

weston hall • weston on trent
discharge of planning condition 5:
confirmation of replacement stone for window repairs



weston hall
30 August 2019

WESTON HALL
WESTON ON TRENT

RE-ROOFING, STRUCTURAL REPAIRS & ASSOCIATED
WORK

**discharge of Planning condition 5:
confirmation of replacement stone for window repairs**

Revision	Date	Clauses amended
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First draft for comments	30/08/2018	
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C O N T E N T S

A	Introduction
B	Justifications and cross referenced material

A INTRODUCTION

- I.0 This document provides information relating to the confirmed replacement stone for window repairs proposed at Weston Hall, following several on site meetings and joint inspections with South Derbyshire District Council's Conservation Officers, as well as conversations via email correspondence.

B CONFIRMATION OF SPECIFICATION

Generally replacement stone is to be Hollington sandstone – chosen as the best stratigraphic match to the original stone, following best practice.

2.0 Specification extract:

“6.0 Masonry Works

6.1 Recording and Dismantling of Existing Facing/Dressed Stonework as Part of Repair

6.1.1 Prior to dismantling any stonework to allow repair etc., stones should be numbered with chalk or otherwise labelled in a manner agreed with the Architect. Adequate photographs should be taken of the numbered stones in situ to assist in correct reinstatement.

6.1.2 Stones should be removed with care and progressively.

- i/ Cut/rake out joints using fine toothed mason's saws and hooked blades to release the stone from surrounding work.
- ii/ Lever from cavity ensuring surrounding work is not disturbed.
- iii/ Support surrounding work with timber blocks until replacement or redressed stone is installed.
- iv/ Immediately notify Architect in the event any movement is detected.
- v/ Remove all loose material from cavity using a stiff bristle brush.
- vi/ Rinse out with minimal quantity of clean water immediately prior to placing new or redressed stone.

At high level stones should be laid out in order on the lift of the scaffold, which should have been designed to allow a working platform of adequate size as noted in the Preliminaries section. At low level stones should be laid out and stored on timber pallets.

6.1.3 Except where otherwise agreed by the Architect or where use of replacement stones has been agreed, stones should be reinstated in their original locations within the repair works.

6.1.4 On completion any labels should be removed or chalk marks brushed off.

6.2 Re-bedding Existing Masonry

6.2.1 Remove all loose particles from the surface of the stone (churn brush) by hand. Thoroughly dampen down all masonry before re-bedding allowing a period for any free water lying on surface of stone to dry out before applying mortar. In hot, dry weather sections of stone to be bedded should be immersed in water for up to ten minutes before allowing surface water to dry out for a short period immediately before bedding.

6.2.2 Stone to be bedded to follow line of existing (whether or not the existing is level or plumb) with joint thickness to correspond with that of surrounding masonry.

6.2.3 Lay stones on a full bed of mortar with all joints and voids filled. Where necessary use temporary lead or stainless steel distance pieces to ensure consistent joint width; remove when mortar is sufficiently strong.

6.2.4 Keep stonework clean during construction and until Practical Completion. Ensure that no mortar encroaches on face when laying. Turn back scaffolding boards at night and during heavy rain. Rubbing to remove marks or stains will not be permitted.

6.3 Preparation of Stonework for Repointing

6.3.1 Extent of all existing mortar to be removed to be agreed with Architect before proceeding with the work. Provisionally this is as shown on drawings.

6.3.2 Depth of raking out in preparation for re-pointing to be at least twice the height of the joint and, in any case, not less than 18mm. All loose mortar should be removed from the joint regardless of depth.

- 6.3.3 Lime-based mortar to be removed by hand by scraping (not striking) a sharp chisel or quirk across the joint, ensuring that the back of the joint is square. For fine stone joints a fine toothed saw or hooked blade may be used.
- 6.3.4 Any cement-based mortar to be removed by scraping with a chisel where mortar is loose. Where directed by Architect, firm/sound cement-based mortar to be removed with a hammer and chisel but otherwise should be left untouched. Chisels should be kept sharp, and removal should be carried out by a stonemason and with appropriate care to minimise damage to the existing stonework. Where very hard cement based mortars are encountered, the use of a drill may be permitted to break the back of joints in order to gain an initial purchase for a chisel: pilot holes should be drilled into the centre line of joints using an electric drill with a diamond tipped bit (6mm dia for a 10mm joint) on a low speed and low torque setting. Use of drilling of holes is subject to a test sample of the method to be approved by the Architect.
- 6.3.5 Do not use mechanical chisels, angle grinders, etc. to remove existing mortar.
- 6.3.6 Remove all loose particles from joints and all organic growth (lichen, moss, etc.) from area of stone immediately adjacent to joint (25mm nominal).
- 6.3.7 Thoroughly dampen down masonry with water before re-pointing with lime mortar allowing a period for free water to dry out. As necessary, repeat dampening down of unpointed areas as the work proceeds to ensure masonry is damp when re-pointed.
- 6.3.8 Allow for executing sample panels of pointing in the mortar mix approved to a standard approved by the Architect prior to commencing the works, including a sample area of pointing removal. Sample area of pointing removal and repointing are to be 0.5 metres square in area. Location of sample panels to be agreed with the Architect.

6.4 Repointing Stonework

- 6.4.1 Point up raked out joints ensuring that mortar is forced well into joints to fill all voids. When mortar is semi-set firmly tamp joints with a churn brush to remove laitance. Face of mortar to be finished flush with the face of surrounding stone stones in ashlar work.
- 6.4.2 Where joints are large (i.e. deeper or wider than 30mm), it will be necessary to point up in more than one application (to avoid slumping of mortar or excessive shrinkage) allowing each application to dry to a semi-set condition before applying more mortar.
- 6.4.3 Mortar joints to be finished slightly recessed to the face of the surrounding stone arris with surface of joint, robustly tamped with a churn brush when mortar is semi-set (i.e. when mortar surface can still be worked with a brush but without leaving brush marks in the surface of the mortar or smearing mortar onto surrounding stone) to re-compact the mortar and finish the joint.

6.5 Preparation of Mixes

- 6.5.1 Mortar mixed using a gauging box, mixes as described below.

6.5.2 Design mixes

[Mix A] Non-hydraulic Lime Mortar

Lime to be Singleton Birch Lime Putty or similar and approved.

Mortar to be mixed on site. For non-hydraulic mortar mix up enough lime/sand mortar at start of contract to complete the work set out in Schedule of Works, or in batch sizes to suit work stages. All coarse-stuff mortar (whether mixed on site or supplied to site) to be stored in plastic tubs (or dustbins) or on timber sheeting and protected from the weather and contamination by polythene sheeting/damp Hessian. Coarse-stuff to be remixed immediately before use.

[Mix B] Hot-mixed Mortar

Lime to be Singleton Birch or other approved fine ground quicklime powder. Mix proportion 1 quicklime to 3 sand subject to approval of samples. Use appropriate PPE and metal containers for mix. Mix by hand or, subject to training, pan mixers (not drum mixer).

Keep on site a suitable probe-type temperature gauge to allow safe monitoring of mix temperature. First mix the quicklime with damp sand and allow initial heat to dissipate (use temperature gauge to check) then form a dish in the mix and gradually add water, again allowing heat to dissipate, then mixing to achieve a workable mortar.

All operatives must have attended a training session for mixing and using hot-lime mortar before mixing or use (Nigel Copsey 07845 739594 or other approved/appropriately qualified trainer – training costs must be included in tender figure).

[Mix C] Hydraulic Lime Mortar

Lime to be hydraulic lime hydrate [NHL 2.0 or 3.5 as specified] from Singleton Birch/Hydraulic Lincolnshire Limes Ltd, Melton Ross Quarries, Barnetby, North Lincolnshire, DN38 6AE. telephone 01652 686000 or similar approved by the Architect.

6.5.3 Aggregates and inclusions for use in mortars (if specified in schedules)

Sand provisionally to be Baston plastering sand (Peterborough – Hanson Aggregates 0330 123 4505).

Grit to be clean sharp grit, provisionally Chichester No.1 Grit (Tarmac Quarry Products). The proportion for the addition of grit is to be confirmed through approval of samples.

Fine ground stone dust to pass through a 0.6mm sieve.

Pozzolan to be Trass provisionally added at a rate of 5% by volume to lime (Cornish lime 01208 79779 or other approved supplier).

Other inclusions to be introduced only on discussion and approval of the Architect, approval of suppliers and agreement of samples.

6.5.4 Samples and approvals

Prepare biscuits of mortar samples, samples of raking-out and repointing/consolidation as required in the Schedule of Works. Undertake in-situ samples in locations pre-agreed with the Architect. Await approval before implementing samples elsewhere in the works.

6.6 Repairs to Fractured Masonry

6.6.1 All repairs to masonry to be agreed with Architect before proceeding with the work.

6.6.2 Except where may be otherwise stated in Schedules of Work (Section F) fractures in dressed masonry to be pinned using threaded stainless steel stud 8mm diameter, in a hole drilled with an 8mm bit, unless otherwise directed. Pins to be positioned skew at an angle of between 45° and 60° to the face of the fracture and anchored in an annulus of epoxy resin, Sikadur or similar and approved, type as recommended by manufacturer as appropriate for this use.

6.7 Dowels and Cramps

6.7.1 Dowels and cramps are to be of Delta bronze or stainless steel as directed by the Architect. Approved manufacturers of dowels and cramps are Abbey Building Supplies Co., 213 Stourbridge Road, Halesowen, West Midlands B63 3QY; Ancon Building Products, President Way, President Park, Sheffield, S4 7URACS Stainless Steel Fixings Ltd, Cross Green Approach, Leeds, LS9 0SG. Stainless steel to be grade 1.4401 to BS EN 10088 and BS EN 10027.

6.7.2 Existing rusting iron cramps are to be carefully removed where accessible during the works or where directed in the schedules/drawings and replaced with new cramps in materials as specified to match the design of the originals or, where agreed with the Architect, to new design.

6.8 Protection

6.8.1 Store dressed stone clear of the ground, separate with resilient spacers, protect from inclement weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances. Prevent timber bearers, protective boards, etc. from staining facings in wet conditions by covering with polyethylene or tarpulins held off the face of the stone or separated by undyed hessian. Prevent damage

and disfigurement to stonework during the course of the works. Ensure that arrises and projecting features are protected using securely fixed slats, boards, etc. Remove at Practical Completion. Repairs to damaged components must not be undertaken without approval. Such approval will not be given where components are badly damaged or where the proposed repair will impair appearance or performance.

- 6.8.2 Refer to section C14 for requirements and limitations on masonry works in respect of inappropriate and inclement weather conditions.

6.9 Indent Repairs

- 6.9.1 Cut back existing stone to the minimum amount required to accept stone insert, removing decayed stone, cutting back a minimum of 20mm and back to sound stone using narrow chisels (maximum 10mm cutting edge) or sharp saw blades.
- 6.9.2 As specified on the drawings generally to a minimum thickness of 20mm.
- 6.9.3 Profiles of indents to follow that of the original line of the stone into which they are being inserted. Where possible the edges of the stone are to be formed so as to undercut or be dovetailed to the existing. Where indent repairs continue through a designed joint in the existing stone the inserts should be cut to respect the existing breaks in the stone, with joints pointed-up.
- 6.9.4 Unless otherwise directed, Indents to be pinned with a minimum of two 8mm threaded stainless steel pins set into holes drilled with an 8mm bit grouted and faced with neat lime putty slurry.

6.10 New Stone Dressings etc.

- 6.10.1 New stone to be pieced-in to follow line of coursing and perpends as existing with thickness of courses and perpends to correspond with existing. All voids between new stone and existing fabric to be packed thoroughly with mortar.
- 6.10.2 Avoid smearing mortar on face of stone. All mortar to be removed within one hour of stone being set in position.
- 6.10.3 Line of moulding/carving to stone dressing to be formed from templates/maquettes made by Contractor at no extra cost to be approved by Architect. Where there is no or limited evidence of the design of original stones/stones to be replace the Architect is to be consulted regarding the design of the new stones and the Contractor is to prepare templates/maquettes based on these recommendations.

6.11 New Stone Dressings and Ashlar Work - Tolerance

- 6.11.1 All new stone blocks to be finished to not more than + or - 2mm deviation from dimensions of void cut out from existing block or from line of templates/maquettes/architect's drawings.

6.12 New Stone - Finish

- 6.12.1 For stone in the context of ashlar work provide a coarse rubbed finish to all visible faces ensuring all machine marks are removed. Where existing or surrounding stone has a tooled finish, provide tooled finish to a design agreed with the Architect.

For stone in the context of random or coursed rubble stonework provisionally provide a semi-dressed finish subject to sight of samples.

6.13 New Stone - Structural Integrity and Defects

- 6.13.1 Ensure that all blocks are free from defects that could affect the structural integrity of the stone in use. All blocks with vents, cracks or other structural defects will be rejected.
- 6.13.2 All stone which is chipped, pitted or cracked on the visible face will be rejected. Stone with chips/pitting/cracks filled with stone dust/resin will not be accepted.

6.14 New Stone - Bedding

- 6.14.1 Unless otherwise specified, stone to be laid on natural bed.
- 6.14.2 Where specified, stones not laid on natural bed to be edge-bedded.

6.15 Replacement stone - Source

6.15.1 Allow for advising on and sourcing samples of stone for consideration for use in repairs.

6.15.2 Provisionally new stone to be Hollington (buff/mottled) or Grinshill (buff/mottled).

Samples of all stones should be provided for approval by the Architect. Stone to be selected from beds chosen to best match the existing stone in terms of colour and petrology and providing good quality building stone.”

3.0 Cross referring information

Please refer to the following information submitted with this application:

- ASBC Ltd schedule of works and variations: “ASBC Weston Hall Pay-App 06 redacted.pdf”