

## BRICK BASICS

Most of the historic buildings in Columbia were built with brick exterior walls. Even though brick is durable and long lasting, it requires maintenance. Neglect or improper care can result in costly repairs. Using the wrong tools or repair methods on brick can cause severe damage.

The mortar used to join together masonry units is as important as the bricks themselves. Bricks and mortar have specific characteristics in terms of strength, hardness, and the ability to transmit moisture. These characteristics must be understood before doing any work that affects the materials, including repointing, cleaning, or painting brick walls.

## MOISTURE

Moisture in walls is the cause of most deterioration. Although we think of bricks as very strong building materials, excess water can turn them to powder. When water is caught *inside* bricks, it creates pressure and causes the outer layer of the brick to fall off. The soft inner core is exposed, and crumbles to dust. When water is trapped *behind* the bricks, freezing and thawing of the wall causes the bricks to expand and contract; this movement breaks the bond between the brick and the surrounding mortar, causing individual bricks to fall out of the wall.

*Always address the cause of excess moisture before proceeding with any repairs. Possible sources include:*

- Rising damp from groundwater being pulled into the wall from the bottom up. Make sure rainwater drains away from the foundation.
- Roof damage, or faulty gutters and downspouts.
- Plants or vines clinging to walls and working their way into small cracks, which will also block sunlight that helps to dry the wall.

## MORTAR

The hard baked outer surface of bricks helps to repel water, as does the shape of the mortar joints. Mortar is the "glue" that holds the individual bricks together to form a wall. Over time, it is normal for mortar to loosen and fall away. Repointing restores the physical integrity of the wall, and the visual appeal of the building.

*Make sure that the mortar for repointing is softer than the brick.* Masonry construction is a partnership between the individual bricks and the mortar used as bedding. The mortar joints are designed to absorb stresses and allow each brick to "move" within the mortar, as the brick walls expand and contract with seasonal changes in temperature. A softer mortar mix will prevent the bricks from cracking and breaking.

Sand, lime, and Portland cement are the three basic ingredients that make up mortar. The percentage of Portland cement, a minor additive to help accelerate mortar set time, *should be limited.* Too high a concentration of Portland cement will result in mortar that is excessively hard.

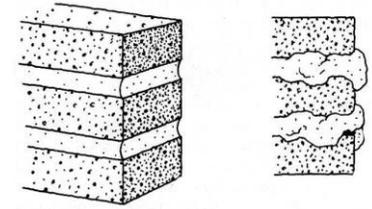
Mortar should be permeable, to allow water vapor to escape from the wall. Mortars with a high percentage of Portland cement are less permeable. If water vapor cannot move through the mortar, it will move through the brick, causing it to crack and break, or turn to powder. (This damage is very expensive to repair.)

The use of lime mortar is recommended, as it is soft, porous, and does not vary much with temperature fluctuations -- well suited to Columbia's cold winters and hot summers. Generally, **type O mortar** is the best match for historic mortar found on buildings in Columbia.

### Type O Mortar Recipe

1 part white Portland cement  
+  
2 parts hydrated lime or lime putty  
+  
8 or 9 parts sand of historic color

Most older brick buildings in Columbia have concave or flush joints, and repointing should match these existing profiles. Mortar should not be spread so thickly as to cover the face of the bricks.



YES

NO

If you are not experienced in the trade, brick repair is not something you should try on your own. It is best to hire a professional mason with experience in masonry restoration.

A proper repointing job will last 75 to 100 years, so it is a good long-term investment in your property!



## CLEANING

Always use the gentlest method possible for cleaning brick surfaces. The use of plain water, a mild detergent applied by hand, and a low-pressure water rinse (from a garden hose spray nozzle) is the best cleaning method.

Abrasive methods of cleaning brick walls will permanently damage the surface of bricks by removing the protective hard outer coating, exposing the softer interior to rapid deterioration and eroding the mortar bond between the bricks. Examples of tools that can seriously damage brick surfaces are wire brushes, rotary wheels, power-sanding disks, and rotary or belt sanders.

## VINYL SIDING

To minimize maintenance of brick buildings, homeowners are often tempted to install vinyl siding, resulting in a loss of the unique character and value of the building. Siding can also contribute to serious structural damage.

Vinyl siding applied over brick walls will:

- Hide the texture of the brick
- Cover trim and details such as window and door frames, cornices and moldings
- Hasten the deterioration of the walls by trapping moisture

- Channel water behind the siding, reducing the efficiency of wall insulation
- Cause irreversible damage to walls from the nails required to apply siding, leaving holes and cracks in the bricks
- Conceal evidence of problems that are early warning signs of serious deterioration

When properly cared for, brick is an extremely durable and long-lasting material. Maintenance of your brick building is a cost-effective measure that also preserves its historic character. Don't cover up its unique and original design. Let your building be itself!

### Historical Architectural Review Board

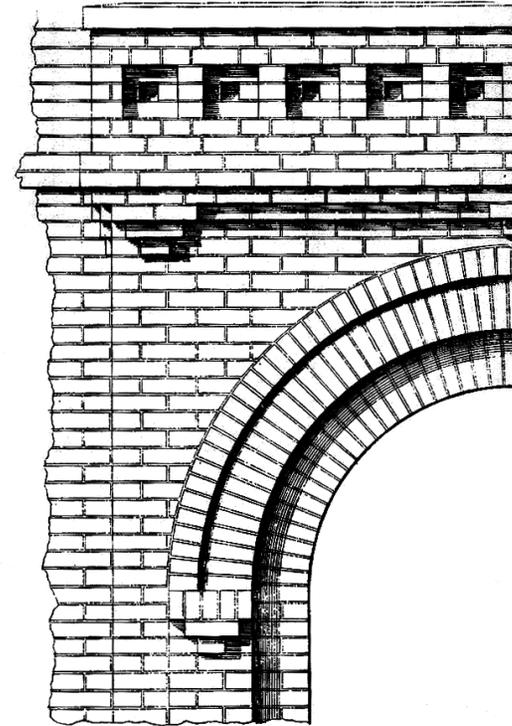
Borough of Columbia  
308 Locust Street  
Columbia, PA 17512



Other pamphlets in this series –

*Caring for Wood Windows*  
*Caring for Porches*  
*Painting Old Buildings*  
*Maintenance Is Preservation:*  
*Maintenance Checklist for Older Buildings*

# Caring for



# BRICKS

**BOROUGH of COLUMBIA**  
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