Hafren Court, Bewdley

Combined Specification and Schedule of Work

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C DEMOLITION

C20 DEMOLITION

To be read with Preliminaries/ General Conditions.

GENERAL REQUIREMENTS

110 DESK STUDY/ SURVEY:

- Extent:
  - Remove existing uPVC rainwater goods and set on one side.
  - Carefully dismantle existing dormer.
  - Strip back roof structure to kitchen extension approx. 1M, including rafters and lead flashings etc., to allow working access.
  - Strip back support rafter ends and strip back roof covering to bathroom and lead flashings etc.
  - Carefully remove infill panels to timber framing and set bricks on one side for re-use.
  - Ensure roof structure is adequately propped and carefully dismantle individual elements of the timber frame. Label each framing element as shown on drawing 1154/01/02 and set on one side for inspection.
  - Remove door and door frames to kitchen and bathroom.
  - Ground Floor: Remove residual framing elements and set on one side and take down brick infill panels and set bricks on one side for re-use.

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of areas where demolition is to take place.
- the structure or structures to be deconstructed/ demolished,
- the site on which the structure or structures stand, and
- the surrounding area.
- Report and method statements: Submit, describing:
- Form, condition and details of the structure or structures, the site, and the surrounding area.
- Type, location and condition of features of historical, archaeological, geological or ecological importance.
- Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
- Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
- Proposed programme of work, including sequence and methods of deconstruction/ demolition, methods of temporary support and specific design of props.
- Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
- Arrangements for control of site transport and traffic.
- Format of report: Electronic and report with photographs if necessary.

120 EXTENT OF DECONSTRUCTION/ DEMOLITION: General: As indicated above and in Schedule of Work / drawings.

DECONSTRUCTION/ DEMOLITION WORK

310 WORKMANSHIP:

- Standard: Demolish structures in accordance with BS 6187.
- Operatives:
- Appropriately skilled and experienced for the type of work.
- Holding, or in training to obtain, relevant CITB Certificates of Competence.
- Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

330 DUST CONTROL:
- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- Lead dust: Submit method statement for control, containment and clean-up regimes.

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

380 DANGEROUS OPENINGS:
- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- Access: Prevent access by unauthorized persons.

390 ASBESTOS-CONTAINING MATERIALS - KNOWN OCCURRENCES:
- General: Materials containing asbestos are known to be present in: See asbestos report: In progress, to be supplied upon receipt.
- Removal: By contractor licensed by the Health and Safety Executive, and prior to any other works starting in these locations.

391 ASBESTOS-CONTAINING MATERIALS - UNKNOWN OCCURRENCES:
- Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
- Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

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

MATERIALS ARISING

511 EMPLOYER'S PROPERTY:
- Components and materials to remain the property of the Employer: features to be retained for re-use as indicated on drawings and in schedules.
- Protection: Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.

520 RECYCLED MATERIALS: Materials arising from deconstruction/ demolition work: Not to be re-used.

C41 REPAIRING / RENOVATING / CONSERVING MASONRY/ BRICKWORK

POINTING/ REPOINTING

810 PREPARATION FOR REPOINTING:
- Work from the top of the wall downwards.
- If the stones have retained their sharp arrises then the joints should be filled flush again, unless there is specific evidence that the joint face was profiled in some other way. Weathering, however, will normally have blunted these arrises.

- Flush filling in such a situation will greatly increase the apparent width of the joint and therefore, great care must be taken to keep the face of the new mortar within the original joint width, however far back that may be.
- Cutting out should be achieved using quirks, plugging chisels, long necked jointing chisels and toothed masonry chisels, with 2 1/2 lb club hammer but never with chisels which tend to wedge the joints and cause spalling. Impact should be at an oblique angel to the joint face, not directly onto it.
- Hacksaw blades and masonry saws may also be used and drilling with masonry drills is a useful way of creating an initial breach into strong mortar. Exceptionally, small carborundum or, better, diamond discs may be used in cutting out only on regularly coursed work with level beds where running rules can be fixed to the wall as guides for the power tool.
- Extreme caution must be used not to cut into the masonry or increase the width of the joint. Because of the high risk of damage when discs and power tools are used, they may only be used on the written instructions of the Architect.
- All cutting out should leave a clean, square face at the back of the joint to provide optimum contact with the new mortar.
- Form a neat recess of depth not less than 30 mm from the intended joint face, or 2.5 times the thickness of the joint, whichever is the greater. When mortar beyond this depth is loose and friable and/or cavities are found seek instructions.
- Remove dust and loose debris. Dampen joints to control suction as necessary.

840 POINTING WITH TOOLS/IRONS:

- Press mortar well into joints using pointing tools/irons that fit into the joints, so that they are fully filled.
- Ensure that no mortar encroaches upon the face of the masonry. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly as specified.
- Protection: As clause 160.

860 STIPPLE FINISH TO JOINTS: After the initial set has taken place, stipple joints with a stiff brush to remove laitance/excess fines and give a coarse texture.

870 ADVERSE WEATHER & PROTECTION OF MORTARS

- Do not re-point in natural hydraulic lime:sand mortars when the air temperature is at or below 5oC and falling or below 3oC and rising. Where it is anticipated that the temperature in the first few days might fall to 5oC, or lower, the structure should be protected with damp hessian to preserve the moisture and with sufficient cover, using bubble rap or insulating material, to protect the structure itself and the mortar against frost.
- Maintain temperature of the work above freezing until mortar has fully set.
- Protect re-pointed walls against rain and snow by covering when precipitation occurs and at all times when work is not proceeding.
- Prevent re-pointed walls from drying out too rapidly in both hot conditions and from the effects of the wind by covering with damp hessian as soon as possible to maintain moisture and then with additional cover to prevent the hessian drying out. For best results the moist conditions should be maintained, while allowing air movement over the mortar, for as long as is practicable.
- Rake out and replace mortar damaged by frost and where instructed, redo and repair.

900 CRAFTSMANSHIP AND SUPERVISION REQUIREMENTS FOR POINTING:

- It is important that the mortar mix and the joint preparation procedures of a pointing job are followed carefully.
- It is of even greater importance that the workmanship of the cutting out, preparation and placing of the mortar is carried out well. The following aspects are critical to this:

- The cutting out must be deep enough and the joints cleaned and dampened to receive new mortar.
- The mortar must be consistently of the specified constituents, well rammed and beaten, contain a minimum of water and any hydraulic additives must not be added more than an hour before the mortar is placed.
- The mortar must be placed firmly against the back of a joint with the appropriate tools tamped firmly and receive the agreed surface treatment.
- The quality of workmanship throughout the job must be consistently good.

C51 REPAIRING/ RENOVATING/ CONSERVING TIMBER

To be read with Preliminaries/ General conditions.

GENERAL

110 INSPECTION
- Purpose: To confirm nature and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
- Parties involved: Client / Conservation Officer / Architect / Contractor.
- Instructions issued during inspection: Will be followed up with written confirmation of agreed works to be carried out.

130 OPENING UP
- Purpose: To reveal previously concealed areas of structure or fabric not recorded during initial surveys.
- Extent: Infill panels adjacent to timbers to be repaired.
- Retained building structure/ fabric: Do not damage or destabilize.

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

540 RESIN GROUT/ ADHESIVE FOR TIMBER FRAME REPAIRS
- Type: Two-part compound elastic resin.
- Manufacturer: Desofil UK Ltd.
  - Product reference: Desowood R.A.P or similar approved.

EXECUTION

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

610 TEMPORARY SUPPORTS/ PROPPING
- General: Provide adequate temporary support at each stage of repair work to prevent damage, overstressing or uncontrolled collapse of any part of the structure.

- Bearings for temporary supports/ propping: Suitable to carry loads throughout repair operations.

620 PROTECTION OF TIMBER AND WOOD COMPONENTS BEFORE AND DURING INSTALLATION
- Storage: Keep dry, under cover, clear of the ground and with good ventilation. Support sections/ components on regularly spaced, level bearers on a dry, firm base.
- Handling: Do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

630 MATERIAL SAMPLES
- Representative samples of designated materials: Submit before placing orders.
  - Designated materials: Kiln dried / air dried oak.

650 DIMENSIONS GENERALLY
- Site dimensions: Take as necessary before starting fabrication.
  - Discrepancies with drawings: Report without delay and obtain instructions before proceeding.

660 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
- Tolerances: The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
  - Tolerance class 1 (T1) for sawn surfaces.
  - Tolerance class 2 (T2) for further processed surfaces.

690 PROCESSING TREATED TIMBER
- Cutting and machining: Carry out as much as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

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

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

850 GLUED JOINTS
- Adhesive: As clause 540.
  - Compatibility: Where relevant, obtain manufacturer's confirmation that adhesive is compatible with preservative/ fire retardant treatment.
- Glued structural components: Fabricated to BS 6446 in clean, controlled workshop conditions.
- Anticipated equilibrium moisture content of timber in service: 5%.

860 MOISTURE CONTENT CHECKING
- Procedure: When instructed, check moisture content of timber sections with an approved electrical moisture meter.

- Test results: Keep records of all tests. If moisture content falls outside specified range obtain instructions.

870 MOISTURE CONTENT TESTING

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

COMPLETION

910 MECHANICALLY FASTENED JOINTS

- General: Inspect accessible bolted, coach screwed and timber pegged joints and tighten fasteners if necessary.
  - Timing: On Completion and at end of Defects Liability Period or Rectification Period.

SUGGESTED METHODOLOGY FOR REPAIRING THE FRAMING

- Remove infill panels adjacent to members to be repaired.
- Carry out localised propping / support to adjacent framing to ensure stability of structure.
- Carefully remove defective repairs for replacement.
- Appraise and agree precise nature of repairs required to frame.
- Carry out frame repairs to stabilise the frame. Align it properly (within permitted tolerances) and to return to its original configuration and to enable it to have a proper structural function with all members fully and tightly engaged.
- Depending on the existing condition of the individual members, the scope of repair may include one or more of the following:

  a) Dismantling and reassembling existing members, repegging joints.
  b) Repairing mortice and tenon connections by pinning and gluing new timber to repair haunches, shoulders and tenons.
  c) Cutting away defective material to individual members and replacing with new oak to match existing.
  d) As b) above but replacing the oak by built-up lamination method.
  e) Replacing entire individual members with new oak.
  f) Carrying out metal plate repairs to strengthen joints and improve connections.

- It is likely that some or all of the above methods outlined will be used in different measure, according to the state of repairs of each framing element.

MATERIALS

<u>New Timber (English / Welsh oak)</u>

- Oak shall have a moisture content to match the timbers being repaired and in any case be as close to 15% as possible. As a rule of thumb, no timber should be used which has not been in stock (i.e. air-seasoned) in its required scantling, with allowance for working, for at least one year for every inch of thickness. Less well seasoned oak (or even unseasoned) may only be used for completely new members (such as wall plates) with the approval of the Architect.

- All new members must be of air-dried seasoned timber as specified above. The timber must be delivered and stored on site at the correct moisture level. 25mm – 50mm oak plank and

square billet for lamination repairs (see below) must be kiln dried (app 15%) to as close as possible to the member to be repaired. Moisture readings must be taken before all repairs.

- Members 8' x 8" or larger in cross-section shall be obtained from boxed heart logs squared with the axe of adzed on cambered surfaces (top and bottom in the case of beams) and sawn on the sides).

- Members of 6" or less in their lesser cross-sectional dimension shall in all cases comprise heart-sawn of cleft logs. Straight members may be sawn, axed of adzed on the curved top and bottom edges so that their final shape exactly conforms with the natural grain. New curved shaped members such as curved arch braces shall only be cut from selected naturally curving timbers and shall also be axed or adzed to shape in accordance with natural grain, sawn surfaces being permitted on the sides.

- On finished surfaces saw marks may be left visible but axed or adzed finishes shall be smooth. Visible adze marks are not permissible. Chamfers shall be axed or chiselled.

Old Timber: The re-use of timbers in any position or for any other purpose than that for which it was first designed will not be permitted without the specific approval of the Architect. On no account shall an old timber or part of it that is for re-use be rejected without Architect's approval.

Repairs

- Repairs of existing timbers shall be of three kinds:

- By means of wood: where a section of the member to be repaired has decayed, or where the end of a member has decayed or disappeared, the decayed area shall be cut out and replaced with New dry Oak not less that 2" (50mm) wide at its least cross-section or a new piece of correct section and shape to conform with the original shall be scarfed, glued with Cascamite (or other approved glue), and pegged to that part of the old timber that is still sound. The grain of the new timber shall generally follow that of the timber being repaired. All joints shall be exactly formed and accurately cut, the surfaces to be glued, properly prepared and the joints securely cramped until finally set.

- By means of kiln dried oak board or billet (max 50mm thickness): glued and cramped in place to form laminations, so as to 'rebuild' a decayed member back to its original profile and strength. The decayed areas shall be identified by prior discussion / instruction from the Architect, the members shall be carefully cut back to a sound and level surface to receive the laminations, and the profile rebuilt by gluing in place the board or billet with approved glue in successive layers, the board / billet being cut and fitted to follow the grain and curvature / alignment of the member under repair. Plane off surplus material upon completion to render the repaired section to the desired profile.

- By means of steel: fractured or weakened members shall be strapped on both faces and bolted right through or flitch plates / brackets introduced in accordance with structural engineers' designs. The purpose being to enable the retained portions to continue to function properly as a structural system without loss of original material and prevent further distortion of the damaged member rather than to force it back to the straight. Straps and bolts shall be of the sizes given on the drawings or as specified.

Earlier Repairs: The timbers have already been extensively repaired by means of splicing and face patching. Where feasible these old repairs can be retained and are only to be disturbed or altered where they have failed, distorted or warped as directed.

Pegs: Loose joints shall be re-pegged, the pegs being at least twice as long as the thickness of timber to be penetrated. The pegs shall be hexagonal, tapered and driven in from the upper face. Projecting ends shall not be cut. Turned pegs will not be permitted.

Draw-Boring: Pegs holes of timbers to be mortice and tenoned together shall be staggered to that the joint tightens as the peg is driven in. The tenoned member shall therefore be drilled separately from the morticed member.

Mortice & Tenons: New tenons shall be shaped to allow slight play but the shoulders of tenoned timbers shall fit tightly to the morticed member. Open joints will not be accepted. The shoulder of damaged mortices are to be repaired by scarfing and gluing in place sound new timber, to reinstate the mortice to its original dimensions and solidity.

Type of Joint: The type of joint, whether mortice and tenon, scarf, dovetail, etc. is shown on the drawings and shall be followed in all the repairs and replacements.

Treatment of Timber: Frass resulting from woodworm shall not be removed except at the direction of the CA. the Contractor shall the notify the Architect o any fungus or suspected death watch beetle infection. Timber so infected shall be replaced at the Architects direction but no timber shall be removed without the Architects approval. All faces to be concealed shall be twice treated with Wykamol Plus or similar.

Completed Frame: On completion of structural repairs, the entire framework shall be tight and secure but re-aligned and levelled up, the aim being to preserve the structure as far as possible as found, rather than to renew it. Surface accretions, paint, blemishes, smoke-blackening, nails, etc. shall not be removed from old timbers unless directed by the Architect.

F MASONRY

F10 BRICK/ BLOCK WALLING

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

110 CLAY FACING BRICKWORK FOR INFILL PANELS AND GROUND FLOOR WALL

- Bricks: To BS EN 771-1.
- Manufacturer: Reclaimed from site and new to match existing. Provide samples.
- Recycled content: 10%.
- Mortar: As section Z21.
- Standard: Not applicable.
- Bond: To match existing.
- Joints: To match existing
- Features: To match existing

WORKMANSHIP GENERALLY

430 CONDITIONING OF CLAY BRICKS

- Bricks delivered warm from manufacturing process: Do not use until cold.
- Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

500 LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid on a full bed.

- Interlocking perpends: Butted.
- Bond where not specified: To match existing.
- Vertical joints in brick facework: Even widths. Plumb at every fifth cross joint.

535 HEIGHT OF LIFTS IN WALLING USING HYDRAULIC LIME MORTAR
- Quoins and advance work: Rack back.
- Lift height (maximum): 1.2 m above any other part of work at any time.
- Daily lift height (maximum): 1.5 m for any one leaf.

561 COURSING BRICKWORK WITH EXISTING: Gauge: Line up with existing brick courses.

635 JOINTING: Profile: Consistent in appearance.

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

665 POINTING TO WALL BENEATH COPING
- Joint preparation: Remove debris. Dampen surface.
- Mortar: As section Z21.
- Mix: 2.5 NHL 2.5 Lime / Sand .
- Profile: To match existing.

690 ADVERSE WEATHER
- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay bricks/ blocks:
- In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
- In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
- In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
- Rain and snow.
- Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

710 THE TERM FACEWORK
- Definition: Applicable in this specification to all brick/ block walling finished fair.
- Painted facework: The only requirement to be waived is that relating to colour.

740 FINISHED MASONRY WORK REFERENCE PANELS
- General: Before proceeding to construct the following walling types, construct panels as specified. Give notice when panels are dry.
- Selection masonry units: To BS EN 771-1 and PAS 70.
- Panel types:
- Walling type: Brickwork.
  Location: Adjacent to relevant work area.
  Size:1.5 x 1.5m ².

745 MASONRY SAMPLE PANELS
- Sampling frequency: A panel for each type and delivery of masonry unit.
- Selection of masonry units: As above.
- Panel types: As clause 740.

750 COLOUR CONSISTENCY OF MASONRY UNITS
- Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
- Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
- Finished work: Free from patches, horizontal stripes and racking back marks.

760 APPEARANCE
- Brick/ block selection: Do not use units with damaged faces or arrises.
- Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
- Quality control: Lay masonry units to match relevant reference panels.
- Setting out: To produce satisfactory junctions and joints with built-in elements and components.
- Coursing: Evenly spaced using gauge rods.
- Lifts: Complete in one operation.
- Methods of protecting facework: Submit proposals.

780 GROUND LEVEL: Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.

790 PUTLOG SCAFFOLDING: Use: Not permitted in facework.

800 TOOTHED BOND: New and existing facework in same plane: Bond together at every course to achieve continuity.

830 CLEANLINESS
- Facework: Keep clean.
- Mortar on facework: Allow to dry before removing with stiff bristled brush.
- Removal of marks and stains: Rubbing not permitted.

G STRUCTURAL / CARCASSING METAL / TIMBER

G12 ISOLATED STRUCTURAL METAL MEMBERS

To be read with Preliminaries/ General conditions.

PRODUCTS

320A STEEL SECTIONS GENERALLY
Steel: To BS EN 10025-2.
- Grade: S275JR.
- Section properties and dimensions: To BS EN 10056.
- Surface condition: Free from heavy pitting and rust, burrs, sharp edges and flame cutting dross.

330 STAINLESS STEEL WIRE
Steel: to BS EN 10264-4:2012
- Grade: Best Marine Quality A316
- Section properties and dimensions: As shown on drawings

340 BOLT ASSEMBLIES
- Designation: Black bolts to BS 4190, grade 8.8. unless otherwise shown
- Size: As shown on drawings. Minimum M12
- Nuts and washers: Material grade and finish to suit bolts.

- Coating applied by manufacturer: Galvanized.
- Other requirements: Diameter of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.

EXECUTION

610A INSTALLATION
- Accuracy: Members positioned true to line and level using, if necessary, steel packs of sufficient area to allow full transfer of loads to bearing surfaces.
  Fixing: Use washers under bolt heads and nuts.
- Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.
- In situ welding to repair / install additional structure to be agreed on site with the Engineer and the Client's representative.

650 SHOP PRIMING GENERALLY
- Preparation: To BS EN ISO 12944-4. Remove fins, burrs, sharp edges and weld spatter and clean out crevices.
- Surface finish: Blast cleaned to BS EN ISO 8501-1, Grade Sa 2½.
- Prepared surfaces: Keep in a dry atmosphere and apply first coating without delay.
- Priming:
- Primer: High build zinc phosphate epoxy.
  Number of coats: One.
  Dry film thickness (minimum): 80 micrometres per coat.
- Application: To BS EN ISO 12944-7.
- Other requirements: Overcoat ends of beams built into solid external walls with high build bituminous paint. Extend coating 300 mm from face of wall onto exposed steelwork.

G20 CARPENTRY / TIMBER STRUCTURAL FRAME AND REPAIRS

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

4 GRADED SOFTWOOD FOR STRUCTURAL USE: .
- Strength graded to BS 4978 or BS EN 519 or other national equivalent and so marked. Strength class to BS EN 338: C16 & C24 (SC4)
- Type: Southern Yellow Pine or Douglas Fir (FREE OF KNOTS AND FISSURES)
- Preservative treatment: As section Z12 and British Wood Preserving and Damp Proofing Association Commodity Specification C8: constructional timbers
- Type/desired service life: Organic Solvent (Double Vacuum) / 60 years
- Moisture content at the time of erection: Less than 24%.

5 TIMBER FOR EAVES FASCIA
Quality of Timber and Fixing:
- Species: Douglas Fir (free of knots and fissures – Samples to be provided for approval) Timber to be FSC certified, contractor to provide evidence and certificates to CA and

include in documentation.
- Moisture Content at Time of Fixing: 13 to 19%
- Preservative treatment: As section 212 and BWP and Damp Proofing Association Commodity Specification C5.
  Type/desired service life: Organic Solvent (Double Vacuum) / 60 years

6 STRUCTURAL SOFTWOOD GENERAL TIMBER & FLOORING
- Softwood Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Timber of a target thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Strength class to BS EN 338: C24.

8 STRUCTURAL HARDWOOD TIMBER USE GENERALLY
- Grading standard: To BS 5756
- Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Planed Surface tolerance Class 'T2'
- Minimum Strength class to BS EN 338: D30.
- Treatment: submit proposal. Cut ends to be sealed.

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

30 SELECTION AND USE OF TIMBER
- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.
- Notches and holes: Position in relation to knots or other defects such that the strength of members will not be reduced.
- Scarf joints, finger joints and splice plates: Do not use without approval.

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

38 MOISTURE CONTENT
- Moisture content of wood and wood-based products at time of installation: Not more than:
- Covered in generally unheated spaces: 24%.
- Covered in generally heated spaces: 18%.
- Internal in continuously heated spaces: 20%.

JOINTING TIMBER

42 JOINTING/FIXING GENERALLY: Where not specified otherwise, select fixing and jointing methods and types, sizes and spacing of fasteners in compliance with section Z20.

Fasteners to comply with relevant British Standards.

45 TIMBER FRAME REPAIR JOINTS
- Original peg joints are to be reformed where decayed.
- New joints formed within the frame to make good rotten ends or missing tenons are to be made with neat scarf joints and bonded with resin adhesive.
- Bolts are not to be visible on the face of framing members unless the joint is concealed internally i.e. within the roof space.

48 BOLTED JOINTS
- Bolt spacing (minimum): To BS 5268-2, table 81.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- 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.
- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
- Checking: At agreed regular intervals. Tighten as necessary.

50 ADDITIONAL SUPPORTS
- Provision: Position and fix additional studs, noggins and/ or battens to support edges of sheet materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings.
- Material properties: Timber to be of adequate size and have the same treatment as adjacent timber supports.

55 INSTALLING JOISTS GENERALLY
- Centres: Equal, and not exceeding designed spacing.
- Bowed joists: Installed with positive camber.
- End joists: Positioned about 50 mm from masonry walls.

60 JOISTS ON HANGERS
- Hangers: Bedded directly on and set tight against supporting construction. Do not use packs or bed on mortar.
- Joists: Cut to leave not more than 6 mm gap at each end. Rebated to lie flush with underside of hangers.
- Fixing to hangers: A nail in every hole.

70 TRIMMING OPENINGS: Trimmers and trimming joists: Not less than 25 mm wider than adjoining joists.

80 LATERAL RESTRAINT STRAPS
- Manufacturer and reference: Catnic or BAT or equivalent approved
- Material/finish: galvanized to BS 729
- Size: Not less than 30 x 2.5 mm cross section and length to suit – minimum 1200mm or set across three joists.
- Position: to top of joists / underside of rafters or as directed by structural engineer:
- Ensure turned up / down end is set tight behind wall plate or fixed to inner wall leaf using minimum 2No M8 Rawl Bolts / Coach Screws.
- Notch joists or firring strips so straps run flush with face. Do not notch rafters.
- Straps to joists / rafters running parallel with wall
  Fix noggins and pack tightly beneath straps. Use same depth as member, minimum 38mm thick noggings.
- Fixing to joists running perpendicular to wall: Fix to every third joist. A nail in every hole.

H CLADDING/COVERING

H71 LEAD SHEET COVERINGS/FLASHINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF LEADWORK

200 ABUTMENT SOAKERS
- Substrate: Existing timber structure.
- Preparation: Make good as clause 620.
- Underlay: Not required.
- Type of lead: Code 6 milled.
- Thickness: 3.15mm.
- Spacing: Max: Every tile course.

470 FLASHINGS GENERALLY:
- Lead: Code 6 milled.
- Thickness: 3.15mm.
- Lengths: Not more than 1500mm.
- Fixing: Lead wedges at every 100mm and clips at not more than 500 mm centres.

GENERAL REQUIREMENTS/PREPARATORY WORK

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

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

520 LEAD SHEET:
- Production method:
- Rolled, to BS EN 12588, or
- Machine cast and BBA certified, or
- 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%.
- Identification: Labelled to show thickness/ code, weight and type.

585 EXISTING METAL REMOVED TO REMAIN THE PROPERTY OF THE EMPLOYER:
- Type/ Location/ Extent: Soakers, flashings etc. – To be agreed on site with Architects which is to be retained / re-used.
- Removal: Give notice when the metal is to be stripped.
- Handling/ Storage: Keep for reuse by the Employer.

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

620 PREPARATION OF EXISTING TIMBER SUBSTRATES:
- Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
- Defective boards: Give notice.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.

FIXING/JOINTING LEAD

710 FIXINGS:
- Nails to timber substrates: Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
- Shank type: Annular ringed, helical threaded or serrated.
- Shank diameter: Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
- Length: Not less than 20 mm or equal to substrate thickness.
- Screws to concrete or masonry substrates: Brass or stainless steel to BS 1210, tables 3 or 4.
- Diameter: Not less than 3.35 mm.
- Length: Not less than 19 mm.
- Washers and plastic plugs: Compatible with screws and lead.

715 CLIPS:
- Generally 50 mm wide where not specified to be continuous, length to suit detail.
- Lead clips to be cut from sheets of same code as sheet being secured.
- Copper clips to be cut from 0.7 mm thick sheet to BS EN 1172, temper designation R220 in welts, seams and rolls, R240 elsewhere; dipped in solder if exposed to view.
- Stainless steel clips to be cut from 0.46 mm sheet to BS EN 10088, grade 1.4301(304) terne coated if exposed to view.
- Unless specified otherwise fix each clip with two fastenings not more than 50 mm from edge of lead sheet. Clips welted around edges of sheets to be turned over 25 mm.

820 WEDGE FIXING INTO CHASES:
- Carefully cut chase to a depth of not less than 25 mm using a diamond tipped saw with appropriate guards to prevent over cutting.
- Dress lead into chase and fix with lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Prepare joint/chase and apply 'Lead mate' sealant – dark grey.

840 SCREW FIXING INTO CHASES:
- If so directed:
- Carefully cut chase to a depth of not less than 25 mm using a diamond tipped saw with appropriate guards to prevent over cutting.
- Dress lead into joint/chase and up back face. Fix 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.
- Prepare joint and apply 'Lead mate' sealant – dark grey.

880 FINISHING: As soon as practical, apply a smear coating of patination oil, evenly in one direction and in dry conditions, to all exposed leadwork.

M SURFACE FINISHES

M20 PLASTERED/ RENDERED/ ROUGHCAST COATING

To be read with Preliminaries/ General Conditions.

TYPES OF COATING

310 LIME: plaster for internal walls.
- Substrate: Ground floor: new brickwork; First floor: Woodtherm insulating board fixed to reconstructed framing and brickwork infill panels.
- Preparation: Wet surfaces prior to application.
- Product reference/ Type: Lime Green One Coat Proprietary Lime plaster or Similar Approved.
- Finish: Wooden float.

PREPARING SUBSTRATES

510 SUITABILITY OF SUBSTRATES
- Soundness: Free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

INTERNAL PLASTERING

710 APPLICATION GENERALLY
- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
- Accuracy: Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Drying out: Prevent excessively rapid or localized drying out.

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

725 UNDERCOATS GENERALLY: General: Rule to an even surface. Cross scratch to provide a key for the next coat.

786 PLASTERING ON TIMBER LATHING: Application of undercoats: forced between laths to form continuing key.

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

M60 PAINTING/CLEAR FINISHING

To be read with Preliminaries/General conditions.

COATING SYSTEMS

110 TIMBER FRAMING
- Manufacturer: Osmo.
- Application area: To timber frame windows, doors and barge boards.
- Product reference: Osmo Natural Oil Wood Stain.
- Surfaces: Previously painted and new repairs.
- Preparation: As manufacturer's recommendations.
- Undercoats/primer: Primer to manufacturer's details.
- Number of coats: To manufacturer's recommendations.
- Number of coats: To manufacturer's recommendations.

170 INFILL PAINT
- Manufacturer: Keim.
- Application area: Brick infill panels.
- Product reference: Keim Soldalit (samples to be agreed on site).
- Surfaces: Previously painted.
- Preparation: As manufacturers recommendations.
- Initial coats: Keim Aligcid.
- Initial coats: Keim STS 7M paint stripper.
- Number of coats: To manufacturers recommendations.
- Number of coats: To manufacturers recommendations.
- Finishing coats: Keim Soldalit 9071.
- Number of coats: 2.

180 IRONWORK PAINT (Gutters and downpipes).
- Manufacturer: AkzoNobel.
- Application area: New cast iron rainwater goods.
- Preparation: As clauses 400 and 500.
- Initial coats: Dulux red oxide.
- Undercoating: Dulux Weathershield external undercoat.
- Finishing: Dulux Weathershield exterior satin.
- Colour: Gallant grey.
- Application: By brush.

GENERALLY

215 HANDLING AND STORAGE:
- Coating materials must be delivered in sealed containers, each clearly labelled with the brand name, type of material and manufacturer's batch number.
- Wherever possible materials must be from one manufacturing batch. Inform the CA if materials from more than one batch are to be used, store separately and allocate to distinct parts or areas of the work.
- Store materials in accordance with manufacturer's recommendations. Use in order of delivery and before expiry of any shelf life date.

220 COMPATIBILITY:
- Check that all materials to be used are recommended by their manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other.
- Where surfaces have been treated with preservatives or fire retardants, check with treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance.
- Inform the CA of any discrepancy in specification of coatings and obtain instructions before proceeding with application.

230 ANCILLARY SURFACES: The descriptions of areas to be coated given in schedules, etc.

are of necessity simplified. All ancillary exposed surfaces and features are to be coated to match similar or adjacent materials or areas except where a fair faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.

270 OFF SITE WORK:
- All off site preparation and coating to be carried out under cover in a suitable environment with adequate lighting.
- Store all items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked with spaces to permit air circulation and prevent sticking of surfaces.

280 PROTECTION:
- Adequately protect internal and external surfaces, fixtures and fittings which are not to be coated, by covering with dust sheets, masking or other suitable materials.
- Exhibit 'Wet paint' signs and provide barriers where necessary to protect other operatives and the general public, and to prevent damage to freshly applied coatings.

290 TESTING OF VISCOSITY, ETC:
- The CA may, with discretion, take samples of materials from each manufacturing batch as follows:
- Unopened containers, or samples from previously unopened containers, for submission to manufacturer for comparison with manufacturer's own retained samples from the same batch.
- Unopened containers, or samples from previously unopened containers, as a control sample for assessment of samples taken from painters' kettles.
- Samples from painters' kettles for submission with control sample to manufacturer and/or independent testing laboratory for comparative testing.

320 INSPECTION OF WORK: Permit coating manufacturers to inspect the work in progress and take samples of their products from site if requested.

321 INSPECTION OF WORK STAGES:
- Programme for inspections: Submit as follows:
  Types of coatings and inspection at completion of works
- Programme to be agreed with CA as soon as section completion dates have been agreed.
- Inspection: Give prior notice when each stage is ready for inspection.

PREPARATION

400 PREPARATION GENERALLY:
- To BS 6150, Section 4.
- Materials used in preparation must be types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Prevent or control exposure of operatives to dust, vapour and fumes exceeding occupational exposure standards set in the current Health and Safety Executive (HSE) document EH40.
- Substrates must be sufficiently dry in depth to suit the coating to be applied.
- Remove efflorescence salts from surfaces. Repeat removal if efflorescence recurs.
- Clean off dirt, grease and oil from surfaces. If contamination of surfaces/substrates has occurred, obtain instructions before proceeding.
- Remove mould or other organic growths using an approved fungicide / biocide.
- 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 when applied after priming.
- Remove dust and particles from dry abrasive preparation of surfaces.
- Remove residues from wet preparation of surfaces by rinsing with clean water, wiping and allowing to dry.
- Ensure that doors, opening windows, etc, are 'eased' as necessary before coating. Prime any resulting bare areas.

410 SUITABILITY OF SURFACES AND CONDITIONS: Application of coatings will be taken as joint acceptance by the Main Contractor and the Painting Contractor of the suitability of surfaces and conditions within any given area to receive the specified coatings.

440 PREVIOUSLY COATED SURFACES GENERALLY:
- Prepare in accordance with BS 6150, Section 6.
- When removing or partially removing coatings, use methods which will not damage the substrate or adjacent surfaces or adversely affect subsequent coatings.
- Carefully remove all loose, flaking or otherwise defective areas to a firm edge.
- Completely remove alkali affected coatings.
- Where coatings are suspected of containing lead, obtain instructions before proceeding.
- Where substrates containing asbestos are revealed, obtain instructions before proceeding.
- Where significant rot, corrosion or other degradation of substrates is revealed, obtain instructions before proceeding.
- Thoroughly clean retained coatings with appropriate detergent solutions or solvents to remove all dirt, grease and contaminants. Abrade gloss coated surfaces when still wet to provide a key.
- Apply additional preparatory coats to areas of partial removal to restore original coating thicknesses. Abrade junctions to give a flush surface.
- Where coatings are completely removed, prepare surfaces as specified for uncoated surfaces.

461 PREVIOUSLY COATED WOOD
- Degraded or weathered surface wood: Take back to provide suitable substrate.
- Degraded substrate wood: Repair with sound material of same species.
- Exposed resinous areas and knots: Apply two coats of knotting.

471 PRE-PRIMED WOOD Areas of defective primer: Take back to bare wood and re-prime.

481 UNCOATED TIMBER: TO BE OPAQUE FINISHED
- Abrade to a smooth, even finish with arrises and moulding edges lightly eased.
- Ensure that heads of fasteners are countersunk sufficiently to hold stoppers/fillers.
- Apply two coats of knotting to resinous areas and knots and allow to dry.

521 UNCOATED STEEL / CAST IRON - MANUAL CLEANING:
- Remove oil and grease.
- Abrade to remove corrosion, loose scale, welding slag and spatter.
- Treat any residual rust with a proprietary removal solution. Prime as soon as possible.

631 PREVIOUSLY PAINTED WINDOW FRAMES
- Paint encroaching beyond glass sight line: Remove.
- Loose and defective putty: Remove.
- Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.

- Finishing:
- Patch prime, re-putty as necessary, and allow to harden.
- Seal and coat as soon as sufficiently hard.

APPLICATION

700 UNSUITABLE CONDITIONS:
- Take all necessary precautions including restrictions on working hours, providing temporary protection and allowing extra drying time, to ensure that coatings are not adversely affected by climatic conditions during and after application.
- Prevent or control exposure of operatives to solvent vapour levels exceeding occupational exposure standards set in the current Health and Safety Executive (HSE) document EH40.
- Unless it is specifically permitted by the coating manufacturer, do not apply coatings:
- To surfaces affect by moisture, frost or airborne dust.
- When the air or substrate temperature is below 5 °C.
- When the relative humidity is above 80%.
- When heat is likely to cause blistering or wrinkling.

711 COATING GENERALLY:
- To BS 6150, Section 5.
- Do not use materials which show any bittiness or other defects when applied. Do not thin or intermix unless specified or recommended otherwise.
- Apply priming coats as soon as possible on the same day as preparation is completed. They must be of adequate thickness and suit surface porosity.
- Apply coatings by brush or roller unless otherwise specified or approved.
- Keep brushes and equipment in a clean condition. Dispose safely of cleaning and waste materials, do not pour into sanitary appliances or drains.
- Subsequent coats of the same pigmented material must be of a different tint to ensure that each coat provides complete coverage.
- Apply coatings to clean, dry surfaces in accordance with the manufacturer's recommended intervals between coats.
- Apply coatings evenly to give a smooth finish of uniform colour, free from brush marks, sags, runs and other defects. Cut in neatly and cleanly. Do not splash or mark adjacent surfaces.
- Adequately protect drying and completed work from damage.

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

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

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

820 COMPLETION: Ensure that opening lights and other moving parts move freely. Remove all masking tape and temporary coverings.

R DISPOSAL SYSTEMS

R10 RAINWATER DRAINAGE SYSTEMS

To be read with Preliminaries/ General conditions.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM
- Gutters: Cast iron.
- Pipework: Cast iron .
- Below ground drainage: As Section R12.

SYSTEM PERFORMANCE

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

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

PRODUCTS

315 CAST IRON GUTTERS
- Manufacturer: Alumasc .
- Apex Heritage half round – 113mm HG45.
- Include for all stop ends, outlets etc.

316 CAST IRON DOWN PIPES
- Manufacturer: Alumasc .
- Apex Heritage circular – 75mm P30.
- include for all swan necks, collars, shoes, etc.

EXECUTION

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

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

610 FIXING AND JOINTING GUTTERS
- Joints: Watertight to manufacturer's specification.
- Brackets: Securely fixed.

- Fixings: Screwed to timber work.
- Fixing centres: 900mm.
- Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
- Roofing underlay: Dressed into gutter.

615 SETTING OUT EAVES GUTTERS – TO FALLS
- Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
- Outlets: Align with connections to below ground drainage.

630 INSTALLING RAINWATER OUTLETS
- Fixing: Secure. Fix before connecting pipework.
- Junctions between outlets and pipework: Accommodate movement in structure and pipework.

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

640 FIXING VERTICAL PIPEWORK
- Bracket fixings: Screwed to frame on oak bobbins.
- Distance between bracket fixing centres (maximum): 3 metres .

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

660 JOINTING EXTERNAL PIPEWORK Jointing: Cold caulking .

675 CUTTING COATED PIPEWORK AND GUTTERS Cutting: Recoat bare metal.

COMPLETION

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

Z BUILDING FABRIC REFERENCE SPECIFICATION

Z10 PURPOSE MADE JOINERY

To be read with Preliminaries/ General Conditions.

110 FABRICATION: Dormer Window
- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
- Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Adhesives: Compatible with wood preservatives applied and end uses of timber.
- Copper pin fixings.

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

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

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

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

Z20 FIXINGS AND ADHESIVES

To be read with Preliminaries/ General Conditions.

PRODUCTS

310 FASTENERS GENERALLY
- Materials: To have:
- Bimetallic corrosion resistance appropriate to items being fixed.
- Atmospheric corrosion resistance appropriate to fixing location.
- Appearance: Submit samples on request.

320 PACKINGS
- Materials: Non compressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

330 NAILED TIMBER FASTENERS
- Nails:
- Steel: To BS 1202-1 or BS EN 10230-1.
- Copper: To BS EN 1202-2.
- Aluminium: To BS 1202-3.

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

360 ANCHORS
- Types:
- Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
- Adhesive or chemical:
  For use in substrate where expansion of anchor would fracture substrate.
  For use in irregular substrate where expansion anchors cannot transfer load on anchor.
- Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.

370 WOOD SCREWS
- Type:
- Wood screws (traditional pattern).
  Standard: To BS 1210.
- Wood screws.
  Pattern: Parallel, fully threaded shank or twin thread types.
- Washers and screw cups: Where required are to be of same material as screw.

380 MISCELLANEOUS SCREWS
- Type: To suit the fixing requirement of the components and substrate.
- Pattern: Self-tapping, metallic drive screws, or power driven screws.
- Washers and screw cups: Where required to be of same material as screw.

390 ADHESIVES GENERALLY
- Standards:
- Hot-setting phenolic and aminoplastic: To BS 1203.
- Thermosetting wood adhesives: To BS EN 12765.
- Thermoplastic adhesives: To BS EN 204.

410 POWDER ACTUATED FIXING SYSTEMS: Types of fastener, accessories and consumables: As recommended by tool manufacturer.

EXECUTION

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

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

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

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

650 NAILED TIMBER FIXING
- Penetration: Drive fully in without splitting or crushing timber.
- Surfaces visible in completed work: Punch nail heads below wrot surfaces.
- Nailed timber joints: Two nails per joint (minimum), opposed skew driven.

660 SCREW FIXING
- Finished level of countersunk screw heads:
- Exposed: Flush with timber surface.
- Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

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

680 PLUGGED COUNTERSUNK SCREW FIXING
- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Plugs: Glue in to full depth of hole.
- Finished level of plugs: Projecting above surface.

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

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

Z21 MORTARS

To be read with Preliminaries/ General Conditions.

LIME: SAND MORTARS

310 LIME: SAND MORTAR MIXES

See also C41 320
- Brickwork Generally:
  - Fine Hydraulic Lime Mortar - 1 part St Astier NHL.2: 2 parts sand (2 parts washed sharp: 1 part soft sand).

315 MORTAR SAMPLES

Samples of the following mixes in 'biscuit' form (approx 50 mm x 50 mm) will be required prior to commencement of sample panels.
See C41 320

320 SAND FOR LIME: SAND MASONRY MORTARS

- Sharp, well graded and conforming to the methods of sampling and testing and quality requirements of BS 882 or BS 1200, unless specified otherwise.
- Source(s)/type(s) of sand are specified elsewhere.

350 SITE STORAGE OF LIME: SAND MORTAR MATERIALS:

- Store different sands and aggregates in different stockpiles on hard clean bases that allow free drainage.
- Store bags of hydraulic lime powder in dry conditions, raised off the ground and not touching damp surfaces. Do no use hydraulic lime affected by damp.
- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

360 MAKING LIME: SAND MORTARS GENERALLY:

- Use operatives who are skilled and experienced in the making and use of lime:sand mortars. Provide evidence of their experience to the CA on request.
- Keep plant and banker boards clean at all times. Avoid contamination of lime:sand mortar by other materials or by any set material (including Portland cement).
- Measure materials accurately by volume using clean gauge boxes or clean undamaged buckets.
- Do not mix mortar when the air temperature is at or below 5°C and falling or below 3°C and rising.

400 SITE PREPARATION OF HYDRAULIC LIME: SAND MORTAR:

- Thoroughly mix hydrated hydraulic lime powder with sand, first in the dry state and then with water. Follow the lime manufacturer's recommendations for each stage of the mix. Add only sufficient water to produce a workable mix.
- Use mortar within time limits recommended by the lime manufacturer. Do not use mortar that has begun to stiffen.
- Fill joints completely, leaving no gaps, excluding all air and ensuring firm adhesion of sealant to required joint surfaces. Tool the sealant to a neat, slightly concave profile unless specified otherwise.
- Protect until cured.

402 THE USE OF POZZOLANIC ADDITIVES

- In cold weather a fine brick dust can be used (only by the agreement of the architect) to encourage the set of the hot lime mortar. The brick material should be in an amorphous form, obtained from a low thermal industrial process. It also should be finely grounded (below 50microns), so that there is a big surface of pozzolanic particles to react.

SCHEDULE OF WORKS

		Item	No.	£	p
1.0	**Preliminaries and Site Set Up / CDM**				
1.1	Contractor to allow for all preliminaries, including: scaffolding, temporary works, site fencing, welfare facilities and take into account all constraints indicated on the Site Plan drawing 1154-01-01.				
1.2	Scaffolding to have an unclimbable 3m hoarding.				
1.3	Contractor to take into account the Pre-Construction Health & Safety Plan, develop the Construction Phase Health & Safety Plan and produce Health & Safety File upon completion.				
2.0	**Preparation and Demolitions**				
2.1	Carefully remove abutment flashings and roof tiling and rafters to a distance of 1.5 metres in order to create a working area.				
2.2	Bathroom lean to: Carefully remove lead flashing and tiles approximately 1.5 metres. Support rafter ends and wall plate internally. Free wall plate from existing structure.				
2.3	Ensure temporary works are in place in order to support roof structure to main roof pitch above wall plate.				
2.4	Strip back five courses of roof tiles to main roof and set on one side for reinstatement.				
2.5	Remove existing UPVC rainwater goods to dormer and elevation and set on one side.				
2.6	Carefully remove and clean brickwork infill panels to first floor framing and set on one side for reinstatement.				
2.7	Carefully remove and clean brickwork panel above bathroom lean-to and set on one side for reinstatement.				
2.8	Carefully remove first floor timber frame down to mid-rail. Label up with unique reference no. as indicated on drawing 1154-01-02 and set on one side for repair and reinstatement as follows: WP1, WP2, WP3, SP1, ST1, ST2, ST3.				
2.9	Carefully remove door linings and architraves to bathroom and kitchen and set on one side for reinstatement.				
2.10	Ensure spine beams SB1 and SB2 are fully supported.				
2.11	Carefully remove brickwork from panels and brickwork surrounding door positions. Clean off and set on one side for re-use.				
2.12	At the same time remove mid-rail and ground floor framing and dispose of off site as follows: MR1, P1, P2, P3, P4, R1, R2, R3, R4, ST5.				
2.13	Carefully remove bath and kitchen units at ground floor and first floor. Set on one side for reinstatement.				

2.14 Lift floor and joists adjacent to elevation at first floor level.

3.0 Repairs and Reinstatements

3.1 Excavate trench and form foundation and footings. Depth of trench to structural engineers' detail.

3.2 Form new strip foundation to structural engineers' detail.

3.3 Brickwork up to internal floor level formed in concrete common brickwork.

3.4 Form new brickwork, 225 thick, wall up to mid-rail level in reclaimed bricks and new to match existing. Allow for 75% new bricks. Incorporate new DPC at floor level and 2No lintels for doorways.

3.5 Incorporate new 12mm x 150mm long stainless-steel dowels to the head of the new wall at 600 centres to receive new oak mid-rail.

4.0 Repairs to Framing (Refer to drawing 1154-01-05)

4.1 Wall Plates

4.1.1 WP1, size: 180 x 130. New face patch to 2No. mortices.

4.1.2 WP2, size: 180 x 130. New face patch to mortice mid-point. Form new shoulders and tenon at each end.

4.1.3 WP3, size: 180 x 130. New face patch to mortice. Form side half and bridal scarf joint to connect to new section of wall plate.

4.1.4 WP4, size: 180 x 130 x 1200. New oak side halved and bridal scarf for one end to connect to WP3. Form 2No mortices to take studs.

4.2 Storey Posts

4.2.1 SP1, size: 180 x 130. 1No new shoulders and tenon. 1No new shoulders and slip tenon.

4.2.2 SP2, size: 180 x 130 x 1400. New oak, 1No tenon, 1No slip tenon.

4.3 Studs

4.3.1 ST1: 1No new shoulders and tenon, 1No new shoulders and slip tenon. Laminate repair to side of stud 50mm full length.

4.3.2 ST2, size: 150 x 130. 1No new shoulders and tenon, 1No new shoulders and slip tenon.

4.3.3 ST3, size: 180 x 130. 1No face patch to mortice, 1No new shoulders and tenon, 1No new section 180 x 130 x 400. Form half-lap with squinted butts to new and existing sections. 1No slip tenon to new lower section.

4.3.4 ST6, size: 180 x 130 x 1400. 1No tenon and 1No slip tenon.

4.4 Midrail

4.4.1 MR2, size: 180 x 150 x 5500. New oak formed in 2No sections with side halved and bridle scarf mid-point located on stainless steel dowels. 6No mortices to take studs / storey posts.

4.5 *Infill panels*

4.5.1 Form new infill panels to framing re-using existing bricks. For panel details see drawing: 1154-01-06. New infill panels to include bitumen coating to inside face of the framing, 50mm wide stainless steel mesh to top and bottom edges of the panel.

4.5.2 Incorporate 50mm wide stainless steel 'L' shaped mesh ties every third course.

4.5.3 Provide oakum corking to perimeter of the panel and point up upon completion.

4.5.4 Decorate infill panels and new and existing framing as per specification.

5.0 Dormer Window

5.1 Form new dormer window to match existing.

5.2 Form framing for side cheeks in softwood studs and new cladded marine ply and lead.

5.3 Form new roof with softwood joists, marine ply and lead roof covering with core rolls. New lead soakers at abutment with dormer cheeks.

5.4 Fit new 3No light mullion window with central opening casement in hardwood and 6:12:6 double glazed units.

5.5 Provide sheeps wool insulation to side cheeks and roof.

5.6 Line inner face of cheeks and roof with 40mm Woodtherm board finished in Lime Green Solo One Coat lime plaster.

6.0 Roof Coverings

6.1 Reinstate roof coverings to kitchen extension including rafters, roof tiles and new soakers and flashings at abutment.

6.2 Reinstate roof coverings to bathroom extension with new abutment flashing.

6.3 Reinstate rover coverings to main roof.

6.4 Reinstate rainwater goods upon completion.

7.0 Internal Works

7.1 *Ground Floor*

7.1.1 Plaster new brickwork ground floor with Lime Green One Coat lime plaster.

7.1.2 Re-plaster kitchen and bathroom walls with Lime Green One Coat plaster.

7.1.3 Reinstate doors, frames and architraves to kitchen and bathroom.

7.1.4 Fit new skirting boards.

7.1.5 Reinstate bath and kitchen units.

7.1.6	Decorate upon completion.				
7.2	*First Floor*				
7.2.1	Line external face of first floor framing with 40mm Woodtherm insulation board, pack any voids with sheeps wool insulation, finish with Lime Green One Coat lime plaster and fit new skirting boards.				
7.2.2	Reinstate kitchen units.				
7.2.3	Decorate upon completion.				
8.0	**Provisional Sums**				
8.1	Additional oak frame repairs			250	00
8.2	Additional new oak framing			500	00
8.3	Additional skirtings/ architraves			100	00
8.4	Additional bricks			250	00
8.5	Stainless steel connection plates and fixings			250	00
8.6	Rafter end repairs			250	00
8.7	New floor finishes			100	00

CONTRACTOR PRELIMINARIES (SECTION 1): £ _____

TOTAL FOR WORK (SECTIONS 2 TO 7): £ _____

PROVISIONAL SUMS: £ **1,700.00**

CONTINGENCY (Unforeseen works): £ _____

GRAND TOTAL (Excluding VAT): £ _____