benjamin+beauchamp
architecture design conservation
the borough studios, the borough, wedmore, somerset BS28 4EB
T 01934 713313 F 01934 713314
studio@b2architects.com www.b2architects.com

WEMBDON
St George

Tree Damage Repairs:
North Aisle, Organ Chamber & Chancel Roof

Project No 0519

DRAFT Rev -
December 2024

1. SECTION ONE: PRELIMINARIES

1.1 Background

St George's, Wembdon is a grade II listed medieval parish church, comprising C15 west tower and mainly C15 chancel. The nave and aisles were rebuilt reusing some medieval fabric, following a disastrous fire in the 1860's. The interiors are Victorian in character, including pitch pine pews to nave and aisles.

On the evening of the 8 September 2024, a large bough detached from the trunk of a tree located approximately 9m from the north elevation of the church, bringing down several branches along with it, and causing damage to the roof pitch above the north aisle, organ chamber and chancel. Following removal of the branches by a tree surgeon, temporary protections were put in place to reduce the risk of further water damage.

b2 architects have subsequently visited the church on the 11 November 2024 and recorded the condition of the fabric in the form of a site visit report – attached separately. On the day, we were accompanied by structural engineer, Steve Swinbank of Mann Williams, who will be preparing his own structural report – attached separately. This has formed the basis of the scheduled repairs.

1.2 Scope and Principles of the Works

This project comprises the following range of work, with the full extent to be determined following detailed inspection:

- Re-roofing: Externally stripping tile finishes and carrying out further inspection to approximately 55sqm of roof area. Reinstating existing and new tiles on new timber battens and felt underlay.
- Structural repairs to existing timber purlin and provisional allowance for strengthening damaged common rafters, to be determined on opening up.
- Replacing section of damaged cast iron guttering.
- Leadwork: Repair and replacement of damaged secret gutter and cover flashings
- Masonry: Re-bedding of stone coping/water tabling to parapet verge, including new lead flashings and masonry repair to fractured lower kneeler section.
- Finishes & Decorations: Internal redecoration of plastered chancel arch to above north aisle. Replacement and redecoration of insulated plasterboard ceiling finishes to above north aisle. Replacement, repair and redecoration of lath and plaster ceiling to above the organ chamber
- Replacing carpet to north aisle
- Additional works, to be confirmed and instructed in due course:
    - Introduce new suspended timber floor deck to organ loft
    - Plaster repairs and redecoration of organ chamber walls
    - Repair and redecoration of lath and plaster ceiling to chancel barrel vault

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1.3 Fabric Summary

The church is built of local red sandstone rubble, with freestone dressings.
The roofs are laid in Bridgwater double roman tiles with roll top tile ridges.
Internally, the north aisle has an exposed timber roof structure, with insulated plasterboard infill between rafters and purlins. The organ chamber and barrel-vaulted chancel have plastered ceilings, believed to be lath and plaster.
After the 1868 fire, the chancel was one of the few sections, reportedly, to have retained its medieval roof. The plasterwork in this area shows signs of delaminating in places, as identified in the last quinquennial report.

1.4 Condition

Excluding the recent tree damage and associated water ingress, the church is in general good order. The last quinquennial inspection report was carried out in August 2021 by Michael Vaughan RIBA AABC of b2 architects and can be made available on request.

1.5 Location of Site

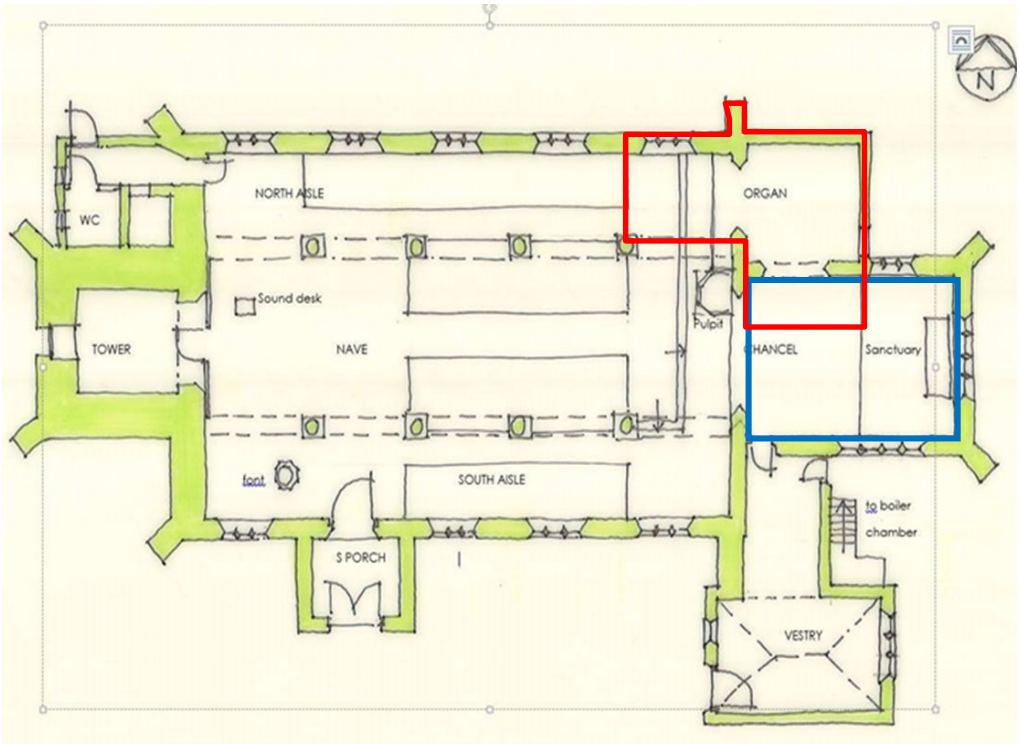
St George's is sited to the north east of Wembdon, a village and civil parish in Somerset, north west of Bridgwater town centre.
Address: Church Road, Wembdon, Bridgwater, Somerset, TA6 7RR

1.6 Access

The church is open daily but if you wish to confirm that there are no services then arrangements to visit the church should be made by contacting benjamin + beauchamp architects.
There is a dedicated church carpark and usually good on-street parking available in the adjacent roads.

1.7 Church Plan – Not to scale

Area of repair works identified in red. Additional area to be instructed in blue.



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The Contract

The Employer will be the PCC of St George's Church, Wembdon.
The Architect will be benjamin+beauchamp architects ltd.
The Principal Designer will be benjamin+beauchamp architects ltd.

A contract will be drawn up between the Employer and the selected Contractor using the Minor Works Building Contract issued by the Joint Contracts Tribunal, 2016 latest edition. All contract figures shall be exclusive of VAT.

The following Contract Particulars shall apply:

1st Recital	The Employer wishes to have the following work carried out: fabric repairs to tree damaged roofs and internal finishes at St George's Church, Church Road, Wembdon, Bridgwater, Somerset, TA6 7RR. 'The Works'
2nd Recital	A Specification (which includes a Schedule of Works and Daywork rates) have been prepared.
3rd Recital	Reference to Work Schedules and Schedules of Rates will be deleted.
4th Recital	The 'Base Date' shall be ten days before the tender return due date. CIS – The Employer at the Base Date is not a Contractor for the purpose of the CIS.
5th Recital	CDM Regulations The Project is non-notifiable.
6th Recital	Framework agreements do not apply.
7th Recital	Supplementary Provisions: - Collaborative working applies. - Health and Safety applies. - Cost savings and value improvements does not apply. - Sustainable development and environmental considerations does not apply. - Performance indicators does not apply. - Notification of disputes does not apply.
Article 7	& Schedule 1 (arbitration) shall apply.
Clause 2.2	Date for commencement of the works : TBA Date for completion of the works : TBA
Clause 2.8	Liquidated damages: £250/week
Clause 2.10	Rectification period shall be 12 months
Clause 4.3	Percentage rate of the total value shall be 95 %
Clause 4.3	Percentage rate of total amount paid to the contractor shall be 97½ %
Clause 4.8	Percentage addition for Schedule 2 (paragraph 13)(if applicable).
Clause 4.8.1	Supply of documentation: 3 months
Clause 5.3	Contractor's Public Liability Insurance shall be taken out to cover an unlimited number of incidents at £5 million per incident.
Clause 5.4A&B	Clause 5.4B applies. The PCC will advise their insurers. Clause 5.4A.1 Percentage shall be 15%
Clause 5.4B.1	Percentage shall be 15%
Clause 7.2	The adjudicator shall be the President or a Vice President or a Vice Chairman of the Royal Institute of British Architects.

1.8 CDM Regulations 2015 - Health & Safety Plan

At the time of the tender, it is considered that the project is not notifiable as it is assumed that that the works will not last longer than 30 days with more than 20 workers working simultaneously at any one point OR exceeds 500 person days. Should this situation change then the project will become notifiable to the HSE.

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The PCC will appoint benjamin+beauchamp architects as the Principal Designer (PD) and the successful contractor as the Principal Contractor (PC) in accordance with the CDM 2015 Regulations. The PD will prepare the Health and Safety Plan for the PC to consider with the tender. The PC will remain responsible for Health and Safety during the construction Phase and complete the Health and Safety File on Practical Completion.

The information contained within this document has been prepared by the Principal Designer to comply with the Construction (Design and Management) Regulations 2015 for a project of this scale. This pre-construction information must be read in conjunction with all drawings, documents, specifications, schedules of work, etc that constitute the tender documents. The Designer Risk Assessment is attached to this document.

The selected Contractor is to undertake the responsibilities and duties of the Principal Contractor as defined by the Construction (Design and Management Regulations 2015). The Contractor warrants that he is competent to act as the Principal Contractor in such case. All costs and expenses resulting from observance of the Principal Contractor's duties are deemed to have been allowed for within the Contractor's tender.

The selected Contractor shall assume the role of Principal Contractor under the CDM Regulations with effect from the date of appointment. The Contractor is required to complete all of the required Health & Safety information to comply with the CDM Regulations. A Construction Phase Health & Safety Plan is to be submitted and approved before any work can commence.

The Contractor must ensure that appropriate health and safety measures are employed throughout the duration of the contract and that these should include the following:

- Provide details of the site management structure and identify those members of staff with specific responsibilities for Health & Safety.
- Be satisfied that when arranging for a sub-contractor to carry out construction work, they are competent and have made adequate provision for Health & Safety.
- Carry out risk assessments and obtain and check safety method statements.
- Ensure the co-ordination and co-operation of sub-contractors.
- Have appropriate communication arrangements between sub-contractors on site for Health & Safety. Ensure that the subject of Health & Safety features strongly on the agenda of all sub-contractors and progress meetings.
- Plan for discussing Health & Safety matters with people on site.
- Allow only authorised people on to site and maintain a visitor's book. Ensure that all visitors are advised of any specific safety risks.
- If after the construction phase commences, the design changes, unforeseeable circumstances arise or the principal contractor wishes to change the principles on which the health and safety plan was prepared, then the Principal Contractor shall liaise and agree necessary variations the Principal Designer.
- Display notification details.
- Monitor Health & Safety performance.
- Prepare a Health & Safety File

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1.9 Variations and Unforeseen Work

The contractor is to notify the architect immediately if any unforeseen defects are uncovered. Any extra works found to be necessary during the works shall not be commenced without the architect's prior instruction, which will be confirmed in writing as a variation.

No claim for extras can be considered in the assessment of the Final Account unless this procedure has been followed.

No variations in addition to, or omissions from, the work shall be made without the written authority of the architect. All authorised variations shall be measured and valued on the basis of priced schedules supplied by the contractor.

1.10 Asbestos

There is no Asbestos Management report for the building. There is no known asbestos identified in the area of works, however the Contractor should approach and proceed with due caution. If the Contractor subsequently finds, or suspects asbestos then appropriate testing should be undertaken before proposals are brought forward for its removal.

1.11 Care, Protection and Security

The church building, contents and grounds are valuable and unique. Great care is to be taken in the carrying out of the works and any necessary temporary protection is to be provided to prevent damage to property or injury to persons. The contactor is to make good at his own expense, any damage or loss arising out of his failure to provide adequate care and protection.
Particular internal features of note include the pulpit, timber organ loft, pews, 2 no. arched windows and decorative stonework to nave/organ chamber arches. Ensure at all times that protections are in place before work commences and in the best possible state of repair.

The works are to be left safe and tidy and the lowest stages of any ladders are to be removed or otherwise made inaccessible at the end of each working day. Adequate safeguards are to be taken against theft, trespass or vandalism. Ensure that at the end of the working day all tools and the like are securely locked away or removed from the site.

1.12 Property

Allow for protecting the property both real and personal of the church, their neighbours and visitors. The contractor will be held responsible for and must make good at his own expense any damage caused to buildings, roads, pavements, fencing, drains electric, gas or water services and the like, arising from the contract. He shall not allow his own or any other workmen engaged upon the works to trespass upon the grounds adjoining the works.

The contractor will be required to make good to the architect's satisfaction all damage to paths, lawns and flowerbeds, including those within the area allocated for storage and working space. All areas of storage and transit operations at the current site must be made good to the architect's satisfaction.

1.13 Programme

The contractor will commence work within five days of the date for commencement and shall proceed regularly and efficiently with the works until completion.

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1.14 Water for the Works

Water is available on site at the cost to the Employer. Water must not be drawn as to cause any inconvenience to the Employer.

1.15 Lighting and Power for the Works

Lighting and power is available on site for use by the Contractor at the cost to the client. The contractor may make temporary connections to the existing installation. All temporary lights on site to assist with the work will be fluorescent, **no 'hot lamp'** halogen lights are to be used at any time.

1.16 Removal of Rubbish and Spoil, No Fires

The contactor is to clear and cart away from time to time, as it accumulates, all rubbish and spoil arising from the work. Paths and roadways are to be kept free of obstruction. Consent for parking a skip, if required will be the contractor's responsibility.

No water, or other liquid, containing cement, lime, paint, solvent, oils etc., is to be allowed to enter any drain and must be removed from the site for proper disposal.

1.17 Temporary Accommodation

A WC is available for use on site, but the Contractor must ensure that these facilities are left in a clean and serviceable state at all times after use.

The Contractor is to satisfy himself that the facilities available are appropriate. Please allow for any alternative or additional welfare facilities that may be necessary.

1.18 Discoveries

Any unusual discoveries of artefacts or fragments of metal, glass, or carved wood are to be carefully preserved and reported to the architect or archaeologist if engaged.

1.19 Bats

The churchwarden has reported no evidence of bats within the church, and no bat droppings or other indicators of their presence have been detected during previous visits or inspection of the damaged roofs.
The Contractor is reminded that bats are a protected species, under European Law. The advice from Natural England is that if any bats are discovered in any area of works, operations there are to cease and the architect notified, who will then seek appropriate advice from an ecologist.

1.20 Salvage, Removal of Material

No material is to be removed from the site without the permission of the architect. Where noted a full salvage value for materials is to be allowed against the contract.

1.21 Completion and Clearing Up

On completion of the works, remove from site all temporary installations, rubbish and surplus materials. Clean the affected parts of the building and working areas. Repair paths, turf, fences etc, and leave everything clean and tidy to the satisfaction of the architect.

1.22 Plant and Equipment

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The contractor is to provide all plant and equipment necessary for the execution of the works and will be responsible for ensuring that it complies with, and is used entirely in accordance with, safety recommendations and statutory regulations.

1.23 Health and Safety File

This is in relation only to the construction work carried out under this contract. At the completion of the works, the Contractor is to supply to the Principal Designer the completed Health & Safety file in accordance with the current legislation. The information provided should include the following:

- Schedules of the materials used showing the source of supply for each material with manufacturer's literature of all materials, plant and equipment used in the works.
- The names and addresses of every sub-contractor engaged upon the contract, together with a description of the work carried out by each company.
- A maintenance plan describing the nature and the frequency of future maintenance work and identifying risks. The employer's attention to be drawn to the use of any hazardous materials - COSHH assessments to be provided to ensure safe working methods.

1.24 Working Times, Radios and Church Services

The church is generally open to the public during the daylight hours. The Contractor is to familiarise himself with regular service times although this is unlikely to affect the progress of the work. The use of the church is not likely to cease during the works. There will be infrequent occasions throughout the contract when work has to stop due to a funeral or similar unpredictable event. The contractor will be expected to change his working pattern on the relevant day and no charge will arise as a result. In the event that the church needs to open for a service then the contractor is to cease noisy operations throughout the period of the service. Further details will be found published on the church noticeboard.

We do not foresee the need for any weekend work, and this should be agreed in advance.

The Contractor is not to generate noisy operations before 8am and after 5pm unless by prior agreement. Radios, CD or tape players will not be allowed at the church.

1.25 Provisional Sums

Provisional sums may be included for works that cannot be quantified until the work is opened-up. These sums are to be used as directed in whole, or in part, if not required.

Where Provisional Sums are stipulated for the cost of specialist items these are to cover the net cost of supply and delivery only. They will be spent, in whole or in part, as directed by the architect. The contractor should allow in addition for profit and any handling charges.

Where Provisional Sums are included for specialist works or services these will be assumed to be carried out by domestic, specialist subcontractors whose identity will have been discussed with the architect. The contractor should allow in addition for profit and attendance.

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1.26 Specification

Copies of the architect's specification are to be readily available at all working times. All craftsmen must read the Preliminaries and those parts of the Specification relating to their work, prior to commencement.

1.27 Record Photographs

The contractor is to provide 'before' and 'after' photographs of the works in digital format. The photographs should be dated.

1.28 Conservation Practice

All works to be undertaken with due care and attention to prevent any damage to the structure and fabric of the existing building. All conservation and repair work is to be carried out to best practice standards.

All temporary electrical installations are to be inspected and tested by a competent person before use.

Chemicals and other harmful substances must not be discharged into open watercourses or drains.

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2. SECTION TWO: MATERIALS AND WORKMANSHIP

C20 SCAFFOLDING

100 SCAFFOLDING GENERALLY

- Scaffolding or other safe means of access is to be provided wherever scheduled.
- The Main Contractor will be responsible for the design of safe scaffolding which is to comply with all relevant British and European Standards, including, but not exclusively, BS1139: 1964; BS2482:1970; BS5973:1993 and BS EN 12811-1: 2003
- The scaffold design is the responsibility of the Main Contractor and is to be carried out by experienced designers. Where requested, the Main Contractor is to provide drawings and calculations for the scaffold design. These documents must be provided at least two weeks prior to the commencement of erection to allow checking. The drawings will be considered by the Structural Engineer/ Architect.
- Wind loads must be assessed in accordance with Eurocode 1 with due consideration given to local wind speeds and the precise location of the scaffold.
- There are to be no fixing points into the building. Putlog fixings are unacceptable.
- Ideally there should be no bearing or bracing points to the building but where needed they must first be agreed in advance with the Structural Engineer/Architect and are to be fully padded to prevent damage to the fabric of the structures. Deflections in the scaffold should not cause any damage to the fabric of the building.
- The scaffold should designed and built to enable safe working platforms and access to undertake the Works.
- Scaffolding is to be erected and dismantled under the supervision of the general contractor's foreman to ensure that it is done with care to avoid any damage to the existing structures. At all times, ensure that members of the public including the owners of the property are kept at a safe distance during erection and dismantling.
- Due consideration must be given at all times to the historic fabric. Temporary protection should be installed as required to avoid damage to the building or monuments in the site area or on the route between the site and the delivery site.
- All pole ends within 25mm of the structures are to be fitted with plastic caps. Boards installed adjacent to walls are to be upturned to prevent accidental damage to the walls.
- Due consideration in the design should also be given to delivery, erection, dismantling and removal of the scaffold and to any hoisting arrangements required for the execution of the work.
- The design of the scaffold should give due regard to entrances and exits from the building that remain in use with fan hoardings if necessary.
- Temporary rainwater disposal connecting into the existing should be included where the scaffold includes any form of roof.
- Unless specified otherwise the Contractor is responsible for installing appropriate ventilated sheeting and protection to carry out the works.
- If deemed necessary, the Contractor should install appropriate lightning protection to the scaffold and the scaffold should be bonded into the existing lightning conductor if it exists.
- The Contractor should design and place the scaffold giving due consideration to the ground conditions, drains and the like and any works that are to take place. Burial sites are highly likely in ground around churches.

150 SCAFFOLD SECURITY

- All scaffolding is to be rendered inaccessible outside working hours in order to prevent vandalism or theft.
- The Contractor must ensure that scaffolds are erected and maintained so as to provide adequate protection against the theft of materials both fixed and unfixed, and particularly of old and new lead on roofs, and to prevent as far as possible any unauthorized access or breaking and entering into the building by way of the scaffolds.
- Erect the lowest lift at least 2.4 metres above ground level and provide access to the lowest lift by means of short ladders that must be removed every evening and locked away in a secure place.

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160 ADDITIONAL SCAFFOLD REQUIREMENTS TO PROVIDE COVER FOR THE THEFT OF EXTERNAL METAL

- The scaffolding is to be fully enclosed by minimum 18mm exterior grade plywood sheeting or steel sheeting hoarding to a minimum height of 4.0 metres. Any plywood sheeting must be fixed to 75mm x 100mm timbers. The timbers must be either clipped to the scaffolding by appropriate scaffold clips, or secured to a substantial stand-alone timber frame complete with adequate internal bracing to prevent collapse if attacked. Please note that orientated strand board (OSB) is not an acceptable form of hoarding. All joints of the plywood or steel sheeting facing will be tightly butted to prevent tools being used to prise them apart. Steel sheets should be in good condition and not rusty.
- Secure the hoarding with 100mm annular ring shank nails at 150mm centres to fix the plywood boards to the timber frame. Tamper proof screws may be used as an alternative.
- The bottom of the hoarding will follow the contour of the ground leaving no gaps between the hoarding and the ground.
- Where the hoarding abuts a building the plywood or steel sheeting will be cut to match closely the contours of the building to prevent any gaps being formed.
- All lower level ladders including access ladders to any scaffolding will be removed from the site, or rendered inaccessible at the end of each days working.
- Any doors let into the hoarding will be of exterior grade solid wood type fitted in a purpose built frame. The door and frame must be flush with the exterior face of the hoarding. Heavy duty 75mm x 100mm steel butt hinges will be used to hang the door, the hinge pin being burred over to prevent it being driven out. A minimum of 3 hinges to be fitted to any door.
- A 'Yale' latch type lock will be fitted to all doors. When the site is not attended doors must be secured by a heavy duty locking bar, secured to the door and frame by bolts bolted through. The locking bar must conceal the bolt heads. A heavy duty close shackled padlock conforming to at least BS EN 12320 security grade 4 and designed for external use will be used to secure the locking bar.
- The exterior of the hoarding will have floodlights (500w or LED equivalent) angled out and towards the ground at a height of three metres from the ground and not more than four metres apart. These lights must be switched on by 'PIR' detectors during darkness.
- The inside of the scaffold will be adequately floodlit with floodlights angled inwards and up through the scaffold illuminating its entire height. These lights must be switched by photo-electric cell for illumination at night only.
- The scaffolding will be protected by a scaffolding alarm system installed in accordance with NSI Code of Practice for the design, installation and maintenance of scaffolding alarm systems NCP 115 or SSAIB (SS2006) codes of practice for the design, installation and maintenance of scaffolding alarm systems.
- The system will be installed and maintained by a company on the official list of recognised firms of the NSI or SSAIB Inspectorate bodies and must also appear on the local police force list of compliant companies.
- The system will combine notification locally by an instantaneous audible device activation together with notification to a permanently manned alarm receiving centre conforming to BS 5979 or BS EN 50518 via a minimum Grade 2 alarm transmission system under BS EN 50136. The system must be designed to utilise combined PIR detectors and cameras to detect unauthorised movement. Images from devices must be reviewed by the manned alarm receiving centre and action taken if unlawful activity is identified.
- A copy of the scaffolding alarm system design proposal will be sent to Ecclesiastical for approval. The specification must include confirmation by the alarm company that, either sub-contractors will not be used or specify the extent to which sub-contractors will be used where appropriate.

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C41 MINOR MASONRY WORKS

To be read with Preliminaries/ General conditions.

GENERAL/ PREPARATION

110 SCOPE OF WORK
- Schedule: As shown on structural engineer's drawings or as described in the Schedule of Works

WORKMANSHIP GENERALLY

150 POWER TOOLS
- Usage for removal of mortar: Not permitted under any circumstances.

155 PUTLOG SCAFFOLDING
- Usage: Not permitted

160 PROTECTION OF MASONRY UNITS AND MASONRY
- Masonry units: Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points, where provided.
- Masonry: Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking on facework. Protect using suitable nonstaining slats, boards, tarpaulins, etc. Remove protection on completion of the work.

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

170 DISTURBANCE TO RETAINED MASONRY
- Retained masonry in the vicinity of repair works: Disturb as little as possible.
- Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
- Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.

180 WORKMANSHIP
- Skill and experience of site operatives: Appropriate for types of work on which they are employed.

185 ADVERSE WEATHER
- General: Do not use frozen materials or lay masonry units on frozen surfaces.
- Air temperature: Do not bed masonry units or repoint:
  - In hydraulic lime:sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising.
  - In nonhydraulic lime:sand mortars in cold weather, unless approval is given.
- Temperature of the work: Maintain above freezing until mortar has fully set.
- Rain, snow and dew: Protect masonry by covering during precipitation, and at all times when work is not proceeding.
- Hot conditions and drying winds: Prevent masonry from drying out rapidly.
- New mortar damaged by frost: Rake out and replace.

190 CONTROL SAMPLES
- General: Complete an area of each of the following types of work, and arrange for inspection before proceeding with the remainder:
  - Repointing of rubble stonework: To match existing. Allow for 3no. samples at 0.2 sqm
  - Repointing of ashlar stonework: To match existing. Allow for 1no. samples at 0.2 sqm

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- Ridge/Verge tile pointing: To match existing. Allow for 1no. samples at 0.2 sqm

MATERIALS/ PRODUCTION/ ACCESSORIES

215 MATERIAL SAMPLES
- Representative samples of designated materials: Submit before placing orders.
- Designated materials:
  - New dressed stone to match existing

- Retention of samples: Unless instructed otherwise, retain samples on site for reference. Protect from damage and contamination.

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

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

250 STONE ORIENTATION
- Orientation of natural bed:
  - In plain walling: Horizontal.
  - In projecting stones and copings: Vertical and perpendicular to wall face – joint bedded
  - In arches: Perpendicular to line of thrust.

255 ASHLAR BLOCKS/ DRESSINGS
- Cutting and dressing stone: To true and regular surfaces, free from hollow or rough areas.

258 TEMPLATES
- Templates for replacement stones are to be prepared by careful measuring and inspection of the adjoining stonework.

281 DOWELS AND CRAMPS FIXINGS FOR STONEWORK GENERALLY
- Type: Submit proposals.
- Material: Austenitic stainless steel – Grade 316.
- Size, strength and number: As necessary to resist loads likely to occur during the life of the building, and to prevent lateral displacement or pulling apart of the construction.

DISMANTLING/ REBUILDING

310 DISMANTLING MASONRY FOR REUSE- KNEELER & COPING STONES
- 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.

320 REBUILDING COPINGS
- Replacement materials: Existing kneeler and coping stone from site
- Mortar: As section Z21.

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- Mix: 1:2.5 Hydraulic Lime NHL 3.5: sand
- Sand source/ type: Smooth, sharp and well graded to approval
- Fixings: Cramps and dowels as Clause 281.
- Rebuilding: To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work/ backing masonry, as appropriate.
- Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Joints: Joint finishing to be completed as separate pointing operation in association with other repointing and using a weaker hydraulic lime mix (NHL 3.5)
- Other requirements: Where stones have been taken down from the wall the stones are to be relaid where possible in original locations, with external faces retained externally, but whilst also ensuring a good bond is achieved. Seek clarification if required.

REPLACEMENTS AND INSERTIONS

385 LAYING REPLACEMENT MASONRY UNITS
- Exposed faces of new material: Keep to agreed face lines. Where possible maintain original face/line of the wall.
- Faces, angles and features: Align accurately. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
- Joint surfaces: Dampen to control suction as necessary.
- Laying units: On a full bed of mortar, all joints filled.
- Exposed faces: Keep clear of mortar and grout.

390 GROUTING JOINTS
- Grout mix: Non- hydraulic lime with pozzolanic additive.
- Joints that cannot be fully filled with bedding mortar: Grout thoroughly around replacement masonry units.
- Grouting: Keep grout back from exposed face to allow for the depth of pointing, using an approved temporary sealing material. Prevent grout staining exposed face.

395 INSTALLING STONE INSERTS
- Pockets to receive inserts:
  - Cut out accurately. Undercut sides of pocket, where necessary, to provide space for bonding material.
  - Adjust depth so that insert stands proud of existing stone for finishing in situ.
  - Clean out thoroughly.
- Inserts: Cut to the smallest rectangular shape necessary to replace the defective area and provide a firm seating. Install accurately and securely.
  - Exposed faces: Keep clear of bonding material.
- Existing joint widths: Maintain. Do not bridge joints.
- New inserts should respect the existing joints. Do not 'jump' to create cross bonded stones.

410 CORRODED METAL FIXINGS
- Removal: Cut or drill out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
- Replacement: Compatible fixings, as clause 281.

TOOLING/ DRESSING STONE IN SITU

458 REDRESSING STONE
- No redressing is to be undertaken.

CRACK REPAIRS/ TIES/ REINFORCEMENT

640 PINNING LOOSE OR DETACHED MASONRY IF REQUIRED
- Dowels/ Pins:
  - Type: Austenitic stainless steel threaded rods

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  - Diameter: 3, 4 or 6mm to suit
- Resin: Contractor's choice
- Holes: Drill carefully, sloping downwards into background. Remove drilling dust and debris and keep dry.
- Filling holes:
  - Check that dowel lengths are correct before filling with resin.
  - Use sufficient resin so that when the dowel is inserted the resin is dispersed to achieve an effective repair.
- Exposed faces: Keep clean and free from resin stains. Use temporary plugging material and/ or isolating membranes as necessary.
- Clearances: Keep ends of ties and resin back from face of masonry.
- Making good after resin has cured: Allow for stone plugs as Clause 692 but discuss on site prior to installing.

692 MAKING GOOD TO TIE AND DOWEL INSERTION HOLES USING CORE DRILLED PLUGS
- Plugs: Cut plug from masonry face before drilling hole for each tie/ dowel. Where resulting plug is unusable, prepare plug from matching material.
  - Plug diameter: Smallest practicable.
- Holes: Clean.
- Method of securing plug: A spot of epoxy resin and hydraulic lime mortar and sand.
- Joints: Fine and flush.
- Finished appearance: Obtain approval for first three holes before completing remainder.

POINTING/ REPOINTING

810 PREPARATION FOR REPOINTING
- Existing mortar: Working from top of wall downwards, remove loose mortar carefully, without damaging adjacent masonry or widening joints, to a minimum depth of 30mm. Do not remove any sound mortar.
- Raked joints: Remove dust and debris by brushing and gentle flushing out with clean water.

820 POINTING TO RUBBLE WALLING & KEYSTONE
- Preparation of joints: As Clause 810
- Mortar: As section Z21.
  - Mix: 1:$2^{1/2}$ Hydraulic Lime NHL 3.5: sand
  - Sand source/ type: Smooth, sharp and well graded to approval
- Joint profile/ finish: Recessed very slightly back from the weathered arrises and to match the approved sample.
- Other requirements: Deep pack locally or grout any voids found.

824 POINTING TO RIDGE TILES
- Mortar: As section Z21.
  - Mix: 1:$2^{1/2}$ Hydraulic Lime NHL 5.0: sand
  - Sand source/ type: Smooth, sharp and well graded to approval
- Joint profile/ finish: Recessed very slightly back from the tile arises and to match the approved sample.
- Other requirements: Ensure ridge and capping tiles are kept clean.

840 POINTING WITH TOOLS/ IRONS
- General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled, and taking great care not to spread any mortar over the surface of the masonry units
- Face of masonry: Keep clear of mortar: Work carefully using specialist tools to suit the width of joint to avoid spreading mortar over arises or surfaces of the masonry units. Should this occur, it should be removed immediately and washed clean with clean water. Where arises are sharp and clear, gentle adhesive tape may be permitted for use as a mask. Finish joints full and neat.

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860 BRUSHED FINISH TO JOINTS

- Following initial mortar set, when the mortar is still 'going off', carefully remove the surface of the mortar using saw blade or knife and dress back the joint using a stiff churn brush to compact the mortar, and to provide a coarse texture with the aggregate exposed and visible in the finished appearance.

C51 REPAIRING/ RENOVATING/ CONSERVING TIMBER

To be read with Preliminaries/ General conditions.

GENERAL

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

160 TIMBER SUPPLIER
- Supplier: Contractor's Choice

165 TIMBER GENERALLY
- All structural timbers are to be sawn die square, regularised where necessary and shall hold to the full basic size.

- The timber shall be properly seasoned, free of sap wood, large knots and decayed knots, waney edges and other defects to suit the particular purpose for which it is intended.

- Structural timbers are to be framed and put together in the best manner, together with all ties, straps, bolts, nuts, washers and the like as required. Wallplates are to be halved and spiked at joints. Rafters, purlins, ridges and ceiling joists are to be in one length wherever practicable. Where joints are unavoidable the timbers are to be properly stop splayed scarfed, spiked and bolted as required, and as shown on the drawings or as agreed. Assembled timber is to have tight, close fitting joints to produce rigid components free from distortion and ensure that notches and holes are not so positioned in relation to knots or other defects that strength of the timber will be reduced or the detailing compromised.

- For each repair, the architect is to agree the extent of the repair on site with the joiner/carpenter before the original timber is cut.

- All timber must be appropriately protected during the course of the works to prevent physical damage and or exposure to the lime, gypsum or cement products and water.

PRODUCTS

310 GRADED SOFTWOOD FOR STRUCTURAL AND CARCASSING WORK
- Grading Standard: To BS 4978, BS EN 14081-1 or other national equivalent and so marked.
- Strength Class to BS EN 338: C16 or C24 - as specified by the Structural Engineer
- Treatment: C8
- Moisture content at time of installation:
  - Covered in generally unheated spaces 24%

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- Covered in generally heated spaces 20%
- In continuously heated spaces 20%

450 STAINLESS STEEL BOLT ASSEMBLIES
- Bolts: To BS EN ISO 3506-1.
  - Designation:
    - Grade A2 (for most applications)
  - Nuts and washers: To suit grade of bolt.
  - Washer size:
    In contact with timber: Diameter: 2 times bolt diameter; thickness: 0.2 times bolt diameter.
    In contact with steel section/ plate (required when surface finish may be damaged by nut or bolt head rotating): To BS 4320.

480 SCREWS GENERALLY UNLESS SPECIFIED OTHERWISE
- Standard: As section Z20.
- Material: Stainless steel Grade 316 (1.4401)
- Tensile strength (minimum): As appropriate for location
- Screw heads to be counterbored and pelleted where visible, with the pellet grain aligning with the existing grain. All visible fixings must be spaced at equal centres and must line through.

EXECUTION

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

610 TEMPORARY SUPPORTS/ PROPPING
- General: Provide adequate temporary support at each stage of repair work to prevent damage, overstressing or uncontrolled collapse of any part of the structure.
- Bearings for temporary supports/ propping: Suitable to carry loads throughout repair operations.

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

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

660 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD
- General: Dimensions given on drawings and in schedules of work are finished sizes.
- Maximum permitted deviations from finished sizes:
  - Sawn surfaces:
    Thickness and widths < 100 mm: -1, +3 mm.
    Thickness and widths > 100 mm: -2, +4 mm.
  - Further processed surfaces:
    Thickness and widths < 100 mm: -1, +1 mm.
    Thickness and widths > 100 mm: -1.5, +1.5 mm.

670 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD AND HARDWOOD
- General: Dimensions given on drawings and in schedules of work are finished sizes.
- Maximum permitted deviations from finished sizes:

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- Sawn surfaces:
  Thickness and widths < 100 mm: -1, +3 mm.
  Thickness and widths > 100 mm: -2, +4 mm.
- Further processed surfaces: -0, +1.

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

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

710 REUSE OF TIMBER SECTIONS/ WOOD COMPONENTS
- Not to be undertaken unless specifically stated.

730 PARTIAL REMOVAL OF EXISTING DECORATIVE/ PROTECTIVE FINISH
- Extent: Remove minimum necessary to expose damaged or decayed wood. Feather the edge of remaining coating around repair site.
- Generally historic finishes are an important part of the component's history and they should not unnecessarily be removed.

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

770 NOTCHES AND HOLES IN STRUCTURAL TIMBER
- Avoid hole or notches wherever possible and re-route using existing holes or notches. Agree extent of new notches and holes with the architect.
- For new notches or holes, do not position near knots or other defects which might significantly affect the strength of the timber.
- For notches in joists, first drill the joist and then cut down into the drilled hole as this minimises the risk of weakening the timber. Locate notches between 0.07 and 0.25 of span from support and not deeper than 0.125x the depth of the joist.
- For holes in joists, install in the neutral axis with a diameter not more than 0.25x the depth of the joist. Space holes at not less than 3x diameter of largest hole and located between 0.25 and 0.4 of span from support.

860 MOISTURE CONTENT CHECKING
- Procedure: When instructed, check moisture content of timber sections with an approved electrical moisture meter.
- Test results: Keep records of all tests. If moisture content falls outside specified range obtain instructions.

COMPLETION

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

920 DATING TIMBERS USED IN STRUCTURAL REPAIRS
- Principal replacement members: Mark by carving or branding with date of repair and, when appropriate, initials of carpenter, in characters 20-25 mm high.
- Location of marks: In discrete locations.

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H65 SINGLE LAP ROOF TILING

To be read with Preliminaries/ General conditions

All roofing works are to be undertaken by a Contractor or Sub-contractor with a demonstrable experience of high quality roofing work.

190 DOUBLE ROMAN TILING
- Substrate: Existing / repaired common rafters
- Pitch: Existing varies, nominally 35 – 45 degrees
- Underlay: To match existing, reinforced bitumen felt Type 1F
  - Direction: parallel to eaves
  - Head-lap (minimum): To match existing gauge
- Battens: As Clause H65/30
  - Size: To match existing. Allow for 50 x 25mm
  - Fixing: 65 x 3.35mm stainless steel nails
- Tiles: Existing re-used and new Bridgwater double roman clay tiles, to match existing. Sample to be approved by architect.
  - Manufacturer: Contractor choice.
  - Head-lap: To match existing.
  - Fixing: To match existing condition.

TILING GENERALLY

200 BASIC WORKMANSHIP
- The Contractor is generally follow the current versions of BS55324 Code of Practice for Slating and Tiling and BS8000 for Workmanship on Building Sites Part 6 Slating and Tiling.
- General: Fix slating and accessories to make the whole sound and weathertight at earliest opportunity.
- Setting out: To true lines and regular appearance, with neat fit at edges, junctions and features.
- Fixings: As recommended by manufacturer.
- Gutters and pipes: Keep free of debris. Clean out at completion.

210 REMOVING EXISTING TILES
- General: Carefully remove tiles, battens and any underlay, etc. with minimum disturbance of adjacent fabric including the plaster ceilings. If boarding is found this is be retained in-situ and seek advice where found decayed.
- Undamaged tiles: Set aside for reuse.

- The Contractor is responsible for installing and maintaining temporary tarpaulins over the roof once the roof has been stripped. The contractor must make every effort to repair, re-felt and re-tile as soon as possible.

240 UNDERLAY
- Handling: Do not tear or puncture.
- Laying: Maintain consistent tautness.
- Vertical laps (minimum): 100 mm wide, coinciding with supports and securely fixed.
- Fixing: Galvanized steel, copper or aluminium 20 x 3 mm extra large clout head nails.
- Eaves: Where exposed, underlay must be BS 8747, Annex B , type 5U, or equivalent UV durable type.
- Ventilation paths: Do not obstruct.

245 BATTENS
- Timber: Sawn softwood.
  - To match existing, allow for 50 x 25mm
  - Standard: To BS 5534, clause 4.12.1.
  - Permissible characteristics and defects: Not to exceed limits in BS 5534, Annex C.

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- Moisture content at time of fixing and covering (maximum): 22%.
- Preservative treatment: As Wood Protection Association Commodity Specification C8.
- Counterbattens are only to be fixed if required.
- Where proprietary eaves ventilator is not used, a tilting filet is to be provided at the eaves and at any back gutter situations to ensure that the tiles lie correctly and to prevent wind uplift.

265 BATTEN FIXING
- Setting out: To match existing gauging.
- Batten length (minimum): Sufficient to span over three supports.
- Joints in length: Square cut. Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
- Additional battens: Provide where unsupported laps in underlay occur between battens.
- Fixing: Each batten to each support. Splay fix at joints in length.

EDGES/ JUNCTIONS/ FEATURES

270 MORTAR BEDDING/ POINTING
- Mortar: As section Z21, NHL 5 mortar, continuous to edges and solid to joints.
  - Ensure ridges are bedded tight to adjacent with minimal mortar beddings visible.
  - Fixing: To match existing condition. Allow for fixing all ridge tiles to ridge boards or ridge tile fixing battens with self-sealing non-ferrous fixings.
- Weather: Do not carry out in wet or frosty conditions or when imminent.
- Appearance: Finish neatly and remove residue.

290 SIDE ABUTMENTS
- Underlay: Turn up not less than 100 mm at abutments.
- Abutment tiles: Cut if absolutely necessary. Fix close to abutments.

H71 LEAD SHEET COVERINGS/ FLASHINGS

To be read with Preliminaries/ General conditions.

All leadwork must be carried out by competent and skilled plumbers. Leadwork contractors engaged must be listed in the Directory of Specialist Leadworking Contractors as published by the Lead Contractors Association.

All leadwork must be carried out fully in accordance with the current recommendations of the Lead Sheet Association.

It is to be assumed unless otherwise stated that all new leadwork and existing leadwork within the works area is to be treated with Smartwater in discrete locations. Ideally the Smartwater is to be applied to the rear surfaces to ensure longevity. Smartwater is to be supplied by the PCC who will register the product following the application.

TYPES OF LEADWORK

420 COVER FLASHINGS
- Lead:
  - Thickness: Code 5
- Dimensions:
  - Lengths: Not more than 1500mm
  - End to end joints: Laps of not less than 100 mm.
  - Cover: Overlap to upstand of not less than 75 mm.
- The top edge is to be dressed to a right angle and welted and inserted at 35 mm into the joint, or dressed 75mm over masonry, prior to re-bedding coping stone
- Fixing: Lead wedges into the bed joint under coping stones. Ensure that the lead is very securely wedged. Proprietary stainless steel wedges are not to be used.

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456 SECRET GUTTER
- Lead secret gutter lining:
  Thickness: Code 6
  - Dimensions:
  Lengths: Not more than 1500 mm.
  End to end joints: Laps as follows:
  15-20 degrees =300mm cover
  20-30 degrees =220mm cover
  30-40 degrees =150mm cover
  40-50 degrees =115mm cover
  50-60 degrees =100mm cover
  60-85 degrees =85mm cover
  85 degrees + =75mm cover
  Upstand: Not less than 65 mm above tiles.
- Fixing: Dress into secret gutter and form a welted edge at side to be tiled. Nail top edge of each sheet. Dress bottom end neatly into gutter.

GENERAL REQUIREMENTS/ PREPARATORY WORK

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

515 LEADWELDING
- In situ leadwelding: Not permitted.

520 LEAD SHEET
- Production method:
  - Rolled, to BS EN 12588
- Identification: Labelled to show thickness/ code, weight and type. Supply to the Architect.

580 EXISTING METAL REUSED
- Type/ Location/ Extent: Wherever lead is undamaged and suitable for re-use. To be agreed with architect.
- Handling/ Storage: Keep for reuse in the Works.
- Security: Be aware that existing leadwork is a greatest risk from theft whilst the work is taking place.
- Provide adequate physical protection to protect the lead from damage caused by the building work itself.
- If Smartwater is being applied generally, ensure that existing retained lead within the contract area is similarly treated.

585 EXISTING METAL REMOVED TO REMAIN THE PROPERTY OF THE EMPLOYER
- Type/ Location/ Extent: Damaged lead cover flashings or secret gutters
- Removal: Give notice when the metal is to be stripped.

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- Handling: Include for lowering to the ground, storing in a secure place either on or off site. Immediately following removal weigh the lead and seek two prices for salvage value. Advise the architect of the weight and value and seek instruction as to whether the material should be sent for salvage or kept for re-use by the Employer.
- The security of removed lead remains the responsibility of the Contractor until formally handed to the client or until the sale of the lead if instructed so to do.

590 SECURITY OF LEAD
- The security of all lead associated with the works remains the responsibility of the contractor until the Completion of the works.

610 SUITABILITY OF SUBSTRATES
- Condition: Dry and free of dust, debris, grease and other deleterious matter.
- Minimum falls for roofing and gutters are to be 1:60 unless directed otherwise. Advise if existing gutters have back falls or a fall of less than 1in 60.

620 PREPARATION OF EXISTING TIMBER SUBSTRATES
- Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
- Defective boards: Give notice.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
- Replacement boards should be of the same dimensions as the existing boards unless specifically shown or directed otherwise.

640 NEW TIMBER FOR USE WITH LEADWORK TO SECRET GUTTER
- Quality: Planed, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
- Species: Douglas Fir
- Supplier: Interesting Timbers, Wells, Road, Emborough, Bath, Somerset, BA3 4SP. Tel: 01761 241333 or other of the Contractor's choice.
- New timber shall be rift sawn to minimise warping and laid with the grain in the direction of the fall.
- pH level - greater than 5.5.
- Moisture content: Not more than 15% at time of laying the lead.
- Preservative treatment: Not required.
- All new boarding to be laid with penny joint gaps between the boards with nail heads punched below the surface. There should be no rough edges.

655 BUILDING PAPER
- Product Reference and Manufacturer: Sisalkraft 420. Proctor Group Ltd, The Haugh, Blairgowrie, Perthshire, PH10 7ER. Tel: 01250 872261.
  OR
  Product Reference and Manufacturer: GradeA1F Building Paper. British lead, Peartree Lane, Welwyn Garden City, Herts, AL7 3UB. Tel: 01707 324595.

660 LAYING BUILDING PAPER
- Handling: Prevent tears and punctures.
- Laying: Lapped and taped in accordance with the manufacturer's information.
  - Wood core rolls: Fixed over building paper.
- Protection: Keep dry and cover with lead at the earliest opportunity.

FIXING LEAD

705 HEAD FIXING LEAD SHEET
- Top edge: Secured with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
- Sheets less than 500 mm deep: May be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

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710 FIXINGS
- Nails to timber substrates: Stainless steel (austenitic) clout nails to BS 1202-1.
  - Shank type: Annular ringed, helical threaded or serrated.
  - Shank diameter: Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
  - Length: Not less than 25 mm or equal to substrate thickness.
  - Where water may penetrate to nail heads, waterproof with lead welded dots.
- Screws to concrete or masonry substrates: Stainless steel to BS 1210, tables 3 or 4.
  - Diameter: Not less than 3.35 mm.
  - Length: Not less than 25 mm.
  - Washers and plastic plugs: Compatible with screws and lead.

770 WEDGE FIXING INTO JOINTS/ CHASES (where repair is deemed necessary)
- Joint/ chase: Rake out to a depth of 35 mm.
- Lead: Dress into joint/ chase.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead. Ensure that the lead wedges are very secure otherwise there is a risk that the lead will move and dislodge the mortar pointing.
  - Protect the top edge of the flashing with building paper before pointing up. Ensure that the groove is damped down before pointing up and tend and protect as required. With a very sharp knife trim off the building paper after the mortar has set.
- Sealant: Do not use unless otherwise agreed.
  - Application: As section Z22.

JOINTING LEAD

810 FORMING DETAILS
- Method: Bossing except where leadwelding is specifically required or agreed.
- Bossing: Carried out without thinning, cutting or otherwise splitting the lead sheet. Take care not to overwork. All lead is to follow the line of building and the existing timber boarding.
- Leadwelded seams: Neatly and consistently formed.
  - Seams: Do not undercut or reduce sheet thickness.
  - Filler strips: Of the same composition as the sheets being joined.
  - Butt joints: Formed to a thickness one third more than the sheets being joined.
  - Lap joints: Formed with 25 mm laps and two loadings to the edge of the overlap.

870 SOLDER
- No solder shall be used

880 WELTED JOINTS
- Joint allowance: 50 mm overlap and 25 mm underlap.
- Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
- Overlap: Welt around underlap and clips and lightly dress down.

970 PATINATION OIL
- Acceptable Manufacturers:
  - British Lead, Peartree Lane, Welyn Garden City, Herts, AL7 3UB. Tel: 01707 324595.
  - Midland Lead Manufacturers ltd, Kiln Way, Woodville, Swadlincote, Derbyshire, DE11 8ED. Tel: 01283 224 555 or other supplier of the Contractor's Choice.
  - Product reference: Patination Oil
- Location: flashings
- Application: As soon as practical and no later than at the end of a day's work, apply a smear coating to lead, evenly in one direction and in dry conditions.
- Apply to under the lower edge of leadwork, between the laps and along the edges of flashings.

980 PLAQUES AND GRAFFITI

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- Plumbers plaques and graffiti (often in the form of footprints) are historically important. Where leadwork replacement has been specified and plaques or graffiti found, these should be brought to the attention of the architect.
- Plaques should be carefully cut off the lead if the lead is to be replaced and following completion of the works the plaques are to be re-welded to the new lead.
- Old and good quality graffiti is to identified and salvaged for either display on the ground or for re-welding in-situ to the new lead in a position as close as possible to that found.

M20 PLASTERED/ RENDERED/ ROUGHCAST COATING

TYPES OF COATING

309 LIME:SAND PLASTERS FOR INTERNAL USE (LIME PUTTY MIXED ON SITE)

- Substrate: Masonry and studwork including ceiling laths.
  - Preparation: Ensure that the substrate has been repaired in full to the architect's approval. All loose and failing pointing must be removed and replaced.
- Lime manufacturer: Lime putty as Z21
- Scratch coat: 2.5 parts sharp well graded sand: 1part mature lime putty with hair re-inforcement.
  - Thickness (excluding dubbing out and keys): not exceeding 10mm
- Floating coat: 2.5 parts sharp well graded sand: 1part mature lime putty. No hair re-inforcement.
  - Thickness (excluding dubbing out and keys): not exceeding 8mm
- Finishing coat: 1 parts kiln dried fine sieved silver sand to 1 parts mature lime putty. NO hair reinforcement. Prepare at least 7 days before use and then thoroughly knock up prior to use.
  - Thickness: 2-3mm applied in 2 applications.
  - Finish: Smooth
- Accessories: Beads and stops are not required.
- Allow to prepare 1Nr sample area approx 1m^2 for consideration and approval prior to commencing finishing coats.

330 PROPRIETARY LIME:SAND PLASTERS FOR INTERNAL USE

- Substrate: New and existing masonry and stud walls and lath ceilings.
  - Preparation: Ensure that the substrate has been repaired in full to the architect's approval. All loose and failing pointing must be removed and replaced. Apply plaster coats in accordance with the supplier's recommendations.
- Manufacturer:
  - Limebase Products Ltd, Walronds Park, Isle Brewers, Taunton, Somerset. TA3 6QP. Tel: 01460 281921.
  - Mike Wye and Associates Ltd, Buckland Filleigh Sawmills, Buckland Filleigh, Devon. EX21 5RN. Tel: 01409 281644.

    or Contractor's choice - submit proposals.
- Scratch Coat:
  - Product reference/ Type: UP4 from Limebase Products Ltd or Lime Mortar 3/1 from Mike Wye & Associates Ltd.

    Fibre reinforcement: Animal hair.
  - Thickness (excluding dubbing out and keys): not exceeding 10mm.
- Floating Coat:
  - Product reference/ Type: UP4 from Limebase Products Ltd or Lime Mortar 3/1 from Mike Wye & Associates Ltd.
  - Fibre reinforcement: No hair.
  - Thickness (excluding dubbing out and keys): not exceeding 8mm.
- Final coat:
  - Product reference: FP14 from Limebase Products Ltd or Lime Plaster 3/2 from from Mike Wye & Associates Ltd.
  - Thickness: 2-3mm applied in 2 applications.
  - Finish: Smooth to match the approved sample
- Accessories: Beads and stops are not required.

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- Allow to prepare 1Nr sample area approx 1m² for consideration and approval prior to commencing finishing coats.

PLASTER CONSERVATION AND REPAIR

405 REPAIRS TO SMALL PATCHES OR LARGE CRACKS IN LIME PLASTER WORK INTERNALLY

- Large cracks and patches must be prepared by undercutting the edges of the well adhered plaster with a sharp knife to create a dovetail key. The area of repair may need to be widened slightly to ensure all the edges are tightly adhered to the background.
- Remove all loose dust and debris by careful brushing and the use of a vacuum cleaner.
- Treat the surrounding plaster with a weak solution of PVA solution (10%) and once dry thoroughly wet the masonry, laths and adjacent plaster with limewater. Dry plaster may require additional applications of limewater.
- The patch or crack should then be built up in coats no greater than 10mm with the lime putty finishing coat approximately 3mm thick. Finish with a soft brush to marry in with the adjacent existing surfaces.

406 REPAIRS TO SMALL CRACKS IN PLAIN LIME PLASTER WORK INTERNALLY

- Small cracks should be thoroughly cleaned; wetted with limewater and then filled with lime putty mixed with a small amount of fine aggregate. Apply with a soft brush.

410 LOCALISED REPAIR OF A MISSING OR DECAYED CEILING LATH – 2 lathes max

- Identify carefully the missing or decayed lath and if necessary protect and support the underside of the ceiling.
- Carefully clean the area of all loose material. Decayed laths should be carefully sawn through with a hacksaw blade.
- For 1no missing lath install 1no 50mm stainless steel screw into the sides of the joist immediately above the missing lath and run 1no stainless steel wire between the screws. For a pair of missing laths install 3no screws and 3no wires as described above.
- Prepare the cleaned plaster by applying an application of PVA solution (10%) to control suction to the adjacent laths as well as the plaster.
- Carefully create a new plaster bridge around the wires and which is bonded to the plaster ceiling below using superfine retarded (mixed with a solution of glue size and water) Plaster of Paris.

411 REATTACHING SMALL AREAS OF DETACHED PLAIN LIME PLASTER TO WALLS AND CEILINGS WHERE THE LATHS ARE IN GOOD CONDITION BUT WHERE THE LATH FIXING HAS FAILED.

- Identify carefully the area where the plasterwork has detached from the joists or studs.
- For ceilings, install temporary 2"x1" softwood battens slightly offset under the existing sprung laths using temporary stainless steel wire hangers carefully drilled through the ceiling and wrapped over the top of the joists. Suitable soft padding should be provided to the upper surface of the batten so as to avoid damage to the plaster.
- For ceilings, very carefully raise the battens and tighten the wires to draw the sprung laths back up against the underside of the joists. For walls, gently push the detaching plaster back to its original position and temporarily hold in place. Note: Do not push the plaster back if there is a risk of plaster damage.
- Cut a small circular hole with undercut sides in the plaster aligned with a joist or stud and resecure the laths with using a stainless steel screw, s/s washer and a further stainless steel gauze washer underneath to provide a key for the a small plaster repair to fill the hole.
- Carefully release the temporary propping. For ceilings, once the laths are fully reattached make good all the wire holes.

MATERIALS AND MAKING OF MORTAR

478 HYDRAULIC LIME

- Standard: To BS EN 459-1.
  - Type: Natural hydraulic lime (NHL).

481 READY PREPARED LIME PUTTY

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- Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.
  - Maturation: In pits/ containers that allow excess water to drain away.
  - Density of matured lime putty: 1.3–1.4 kg/litre.
- Maturation period before use (minimum): 90 days.
- Storage: Prevent drying out or wetting. Protect from frost.

492 HAIR REINFORCEMENT TO SCRATCH COATS
- Manufacturer/ Supplier: Contractor's choice
- Product reference: Goat or cow hair between 25mm and 100mm long. The hair should be strong, soft and not springy.
- Proportions (approximate): Allow 2 kg of hair/tonne of coarse stuff for ceilings and 1kg of hair/tonne of coarse stuff for walls.
- Condition: Clean, sterile and free from grease and other impurities. Well teased before adding to the mix.
- Distribution: Evenly throughout with no balling into lumps.
- Hair must always be added to the mix as late as possible and certainly never to non-hydraulic batches which are left to 'fatten up' prior to knocking-up.

495 MIXING
- Render mortars (site-made):
  - Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on damp sand. Adjust for dry sand.
  - Mechanical mixers required for large quantities.
  - Mixing must be thorough and generally for 15 – 20 minutes
- Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
- Contamination: Prevent intermixing with other materials.

497 COLD WEATHER
- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
- Internal work: Take precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

PREPARING SUBSTRATES

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

556 REMOVING DEFECTIVE EXISTING RENDER OR PLASTERS
- Plaster or render for removal: Detached, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged. Agree the extent of removal on site in advance as hollow, detached areas in historic plasterwork can frequently be reattached to avoid the loss of the historic plaster and decorative finishes.
  - For smooth renders, edges should be square cut or slightly undercut but for rough cast the edge should be feathered.
  - Bottom edges to external render: Do not undercut to avoid creating a water trap.
- Cracks:
  - Fine hairline cracking/ crazing: Leave.
  - Other cracks: Discuss with architect
- Faults in substrate (structural deficiencies, damp, etc.): Discuss with architect
- Dust and loose material: Remove from exposed substrates and edges.
- Perished and salt contaminated masonry: Rake out mortar joints.

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- Drying out substrates: Established drying conditions. Leave walls to dry for as long as possible before plastering.
- Great care must be taken to minimise damage to masonry.
- In certain situations and when used by skilled operatives small power or air chisels may be used to remove large flat areas of render, but render removal must always be by hand around carved stonework.
- For wide joints, carefully drilled holes into the mortar can assist with the breaking up the mortar, but care must be taken never to drill the stonework. Hacksaw blades may be beneficial for narrow joints.
- Cement pointing must be picked out with care with joints always cleaned out by hand.
- Any evidence of historic renders below should be retained for close inspection and analysis.
- Where timber lintels are revealed internally allow to counterbatten with oak laths prior to re-plastering. Externally apply stainless steel mesh over timber lintels.

LATHING/BACKINGS/ BEADS/ JOINTS

600 LATHING
- Unless stated otherwise lathes should aim to match the existing in terms of split or sawn, timber species, thickness, length and spacing unless directed otherwise.
- All lathes in repair and conservation work are to be screw fixed to avoid disturbing adjacent surfaces.
- Laths in new work shall be:
  - Oak riven laths
- Laths in entirely new work can be nail fixed using stainless steel ring shank nails but care must be taken to ensure that the other surfaces are not inadvertently damaged by the vibration and impact.
- Timber treatment if specifically stated must be a water-borne product.

630 BEADS/ STOPS FOR INTERNAL USE
- Material: Do not use.

INTERNAL PLASTERING

705 WALL PREPARATION GENERALLY
- Where sound backgrounds are found, with good pointing then only loose surface material needs to be removed.
- Failing and loose pointing must be raked out and replaced before a new render application is applied. All joints in masonry should be left open or raked to a minimum depth of 2.5mm.
- Dampening down must be undertaken to modify the suction characteristics of the substrate. When patch repairing, the edges of surrounding material must be well dampened.

710 APPLICATION GENERALLY
- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion. When applying a scratch coat over laths apply diagonally.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  - Accuracy: Unless stated or agreed otherwise, finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- The substrate should be thoroughly wetted down to control suction.
- Drying out: Prevent excessively rapid or localized drying out.

725 UNDERCOATS GENERALLY
- General: Rule to an even surface and the cross scratch to provide a key for the 'floating coat'.
- Scratch coats on metal lathing: Work well into interstices to obtain maximum key.

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- Wherever possible routinely inspect the rear of the lathing to ensure a good key is being maintained.
- Do not apply next coat until drying shrinkage is substantially complete. The recommended interval between coats is one to three weeks but this will vary according to humidity and temperature.
- The undercoats are to be finished with a wooden float prior to scratching.
- Ensure that the floating coat is accurately gauged to allow the finishing coat thickness to be consistent over all areas.
- It is essential that the 'floating coat' is vigorously 'scoured' or compacted with a wood float at least twice before it sets to consolidate as it shrinks on drying.
- The 'floating coat' is to be scratched with a 'devil float'.

777 SMOOTH FINISH
- Appearance: A tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks. Avoid water brush, excessive trowelling and over polishing. Do not overwork.

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

780 PATCH REPAIR TO LATH AND PLASTER WALLS OR CEILINGS
- Carefully removed the detached section of plaster back to where the plaster remains firmly attached to the laths. If the laths are found decayed or damaged, then additional plaster cutting back may be required to allow a new section of lath to be fixed. Discuss with Architect on site. Replacement laths should match the existing unless agreed otherwise.
- Clear the laths of as much debris as possible and check that all laths are adequately secured. Loose laths should be resecured with stainless steel screws. Pilot drilling may be necessary to prevent splitting.
- Dampen the laths thoroughly to prevent the laths sucking out the moisture from the 'pricking–up coat'.
- Build up the plaster in 3-coat work in layers as close as possible to the existing ensuring that the 'pricking-up coat' is well worked in between the lathes in a diagonal motion with the 'floating coat' of appropriate thickness to ensure the 'finishing coat' marries in perfectly with the adjacent plasterwork. Brush the finishing coat flush with the existing ceiling.

M60 PAINTING/ CLEAR FINISHING

COATING SYSTEMS

112 ESTATE EMULSION PAINT
- Manufacturer: Farrow & Ball
  - Product reference: Estate Emulsion (water based)
- Prepare surfaces in accordance with manufacturer's recommendations and apply 1 coat of Farrow & Ball 'Wall and Ceiling Primer and Undercoat'.
- Apply 2no full top coats.
- Colour to match existing

132 EGGSHELL/ SATIN PAINT FOR INTERNAL USE ON WOOD AND METAL
- Manufacturer: Dulux
  - Product reference: Diamond Satinwood (water based)
- Prepare surfaces in accordance with manufacturer's recommendations:
  - Interior bare wood: Apply 1no coat of Dulux Trade Quick Drying Wood Primer. No undercoat required unless there is a significant colour change.
- Interior ferrous metal surfaces: Degrease thoroughly and then apply an appropriate Dulux Trade Metal Primer.
- Apply 2no full top coats

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152 EXTERIOR DECORATION OF METAL WORK
- Manufacturer: Rustoleon. Supplier: Rustoleum Direct, Andrews coatings, Carver Buildings, Littles Lane, Wolverhampton, WV1 1JY. Tel: 01902 712286.
- Surfaces: Preparation: Prepare in accordance with paint supplier's recommendations.
- Initial Coats:
  - Rubbed down metalwork where previously rusty. Prime with Rustoleon 769 damp proof red primer.
  - Bright metallic steel and all transit primed metalwork or where existing paintwork is in good condition and not rusty. Prime with Rustoleon 569.
  - Stainless steel or galvanised metal: Rustoleon 3202 Galvinoleum.
- Undercoats: Apply 1no coat of Rustoloeum Hi-build undercoat over existing well adhered paint and primed surfaces including transit primer for new cast iron goods.
- Finishing coats: Apply 2no full coats of Rustoleon Alkythane top coat in black to match existing finish. Rustoleon Code: 7575: Alternative: RAL 7021 Black Grey.

153 BITUMINOUS PAINT TO CONCEALED SURFACES WHERE EXPOSED AND ACCESSIBLE
- Manufacturer: Contractor's Choice
- Surfaces: Inside of cast iron gutters, hoppers and shoes and cast iron gully covers.
  - Preparation: In accordance with supplier's recommendations
  - Number of coats: 2

160 PURE LIMEWASH
- Limewash should be sourced direct from the slaking process.
- Manufacturer: Pre-prepared limewash applications can be obtained from:
  - Limebase Products Ltd, Walronds Park, Isle Brewers, Taunton. TA3 6QP Tel: 01460 281921.
  - Farrow & Ball Ltd, 33 Uddens Industrial Estate, Wimborne, Dorset. BH21 7NL Tel: 01202 876141.
  - Rose of Jericho Ltd, Horchester Farm, Holywell, Evershot, Dorchester. DT2 OLL. Tel: 01935 83676.
  - The Potmolen Paint CO Ltd, 27 Woodcock Industrial Estate, Warminster, Wilts. BA12 9DX. Tel: 01985 213960.
  - Mike Wye & Associates, Buckland Filleigh Sawmills, Buckland Filleigh, Devon, EX21 5RN. Tel: 01409 281644.
- Colour: Colour matched to existing paint finishes (off-white)
- Finishing coats:
  - Apply three full coats internally
- Sample areas: Allow for 1nr. sample (0.5sqm) for architect's approval

170 DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE TO PURLIN REPAIR
- Manufacturer: Contractor's choice.
  - Product reference: To be agreed following approved samples, to match existing dark wood finish.
- Surfaces: Exposed faces of new timber
  - Preparation: As manufacturer's recommendations
- Initial coats: As manufacturer's recommendations
  - Number of coats: As manufacturer's recommendations
- Finishing coats: As manufacturer's recommendations
  - Number of coats: As manufacturer's recommendations

GENERAL

210 COATING MATERIALS
- Manufacturers: Contractor's choice unless stated.

215 HANDLING AND STORAGE
- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.

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- Materials from more than one batch: Store separately. Allocate to distinct parts or areas of the work.

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

PREPARATION

400 PREPARATION GENERALLY
- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- For newly lime plastered surfaces allow at least four weeks for the plaster to carbonate prior to applying paints or distempers.
- Wash off old distempers thoroughly prior to applying new coats.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
  - Apply before priming unless recommended otherwise by manufacturer.
  - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
  - Ease, if necessary, before coating.
  - Prime resulting bare areas.

420 EXISTING FIXTURES, FITTINGS AND IRONMONGERY
- Generally remove before commencing work. Carefully label, refurbish as necessary, and refit when coating is dry. Hinges to doors need not be removed.
- Remove old coating marks. Clean and polish.

440 PREVIOUSLY COATED SURFACES GENERALLY
- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos or other hazardous materials.
  - Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
  - Significant rot, corrosion or other degradation of substrates.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Retained coatings:
  - Thoroughly clean to remove dirt, grease and contaminants.
  - Gloss coated surfaces: Provide key.
- Partly removed coatings:

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- Additional preparatory coats: Apply to restore original coating thicknesses.
- Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

461 PREVIOUSLY COATED WOOD
- Degraded or weathered surface wood: Take back to provide suitable substrate.
- Unless specified otherwise, well adhered paint should not be removed. Sound edges should be feathered back where they stand proud. Discuss on site with the architect.
- Degraded substrate wood: Repair with sound material of same species.
- Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED WOOD
- Areas of defective primer: Take back to barewood and reprime.

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

500 PREPRIMED STEEL
- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.

580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Key lightly.

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

651 EXISTING GUTTERS
- Dirt and debris: Remove from inside of gutters.
- Defective joints: Clean and seal with suitable jointing material.

APPLICATION

711 COATING GENERALLY
- Application: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
  - Thickness: To suit surface porosity.
  - Application: As soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.
- For rainwater and other goods apply all coats fully prior to installation but include to redecorate locally any areas of damage caused by the fixing and installation. Where

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required, the touching-up should include rubbing back, priming, undercoat and two topcoats all as specified.

800 LIMEWASH PREPARATION

- If using a specified or agreed pre-prepared limewash product then the preparation and application of the product should be fully in accordance with the supplier's information.
- Ensure all other works to the stone, render or plaster are complete before applying the limewash. Lime mortars and renders should have been allowed to carbonate for at least one month.
- Any algae or mould must be treated with an algaecide or fungicide and thoroughly washed off with clean water. Do not use proprietry fungicides containing water repellents.
- Protect any adjacent surfaces and fixtures and fittings as required to avoid splashing and spillages.
- Protect fixtures, fittings and furnishings as appropriate to prevent any damage and discolouration.
- Ensure that the surface is brushed down and washed to remove any loose dust flushed from the surface of the stone, render or plaster.
- Advise the Architect of the discovery of any wall paintings or historic paint schemes.
- Limewash must be applied to dampened stone/plaster surfaces.
- Ensure all preparatory materials are compatible with the limewash to be used.
- Ensure colourants for pigmentation are to be stirred in well to the prepared limewash to achieve the colour required.
- As far as possible, all limewash for one job should be batched, combining and inter-mixing all separately measured quantities at the start of the job.

802 LIMEWASH APPLICATION

- Ensure limewash is within the shelf life period.
- Apply limewash using a large bristle brush working the limewash well into the surface paying special attention to any eroded areas, cracks and fissures.
- Coats should be applied thinly to avoid cracking of the finish. Each coat will not at first appear to cover, but will become opaque as the limewash dries. Each coat should be well burnished into the surface with the brush as it starts to 'gel'.
- It is important to mist spray the previous coat prior to the application of the next coat.

803 LIMEWASH PROTECTION

- Ensure all limewashed areas are properly and promptly protected. It is essential that the limewash dries slowly.
- Externally used limewash must be protected from frost before carbonation.
- Protect limewashed surfaces from premature drying as it is essential that the limewash dries slowly and remains damp for at least four hours to ensure maximum strength. Limewashed surfaces may be damped down with fine mist sprays if early drying is a problem. Protection from the sun, and or wind, may also need to be erected if drying becomes too fast.

R10 CAST IRON RAINWATER AND SOIL DRAINAGE SYSTEMS

To be read with Preliminaries/ General conditions.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM

- Gutters: Replacing a short section of guttering (approx. 3.2m length)

DISMANTLING OF EXISTING GUTTERING

250 DISMANTLING THE EXISTING INSTALLATION

- The existing guttering within the damaged area are to be carefully dismantled. Cast iron is a brittle material and joints must not be forced. The intention is to reuse as much of the existing installation as possible, removing only the damaged section of gutter.

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- If removal of existing fixings is necessary, make good the masonry surfaces with lime mortar repairs as described elsewhere.
- In conjunction with the removal of the existing rainwater goods arrange for the erection of temporary rainwater goods to protect the fabric of the building whilst the goods have been removed. (If a temporary roof has been specified elsewhere then this will not be necessary). Wherever possible reuse brackets and fixings etc to install temporary goods.
- Prepare a schedule of decayed and damaged items within the described works area and discuss with the architect.
- Store all removed cast iron goods in a safe, dry and secure location until refixing e.g. any retained brackets which may have been removed

PRODUCTS

315 NEW CAST IRON GUTTERS

- Manufacturer: Standard fittings can be obtained from various sources. Suggested suppliers include:
  - Tuscan Foundry Products, Unit 8, Tamar Business Park, Tamar Way, Holsworthy, Devon. EX22 6HL. Tel: 01409 255120.
  - J & J W Longbottom Ltd, Bridge Foundry, Holmfirth, Nr Huddersfield, HD9 7AW. Tel: 01484 681513.
  - Hargreaves Foundry, Water Lane, South Parade, Halifax, West Yorkshire, HX3 9HG. Tel: 01422 330607.
- Profile: or Product reference: To BS 460. Half round, to match existing
- Jointing type: To match the existing found
- Finish as supplied: Transit primed
- Brackets and fixing:
  - 'Repair' bracket to suit gutter. If beyond repair, replace on a like-for-like basis.
- Accessories: Supply 1no. stop end
- Sealing: Gutter joints must be sealed. Apply a low modulus silicone sealant. Spread the sealant evenly within the gutter socket before placing the gutter spigot into the socket and bolting them together with stainless steel bolts and washers. The nuts should not be over tightened to avoid damaging the paint and the gutter. All excesses sealant should then be removed. Sealant colour to match the finished painted colour. All bolts and sealant to be 'painted-in' following installation and testing.

EXECUTION

605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.

610 FIXING AND JOINTING GUTTERS

- Joints: Re-use existing above retained hopper
- Brackets: Securely fixed.
  - Fixings: To match existing.
- Fixing centres: 900mm minimum centres.
  - Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
- Roofing underlay: Dressed into gutter. Allow to trim back underlay so that it does not restrict the flow of water or reduce the capacity.

615 SETTING OUT EAVES GUTTERS

- Setting out: Level and as close as practical to the roof
- Outlets: Align with connections to below ground drainage. Set out and install the below ground drainage gullies in conjunction with the installation of the above ground rainwater goods.

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650 JOINTING PIPEWORK AND GUTTERS
- General: Joint with materials and fittings that will make effective and durable connections. Retain and re-use existing where undamaged.
- Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets. Recoat bare metal with a zinc rich primer as soon as practically possible following cutting.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.

DECORATION OF CAST IRON GOODS

701 TOP COATS
- Manufacturer: Rustoleon. Contact and supply details: Rustoleum Direct, Andrews coatings, Carver Buildings, Littles Lane, Wolverhampton, WV1 1JY. Tel: 01902 712286.
- Surfaces: Preparation: Prepare in accordance with paint supplier's recommendations.
- Initial Coats:
  - Rubbed down metalwork where previously rusty. Prime with Rustoleon 769 damp proof red primer.
  - Bright metallic steel and all transit primed metalwork or where existing paintwork is in good condition and not rusty. Prime with Rustoleon 569. Apply in accordance with manufacturer's recommendations.
  - Stainless steel or galvanised metal: Rustoleon 3202 Galvinoleum. Apply in accordance with manufacturer's recommendations.
- Undercoats: Full undercoat over existing well adhered paint and primed surfaces including transit primer for new cast iron goods using Rustoloeum Hi-build undercoat 1060-08B (Tinted: Dark Grey)
  - Number of coats: 1. Apply in accordance with manufacturer's recommendations.
- Finishing coats: Rustoleon Alkythane black to match existing. Rustoleon Code: 7575:
  - Number of coats: 2. Apply in accordance with manufacturer's recommendations.
  - Application: Apply all coats fully prior to installation but include to redecorate locally any areas of damage caused by the fixing and installation. Where required, the touching-up should include rubbing back, priming, undercoat and two topcoats all as described above.

GENERAL

710 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.

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

PREPARATION

720 PREPARATION GENERALLY
- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.

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- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Dust, particles and residues from preparation: Remove and dispose of safely.

721 PREVIOUSLY COATED SURFACES GENERALLY
- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
- Significant corrosion or other degradation of substrates.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge and if paint layers are thick 'feather-in'.
- Alkali affected coatings: Completely remove.
- Retained coatings:
  - Thoroughly clean to remove dirt, grease and contaminants.
  - Gloss coated surfaces: Provide key.
- Partly removed coatings:
  - Additional preparatory coats: Apply to restore original coating thicknesses.
  - Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

APPLICATION

730 COATING GENERALLY
- Application: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Priming coats:
  - Thickness: To suit surface porosity.
  - Application: As soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.

Z21 LIME MORTARS

300 NON-HYDRAULIC LIME MORTARS

310 LIME:SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

320 SAND FOR LIME:SAND MASONRY MORTARS
- Type: Sharp, well graded.
- Grading/ Source: As specified elsewhere in relevant mortar mix items or if not stated to include the following:
  - Fine yellow washed pit sand
  - Bath stone dust
  - Ham stone dust

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- Lias stone dust
- Holme sand
- Hornton Brown sand
- Ginger Building Sand
- Silver sand
- Wareham washed pit sand
- Chard Coarse stock
- Others of the Contractor's choice

- Quality, sampling and testing: To BS EN 13139. Sands should not be marine dredged due to salt contamination.

- Ensure all sands and aggregates are stored in different stockpiles on clean hard bases that allow free drainage.

330 READY PREPARED LIME PUTTY

- Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.
- Maturation: In pits/ containers that allow excess water to drain away.
- Density of matured lime putty: 1.3–1.4 kg/litre.
- Maturation period before use (minimum): 6 months

335 READY PREPARED LIME PUTTY

- Lime putty can be obtained from various sources. Suggested suppliers include:
  - Limebase Products Ltd, Walronds Park, Isle Brewers, Taunton. TA3 6QP Tel: 01460 281921.
  - Rose of Jericho Ltd, Horchester Farm, Holywell, Evershot, Dorchester. DT2 OLL. Tel: 01935 83676.
  - Cornish Lime Company Ltd, Brims Park, Old Callywith Road, Bodmin, Cornwall, PL31 2DZ Tel: 01208 79779.
  - Mike Wye & Associates, Buckland Filleigh Sawmills, Buckland Filleigh, Devon, EX21 5RN. Tel: 01409 281644.
  - HJ Chard & Sons, 1 Cole Road, Bristol, BS2 0UG. Tel: 0117 977 7681.
- Maturation period before use (minimum): 2 months
- Ensure that all supplied lime comes in bins with the date of slaking clearly marked.
- Store ready lime putty in conditions that prevent drying out and protect from frost.
- Note: 'Reconstituted lime putty' made by mixing bagged hydrated non-hydraulic lime with water is not acceptable.

340 POZZOLANIC ADDITIVES FOR NONHYDRAULIC LIME:SAND MORTARS

- Manufacturer/ Supplier: As for Clause 335
- Product reference:
  Metastar 501- white and based on china clay
  PFA – (for consideration in the repointing mix for the rubble walls of the house as the mortar analysis of the original records 'occasional fine fuel ash (charcoal) particles').
  The use of Pozzolanic additives should be discussed with the Architect before use. Use only as and when directed. Use is likely to depend on the analysis of past mortars used on site.
- Mixing: Mix thoroughly into mortar during knocking up and ensure that the mortar is used promptly.
- The quantity of the additive will depend on the usage and location. Seek recommendations from the supplier. Usage for Metastar products is as follows:
  External pointing – 8-12% by volume
  Rendering – 12-30% by volume
  Copings – 24-48% by volume
- Follow strict Health & Safety Guidelines when using fine mineral dusts.

360 MAKING LIME:SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Allow for bulking if sand is damp.
- Contamination: Prevent intermixing with other materials, including cement.

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370 SITE PREPARED NONHYDRAULIC LIME:SAND MORTARS
- Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
- Ensure putty and aggregates are thoroughly mixed in large batches.
  - Equipment: Paddle or roller pan mixer or submit proposals.
- Maturation period before use (maximum): 7 days
- The mortar, plaster or render should be left to mature in air tight containers. Include additional covering inside the bin to prevent drying out.

390 KNOCKING UP NONHYDRAULIC LIME:SAND MORTARS
- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water.
- Equipment: Paddle or roller pan mixer or submit proposals.

400 HYDRAULIC LIME MORTARS

405 Hydraulic lime is available as follows:
- NHL 2.0 – Feebly hydraulic
- NHL 3.5 – Moderately hydraulic
- NHL 5.0 – Eminently hydraulic

410 LIME:SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

420 SAND FOR LIME:SAND MASONRY MORTARS
- Type: Sharp, well graded.
- Grading/ Source: As specified elsewhere in relevant mortar mix items for if not stated as follows:
- Fine yellow washed pit sand
  - Chard Coarse stock
  - Wareham washed pit sand
  - Holme sand
  - Ginger Building Sand
  - Silver sand
  - Washed sand of the Contractor's choice
- Quality, sampling and testing: To BS EN 13139. Sands should not be marine dredged due to salt contamination.
- Ensure all sands and aggregates are stored in different stockpiles on clean hard bases that allow free drainage.
- Prepare mortar samples based on mixes using various sands and stone dusts for consideration.

445 ADMIXTURES FOR HYDRAULIC LIME:SAND MORTARS
- Do not use any admixtures.
- Do not use cement.

460 MAKING LIME:SAND MORTARS GENERALLY
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: Prevent intermixing with other materials, including cement.

470 MAKING HYDRAULIC LIME:SAND MORTARS
- Lime can be obtained from various sources. Suggested suppliers include:
  - Limebase Products Ltd, Walronds Park, Isle Brewers, Taunton. TA3 6QP Tel: 01460 281921.
  - Rose of Jericho Ltd, Horchester Farm, Holywell, Evershot, Dorchester. DT2 OLL. Tel: 01935 83676.

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  - Cornish Lime Company Ltd, Brims Park, Old Callywith Road, Bodmin, Cornwall, PL31 2DZ Tel: 01208 79779.
  - Mike Wye & Associates, Buckland Filleigh Sawmills, Buckland Filleigh, Devon, EX21 5RN. Tel: 01409 281644.
  - HJ Chard & Sons, 1 Cole Road, Bristol, BS2 0UG. Tel: 0117 977 7681.
- Mixing hydrated hydraulic lime:sand: Follow the lime manufacturer's recommendations for each stage of the mix and allow for each batch of lime to be mixed for at least 15 minutes and then left to stand for a short period to improve workability prior to application.
- Water quantity: Only sufficient to produce a workable mix.
- Contamination: Prevent intermixing with other materials, including cement.
  - Working time: Within limits.

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APPENDIX

APPENDIX I Photos

APPENDIX II Designer Risk Assessment

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the borough studios, the borough, wedmore, BS28 4EB
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www.b2architects.com

APPENDIX II – Photographs

benjamin + beauchamp architects
the borough studios, the borough, wedmore, BS28 4EB
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APPENDIX III – DESIGNER RISK ASSESSMENT

CONSTRUCTION RISKS						
ELEMENT	**DETAILS OF CONSTRUCTION**	**HEALTH & SAFETY IMPLICATIONS**	**E**	**IR**	**ACTION TO BE TAKEN**	**RR**
Demolitions	Discovery of asbestos	Obtain Asbestos report	LPW	2	Inspect asbestos report. Wear protective clothing and work in accordance with current guidelines	2
	Internal protections & high level access	Falling from height, unsafe methodology	LPWID	3	Method statements	1
Services	Electrical services	Live services	LPW	3	Carry out desk top & site survey, divert/protect & make safe as required	2
		Proximity of public highway and footpath	LPWID	1	Method statements for protection of public & buildings	2
Finishes	Lime based products	Injury to health	LPW	2	Keep away from public, only use trained operatives. Follow current guidelines	1

Risk assessment key

EFFECT (E): Loss of Life = L, Injury to Public = P, Injury to Workforce =W, Disruption to Infrastructure = I, Damage to Works = D.
INITIAL/RESIDUAL RISK (IR)/(RR): High = 5, Probable = 4, Occasional = 3, Improbable = 2, Remote = 1.