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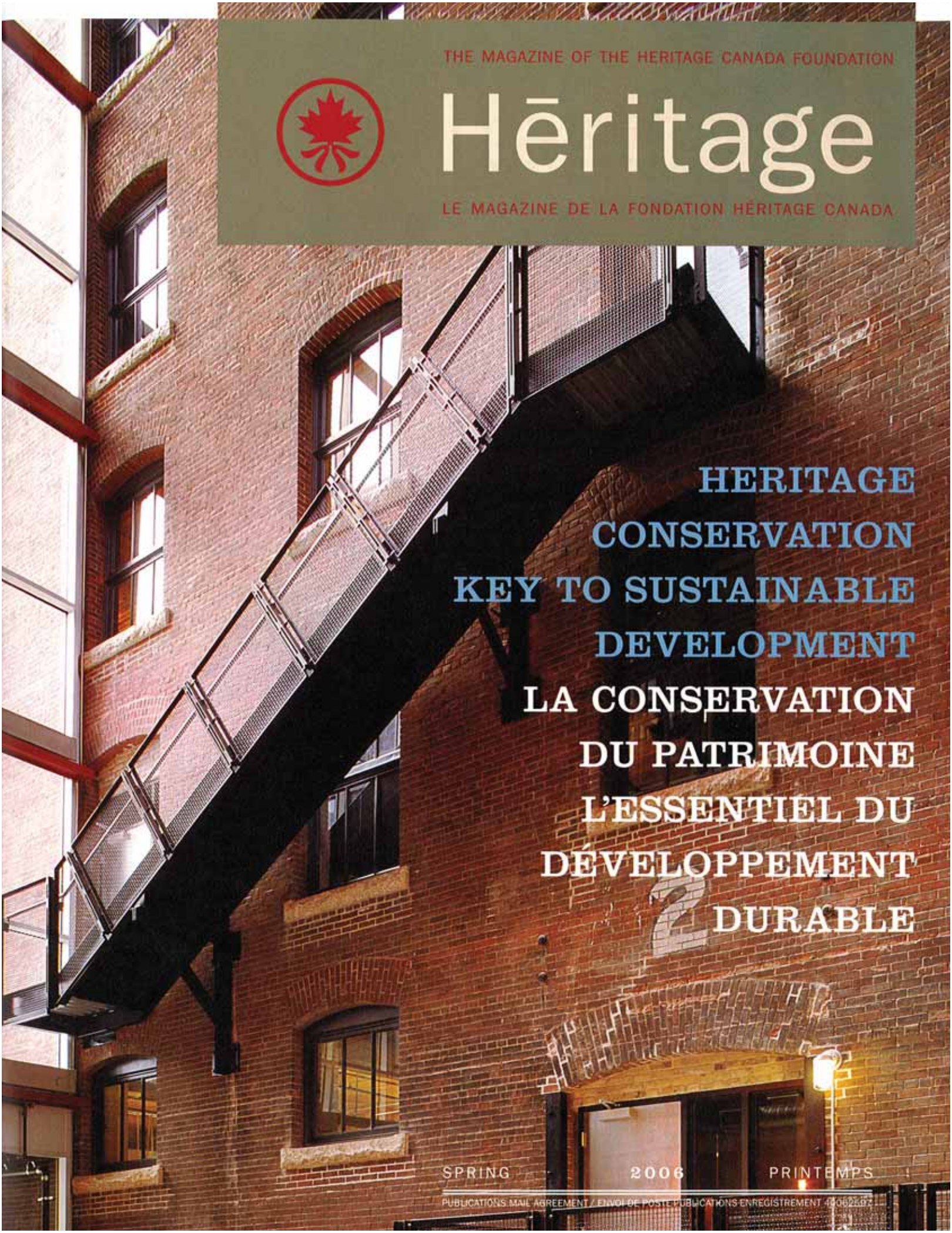

HERITAGE CONSERVATION KEY TO SUSTAINABLE DEVELOPMENT

LA CONSERVATION DU PATRIMOINE L'ESSENTIEL DU DÉVELOPPEMENT DURABLE

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Windows in Historic Buildings: Sustainable, Repairable

BY SUSAN D. TURNER

Windows are often described as "the eyes of a building." Their size and spacing create rhythm and balance in the façade that may be emphasized by deliberate shadow lines and relief; their materials and operation type may reflect the state of technology for their time. For many building types and styles, windows are a key character-defining element.

However, as interest in energy conservation and sustainable development increases, and building owners look for ways to improve energy performance, old windows are a common target. Window replacement is often mistakenly identified as one of the top energy-saving improvements that can be made. Yet windows are also important character-defining elements to a building's architecture, and the *Standards and Guidelines for the Conservation of Historic Places in Canada* encourage owners of heritage buildings to "repair rather than replace character-defining elements." Fortunately, it is possible to improve the thermal performance and operation of old windows while at the same time respecting heritage character (and often even saving money into the bargain).

REPAIRING AND UPGRADING WINDOWS IS A GREEN THING TO DO

Windows represent embodied energy: raw resources, processing, labour, and shipping energy have gone into their manufacture. Embodied energy is lost when windows are sent to a landfill. When even more energy and resources are invested in replacing them with new windows made of wood, aluminium or vinyl—often with a shorter service life than the old windows—the cost to the environment is substantial. This is above and beyond the cost to the building's character and heritage value when original features are lost. When properly repaired and retrofitted, early windows can usually be made to perform at a level comparable to new windows. This approach is 'sustainable' on many levels. Old windows are often built of old growth lumber with good construction details, resulting in an assembly that is more durable and more easily maintainable than new replacement windows. If maintained, they can last for decades, with the result that repair costs over the lifecycle of the building compare favourably with the cost of periodic replacement. Repair costs usually reflect an investment in labour that benefits the local economy, rather than harvesting resources or shipping products from a distant manufacturing location.

DETERMINING THE BEST APPROACH

The argument for replacing windows often begins with a perception of deteriorating materials and heat loss. However, there are simple repairs and upgrades that can be done by the building owner or by a tradesperson. Selective repair or replacement of parts and the implementation of a maintenance program are sometimes all that is needed.

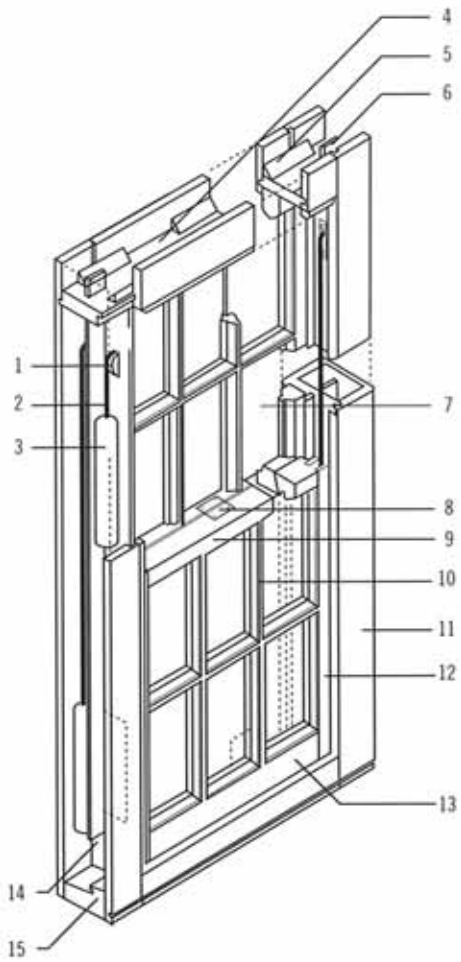
It is important to carefully assess the condition and performance of the existing windows. Begin by documenting the condition of each window. Simple drawings can be used to locate and number each window, and document areas of decay, broken putty, missing hardware, or other problems. These will be useful in obtaining several comparable price quotes, should you choose not to do the work yourself.

FIRST LINE OF DEFENCE: TACKLE SOURCES OF AIR INFILTRATION

Making windows air- and weather-tight is often the most effective and least expensive step. This may include replacing broken glass, re-setting panes using linseed-oil-based glazing putty and glazing points, and painting the sash and putty lines to create a good seal against air and moisture.

There are many weather-stripping products on the market: high-quality metal weather-stripping (such as copper or lead-coated copper) is well worth the investment.

Finally, find replacement hardware for missing pieces. Window locks are important in maintaining pressure on the weather-stripping to reduce draughts.



1. Pulley wheel / Roue de poulie
2. Sash cord / Câble à châssis
3. Counterweight / Contrepoids
4. Soffit lining / Revêtement de soffite
5. Fixing block / Bloc de clouage
6. Parting slip / Séparateur
7. Glazing / Vitre
8. Sash hardware (lock) / Quincaillerie de châssis (verrou)
9. Meeting rail / Traverse de rencontre
10. Glazing bar / muntin / Petit bois
11. Inner lining / Revêtement intérieur
12. Vertical stile / Montant vertical
13. Bottom rail / Traverse inférieure
14. Sill / Appui
15. Pulley lining / Recouvrement de poulie

SECONDARY GLAZING

Single-pane windows (one layer of glass) may suffer from condensation when interior air is warmer and more moist than exterior air; they may also "feel" cold and draughty even if they are air-tight. Traditional storm windows result in a warmer glass surface by providing an additional space and pane of glass to temper the indoor environment from the exterior. In effect, this is a low-tech version of "double glazing." Another simple option is to add new interior or exterior removable glazing panels. Always ensure that the layer of glass on the warm or interior side is the one that is air-tight.

Retrofitting is generally less expensive than wholesale replacement and it permits the retention of the greatest amount of historical material.

CONCLUSION

Repairing and retrofitting windows is a sustainable course of action that protects the character of a historic place and respects the environment.

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Energy efficiency in historic buildings:
http://www.oldhouseweb.com/stories/Detailed/965.shtml

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ADDITIONAL READING

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Editor's Note: *This is the first article in a series on windows in historic buildings. Upcoming issues will include technical notes by Craig Sims, one of Canada's foremost specialists in repairing and upgrading historic windows, and designing and specifying replacement windows for historic buildings.*