SPALLING BRICK

The primary cause of brick spalling is mortar with incorrect compressive strength. Mortar with proper compressive strength will absorb the expansion of brick during freeze and thaw cycles. If the mortar is stronger than the brick, this role reverses.

Mortar is typically made up of three dry components: a binder, an aggregate and lime. This is usually Portland cement, sand and hydrated lime. It’s the ratio that determines the strength, or ASTM classification, of the mortar.

Masonry units, be they brick, stone or block, are laid in mortar. That mortar absorbs and expels moisture. Moisture is water, and water freezes. When it freezes it expands, increasing volume by as much as 12%. So, in a sense, the mortar expands, even minutely. Something has to give: the brick or the mortar.

If the mortar is “harder” (meaning a high cement content) than the bricks laid in it, the bricks will spall and pop, their faces crumbling and falling off. But if the bricks are “harder,” the mortar will give, often without cracking or falling apart or leaving any visible record of the strength through failure. And if the mortar joints do fail, it’s far less expensive to repoint masonry than it is to rebuild it.

A good mason will be able to mix up a repointing mortar that will not jeopardize the historic masonry fabric of your home or building. If the color or texture are more challenging, there are firms available online that will custom match mortar samples for under $200.