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SPECIFICATION AND SCHEDULE OF WORK
for
CHURCH REPAIR WORKS

at

SACRED HEART CHURCH
EXETER



November 2023

Partners

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Regulated by RICS



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SECTION ONE - PRELIMINARIES

INTRODUCTION

Employer	The Employer will be Father Petroc Cobb, Sacred Heart Church, The Presbytery, 25 South St, Exeter EX1 1EB (Tel: 01392 642389 or 01392 642388).
Contract Administrator	The Contract Administrator will be Philip Hughes Associates, Old Manor Stables, Tout Hill, Wincanton, Somerset BA9 9DL (Tel: 01963 824240).
Principal Designer	The Principal Designer will be the Contract Administrator.
Scope of Work	<p>The works are to the exterior of the presbytery, connected to the south west side of the church of the Sacred heart, Exeter. The works will comprise the following:</p> <ul style="list-style-type: none">a) Design, erection, maintenance and dismantling of scaffolding to provide access for the works.b) Provision of temporary protections, road closures licences and site facilities for the duration of the works.c) Roof and high-level stonework repairs.d) Repairs and redecoration of the rainwater goods.e) Removal of the redundant access walk way on the south side of the nave.f) Provision of internal access through the tower.g) Removal of external bird netting and renewal of bird netting in the belfry windows.h) Works to the flag pole.i) Lightning protection system works to the tower.
The Site	<p>The Sacred Heart Church, Exeter, Devon.</p> <p>The contractor's access to the church is to be via the main west door from the main road and the rear (south east) north door into the presbytery link from the church garden.</p> <p>Internally access will be limited to the tower and access route to these areas. The church and presbytery will remain in use throughout the works. Internal works will need to be kept to a minimum necessary and programmed with the users of the building.</p> <p>There is a small carpark to the north-east of the church where the contractor can deliver materials but parking will not be available in this space. The parking space and lane to it are narrow and will severely restrict vehicular access. Contractors will need to find public parking locally.</p> <p>Externally the site area will be restricted to the areas immediately in the vicinity of the works and agreed storage and site facility areas.</p>

To the north and west of the presbytery/church there are busy public highways and foot paths. There are sections of works to the north that will require scaffolding and access on or over the road. It is envisaged that the Contractor will need to obtain a road closure licence for works in these areas. Works where roads have to be closed should be programmed and set up to minimise the duration of any closures. Public footpaths should be kept open where ever possible.

THE CONTRACT

Form of Contract The works described in this specification will be executed under the Agreement for Minor Works Building Contract 2016 (MW 2016) issued by the Joint Contracts Tribunal.

Recitals

3rd Recital "schedules of rates" deleted.

Articles

Article 3 "the Architect" deleted.

Article 4 Principal Designer: To be the Contract Administrator.

Article 5 Principal Contractor: To be the Contractor.

Contract Particulars

4th Recital and Schedule 2 (paragraphs 1.1, 1.2, 1.5, 1.6, 2.1 & 2.2) Base Date: the Base Date is to be the date of tender returns.

4th Recital & Clause 4.2 The Employer at the Base Date is not a contractor for the purposes of CIS: 'is a contractor' to be deleted.

5th Recital CDM Regulations the project is notifiable: 'is not' to be deleted.

6th Recital Framework agreement not applicable.

7th Recital & Schedule 3 Supplemented provisions.
Collaborative working Supplemental Provision 1 applies: "does not" to be deleted.

Health and safety Supplemental Provision 2 applies: "does not" to be deleted.

Cost savings and value improvement Supplemental Provision 3 applies: "does not" to be deleted.

Sustainable development and environmental considerations Supplemental Provision 4 applies; "does not" to be deleted.

Performance indicators and monitoring Supplemental Provision 5 applies: "does not" to be deleted.

Notification and negotiation of disputes Supplemental Provision 6 applies: "does not" to be deleted.

Employer's nominee: to be agreed.
Contractor's nominee: to be agreed.

Article 7 Article 7 and Schedule 1 (Arbitration) apply: "do not" to be deleted.

Clause 2.2 Works commencement date: To be agreed.

Clause 2.2 Date for completion: To be agreed.

Clause 2.8	Liquidated damages: £250 per week.
Clause 2.10	Rectification period: 12 months from the date of practical completion.
Clause 4.3	Interim Payments: The first Interim Valuation Date is to be agreed (to be one calendar month after the Works Commencement Date). Interim payments – thereafter at intervals of one calendar month.
4.3	Payments due prior to practical completion: percentage of the total value of the work etc.: to be 95%.
4.3	Payments becoming due on or after practical completion: percentage of the total amount to be paid to the contractor: 97.5%.
4.3 & 4.8	Fluctuation provision “no fluctuations provision applies”: applies. “Schedule 2 (contribution, levy and tax changes)”: does not apply delete clause. “the following fluctuations provision”: does not apply delete clause.
4.3 & 4.8	Percentage addition for Schedule 2: does not apply, delete clause.
Clause 4.8.1	Supply of documentation for final certificate: 12 months from the date of practical completion.
Clause 5.3	Contractor’s Public Liability insurance: injury to persons or property – the required level of cover is not less than: £5,000,000 for any one occurrence or series of occurrences arising out of one event.
Clause 5.4A, 5.4B & 5.4C	Insurance of the Works etc. : “Clause 5.4A (Joint Names Insurance of the Works by Contractor)”: to be deleted. : “Clause 5.4B (Joint Names Insurance of the Works and existing structures by Employer)”: to be deleted. : “Clause 5.4C (Insurance of the Works and existing structures by other means)”: applies (see inserted clause).

Inserted Clause

Insurance of the Works etc.

The following insurances will be effected

1. Insurance of the Works by Contractor

(Based on JCT Minor Works Contract 2011 clause 5.4A)

The contractor shall take out and maintain with insurers a Policy for All Risks Insurance for the full reinstatement value of the Works (plus the percentage, if any, stated in the Contract Particulars to cover professional fees) and shall maintain such Policy up to and including the date of issue of the practical completion certificate or, if earlier, the date of termination of the Contractor’s employment (whether or not the validity of that termination is contested).

After any inspection required by the insurers in respect of a claim under the insurance has been completed, the Contractor shall with due

diligence restore the damaged work, replace or repair any lost or damaged Site Materials, remove and dispose of any debris and proceed with the carrying out and completion of the Works.

The Contractor shall authorise the insurers to pay all monies from such insurance to the Employer and the Employer may retain from monies paid by the insurers the amount properly incurred by the Employer in respect of professional fees up to an amount which shall not exceed the amount of the percentage additional cover for those fees or (if less) the amount paid by insurers in respect of those fees.

In respect of restoration, replacement or repair of such loss or damage and (when required) the removal and disposal of debris, the Contractor shall not be entitled to any payment other than amounts received under the insurance referred to in clause 5.4A.1 (less only the amount stated in clause 5.4A.2.2) and such amounts shall be paid to the Contractor under certificates of the Architect/Contract Administrator at the intervals stated in clause 4.3.

2. Insurance of existing structures by Employer in own name
(Based on JCT Minor Works Contract 2011 clause 5.4C)

The Employer shall, if he has not already done so, take out and maintain in his own name a policy in respect of the existing structures together with the contents thereof owned by him or for which he is responsible, for the full cost of reinstatement, repair or replacement of loss or damage due to any of the Specified Perils up to and including the date of issue of the practical completion certificate or (if earlier) the date of the termination of the Contractor's employment (whether or not the validity of that termination is contested).

Clause 5.4A. & 5.4B	Percentage to cover professional fees shall be 15%.
Clause 5.4C	Insurance arrangements: applies, details set out above under Insurance of the Works etc.
Clause 7.2	Adjudication. Nomination to be by a President or a Vice-President of the RICS.
Schedule 1 (paragraph 2.1)	Arbitration. The appointor of Arbitrator is to be by the President or a Vice- President of the RICS.

TENDERING INFORMATION

Tender Package	<p>The following documents are provided for tendering purposes:</p> <ul style="list-style-type: none">a) One copy of the drawings as listed (on drawing register).b) One copy of the specification.c) One copy of the form of tender. <p>Check all documents and paging of the same upon receipt and report any discrepancies. Do not amend documents without written authorisation.</p>
Before Tendering	<p>Inspect the site and ascertain all factors relating to its location, ground conditions and working space together with any other factors that may affect the tender.</p>
Access to Site	<p>Access for inspection of the interior is to be arranged with the Contract Administrator.</p>
Pricing	<p>The main contractor should set prices against the items in Section 4 - 'Schedule of Works'. Where items are subdivided prices are to be set against each division. The prices should then be carried to the summary which should be totalled and entered upon the form of tender provided. 'Extra Over Items' are to be included in the summary.</p>
Contract Sum	<p>This shall be a fixed, all-inclusive price based upon the contract documents and a careful inspection of the site, including an allowance for all work and risks. It should include for handing over the works clean, functional and complete, fit for immediate occupation and use as intended.</p>
Disbursements	<p>Tenders will be deemed to include all travelling time and disbursements arising out of the employment of work people including safety, health and welfare, and any insurances additional to those required by the contract conditions.</p>
Prime Cost Sum	<p>A sum (usually referred to as a PC sum and sometimes entered into a bill description as PC prices) provided for work or services to be executed by a nominated statutory authority; such sums or prices exclude contractor's profit.</p>
Provisional Sum	<p>A sum provided for the entire cost of anticipated work that cannot be properly drawn or described. Where work is undertaken against provisional sums on a time and materials basis, the Contract Administrator is to be notified in advance and timesheets are to be sent to the Contract Administrator on a weekly basis identifying the work undertaken and the time spent. Copies of invoices for materials are also to be provided.</p>
Domestic Subcontracts	<p>Tenderers must submit names of any proposed domestic sub-contractors with their tender.</p>
Evaluation of Tender	<p>The tender shall remain open for 3 months. The employer does not undertake to accept the lowest or any tender and will not pay any tendering costs.</p>
Discrepancies	<p>This specification is to be read in conjunction with the contractor's own inspection of the site and any discrepancy found shall be notified to the Contract Administrator and the discrepancy shall be rectified or explained before a tender is submitted.</p>

Extras	The contractor shall include for everything necessary for the proper execution of the works and all items which may reasonably be inferred although not specifically shown on the drawings or mentioned in the specification and no extras will be allowed unless agreed in writing by the Contract Administrator.
Contingency	There is to be a 10% contingency.
Tenders	Tenders are to be sent to the Contract Administrator in sealed envelopes by 5pm on the day named in the letter of invitation.
Priced Copies	A priced copy of the Schedule of Work (Section 4) showing a detailed breakdown of the pricing (including all divisions) is to be submitted within 3 working days upon request of Contract Administrator.

GENERAL PRELIMINARIES

Management	Provide proper management of the works including close supervision of the contractor's own employees and sub-contractors.
Foreman	<p>The contractor is to retain on site at all times a suitably qualified foreman. The foreman is to be appointed sufficiently early on so as to be able to attend a pre-start on site meeting and is to be present on site throughout the time the scaffolding is being delivered and erected and also at the conclusion of the works when the same is being dismantled and cleared away. The foreman shall be responsible for all labour working on site including sub-contractors. He shall be responsible also for site security and for the protection of the building during the course of the works. He is to ensure that the working area is kept tidy at all times. He is to pay particular attention to the condition and safe maintenance of the scaffold and all arrangements to be made for public safety.</p> <p>The same foreman is to be retained on site throughout the contract. If for any reason he is not available due to sickness or holidays the Contract Administrator is to be advised directly.</p>
Programme	Prepare a programme for the work to be tabled at the pre-contract meeting, supply the Contract Administrator with a copy and keep a record of progress. Give the Contract Administrator due notice of all critical dates (e.g. when information is required, when work is due to be covered up). The programme is to include all provisional items described in terms of hours of work in the Schedule of Work.
Notification	<p>The contractor is to notify the Contract Administrator of any site visits required or decisions to be taken at least 5 working days in advance.</p> <p>The contractor is to notify and liaise with police, fire brigade, local and highway authorities and all others concerned with the works.</p>
Meetings	The contractor's site foreman is to attend weekly site meetings.
Contractor's Equipment and Facilities	<p>Provide the following which shall be deemed to include all incidental items required by the contractor:</p> <ul style="list-style-type: none">a) Plant, tools, vehicles, scaffolding and temporary equipment of every description.b) Hoarding, barriers, covers and everything necessary for safety and weather protection.c) Access into and around the site including hardstandings and storage areas.d) Temporary structures including welfare facilities. The contractor is to have use of the WC and wash facilities within the ground floor of the presbytery. The contractor can make use of the lower ground floor facilities for mess room. This area will be shared with various groups and timings of breaks on certain days may need to be varied. Sheds to the east of the church can be used for limited storage of materials. The contractor is to ensure these facilities are kept clean and tidy at all times.e) Water, power and lighting and means of distribution. Electrical and water supplies are available within the presbytery and are to be made available to the contractor, free of charge. Contractor to use both power and water responsibly.

	<p>f) Adequate telephone facilities. A mobile telephone would be acceptable provided there is sufficient reception.</p> <p>g) Adequate means of water disposal, to ensure that water from any source does not collect on the site.</p>
Temporary Facilities	<p>Inform the Contract Administrator of the intended siting of all temporary works, facilities (including skips) and services. All such works are to be subject to approval which must be obtained by the contractor in writing.</p> <p>Maintain, alter, adapt and move temporary works and services as necessary. Clear away when no longer required and make good any damage caused by the siting, use or removal of these services</p>
Existing Services	<p>The contractor shall ascertain the position of all existing services over the area of the site before starting work and shall take all necessary precautions to protect, isolate or maintain these during the progress of the works.</p>
Security	<p>Keep the site secure and prevent trespass, including trespass by work people or plant on or over adjacent property.</p>
Noise, Disturbance	<p>Noise, dust, smoke and disturbance are to be kept to an absolute minimum. Prevent all forms of pollution or nuisance. No radios to be permitted on site. The contractor shall organise his work so not to provide grounds for complaint under the Control of Pollution Act, 1974.</p>
Outside Working Area	<p>The contractor is to ensure that all areas outside the site, both inside and outside the building, affected by the works are kept clean and tidy and that there is no risk to public safety.</p>
Hot Work	<p>Hot Work is generally prohibited on site. Hot work is defined as 'All operations involving flame, hot air or Arc Welding and cutting equipment, brazing and soldering equipment, blow lamps, bitumen boilers and other equipment producing heat or having naked flames'. If any of these operations are essential for the execution of the specified work written approval must be obtained from the Contract Administrator relating to each operation.</p>
Fire Precautions	<p>The following precautions shall be taken to avoid the outbreak of fire:</p> <ul style="list-style-type: none">a) Discuss proposals with Employer to ensure fire hazards are known.b) Additional fire-fighting equipment shall be provided appropriate to specific identified risks.c) Flammable materials must not be stored on site. Do not take flammable liquids or gases (eg preservative treatments) into the building other than those needed for one day's work.d) Smoking is prohibited (see below).e) Do not permit any accumulation of flammable debris.f) Burning of rubbish is strictly prohibited. All rubbish must be promptly removed from site.

Smoking	There is to be no smoking within or in the immediate vicinity of the building. Anyone caught smoking in restricted areas may be excluded from the works for the duration of the contract at the Contract Administrator's discretion and at no expense to the Employer.
Inspection	Whenever work ceases for a meal break or at the end of the day, the general foreman is to make a thorough inspection of areas where work has been in progress during the same day to make quite sure that there are no signs of incipient fire.
Temporary Electrical Wiring	All temporary electric wiring is to comply with the regulations of the Institution of Electrical Engineers. Circuits are to be physically disconnected from the mains at the end of the day even when mains switch is turned off at night.
Preservative Treatment	Special care should be taken where preservative treatments have been used as these are commonly based on flammable solvents the vapour from which has a very low flash point. Such vapour may remain in unventilated spaces for a considerable time after treatment.
Advertising	The contractor's and scaffolders signboard will be subject to approval. All other advertising is to be approved by CA.
Press Enquiries	The contractor is to refer all press enquiries to the Employer.
Confidentiality	No financial matters are to be disclosed to third parties. All matters relating to the contract are confidential.
Handover	At handover: <ul style="list-style-type: none"> a) Make good all damage consequent upon the work. b) Remove all temporary marking, coverings and protective wrapping unless otherwise instructed. c) Clean the works thoroughly, removing all splashes, deposits, efflorescence, rubbish and surplus materials consequent upon the execution of the work. d) Cleaning materials and methods to be as recommended by manufacturer of product being cleaned. In the absence of such recommendations cleaning materials and methods to be approved by the Contract Administrator. e) Security at completion - liaise with the employer and leave the works secure.
Defective Work	As soon as possible after any part of the work is known or suspected to be defective, submit proposals to the Contract Administrator for further testing, opening up, inspection, making good or removal and re-execution and obtain instruction. Wherever inspection or testing shows that the work is not in accordance with the contract and measures (e.g., testing, opening up, experimental making good) are taken to establish the acceptability of the work, such measures: <ul style="list-style-type: none"> a) will be at the expense of the contractor. b) will not be considered as grounds for an extension of time.
Making Good Defects	Make arrangements with the Contract Administrator and give reasonable notice of the precise dates for access to the various parts of the works for purposes of making good defects. Inform Contract Administrator when remedial works to the various parts of the works are completed.

HEALTH AND SAFETY/CDM REGULATIONS

CDM	<p>Construction (Design and Management) Regulations 2015 will apply to this project.</p> <p>The contractor will develop a Construction Phase Health and Safety Plan (HSP) as referred to in regulation 2 of the CDM Regulation. The contractor will implement effective management, monitoring and supervision of this plan and coordinate the activities of all contractors on site, ensuring their compliance with Health and Safety requirements.</p> <p>The Contract Administrator will liaise with the Principal Contractor to ensure that the HSP complies with the regulations.</p>
Outline H&S Plan	<p>An outline Construction Phase Health and Safety Plan must be submitted to the Contract Administrator and is to include the following:</p> <ul style="list-style-type: none">a) Method statements related to the construction hazards identified in the pre-tender health and safety plan and/or statement on how the hazards will be addressed and other significant hazards identified by the contractor.b) Details of the management structure and responsibilities.c) Arrangements for issuing health and safety directions.d) Procedures for informing other sub-contractors and employees of health and safety hazards.e) Selection procedures for ensuring competency of other sub-contractors, the self-employed and designers.f) Procedures for communications between the project team, other sub-contractors and site operatives.g) Arrangements for co-operation and co-ordination between contractors.h) Procedures for carrying out risk assessment and for managing and controlling riski) Emergency procedures including those for fire prevention and escape.j) Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded.k) Arrangements for welfare facilities.l) Procedures for ensuring that all persons on site have received relevant health and safety information and any training.m) Arrangements for consulting with and taking the views of the people on site.n) Arrangements for preparing site rules and drawing them to the attention of those affected and ensuring their compliance.o) Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements.p) Review procedures to obtain feedback.

H&S File The Health and Safety File is an information source and guide for the Employer and end users providing an understanding of the building and its systems and enabling it to be operated and maintained safely. Provide the CA with 3 copies of the information required below.

- a) Details of construction methods and materials which may present significant residual hazards with respect to cleaning, maintenance or demolition.
- b) As built drawings recording details of construction on paper prints.
- c) Copies of manufacturers current literature for all products for which the particular proprietary brand has been chosen, including COSHH dated data sheets and manufacturers recommendations for cleaning and maintenance.
- d) Copies of all guarantees, warranties and maintenance agreements offered by subcontractors and manufacturers.
- e) Copies of all test certificates and reports required in the specification.

The H&S file must be fully compiled, passed to and approved by the CA prior to practical completion being certified.

Presentation of H&S File The H&S file is to be contained in a series of A4 size, plastic covered, loose leaf, four-ring binders with hard covers, each indexed, divided and appropriately cover titled. The main set(s) of as-built drawings may form annex(es) to the file.

SECTION TWO - SPECIAL CONSIDERATIONS

The Building	<p>The church of the Sacred Heart was built on the site of the former town house of the Abbots of Tavistock, which became the Bear Tavern after the Dissolution. Believed to be the earliest surviving work of Leonard Stokes, a leading figure in the Gothic Revival, and designed in conjunction with CE Ware, a local engineer, the church was built in 1883/4. The tower was completed in 1926. The church is noted as a good and well detailed example of Gothic Revival architecture with a rich collection of late 19th century fittings.</p> <p>The presbytery attached to the south of the church, 25 South Street, dates from the late 18th or early 19th century the building is believed to have been converted to a presbytery when the church was built. The ground floor was extended to the east to form a link with the church in 2020.</p> <p>Both the church and presbytery are listed as being of special historical and architectural interest. Both are listed separately, grade II.</p>
Ancient Fabric	<p>The building and site contain features of special interest and importance and great care must be taken to avoid unnecessary disruption of the fabric. If in doubt about cutting or removing anything, contact the Contract Administrator.</p>
Fit New to Old	<p>To ensure the survival of the maximum amount of ancient fabric all new work must be fitted to the old - not the old adapted to accommodate the new.</p>
Irregularities and Distortions	<p>In an old building a certain amount of distortion and irregularity is to be expected and is one way in which a building reflects its age. Unless instructed otherwise by the contract administrator no attempt is to be made to even up or correct such irregularities.</p>
Surface Treatments	<p>No surface treatment is to be undertaken unless included in the schedule of works and all such treatments shall be exactly as specified. No additives are to be used in any mix unless specified.</p>
Specification	<p>It is the contractor's responsibility to ensure that the relevant provisions of the specification and particularly of this section are fully understood by his operatives including those of sub-contractors. A copy of the specification and drawings shall be retained on site for reference.</p>
Treasure Trove	<p>Items of interest or value found during the course of the work must be reported to the Contract Administrator. These are to remain the property of the Employer.</p>
Damage	<p>Damage to ancient fabric cannot simply be rectified by replacement because ancient features are no longer ancient if they are renewed. Take special care therefore to avoid all damage. Report any damage to the Contract Administrator immediately.</p>
Recording	<p>Any features of historic interest exposed during the works will need to be recorded by measurement, drawing and photographs. Should such features be encountered then the contractor is to notify the Contract Administrator without delay.</p>
British Standards	<p>Note that British Standards and Codes of Practice are designed as minimum standards for new work and are not always relevant to work on historic buildings.</p>

SECTION THREE - SPECIFICATION OF MATERIALS AND WORKMANSHIP

GENERAL REQUIREMENTS

This section is to be read in conjunction with all other sections. If any part of this document is detached for use by other parties, ensure a copy of this section is also provided.

Definition of the term "Approved"	The term "approved" shall be understood to mean that the use of a particular material, unit, component or method will be subject to the written approval of the Contract Administrator. Unless otherwise specified in the written approval, approval is limited to the visual appearance of the work, materials or components involved and shall not relieve the contractor from compliance with the specification.
As Directed	As defined for 'approval'.
"Carefully Remove"	The term used for components which are to be retained as stated or where adjacent work is to be retained. Handle such components with care and protect from damage. In pricing such work it will be assumed that the contractor considers that he is able to unfix and handle without damage.
Dimensions/ Sizes	Unless otherwise indicated, any dimensions stated in descriptions are in the sequence of length, width and height.
Descriptions	<p>The descriptions in this specification/schedule of works are to be taken in a comprehensive sense and the rates are to include for everything and all associated work necessary for the execution of the work described in an efficient manner, including:</p> <ul style="list-style-type: none">a) Materials and components as specified and all labour in fitting and fixing in position including cutting and wastage.b) Use of plant, tools and temporary works of every description.c) All matters of general application as set forth in sections 1 and 2 and this section.
British Standards	Where materials, articles and/or workmanship are specified to be in accordance with a BS and/or BSCP this is deemed to mean the latest issue of the British Standard Specification or British Standard Code of Practice together with any amendments.
Setting Out	Check the levels and dimensions of the site against those shown on the drawings, and record the results on a copy of the drawings. Notify the Contract Administrator in writing of any discrepancies and obtain instructions before proceeding.
Before Commencing	<p>Liaise with all parties concerned and arrange liaison between trades. Do not start or continue any part of the work until:</p> <ul style="list-style-type: none">a) Environmental conditions are suitable for the type of work involved.b) Supervisors are satisfied that operatives understand what is required.c) Related preceding work is fully completed and, if necessary, tested and approved.
Weather	Specified requirements for weather precautions and protection refer to rain, frost, snow, sleet, gales, excessive sunshine, drying winds, flooding or any other state of the weather which could cause damage or otherwise interfere with the execution of the works.

Delivery Procedure	<p>Arrange and programme deliveries to the site so that materials:</p> <ul style="list-style-type: none"> a) Are dispatched suitably protected, if liable to damage. b) Arrive in a sequence suited to incorporation into the works. c) Arrive in quantities that minimise site storage but do not delay the works.
Good Practice	<p>Where and to the extent that materials, products and workmanship are not fully specified they are to be:</p> <ul style="list-style-type: none"> a) Suitable for the purposes of the works stated in or reasonably to be inferred from the contract documents. b) In accordance with good building practice, including the relevant provisions of the current BSI documents.
Manufacturer's Recommendations	<p>Handle, store, prepare and use or fix each product in accordance with manufacturer's printed or written recommendations/instructions. Inform the Contract Administrator if these conflict with any other specified requirements.</p> <p>The recommendations/instructions are those which are current 10 days before the date of tender. If they change between tender and construction inform the Contract Administrator and obtain instructions before ordering materials or starting work.</p>
Liaison with Manufacturer	<p>The contractor shall supply the manufacturers with all relevant details and afford them every facility for inspecting the work during progress of the works in order to ascertain that their products are being used correctly, and allow them to take samples of their materials from the site if so desired.</p>
Proprietary Brands	<p>Should the contractor wish to obtain the materials from firms or sources other than those specified, prior approval in writing for every item must be obtained from the Contract Administrator.</p>
Materials Delays	<p>The employer reserves the right to place orders in advance of the signing of the contract for materials, the supply of which is likely to delay the progress of the works, and the contractor shall confirm such orders after signing the contract.</p>
Samples	<p>Where approval of products or materials is specified submit samples or other evidence of suitability. Do not confirm orders or use materials until approval has been obtained. Retain approved samples on site for comparison with products and materials used in the works. Remove when no longer required.</p>
Craftsmanship	<p>Undertake work by or under the direct supervision of operatives with suitable training, experience and competence. Craftsmen shall undertake work requiring special skill. Do not permit apprentices to work unsupervised.</p>
Workmanship	<p>Undertake all work with skill and care in order to produce work fit for its intended purpose and of good quality. Generally make every attempt to undertake the work as follows:</p> <ul style="list-style-type: none"> a) Cutting away and alteration work generally: undertake with the minimum amount of disturbance to those parts of the building intended to be left undisturbed. b) Work involving existing work and components: undertake to the same standard and appearance as that originally achieved, unless otherwise specified. c) New work: undertake new work associated with the alterations as specified in the appropriate work sections.

Appearance and Fit	Wherever satisfactory accuracy, fit and/or appearance of the work are likely to be critical or difficult to achieve obtain approval of proposals or of the appearance of the relevant aspects of the partially finished work as early as possible.
Fixings/ Fastenings/ Adhesives/ Mortars	<p>All fixings, fastenings, adhesives and mortars to be subject to approval by the Contract Administrator. Generally use fixing and jointing methods and types and spacings of fastenings which are suitable having regard to:</p> <ul style="list-style-type: none">a) Nature of and compatibility with product/material being fixed and fixed to.b) Recommendations of manufacturers of fastenings, and manufacturers of product/material being fixed and fixed to.c) Materials and loads to be supported.d) Conditions expected in use.e) Appearance, this being subject to approval.f) Durability, compatibility with other components and corrosion resistance.
Cleanliness	Keep the works and the equipment used for its construction clean. Accumulate debris in suitable pre-determined areas and promptly remove from site. Keep all gutters, downpipes and drains clear and flush out on completion.
Protection Generally	Protect the works, during construction and as portions reach completion, against any form of damage or deterioration. Such protection shall include coverings, guard rails, temporary heating or other appropriate methods. Any heating required for protection to be approved in advance and in writing by the Contract Administrator.
Unwanted Materials	Remove debris and materials not required for re-use on site. Do not permit such materials to accumulate to become a health or fire risk.

SCAFFOLDING

MATERIALS

Tubing	All scaffold tubing is to be galvanised and in 'as new' condition.
Caps	Plastic end caps.
Fittings	Fittings are to be properly oiled and in good clean condition.
Boarding	Scaffold boards are to be straight and sound. The boards are not to contain any residues (e.g. gypsum plaster) which would harm the building.
Debris Netting	Green debris netting. No torn or damaged netting is to be used.
Ladders	Ladders in sound condition complying to British Standards.
Hoardings	Metal corrugated sheeting. Sheetting for hoarding to be in good clean condition without damaged or bent edges.

WORKMANSHIP

General	Scaffolding and temporary roof to be undertaken by a registered member of the National Association of Scaffolding Contractors or similar approved body.
Health and Safety Regulations	<p>a) The contractor is to ensure that all legal obligations currently in force are complied with in full.</p> <p>b) A competent person inspects all material to be used for any scaffold prior to erection and inspects the completed scaffolding within 7 days of erection and prior to use.</p> <p>c) Further inspection shall be carried out within 7 days of any alteration to the scaffolding and prior to use.</p>
Survey	<p>The contractor is responsible for making a thorough inspection of the site to determine all factors which may affect erection of the scaffold including:</p> <p>a) Location of services above and below ground</p> <p>b) Location of graves</p> <p>c) Paths and access routes</p> <p>d) Elements of the building that are delicate and where special care will be needed to avoid damage.</p>
Method Statement	<p>The contractor shall provide a full method statement identifying</p> <p>a) All materials to be used.</p> <p>b) Method to be following during erection and dismantling of scaffold.</p> <p>c) Chain of command and responsibility of site personnel.</p> <p>d) Stability of the scaffolding during erection and dismantling.</p> <p>e) Security of the scaffold and building during erection and dismantling.</p> <p>f) Emergency procedures to be followed in case of accident or injury.</p> <p>g) 24 hour emergency telephone contact numbers.</p>
Boarding and Guarding	<p>The contractor is to ensure that:</p> <p>a) Working and access platforms are to be fully boarded in such a manner as to provide a safe and secure platform. No boards shall be cantilevered.</p> <p>b) Defective boards are to be removed from site.</p> <p>c) Handrails and toe boards are to be provided to all boarded scaffold lifts.</p>

Design and Erection	<p>Scaffolding and temporary roof are to be designed and erected so that:</p> <ul style="list-style-type: none"> a) The scaffolding complies with the recommendations of BS5973 parts 1 and 2 as appropriate. b) Loads are adequately transmitted to ground. c) No loads are placed on any part of the building structure without the written consent of the Contract Administrator. d) Lateral support is provided from points which are capable of providing the necessary support and which will not be damaged. e) Tying through window openings and to parapets is avoided. f) No damage of any kind will be caused to the building or finishes (see protection below). g) Loads of necessary materials are adequately supported. h) Loads are adequately spread at ground level to avoid damage to drains and other underground services, grassed areas or paving. i) Access is maintained to services (e.g. valves, inspection chambers, rodding eyes, etc). j) Lift positions are selected to provide platforms at the optimum level for undertaking all works being carried out. k) No scaffold support or access is to be located on marked graves. l) The contractor is to be entirely responsible for the safety and stability of the scaffold and protection provided for the public both during and after erection. m) The security of the scaffolding and building are maintained even during erection and dismantling of the scaffold.
Protection of Public	<p>The contractor is to:</p> <ul style="list-style-type: none"> a) Prevent public access within 2 metres of the scaffolding. b) Provide secure pedestrian routes as necessary.
Protection of Building	<p>The fabric of the building is to be protected against damage by the scaffolding during use, scaffold construction, dismantling or transport of materials. The contractor is to ensure that:</p> <ul style="list-style-type: none"> a) No part of the scaffold is placed in such a way that it abrades the building. b) Plastic caps are placed on both ends of all tubes. c) Where tubes are required to bear against the building they are to be provided with 250x250 timber packings and a resilient material against the building. Allow for rigid insulation board a minimum of 50mm thick. d) Scaffolding generally does not bear on the roofs. e) Paving, drives, trees etc are adequately protected. f) Any damage caused is made good at the contractor's own expense.
Access	<p>Ladder access is to be provided to all scaffold lifts. The ladder to the first two lifts must be removed at the end of each working day and locked away.</p>
Striking	<p>The main contractor is to ensure that the scaffold is struck in part or in whole only after receiving written authorisation from the Contract Administrator (such approval to be requested by the contractor).</p>

STONEMASONRY CONSERVATION & POINTING

MATERIALS

Pure Lime The lime is to be in lime putty form. The putty is to be obtained by slaking a pure (non-hydraulic) lump lime with water. (The lump lime is not to be ground or crushed prior to slaking.) The lime putty is to be strained through a screen to remove all lumps over 0.5mm diameter. The slaked lime (lime putty) is to be stored in an airtight container for a minimum period of 12 months prior to use.

Hydraulic Lime *Eminently Hydraulic Lime*

St Astier eminently hydraulic lime (100% pure) in dry hydrate form, available from:
- The Lime Centre, Long Barn, Morestead, Winchester, Hants SO21 1LZ Tel: 01962 713636.
- Limebase Products Ltd., Walronds Park, Isle Brewers, Taunton, Somerset TA3 6QP Tel: 01460 281921.
- Cornish Lime Company, Brims Park, Old Callywith Road, Bodmin, Cornwall PL31 2DZ. Tel: 01208 79779.
- Ward & Co., Ryeford Industrial Estate, Ryeford Road (North), Stroud, Glos. GL10 2LA. Tel: 01453 791725

Hydraulic lime shall be stored in a suitable dry heated store and is to be used within 4 weeks of production. Once bags are opened or punctured exposure to the air will weaken the hydraulic set. Opened bags must be re-sealed at the end of each day and used within 2 days.

Cement No cement is to be used.

Pozzolanic Additives A pozzolanic material is one which helps to make a lime mortar set. The pozzolanic additive is to be trass obtained from Nimbus Conservation Ltd, Eastgate, Christchurch Street East, Frome BA11 1QD (Tel: 01373 474646)

Charcoal Charcoal to be used as an additive to lime mortars for pointing work is to be crushed so that no piece is greater than 3mm (1/8") diameter.

Aggregate for Mortars a) The aggregates for mortars shall be non-staining, clean, sharp and of the correct colour so that new mortar, when dried out, will match the original colour and texture of the existing mortar.

b) The aggregate to be well washed, dried and stored in dry conditions.

c) Samples of selected aggregates to be provided for approval - see schedule of work.

Water Water for the works is to be clean and pure and free from salts.

Metal Fixings a) Micro pins to be fabricated of soft copper wire 1.2mm diameter and 0.6mm diameter.
b) Dowels, and other metal fixings associated with masonry to be fabricated from austenitic stainless steel grade 316.

- Resin
- a) Resin securing dowels and fixings into masonry shall be a high strength pourable epoxy resin (e.g. Sikadur 42 available from Resapol, Unit 6, Hanover West Industrial Estate, Park Royal, London NW10 7NS Tel: 01942 609001.
 - b) Resin securing micro pins shall be a flexible epoxy resin (i.e. not fully polymerised) to permit slight movement of fixing (e.g. Sika 31). Details of the resin proposed to be included in the Method Statement.

WORKMANSHIP

General Clauses

- Samples Samples of all the main types of work will be required for approval.
- Inspection
- a) Include for inspection by the Contract Administrator of all main stages of work prior to covering over (e.g. allow for inspection of all raking out prior to repointing).
 - b) Include for cutting out and making good 10 no. newly pointed joints selected at random.
- Additives Absolutely no additives are to be used in mortars unless specifically mentioned in this specification.
- Protection of mortars Protect mortars as follows:
- a) All mortars shall be properly covered up and protected from frost, sun and wind.
 - b) Pointing in lime mortar shall be protected against rain until set.
 - c) It is important that lime-based mortars and renders are only allowed to lose their moisture slowly and rapid drying out must be prevented. Include for tending mortars as specified in rates for work.
 - d) From November to March inclusive, protection of mortars is to be maintained using insulation blankets.
- Protection and Cleaning
- a) Cover delicate finished work with adequate protection suitably fixed and remove on completion.
 - b) Prevent staining during the works.
 - c) Remove dust and clean down stonework prior to removal of scaffolding and as scaffolding is dismantled.

Pointing Work

Mortar for Pointing The mortar is to be match the original as closely as possible.

Mortar Mix A

2 putty line : 4 aggregate :1 pozzolanic additive

Mortar Mix B

1 hydraulic lime NHL2 : 3 aggregate

Mortar Mix C

1 hydraulic lime NHL3.5 : 3 aggregate

Aggregates are to be selected to match the existing mortar in colour and texture and adjusted to suit the size of the joints.

- Mixing Lime Putty Mortar
- a) The lime and aggregate are to be mixed together to form coarse stuff and set aside in airtight containers prior to use.
 - b) Measured constituents by volume in clean gauge boxes.
 - c) No more water than is absolutely necessary to work the materials is to be incorporated. The addition of water to lime mixes is not normally necessary or desirable as the lime becomes plastic when worked. (Note: wall surfaces being worked on must be thoroughly dampened and thus reduce suction and water required in the mix).
 - d) Where pozzolanic additive is specified it is to be added immediately before use.
 - e) A pan mixer is preferred for lime putty mortars.
 - f) Mortar for pointing very fine joints is to be passed through an 80 mesh sieve.
- Mixing Hydraulic Lime Mortar
- a) Measure constituents by volume in clean gauge boxes.
 - b) Sufficient water should be added for workability.
 - c) The mortar must be very well mixed to avoid balling. A conventional cement mixer or a paddle mixer may be used.
 - d) Mortar must be applied within 2 hours of mixing.
- Mortar Samples
- Mortar samples with a range of colours and textures are to be prepared in 50x50x25mm cubes in a timber box. See schedule of work.
- Pointing Trials
- Include for the preparation of four trial panels approx. 1m². Mortar mixes to be agreed in advance and the panels to be inspected and a mortar mix and pointing technique approved by the Contract Administrator before the work proceeds. The selected panel is to be kept intact and undisturbed until the work is complete and has been approved.
- Descaling
- Descalce stonework as follows:
- a) Remove all loose flakes of stone with a gloved hand.
 - b) Brush surface with churn brush to remove dust.
 - c) Take care to avoid damage to surrounding surfaces intended to be left undisturbed.
 - d) Agree trial area with Contract Administrator prior to proceeding with the works generally.
- Raking Out
- a) Great care is to be exercised in ensuring that the arrises of the stones are not further damaged during raking out of joints or cutting out existing cement pointing.
 - b) Sound lime pointing is to be retained.
 - c) Joints are to be raked out using hand tools to depth minimum 30mm. The use of angle grinders is forbidden.
 - d) Thin joints (less than 6mm) shall be raked out to minimum depth of three times their width, using saw blades if necessary. A range of raking out tools are to be available on site to accommodate the variations in joint width. No joint is to be raked out using a tool more than $\frac{3}{4}$ width of the joint.
 - e) Where pointing is described in the schedule as ‘deep packed’ joints are to be cleaned out or raked out to a minimum depth of 100mm.

f) Small compressed air tools may be necessary to remove cement rich mortar. If removal of cement rich mortar damages stone inform the Contract Administrator immediately and stop work on the area concerned.

g) The masonry is to be washed down to remove dust and thoroughly dampened before repointing to reduce suction.

h) Where there is any danger of stonework becoming loosened during the raking out and repointing exercise, raking out is to be limited to small areas (say 1m²) which are to be repointed immediately before progressing to an adjacent area.

Damping Down Areas to be pointed shall be thoroughly dampened down the day before and immediately before mortar is applied.

- Pointing with Hydraulic Lime or Pozzolanic Mortars
- a) Pointing shall be well packed in but finished full, flush with the surface of the masonry.
 - b) The pointing should not be re-worked until the initial set has occurred. To expose the aggregate the surface should be scrapped back with a small pointing tool when it is placed.
 - c) The mortar should be kept constantly damp until the hydraulic set is complete (approx. 7 days). Avoid re-wetting the surface of mortar as this may result in lime bloom. Water should be retained from the initial wetting down of the masonry and within the mortar and be protected from drying out. If the mortar is found to be drying periodically re-wet the hessian or blanket protections.
 - d) When the hydraulic set is complete the mortar should be protected as a putty lime mortar to assist carbonation of the lime (controlled cyclic wetting and drying).

Conservation Work

Micro Pinning Laminating or fracturing stonework is to be pinned using the micro pinning technique as follows:

- a) Provide temporary support to fragments during drilling and fixing of pins (Note: some stone fragments may have been dowelled previously).
- b) Undertake grouting in advance of pinning to avoid loss of fixative.
- c) Pin and hole diameter are dependent on the size of fragment to be pinned and the length of pin required. (The limiting factor has been found to be the length of small diameter drill bits. MSS Jobber drills are available in long lengths from Avery Knight & Bowler, Bath.)

Pin and hole diameter is to be kept to an absolute minimum to reduce stresses on the stone. If a choice of pin size is available a larger number of smaller diameter pins is to be selected.

<u>Pin Size</u>	<u>Hole Diam</u>	<u>Max. depth of hole</u>	<u>Thickness of fragment</u>	<u>Pin spacing (centre to centre)</u>
2x0.6mm	3mm	140mm	up to 45mm	90mm
3x0.6mm	3mm	140mm	up to 45mm	100mm
2x1.2mm	4mm	140mm	up to 45mm	140mm
2x1.2mm	4mm	225mm	up to 75mm	140mm

3x1.2mm	5mm	180mm	up to 60mm	170mm
3x1.2mm	6mm	225mm	up to 75mm	TBA
3x1.2mm	6mm	290mm	up to 100mm	TBA

Note: The majority of pinning is to be undertaken using hole diameters of 3 and 4mm.

- d) The length of the pin into sound stonework to be at least twice the length of pin in the fragment.
- e) The diameter of pins to be adjusted as appropriate by twisting a number of strands of copper wire together.
- f) The spacing of pins is to be selected based on the size of fragment to be pinned and the size of pin to be used.
- g) Dedust holes for pins to ensure that a fixing is achieved.
- h) Apply latex (or similar non-staining material) to the surface of the stone as protection from excess resin and remove on completion of pinning.
- i) Dip prepared pins in epoxy resin to form a protective layer around the pin prior to inserting into the hole. This protection is intended to resist corrosion of the copper.
- j) Set pins in 'flexible' epoxy resin. Hypodermic syringes or guns with tubing attached may be necessary to get the resin into the full depth of the holes. Form clay cups around the hole end to ensure that adequate resin enters each hole. (2.1mm external diameter Portex clear pvc tubing available from Laboratory Analysis, Exeter. Tel: 01392 841082.)
- k) Ends of pins are to be set below the surface of the stone (where the size of fragment permits the pins should be recessed by minimum 3mm) and are to be filled over with a lime mortar repair material (as specified).

- Drilling Drilling is to be with rotary, non percussive, variable speed drills, including hand drills.
- Dowelling Substantial pieces of stone, which have fractured, are to be dowelled using 6mm diameter stainless steel threaded rod. Dowelling to be undertaken generally as for micro pinning.
- Grout Put lime putty through 300 micron sieve, put pozzolanic additive through 300 micron sieve, add 4 parts lime putty to 1 part pozzolanic additive to 3 parts water.
- Flushing Solution Add 1 part of ethyl alcohol to 4 parts of water.
- Grouting
Fine Cracks Fine cracks in shattered stonework are to be grouted as follows:
 - a) Provide temporary support to fragments during drilling and grouting.
 - b) Grout injection holes to be drilled carefully using a small manual drill 2-3mm diameter.
 - c) Loose material to be blown out.
 - d) Solution of water and alcohol introduced (injected) into fractures as a wetting aid.
 - e) Flush fractures with water immediately before grouting to avoid rapid water loss from the grout.

- f) Prevent escape of grout using mortar fillets/clay plugs, but allow weep holes to check grout penetration and allow escape of air.
- g) Grout from the base upwards with pozzolanic lime grout as specified. Keep grout agitated to avoid materials settling out.
- h) Plug holes as grouting proceeds.
- i) Remove clay/mortar fillets as grouting proceeds and point up fractures and grout holes on completion.

Lime Adhesive Mortar Adhesive mortar for use with pins is to be prepared by mixing lime, fine stonedust and casein. 1 part of lime putty to be added to 2 parts stone dust and 1 part of low fat cottage cheese. The cheese must be strained to remove water prior to mixing.

Adhesive mortar for re-attaching fragments is to be a fine pozzolanic mortar. Lime and aggregates for the mortar to be passed through an 80 mesh sieve.

Loose Fragments Loose fragments are to be removed, cleaned and rebedded in a thin lime adhesive mortar.

Cement Removal Take extreme care to avoid damage to existing stonework during removal of cement mortars. Previous cement repairs and pointing are to be removed taking extreme care to avoid damage to existing stonework. If necessary drill the cement at close centres to weaken it sufficiently to enable it to be removed. A range of tools including hand, mechanical and compressed air tools are to be available.

Mortar for Repairing Stonework Mortar used for building up areas of shallow decay shall be a hydraulic lime mortar with graded crushed stone particles mixed to produce a mortar of the same colour and texture as the stone to be repaired and to be marginally less dense and slightly more porous. The precise blend to be determined by trials and are to be based on mortars for pointing above.

Prepare stone repair mortar samples - see schedule of work, section 5.

The lime and aggregate are to be mixed together in the proportions 2 parts of lime to 5 parts of the chosen aggregate.

Mortar Repairs Mortar repairs have a number of different functions including:

- Filling fine cracks (e.g. between parts of shattered stones).
- Protective filling (e.g. weathering surfaces, supporting fragile stone or edges of stones).
- Filling cavities (e.g. sulphate blisters).
- Capping (i.e. protection of vulnerable and weakened surfaces).
- Reprofilling (i.e. rebuilding decayed or lost areas of stone to redefine the form of the stonework).

In general undertake mortar repairs as follows:

a) Scrape back any areas of softened stone to a sound surface taking care to retain the original stone surface if it survives.

b) Where instructed by the Project Manager (normally where depth of repair exceeds 50mm) introduce 8 gauge soft copper wire or stainless steel Spiro-tie reinforcement as an armature, set in pre-drilled holes in sound stones using epoxy adhesive.

c) Thoroughly dampen with water to reduce suction.

- d) The specified mix is to be applied in coats, built up to the correct profile where required (e.g. reprofiling).
- e) Mortar must not be over-trowelled which brings laitence on the surface and increases the risk of crazing.
- f) After the initial set, the final texturing is to be applied to the mortar by a suitable wooden tool to achieve a rough surface.
- g) Generally (except for mortar capping) mortar repairs are to be left 3mm below the true surface of the stone so that the patch appears to be an area of slightly eroded stone at a casual glance.
- h) Stones to be repaired individually. Joints between 2 stones being repaired with mortar are to be pointed up not less than seven days after the mortar repairs completed.
- i) The mortar is to be protected as for pointing.
- j) All mortar repairs are to be shown on the record drawings.

Shelter Coat A thin shelter coat is to be applied to the surface of the conserved stonework and is to be well worked in to fill pores and water traps in the stone but the high areas are to be left uncovered. The shelter coat is to be a lime/fine stone dust/casein (max.5%) mix. The stone dusts selected for shelter coat to match the colours of the existing. (Note that the colour of the sheltercoat will need to be varied from stone to stone and area to area.) Stone dust containing iron shall not be used. Prepare samples - see schedule of work.

Iron Cramps All iron cramps encountered during the course of the work are to be cut out and replaced with non-ferrous cramps, taking care to avoid causing further damage to surrounding stonework.

CARPENTRY**MATERIALS**

Hardwood	English oak, winter felled and minimum 18 months air dried, free from short grain, rot, sapwood, wane, excessive knotting (as defined by CP112; SG65) or other defects which will impair its strength, durability or suitability for the works.
Softwood	<p>a) All softwood timber is to be well seasoned, free from sap, large loose or dead knots, shakes, waney edges, excessive moisture and other defects and is to be pressure impregnated with an approved preservative.</p> <p>b) All softwood timber is to be in as long commercial lengths as possible and all laps and joints are to be placed over points of support.</p> <p>c) Timber is to be sawn die square and is to hold the full size specified when sawn.</p> <p>d) All allowance of 3mm to be made for each wrot face.</p>
Structural Softwood	Stress graded softwood grade GS (General Structural) to BS4978 or equivalent grading to NLGA rules. Each piece of timber shall be marked with the grade.
Non-structural Softwood	Natural defects which will not affect the durability or performance of the timber in use are acceptable. Regularised if necessary to provide true flat backgrounds for other materials.
Definition	In carpenters work timbers are to be left 'from the saw' unless specified to be wrot.
Landing Deck Boarding	Roof deck boarding is to be untreated white softwood (Baltic whitewood) of low acidity. Minimum dimensions 19mm x 150mm.
Adhesives	Synthetic resin to BS 1203 or 1204 as appropriate - the correct class for duty and type of joint.
Corrosion Protection	Protect all existing ironwork with two coats of red oxide paint.
Nails	To BS 1202. Stainless steel.
Screws	To BS 1210. Stainless steel 316 A2. Screws for structural fixings to be no. 12, length selected to suit application.
Timber Pegs	Timber pegs for framing works are to be octagonal section seasoned oak, formed from cleaved, split timber and formed to profile with a spoke shave. The taper is to match existing pegs. Turned pegs are not to be used.
Bolts	Bolts may be formed of threaded rod cut to length complete with nuts and washers. For structural connections in timber washers are to be 50mm diameter. Bolts will be austenitic stainless steel grade 316.
Timber Treatment	Timber treatment is to be selected and applied to cause minimum harm and disruption to bats. Seek advice from English Nature, Roughmoor, Bishops Hall, Taunton, Somerset TA1 5AA (Tel: 01823 283211). Where treated timber is cut in any way, two liberal coats of an appropriate timber preservative are to be applied to the cut surfaces of the timber. All timbers exposed during the course of the works shall be thoroughly treated with an appropriate preservative.
Isolator Bushes	Isolator bushes used between different grades of steel are to be obtained from Moss Plastics Ltd, Langford Lane, Kidlington, Oxford, OX5 1HX. Tel: 01865 841100.

WORKMANSHIP

Generally	All carpenters work is to be accurately set out, taking care to work to existing deformation of the building without trying to straighten up or square up any existing irregularities. All work is to be finished off in a proper and workmanlike manner. New work is to be carefully wrot and blended to old. Old timbers are <u>not</u> to be cut away, planed or otherwise worked unless specific instructions have been given by the Contract Administrator to do so.
Cutting away of Structural Timbers	Structural members shall not be cut away except where marked by the Contract Administrator. Care is to be taken to ensure that no more of the existing timber than is absolutely necessary is cut away.
Landing Deck Boards	Roof deck boards are to be laid so that they hog rather than dish. Boards are to be fixed with countersunk stainless steel screws. Following laying ensure that all fixings are adequately countersunk and plane any edges which do not align flat to ensure a smooth and level surface for the roof covering.
Inspection	Include for inspection by the Contract Administrator of all main stages of work prior to covering over (eg. allow for inspection of all dry fitted joints).
Markings	No indelible ink or wax crayon markings are to be applied to any faces of old or new timber. All marks are to be made with chalk or pencil.
Cleaning	Ensure that all shaving and offcuts etc are collected up and removed from site. In particular leave no surplus materials in concealed spaces where they could attract vermin or contribute to a fire.
Defective Work	Should any warping or unreasonable shrinkage occur or any other defect appear in the carpenters work before the end of the defects liability period such defective work shall be taken down and renewed and any work disturbed in consequence shall be made good at the contractors expense.

LEADWORK

MATERIALS

Milled Lead	Milled lead sheet to comply with BS 1178: 1982. Code of lead to be as indicated in the Schedule of Works.
Clips	To be austenitic stainless steel grade 316, 50mm wide gauge 22(0.7mm) supplied by Messrs Lee Steel Strip Ltd., PO Box 54, Meadow Hall, Sheffield S9 1HU (Tel: 01142 437272).
Lead Tacks	Minimum 65mm wide, cut from the lead being fixed.
Nails	Austenitic stainless steel (grade 316) or copper jagged or ring shank minimum 20mm long with large flat heads.
Plugs & Screws	Stainless steel screws (grade 316), complying with BS 1210, not less than 30mm long and 3.35mm diameter. Plugs to be plastic of a size to suit the screws.
Underlay	Geotextile Underlay
Chalk Emulsion Slurry	Chalk/emulsion slurry to be supplied by Rowan Technologies Ltd, 216 Church Road, Urmston, Manchester. (Tel: 0161 748 3644).
Wood Rolls	Wrot seasoned softwood to smooth rounded profile shown in BS 6915. Common rolls approx. 45 x 45mm with 25mm wide flat base unless otherwise Shown.

WORKMANSHIP

General

Generally The work described in the specification shall include all jointing materials, copper nails, lead wedges, wall hooks, tacks, lead collars, felt or paper underlays etc necessary to make the construction perfect and complete.

Leadwork generally to be undertaken in accordance with the recommendations of the Lead Sheet Association, Unit 10 Archers Park, Branbridges Road, East Peckham, Tonbridge, Kent, TN12 5HP. If the requirements of this specification or of the drawings conflict with the LSA recommendations the discrepancy is to be brought to the attention of the Contract Administrator. The contractor should note that in certain respects this specification is more onerous than the LSA requirements.

Preliminary Checks Check to ensure that the following conditions exist:
 a) All surfaces receiving lead or its underlays are clean, dry and smooth; the abutting edges of boards planed or sanded level.
 b) Nails and screws in boarding or sheathing finished below the surface.
 c) Falls are correct and any steps in the decking for drips correctly located and formed.
 d) Everything which lead is dressed around or into (e.g. grooves, roof fixtures) completed and/or fixed into position and all pre-leadwork operations by other trades completed.

Cutting Lead	Prepare for cutting by rolling out onto clean, flat, smooth surfaces. Do not mark out with sharp scribes.
Dressing Lead	Dress and boss to the necessary profiles without reducing the thickness of the lead by more than 25%. Where necessary boss to approximate shape before fixing. Note: Bossing to approximate shape before fixing is particularly important where vibration in situ might damage existing fabric or finishes.
Angles etc	Cut and fold or lead burn where bossing is not practicable.
Lead Burning	Produce solid welds approximately one third thicker than the lead being joined. All lead burning to be undertaken away from the building or scaffold.
Thermal Movement	Do not dress so tightly or fix leadwork in any manner that will restrict free thermal movement of the lead.
Nailing	Unless otherwise stated, use nails at 75mm centres.
Setting Out	The leadwork is to be set out so that the laps are protected from the weather.

Lead flashings & weatherings

Cover Flashings	The lead where turned up against vertical faces (to walls etc) to be covered by a flashing of code 5 lead, 150mm in height, the upper edge to be dressed to a right angle and inserted 40mm into joint in masonry immediately above the edge of the turned up portion of gutter, roof or soakers, the remainder of the flashing to be neatly dressed against the turned up portion of lead gutter etc, the cover flashing to be secured to wall with lead wedges at 200mm centres and the joint pointed in a hydraulic lime mortar. Lapped joints between flashing lengths to lap minimum 150mm. Cover flashings to lap upstands/soakers minimum 100mm. All edges where necessary to be neatly welted. Maximum length of sheet for flashings to be no greater than 900mm. Free edges to be secured with lead tacks.
Lead Tacks	The cover flashing to be secured with lead tacks 65mm wide out of code 6 lead to be of sufficient length to be secured to the masonry under the flashing, and to pass down behind the flashing and turn up about 25mm upon the external face of the flashing, to which it is to be closely dressed, the tacks to be placed at intervals of not more than 450mm in the length of the flashing; a tack must in every case be placed at the laps. Fix each tack with 2 screws or 3 nails.
Clips	Secure any free edges subject to wind lift with lead or stainless steel clips at max. 500mm maximum centres. Fix each clip with two screws or three nails and form recesses in the background where necessary. In exposed locations use stainless steel.
Wedging	Fold strips of lead and wedge in for the full depth of the groove to securely hold the lead at 200mm centres unless otherwise stated.
Soakers for Slates or Tiles	Soakers to be of code 5 lead, one to each tile the length to be that of the gauge plus the lap plus 50mm; to lie 150mm under the tiles and to turn up minimum 125mm against the wall with cover flashing fixed over same. Soakers to be sized to provide a lap for cover flashings of minimum 100mm.
Sloping Abutments	All sloping abutments of roofs against vertical faces, such as against parapet walls, chimney stacks etc to be provided with cover flashings of code 5 lead dressed down to lap 100mm over soakers, stepped down in brick courses and secured into the joints of brickwork (or groove in masonry) as described for cover flashings.

No flashing or apron to be longer lengths than 900mm and to lap at least 100mm at their junction.

Completed
Lead Work

Do not use for access or as a working platform without the provision of protection. in the form of plywood sheets packed up with softwood either side of each lead roll.

RAINWATER DISPOSAL

MATERIALS

Rainwater Goods

Cast Iron	Rainwater gutters, pipes and fittings shall be cast iron complying with the requirements of BS460 or of cast lead (as scheduled). Gutter details and sections to match existing unless otherwise scheduled.
Aluminium	Where scheduled aluminium rainwater goods are to be XL square section downpipe and XL MOG gutter supplied by Raingaurd, or similar approved by CA (https://www.rainguard.co.uk/product/xl-square-pipe/).
Balloon Guards	Balloon guards to gutter outlets to be of stainless steel.
Brackets	Braced drive in brackets with stays as appropriate to match existing. All brackets to be galvanised.
Fixings	Fixings for downpipes to be grade 316 stainless steel stud anchors manufactured by Hilti (or similar).
Bolts	Bolts joining gutter lengths to be galvanised dome headed bolts with galvanised nuts and washers.
Paint	Paint for cast iron rainwater goods is to be supplied by Johnstones (or similar approved by CA), website www.johnstonstrade.com (tel: 01924 354354) as follows: a) Primer to be High Build Zinc Rich Primer. b) Top coat and under coat both to be Micaceous Iron Oxide Paint, in Natural (dark grey) matt finish.

WORKMANSHIP

Marking Out	Mark out holes and chases etc, bracket fixing locations and provide all necessary guidance in order that the builders work can be correctly undertaken.
Historic Fabric	No chasing, cutting or drilling of historic fabric, (stonework, plaster etc) is to be undertaken without the approval of the Contract Administrator on site.
Fixing Gutters	Subject to gutter type and specific requirements, fix as soon as possible after roof coverings completed as follows: a) With centre line vertically below edge of roof covering and close beneath it; dress any underfelt into the gutter. b) To fall evenly to outlets at 10mm in 3m. c) With adequate supports to prevent sagging and ponding. d) Provide additional support at outlets and changes in direction. e) Where possible locate outlets vertically above drain connections/gullies.
Gutter Jointing Generally	In mastic joints, spread the compound evenly in the joint surface and remove surplus after tightening bolts. Place a thin washer under each nut. If bolts occur in the gutter sole, tighten them first.

Jointing Cast Iron	Paint the joint contact surface and cut ends before fixing. Joint with red lead putty/bituminous mastic. Bolt with rustproofed bolts and nuts.
Jointing Aluminium	Aluminium pipes and gutters to be jointed in accordance with manufacturers recommendations.
Guards Jointing Pipes	<p>Fix balloon gratings to all open stacks.</p> <p>Generally comply with the following procedures when making joints in cast iron downpipes:</p> <ol style="list-style-type: none"> a) Ensure pipes are clean internally and undamaged. b) Cut pipes square. c) File/ream cut ends and finish smooth. d) Ensure pipe ends enter fittings and sockets to full depth of jointing area. e) Assemble pipework in a manner that does not entail making joints in restricted locations. f) Leave external vertical rainwater pipe socketed joints open unless otherwise specified. <p>Centralise each metal pipe spigot with three lightly wedged pieces of hardwood or folded lead.</p>
Fixing Pipes	Cast iron downpipes are to be fixed on cast iron or stainless steel spacers to keep them far enough away from the wall to enable the backs of the pipes to be painted. Wherever possible fixings are to be made into mortar joints NOT into stone.
Finish	Rainwater goods to be prepared by blast cleaning and hot zinc spraying. Seek manufacturer's approval for blast cleaning technique proposed.
Decorations	<p>Rainwater goods are to be prepared and decorated in line with manufacturer's recommendations and as follows:</p> <ol style="list-style-type: none"> a) Prepare surfaces for decoration by degreasing and cleaning down with fresh water to remove surface contamination. b) Apply primer, undercoat and top coats with a brush.
Testing	<p>All gutters are to be tested to ensure that they are fixed to correct falls by pouring a bucket of water into their highest point.</p> <p>Test for leakage by blocking gutter outlets and flood gutters. Allow full discharge through stacks.</p>

LIGHTNING PROTECTION INSTALLATION

Lightning Protection System to be installed in accordance with BS EN 62305

MATERIALS

Air Terminations	Aluminium or copper strike plates.
Down Conductors	8mm diameter copper rod with PVC sheathing (colour to be agreed).
Conducting Tape	25 x 3mm copper tape with PVC sheathing (colour to be agreed).
Fixings	a) Fixings for down conductors to be gunmetal holdfasts to BS 1400, grade LG1. b) Fixings to lead roofing to be lead tabs, leadburnt to the leadwork off site.
Earth Rod	16mm diameter copper clad steel electrode.
Tying Wire	Soft copper wire 1.2mm diameter.
Materials Generally	a) Materials selected for the protection system or ancillary fixings, bondings, etc., are to be of materials which have a high resistance to corrosion. b) Materials selected which may by design or fortuitously come into contact with other building materials, such as lead roofs and gutters, must be selected, protected or installed so that there is no electrolytic action. Any salts dissolved by rainfall from the material of the conductor system or fixings must not be allowed to fall, drop or splash on to dissimilar metals on the building as these may cause corrosion, staining or deterioration. c) Materials for the lightning protection system must be so selected and placed that they do not produce salts or other liquids from rainfall or other precipitation which will produce staining on roofs, walls or other surfaces (including pathways, flagstones etc.) on or around the building.

WORKMANSHIP

Installer	The lightning conductor installer is to be ATLAS accredited (or similar approved by CA).
Generally	a) Agree precise routing of installation on site with Contract Administrator prior to commencement of the installation. b) Run conductors in the straightest lines possible. c) Avoid damage to the fabric of the building during the work or by inappropriate selection of fixing positions.
Standards	Provide an installation, complete in all respects, following British Standards, particularly BS EN 62305, and associated relevant standards, the IEE Wiring Regulations (BS7671)(current edition) except as modified by this specification. Where standards will not be met raise points in question with the Contract Administrator and seek direction.

Joints Joints in the system are to be kept to a minimum. Where these occur they must provide a contact surface of at least 6.25cm² (right angled), 7.5cm² (in line) and are to be bolted, screwed, riveted or clamped. Corrosion between the two meeting surfaces is to be inhibited by use of anti-corrosion preparations upon clean surfaces.

Builder's Work and Attendances

- a) No part of the building, roofs, pavings, surrounds etc., may be drilled, chipped, chased, removed or trenched, without prior agreement of the Contract Administrator.
- b) The builder's work and attendance may be entrusted to the specialist lightning protection contractor or may be the subject of an alternative arrangement with a main contractor or builder.
- c) Where lightning protection specialists are required to provide the associated builder's work they must, prior to commencement, agree in detail the method of providing such builder's work, the materials to be used for reinstatement, the location, method and frequency of fixings, bondings etc. If so required, samples of fixings, chasings and making good are to be provided for approval.
- d) Where builder's attendance is provided by another specialist or a builder, the lightning protection specialists are to provide full details of all the builder's work required in the form of a written schedule accompanied as appropriate by sketches and drawings. Chases, holes, fixings etc., are to be marked out on site for approval by an approved method.

Access Plant & Equipment

- a) Unless so specified otherwise, the lightning protection specialist is to provide all scaffolding, ladders, hoists, safety harnesses, protective rails, etc., needed to gain full and safe access to the works
- b) Such means of access are to be designed, erected, supported and protected so that there is no danger of damage to any part of the building, fixtures thereof, or to surrounding paving, etc., nor any risk to visitors or the general public.

Air Terminations

- a) Provide a complete air termination network in accordance with the designs provided, this specification and BS 6651:1992 including latest amendments.
- b) Air terminations are to be firmly fixed into position so that they cannot move or be lifted by the action of the rain, wind or similar.
- c) Position air terminations in a neat straight line, concealed as far as reasonably practical from normal angles of view.

Cross Bonding Cross bond to all appropriate metal on the roof. Where metal on the roof may be used as part of the air termination network, e.g. lead-covered roofs, copper cladding, parapet cappings or hand rails, these will be shown on the drawings. The contractor is to allow for forming a non-electrolytic non-deteriorating bond to the metal and to confirm to the contract administrator that the thickness of metal and the continuity meet the British Standard. The minimum thickness of sheet metal used for roofing and forming part of the air termination network shall be:

Stainless steel	0.4mm
Copper	0.3mm
Lead	2.0mm

Special attention must be paid to electrical continuity, especially on large roofs and those with expansion joints. Provide suitable stranded conductors or metal strips of the same cross-sectional area as that specified for the roof air termination network to bridge any discontinuity discovered.

- Fixings
- a) All fixings are to be approved and are to be of a type which will not damage, stain or mar the material to which it is fixed. Fixings must not penetrate any water or vapour barrier without prior approval in writing of the contract administrator. Fixings must not allow water or moisture into the structure or onto internal finishes.
 - b) To lead roofs. Lead tabs may be fixed by adhesive providing locations are easily accessible (note that the long-term durability of this material is unproven and regular inspections will be necessary).
 - c) Equipotential cross bonding terminations must not be fixed by adhesives but must be mechanically secured.
- Down Conductors
- a) The precise location of conductors is to be agreed on site with the Contract Administrator.
 - b) It may be possible to comply fully with British Standards with respect to equi-spacing of down conductors. The positions will be selected to be an inconspicuous as possible. The number of down tapes may be increased to compensate for difficulties of location. As with roof conductors, fixings are to be agreed and are to cause as little damage to building surfaces as possible.
 - c) Provide a suitable test joint on each down conductor generally at a height of 500mm above ground level. The test joint, of suitable compatible materials, is to enable earth electrode resistances to be measured. The location will, if possible, be easily accessible but without being too convenient for public interference. No permanent connections are to be made below the test joints including cross bonding to the electrical installation.
- Cross Bonding
- a) Cross bonding is to be carried out where down conductors pass within 500mm of metalwork on the building which could carry a potential (including earth potential), or which are connected or pass within 1m of other metalwork that could carry such a potential, or are within a zone where a side flash risk occurs.
 - b) The nature and locations of such bonding is to be agreed.
 - c) Where conductors pass for long distances adjacent to metalwork e.g. downpipes etc bonding is to take place at both the top and bottom of the run.
- Fixing of Conductors
- a) Fix conductors at intervals no greater than the following:

Horizontal conductors on horizontal surfaces:	1000mm
Horizontal conductors on vertical surfaces:	500mm
Vertical conductors:	1000mm
Vertical conductors over 20m:	500mm
 - b) Generally, fixings of conductors are to be made into mortar joints of brick, stone etc. Where these are unavailable at the distances required for firm support or are of a weak and friable nature, the contract administrator is to be consulted before work commences.
- Earthing Electrodes
- a) Rods are to be driven into the soil in 1200mm lengths using a hardened metal driving stud.
 - b) The bottom rod end is to be fitted with a pointed spike and lengths jointed with suitable copper coupling dowels.
 - c) Allowance is to be made in the tender for at least 2.4m of rod per downtape.
 - d) The standard electrodes are to be sunk in positions agreed as close to the building as reasonably practicable taking care to avoid buried services, drains etc. The contractor is to enquire about the presence of archaeological remains beneath the ground before undertaking any work. In areas of known or suspected archaeological sensitivity, an appropriate level of archaeological recording, excavation or a watching brief may be required.
 - e) Connect the earthing electrodes to the test point by means of flat copper conductors.

- f) The test results are to be referred to the contract administrator together with confirmation that a suitable earth electrode resistance (10 times the number of earth electrode ohms per electrode) can be achieved.
- g) Mark earth electrode positions with a stone 150x150mm and marked with an earth symbol incised into the surface. A sample to be approved.

Electrical
Installation

- a) Provide a cross bonding conductor between the main earthing terminal of electrical installation and the lightning protection system. This is to consist of a test point for disconnecting during testing at a point above a standard test point and a circular pvc/pvc insulated single conductor or a copper tape between the test point and the earthing terminal. The conductor size is to be a minimum of 75mm².
- b) The specialist lightning conductor contractor shall liaise with the local authority for confirmation that the cross bonding proposed is acceptable. Any difficulties are to be reported to the Contract Administrator by the contractor. Final connections are to be by the electrical contractor/electrical authority as appropriate.

Testing

- The following tests at completion are to be conducted:
- a) A thorough visual inspection of all conductors, bonds, joints, fixings, earth electrodes (including reference electrodes).
 - b) A measurement of joint electrical continuity.
 - c) The resistance to earth of each of the earth electrodes individually and of the whole earth termination network.
 - d) The system is to be tested as outlined in BSCP1013. Before disconnecting the system from earth, tests are to be performed, using sensitive voltage testing instruments, to establish that the network is not live.
 - e) Copies of test certificates, duly signed by the contractor's authorised signatory, are to be provided to the contract administrator within 14 days of completion.

Record Drawings

- Within 14 days of practical completion, the specialist lightning protection contractor is to provide the contract administrator with one reproducible drawing showing:
- a) The location of all system conductors.
 - b) The location of all test points.
 - c) The location of all earth electrodes and connecting or inter-connecting conductors individually identified and the current earth electrode resistance.
 - d) Details of all bonding or cross bonding conductors.

SECTION FOUR - SCHEDULE OF WORK

A. All works are to comply with the provisions of the materials and workmanship sections and general requirements of the specification. The specification is not a standard document and its requirements must be understood by all engaged on the works.

B. The scope of works defined within this schedule and shown on the drawings has been determined from a visual inspection and some opening up works. The extent of work will be reviewed by the Contract Administrator (CA) following required opening up.

C. If in doubt about any of the works being undertaken or its effect on the building or surroundings stop and ask. Telephone the CA or leave the item of work until the next site visit (normally at least weekly).

D. Access to the working areas is restricted by adjoining buildings, public highways and limited surrounding spaces. Careful consideration of working and access methods and techniques is required and may restrict the size of delivery vehicles.

1. Site Set Up & Protections

- 1.1 Prior to commencement of the works take a full record set of photographs of all working, storage and access areas. Take especial note of any existing damage. Provide a full digital set of photos to CA prior to commencement.
- 1.2 Prior to commencement of the works undertake a pre-refurbishment asbestos survey of all site, working and access areas. Provide copy of survey to CA.
- 1.3 Move unfixed items away from the areas where works are to be carried out. Store moved items on site and reposition on completion.
- 1.4 Protect all internal access routes and working areas where there is a risk of damage with sheeting and hardboard. Protections to be removed when not in use and kept in place for the minimum amount of time possible. Adjust protections as necessary as the works progress and remove on completion.
- 1.5 Works on or adjacent to public highways and footpaths:
 - a) Obtain all necessary road closure licences for the duration of the works to the road to the north of the church (works to be set up and programmed to limit duration of any closure).
 - b) Provide temporary barriers and protections to public highways around the church while scaffolding and other works in these areas are undertaken.
- 1.6 Check all external fittings (e.g., light fittings, alarm boxes, sensors etc.) in areas of works are functional, report any issues to CA and protect with plyboard boxing and plastic sheeting.
- 1.7 Take all precautions to protect against the danger of fire or arson, ensure that hot works requirements are strictly adhered to. Maintain a minimum of fire extinguishers on site at all floor levels during the work and additional extinguisher in areas where there is a fire risk due to works or a risk that emergency exits may be compromised in the event of fire. Ensure that all operatives are aware of their positions.
- 1.8 Protect the works from frost or inclement weather and provide all necessary waterproof sheets, tarpaulins, temporary gutters, water chutes and downpipes etc., required to protect the works/building and make good any damage due to lack of such protection.
- 1.9 Remove rubbish and debris from site regularly and keep the site and works clean and tidy.

- 1.10 Allow to undertake additional protection works, instructed by CA as follows:
- a) Include a provisional sum equivalent to 1 no. carpenter and 1 no. labourer for 8 hours each to undertake further protection works.
 - b) Allow a PC sum of £150 plus contractor's profit for materials.

- 1.11 Monitor, maintain and adjust protections as the works progress. On completion of the works dismantle all protections and cart away.

2. **Scaffolding**

Note:

- a) The church is located within the city centre and has public footpaths and roads to the north and west. Footpaths and highways to the west are to remain in use throughout the works. Road closure licences for the road to the north will be required, see item 1.5a). Scaffold to be formed so that the northern footpath can remain open when scaffolding complete. All scaffold to allow for any necessary highways requirements and licences.*
- b) Protections to the public highways and paths and to the church entrance are to be in place prior to erection of the scaffolding.*
- c) Access to the church is severely restricted and there is only designated parking for two cars. The size of scaffold delivery vehicles will be limited.*

- 2.1 Contractor, scaffolder and CA to meet prior to commencement to agree location and form of scaffolding.
- 2.2 Design, erect and maintain an external access and working scaffolding to provide access to all areas of works described in the schedule and complying with the materials and workmanship clauses.
- 2.3 Include to place a double layer of scaffold boards to the bottom lift on all elevations. Place plastic sheeting between the two layers of boards to limit the risk of falling debris.
- 2.4 Include to place debris netting around all sides of the scaffolding, to limit the risk of falling debris.
- 2.5 Provide ladder access to all scaffolding lifts. External ladders are to be removed from the bottom two lifts at the end of each working day and locked away and ladder hatches on each lift are to be locked to prevent unauthorised access.
- 2.6 Design, erect and adjust as works progress lightweight bird cage scaffolding (or similar) to gain access to the internal areas of the tower, for the tower access works.
- 2.7 Strike scaffolding (in whole or part) only after written approval has been given to do so by the CA. Such approval is to be requested by the contractor.

3. **Roofing Works**

- 3.1 Patch repair the flashing to the apex cross on the chancel/sanctuary roof and undertake the following works:
- a) Provide access to cross.
 - b) Include a provisional sum equivalent to 1 no. lead worker for 4 hours to undertake repairs to the cross flashing.
 - c) Allow a PC sum of £150 plus contractor's profit for materials.
 - d) Clean down and treat with fertan rust inhibitor the iron cross.

- 3.2 Provide access, clear out all gutters, valley gutters, etc and attend CA inspection of roof coverings as follows:
- Chancel/sanctuary roof – establish if hips have lead soakers.
 - Nave south roof slope – establish if there are lead soakers at abutments.
 - North chapel - south slope and valley gutter.
 - South chapel – north roof slope and valley gutter.
 - Sacristy – north roof slope and valley gutter.
- 3.3 Replace damaged or slipped slates to roof coverings. Replace damaged slates with new natural Welsh slate to match fixed with copper nails and stain less steel secrete clips. For pricing purposes allow new slates to be new 600x300mm Penrhyn Welsh slate. Repair the following:
- Nave north slope – replace 4no. slates.
 - Nave south slope – replace 15no. slates.
 - North transept west slope – replace 4no. slates.
 - Catslide roof over Outer Sacristy, to south of south transept – replace 4no. slates.
 - South aisle roof – replace 25no. slates.
- 3.4 Rake out and repoint failed mortar joints to the lead flashing chase on the northern abutment of the Catslide roof to south of south transept. Repoint in hydraulic lime mortar type B. Allow to repoint 100% of the horizontal chase.
- 3.5 Repoint failed bedding mortar to horizontal and vertical joints to the ridge tiles on the nave. Repoint in hydraulic lime mortar type B. Allow to repoint 35% of joints on the full length of the ridge in small patches. Include to lift and re-bed 10no. individual ridge tiles.
- 3.6 Clear out moss and debris from the southern abutment flashing on the south transept and cart away.
- 3.7 Patch repair leadwork to the narthex (west entrance) roof as follows:
- Provide access to the roof coverings and attend CA inspection.
 - Patch repair splits in the leadwork with lead burn code 6 lead sheet patches. Assume 4no. splits with each patch to be 250x100mm and to the wood cored roll.
Note: *hot works restrictions as specified will apply.*
 - Rake out and repoint failed mortar joints to the full length of the lead flashing chase. Allow to repoint 100% of the horizontal chase in hydraulic lime mortar type C
 - Include a provisional sum equivalent to 1 no. lead worker for 4 hours to undertake further repairs identified by CA.
 - Allow a PC sum of £250 plus contractor's profit for materials.
- 3.8 Patch repair leadwork to the tower roof as follows:
Note: *hot works restrictions will apply as specified.*
- Clear debris and plant growth from the tower roof, parapet gutter and sump and cart away.
 - Patch repair splits in the leadwork with lead burn code 7 lead sheet patches to the ends of the wood cored rolls. Assume 4no. splits with each patch to be 450x175mm and to the wood cored roll.
 - Cut out lead around long mastic repair in lower section of roof adjacent to roll. Cut lead minimum 100mm from roll on flat and extending over the wood cored roll. Lead burn code 7 milled lead sheet patch to replace damaged lead. Assume patch to be 550mm long.
 - Include a provisional sum equivalent to 1 no. lead worker for 4 hours to undertake further repairs identified by CA.
 - Allow a PC sum of £150 plus contractor's profit for materials.
- 3.9 Rake out flashing chase mortar, insert 2no. code 5 lead sheet patches each 500mm long to splits in tower flashing lead. Repoint chases in hydraulic lime mortar type B.

- 3.10 Renew tower roof access hatch cover as follows:
- a) Remove the existing lead hatch cover and cart away. Include to allow to offset scrap value of lead against costs of the works.
 - b) Replace the hatch cover with new copper.
 - c) Include a provisional sum equivalent to 1 no. carpenter for 2 hours to undertake repairs to the hatch timberwork identified by CA.
 - d) Allow a PC sum of £100 plus contractor's profit for materials.
 - e) Extra over items 3.10 c) & d) – renew the framed and boarded timber hatch with drip detail around the perimeter in new Douglas fir.
- 3.11 Provide code 4 milled lead diverters to the slating on the north aisle roof. Place 6no. L shaped diverters to spread water from the 2no. nave/north chapel downpipes across the roof and away from the buttresses. Diverters to be approx. 350x500mm and clipped to the slating. CA to agree locations.
- 3.12 Provide access, undertake opening up works and attend CA inspection of the timber vaulted ceiling of the sanctuary (east end of the chancel) as follows:
- a) Allow to strip slates, battens and underfelt from the apse at the east end of the chancel roof. Refix slates with secrete stainless steel clips allowing for 10% replacement on new treated battens and bituminous underfelt following CA inspection. Include to strip slates in 1no area each approx. 1x1.5m.
 - b) Subject to CA confirmation (if access through roof coverings above is not sufficient) allow to provide scaffold access internally to the full height of the vaulted ceiling. Include to provide 3m long boards under the feet of the scaffold uprights to spread loads and protections to the floors.
 - c) Include a provisional sum equivalent to 1 no. carpenter for 16 hours to undertake repairs to the timber ceiling identified by CA.
 - d) Allow a PC sum of £350 plus contractor's profit for materials.

4. **Masonry Works**

- 4.1 Prepare samples as follows:
- a) Prepare mortar samples for new repointing mortars and allow to thoroughly dry out for CA inspection and approval. Assume 6 no. samples.
 - b) Prepare mortar samples of mortar repair mortars and allow to thoroughly dry out for CA inspection and approval. Assume 8no. samples.
- 4.2 Rake out, deep pack and repoint mortar joints to gable copings in hydraulic lime mortar type C in the following areas:
- a) Nave east gable, north and south slopes – allow to patch repoint 50% of mortar joints in small patches.
 - b) North chapel, east and west slopes – allow to patch repoint 85% of mortar joints in small patches.
- 4.3 Pin 2no. coping stones on the north chapel with 6mm dia. stainless steel dowels set in resin and mortar repair the face of the repair as specified. Include for each stone to have 3no. pins.
- 4.4 Carefully lift, clean off and reset all the gable coping stones to the south chapel, east and west slopes. Bed and point copings in hydraulic lime mortar type C. Include to rake out, deep pack and patch repoint mortar joints in the head of the gable walls disturbed by the works, allow to repoint 25 linear meters of mortar joints in small patches.
- 4.5 Undertake conservation work, as specified, to the string course and ashlar band around the east end of the chancel as follows:
- a) Carefully clean off and poultice concentrations of sulphates on the stone surface.

- b) Form mortar repairs to eroded stone and water traps as specified. Repair sizes will vary but for pricing assume 15no. repairs each 50x100x20mm.
- c) Apply sheltercoat to eroded stone - assume a total area of 2m² in small patches.
- 4.6 Undertake conservation work, as specified, to the window surrounds and hood moulds on the nave south clerestory windows as follows:
- a) Flush out, grout and micro-pin 5no. fractures to the hood mould stonework as specified. Allow 4no. pins to each of the 5no. fractures.
- b) Form mortar repairs to eroded stone and water traps as specified. Repair sizes will vary but for pricing assume 20no. repairs each 150x300x20mm.
- c) Apply sheltercoat to eroded stone - assume a total area of 2.5m² in small patches.
- 4.7 Rake out, deep pack and patch repoint open and failed mortar joints in areas of the works (generally around downpipes and at low level) in hydraulic lime mortar type C. Allow to patch repoint the equivalent of 100% of 10m² of mortar joints to the walls in small patches.
- 4.8 Undertake further conservation works to decayed stonework in working/accessible areas identified by CA as follows:
- a) Allow a provisional sum equivalent to 1no. conservator for 24 hours.
- b) Allow a PC sum of £250 plus contractor profit for materials.
5. **Rainwater Goods**
- 5.1 Carefully remove the fibre cement gutter for the eastern eaves on the passage to the east of the south chapel and dispose of appropriately.
Note: the gutter may contain asbestos (see asbestos survey above).
- 5.2 Carefully dismantle the rainwater gutters and downpipes. Set aside dismantled goods for CA inspection and cart away all rejected elements. Dismantle rainwater goods in the following areas:
- a) Chancel, north, east and south eaves – cast iron.
- b) North chapel, east – cast iron.
- c) Passage to east of south chapel – cast iron hoppers and downpipes (see gutter above).
- d) South chapel, east – cast iron.
- e) Inner Sacristy, south – cast iron.
- f) Outer sacristy (to south of south chapel), south – cast iron with upvc elements.
- g) South chapel, east – cast iron.
- h) Nave, south and south chapel west – aluminium and cast iron.
- i) South aisle, south and east – upvc.
- j) Nave, north and north chapel, east – cast iron (round downpipes).
- k) North aisle, north – cast iron.
- l) Narthex, south – upvc.
- 5.3 Replace damaged sections of cast iron rainwater goods including fixings with new cast iron to match existing. For pricing purposes allow to renew the following:
- a) Narthex, south – provide new cast iron hopper and 75mm dia. downpipe to replace existing upvc.
- b) Nave north and north chapel west roof slope – renew the OG gutters, brackets and downpipes complete. **Note:** It is intended that the new rainwater goods in this area can be purchased, prepared and decorated in advance of the scaffolding being erected to minimise the amount of time the scaffold and road closure are required. Salvageable sections of rainwater goods can be reused on other areas.
- c) Passage to east of south chapel – new cast iron OG gutters to replace existing fibre cement gutters.
- c) 5no. lengths of gutter, with 150mm (6”) OG cast iron gutter.
- d) 35 no. cast iron fascia type gutter brackets.
- e) 5no. lengths of square section downpipe.

- 5.4 Replace existing aluminium and upvc rainwater goods with new aluminium gutters and downpipes as specified to replace the existing arrangements complete, in the following areas:
- Nave, south slope and south chapel west slopes (retain cast iron elements for reuse on other part of the church). Include to add 1no. additional hopper and downpipe on the nave.
 - South aisle, south and east slopes.
- 5.5 Clean down, shot blast and hot zinc spray all new and salvaged rainwater goods. Prepare and redecorate with 1no. coat of primer, 2no. undercoats and 2no. top coats as specified to give a matt grey finish to match existing (colour to be agreed with CA prior to painting).
- 5.6 Refix all dismantled and new cast iron rainwater goods in original positions as specified. Adjust brackets and falls to gutters to ensure no ponding occurs. Include to touch up damaged decoration to the rainwater goods once they have been re-fixed.
- Chancel, north, east and south eaves.
 - North chapel, east.
 - Passage to east of south chapel – all cast iron (see above).
 - South chapel, east.
 - Inner Sacristy, south – cast iron.
 - Outer sacristy (to south of south chapel), south - all downpipes to be cast iron (replacing upvc sections).
 - South chapel, east.
 - Nave, north and north chapel, west – cast iron downpipes in half round, routes to be simplified to discharge onto north aisle roof. **Note:** It is intended that the new rainwater goods in this area can be purchased, prepared and decorated in advance of the scaffolding being erected to minimise the amount of time the scaffold and road closure are required. Salvageable sections of rainwater goods can be reused on other areas.
 - North aisle, north – cast iron.
 - Narthex, south – upvc replaced with cast iron (see above).
- 5.7 Extra-over item 5.6h):
- Subject to CA confirmation, form 2no. new stainless steel chutes over north aisle from downpipes on nave north slope to north aisle eaves gutter. Form 400mm wide chute with 150mm upstands to either side laid on treated softwood boards.
 - Allow to strip slates and slate battens to form the chutes and reinstate slates on new treated softwood battens over breather membrane cutting into sides of new chute. Include for code 4 lead soakers to lap each slate and the new chute.
- 5.8 Undertake works to the drainage as follows:
- Test the existing drains with buckets of water to ensure they drain adequately. Report findings to CA.
 - Allow a provisional sum equivalent to 1no. ground worker and 1no. labourer for 16 hours each to undertake repairs and clearance of the drains identified by CA.
 - Allow a PC sum of £250 plus contractor profit for materials.

6. **Nave South Slope Access Walkway**

Note: *the existing walkway is incomplete and no longer safe to use or access.*

- 6.1 Following erection of scaffolding access attend CA inspection of remains of steel walkway.
- 6.2 Carefully dismantle the walkway to the south slope of the nave, west slope of the south transept and access from the presbytery roof complete and cart away.
- 6.3 Carefully remove all walkway fixings from the stonework and cart away.

- 6.4 Clear out fixing holes and make good holes with hydraulic lime mortar type B. Allow to deep pack fixing holes with mortar and slate packing slips and form mortar repairs to the face of the stonework.
- 6.5 Include to renew 8no. walling stones damaged by the removal of the walkway to the clerestory south wall. New stone to be Plymouth lime stone dressed and finished to match surrounding stones. For pricing purposes allow new stone to be 550x350mm and 350mm deep.
- 6.6 Undertake further masonry repairs to identified by CA as follows:
- Include a provisional sum equivalent to 2 no. masons for 24 hours each to undertake further masonry repairs.
 - Include a PC sum of £200 plus contractor's profit for materials.

7. **Tower Belfry Works**

- 7.1 Undertake works to existing platform on bellframe as follows:
- Remove existing access timber ladder and cart away.
 - Fix new aluminium ladder with 'L' shaped brackets to reform access.
 - Form new timber handrail on 75x40mm posts fixed with coach bolts into joist on the bellframe platform. Form a horizontal central rails and 200x25mm toeboard to edge of 2no. landings.
- 7.2 Form new access through the tower as shown on dwg. no. 557/03/001 and as follows:
- Provide edge protection to the bell lifting hatch and lift the hatches to allow materials and equipment to be lifted into tower. Replace hatches when not required for access.
 - Carefully remove the existing ladder and set aside for reuse.
 - Clear down all debris in working area and cart away.
 - Provide temporary access to the proposed works. Adjust as necessary as works progress and remove on completion.
 - Fix 200x75mm treated softwood plates to walls with 10mm dia. stainless steel threaded rod set in resin, nuts and washers, to hang the new joist for the 2no. new landings.
 - Hang new 250x75mm treated softwood joists at 400mm centres on stainless steel hangers to form 2no. new landings. Fix noggins between the joists at approx. 1.3m spacings.
 - Trim joists and fix new 250x75mm trimmers on stainless steel hangers to form the 2no. access ladder openings in the landings.
 - Form new deck to 2no. landings in 25mm thick and 125mm wide treated softwood boards fixed with stainless steel nails.
 - Form new handrail on 75x40mm posts fixed with coach bolts into joist. Form a horizontal central rails and 200x25mm toeboard to edge of 2no. landings.
 - Fix new aluminium ladders to landings (**Note:** if existing ladder is suitable this is to be cut down and reused, but for pricing purposes allow all new ladders). Fix with 'L' shaped brackets into floor decks and landing structures.
 - Clear down and cart away all unwanted materials, debris and off cuts on completion.
- 7.2 Renew wire bird mesh to the inner face of all 8no. (2no. per elevation) belfry windows as follows:
- Remove the existing wire mesh complete and clear out all debris from the window reveals and frames. Cart away mesh and debris.
 - Attend CA inspection of the timber frames and slate louvres to the windows.
 - Include a provisional sum equivalent to 1no. carpenter for 4 hours to undertake repairs to the timber frames identified by CA.
 - Include a PC sum of £100 plus contractor's profit for materials.
 - Fix new stainless steel wire mesh to the inner face of the existing timber frames with stainless steel screws and washers.

8. **Tower Lightning Protection Works**

- 8.1 Obtain design for upgraded lightning protection system to the tower from specialist installer for CA approval.
- 8.2 Remove existing down tapes, fixings and air terminals and cart away.
- 8.3 Upgrade the lightning protection system to the tower as follows:
Note: *the design may vary but for pricing purposes allow the following works to upgrade the lightning protection system. All new tapes, rods, etc to be in plastic sheathed copper.*
- a) 2no. down tapes to the full height of the tower.
 - b) ring tape around tower parapet.
 - c) 2no. air terminals at parapet level.
 - d) bonding to tower lead roof.
 - e) cross bonding and surge protection to electrical system.
 - f) 2no. new earth rods and test clamps.
 - g) include to make good ground surfaces on completion.
 - h) test system and provide all necessary certificates.

9. **General Works**

- 9.1 Remove flag pole on the tower:
- a) Carefully remove the remains of the existing decayed timber flag pole and cart away.
 - b) Remove all fixing brackets to flag pole and cart away. Note: 1no. bracket is built into the parapet stonework and 2no. are bolted to the inner face of the parapet stonework.
 - c) Make good all fixing holes and positions with lime mortar type A.
- 9.2 Remove bird netting fixed at nave roof eaves level between the south side of the church and presbytery, including to remove fixings and cart away. Make good fixing holes with hydraulic lime mortar type B.
- 9.3 Carefully remove snow guards to the eastern end of the south aisle gutter/eaves, cart away and make good fixing holes with hydraulic lime mortar type B.