



Guidelines for the Repair or Replacement of Windows in Historic Buildings

Windows Condition Assessment

Planning & Land Use, Heritage Unit, City of Winnipeg
Historic Resources Branch, Province of Manitoba
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Image Front Cover:

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GETTING STARTED

One of the most common practices during renovation is to throw away old original windows. Removing historic windows decreases the heritage value of a historic building and should be a last resort. The Province of Manitoba and the City of Winnipeg have collaborated to prepare these guidelines to assist property owners, contractors and consultants when considering repair or replacement of original wood or metal windows in a historic building.

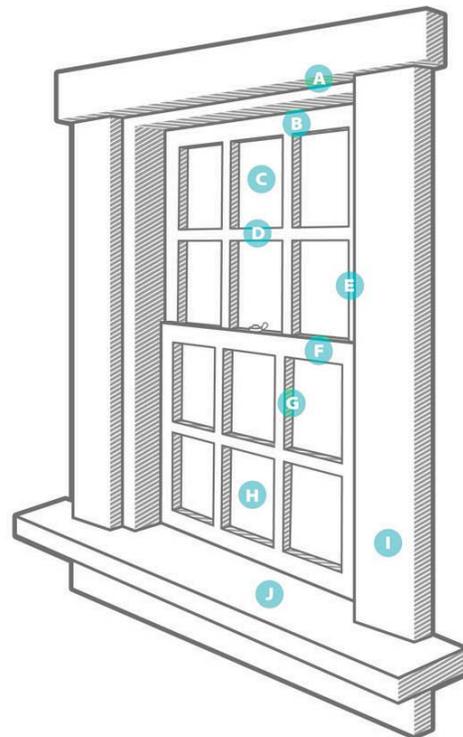
Life-cycle cost analysis has shown that replacing historic windows in order to reduce heating costs is largely a myth. The thermal and acoustic performance of old windows can be greatly improved through simple non-invasive strategies such as weather stripping and installing storm windows. Traditional windows are usually maintainable – nearly anything that goes wrong with them can be fixed. If you are facing operational problems with your old wood windows, it is possible to meet modern performance standards either by repairing and upgrading existing windows or, where this is not feasible, by providing new components that match the original design specifications.

GENERAL GUIDELINES

The City of Winnipeg and the Province of Manitoba support the objective, set forth by the *Standards and Guidelines for the Conservation of Historic Places in Canada*, that preservation and rehabilitation are always preferred over replacement. The first step in considering repair or replacement of windows in your historic building is to evaluate the architectural and historical significance of the windows. Original windows function as an integral part of the building's interior and exterior and contribute to the architectural rhythm of the facade. Removing historic windows negatively affects a building's appearance and the appearance of the entire streetscape. Where windows are original to the building and of special importance they will be included in the designated building's *Statement of Significance*, a brief report on what makes the site special. These can be found on the Canadian Register of Historic Places at www.historicplaces.ca.

ANATOMY OF A WINDOW

Understanding the parts and operation of your windows is the next step in assessing the window condition. Each component will need to be carefully examined visually and structurally when completing the Condition Assessment. The Condition Assessment should include notes and photographs. Deterioration should be photographed and images submitted to the appropriate heritage authority along with the Condition Assessment. Your photographs will support your observations. The value assigned to each window reflects whether the overall elements are in Good, Fair or Poor Condition and, in consultation with your local heritage authority, will determine any future changes.



- A. Jamb
- B. Rail
- C. Pane or Light
- D. Top Sash
- E. Stile
- F. Meeting Rail
- G. Muntin Strip
- H. Bottom Sash
- I. Casing
- J. Stool

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EVALUATION STANDARDS

Use the evaluation standards to determine the condition for each historic window listed on the Condition Assessment.

Condition	Description
GOOD	A. The window is intact, structurally sound and performing its intended purpose. B. The window needs no repair and only minor or routine maintenance.
FAIR	A. There are early signs of wear, failure or deterioration, though the window is generally structurally sound and performing its intended purpose. B. There is a failure of a subcomponent of the window. C. Replacement of up to 30% of the window or replacement of a defective subcomponent is required.
POOR	A. The window is no longer performing its intended purpose and can not be made to do so. B. The window is missing C. Deterioration and damage affects more than 30% of the window and can not be adjusted or repaired. D. The window shows signs of imminent failure or breakdown

Owners of designated heritage buildings in the City of Winnipeg must still apply for a heritage permit from the Planning and Land Use, Heritage Unit. Provincially designated buildings still require a permit from the Historic Resources Branch. Municipally designated buildings outside the City of Winnipeg may require a permit from the local municipal government. Additional contact information is provided on page 15.

The Historical Windows Condition Assessment will help you to prioritize window repair work and determine which windows may be eligible for replacement. The Evaluation Standards (Good, Fair or Poor) are used to assess the condition of each window. Once the window condition has been determined, the Intervention Standards outline the appropriate treatment for each window.

INTERVENTION STANDARDS FOR HISTORIC WINDOWS

The following Intervention Standards are based on recommendations from the *Standards and Guidelines for the Conservation of Historic Places in Canada* and are strictly guidelines. Consult with your local heritage authority before taking action.

GOOD: PROTECT & MAINTAIN

The wood and architectural metals that comprise the window frames, sashes, muntins and surrounds should be protected and maintained through appropriate surface treatments such as cleaning, rust removal, limited paint removal and reapplication of protective coating systems in kind. Windows should be made weather tight by re-puttying, and replacing or installing weather-stripping.

FAIR: REPAIR & STABILIZE

Window units deemed as fair require repair and stabilization of deteriorated window elements using structural reinforcement, weather protection, or correcting unsafe conditions, as required, until any additional work is undertaken. Repairs should be physically and visually compatible. Where there are missing parts match to surviving prototypes. Refer to the Windows Guidelines for appropriate treatment of window components.

POOR: REPLACE IN KIND

Windows deemed as poor may be eligible for replacement in kind. The new work should match the old in form and detailing. Refer to the Windows Guidelines regarding replacement window elements. Contact the City of Winnipeg Planning & Land Use, Heritage Unit, the Historic Resources Branch of the Province of Manitoba, or your local municipal heritage authority to discuss an appropriate replacement window unit.

GUIDELINES FOR THE REPAIR AND REPLACEMENT OF WINDOWS IN HISTORIC BUILDINGS

Windows in historic buildings may be eligible for replacement if:

- the original windows no longer exist
- the windows are located on a less visible elevation, such as the rear of a building.
- the Window Condition Assessment and corresponding documentation demonstrate the the window is unsalvageable.

WINDOW TYPE

Replacement window types should match the appearance and character of the original window. Best practice dictates that original double-hung windows should only be replaced with new double-hung window units. The sizes of sashes and location of meeting rails should match the original windows. Replacement windows should incorporate any special features of the original windows, such as transom windows. Avoid enlarging window openings or closing them off. Maintain or, if necessary, recover the historic size and shape of all window openings; neither expand the openings nor fill them in, except to make good previous damaging modifications. If interior ceilings are to be lowered with a suspended ceiling or furred down with a false ceiling, ensure that the ceiling drop is set back sufficiently from the windows to enable their visual and functional continuity.

WINDOW FRAMES

Replacement window frames for wooden windows should be of wood construction or of an approved substitute material (See Substitute Materials page 12). Dimensions should match the original windows. Any decorative detailing on the original windows (such as brick mold, lintels, sills and casings) should be accurately duplicated.

SASHES

Replacement sash for wooden windows should be of wooden construction and dimensions should match the original windows. Any decorative detailing on the original sashes (such as muntins, mullions and sash frames) should be accurately duplicated. The sizes of the sash and location of the meeting rails should match the original windows. The upper and lower sash should be on separate planes to match original sash windows. If the window sash is badly deteriorated, replacement units can be made to fit the existing frame (See Substitute Materials page 11). Replacement for metal windows should be of metal construction. Replacement windows should incorporate any special features of the original windows.

MUNTINS

Replacement muntins should appear on the outside of the window and, preferably, on the inside as well. Muntins attached to the inside of the window or between inside and outside panes of glass are not acceptable. The following muntin replacement techniques are listed in descending order of acceptability:

- true muntins that actually support the glass and extend from the exterior to the interior of the window, providing that the dimensions and profiles of the original muntins can be reproduced
- muntins that match the dimensions and profile of the original muntins but applied to the interior and exterior surface of a sealed window unit
- as above but applied only to the exterior of the sealed window unit
- never add muntins or the appearance of muntins to windows that were originally composed of large sheets of glass.

GLASS

Retain historic glass and protect it during repairs. If glass is cracked or missing, new glass panes can be installed. Cracks smaller than 1" may be monitored and

not replaced. Replacement glass should be clear and without tint or mirror-finish. If necessary, Low-E films are acceptable. Laminated security glass is a superior solution to unsightly security grilles or bars, which make maintenance and cleaning more difficult. Clean glass with detergent on rags or newspaper. If there is a considerable build-up of grime, use the finest steel wool available. Rinse off with water. Polish the glass with chamois, linen or powdered chalk.

FINISHES

Exterior finishes should match the original window colours (confirm through on-site investigations, historic research and archival photographs). If the original colours cannot be recovered, repaint in suitable colours that are authentic to the period of the building. The following exterior finish materials are listed in descending order of acceptability:

- paint/stain finish to match original colours
- factory applied paint finish to match original colours
- aluminium clad wooden window frames with a factory finish to match original colours
- aluminium clad wooden window frames with a finish sympathetic to original colours

SUBSTITUTE MATERIALS

Substitute materials will only be considered in circumstances where the appearance is virtually indistinguishable from the original and there is a significant advantage in terms of the availability, cost, performance or durability. Wherever possible, windows that are visually accessible should be made of the same material and visual quality to match the original. Aluminum or fibreglass may be a suitable replacement for a historic wood sash provided the detail of the historic window can be matched. Replacement window frames for steel windows may be of aluminium or fibreglass.

BLIND WINDOWS

If windows must be blocked because of a major functional change, first consider changing the interior layout and, secondarily, look for Building Code alternatives to accommodate the use of the window in its historic form and location. If, as a last resort, windows must be covered over from the interior, maintain their exterior appearance as windows. Maintain or if necessary recover the historic size and shape of all window openings. Removing a window is not acceptable.

WEATHERSTRIPPING

The most dramatic and cost-effective improvements are achieved not through replacing windows but by reducing air infiltration (i.e. sealing fixed joints and installing weatherstripping). Weatherstripping should be flexible and spring back to its original shape. Spring bronze is an excellent choice for weatherstripping windows as it is durable and easy to install.

STORM WINDOWS

If wooden storm windows exist they should be kept painted and in good repair. If you have single pane wooden windows, consider adding wood storms to increase energy efficiency. Interior storms are also a good alternative; they are less visible and often cheaper than exterior storms and can be made to fit on the sash or the window trim. Aluminum storms and screens are not recommended because they obscure the original windows. However, they maybe acceptable in special circumstances. Consult with your designation authority. Clip-on plastic muntins are inappropriate and should not be used.

HARDWARE (SASH LOCKS, SASH COUNTERWEIGHTS, SASH HOLDS, ETC.)

Wherever possible:

- salvage, repair and clean original hardware and reuse on the replacement frames
- select new hardware that is appropriate to the era of the building

REPLACEMENT WINDOWS

If the degree of deterioration necessitates the replacement of windows, authentic replacement units are recommended. Replacement windows should match the original windows in terms the size, shape, material, proportions, profiles, reveal and glazing type of the original window. It is important that every effort be made to match the style, muntin grids, size and profiles of elements. Blocking up a window, that is, removing the sash and frame and filling in the opening, should never be considered on a primary façade or visible side elevation. Replacement of windows on primary or secondary building elevations is not recommended. However, the back of the building is traditionally an area that allows flexibility. Original appearance, dimensions and detailing should be confirmed through:

- remnants of the original windows
- archival photographs
- original architectural drawings

For more information on the *Guidelines for the Repair or Replacement of Windows in Historical Buildings* or the *Windows Condition Assessment* please contact:

City of Winnipeg

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Province of Manitoba

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Manitoba Culture, Heritage, Tourism and Sport
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