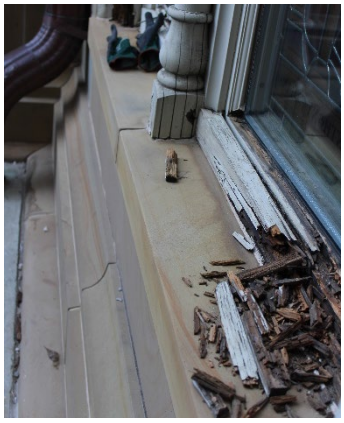
NATIONAL FUND FOR SACRED PLACES

QUICK REFERENCE GUIDE | HISTORIC WINDOWS





Left: Window trim condition before restoration on the Basilica of St. Josaphat, Milwaukee, WI. Photo by Colleen Cheney-Trawinski.
Center: Removal of the window for restoration by the contractor, Jim Hunt, at the United Baptist Church, Poultney, VT. Photo by Chuck Helfer.
Right: Restored historic wood window after repair and repainting at St. Francis Xavier Mission, St. Xavier, MT. Photo by Fr. Michael Dorn OFM Cap.

HISTORIC WINDOWS

Windows are essential components of historic buildings, both functionally and aesthetically. Windows admit natural light into interior spaces, provide fresh air into the interior of the building, and provide a visual connection to the outdoors. Throughout most of the United States' history, wood has been the most common material used to build windows. By the end of the nineteenth century, steel began to be used for fire-resistant windows, and in the 1930s, aluminum windows were developed. While metal-clad wood windows were first developed in the early twentieth century, they did not become common until later in the century. Today, windows are complex units constructed from a variety of traditional and new materials, often with energy-efficient multi-panes of glass.

Windows can be the most visible and important component of a historic building, but they are often underappreciated. Aesthetically, windows are a significant aspect of a historic building and are an integral part of a building's design. They add beauty and character to the building, and in some buildings, the windows may be the most dominant visual element. Historic windows are character-defining features that are typically unique to the building and its architectural style. They also provide evidence of a specific period of time, a region's design style, craftsmanship, and building practices. When historic windows are replaced, the building permanently loses an important character-defining feature. If modern replacement windows do not match the design of the historic windows, they can significantly affect the architectural style of the building. For example, installing Prairie-style windows made popular by Frank Lloyd Wright in a Colonial-era building

For information on stained-glass and leaded glass windows reference the Stained- and Leaded Glass Quick Reference Guide.

would change the overall feel of the symmetrical, rectangular building with delicate classical details. Modern stock replacement windows also typically do not match historic, custom window openings, which can create inaccurate proportions, reduce natural light inside the building, and negatively affect the building's appearance.

Historic windows require maintenance and repair to keep them functioning properly, but even most historic windows that have been neglected and badly damaged can be repaired. Traditional windows, made of individual parts that are assembled to create the window, are designed to be repaired or replaced in-kind. This differs from today's vinyl, aluminum, fiberglass, and composite windows, which are manufactured as a unit and whose components generally cannot be repaired. This means that when a part of a new window fails or the insulated glass seal breaks, the entire window unit must be replaced. Historic windows are also typically made of high-quality materials. Wood windows made before the 1940s were likely made from old-growth wood. Old-growth wood is a stable, dense wood that mills well, holds paint and stains, is not as attractive to insects, and has a natural resistance to rot. If historic windows are maintained, they can last for more than 100 years.

Historic windows are often one of the first building components blamed for a building's energy loss, with a common belief that their replacement is the clearest path to energy efficiency. Most historic windows can match, if not exceed, the efficiency of replacement windows if they are properly maintained, properly weatherproofed, and retrofitted with storm windows. Retrofitting historic windows can achieve energy savings at a lower cost than installing high-performance replacement windows. Preserving historic windows also avoids the environmental impact of producing new windows while keeping the historic windows out of the landfill.

Historic windows are worthy of preservation. They are important character-defining features of a building, and replacing them could greatly affect a historic building's appearance. They were designed to be repaired and are typically made of high-quality materials that allow them to last longer. Historic windows can be made energy efficient, and saving them reduces environmental waste.

GENERAL RECOMMENDATIONS

All projects funded by the National Fund for Sacred Places must respect the property's historic character and materials, and must adhere to the Secretary of the Interior's Standards for Rehabilitation. Below are general recommendations for the treatment of historic windows, but they do not cover all the specific recommendations. Reference the resources in the section below for more detailed recommendations.

- **RETAIN AND PRESERVE:** Preserve historic windows, including how they operate and their functional and decorative components (such as sashes, muntins, glazing, pane configuration, sills, jambs, mullions, casing, trim, lugs, brick molding, and hardware). For more information on the components of a window, reference Anatomy of a Double-Hung Window by Jonathan Poore.

- **MAINTAIN:** Maintain historically operable windows by repairing or replacing broken components of the window's operating mechanisms (such as hinges, latches, sash chains, or cord) and lubricating friction points.
- **CONTRACTORS:** Only qualified contractors that have experience working with historic windows, and experience working on similar window types (specific window material, style, and size) should be used.
- **PROTECT:** Protect and retain historic glass when repairing the window or replacing glazing putty.
- **WINDOW CONDITIONS ASSESSMENT:** Perform a detailed assessment of each window to document existing conditions. The assessment will help determine if the window can be repaired or if it is beyond repair. This is an important step before beginning a window restoration. A qualified historic preservation architect or qualified historic window contractor should complete the Window Conditions Assessment.
- **REPAIR:** Repair window frames and sashes by patching, splicing, or consolidating them using recognized preservation methods.
- **REPLACE GLAZING PUTTY:** Replace in-kind glazing putty that has failed. Sealants or caulks should not be used because they are not the same as glazing putty. Glazing putty is the pliable compound used to hold the glass in place in the frame and seal the joint to make it weathertight.
- **REPLACE IN-KIND PARTS:** Replace in-kind window parts and elements (such as muntins, rails, stiles, sashes, sills, or trim) in the existing window that are too deteriorated to be stabilized and repaired. The replacement parts and elements should match the exact materials, size and design details of the historic parts and elements.
- **GLASS:** Replace broken historic glass with new glass that has the same visual characteristics (color, tint, reflectivity, pattern/texture, size, and thickness) as the historic glass if possible.
- **WEATHERPROOFING:** Replace or install weatherstripping.
- **STORM WINDOWS:** To protect historic windows and improve energy efficiency, consider adding a storm window. Storm windows can be installed at the interior or exterior depending on the application. The storm window should not obscure the characteristics of the historic window. To minimize the visual impact of the storm window, select a storm window with a matching or a one-over-one pane configuration with a frame color that matches the existing trim color.
- **REPLACE IN-KIND:** If an entire window is deteriorated beyond repair, replace the window in-kind. To replace in-kind means that the replacement window(s) should match the exact materials, size, operation style, and design details of the historic windows. For example, a historic double-hung wood window should be replaced with a new double-hung wood window. The glass in the replacement window should match the visual characteristics (color, tint, reflectivity, pattern/texture, size, and thickness) of the historic glass if possible.
- **ENERGY EFFICIENCY:** To improve energy efficiency, a historic single-pane sash may be modified to accommodate insulated glass, if it will not jeopardize the structural soundness of the sash, alter the sashes appearance, and if the weight pockets can accommodate an increase in weight to counterbalance the added weight of the insulated glass. However, adding a storm window is often the better solution for energy efficiency. Refer to the Quick Reference Guide on Energy Efficiency for more information.

RESOURCES

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings | Window Recommendations are found on Pages 102-109

Preservation Brief #9: The Repair of Historic Wooden Windows

Preservation Brief #13: The Repair and Thermal Upgrading of Historic Steel Windows

Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement

Weatherization of Historic Buildings: Repair and Upgrade Windows and Doors

Historic Wood Windows: A Tip Sheet from the National Trust for Historic Preservation's HOPE Crew

10 Things You Should Know About Retrofitting Historic Windows by Julia Rocchi, National Trust for Historic Preservation

Skill Set: Windows of Opportunity by Meghan Drueding, National Trust for Historic Preservation