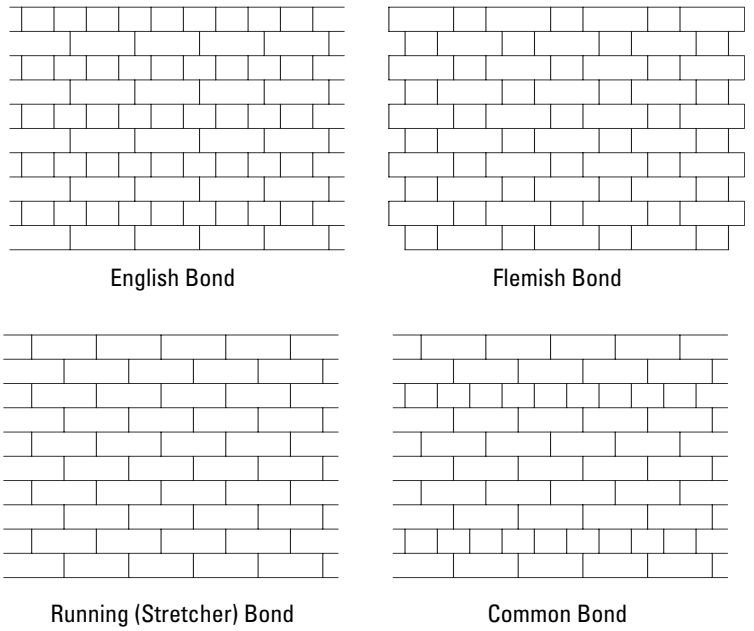
Building Materials VIII

A. Masonry

Brick is the most common type of masonry used in Smithfield. Study the architectural character of the immediate area to determine appropriate use of brick.

- Use brick for the foundations of frame residences.
- Use brick as the dominant material for a residence only if it has a form similar to Georgian/Federal or Colonial Revival style.
- For commercial and institutional buildings, use masonry, preferably brick, as the main construction material.

Types of Brick Bonds



Moisture problems can cause paint failure on masonry (top) and block the adhesion of secondary coatings such as the parging seen here.

i Building owners applying for federal rehabilitation tax credits must conduct test patches before cleaning masonry. Sand-blasted masonry buildings cannot receive state or federal tax credits.

T Most of the major masonry problems can be avoided with monitoring and prevention Prevent water from causing deterioration by ensuring proper drainage, removing vegetation too close to the building, repairing leaking roof and gutter systems, securing loose flashing around chimneys, and caulking joints between masonry and wood. Repair cracks and unsound mortar.

VIII Building Materials

A. Masonry

Stone and stucco, fairly rare in the district, are used for specific elements. Stone is used for foundations, chimneys, and outdoor walls of a few predominantly late-nineteenth-century structures. Parging, a variation of stucco, has been used as a coating over brick.

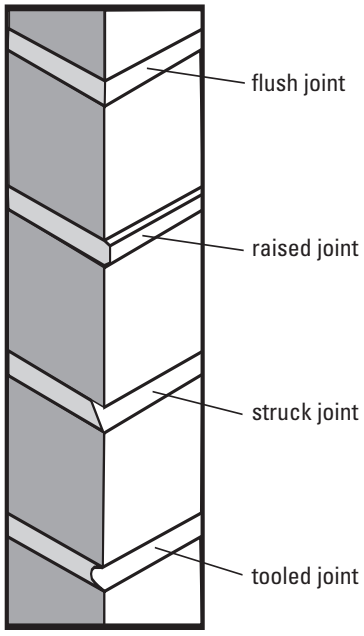
Concrete occurs in the more modern buildings and in alterations of older buildings. It can be appropriate for decorative details like copings, lintels, and sills, but avoid using concrete block for alterations.

1. Use masonry as it traditionally has been used in the historic district:
2. Retain masonry features that define the overall character of the building. Repair rather than replace damaged masonry features by patching, piecing, or consolidating units to match the original. Repair stucco or plastering by removing loose material and patching with a new material that is similar in composition, color, and texture. Patch stone in small areas with a cementitious material which, like mortar, should be weaker than the masonry units being repaired.

T Remove deteriorated mortar by carefully hand-raking the joints. Do not remove mortar with electric saws or hammers that damage the surrounding masonry.

3. Discourage the use of waterproof, water-repellent, or non-historic coatings on masonry. They often aggravate rather than solve moisture problems.
4. Avoid painting unpainted masonry surfaces.
5. Clean masonry only when necessary to remove heavy paint build-up, halt deterioration, or remove heavy soiling. Use only the gentlest means possible and never sandblast. Avoid high-pressure water wash. Avoid freezing conditions when using water-based products.
6. Repoint disintegrated masonry joints. Duplicate the original mortar in strength, composition, color, and texture.

Types of Brick Joints



T **Repointing Historic Masonry**

Strength: Do not repoint with mortar that is stronger than the original mortar and the brick itself. When brick expands and contracts with freezing and heating conditions, old mortar moves to relieve the stress. If a hard, portland cement mortar is used, the mortar does not flex as much and the brick can crack, break, or spall.

Composition: Mortar of older brick buildings has a high lime and sand content. Replacement mortar should be composed primarily of lime (one part) and sand (two parts). Some portland cement (ASTM C-150 Type 1) can be included in the lime portion for workability but should make up no more than 20 percent of the lime and cement combined. For newer buildings, decrease the lime content and increase the portland cement content.

Appearance: Duplicate old mortar joints in width and profile (See the drawing at left). Cut out old mortar to a depth of one inch. Repoint to match original joints and retain the original joint width.

Do not use "scrub" coating, in which a thinned, low-aggregate coat of mortar is brushed over the entire masonry surfaces and then scrubbed off the bricks after drying, as a substitute for traditional repointing. Synthetic caulking compound also should not be used for repointing.

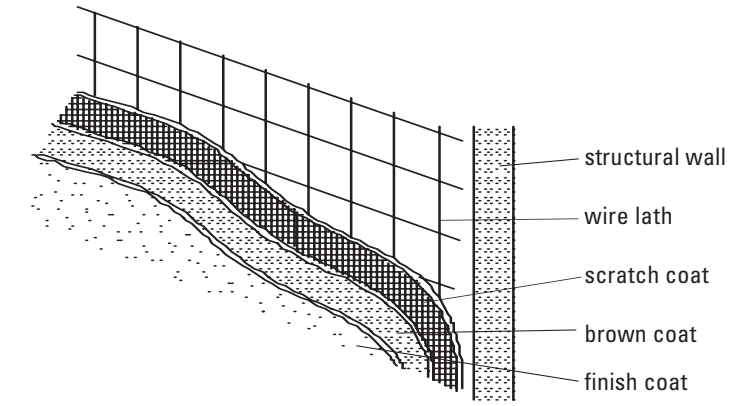
Building Materials VIII

A. Masonry

Old bricks are different from new bricks and the mortar, the material that makes the joints, has to be different as well. Appearance is not the only issue. An improper mortar mixture can damage historic brick. Professionals experienced in working with old masonry can guide you in appropriate repointing methods.

The best method for cleaning unpainted brick is low-pressure water wash with detergents. Test the cleaner on a small, inconspicuous part of the building. Older brick may be too soft to clean and can be damaged by detergents and by the pressure of the water.

- Use chemical cleaners cautiously. Do not clean with chemical methods that damage masonry and do not leave chemical cleaners on the masonry longer than recommended.
- Use knowledgeable contractors and check their references and methods. (Look for damage caused by improper cleaning such as chipped or pitted brick, washed-out mortar, rounded edges of brick, or a residue or film.)



Pressure washing may not be appropriate for older brick.

Preservation Brief #01
Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings

Preservation Brief #02
Repointing Mortar Joints in Historic Masonry Buildings

Preservation Brief #06
Dangers of Abrasive Cleaning to Historic Buildings

Preservation Brief #15
Preservation of Historic Concrete: Problems and General Approaches

Preservation Brief #42
The Maintenance, Repair and Replacement of Cast Stone

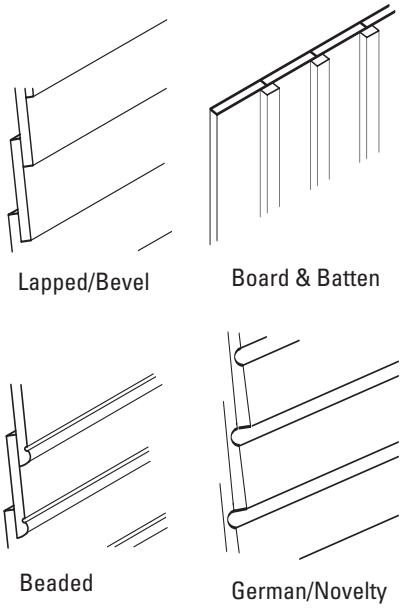
available from:
www2.nps.gov/tps/briefs/presbhom.htm

VIII Building Materials

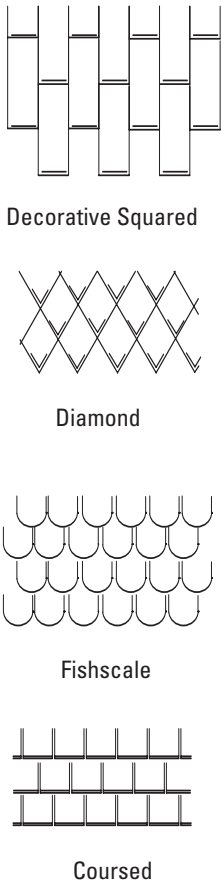
B. Wood

1. Retain wood as the dominant framing, cladding, and decorative material for Smithfield's historic buildings.
2. Retain wood features that define the overall character of the building. Repair rotted sections with new wood, epoxy consolidates, or fillers.
3. Consider using wood as the dominant cladding and decorative material for new construction. New wood surfaces should be painted rather than left with a natural finish.
4. Replace wood elements only when they are rotted beyond repair. Match the original in material and design or use substitute materials that convey the same visual appearance. Base the design of reconstructed elements on pictorial or physical evidence from the actual building rather than from similar buildings in the area.
5. Avoid using unpainted pressure-treated wood except for structural members that will be near the ground and outdoor floor decking.

Wood Siding



Wood Shingles



T Allow pressure-treated wood to season for a year before painting it. Otherwise, the chemicals might interfere with paint adherence.

T To test for rotten wood, jab an ice pick into the wetted wood surface at an angle and pry up a small section. Sound wood will separate in long fibrous splinters while decayed wood will separate in short irregular pieces. Alternatively, insert the ice pick perpendicular to the wood. If it penetrates less than 1/8 inch, the wood is solid; if it penetrates more than 1/2 inch, it may have dry rot. Even when wood looks deteriorated, it may be strong enough to repair with epoxy products.

T Wood requires constant maintenance. The main objective is to keep it free from water infiltration and wood-boring pests. Keep all surfaces primed and painted. As necessary, use appropriate pest poisons, following product instructions carefully. Recaulk joints where moisture might penetrate a building. Do not caulk under individual siding boards or window sills. This action seals the building too tightly and can lead to moisture problems within the frame walls and to failure of paint.

Preservation Brief #10

Exterior Paint Problems on Historic Woodwork

available from:
www2.nps.gov/tps/briefs/presbhom.htm

Building Materials VIII

C. Architectural Metals

T Prepare for repainting by hand scraping or brushing with natural bristle brushes to remove loose and peeling paint. Removing paint down to the bare metal is not necessary, but removal of all corrosion is essential.

Clean cast iron and iron alloys (hard metals) with a low-pressure, dry-grit blasting (80 to 100 pounds per square inch) if gentle means do not remove old paint properly. Protect adjacent wood or masonry surfaces from the grit. Copper, lead, and tin can be cleaned with chemicals or heat.

(t) Aluminum, fiberglass, or wood can be considered for reconstructing missing metal elements if it is not technically or financially feasible to replace them with the original material.

Preservation Brief #27

The Maintenance and Repair of Architectural Cast Iron

available from:
www2.nps.gov/tps/briefs/presbhom.htm

1. Retain architectural metals used on historic properties. Cast iron, steel, pressed tin, copper, aluminum, bronze, galvanized sheet metal, and zinc are some of the metals that occur mainly in commercial storefronts, cornices, in decorative elements for elaborate turn-of-the-century residences, and fences.
2. Clean metals using the gentlest means possible. Do not sandblast copper, lead, or tin. Do not remove the patina of a metal when it provides a protective coating and is also a significant finish such as on bronze or copper.
3. Repair or replace metals as necessary, using identical or compatible materials. Some metals are incompatible and should not be placed together without a separation material such as nonporous, neoprene gaskets or butyl rubber caulking.

Decorative metal finial.

VIII Building Materials

D. Synthetic Siding

1. Do not use synthetic materials to replace or cover the original materials, including siding, of buildings that contribute to the historic and architectural character of the district.
2. Remove synthetic siding and restore original building material, if possible.
3. The new use of vinyl siding is prohibited on structures adjacent to landmark structures unless grandfathered or a repair to existing synthetic siding.
4. Cementitous siding such as Hardiplank is the only approved substitute for wood siding on new construction in the historic district.
5. Where its use is permitted, synthetic siding should match the size, type, style, and surface appearance of the original material as closely as possible. Ensure that any moisture, rot, or infestation problems are corrected before covering up these areas with synthetic materials.
6. Decorative elements, trim, features, and special surfaces should be retained when adding synthetic siding.
7. Consideration should be given to retaining the original materials on the primary elevations of the building and using synthetic siding on secondary elevations of the building.
8. Discourage the use of synthetic siding on new buildings within the historic district. Review the historic and architectural significance of surrounding buildings when determining the appropriateness of using synthetic siding on new buildings.
9. Synthetic siding that simulates wood may be used on new construction only if real wood trim is used for windows, doors, cornices, cornerboards, soffits and other decorative features and if the depth of the boards relates to the depth of traditional siding. *Update?*

Preservation Brief #08
Aluminum and Vinyl Siding on Historic Buildings:
The Appropriateness of Substitute Materials for Resurfacing Historic Wood Frame Buildings

Preservation Brief #08
The Use of Substitute Materials on Historic Building Exteriors

available from:
www2.nps.gov/tps/briefs/presbhom.htm

i Synthetic siding does not have the same patina, texture, or light-reflective qualities of original materials such as wood, brick, shingle, or stone. In addition to changing the appearance of a historic building, synthetic siding can make maintenance more difficult because it covers up potential moisture problems that can become more serious. And siding, once it dents or fades, needs painting just as frequently as wood.