

## Changes to the Building Exterior

### 2.2 TUCKPOINTING MASONRY



Tuckpointed brick

Repointing the joints in a masonry wall is the process of replacing missing or defective mortar with new mortar. When repointing brick walls, match the proportion of lime and sand in the mortar mix with the extant mortar. In general, to yield proper consistency start with a mixture of six parts lime and one part grey or white Portland cement. Next, add two parts sand for every one part of the Portland/lime mix. The mesh sand should be matched as closely as possible with the consistency of the sand in the original mortar. If the mix greatly differs from the original mortar, or if too much Portland cement is used, the new mortar will expand and contract at a different rate than the existing mortar, causing the brick and/or the mortar to deteriorate.

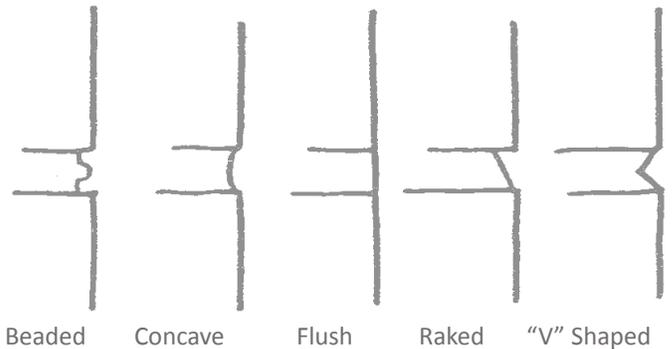
Generally, tuckpointing is considered to be regular building maintenance. The following are recommendations to property owners when they are planning to tuckpoint a building.

#### Standard Historic Mortar Recipe

4 cups white, non-staining Portland cement  
 1 five gallon bucket hydrated lime  
 2 five gallon buckets sand  
 Enough water to form workable mix

#### NOTES

Repointing mortar for most historic buildings should ideally be composed only of sand and lime. A proportion of 1 part lime to 2 parts of sand is a useful starting point. The addition of Portland cement increases workability and achieves a whiteness of color. The National Park Service recommends that no more than 20% of the total volume of the lime and Portland cement-combined-should be Portland cement. Any greater amount of Portland cement increases the hardness of the repointing mortar to a potentially damaging degree. Since this is a very light colored mortar, it should be tinted to match the original.



Typical mortar joints

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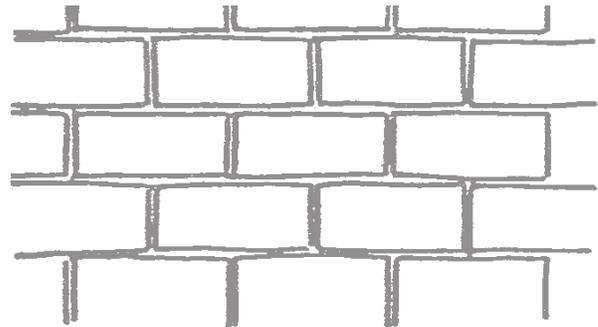
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#### GUIDELINES:

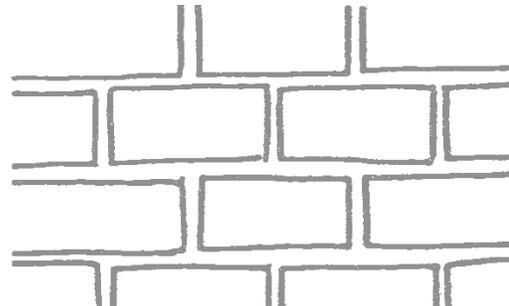
1. Determine why the mortar is deteriorating and solve that problem before repointing. For example, a downspout may be broken, causing water infiltration to deteriorate the mortar.
2. Analyze the building's original mortar to determine its proportions of lime and sand. Use as close as the same proportion as possible. Using the wrong mortar can alter the visual characteristic of the building and cause physical damage.
3. Use only small quantities of Portland cement. A large proportion of Portland cement can seriously damage a building because it expands and contracts at different rates than the original mortar, which can cause cracks in the masonry and spall the brick.
4. Repoint only areas where mortar is missing or damaged. Rarely is it necessary to repoint an entire wall.
5. Match new mortar to the exiting mortar's composition, texture, color, and joint profile.
6. New mortar must be softer than the brick and not harder than the original mortar. Generally, high lime mortars and hydraulic cements work well in repointing historic structures. Ideally, these mortars should only contain lime and sand, and if Portland cement is used, it should substitute no more than 20% of the lime content.
7. Prepare brick joints carefully by using hand tools, matching the joint style of the original brick (see diagram of joint styles).
8. Remove from  $\frac{1}{2}$ " to 1" of old mortar when preparing to insert new mortar. A depth of this measurement will allow the new mortar

to have enough room to bond and prevent it from popping out.

9. Test a small and inconspicuous spot on the building to see how the repointing and joints will look. Contact the Historic Preservation Officer before you begin a test patch.
10. Finish new joints carefully to prevent making them wider than old joints.
11. Clean excess mortar from the masonry using a hard-bristle brush as part of the repointing process.
12. Match size, shape, color, and texture of new bricks to existing bricks when making replacements.



Original: Thin Distinct Joints



Inappropriate: large Mortar Joints