

## NEW RESIDENTIAL DEVELOPMENT AT CHURCH LANE, WHITBURN

### **Upgrading and replacement of the existing stone boundary wall**

The first stage is to be a close inspection survey of the existing masonry walls and their condition. This should identify and differentiate between any original mortars and later repairs. If possible, any inappropriate mortars which are causing accelerated decay of the adjacent masonry will be removed and replaced with more appropriate materials. Sound, original mortars will be left in place: the principle of minimum intervention applies.

If sound original mortars are found, these may provide evidence of how the joints were originally finished

Pointing is a 'top-down, bottom-up' process. Clearing out and preparation of joints should be carried out from the top down, and pointing should be carried out from the bottom up to take account of the effects of gravity.

Any cementitious or other non-original and inappropriate mortars should be carefully removed, avoiding damage to adjacent masonry. If a cementitious mortar cannot be removed without damaging the masonry, consideration should be given to leaving it in place. Defective lime mortars (those which are friable or have become detached from the adjacent masonry) should be raked out to a sufficient depth where sound mortar exists. However, care should be taken to ensure that sound, original lime mortars are left in place, in accordance with the principle of minimum intervention.

Where masonry is relatively impervious and a suction bond may be difficult to achieve, joints may need to be raked out further, (say) at least twice the depth of the joint width, to provide a level of mechanical anchoring of the new mortar into the joint.

Hand tools such as plasterers' small tools, half hacksaw blades and specially made steel hooks can be used to avoid damage to the stone arrises and widening of the joints. Large chisels and any tools wider than the joint width itself should not be used. No power tools are to be used.

All loose and friable material must be removed prior to placing new mortar, as it requires a sound surface to adhere to. A stiff bristled brush should be suitable for clearing stone surfaces of unwanted material, followed by lightly spraying water (not under high pressure) into the joints to remove any remaining dust and debris. Preparation of the wall surfaces generally should include thorough cleaning down and removal of all loose material, dust, etc, and damping down before starting work.

Control of suction between the new mortar and the substrate is required. The more absorbent the stone, the more wetting down it will need, in order to prevent water being drawn from the newly-placed mortar into the stone. If too much water is lost, the mortar will shrink excessively, become friable and ultimately become detached from the substrate. Impervious stones may require minimal or no damping down.

For re-pointing, the mortar should be sticky but not wet. A suitable mortar should stick to the underside of an inverted hawk (or trowel). An appropriate pointing tool should be chosen to suit the width of the joint, thus preventing spreading of mortar or staining on the masonry faces. The mortar should be firmly pressed into the depth of the joint with the pointing tool. Where pinning stones exist (normally found in rubble-stone mortar joints over 10-15 mm) they should be hammered in any joints to force the mortar well back into the depth of the joint and to reduce the volume of mortar present in one location.

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In general, when mortar has stiffened up, it should be firmly compacted into the joints by beating with a stiff bristle brush. This will help eliminate any initial shrinkage cracking and ensure that the mortar is fully compacted into the joint with a good bond to the surrounding masonry. The surface should then be lightly scraped back with the edge of the pointing tool or similar, to provide a rough, open-textured surface which is ideal for carbonation and curing, and for maximum evaporation of moisture from the joints once fully cured.

Overworking the surface of the mortar will result in surface laitance caused by lime particles being 'worked' to the surface, and forming an outer crust which may restrict carbonation of the mortar behind. This can also result in lime leaching if subjected to rainfall before the mortar has sufficiently cured.

The mortar will require adequate protection until it is fully cured, and inadequate protection is a common cause of failure in lime work. These mortars should not be expected to cure as quickly as cement-based mortars.

In drying conditions, new lime pointing will need to be dampened regularly (by lightly spraying) to prevent rapid drying. Over-rapid drying will result in shrinkage cracking due to rapid loss of water and will inhibit curing because the lime will only react with carbon dioxide in the presence of moisture.

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