REPOINTING PROCEDURES

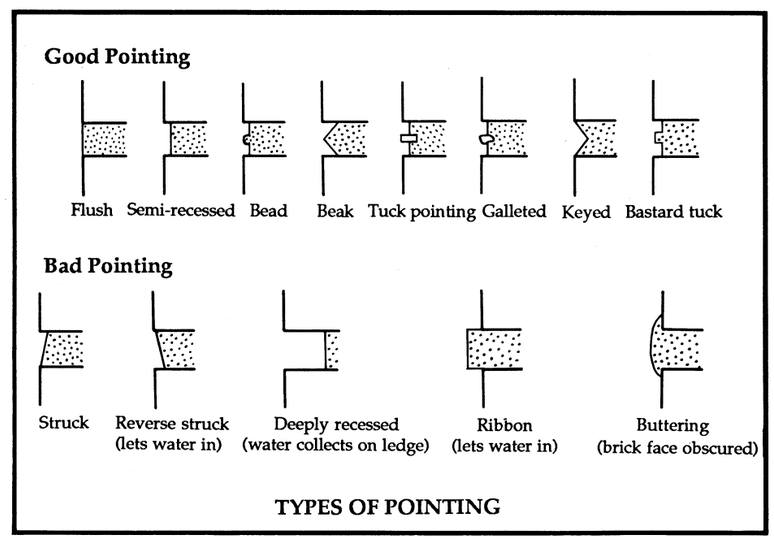
1 Rake out the joints to a depth of at least 20mm. Care must be taken not to damage the edge (or arris) of the blocks. All the weakened and friable material must be removed. After washing or brushing to remove loose material, the inside face of the joint should be left rough to provide a key for the new mortar.

2 The wall should first be wetted and work should proceed from the top downwards. The joints should be filled by using a special rod, bar or pointing tool and the mortar should be well compacted. No mortar should be left on the face of the bricks and by working from the top downwards, the surfaces can be cleaned as work progresses.

3 **Finishing the joint.** Serious weathering of the jointing may make it impossible to determine the finish of the original joint. In this case good examples of neighbouring buildings can be inspected as a guide, or buildings of a similar period studied. If comparisons do not solve the problem then a slightly recessed joint should be used. Where evidence survives of the previous finish, this should be copied. In the case of specialist finishes such as tuck pointing (where a wide joint is filled with a coloured mortar to match the surrounding fabric and then has a narrow groove dug out in a straight line and filled with lime putty) a suitably experienced contractor will have to be used in order to ensure a good match. Take advice from your Local Authority if necessary.

4 Generally, joints should not be left "struck" or weathered with a metal trowel or tool which will bring the "fat" of the mortar to the surface. Double struck or "beak" joints should only be used to match existing work.

5 After the initial set of the mortar, the texture of the sand should be brought out with a stipple brush, sacking or a fine water spray.

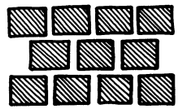


TYPES OF POINTING

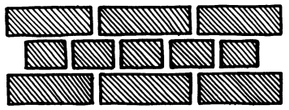
REPLACING WALL FABRIC

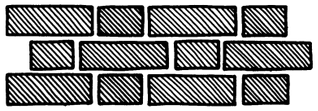
If it becomes necessary to replace individual bricks, great care must be taken not to cause damage to adjacent bricks in the process. When the cavity has been cut and cleaned up, a brick should be chosen to match the rest of the surface as closely as possible. Wet the cavity thoroughly and place lime mortar on the bottom, rear and sides, before gently tapping into place.
If it becomes necessary to replace stones, matching materials must be used. If it is no longer possible to obtain stone from the original source, then a geologically matching stone should be used, laid in correct "bed". The bond of the brickwork should always be respected.

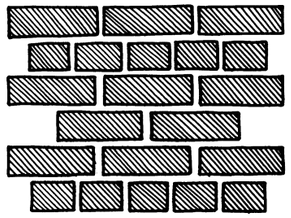
TYPES OF BONDING

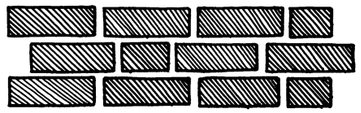

Header Bond

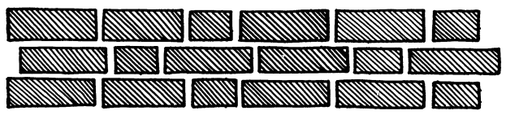

Stretcher Bond


English Bond


Flemish Bond


English Garden Bond


Flemish Garden Bond


Monks Bond

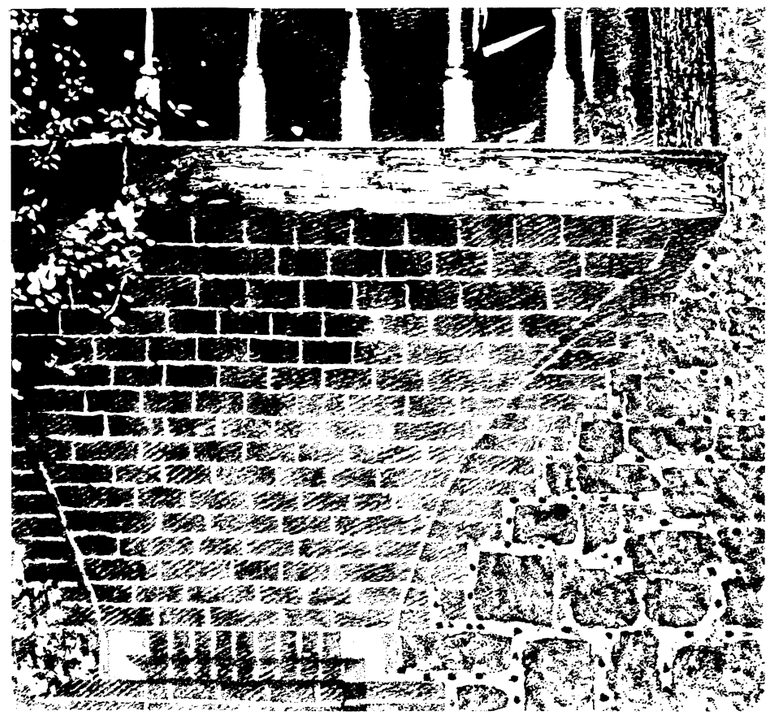
FURTHER ADVICE

Before you obtain estimates for your repointing, contact your Local Planning Authority who will draw your attention to any special requirements necessary for instructing your contractor. They may also draw your attention to any Historic Buildings Grants available and give details of the other leaflets in this series.

BUILDING CONSERVATION • SURREY •

Advisory Leaflet 3

REPOINTING BRICK & STONEWORK



Although only small in area, the effect of pointing can enhance or substantially detract from the overall appearance of a building. In early brickwork of the late medieval and Tudor periods the mortar joints are quite thick, which contributes much to the historic character of the walls. However, in the Georgian period fine quality brickwork was highly prized and the use of very fine joints in rubbed and gauged brick detailing was much sought after, so much so that where the actual joint failed to meet the standard desired, tuck pointing or false pointing was employed to give a regular finish. There is nothing worse than sloppy pointing repairs, resulting in mortar smeared over the brick or stonework, to ruin the quality of an historic building.

This leaflet explains how to ensure sympathetic repointing to maintain the quality and integrity of your historic building. It is one of a series prepared jointly by Surrey County Council and the eleven District Councils to provide advice, without prejudice, to the owners of and those working with, historic buildings.

SIMPLE RULES OF THUMB FOR ALL REPOINTING REPAIRS

1 **Employ a reputable and experienced contractor, one who has knowledge of historic buildings and their repair.**

2 **Repoint with a similar mortar type to the original. This usually means a lime based mortar.**

3 **Repoint in a mortar colour to match or blend with the existing mortar. This will have implications for the colour of the sand selected for the mortar mix.**

4 **Repoint to the same style as the original joint. This may require specialist finishing techniques such as tuck pointing for brick work or galletting in masonry.**

5 **When repointing, use the opportunity to replace cracked or defective brick or masonry, respecting the original bonding.**

6 **Remember, do not use too strong a mortar. If you use a hard cement mortar it will lead to cracking and possible collapse of the walling material. A good mortar will always be weaker than the fabric of the wall and at least as porous. If the mortar is the correct strength any cracking will occur along the joints and not in the walling fabric.**

WHY REPOINT AND WHEN ?

By the nature of the materials in most walls, the brick or the stone is denser than the mortar and hence the main fabric and the joints will weather at different rates. Where brickwork or masonry is exposed to severe weathering, for example on the weather side of a house or chimney stack, the mortar will lose its strength and ultimately powder. It is then easily washed or blown out of the joint. Where the joint has eroded to a depth of approximately 12mm, it may be judged prudent to repoint so that water will not penetrate into the fabric of the wall as in winter this water can freeze and cause further damage .

THE ROLE OF MORTAR

Mortar has two basic functions. Firstly, it evens out the irregularities in the size and shape of the building blocks and allows even distribution of load . Secondly, it prevents water penetrating into joints and causing damage in freezing weather.

Clearly, it is important to establish the strength and type of mortar mix used in the wall and repointing should be carried out to match the original. In most cases a traditional lime mix will be required. A mix of 1:1:6 cement, lime and sand is usually the strongest required for most purposes. An average mix would be 1:2:9. There are no hard and fast rules for mixes but the strength of the bricks, their likely exposure to weathering and their porosity must all be taken into account when determining the strength of the mortar.

INGREDIENTS:

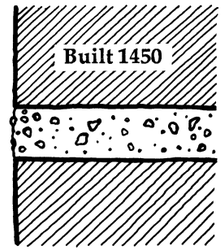
Cement: For most purposes, ordinary Portland cement will be adequate. If a very lightly coloured mortar is required a white Portland cement will be necessary.

Lime: Lime may be obtained in three forms - unslaked quicklime, lime putty or as a dry powder. The putty and powder are easier and safer to use on site than quicklime.

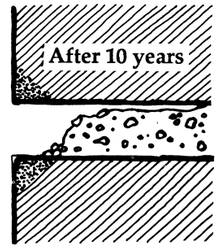
Sand: Sand is the major constituent of mortar and has a correspondingly greater effect on the performance and appearance of the mortar. Sharp coarse sands or grits are best and usually ordinary Zone 4 building sand is adequate. By using sand from local sources there is a better chance of achieving a good match between existing and new mortars.

Colour: The colour of mortar can make or mar a repointing job. The choice of colour depends on the colour of the bricks or masonry and the existing mortar. The main determinant of colour is the colour of the sand. This can range from a soft yellow sand to a white silver sand. To ensure the best match between new and old it may be necessary to carry out trial patches using different textures and colourings.

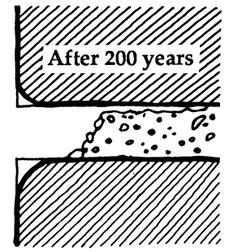
TYPICAL WEATHERING AND REPAIR OF LIME MORTAR JOINT



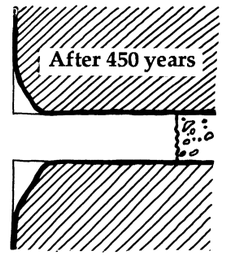
Medieval joint-finished profile.



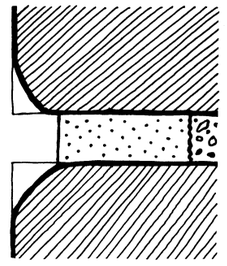
Arrises exposed by disintegration of mortar become saturated during rain.



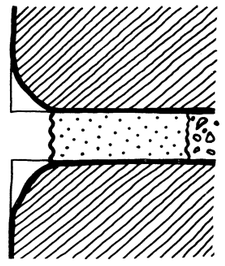
Further weathering rounds off damaged arrises.



The correct remedial treatment is carried out. Surviving mortar is raked out (if soft) or chopped back (if hard) to clear between 25mm and 38mm of original joint width. The old mortar is left with a square face.



The cleared joint is flushed out with clean water and while damp is filled with a lime putty. The mortar is thoroughly compacted and ironed in with a pointing iron, keeping the mortar face back within the original joint width.



After the initial set has taken place the mortar face is tapped with a stiff bristle brush to expose the aggregate, compacting the joint and matching surviving weathered original. The overall character of 1450 is regained.