Design Review Brochure

BRICKS & MASONRY

in Historic Downtown Montpelier

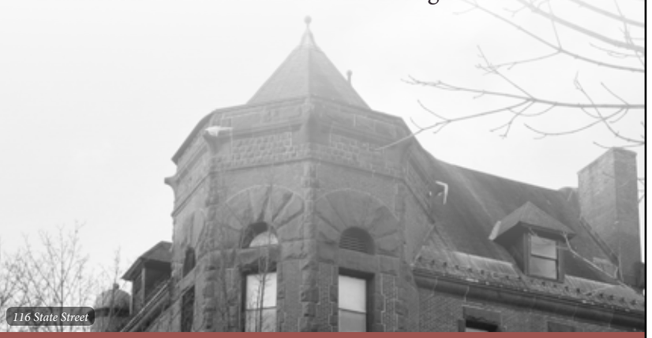
The City of Montpelier believes that ongoing maintenance of historic buildings, such as reasonable repairs and use of quality materials, extends the life of these structures and contributes to the vitality of downtown Montpelier.

In providing this document to local citizens, the Department of Planning and Community Development seeks to encourage the proper maintenance of historic buildings in the City and make information available to property owners well before the final design of a project, thereby saving both the owners and the City valuable time and money.

The Value of Brick

Dating back over 6,000 years, brick is one of man's oldest and most common building materials. In Vermont, residents started incorporating the product into retail and residential buildings in the 1700s and have been using it ever since.

Brick's widespread popularity is due primarily to its natural properties and aesthetic qualities. It not only provides a feeling of permanence and distinction in a building, but the raw materials required to make it are inexpensive, and the final product is extremely durable even in the harsh northeastern climate. Throughout Vermont's history, most bricks were created using a mixture of local clay and small amounts of sand that were then formed into standard rectangles and fired in a kiln. The result was a brick of a particular size, color, and texture that is found throughout Montpelier's Historic District and in other downtowns throughout the state.



116 State Street

This specific Design Review Brochure is intended for the use of property owners within the City of Montpelier's Historic District who wish to preserve, rehabilitate, restore, or reconstruct the masonry on the exterior of their building.

Bricks and Masonry

Natural Benefits

The natural properties of brick make it extremely practical for use as a building material. Kiln-fired, brick has a semi-permeable barrier that, along with the surrounding mortar, allows the building to breathe, thereby providing natural moisture control for the structure. The mortar between bricks is also a crucial element in the structure. Softer than brick, it allows the primary building material to expand and contract during the changing seasons, a process that can prevent broader structural issues throughout the lifespan of a building.

Lane Shops, 1 Mechanic Street

Elements of Brickwork

- Belt course (string course or sill course): A narrow horizontal row of brick, sometimes slightly projecting such as window sills.
- Corbel: A shelf formed by successive rows of brick projecting out from the face of the main wall.
- Course: One continuous horizontal row of bricks.
- Efflorescence: A white powder or stain on the surface of the brick resulting from water seeping through the brick and depositing salts.
- Lintel: A beam placed over an opening in a wall, such as a door or window.
- Spalling: A detachment of mineral grains on the surface of a brick the can result from excessive pressure from adjacent, incompatible mortars or the expansion and crystallization of soluble salts.
- Water table: A projection of brick at the bottom of the outside wall, slightly above the ground.

Wear and Tear

Despite the longevity and durability of brick, it, like all other materials and products, still requires maintenance and care. Typically, this maintenance is in response to either deteriorated mortar or efflorescence (the buildup of salt on the surface of the brick due to water seepage).

As brick is exposed to the elements, over time the mortar can deteriorate which in turn, will allow moisture to penetrate. This can be fixed by repointing the brick: replacing the mortar with fresh mortar of a similar composition with regard to color, texture, and relative compressive strength. When done correctly, this can restore the visual integrity of the building and can help seal the building's exterior envelope. If done incorrectly (often due to the use of harder, cement-based mortars), it can compromise the integrity of brick, causing it to crack from excessive pressure. Successful repointing is dependent on the use of a mortar that is softer than the brick to allow for expansion and contraction during seasonal changes. Therefore the use of a soft, lime-based mortar is highly recommended. These mortars are slightly flexible to allow for expansion and contraction, are highly breathable, and allow moisture to evaporate.

Efflorescence is caused by water seeping through bricks and depositing salt in its wake. The problem with this is mainly visual as deposited salts leave a white powder or film on the exterior of the brick, but if left alone, this can deteriorate the brick over time, often causing spalling. Thankfully, simply cleaning with water (low-pressure) and a natural bristle brush can take care of this problem. Chemical and mechanical methods also exist but are strongly discouraged. These materials can change the color of treated bricks and have the potential to cause permanent damage to bricks and mortar. These changes can destroy the visual and structural integrity of the building.

Making Plans

Considerations Along the Way

Due to the issues discussed above, please consider the following guidelines when preparing to preserve, rehabilitate, restore, or reconstruct the brick or masonry on your building:

Appropriate Actions:

1. Maintaining brickwork over time. This includes checking for cracks or signs of other problems and replacing deteriorated mortar with mortar of a similar composition and color.
2. Cleaning surfaces with the gentlest means possible. This means hand-scrubbing with natural bristle brushes and using water with low-pressure applications.
3. If replacing brick: using an appropriate, matching brick with regard to size and color, following the existing bonding pattern of the brickwork, and retaining special architectural details.
4. Matching tooling, composition, hardness, and color of the mortar. Lime-based mortars allow joints to expand and contract effectively.

Inappropriate Actions:

1. Replacing brick with synthetic materials or other inappropriate materials.
2. Replacing historic brick with bricks of different colors or sizes. Creating a new brick pattern on the exterior surface of the building.
3. Using cement-based mortars which often damage masonry and brick due to its rigidity.

FOR MORE INFORMATION

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