

Specification

seven.

Client: Rochdale Borough Council
Project: St Mary's CE Primary School
Reference: 20818 | 9500
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REVISION

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1.0 SITE DESCRIPTION

1.1 SITE ADDRESS

Oldham Rd,
Rochdale,
Greater Manchester,
OL11 2HB

2.0 DESIGN PROPOSALS

2.1 OVERALL DESIGN

Seven Architecture have been appointed to act as Conservation Architects & PD to Rochdale Borough Council for repair works to the building fabric. With this there will also be a provision of drawings based on architecturally conserving and securing the building.

3.0 DESIGN STANDARDS

- 3.1 The development as a minimum is to be designed and constructed in compliance with and to conform to the following:
- a. Any planning and listed building consents for the building.
 - b. Any drawings that have been produced in accordance with Building Regulations approval.
 - c. Where reference in this specification is made to compliance with the Building Regulations, it shall be construed to mean compliance with this sub-clause.
 - d. The requirements of the Local Authority, Utility Supply Companies and of competent organisations reporting to the Local Authority, including the Fire Officer requirements.
 - e. British Standards Specifications and Codes of Practice.
 - f. Any relevant Acts, Statutory Instruments and Mandatory Guidelines.
 - g. Joint Code of Practice 'Fire Prevention on Construction Sites' published by the Building Employers Federation and the Loss Prevention Council.
 - h. All Health and Safety Regulations including CDM 2015 Regulations and any subsequent amendments.
 - i. Equality Act 2010 Legislation and all subsequent amendments.

Note: Where reference is made to material specification 'Unacceptable' or 'Deleterious' materials will not be accepted, meaning any material, which by its nature or application contravenes any British Standard or British Code of Practice or E.U equivalent current at the date of incorporation in the works, and/or any material which is not in accordance with good building practice and/or which is generally known to be deleterious at the time of use.

4.0 EXTERNAL SPECIFICATION

4.1 ACCESS SCAFFOLDING

4.1.1 DESIGN

- 4.1.1.1 The design of all scaffolding will be the responsibility of the Contractor and is to be in accordance with the recommendations of BS 5973 : 1990 "Code of Practice for access and Working Scaffold and special scaffold staircases in Steel" or as updated.
- 4.1.1.2 Compliance with the various Acts and regulations listed in BS 5973 is the responsibility of the Contractor.
- 4.1.1.3 Compliance with all aspects of Health and Safety during erection, using and dismantling is the responsibility of the Contractor.
- 4.1.1.4 The design of the scaffold is to take account of the requirements of all trades which will require access, use as a working platform or storage. No claims will be entertained for additional scaffold or for amending scaffold already erected to suit the requirements of trades contained within the specification.
- 4.1.1.5 The design of the scaffolding will take into account the structural requirements of the provider and the possible requirements for facade restraint.

4.1.2 PROPOSALS

- 4.1.2.1 The Contractor is to submit their proposals for the scaffold on or before the date for possession and not less than 7 days before commencement of the scaffold.
- 4.1.2.2 The Contractors proposals are to include clear drawings and structural calculations in duplicate sufficient to prove the stability of the proposed temporary structures in accordance with BS 5973 : 1990. Drawings will be provided to the CA and the structural Engineer.
- 4.1.2.3 These drawings will clearly indicate positions where any scaffold is to be tied back to the fabric of the building.
- 4.1.2.4 No scaffolding shall be commenced on site until the Contractors proposals have been submitted and agreed with the Architect/Structural Engineer. Agreement of the Contractors proposals does not relieve the Contractor of his responsibilities to ensure full compliance of all requirements.

4.1.3 PROGRAMME

- 4.1.3.1 Prior to commencement of any scaffolding the Contractor shall submit a programme indicating the commencement date, and completion date.
- 4.1.3.2 Prior to striking the scaffold the contractor will submit a programme indicating the period for dismantling for each area of scaffolding.
- 4.1.3.3 Scaffold is required for inspection purposes prior to confirmation of scope of the work and the Contractor is to indicate this period on his programme and ensure that his proposals are submitted early enough to ensure that this period is not compromised.
- 1) The programme is to take account of all the requirements of the sub-contractors who require the use of the scaffold.

4.1.4 ERECTION REQUIREMENTS

- 4.1.4.1 All scaffold tubing and fittings are to be galvanised and in good condition and free from corrosion. Rusty components will not be accepted.
- 4.1.4.2 No steel component (including capped tubes) is to be in contact with the fabric of the building except where specific approval has been given.
- 4.1.4.3 Where it is necessary to brace the scaffold from the masonry then timber packing of a minimum thickness of 20mm is to be placed between the scaffolding and the masonry.
- 4.1.4.4 No scaffolding shall rest on any roof coverings unless agreed in writing prior to commencement.
- 4.1.4.5 The ends of ALL scaffold tubes are to be protected with plastic caps which are to be fitted prior to delivery to site. Where it is necessary to cut scaffold tubes during erection the end is to be re-capped immediately.
- 4.1.4.6 Scaffold tubes are not to encroach within 200mm of the surface of the building except where required for support or stabilising. This is to prevent accidental damage to the fabric by minor movement of the scaffold.
- 4.1.4.7 Where it is necessary to brace scaffold through window or door openings the existing finishes are to be protected with 20mm thick timber packers both internally and externally. The opening is to be boarded up with access only for the scaffold tubes.

4.1.5 SUPERVISION

- 4.1.5.1 The Contractor is to exercise particular care in supervising the erection and dismantling of the scaffold to ensure that no damage occurs to the fabric of the building.
- 4.1.5.2 It should be noted that in many instances damage to the historic fabric cannot easily be rectified. Any damage due to the scaffold use, erection or dismantling will be rectified at the Contractors expense.
- 4.1.5.3 Any area of scaffold not complying with items 04.01 to 04.07 above will not be used for any purpose.

4.1.6 SECURITY

- 4.1.6.1 All external scaffolding shall be designed and erected so as to prevent unauthorised access by sheeting (whether ply or steel) to a minimum height of 2.4 metres.
- 4.1.6.2 Access to the scaffold is to be via a single point of entry and a lockable door through the barrier described above. The single point of entry is to be protected by CCTV with a video recorder and tapes retained for 14 days.
- 4.1.6.3 Ladders to the lower lifts are to be removed at night.
- 4.1.6.4 Any areas which may be accessible from adjoining structures, roofs, etc are to be similarly protected by boarding or by other approved means.
- 4.1.6.5 Adequate measures must be taken to prevent unauthorised access from the canal and other rear elevations.

4.1.7 PROTECTION

- 4.1.7.1 The covering to hard surfaces is to be double boarded with Visqueen between.
- 4.1.7.2 The contractor is to satisfy all the requirements of the Local Authority and Highways department.

- 4.1.7.3 All surfaces at ground level are to be suitably protected to prevent the scaffold damaging existing external finishes.
- 4.1.7.4 Where internal scaffold is to be erected full protection will be required under all scaffolding except with prior written consent.
- 4.1.7.5 Ensure any architectural features or areas prone to damage are suitably protected.
- 4.1.7.6 Where protection measures are considered inadequate the Contractor will at their own expense provide additional protection as directed by the Architect at the Contractors own expense.
- 4.1.7.7 All entrance doors, fire exits etc are to be kept clear of obstructions and are to be lined at the top and both sides to protect the public/building users.
- 4.1.7.8 All scaffolding at ground floor level is to be boxed in to a height of 2400mm min and decorated to a scheme approved by the Architect

4.1.8 DISMANTLING

- 4.1.8.1 Ensure all necessary care is taken to ensure that no damage occurs to the fabric of the building.
- 4.1.8.2 Scaffold tubes should be carefully lowered to ground level and not thrown or dropped.
- 4.1.8.3 No dismantled components shall be left on site outside working hours.

4.1.9 CERTIFICATES

- 4.1.9.1 Copies of all handover certificates issued by the scaffolding sub-contractor shall be forwarded to the Architect upon receipt by the Main Contractor.
- 4.1.9.2 Copies of all test certificates for hoists shall be forwarded to the Architect on receipt by the Main Contractor.
- 4.1.9.3 No scaffolding shall be used unless handover certificates and test certificates have been issued.

4.2 DEMOLITION

4.2.1 GENERAL REQUIREMENTS

- 4.1.2.1 Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
- the structure or structures to be deconstructed/ demolished, - the site on which the structure or structures stand, and - the surrounding area.
- 4.1.2.2 Report and method statements: Submit, describing: - Form, condition and details of the structure or structures, the site, and the surrounding area.
- 4.1.2.3 Type, location, and condition of features of historical, archaeological, geological, or ecological importance. Type, location, and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
- 4.1.2.4 Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
- 4.1.2.5 Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
- 4.1.2.6 Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
- 4.1.2.7 Proposed programme of work, including sequence and methods of deconstruction/ demolition. - Details of specific pre-weakening required.
- 4.1.2.8 Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons. - Arrangements for control of site transport and traffic.

4.2.2 EXTENT OF DECONSTRUCTION/ DEMOLITION

The extent of the demolition works are outlined on the drawings.

4.2.3 GROUNDWORKS

- 4.2.3.1 Old foundations, slabs and the like should be broken out in locations and to the extents stated on the drawings.
- 4.2.3.2 Contaminated material should be removed and carry out remediation required by the Enforcing Authority.

4.2.4 BENCHMARKS

Notice should be given if any unrecorded benchmarks and other survey information is found. Do not remove marks or destroy the fabric on which they are found.

4.2.5 FEATURES TO BE RETAINED

Existing Building and Historic Fabric is to be retained in its entirety unless specified by the Architect.

4.2.6 SERVICES AFFECTED BY DECONSTRUCTION

Work carried out to or affecting new and/ or existing services. Carry out in accordance with the bylaws and/ or regulations of the relevant Statutory Authority.

4.2.6.1 LOCATION OF SERVICES

Services affected by deconstruction/ demolition work: Locate and mark positions.

Mains services marking: Arrange with the appropriate authorities for services to be located and marked. - Marking standard: In accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities' apparatus'.

4.2.6.2 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

4.2.6.3 DISCONNECTION OF DRAINS

Disconnect and seal disused foul and surface water drains.

4.2.6.4 LIVE FOUL AND SURFACE WATER DRAINS

- a) Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings should be protected. Normal flow during deconstruction/ demolition should be maintained.
- b) Make good any damage arising from deconstruction/ demolition work. Leave clean and in working order at completion of deconstruction/ demolition work.

4.2.7 SERVICES TO BE RETAINED

Give notice and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.

Repairs to services should be completed as directed, and to the satisfaction of the service authority or owner.

4.2.8 WORKMANSHIP

4.2.8.1 Demolish structures in accordance with BS 6187. Operatives should be appropriately skilled and experienced for the type of work. Holding, or in training to obtain, relevant CITB Certificates of Competence.

4.2.8.2 Site staff responsible for supervision and control of work. Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

4.2.9 GAS OR VAPOUR RISKS

Precautions should be taken to prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.

4.2.10 DUST CONTROL

Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.

4.2.11 HEALTH HAZARDS

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

4.2.12 ADJOINING PROPERTY

Temporary support and protection should be provided. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections. Report defects immediately on discovery. Damage should be minimised and repaired promptly to ensure safety, stability, weather protection and security.

4.2.13 DANGEROUS OPENINGS

- (a) Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- (b) Prevent access by unauthorized persons.

4.2.14 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials and submit statutory risk assessments and details of proposed methods for safe removal.

4.2.15 UNFORESEEN HAZARDS

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

4.2.16 SITE SURFACE AT COMPLETION

Levels: Grade the site to follow the levels of adjacent areas.

4.2.17 CONTRACTOR'S PROPERTY

Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided.

Action: Remove from site as work proceeds where not to be reused or recycled for site use.

4.2.18 RECYCLED MATERIALS

Materials arising from deconstruction/ demolition work can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.

4.3 MASONRY REPAIRS

4.3.1 MASONRY

- 4.3.1.1 Walls to be rebuilt should be done to match the historic laying pattern with reclaimed bricks/stonework in storage or from dismantling of existing wall to be reused building by building.
- 4.3.1.2 New masonry shall be sound second-hand bricks/stonework selected to match existing in size, texture and colour. Samples shall be provided by the Contractor for approval and no work shall commence on the repairs until the sample has been approved in writing.
- 4.3.2.2 Any masonry that has reduced structural integrity due to spalling to be replaced with reclaimed bricks/stonework from site or masonry of a matching type as outlined above. Masonry to be replaced to be agreed and identified on site following the erection of scaffold access.

4.3.2 CILLS

Masonry cills with radius edge to be reused where possible. Replacement bricks/stonework to match existing composition and strength. All windows with historic masonry cills to be reinstated.

4.3.3 LINTELS

Segmented arched lintels to be reinstated using existing reclaimed masonry where possible. Replacement segmented arched lintels to match existing brick types, dimensions, composition and strength.

4.3.4 TIES

Ties to cavity brickwork/stonework shall be as follows:

- a) where repair involves only the outer skin of cavity brickwork or solid masonry the ties shall be of a resin anchor type (Anon Clarke ref. AC31) manufactured in austenitic stainless steel.
- b) where repair involves both skins of cavity brickwork then ties shall be stainless steel fish tail ties to BS 1245 : 1978 (Anon Clarke ref. FVF).
- c) where repair involves cavity wall tie replacement ties shall be stainless steel resin ties.
- d) where repair involves rebuilding of solid masonry ties shall be stainless steel fish tail ties except where the existing bonding pattern allows header bricks to be used.

All ties are to be manufactured in austenitic stainless steel by Ancon Clarke, Olive Grove Road, Sheffield. S2 3GB.

4.3.5 WATER

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

4.3.6 MORTAR

Shall be lime mortar in accordance with specification.

4.3.7 INSPECTION

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

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

4.3.8 NOTICE

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

4.3.9 CONFIRMATION

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

4.3.10 SCAFFOLD

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

4.3.11 PROGRAMME

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

4.3.12 PROTECTION, STORAGE, CLEANING

4.3.12.1 Protection of Work Area

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

4.3.13.1 Protection of the Fabric

- (a) Any existing windows are to be protected with ply or particle board, in the areas adjacent to any area of work. Other features identified on the drawings are to be protected from damage.
- (b) Where scaffold is erected internally or where scaffolding penetrates through into the building internal fittings shall be adequately protected.

4.3.14 STORAGE

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

4.3.15 STORAGE ON SCAFFOLDING

Only bricks/slates for immediate use shall be stored on the scaffold unless specified otherwise.

4.3.16 PROTECTION OF FINISHED WORK

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

4.3.17 CLEANING OF WORK

4.3.17.1 Keep facework clean and free from staining at all times.

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

4.3.17.3 If acid is used for cleaning down fully protect all windows and other areas liable to damage (e.g. paintwork etc.)

4.3.18 CUTTING OUT OF DEFECTIVE BRICKWORK/ STONWORK

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

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

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

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

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

4.3.19 INSERTING NEW BRICKWORK/ STONWORK

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

4.3.19.2 New masonry is to be bedded on a bed of mortar. The mortar is to be prepared as described in this specification.

4.3.19.3 New masonry is to be installed flush with the face of the building and ensuring that the bed joints and perpend joints are maintained consistent with the existing bricks.

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

4.3.19.5 Where masonry is being inserted into worn areas of masonry the new brick/stonework is to be set such that the face is in the line of the original face of the brick/stonework.

4.3.19.6 Where individual brickwork/stonework is being replaced ties are not necessary.

4.4 HOT LIME MORTAR

4.4.1 MATERIALS

Existing walls should be repointed in a Hot Lime mortar mix. Any cementitious mortar should be carefully removed using hand tools. No mechanical tools should be used for the removal of cement-based mortars.

4.4.2.1 MATERIALS

Materials may be obtained from
(or other approved suppliers):

- a) Wormersley Associates
Walkley Lane
Heckmondwike
WF16 0PG
Tel : 01924 400651
- b) Eden Hot Lime Mortar
Edenholme
Great Musgrave
Kirkby Stephen
Cumbria
CA17 4DP
Tel : 01768 341291
- c) Lincolnshire Lime
Northfield Lane
Dam Lane
Thornton Curtis
North Lincolnshire
DN39 6XN
Tel : 01469 531227

4.4.1.1 FINE AGGREGATES

All sand shall be to B.S. 1200, non-staining clean sharp coarse sand. Sand shall be selected so that when the mortar has dried out the colour will match the colour and texture of the original mortar, unless instructed otherwise in writing by the Architect.

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

Stone dust shall be selected to match the colour of the stone and graded by sieve to ensure grain size is small enough to allow proper filling of the joints. Samples of stone dust shall be provided to the Architect for comment prior to ordering of materials.

4.4.1.2 TESTING

Existing lime mortar composition to be tested and sample panel prepared for approval.

4.4.2 WEATHER AND PROTECTION**4.4.2.1 COLD WEATHER WORKING**

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

4.4.2.2 PROTECTION

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

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

4.4.2.3 DAMAGE DUE TO WEATHER

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

4.5 POINTING OF MASONRY

4.5.1 GENERAL

- 4.5.1.1 Contractor's attention is drawn to the fact that in some cases the joints between brickwork/stonework is extremely fine and will demand a great deal of care and attention on site to the preparation, filling and pointing.
- 4.5.1.2 Pointing should commence from the top of the building and work down.

4.5.2 SAMPLE PANELS

- 4.5.2.1 The tenderer is to allow for carrying out two test panels each approximately 1 metre square under the direction of the Architect, using the methods described below. Work to the rest of the masonry should not commence until the test panel has been approved by the Architect. The location of the test panels is to be agreed with the Architect prior to commencement.
- 4.5.2.2 Tenderer is to allow for several sample mixes using different coloured fine aggregate to obtain a satisfactory colour for the pointing.

4.5.3 PREPARATION

- 4.5.3.1 All joints are to be raked out to a depth of 25mm using a fine-toothed saw blade or hooked knife. Extreme care is to be taken to avoid damage to the arris of the brick. Under no circumstances shall chisel and bolsters be used.
- 4.5.3.2 Under no circumstances will the use of mechanical tools be permitted (disc cutters etc.)
- 4.5.3.3 Joints are to be flushed out using clean water until the water runs clear. Where very fine joints are encountered a large hypodermic syringe shall be used to flush the joints.

4.5.4 FILLING AND POINTING

- 4.5.4.1 Mortar is to be as specified on the drawing and in accordance with the Mortar specification.
- 4.5.4.2 The mortar is to be introduced into damp joints and compressed with a purpose made pointing iron/key of approximately 30mm diameter giving a shallow "bucket handle" joint. Mortar is to be thoroughly compacted into the joints.
- 4.5.4.3 Care is to be taken to eliminate lines of mortar occurring on joint intersections, mortar should flow visually from perpendicular to bed joints.

4.6 RAINWATER GOODS

4.6.1 SYSTEM PERFORMANCE

Drainage design should be in accordance with BS EN 12056-3, clauses 3–7, Annex A and National Annexes. - To BS EN 12056-5, clauses 3, 4, 6 and 11.

Proposals should be submitted to the Architect for approval but should follow historic drainage routes where possible. Items for approval should include drawings, technical information, calculations, and manufacturers' literature.

4.6.2 COLLECTION AND DISTRIBUTION OF RAINWATER

Drainage should be installed as per the manufacturer's recommendations. It should be well fitted to the building and safely and adequately discharge of rainwater off the roof of the building.

4.6.3 CAST IRON GUTTERS

Manufacturer:

Alumasc Water Management Solutions or equally approved

Web: www.alumascwms.co.uk.

Email: info@alumascwms.co.uk.

Product reference: Apex Heritage OG50 127 mm Cast Iron Ogee gutter

Fittings:

Union clips: OG50/UC.

Stop ends: OG50/SE/LE left hand external stop end and OG50/SE/RE right hand external stop end.

Running outlets: OG50/RO/30 single socket running outlet, 4 inch diameter.

Angles: OG50/EA/9 single socket 90° external angle.

Brackets/ Rafter arms: Fascia brackets.

4.6.4 CAST IRON GUTTERS

Manufacturer:

Alumasc Water Management Solutions or equally approved

Web: www.alumascwms.co.uk.

Email: info@alumascwms.co.uk.

Product reference: Hoppers made to order

Fittings: As per manufacturers recommendations

Union clips: OG50/UC.

Running outlets: OG50/RO/30 single socket running outlet, 4 inch diameter.

Angles: OG50/EA/9 single socket 90° external angle.

Brackets/ Rafter arms: Fascia brackets.

4.6.4 CAST IRON PIPEWORK - SPIGOT AND SOCKET

Manufacturer: Alumasc Water Management Solutions.

Web: www.alumascwms.co.uk.

Email: info@alumascwms.co.uk.

Product reference: Apex Heritage 4 inch cast iron socketed round pipework

System colour/ Finish: TBC

Pipes: P30/6FT, length 1830 mm, with ears.

Fittings:

Bends: P30/B/92, 92.5° bend, without ears.

Branches: P30/BR/92, 92.5° branch, without ears.

Access pipe: Not required. - Offset (112.5°, one piece): P30/OF/03, 76 mm offset, without ears.

Shoe: Not required. - Rainwater head: Not required. - Holderbatts and earbelts: Contractor's choice.

4.6.5 PREPARATION

Below ground drainage should be completed before commencing any above ground drainage works. Alternatively, provisions should be made for the temporary dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.

4.6.6 FIXING PIPEWORK

4.6.6.1 Pipework should be fixed securely back to the building and should be installed plumb and/ or true to line. Branches and low gradient sections should be fixed with uniform and adequate falls, in order to drain efficiently.

Externally socketed pipes and fittings: Fix with sockets facing upstream.

Additional supports: Provide as necessary to support junctions and changes in direction.

4.6.6.2 Vertical pipes: - Provide a loadbearing support at least at every storey level. - Tighten fixings as work proceeds so that every storey is self-supporting. - Wedge joints in unsealed metal pipes to prevent rattling.

4.6.6.3 Wall and floor penetrations: Isolate pipework from structure.

Pipe sleeves: As section P31. - Masking plates: Fix at penetrations if visible in the finished work.

Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

4.6.7 JOINTING PIPEWORK AND GUTTERS

Joint should be made with materials and fittings that will make effective and durable connections.

4.6.7.1 Where jointing of different pipework and gutter systems are required then adaptors intended for the purpose should be used. Cut ends of pipes and gutters should be clean and square and burrs and swarf should be removed. Pipe ends should be chamfered before inserting into ring seal sockets.

4.6.7.2 Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly. Jointing material should be strike off flush. Do not allow it to project into bore of pipes and fittings.

4.6.8 ACCESS FOR TESTING AND MAINTENANCE

Install pipework and gutters with adequate clearance to permit testing, cleaning, and maintenance, including painting where necessary.

Access fittings and rodding eyes should be positioned so that they are not obstructed.

4.6.9 GUTTER TEST

In preparation all outlets should be temporarily blocked all. Gutters should be filled to overflow level and after 5 minutes closely inspect for leakage.

4.6.10 MAINTENANCE INSTRUCTIONS

At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation, including full details of recommended inspection, cleaning, and repair procedures.

4.6.11 IMMEDIATELY BEFORE HANDOVER

Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system. Be sure to remove debris and do not sweep or flush into the rainwater system.

Access covers, rodding eyes, outlet gratings and the like should all be secure complete with fixings.

4.7 PAINT REMOVAL

4.7.1 GENERAL

- 4.7.1.1 The joinery repairs and paint removal on any part of this project shall only be undertaken by experienced operatives who have regularly been engaged in or specialise in restorative works of external and internal joinery and shall produce references of such activity with the tender return.
- 4.7.1.2 The primary purpose is to remove paint from the woodwork on the dormer windows across the roof as well as the central spire. This will only be required on windows with delaminating paintwork which will necessitate further inspection.
- 4.7.1.3 The operatives shall be fully conversant with the method of repairs specified and have had previous experience and knowledge of the system. The operatives shall have attended training sessions on the use of all items of equipment or chemicals contained in the specification.
- 4.8.1.4 No chemicals are to be used as part of the current repairs process and this specification is to be adhered to rigidly unless instructed in writing by the Architect.
- 4.7.1.5 The scope of the work is clearly identified on the drawings and the tenderer is to visit the site to confirm for themselves the difficulties in executing the work as specified and is to include for such within his tender. The paint removal is limited to the dormer windows and central spire.
- 4.7.1.6 No claim will be entertained for failure to appreciate the difficulties in executing the works.
- 4.7.1.7 Except where the repair is let as a main contract all access scaffolding will be provided by the main contractor. The sub-contractor is to advise the main contractor of their requirements during the tender stage (if known) or immediately on nomination.
- 4.7.1.8 Any alterations required to the scaffold to suit the sub-contractors needs arising out of his failure to inform the contractor in accordance with this clause will be charged to the sub-contractor.

4.7.2 HEALTH AND SAFETY

- 4.7.2.1 The Contractor shall be responsible for ensuring that all products used, and all procedures adopted comply in full with current Health and Safety requirements.
- 4.7.2.2 Ensure that all operations carried out in such a way that they do not represent a risk to health and safety of the general public or other operatives on site.
- 4.7.2.3
 - a) Areas should be representative of the substrate, soiling and detail of the main works.
 - b) Test panels should be positioned discreetly and agreed with the Architect before continuing with the main works.
 - c) Location of the test areas must be recorded and protected from further alteration.
 - d) The parameters by which the result is obtained must be recorded.
 - e) An acceptable test area should be retained as a control panel for the main works.
 - f) Measures adopted as a result of the tests must be attainable and controllable in the main works.

- 4.7.2.4 Protection should be given to windows, doors, delicate features or any other areas not to be treated. For example 'Tank-Tape' and polythene to reduce the potential for damage to the glass. Isolation of vulnerable electrical apparatus, lighting etc.

4.08 ROOF WORKS

4.08.1 MATERIALS

4.08.1.1 SLATE

Existing slates are to be retained and stored for reuse. The slates are to be sorted for size and shape and any broken, delaminating or otherwise unsuitable slates are to be discarded.

New slates shall be obtained from an approved source and shall be to match in colour and sizes any areas of stone slates retained for use. Samples shall be submitted to the architect for approval prior to ordering materials.

New slates shall comply with BS 12326-1 (2014).

4.08.1.2 ROOFING FELTS

Untearable felt shall be to BS 747.

To comply with Natural England guidelines, posing no risk to bats. Requires 10mm min. air gap underneath.

4.08.1.3 NAILS

Nails shall comply with BS 1202 Part 2 and 3.

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

Nails for fixing slates should penetrate battens to a minimum depth of 15mm but should not penetrate through the batten.

4.08.1.4 TIMBER

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

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

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

4.08.1.5 MORTAR

Mortar for bedding stone copings etc. is to be 1:1:6 mortar with pigmentation to match ridge tiles.

4.08.1.6 INSULATION

Insulation: Rockwool HardRock Multi-Fix. To run minimum 10mm from top breather membrane (ventilation gap) then for the remaining depth of the rafter. Rafter depths assumed to be 75-100mm though exact measure TBC upon opening-up works and may vary across roofs.

Rockwool include for 60mm / 85mm / 105mm / 115mm / 150mm available board depths.

Works will require an uplift to the building's thermal envelope but no specific U-Value goal has been set.

4.08.1.7 LEAD FLASHING

Specification as per drawings.

4.08.1.8 RIDGE TILE VENTS

Airtrak roof void ventilators. Manufactured from 0.7mm 304 stainless steel sheet.

4.08.2 WORKMANSHIP

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

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

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

4.08.3 EXISTING ROOF COVERINGS

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

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

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

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

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

4.08.4 UNDERLAY

4.08.4.1 All underlay shall comply with BS 5535 Part 1 1990 and BS 747. Underlay shall be of Type 1F or 5U reinforced bitumen felt to BS 744 and BS 5534. If Type 1F is used then a further layer of type 5U is required at eaves and verges or any other location where felt may be exposed. This should be applied as a strip of minimum 400mm wide and dressed into gutters etc. without forming a trough for water collection.

4.08.4.2 For an unsupported installation with a roof pitch between 15 and 30 degrees the minimum horizontal lap should be 150mm. Where the underlay is supported, this may be reduced to 100mm.

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

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

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

4.08.5 BATTENS

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

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

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

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

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

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

4.09 SLATING

4.09.1 All slates are to be sorted prior to holing and fixing. All slates to be used on any course shall be of the same thickness. Where thicker slates are encountered these should be used at the eave's courses.

4.09.2 HOLING

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

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

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

4.09.2.4 For centre nailed slates holing gauge-batten gauge+lap+8mm-15mm.

4.09.2.5 For head nailing holes are to be 25mm from the top of the slate. Unless specified elsewhere all slates shall be centre nailed.

4.09.3 CUTTING

4.09.3.1 No tile shall be cut to less than 2/3rds of its original width. Where details would require smaller cut 'tile and a half' shall be used.

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

4.09.3.3 Remaining courses should be twice nailed every file except top row and so that the tails of all courses are parallel and are finished in clean straight lines.

4.09.3.4 All tiles shall be laid half bond.
Verges should be finished with alternating tile and tile and a half courses.

4.09.3.5 Verges should not overhang their support by more than 50mm. Undercloak slates of a minimum 150mm wide butt jointed and nailed face down. Underlay should be well lapped and laid under undercloak slates. Undercloak slates should be bedded in mortar stuck to the line of the wall.

4.09.3.6 Point up in 1:1:6 mortar all verges. All mortar is to be coloured to match the slate. Colours should be confirmed with the Architect prior to application.

4.09.3.7 Ridge tiles should also be mechanically fixed in accordance with BS 5534.

4.09.3.8 Hips shall be clay hip tiles to match existing. A hip iron to BS 5534 should be fixed at the base of the hip with 12 gauge galvanised screws.

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

4.09.3.10 Hip tiles are to be bedded in mortar and secured in accordance with BS 5534. Mortar shall be struck off as work proceeds.

4.09.3.11 Any fixings in hip and ridge tiles are to be sealed with black mastic.

- 4.09.3.12 All joints in hip tiles shall fit closely and be pointed up. Exposed end of hip shall be filled with tile slips and pointed in mortar.

4.10 LEADWORKS

4.10.1 REQUIREMENTS

- 4.10.1.1 All work shall be undertaken by trained operatives employed by a contractor who is a member of Lead Contractors Association or Stainless-Steel Equivalent.
- 4.10.1.2 All workmanship shall be in accordance with the Lead Sheet Associations recommendations as contained in the Lead Sheet Manual - a guide to good building practice Volume 1 to 3 and update No. 1.
- 4.10.1.3 Working Practices shall comply with the Health and Safety Executive COP2 "Control of lead at work - approved code of practice".
- 4.10.1.4 All work shall comply with BS 5250 "Code of Practice for control of construction in buildings".

4.10.2 MATERIALS

4.10.2.1 Lead Sheet

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

4.10.2.2 Underlay

To lead shall be a polyester geotextile felt such as "Lotrak" non-woven trevira 200g manufactured by Don and Low (Geotextile Division) Tel: 01307 66011.

4.10.2.3 Plywood

Shall only be used where specified and shall be in accordance with BS 1210. Plywood shall be WBP grade.

4.10.2.4 Copper Nails

Copper nails for fixing lead shall be in accordance with BS 1202 part 2.

4.10.2.5 Wood Screws

Shall be in accordance with BS 1210.

4.10.2.6 Timber

For gutter linings, roof decks etc shall be 100x25mm straight edged boarding with a 2mm gap between adjoining boards.

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

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

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

4.10.3 WORKMANSHIP

4.10.3.1 General

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

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

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

Ensure that finished leadwork is fully supported.

4.10.3.2 Lead Welding

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

4.10.3.2 Layout

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

4.10.3.3 Control Samples

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

4.10.3.4 Existing Lead to Be Retained

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

4.10.3.5 Existing Lead to Be Removed

Lead specified to be stripped and shall become the property of the contractor. The contractor shall credit the Employer for the scrap value of all such lead and shall declare the value in this tender.

4.10.3.6 Replacement of Existing Lead

Replacement of existing lead will generally be carried out under the protection of a temporary roof. In areas where this is not possible or in areas receiving run off from adjoining unprotected roofs (e.g. gutters etc) then the work must be carried out in small sections at a time to reduce the risk of weather damage. The contractor shall

check the weather forecast before commencing removal of lead and shall only remove an area small enough to permit its reinstatement within the working day.

4.10.3.7 Existing Bases

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

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

4.10.3.8 All Bases

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

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

4.10.4 FIXING AND JOINTING

4.12.4.1 Head Fixing of Lead Sheet

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

4.10.4.2 Fixings

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

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

4.10.4.3 Clips

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

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

4.10.4.4 Wood Cored Roll Joints

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

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

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

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

4.10.4.5 Weltd Joints

Form with a 50mm overlap, 25mm underlap and copper or stainless steel clips at not more than 450mm centres. Welt overlap and clips around underlap loosely turn over and lightly dress down.

4.10.4.6 Drips - Roofs Up To 3# Pitch

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

4.10.4.7 Drips - Roofs Over 3# Pitch

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

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

4.10.4.8 Forming Details

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

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

4.10.4.9 Fixing Into Joints

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

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

Joint to be pointed as indicated on the drawings.

4.10.4.10 Finishing

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

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

4.11 PAINTING/ CLEAR FINISHING

4.11.1 LINSEED PAINT

Colour: TBC

- Manufacturer: BROUNS & CO, Highfield, Selby Road, Garforth Cliff, Leeds, LS25 2AG, tel 01423 500694, sales@linseedpaint.com, www.linseedpaint.com

- Product reference: LINSEED PAINT

- Surfaces:

New and existing timber surfaces, interior and exterior

Application on timber:

- Initial coats: 2 coats of shellac knotting primer on knots. Supplier: BROUNS & CO, Highfield, Selby Road, Leeds, LS25 2AG, tel 01423 500694, sales@linseedpaint.com, www.linseedpaint.com.

- Number of coats: 3

- Undercoats: 1 primer coat to the mixture of 50% linseed oil paint, 35% raw linseed oil, 15% Balsam Turpentine.

- Finishing coats: 2: Linseed paint to colour of choice, finished in 2 coats.

Application between mid-March to mid-September, depending on the weather. Application in very thin coats by brush. Paint needs to be worked into the substrate, then laid off using a fine brush. One coat always needs to be dry to the touch before applying a new coat.

Application on existing metal roof trusses:

Number of coats: 4

- Undercoats: 2 primer coats of Linseed Paint Iron Oxide Primer.

- Finishing coats: 2: Linseed paint to colour of choice, finished in 2 coats.

Application between mid-March to mid-September, depending on the weather.

Application in very thin coats by brush. Paint needs to be worked into the substrate, then laid off using a fine brush. One coat always needs to be dry to the touch before applying a new coat.

- CAUTION: any cloths or rags used should be soaked under the tap before throwing in the bin to prevent self-combustion.

4.11.2 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.

- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.

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

4.12 TIMBER/ JOINERY

4.12.1 MATERIALS

4.12.1.1 Oak For Replacement Timbers

All timbers for the use in repairing timber framed structures shall be unseasoned ("Green") English oak from selected timbers. Timbers shall have been felled for approximately three years.

Timbers shall be selected to comply with TRADA information sheet 47 and CP112 for grade 65 hardwoods. Maximum size of fissures acceptable is 0.4 of the thickness of the member. The maximum permissible slope of the grain is 1 in 11. The timber shall be free from wane.

The maximum permissible size of knots is listed below.

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

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

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

No sapwood will be permitted.

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

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

4.12.1.2 Oak Pegs

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

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

4.12.1.3 Loose Tonnons (Slip Tonnons)

Shall be fabricated from air dried oak.

4.12.1.4 Non Structural Components

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

4.12.2. PREPARATION OF TIMBERS

4.12.2.1 Timbers Of Large Cross Sectional Area

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

4.12.2.2 Timbers Of Smaller Cross Sectional Area

Where straight sections are required these may be sawn or axed on the remaining three sides.

4.12.2.3 Conversion Of Oak

The normal method of conversion of oak for various uses is as follows:

Beams (floor-,sill-,cross-)	Boxed-heart
Purlins	Boxed-heart
Plates (wall-,arcade-,collar-,sole-)	Boxed-heart or quartered
Ridge	Boxed-heart or quartered
Posts	Boxed-heart or halved
Tie Beams	Halved
Girdings	Halved
Bressummers	Halved or quartered
Studs	Halved
Braces	Halved
Brackets	Halved
Principals	Halved
Collars	Halved
Struts	Halved
Joists	Halved or quartered
Rafters	Boxed-heart, halved or quartered
Bargeboards	Quartered

4.12.2.4 Curved Members

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

4.12.2.5 Shaped Members

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

4.12.2.6 Finished Surfaces

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

4.12.3 STORAGE

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

4.12.4 INSERTION OF NEW TIMBERS

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

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

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

4.12.5 PREPARATION OF REPAIRS

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

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

4.12.5.3 Where necessary the frame shall be propped to ensure that no settlement occurs during cutting out. Great care shall be taken during the insertion of any necessary props to ensure that the props only take the weight and do not exert any pressure in themselves. Where props are used the timber structure shall be protected

from damage by using minimum 25mm thick timber packers between the prop and the timber. Similarly protect under all props.

4.12.6 CUTTING OUT AND FORMATION OF REPAIRS

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

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

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

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