

HISTORIC MASONRY REPAIR

MORTAR SPECIFICATIONS

All new mortar joints should match the historic joints in strength, color, texture, size, shape, tooling detail and other visual qualities.

Beware Of Portland Cement

It is essential that the **strength** of the new mortar is compatible with the historic masonry. If the new mortar contains a high Portland-cement content, it will not be flexible enough to allow the soft historic masonry to expand and contract with climactic changes. The softer masonry will become damaged over time as it cracks between the mortar joints.

The recommended mortar composition is approximately 2.5 parts aggregate and 1 part hydrated, or “slacked” lime. Add just enough water to create a workable mortar mix. If the workability of the composition is extremely poor, a maximum of 20% Portland cement may be added to the mix. Since the aggregate is a blend of sand which contains both fine and coarse particles, the blend of particles sizes in the new mortar should closely match the historic composition. Keep in mind that the larger particles will move to the outer surface of the wall to protect the mortar against erosion.

The use of locally found aggregates usually provides the best match to historic mortar, since early craftsmen generally created mixes from readily available sands found close to the construction site. Although it is preferable to match the color of the historic mortar through the selected aggregate blend, it is acceptable to introduce artificial coloring agents in small quantities.

Power Tools

The use of power tools to remove deteriorated mortar is not explicitly prohibited, but it is strongly discouraged. The most gentle techniques are always preferable; if the mortar is so sound that power tools are required to remove it, the mortar probably sound enough to be left alone. Raking out deteriorated mortar by hand avoids damage to the surrounding masonry components. Several tax incentive projects have been denied at the national level because of the inappropriate use of power tools.

How Much Water?

Water will evaporate as the mortar dries, so mortar which requires less water will be stronger and more durable than mortar with a high water content. A simple test to determine the appropriate blend of aggregate particle sizes is to place samples into three clear glass jars. The first jar should contain only sand. The second jar should contain sand and a small amount of pebbles. The third jar should be half sand and half pebbles. The total amount of aggregate in each container should be the same. Slowly pour water into each jar, measuring the amount of water needed to just cover the aggregate. The jar that requires the least amount of water to cover the aggregate will create the most suitable mortar blend.