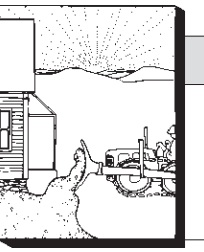

Century-old Brownstones Eventually Need Repair

by Sara Chase

This stately Boston brownstone built in 1869 required extensive repairs. Restorers cut back its severely deteriorated trim and many of the blocks to solid stone and rebuilt the areas with tinted cement. The building, originally the Museum of Natural History, now houses a clothing store.

Although brownstone facades peaked in popularity during the Victorian period, many over 100-year-old brownstone buildings survive, and eventually need repair.

Perhaps the best-known remaining examples are the rows of townhouses in New York, Boston, Philadelphia, and Washington. But brownstone, which is sandstone laced with iron, came in other colors besides the reddish brown most familiar in the east. Sandstone used in the midwest is often the lighter buff variety quarried in Ohio, while in the west, especially in Denver, rich red sandstones were most popular.

The softness of the stone, which makes it easy to carve, also makes it vulnerable to a variety of stresses, including weather, one of the chief causes of brownstone deterioration. Some typical problems include:

- Cracking: Because it was formed in layers, the stone is prone to cracks caused by physical stresses, including freeze-thaw cycles and corroded fasteners.
- Exfoliation or spalling: The scaling off of large sections of stone are typically caused by water absorption and expansion in the stone.
- Detachment: This is a clean break in the stone that usually results from impact or structural settlement.
- Efflorescence: Salts, moved through the stone by capillary action, are deposited on the surface, creating a whitish stain.

The doorway to this brownstone in the Beacon Hill section of Boston suffers from just about every brownstone failure. Many of the bricks are discolored from salt and are spalling from moisture. In other sections, large chips of stone have fallen away.

Inspecting brownstones

You'll need to examine every stone to find all the problems. You can inspect high sections with binoculars, but it's best to use a ladder and make a visual and physical examination. First, however, take a photograph of each elevation of the building. Use a photocopier to enlarge the photos into a "map" of the building's exterior. Mark any problem areas on your map.

As you examine the stones for looseness, crumbling, or breakage, tap them lightly and listen for hollowness. You will soon recognize the sound of solid bricks as opposed to those with voids, which lead to exfoliation.

Check around gutters, downspouts, trees, and shrubs, all of which hold water next to the stone and prevent speedy evaporation. Look for failures of any flashings, including those on window and door lintels, as well as those of roofs, balconies or other projecting elements. Examine all exterior ledges, such as window sills and porch flooring, to see that they slope away from the main body of the building.

Finally, check all mortar joints to make sure they are sound and sealed against the stone. Look for mortar that is too hard and has come away from the stone or any mortar that is the wrong color.

Repair options

Fixing brownstone is always costly. While replacing single stones or missing architectural features is an effective means of repair, it is the most expensive method, mainly because brownstone is no longer quarried in the United States. Usable stones may be available at local salvage yards or stones could be imported.

Probably the least expensive option is to patch existing stone. But the best course is always the one that retains as much of the original stone as possible.

Regardless of which solution the owner chooses, it's a good idea to clean the stone first to remove dirt, which can hold moisture. Cleaning may also reveal the stone's original color, making any patchwork more accurate and visually consistent.

Use a mild detergent solution, such as trisodium phosphate (Spic-n-Span) and water. Alkaline cleaners, such as Heavy Duty Paint Stripper, or diluted acidic cleaners, such as Sure Klean Restoration Cleaner (both made by ProSoCo, P.O. Box 171677, Kansas City, KS 66117; 913/281-2700), can be used, but patch test them to make sure they don't burn or discolor the stone. The optimum water pressure for cleaning is about double normal city water pressure. Anything stronger may harm the stone. Finally, a thorough rinse is mandatory.

To put in a patch, you must first cut back loose or crumbly stone to a sound base. The patching material, as well as the mortar, is usually made of cement, special sands containing mica, pigments, and lime. Some contractors work with acrylics and epoxies, but these materials are sensitive to temperature and moisture and can discolor as they cure.

If patches are larger than a few square inches or are used on projecting elements, they should be anchored with threaded nylon or stainless steel 1/4-inch rods. These are set in holes drilled slightly larger than the pins to allow for use of a waterproof adhesive.

Water has caused the ironwork to rust and expand where it enters the brownstone trim, which has caused the stone to burst.

Painting over brownstone will not stop its deterioration. The crumbling stone should be removed and replaced with an appropriate cement patch.

Coatings, including paint, sanded paint, and some water repellent or waterproof substances, may cover up a multitude of problems and provide visual uniformity. They are quick and, in the short run, may be cheap. However, they often mask the color and texture of the original stone and they can trap any moisture that gets behind them. Breathable water repellents may work, but they are expensive and difficult to apply. ■

Sara Chase is an historic preservation consultant and the author of "Brownstone: An Owner's Care and Repair Guide," *a pamphlet published by The Society for Preservation of New England Antiquities. For a copy, write to The Conservation Center, The Vale, 185 Lyman St., Waltham, MA 02154; 617/891-1985.*