

General Brickwork repair and Repointing Recommendations

Reinstatement of masonry

The reinstatement of masonry refers to the areas where brickwork sections have been previously removed. Use existing dismantled brickwork where possible and new brickwork, to approved sample, where necessary. Accurately align all faces, angles, and features. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.

When fixing, dampen joint surfaces to control suction, as necessary. Lay masonry units on a full bed of mortar, with all joints filled. Keep exposed faces clear of mortar and grout. Rebuilt brickwork is to be supplemented with new bricks, to approved sample, to match original facing brick. Rebuilt brickwork is to match original coursing and brickwork layout exactly.

The replacement of brickwork shall only comprise bricks that are not original to the building or those where the surface has eroded by more than 3mm. All new brickwork shall match the size, type, colour, and finish of the original bricks and shall reinstate the Flemish or Stretcher bond of the original building.

Contractor to consider temporary stability of those areas of construction which currently rely on elements which are scheduled for reconstruction – appropriate means of support should be designed into the scaffold.

Removal of plant growths from masonry (plants, root systems and associated soil/ debris)

Carefully remove from all joints, voids, wallheads and facework. Once vegetation has been removed from wallheads and joints, treat these areas with herbicide to ensure eradication; Herbicide to be SBK Brushwood Killer. Use in accordance with manufacturer's instructions.

Where vegetation, such as ivy, has affixed itself to the masonry and left suction marks, remove all vegetation, and treat stonework with biocide. Once treatment has been applied, lightly rub stonework with carborundum block to remove any friable material which may have been caused by the ivy.

Removal of roots

Where necessary carefully take down masonry to remove root systems. Where growths cannot be removed completely without disturbing masonry beyond practical extent, seek instructions.

Repointing - Removing mortar:

- Work from the top of the wall downwards.
- Use hacksaw blade to remove mortar from all fine joints.
- Remove mortar carefully and without damaging adjacent masonry, arrises or widening joints.
- Form a neat recess of depth not less than twice the thickness of the joint When mortar beyond this depth is loose and friable and/ or cavities are found seek instructions from Architect.
- Remove dust and loose debris. Dampen joints to control suction, as necessary.
- The old mortar is to be left with a square face, and the arrises lightly dressed to exclude water traps.
- **The use of power tools is forbidden**, (except that of Fein machines in circumstances to be agreed with the CA), **and all work is to be carried out by hand.**

Joints to the brickwork are usually narrow and this width of joint is to be maintained throughout the repair/consolidation works to the elevations. The mortar appearance will be agreed by the production and breaking of dried sample pieces ('cookies') and then two samples of the most appropriate mixes will be provided, to agree workmanship standards on the exemplar wall described above for void filling. Mortar, once applied, it to be tamped back from the face of the brickwork.

Sand for lime:sand masonry mortars

Type of sand to be a mix of 1.5 Nosterfield Grit Sand (sieve sand down from 2mm), 1 Leyton Buzzard and 0.5 Waddington Fell. Keep all sand very dry. Samples are to be provided and approved.

Lime for masonry mortars

Standard: To BS EN 998-2. Samples of St. Astier NHL 3.5 and Otterbein Lime 3.5 to be provided for approval. Mortar Mix ratio 1:3.

Making mortars generally

Batch mortar by volume using clean and accurate gauge boxes or buckets. The mix proportion of 1:3 is based on dry sand. Very dry to dry sand should be used when mixing mortars. Mix the mortar thoroughly to a uniform consistency, free from lumps and prevent contamination by intermixing with other materials.

Pointing mortar

1 bag Otterbein NHL 3.5 with 13 litres water to create a material of putty consistency. This putty is then mixed with 3 parts of the aggregate (1.5 Nosterfield Grit Sand (sieve sand down from 2mm), 1 Leyton Buzzard and 0.5 Waddington Fell)

Use technically and aesthetically compatible materials

Within any repair programme it is important that materials and methods are employed, which are compatible with those traditionally used to construct and repair the building e.g. lime mortars, natural stone, etc. Many of the standard treatments used to overcome defects in relatively modern buildings can cause considerable physical damage to masonry ruins and their integrity as a structure. The most encountered and potentially inappropriate materials are cement (Ordinary Portland Cement) based mortars (pointing), grouting and renders.

Modern materials can have a place in interventions to historic fabric provided they are additive and not subtractive; do not actively contribute to decay of historic fabric and aid in the saving of a greater amount of historic fabric than the use of a more traditional approach.

Interventions should generally be technically subservient to the adjacent, presumably significant, historic fabric. By doing so, it is hoped that in the event of failure, it is the intervention that either breaks down or can be relatively easily removed, thereby preserving the accepted approach of complete reversibility.

Retention of original surface finishes

There should be a presumption in favour of retention of traditional material and natural surface finishes wherever possible. The structure has inevitably been colonised by the natural environment and any attempt to indiscriminately remove or prevent re-colonisation where necessity dictates removal for repair should be resisted. The patina of age should be maintained in all works.

Use craftspeople, experienced in the use of the materials and methods proposed

Appropriately skilled operatives are essential to deliver a much greater chance of success with the repairs proposed.

Masonry Cleaning

General Notes

The cleaning of masonry on any part of this project shall only be undertaken by experienced operatives who have regularly been engaged in, or specialise in restorative cleaning of external and internal masonry and shall produce references of such activity with the tender return. The sub-contractor shall be a member of the Stone Federation's surface cleaning contractors.

The operatives shall be fully conversant with the method of cleaning specified and have had previous experience and knowledge of the system. The operatives shall have attended training sessions on the use of all items of equipment or chemicals contained in the specification.

The extent of masonry to be cleaned is identified on the elevational drawings and is to include all cills, ledges, mullions, cornices, and mouldings within the designated area. The primary purpose is to remove heavy soiling, bird fouling and carbon deposits. The process may also remove some algae staining.

Unless instructed otherwise the cleaning process is to be executed prior to carrying out any masonry repairs. Prior to carrying out the works the areas to be cleaned are to be examined by the Architect and Contractor to confirm the exact cleaning system type and areas for cleaning of the masonry/stone.

All surfaces not being cleaned shall be fully and adequately protected to ensure that no accidental over spray of cleaning occurs. Protection shall be inspected at the start of each working day to ensure its integrity. Any defects noted shall be rectified by the Contractor prior to commencement of work

Cleaning System

Masonry cleaning is to be carried out using the Stonehealth DOFF cleaning system uses steam as the cleaning agent. A normal water supply is taken into the high-pressure pump where the pressure is increased to the required level before it enters the hot box. The temperature is increased up to 150°C if necessary before it passes to the heat resistant nozzle where special jets direct the steam onto the surface to be cleaned. The DOFF system will effectively remove paint, bitumen, oil, and grease, chewing gum, algae etc from virtually all surfaces including brick, stone, concrete, tiles, terracotta, wood, stucco.

Contractor or Sub- Contractor is to provide full method statement prior to carrying out the works approved by Stonehealth Ltd.