## OF PAINT AND WINDOWS
# REPLACE OR REPAIR—THAT IS THE QUESTION

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One of the toughest issues for many historic preservation commissions involves the pleas of property owners that have bought into the "big lie." The "big lie" is that somehow original materials that have served us well for hundreds and sometimes thousands of years are no longer useful. I always ask my audience and seminar attendees this question, "If the replacement product industry spend tens of millions of dollars a year to market their products to you, the historic property owner, does that mean you should automatically believe them and run out to buy their products?" In over 25 years of asking this question, no one has ever said, "Why, yes Bob it does." Any seemingly rational person would answer “no” to this. The next question I ask is, "Well then, and don't be shy, how many of you old house owners have installed replacement windows or vinyl siding?" I usually get about 20% of the audience that has the courage to admit they have. I suspect the number is higher.

The point is that we as a society have become lazy. Universities and not-for-profits have done most of the objective research and field studies. The problem is that they don't have the financial ability to get the proven truth out to consumers. That truth is simple—preservation doesn't cost—it pays! I've spent my entire 32-year career digging up research and testing theories in the field on over 150 rehabilitations of historic properties. Historic Preservation Commissions need to arm themselves with this type of available information. We also need to do a much better job educating property owners and contractors on ways to practice cost effective, preservation rehab.

### Long Term Paint Jobs

A 70-year-old guy is climbing up a rickety old wood ladder that's propped up against a house with massive paint failure. His bucket of paint is spilling and he looks like he has a bad case of gas. We've all seen this TV commercial or a variation of it. The pitch is, you don't ever have to paint your house again if you install replacement siding. This is a very appealing idea to many homeowners having trouble keeping paint on their homes for more than three to five years. Yet, very few people paint their own houses and even fewer 70-year-olds do.

If the standard for most paint jobs seems to be three to five years and re-painting is needed, what's a homeowner to do? With the tools we have today, your painter can achieve a paint job that will last 12 to 15 years cost effectively. The key is thorough and appropriate preparation and quality materials. When there are too many coats of paint on the wood exterior of a house they cure at different rates. Oil-based paints actually never stop curing while latex/acrylic based paints cure quickly. Oil-based paints that have hardened to the point of cracking allow water infiltration, which can lead to the underlying wood to soften, resulting in paint flaking off due to wood failure. A new latex top coat contracts and expands at a different rate than the old paint under it, which in turn can cause the old paint to pull away from the wood. Only firmly adhered paint should be allowed to stay. Hand scraping is a must unless all the old paint is to be removed. It is a time-consuming process, but the costs are more than made up by the longevity of the resulting paint job. Lightly misting the paint with a spray bottle before scraping will help reduce dust. *Editors note: Many historic district guidelines specifically prohibit total removal of firmly adhered paint. Be familiar with your commission's guidelines to avoid mistakes when advising property owners and contractors.*

After thorough scraping, or complete paint removal, the wood must be cleaned and allowed to dry before priming and caulking. All bare wood should be hand washed with trisodium phosphate (TSP) (or fake TSP) and water. Use ¼ cup of TSP for every gallon of water and scrub the siding. Hand scrubbing forces you to get up and look at all the areas of your house. After being scrubbed, the entire surface should then be rinsed with a hose without a spray nozzle. Never let a painter power-wash your house. A painter on the ground water blasting your house at 2,200 pounds per square inch (about the same pressure as sand blasting) will not see a rotted eave board, but they will cause your paint job to fail. Exterior wood with moisture contents over 15% will not hold paint. In tests we did for my PBS show we found that power washed wood siding and trim had a moisture content of over 30% even after sitting in the sun for five days. The high pressure drives moisture deep into the wood and it can take as long as six months to dry down to 15% moisture. All house painters should have a moisture meter.

Once the wood is clean, it's time to repair or replace any rotted and cracked siding and trim. Replacement should be with similar materials, but most rot can be repaired using architectural epoxies. It is usually cheaper to do epoxy repairs than replacing rotted wood. All primer should be oil-based alkyd primer. Latex primer does not bite into the wood and condition it properly for caulk and topcoats. Primer should be applied by brush, not spray. Spraying does not provide adequate adhesion and puts the paint on too thin. Brushing will always give a thicker coat that will wear longer. Caulking will help stop air infiltration into the house and will help prevent moisture damage to the paint job. Always caulk after priming and use a high quality caulk such as latex/acrylic with silicone or a polyurethane sealant. Imagine your house under Niagara Falls. Caulk all areas the cascading water can penetrate but don't caulk where it can't. Your house still has to be able to breathe.

Use the highest quality acrylic latex topcoats you can afford. With paint you get what you pay for. Painting contractors have accounts with paint stores and often want to sell you paint for twelve to fifteen dollars a gallon. This is no bargain as the paint is always inferior with low solids content. Twenty-five to forty dollars a gallon is the correct range. Apply two coats with brush only. Check *Consumer Reports Magazine* for the highest rated paints and use them! This is the point where it is best to finish all the prepping and painting on one side of the house at a time. We don't think about it often, but if you clean, prime, and caulk sides one, two, three and four, and then begin painting side one with topcoats, the airborne pollution that attaches itself to the house can knock as much as five to seven years off the life of the paint job.

Finally, a paint job must be maintained on a yearly basis. Look around your house to see if any paint is failing. Paint failure, on a properly painted house, can be caused by things such as exhaust fans that are not sealed properly, leaky gutters, or roof problems. If you're hiring all the work done, buy a yearly maintenance contract from the painter. This will cost between $100 and $200 a year but is well worth it.

In truth, you can hire a contractor to paint your house, as described above, twice in 24 to 30 years, never lift a finger and pay less than installing plastic siding that will last about 18 to 20 years. It's all about sustainable rehab that's cost effective.

**Old Windows Aren't a Pane—They're a Goldmine**

It is a challenge that plagues commissions across the country—homeowners who want to replace their original wood windows with new double-paned plastic knock offs. They come before the commission citing the cost of repairing the original windows, their low energy efficiency, and the superiority and similar appearance of the replacement product. When the commission stands firm and says no, it gets accused of not being sympathetic to the owner's plight. When it caves in and says yes, it is creating a potentially dangerous precedent. Education is the key. Commission members need to know the facts in order to educate property owners and contractors. Here then, are the facts:

I know many historic house owners feel their old windows need to be replaced. They leak air, have tons of old paint, the sash ropes are broken, the glazing putty is falling out, and those stupid old aluminum, self-storing storm windows are only good for breaking fingernails. You should go ahead and replace them if you like spending more money than you need to for something that won't be as energy efficient as what you have. I can hear it now, "Did Yapp just say old windows can be made as or more energy efficient for less money than comparable replacement windows? How can that be? The window industry tells me I can't live without their products." Very good, that is exactly what I'm saying and yes, you don't need their products. You may want them, but you rarely *need* them!

To be fair, if your original wood windows are rotted beyond repair you will need new windows. However, in the 150 plus complete rehabs of old houses I've been involved in, I have never replaced a window unless it was missing. I haven't because restored original, wood windows are more energy efficient and cost me less than replacements. Remember, just because the window replacement industry says you should replace your windows doesn't automatically make it so.

Double hung windows (one window sash on top and one on the bottom) are the most popular in America and were invented in the 1400s primarily as an early air conditioning system. Each of the two window sashes move up and down utilizing a counter balance system with a cast iron weight, a pulley, and rope to connect the weight to the side of the window sash. If you drop the top window sash down three inches and raise the lower sash three inches a very interesting thing happens. The heat and humidity leaves the house through the top gap and cooler breezes enter the house through the lower gap. Now, I love air conditioning; but when we use our windows in this fashion, I don't have to turn on the air conditioning until mid-July and it goes off in mid-August. We estimate we're saving between 20% and 30% on our summer electricity bills without sacrificing comfort to do so.

In most pre-1960 homes with wood windows, there is also a storm window that protects them. Part of the reason we don't use our windows as air conditioning systems is that we replaced the original wooden storm windows with aluminum, self-storing storms. Folks just got tired of climbing up and down ladders in the spring and fall to switch out glass storm windows with screen windows. Whoever invented these aluminum storms did so because of this fact. The problem with this design is that there is only a screen on the bottom; and so everyone painted their top window sashes shut. Not only did this stop people from using their double-hung windows as air conditioning, the windows got much less use and people didn't pay much attention to maintenance issues.

One of the primary problems I have with new double paned (insulated glass) windows—wood or vinyl—is that they have no storms. Your interior double hung units—old or new—were never intended to take a direct hit from the weather. Up until about the 1880s all windows had storm shutters. Then wooden storms were invented in favor of shutters. These were more practical than hassling with closing the shutters every time a storm was coming.

The good news is there are now combination wooden storms that are either self-storing or have glass that can be taken out of the wood frame from inside the house. No more trudging up and down the ladder to change storms and screens twice a year. These storms also have full screens so your windows can be used as they were intended.

It will take a consumer ten to thirty years to get any payback from replacement windows with double paned glass and considering the following statements in the window industries trade periodical, *Glass Magazine*, they make the case for restoration.

In the July 2001 *Glass Magazine*, editor, Charles Cumpstom states that, "The consumer's perception of glass is significantly different from the industry's. While some in the industry think a 15-year life is adequate, it is the rare homeowner who envisions replacing all his windows in 15 years." This quote was addressing both plastic (vinyl) and wood windows. Another *Glass Magazine* article in 1995 by Ted Hart states, "Remember our industry, with rare exception, has chosen to hide the fact that insulating glass does have a life expectancy. It is a crime that with full knowledge and total capability to build a superior unit, most of the industry chooses to manufacture an inferior single-seal unit." Single seal units are still the norm in plastic windows with an average seal life of two to six years according to accelerated testing by the flat glass manufacturer, IG Cardinal.

For most homes, you will never find a simpler and more energy efficient window unit than a weatherized, single paned, double hung window with a combination wooden storm. In most cases, original windows can be made energy efficient, safe, and easily cleaned for less than a wood replacement and often for less than a vinyl replacement. Commissions need to train contractors how to do this in order to compete with the replacement industry.

**Time-out**

Take the time to become familiar with your commission's guidelines and to understand them and their intent. Take the time to learn about the care and feeding of old buildings. Take the time to learn about new miracle products, their pros and cons. Take the time to explain the reasoning behind the guidelines to property owners and applicants. Take the time to reach out to contractors in your area so they know what they're getting into when they accept a job in the district. It isn't hard to do, and a little time now will save a lot of time later.

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