New York Landmarks Conservancy

Common Bond

Tiffany Stained Glass Windows

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Focus: Clear Masonry Coatings

The application of clear masonry coatings on historic masonry should be avoided except in unusual circumstances and undertaken only after professional consultation.

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Clear masonry coatings can damage historic masonry. Above, the thick and shiny clear coating resembles a plastic sheathing applied over the brick. Scratches are highly visible and a surface haze indicates that the coating has begun to deteriorate.

Building committee members are often told that they should apply a clear coating to masonry to prevent water infiltration or protect it from dirt, pollution, and graffiti. While this may sound like a great idea, it's not! Moisture problems on the interior are usually not from the penetration of rain through a brick or stone wall, but by defective roofs and gutters, open mortar joints, moisture from the ground (known as rising damp), and condensation. And since coatings are more likely to trap moisture inside a wall than keep it out, they can create more serious problems. It is better to fix the gutters or repoint the building before considering the application of a clear coating that is costly, possibly unwarranted, and can potentially lead to long-term damage. Bear in mind that most historic houses of worship have endured for years without any type of coating.

Types of Coatings

Waterproof coatings or sealers (acrylics, epoxies, polyurethanes) make a surface impermeable to water. Since all types of masonry are naturally porous, moisture evaporates through pores in the material. When a waterproof coating is applied to masonry, this natural evaporation process is altered. Moisture can still enter the masonry one way or another, but will no longer evaporate through the exterior wall. The trapped moisture can either migrate back to the interior, damaging interior structural systems and finishes, or in cold weather, freeze and expand behind the exterior coating, causing the masonry to crack and crumble (called spalling).

Water-repellent coatings (stearates and polymers, silicones, silanes and siloxanes) repel water and water-borne substances from the masonry surface and are designed to allow water vapor to enter and leave; for this reason many manufacturers call them "breathable." Their application to sound masonry is typically unnecessary since interior moisture migration does not come from water passing through stone or brick. And even if they are designed to "breath" and not harm masonry, water-repellent coatings are expensive and need to be renewed every five to ten years. Another troubling aspect is that the reapplication of the coating can block masonry pores causing possible damage.

Graffiti barrier coatings (acrylics, polyethylene wax emulsions, polysaccharides, silicones, and others) prevent graffiti from penetrating into the masonry and make removal easier. Current information on barrier coatings is quickly changing and should be investigated before any are applied to a masonry surface.

Drawbacks of Coatings

Many masonry coatings have the following potential drawbacks:

- trapping moisture and soluble salts in the wall cavity and masonry resulting in cracking and deterioration (called spalling) which may not show up for several years
- a glossy sheen, which may be obvious in normal lighting conditions or only visible when it rains
- over time they can discolor, turn yellow, or attract dirt
- a patchy, uneven appearance, often with flaking, as the coating deteriorates
- increased maintenance schedules and expenses since some need to be reapplied frequently, which can be costly especially if scaffolding is required
- difficult or impossible to remove
- not necessary or ineffective
- impediment to repointing or patching masonry

Consequently, coatings must be used with extreme caution. Always seek the advice of a preservation architect or building conservator in evaluating the need for a coating versus alternative treatments. If a coating is going to be used, make sure to specify the manufacturer and type of masonry coating needed, and test and monitor its performance in an inconspicuous area.

Limited Uses

Clear masonry coatings should be used as a last resort for areas that exhibit active signs of deterioration. For example, water-repellent coatings may be considered as a temporary measure to slow down unusual problem areas where other means to prevent water infiltration have failed, such as sandblasted or badly spalling brick or sandstone, or high exposure areas such as parapets or a portion of a building subject to driving rains. Repairs to treat a moisture problem and drying out of the masonry may be necessary before applying a coating. According to Mark London in *Masonry: How to Care for Old and Historic Brick and Stone*, waterproof coatings "may be used effectively on the dry exteriors of foundations and basement walls...since trapping moisture within the wall is unlikely in this case as no evaporation occurs below grade." Transparent graffiti barrier coatings may be worth considering in cases of severe, recurrent graffiti problems, in addition to other types of measures (such as security lights) to prevent and control graffiti. Among the safer choices, suggests Martin Weaver in *Removing Graffiti from Masonry*, are water-based polysaccharides, and silicone and silicone-based coatings, which are vapor-permeable and generally do not change the natural appearance of the masonry. As with water-repellent and waterproof coatings, the application of a barrier coating should be discussed with the local municipal preservation commission or review board. In New York City, the Landmarks Preservation Commission must review all proposals for the application of masonry coatings on landmark properties.

Acknowledgements: Mark London, *Masonry: How to Care for Old and Historic Brick and Stone* (Washington, D.C.: Preservation Press, 1988); Robert C. Mack, AIA, *Preservation Briefs 1: The Cleaning and Waterproof Coating of Masonry Buildings* (Washington, D.C.: U.S. Department of the Interior, 1975); New York City Landmarks Preservation Commission, *Rowhouse Manual*; Martin E. Weaver, *Removing Graffiti from Masonry: A Technical Preservation Brief* (New York Landmarks Conservancy, 1995).

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The transparent coating applied to the lower portion of this granite entranceway has darkened the stone, thus changing the character of the historic masonry.