

St George's Church, Jesmond
Newcastle NE2 2TF

PROPOSED
MASONRY REPAIRS at TOWER

Specification and Schedule of Work

March 2020

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To be read with drawings
677/1 - 7
and site photographs

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Definitions

Employer	St George's PCC c/o The Parish Office St George's Close Jesmond	NE2 2TF	
Architect	Ian Ness Architect 26 Grosvenor Place Newcastle upon Tyne	NE2 2RE	(0191) 281 2559

Description of the Work

Repair of high level Masonry at the tower of St Georges Church (grade I listed), including provision of safe access. Repointing, indenting of ashlar and mouldings and replacement of a missing cornice.

Health and Safety

With reference to the Construction (Design and Management) Regulations 2015 this project is not expected to last more than 30 days or to have over 20 workers on site at any time or to involve more than 500 man days. If the contractor has cause to believe the work will exceed these limits he must notify the architect when submitting his tender and allow for Notification to the HSE. Because there will be more than one contractor on site the architect will act as Principal Designer and the Masonry contractor is to act as Principal Contractor.

Pre Construction Information

No special risks have been identified at pretender stage other than

- limited bearing strength of the slate and timber roofs under parts of the work area
- close proximity of occupied 'Tower House' and the roads and green normally used by the public

Conditions of Tendering

Contractors tendering do so at their own cost. Tenders are to remain open for acceptance for four months after submission. Tenders are to be on a Firm Price basis and without qualification. The successful tenderer will be asked to submit within four working days an itemised priced schedule of work with a schedule of rates of labour and materials as applicable for inspection by the architect. Obvious errors will be corrected in accordance with JCT Tendering Practice Note 2012 Alternative 1.

The employer is not bound to accept the lowest or any tender.

Inspection of site and drawings The contractor shall examine the Specification and drawings, inspect the site and acquaint himself with the means of access, working conditions and working space as no claims will be entertained on the grounds of ignorance of these conditions.

Any doubt or obscurity in the meaning of the specification or drawings shall be brought to the attention of the architect before submission of the tender.

Contract The contract documents shall be:

- a) the JCT Minor Works Building Contract MW 2011 incorporating Amendment 1:CDM Regulations March 2015
- b) the priced specification and schedule of work and drawings numbered 677/1, 2, 3, 4, 5 and 6

The contract conditions shall be completed as follows:

Article 7 and Schedule 1 (arbitration)		shall apply
1.1 CDM planning period	5 days ending on the date of Works commencement	
2.2 Dates of Commencement and Completion		to be agreed
2.8 Damages for non-completion		£200.00 per week
2.10 Rectification Period		six months
4.3 Progress Payments and Retention		95%
4.4 Interim Payments on and after Practical Completion		97.5%
4.8.1 Documentation for Final Certificate		three months
4.11 Contribution etc		percentage addition nil
5.3.2 Contractor's Insurance for injury or damage to persons or property		£2 million
5.4A Insurance of the Works by Contractor in joint names		shall be deleted
5.4B Insurance of the Existing Structures and Works by Employer in joint names		shall apply
5.4C Insurance of Existing Structures by Employer in Own Name		shall be deleted
5.4A.1 and 5.4B1.2 Professional fees		percentage 15%
7.2 Adjudication		RIBA
Schedule 1 (para 2.1) Arbitration		RIBA

Programme and Progress Meetings

The contractor is to prepare a programme for the works for approval. Progress meetings will be held at fortnightly intervals. Minutes will be taken and circulated by the architect.

Materials and Workmanship

Materials are to be of the best quality consistent with the nature of the works. All relevant British Standards and Codes of Practice are to be conformed to, unless otherwise described. The contractor is to carry out everything necessary for the proper execution of the works, whether or not shown on the drawings or in the specification and schedule provided the same may reasonably be inferred therefrom.

Plant Provide all plant, tools, scaffolding and temporary support necessary for the execution of the works. Allow for preventing nuisance in adjoining buildings and for the protection of the existing structures.

Demolitions

All demolitions and cutting out are to be fully supported and the contractor is to allow for all reinstatement and making good in matching materials. No claim will be allowed where the contractor has not taken reasonable steps to avoid damage.

Builder's Work Include for all builder's work in the cutting of holes and recesses.

Sanitary Accommodation

The contractor may use the toilets in the adjacent church hall by arrangement and must ensure they are kept clean at all times.

Services Water and electricity may be taken from the existing supplies and no charge will be made.

Protection of public and private services

The contractor is to protect, uphold and maintain all pipes, service mains, overhead cables etc during the works. The contractor is to make good any damage due to any cause within his control at his own expense or pay any costs or charges in connection therewith.

Notices The contractor is to serve all required notices on service undertakings and the local authority. It is the contractor's sole responsibility to comply in detail with the requirements of the authorities. Any substantial alterations resulting from additional unforeseen requirements of the authorities will be covered by architect's instruction.

Noise and Dust Nuisance Avoid so far as practical. Work shall be limited to 8am – 6pm Monday-Friday unless otherwise agreed by the occupiers of adjacent Tower House and Close House.

Safety, health and welfare of workpeople

The contractor shall allow for complying with all Safety, Health and Welfare Regulations appertaining to workpeople (including those employed by any nominated subcontractor) on the site.

Safeguarding the Works

The contractor shall allow for safeguarding the existing premises, the works, materials, plant and any other equipment delivered to the site against accidental damage and theft.

Drying out The contractor shall be responsible for the satisfactory drying out of the work and shall allow for ascertaining from subcontractors any special requirements relating to the correct conditions of temperature and humidity and shall provide and maintain these conditions until the completion of the works.

Waste disposal No burning of material will be allowed on site. All waste must be removed and properly disposed of to tip unless permission is granted by the employer for tipping on his own land.

Protection of the works

Provide all coverings necessary for the protection of completed portions of the works. Clean the works of any stains caused by the execution of the works and remove all rubbish and debris from time to time and at completion, leaving the whole premises clean. Allow for temporary protection from inclement weather.

Workpeople and Management

Allow for all costs arising from transport for workpeople, overtime, holidays and any other expense from the employment of workpeople. Allow for all costs of supervision and site management.

SPECIFICATIONS

NEW STONE

SCOPE and PURPOSE of WORK

The replacement of one part missing moulded cornice (Course D) and the indenting of decayed moulded strings and ashlar (Courses E – L) with matching sandstone. Lime mortar bedding and pointing. The church is listed and very good match to the original masonry is required.

GENERAL

Materials and workmanship to be to BS 5390 Code of Practice for Stone Masonry

MATERIALS – STONE

Buff sandstone, durable in severe exposure, to match existing colour and texture, Dunhouse Buff unless agreed in writing

Stone sample and freeze/thaw test report to be produced for approval before order.

Stone to be selected for quality, consistency, and freedom from vents, cracks, fissures, soft beds and veins.

To be cut so that the natural bed is laid horizontal except mouldings bed vertical and at right angle to face.

Min indent thickness 75mm for stability and weathertightness. Thicker if needed for handling.

MORTAR MATERIALS and MIX – BEDDING and POINTING

Water Shall be obtained from the public supply and shall be kept clean

Lime

Naturally Hydraulic Lime bagged as dry hydrate powder to BS EN 459-1:2001.

Use NHL5 (eminently hydraulic) for severe exposure.

Lime to be not more than 6 months old. Reject any opened or damaged bag.

Sand

Aggregate to contain a range of well mixed particle size to ensure good interlock and good coverage of each grain with binder.

The maximum particle size will be about one third of the joint width and the remainder should range down to fine material which may be crushed stone.

For pointing clean very coarse grit, sharp and well graded river or pit sand or crushed gravel 3mm down (similar to concreting sand) free from impurities and washed if required. Colour to be similar to stones or darker. Sample to be approved by architect.

Gravel

Where wide joints in masonry are to be pointed include 1/6th part of 4mm or larger dust free particles to provide the course aggregate.

Mix

Due to the exposure make a mix of about 1 : 2 (NHL5 binder : sand)

Mix is nominal only and may be adjusted slightly depending on the aggregate. Too little binder will result in too weak a mortar and high capillarity and poor workability. Too much binder increases the risk of shrinkage cracks. Mix with the minimum water needed for workability.

Mix for 10-15 minutes and allow to stand for 15 minutes to allow water to contact all the lime powder.

MASONRY WORKMANSHIP

Inspection : decayed stonework identified on the drawings shall be jointly inspected by the architect and mason and extent and method confirmed

New stone: take detailed measurement of the sizes required. Cut new stone accurately. **Smooth rubbed finish to match existing**

Joints: existing joints shall be replicated and the existing joint widths maintained. Ensure all existing bed joints pass through the new work.

Propping: the existing masonry shall be fully propped at all times to ensure no movement occurs.

Indenting :

Remove all mortar and form a neat square cavity ready to receive the new stonework. Stone to be dressed with joints no wider than the original. Ashlar indents laid with natural bed horizontal. Moulded indents cut with natural bed vertical and at right angles to wall face.

Dampen ashlar and lay accurately on a full bed of mortar with all joints filled and with temporary lead or stainless steel distances pieces removed when the mortar is strong enough. Grout any voids found between existing stones when bonding in.

Other indents : drill holes in existing and new stones (10 dia 50 deep at ashlar and mouldings, 15 dia 200 deep at course D cornice), fit 8 and 12mm type 316 stainless steel threaded reinforcing rod anchors bedded in epoxy adhesive. Generally 2 holes per indent except min 3 at course D cornice.

Apply a thin layer of adhesive to existing stone (keeping 25 from edges) and part fill holes in new stone with adhesive. Apply new stone dust mortar to perimeter of each stone. Locate new stone onto rods and press together, correctly aligned with no step or misalignment. Wipe away excess stone dust mortar. Allow initial set then sponge off joint. Remove any excess from stonework.

Protect all stonework during construction particularly arrises. Prevent staining and other disfigurement. Turn back scaffold boards at night and during heavy rain. Any damaged stone to be replaced at contractor's expense.

Store all stone clear of the ground, well protected from rainwater and damage from salts and other deleterious substances

Keep all mortar material dry before use. Mix only enough mortar as can be used within two hours. No mortar to be worked up for reuse.

Do not use frozen material or lay stones when air temperature is at or below 4^o unless mortar has minimum temperature of 5^o when laid and the masonry is protected. Maintain the work above freezing until the mortar has fully hardened. All work undertaken in these conditions to be approved by the architect.

POINTING and REPOINTING WORKMANSHIP

Purpose is to prolong the life of the masonry. The pointing should be durable and protect the tower from wind, rain and frost. It should be impermeable enough to keep out wind driven rain but permeable enough to allow freer evaporation of moisture from the joints than from the masonry. As a general principle pointing should be slightly weaker than the stones but well bonded to them. Mortar should be workable enough to allow full filling or vertical as well as bed joints to prevent rain penetration. Eventually it should decay sacrificially before the stones.

Surviving mortar should not be removed unnecessarily and the original appearance should be retained. New pointing must match in colour, texture and finished profile the surviving weathered material.

Generally only mortar which can be raked out rather than cut should be removed. Hand rake or cut out joints to a square face in 25 deep or, if wider, equal to the width of the joint. Use long necked jointing chisels hammered obliquely or hacksaw blades to avoid any spalling of stone. Do not use discs. Grout any empty joints to a square face at the same depth.

Point any fissures found in stones not to be replaced. Brush or flush out with clean water avoiding over wetting.

New pointing mortar to match in colour, texture and finished profile the surviving weathered original material.

Provide a sample of pointing for architect's approval before proceeding.

Use mortar fresh, sticky but not wet. A suitable mortar should stick to the underside of a trowel or hawk. Do not knock up a second time. Any mortar which has developed its initial set is to be rejected and removed.

Rewet if necessary before pointing. Push mortar in firmly with an iron to suit the joint width, leaving no voids and compacting thoroughly. Fill the joint flush or slightly recessed where the stones are not square to avoid spread of mortar.

To match the rough texture of the retained pointing, beat the surface after the initial set with the end of a stiff brush to expose the aggregate. Where wide joints require gravel in mix wash once the mortar has hardened sufficiently to expose the gravel. Clean any spilled mortar from the face.

When there is risk of cold overnight temperatures the contractor may add a small amount of a pozzolanic material such as Metastar (china clay based) to achieve a more rapid set but without interfering with the breathable properties of the mortar.

Notwithstanding the above do not use frozen material or point when air temperature is at or below 4^o unless mortar has minimum temperature of 5^o when laid and the masonry is protected. Maintain the work above freezing until the mortar has fully hardened. All work undertaken in these conditions to be approved by the architect.

Curing and protection

All mortars need protection until they are fully cured and poor protection is a common cause of failure in lime work which should not be expected to cure as quickly as cement based mortars.

Protect the new mortar from rain and protect it from fast drying by covering with wet hessian under polythene for at least 72 hours or a week in warm weather or until initial set is complete.

SCHEDULE of WORK

A) perform any actions required of a Principal Contractor under the CDM Regulations 2015 which may include lodging an F10 Notification to the HSE, submitting a Construction Phase H&S Plan to the Principal Designer for approval before work and a H&S File on completion

SCAFFOLD

B) Design, erect, maintain and remove suitable scaffold for safe work at height with fully boarded lifts and protections as Schematic drawing 677/6 including suitable ladders or stairs – to BS 5973 : 1990 Code of Practice for Access and Working Scaffolds and Special Scaffold Structures in Steel

C) Submit drawn design for the scaffold to the architect for prior approval

CC) Provide small INTERNAL tower scaffolds A-D on drawing 677/7 for glazier

D) Hoist and Loads on Lifts – Provide and maintain a hoist and if required intermediate boarded lifts for safe handling of materials and waste. Provide boarded lifts to suit the loads of the works and materials.

E) Stability – NO drilling of the existing masonry is permitted. Achieve stability with large ground and roof spreaders, buttresses and tight packings around the Tower shaft. No metal to contact the masonry – cap all tubes within 50mm of masonry and use robust timber packers around the Tower shaft.

Note the bearing capacity of the vestry roof timbers (two sides of Tower) is unknown so design to minimise imposed loads. Bearings are available at the tall belfry openings subject to the obstructions of the louvres and external pigeon mesh which must be protected from damage

F) Provide competent and experienced supervision by the scaffolder to ensure no damage to the building or grounds

G) Use by others – Provide boarded lifts and ladders at approx. 4m (2 sides) and 10m high (4 sides) and allow use under separate contract by a glazier to repair two tiers of low windows as dwgs 677/6 & 7.

H) Protections – Effectively protect the vestry slates and lead gutter on two sides. After removal of scaffold inspect with architect and make good any damage to his reasonable satisfaction.

Protect the block road surface and the floodlights and external light.

So far as practical leave space past scaffold and hoardings to maintain access to the car park for cars at weekends

Include debris netting but avoid any installation which imposes significant wind loads

SECURITY & FIRE

J) Include secure hoardings around all scaffold min 3m high with lockable door. Maintain access to the Tower E door for bellringers.

K) Provide and maintain an adequate concealed scaffold alarm.

L) Adequately safeguard the site, the works, materials and existing buildings affected by the Works from damage or theft. Take all reasonable precautions against unauthorised access to the site, the Works, the church and adjoining property. Include removal and securing of any ladder to first lift whenever site unattended.

M) Maintain fire extinguishers on the works and ensure workmen are familiar. Prevent smoking and use of sources of ignition at all times.

STABILITY

N) Maintain the stability and structural integrity of the Works and church (noting the limited bearing capacity of the timber vestry roofs) during the contract. Prevent overloading at all times.

Total to Collection

MASON'S WORK

COURSES A & B

A) Rake and point all perp joints and all of 2no. bed joints at all four sides (each side 7m long approx.)

TOP of CILLS (course C) at ARCADE

Note – the tops of the cills at each open arcade are approx. 1.3m wide x 4.4m long with shallow inward falls. Each top has one longitudinal and about five cross joints. Recent strip uprights are fixed between the arcades. Metal pigeon mesh is fixed to the inner faces of the arcade openings. See photos. Defects - many cill tops are shaling and majority of the mortar in top joints and holes cut in the stone tops is missing, leaving deep voids

Approx quantities of open joints:

W side – 100% joints and 4 no. open holes in stones

S side - 100% joints and 2 no. open holes in stones

E side – 50% joints

N side – 50% longitudinal joint only and 3 no. open holes in stones

Purpose – to permanently waterproof the sloping tops of the cills by filling the open joints between stones, the open holes in many stones and draining all depressions including areas of shaling to prevent moisture being retained and soaking down into masonry.

B) Isolate, disconnect, set aside, protect, refix, reconnect and recommission 8no. strip uprights bolted to the tops of the cills

C) with compressed air thoroughly dry and clean debris from all voids in holes and joints to be filled

D) prime and apply suitable durable repair mortar (Remmers FM NB or equal approved) to fill all joints and holes. Build up in thin layers, allowing to dry as maker's instructions, to slightly above general stone level to leave the whole of each cill top able to drain naturally.

E) Remove all shaled stone to sound surface. At shaled and other surface depressions cut shallow drainage channels to the cill inner edges to leave the whole of each cill top able to drain naturally.

F) At all **newly exposed** stone top surfaces apply clear impregnating stone waterproofer (Remmers FUNCOSIL SNL or equal approved) priming and min. two coats to maker's instructions

COURSE D (South side only)

G) missing moulded Cornice :

Cut back broken root to sound true flat face. Take templates (at high level and from fragment on ground). Supply, dress, fix and point new cornice 900 long approx. Drill root and new cornice for min 3 no. 12mm rods at least 200 long in both root and new cornice. Apply epoxy resin adhesive as specification, prop and grout as necessary to ensure the joints above and besides the new stone are fully filled before pointing.

COURSES C & D (outward faces only – noting the broad tops of course C are scheduled elsewhere)

H) Rake and point all perp joints and 1no. intermediate bed joint at all four sides (each side 7m long approx.)

COURSE E & F (West side ashlar – two stones max 750 long)

J) Cut back decayed faces min 80 deep.

Measure, supply and indent new faces min 75 thick, coursed to match, well anchored into masonry.

COURSE E & F (all sides)

A) Rake and point all perp joints and 2no. bed joints (each side 3.5m long approx. between decorative corbels)

COURSE G

B) Take template of complex moulded string, cut out decayed or broken lengths min 200 behind tower face, supply and indent new matching moulds with roots min 190 deep

West side – two full moulds each 375 long approx

South side - one full mould 375 long approx., two lengths of bottom mould only, 950 and 700 long approx

East side - bottom mould only in multiple lengths total 5.5m long approx. including two return ends

North side - bottom mould only in multiple lengths total 5.5m long approx including a return end

COURSES H & J (ashlars all sides)

C) Cut back decayed faces min 80 deep, 250 high

Measure, supply and indent new faces min 75 thick, coursed to match, well anchored into masonry.

West side – 6 no. each max 600 long

South side – 6 no. each 250 - 900 long

East side – 8 no. each 600 – 900 long

North side – 5 no. each max 650 long

D) At each end of East side prop, cut out 2 no. whole corner ashlar each approx. 250 high, 225 deep, 650 long. (ie $2 \times 2 = 4$)

Measure, supply and lay 4 no. new corner ashlar to match.

E) Rake and point all perp joints and 2no. bed joints (each side 6.2m long approx.)

COURSE K

F) Take template of plain roll string, cut out decayed or broken lengths min 200 behind tower face, supply and indent new matching string with roots min 190 deep

West side – two lengths each 500 long approx

South side – one length 500 long approx

East side – two lengths each max 600 long approx.

G) Rake and point all perp joints and 1 no. bed joint (each side 6.2m long approx.)

COURSE L (one ashlar course 300 high approx - all sides)

H) At East side cut back decayed face of one stone 500 long min 80 deep.

Measure, supply and indent new face min 75 thick, coursed to match, well anchored into masonry.

J) Rake and point all perp joints and 1 no. bed joint (each side 6.2m long approx.)

COURSE M (roll string)

K) Rake and point all perp joints and 1 no. bed joint (each side 6.2m long approx.)

Further pointing (provisional)

L) Allow if instructed for further 100 lm raking and pointing of joints

General contingency

M) Allow a general contingency sum of £5,000 to be expended only on architect's instruction

Total to Collection

DAYRATE Rate for deshaling 1m² plain ashlar

St George's Church Jesmond – Tower Repair

FORM of TENDER

To St George's PCC

We the undersigned hereby tender and undertake to execute the whole of the work required in carrying out the proposed Tower repair of St George's Church in accordance with drawings, 677/1 – 7 specification and schedules v2 prepared by Ian Ness Architect for the sum of

.....pounds

andpence (£) excluding VAT

We undertake that this fixed price tender shall not be withdrawn or qualified for eight weeks from the date of tender.

We undertake to complete the whole of the works withinweeks of the date of possession and to deliver within 4 days one priced specification and schedule of works upon which this tender is based.

We note that the employers do not bind themselves to accept the lowest or any tender.

We have visited the site and are fully acquainted with the local conditions. We undertake, if this tender is accepted, to execute with you a form of contract embodying all the terms and conditions contained in this offer.

We certify that the amount of this tender has not been and will not be revealed without the consent of the architect.

Date.....

Signature.....

On behalf of

Address.....

.....

.....

Telephone.....

Tenders are to be delivered, faxed (0191) 281 2559 or emailed i.ness@btinternet.com to

Ian Ness Architect
26 Grosvenor Place
Newcastle upon Tyne
NE2 2RE

Not later than noon on Thursday 16 April 2020