SPECIFICATION & SCHEDULE OF WORKS

Mark Taylor
CHARTERED ARCHITECT

to be done and materials to be used in the construction of

MASONRY REPAIRS AND ASSOCIATED WORKS

at

ST GILES, LEIGH ON MENDIP, SOMERSET

for

THE PAROCHIAL CHURCH COUNCIL

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October 2022

SECTION 1 : PRELIMINARIES

1.1 PROJECT PARTICULARS

1.1.1 Description of the work

- Leadwork to Porch & North Aisle roofs: remedial work and opportune quinquennial repairs following attempted theft of lead.
- Drainage work: completion of ground gutter repair and refurbishment partially completed last year around the Chancel and now requiring completion around remainder of church to west end (excluding west side of tower). New catch pits to be installed to receive rainwater from lengthened chutes over.
- Stonework to aisle and porch parapets: Allowance for parapet walls to be dismantled for replacement of iron fixings and repairs to stonework as required using lime mortar.
- Repairs to windows; masonry ferramenta and glazing.

1.1.2 Names and addresses of Employers and Consultants

Employer

The PCC of St Giles, c/o Mrs Paula Freeland, PCC Member
Honeysuckle Cottage, Leigh on Mendip, Radstock, Somerset BA3 5QQ
Tel: 01373 813526

Architect (Contract Administrator CA) and Principal Designer

Mark Taylor Chartered Architect
The Warren, Stoke Road, North Curry, Somerset TA3 6HN
Tel: 01749 673565
Fax: 01794 328319

1.2 DRAWINGS AND INFORMATION ACCOMPANYING THE TENDER

- Project Preliminaries (1044-B10-001)
- Materials & Workmanship (1044-B10-002)
- Schedule of Works (1044-B10-003)
- Drawing 1044/01: proposed repairs (side elevations) 1:50 (A1)
- Drawing 1044/02: proposed repairs (plans) 1:50 (A1)
- Drawing 1044/03: proposed repairs (end elevations & details) 1:50/5 (A1)
- Photosheets 1-37

1.3 FORM OF CONTRACT

The Form of Contract will be the JCT Minor Works Building Contract 2016 Edition with current revisions as published by Sweet & Maxwell for the Joint Contracts Tribunal. A copy of this contract may be purchased from stockists as listed by the publishers (Sweet & Maxwell, London NW3 3PF tel: 020 7393 7000). The contract will be executed under hand (signed not sealed).

Allow for all costs arising from the obligations, liabilities and services described in the contract.

The Contract Particulars will be as follows:

Fourth Recital & Clause 4.2	Construction Industry Scheme for CIS	The Employer is not a Contractor
Fifth Recital & Schedule 2	Base date	Date of tender
Fifth Recital	CDM Regulations	All the CDM Regulations apply
Sixth Recital	Framework Agreement	Not applicable
Seventh Recital	Supplemental Provisions	Paragraphs 1 and 2 only apply
Article 7	Arbitration	Article 7 & schedule 1 apply Arbitrator to be nominated by President of the Royal Institute of British Architects
2.3	Date for commencement	To be agreed) see invitation to
2.3	Date for completion	To be agreed) tender/outline
2.8	Liquidated Damages	£250/week or part thereof
2.10	Rectification Period	Twelve months
4.3	Percentage of total value	95% (progress payments before practical completion)
4.5	Percentage of amount paid	97½% (after practical completion and before final certificate)
4.8.1	Documents for computation of amount of final certificate	Three months
4.11 & Schedule 2	Contribution, levy & taxes	Fluctuation option will be deleted
5.3.2	Contractors insurance cover, injury to persons or property other than works	£5,000,000.00
5.4A, 5.4B 5.4C	Insurance of the works	5.4B applies (insurance of work by Employer) but see also clause 1.14 below
5.4A.1 & 5.4B.1	Percentage to cover professional fees	15%
7.2	Adjudication	Adjudicator to be nominated by President of the Royal Institute of British Architects

1.4 HEALTH & SAFETY

The Construction (Design & Management) Regulations 2015 apply to this work and it maybe notifiable to the Health & Safety Executive (Contractor to notify Architect if works are anticipated to be more than 500 person days). The Employer has appointed a Principal Designer. In conjunction with the Client and Principal Designer, the CA and other designers have prepared the preconstruction information. This is included with the tender documents and the Contractor is to take full account of the details in his pricing.

The particular matters included in the tender documents are:

- The church will remain open during construction works, as far as reasonably possible, and churchyard to remain open to public at all times.
- Scaffolding over public entrances must be constructed to prevent materials from falling through holes and gaps to allow safe access for public.
- A permit system for hot work is to be established and maintained by the Contractor for any operations such as welding or cutting, brazing or soldering, bitumen boilers or any other equipment using naked flames or high temperatures.
- Whether or not a hot work permit has been issued, the Contractor is to arrange for a responsible person to check all areas for fire risk and prevention of access at the end of each working day. Suitable fire-fighting equipment is to be available at ground level and on the roofs.
- Asbestos: Asbestos is not anticipated in any of the working areas. If asbestos is found to be present on commencement of works notify the Architect immediately.
- It is intended that the main Contractor will be appointed as the Principal Contractor as required by the CDM Regulations. Before inclusion on the tender list firms will need to have shown general competence on Health & Safety matters.
- The Principal Contractor is to develop the Construction Stage Plan before starting on site and ensure its implementation including any work to be carried out by sub-contractors. Health & Safety matters are to be kept constantly under review and information required for the Health & Safety file is to be passed to the Principal Designer.
- The PCC have a Health and Safety Policy as well as a site Permit to Work system for general tasks. The Contractor must read and acknowledge the PCC Policy and implement it where and as appropriate.

1.5 LOCATION AND ACCESS DELIVERIES

- The church is located to north of Leigh Street in the heart of the village, and there is no vehicular access to the site. There is limited room for vehicles to park opposite the churchyard entrance.
- Access and parking procedures to be agreed with the Church Note: The slabs at the public access to the site are historic and have recently been re-laid. Care must be taken when moving heavy loads into the churchyard.

1.6 TENDER REQUIREMENTS

- All work necessary for the proper completion of the project is to be included and deemed part of the Contractors obligation whether or not all details are given in

this specification and schedule. Any queries should be raised with the CA before the tender submittance. Unauthorised amendments or qualifications may invalidate the tender.

- The tendering procedure will be in accordance with the principles of the 'Code of Procedure for Selective Tendering' issued by the National Joint Consultants Committee for Building. Should any errors be found in the priced specification and schedule of work alternative 2 or part 6 of the code will apply. Tenders must be open for acceptance for a period of 3 months. The Employer does not bind himself to accept the lowest or any tender.
- If called upon the tenderer is to provide a fully priced copy of the specification and schedule of work. As far as possible each item is to be priced individually. Any lump sum or percentage additions which are included in the make up of the pricing will be subject to the same proportional or percentage adjustment if the work involved is varied by formal instructions.
- Arrangements for site visit

The church is generally open during daylight hours. However confirm that it is suitable to visit the church to avoid conflict with others or other activities. To confirm contact the Employer's representative Paula Freeland, tel: 01373 813526 or any other PCC member.

- Requirements for non-disclosure of tender information

Contractor submitting tenders shall not disclose his tender or any particulars to any third party.

- Contractor is to confirm that he is not currently being investigated by the Office of Fair Trading.
- Contractor to submit a completed copy of the cost sheet and Schedule of Rates as part of his tender submission (see tender package covering letter).

1.7 REQUIREMENTS FOR SUB-CONTRACTING

- No part of the work may be sub-contracted without the express prior approval of the CA.

1.8 MANAGEMENT OF THE WORKS

- Contract Manager/Foreman to be on site during the Works and maintain adequate and skilled direction and supervision of the works.
- A competent Foreman is to be employed continuously on the site in full charge and he is to accept instructions given only by the CA and act on them immediately if necessary.
- All such instructions will be confirmed in writing. Only variations authorised by the issue of written instructions will be recognised for cost adjustments.
- The Foreman cannot be replaced without the prior written permission of the CA.
- The Client is planning to undertake a minor project in separate work areas to the Contractor. However, with a single access to the churchyard, it may prove necessary to have routine coordinating meetings (plan of the day/week); if instigated the Foreman or his representative is to attend.

1.9 PROGRAMME

- Before commencement of the work the Contractor is to provide a programme in an approved form showing the timing of the various operations that have to be carried out within the contract period. This is to be regularly updated and reviewed at meetings with the CA. See section 1.12.Client representatives will be invited to attend.

1.10 BEHAVIOUR

- Behaviour of all site staff is to be appropriate for the church environment in the centre of a rural village. No smoking will be permitted within the building or workplace. Portable radios or similar equipment may only be used in the Contractor's welfare accommodation.

1.11 QUALITY CONTROL

- Provide reasonable access for the CA to inspect the work. The CA will make a periodic inspection of the work in progress, usually weekly but he may wish to make an inspection without notice and will expect the Contractor's reasonable co-operation.
- Questions the Contractor may have should be raised as they arise and not accumulate. The CA will endeavour to deal with queries during site inspections but the Contractor may not expect that he will have sufficient time to answer all or any queries while on site.
- Receipts for the delivery of goods and materials are to be made available for the CA's inspection.

1.12 CONSTRUCTION INDUSTRY TRAINING BOARD

The Contractor must be registered with the Construction Industry Training Board (CITB).

1.13 SECURITY

Where external ladders/access platforms or scaffolding are erected as part of the works (with or without a formal contract) the following conditions apply:

- All access ladders must be removed from the site, or rendered inaccessible at the end of each day's operations.
- Any internal and external access platforms should not meet at the same time at the same place if this would aid the entrance to/exit from the premises for a would-be thief.
- Scaffolding should be enclosed by non-climbable cladding (eg. corrugated iron sheeting) min. 3.5m high. For use of Heras fencing approval from church insurer will be required.

Insurance cover provided under clause 5.4B of the contract will not include the theft of metals while there is an external scaffold in place. The Contractor is required therefore to take out insurance cover against the theft of metals, to include remedial work while the scaffold is present.

1.14 PROTECTION AND POLLUTION

- Insurance of the existing building, the works and unfixed goods and materials is to be arranged in accordance with the contract conditions.
- The Contractor will be required to take all reasonable care to avoid loss or damage to the works including keeping the building secure and protected from the weather. All practical measures are to be taken to allow the work to proceed during inclement weather including precautions for cold winter or hot summer conditions.
- The Contractor is to indemnify the Employers from any claim in respect of death

or injury or damage to property other than clause 5.4B, by arranging insurance in accordance with the contract conditions.

- A schedule of condition of the access and working areas externally and internally is to be prepared jointly at the commencement of the works. In addition to the work described in the schedules the Contractor will be responsible for making good any damage at his own expense.

1.15 LIMITATIONS ON WORK

1.15.1 Limitations on work time

- To avoid unnecessary disturbance building work is generally to be restricted to the normal working day, ie Monday to Friday 8.00 a.m. to 6.00 p.m. A request to work Saturday will normally be acceptable. Sunday working will only be permitted in exceptional circumstances.

1.15.2 Restrictions on access routes

- The Contractor must not cause any obstruction on the approach roads as these are shared by adjoining occupiers.
- The chevron area outside the school must not be used at any time.

1.15.3 Restrictions on working methods

- No machine or mechanical cutting tools may be used for stonework repairs.

1.15.4 Requirements for sequence of the work – None.

1.15.5 Bats

- Bats are known to be present inside the church and are likely to roost under the chancel timberwork. Building paper is specified below vapour control layer to protect bats from entanglement. All operatives are to be briefed on the possible presence of bats within the church fabric.

  If bats are discovered within chancel roof area work is to stop and the CA informed. Bats may only be moved by a licensed bat handler.

1.15.6 Discoveries

- When working on an old building objects of historic or artistic value may be found buried in the ground, beneath floors or in roof spaces. Any unusual fragments of metal, glass, carved stone or wood must be photographed, carefully preserved and reported to the CA.
- Before excavating in the churchyard consult the CA about requirements for an archaeological watching brief.

1.15.7 Location and Access

Read with sections 1.5 and 1.15.2.

- The working area to be confined to eastern exterior of the church including Chancel, Lady Chapel, Organ Chamber and Vestry roofs, gables and parapet stonework, window stonework repairs and drainage works to open channel adjacent.
- Contractor's compound area is to be agreed with the Client prior to commencement of works. Working and compound areas to be isolated with Heras fencing and to have adequate signage.

1.15.8 Parking

- Car parking will only be permitted in areas agreed with the Church. Routine parking in the Memorial Hall car park may be available on request.

1.16 SETTING OUT

- The Contractor is responsible for the correct setting out of the works. In the case of any discrepancy found in the drawings the Contractor must request instructions from the CA.

1.17 STORAGE

- The Contractor is to provide all necessary temporary structures.
- The church is not to be used for access/storage unless by agreement with the Client and only for internal works as required.
- Provision is to be made to accommodate workmen, and facilities must be provided so that drawings and other documents kept on site can be readily referred to.
- Materials and plant are to be brought in as required. Where deliveries are made to a point outside, arrangements must be made so that offloaded materials can be brought in immediately. The street outside the churchyard is the sole Village through route.

1.18 TRADE BOARDS

- The Contractor may display a suitable trade sign on the site for the period of the contract subject to the requirements of the Planning Authority. Provision to be made for displaying the Consultant's sign boards.

1.19 LATRINE/WELFARE FACILITIES

- The Contractor is to provide welfare accommodation including a temporary toilet for use of his staff and sub-contractors.

1.20 PLANT AND TRANSPORT

- Provide all necessary hoists, ladders, scaffolding, staging, tackle, tarpaulins, tools and other plant (mechanical and otherwise) and allow for all labour and materials in installing, operating, moving, adapting and maintaining same as necessary.

1.21 WASTE

- Surplus materials together with other waste is to be disposed of as controlled waste under the Environmental Protection Act 1990. Waste is to be carted away by a Registered Carrier to a licensed Disposal Site. Burning of rubbish on site will not be permitted. Transport dockets are to be kept on site for inspection by the CA.

1.22 TEMPORARY SERVICES

- There is no water supply and the Contractor must make arrangements as necessary for provision/delivery of water for the works with all temporary plumbing and storage; pay all charges and alter, adapt and maintain temporary works as necessary.
- A temporary electricity supply may be taken from the existing installation. A suitable 13amp socket outlet is to be identified for use in consultation with the Client which the Contractor may use free of charge. Include for all temporary wiring and lights and maintain in a safe condition.

- The free use of services will be withdrawn if the use becomes unreasonable in the opinion of the CA.
- A temporary site telephone is to be provided and all costs met by the Contractor. A mobile telephone may be used provided that the network coverage and signal strength is adequate.

1.23 CLEARING AWAY

- Take down and clear away all plant and temporary works, including any sheds etc. and make good. Remove all rubbish and debris and surplus materials as they accumulate and at completion; clean windows, fixtures and fittings and leave works in good order.

1.24 NOTICES, TESTING AND COMMISSIONING

- The Contractor is to give all the necessary notices and certificates required by the Statutory Authorities in respect of these works. The Employer will pay the Local Authority direct any fees for Planning Permission and Building Regulation approval.

The Contractor is to meet all other fees and charges.

1.25 DEFECTS

- Any defects, shrinkages or other faults which appear during the work or the defects liability period due to defective materials or workmanship, frost or other weather conditions, are to be made good or replaced by the Contractor at his own expense.

1.26 LABOUR ON COSTS

- The Contractor is to allow for all costs arising from National Insurance contributions, pensions, holidays, travelling time and expenses, non-productive time, incentive schemes, levies and any other payments arising from the employment of labour.

1.27 VALUATIONS & PAYMENTS

- Material(s) which is/are brought on site prematurely or not stored/protected in accordance with the manufacturer's written instructions may not form part of the Valuation at the discretion of the CA.
- When interim payments are due the Contractor shall forward to the CA an itemised statement showing the value of the work and material for which he is making application for payment. The format of the statement is to be based on the priced specification.
- The contract sum and all valuation figures are to be exclusive of VAT. Where VAT is chargeable under the rules issued by HM Revenue & Customs then the tax is to be added to the Contractor's invoices and paid by the Employer.
- No work shall be carried out and charged as day work without the prior written approval of the CA.

1.27.1 PROVISIONAL SUM

• Include a provisional sum of £2,500 for contingencies which is to be expended only as directed by the CA and deducted in whole or in part if not required.	2,500	00

SECTION 2 : MATERIALS & WORKMANSHIP

2.1 GENERAL

- Materials and workmanship are to be the best of their respective kinds. Materials to be new unless otherwise specified, suitable for the purpose and whenever a British/European Standard Specification is current in full conformity with such standard, accepted good practice and to the approval of the Architect.
- The changeover from British Standard to European Standards (BSEN) is in progress and compliance with the relevant new standard together with any National Annexes will be acceptable.
- Samples of the principal materials that will be visible on completion are to be provided for approval prior to use.
- Full regard is to be taken of the manufacturers instructions including Health and Safety Data. User instructions and other literature provided are to be retained for inclusion in the Building Manual/Health & Safety File.
- Tenders must be based on the specification. If the Contractor wishes to suggest an alternative product as being more practical or economic (the use of suitable recycled material will be considered) then details including cost implications must be set out in an accompanying letter.
- Cash columns have not been provided in this section. Should tenderers wish to price any clause this should be entered at the summary page. Clauses included under one work section heading will be deemed to apply to similar work in other sections.

2.2 MORTAR/MASONRY

Personnel must be skilled and experienced in repairing historic buildings.

2.2.1 Sand for mortar

- To BS EN 13139:2002 unless otherwise specified.
- Sand for facework mortar to be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture.
- When a range is specified (eg 1:1:5-6) use lower proportion of sand for Grade G sands and higher proportion for Grade S.
- Sands for mortars generally to be well graded and to an approved sample.
- Generally, for historic building work an analysis should be done of existing materials.
- Silver Sand: To be from an approved source/supplier.

2.2.2 Lime Products

Lime putty (non-hydraulic lime)
To be best quality super fine Singleton Birch (mortar grade) or Buxton (fine work and limewash) quicklime and matured for a minimum of 6 months after slaking (Limebase, Waldrons Park, Isle Brewers, Taunton TA3 6QP, tel: 01460 281921, email: info@limebase.co.uk) OR best quality made from Cumbrian or South Wales quick lime and matured min 6m after slaking (Ty Mawr Lime Ltd, Brecon LD3 8BT, tel: 01874 611350, email: tymawr@lime.org.uk) or similar approved.

Natural Hydraulic Lime (NHL)

- To be Singleton Birch Limited (grey in colour) or St Astier (white in colour). Strength NHL 2 / 3.5 / 5 as specified. Suppliers as above or similar approved.

2.2.3 Aggregates

- The aggregates for mortar are to be crushed stone, stone dust and sand to BSEN 13139. The aggregate size and colour is to be selected to suit the application and to the approval of the Architect. Allow for providing samples.

2.2.4 Stone Dust

- To match the type of stone being used, or as specified in previous work sections.

- Stone dust to be washed before supply and use.

2.2.5 Admixtures

- Do not us in mortar unless specified or approved.
- Do not use calcium chloride or any admixtures containing calcium chloride (if specified to BS EN 934-3:2003).

2.2.6 Water

- Clean and uncontaminated. Obtain approval for other than mains supply. Test to BS EN 1008:2002 if instructed.

2.2.7 Mortar for repairs

- For minor plastic stone repairs, the lime to aggregate ratio should be in the range of 1 lime to 2-3 aggregate with the size of the aggregate correctly scaled to interlock and to suit the size and dimension of the repair. It may not be necessary to add a pozzelana as the quality of the mortar should be sufficient to set well within the joints. However a pozzelana to lime ratio should be allowed in the region of 2% to 5% and the pozzelana in the form of brick dust. Prepare sample area of mortar repair for approval by the Architect before proceeding.

2.2.8 Tending

- All lime mortar work is to be tended between applications and until adequately set. Keep damp and protect from frost, wind and sunlight.

2.2.9 Pointing

- Wherever serviceable, historic mortars are to be retained.
- All general pointing to be carried out in moderately hydraulic lime (NHL 3.5) comprising 1:2.5 lime to aggregate. In pointing old work the joints are to be well raked out at least 38mm back from face of wall and the cavity cleared thoroughly with a syringe.
- Pointing is to be flat and flush, slightly recessed back from face of stones, to match existing. The mortar is to be well pressed in flush with a pointing trowel and the joints well rubbed back flush and left with rough face, care being taken that no mortar is left smeared over the face of the walling. The wall should be well wetted before pointing to retard setting.
- The mortar for copings is to finish flush. It must be of a colour to allow the pointing to blend with the existing stonework and must tend to emphasize the stonework, not vice versa. The colour of the mortar is to tone with that existing and samples are to be provided for approval by the Architect before the work proceeds.

2.2.10 Coping /parapet stone bedding

- To be carried out using hydraulic lime (NHL 3.5) comprising 1:2.5 lime to aggregate.
- The rubbing back to obtain the required texture is to be done just prior to the final set. Application, tending and protection of the mortars should be carried out with care.
- Prepare sample area of pointing for approval by the Architect before proceeding.

2.2.11 Fixings

- All new fixings into stone are to be stainless steel. Where existing iron dowels, cramps, etc are found set into existing stonework, they are to be replaced with stainless steel.
- Adhesives for fixings and repairs are to be 2-part epoxy resin selected from the Fosroc range to suit the particular application (Fosroc Ltd, Tamworth B78 3TL, tel: 01827 262222).
- Where possible fixings will be secured with lime mortar, or alternatively at one end with resin and lime mortar the other.

2.2.12 Pinning

- The pins/dowels should be graded in size to their function, angled down and set in adhesive lime mortar. It may be necessary to use resin where it is not possible to angle the dowels due to the location, size and bedding of the stone. In all cases the ends of the dowels must be sunk 3-5mm beneath the surface of the stone and capped with mortar.

- After dowelling, the cavity should be filled with adhesive lime in more than one application if necessary and the edges prepared for surface repair.

2.2.13 Cleaning

The following individual or combination of all three of the following methods are to be used:

- The dressed stone surface is to be brushed down using hard dry glass fibre bristle brushes to remove lichens and dirt generally.
- Poultices are to be used for the removal of carbon/soluble sulphate deposits.
- DOF hot water/pressurized air spray to be used for removal of general dirt.

2.2.14 Sheltercoating

- The ingredients of the sheltercoat are similar to that of the adhesive lime mix with the addition of 5% casein. The purpose of the sheltercoat is to provide a physical barrier against weathering, as well as knitting together both physically and visually the original stone surfaces with the lime mortar repairs.
- The sheltercoat should fill all the fine hairline cracks and cavities that are too small to be repaired, and is particularly useful on undercut surfaces acting as a barrier between the stone surface and future soiling.
- Drying time is greatly affected by humidity, temperature and the moisture content of the stone. It can take up to six weeks for the sheltercoat to reach an equilibrium with its substrate.
- The sheltercoat offers the opportunity to achieve a level of aesthetic unity in the treatment of complex surfaces.

2.2.15 Site storage

- Store different sands and aggregates in different stockpiles on hard clean bases which allow free drainage and cover to prevent excessive wetting.
- Store factory produced premixed lime:sand for mortars ready-to-use retarded mortars in covered containers to prevent excessive drying out or wetting.
- Lime putty mixes should be adequately protected against frost damage.
- Store bags of cement and hydrated lime in dry conditions, raised off the ground and not touching damp surfaces. Do not use cement or hydrated lime affected by damp.
- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

2.2.16 Site preparation or pure lime putty:sand mortar

- Use lime putty to BS 890, ready prepared from quicklime.
- Thoroughly mix lime putty with sand using a roller pan mortar mill. Mix as dry as possible. No extra water is to be added, and any excess water is to be removed from the lime putty.
- Prepare the mortar in advance and store for a minimum of one month, preferably longer, to achieve maximum lime-aggregate contact. Store in airtight, watertight containers and protect from frost. All frosted mix is to be discarded.
- Before use, or before gauging with other constituents, thoroughly ram, beat and chop the mortar till plastic or knock up again in the mortar mill, without the addition of water.
- Incorporate sands of varying colours and grade to achieve required colour/texture.

2.2.17 Site preparation of hydraulic lime:sand mortar

- Using a concrete mixer, thoroughly mix eminently hydraulic lime-powder with sand, first in the dry state and then with water. Add only sufficient water to produce a workable mix.
- Sufficient mortar must be mixed for use within 1-2 hours maximum. Do not use mortar which has begun to stiffen.
- Do not use hydraulic hydrated lime powder which exceeds its shelf-life (approximately one month).
- Carry out a site trial to test initial setting period prior to carrying out the work.

2.2.18 Site preparation of cement:sand mortar

- Keep plant and banker boards clean at all times.

- Measure materials accurately by volume using clean gauge boxes. Proportions of mixes are for dry sand; allow for bulking if sand is damp.
- Mix ingredients thoroughly to a consistence suitable for the work and free from lumps. Mortars containing air entraining admixtures must be mixed by machine, but do not overmix.
- Mix mortar within about two hours of using at normal temperatures. Use retarded mortar within the time and site temperatures recommended by the manufacturer. Mortar may be re-tempered to restore workability, but only within these time limits.
- Keep plant and banker boards clean at all times.

2.2.19 Samples

Contractor to provide the following samples for approval with the CA and Client prior to work being carried out:

- Pointing – allow for samples of mortar to match existing for CA approval prior to commencement of works and for raking out and repointing rejected areas.

2.3 CARPENTRY REPAIRS

Timber generally:

- Wherever possible timber is to be from FSC (Forestry Stewardship Council) managed source.
- Replacement sarking boarding to be kiln dried English Oak, of good quality and free from injurious shakes, sapwood, large, loose or dead knots, waney edges or other defects, sized and stained to match existing on underside using water based wood stain.
- Note – it is not intended that remedial timber treatment will be applied generally to existing roof structure. Where decay is found during opening up, appropriate remedial work is to be agreed with CA as part of timber repairs and in compliance with bat guidance.

2.5 LEADWORK

2.5.1 Materials and workmanship generally

- Sand cast, from lead complying with BS EN 12588:1999 and free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes.
- Thickness(es) as BS 1178 but with a tolerance of $\pm$10%.
- Cut, joint and dress lead neatly and accurately, to provide fully waterproof coverings/flashings, free from ripples, kinks, buckling and cracks.
- Comply with BS 6915 and good practice as described in the latest edition of 'The Lead Sheet Manuals' published by the Lead Sheet Association, unless agreed otherwise (LSA, East Peckham TN12 5HP tel. 01622 872432).
- Do not use scribers or other sharp instruments to mark out lead and do not use solder.
- Ensure that finished leadwork is fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
- Finishing: As soon as practical apply to all visible lead a smear coating of patination oil, evenly in one direction and in dry conditions, and on completion of the works one coat all over.

2.5.2 Existing Lead

- Removed will become the property of the Contractor. The scrap value of such lead must be estimated by the Contractor, itemised separately in the tender, and set against the tender sum in order to be credited to the Client.
- Retained lead to be stored flat for re-use as specified.

2.5.3 New lead

Tapered gutter and ridge lead to be laid on new 'penny ventilated' boarding fixed to new treated softwood 50x50mm counter battens/furrings fixed through thermal insulation and through existing boarding to joists with 240mm long stainless steel screws. Screws, insulation and vapour control layer all as for slated areas and continuous.

Existing decking repaired/renewed as necessary.

Sand cast lead sheet to thickness as recommended by LSA for Historic buildings:
- Flat roofing – code 7
- Parapet gutters/tapered valley gutters – code 6
- Flashings – code 5 (hip/ridge flashings – code 6)
- Soakers – code 4
- Weatherings – code 6

- Ventilation details – p. 200 fig 325, no.4 for gutter boarding at abutments. Ridge and eaves to be detailed as per drawing 4130/05 Details incorporating insect screen.

2.5.4 Layout
- Agree setting out of joints, drips and laps with the CA before beginning work.

2.5.5 Control sample(s)
- Complete area(s) of the finished work in approved location(s), and obtain approval of appearance from the CA before proceeding.

2.5.6 Replacement of existing lead
- Must be carried out under a temporary roof or in small sections at a time, providing temporary waterproof coverings, to prevent damage to the existing base. To be agreed with Architect and priced for both options.

2.5.7 Suitability of bases
- Bases to be dry and free of dust, debris, grease and other deleterious matter.
- Laying of lead will be taken as joint acceptance by the Main Contractor and Sub-contractor of the suitability of bases.

2.5.8 Timber for use with leadwork
- Regularised, free from wane, pitch pockets, decay and insect attack except pinhole borers.
- Moisture content: Not more than 22% at time of covering.
- Preservative treatment: CCA as section Z12 and BWPA Commodity Specification C8.
- 25 x 125mm s/w to be used with 6mm 'penny' ventilation spaces between boards.

2.5.9 Fixings

Where not specified otherwise, fix lead sheet to timber substrates with:
- Copper clout nails to BS 1202:Part 2, table 2, with annular ring, helical ring or serrated shank, length not less than 20mm, shank diameter not less than 3.35mm and head diameter not less than 8mm, or
- Stainless steel (austentic) clout nails with annular ring, helical ring or serrated shank, length not less than 19mm, shank diameter not less than 2.65mm and head diameter not less than 8mm.

Where not specified otherwise, fix lead sheet to concrete or masonry substrates with:

- Brass or stainless steel screws to BS 1210, table 3, length not less than 25mm and diameter not less than 3.35mm with washers of the same material and plastic plugs of length and diameter to suit screws.

2.5.10 Clips

Generally 50mm wide where not specified to be continuous, length to suit detail.
- Lead: Cut from sheets of the same code as the sheet being secured, or
- Copper: Cut from 0.7mm thick sheet to BS 2870, temper grade 1/4H, dipped in solder if exposed to view, or
- Stainless steel: Cut from 0.38mm sheet to BS 1449:Part 2, grad 304, terne coated if exposed to view.

Fix with two fastenings not more than 50mm from edge of lead sheet. Clips welted around edges of sheets to be turned over 25mm and allow min. 6mm space to edge of lead for thermal movement.

2.5.11 Welted Joints

- Form with a 50mm overlap, 25mm underlap and copper or stainless steel clips as clause 80 at 450mm centres.
- Welt overlap and clips around underlap, loosely turn over and lightly dress down.

2.5.12 Splash Laps

- As LSA guidance.

2.5.13 Wedge Fixing Into Joints/Chases/Grooves

- Carefully rake out groove to a depth of at least 25mm, avoiding damage to any damp-proof course.
- Dress lead into groove below dpc and fix with lead wedges at not more than 450mm centres, at every change of direction and with at least two for each piece of lead.
- Groove to be filled with mortar to match adjacent work and tool to a neat finish.

2.5.14 Cover Flashings

- Lead: Code 5 (in lengths not exceeding 1500mm where permissible).
- Lengths: Not more than 1500mm.
- End to end joints: Laps of not less than 100mm.
- Cover: Overlap to upstand not less than 75mm.
- Fixing: Top edge – form reverse welt at rear of joint/chase. Fix with folded lead wedges at max. 450mm c/c. Joint min. 25mm deep x 10mm high. Side laps min 150mm, equal to girth where greater than 150mm.

2.5.15 Gutter linings:

- Lead: Code 7 (max length between drips 2500, max overall girth 900, drip heights 60 as per table 8 p89 LSA Manual).
- To be minimum 225mm wide at lowest point. Length must not be exceeded. Girth maybe exceeded if length is reduced, and agreed with Architect.
- Splash laps – must not be provided. Side laps as LSA p 90 with raking cut.
- At wall abutment upstand minimum 75mm with lead dressed into chase in stonework and weathered with welted cover flashing dressed in under copings.
- Gutters to be laid to minimum 1:80 fall.

2.5.16 In situ lead details

- As far as possible leadwork is to be prefabricated.
- Forming of in situ details must be by bossing unless agreed with Principle Designer in advance. Any lead welding is to be carried out away from the building and the trays, gutters, etc pre-formed prior to fixing.
- Where leadburning is unavoidable, it is permitted subject to completion of 'Hot Work Permit' form and in strict compliance with its requirements.
- Lead welded seams must be neatly and consistently formed. Do not undercut or otherwise reduce the thickness of the sheets at seams. Filler strips are to be of the same composition as the sheets being joined. Butt joints are to be formed to a thickness one third more than the sheets being joined. Lap joints are to formed with 25mm laps and two loadings to the edge of the overlap.
- Bossing must be carried out without thinning, cutting or otherwise splitting the lead sheet.

2.5.17 Chalk emulsion

- Lead corrosion protection – chalk slurry from Rowan Technologies to be painted on to underside of all lead (new and existing) and allowed to dry thoroughly before laying lead.

2.5.18 Completion

- Immediately on completion, leadwork to be treated with patination oil.

2.6 WINDOW/GLAZING – LEADED LIGHT GLAZING

Workmanship Generally

- Glass generally (excluding handmade glass) to BS 952, free from bubbles, inclusions, cracks, rippling, dimples and other defects.
- Handmade glass to be free from cracks.
- All surfaces to receive glazing to be clean, dry and free from grease at time of priming/sealing and glazing. Prime/seal if recommended by glazing compound manufacturer.
- Ensure that glazing materials, surrounds, primers, etc which are to be used together are compatible.
- Comply with BS 6262 and glass and sealant manufactures' recommendations for dimensions of edge cover and clearance, positions and materials of distance pieces, setting and location blocks.
- Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
- Comply with relevant parts of BS 8000:Part 7 unless specified otherwise.

Lead Light Glazing

- Lead light glazing is to be carried out by an approved contractor.
- Pane material: as Schedule of Works and sound salvaged glass from original window.
- Pattern and size: to match existing.
- Cementing compound: leaded light cement, obtained from Robert Boare, Stanford-le Hope, colour: black.
- Lead cames:
  Intermediate: Flat, 8mm/12mm wide, unless otherwise described.
  Border: Flat, 15mm wide.
- Ties to glazing bars: 1/16" copper soldered to lead cames and decorated as described for ferramenta.
- Glazing bars: reuse existing where possible. New phosphor bronze bars elsewhere to match profile of existing.

Lead Lights – Deglazing Existing Windows

- Carefully remove existing ferramenta and wrought iron casements. Take details of existing fittings and dimensions and record original locations.
- Existing panels: Remove and carefully transport to workshop. Proof of 'in transit' insurance shall be provided when requested by Architect.

Deglazing – Leaded Light Glass – Existing Openings

- Temporary blocking to opening whilst glass is removed: Sterling board (12mm minimum thickness) neatly scribed to outer face of stonework. Provide 100 x 50mm softwood bracing internally. Bolt bracing and board together with threaded rod, nuts and washers. Pack at wall faces the foregoing provided at the inner face of wall where stonework repairs are specified with softening to prevent damage. Brace blocking to withstand wind load.
- Internal dust sheeting: provide polythene sheeting internally where required by Schedule of Works.
- Channel/surround: groove in stonework.
- Preparation: clean out and leave ready for glass.
- Perimeter pointing: fully point around panel in lime mortar (refer to section 2.10.5). Clean mortar from glass, cames and bars as work proceeds. Clean tray and condensation holes upon completion.

Lead Light Glazing Fixtures

- Carefully open existing lead cames and remove existing quarries. Set aside sound quarries for

reuse.
- Re-lead in new cames (where instructed) to precisely match existing detail.
- Remaking Panels: To precisely match the existing detail and shape unless otherwise described. Where stonework repairs are carried out in conjunction, take templates of new stonework and agree variations with Architect.
- Insertion of additional cames will not be permitted without the express approval of the Architect in writing.
- Deliver back to site and re-fix.

Leaded Light – Ferramenta
- Saddle bars: to be cropped at stone face, and rebated and fitted with rebated stainless steel studs for embedding in stone and re-fixing to saddle bars with countersunk machine screws. Grub out remains of existing from mullions and jambs and dispose.
- Preparation: De-rust by shot blasting and decorate with 1 coat of two pack Croda Ruskilla Epoxy Mastic XY400 (CA 70) and 2 coats of Croda Ruskilla M I O, colour to Architect's approval.
- Ferramenta: treat as described for saddle bars. Vertical bar to sit on cill/tray.
- Bedding compound material: mortar as section Z21, ¼:1:3 cement/lime/stonedust (50%) and silver sand (50%) to precisely match colour of stonework.
- Where it is not possible to remove the existing ferramenta, clean down to remove dust and old paint by chipping, scraping and wire brushing.
- New saddle bars: To be phosphor bronze matching existing profiles.

Leaded Light – Casements

Re-fix existing wrought iron frames using non-ferrous fixings with security heads to exposed screws. Where no screw fixings exist, fix casement with glazing sprigs. Opening and fixed casements are to be redecorated as clause 46 prior to re-glazing. Fixed lights are to be bedded in Polymer glazing compound. Seal glazing rebate in untreated hardwood with one coat of Arbo NP90 primer prior to glazing.

Where other glazing compounds are used, sealers should be compatible with the compound.

Leaded Lights – Condensation Tray

Provide where instructed by the Schedule of Works in accordance with Standard detail attached to Specification.

2.6 BELOW GROUND DRAINAGE REPAIRS TO CHANNEL AND NEW WORKS

2.6.1 Setting Out
- Before starting work, check levels of existing drainage channel and ensure 1:40 continuous fall to outlets.

2.6.2 Trenches
- 4 no. trail hole excavations are required to establish depth of existing foundations under supervision of Architect.

2.6.3 Trenches less than 1 metre from Foundations
- Class Z concrete surround: Provide in locations where bottom of trench is lower than bottom of foundation.

2.6.4 Hardcore
- To be clean hard material free from deleterious matter, well graded and passing a 75mm BS sieve. Crushed concrete or brick is to be free from plaster.

2.6.5 <u>Concrete</u>

Ready Mixed
Concrete generally is to comply with BS EN 206-1 and BS 8500 and be supplied by a ready mixed specialist from a plant which has accredited production control and product conformity certification. The designated mix for each purpose is given in the relevant clause of the schedule. All delivery notes are to be retained.

The ready mixed concrete supplier is to take test cubes as required by his quality assurance procedures.

Site Mixed
Where the Contractor wishes to produce small quantities of concrete on site, this will be permitted provided that the following Standard Mixes are used and carefully measured:

ST1 mix 50kg bag cement with (equivalent GEN 1 rough blinding and infill)	130 litres fine aggregate and 190 litres coarse aggregate
ST2 mix 50kg bag cement with (equivalent GEN 1 drainage, foundations & fill to cavity walls)	110 litres fine aggregate and 160 litres coarse aggregate
ST3 mix 50kg bag cement with (equivalent GEN 2 unreinforced floor slabs)	100 litres fine aggregate and 150 litres coarse aggregate

For higher strength grades and all reinforced work, site mixing will not be permitted.

Cement
The cement is to be British Portland cement to BS EN 197. It is to be fresh and stored in a cool dry place.

Aggregates
Fine and coarse aggregates are to comply with BS EN 12620. Sands are to comply with BS1199 (sands for external render, plastering and screeds) and BS EN 13139 (aggregates for mortar).

Placing, Compaction and Curing
All concrete shall be transported and placed promptly after mixing by suitable means to avoid segregation. It is to be fully compacted using mechanical vibration where necessary. Floor slabs and exposed concrete elements are to be covered with suitable impervious sheeting for a period of 1 week for curing.

Precast Reinforced Concrete
The pre-stressed concrete floor beams are to be in accordance with BS 8110:parts 1 and 2. Infill blocks are to be 100mm thick dense concrete 7 N/mm^2. The manufacturer is to prepare a detailed layout for the floor based on site dimensions. Reinforced concrete lintels are to comply with BS 5977:part 2. They are to be supplied in lengths to suit spans with 100mm bearings.

Concrete Blocks
Dense concrete blocks are to comply with BS 6073:part1:1981 7N/mm^2 strength. Block thickness as scheduled. Where necessary blocks are to be cut to suite the coursing shown on the drawings.

2.6.6 Cleaning

- General: Flush out the whole installation, including outlet pipework, ensure free flowing and remove silt and debris immediately before handing over.

2.7 PAINTING AND DECORATING

Preparation generally

- Preparation to standard BS 6150 Section 4. Substrates to be sufficiently dry in depth to suit coating; dirt, grease and oil removed; abrade to a smooth finish and remove organic growths with biocidal solution and apply residual effect biocidal solution to inhibit regrowth. Joints, cracks, holes and other depressions to be filled with stoppers/fillers. Abrade to a smooth finish. Remove dust, particles and residues from abrasion and prime resulting bare areas.

Previously coated surfaces

- Preparation to BS 6150 Section 6. Remove all coatings without damaging substrate and adjacent surfaces or adversely affecting subsequent coatings. Carefully remove loose, flaking or otherwise defective areas. Completely remove alkali affected coatings.

Give notice of coatings suspected of containing lead, substrates suspected of containing asbestos, significant rot, corrosion or other degradation of substrates. Thoroughly clean retained surfaces and abrade gloss coated surfaces to provide a key. Apply additional preparatory coats to partly removed coatings. Prepare any completely stripped surfaces as for uncoated surfaces.

Wood preparation

- Abrade to smooth, even finish with lightly rounded arrises. Abrade to remove degraded or weathered surface wood. Repair degraded substrate wood with sound materials of same species. Heads of fasteners: countersink sufficient to hold stoppers/fillers. Apply 2 coats of knotting to resinous areas and knots. Abrade defective primer back to bare wood and re-prime.
- All products should be applied in accordance with the manufacturer's instructions/product data sheets.
- If there is any doubt whatsoever with any respect of this specification it must be brought to the attention of the Architect before pricing.
- When preparing pre 1960s painted surfaces consideration must be given to taking special precautions as they may contain lead. Occasionally there may be very slight differences in shade between batches therefore as with all paints, as a precaution avoid starting a new container in the middle of a surface.
- Loose or Flaking Material
  All surfaces must be clean, dry and free from anything that will interfere with the adhesion of the materials to be applied. Remove loose or flaking material by scraping or brushing with a stiff bristle brush to a sound edge. Feather sound edges with a fine grade of abrasive paper. Remove all dust.
- Small Repairs to Plastering
  Remove any small areas of loose plastering. Remove dust. Dampen edges and areas to be made good. Make good with a suitable plaster repair compound in accordance with manufacturer's instructions. Allow to dry.

Sound Paint

Oil based previous coatings and glossy surfaces should be lightly wet abraded to provide a key. Wash with hot water and liquid detergent solution to remove any contaminants frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry.

Cracks and Surface Defects

Fill any cracks and small surface defects with a suitable filler in accordance with the manufacturer's instructions. Allow to dry. Rub down with a fine grade or abrasive paper to a smooth level surface. Remove all dust.

Application

Stir thoroughly before use and apply strictly in accordance with manufacturer's recommendations. Emulsion can be applied with a brush, roller or spray gun. For porous surfaces apply an undercoat of emulsion thinned with water (four parts paint mixed with one part water). Apply two finishing coats, allowing to dry between coats. (Total of minimum 3 coats including

undercoat/mist coat.)

Drying Time

In normal temperatures and humidity, allow 3-6 hours drying time between coats. The emulsion is touch-dry after 1-2 hours. The final painted surface is wipe-able after 10 days.

Rainwater gutters and downpipes, brackets, struts and ferramenta

- Where stated in the schedule of work rainwater goods are to be dismantled and blast cleaned back to bare metal with additional acid cleaning/neutralizing to treat rust inside pipes. Immediately after this treatment, prime with Oricalcum Linseed Paint Iron Oxide primer strictly to manufacturers instruction unless pre-primed by manufacturer. NB. Pre-priming to be used only by agreement of priming system by architect.
- Apply 2/3 coats of Brouns Linseed Paint over dry primer in thin layers allowing minimum of 48 hours between coats in favourable conditions. Ensure paint is dry to touch prior to application of next coat. 3rd coat maybe applied in situ once RWGs are reinstated to touch up defects caused during fitting.
- All joints to be sealed with red lead linseed putty (Potmolen or similar approved) as required
- Where not to be dismantled chip, scrape and wire brush surfaces to remove all loose rust and failing coatings. Abrade painted surfaces to provide a key for new paint to adhere to. Immediately after this treatment, apply 2 coats of Ottosson Linseed Paint Iron Oxide primer.
- Brouns & Co, Highfield, Selby Road, Leeds LS25 2AG United Kingdom Tel : +44 (0)1423 500 694, Useful information also available on the Brouns website https://linseedpaint.com/
- Potmolen Paint, 27, Woodcock Industrial Estate, Woodcock Road, Warminster BA12 9DX, Tel 01985 213960, contact Mrs Butcher

Where new cast iron components are required they are to be J W Longbottom Cast Iron complete with ear sockets and shoes.

- Supplier details: J & J W Longbottom Ltd, Bridge Foundry, Holmfirth, Nr Huddersfield HD0 7AW, tel: 01484 682141, website: www.longbottomfoundry.co.uk or similar approved, to be installed following manufacturer's instructions.

External Wood

- To prepare previously (non-linseed) painted substrates scrape away any loose paint and wash the surface.
- Damaged wood to be replaced or filled where appropriate by method agreed with CA.
- Apply primer paint mixed as follow:
- Mix 35% paint with 50% raw linseed oil and 15% pure balsam turpentine (available from Oricalcum).
- Apply the primer well in a thin coat, estimate 3-4 days drying time in dry warm conditions. Alternatively use Potmolen Linseed Oil Wood Primer.
  Proceed to apply 2/3 coats of undiluted linseed gloss ensuring full coverage.

Beeswax & Turpentine protective finish to unpainted external hardwood

- Location: Refer to Schedule of Works.
- Manufacturer/Supplier: to CA's approval.
- Surface(s): Existing stripped/partially stripped/external timber.
- Preparation: Wash down the timber and allow to dry. Prepare the beeswax and turpentine mix by shredding the beeswax and dissolving it in turpentine – 1 lb (1/2 kg) wax to 1 pint (1/2 litre) turpentine. (Turps substitute to CA's approval may be used.) Allow to stand overnight and mix thoroughly with 1 gallon (3.8 litres) of boiled linseed oil and strain through a piece of Hessian.
- Coating: Apply one coat of the mixture by brush and allow it to soak in. Rub with a smooth cloth to remove surplus. Repeat operation a second time.

Storage

Keep containers sealed and store in a cool frost-free place.

Cleaning

Between coats of linseed primer/linseed paint store brushes in linseed oil. Wash tools with warm water and mild soap. Wash hands with hand cleaner if required.

Safety

Please refer to the Material Safety Data Sheet.

Disposal

Surplus paint to be retained for future use.

Internal Decorations

- Previously painted ceiling plaster; allow for sound areas to be cleaned with a soft cloth and painted using 'breathable emulsion' in an off white from standard colour range (either Potmolen HO matt emulsion or Ty-Mawr internal limewash colour, to be confirmed).

Contractor to provide sample areas for approval with Client.

Organic growths and infected coatings to be removed with biocidal solution. Apply residual effect biocidal solution to inhibit growth.

2.8 SCAFFOLDING

- The Contractor is to provide all scaffolding, staging, ladders, trestles etc necessary for the proper execution of the work. All such scaffolding must comply with the information on scaffolding in H.S.E. 1996 book "Health & Safety in Construction". Scaffolding is to be independent of the structure with suitable braces and shores. Suitable timber spreader plates are to be used to give a sound base to the scaffolding. Ground conditions must be checked for stability with special consideration for the churchyard location.
- The Contractor is liable for any delay caused by ScaffTags being invalid and be charged at liquidated damages rates.

2.8.1 Guard rails and toe boards

- Guard rails and toe boards are to be provided wherever 2 m or more from the ground.
- Guard rails of scaffolding tube to be at least 910mm above any edge from which people are liable to fall.
- Toe boards are to be at least 150mm high.
- Intermediate guard rails must be provided so that the unprotected gap does not exceed 470mm or suitable mesh (eg brick guard) or similar can be used.

2.8.2 Working platforms should be:

- Wide enough to allow 2 people to pass – at least 600mm wide.
- Free of openings and traps through which people's feet can pass causing them to trip, fall or be injured in any other way.
- Constructed to prevent materials from falling – the platform should be constructed to prevent objects falling through holes and gaps.
- Kept free of tripping and slipping hazards, where necessary provide handholds and footholds. Keep platforms clean and tidy. Do not allow mud to build up on platforms.

2.8.3 General Notes

- The scaffolding is to be designed and constructed by competent trained personnel.
- The scaffolding to be capable of taking the weight of the personnel and materials used or stored on it.
- The decking boards should be fitted with hoop iron at each end. Decayed, warped or split boards must not be used. Boards should oversail the last support by at least 50mm but by less than 150mm. Precautions should be taken to hold boards down to protect from high winds.
- Ladders must be sound, securely fixed, and set at an angle of 4:1. To prevent unauthorised

access by vandals or children, lockable ladder boards should be used when the site is unattended.

- Alternatively, the bottom ladder should be removed. All scaffolding to be enclosed in metal sheeting to a minimum height of 3m from ground level.
- In areas where work is being done provide netting to ensure the safety of pedestrians using the churchyard.
- All tube ends within 25mm of the wall should have plastic cups.
- It is likely there are underground voids throughout the churchyard as a result of burial activity which may undermine the support of any structure such as the scaffolding. The extent of these voids is unknown.
- The Contractor should also note the numerous gravemarkers throughout the churchyard which effectively preclude the storage of materials or siting of a compound.
- Provide and maintain a fully independent scaffold sufficient for access, working and material loads to the roof of Nave. Fully enclose the base of the scaffold with 3 metre high corrugated iron sheeting (or heras if approved by insurance company). Provide a hoist as required.
- Side sheeting to the scaffolding other than at ground level may be provided at the Contractors discretion. Where side sheeting is not provided provide adequate weather protection to the work.
- Make due allowance for artificial lighting where any solid sheeting is used.
- Provide and maintain large and obvious "danger, construction site" signage all round the scaffolding at low level to inform the public to keep clear.

SECTION 3 : SCHEDULE OF WORKS

ALL DIMENSIONS ARE TO BE CHECKED AND VERIFIED ON SITE BEFORE ORDERING MATERIALS.

3.1 GENERAL

- The Contractor will be required to possess a high level of expertise in the repair of historic buildings and to carry out all of the work in accordance with current best practice. Read with section 2 'Materials & Workmanship'.
- Contractor to complete costing sheet at the end of this schedule and submit it with the Form of Tender.

3.2 SCAFFOLDING

See Materials & Workmanship item 2.7.

- Contractor to provide and maintain independent scaffolding for access, working and material loads to scheduled working areas (parapets, walls and windows).
- Form suitable support at the base of the scaffold including bridging over drains and accommodating buttresses and other projections and ensuring adequate load bearing at ground level in proximity of graves. Take care to avoid damage to masonry and stained glass.
- Fully enclose the base of the scaffolding with 3.5m high corrugated steel sheeting and provide additional security measures required by the church insurer – interior scaffold lighting controlled by solar sensor to be on all night, and monitored PIR & CCTV intruder alarm.
- Allow £750 for alarm to be installed by church security provider as an extension to existing system. | 750 | 00
- Provide safety netting to prevent tools & materials dropping from higher level.
- Where necessary protect access routes with rigid sheets (the porch).

3.3 DEMOLITIONS

3.3.1 <u>Cast Iron Rainwater downpipes and hoppers:</u>

- Carefully dismantle hoppers and downpipes from north aisle and set aside for sand blasting, repainting and re-fixing.
- Set aside rainwater butt for reuse. Cart away existing plinth.

3.3.2 Stonework:

<u>South Aisle Parapet:</u>

- Allow to carefully dismantle the coping stone by stone (carefully removing surface cramps to avoid stone damage) and pierced work beneath down to string course and rebuild replacing cramps and dowels in stainless steel. Itemise all parapet stones prior to removal and set aside for cleaning, repair and re-use in existing location and position.
- If on inspection with the architect repair in-situ is feasible dismantling will NOT be done.

<u>North Aisle Parapet:</u>

- Allow to carefully dismantle 100% of coping and ashlar beneath down to string course and rebuild replacing cramps and dowels in stainless steel. Itemise all parapet stones prior to removal and set aside for cleaning, repair and re-use in existing location and position.
- If on inspection with the architect repair in-situ is feasible dismantling will NOT be done.

Porch Parapet:

- Allow to carefully dismantle 100% of coping and ashlar work beneath down to string course and rebuild replacing cramps and dowels in stainless steel (some new bed joint reinforcement will be needed across the south corners). Itemise all parapet stones prior to removal and set aside for cleaning, repair and re-use in existing location and position.
- If on inspection with the architect repair in-situ is feasible dismantling will NOT be done.

Drainage Channel at ground level:

- Carefully dismantle and set aside for reuse external channel walling stone (churchyard side) and stone base of drainage channel for inspection by Architect, cleaning and re-use, where possible.

3.4 STONEWORK REPAIRS

Read with section 2.2 of Materials & Workmanship.

3.4.1 Specialist works by stone conservator:

3.4.1.1 Parapet stonework and copings (all areas):

- The existing copings and pierced & plain ashlar stonework beneath to be lifted for re-bedding and removal of rusting iron cramps/fixings. Remove all old mortar. Clean exposed faces by brushing down using hard dry glass fibre bristle brushes to remove lichens and dirt generally, and re-bed. Take great care to minimise damage to friable pierced work, which is to be repaired.
- Allow to repair & consolidate 65% of South Parapet pierced work, grouting fissures, pining fragments, filling crevices with matching lime mortar and sheltercoating as necessary.
- Replace iron cramps with stainless steel. Allow for 2no. vertical dowels to each coping stone and also each stone beneath.
- Make good damaged stone where original dog cramps removed from coping tops (every joint along south aisle parapet) – in general filling slots with lime mortar repair and where necessary re-adhering fractured stone with acrylic resin.
- Ensure all water traps to coping stones are filled to a level surface to allow efficient shedding of rainwater with lime mortar repair.
- Re-lay stones solidly on a new bed of lime mortar and point similarly in lime mortar. Allow for lime putty mortar in the proportions 1:2 lime: aggregate with the aggregate comprising sharp sand and crushed stone suitably graded and matched to the stone, approved by the architect.
- Provide samples of suitable mortar for approval.
- To porch allow to renew entirely the render inside the parapet using lime mortar 1:2.5 NHL2 lime : aggregate, the aggregate to be well graded sharp sand and Doulting stone dust.
- Provide samples of suitable render for approval.

3.4.1.2 Repairs to window tracery/mullions, jambs, heads and cills:

Tower west, North & South aisles, South Chapel, North Organ chamber, Vestry and Chancel:

- Clean masonry by dry brushing with a glassfibre bristle brush, re-point cracked and failed joints in window stonework generally with 1:2 lime putty mortar as before, and repair decayed masonry to original profile with 1:2 matched lime putty mortar as before as necessary.
- For pricing allow to rake out and repoint approximately 35% of all joints in window surrounds, tracery, jambs, cills and mullions. Allow to renew 50% of

mortar in the glass margins. Allow to clean the tracery and mullions in each window and the inner parts of the jambs.

- To chancel east, organ chamber, north aisle & tower west windows allow to remove sulphate deposition with two applications of poultice cleaning.
- To western north aisle window allow to renew the external face of the eastern mullion entirely from top to bottom, cutting back to the glass line and piecing in new Doulting stone of matching profile. Pin and fix in place with acrylic resin. Make good mortar margin to glass each side.
- To central north aisle window allow to repair lost drip profile to window head by piecing in new stone 500 long x 75mm high x 75mm deep in matching Doulting stone.
- To tower west window re-paint ferramenta.

3.4.1.3 Vestry window internally:

- Carefully dismantle opening light and take to workshop for overhaul – stripping back iron to bare metal, priming & painting with Rust Anode cold galvanising primer and two coats Brouns linseed oil paint in black. Refix opening light. Re-lead glazing, reusing old glass.
- Re-lead glazing in each light, reusing old glass and replace saddle bars with matt black painted stainless steel of matching dimension.
- Make good damaged stonework from corrosion of old saddle bars and opening light, pining fractured pieces – in particular the east mullion.
- Repair mullion profile as necessary with stone matched 1:2 lime putty mortar.

3.4.1.4 West door (Tower exterior):

- Poultice clean upper parts of door head masonry to remove carbon/sulphate deposits (allow two applications), and carry out stone repairs as necessary as for windows. Pin laminating stone, lime grout fissures and form lime mortar cappings and supports to mouldings where vulnerable. Allow to apply 2no. layers lime sheltercoat comprising dilute lime putty with stone dust to match existing masonry.
- Provide samples of suitable sheltercoat for approval.
- Repair bottoms of both door leaves. Allow to piece in matching seasoned oak to top and bottom of rails 50mm high, and to bottoms of stiles 400mm high, neatly scarfed in at a 45 degree angle.
- For west door work allow to dismantle bookcase inside door, and reassemble on completion. The bookcase is designed to be removed. Carefully remove thermal insulation & draught stripping and reinstate on reassembly. Assume bookcase components will be stored within the church. Provide a sheet of 12mm plywood to ay on top of pews as a platform for storage and cover with dust sheets.
- Chip & scrape iron strap hinges to remove loose and defective paint and repaint as for window metalwork above (Vestry – Brouns linseed paint).
- Apply Nitromores paint stripper to remove modern graffiti paint from meeting stiles.
- Biocide exterior face of oak and apply a protective and nurturing dressing of beeswax & turpentine, buffed to a satin sheen when sufficiently dry.

3.4.1.5 Nave parapet SE corner:

- Pin vertical fracture between south & east parapets. Allow for 2no. 10mm dia. threaded ss dowels 750mm long set in acrylic resin with the bar ends recessed 15mm and pointed over with stone matched 1:2 lime putty : aggregate mortar.

3.4.1.6 Ringing chamber south window (tower):

Work to be done from Ringing chamber through open window/while frame removed for repair;

- Pin loose fragment of stone to east jamb.

3.4.1.7 Nave S arcade (internally):

- Pin fracture above first from west pier. Allow for 2no. 3mm dia. ss pins 100mm long.

3.4.1.8 Chancel step (internally):

- Repair decayed edge of grey sandstone step where nave floor tiling adjoins. Allow to build back stone profile with stone matched 1:2.5 NHL3.5 : aggregate mortar. For pricing assume repair strip 50mm wide, 2m long nominally 15mm deep.

3.4.1.9 South Gate Piers:

- Repair decayed and rust jacking damage to apex of both gate piers with matched 1:2 lime putty : aggregate mortar.

3.4.2 Repointing (refer also parapet & drainage channel repairs):

Pointing to be 1:2 – 2.5 lime putty : aggregate, the aggregate to be sharp sand and stone dust to match existing.
Provide samples of suitable pointing for approval.

Porch;

- Allow to rake out and repoint west wall 100%, with raking out to lower half minimum 50mm deep.
- Allow to rake out and repoint 1sqm of south wall; individual joints in isolated places to be agreed on site.
- Allow to rake out and repoint 2sqm of east wall; individual joints in isolated places to be agreed on site.
- Allow to insert 2no. crack stitches 600mm long in south wall immediately beneath parapet 500mm east of west corner across existing vertical crack. Use 2no. 6mm twisted stainless steel bars per stitch – Helibar or equal approved, recessed 150mm and 50mm respectively and set within pointing mortar.

South aisle;

- Allow to rake out and repoint 5sqm of south wall; individual joints in isolated places to be agreed on site.

North aisle;

- Allow to rake out and repoint 5sqm of north wall; individual joints in isolated places to be agreed on site (centrally beneath parapet & at plinth level).
- Rebed loose stone at base of north west buttress.

3.4.3 Existing Ground Level Drainage Works (refer drawings for scope and see east end of church for example of work already completed):

Allow for Archaeologist watching brief for all excavation works Provisional sum 750 00

3.4.3.1 Battered stone to inside of existing drainage channel (i.e. church walling):

- Carefully rake out and deeply re-point existing joints, re-building areas of loose stonework as required. Allow for 100% re-pointing using NHL 5 lime mortar and ensure all stonework is securely fixed prior to re-pointing.
- Expect to rake out to depth of 75mm generally.

3.4.3.2 Formation of base and external walls of re-built drainage channel:

- Base of channel to be formed by re-laying sound existing lias paving on 25mm

lime/sand 1:2.5 NHL5 bedding mortar over 100mm of concrete nominally 1:2:4 mix (Ordinary Portland cement : sharp sand : 10mm coarse aggregate). Concrete to extend under outside wall of channel as a footing, and to be separated from church wall with 12mm Flexcell strip. Allow to excavate 150mm beneath existing formation and cart away arisings. For pricing assume supply of additional 25% base stone to match existing (assumed 75-100mm thick).

- Allow to take out 4 no. trial holes along aisles to determine depth of wall foundations; say 450 x 450 x 600mm deep & report findings to CA.
- Rebuild external channel retaining wall re-using stone bedded in 1:2.5 NHL5 lime mortar on concrete channel sub-base.
- Provide new coping/edging to top of channel external wall using 100 x 300mm random lengths of Lias stone laid to existing ground level. NB. Stone adjacent to catch pit channel to be omitted to allow insertion of Stainless Steel hollow box section (50 x 50mm) for drainage (see drawing & example completed at east end).
- Channel base, sides and coping to be pointed with NHL5 lime mortar.

Details provided are for pricing purposes and subject to confirmation after trial pits are undertaken to establish foundation depths of the church building. Fall and outlet to be confirmed.

3.4.3.3 <u>New ground level drainage works (refer drawings & see example of completed work at east end):</u>

3.4.3.4 <u>Catch pit details to north and south aisles:</u>

- Sides of catch pits to be formed using concrete kerbing retaining detail and allowing sufficient depth below finished ground level to install porous plastic grass pavers over 35mm 60/40 compacted root-zone sandy soil. Sub-base layer to be min 75mm deep with free draining, compacted, sharp, angular fill, 95% between 5-45mm (MOT type 3 or similar with reduced fine content) with geotextile membrane separation to root zone, to manufacturer's instructions. Grass surface to be reinstated over geotextile membrane.
- Base of catch pits to be formed using min 90mm deep concrete, bedded on hardcore and geotextile membrane as described above.
- Base to be formed with 1:40 falls from both sides to 300mm wide central channel, and channel also laid to fall of min 1:40 towards main drainage channel allowing water to discharge into it.
- Central 300mm drainage detail adjacent to channel to be formed using 50mm wide x 185mm deep stainless steel RHS drilled through using 12mm dia. bit at 20mm ctrs, to form a row of drainage holes at base, allowing flow of water into channel but retention of gravel behind. (See drawing.)
- Catch pit kerb to be pointed with NHL5 lime mortar.
- Channel to be filled with freely draining porous grass pavers such as Suregreen PP40 or similar approved.

3.5 LEADWORK

<u>South aisle;</u>

• Allow £250 to repair & straighten western rainwater spout.	250	00
• Leadburn creep ridges in eastern roof bay with hot work permit and fire extinguisher in attendance. Allow £250 for leadburning.	250	00

<u>Chancel:</u>

- Several panels of old lead bearing graffiti are leadburned onto the roof covering. A blister in the lower-most graffiti panel may be a result of trapped moisture expanding.

- Allow to cutting a small outlet at the base of the panel, with careful dressing back of the blister.
- Allow also to remove silicone sealant from west abutment flashing where masonry crumbly, rake out and point with lime mortar. Say 2m length for pricing purposes.

3.6 RAINWATER GOODS

- Repaint and refix CI hoppers and downpipes to north aisle. Dismantle and sandblast back to bare metal. Prime with Rust Anode cold galvanising and paint with 2 coats Brouns linseed paint in black.
- Caulk joints with red lead putty.
- Refix with driven pipe nails reusing old holes fitted with new oak plugs.

3.7 BELOW GROUND DRAINAGE

- Contractor to clean out 2 no. gullies discharging to north (to soakaway) and south (drain beneath path at porch), and ensure they are flowing freely.

3.8 WOODWORK REPAIRS

Ringing chamber south window:
Work to be done from Ringing chamber;

- Carefully remove window casements and take to bench for repair.
- Check over oak subframe.
- Allow £250 to make repairs to subframe. 250 00
- On workbench remove glazing and set aside for refixing.
- Clean down woodwork and check over for decay.
- Allow to replace bottom rails of both casements in new season oak. Allow also to scarf in new oak to bottoms of stiles of both casements.
- Check over glazing for defect.
- Allow to re-cement leadwork inside & out.
- Refix glazing, sealing all round with glaziers linseed putty.
- Paint oak (casements & subframe inside & out) with clear UV resisting Osmo oil.
- Repaint 2no. external iron bars.

3.9 REDECORATION

Vestry:

- Brush down walls to remove loose & deleterious material.
- Make good damp damaged wall plaster. Allow to replaster 3sqm in three coat haired lime plaster, 1:2.5 Lime putty : aggregate.
- Allow new plaster to dry/cure thoroughly before painting.
- Patch prime new plaster with Graphenstone ambient primer L42.
- Prime previously painted plaster with Graphenstone GCS Premium Internal Primer.
- Paint wall plaster with Graphenstone GCS Interior Premium. Allow to apply three coats "White Linen".

On A3.8 Costing Sheet
Contractor to complete the following and submit with the Form of Tender:

S of W item		***Form of Tender***
3.2	Scaffolding	£
	Scaffolding additional security	£750
3.3	Demolitions	£
3.4.1	Stonework repairs - parapets	£
3.4.2	Stonework repairs - windows	£
3.4.3	Stonework repairs - drainage	£
3.4.3	Provisional sum for Archaeology watching brief	£750
3.5	Leadwork:	£
	Provisional sum for Straightening spout	£250
	Provisional sum for Leadburning	£250
3.6	Rainwater goods	£
3.7	Drainage below ground	£
3.8	Woodwork Repairs	£
	Provisional sum for subframe repairs	£250
3.9	Painting	£
	Preliminaries, oh & p:	£
	Contingency sum	£2,500
	TOTAL:	**£**