CONSERVATION REPAIR/REINSTEMENT OF STORM/TREE DAMAGED MASONRY TO THE ORATORY | BIRDCAGE GARDENS | ALTON TOWERS

OUTLINE SPECIFICATION & METHOD STATEMENT

(to be read in conjunction with Drawings no.'s 0860 AL2.01-07)

1.0 PRELIMINARIES & GENERAL CONDITIONS

1.1 **PRELIMINARIES & GENERAL CONDITIONS:** allow for and comply with all General Preliminaries and Conditions and General Materials and Workmanship Specification including maintaining Quality Control on site, Site Progress Photographs, Small Plant & Tools and complying with CDM07 Regulations etc.

1.2 **PROTECTION, GENERALLY:** provide adequate protection to all parts of the works; existing structures and salvaged masonry & iron details etc. Provide temporary hardboard/plywood protection to existing floor finishes prior to salvage; and weather, especially wind, rain & frost, protection throughout the works; provide a weather-proof/covered materials storage area and masons work area/'banker' within the adjacent enclosed Birdcage Gardens.

1.3 **SCAFFOLDING:** provide a full scaffold/means of access/tressel (?) with ladders, gangways etc. to TG20:08 and BS EN 12811-1 and as necessary to complete the works and to comply with Health & Safety Regulations for the full duration of the works.

The scaffolding is to INCLUDE for the supply & installation of sheet protection to prevent falling masonry, reduce dust & debris, and provide weather, especially wind & frost, protection throughout the works. All sheet materials are to be fire retardant.

Extreme care must be taken when the scaffolding is erected, altered, adjusted and dismantled to protect the existing historic fabric and any fixtures or fittings from any damage caused by scaffold poles, boards and the like and the design and location of the scaffold is to be discussed and agreed with the architect on site beforehand to ensue no conflict with other site operations.

The scaffolding MUST be designed to be free standing and UNDER NO CIRCUMSTANCES SHOULD IT BE FIXED to the masonry structure. Scaffolding tubes/poles MUST finish at least 50mm from the walls and all pole ends MUST be protected with plastic end caps and all poles must be seated on timber pads to protect the ground/floor from damage.

1.4 **CLEANING/CLEARING UP:** remove debris, rubbish etc., and clean up etc. **on a daily basis** as works proceed with particular attention to leaving the site clean and tidy at the end of each week and in a presentable manner. Clean all surfaces upon completion.

1.5 **PROVISIONAL - MORTAR MIX SAMPLING & ANALYSIS:** Carefully take 2no. samples of existing mortar (exact locations to be agreed with architect on site) to establish the composition and mix proportions of the existing mortar mix(es), to include the following information:

- Composition of mortar, including Loss on Ignition Test
- Binder composition including hydrolicity
- Sand/aggregate grading
- Estimation of mix volume proportions

Submit to either, Womersleys Ltd., Walkley Lane, HECKMONDWIKE, WF16 0PG Tel. 01924 400651; CERAM, Queens Road, PENKHULL, Stoke-on-Trent ST4 7LQ tel. 01782 764444; or Heritage Testing Ltd., Unit 43, The Old Brickworks, Station Road, Plumpton Green, LEWES, East Sussex BN7 3DF tel. 01273 891785, for analysis to help determine mortar consistents and mix proportions for repointing of existing brickwork. Inform architect of results and provide a copy of the Composition of Mortar Report and Examination Report and estimate of volume proportions. New mortar mix will be determined by the results of this analysis and is to be agreed with the project architect and local authority conservation officer before work proceeds. Include for taking samples, delivering to testing laboratory, the cost of analysis and providing copies of results for architects comments.

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2.0 OUTLINE MATERIALS & WORKMANSHIP SPECIFICATION

C41 REPAIRING/RENOVATING/CONSERVING MASONRY

GENERALLY/PREPARATION

110 SCOPE OF WORK:
Replacing/rebuilding/repairing external natural White Hollington sandstone ashlat walling and carved details to storm/tree damaged Oratory structure to match existing; and raking-out & re-pointing open jointed surviving masonry as required and as directed on site by Architect.

120 REVIEWING SCOPE OF THE WORK
- Inspect each relevant area of masonry with the Architect to confirm the type and extent of the work.
- Mark clearly on face any masonry units or parts of units that are to be cut out and replaced.
- Identify each masonry unit that is to be removed, replaced or repaired with a code number cross-referenced to drawings/photographs.
- **Adequately record the characteristics of existing masonry in areas affected by repair works. Use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.**
- Obtain samples and specialist analysis of existing mortar mixes to inform choice of new mixes

125 REDUNDANT FITTINGS/FIXINGS: generally all redundant fittings/fixings, and as identified by the Architect on site are to be removed from the masonry carefully, causing as little disturbance to the surface as possible.

130 REMOVAL OF PLANT GROWTHS FROM MASONRY
- Carefully remove plants, root systems and associated soil/debris from joints, voids and facework.
- Use dampened temporary timber wedges or other approved method to assist removal of roots. Where growths cannot be removed completely without disturbing masonry treat with herbicide to manufacturer's instructions: **ROUNDUP PRO BIACTIVE** Glyphosate-based herbicide (Monsanto UK Limited., Cambridge, CB2 9LQ tel. 01223 849200)
- Where a plant is to remain in the ground, cut out a section of stem as close to the ground as possible. Peel bark back from stump and apply an approved herbicide paste. Leave stump to wither.

WORKMANSHIP GENERALLY

151 POWER TOOLS FOR REMOVAL OF MORTAR are NOT permitted.

155 PUTLOG OR ANY MECHANICALLY-FIXED SCAFFOLDING will NOT be permitted.

160 PROTECTION OF MASONRY:
- Prevent overstressing of masonry units during transit, handling, storage and fixing. Lift units at designed lifting points where provided.
- Store masonry units on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances.
- Prevent damage to all masonry, particularly arrises, projecting features and delicate, friable surfaces. Protect with suitable non-staining slats, boards, etc. which must be removed at Practical Completion.
- Prevent mortar/grout splashes and other staining and marking of masonry.

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165A STRUCTURAL STABILITY: Ensure that the stability of the surviving/intact masonry is maintained throughout the work. Report to the CA any defects, including signs of movement that are exposed or become apparent during the removal of masonry units.

170 DISTURBANCE TO RETAINED MASONRY:
- Ensure that retained masonry in the vicinity of repair works is disturbed as little as possible.
- Do not cut or adjust existing retained masonry to accommodate new or reused units without approval.
- Prop or wedge retained loose masonry units or those that are vulnerable to movement during repair works, so that they are firmly and correctly positioned.

180 OPERATIVES: Use operatives who are skilled and experienced with the materials and procedures required for the types of repairs specified. Provide evidence of their training and previous experience to the Architect on request.

185A ADVERSE WEATHER & PROTECTION OF MORTARS:
- Weather: Do not use NHL mortars in wet or frosty weather or when imminent. FROST RESISTANT ADDITIVES WILL NOT BE TOLERATED AS THEY CONTAIN SALTS WHICH WILL AFFECT THE MORTAR.
- Do not use frozen materials and do not lay masonry units on frozen surfaces.
- Do not bed masonry units or re-point in natural hydraulic lime:sand mortars when the air temperature is at or below 5°C and falling or below 3°C and rising. Where it is anticipated that the temperature in the first few days might fall to 5°C, or lower, the structure should be protected with damp hessian to preserve the moisture and with sufficient cover, **using bubble wrap or insulating material, to protect the structure itself and the mortar against frost.**
- Maintain temperature of the work above freezing until mortar has fully set.
- **Protect masonry against rain and snow** by covering when precipitation occurs and at all times when work is not proceeding.
- **Prevent masonry from drying out too rapidly** in both hot conditions and from the effects of the wind by covering with damp hessian as soon as possible to maintain moisture and then with additional cover to prevent the hessian drying out. For best results the moist conditions should be maintained, whilst allowing air movement over the mortar, for as long as is practicable.
- Rake out and replace mortar damaged by frost and where instructed, redo the repair.

190 REFERENCE SAMPLE(S): Prepare up to 3no. 0.5sq.m sample panels of the specified mortar mix for approval of the architect/client before proceeding with the remainder. Protect from adverse weather and damage.

195A SAND SAMPLES
- Approval: Before placing order, submit for approval representative samples of: sand to be **good quality, washed, well graded coarse or fine sharp sand to suit application/joint width** as Z21/320A i.e. **'Croxden M2 Concreting Sand'** from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393 or **'Mercaston Washed Concreting sand'** from Hanson's Mercaston quarry, Ashbourne tel. 01509 503161; fine sharp sands to contractors proposals ie. 'Croxden Asphalting Sand' from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393, Exact choice of sand to be agreed/advised with the architect before commencing work.

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MATERIALS/ PRODUCTION/ ACCESSORIES

215 SAMPLES
- Inspection: Make arrangements for the inspection of samples of the following materials:
  - New/reclaimed natural **White Hollington sandstone,** locally sourced from one of the Hollington quarries to match existing
- Samples: Representative of the range of variation in appearance for each type of material to be matched.
- Appearance: Obtain approval before placing orders with suppliers or proceeding with production.

220 RECORDING PROFILES
- Profiles: Take measurements from existing masonry units, as instructed, to allow replacements to be matched accurately.
- Recording in situ: If there are no suitable joints for inserts, seek instructions.
- Drawings and templates: Prepare as necessary, clearly and indelibly marked to identify use and location.

235 INSPECTION OF MASONRY UNITS
- General: Before despatch to site, inspect and check completed units for:
  Match with approved samples.
  Compliance with drawings and specification.
- Give notice: At appropriate stages in production to allow inspection of masonry units before delivery to site.

240A STONE
- Type: Natural **White Hollington sandstone,** locally sourced from one of the Hollington quarries (Staffordshire Stone Ltd. or Oldhams ?) to match existing to match existing in geology/type, colour, texture, bed orientation etc.
- Requirements: Free from vents, cracks, fissures, discolouration, or other defects which may adversely affect strength, durability or appearance. Thoroughly seasoned, dressed and worked in accordance with shop drawings prepared by the supplier.
- Finish: Finished to match existing.
- Supplier: Contractors choice, to be approved.

245 REPLACEMENT STONE UNITS
- Minimum bed depths and agreed face lines in relation to existing work: Maintain. Make suitable allowances for any final finishing carried out in situ.
- Sizes and profiles: To match existing masonry; existing joint widths maintained.
- Sinkings for fixings and joggles: Accurately aligned and positioned in relation to existing masonry. Provide sinkings for lifting devices.
- Marking: Each block/ dressing clearly marked on a concealed face to indicate the natural bed and position in the finished work.

250 ORIENTATION OF STONE
- Natural bed:
  In plain walling: Horizontal
  In projecting stones and copings: Vertical and at right angles to wall face.
  In arches: At right angles to line of thrust.

255 ASHLAR BLOCKS/DRESSINGS
- Cutting and dressing stone: To true and regular surfaces, free from hollow or rough areas.

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DISMANTLING/REBUILDING

310 DISMANTLING MASONRY FOR REUSE
- Masonry units to be reused: Remove carefully and in one piece.
- Treatment: Clean off old mortar, organic growths and dirt, and leave units in a suitable condition for rebuilding.
- Identification: Mark each unit clearly and indelibly on a concealed face, indicating its original position in the construction. Transcribe makings to drawings/ photographs.

320 REBUILDING AREAS OF COLLAPSED/MISSING/DEFECTIVE STONEWORK - AS REQUIRED/DIRECTED ON SITE BY ARCHITECT
- Replacement materials: new/used salvaged sandstone as clause 240A as agreed on site with architect.
- Mortar: pre-bagged natural hydraulic lime (NHL 3.5) : sand, as section Z21 (hydraulic lime available from The Traditional Lime Co. tel. 01242 525444, Markovitz Builders Merchants Ltd., Leek tel. 01538 384141, or contractors choice)
- Mix: 1:2.5-3, to match existing, to architects approval. Example: **'Croxden M2 Concreting Sand'** from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393 or **'Mercaston Washed Concreting sand'** from Hanson's Mercaston quarry, Ashbourne tel. 01509 503161; Exact choice of sand to be agreed/advised with the architect before commencing work.
- Sand source/ type: good quality, well-graded washed sharp coarse sand (particle size 3.35mm to 0.075mm); fine sharp sands to contractors proposals ie. 'Croxden Asphalting Sand' from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393, Exact choice of sand to be agreed/advised with the architect before commencing work.
- Rebuilding: To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work/ backing masonry, as appropriate.
- Joint surfaces: Dampen joint surfaces to control suction as necessary. Lay on a full bed of mortar and ensure that all joints are filled. Ensure that no mortar encroaches upon exposed faces.
- Exposed faces: Remove mortar/grout splashes immediately.
- Joints: flush pointed as clause 820.
- Bond: to match existing, to suit situation
  Other requirements: **After initial setting and before fully dry, revisit area of pointing and carefully 'beat back' with a stiff bristle 'churn brush' until the mortar is recessed by approx. 1mm BEHIND FACE OF ADJACENT STONES.** DO NOT SMEAR ADJACENT MASONRY.
- Weather: Do not use NHL mortars in wet or frosty weather or when imminent. Frost resistant additives will not be tolerated as they contain salts which will affect the mortar.

TOOLING/ DRESSING STONE IN SITU

450 WEATHERING LEDGES AT JOINTS
- Locations: Where stones project or are recessed.
- Requirement: Carefully weather the ledge, to approval.
- Method: Suitably graded carborundum blocks or tooling as appropriate.

455 DESCALING STONE
- Requirement: Carefully remove loose scaling and powdering from stones to the extent agreed.
- Method: Suitable natural bristle 'churn' brushes or carborundum blocks. **Do not use wire brushes.**

458 REDRESSING STONE
- Requirement: Carefully dress back stones to the extent agreed.
- Method: Suitably graded carborundum blocks or tooling as appropriate.

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POINTING/REPOINTING

810A PREPARATION FOR REPOINTING:

- Work from the top of the wall downwards.
- Remove loose or cracked mortar ONLY, carefully and without damaging adjacent masonry, arrises or widening joints. Form a neat recess of depth **not less than 30mm** or twice the thickness of the joint.
- When mortar beyond this depth is loose and friable and/or cavities are found **seek instructions.**
- Remove dust and loose debris and **flush out with clean water.**
- Dampen joints to control suction as necessary.

820 RE-POINTING OPEN-JOINTED STONEWORK TO SURVIVING/REMAINING WALLING - AS DIRECTED ON SITE BY ARCHITECT)

- Preparation of joints: as clause 810
- Mortar: pre-bagged **natural hydraulic lime** (NHL 3.5) : sand, as section Z21 (hydraulic lime available from The Traditional Lime Co. tel. 01242 525444, Markovitz Builders Merchants Ltd., Leek tel. 01538 384141, or contractors choice)
- Mix: 1 : 2.5 - 3 (NHL : Sand) by volume
- Sand source/type: good quality, well-graded washed, sharp coarse sand (particle size 3.35mm to 0.075mm) ie. 'Croxden M2 Concreting Sand' from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393, or **'Mercaston Washed Concreting sand'** from Hanson's Mercaston quarry, Ashbourne tel. 01509 503161; or other to architects approval
- Joints: Finish mortar joints flush, approx. 1mm behind face of stonework.
- Other requirements: mortar to be carefully 'tamped' into the joint with a pointing iron and not trowelled which leaves the faces smeared. **After initial setting and before fully dry, revisit area of pointing and carefully 'beat back' with a stiff bristle 'churn brush' until the mortar is recessed by approx. 1mm BEHIND FACE OF ADJACENT MASONRY.** DO NOT SMEAR ADJACENT MASONRY.
- **Allow for raking out & pointing joint depths up to 50mm deep when pricing**
- Weather: Do not use NHL mortars in wet or frosty weather or when imminent. Frost resistant additives will not be tolerated as they contain salts which will affect the mortar.

840A POINTING WITH TOOLS/IRONS:

- Press mortar well into joints using pointing tools/irons that fit into the joints, so they are fully filled.
- Ensure that no mortar encroaches/smears upon the face of the masonry. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly as specified (with a 'recessed key' type joint NOT 'weatherstruck') generally to full face of stonework. **After initial setting and before fully dry, revisit area of pointing and carefully 'beat back' with a stiff bristle 'churn brush' until the mortar is recessed by approx. 1mm behind face of adjacent stones.**

870 ADVERSE WEATHER & PROTECTION OF MORTARS:

- UNDER NO CIRCUMSTANCES re-point in natural hydraulic lime:sand mortars when the air temperature is at or below 5°C and falling or below 3°C and rising. Where it is anticipated that the temperature in the first few days might fall to 5°C, or lower, the structure should be protected with damp hessian to preserve the moisture and with sufficient cover, **using bubble wrap or insulating material, to protect the structure itself and the mortar against frost** FROST RESISTANT ADDITIVES WILL NOT BE TOLERATED AS THEY CONTAIN SALTS WHICH WILL AFFECT THE MORTAR.
- Maintain temperature of the work above freezing until mortar has fully set.
- **Protect re-pointed walls against rain and snow** by covering when precipitation occurs and at all times when work is not proceeding.
- **Prevent re-pointed walls from drying out too rapidly** in both hot conditions and from the effects of the wind by covering with damp hessian as soon as possible to maintain moisture and then with additional cover to prevent the hessian drying out. For best results the moist conditions should be maintained, whilst allowing air movement over the mortar, for as long as is practicable.
- Rake out and replace mortar damaged by frost and where instructed, redo the repair.

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G20 CARPENTRY REPAIRS TO ROOF STRUCTURE (AS REQUIRED/DIRECTED BY ARCHITECT ON SITE)

02 TIMBER PROCUREMENT

- Timber (including timber for wood based products): Obtained from well managed forests/ plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

05A STRUCTURAL SOFTWOOD TO ROOFS

- Species: treated Baltic/Nordic Redwood - *Pinus sylvestris* - Deal, Memel, Pine etc. Third Party Certified from a sustainable source
  Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Timber of a target thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Strength class to BS EN 338: C16 & C24
- Treatment: Organic solvent impregnation to section Z12#

10A UNGRADED SOFTWOOD GENERALLY

- Species: treated Baltic/Nordic Redwood - *Pinus sylvestris* - Deal, Memel, Pine etc. Third Party Certified from a sustainable source
- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Sawn generally, as required
- Treatment: Organic solvent impregnation to section Z12

30 SELECTION AND USE OF TIMBER

- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.
- Notches and holes: Position in relation to knots or other defects such that the strength of members will not be reduced.
- Scarf joints, finger joints and splice plates: Do not use.

35 PROCESSING TREATED TIMBER

- Cutting and machining: Carry out as much as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

40 MOISTURE CONTENT

- Moisture content of wood and wood based products at time of installation: Not more than:
  - Covered in generally unheated spaces: 24%.
  - Covered in generally heated spaces: 20%.
  - Internal in continuously heated spaces: 20%.

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41 BOLT/ SCREW ASSEMBLIES

- Designation: to existing timber roof structure
- Size: as required to match existing
- Coating applied by manufacturer: galvanised
- Nuts and washers: Material grade and finish to suit bolts
- Washer dimensions: Diameter/ side length of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.

50 ADDITIONAL SUPPORTS

- Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheet materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings.
- Material properties: Timber to be of adequate size and have the same treatment as adjacent timber supports.

M60 LIMEWASHING TO INTERNAL WALLS

900 Manufacturer: Either 'St. Astier Lime Paints' or 'Tradlym Wash W2' available from The Traditional Lime Co. tel. 01242 525444, or to contractors choice TBA with Architect
Colour(s): traditional natural (white) or pigmented to match existing, or as agreed with architect
Surfaces: new lime render to kiln hovel capping and to make good areas of previously limewashed, exposed brickwiork walls to Building H, southeast of kiln

901 PREPARATION:
- Sufficiently dry in depth, carefully remove any efflorescence salts, dust, particles, residues, dirt etc.
- Joints, cracks, holes etc.; Fill with lime mortar NOT proprietary fillers or stoppers.
- Thoroughly pre-wet all surfaces to be limewashed with last prewetting being one hour before application.

902 APPLICATION:
Stir the limewash really well bringing all settled material back to solution. Add no further water. Apply by 150mm wide copperbound flat brush. Charge the brush and apply in every direction in 450mm wide strips keeping the outside edge open. The transparent wash will dry opaque. **Apply up to five coats (min. three)**

Z21 NATURAL HYDRAULIC LIME : SAND MORTARS

10 MORTAR MIXES FOR HYDRAULIC LIME:SAND MORTARS

- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

25 SAND FOR LIME:SAND MASONRY MORTARS

- Sharp, well graded and conforming to the methods of sampling and testing and quality requirements of BS 882 or BS 1200, unless specified otherwise.
- Source(s)/type(s) of sand are specified elsewhere ie. **'Croxden M2 Concreting Sand'** from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393 or **'Mercaston Washed Concreting sand'** from Hanson's Mercaston quarry, Ashbourne tel. 01509 503161; fine sharp sands to contractors proposals ie. **'Croxden Asphalting Sand'** from Tarmac's Croxden Quarry, Cheadle tel. 01538 722393, Exact choice of sand to be agreed/advised with the architect before commencing work.

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60 MAKING MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mix proportions: Based on dry sand. Allow for bulking of damp sand.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
- Contamination: Prevent intermixing with other materials.

70 MAKING/USING HYDRAULIC LIME:SAND MORTARS GENERALLY:

- Use operatives who are skilled and experienced in the making and use of hydraulic lime:sand mortars. Provide evidence of their experience to the CA on request.
- Keep plant and banker boards clean at all times. Avoid contamination of hydraulic lime:sand mortar by other materials or by any set material (including Portland cement).
- Measure materials accurately by volume using clean gauge boxes or clean undamaged buckets.
- Do not mix mortar when the air temperature is at or below 5°C and falling or below 3°C and rising.
- Do not use frozen materials and do not lay masonry units on frozen surfaces. FROST RESISTANT ADDITIVES WILL NOT BE TOLERATED AS THEY CONTAIN SALTS WHICH WILL AFFECT THE MORTAR.
- Do not bed masonry units or repoint in natural hydraulic lime:sand mortars when the air temperature is at or below 5°C and falling or below 3°C and rising. Where it is anticipated that the temperature in the first few days might fall to 5°C, or lower, the structure should be protected with damp hessian to preserve the moisture and with sufficient cover, **using bubble wrap or insulating material, to protect the structure itself and the mortar against frost.**
- Maintain temperature of the work above freezing until mortar has fully set.
- **Protect masonry against rain and snow** by covering when precipitation occurs and at all times when work is not proceeding.
- **Prevent masonry from drying out too rapidly** in hot conditions and in drying winds by covering with damp hessian as soon as possible to maintain moisture and then with additional cover to prevent the hessian drying out. For best results the moist conditions should be maintained, whilst allowing air movement over the mortar, for as long as is practicable.

71 SITE PREPARATION OF HYDRAULIC LIME:SAND MORTAR:

- Thoroughly mix (dry) natural hydraulic lime powder with sand, first in the dry state and then with water. Follow the lime manufacturer's recommendations for each stage of the mix. Add only sufficient water to produce a workable mix.
- Use mortar within time limits recommended by the lime manufacturer. NHL 2.0 & 3.5 mortars can generally be re-worked, or 'knocked-up', for up to 24 hours and can improve workability (NHL 5.0 limes have a shorter 'knock-up' life).
- If the mix requires significant addition of water then it has reacted too far to be useable and must be rejected. Cover mortars intending to be re-worked to control water loss.

ALL WORKS TO BE CARRIED OUT USING MATERIALS & WORKMANSHIP COMMENSURATE WITH THE NATURE OF THE JOB AND TO BE IN ACCORDANCE WITH BUILDING REGULATIONS REGULATION 7, BS 8000 AND ALL RELEVANT BRITISH / EUROPEAN STANDARDS & CODES OF PRACTICE, MANUFACTURERS SPECIFICATIONS & RECOMMENDATIONS AND BE FIT FOR PURPOSE

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3.0 OUTLINE METHOD STATEMENT/SEQUENCE OF WORK

3.1 Establish a robust, 3-sided & roofed – scaffold/corrugated tin/tarpaulin/plywood – temporary covered storage and masons 'banking'/working area within the enclosed adjacent Birdcage gardens a good working distance away from the Oratory

3.2 With the architect in attendance the mason will carefully gather-up and sort the existing collapsed stones, marking them with numbers/letters using masons chalk/crayon to identify their most likely original position, cross-referencing to the architects record drawings and 'as existing' pre-December 2009 photographs

3.3 DANGER/WITH CAUTION : Carefully, to avoid risk of further un-controlled collapse, take-down existing unstable/temporarily propped north gable wall and displaced sections of ashlar walling generally to just above ground level, to make safe

3.4 Carefully lay-out, as best is practicable, each elevation on the ground to re-establish the relationship of each stone and decorative details etc., piecing-together individual stones to identify the full extent of damaged, destroyed or missing stones to agree full extent of repairs and quantity/size/shape of replacement/new stones

3.5 Record quantities, take detailed measurements/templates and record bed orientation etc. for replacement/new stones and indent repairs etc. and source new stones accordingly for cutting/tooling/carving on site

3.6 Once clearly marked-up and identified, the stones are to be carefully moved and stacked on timber pallets in a logical and methodical manner and stored in the temporary protection area

3.7 Methodically re-build structure re-using as much salvaged and repaired surviving original stones as possible, using an NHL lime mortar mix. and in accordance with the agreed materials and workmanship specification, using the marked-up, cross-referenced record drawings and photographs. New decorative carved cross gable apex finial details and internal corbel brackets etc. are to match the existing surviving details exactly

3.8 Salvage and repair – following an assessment with the architect and the carpenter on site – the existing natural slate/timber roof structure and repair/re-build as required in-situ upon the completion of the masonry structure with new Code 6 lead abutment flashings chased into existing raking bed joint, lead wedged and pointed up using an NHL lime mortar as specification

3.9 Prepare and Limewash internal ashlar wall surfaces as specification, to match existing

3.10 Salvage, carry out minor repairs, redecorate and re-fit existing painted pair of metal gates, hung on new stainless steel hinge pins resin-fixed to stonework door surround to match existing

3.11 PROVISIONALLY/SUBJECT TO AGREEMENT : In conjunction with the Architect and Alton Towers consider producing a temporary display/public information board explaining the situation and work to re-build The Oratory including possible historic and 'before damage' photographs and record drawings ?