm.
      3.2.3. Front end: Turn 75 mm around chimney over apron.
      3.2.4. Cover: Overlap to soaker upstands of not less than 65 mm.
   3.3. Fixing: Lead wedges at every course.
4. Lead back gutter
   4.1. Thickness: 2.00 or 2.24 mm (Code 5)
   4.2. Dimensions
      4.2.1. Length: Width of chimney plus not less than 100 mm overlap to each side flashing.
      4.2.2. Upstand: Not less than 100 mm.
      4.2.3. Gutter sole: Not less than 150 mm.
      4.2.4. Cover up roof: Not less than 225 mm.
5. Lead back gutter cover flashing
   5.1. Thickness: 2.00 or 2.24 mm (Code 5)
   5.2. Dimensions
      5.2.1. Length: Width of chimney plus not less than 100 mm overlap to each side flashing.
      5.2.2. Cover: Overlap to back gutter upstand of not less than 75 mm.
   5.3. Fixing: Lead wedges into bed joint.

480 Lead slates At roof penetrations

1. Manufacturer: Contractor's choice
2. Lead
   2.1. Thickness: 2.00 or 2.24 mm (Code 5)

3. Dimensions
   3.1. Base: Not less than 400 x 400 mm.
   3.2. Upstand: Not less than 150 mm, to fit pipe and at angle to suit roof pitch.

492 Vertical tiling/ Slating top edge and corner flashings

1. Lead
   1.1. Thickness: 2.00 or 2.24 mm (Code 5)
2. Dimensions
   2.1. Lengths: Not more than 1500 mm.
   2.2. End to end joints: Laps of not less than 100 mm.
   2.3. Width: Adequate for underlap to abutment and dressing down over tiles/slates not less than 150 mm.

General requirements/ preparatory work

510 Workmanship generally

1. Standard: In accordance with BS EN 14783 and BS EN 12588 and 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 scribers 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.
10. Protection: Prevent staining, discolouration and damage by subsequent works.

516 Lead-welding

1. In situ lead-welding: Is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

520 Lead sheet

1. Production method
   1.1. Rolled, to BS EN 12588, or
   1.2. Machine cast and BBA-certified, or
   1.3. Sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of ±10%.
2. Identification: Labelled to show compliance with the harmonized standard (hEN) BS EN 14783, where appropriate, and detail of the thickness/ code, weight and type.

550 Lightning protection

1. Lead coverings: Attach the following to a lightning protection system: …….

1.1. Electrical continuity: Provide between lead sheets. Discontinuous sections must be separately bonded.

555 Layout

1. Setting out of longitudinal and cross joints: Submit proposals.

560 Control samples

1. General: Complete areas of the finished work, and obtain approval of appearance before proceeding:
2. Size: Two gutter bays including step, 2m section of weathering to parapet and cornice.
3. Location: Gutter, parapet and cornice location to contractor's choice.

610 Suitability of substrates

1. Condition: Dry and free of dust, debris, grease and other deleterious matter.

620 Preparation of existing timber substrates

1. Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
2. Defective boards: Give notice.
3. Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.

625 Existing membrane

1. Defective, unsuitable or missing membrane: Give notice.

627 Existing AVCL

1. Defective, unsuitable or missing AVCL: Give notice.

630 Plywood overlay

1. Standard: Manufactured to an approved national standard and to BS EN 636, section 8 (plywood for use in humid conditions).
   1.1. Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
2. Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
3. Laying: Parallel to perimeter edges with cross joints staggered and a 0.5-1 mm gap between sheets.
4. Fixing: With 25 mm annular ringed shank copper or stainless steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges and in pairs across joints.
   4.1. Nail heads: Set flush with or just below the surface.

640 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 22% 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.

645 Sheet underlay

1. Manufacturer: Contractor's choice

1.1. Product reference: Building paper to BS 1521, Class A1

650 Laying sheet underlay

1. Handling: Prevent tears and punctures.
2. Laying: Butt or overlap jointed onto a dry substrate.
   2.1. Fixing edges: With copper or stainless steel staples or clout nails.
   2.2. Do not lay over roof edges but do turn up at abutments.
   2.3. Wood core rolls: Fixed over sheet underlay.
   2.4. Protection: Keep dry and cover with lead at the earliest opportunity.

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.

710 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.
3. Screws to composite metal decks: Self tapping as recommended by the deck and lead manufacturer/ supplier for clips.

715 Clips

1. Manufacturer:
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:
      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:
      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.

760 Continuous clips

1. Manufacturer:
2. Material: Material:
   2.1. Lead continuous clips
      2.1.1. Thickness: Code 6
   2.2. Temper: BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere.
3. Dimensions
   3.1. Width: To suit detail.
4. Fixing clips: Secure at 200 mm centres.
5. Fixing lead sheet: Welt edge around continuous clip and dress down.

765 Continuous clips for cross joints in roofing

1. Lead continuous clips: 50 mm wide, cut from sheets of same thickness/ code as sheet being secured.
2. Fixing clips: Lead-weld top edge of clips to underlap sheet, 50 mm from lower edge of overlap.
3. Fixing lead sheet: Welt edge around continuous clip and dress down.

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:
   3.1. Application: As section Z22.

Jointing lead

810 Forming details

1. Method: Bossing or lead-welding except where bossing is specifically required.
2. Lead-welded 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:

840 Wood-cored roll joints without splash lap

1. Wood core
   1.1. Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
   1.2. Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
2. Undercloak: Dress half way around core.
3. Copper or stainless steel clips. Fix to core at not more than 450 mm centres. Do not restrict thermal movement of the undercloak.

4. Overcloak: Dress around core with edge welted around ends of clips, finishing 5 mm clear of main surface.

845 Wood-cored roll joints with splash lap

1. Wood core
   1.1. Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
   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.

862 Drips with splash laps

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

880 Welted 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.

970 Patination oil

1. Manufacturer: Contractor's choice
2. Location: Exposed lead surfaces and as recommended by Lead Sheet Training Academy, The Complete Manual
3. Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

Ω End of Section

H75
Stainless steel strip/ sheet fully supported roof and wall coverings/ flashings

Types of stainless steel work

110 Stainless steel sheet fully supported roof covering

1. Description: Flat Roofing
2. Covering system: Traditional sheet
3. Insurance and warranties: Not required
4. Air and vapour control layer: Plastic sheet to BS EN 13984
5. Insulation: 100mm Mineral fibre
6. Sarking or roof boarding: 18mm marine grade plywood sheet
7. Membrane: Vapour-permeable sheet, in accordance with BS EN 13859-1
8. Substrate: 18 mm plywood (as K11/816) on treated timber forming ventilated cavity and 3º pitch.
   8.1. Preparation: Strip off existing boarding and provide timber firings to give fall
9. Sheet underlay: Acoustic damping underlay
   Sas Clause 645
10. Stainless steel:
    10.1. Type: Coated sheet/ strip
    10.2. Grade: 1.4301 (304)
    10.3. Finish: To BS EN 10088-4, finish 2S (terne-coated)
    10.4. Thickness: 0.50 mm
11. Longitudinal joints: Batten rolls
    11.1. Spacing: Determined by contractor
12. Cross-joints: Single lock welts
    12.1. Spacing: Determined by contractor
13. Other requirements: Extend under adjacent pitched roofs and include ventilation at abutment with parapet wall. Roof gulley and outlet into existing rainwater pipe.

205 Insurance and warranties

1. Requirements and testing:
2. Additional requirements:

206 Fire performance of insulation

1. Reaction to fire: To BS EN 13501-1, Class A1

310 Batten roll seams

1. Core: Rounded timber as clause 840.
   1.1. Fixing: Stainless steel countersunk screws at not more than 600 mm centres to ridge/ hip board.
2. Roof coverings: Fix two clips as clause 730 to each roof bay. Form roof coverings each side with upstands to just less than the height of the core. Welt clips over upstands.
3. Cappings: Stainless steel of the same grade and thickness as the roof covering, in preformed lengths not exceeding 1 m.

3.1. Fixing: Overlap each length and secure with capping clip as clause 735.

460 Miscellaneous flashings

1. Description: Flashing under pitched roof finish.
2. Stainless steel
   2.1. Type: Coated sheet/ strip
   2.2. Grade: 1.4301 (304)
   2.3. Finish: To BS EN 10088-4, finish 2S (terne-coated)
   2.4. Thickness: 0.50 mm
3. Dimensions
   3.1. Lengths: Not more than 3 m.
   3.2. End-to-end joints: Single lock welts
4. Fixing: Clips to bottom edge at welts and 450 mm centres

General requirements/ preparatory work

510 Workmanship generally

1. Fabrication and fixing: To provide a secure, free draining and weathertight installation.
2. Operatives: Trained in the application of stainless steel coverings/ flashings. Submit records of experience on request.
3. Preforming: Measure, mark, cut and form stainless steel prior to assembly wherever possible.
4. Marking out: Use scribers discreetly for marking out stainless steel. Do not use other sharp instruments.
5. Folding: With mechanical or manual presses to give straight, regular and tight bends, leaving panels free from ripples, kinks, buckling and cracks. Use hand tools only for folding details not able to be pressed.
6. Avoiding sharp edges: Fold under or remove as work proceeds.
7. Sealants: Do not use in joints to attain waterproofing.
8. Solder: Use only where specified.
9. Finished stainless steel work: Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
   9.1. Protection: Prevent staining, discolouration and damage by subsequent works.

520 Stainless steel strip/ sheet

1. Standard: To BS EN 10088-4 and BS EN ISO 9445-1 or -2
   1.1. Identification: Stamped or labelled with grade, finish and thickness as specified.
2. Manufacturer: Contractor's choice
   2.1. Product reference: Terne coated stainless sheet

535 Integrity of stainless steel

1. Requirement: Design coverings/ flashings and methods of attachment to prevent loss of weathertightness and permanent deformation due to wind pressure or suction.
2. Structural requirements
   2.1. Wind loads: To Structural engineer's recommendations

545 Soldering/ welding

1. In situ soldering/ welding: Permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

550 Lightning protection

1. Extent: The following stainless steel coverings are to be attached to a lightning protection system: …….
2. Electrical continuity: Provide between stainless steel strips/ sheets via welting of joints.

555 Layout

1. Setting out of longitudinal and cross-joints: Submit proposals.

610 Suitability of substrates

1. Condition: Dry and free of dust, debris, grease and other deleterious matter.

620 Preparation of existing timber substrates

1. Defective boards: Give notice.
2. Sound boards: Adjust boards to level and securely fix. Punch in any protruding fasteners and plane or sand to achieve an even surface.
3. Moisture content: Not more than 22% at time of covering.

640 Timber for use with stainless steel work

1. Quality: Planed, free from wane, splits, pitch pockets, decay and insect attack (ambrosia beetle excepted).
2. Moisture content: Not more than 22% at time of fixing and covering.
3. Preservative treatment: Organic solvent as section Z12, and Wood Protection Association Commodity Specification C8.

645 Sheet underlay

1. Manufacturer: Sound Reduction Systems Ltd
   Adam Street,
   Off Lever Street,
   Bolton,
   Lancashire
   BL3 2AP
   Tel. 01204 380074
   https://www.soundreduction.co.uk/products/acoustic-membranes/raincheck/
   1.1. Product reference: Raincheck
2. Weight: 1.9Kg/m^2

650 Laying sheet underlay

1. Handling: Prevent tears and punctures.
2. Laying: Butt jointed onto a dry substrate.
   2.1. Fixing edges: With stainless steel staples or 20 x 3 mm extra large head clout nails.
   2.2. Do not lay over eaves and drip/ step stainless steel underlaps.
3. Protection: Keep dry and cover with stainless steel at the earliest opportunity.

Fixing

710 Fixings for clips

1. Nails to timber substrates: Stainless steel austenitic.
   1.1. Shank type: Annular ringed or helical threaded.
   1.2. Shank diameter: Not less than 2.65 mm.
   1.3. Head: Flat.
   1.4. Length: Not less than 25 mm or equal to substrate thickness
2. Screws to concrete/ masonry substrates: Stainless steel (austenitic) to BS EN 14592.
   2.1. Diameter: Not less than 3.45 mm.
   2.2. Length: Not less than 25 mm.
   2.3. Washers and plastic plugs: Compatible with screws.
3. Screws to composite metal decks: Self-tapping, as recommended by the deck and stainless steel manufacturer.

730 Batten roll clips

1. Material: Stainless steel of same grade and thickness as that being secured.
2. Dimensions
   2.1. Width: Not less than 50 mm.
   2.2. Length: Sufficient to pass under batten and turn up each side, with 25 mm projection for folding into welt.
3. Fixing: Secure each clip to substrate with one fixing.

735 Batten roll capping clips

1. Material: Stainless steel of same grade and thickness as that being secured.
2. Dimensions
   2.1. Width: Equal to capping width.
   2.2. Length: Not less than 150 mm overall, with 30 mm reverse fold to secure overlapping capping.
3. Fixing: Secure each clip to batten roll core with two screws.

740 Sliding cover clips

1. Material: Stainless steel of same grade and thickness as that being secured.
2. Dimensions
   2.1. Width: Not less than 50 mm.
   2.2. Length: Sufficient to fold into welts of adjoining strips/ sheets.
3. Fixing: Secure each clip to substrate with two screws.

Jointing

810 Forming details

1. Folds and welts: Form without thinning, or splitting the strip/ sheet.
2. Thermal movement: Form all stainless steel details with appropriate allowance for movement, without impairment of security at full expansion or contraction.

815 Free edge details

1. Visible feature edges: Finished with 15 mm welts.

820 Soldering details

1. Solder: As recommended by the stainless steel manufacturer and appropriate to the metal finish. Not less than 30% tin content.
2. Flux: Acidic, as recommended by the stainless steel manufacturer. Thoroughly remove residues.
3. Unstressed joints: Use unreinforced soldering where there is no risk of movement stresses.
    3.1. Seams: Form neatly and consistently with not less than 10 mm overlap of clean stainless steel.
4. Stressed joints: Use reinforced soldering where there is a risk of movement stresses.
    4.1. Seams: Form neatly and consistently with not less than 30 mm overlap of clean stainless steel. Reinforce seams with 3 mm diameter copper rivets at close centres.
    4.2. Protection to rivets: Cover exposed rivet heads with solder. Isolate rivets from substrate with sheet underlay to prevent localised friction.

825 Welding details

1. Seams: Form neatly and consistently.
    1.1. Height of joint before folding: Not less than 30 mm.
    1.2. Overlap: 10 mm.

840 Batten roll joints

1. Timber core
    1.1. Size: 45 x 45 mm
    1.2. Shape: Rounded
    1.3. Fixing core: To substrate with stainless steel countersunk screws at not more than 500 mm centres.
2. Stainless steel covering
    2.1. Joint allowances: Form strip/ sheets each side of core with 3 mm gap for thermal movement and upstands to just less than the height of core.
    2.2. Fixing: Clips at 400 mm centres. Welt clips over upstands. Locally secure strips/ sheets against slippage by notching at clip positions recommended by the stainless steel manufacturer.
3. Cappings: Stainless steel of the same grade and thickness as the strip/ sheet being jointed. Preform in lengths not exceeding 1 m. Overlap each capping in length and secure with capping clip.

860 Drip/ step joints

1. Strip/ sheet from below step: Fold up full height of upstand and fix to top edge.
2. Stainless steel underlap/ continuous clip
    2.1. Cover to roof slope: Not less than 100 mm with anticapillary welt at top edge.
    2.2. Projection: 25 mm for forming into drip welt.
    2.3. Downstand: Not less than 40 mm with welt at bottom edge.
    2.4. Fixing: To roof slope at 200 mm centres, avoiding through fixings at longitudinal joint positions.
3. Strip/ sheet from above step: Fold around underlap projection and single welt to form a drip.

870 Laplock welt joints

1. Underlap: Fold 30 mm anticapillary welt at top edge of underlap and secure with clips, two per bay.
2. Overlap: Welt bottom edge of overlap 30 mm and lay 175 mm over underlap. Secure overlap welt with continuous clip, 60 mm wide, soldered to underlap.

880 Single lock welt joints

1. Joint allowances: 100 mm overlap and 50 mm underlap.
2. Underlap: Welt and secure with clips, two per bay.
3. Overlap: Welt around underlap and clips and dress down.

890 Double lock welt joints

1. Joint allowances: 90 mm overlap and 60 mm underlap.
2. Underlap: Welt and secure with clips, one per bay.
3. Overlap: Double welt around underlap and clips and dress down.

Ω End of Section

K11
Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings

Types of flooring/ sheathing/ decking/ sarking/ lining/ casings

110 Wood-based sheets generally

1. Standard: To BS EN 13986.
    1.1. Evidence of compliance: All sheets to be UKCA/ UKNI/ CE marked. Submit Declaration of Performance (DoP).

816 Marine plywood

1. Description: Decking for lead lined gutters, terne coated stainless steel flat roofing, underlay for lead lined valleys, rigid sarking at hips, ridges and pitch roof perimeter
2. Substrate: Existing timber trusses
    2.1. Additional supports: Softwood members and timber fillets
3. Plywood: To BS 1088 but excluding plywood made of gaboon veneers.
    3.1. Manufacturer/ Supplier: Contractor's choice
    3.2. Thickness: 12mm, 18mm and 25mm
    3.3. Fire performance
        3.3.1. Reaction to fire: Not applicable
        3.3.2. Resistance to fire: Not applicable
    3.4. Edges: Square or mitred
4. Setting out: Long edges running across supports.
5. Fixing to supports
    5.1. Fasteners: 50 mm x 8 gauge wood screws into pilot holes
    5.2. Fixing centres (maximum): Along intermediate supports: 300 mm
    5.3. Fixing distance from edges (minimum): 10 mm.
6. Joint treatment: Bonded with waterproof adhesive
7. Accessories:

Workmanship

910 Installation generally

1. Timing: Building to be weathertight before fixing boards internally.
2. Moisture content of timber supports (maximum): 18%.
3. Joints between boards: Accurately aligned, of constant width and parallel to perimeter edges.
4. Methods of fixing, and fasteners: As section Z20 where not specified otherwise.

930 Additional supports

1. Additional studs, noggings/ dwangs (Scot) and battens
    1.1. Provision: In accordance with board manufacturer's recommendations and as follows:
        1.1.1. Tongue and groove jointed rigid board areas: To all unsupported perimeter edges.
        1.1.2. Butt jointed rigid board areas: To all unsupported edges.
    1.2. Size: Not less than 50 mm wide and of adequate thickness.

1.3. Quality of timber: As for adjacent timber supports.

1.4. Treatment (where required): As for adjacent timber supports.

2. Additional floor supports.

2.1. Type:

2.2. Acoustic batten cradles.

2.3. Counterbattens.

940 Board moisture content and conditioning

1. Moisture content of boards at time of fixing: Appropriate to end use.
2. Conditioning regime: Submit proposals.

960 Fixing generally

1. Boards/ sheets: Fixed securely to each support without distortion and true to line and level.
2. Fasteners: Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.

2.1. Distance from edge of board/ sheet: Sufficient to prevent damage.

3. Surplus adhesive: Removed as the work proceeds.

980 Open joints

1. Perimeter joints, expansion joints and joints between boards: Free from plaster, mortar droppings and other debris.
2. Temporary wedges and packings: Removed on completion of board fixing.

Ω End of Section

L40
General glazing

To be read with preliminaries/ general conditions.

10 Workmanship and positioning generally

1. Glazing
    1.1. Generally: In accordance with BS 6262 series.
    1.2. Integrity:
2. Glass
    2.1. Standards: Generally to BS 952-1, BS 952-2 and to the relevant parts of:
        2.1.1. BS EN 572-9 for basic soda lime silicate glass.
        2.1.2. BS EN 1096-1 for coated glass.
        2.1.3. BS EN 12150-2 for thermally toughened soda lime silicate glass.
        2.1.4. BS EN 14449 for laminated glass.
    2.2. Quality:
    2.3. Dimensional tolerances:
    2.4. Material compatibility:
    2.5. Protection:

20 Removal of glass/ Plastics for reuse

1. Existing glass/ plastics, glazing compound, beads, etc.:
2. Deterioration of frame/ surround:
    2.1. Affected areas:

30 Preparation

1. Surrounds, rebates, grooves and beads:

57 Bead-fixed insulating glass units – solid bedding, outside bead

1. Description: Replacement insulating glass units
2. IGU: As clause 60.
    2.1. Perimeter taping: Do not use.
3. Surround/ bead: Aluminium
    3.1. Preparation: Remove existing beads and clean
    3.2. Bead location: Outside.
    3.3. Bead-fixing: As existing
4. Glazing system
    4.1. Inner sealant: Low-permeability sealant
    4.2. Outer sealant: Moisture vapour-permeable sealant
5. Glazing installation
    5.1. Insulating unit: Located centrally in surround using setting and location blocks and distance pieces.
    5.2. Inner sealant: Neoprene seal as existing
    5.3. Outer sealant: Neoprene seal as existing
6. Verification:

6.1. Submittals:
6.2. Timing:

60 Insulated glass units

1. Description: Replacement insulating glass units to roof glazing
2. Manufacturer: Contractor's choice
3. Standard: BS EN 1279-5.
4. Thermal performance (centre pane): 1.1 W/(m²·K)
5. Construction
   5.1. Inner pane: Laminated safety glass as recommended by the installer
   5.2. Cavity: to suit existing system
   5.3. Outer pane: 4 mm clear toughened glass
   5.4. Spacer: To match existing
6. Unit thickness: To match existing
7. Other requirements:

Ω End of Section

M60
Painting/clear finishing

Coating systems

130 Water-based finishing coats Type B

1. Description: To external surfaces of existing timber windows
2. Manufacturer: Dulux Trade, brand of AkzoNobel
   2.1. Contact details
      2.1.1. Address: AkzoNobel Decorative Paints
      Wexham Road
      Slough
      Berkshire
      SL2 5DS
      2.1.2. Telephone: +44 (0)333 222 7070
      2.1.3. Web: www.duluxtradepaintexpert.co.uk
      2.1.4. Email: project.support@akzonobel.com
   2.2. Product reference: Weathershield Quick Dry Exterior High Gloss
3. Composition: Waterborne, alkyd emulsion with non-lead pigments.
4. Sheen: High gloss.
5. Colour: To be confirmed
6. Form: Liquid.
7. Volume solids: 39%.
8. Drying time: 1—2 hours.
9. Recoating time: 4—6 hours.
10. VOC content: 45 g/L (maximum).
11. Surfaces: Previously decorated
    11.1. Preparation: Remove all loose and defective coatings
12. Initial coats: As recommended by manufacturer
    12.1. Number of coats: 1
13. Finishing coats: Full gloss
    13.1. Number of coats: 2

Generally

210 Coating materials

1. Manufacturers: Obtain materials from any of the following:
2. …….
3. Selected manufacturers: Submit names before commencement of coating work.

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.

300 Control samples

1. Sample areas of finished work: Carry out, including preparation, as follows:
2. Types of coating Location
3. M60/ ……. …….
4. Approval of appearance: Obtain before commencement of general coating work.

321 Inspection of work stages

1. Programme for inspections: Submit as follows:
2. Types of coating Inspection at completion of
3. M60/ ……. …….
4. Inspection: Give prior notice when each stage is ready for inspection.

Preparation

400 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.
8. Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
9. Surface irregularities: Remove.
10. Joints, cracks, holes and other depressions: Fill flush with surface, to provide smooth finish.
11. Dust, particles and residues from preparation: Remove and dispose of safely.
12. Water based stoppers and fillers
    12.1. Apply before priming unless recommended otherwise by manufacturer.
    12.2. If applied after priming: Patch prime.
13. Oil based stoppers and fillers: Apply after priming.
14. Doors, opening windows and other moving parts
    14.1. Ease, if necessary, before coating.
    14.2. Prime resulting bare areas.

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.

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.

631 Previously painted window frames

1. Paint encroaching beyond glass sight line: Remove.
2. Loose and defective putty: Remove.
3. Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.
4. Finishing
   4.1. Patch prime, reputty as necessary, and allow to set.
   4.2. Seal and coat as soon as fully set.

640 External pointing to existing frames

1. Defective sealant pointing: Remove.
2. Joint depth: Approximately half joint width; adjust with backing strip if necessary.
3. Sealant
   3.1. Manufacturer: Contractor's choice
      3.1.1. Product reference: Silicone sealant, colour to be approved
   3.2. Preparation and application: As section Z22.

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.

790 Linseed oil putty glazing

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

800 Glazing

1. Etched, sand blasted and ground glass: Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.

Ω End of Section

Z21
Mortars

Cement gauged mortars

110 Cement gauged mortar mixes

1. Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

120 Sand for site made cement gauged masonry mortars

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

131 Ready-Mixed lime:sand for cement gauged masonry mortars

1. Standard: To BS EN 998-2.
2. Lime: Nonhydraulic to BS EN 459-1.
    2.1. Type: CL 90S.
3. Pigments for coloured mortars: To BS EN 12878.

135 Site made lime:sand for cement gauged masonry mortars

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

160 Cements for mortars

1. Cement: To BS EN 197-1 and CE marked.
    1.1. Types: Portland cement, CEM I.
        1.1.1. Portland limestone cement, CEM II/A-L or CEM II/A-LL.
2. Portland slag cement, CEM II/B-S.
3. Portland fly ash cement, CEM II/B-V.
    3.1. Strength class: 32.5, 42.5 or 52.5.
4. White cement: To BS EN 197-1 and CE marked.
    4.1. Type: Portland cement, CEM I.
    4.2. Strength class: 52.5.
5. Sulfate resisting Portland cement
    5.1. Type: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
6. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
    6.1. Strength class: 32.5, 42.5 or 52.5.

7. Masonry cement: To BS EN 413-1 and CE marked.
   7.1. Class: MC 12.5.

180 Admixtures for site made cement gauged mortars

1. Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
2. Other admixtures: Submit proposals.
3. Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

Lime:sand mortars

310 Lime:sand mortar mixes

1. Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

320 Sand for lime:sand masonry mortars

1. Type: Sharp, well graded.
   1.1. Quality, sampling and testing: To BS EN 13139.
   1.2. Grading/ Source: As specified elsewhere in relevant mortar mix items.

345 Admixtures for hydraulic lime:sand mortars

1. Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
2. Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

350 Storage of lime:sand mortar materials

1. Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
2. Ready prepared nonhydraulic lime putty: Prevent drying out and protect from frost.
3. Nonhydraulic lime:sand mortar: Store on clean bases or in clean containers that allow free drainage. Prevent drying out or wetting and protect from frost.
4. Bagged hydrated hydraulic lime: Store off the ground in dry conditions.

360 Making lime:sand mortars generally

1. Batching: By volume. Use clean and accurate gauge boxes or buckets.
2. Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
3. Contamination: Prevent intermixing with other materials, including cement.

400 Making hydraulic lime:sand mortars

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

Ω End of Section

Z22
Sealants

Products

310 Joints

1. Description: External perimeter of windows
2. Manufacturer: Contractor's choice
   2.1. Product reference: Silicone sealant, colour to be approved.
3. 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:

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