

Surface grouting to repair mortar joints

When joints are weathered but not badly deteriorated, this technique can stop leaks more economically than repointing

By Kenneth A. Hooker

Case #1: Your turn-of-the-century brick building has developed leaks. The brick itself is fairly dense and smooth; mortar joints are narrow. An investigation shows no large cracks, severe spalling, or extensive deterioration of the mortar, but erosion caused by decades of exposure to the weather has opened small gaps at the interface of brick and mortar.

Case #2: Your new brick building, completed six months ago, has begun to leak in rainy weather. An investigation shows no major flaws in design or construction, but it does reveal a network of tiny cracks between the units and the shallow raked mortar joints. These apparently were caused by shrinkage of the mortar as it set, followed by chemical cleaning.

In both cases, repointing would be one option likely to solve the leakage problem. But properly done, repointing is expensive, and the condition of the mortar joints described doesn't seem to warrant full repointing jobs. Furthermore, when joints are less than the typical $\frac{3}{8}$ inch wide, chipping or grinding out the old mortar is very hard to accomplish without damaging the brick as well.

Try surface grouting

In situations like these, surface (or mask) grouting is another option to consider. The process consists of applying a thin coat of cement-based grout to the mortar joints and the mortar/brick interface. The Brick Institute of Ameri-

ca recommends a mixture of 1 part portland cement, $\frac{1}{2}$ part lime, and $1\frac{1}{2}$ parts fine silica sand (Ref. 1). Premixed, proprietary surface grouting mortars also are available.

Manufacturers say that glazed or very smooth brick can be left unmasked and any excess grout removed from the face of the brick with a damp sponge or cloth. More often, though, the brick are carefully covered with masking tape before grout is applied.

In one study, walls known to leak were tested for water permeance before and after the joints were mask-grouted. The tested walls averaged a 93% reduction in water permeance after the treatment (Ref. 2).

Lynn Lauersdorf, chief of the building technology team for the Wisconsin Facilities Management Division, has overseen several mask grouting projects in the past 20 to 25 years. Lauersdorf says the technique actually can be superior to repointing under certain circumstances.

"We've had tremendous success with mask grouting on historic buildings where the mortar

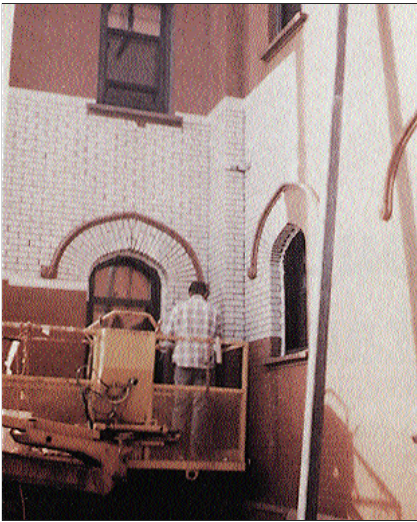


Photos courtesy of Wisconsin Facilities Management Division

Surface grouting has helped stop leaks in older brick buildings such as Bowman Hall at the University of Wisconsin at Stoughton, where mortars joints are weathered but generally sound.

joints aren't badly damaged, just eroded $\frac{1}{8}$ inch or so from normal weathering. The special grouts designed for the process bond well and seal the interface between the mortar and brick to stop leaks," Lauersdorf says.

Before planning such work on a historically significant building, however, it's important to realize that the appearance of the joints will change somewhat as a result. After long exposure to weather, the aggregate in mortar joints becomes more prominent.



Brick faces (left) are carefully masked with tape before grouting mortar is applied.

Surface grouts contain only very fine aggregate, and it isn't apparent in a finished job. The joints also may appear slightly wider after grouting, if care is taken to ensure a good seal at the interface.

Lauersdorf says it's a good idea to choose a grout color close to the brick color for best results. Grout manufacturers produce the material in a standard gray, but will premix it to specific tints. Wisconsin's guide specification allows only premixed colors on state projects, to make sure the color is consistent.

Step by step

Mask grouting should be done only when the outside air temperature is at least 50° F. The recommended procedure is as follows:

1. Fill small holes and repair any seriously deteriorated mortar joints. Prepare the surfaces for grout application by removing any dust, dirt, efflorescence, paint, or previous water repellent treatments.

2. Cover the brick faces with strips of masking tape as wide as the height of the brick. Use a serrated blade held tight against the wall to cut the strips of tape.

3. Place dry grout material in a clean container and gradually

add clean water, stirring until the mixture has the consistency of thick batter. Let it set for 10 to 15 minutes, then mix it thoroughly just before using. Mix only as much material as you can apply within 2 hours. The material can be retempered as needed within that time, but avoid retempering pigmented grout to maintain consistent color.

4. Dampen the mortar joint surfaces, but leave no free water. Then, following the joint lines, apply the grout with a coarse-fibered brush. Use short, diagonal strokes to seal the brick/mortar interface. Alternatively, you can apply the grout with a sponge float, using a circular motion.

5. Carefully strip the masking tape before the grout sets.

Laborious but effective

CaNavis of Wisconsin Restoration, Verona, Wis., has performed several mask grouting projects over the past 20 years. He says the process is laborious, but can be both effective and economical under the right circumstances.

"Mask grouting works when the joints are slightly eroded but basically in good shape. You have to fill holes and repair deteriorated mortar before applying the grout, so it's probably not worthwhile if much preliminary work is needed. Also, I'd only recommend it when you're working with a hard, smooth brick. With a mat



To be effective, grouting mortar must cover the brick/mortar interface, thus slightly altering the joint's appearance. Choosing a mortar color close to that of the brick can minimize the visual impact.



Grouting mortar (above), mixed to the consistency of thick batter, is brushed or floated over the wall surface following the lines of the mortar joints.

or textured finish, you'd have a hard time sealing the edges with the tape," Navis says.

"On the right kind of project, though, it's a little faster and less expensive than full repointing—about two-thirds the cost. And a veterans' hospital we did back in the 1970s is holding up fantastically well."

The hospital project was an eight-story building, with brick accounting for about half the wall area. Wisconsin Restoration crews worked from swing-stage scaffolds and spent two days on each section of wall. The first day was spent masking the brick in the area covered by one full drop of the scaffold. On the second day, workers brushed grout on the joints in the same area, then raised the swing-stage again and worked down the wall removing the tape.

Surface grouting is not a panacea for every leaky brick wall, but it *can* be an effective repair method for some of them. 🏠

References

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