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MEMORANDUM

Historic Resource Commission of September 13, 2018

TO: Planning Commission **Item E-5**

FROM: Hope Sullivan, AICP
Planning Manager

DATE: September 5, 2018

SUBJECT: **HRC-18-114 –** To consider potential modifications to Section 5.16 of the Development Standards regarding guidelines for windows in the Historic District.

Section 5.16 of the Design Guidelines addresses windows as follows.

5.16 - Guidelines for windows.

The majority of buildings in the Historic District are characterized by I9 century styles of architecture. A basic design characteristic of these styles is symmetrically placed, vertically proportioned windows. Houses built in the 1930s to 1960s used in addition to the above, metal framed windows such as casements and picture windows.

***5.16.1 Guidelines for Historic Buildings**. Original windows shall be retained and repaired when at all possible. When replacement is necessary a window of duplicated design shall be used. The size, pane configuration, design and trim shall replicate that of the original. Original trim and surrounds are to be retained when windows are replaced. Bronzed aluminum framed windows are not appropriate for use in a historic building. Stained glass windows were not commonly used in the buildings of the district. Original stained glass windows are very valuable and should be retained. The addition of stained glass windows into openings which did not historically have stained glass is discouraged. (Standard Number: 2, 6)*

Graphics of windows not shown

***5.16.2 Guidelines for New Construction**. The overall style of the new building will determine the appropriate design characteristics of the windows to be used. Windows for new buildings emulating 19th or early 20th century designs should emulate one of the 19th or early 20th century window styles and shall be vertically proportioned with a minimum ratio of 2 horizontal to 3 vertical and shall be single or double hung. Windows for new buildings emulating mid-20th century designs should use windows found in designs of those era (c. 1930-1960). The use of smoked, mirrored or tinted glass is not appropriate for use in the district.*

(Ord. 2005-23 § 1 (part), 2005: Ord. 2001-23, Development Standards).

The guidelines reference standards 2 and 6 of the Secretary of the Interior Standards for rehabilitation. These standards state the following.

5.13 - Secretary of interior standards for rehabilitation.

Rehabilitation is defined as the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural and cultural values.

The standards for rehabilitation are as follows:

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

Over the past five years, the Historic Resource Commission has considered 12 requests to modify windows on properties in the district. In anticipation of future requests, and in order to better articulate the Commission's expectations with respect to windows to property owners in the district, staff is recommending that that the Commission review the existing guidelines, discuss the character defining features of the district, and articulate the expectation of the treatment of windows in the district.

The guidelines note that original windows shall be retained and repaired, and when replacement windows are necessary, the size, pane, configuration, design and trim shall replicate that of the original. Staff recommends that the Commission focus these provisions, and identify if modifications to the guidelines are recommended.

To help the Commission think through this matter, information regarding the treatment of historic windows is attached.

Attachments

1. Technical Preservation Services Information on Windows
2. Select pages for the Secretary of the Interior's Standards Regarding Window
3. Information from Oak Park (IL) Historic Preservation Commission regarding Windows

Technical Preservation Services

Building Exterior Windows

Identify | Protect | Repair | Replace | Missing Feature | Alterations/Additions

< | HOME | >

Standards
Guidelines

Masonry
Wood
Metals

Roofs
Windows
Entrances/Porches
Storefronts

Structural Systems
Spaces/Features/Finishes
Mechanical Systems

Site
Setting

Energy
New Additions
Accessibility
Health/Safety

Distinctive window design on 19th century building.

Technology and prevailing architectural styles have shaped the history of windows in the United States starting in the 17th century with wooden casement windows with tiny glass panes seated in lead cames. From the transitional single-hung sash in the early 1700s to the true double-hung sash later in the same century, these early wooden windows were characterized by the small panes, wide muntins, and the way in which decorative trim was used on both the exterior and interior of the window.

As the sash thickness increased by the turn of the century, muntins took on a thinner appearance as they narrowed in width but increased in thickness according to the size of the window and design practices. Regional traditions continued to have an impact on the prevailing window design such as with the long-term use of "french windows" in areas of the deep South.

Changes in technology led to the possibility of larger glass panes so that by the mid-19th century, two-over-two lights were common; the manufacturing of plate glass in the United States allowed for dramatic use of large sheets of glass in commercial and office buildings by the late 19th century. With mass-produced windows, mail order distribution, and changing architectural styles, it was possible to obtain a wide range of window designs and light patterns in sash.

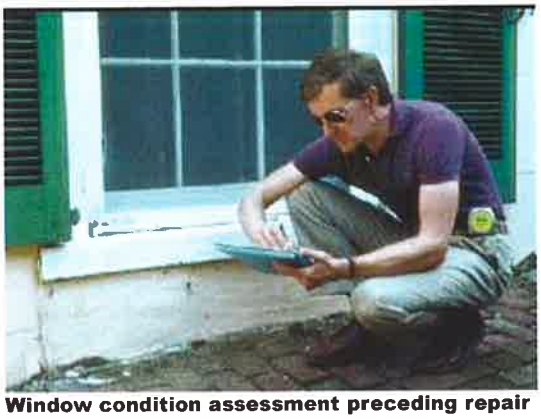
Delicate muntins and multi-pane sash on early 19th c. row houses.

Popular versions of Arts and Crafts houses constructed in the early 20th century frequently utilized smaller lights in the upper sash set in groups or pairs and saw the re-emergence of casement windows. In the early 20th century, the desire for fireproof building construction in dense urban areas contributed to the growth of a thriving steel window industry along with a market for hollow metal and metal clad wooden windows

As one of the few parts of a building serving as both an interior and exterior feature, windows are nearly always an important part of the historic character of a building. In most buildings, windows also comprise a considerable amount of the historic fabric of the wall plane and thus are deserving of special consideration in a rehabilitation project.

Windows ....Identify, retain, and preserve

recommended.....



Window condition assessment preceding repair work.

Identifying, retaining, and preserving windows--and their functional and decorative features--that are important in defining the overall historic character of the building.

Such features can include frames, sash, muntins, glazing, sills, heads, hoodmolds, panelled or decorated jambs and moldings, and interior and exterior shutters and blinds.

Conducting an indepth survey of the conditions of existing windows early in rehabilitation planning so that repair and upgrading methods and possible replacement options can be fully explored.

not recommended.....

Removing or radically changing windows which are important in defining the historic character of the building so that, as a result, the character is diminished.

Changing the number, location, size or glazing pattern of windows, through cutting new openings, blocking-in windows, and installing replacement sash that do not fit the historic window opening.

Changing the historic appearance of windows through the use of inappropriate designs, materials, finishes, or colors which noticeably change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame.

Obscuring historic window trim with metal or other material.

Stripping windows of historic material such as wood, cast iron, and bronze.

Replacing windows solely because of peeling paint, broken glass, stuck sash, and high air infiltration. These conditions, in themselves, are no indication that windows are beyond repair.

Windows ....Protect and Maintain

recommended.....

Protecting and maintaining the wood and architectural metal which comprise the window frame, sash, muntins, and surrounds through appropriate surface treatments such as cleaning, rust removal, limited paint removal, and re-application of protective coating systems.

Making windows weathertight by re-caulking and replacing or installing weatherstripping. These actions also improve thermal efficiency.

Evaluating the overall condition of materials to determine whether more than protection and maintenance are required, i.e. if repairs to windows and window features will be required.

Newly painted double-hung wood windows.

not recommended.....

Failing to provide adequate protection of materials on a cyclical basis so that deterioration of the window results.

Retrofitting or replacing windows rather than maintaining the sash, frame, and glazing.

Failing to undertake adequate measures to assure the protection of historic windows.

Windows **....Repair**

recommended.....

Repairing window frames and sash by patching, splicing, consolidating or otherwise reinforcing.

Preparing historic steel windows for repairs and re-finishing.

Such repair may also include replacement in kind--or with compatible substitute material--of those parts that are either extensively deteriorated or are missing when there are surviving prototypes such as architraves, hoodmolds, sash, sills, and interior or exterior shutters and blinds.

not recommended.....

Replacing an entire window when repair of materials and limited replacement of deteriorated or missing parts are appropriate.

Failing to reuse serviceable window hardware such as brass sash lifts and sash locks.

Using substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the window or that is physically or chemically incompatible.

Windows ....Replace

recommended.....

Replacing in kind an entire window that is too deteriorated to repair using the same sash and pane configuration and other design details. If using the same kind of material is not technically or economically feasible when replacing windows deteriorated beyond repair, then a compatible substitute material may be considered.

Deteriorated lower window sash shown prior to its replacement in kind.

Lower window sash replaced, based on physical documentation.

For example, on certain types of large buildings, particularly high-rises, aluminum windows may be a suitable replacement for historic wooden sash provided wooden replacement are not practical and the design detail of the historic windows can be matched.

Historic color duplication, custom contour panning, incorporation of either an integral muntin or 5/8" deep trapezoidal exterior muntin grids, where applicable, retention of the same glass to frame ratio, matching of the historic reveal, and duplication of the frame width, depth, and such existing decorative details as arched tops should all be components in aluminum replacements for use on historic buildings.

not recommended.....

Removing a character-defining window that is unrepairable and blocking it in; or replacing it with a new window that does not convey the same visual appearance.

Design for Missing Historic Features

The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been

addressed.

recommended.....

Designing and installing new windows when the historic windows (frames, sash and glazing) are completely missing. The replacement windows may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the window openings and the historic character of the building.

not recommended.....

Creating a false historical appearance because the replaced window is based on insufficient historical, pictorial, and physical documentation.

Introducing a new design that is incompatible with the historic character of the building.

Alterations/Additions for the New Use

The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

recommended.....

Designing and installing additional windows on rear or other-non character-defining elevations if required by the new use. New window openings may also be cut into exposed party walls. Such design should be compatible with the overall design of the building, but not duplicate the fenestration pattern and detailing of a character-defining elevation.

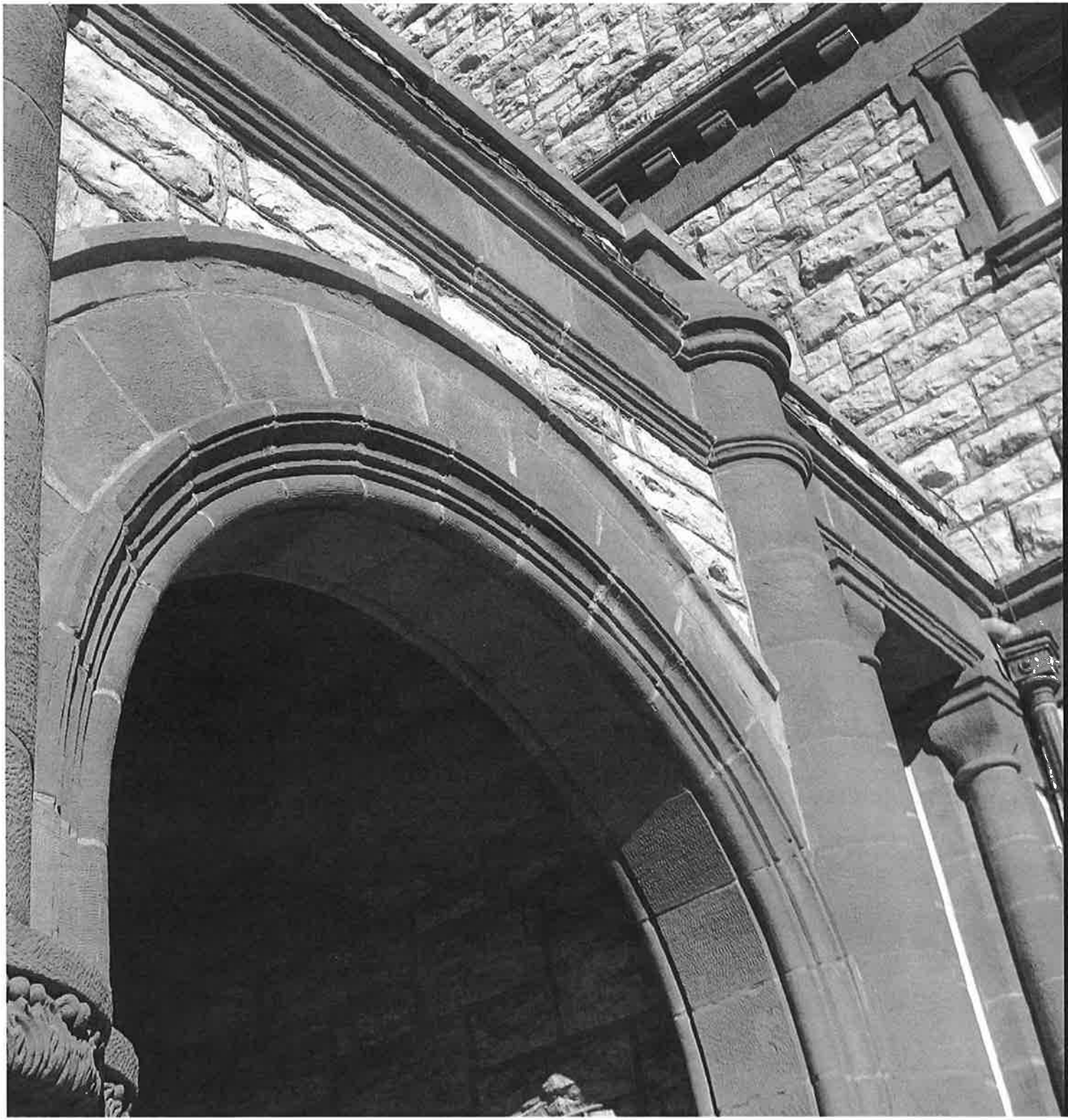
Providing a setback in the design of dropped ceilings when they are required for the new use to allow for the full height of the window openings.

not recommended.....

Incompatible new window (lower right), resulting in loss of the building's historic character.

Installing new windows, including frames, sash, and muntin configuration that are incompatible with the building's historic appearance or obscure, damage, or destroy character-defining features.

Inserting new floors or furred-down ceilings which cut across the glazed areas of windows so that the exterior form and appearance of the windows are changed.



THE SECRETARY OF THE INTERIOR'S **STANDARDS** FOR THE TREATMENT OF HISTORIC PROPERTIES

WITH

GUIDELINES FOR PRESERVING, REHABILITATING, RESTORING & RECONSTRUCTING HISTORIC BUILDINGS

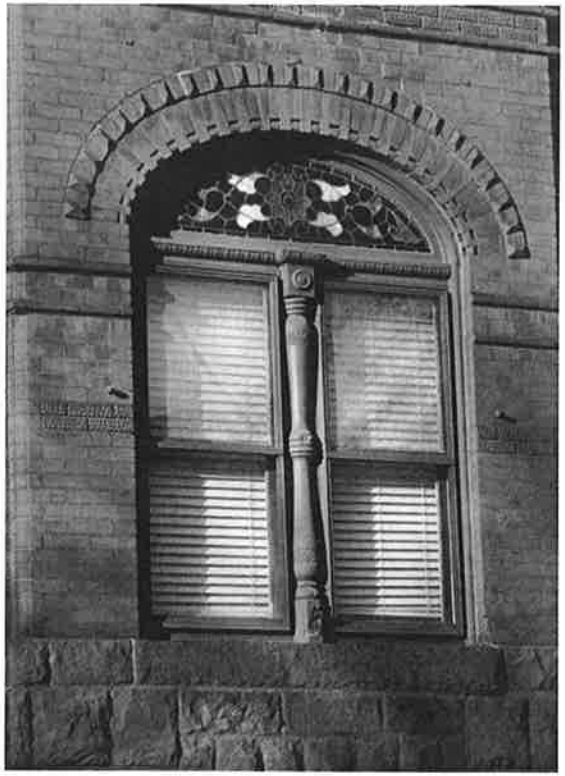
U.S. Department of the Interior
National Park Service
Technical Preservation Services

Windows

Technology and prevailing architectural styles shaped the history of windows in America. The earliest windows were essentially medieval in their form. Small panes of glass, usually diamond-shaped and held together with lead, were set in a hinged casement sash of wood or iron. By the beginning of the 18th century, the glass had increased in size and had become rectangular, with putty holding it in place. Wood muntins replaced lead cames between the panes, and two sashes were placed in a frame where the lower one could slide vertically. Such simple windows remained common in utilitarian buildings well into the 20th century. With the introduction of iron pulleys, the sash could be hung from cords connected to counterweights, which resulted in single-hung windows, or double hung when both sashes were counterbalanced.

Sash increased in depth as it evolved, providing additional strength that allowed narrower muntins. As the production of glass (blown initially as a disk and later as a cylinder) improved, larger pieces of glass became more affordable, resulting in fewer panes of glass in a window. A sash that would have had twelve panes of glass in the 18th century often had only two by the mid 19th century. After about 1850, with the advent of mass-produced millwork, standard profiles and sizes of windows were established with a wide variety of designs and glazing configurations that could be purchased from catalogues. The Chicago window, which featured a large fixed pane of glass in the center with a narrow, double-hung, operable sash window on either side of it, was introduced in the last decades of the 19th century as a feature of the Chicago School-style of architecture. The picture window, popular in ranch-style houses in the mid 20th century, evolved from this.

Steel was employed beginning at the end of the 19th century to build fire-resistant windows in tight urban environments. These hollow-core windows were frequently galvanized. Windows with solid, rolled steel sections were first produced in the first decade of the 20th century in many forms, ranging from casements (especially popular in domestic construction) to large, multi-pane units that provided whole walls of natural light in industrial and warehouse buildings. Operable vents in these large windows pivoted on simple pins. Their relatively small panes and the fact that they were puttied in from the interior made the inevitable breakage easy and inexpensive to repair. Rolled steel was also used for double-hung windows, which were common in high-rise buildings in the 1920s and beyond. Aluminum windows were developed in the 1930s and, by the 1970s, rivaled wood in popularity, particularly in commercial and institutional buildings. They were produced in a variety of styles and functionality, including casement, hopper, awning, and double-hung sash.



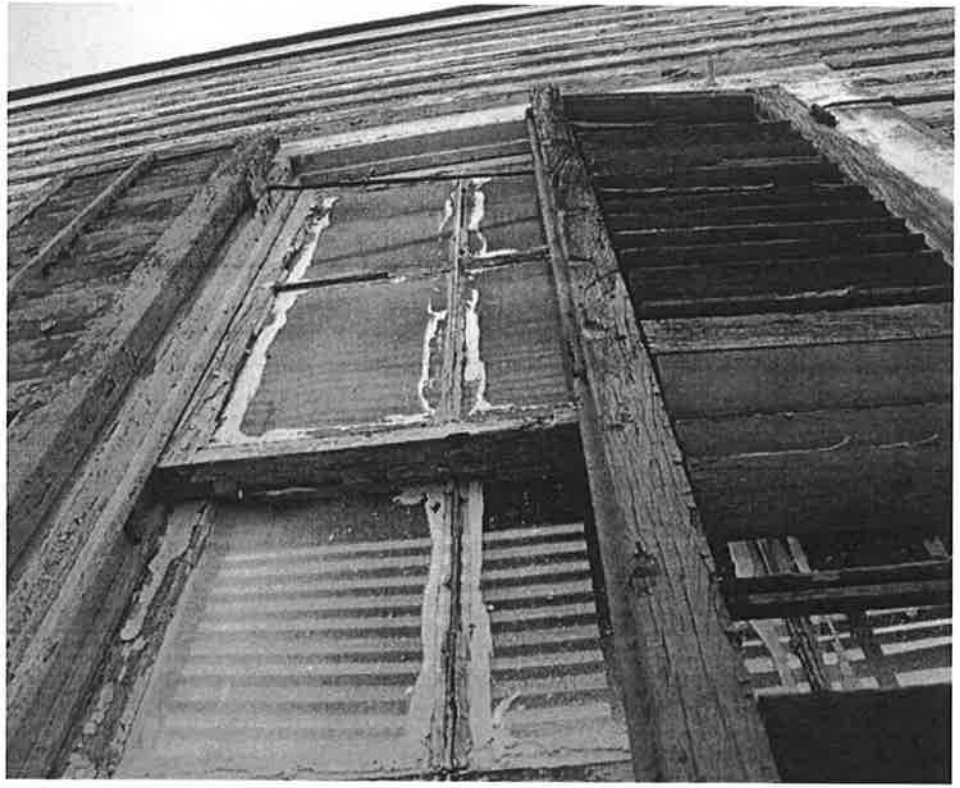
Metal-clad (initially copper) wood windows appeared early in the 20th century but were not common until the later part of the century, when enameled aluminum cladding replaced copper. Although used primarily as replacements in older buildings, vinyl windows were developed in the latter part of the 20th century and marketed as inexpensive and thermally efficient. Modern windows are also made of fiberglass and polymer-based composites.

Storm windows were used historically and are still used to help regulate interior temperatures. Limited commercial use of thermal-pane or insulated glass in windows began in the 1930s, but it was not readily available until about 1950. Tempered glass also came into use about this time. Since then, work has continued to improve its efficiency and to reduce the effect of ultra-violet rays with tinted and low-e (low emissivity) glass. Impact-resistant glass is not new, but its use in windows continues to expand to meet modern hurricane code requirements as well as protection and security requirements.

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Identifying, retaining, and preserving windows and their functional and decorative features that are important to the overall historic character of the building. The window material and how the window operates (e.g., double hung, casement, awning, or hopper) are significant, as are its components (including sash, muntins, ogee lugs, glazing, pane configuration, sills, mullions, casings, or brick molds) and related features, such as shutters.	Altering windows or window features which are important in defining the historic character of the building so that, as a result, the character is diminished. Changing the appearance of windows that contribute to the historic character of the building by replacing materials, finishes, or colors which noticeably change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame. Obscuring historic wood window trim with metal or other material.
Stabilizing deteriorated or damaged windows as a preliminary measure, when necessary, prior to undertaking preservation work.	Failing to stabilize deteriorated or damaged windows as a preliminary measure, when necessary, prior to undertaking preservation work.
Protecting and maintaining the wood or metal which comprises the window jamb, sash, and trim through appropriate surface treatments, such as cleaning, paint removal, and reapplication of the same protective coating systems.	Failing to protect and maintain materials on a cyclical basis so that deterioration of the window results.
Protecting windows against vandalism before work begins by covering them and by installing alarm systems that are keyed into local protection agencies.	Leaving windows unprotected and subject to vandalism before work begins, thereby also allowing the interior to be damaged if it can be accessed through unprotected windows.
Installing impact-resistant glazing, when necessary for security, so that it is compatible with the historic windows and does not damage them or negatively impact their character.	Installing impact-resistant glazing, when necessary for security, that is not compatible with the historic windows and damages them or negatively impacts their character.
Making windows weathertight by recaulking gaps in fixed joints and replacing or installing weatherstripping.	Replacing windows rather than maintaining the sash, frame, or glazing.
Protecting windows from chemical cleaners, paint, or abrasion during work on the exterior of the building.	Failing to protect historic windows from chemical cleaners, paint, or abrasion when work is being done on the exterior of the building.
Protecting and retaining historic glass when replacing putty or repairing other components of the window.	Failing to protect the historic glass when making repairs.

[10] Historic exterior storm windows preserve and help to insulate wood windows.



[11] Old and brittle glazing putty should be removed carefully before reputtying to keep window glazing weathertight.

WINDOWS

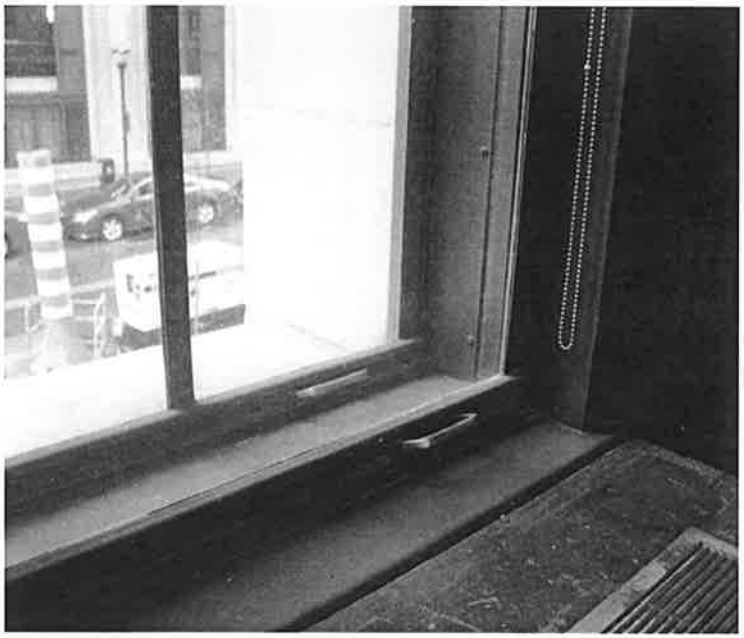
RECOMMENDED	NOT RECOMMENDED
Sustaining the historic operability of windows by lubricating friction points and replacing broken components of the operating system (such as hinges, latches, sash chains or cords) or replacing deteriorated gaskets or insulating units.	Failing to maintain windows and window components so that windows are inoperable, or sealing operable sash permanently. Failing to repair and reuse window hardware such as sash lifts, latches, and locks
Adding storm windows with a matching or a one-over-one pane configuration that will not obscure the characteristics of the historic windows. Storm windows improve energy efficiency and are especially beneficial when installed over wood windows because they also protect them from accelerated deterioration.	
Protecting adjacent materials when working on windows.	Failing to protect adjacent materials when working on windows.
Evaluating the overall condition of windows to determine whether more than protection and maintenance, such as repairs to windows and window features, will be necessary.	Failing to undertake adequate measures to ensure the protection of windows.
Repairing window frames and sash by patching, splicing, consolidating, or otherwise reinforcing them using recognized preservation methods.	Removing window frames or sash that could be stabilized, repaired, and conserved, or using untested consolidants, improper repair techniques, or untrained personnel, potentially causing furthur damage to historic buildings.
Using corrosion-resistant roof fasteners (e.g., nails and clips) to repair a roof to help extend its longevity.	
The following work is highlighted to indicate that it represents the greatest degree of intervention generally recommended within the treatment Preservation, and should only be considered after protection, stabilization, and repair concerns have been addressed.	
Limited Replacement in Kind	
Replacing in kind extensively deteriorated or missing components of windows when there are surviving prototypes, such as frames or sash, or when the replacement can be based on documentary or physical evidence. The new work should match the old in material, design, scale, color, and finish.	Replacing an entire window when limited replacement of deteriorated or missing components is appropriate. Using replacement material that does not match the historic window.

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Identifying, retaining, and preserving windows and their functional and decorative features that are important to the overall character of the building. The window material and how the window operates (e.g., double hung, casement, awning, or hopper) are significant, as are its components (including sash, muntins, ogee lugs, glazing, pane configuration, sills, mullions, casings, or brick molds) and related features, such as shutters.	Removing or substantially changing windows or window features which are important in defining the overall historic character of the building so that, as a result, the character is diminished. Changing the appearance of windows that contribute to the historic character of the building by replacing materials, finishes, or colors which noticeably change the sash, depth of the reveal, and muntin configurations; the reflectivity and color of the glazing; or the appearance of the frame. Obscuring historic wood window trim with metal or other material. Replacing windows solely because of peeling paint, broken glass, stuck sash, or high air infiltration. These conditions, in themselves, do not indicate that windows are beyond repair.
Protecting and maintaining the wood or metal which comprises the window jamb, sash, and trim through appropriate treatments, such as cleaning, paint removal, and reapplication of protective coating systems.	Failing to protect and maintain window materials on a cyclical basis so that deterioration of the window results.
Protecting windows against vandalism before work begins by covering them and by installing alarm systems that are keyed into local protection agencies.	Leaving windows unprotected and subject to vandalism before work begins, thereby also allowing the interior to be damaged if it can be accessed through unprotected windows.
Making windows weathertight by recaulking gaps in fixed joints and replacing or installing weatherstripping.	
Protecting windows from chemical cleaners, paint, or abrasion during work on the exterior of the building.	Failing to protect historic windows from chemical cleaners, paint, or abrasion when work is being done on the exterior of the building.
Protecting and retaining historic glass when replacing putty or repairing other components of the window.	Failing to protect the historic glass when making window repairs.

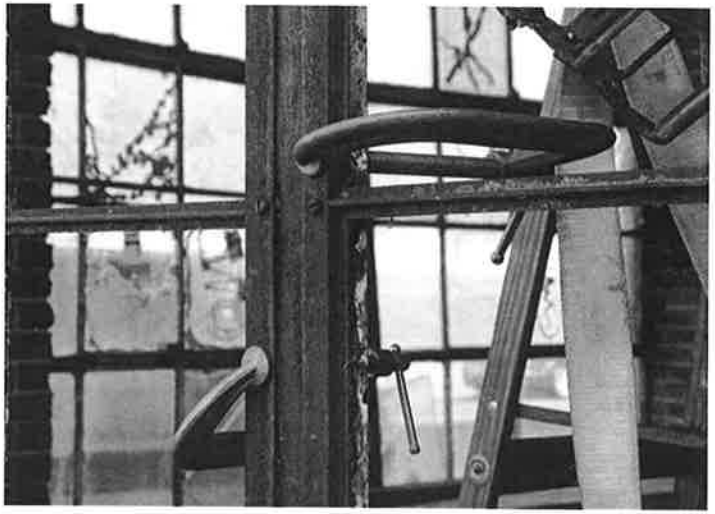
WINDOWS

RECOMMENDED	NOT RECOMMENDED
Sustaining the historic operability of windows by lubricating friction points and replacing broken components of the operating system (such as hinges, latches, sash chains or cords) and replacing deteriorated gaskets or insulating units.	Failing to maintain windows and window components so that windows are inoperable, or sealing operable sash permanently. Failing to repair and reuse window hardware such as sash lifts, latches, and locks.
Adding storm windows with a matching or a one-over-one pane configuration that will not obscure the characteristics of the historic windows. Storm windows improve energy efficiency and are especially beneficial when installed over wood windows because they also protect them from accelerated deterioration.	
Adding interior storm windows as an alternative to exterior storm windows when appropriate.	



[18] The historic metal storm windows in this 1920s office building were retained and repaired during the rehabilitation project.

[19] Installing a mockup of a proposed replacement window can be helpful to evaluate how well the new windows will match the historic windows that are missing or too deteriorated to repair.



[20 a-d] The original steel windows in this industrial building were successfully repaired as part of the rehabilitation project (left).

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Installing sash locks, window guards, removable storm windows, and other reversible treatments to meet safety, security, or energy conservation requirements.	
Evaluating the overall condition of the windows to determine whether more than protection and maintenance, such as repairs to windows and window features, will be necessary.	Failing to undertake adequate measures to ensure the protection of window features.
Repairing window frames and sash by patching, splicing, consolidating, or otherwise reinforcing them using recognized preservation methods. Repair may include the limited replacement in kind or with a compatible substitute material of those extensively deteriorated, broken, or missing components of features when there are surviving prototypes, such as sash, sills, hardware, or shutters.	Removing window features that could be stabilized, repaired, or conserved using untested consolidants, improper repair techniques, or unskilled personnel, potentially causing further damage to the historic materials. Replacing an entire window when repair of the window and limited replacement of deteriorated or missing components are feasible.
Removing glazing putty that has failed and applying new putty; or, if glass is broken, carefully removing all putty, replacing the glass, and reputtying.	
Installing new glass to replace broken glass which has the same visual characteristics as the historic glass.	
Replacing in kind an entire window that is too deteriorated to repair (if the overall form and detailing are still evident) using the physical evidence as a model to reproduce the feature or when the replacement can be based on historic documentation. If using the same kind of material is not feasible, then a compatible substitute material may be considered.	Removing a character-defining window that is unrepairable or is not needed for the new use and blocking up the opening, or replacing it with a new window that does not match. Using substitute material for the replacement that does not convey the same appearance of the surviving components of the window or that is physically incompatible.

[21] The windows on the lower floor, which were too deteriorated to repair, were replaced with new steel windows matching the upper-floor historic windows that were retained.

WINDOWS

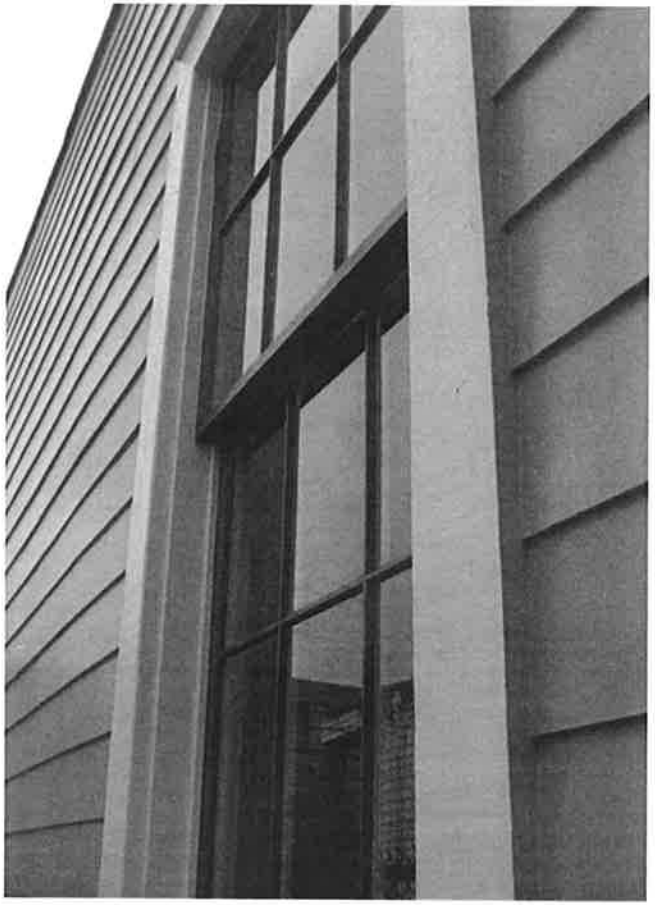
RECOMMENDED	NOT RECOMMENDED
Modifying a historic single-glazed sash to accommodate insulated glass when it will not jeopardize the soundness of the sash or significantly alter its appearance.	Modifying a historic single-glazed sash to accommodate insulated glass when it will jeopardize the soundness of the sash or significantly alter its appearance.
Using low-e glass with the least visible tint in new or replacement windows.	Using low-e glass with a dark tint in new or replacement windows, thereby negatively impacting the historic character of the building.
Using window grids rather than true divided lights on windows on the upper floors of high-rise buildings if they will not be noticeable.	Using window grids rather than true divided lights on windows in low-rise buildings or on lower floors of high-rise buildings where they will be noticeable, resulting in a change to the historic character of the building.
Ensuring that spacer bars in between double panes of glass are the same color as the window sash.	Using spacer bars in between double panes of glass that are not the same color as the window sash.
Replacing all of the components in a glazing system if they have failed because of faulty design or materials that have deteriorated with new material that will improve the window performance without noticeably changing the historic appearance.	Replacing all of the components in a glazing system with new material that will noticeably change the historic appearance.
Replacing incompatible, non-historic windows with new windows that are compatible with the historic character of the building; or reinstating windows in openings that have been filled in.	
The following work is highlighted to indicate that it is specific to **Rehabilitation** *projects and should only be considered after the preservation concerns have been addressed.*	
Designing the Replacement for Missing Historic Features	
Designing and installing a new window or its components, such as frames, sash, and glazing, when the historic feature is completely missing. It may be an accurate restoration based on documentary and physical evidence, but only when the historic feature to be replaced coexisted with the features currently on the building. Or, it may be a new design that is compatible with the size, scale, material, and color of the historic building.	Creating an inaccurate appearance because the replacement for the missing window is based upon insufficient physical or historic documentation, is not a compatible design, or because the feature to be replaced did not coexist with the features currently on the building. Installing replacement windows made from other materials that are not the same as the material of the original windows if they would have a noticeably different appearance from the remaining historic windows.

(a)

(b)

(c)

[22] **Not Recommended:** (a-b) The original wood windows in this late-19th-century building, which were highly decorative, could likely have been repaired and retained. (c) Instead, they were replaced with new windows that do not match the detailing of the historic windows and, therefore, do not meet the Standards (above).



[23] (a)This deteriorated historic wood window was repaired and retained (b) in this rehabilitation project.

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Alterations and Additions for a New Use	
Adding new window openings on rear or other secondary, less-visible elevations, if required by a new use. The new openings and the windows in them should be compatible with the overall design of the building but, in most cases, not duplicate the historic fenestration.	Changing the number, location, size, or glazing pattern of windows on primary or highly-visible elevations which will alter the historic character of the building. Cutting new openings on character-defining elevations or cutting new openings that damage or destroy significant features. Adding balconies at existing window openings or new window openings on primary or other highly-visible elevations where balconies never existed and, therefore, would be incompatible with the historic character of the building.
Replacing windows that are too deteriorated to repair using the same sash and pane configuration, but with new windows that operate differently, if necessary, to accommodate a new use. Any change must have minimal visual impact. Examples could include replacing hopper or awning windows with casement windows, or adding a realigned and enlarged operable portion of industrial steel windows to meet life-safety codes.	Replacing a window that contributes to the historic character of the building with a new window that is different in design (such as glass divisions or muntin profiles), dimensions, materials (wood, metal, or glass), finish or color, or location that will have a noticeably different appearance from the historic windows, which may negatively impact the character of the building.
Installing impact-resistant glazing, when necessary for security, so that it is compatible with the historic windows and does not damage them or negatively impact their character.	Installing impact-resistant glazing, when necessary for security, that is incompatible with the historic windows and that damages them or negatively impacts their character.
Using compatible window treatments (such as frosted glass, appropriate shades or blinds, or shutters) to retain the historic character of the building when it is necessary to conceal mechanical equipment, for example, that the new use requires be placed in a location behind a window or windows on a primary or highly-visible elevation.	Removing a character-defining window to conceal mechanical equipment or to provide privacy for a new use of the building by blocking up the opening.

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Identifying, retaining, and preserving windows from the restoration period and their functional and decorative features. The window material and how the window operates (e.g., double hung, casement, awning, or hopper) are significant, as are its components (including sash, muntins, ogee lugs, glazing, pane configuration, sills, mullions, hardware, casings or brick molds) and related features, such as shutters.	Altering windows or window features from the restoration period. Failing to document window features from the restoration period, which may result in their loss. Applying paint or other coatings to restoration-period window features, or removing them, if such treatments cannot be documented to the restoration period. Changing the type of paint or coating or the color of restoration-period windows, unless the work can be substantiated by historical documentation. Stripping windows of sound historic material (such as wood or metal) from the restoration period.
Conducting an in-depth survey of the condition of existing windows from the restoration period early in the planning process so that repair, upgrading, and, if necessary, possible replacement options can be fully explored.	Replacing windows from the restoration period solely because of peeling paint, broken glass, stuck sash, or high air infiltration. These conditions, in themselves, do not indicate that windows are beyond repair.
Protecting and maintaining the restoration-period wood or metal which comprises the window jamb, sash, and trim through appropriate surface treatments such as cleaning, paint removal, and reapplication of the same protective coatings.	Failing to protect and maintain window materials from the restoration period on a cyclical basis so that deterioration of the window results.
Protecting windows from the restoration period against vandalism before work begins by covering them and by installing alarm systems that are keyed into local protection agencies.	Leaving windows unprotected before work begins, thereby also allowing the interior to be damaged if it can be accessed through unprotected windows.
Installing impact-resistant glazing, when necessary for security, so that it is compatible with the historic windows from the restoration period and does not damage them or negatively impact their character.	Installing impact-resistant glazing, when necessary, for security that is not compatible with the historic windows from the restoration period and damages them or negatively impacts their character.

[9] Historic window and shutter hardware such as that shown here should be retained and repaired in a restoration project.

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Protecting restoration-period windows when working on other features of the building.	Failing to protect restoration-period windows when working on other features of the building.
Protecting and retaining historic glass from the restoration period when replacing putty or repairing other components of the window.	Failing to protect historic glass from the restoration period when making repairs.
Sustaining the historic operability of windows from the restoration period by lubricating friction points and replacing broken components of the operating system (such as hinges, latches, sash chains or cords) and replacing deteriorated gaskets or insulating units.	Failing to maintain windows and window components from the restoration period so that windows are inoperable, or sealing operable sash permanently. Failing to repair and reuse window hardware from the restoration period, such as sash lifts, latches, and locks.
Evaluating the overall condition of windows from the restoration period to determine whether more than protection and maintenance, such as repairs to windows and window features, will be necessary.	Failing to undertake adequate measures to ensure the protection of window features from the restoration period.
Repairing window frames and sash from the restoration period by patching, splicing, consolidating, or otherwise reinforcing them using recognized preservation methods. Repair may include the limited replacement in kind or with a compatible substitute material of those extensively deteriorated, broken, or missing components of windows when there are surviving prototypes (such as sash, sills, hardware, or shutters) or when the replacement can be based on physical or historic documentation. The new work should match the old in material, design, scale, color, and finish.	Replacing an entire window from the restoration period when repair of materials and limited replacement in kind are appropriate. Removing a window from the restoration period that is unrepairable and not replacing it, or replacing it with a new window that does not match.

WINDOWS

RECOMMENDED	NOT RECOMMENDED
Replacing in kind an entire window from the restoration period that is too deteriorated to repair (if the overall form and detailing are still evident) using the physical evidence as a model to reproduce the feature or when the replacement can be based on historic documentation. If using the same kind of material is not feasible, then a compatible substitute material may be considered. The new work may be unobtrusively dated to guide future research and treatment.	Removing a window from the restoration period that is unrepairable and not replacing it, or replacing it with a new window that does not match. Using substitute material for the replacement that does not convey the same appearance of the surviving components of the window from the restoration period or that is physically incompatible.
The following **Restoration** *work is highlighted to indicate that it involves the removal or alteration of existing historic masonry features that would be retained in Preservation and Rehabilitation treatments; and the replacement of missing window features from the restoration period using all new materials.*	
Removing Existing Features from Other Historic Periods	
Removing windows or window features from other historic period, such as the glazing pattern or inappropriate shutters.	Failing to remove a window or window feature from another period, thereby confusing the depiction of the building's appearance from the restoration period.
Documenting window features dating from other periods prior to their alteration or removal. If possible, selected examples of these features or materials should be stored for future research.	Failing to document window features from other historic periods that are removed from the building so that a valuable portion of the historic record is lost.
Recreating Missing Features from the Restoration Period	
Recreating a missing window or window feature that existed during the restoration period based on documentary and physical evidence; for example, duplicating a hoodmold or shutter.	Constructing a window feature that was part of the original design for the building but was never actually built, or constructing a feature which was thought to have existed during the restoration period but cannot be documented.

Simulated divided light windows, which have grilles permanently applied to the exterior of the glass, offer a good substitute for historic wood muntins. Avoid flat grilles placed between windowpanes or only on the interior, because they poorly replicate the aesthetic qualities of a historic window.

Summary

One of the basic tenets of preservation is to repair something first, when possible, rather than replace. After all, the old windows you may consider for replacement have been protecting your house for up to a century. Most replacement windows, particularly vinyl products, are only guaranteed for a few years. Preservation experts joke that there is a good reason they call them "replacement windows" — you have to replace them over and over again, unlike some historic windows that have lasted 100 years with regular maintenance.

It could take 20 or 30 years to get back in energy savings what you spend on window replacements. Most people just don't stay in a home long enough to recoup the money they spent.

Beth Parks, Associate Professor of Physics at Colgate University

Oak Park

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Community Planning &
Development Department
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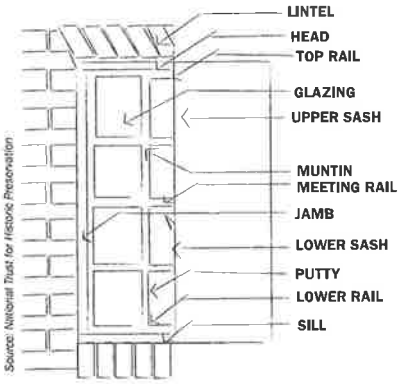
Historic Windows

How Repair Can Save Money, Preserve Character and Improve Energy Efficiency

Oak Park



Why historic windows matter

Windows are significant character-defining elements of historic buildings. Their design, craftsmanship and aesthetic qualities often make them worthy of preservation. People often do not realize that windows do more than let in light and air. The wrong window can stand out like a black eye on an historic home. This is especially true when one type of window is replaced with another type, such as replacing a double-hung for instance with a casement or sliding window.

Some people decide to replace windows in pursuit of better energy efficiency, convenience and lower maintenance. Most local residents have received a telephone call or mailer urging them to consider replacement windows to make an old home more energy efficient with less maintenance. These promotions imply that swapping old wood or metal windows with vinyl or aluminum replacements will automatically save you money in lower energy costs.

But like all components of historic buildings, windows need regular maintenance to extend their useful life. Even if windows are deteriorated, it can often be cheaper to reglaze, caulk, weather-strip or scrape and paint the old windows, which are made of old-growth wood, a denser, longer-lasting material than wood harvested today. The addition of a storm window can protect a home's historic windows and extend their life for decades. Properly maintained historic wood windows with weather-stripping and storm windows can improve their energy efficiency and are comparable to the energy efficiency of many new windows.

Of course, some window components may be so rotted or otherwise deteriorated that replacement is necessary. In that case, building owners are urged to replace windows or window parts as needed with windows that match the style, size and materials of the originals.

Under local ordinance, owners of buildings within Oak Park's historic districts, or of buildings designated as Historic Landmarks throughout the Village, are required to get permits before replacing windows. The Oak Park Historic Preservation Commission offers free advice and helpful literature that can guide you to the best choices for your historic home.

Windows only account for up to 10 percent of a building's energy costs. Insulating your roof will save 80 percent of all energy savings possible. Caulking the exterior of the window frames will block airflows. Reglazing, painting and weather-stripping saves more energy than new double-glazed windows.

Vince Michael, Director of the Historic Preservation Program, School of the Art Institute of Chicago

A master plan should be created for the phased repair or replacement of windows in apartment buildings and condominiums. Such a master plan should identify existing and proposed conditions, and provide design standards for systematic future repair or replacement work. Avoid the haphazard replacement of windows in separate living units.

Oak Park Architectural Review Guidelines
Source: National Trust for Historic Preservation

A preservation-friendly approach: Retain, repair, replace.

Try to repair what you have. Investigate the historic windows to determine the problems and their causes. Only after weighing the aesthetic, performance, energy efficiency, cost and long-term durability aspects of proposed work can an informed decision be made whether to repair or replace windows.

If you cannot feasibly repair it, replace it with the same thing. Consider the impact of the new windows on the appearance of the building. Replacement windows should match the historic windows in their materials, operation and design.

If you cannot replace it with the same thing, replace it with something that is similar in appearance. Wood windows are offered with aluminum or vinyl cladding on the exterior, which helps reduce the maintenance.