

Methodologies of Works – Rutherford Build UoM

Cleaning

ThermaTech superheated water cleaning equipment. Conceived for the requirements of building conservation, restoration and refurbishment, this system is highly effective for removing soot, grease, oil, and organic matter from a wide range of substrates.

The ThermaTech system produces superheated water, a liquid spray at 150°C. This temperature is capable of melting and removing many paints, surface treatments, chewing gum, wax and bitumen.

ThermaTech reduces reliance on chemicals and boosts the performance of milder agents. It also uses less water than conventional hot and cold-water pressure washers. In this way it yields positive results for COSHH and REACH in safety and environmental risk assessment.

Removal of fixings

1. Carefully remove redundant fixing via drilling around to loosen fixing and remove.
2. Clean out resulting hole to remove dust & debris cleaning out with water.
3. Spray with clean water prior to commencement.
4. Infill with lime mortar ensuring it has been well compacted and the mortar is colour toned to match the existing as best as possible.

Replacement Stone

Samples to be provided of Birchover Gritstone (Buff) - It is a versatile stone, with the advantages of being ideal for intricate carving and fine masonry combined with durability and resilience. The colour is a warm and attractive naturally varied blend of buff to pink.

Stone Indents

Before any repairs are undertaken, the existing stonework details should be carefully categorised for the type of stone, colour of stone, finish to stone face.

1. Carefully mark out area to be cut out to receive indent.
2. Remove loose and friable stone from face, with hand tools.
3. Using a grinder cut into the stone to form a neat straight line between the new indent and the existing stone.
4. Once the initial cuts are made around the perimeter of the indent location then the defective section of stone can be removed using a mixture of mechanical and hand tools.
5. The stone should be cut back to the required depth ensuring sound stone remains.
6. Dampen area prior to installation of indent with clean water.
7. New indent will be made to match any existing profile with templates made and followed by masons in the workshop prior to delivering to site.
8. Indent repairs should be fixed in place using stainless steel dowels set in resin.
9. The interface between a stone indent and repaired stone should be kept as tight as possible and grout filled.

Replacement Bricks

Bricks are to be sourced from a reclamation yard and are to be approved. They will be used only if they are free from fungus, have no deep or extensive cracks, or damaged corners or arises, and are free from old mortar. A sample will be provided prior to commencement of works.

Repointing

A mortar sample should be taken from site and a mortar analysis undertaken prior to commencement. This will give an indication of the existing mortar and propose a best match.

Samples to be provided as follows: -

1 part Ionic NHL 3.5 : 2 Part Waddington fell sand : 1 part Nosterfield, mixed on site.

Please note the joints maybe to narrow to have the grit sand in the mix.

A further sample will be provided.

1 part Ionic NHL 3.5 : 3 Parts Waddington fell sand, mixed on site.

1 part Ionic NHL 3.5 : 3 Parts local washed sand, mixed on site.

Samples will be provided for approval prior to commencement of the main works.

Process

1. Joints should be carefully raked out to a depth at least twice the width of the joint.
2. Rake out mortar with use of both hand & mechanical tools by experienced stonemasons. Hard patches of mortar will be removed by use of mechanical grinders to ensure no damage is done to the brick arises.
3. Thoroughly brush out dust & loose mortar followed by thoroughly cleaning out with water.
4. Spray joints with clean water prior to commencement of repointing works to dampen the area to control suction.
5. Push in the new mortar from a hand board and press it well into the joint with a pointing iron / tool made to the size of the joints to ensure they are fully filled. Work towards existing mortar.
6. Fill the joints with mortar until it is flush with the face of the brick/stonework. Ensure that no mortar encroaches/smears upon the face of the brick or stone. Finish joints neatly as specified when the mortar is curing, but before it is fully set, with a light brush finish. This will expose any aggregate for appearance and better weathering. Differences in timing and techniques may give rise to inconsistencies in the visual appearance and performance. The optimal timing of finishing the joints will depend on the brick type, mortar mix and the weather. Correct timing will become apparent to an experienced and practised stonemason at an early stage.
7. Deep point joints where required, wedge with natural slate and point with the same mix.
8. No pointing should be carried out in frost or when frost is likely to occur. Pointing should be protected against weather where possible by use of hessian sheeting.

Descaling & Redressing

Redressing is the removal of the surface layer from the decayed stone.

1. Initially use a phosphor bronze or churn brush to brush off any loose and friable material from the face of the stone.
2. Using a fine chisel remove more stubborn carbon build up from areas around the joints
3. Finally rub any proud edges down with a carborundum block to ensure no water traps remain.

Bed reinforcement to brickwork Vertical cracks

The objective is to strengthen the brickwork without the need to replace sections of the fractured bricks.

1. Rake out the joints to 40mm in depth and 300-500mm either side of the crack
2. Wash out the joint with clean water
3. Once dried insert a bead of approved epoxy resin and set in a 1m length of 3-6mm stainless steel helical bar, insert a further bead of epoxy resin.
4. Once set, repoint by pressing mortar well into joints using pointing tools/irons that fit into the joints, so they are fully filled.
5. Finish joints neatly as specified when the mortar is curing, but before it is fully set, with a light brush finish.

Restoration to stonework

1. Identify the area where the repair is required.
2. Carefully cut back face of damaged stone to a sound base within use of hand & mechanical tools.
3. Clean area to leave free from dust and debris by thoroughly washing out with water.
4. Dampen to control suction by spraying with clean water.
5. Apply mortar firmly, ensuring good adhesion with no voids. Form a mechanical key to undercoats by combing or scratching to produce evenly spaced lines.
6. If required for deep repairs insert non-ferrous pins, armatures, reinforcing wire as necessary & progressively build up in layers not exceeding 12mm to original profile using lime-based restoration mortar.
7. Prevent each layer from drying out rapidly by covering immediately with plastics sheeting and/ or dampening intermittently with clean water.
8. Final coat to be finished with a float and colour toned, textured to match existing stonework.