

The Church of the Holy Trinity  
Minchinhampton

# Proposed re-ordering

# Outline technical specification

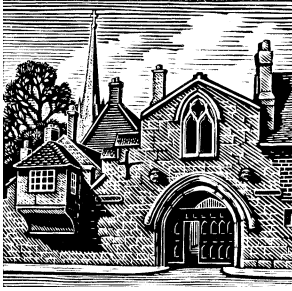
March 2017 – **for approval**

Antony Feltham-King RIBA GradDiplConsAA AABC



ST. ANN'S GATE  
ARCHITECTS

ST. ANN'S GATE ARCHITECTS  
The Close • Salisbury • Wiltshire • SP1 2EB  
reg. no: OC344334 • VAT: GB 188 085 427  
t: 01722 555200 e: admin@stannsgate.com



# ST.ANN'S GATE ARCHITECTS

The Close · Salisbury · Wiltshire · SP1 2EB

*principals:* Michael Drury RIBA GradDiplConsAA AABC

Antony Feltham-King RIBA GradDiplConsAA AABC

*partners:* Louise Rendell RIBA DipConsHistEnvRICS

Helen Martin BAHons DiplArch MScCons AABC

Limited Liability Partnership · reg. no: OC344334 · VAT: GB 188 085 427 · ISO 9001:2008 Registered

t: 01722 555200

e: admin@stannsgate.com

f: 01722 555201

w: www.stannsgate.com

1196/01/-/ACFK

March 23<sup>rd</sup> 2017

## The Church of the Holy Trinity Minchinhampton Gloucestershire

### Proposed re-ordering: **OUTLINE TECHNICAL SPECIFICATION**

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#### relevant drawings by St. Ann's Gate Architects:

#### Holy Trinity Church: Minchinhampton: Proposed re-ordering:

dwg nos: at Faculty submission: March 2017

1196-01-301	Plan as existing
1196-01-302	Sections as existing
1196-01-303	Plan as proposed (key plan)
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1196-01-306	Entry space elevations
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## **D20 EXCAVATING AND FILLING**

To be read with preliminaries/general conditions/pricing document/drawings etc.

### **GENERALLY/THE SITE**

- 110** **GENERALLY:** All excavation works are to be carried out by an archaeological contractor, working within the constraints of a watching brief to be provided by the church's Archaeological Consultant. From the advanced archaeological evaluation carried out in 2016, it is generally concluded that any significance archaeological remains are at depths unlikely to be disturbed by the proposed works.
- 130** **GROUND WATER LEVEL** on the site varies - it is assumed to be lower than the levels of any excavations within the church building.
- 140** **EXISTING SERVICES:** Some existing heating pipework is located below the existing stone pavement. Live electrical cables may also be present. Extreme care must be taken when excavating and lifting existing pavings. Assume services are live unless services sub-contractor has ascertained that such services are disconnected.
- 150** **SITE FEATURES TO BE RETAINED: IMPORTANT:** Over and above the methodology contained in the archaeological control documents, excavation work **MUST STOP IMMEDIATELY** if any items of significant archaeological or architectural importance are found. Refer immediately to the consultant archaeologist and church architect for instruction.

### **CLEARANCE/EXCAVATING**

- 160** **SITE FEATURES:** Before starting work verify with architect which existing site features are to be removed. Materials arising are to be removed from site.
- 240** **ADJACENT EXCAVATIONS:** Where an excavation encroaches below a line drawn at an angle of 45 degrees from the horizontal from the nearest formation level of another higher excavation to the lower excavation, all work within it and backfilling thereto must be completed before the higher excavation is made.
- 250** **ACCURACY:** Permissible deviations from formation levels:
- Accuracy in the laying of the new floor is of paramount importance. The new floor is to be laid level in the nave and aisles, to marry-in with the level of the existing floor in the Crossing/Choir space.
  - The floor in the narthex (welcome) area is to be set on a slope of around 1 in 20.
  - Proposals for achieving these levels are to be offered for approval by the CA before works starts.
- 260** **FORMATIONS GENERALLY:**
- Make advance arrangements with architect and structural engineer for inspection of formations for the following:
  - once timber pews and their islands are removed, exposing the voids below

- when 1840s sleeper walls have been reduced in level and prior to placement of type-one fill material
- prior to laying first layers of recycled foamed glass
- prior to laying crushed slate on the dpm
- prior to installing screed replacement tiles
- NB Recording archaeologist will conduct final clean of formation and record findings photographically and in drawn form. (For more details on this activity, see archaeological control documents – to follow at tender stage.)

**270 FOUNDATIONS GENERALLY:** Obtain instructions if the formation contains soft or hard spots or highly variable material.

**310 UNSTABLE GROUND:** Inform architect without delay if any newly excavated face will not remain unsupported sufficiently long to allow the necessary permanent construction work to be inserted.

**320 RECORDED FEATURES:** Do not break out old foundations, beds, drains, manholes, etc. except where agreed with archaeologist, architect and engineer. Backfill as specified on drawings.

**330 UNRECORDED FEATURES:** Where old foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered, do not disturb or enter and obtain instructions before proceeding.

**360 EXCESS WIDTH:** Backfill any excavations taken:

- Wider than required with the material specified for backfilling.
- Deeper than required with well graded granular material or lean mix limecrete.

#### **DISPOSAL OF MATERIALS**

**400 ITEMS OF ARCHAEOLOGICAL INTEREST:** The archaeological control documents notes the recording and archiving of items of archaeological interest. The following clauses address items outside of the scope of the archaeological control documents.

**410 SURPLUS SUBSOIL:** This is to be removed from site only if required and only after grading/filtering to remove possible sensitive archaeological material. Any material containing identifiable human remains must be retained on site for respectful re-burial in the new formations.

**420 WATER:** Keep all excavations free from water until formations are covered and below ground constructions are completed. However, some dampening down-of back-filled areas may be required during compaction to avoid unnecessary dust creation (see health and safety documents for details).

**430 GROUND WATER LEVEL:** Inform the CA immediately if it is considered that the excavations are below the water table so that the ground water level can be determined.

**440 PUMPING:**

- Do not disturb excavated faces or the stability of adjacent ground or structures.
- Avoid flooding of the site, or adjoining property, by disposal of pumped water.
- Construct sumps clear of the excavations and fill as specified on completion

**FILLING**

**510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS:**

Do not import or use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling.

- Soluble sulphate content (SO<sub>3</sub>) of materials for filling under concrete slabs or within 1 m of substructures must not exceed one g/litre when tested to BS 1377:Part 3, clause 5 using a 2:1 water-soil extract. Submit test reports from a UKAS/NAMAS accredited laboratory demonstrating compliance of the proposed material(s).

**530 PLACING FILL GENERALLY:**

- Ensure that excavations and areas to be filled are free from loose soil, rubbish and standing water.
- Do not use frozen materials or materials containing ice. Do not place fill on frozen surfaces.
- Take all necessary precautions to avoid overloading of adjacent structures and to ensure stability. Place and compact fill against structures, membranes or buried services in a sequence and manner which will ensure stability and avoid damage.
- Plant employed for transporting, laying and compacting must be suited to the type of material.
- Lay differing materials separately so that only one type of material occurs in each layer.

**550 GEOTEXTILE SHEET:**

- Manufacturer and reference: Terram by Netlon or similar
- Jointing: taped
- Protect from exposure to light, except for a maximum of 5 hours during laying. Protect from contaminants, e.g. fuel oils.
- Before commencing laying, remove humps and sharp projections from the ground and fill hollows. Do not stretch or bridge the geotextile over irregularities and ensure that the specified lap is maintained.
- Take care to avoid damage to geotextile by vehicles, plant or by tipping material from excessive height. Do not allow construction traffic over geotextiles until covered by the full thickness of fill.

- Temporarily weight edges of sheet with fill and lay a maximum of 15 m of geotextile before covering to prevent wind uplift. Place fill as soon as possible after laying and within a maximum of 24 hours.
- Place geotextile patches over tears with minimum lap of 300 mm beyond extent of damage and cover immediately to retain in place.

**625 COMPACTED GENERAL FILLING/EARTHWORKS:**

- Comply with Highways Agency 'Specification for highway works', Earthworks section, clauses 608,609,613-617 , Table 6/1 and Appendices 900,910 and 920. References to the 'Overseeing Organisation' are deemed to be to the architect and/or structural engineer referred to in Main Contract Preliminaries.

**700 BACKFILLING TO FOUNDATIONS:**

Clean recycled foamed glass aggregate:

Possible suppliers:

Dreieck Cheltenham (Bi-Foam)

Jurgen Baas

Director

Dreieck Cheltenham

07486 381191

jurgen.baas@yahoo.co.uk

Mike Wye & Associates Ltd

Buckland Filleigh Sawmills, Buckland Filleigh

EX21 5RN Devon

01409 281644

sales@mikewye.co.uk

<http://www.mikewye.co.uk/>

Ecolime

Mowthorpe Lane

Terrington

York

YO60 6PZ

01653 648566

sales@ecolime.co.uk

<http://www.ecolime.co.uk/>

Eden Lime Mortar

Edenholme

Great Musgrave

Kirkby Stephen

CA174DP Cumbria

017683 41291 or 07717400233

edenlimemortar@hotmail.co.uk

<http://www.eden-lime-mortar.co.uk/>

Samples to be supplied for approval before bulk order placed.

**Laying:** Spread and level clean foamed glass aggregate and thoroughly compact with a vibratory roller, vibrating plate compactor, vibro-tamper, power rammer or other suitable means, as agreed with the supplier.

**710** **HARDCORE** (to make up levels where foamed glass aggregate not required for insulation reasons)

- Granular material, free from harmful matter and excessive dust, well graded, passing a 75 mm BS sieve and in any one layer only one of the following:
- Crushed hard rock or quarry waste (other than chalk) with not more binding material than is required to help hold the stone together
- Crushed concrete, crushed brick or tile, free from plaster, timber and metal. Suggest remove
- Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay. Suggest remove
- Spread and level both backfilling and general filling in layers not exceeding 150 mm. Thoroughly compact each layer with a vibratory roller, vibrating plate compactor, vibro- tamper, power rammer or other suitable means.

## **E80 IN SITU LIMECRETE MIX**

For areas in the floor construction where such density might be required (eg infilling around discovered vault areas etc.)

To be read with preliminaries/general conditions/pricing document/drawings etc.

## **100 DESIGNATED MIX FOR FOUNDATION SLAB**

Generally:

100mm thick, limecrete comprising:

- one part NHL3.5 lime (ie. moderately hydraulic)
- three parts aggregate with polypropylene fibre

all as supplied by Messrs. TyMawr Lime:

Ty-Mawr Lime

Llangasty, Brecon

Powys, LD3 7PJ

tel: 01874 658000

fax: 01874 658502

e-mail: [tymawr@lime-org.uk](mailto:tymawr@lime-org.uk)

[www.lime.org.uk](http://www.lime.org.uk)

or similar approved supplier

## **125 SUBSTITUTION OF STANDARD FOR DESIGNATED MIXES:**

Not permitted.

## **PLACING AND COMPACTING**

### **630 UNDERLAY:**

Geo-textile located above foamed glass aggregate layers

### **640 CONSTRUCTION JOINTS:**

- to be agreed with architect and structural engineer

**650 CLEANING:** At time of placing ensure that all surfaces on which limecrete is to be placed are clean, with no debris, tying wire clippings, fastenings or free water.

### **680 PLACING:**

Record time, date and location of all pours.

Form test cubes and retain for later inspection.

- Place as soon as practicable after mixing and while sufficiently plastic for full compaction. After discharge from the mixer do not add water or re-temper mixes.
- Ensure that temperature of limecrete is not more than 30 degC in hot weather and not less than 5 degC in cold weather. Do not place against frozen or frost covered surfaces.
- Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
- Do not discharge from an excessive height or through reinforcement or other obstructions in a way which may cause uneven dispersal, segregation or loss of



ingredients, or adversely affect the formwork or formed finishes. Use suitable chutes or trunking where necessary.

- Place in layers no thicker than can be effectively compacted with the equipment being used, without delay between layers. Merge together by compaction.
- Do not use vibrators to make material flow horizontally into position, except where necessary to achieve full compaction under void formers and cast in accessories and at vertical joints.

## **CURING AND PROTECTION**

### **810 CURING:**

- Prevent surface evaporation from limecrete throughout the period(s) specified below by:
- Retaining formwork in position and, if necessary, covering surfaces immediately after striking, and
- Covering top surfaces immediately after placing and compacting each bay, removing covering only to permit any finishing operations and replacing immediately thereafter.
- Maintain surface temperature above 5° throughout the periods specified below or four days, whichever is the longer
- Maintain detailed records of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep on site, available for inspection.

### **822 CURING PERIODS:**

keep newly laid limecrete protected from:

- foot traffic for 2-3 days
- all other plant and loads, 2-3 weeks

### **840 PROTECTION: Prevent damage to limecrete, including:**

- Surfaces generally: From indentation and other physical damage.
- Surfaces to be exposed in the finished work: From dirt, staining, rust marks and other disfiguration.

## **J42 RUBBER ROOFING MEMBRANE TO ROOF OF ENTRY SPACE**

### **100 EPDM membrane:**

Firestone RubberCover™ EPDM membrane 1.1 mm

100% cured single roofing membrane made of a synthetic rubber Ethylene Terpolymer.

Preparation: Substrates need to be clean, smooth, dry and free of sharp edges, loose or foreign materials, oil, grease and other materials that may damage the membrane. All surface voids greater than 5 mm wide shall be properly filled with an acceptable fill material.

Application Allow the membrane to relax for approximately 30 minutes before adhering it to the substrate. Install the RubberCover EPDM membrane in accordance with the installation instructions and details.

Coverage The dimensions of the membrane are calculated to cover the substrate and possible upstands. Provide an additional length (150 mm) at upstands for easy manipulation.

Characteristics Physical

Elastomeric membrane with a good combination of high elasticity and tensile strength.

Excellent resistance to UV and ozone.

Excellent slip resistance for maintenance access

Retains its elasticity even at temperatures as low as -45°

Resists to temperature shocks up to 130°C.

Excellent resistance to alkali rains, less resistant to oil products. Contact with mineral and vegetable petroleum-based products, hot bitumen and grease must be avoided.

- Firestone Building Products Europe

Firestone Building Products

Premier Park, Road One,

Winsford Industrial Estate,

Winsford, Cheshire, CW7 3PH

tel: 01606 552026

**110 ADVERSE WEATHER:** General: Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area. Unfinished areas of roof: Keep dry and protect edges of laid membrane from wind action.

**120 INCOMPLETE WORK:** End of working day: Provide temporary seal to prevent water infiltration. On resumption of work: Cut away tail of membrane from completed area and remove from roof.

**130 SUITABILITY OF SUBSTRATES:** Surfaces to be covered: Secure, clean, dry, smooth, free from frost, contaminants, voids and protrusions. Preliminary work: Complete, including: - Grading to correct falls. - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints. - Fixing of battens, fillets and anchoring plugs/ strips. Moisture content and stability of substrate: Must not impair integrity of roof.

**140 DETAILS:**

Include for all flashings, junctions and weatherings at any penetrations, using proprietary components from Firestone.

**150 COMPLETION**

Roof areas: Clean. Outlets: Clear. Flood test

Work necessary to provide a weathertight finish: Complete. Storage of materials on finished surface: Not permitted. Completed membrane: Do not damage. Protect from traffic and adjacent or high level working.

**L10 DOORS/ROOFLIGHTS**

To be read with Preliminaries/ General conditions.:

**100 SITE DIMENSIONS**

Procedure: Before starting work on designated items, take accurate site dimensions to record on shop drawings, for approval prior to manufacture of specialist items.

**110 ROOF LANTERN TO ENTRY SPACE**

Dodecagonal roof lantern (twelve sided), using proprietary glazing bar system such as:

Lonsdale: Spanguard: self-supported system

Extruded aluminium framing bars

Polyester powder coated to BS6496, dark grey RAL 7016 colour, matt finish.

Glazing: Double glazed units, 18.4mm thick: ie: inner pane, 6.4 laminate, 6mm spacer, upper pane 6mm toughened, no tint.

Lonsdale Ltd.

Unit 40 Millmead Industrial Centre

Millmead

London N17 9QU

tel: 0208 801 4221

email: info@lonsdalemetal.co.uk

**120 NEW GLAZED DOORS TO ENTRY SPACE**

Technal 'CD door system'

Extruded aluminium framing bars

Polyester powder coated to BS6496, dark grey RAL 7016 colour, matt finish.

Glazing: Double glazed units, 18.4mm thick: ie: inner pane, 6.4 laminate, 6mm spacer, upper pane 6mm toughened, no tint.

Technal

Hydro Building Systems Ltd.

The HBS Centre

Silkwood Park

Wakefield WF5 9TG

www.technal.co.uk

Ironmongery. manifestation and signage: TBC

**K13 RIGID SHEET FINE LININGS/PANELLING – for new joinery elements**

To be read with preliminaries/general conditions/pricing document/drawings etc.

**110 OAK JOINERY TO NEW STORAGE CUPBOARDS ETC. and for PANELLING TO NORTH SIDE OF ENTRY SPACE**

Battens/noggin where required: Softwood free from decay and active insect attack and with no knots wider than half the width of the section.

Finished size: as shown on the drawings noted above

Materials generally: To BS EN 942.

Wood species: Best quality selected European Oak

Class: J2 and J10 for high quality joinery items

Panels: solid oak to match framing members

Moisture content on delivery: 9-12%.

Finish (to match approved sample): stained down to mid-oak finish as directed by architect, oil finished.

**PRELIMINARY/GENERAL REQUIREMENTS**

**250 PROTECTION:**

Do not deliver components to site and do not remove protective packaging/coverings until immediately before required for fixing.

Stack boards and panels flat on bearers and separated by spacers where necessary to prevent damage to or from projections.

Keep components and completed linings/panelling clean and dry, and protect from physical damage until Practical Completion.

**260 ENVIRONMENT:**

Do not start work specified in this section before building is weathertight, wet trades have finished their work and the building is well dried out.

Before, during and after fixing, temperature and humidity must be maintained at levels approximating to those which will prevail after building is occupied.

**270 HEATING:**

Agree arrangement for operating the heating installation up to the date of Practical Completion of the Works to ensure that excessive moisture movement of linings/panelling does not take place.

**FABRICATION/FIXING/FINISHING**

**310 ACCURACY OF FABRICATION:**

Exact site dimensions must be taken as necessary before starting fabrication. Report any discrepancies to CA without delay and obtain instructions before proceeding.

Permissible deviations for panels:

Length:  $\pm 1.5$  mm.

Width:  $\pm 1.5$  mm.

Squareness:  $\pm 1.5$  mm in 1 m (taking the longer of 2 sides at any corner as a baseline and measuring the deviation of the shorter side from the baseline perpendicular).

Flatness (of panels with a core thickness of 12 mm and over, as delivered to site):  
±1 mm under a 600 mm straightedge.

Finished dimensions of components must be such that the required accuracy of the finished linings/panelling and joints can be achieved.

**350 FIXING LININGS/PANELLING:**

Set out accurately, true to line and level, free from undulations and lipping, with lines and joints aligned, straight and parallel unless specified otherwise.

Make adequate allowance for future moisture and temperature movement of boards.

Fix panels securely to prevent pulling away, bowing, or other movement during use.

Trims, wherever possible, to be in un-jointed lengths between angles or ends of runs. Where running joints are unavoidable obtain approval of location and method of jointing. Mitre angle joints unless specified otherwise.

**480 CLEAR FINISHES:**

Fill nail holes with stopping coloured to match timber. Scrape, sand and fill wood surfaces to give a smooth, closed surface free from sanding marks.

Apply finish in clean, dust-free conditions to give smooth surfaces free from brush-marks, nibs, sags, runs and other defects.

**Q25 STONE + TILE PAVINGS to new heated substrate**

see architects' drawing 1196-01-303 - Plan as proposed (key plan) for general arrangement

**GENERALLY**

**100 EXISTING PAVINGS:**

Existing limestone pavings are to be lifted, with suitable material re-used wherever possible, grouped together in the Lady Chapel.

Existing ledger stones in the welcome area are to be carefully lifted and re-laid in a new pattern within the same area.

**110 NEW PAVINGS:**

These are to be used throughout the nave and aisles and in the welcome area.

**120 NEW FLOOR TILES:**

These will be employed in the new infill flooring areas in the Crossing/Choir space.

**130 HEATED SUBSTRATE:**

See specification section **T90 HEATING SYSTEMS** for details of build-up in readiness to lay pavings.

**200 NEW PAVINGS – TYPE AND SOURCE:**

for main paving areas: Ancaster Weatherbed Buff

for detail areas (such as Holy Trinity emblem and borders): Ancaster Weatherbed Buff

- Supplier:

Glebestone

Stubbs Hall Farm

Wakefield Road

Hampole

Doncaster

South Yorks. DN6 7EZ

contact: Nick Bristow

Yard. 07945 414130

Mobile: 07711 589133

email: n.bristow@glebestone.com

obtain 2m<sup>2</sup> of sample of main paving and 1m<sup>2</sup> of darker stone type for border work for approval before ordering

finish: dimensioned stone to be supplied, to tolerance of  $\pm$  2mm on plan and thickness – dimensioned drawings to be developed by selected contractor using architects' drawings as a base.

thickness: nom.40mm

bedding: lime mortar as specified in section Z21

**210 NEW GEOMETRIC AND INLAID TILES:**

new ceramic tiles to replicate designs of existing C19th tiling in Chancel space, for new infill floor areas in Crossing/Choir space:

- Suppliers:

Craven Dunnill Jackfield Ltd  
Jackfield Tile Museum  
Ironbridge Gorge  
Shropshire TF8 7LJ  
tel: 01952 884 124  
email: sales@cravendunnill-jackfield.co.uk

Heritage Tile Conservation Ltd.  
The Studio, Cwm Gweld  
Stone Acton Lane, Wall under Heywood  
Church Stretton  
Shropshire SY6 7DS  
tel: 01694 771527  
mob: 07817 704583  
email: heritagetile@msn.com

Bedding: Solid adhesive bedding onto terracotta layer of underfloor heating system.  
Cork-pack edges where required.

**500 LIME FOR MORTAR BEDDING AND POINTING:**

See section Z21

**600 LAYING NEW PAVINGS (where required)**

- Cut paving units neatly and accurately with a masonry saw to give neat junctions with edgings and adjoining finishes.
- All visible surfaces to be 'honed', to remove saw marks and provide presentable faces. The stones are NOT to be polished. Samples to be offered to architect and client for approval before ordering.
- Lines and levels of finished surface to be smooth.
- Bed paving units firmly so that rocking does not occur or develop.
- Finished paving to have an even overall appearance with even joint widths and free of mortar and sand stains.

**610 LEVELS OF PAVING:**

Permissible deviation from specified levels to be  $\pm 2$  mm generally.

**620 PROTECTION:**

- Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Do not overload pavings with stacks of materials.
- Handle pavings with care to avoid damage to corners and arrises, and to previously laid paving.



- Pavings bedded on mortar must be kept free from pedestrian traffic for 5 days and vehicular traffic for 10 days after laying.
- Restrict access to paved areas as necessary to prevent damage from site traffic and plant.

### **SLAB/FLAG PAVING**

#### **630 FULL MORTAR BEDDING:**

- Mortar: As Section Z21.
- Mix:
- Consistency: semi-dry
- Sand: To BS 882, grading limit M or F.
- Spread and level mortar to give the specified average nominal thickness after bedding of slabs/flags.
- Rake bed to provide corrugated surface.
- Lay slabs/flags on full mortar bed and bed down to line and level with a maul.
- Note: Full-bedding is essential to allow pavings to accept loadings during future works.

#### **640 NARROW JOINTS USING MORTAR POINTING**

Jointing material: hydraulic lime mortar as section Z21, joints to be nominally 4mm

- When the paving is dry, brush dry mortar into joints, ram firmly home with pointing iron, then repeat the operation until the joints are filled solid and flush. Brush off all residue without delay. Do not rebate joints.
- Do not wet the paving: allow the joints to hydrate naturally. Immediately after filling joints, cover paving with polyethylene sheeting for three days to protect.
- Leave perimeter joint open, to allow floor to 'move' following completion. Allow for pointing of these joints at expiry of maintenance period.

Joint width: nominally 5mm

**T90 HEATING SYSTEMS – for information in relation to builder’s work**

**10 UNDERFLOOR HEATING SYSTEM COMPLETE:**

- System Ideal by Jupiter, using screed replacement tile, system A40

**20 SUPPLIER AND INSTALLER:**

- JUPITER Heating Systems Ltd.  
Unit 1 The Barns  
Pennypot Lane  
Chobham, Surrey, GU24 8DJ  
tel: 1276 859066
- contract: Chris Kollmer

**30 INSULATION ETC.:**

- Integrated insulation layer and pipe support: 30mm thick, laid onto secure sub-base formed using recycled foamed glass layer
- Pipe – Jupiter multi-layer PE-RT pipes, laid continuously between manifolds.

**40 SCREED REPLACEMENT TILE:**

- 20mm thick terracotta tile made by Creaton, supplied by Jupiter as above.
- laid loose over insulation and pipe layer
- adhered together using adhesive specified by manufacture
- SRT provides substrate for direct bonding of stone pavings above (see Q25) using lime-based mortar. Terracotta surface requires ‘priming’ before stone floor is laid.

**50 DETAILED SYSTEM DESIGN**

- Jupiter will be required to provide full design details for approval before construction, including, but not limited to:
  - full working drawings showing layout of individual heating pipe loops, manifold positions etc., working with architect and building services engineer on the sequencing of the work in phases
  - proposals to ensure that the floor is fully supported to take not only its own weight but applied loads from scaffolding and/or hydraulic access hoists in future, ensuring the integrity of the floor system including the stone pavings above
  - close liaison with the selected consultant building services engineer regarding heating plant (envisaged as new boilers in the existing location)
  - controls and connections to ensure operation in concert with other modes of heating
  - method statements and risk assessments for working within the church building, alongside other trades

**60 BUILD-UP:**

- Jupiter to supply and install the following items (not an exhaustive list)
  - crushed slate levelling layer, onto the dpm layer
  - 20mm Fermacell board layer
  - insulation/pipe-bearing layer
  - all necessary pipe loops, manifolds, controls etc.
  - terracotta SRT layer
- NB The remainder of the build-up will be responsibility of the main contractor.

## **V90 ELECTRICAL SYSTEMS**

To be read with preliminaries/general conditions/pricing document/drawings etc.

### **GENERAL**

## **100 ELECTRICAL WORKS**

### **110 FLOOR SOCKET ENCLOSURES:**

- Type 700 service outlet box
- size: 85mm deep, 200mm x 200mm on plan  
stainless steel finish with inset stone to cover  
by Cableduct Limited  
No.30 Selhurst Road,  
South Norwood  
London SE25 5QF  
Tel: 020 8683 1126  
[info@cableductuk.com](mailto:info@cableductuk.com)  
web: [www.cableductuk.com](http://www.cableductuk.com)
- Outlet plate type to be advised depending on AV and power needs
- In locations to be agreed

### **120 SINGLE FLOOR SOCKETS:**

- Individual lift-flap socket outlets (single gang)
- Stainless steel cover and socket plate with black inserts
- Located to match in closely with spacing of tiles at perimeter.  
MK Electric Albany Plus 13A 2 Gang Plug Socket Floor Mounted with spring loaded cover 102x146mm

## **Z21 MORTARS**

for masonry pointing and also for pointing pavings etc.

To be read with preliminaries/general conditions/pricing document/drawings etc.

### **10 LIME MORTAR MIX FOR POINTING TO PAVINGS**

- 1:3 hydraulic lime:aggregate
- hydraulic lime from approved sources, see clause 30 below
- aggregate: graded sand/stone dust, to colour to match pavings
- A sample section of pointing will be carried out before a mix is agreed for the remainder of the works.
- Alternative mortar mixes (for example using putty lime) may be used, with the prior approval of the architect.

### **25 SAND FOR MORTAR**

- To BS 1200 unless specified otherwise.
- Sand for facework mortar to be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture.

### **30 LIME PUTTY**

- Use mature lime putty which has a minimum age of 3 years (essential). CA reserves the right to verify source and age of lime putty used for all repairs.
- Lime putty is to be have been made by slaking freshly burnt lime, with enough water to obtain a soft mass of putty. The slaking lime must be hoed and raked and stirred until the visible slaking reaction has ceased. Sieve to remove un-burnt lumps and coagulations using a 2 mm screen.
- Lime putty, with a shallow covering of water, to have been stored for a minimum period of three years.  
There is no upper limit to the storage period, providing the lime is properly 'knocked up' prior to use.
- Obtain lime form approved suppliers, in plastic bins, dated with date of slaking.
- Approved suppliers of lime:
  - ♦ Heritage Lime  
Henley Farm, Miserden, Stroud, Gloucestershire GL6 7HZ  
Tel: 01285 821751
  - ♦ The Lime Centre  
Long Barn, Morestead, Winchester, Hampshire SO21 1LZ  
tel: 01962 713636
  - ♦ Limebase Products Ltd.  
Walronds Park, Isle Brewers, Taunton, Somerset TA3 6QP  
tel: 01460 281921
  - ♦ Rose of Jericho Ltd.  
Westhill Barn, Evershot, Dorchester DT2 OLD  
tel: 01935 83676 fax: 01935 83676
  - ♦ The Traditional Lime Company  
Church Farm, Leckhampton, Cheltenham, Gloucestershire GL53 0QJ  
tel: 01242 525444
  - ♦ Ty-Mawr Lime Ltd.

Unit 12, Brecon Enterprise Park, Brecon, Powys LD3 8BT  
tel: 01874 611350

- ♦ Mike Wye & Associates Ltd.  
Buckland Filleigh Sawmills, Buckland Filleigh, Beaworthy, Devon EX21 5RN  
tel: 01409 281644

#### **40 HYDRAULIC LIME**

- Use hydraulic lime, from approved sources only.
- Approved suppliers of hydraulic lime:
  - ♦ Hydraulic Lias Limes  
Melmoth House, Abbey Close, Sherbourne, Dorset DT9 3LH  
tel: 01935 817220
  - ♦ The Lime Centre  
Long Barn, Morestead, Winchester, Hampshire SO21 1LZ  
tel: 01962 713636
  - ♦ Limebase Products Ltd.  
Walronds Park, Isle Brewers, Taunton, Somerset TA3 6QP  
tel: 01460 281921
  - ♦ Singleton Birch Limited  
Melton Ross Quarries, Barnetby, North Lincolnshire DN38 6AE  
tel: 01652 686000

#### **50 ADMIXTURES:** Do not use any admixtures.

#### **60 MAKING MORTAR**

- Measure materials accurately by volume using clean gauge boxes. Proportions of mixes are for dry sand; allow for bulking if sand is damp.
- By adding the sand to the lime putty, mix ingredients thoroughly to a consistency suitable for the work and free from lumps.
- Ensure 'coarse stuff' is well beaten, rammed and chopped to ensure the best mix.
- Do not add excess water to the mix. It is not required. By following the above instructions, excess water is not needed.
- Do not use an ordinary cement mixer for mixing. A traditional 'larry' or a paddle mixer may be used.
- Make up a large enough batch of mortar to complete work on each elevation at the commencement of works. This ensures consistency of mix, and also a mature coarse stuff.
- Store coarse stuff in air-tight containers, to allow for later knocking up when required.  
There is no upper limit for the storage period of coarse stuff if stored properly.
- Mortar is to be tipped out of the containers and the whole batch knocked up. Again, no excess water is required at this point.
- Keep plant and banker boards clean at all times.

#### **70 ALL LIME-BASED MORTARS**

- Are to be thoroughly protected from running or surface water for a minimum period of 36 hours after incorporation into the works.
- Unprotected work may require removal and re-instatement at discretion of the CA.

## **80 LIME-BASED MORTARS**

- Must not be used in adverse weather conditions, i.e. when outside air temperature is less than 1°C.
- Underfloor heating system must not be used to speed up the carbonation process.
- Work in cold weather shall be protected to ensure a minimum temperature of 5°C is maintained in the work when laid, and must be maintained for at least seven days after use.
- In any case, work with mortar shall cease at 2°C on a falling temperature and only re-commence on a rising temperature on 1°C, even when protected.
- No mortar plasticisers or anti-freezes may be used at any time.
- During any break in use of mortar, all work shall be protected against rain, frost and snow with waterproof coverings.
- Work in hot weather shall be permitted even when the air temperature adjacent to the work exceeds 25°C, so long as ambient humidity is kept sufficiently high. Avoid all draughts and hang wetted hessian on the outer scaffold. Protect the work at night with additional wetted hessian hanging slightly away from the work, this in turn to be covered by plastic sheeting.
- Wet hessian must not be allowed to blow against any of the work areas in order to avoid lime blooming.
- During any period where the temperatures exceed 25°C, all work less than three days old is to be kept moist and prevented from rapid drying out by using hessian and plastic sheeting as stated above.

## **90 CEMENT**

- Do not use cement of any type for lime-based mortar repairs.