Canada's Historic Places
Lieux patrimoniaux du Canada

Guide to the Installation of Exterior Wood Cladding

Gerald Reardon and Herb Burke working on Allan and Sue Dwyer's House on Kelly's Island in Tilting, Fogo Island. This house, which won a Southcott Award from the Newfoundland Historic Trust in 2005, has a rain screen detail for the exterior wood cladding as described in this guide. The cladding has performed very well in an exposed coastal environment.

www.historictrust.com/southcott.shtml

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Conserving Our Heritage

This guide has been prepared as a quick guide to the installation of wood exterior cladding for repair and restoration work in Newfoundland and Labrador. It follows best practices available at the time of publication; however, neither the Heritage Foundation of Newfoundland and Labrador nor the author assume responsibility for the performance or quality of exterior cladding installations influenced by this guide. Project conditions may require advice from a registered architect or heritage conservation technologist.

The photographs of historic structures included in this publication are from the Provincial Registered Heritage District and National Cultural Landscape District of Tilting, Fogo Island, Newfoundland and Labrador. This is partly because of the author's connection with this community, but also because the rain screen details described in this guide evolved through restoration work and maintenance experience obtained on various projects in Tilting in recent years.

Introduction

Researching the original cladding on your structure before the start of restoration work is advisable, possibly by consulting old photographs or by studying historic buildings in the area. Maintaining the plain and reticent detailing found in much of Newfoundland's vernacular architecture is preferable to inappropriate enhancement with overly elaborate ornamentation. Wood exterior cladding on historic structures Newfoundland and Labrador can generally be described as spare but elegant in appearance; often with minimal and plain trim boards and eaves. Materials are commonly spruce or pine clapboards or short sawn cedar shingles with a four inch coursing or "exposure to the weather" for structures built before the early 1950's, and sometimes wider coursing for early modern structures. For the older structures, full one-inch thick jack pine trim boards at corners and around windows and doors were often used, and windows and doors typically had projecting 1 ½ inch thick sills and caps (cap above the window and door head trim). Water tables, trim at the base of the exterior wall with a projecting sill, were not that common on rural houses or outbuildings, but they could occasionally be found on public buildings. However, water tables were once common on all types of wood-clad buildings in urban areas.

In rural Newfoundland and Labrador, outbuildings were commonly stained with red ochre. If paint was scarce, sometimes only the front of the house was painted in a more formal way with "proper" paint. Ornamentation on many traditional Newfoundland and Labrador structures was often two dimensional in character, as in the painted door ornament (below) on the Kinsella Premises in Tilting. Each door jamb has a small section painted red by the door latch to mask wear and tear.

Materials

Using spruce clapboards has advantages over the use of pine. Some spruce clapboard is locally produced, thus reducing shipping costs for the material, and knots in spruce clapboards are usually less problematic for bleed-through and stability than pine. Ideally, the thickness of trim boards should be full one-inch board, not three-quarter inch as is sometimes used. With full one-inch board, the thickness of the overlap of the clapboards will not project beyond the face of the trim boards. Full one-inch thick jack pine is the preferred material for trim boards, and it is often readily available for heritage conservation projects. For Newfoundland and Labrador's environmental conditions, the use of stainless steel nails for clapboards and trim boards is highly recommended, especially in coastal locations.

Rough side out clapboards and trim boards are commonly used for restoration work today, even though the rough appearance has more of a rural, rustic character. Properly applied primer and paint or stain adheres to either rough or smooth wood equally well at the microscopic level, but using rough sawn material may eliminate problems with "mill glaze," especially when using latex paint.

Preparing Door and Window Openings

Window and door openings must be properly prepared prior to the installation of wood exterior cladding. Helpful details to eliminate leaks in windows and doors can be obtained from NRC-IRC and CMHC. These details require sloped sills for rough openings with back dams and the use of protective waterproof membranes on sills and jambs that must be installed in a particular sequence. For more information see - *http://irc.nrc-cnrc.gc.ca/bes/hmpe/rainwater_e.html.*

Rain Screen Detail

One of the most helpful details for reducing maintenance problems with wood exterior cladding is the "rain screen (Pages 8 - 9)." This is like placing an umbrella all around your house, with a vented air space placed under the clapboards and trimboards. The rain screen detail permits moisture to harmlessly escape through the exterior of the wall without compromising the integrity of the exterior cladding and paint finish. A typical rain screen usually has a spunbonded olefin protection membrane installed over the sheathing. After the seams are taped, 1" x 3" wood strapping is installed vertically, at 16" centers. The compartments created by this strapping must be cross-vented above and below windows and doors, so gaps in the strapping must be left for this purpose. At the base of the wall, two layers of screening (an inner layer of plastic window screen as an insect barrier and an outer layer of ¼ inch galvanized wire mesh screen as a vermin barrier) are placed behind the bottom of the strapping, and then folded under and over the front of the strapping and stapled in place. This screened vent detail permits air to enter the space of the rain screen behind the water table and clapboards. At the top of the wall, the strapping can be left open to the air space of the soffit for the eaves, and appropriately sized vents should then be placed in the soffits.

A similar rain screen detail is installed above windows and doors (Pages 10 - 12), but metal flashing must also be installed in these locations. The flashing must be carried slightly over the edges of the projecting head trim of the windows

and doors, and the olefin membrane must be taped over the top of the flashing. The ends of the flashing must be sealed where they meet clapboards at the window or door jambs to prevent leaks. Where clapboards meet trim boards, the vertical strapping should centre on this junction to provide support. Narrow pieces of strapping at corners and under window and door trim are preferable to wide strapping so that the air space is preserved under these elements. Placing 1" x 4" - or wider - strapping under the trim boards will partially negate the value of the rain screen.

> ***Caution:*** *installing clapboards, shingles, or trim boards directly on top of a spunbonded olefin protection membrane is NOT recommended in Newfoundland and Labrador's environmental conditions as moisture accumulates behind the exterior cladding, resulting in decay in a very short period of time.*

Wood Shingles for Exterior Cladding

For houses or outbuildings with traditional wooden shingles, a rain screen can be created by the use of a product designed specifically as a breather underlay for wood shingles. One product on the market uses an expanded plastic mesh that is stapled over the olefin membrane, and the shingles are installed by nailing them on over this mesh. Wood shingles will absorb moisture and swell laterally, so be sure to follow the supplier's recommendations for the gaps that must be maintained between shingles. Shorter length wood shingles suitable for exterior cladding restoration work in Newfoundland and Labrador must be specially ordered, and are readily available from suppliers in Nova Scotia and New Brunswick, often through retailers in Newfoundland and Labrador.

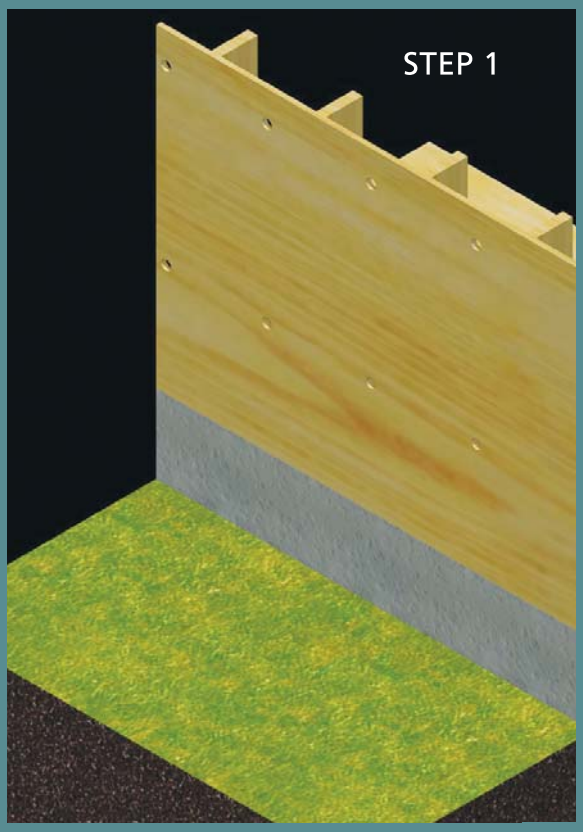
Paint: Oil *vs.* Latex, Paint *vs.* Stain

Carefully consider the type of paint or stain you will use. Oil base paint and even oil base stain and oil base primer create a vapour barrier on the exterior of the house. This type of paint is forced off the wood when moisture traveling through the wall from the interior to the exterior encounters the vapour

barrier created by the paint. For these reasons, current best practice is to use high quality latex primer with two coats of high quality latex paint. Not only is latex paint better environmentally (oil base paint has been prohibited in some locations because of its contribution to air pollution), it is compatible with the concept of the rain screen detail described here. Moisture can pass through latex primer and paint, avoiding the unsightly peeling associated with paint failure. If you are not replacing clapboards and trim boards or if you are not installing a rain screen, it is important to remove all the existing oil base paint and oil base primer before painting with latex primer and paint.

There is some controversy about the benefit of using latex stain vs. latex paint. Both perform equally well with regard to permitting the diffusion of moisture, but on the sunny sides of a building, paint may provide better performance than stain for U.V. light protection, thus reducing paint chalking and cracks in clapboards. For new clapboards and trim boards, follow the paint manufacturer's directions. Preparation of the exterior cladding is required before installation. First, prime all surfaces with a tinted latex primer, followed by the application of one finished coat of latex paint or stain to the surfaces that will be visible, and then install the cladding. The final coat of latex paint or stain should be applied once the installation is complete. If you are doing the construction in the fall, winter, or spring, try to wait until the summer for the application of the final coat of paint.

If you are going to use a knot sealer with latex paint, make sure the knot sealer is compatible with the latex paint. Latex paint failure is sometimes associated with incompatible knot sealers like shellac.

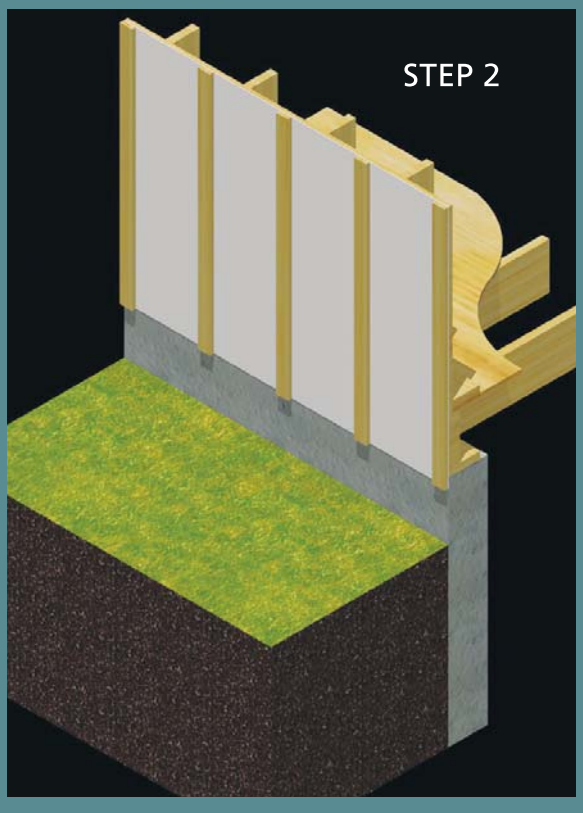


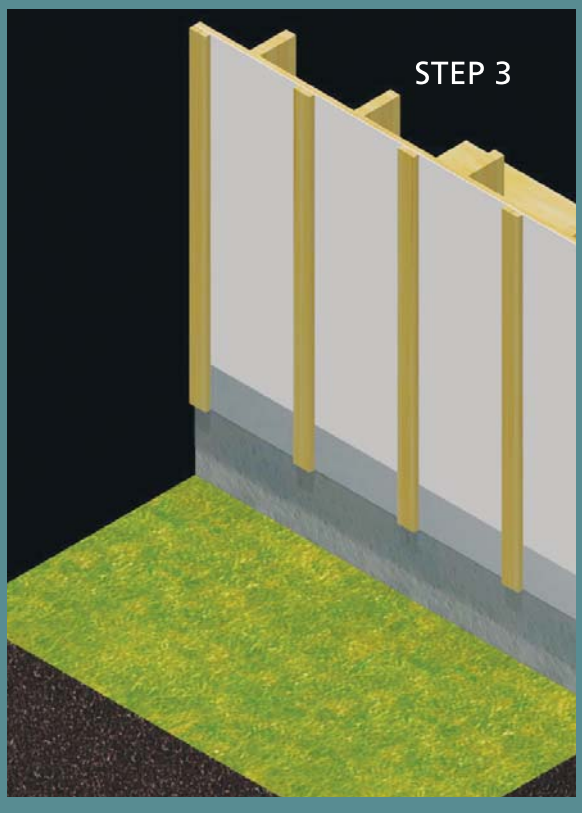
Exterior Cladding Rain Screen Detail

STEP 1: Drill holes in the exterior wall sheathing if plywood sheathing is used to permit air flow.

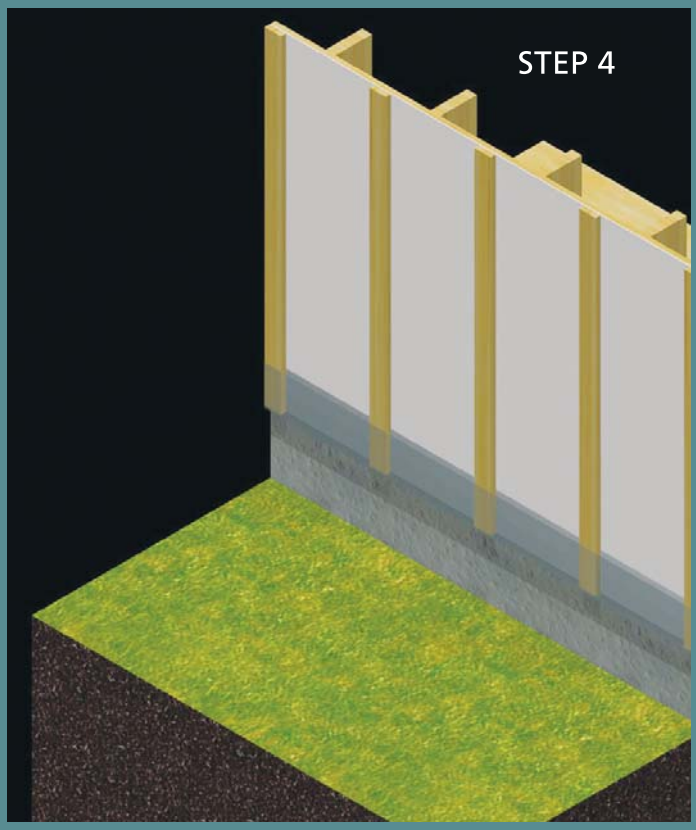
STEP 2: Installation of the olefin membrane over the exterior wall sheathing and 1" x 3" wood strapping at 16" centres.

STEP 3: Install half the width of the airspace screen materials under the ends of the wood strapping.

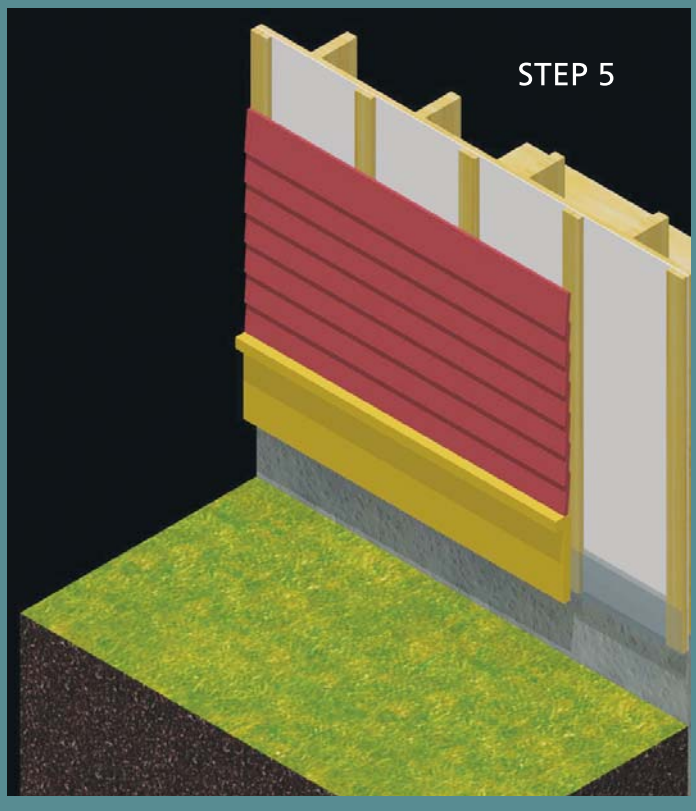


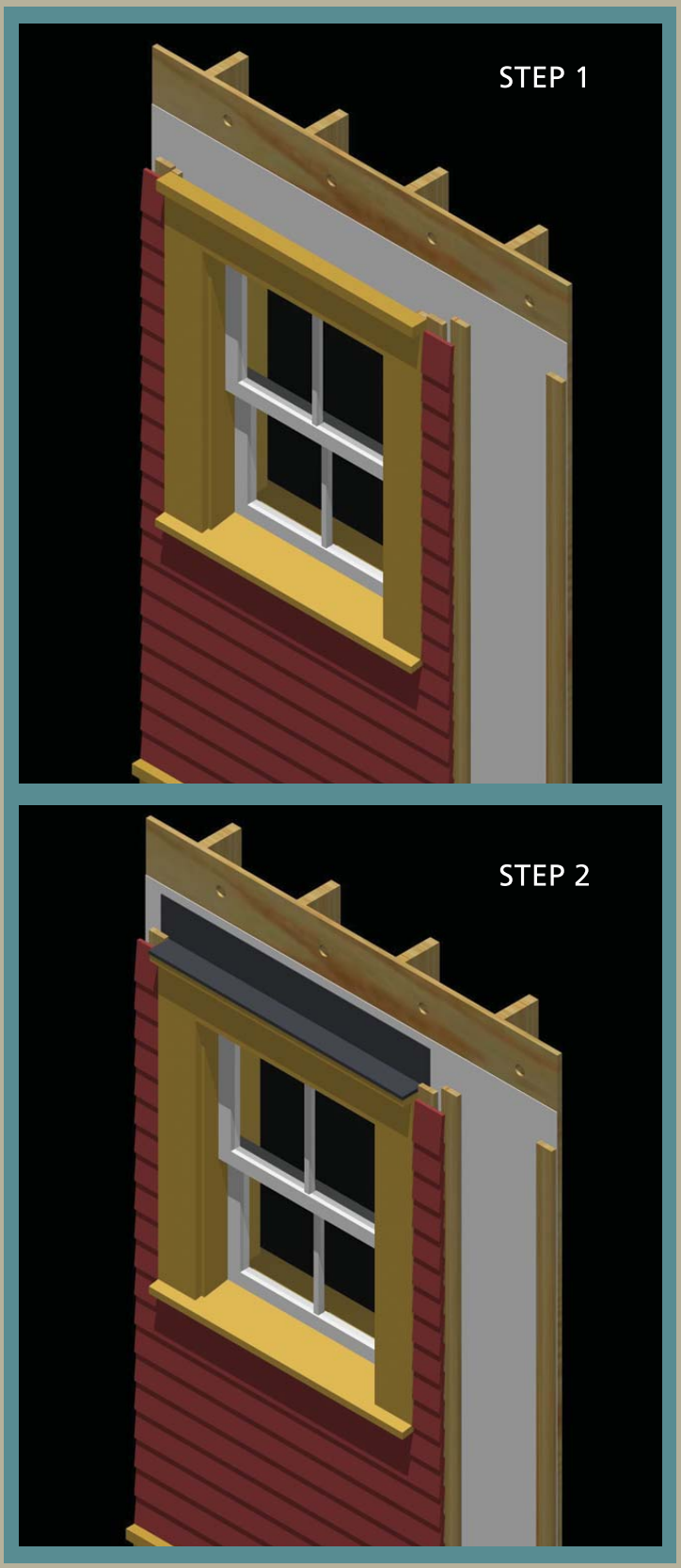


STEP 4: Fold the air space screen materials under the bottom of the strapping and staple them onto the faces of the strapping.



STEP 5: Install the exterior cladding on top of the strapping. The use of a rainscreen detail, latex primer, latex paint, and stainless steel nails is highly recommended and will practically eliminate maintenance work typically associated with exterior wood cladding.





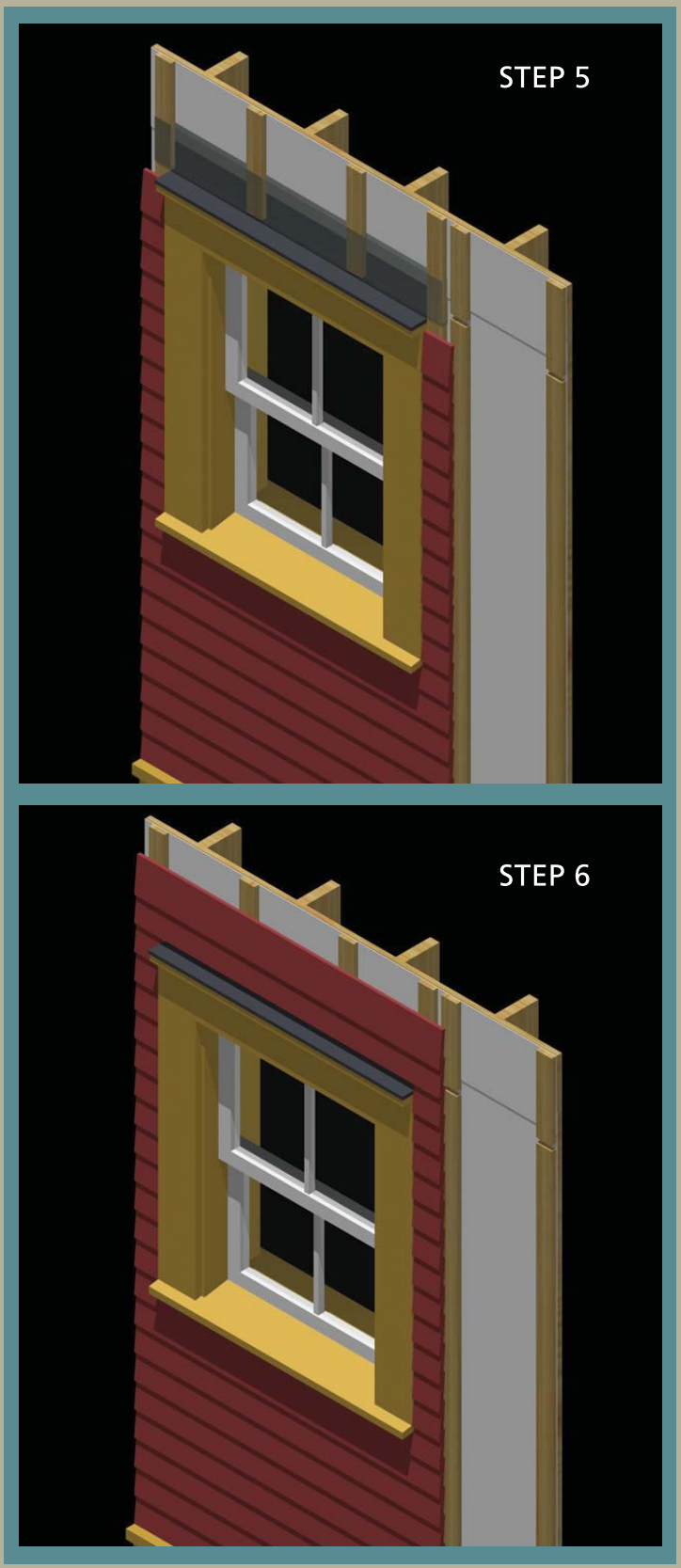
Window and Door Details

STEP 1: Install the window trim on top of the 1" x 3" strapping, with the strapping aligned with the top of the window cap as shown on the drawing.

STEP 2: Install metal flashing on top of the olefin membrane, and carry the flashing down over part of the front and sides of the window head trim cap.

STEP 3: Cover the top of the flashing with the next layer of the olefin membrane and tape the membrane to the flashing.

STEP 4: Install two layers of screening under the strapping. For all strapping above the window (except for the strapping above the window jambs), leave a gap between the underside of the strapping and the window head flashing. Seal the flashing/ strapping junctions only where shown by the arrows.



STEP 5: After applying sealant where shown in step #4, fold the screening materials over the faces of the strapping and staple them in place.

STEP 6: Complete the installation of the exterior cladding. Leave a gap between the underside of the clapboards and the flashing to permit air flow: do not seal this gap, except at the corners as shown in step #4.

A Tool to Assist in Heritage Conservation

The Standards and Guidelines for the Conservation of Historic Places in Canada are the first ever Pan-Canadian Benchmarks for heritage conservation practice in this country. They offer results-oriented guidance for sound decision making when planning for, intervening in, and using historic places. The Standards and Guidelines are based on universally recognized conservation principles inspired by international heritage conservation charters. The fundamental principles for conserving historic places of all types are first outlined in a set of "Standards." Detailed "Guidelines" then present the Do's and Don'ts of preserving, rehabilitating or restoring historic landscapes, buildings and engineering works, and for safeguarding archaeological sites. Emphasis has been placed on providing sound, practical advice for conserving our rich and irreplaceable built heritage.

To obtain a copy of the Standards and Guidelines for the Conservation of Historic Places in Canada, contact the Heritage Foundation of Newfoundland and Labrador, or visit:

http://www.pc.gc.ca/docs/pc/guide/nldclpc-sgchpc/index_e.asp

Note: The reader assumes all risks from using the information provided herein. Property owners are encouraged to seek the advice of a registered architect or certified heritage conservation technician to obtain information relating to specific project conditions.

The Heritage Foundation of Newfoundland and Labrador is a non-profit organization which was established by the Provincial Government of Newfoundland and Labrador in 1984 to stimulate an understanding of and an appreciation for the architectural heritage of the province. The Foundation, an invaluable source of information for historic restoration, supports and contributes to the preservation and restoration of buildings of architectural or historical significance.

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