

A craftsman in a blue plaid shirt and dark pants is working on a large, ornate wooden window frame in a factory setting. The frame is made of light-colored wood and features a complex, multi-lobed design. The craftsman is using a tool to work on the frame, which is supported by a wooden structure. The background shows a factory floor with yellow and white markings, a workbench with various tools and materials, and a yellow pallet jack.

REPLACING
HISTORIC
WINDOWS:
NAVIGATING THE
PRESERVATION REVIEW
PROCESS



REPLACING HISTORIC WINDOWS: NAVIGATING THE PRESERVATION REVIEW PROCESS

The contractor renovating the exterior of an early 1900's school had to make a key decision when it came time to refurbish badly decayed window exteriors. Parts of the wood casings were beyond repair and would have to be replaced, but the contractor balked when he saw how much it would cost to duplicate the fluted molding in a weather-resistant wood species.

So he chose to value engineer a solution. Instead of ordering the molding that the job specifications called for, the contractor ordered an interior-grade molding produced in a local mill shop. It was identical in appearance to the originally specified molding but the substitution was cheaper. Once the molding was painted, it was impossible to tell the difference, and the change went unnoticed at first.

Within a few years, the replacement molding—interior-grade wood never intended for exterior use—started to deteriorate. An expensive renovation that should have given the building owners decades of trouble-free operation now needed another round of repairs.

This discouraging chain of events highlights the potential hazards of renovations at historically significant properties—issues that can be avoided with diligent research and careful execution. In this case, the general contractor was simply looking for an economical approach to a needed repair. But the absence of a consultation with a design professional familiar with the special requirements of historic properties proved problematic in the long run.

Windows are an especially important architectural component of older buildings, on both the interior and exterior, and they deserve special consideration in a rehabilitation project. In addition, energy efficiency, ease of operation, and weather tightness also may be design goals. These challenges take on special significance in established historic districts, where local, state, and even federal rules on renovations and repairs come into play.

RESOURCES FOR THE HISTORIC PROJECTS



Planning is essential, particularly when operating in a historic district. “It’s a bad time to do research if you’ve already swung a hammer,” says Charles McBrien, an expert on historical design considerations and the regional manager of architectural sales at Marvin Windows and Doors. “The entire process hinges on planning.”

Fundamental steps at the outset include a review of how building codes and other legal requirements will affect the renovation. Does a local historic preservation commission, for example, have the right to review plans and building specifications and make changes where it sees fit? Certain types of buildings are eligible for federal historic preservation tax incentives. These include buildings that are national historic landmarks, and buildings that are listed in the National Register of Historic Places. Does the building fall into one of those categories?

Contractors and architects tackling a historical project will find a number of research tools available to them. They include the Historic American Buildings Survey, the Historic American Engineering Record (both of which are part of the Prints and Photographs Division of the Library of Congress), the National Register of Historic Places, records of the local historic preservation commission (providing one exists), and copies of local building ordinances. These sources provide detailed drawings and photographs of many historic building types.

While the National Park Service (NPS) has developed a list of standards and guidelines for windows in historic renovations, it is important to remember that local historic districts are the entities that develop the regulations that guide renovations in their jurisdictions. There are no uniform guidelines that cover all projects in all jurisdictions — plans developed for one historic commission may not be suitable for another. All projects are judged on their own merits and must be researched individually. The recommendations outlined in this white paper should be viewed in that light.

DISTRICT ORDINANCES AND THE COMMISSION REVIEW PROCESS



Trade professionals should be prepared to consult with local code officials, state historic preservation offices, and the NPS to make sure that rehabilitation projects will pass muster. If the building is located within an historic district, count on a review of repair/replacement plans at the local level. If the project is to include an application for a tax credit, expect a more rigorous review.

In order to qualify for the 20% federal tax credit, the building must be income producing, not a personal residence, and a three-part application is required. As detailed by the NPS, Part 1 includes information about the historical significance and appearance of the building. Part 2 covers the condition of the building and the specific work being proposed. (Note that a rehabilitation proposal is not always about returning the building to its original look—it might restore it to its appearance at a later date when it became historically significant.) Part 3 is submitted after the project is complete to show that the work was carried out correctly and according to the approved plan.

The application is submitted to the state historic preservation office, where it is reviewed for accuracy and completeness. Officials may want to schedule an inspection of the property, and may request additional information. The application then goes on to the National Park Service with a recommendation of whether the project meets the Standards for Rehabilitation. After the owner has paid the applicable fee, NPS staffers will review the application. Keep in mind that the NPS staff may not agree with the recommendation of the state historic office. It is the National Park Service that makes all certification decisions in regards to the federal tax credit.

Building permits are a separate issue. If the project is in an historic district, approval from the local historic review commission will be required before a builder is able to get a permit. Although most local commissions start with the NPS standards, they are really a starting point for local authorities, and the rules are likely to be adapted to reflect local conditions and preferences.

KNOW IF AND WHEN OLD WINDOWS SHOULD BE REPAIRED



Before any work begins, it is important to research the historical significance of the windows, and take a careful inventory of the condition of each window on the project. Photograph each window carefully, making note of the condition of the jambs, muntins, sash, exterior sills, interior casings, and other parts. Check the hardware. Finally, rate the overall condition of each window as excellent, fair, or poor.

The Secretary of the Interior's Standards for Rehabilitation, the set of rules under which the NPS reviews work on historic properties, unequivocally calls for repair over replacement. That's the key rule: Always repair first. Repairs can include refinishing, the use of repair materials such as epoxy, the addition of weather stripping, and the replacement of component parts, such as the sash stiles or rails.

McBrien says he has photographs of windows that anyone would say needed replacing when, in fact, a local historical board had ruled in favor of repair. "There is no definite black and white," he said, "this is beyond repair; this is not."

According to the NPS, many factors can contribute to decay — poor design, vandalism, insects, a lack of maintenance, and prolonged exposure to moisture. Moisture is a primary factor leading to decay. It usually begins on horizontal surfaces and at joints where water is wicked into end grain. Look carefully at the sill, joints between the sill and jambs, corners of the bottom rails, and muntin joints. Check the edges of the frame and whether

seams have been caulked to keep water out. Also, check glazing putty for cracks or missing sections, especially at the joints.

It is also important to check the operational soundness of the window. That includes lifts and locks, the balance system, sash locks and other hardware, and the weather stripping. An awl or penknife is an excellent tool for checking whether wood components are decayed; when the tool can be pushed easily into the wood, there is rot below.

The design and location of windows and their role in defining the character of the building should be weighed also. If the windows are unusually well crafted, or play a critical role in a particular elevation of the building, the likelihood that an historical review commission will opt for repair over replacement is stronger.

"If you took a really prominent building, like a 150-year-old city hall, they are probably going to say these windows need to be all wood, no matter what," McBrien said. "They will require wood replication, or that you must repair them, even if they are 90% shot."

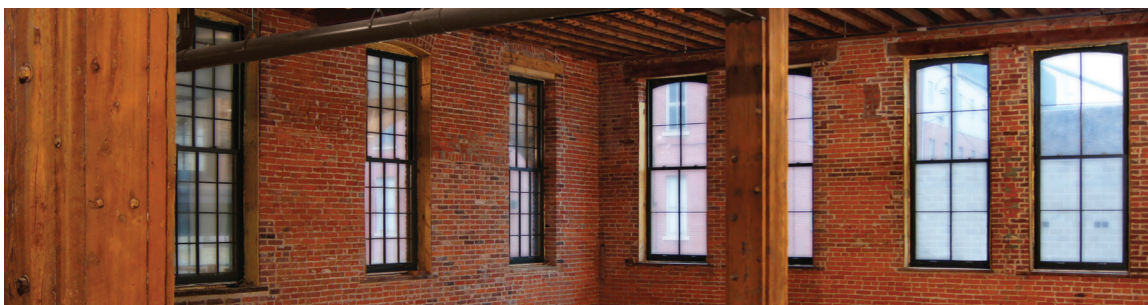
The overall condition of the window is what counts; no single factor determines whether the window should be repaired or replaced. NPS suggests that the feasibility of a repair can best be answered by walking through the process on a sample window. This is a good way of weighing the finished appearance, the cost, and other factors.

Individually, the NPS says, code requirements, energy performance, and the presence of hazardous materials are not reason enough to replace a window. But in conjunction with deterioration, they may swing the decision toward replacement. In coastal areas, requirements for impact resistance, which old windows will never be able to meet, may be another factor in deciding whether windows should be repaired or replaced.

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UNDERSTANDING REPLACEMENT OPTIONS



In theory, with enough time and money just about any window can be repaired. But that is not always practical, and when a window must be replaced, trade professionals will have several options. Replacement decisions should be guided by the NPS standard, which requires that the design, color, texture and, where possible, the original materials should be replicated.

The more important the window is in defining the character of a building, the NPS suggests, the more important it is to choose a close match to the original. Windows in an alley, for example, or on an upper floor of a building are not as important as windows on the main façade where they are critical to the overall appearance — the historic “fabric” — of the building. It may be possible to move windows in good repair from a secondary to a primary location on the building, then use new sash or less preferred replacements for locations that are less prominent.

Builders have a couple of choices for replacement windows: a sash-only replacement that leaves the original interior and exterior trim and the frame intact; or completely new units, which require the removal of interior and exterior trim, and possibly some siding and interior wall finishes as well.

Sash-only replacement keeps the master frame intact, and that preserves the mass and proportionality of the original. Stepping up from a single-pane window to a double-glazed insulated glass unit promises significant energy savings, especially when multiplied by a building’s worth of windows.

However, replacement sash must be chosen with care. It is easy to choose new sash that represent an upgrade in performance, but do not bear enough resemblance to the originals to satisfy a local historical commission. Windows in an old factory with narrow steel frames, for example, will look odd when fitted with sash made with wider stiles and rails. A one-over-one sash, with a single pane of glass in both the upper and lower sash, will look completely wrong in a Federal or Georgian house whose original windows had multiple panes of glass in each sash. Context is everything.

On commercial buildings, the owners typically are most interested in low maintenance, while historic preservation commissions typically prioritize protecting the building’s original appearance. This potential conflict of expectations will be settled on a case-by-case basis, depending on the particular jurisdiction where the building is located. For example, NPS guidelines allow clad windows on a case-by-case basis, while some historic districts flatly rule that option out. Windows with applied grills are made to look like true divided-lite windows, and at first glance these windows may look very much like those with individual panes of glass. Are they allowed on historic building facades? It all depends on the local historic review.

REPLACEMENT IS 'MAJOR SURGERY'



Replacing the entire window is obviously a more intensive repair—“major surgery,” in McBrien’s words. But if water leaks have been a problem, this route allows for up-to-date flashing, air sealing, and waterproofing—steps that should forestall water damage in the future. A local historic commission is likely to require detailed drawings and specifications to make sure the replacements match the originals in appearance and materials.

With a generous budget, the wholesale replacement of windows gives the building owner an opportunity to match the originals very accurately. An experienced manufacturer can build windows to meet even the most demanding list of specifications, and replacement windows will be equal to the originals in terms of craftsmanship and appearance.

Storm windows on either the inside or the outside are a potentially appealing third option when the building owner cannot afford to replace all the windows or window sash right away. Storm windows protect the original fabric of the building when installed on the exterior, and can offer significant energy improvements when original windows are leaky. Trapped moisture between an exterior storm and the sash, however, may cause or exacerbate damage.

Navigating the historic review process may seem daunting, even unnecessarily expensive, to builders and architects who are not familiar with the process. Windows play a key part in the decision-making process and are, in McBrien’s view, the number one challenge in getting a project right.

As challenging as the process can be, McBrien suggests taking the long view: not only about window selection, but about historical preservation in general. “We have to remember we are just stewards of these buildings,” he says. A thoughtful restoration is really about making sure that a historic building retains its sense of place, even as the world changes around it, for generations to come.

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