GRAHAM + SIBBALD

UNDERGRADUATE BUILDING
Manchester Royal Infirmary



Architectural Restoration Specification

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DEFINITIONS

CA means Conservation Architect / Architectural Technologist

REMOVE means disconnect, dismantle as necessary and remove the stated element, work or component and all associated accessories, fastenings, supports, linings, and bedding materials, and dispose of unwanted materials. It does not include removing associated pipework, wiring, ductwork, or other ```.

KEEP FOR REUSE means during removal prevent damage to the stated components or materials and clean off bedding and jointing materials. Stack neatly, adequately protect and store until required by the Employer or for use in the Works as instructed.

REPLACE means remove the stated existing components, features, and finishes. Provide and fit in lieu new components, features or finishes which, unless specified otherwise, must match those which have been removed. Make good as necessary.

REPAIR means carry out local remedial work to components, features and finishes as found in the existing building, resecure or refix as necessary and leave in a sound and neat condition. It does not include:

- Replacement of components or parts of components.
- Redecoration.

MAKE GOOD means carry out local remedial work to components, features and finishes which have been disturbed by other, previous work under this Contract and leave in a sound and neat condition. It does not include:

- Replacement of components or parts of components.
- Redecoration.

The meaning of the term shall not be limited by this definition were used in connection with the defect's liability provisions of the Contract.

EASE means make minor adjustments to moving parts of the stated component to achieve good fit in both open and closed positions and ensure free movement in relation to fixed surrounds. Make good as necessary.

TO MATCH EXISTING means, use products, materials and methods to match closely all visual characteristics and features of the existing work, with joints between existing and new work as inconspicuous as possible, all to approval of appearance.

TO MATCH ADJACENT means that the component is *to match existing* component in the immediate vicinity, room or area.

SALVAGED refers to materials that have been *removed* and *kept for re-use* on this job: no second-hand or reclaimed material are to be used on this project.

APPRAISE means the contractor is to appraise and carry out own independent assessment of the works detailed here within and update the scope of works as is necessary through consultation with the Architect.

CONSOLIDATE means the contractor is to make something physically stronger and solid. Returning / combing items into a single / coherent whole. Rake out and repoint / build with an NHL mortar. Return to match original profiles. Rebuild in association with structural ties / wall core gravity grouting etc.

RS1 PROTECTION OF HISTORIC FABRIC / FEATURES

1.1 WORK IN LISTED BUILDINGS

1.1.1 It is the responsibility of the Contractor to ensure that no disturbance of any fabric within the listed buildings takes place unless this is specifically detailed on the Architect's drawings and/or specification. The Architect's information is subject to listed building consent and any deviation from this is an offence under the Planning (Listed Buildings and Conservation Areas) Act 1990.

1.1.2 Should the Contractor be in doubt about the extent of works or protection required, he should consult with the Architect prior to those works being carried out. Agreement may also be required from the local authority Conservation Officer in some cases, and therefore the Contractor should make any queries to the Architect in a timely manner.

1.1.3 The Contractor is to provide adequate protection to any historic features which are to be retained in order to avoid damage as the works are in progress. The methods for protection should be agreed with the Architect prior to works being carried out.

1.1.4 Should it be the case that it is not possible to protect historic features without causing further damage to the building, it is the Contractor's responsibility to exercise maximum care to avoid disturbing any historic fabric during the course of the works. This may entail an approach of temporary protection with the agreement of the Architect.

1.1.5 It should be noted that damage to historic fabric cannot be made good in an acceptable manner and that the Contractor is to take all necessary measures to ensure damage does not occur.

1.1.6 The Contractor is to satisfy themselves that they are in possession of adequate information prior to commencing any work.

Any discrepancies found within this document by the Contractor should be brought to the attention of the Architect at the time of tendering.

The Contractor is to be responsible for all on site measurement including setting out for new work, details and dimensions for any replacement or repair work.

All dimensions included on the drawings are to be checked for accuracy on site prior to commencing work and any discrepancies reported to the Architect immediately.

No work shall commence until any such discrepancies have been resolved.

1.1.7 To be read in conjunction with Restoration Specification section RS2 — Protection of Elements and Components.

RS2 PROTECTION OF ELEMENTS AND COMPONENTS

2.1 DESIGN

2.1.1 Prior to undertaking any construction works, all working areas and access routes are to be thoroughly protected for the duration of the contract.

There are a number of areas across the building which will undergo destructive investigation surveys / removals and interior / exterior fabric repairs. The careful removal of building fabric will likely produce excessive dust and debris build up within working areas. The proposed fabric repair works are identified within the drawing pack.

2.2 WORK IN LISTED BUILDINGS

2.2.1 This section is to be read in conjunction with section Restoration Specification section RS1 — Protection of Historic Fabric / Features.

2.2.2 The contractor is to provide adequate protection to any historic features which are to be retained in order to avoid damage as the works are in progress. The methods for protection should be agreed with the Architect prior to works being implemented.

2.2.3 Whilst historic floors / surfaces are often worn, discoloured and out of true level, these imperfections can contribute to the interest and historic value of a building and thus should be protected.

2.3 PREPARATION

2.3.1 Prior to installation of any protective measures. The areas in question must be thoroughly cleaned to remove all loose debris / dust which could lead to scratching / abrasion of the finished surface once protective boards are overlaid.

It is important to try to not over wet floors as the substrate could become loosened or efflorescence could be triggered. Surface dirt should be removed with minimal quantities of warm water.

2.3.2 Sweep and vacuum existing floors / components prior to laying / fixing of any protective boards.

2.3.3 Contractor is to photograph and record all areas prior to undertaking any works.

2.4 PROTECTION OF HISTORIC FABRIC

2.4.1 The structure, fabric, decoration, and contents of the buildings are to be suitably protected by the use of dustsheets, solid protection, sealing of doors, etc.

2.4.2 The appropriate method of protection is to be agreed with the Architect and Local Authority Conservation Officer.

2.4.3 Equipment and materials must not be propped against decorated surfaces, fittings, or furniture.

2.4.4 When dust or vibration is anticipated, the contractor is to give the Client, neighbouring properties/businesses advance warning.

2.4.5 Footwear is to be appropriate to the part of the building or structure in which the work is being undertaken to avoid damage to floor finishes and coverings.

2.4.6 No contents or fixture and fittings shall be moved by the Contractor without the written permission of the Client.

2.4.7 No adhesive tapes or fixings should be used to secure in-situ protection. If no alternatives can be proposed, each instance of proposed use should be discussed with the Architect and Project Conservator.

2.4.8 No item longer than 1200mm can be carried through the building unsupervised. Materials and objects should be appropriately covered to ensure that damage will not occur to either the fabric or contents of the building. The admission of equipment /

materials longer than 1200mm into the building will be considered — however prior consultation must be sought with the Architect / Project Conservator.

2.4.9 Cutting of boards on site; dustsheets should be laid, and vacuum cleaners must be available at the point of work and used to collect dust as and when created.

2.4.10 All Contractors must adhere to the restricted walkways through the building / site. These routes **MUST** be clearly visible and identified by the Contractor.

2.4.11 All contractors must use dustsheets at all times.

2.4.12 Illustrative prints relating to particularly fragile elements / components, will be located at the site of work. All contractors are required to familiarise themselves with the pictures provided.

2.4.13 **All** areas of the building / asset are **vulnerable** and **important** and should be protected for the duration of the work.

2.4.14 All items protected must be protected by products and materials which are fire retardant.

2.4.15 All protective materials will be attached to elements and components by cloth string and/or pressure fixed unless otherwise directed and approved. No direct fix will be acceptable.

2.4.16 Phasing / Sequencing:
Installation of protection works is likely to be phased pending investigation works. Refer to Scope of Works document and drawing package.

2.5 PROTECTION OF WALLS AND FLOORS

2.5.1 Prior to undertaking any fabric repair / investigation works. Allow for fixing of protective measures to walls and floors within working areas. Refer to marked up drawings.

2.5.2 Walls and Floor Generally:

- Lay Antinox protective FR boards to floors and walls within working areas. Tape and seal. Overlay with hardboard in particularly high traffic areas. No direct fix into building fabric is allowed. Loose fix with tape / pressure fix and cloth string.

- Refer to drawings for locations where protective floor measures are required.

Manufacturer:

Antinox Global,
Castlepoint,
Ellon, AB41 9RG.
Tel: 01358720888.
Email: sales@antinoxglobal.com

Substrate:
wood, stone, concrete

Product reference:
Antinox Protection Board — Black Trade Sheet

Thickness:
6mm (floor) 4mm (walls).

Accessories:
Antinox jointing tape strong and wide / hardboard

2.6 PROTECTION OF EXISTING DOORS AND FRAMES

2.6.1 Prior to undertaking fabric repair / construction works, all existing retained doors are to be thoroughly protected for the duration of the project.

- Lightly clean existing door prior to fixing / over-boarding of protective measures.

- Over-board with Antinox Protection Board and fix in place with cloth string. No direct fix will be acceptable.

- If existing door is to remain on a main access route for construction traffic, the addition of a hardboard sheet may be required as additional protection.

- Loosely fix foam (self-gripping) door leaf protector to all leading door edges. No direct fix will be acceptable.

- Loosely fix foam door jamb (self-gripping) protector within all trafficked openings. No direct fix will be acceptable.

- Remove and discard of protective measures upon completion of main contract works and undertake any identified door repair / cleaning works identified elsewhere.

2.7 PROTECTION OF STONE STEPS / HANDRAILS / WALLS / ACCESS RAMP

2.7.1 Prior to undertaking fabric repair / construction works, all existing retained access routes / steps / landing areas are to be thoroughly protected for the duration of the project.

- Lightly clean area in question prior to fixing / over-boarding of protective measures, to eradicate risk of scratch / abrasion of surfaces.

- Overboard existing steps / walls and landing areas with 12/18mm WBP plywood sheathing with non-slip surfaces including visible nosings.

- Screw fix at joints / treads and risers.

- No direct fix into the existing building fabric is acceptable.

2.8 CONSERVATION WORKIING PRACTICES DURING BUILDING WORKS

2.8.1 It is of paramount importance that the working site is maintained and cleaned throughout the construction works.

The following measures are to be observed and looks to reduce the time needed for the conservation clean of the building post-contract.

- Prior to temporary fixing of protection measures, area to be covered should be vacuumed / cleaned to remove all loose debris and dust prior to over-boarding.

- Vacuum cleaners must be used at source where dust is being created. Bags and filters must be regularly changed, and the vacuum cleaners well maintained.

- Contractors should vacuum up after themselves at the end of each working day.

- In-situ protection must be well maintained.

- Keep to walkways of protection.

- Floor voids should be vacuumed out (check with archaeologist regarding significance of contents).

- All equipment and materials should be placed on Antinox.

- Loose laid sheets of Antinox should be used by contractors around work areas.

RS3 ACCESS SCAFFOLDING

3.1 DESIGN

3.1.1 The design of all scaffolding will be the responsibility of the Contractor and is to be in accordance with the recommendations of BS 5973:1990 "Code of Practice for access and Working Scaffold and special scaffold staircases in Steel" or as updated.

3.1.2 Compliance with the various Acts and regulations listed in BS 5973 is the responsibility of the Contractor.

3.1.3 Compliance with all aspects of Health and Safety during erection, using and dismantling is the responsibility of the Contractor.

3.1.4 The design of the scaffold is to take account of the requirements of all trades which will require access, use as a working platform or storage. No claims will be entertained for additional scaffold or for amending scaffold already erected to suit the requirements of trades contained within the specification and the tendered works as a whole.

3.2 PROPOSALS

3.2.1 The Contractor is to submit their proposals for the scaffold on or before the date for possession and not less than 7 days before commencement.

3.2.2 The Contractors proposals are to include clear drawings and structural calculations in duplicate sufficient to prove the stability of the proposed temporary structures in accordance with BS 5973: 1990. Drawings will be provided to the Architect and the Structural Engineer.

These drawings will clearly indicate positions where any scaffold is to be tied back to the fabric of the building and the proposed method of fixing.

3.2.3 No scaffolding shall be commenced on site until the Contractors proposals have been submitted and agreed with the Architect/Structural Engineer. Agreement of the Contractors proposals does not relieve the Contractor of his responsibilities to ensure full compliance of all requirements.

3.3 PROGRAMME

3.3.1 Prior to commencement of any scaffolding the Contractor shall submit a programme indicating the commencement date, and completion date.

3.3.2 Prior to striking the scaffold the contractor will submit a programme indicating the period for dismantling for each area of scaffolding.

3.3.3 Scaffold is required for inspection purposes prior to confirmation of scope of the work and the Contractor is to indicate this period on his programme and ensure that his proposals are submitted early enough to ensure that this period is not compromised.

3.3.4 The programme is to take account of all the requirements of the sub-contractors who require the use of the scaffold.

3.4 ERECTION REQUIREMENTS

3.4.1 All scaffold tubing and fittings are to be galvanised and in good condition and free from corrosion. Rusty components will not be accepted.

3.4.2 No steel component (including capped tubes) is to be in contact with the fabric of the building except where specific approval has been given.

3.4.3 Where it is necessary to brace the scaffold from the structure then timber packing of a minimum thickness of 20mm is to be placed between the scaffolding and the masonry.

3.4.4 No scaffolding shall rest on any roof coverings unless agreed in writing prior to commencement.

3.4.5 The ends of ALL scaffold tubes are to be protected with plastic caps which are to be fitted prior to delivery to site. Where it is necessary to cut scaffold tubes during erection the end is to be re-capped immediately. A disc of carpet is to be sandwiched between the plastic scaffold cap and the building fabric at every point of contact.

3.4.6 Scaffold tubes are not to encroach within 50mm of the surface of the building except where required for support or stabilising. This is to prevent accidental damage to the fabric by minor movement of the scaffold. Where such support is required, the scaffold shall be separated from the building fabric by 20mm timber packers to prevent scarring of the fabric by scaffold tubes.

3.4.7 Where it is necessary to brace scaffold through window or door openings the existing finishes are to be protected with 20mm thick timber packers both internally and externally. The opening is to be boarded up with access only for the scaffold tubes.

3.4.8 A temporary roof shall be erected over the clerestory area where wholesale re-roofing works are undertaken as further damage to the interior will be detrimental.

3.4.9 Temporary roofs shall be a minimum of 2.5m clear of the existing roof covering / structure to the underside of any scaffold / beam component on the temporary roof.

3.4.10 Side sheeting to temporary roofs shall extend to below parapet level on the outside of any scaffolding.

3.4.11 All temporary roofs shall be complete, wind and watertight prior to any work being implemented.

3.5 SUPERVISION

3.5.1 The Contractor is to exercise particular care in supervising the erection and dismantling of the scaffold to ensure that no damage occurs to the fabric of the building.

3.5.2 It should be noted that in many instances damage to the historic fabric cannot easily be rectified. Any damage due to the scaffold use, erection or dismantling will be rectified at the Contractors expense.

3.5.3 Any area of scaffold not complying with section 2.4 above will not be used for any purpose.

3.6 SECURITY

3.6.1 All external scaffolding shall be designed and erected so as to prevent unauthorised access by sheeting (whether ply or steel) to a minimum height of 3 metres at the base. 'Heras' mesh fencing is not considered a suitable alternative.

3.6.2 For the purposes of this tender allow for a 2.4m high 'Plas-Hoard' PVC-U hoarding. The contractor must make an allowance for the application of a vinyl graphic along the entire length of the hoarding subject to the client's requirements and design.

3.6.3 Sheeting which forms part of the perimeter hoarding for the site will also need to comply with constraints for site hoarding specified elsewhere within the preliminaries for the project.

3.6.4 Access to the scaffold is to be via a single point of entry and a lockable door through the barrier described above. Alternative designs should be approved by the Contract Administrator.

3.6.5 Ladders to the lower lifts are to be removed at night.

3.6.6 Any areas which may be accessible from adjoining structures, roofs, etc. are to be similarly protected by boarding or by other approved means.

3.6.7 Scaffolding shall be alarmed at all times.

3.6.8 Adequate measures must be taken to prevent unauthorised access from all elevations. Which could include floodlights and motion detectors as well as CCTV cameras.

Adequate signage and lighting must be provided in areas where light levels are reduced.

3.7 PROTECTION

3.7.1 The covering to pavements is to be double boarded with visqueen between.

3.7.2 The contractor is to satisfy all the requirements of the Local Authority and Highways department.

3.7.3 All surfaces at ground level are to be suitably protected to prevent the scaffold damaging existing external finishes.

3.7.4 Where internal scaffold is to be erected full protection will be required under all scaffolding except with prior written consent.

3.7.5 Ensure any architectural features or areas prone to damage are suitably protected.

3.7.6 All entrance doors, fire exits etc. are to be kept clear of obstructions and are to be lined at the top and both sides.

3.8 DISMANTLING

3.8.1 Ensure all necessary care is taken to ensure that no damage occurs to the fabric of the building.

3.8.2 Scaffold tubes should be carefully lowered to ground level and not thrown or dropped.

3.8.3 No dismantled components shall be left on site outside working hours unless housed within a secure compound area.

3.9 TEMPORARY PROTECTION AGAINST THE ELEMENTS

3.9.1 A temporary roof is required to the clerestory for the duration of all roofing works as per above specification.

Protection to side walls and public walkways under the scaffold are to be allowed for as is the temporary sheeting of opened roofs and lanterns.

3.9.2 Any damage arising to the building fabric from the failure of temporary sheeting will be made good at the contractor's expense. Sheeting for side walls shall be reinforced translucent sheets which are self-extinguishing and flame retardant (e.g. Monarflex). Details of any alternative proposals shall be submitted for approval with the tender.

3.9.3 All sheeting shall be adequately secured against wind uplift etc.

3.9.4 All sheeting shall be checked by a competent person once a week and a signed record kept onsite. Any defects are to be rectified immediately.

3.9.5 All areas are to be maintained as watertight at all times.

3.10 CERTIFICATES

3.10.1 Copies of all handover certificates issued by the scaffolding sub-contractor shall be forwarded to the Contract Administrator upon receipt by the Main Contractor.

3.10.2 Copies of all test certificates for hoists shall be forwarded to the Contract Administrator on receipt by the Main Contractor.

3.10.3 No scaffolding shall be used unless handover certificates and test certificates have been issued.

3.11 DESCRIPTION OF THE PROPOSED WORKS AND METHODOLOGY

3.11.1 It is proposed that a full access scaffold is erected around the main building to allow for wholesale replacement of the parapet gutter. Work areas are to be temporary protection during inclement weather and during the evening, so that the building's interior is protected from the external elements for the duration of the project.

3.11.2 The Main Contractor is to provide the Contract Administrator with a scaffold design well in advice of any erection works.

The scaffold design will highlight all proposed fixing and contact points for discussion with the Architect and Structural Engineer.

Detailed methodologies are to be provided by the Main Contractor, to accompany the scaffold design.

3.11.3 The access scaffold will run around the building to 4no. sides, north, east, south and west.

Note: The Education North: Undergraduate Building is adjacent to an active Hospital site to all four sides of the site.

3.11.4 The scaffold will be built up tight to the facades, with protected scaffold tubes. The scaffold will be braced through existing window and door openings.

3.11.5 Where direct fixings will be required into the fabric, these will primarily be taken into mortar joints where the joint size is sufficient.

3.11.6 No direct fixings into stonework will be accepted.

3.11.7 The access scaffold may likely be required to house contractor welfare facilities due to space restrictions onsite. The exact arrangement is to be confirmed by the Main Contractor and coordinated with neighbouring properties/businesses.

RS4 HYDRAULIC LIME MORTAR

PLEASE NOTE THAT THE EXACT MORTAR COMPOSITION TO BE USED ACROSS THE EXISTING FABRIC WILL LIKELY DIFFER TO THE GENERAL MORTAR SPECTIFICTION AS IDENTIFIED BELOW.

THE EXACT MORTAR MIX AND STRENGTHS TO BE ADOPTED WIL COME FOLLOWING ONSITE SAMPLYING AND ANALYSIS. IT IS LIKELY THAT THERE WILL BE VARIANTS ACROSS THE FABRIC.

4.1 PRODUCT

4.1.1 Mortar to constitute 1-part Hydraulic Lime: 2½ part graded sand (from 5mm down to 75 microns) using a moderately hydraulic Lime (St. Astier NHL 2 or similar approved). For pointing of ashlar stone, the graded grit is to be replaced by equal amounts of grit sand.

4.1.2 Suppliers to be consulted for variations in aggregates to achieve required distribution and colour.

4.1.3 Mixing and usage to be strictly in accordance with supplier's recommendations.

** PENDING MORTAR ANALYSIS AND SAMPLING **

4.2 MATERIALS

4.2.1 Hydraulic Lime

Hydraulic Lime or pre-mixed hydraulic lime mortar may be obtained from:

a) Womersley's Ltd.
Ravensthorpe Industrial Estate
Low Mill Lane
Ravensthorpe
West Yorkshire, WF13 3LN
Tel: 01925 400 651
Email: info@womersleys.co.uk

b) Lime Green Products Ltd.
Coates Kiln
Stretton Road
Much Wenlock
Shropshire, TF13 6DG
Tel: 01925 728 611

c) Telling Lime Limited
Booths Hall
Booths Park, Chelford Road
Knutsford
Cheshire, WA16 8GS
Tel: 01565 756 110
Email: info@tellinglime.com

d) Limetec — LMR Traditional
Office 2, Grove Street
Wantage
Oxfordshire, OX12 7AB
Tel: 01235 434 300
Email: sales@limetec.co.uk

4.2.2 Fine Aggregates

All sand shall be to BS 1199 and BS 1200:1976, well-graded non-staining clean sharp coarse sand, uncontaminated by clay/silt. Sand shall be selected so that when the mortar has dried out the colour will match the colour and texture of the original mortar, unless instructed otherwise in writing by the Architect.

For work requiring very fine joints in the masonry sand grain size may impede filling the joints. In these instances, fine stone dust or brick dust should replace the sand as the fine aggregate.

Suppliers of lime to be consulted on suitability of sands proposed. Ideally sand to be obtained from the supplier of the lime.

4.3 WEATHER AND PROTECTION

4.3.1 Cold Weather Working

No work involving the preparation of mortar, or the laying of stonework shall be undertaken when the temperature is 5 degrees centigrade falling or below 4 degrees centigrade when the temperature is rising.

4.3.2 Protection

All work is to be protected from the frost and rain with hessian sheets for a minimum of 7 days or until the mortar has cured if longer.

In warm weather the work is to be similarly protected with hessian sheets which should be kept moist at all times to avoid quick curing.

4.3.3 Damage due to Weather

Any work affected by the weather is to be cut out and replaced at the Contractor's expense.

4.4 PROTECTION AND GOOD WORKING PRACTICE

4.4.1 For all mortar work, best practice requires proper curing and aftercare against the effects of drying against winds, sunlight, rain, and frost. Lime mortar may require slightly longer curing times. Where scaffolding is in place, fine mesh debris netting securely fixed to the outside of the scaffold gives basic protection to the working area slowing down strong wind whilst allowing good natural light for the works. Securely fixed haps or polythene placed over plywood sheeting on to the top of the scaffold from the wall heads or just below the gutters will ensure that rain does not wash down the face of the walls.

4.4.2 Scaffolding should always be erected in such a manner as to allow the highest point of the building to be protected. In an ideal world, a temporary roof would be desirable, however the costs may be prohibitive. As regards external protection the work should be covered with hessian sheets, polythene, or both. Polythene should never come in contact with the work. Accurate records of the minimum and maximum temperatures below the covers should be taken daily, with provision to record these over weekends and holiday breaks. To avoid rapid drying and consequent high shrinkage, especially in hot or windy weather conditions keep all work damp by repeatedly applying a fine mist of clean potable water, if necessary, several times a day, until the mortar has hardened.

4.4.3 Re-pointing

Before any re-pointing work is undertaken, a survey of the building should be carried out by the supervising officer and the contractor to determine the precise areas to be re-pointed. Often much of the old lime mortar raked out is sound and could, with advantage (appropriate access), have been left in place. It is essential that all pointing is carried out to match previously approved samples.

4.4.4 Preparation

Joints should be thoroughly cleaned from top to bottom after pre-wetting the wall.

Use brushes, low pressure compressed air or wash out the joints with a hose. Remove all loose materials and dust. This is important as dust that is left in the joints will deplete the bond.

4.4.5 Application

Mortar should be plastic and workable but as stiff as possible. It should be pushed into the back of the joints in layers, avoiding large volumes of deep filling at all times.

4.4.6 Finishing

To ensure good compaction and adhesion within the joint, the mortar can be tamped firmly back with a stiff bristle brush as it starts to firm up. The timing of this is critical. If it is carried out too soon after placing, fines in the mix will be drawn to the surface and will form a dense skin, inhibiting the proper curing of the mortar. Once the surface of the mortar is firm (usually the next day) lightly scraping or brushing the surface to expose the aggregate can improve the appearance of the mortar and make the joints less visible.

When re-pointing joints should be raked back to approximately 25mm, thoroughly cleaned, including the top and bottom faces of the beds, ready for the new mortar. Pinning stones should not be removed, but if they are loose, they should be removed and put back during the re-pointing. Where a wall has previously been re-pointed and the pinning stones have been lost, suitable replacements should be used. The walls should be well washed to remove any dust and loose friable material making sure that the entire elevation is cleaned down to prevent staining on the walls. Impervious masonry should be dry when the work commences, however the original backing mortar should be kept damp.

Pointing deep joints should be done in layers of 20 - 25mm at a time, allowing the proceeding layer to take up before applying the next.

RS5 POINTING OF ASHLAR

5.1 GENERAL

5.1.1 Contractor's attention is drawn to the fact that the joints between stones are extremely fine and will demand a great deal of care and attention on site to the preparation, filling and pointing

5.2 SAMPLE PANELS

5.2.1 The tenderer is to allow for carrying out two test panels each approximately 1 metre square under the direction of the Architect, using the methods described below. Work to the rest of the stonework should not commence until the test panel has been approved by the Architect. The location of the test panels is to be agreed with the Architect prior to commencement.

Tenderer is to allow for several sample mixes using different coloured fine aggregate to obtain a satisfactory colour for the pointing.

5.3 PREPARATION

5.3.1 All joints are to be raked out to a depth of 25mm using a fine-toothed saw blade or hooked knife. Extreme care is to be taken to avoid damage to the arris or dislocation of the stone. *Under no circumstances shall chisel and bolsters be used. Under no circumstances will the use of mechanical tools be permitted (disc cutters etc.)*

5.3.2 There are power tools that use oscillating blades to clean out joints; care must be taken with these, especially if the stone is softer than the mortar, as the blade can slide off the mortar and cut into the stone.

5.3.3 Joints are to be flushed out using a large (30cc) hypodermic syringe and clean water until the water runs clear.

5.3.4 The tenderer is to allow for the insertion of a backing 'rod'. This item is to be confirmed during the preparation of the sample area.

5.3.5 The backing rod is to be fine waxed string or string coated with petroleum jelly, stretched and twisted several times prior to inserting to the back of the prepared joint with a knife blade.

5.4 FILLING AND POINTING

5.4.1 Mortar is to be as described in the lime mortar specification RS4 — Hydraulic Lime Mortar

5.4.2 Filling is to be by the taping and pointing method.

5.4.3 The prepared joints are to be covered with 50mm heavy duty carpet tape applied to the stone. The tape is to be slit along the joint line with a sharp knife. It should be noted that the stone will need to be dry for the tape to adhere.

5.4.4 The mortar is to be introduced into damp joints and compressed with a purpose made pointing iron/key. Mortar is to be thoroughly compacted into the joints.

5.4.5 The mortar is to be pointed firmly into the joints and finished with a very slight recess (not more than 1mm deep).

5.4.6 Adhesive tape is to be carefully removed ensuring that no residue of adhesive is left on the stone.

5.4.7 Clean off any surplus or spread of mortar with a clean pointing trowel.

5.5 PROGRESS

5.5.1 Works are to be co-ordinated such that preparation is carried out to agreed areas and made available for inspection by the Architect/Employer's Representative. The Contractor is to give at least 48 hours' notice for inspection.

5.5.2 No taping or filling of joints is to proceed until preparation has been inspected and approved by CA.

5.5.3 Taping, filling and pointing is to be carried out in small areas such that all operations in one area can be completed within the working day with due notice being paid to any potential adverse weather conditions.

5.5.4 Work is to be kept clean from mortar spillage at all times.

5.5.5 When pointing commences only area which can be successfully completed during the normal working day are to be attempted giving due regard to the weather conditions/forecast.

5.5.6 Completed areas are to be protected until cured.

RS6 MASONRY REPAIRS

6.1 GENERAL / PREPARATION

6.1.1 Scope of Work

Schedule:
Generally, as description and schedule of works.

Records of Masonry to be Repaired:
Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, specific features, etc.

Identification of masonry units to be removed, replaced, or repaired:
Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced. Transcribe markings to drawings / photographs.

6.1.2 Site Inspection

Purpose:
To confirm type and extent of repair/renovation/ conservation work shown on drawings and described in survey reports and schedules of works. Parties involved:

- Contract Administrator
- Foreman mason; and
- Structural engineer

Timing:
To suit contractors programme of work.

Instructions issued during inspection:
Confirm in writing, with drawings and schedules as required, before commencing work.

6.1.3 Removal of Fittings / Fixtures

Items to be removed and reinstated on completion of repair work:
All items fixed to fabric indicated for reuse.

- Identification:
  Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe re-fixing instructions, where applicable.
- Treatment following removal:
  as schedule.
- Storage:
  Protect against damage, and store until required.
- Storage location:
  onsite.
- Reinstatement:
  Refit in original locations using original installation methods.

Items unsuitable or not required for reuse:
To be disposed of appropriately, recycling materials accordingly to reduce landfill. Disposal of materials to be in accordance with the Site Waste Management Plan (SWMP).

Masonry fabric and surfaces:
Do not damage during removal and replacement of fittings / fixtures.

6.1.4 Removal of Plant Growths from Masonry

Cleaning works as clauses:
Requirements RS9 — Masonry Cleaning: Removal of Organic Growth.

Plants, root systems and associated soil/debris: Carefully remove from joints, voids, and face work.

6.1.5 Removal of roots:
Where growths cannot be removed completely without disturbing masonry seek instructions.

6.1.6 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.

6.1.7 **Record of Work**

General:
Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings, and photographs, as necessary.

Specific records:

a. Annotated elevation drawings to identify the location of each individual repair.

b. Photographs of damaged areas prior to removal of any material.

c. Sketches and drawings for each unique item to be replaced, fully dimensioned.

d. Photographs of each repair area following removal of the material.

e. Photographs of the finished repair.

All information is to be cross referenced and fully annotated.

6.1.8 **Structural Stability**

General:
Maintain stability of masonry. Report defects, including signs of movement, that are exposed or become apparent during the removal of masonry units.

Disturbance to Retained Masonry
Retained masonry in the vicinity of repair works: Disturb as little as possible.

Existing retained masonry: Do not cut or adjust to accommodate new or reused units.

Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.

6.2 WORKMANSHIP

6.2.1 All work shall comply with the general recommendations of BS 5390 part 5 — Work on Site.

NOTE: Masonry repairs are to be undertaken only by an approved stone mason who is a member of The Heritage Contractors Section of the Stone Federation. None registered companies or unqualified personnel will not be permitted to work on site. Contractors MUST provide references and case studies from projects undertaken within the last 3 years.

6.2.2 **Protection of Masonry Units and Masonry**

Masonry Units:
Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points where provided.

Masonry
Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar / grout splashes and other staining and marking on face work. Protect using suitable non-staining slats, boards, tarpaulins, etc. Remove protection on completion of the work.

6.3 INSPECTION AND DRAWINGS

6.3.1 Access
In any project involving masonry repairs the tender drawings will have been prepared from visual inspection only, usually without the benefit of access scaffold. *The Contractor is to allow in his/her programme a period of 2 weeks for confirmation and*

appraisal of the scope of the works to each area.

The Contractor is encouraged to be represented during the inspection in order that he may contribute to any discussion regarding alternative methods of repair.

6.3.2 Notice
The Contractor is to give a minimum of 48 hours' notice to the Architect of the completion of the access scaffold to each area.

6.3.3 Confirmation
Confirmation of the scope of the work will be the issue of revised drawings and confirmed by an Architects Instruction following completion of the inspection from the access scaffold.

6.3.4 Scaffold
The Contractor shall ensure that all access scaffold alterations are complete and in accordance with the specification and that handover certificates have been issued before inviting inspection. Inspection will not be carried out if the scaffold is not in accordance with the specification.

6.3.5 Drawings
In most cases all working drawings will be provided by the Architect. Where fabrication drawings are required to be prepared by the Contractor for specialist areas the Contractor shall submit duplicate copies of the drawings at least two weeks before confirmation of the order for the stonework is required. No cutting of the stonework shall commence until the drawings have been approved in writing by the Architect.

6.3.6 Programme
The Contractor shall provide a programme of work based on the tender drawings before commencement of work on site. This programme shall indicate separately the erection/alteration(s) sequence for access scaffold inspection period, order period and works on site for reach area of work.

6.4 MATERIALS

6.4.1 Dowels and Cramps
All dowels and cramps are to be as manufactured by Ancon Clarke Ltd., Olive Grove Road, Sheffield. S2 3GB (or equal approved) and are to be manufactured in austenitic stainless steel to BS 1449-2:1983. Typical details for cramping are contained in the appendix to the specification.

Bronze cramps may also be used subject to prior written approval.

6.4.2 Water
Water for the works shall be clean and fresh without pollutants. Where existing water supply is available within the building this may only be used with the Employers permission. In other cases, a lockable standpipe shall be erected to the approval of the local water authority.

6.4.3 Mortar
Hydraulic lime mortar as specification clause: RS4 — Hydraulic Lime Mortar.

6.5 PROTECTION, STORAGE AND CLEANING

Protection of Work Area
Where large areas of masonry repairs are to be undertaken the scaffold is to be fully protected using a translucent non-combustible sheet such as Monarflex fixed to the outside of the scaffold.

6.5.1 Protection of the Fabric
Any existing windows are to be protected with ply or particle board in the areas adjacent to any area of work. Other features identified on the drawings are to be protected from damage.

Where scaffold is erected internally or where scaffolding penetrates through into the building internal fittings shall be adequately protected to protect the historic fabric from damage.

6.5.2 Storage
Stone should be stored in stacks on battens protected from moisture and freezing. Adequate care is to be taken to ensure that no damage occurs to the stone during storage or handling.

6.5.3 Lifting
The Contractor shall provide adequate lifting gear to unload and handle stones into position.

6.5.4 Storage on Scaffolding
Only stone for immediate use shall be stored on the scaffold.

6.5.5 Protection of Finished Work
Cover arrises, moulds, carving and other finished work to protect from accidental damage. Protection is to be maintained until completion of all work in that vicinity.

6.5.6 Cleaning of Work
Keep facework clean and free from staining at all times.

Clean off and rub down all stonework as scaffold is taken down.

6.6 DISMANTLING / REBUILDING

6.6.1 Masonry units to be reused:
Remove carefully and in one piece.

- Treatment:
  Clean off old mortar, organic growths, and dirt, and leave units in a suitable condition for rebuilding.

- Identification:
  Mark each unit clearly and indelibly on a concealed face, indicating its original position in the construction. Transcribe markings to drawings / photographs.

6.6.2 Rebuilding:
Replacement materials: as indicated in specification and drawings.

6.6.3 Mortar:
as section RS4 — Hydraulic Lime Mortar

6.6.4 Mix:
as section RS4 — Hydraulic Lime Mortar

6.6.5 Sand / Source Type:
as section RS4 — Hydraulic Lime Mortar

6.6.6 Fixings:
Cramps and dowels as clause as section RS5 — Masonry Repairs

6.6.7 Rebuilding:
To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work / backing masonry, as appropriate.

6.6.8 Joint Surfaces:
Dampen, as necessary, to control suction.

6.6.9 Laying masonry units:
On a full bed of mortar; perpend joints filled.

6.6.10 Exposed faces:
Remove mortar and grout splashes immediately.

6.6.11 Joints:
to match existing.

6.7 LAYING OF STONE

6.7.1 Natural Bed
New stonework shall be prepared such that the natural bed is:

1. Horizontal for plain walling works.

2. Vertical and at right angles to wall face for cornices and other projecting stones.

3. Horizontal in quoin stones or end stones. These shall be specially selected to ensure that they are compact non-laminated stones.

Further bedding details are contained in the BRE publications for the relevant type of stone. These are summarised in diagrammatic form in the appendices.

6.7.2 Bedding

All stones shall be laid on a full and even bed of hydraulic lime mortar as specification clause: RS4 — Hydraulic Lime Mortar.

6.7.3 Joints

Horizontal and vertical joints are to match the existing joint size unless instructed differently by the Architect.

6.7.4 Face

Stones are to be placed such that their face is flush with the plane of the original stonework. Where new stone is being inserted adjacent to old worn surfaces the new stone shall be set to the face of the nearest unworn surface.

RS7 BRICK REPAIRS

7.1 MATERIALS

7.1.1 Bricks shall match the existing in size, texture, bond and colour. Samples shall be provided by the Contractor for approval, and no final work shall be commenced on the repairs until the sample(s) have been approved in writing.

7.1.2 Bricks shall be free from the presence of fungal attack, visible salts, paint, lime wash or other substances.

7.1.3 Water
Water for the works shall be clean and fresh without pollutants. Where existing water supply is available within the building this may only be used with the Employers permission. In other cases, a lockable standpipe is to be erected to the approval of the Local Water Authority.

7.1.4 Mortar
Shall be in accordance with specification as instructed, or as referred to in the specification.

7.2 INSPECTION

7.2.1 The Contractor should note that the documentation has been prepared based on visual inspection from ground level or from easily accessible parts, without the benefit of access scaffold. Further inspection will be required on completion of the access scaffold, and the Contractor is allowed a period of 1 week for inspection and confirmation of the scope of the work in his programme.

7.2.2 The Contractor is encouraged to be represented during the inspection in order that he may contribute to any discussion regarding alternative methods of repair.

7.2.3 Notice
The Contractor is to give 48 hours' notice to the Architect of the completion of the access scaffold to each area.

7.2.4 Confirmation
Confirmation of the scope of the work will be the issue of revised drawings and confirmed by an Architects Instruction following completion of the inspection from the access scaffold.

7.2.5 Scaffold
The Contractor shall ensure that all access scaffold is complete and in accordance with the specification and that handover certificates have been issued before inviting inspection. Inspection will not be carried out if the scaffold is not in accordance with the specification.

7.2.6 Programme
The Contractor shall provide a programme of work based on the Architects drawings before commencement of work on site. This programme shall indicate separately the erection sequence for access scaffold, inspection period, order period and works on site for each area of work.

7.3 PROTECT, STORAGE AND CLEANING

7.3.1 Protection of Work Area
Where large areas of masonry repairs are to be undertaken the scaffold is to be fully protected using a translucent non-combustible sheet such as Monarflex fixed to the outside of the scaffold.

7.3.2 Protection of the Fabric
Any existing windows are to be protected with ply or particle board, in the areas adjacent to any area of work. Other features identified on the drawings are to be protected from damage.

Where scaffold is erected internally or where scaffolding penetrates through into the building internal fittings shall be adequately protected.

7.3.3 Storage
Bricks should be stored in stacks on battens protected from moisture and freezing. Adequate care is to be taken to ensure that no damage occurs to the bricks during storage or handling.

7.3.4 Storage on Scaffolding
Only bricks for immediate use shall be stored on the scaffold.

7.3.5 Protection of Finished Work
Protect all work from the weather and to ensure satisfactory curing of the mortar. Protection is to be maintained until completion of all work in that vicinity.

7.3.6 Cleaning of Work
Keep face work clean and free from staining at all times.

Clean off and rub down all brickwork as scaffold is taken down.

If acid is used for cleaning down fully protect all windows and other areas liable to damage (e.g. paintwork etc.) Acid shall not be permitted if lime mortar has been used for pointing.

7.4 CUTTING OUT OF DEFECTIVE BRICKWORK

7.4.1 The areas to be cut out shall be marked on site and approved/confirmed by the Architect prior to commencement of cutting out.

7.4.2 The brickwork shall be carefully cut out with chisels taking extreme care not to damage the arises of adjoining brickwork which may be being retained.

7.4.3 Any damage to adjoining areas will be made good at the contractor's expense.

7.4.4 The area is to be cleared of any mortar, debris etc and any defect in the backing masonry is to be reported to the Architect.

7.4.5 Where large areas of brick or block are to be removed the opening is to be propped with timber props ensuring that no damage is caused to adjoining brickwork.

7.4.6 Under no circumstances will the use of mechanical tools be permitted (disc cutters etc.)

7.4.7 There are power tools that use oscillating blades (Fein saw type) to rake out fine joints; care must be taken with these, especially if the brick is softer than the mortar, as the blade can slide off the mortar and cut into the brick.

7.5 INSERTING NEW BRICKWORK

7.5.1 The recess is to be thoroughly cleaned out and the adjoining brickwork is to be moistened to prevent the mortar "snatching".

7.5.2 New bricks or blocks are to be bedded on a bed (and backing where solid walls are involved) of 1:1:6 or 1:2:9 lime: sand: mortar as specified on the drawings. The mortar is to be prepared as described in the specification.

7.5.3 New brickwork is to be installed flush with the face of the building and ensuring that the bed joints and perpend joints are maintained consistent with the existing bricks/blocks.

7.5.4 The mortar is to be kept back 25mm from the face to facilitate later pointing.

7.5.5 Where brickwork is being inserted into worn areas of brickwork the new brick is to be set such that the face is in the line of the original face of the brickwork.

7.5.6 Where individual bricks are being replaced ties are not necessary. Where larger areas of brickwork or terracotta blocks are to be removed then ties will be required to be located at centres as follows:

a) 900 mm centres horizontally and 450mm centres vertically with rows staggered.

b) 225 centres vertically within 300mm of any opening.

At closer centres if specified by the Structural Engineer or indicated on the drawings.

RS8 POINTING OF BRICKWORK

8.1 GENERAL

8.1.1 The Contractor's attention is drawn to the fact that in some cases the joints between bricks are extremely fine and will demand a great deal of care and attention on site to the preparation, filling and pointing.

8.1.2 Pointing should commence from the top of the building and work down when undertaking fabric repair works.

8.2 SAMPLE PANELS

8.2.1 The contractor is to allow for carrying out two test panels each approximately 1 metre square under the direction of the Architect, using the methods described below. Work to the rest of the brickwork should not commence until the test panel has been approved by the Architect. The location of the test panels is to be agreed with the Architect prior to commencement.

8.2.2 The contractor is to allow for several sample mixes using different coloured fine aggregate to obtain a satisfactory colour for the pointing.

8.3 PREPARATION

8.3.1 All joints are to be raked out to a depth of 25mm using a fine-toothed saw blade or hooked knife. Extreme care is to be taken to avoid damage to the arris of the brick. Under no circumstances shall chisel and bolsters be used.

8.3.2 Under no circumstances will the use of mechanical tools be permitted (disc cutters etc.)

8.3.3 There are power tools that use oscillating blades (Fein saw type) to rake out fine joints; care must be taken with these, especially if the brick is softer than the mortar, as the blade can slide off the mortar and cut into the brick.

8.3.4 Joints are to be flushed out using clean water until the water runs clear. Where very fine joints are encountered a large hypodermic syringe shall be used to flush the joints.

8.4 FILLING AND POINTING

8.4.1 Mortar is to be as specified in accordance with the mortar specification.

8.4.2 The mortar is to be introduced into damp joints and compressed with a purpose made pointing iron/key of approximately 30mm diameter giving a shallow "bucket handle" joint. Mortar is to be thoroughly compacted into the joints.

8.4.3 Care is to be taken to eliminate lines of mortar occurring on joint intersections, mortar should flow visually from perpend to bed joints.

8.4.4 Clean off any surplus or spread of mortar with a clean pointing trowel.

8.4.5 The joint is to be lightly brushed as mortar is achieving its first set to remove the mechanical smoothness left by the pointing iron.

8.5 PROGRESS

8.5.1 The works are to be co-ordinated such that preparation is carried out to agreed areas and made available for inspection by the Architect/Employer's Representative. The Contractor is to give at least 48 hours' notice for inspection.

8.5.2 No filling of joints is to proceed until preparation has been inspected and approved by Architect.

8.5.3 Filling and pointing is to be carried out in small areas such that all operations in one area can be completed within the working day with due notice being paid to any potential adverse weather conditions.

The work is to be kept clean from mortar spillage at all times.

8.5.4 When pointing commences only area which can be successfully completed during the normal working day are to be attempted giving due regard to the weather conditions/forecast.

8.5.5 Completed areas are to be protected until cured.

8.6 CLEANING

8.6.1 Clean down all areas on completion using clean water and bristle brushes only.

8.6.2 Acid cleaners should not be used when lime mortar is present.

RS9 MASONRY CLEANING: REMOVAL OF ORGANIC GROWTH

9.1 MATERIALS

9.1.1 Biocide

The biocide is to be Epicuro Anti-Algae as manufactured by Epicuro Protective Materials, Cardinal House, 39/40 Albemarle Street, London, W1S 4TE.

Where alternative proprietary biocides are proposed they shall be based on a quaternary ammonium compound which is to be subject to the Architects approval.

The biocide should not contain calcium chloride, which will cause a build-up of soluble salts. Where there is any possibility of run off onto limestones then the biocide should not contain zinc or magnesium silicofluoride. Use only biocides with a current Health and Safety Executive number and approved by them for the purpose intended and shall comply with all current pesticide legislation.

Confirmation of this is to be forwarded to the architect prior to commencement of the works.

9.1.2 Water

Water for the works shall be clean and fresh without pollutants. Where existing water supply is available within the building this may only be used with the Employers permission. In other cases, a lockable standpipe shall be erected to the approval of the local water authority.

9.2 EQUIPMENT

1. Non-ferrous soft wire brushes.
2. Knife blades.
3. Pneumatic garden spray with adjustable nozzle.
4. Rubber gloves.
5. Safety mask.
6. Safety goggles.

9.3 PROTECTION

9.3.1 Protect all flowerbeds, landscaped areas etc., with polythene sheeting prior to commencement.

9.3.2 Do not spray near unprotected personnel and animals.

9.3.3 Ensure that pollution of waterways, drainage etc. does not occur as a result of treatment.

9.4 HEALTH AND SAFETY

9.4.1 Biocide should be one approved by the HSE Pesticide Registration Division.

9.4.2 The Contractor shall be responsible for ensuring that all products used, and all procedures adopted comply in full with current Health and Safety requirements.

9.4.3 Contractor shall ensure all recommended Personal Protection Equipment be worn by his operatives.

9.4.4 Ensure that all operations carried out in such a way that they do not represent a risk to health and safety of the general public or other operatives on site. Include for all temporary protection and carrying out work "out of hours" to minimise risks.

9.5 STORAGE

9.5.1 Ensure all materials are stored in sealed containers clearly marked with their contents. Undiluted biocides should only be stored in the manufacturer's original containers.

9.5.2 Biocides should only be diluted in such quantities as can be used during the working day. Diluted biocides should not be stored overnight, but any surplus material at the end of the working day should be disposed of to the satisfaction of the Local Authority.

9.5.3 Any biocides stored on site shall be kept in securely locked areas with toxic hazard sign.

9.6 REMOVAL OF VEGETATION FROM MASONRY

9.6.1 General

Prior to commencement of cleaning works, all vegetation growing from masonry joints, open beds, voids, cracks and other defects within the masonry shall be carefully inspected and recorded.

The Contractor shall satisfy themselves that removal of vegetation will not adversely affect the stability of the masonry. Where extensive root systems are encountered, or where removal may result in disturbance to the fabric, the Architect shall be informed and instructions sought prior to proceeding.

9.6.2 Removal of Mosses, Algae and Lichens

Following treatment with the approved biocide and the appropriate dwell period recommended by the manufacturer, organic growths shall be removed using soft natural bristle brushes and clean water.

The use of metal scrapers, abrasive cleaning methods, high-pressure water washing or any other method liable to damage the masonry surface will not be permitted.

9.6.3 Removal of Herbaceous Growth

Grass, weeds and other herbaceous vegetation shall be carefully removed by hand.

All roots, accumulated soil and organic debris shall be removed from joints and crevices where this can be achieved without damage to the masonry fabric.

9.6.4 Removal of Climbers and Woody Vegetation

Climbing plants, ivy and other woody growth shall be cut back and severed at the base of the stem.

The Contractor shall not forcibly remove growth attached to the masonry where damage to the substrate may occur. Following severance, vegetation shall be allowed to die back before careful removal.

Where instructed, approved herbicide shall be applied directly to freshly cut stems in accordance with the manufacturer's recommendations.

9.6.5 Root Systems within Masonry

Roots embedded within mortar joints, cracks, cavities and other openings shall be carefully removed using hand tools only.

Where root systems cannot be removed without disturbing the masonry, the Contractor shall cease work and seek further instruction from the Architect.

No mechanical cutting, grinding or pulling methods shall be employed.

9.6.6 Making Good

Following removal of vegetation, all joints and voids shall be thoroughly cleaned of residual roots, soil and organic matter.

Areas of defective mortar exposed during the works shall be identified and reported to the Architect.

Subsequent masonry repairs and repointing shall be undertaken in accordance with Specification Sections

RS4 — Hydraulic Lime Mortar
RS5 — Pointing of Ashlar
RS6 — Masonry Repairs
RS8 — Pointing of Brickwork

9.6.7 Disposal

All vegetation, roots, soil and debris arising from the works shall be removed from site and disposed of in accordance with current environmental regulations.

The completed work shall be left clean and free from visible organic growth.

RS10 ROOF REPAIRS: GENERAL REQUIREMENTS

10.1 EXISTING ROOF COVERINGS

10.1.1 Existing roof coverings shall be removed in sections small enough to ensure that adequate temporary provision can be made to prevent water ingress into the building / structure. Further sections can only be removed once the previous section has been made watertight unless suitable temporary protection measures are employed.

10.1.2 Existing coverings are to be carefully removed to ensure the maximum amount of material capable of being recycled for reused.

10.1.3 Removal of existing asphalt ,etc. shall be carried out ensuring the minimum of disturbance to the roof voids.

10.1.4 On removal of the asphalt roof covering allow for inspection of substrate by the architect or appointed Specialist.

10.1.5 Allow a credit for the scrap value of any lead to be removed from the site.

10.1.6 No salvaged materials are to be stored on the scaffold or on the existing roof. Materials reclaimed for re-use are to be stored at ground level and protected from damage and theft.

10.2 PROGRAMME

10.2.1 A detailed programme for the roof works shall be submitted to the Architect prior to any works being undertaken.

10.3 INSPECTION

10.3.1 The contractor is to allow a period for inspection of the existing roof structure/decking after the removal of the roof coverings. A period of 7 days shall be allowed for each roof area for inspection and confirmation of instruction/repairs.

10.3.2 The contractor is to give the Architect 2 working days' notice prior to the roof structure being ready for inspection.

10.4 HEALTH AND SAFETY

10.4.1 The contractor shall ensure that all necessary precautions are taken to ensure the safety of all operatives, site visitors etc at all times.

10.5 REMOVAL OF EXISTING COVERINGS

10.5.1 Carefully remove existing coverings to agreed workable area that can be recovered within the same day.

10.5.2 Ensure all roof voids are kept clear of inflammable material and debris and that they are vacuumed clean of all dust on completion of the works.

10.6 STORAGE OF MATERIALS

10.6.1 Only limited use of scaffold or existing roof structure or roofs shall be permitted for the storage of materials.

10.6.2 Materials should generally be stored at ground level in secure areas.

10.6.3 Only sufficient materials for the operatives to use in a working day should be brought to roof level.

10.6.4 Where materials are stored at roof level, they should be distributed evenly to ensure existing structure or scaffold is not overloaded.

10.6.5 Materials should not be stored on completed roof areas.

10.7 LEADWORK

10.7.1 All leadworks shall be in accordance with the Lead Sheet Association recommendations and shall be carried out by an approved contractor who is a member of the Lead Contractors Association.

10.7.2 Cast lead whether machine cast or cast by hand, shall not be used. All lead shall be milled to BS 1178.

10.7.3 All leadworks shall be undertaken by trained operatives employed by a contractor who is a member of Lead Contractors Association.

10.7.4 All workmanship shall be in accordance with the Lead Sheet Associations recommendations as contained in the Lead Sheet Manual - a guide to good building practice Volume 1 to 3 and current updates.

10.7.5 Working Practices shall comply with the Health and Safety Executive COP2 "Control of lead at work - approved code of practice".

10.7.6 All work shall comply with BS 5250 "Code of Practice for control of construction in buildings".

10.8 WORKMANSHIP

10.8.1 All work shall be carried out in accordance with BS 5534 part 1 and 2 "Code of Practice for slating and tiling" and BS 8000: Part 6 "Code of Practice for Workmanship and Building Sites — slating and tiling".

10.9 MATERIALS

10.9.1 Ensure all materials comply in full with the relevant British Standards as listed below:

BS 747 — Specification for Roofing Felts.

BS 1178 — Specification for Milled Lead Sheet for buildings.

BS 1202: Part 2 and 3 — Specification for Nails.

BS 4978 — Specification of softwood for structural use.

RS11 ROOF REPAIRS — NATURAL SLATING

11.1 MATERIALS

11.1.1 General

Where areas of the roof are to have slates and battens removed, allow for 25% new slates (including ridge) to match the existing in size / colour and texture should be allowed for.

Allow a credit for the sale of second-hand slates removed from site.

11.1.2 Roofing Felt

Untearable breathable felt shall be to BS 747.

11.1.3 Roof Slating

(where necessary and identified)

- Base:
  Existing timber roof structure with battens to main roof slopes, or masonry and battens to areas of tile hanging. Cementitious sarking board to station platform roof.

- Pitch:
  Existing / to match existing.

- Underlay:
  Dupont Tyvek Supro breathable membrane.

- Centres:
  Coinciding with rafters / trusses to match existing.

- Battens:
  50 x 32 mm

- Counter Battens:
  25 x 50 mm

  Fix using stainless steel 'helifix' 75mm or screw to give a minimum 25mm penetration into the top of the underlying rafter and also to reduce imposed vibration on the existing structure whilst reducing the risk internal finishes becoming defective due to impact.

- Slates:
  To BS 680: Part 2.

- Supplier and reference:
  Samples to be supplied to match existing

- Fixing:
  As above, minimum end lap 100 mm or to match existing.

- Lead flashings/soakers:
  As clause RS12 — Roof Repairs: Leadwork / Coverings . Flashings / Gutters

- Tilt fillet:
  Provide continuous hardwood tilt fillet across the length, including eaves protection tray.

11.1.4 Nails

Nails shall comply with BS 1202 Part 2 and 3.

Nails for fixing battens should penetrate the rafters by a minimum of 40mm.

Nails for fixing tiles should be hung on battens to a minimum depth of 15mm but should not penetrate the felt.

11.1.5 Timber

All timbers used for both structural, secondary and detail components with the roof construction shall be pressure impregnated preservative treated softwood.

All timbers shall comply with the recommendations of BS 4978 "Specification for softwood grading for structural use" and BS 5534.

All treatment shall be in accordance with the recommendations of the British Wood Preserving Association.

11.1.6 Mortar

Mortar for bedding ridge tiles etc. is to be 1:1:6 mortar. The sand aggregate is to be

selected to give a pigmentation similar to the ridge tiles. Samples are to be approved.

11.2 WORKMANSHIP

11.2.1 All work shall comply with BS 5534 parts 1 and 2 code of practice for slating and tiling.

11.2.2 All workmanship shall comply with BS 8000 Part 6 Code of Practice for workmanship on building sites, slating and tiling.

11.2.3 All work shall be undertaken by suitably qualified and experienced roofers.

11.3 EXISTING ROOF COVERINGS

11.3.1 Existing roof coverings shall be removed in sections small enough to ensure that adequate temporary provision can be made to prevent water ingress into the building/structure. Further sections can only be removed once the previous section has been made watertight.

11.3.2 Existing coverings are to be carefully removed to ensure the maximum amount of material capable of being reused is retained, and to minimise any disturbance to the structure below.

11.3.3 On removal of the roof covering allow for inspection of the roof timbers by the architect or appointed Timber Treatment Specialist. Any timbers found to be rotten are to be replaced with new treated timber of similar section unless otherwise directed.

11.3.4 Allow a credit for the scrap value of any lead to be removed from the site.

11.3.5 Carefully sort all slates removed from the roof and retain all sound slates in secure storage for inspection/approval by the CA.

11.4 FIXING

11.4.1 Underlay

All underlay shall comply with BS 5545 Part 1 1990 and BS 747 where the underlay is not full supported it shall be breathable geotextile felt to BS 744 and BS 5534.

For an unsupported installation with a roof pitch between 15 and 30 degrees the minimum horizontal lap should be 150mm.

Where the underlay is supported, this may be reduced to 100mm.

Ensure that the underlay does not tear or rip and that no gaps occur at the laps. Any torn underlay should be replaced before tiling commences.

Underlay shall be fixed using 3.35mm diameter 20mm long extra-large felt nails manufactured in copper or galvanised steel.

The underlay shall be fixed in such a manner that it cannot touch the underside of the tiles even if subjected to wind pressure from below.

11.4.2 Battens

All battens shall be free from knots and decay. Where battens are cut the cut ends shall be treated with a brush applied compatible preservative. Size of battens should be as described in BS 5534 "Code of Practice for Slating and Tiling" unless larger dimensions are specified. For buildings with a ridge height less than 7.2mm above ground level battens shall be nailed using 3.35mm diameter 65mm length smooth round or ring shank galvanised steel nails to BS 5534.

At hips and valleys battens should be treated to allow a board 225mm wide to be installed to permit fixing of cut tiles.

Battens shall be set out to ensure that battens are at 90 deg. to the direction of water runoff.

Battens shall be set out such that joints do not occur on the same rafter within 4 rows of battens and that within the zone joints do not occur in adjoining rafters.

All joints shall be centred over rafters and fully supported by and nailed to the rafter.

All structure shall be checked for line prior to commencing felting and battening and any discrepancies reported to the Architect.

All existing and new roof structures shall be checked for line prior to commencing felting and battening and any discrepancies reported to the CA.

11.4.3 Slate Fixing

Ensure that stripped eaves sections are at the correct level in relationship to gable walls and parapet gutters. Provide all necessary support and fixing battens as recommended by slate supplier or component manufacturer.

Fix slate roofing to make the whole roof sound and weathertight at the earliest opportunity.

Lay with an even overall appearance, with tails of slates aligned. Use slates of consistent thickness in any one course, laid with thicker end as tail. Fix edge slates and fittings securely to neat, true lines.

Use extra wide slates at ends of courses to maintain bond and ensure that cut slates are as large as possible. Do not use half slates.

Centre fix each slate with two copper nails to BS 1202: Part 2, 30 mm long x 2.8 mm through countersunk holes 20-25 mm from the side edges. Fix slates wider than width and a third with three nails.

All slates are to be sorted prior to holing and fixing. All slates to be used on any course shall be of the same thickness. Thicker slates should be used at the eaves courses.

11.4.4 Holing

Slates to be holed from the underside and positioned so that the thinner end of the slate is at the top when fixed.

Holing with a spiked hammer or pick shall only be used for fixing of details during slating.

Each slate should be holed twice within a range of 20-25mm from each side.

For centre nailed slates holing gauge - batten gauge + lap + 8mm - 15mm. For head nailing holes are to be 25mm from the top of the slate. Unless specified elsewhere all slates shall be centre nailed.

No slate shall be cut to less than 150mm width. Where details would require smaller cuts 'slate and a half' should be used.

Lowest course slates have an under eaves course which should be inverted, and head nailed. Both under eaves course and first full course of slate should overhang the gutter by 50mm and should align to form a neat straight edge.

Remaining courses should be centre nailed so that the tails of all courses are parallel and are finished in clean straight lines.

All slates shall be laid half bond.

Verges should be finished with alternating slates and slate-and-a-half courses.

Pointing for verges shall be up in NHL 3.5 Hydraulic Lime Mortar.

Install additional piece of underlay 600mm wide overlapping the normal underlay and over the hip rafter.

11.5 LIGHTENING PROTECTION

11.5.1 Existing Lightening protection to be temporarily removed if required and reinstated like-for-like upon completion of the works by approved specialist contractor.

11.6 VENTILATION

11.6.1 Standard slate ventilator to slate slope at eaves level — to be 4no. rows from the first row and below Roof Lantern.

- Product:
  Just Lead Standard Roof Vent
  — 10000mm²

RS12 ROOF REPAIRS: LEADWORK / COVERINGS / FLASHINGS / GUTTERS

THIS SHOULD BE READ IN CONJUNCTION WITH SEPARATE NBS SECTION H71 — ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AT THE EARLIEST OPPORTUNITY.

12.1 REQUIREMENTS

12.1.1 All leadworks shall be undertaken by trained operatives employed by a contractor who is a member of Lead Contractors Association (LSA).

12.1.2 All workmanship shall be in accordance with the Lead Sheet Associations recommendations as contained in the Lead Sheet Manual - a guide to good building practice Volume 1 to 3 and current updates.

12.1.3 Working Practices shall comply with the Health and Safety Executive COP2 "Control of lead at work - approved code of practice".

12.1.4 All work shall comply with BS 5250 "Code of Practice for control of construction in buildings".

12.2 MATERIALS

12.2.1 Lead Sheet
Lead sheet shall be milled lead sheet to BS 1178 unless stated otherwise. The minimum height of lead shall not be less than that recommended in BS 6915 "Specification for design and construction of fully supported lead sheet roofs and wall coverings".

12.2.2 Underlay
Building paper to BS 1521, Class A.

12.2.3 Plywood
Shall only be used where specified and shall be in accordance with BS 1210. Plywood shall be WBP grade, min. 18mm thick.

12.2.4 Copper Nails
Copper nails for fixing lead shall be in accordance with BS 1202-2.

12.2.5 Wood Screws
Shall be in accordance with BS 1210.

12.2.6 Timber
For gutter linings, roof decks etc shall be 100x25mm straight edged boarding with a 2mm gap between adjoining boards or min 18mm thick WBP plywood.

Timber shall be vacuum pressure impregnated with preservative in accordance with the British Wood Preserving and Damp Proofing Associations Manual and as British Wood Preserving Association Commodity Specification C8.

Timbers shall be planed, free from wane, pitch pockets decay and insect attack.

Moisture content shall not be more than 22% at the time of covering.

12.3 WORKMANSHIP

12.3.1 General
Cut, joint and dress lead neatly and consistently to provide fully waterproof coverings and flashings free from ripples kinks, buckling and cracks.

Comply with BS 6915 and current good practice as described in the latest edition of "The Lead Sheet Manual" published by the Lead Sheet Association unless specifically instructed in writing.

Do not use screws or other sharp instruments to mark out lead. Use solder only where specified and not in any other location.

Ensure that finished leadwork is fully supported.

12.3.2 Lead Welding
In situ lead welding is permitted where specified subject to completion of a "hot work permit" form and compliance with its

requirements. Lead chutes / sumps will require onsite welding.

12.3.3 Layout
Agree setting out of joints drips and laps with the Architect prior to commencing work.

12.3.4 Control Samples
Complete an agreed area of finished work and obtain approval of appearance and detail from the Architect before proceeding with the remainder of the works. The sample area(s) shall be selected so as to reflect the problems likely to be encountered on the majority of the work.

12.3.5 Existing Lead to Be Retained
Thoroughly clean by washing with a detergent solution and using a stiff bristle brush. Rinse off thoroughly. In areas of stubborn soiling a 5% nitric acid 95% water solution may be used provided that it can be established that the runoff does not have an adverse effect on other materials. Thorough rinsing with clean water should be undertaken on completion.

12.3.6 Existing Lead to Be Removed
Lead specified to be stripped and shall become the property of the contractor.

12.3.7 Replacement of Existing Lead
In areas receiving run off from adjoining unprotected roofs (e.g. gutters etc) then the work must be carried out in small sections at a time to reduce the risk of weather damage. The contractor shall check the weather forecast before commencing removal of lead and shall only remove an area small enough to permit its reinstatement within the working day.

12.3.8 Existing Bases
In areas where existing substrate is to be recovered in lead, remove all existing leadwork and brush clean of all debris, dust etc. Inspect all timbers for condition and level. Replace as necessary any rotten boards with timber to match existing. Ensure that where boarding is straight edged the gaps are cleaned of dust to permit ventilation. Where boarding is tongued and grooved seek instruction prior to drilling ventilation holes in an agreed pattern.

Ensure that all boards are securely fixed. Punch in any protruding fastenings and plane or sand as necessary to achieve an even surface.

12.3.9 All Bases
All bases shall be dry, free from dust debris grease and other deleterious material with all nails punched home and free from all protrusions, unevenness etc prior to laying lead.

Laying of underlay and lead will be taken as a joint acceptance of the Main Contractor and sub-contractor of the suitability of the base.

Substrates or decking for lead coverings must provide a near continuous smooth surface that is strong enough to support the lead (and any superimposed loadings) and hold the fixings firmly and permanently.

12.4 FIXING AND JOINTING

12.4.1 Head Fixing of Lead Sheet
Unless specified elsewhere secure top edge of lead sheets with two rows of fixings 25mm and 50mm from the top edge of the sheet at 75mm centres to each row and evenly spaced and staggered.

12.4.2 Fixings
Fix lead sheet to timber substrates using copper clout nails to BS 1202-2 table 2 with annular ring, helical ring or serrated shank, length not less than 20mm, shank diameter not less than 3.35mm and head diameter not less than 8mm, or similar stainless steel (austenitic) clout nails with diameter not less than 2.65mm.

Where lead is to be fixed to concrete or masonry substrates use stainless steel screws to BS 1210 table 3, not less than 19mm in length and not less than 3.35mm diameter, with stainless steel washers and plastic plugs of length and diameter to suit the screws.

12.4.3 Clips

Clips shall generally be 50mm wide unless specified otherwise. Lead clips shall be cut from sheets of the same code thickness as the sheet being secured.

Each clip shall be secured with 2 fastenings not more than 50mm from the edge of the lead sheet. Clips shall be welted around edges of sheets and turned over 25mm.

12.4.4 Copper clips

Copper or tinned copper clips should not be less than 50mm wide and cut from copper sheet not less than 0.6mm thickness conforming to BS EN 1172.

12.4.5 Stainless steel clips

Clips should be fully annealed stainless-steel strip conforming to BSEN 10088 at least 50mm wide and not less than 0.375mm thickness. It may be terne coated if exposed to view.

12.4.6 Wood Cored Roll Joints

Timber core shall be 45x45 rounded timber tapering to a flat base 25mm wide. Ridge rolls may be larger and should be to the dimensions specified on the drawings. King Wood roll shall be 75x75 rounded timber tapering to a flat base.

Rolls shall be fixed to the base with stainless steel countersunk screws at not more than 300 centres.

Dress under cloak three quarters around the core and fix with nails at 150mm centres for a distance of one third the length of the panel starting from the head of the sheet.

Dress over cloak around core and extent onto main surface to form a 40mm splash lap.

12.4.7 Welted Joints

Form with a 50mm overlap, 25mm underlap and copper or stainless-steel clips at not more than 450mm centres.

Welt overlap and clips around underlap loosely turn over and lightly dress down.

12.4.8 Drips - Roofs up to 3-degree Pitch

Dress underlap into rebate along top edge of drip and fix with one row of nails at 50mm centres on centre line of rebate. Dress overlaps over drip and form a 40mm splash lap.

12.4.9 Drips - Roofs over 3-degree Pitch

Dress underlap up full height of drip upstand. Fix to lower-level base with two rows of nails 25mm and 50mm from face of drip and at 75mm centres to each row. Seal over nails with a soldered or lead welded dot.

Dress overlaps over drip and form a 75mm splash lap. Secure with lead clips lead welded to underlap with not less than one per bay.

12.4.10 Forming Details

Details may be made by bossing or lead weld except where specified. Lead welded seams must be neatly and consistently formed. Do not undercut or otherwise reduce the thickness of the sheets at the seams. Filler strips are to be of the same composition as the sheets being joined. Butt joints are to be formed to a thickness one third more than the sheets being joined. Lap joints are to be formed with 25mm laps and two loadings to the edge of the overlap.

Bossing must be carried out without thinning cutting or otherwise splitting the lead sheet.

12.4.11 Fixing into Joints

Currently rake out joint or neatly cut chase to depth of 25mm.

Dress lead into joint or chase and up back face. Fix into back face with stainless steel screws, washers, and plastic plugs at minimum 450 centres with a minimum number of 2 fixings per piece of lead.

Joint to be pointed as indicated on the drawings and as specification RS4 — Hydraulic Lime Mortar.

12.4.12 Finishing

As soon as practical apply a smear coating of patination oil evenly in one direction. Apply only in dry conditions.

Where run off will be onto visible surfaces apply patination oil immediately on completion of the section of work to avoid staining.

12.5 LEAD SHEET COVERINGS / FLASHINGS

12.5.1 WEATHERING CAPPING: STONE CORNICE

Substrate:
Existing stone cornice with recessed back gutter and sumps.

New solid wood rolls throughout — as per detail.

Preparation:
Remove all latents.

Underlay:
Not Applicable.

Type of lead:
Rolled to BS EN 12588.

Thickness:
Code 6 — refer to drawing series (37).

Pre-treatment:
Chalk emulsion to underside of lead as supplied by Rowan Technologies Ltd. Tel: 0161-748-3644, applied to manufacturers recommendations.

Joints in direction of fall:
New wood cored rolls with splash lap.

Spacing:
Regular — see drawing series (37).
675mm maximum spacing of joints with the fall. 2500mm maximum distance between drips.

Eaves detail:
See drawings.

Cross joints:
150 mm laps with lead clips.

Spacing:
Dependant of code of lead. Follow LSA recommendations.

Intermediate fixings:
Brass cup and screw with die-cast lead dome where required.

NOTE: intermediate fixings do not allow the lead to move.

Sump/catch pit:
Should be measured, folded, cut, and then welded. If the depth is less than 150mm, the length should be increased to avoid surcharging in storm conditions.

Drip height:
55mm minimum with 40mm splash lap.

12.5.2 PARAPET OVERFLOW CHUTE OUTLET:

Preparation:
Remove all latents.

Underlay:
Not applicable.

Type of lead:
Rolled to BS EN 12588.

Thickness:
Code 6 — refer to drawing series (37).

The finish on the outside of the wall should be flashed and lead welded.

The lead should be neatly dressed over existing lead hopper. Refer to drawing series (37).

12.5.3 COVER FLASHINGS:

Lead:
Code 5 in lengths not exceeding 1500 mm.

End to end joints:
Laps of not less than 100 mm.

Cover:
Overlap to upstand of not less than 75 mm.

Fixing:
Lead wedges into bed joint and clips to bottom edge at laps and 450 mm centres.

12.5.4 Sump leaf guard

Provide a stainless-steel fabricated leaf guard to sit recessed within gutter sump, flush with drip edge.

Lid should be perforated to the lid with 20mm gauge holes. Finger slots to either end to allow for lifting for routine maintenance, edges to be rounded with no sharp edges. Allow for neoprene / plastic caps to feet to avoid puncturing of leadwork.

Prior to order, manufacture and installation, the contractor should provide fabrication drawings to the CA for comment. No work shall commence until any such discrepancies have been resolved.

RS13 ASPHALT ROOF COVERING

THIS SHOULD BE READ IN CONJUNCTION WITH SECTION RS11 — ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AT THE EARLIEST OPPORTUNITY.

13.1 GENERAL

13.1.1 The structural decks should comply with Code of Practice BS 6229:2018. (Flat roofs with continuously supported coverings) and BBA certificate.

13.1.2 This proposal specification is valid for a period of 12 months from the above date of issue. In the event that the project is not completed during this period, contact should be made with IKO Technical Services Department prior to the commencement of the works.

13.1.3 **Permaphalt** should be installed by IKO approved roofing contractors in accordance with BS 8000:Part 4:1989, BS 8218:1998 and IKO installation instructions.

13.1.4 The laying temperature of Permaphalt should not exceed 230°C.

13.1.5 Angle fillets should be applied in 2no. coats after warming and cleaning interfaces and should measure not less than 40mm across the face.

13.1.6 Maintain full thickness of Permaphalt around external angles.

13.1.7 Gas torches shall not be permitted, except for drying substrates — HOT WORKS PERMIT TO BE APPLIED AND AUTHORISED FOR PRIOR TO USE.

13.1.8 Each coat of **Permaphalt** should be followed by the succeeding coat without undue delay, as contamination may result in inter-layer blistering.

13.1.9 As the works proceed, night joints should be provided to seal the edges of the new roofing and ensure no water enters the building or damages the newly installed system.

13.1.10 Sand rubbing should be carried out using a wooden float. Brushing the sand is not sufficient.

13.1.11 Surface protection should be applied as soon as practicable.

13.1.12 Adequate protection must be afforded the newly installed roofing system against damage caused by following trades. Failure to provide this protection may require additional works to be undertaken before any guarantee is issued for the works.

13.2 ROOFING SYSTEM

13.2.1 Portico Roof

Manufacturer:

IKO PLC
Prospect Quarry
Grangemill, Matlock
Derbyshire
DE4 4BW
Tel: 01257 256 888
Email: technical@ikogroup.co.uk

Product reference:
Permaphalt Roofing System
(Cold Roof)

Roof Pitch: unknown (to match existing)

Roof Exposure: Maintenance Traffic ONLY

To be read in conjunction with manufacturers recommendations.

13.3 MATERIALS

13.3.1 PERMAPHALT

Permaphalt is a polymer modified mastic asphalt roofing consisting of polymer modified bitumen and graded limestone aggregates.

Permaphalt is covered by BBA Certificate No 89/2299.

Nominal Block Weight: 20kg.

IKO Permaphalt Fire Performance Testing
IKO Permaphalt polymer modified mastic asphalt warm roof system has been tested by the BRE to CEN/TS 1187:2012 Test 4 External fire exposure to roofs.

The roof /roof covering in relation to its external fire performance is classified as BROOF(t4) in accordance with EN 13501-5: 2005 +A1:2009.

13.3.2 IKO BLACK SHEATHING FELT

IKO Sheathing Felt is a separating membrane for use beneath mastic asphalt roofing, consisting of jute fibre impregnated with bitumen.

Maximum Roll Weight: 17kg
Roll Size: 20m²

Product Code: 14260000

13.3.3 IKO SYSTEMS T-O VAPOUR CONTROL LAYER 12M

IKO Systems T-O Vapour Control Layer 12m is a torch applied SBS modified 165gsm polyester reinforced fire-retardant vapour control layer with 50-micron aluminium foil, with torch on release film to the underside and torchable top surface. Used beneath insulation to minimalise the risk of interstitial condensation in areas of high humidity. Product is covered by BBA Certificate No. 86/1640.

Roll Size: 12m x 1m
Roll Weight: 37Kg

Colour: sanded

Product Code: 62120000

NOTE:
Switch to the Self-Adhesive version of the IKO Vapour control layer with one metre of the plastic pipe.

13.3.4 IKO ENERTHERM PIR MG

IKO Enertherm PIR MG is a high-performance CFC/HCFC free rigid polyisocyanurate insulation board.

The board is rated as having a Zero Global Warming Potential and Zero Ozone Depletion.

Board Size	1200 x 1000mm (1.20m²)*
Thermal Conductivity (W/mK) *(Method BS EN 13165:2001)*	0.027
Compressive Strength (kPa) (Method BS 4370: Pt 1: 1988)	140
Water absorption (24 hours in water at 20ºC)	0.5%
Foam Density (kg/m³)	30
Facings	Mineral-coated glass tissue.
Fire Performance (DIN 4102-B2)	Self-extinguishing
Thicknesses	30mm — 140mm *

* 140mm thickness board is 1200 x 600mm (0.72m²) — Code 31012140

13.4 PREPARATION

13.4.1 Surfaces to receive the new waterproofing system should be clean, smooth and dry.

13.4.2 Remove all existing coverings to screed level, carefully examine the screed for any damage or decay and replace with suitable materials to match existing. Include the replacement of any damaged kerbs, gutters, expansion joints, outlets etc to ensure the satisfactory installation of the new waterproofing system. Provide and fix new upstands where existing heights are in adequate, or kerbs are missing.

13.4.3 A provisional cost allowance should be made for the replacement of defective areas of decking/upstands. The building must remain weatherproof at all times, the contractor must only remove areas of existing waterproofing that can be made watertight in the same day, including the provision of day joints.

13.4.4 Remove all existing waterproofing to details.

13.4.5 Temporarily remove or divert all roof mounted plant, pipe, cables, ductwork and equipment etc, and set aside to allow access for installation of waterproofing. Temporarily divert lightning conductor strips. (Any roof opening must be protected). The removal and replacement of plant, equipment and cables from the roof should be carried out in conjunction with the building occupier by competent and electrically qualified personnel.

13.4.6 Raise upstands, kerbs, plinths, door thresholds, kerb openings, pipe/service penetrations etc. to give a minimum upstand height of 150mm above the finished roof level. Make any additional requirements for access, as required by the client. Allowance to be made for the making good of interior decoration.

13.4.7 Chases should comply with BS8000 Pt 3 Clause 5.6.10 and BS 8218:1998 Clause 6.14. A 25mm x 25mm chase to be cut or formed into the brickwork or concrete upstand, at a minimum height of 150mm above the finished level of roofing. The position of a new chase must always be carefully considered to ensure the position of existing DPCs, and cavity trays is not compromised. The lower edge of the chase should be splayed in order to maintain the full thickness of asphalt at this point. Remove all dust and dirt from the chase, surfaces must be clean smooth and dry, and primed with **IKOpro High Bond Primer.**

13.4.8 Securely fix lead sleeve to substrate with independent apron flashing to pipe. Lead sleeve to be minimum Code 5 and give a minimum upstand height of 150mm, above the finished roof surface. Wire brush, apply light brush application of IKOpro High Bond Primer and allow to dry.

13.4.9 Prime all brick and cementitious upstands, slopes etc with IKOpro High Bond Primer and allow to dry. Ensure that primer is continued into any chases.

13.4.10 Install new **IKO Roof Outlets**, designed specifically for use with mastic asphalt roofing systems, fitted with clamping rings, securely fixed to the deck and correctly connected to existing down pipes. Wire brush, apply light brush application of IKOpro High Bond Primer and allow it to dry.

13.5 WATERPROOFING

13.5.1 Lay **Permaphalt** nominal 20mm thick in 2no. 10mm coats on **IKO Black Sheathing Felt** separating membrane loose laid with minimum 50mm side and end laps. The surface of the final coat to be rubbed with clean coarse sand mostly passing a 600-micron sieve and mostly retained on a 212-micron sieve.

13.6 DETAILS

13.6.1 Lay **Permaphalt** nominal 13mm thick in 2no. coats on primed brick or concrete upstands not exceeding 300mm high. Form 2no. coats to solid **Permaphalt** angle fillet at base.

13.6.2 Lay **Permaphalt** nominal 20mm thick in 3no. coats on primed brick or concrete upstands exceeding 300mm high. Form 2no. coats to solid **Permaphalt** angle fillet at base.

13.6.3 Lay **Permaphalt** nominal 20mm thick in 3no. coats on EML on **IKO Black Sheathing Felt** over all timber/plywood/aerated concrete surfaces. Also, any surface that causes excessive blowing. Form 2no. coats to solid **Permaphalt** angle fillet at base, form fair edge at top.

13.6.4 Dress **Permaphalt** into the chase provided and point as soon as possible with low shrinkage cement/sand mortar containing a suitable polymer admixture such as styrene butadiene rubber or acrylic.

13.6.5 Lay **Permaphalt** collar to primed pipe sleeve nominal 13mm thick in 2no. coats. Form 2no. coats to solid Permaphalt angle fillet at base. The **Permaphalt** collar should extend at least 150mm above finished roof level and the top edge protected by an independent apron flashing fixed to pipe.

13.6.6 Install lead flashings tucked into the 25mm deep chase, wedged at 450mm centres maximum, in lengths no greater than 1.5m, with 100mm overlaps. Chase should be pointed with **IKOpro Stickall Bituminous Mastic/Joint Sealant**. The lead flashing should dress down the face of the upstand 75mm and be fabricated from Code 4 milled lead sheet to BS EN 12588:1999 (weight 20.41 kg/m², thickness 1.8mm, blue colour code).

NOTE:
LEAD WORK TO BE INSTALLED IN ACCORDANCE WITH CURRENT LEAD SHEET ASSOCIATION GUIDELINES.

Joint sealant should be applied using a skeleton gun and consolidated into the chase with a tooling piece. It must be ensured that the sealant is finished neatly and in firm contact with the lead flashing and the faces of the chase.

PROTECT PERMAPHALT UPSTANDS IF PATINATION OIL IS USED ON THE LEAD FLASHING.

13.7 SURFACE PROTECTION

13.7.1 Apply White Solar Reflective Coating to all exposed **Permaphalt** strictly in accordance with the manufacturer's instructions. The solar reflective coating should comply with the requirements of BS8218:1998 5.17. (i.e. be free from materials deleterious to mastic asphalt, such as metallic pigments, non-compatible solvents or water-based emulsions).

13.7.2 Position roof mounted plant and equipment on 450mm x 450mm x 38mm paving slabs placed over **IKO ProtectoBoard** loose laid over **Permaphalt**. The plant bases should be placed centrally on an arrangement of the paving slabs, positioned to spread the loading as much as possible. The **IKO ProtectoBoard** must project at least 50mm beyond the perimeter of the paving slab arrangement. To minimise solar heat gain, the slabs and **IKO ProtectoBoard** should be painted with white solar reflective paint.

13.7.3 Alternatively, position roof mounted plant and equipment on a big-foot support system.

13.8 ADDITIONAL WORKS

13.8.1 On completion of the waterproofing, the following items should be attended to

- All outlets and drainage pipes should be checked on completion to ensure that they are free flowing.

13.9 GUARANTEE

13.9.1 Guarantee Period: **20 Years**

IKO will provide a guarantee upon satisfactory completion of the waterproofing works covering IKO waterproofing material failure and workmanship by the installing Contractor, subject to the works being undertaken by an IKO Registered Contractor and installed by operatives whom have undertaken and passed the IKO product induction, and the works completed in accordance with IKO recommendations.

13.9.2 Guarantee application:
to be made by the installing IKO contractor to: guarantees.uk@iko.com

13.9.3 Guarantee issue:
IKO guarantees to be issued to the installing contractor upon satisfactory completion.

13.10 SPECIFICATION NOTES

13.10.1 Permaphalt should be installed by IKO approved Roofing Contractors in accordance with BS 8000:Part 4:1989, BS 8218:1998 and IKO installation instructions.

13.10.2 As the works proceed, the Roofing Contractor is to ensure water tightness of

the roof at all times. Proper day joints must be formed at the end of each working day to seal the edges of the new roofing and ensure no water enters the building or damages the newly installed system. Loose covers or mopping of bitumen is not permitted. Materials used from the day joint, which are not part of the system must be cut away and removed prior to continuation of the works.

13.10.3 Membranes are to be stored carefully on end on a clean level surface under cover.

13.10.4 Insulation materials are to be stored on a clean level surface and protected from direct sunlight and weather. The packaging that insulation is supplied with does not constitute adequate protection for site storage.

13.10.5 All preliminary work including alterations to detail items must be complete and satisfactory.

13.10.6 Prior to works commencing, identify in conjunction with the Client, redundant roof mounted equipment, cables, pipes and rooflights. Make good any openings to provide a satisfactory surface to receive new waterproofing.

13.10.7 It must be ensured that any retained components of the existing structure are sound and capable of accepting the imposed loading of the new system and associated installation procedures.

13.10.8 Before the works proceed the roofing, contractor must ensure that the surfaces to receive the waterproofing are acceptable and that the specification conforms to the requirements.

13.10.9 Works must comply with the requirements of the Health and Safety at Work Act and any additional requirements of the Client. The Contractor must ensure that the works are carried out in accordance with written method statement for the project and that the appropriate risk assessments have been undertaken.

13.10.10 Prior to commencing work, the Principal Contractor must liaise with the Client or building occupier to establish whether any hazards exist (e.g. microwave transmitters) or whether any gases or noxious/flammable fumes are vented at roof level. If a hazard exists, an agreed working pattern must be adopted in accordance with health and safety requirements.

13.10.11 The Principal Contractor must liaise with the Client with respect to any air intake points at roof level, to minimise the risk of any fumes or smoke from the roofing works entering the building. In the event of air intakes being present, a working pattern agreed with the client/building occupier must be agreed prior to works commencing.

13.10.12 The Principal Contractor is responsible for providing adequate firefighting equipment for the works he is carrying out on site. Firefighting equipment must be appropriately positioned adjacent to where works are being undertaken. Equipment must be in good working order and inspected/approved by competent personnel in accordance with the agreed inspection schedule.

13.10.13 When loading materials onto the roof, the authorised Contractor must comply with the requirements of the Client's representative to prevent overloading and possible disturbance to the building structure.

13.10.14 At the pre-tender roof inspection stage, the Roofing Contractor should allow for the extent, volume and degree of difficulty in stripping and carting away from site existing waterproofing / insulating materials and debris (or surface chippings and detail work items in an overlay specification).

13.10.15 Raise the level of all walls and/or parapet DPC/cavity trays to ensure a minimum of upstand height of 150mm above the finished roof level of the new system. The position of DPC's and cavity trays must always be carefully considered when adding insulation. The installation of new DPC's and cavity trays must be carried out to the manufacturer's recommendation, in

conjunction with the client's detailed specification.

13.10.16 All rainwater outlets, pipe inlets and openings to the building interior should be protected during periods of the roofing works. Liaise with the building occupier to ensure essential services are not disturbed or decommissioned unnecessarily.

NOTE:
PROTECTION TO OUTLETS MUST BE REMOVED DURING NON-OPERATING PERIODS.

13.10.17 Roofing materials can be heavy. Note the Handling Weight detailed in the Material Information section of this specification and on the packaging, to correctly assess the risk, and take the relevant precautions when lifting.

13.10.18 For latest Health and Safety Data Sheets (COSHH), regarding the specified products visit www.ikogroup.co.uk and click on full literature library to download information. Alternatively, contact IKO plc. Head Office.

13.10.19 The roofing works to be carried out may need to comply with the requirements of Building Regulations Part L (Revision October 2010). In all circumstances, it is recommended that advice be sought from your local Building Control Office, as to the compliance requirements for this particular project.

13.10.20 In accordance with BS 8217: 2005 'Cold Roof' specifications are not recommended, and as such IKO would always advise the use of a warm roof or inverted roof construction. However, if there is no alternative than to install a 'Cold Roof" system, the space between the roof deck and the ceiling must be adequately ventilated, in accordance with BS 6229:2018 paragraph 10.3.3

CONTRACTOR NOTE:
TO ENSURE CONSISTENCY OF QUALITY AND THE ISSUE OF AN UNQUALIFIED GUARANTEE UPON COMPLETION OF THE CONTRACT, THE MATERIALS LISTED IN THE SECTION **13.3 MATERIALS** SECTION OF THIS SPECIFICATION MUST BE USED THROUGHOUT.

NOTE:
ADEQUATE PROTECTION MUST BE AFFORDED THE NEWLY INSTALLED PERMAPHALT ROOFING SYSTEM AGAINST DAMAGE CAUSED BY FOLLOWING TRADES. FAILURE TO PROVIDE THIS PROTECTION MAY REQUIRE ADDITIONAL WORKS TO BE UNDERTAKEN BEFORE ANY GUARANTEE IS ISSUED FOR THE WORKS.

13.10.21 The performance of flashings, mortar pointing, sealants and reflective surface coatings is subject to regular maintenance, and these items are not covered by the waterproofing guarantee.

13.10.22 When installing a new outlet or drainage sleeve, as part of a re-roofing system, good roofing practice dictates that a positive connection is made between the existing downpipe and the new outlet. This will prevent problems with water backing up within the drainage system and entering the building between the outlet spigot and the existing down pipe. It is recommended that a purpose made refurbishment outlet is incorporated in this situation, featuring an expanding seal at the base of the outlet spigot, or a rubber "O" ring surrounding the spigot to ensure a watertight seal is achieved.

NOTE:
UNLESS THIS SPECIFICATION INCLUDES FOR A NEW SCREED OR A TAPERED INSULATION SCHEME, IT MAKES NO ALLOWANCE FOR CHANGES TO THE EXISTING DRAINAGE. EXISTING FALLS WILL REMAIN AND SOME PONDING OF WATER MAY OCCUR.

RS14 REDECORATION / RENEWAL OF RAINWATER GOODS

14.1 MATERIALS

14.1.1 Cast Iron Rainwater Pipes, Head and Shoes:
Cast iron rainwater pipes to be generally single / double socketed 3" (to be confirmed — to match existing) diameter pipes unless otherwise noted on the drawings, conforming to the dimensional requirements of BS 460: 1964, and manufactured by:

a) J & J W Longbottom Ltd
Bridge Foundry
Holmfirth
Huddersfield, HD9 7AW
Tel: 01484 681 513

b) Hargreaves Foundry
Water Lane
Halifax
West Yorkshire, HX3 9HG
Tel: 01422 330 607

Fittings
Include for all necessary fittings to each section of pipework, including square and obtuse bends, union sockets with fixing ears, shoes, side and anti-splash shoes, single branch fittings, offsets, holderbats, inspection pieces, and rainwater hoppers.

14.1.2 Jointing
Joints at the sockets of the components should incorporate a hemp gasket and be sealed with a bedding of red lead and white putty (or approved polysulphide sealant). Where pipes / components are cut on site, the ends shall be cut clean and square with burrs removed. All cut ends shall be made good/recoated in accordance with the manufacturer's recommendations prior to decoration and fixing.

14.1.3 Fixing
Socketed rainwater and soil pipes are to have hardwood bobbins fitted behind ears to give a minimum 38mm projection from wall face to facilitate decoration. Fixing to the walls is by means of 8mm stainless steel screws through ears and bobbins into plastic plugs in the walls.

14.1.4 Finish
After cutting to finished installed sizes all components are to be primed and painted as per the attached Dulux System M2312ALK. Colour to match existing. Existing cast iron components are to be repainted as per attached Dulux System M2334ALKG. Colour to match existing.

14.2 INSTALLATION GENERALLY

14.2.1 Install to ensure the complete discharge of rainwater from the building without leaking.

14.2.2 Obtain all replacement components for each type of pipework from the same manufacturer unless specified otherwise.

14.2.3 Provide access fittings and rodding eyes as necessary in convenient locations to permit adequate cleaning and testing of pipework.

14.2.4 Provide for thermal and building movement when fixing and jointing and ensure that clearances are not reduced as fixing proceeds.

14.2.5 Where not specified, use plated, sherardized, galvanized, or nonferrous fastenings, suitable for the purpose and background, and compatible with the material being fixed or fixed to.

14.3 PIPEWORK

14.3.1 Fix securely at specified centres plumb and/or true to line with additional supports as necessary to support pipe collars, particularly at changes in direction.

14.4 TESTING

14.4.1 Before striking the scaffold test all gutters by blocking outlets and filling to overflow level. Leave filled gutters for 5 minutes and then inspect for leaks. Inform architects one week in advance of testing so they may be present.

RS15 PAINT AND CLEAR FINISHES

15.1 PAINTS

15.1.1 SATIN PAINT: NEW / EXISTING EXTERNAL JOINERY (DOORS, WINDOWS, COMPONENTS ETC)

Manufacturer:

Dulux Trade
AkzoNobel UK Ltd.
Wexham Road
Slough
Berkshire, SL2 5DS
Tel: 0333 222 7070

Product reference:

Finishing Coat: Sikkens Rubbol Satura Plus Colour: *TBC with Architect.*

- Window Frame: White
- Door Frame: White
- Door Leaf: Black

Undercoat: Sikkens Rubbol Primer Plus

To be read in conjunction with manufacturers recommendations.

rubbol_satura_plus.pdf

rubbol_primer_plus.pdf

Surface Preparation
The timber surface must be abraded, clean and dry and free from dust, dirt, wax, and grease. Remove surface mould and algae using a fungicidal solution. The moisture content of the timber must not exceed 18%. This figure will be 14% or lower for interior timbers. Resinous residues may be removed using a suitable solvent. Knotting may be used to reduce extractive discolouration, however, knotting is not always fully effective in "sealing in" resin. Degrease any exposed bare timber surface by wiping with a cloth dampened in a suitable solvent.

Certain timber species contain high levels of natural wood extractives or exudates, and some softwood can be highly resinous.

New Timber
Where a preservative treatment to softwood and hardwood is necessary, such as timbers in Durability Class 3, Class 4 (in ground contact) and 5 (marine) apply Cetol WP 567 BPD Impregnating Primer at a rate of 120 — 160 ml/m². Cetol WP 567 must be fully dry before the application of Rubbol Primer plus.

Do not use on substrates which have had water-repellent preservative pre-treatments applied. Where possible, the first coat should be applied to all parts of the component prior to fixing.

NOTE:
Discoloration of paint especially noticeable within light colours may occur over knots and resinous areas present in the wood. Particular attention with regards to preparation should be given to wood such as Oak, Teak, Cedar, Douglas Fir, Mahogany and Idigbo, etc., which contain oil and water-soluble tannin which may impair the drying, hardening or adhesion of surface coatings and discolour the finished surface.

Damaged and Decayed Timber
All damaged or decayed timber must be removed and replaced, cutting at least 25mm into sound timber. When splicing in new sections consider whether the timber species' natural durability is sufficient. Brush apply Cetol WP 567 BPD Impregnating Primer at a rate of 120 — 160 ml/m^2.

Thoroughly treat timbers, especially end grain sections, and ensure they are fully dry before splicing in. Secure with non-ferrous fixings and fill all voids surrounding the spliced-in area with the Componex WR Primer/Filler system.

Previously Coated Surfaces
De-nib using a fine grade nylon abrasive pad or a fine grade (P240 or finer) wet or dry silicon carbide abrasive paper, in the direction of the grain. Do not break through the surface coating. Remove all dust.

Where there is localised damage, or deterioration has occurred as a result of exposure of the factory coating for longer than 3 months affected areas should be **thoroughly sanded back to a sound substrate.**

15.1.2 SATIN PAINT: EXISTING FERROUS METALS

Surfaces: Existing ferrous metals

- Rainwater goods

Manufacturer:

Dulux Trade
AkzoNobel UK Ltd.
Wexham Road
Slough
Berkshire, SL2 5DS
Tel: 0333 222 7070

Product reference:

Finishing Coat: Metalshield Gloss.
Colour: *TBC with Architect.*

- Metalwork: Rich Black

Undercoat: Metalshield Primer.

To be read in conjunction with manufacturers recommendations.



dt_512__metalshiel d_gloss.pdf

New or unpainted metalwork:
To get the best results, ensure surfaces to be painted are sound, clean, and dry (new surfaces particularly must be fully dry) and free from all defective or poorly adhering material such as dirt, grease, or wax. New or bare surfaces should be primed with an appropriate Metalshield primer from Dulux Trade. Thoroughly rub down previously painted surfaces, using 'wet flatting' methods where possible, then wipe off with a damp, lint free cloth. Special precautions should be taken during surface preparation of pre-1960s paint surfaces over wood and metal as they may contain harmful lead.

15.2 GENERALLY

15.2.1 HANDLING AND STORAGE

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

15.3 COMPATIBILITY

15.3.1 Coating materials selected by contractor:
Recommended by their manufacturers for the particular surface and conditions of exposure.

Compatible with each other — compatible with and not inhibiting performance of preservative/fire retardant pre-treatments.

15.4 PROTECTION

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

15.5 INSPECTION BY COATING MANUFACTURERS

15.5.1 Permit manufacturers to inspect work in progress and take samples of their materials from site if requested.

15.6 PREPARATION

15.6.1 PREPARATION GENERALLY

Standard:
To BS 6150, Section 4.

Preparation materials:
Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.

Substrates:
Sufficiently dry in depth to suit coating.

Efflorescence salts:
Remove.

Dirt, Grease and Oil:
Remove. Give notice if contamination of surfaces/ substrates has occurred.

Surface irregularities:
Abrade to a smooth finish.

Joints, cracks, holes, and other depressions:
Fill with stoppers/ fillers. Work well in and finish off flush with surface. Abrade to a smooth finish.

Dust, particles, and residues from abrasion:
Remove.

- Fill with stoppers/ fillers. Work well in and finish off flush with surface.
- Abrade to a smooth finish.

Water based stoppers and fillers:

- Apply before priming unless recommended otherwise by manufacturer.
- If applied after priming: Patch prime.

Oil based stoppers and fillers:
Apply after priming.

Doors, opening windows and other moving parts:

- Ease, if necessary, before coating.
- Prime resulting bare areas.

15.7 EXISTING IRONMONGERY

15.7.1 Refurbishment:
Remove old coating marks. Clean and polish.

15.8 PREVIOUSLY COATED SURFACES GENERALLY

15.8.1 Preparation standard:
To BS 6150, Section 6.

Removing coatings:
Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.

Loose, flaking or otherwise defective areas:
Carefully remove to a firm edge.

Alkali affected coatings:
Completely remove.

Contaminated surfaces:
Give notice of:

- Coatings suspected of containing lead
- Substrates suspected of containing asbestos.
- Significant rot, corrosion, or other degradation of substrates.

Retained coatings:

- Thoroughly clean to remove dirt, grease, and contaminants.
- Gloss coated surfaces:
  Abrade to provide a key.

Partly removed coatings:

- Additional preparatory coats:
  Apply to restore original coating thickness.
- Junctions:
  Abrade to give a flush surface.

Completely stripped surfaces:
Prepare as for uncoated surfaces.

15.9 PREVIOUSLY COATED WOOD

15.9.1 Degraded or weathered surface wood:
Abrade to remove.

15.9.2 Degraded substrate wood:
Repair with sound material of same species.

15.9.3 Exposed resinous areas and knots:
Apply two coats of knotting.

15.10 PREPRIMED WOOD

15.10.1 Areas of defective primer:
Abrade back to bare wood and reprime.

15.11 UNCOATED WOOD

15.11.1 General:
Abrade to a smooth, even finish with arrises and moulding edges lightly rounded or eased.

15.11.2 Heads of fasteners:
Countersink sufficient to hold stoppers/fillers.

15.11.3 Resinous areas and knots:
Apply two coats of knotting.

15.12 ORGANIC GROWTHS

15.12.1 Dead and loose growths and infected coatings: Scrape off and remove from site.

15.12.2 Treatment biocide:
Apply appropriate solution to growth areas and surrounding surfaces.

15.12.3 Residual effect biocide:
Apply appropriate solution to inhibit re-establishment of growths.

15.13 PREVIOUSLY PAINTED WINDOWS FRAMES

15.13.1 Paint encroaching beyond glass sight line:
Remove.

15.13.2 Loose and defective putty:
Remove.

15.13.3 Putty cavities and junctions between previously painted surfaces and glass:
Clean thoroughly.

15.13.4 Finishing:

- Patch prime, reputty as necessary, and allow to harden.
- Seal and coat as soon as sufficiently hard.

15.14 APPLICATION

15.14.1 COATING GENERALLY

Application standard:
To BS 6150, Section 5.

Conditions:
Maintain suitable temperature, humidity and air quality during application and drying.

Surfaces:
Clean and dry at time of application.

Thinning and intermixing of coatings:
Not permitted unless recommended by manufacturer.

Overpainting:
Do not paint over intumescent strips or silicone mastics.

Priming coats:

- Thickness:
  To suit surface porosity.
- Application:
  As soon as possible.

Finish:

- Even, smooth and of uniform colour.
- Free from brush marks, sags, runs and other defects.
- Cut in neatly.

15.15 PRIMING JOINERY

15.15.1 Preservative treated timber:
Retreat cut surfaces with two flood coats of a suitable preservative before priming.

15.15.2 End grain:
Coat liberally allow to soak in and recoat.

15.16 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

15.16.1 General:
Apply coatings to all surfaces of components.

15.17 CONCEALED METAL SURFACES

15.17.1 General:
Apply additional coatings to surfaces that will be concealed when component is fixed in place.

15.17.2 Components:
Backs of rainwater pipes.

15.17.3 Additional coatings:
Not applicable.

15.18 EXTERNAL DOORS

15.18.1 Bottom edges:
Prime and coat before hanging doors.

15.19 BEAD GLAZING TO COATED WOOD

15.19.1 Before glazing:
Apply first two coats to rebates and beads.

15.20 PUTTY GLAZING

15.20.1 Setting:
Allow putty to set for seven days.

15.20.2 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.
- Install putty as above.

RS16 REPAIR OF TIMBER FRAMED STRUCTURES AND COMPONENTS

NOTE: UNDER NO CIRCUMSTANCES ARE ANY STRUCTURAL ALTERATIONS TO BE CARRIED OUT PRIOR TO THE STRUCTURAL ENGINEER COMMENTING ON THE CONTRACTORS TEMPORARY WORKS PROPOSALS.

NO WORKS WILL COMMENCE TO ANY STRUCTURAL ALTERATIONS UNTIL THE STRUCTURAL ENGINEER HAS CARRIED OUT AN INSPECTION.

16.1 MATERIALS

16.1.1 Redwood for Replacement Timbers

Timbers shall be selected to comply with TRADA information sheets and guidance documents.

The maximum permissible size of knots is listed below.

It shall be noted that only one knot of maximum size is permitted within any 300mm zone.

Width of Surface	Knots on any Surface of compression member	Knots on any Surface of tension member
16	7	-
19	8	-
22	9	-
25	10	-
32	12	4
36	13	6
38	14	6
40	15	6
44	16	8
50	19	9
63	23	12
75	27	18
100	35	20
125	43	25
150	51	30
175	59	34
200	66	39
225	72	44
250	78	48
300	91	59

All sections shall be in excess of the smallest diameter required to obtain the specified rough sawn size.

No sapwood will be permitted.

Sizes given in the repair drawings are approximate and the contractor shall take site sizes to match existing timbers where repairs are concerned, and where replacements are required the section of new timber should match the timber which is being removed unless a different size is specified.

Sections to be removed from the works may only be used for repairs with the express written permission of the Architect. The use of second-hand timbers from other buildings or sources will not be permitted under any circumstances.

16.1.2 Oak Pegs

Oak pegs for joints shall be formed from heart of oak with a square head and tapering to an octagonal base.

Pegs to be of a length and diameter to suit the location and should stand proud of the finished joint by 25mm.

16.1.3 Loose Tenons (Slip Tenons)

Shall be fabricated from air dried oak.

16.1.4 Non-Structural Components

Window Mullions and Joinery Components not associated with the main structural frame shall be fabricated from air dried oak.

16.2 PREPARATION OF TIMBERS

16.2.1 Timbers of Large Cross-Sectional Area

All members in excess of 200mm x 200mm or equivalent cross-sectional area shall be cut from boxed-heart logs squared with axe or adze on cambered surfaces (top and bottom in the case of beams) and sawn on the sides.

16.2.2 Timbers of Smaller Cross-Sectional Area
Where straight sections are required these may be sawn or axed on the remaining three sides.

16.2.3 Curved Members
Curved members may be sawn on the face opposite the heart surface but must be axed or adzed on the curved top and bottom edges such that their final shape conforms to the natural grain of the timber.

16.2.4 Shaped Members
Shaped members such as jowelled heads of posts, tie beams etc shall be axed or adzed to shape in accordance with the natural grain and sawn surfaces will be permitted on the sides and outer face.

16.2.5 Finished Surfaces
On finished surfaces saw marks may be left visible, but on axed or adzed sickness the timber shall be finished smooth. Visible axe or adze marks shall not be permissible. Chamfers shall be axed chiselled or planed.

16.3 STORAGE

16.3.1 All timbers delivered to site shall be kept under cover and in conditions to match those where they will ultimately to used.

16.4 INSERTION OF NEW TIMBERS

16.4.1 Where timber is to be inserted as a partial replacement of an existing member, the new timber shall be selected to match as near as is practical the grain pattern of the retained timber. Once selected it shall be cut to match the existing profile at the position of the joint.

16.4.2 Where timbers are to replace existing members in their entirety then the timber shall be selected to ensure that the new member will not cause any distortion of the existing structure or finishes by virtue of an ill fit. Members must be selected or shaped to ensure that existing members are accommodated without distress. No attempt should be made to correct existing distortions within the frame unless specifically instructed to do so.

16.4.3 Insertion or replacement of timbers shall be carried out in an agreed sequence, and one repair shall be completed before commencing any further repairs. This is to ensure that no undue weakening of the existing structure occurs during repairs.

16.5 PREPARATION OF REPAIRS

16.5.1 The areas of timber to be replaced or repaired shall be finalised on site with the Architect and the sections for renewal are to be marked out. The profile of joints, splices etc will be marked out and approved by the CA prior to any cutting out commencing.

16.5.2 Cutting out shall be carried out in a sequential manner, with repairs being completed before cutting out subsequent sections. The contractor is to prepare a programme for repairs with each section identified and is to submit the programme to the Architect and Structural Engineer at least 2 weeks prior to commencing repairs. Any variation to the sequence of the programme shall be notified to the Architect and the Structural Engineer in writing at least one week before carrying out works in the revised sequence.

16.5.3 Where necessary the frame shall be propped to ensure that no settlement occurs during cutting out. Great care shall be taken during the insertion of any necessary props to ensure that the props only take the weight and do not exert any pressure in themselves. Where props are used the timber, structure shall be protected from damage by using minimum 25mm thick timber packers between the prop and the timber. Similarly protect under all props.

16.5.4 There is a large quantity of embedded timbers across the interior elevations. All timbers are currently highlighted to be replaced pending further examination and inspection by the CA and contractor. Prior to cutting out of defective timber, the masonry shall be appropriately propped to ensure that no settlement occurs. Great care shall be taken as noted above. It may be necessary to allow for grouting of the solid masonry wall prior to cutting out to retain structural integrity of the fabric.

16.6 CUTTING OUT AND FORMATION OF REPAIRS

16.6.1 Great care shall be exercised to ensure that all repairs match as near as possible the grain and section of the timbers they are replacing.

16.6.2 All repairs shall be identified as new repairs with the date of their execution being carved into the new timber.

16.6.3 Only the areas or members previously marked out by the Architect are to be cut out. Do not exceed the agreed lines of cuts without the consent of the Architect. Wherever possible the extent of timber removal is to be kept to a minimum in order to retain as much of the historic fabric as possible.

16.6.4 Reference is to be made to the drawings prior to cutting out to ensure that the required joint is fully understood. Under no circumstances should cutting out of existing timbers take place based solely on the marked-up joint on the member, as this will indicate the finished visible line of repair and not necessarily the requirements for the "core" of the joint.

16.6.5 Embedded timber within the solid wall construction shall be replaced on a like-for-like basis and will match the grain and section of timber they are replacing.

New sections to be inserted will be no longer than 1.8m in length to allow for handling and sequencing of removal and insertion. Timbers to be lapped at joint.

Contractor to make good surrounding building fabric following timber replacement.

GRAHAM + SIBBALD