

PAINTING HISTORIC MASONRY

VIRGINIA LIME WORKS INFORMATION BULLETIN

Imagine your pipes are clogged beyond use. You have to call a plumber in to completely clear out all of the pipes in your home. Your plumber does a great job and your plumbing system is working like new. Then you tell your plumber to go ahead and gently coat all of your pipes with a little bit of grime and residue. Makes no sense, right? Well, going to the trouble of restoring your historic masonry and putting a modern paint over top of it makes about as much sense.

Walk around a historic downtown and often you see the same thing: storefronts and historic buildings with peeling paint. Or perhaps you are a homeowner who is in a cyclical paint mode, where you are repainting your house every year. Stop, take a breath, step back, and think to yourself: Why is this happening? Surely when the building was built, it wasn't repainted every year.

If you've taken a look around Virginia Lime Works, you are now starting to get an idea about what you should and shouldn't do when it comes to historic masonry preservation. If you are going to make the commitment to restore your structure properly, don't jeopardize your work by using an incompatible paint.

We know by now how historic masonry works. You are dealing with multiple wythes (or layers) of brick or stone laid with a traditional lime or clay mortar, which allows the masonry to breathe. If this breathability is compromised, which is often the case when the masonry is repointed with a hard impervious Portland cement mortar, or stuccoed with a Portland cement stucco, failure occurs. Water will find its way into the masonry, whether it is through the individual masonry units (brick or stone) or through methods underground such as open foundations. This water, if trapped through hard repointing, stuccos, or incompatible paint, can't escape. This leads the water to sit and pool within the historic masonry. This moisture starts to release the free lime (which gives the autogeneous healing property of lime mortars) and the lime, now in solution, begins to move around. The lime will be drawn through hygroscopic pressure to the face of the masonry, where it is deposited and starts to carbonate. This is often described as lime leach and can be a serious problem. Now there is no binder, or glue holding the mortar together, and what is left is merely sand. Frequently, if you remove a modern paint or Portland cement stucco or repointing from historic masonry, you see this issue and think, "My goodness, this historic lime mortar hasn't held up at all!" Again, for the most part, this isn't the fault of the historic materials, but the interjection of modern substitutions during previous repairs. These modern substitutions often have a decay cycle of 5 to 15 years, although some issues may not come to light until 20-30 years later. Using traditional materials, you should expect a repair cycle of every 50-100 years. But to expect this, you can't use half measures, you need to look at everything.

When you think of the modern materials that can cause irrevocable damage to historic masonry, the first thing that comes to mind is Portland cement mortars and stuccos. However, modern paints and coatings can be just as damaging. A good rule of thumb (although there are exceptions to the rule), is if doesn't feel natural, then it may not be compatible with historic masonry. Latexes, acrylics, elastomerics, and other coatings that are common to our buildings of today, may not mix well with an older structure. Limewashes, milk or casein bound paints, colorwashes, mineral paints and whitewashes, that are made of traditional materials for the most part, will be a better fit when painting your historic building. Let's look at each of these types of paints to get a better understanding of their uses and limitations.

Limewashes:

Often just a mixture of lime and water, this diluted lime putty applies in numerous (sometimes 8-10) coats and will need to be repainted every year or so in the beginning. However, over time these ultra-thin layers of lime will

PAINTING HISTORIC MASONRY

VIRGINIA LIME WORKS INFORMATION BULLETIN

build up, making a durable, breathable, and compatible coating. In fact, after a few years of limewashing, you might be able to go 5, 10 or 20 years without reapplying. Depending on your substrate and application, you may have moderate to heavy dusting. Due to the concentration of lime, the color palette commonly available will be light creamy or pastel tones.

Milk or Casein Bound Paints:

These are basically limewashes with a little something special. Casein is a protein commonly found in dairy products that is used in a wide variety of applications, but in the context here, gives the paint a little extra binder. When you are making paint, or a coating, you need two primary ingredients, a binder (or glue) and a solvent (or thinner). In the case of Milk Paints, your solvent is water, and your binder is not only lime, but also this “milk glue.” Often you are looking at the same repainting cycle as limewash, but with only two to three coats per application. With the addition of this extra glue in the form of casein, stronger, although primarily muted tones, can be achieved with casein paints.

Colorwash:

Colorwash is a matter of debate in the historic preservation industry at this time. At Virginia Lime Works, we feel that colorwash was an extremely common masonry coating found on most historic brick buildings from the 1600s to the 1900s. Often a combination of rabbit skin glue, potash alum, natural pigment, and water, this masonry stain could be tinted to very strong colors, such as brick red, and could help clean up, rough irregular brickwork, providing a clean uniform appearance. If applied properly, colorwash should have a life cycle of approximately 15-20 years, and will wear away gradually over time, versus flaking or peeling. Often colorwash was used in conjunction with “penciling”, a mixture of chalk, glue size, and water, painted on the mortar joints lending the brickwork a very crisp uniform appearance.

Mineral Paint:

Definitely in a class of its own, Mineral Paints, (also known as Waterglass or Potassium Silicate Paints) are in its most basic form, a mixture of a binder (Potassium Silicate) and a solvent (often water). Developed in Europe in the late 19th century, the potassium silicate achieves a chemical bond between the coating and the masonry, and the paint actually becomes part of the masonry. A traditional potassium silicate coating should be extremely long lasting (some examples of the lasting power of Mineral Paints are still incredibly vibrant, although over 100 years old). Mineral Paints are breathable and work well with traditional historic masonry.

Whitewash:

Whitewash is a generic term that can be applied to your most basic of limewashes to mixtures of animal glues with chalk. With mix designs using additives such as blood, salt, and even urine, various recipes will produce a wide variety of results. Many of the best whitewash recipes are mixtures of lime with traditional materials such as salt. And remember, because lime doesn't have any of the compounds that react with salt, its fine to combine these two materials.

Hopefully, you now have a sense of what are good options for historic masonry and the reasons why. Alternatively, if you are using a durable lime mortar (such as one made with a Natural Hydraulic Lime), you may not need to paint at all. But if you do choose to paint, make sure your decision is an informed one.