Roof
Roof - This Conservation Bulletin discusses roofs as architectural assemblies that have both functional and decorative elements that help define the architectural character of the historic building. Roof features include cupolas, parapets, chimneys, gutters, dormers, and bracketed eaves.

Cover Photo - TERMUENDE BARN INTERIOR, near LANIGAN SK / Korvemaker
The Saskatchewan Heritage Foundation (SHF) is a Crown Corporation established by provincial legislation in 1991 to support heritage projects at the provincial and community level that seek to conserve, research, interpret, develop and promote Saskatchewan's diverse heritage resources.

The Heritage Resources Branch of the Ministry of Tourism, Parks, Culture and Sport facilitates the protection and conservation of heritage resources in Saskatchewan through inventory, regulatory, research, and consultative programs and services under The Heritage Property Act.

The Historic Places Initiative (HPI) - represents a collaboration of Canada’s federal, provincial and territorial governments to: engage Canadians in the conservation of historic places; facilitate collaborations to build capacity and a credible and coherent heritage management system in Canada; and provide incentives to mobilize Canadian support of heritage conservation.
Roofs do more than keep the rain out - Roofs are architectural assemblies that have both functional and decorative elements to help define a building’s style and historic character. Roofs can be one of the most important Character Defining Elements (CDE’s) of an historic building and how they are maintained matters to the sustained heritage value of the property. The Parks Canada Standards and Guidelines for the Conservation of Historic Places in Canada provides assessment criteria about historic places that helps property developers identify treatments for the repair, maintenance and upgrading of historic elements that are important to protect. These elements embody the heritage value of a site. The Standards and Guidelines identify CDE's as "materials, forms, location, spatial configurations, uses, and cultural associations or meanings".

Cultural associations or meanings - Historic railway stations provide an example of functional buildings that have been crucial to the economic development of their communities while at the same time providing cultural associations on a human scale. The graceful sweep and slope of the station roof added prestige to the community and provided many travelers with a first impression and welcome to their new home or destination. This was a building filled with meaning for the community by providing a place for emotional hellos and goodbyes, pride in community, and the activities of a communications and transportation hub.

The railway station’s architectural form and plan were determined by its function and eloquently expressed with decorative features such as the heavy overhanging eaves which also served many functional purposes.

Generous overhanging eaves provided shelter from the blistering sun and driving rain, and the ornate brackets divided the long expanse into sections that added privacy for those clustered below just off the busy platform. The overhang also protected luggage stacked on carts out of the rain. Under the beautiful overhang, loved ones found a space of privacy and intimacy to say hello or embrace in final farewell before leaving for war or places far from the safety of home.
The SHF Conservation Bulletin Series is designed to stimulate the imagination and foster philosophies and principles that will enable the reader to fully benefit from the abundant available information and hopefully move into the realm of enlightened questioning and decision-making.

Cultural associations or meanings provide the primary reason why heritage properties are preserved and the appearance and function of a roof can play an important role in reinforcing these values. The style of roof can be so distinctive that it can often indicate a building’s function even from a distance. Church spires are one example of how traditional roofs signal the presence of the church to travelers.

Even flat roofs have modern cultural associations and meanings. Roofs are being transformed with improved energy efficient design and landscaping features, roof gardens, patios, trellises, privacy screens, flowers, lighting and comfortable furnishings to create popular outdoor living spaces.
Saskatchewan Heritage Foundation (SHF) funding decisions
discourage requests for approval for renovations and alternate materials that are
outside of the accepted standards for heritage restoration identified by Parks Canada in
the Standards and Guidelines for the Conservation of Historic Places in Canada.
These Standards have been formally adopted by the SHF and inform decisions relating
to the agency’s granting activities. They identify a clear preference for processes that
repair rather than replace; and, if replacement is necessary then replacement of "in
kind" missing or deteriorated parts should be based on historical evidence. Under this
directive roofing materials such as wooden shingles are to be replaced “in kind”.

New and alternate but sympathetic and appropriate materials should be considered for
additions; the additions themselves should be compatible but subordinate to the
original structure. To make the most of limited grant funds, the SHF identifies grant
use only for traditional materials and detailing. However, when contemporary
materials, paid for by the owner are approved, owners can proceed with incorporating
these new materials into their projects without jeopardizing the eligibility of other parts
of their project. Similar to heritage restoration grant programs in other provinces such
as New Brunswick, funding for historic building conservation programs can be used as
a complement to other construction subsidies and energy saving incentives.

Preserving or restoring the weather-tight integrity of a roof is among the
necessary first steps in protecting an historic structure. The roof is a
major feature in the aesthetics of a structure helping to define its design,
arquitectural style and period.

The parapet wall on the Provincial Legislative Building and
appropriately coloured exterior finishes were used to mask
installation of new mechanical rooftop service equipment.
Somewhat visible from the west side, effort was made to make the enclosures as inconspicuous as
possible.
Appropriate treatment of character defining elements requires coordination of decisions about the project as an integrated whole. These decisions will impact all aspects of a project's design, construction processes, materials and methods specifications, operations and maintenance planning.

**Repairing** - a roof by reinforcing the character will also generally include the limited replacement-in-kind of deteriorated or missing parts of elements when there are surviving prototypes such as cupola louvers, dentils, dormer roofing, slates, tiles or wood shingles.

**Preserving** - roofs and their functional and decorative elements that are important in defining the heritage value of the building.

**Rehabilitating** - a roof if an evaluation of its overall condition determines that more than preservation is required.

**Restoring** - a roof if an evaluation of its overall condition determines that reconstruction from the restoration period will be necessary.
The SHF Roofing Policies and Preservation Principles, the Parks Canada Standards and Guidelines, and also the U.S. Department of the Interior Standards for Rehabilitation have been developed to reflect universally recognized conservation principles and standards of quality in keeping with international heritage conservation charters and practices. The U.S. Department of the Interior Standards for Rehabilitation call for the repair or replacement of missing architectural features based on accurate duplication of features, substantiated by historic, physical, or pictorial evidence rather than on conjectural designs. On a wooden shingle roof, it is important not only to match the size, shape, texture, and configuration of historic shingles, but also to match the craftsmanship and details that characterize the historic roof. See references to the Repair and Replacement of Historic Wooden Shingles at the following websites:

SHF Emphasis on Historic Roofing Materials - Due to the high visual impact which most roofs have on any building, it is important that every effort be made to restore these features to their original design. Parks Canada www.pc.gc.ca/docs/pc/guide/nldelpc-sgchpc/page3/page3b.aspx - “Historic materials should be used whenever possible. Substitute materials used to imitate historic materials, should be used only after all other options for repair and replacement in kind have been ruled out. Substitute materials are normally used only when the historic materials or craftsmanship are no longer available, when the original or existing materials are of a poor quality or are causing damage to adjacent materials, or when there are specific regulations that preclude the use of historic materials. Use of these materials should be limited, since replacement of historic materials on a large scale may jeopardize the integrity of an historic place.

Every means of repairing deteriorating historic materials or replacing them with identical materials should be examined before turning to substitute materials. Because there are so many unknowns regarding the long–term performance of substitute materials, their use should not be considered without a thorough investigation into the proposed materials, the manufacturer, the installer, the availability of specifications and the use of that material in a similar situation in a similar environment. The importance of matching the appearance and physical properties of historic materials and, thus, of finding a successful long–term solution cannot be overstated.”
**SHF Roofing Policy** - Preserving or restoring the weather-tight integrity of a roof is among the necessary first steps in protecting an historic structure. The roof is a major feature in the aesthetics of a structure helping to define its design, architectural style and period. The SHF places a high priority on supporting projects that commit to repairing or replacing original roofing with identical replica materials.

**SHF Roofing Preservation Principles** - The SHF follows the fundamental restoration principle of “minimal intervention”. This means that proposed restoration work should make the least amount of change to the building, and that “repair” is preferable to “replacement”. Therefore, every reasonable effort should be made to preserve as much as possible of the original fabric of an historic structure, or to replace worn out elements with replicas of the original. This principle applies particularly to the roof and any other highly visible part of a building or structure, as this can seriously alter the overall appearance.
The Standards and Guidelines for the Conservation of Historic Places in Canada emphasize the importance of: conserving the heritage value of an historic place; conserving changes that have become character defining elements in their own right; minimal intervention; recognition of an historic place as a record of its time, place and use; finding an appropriate use for an historic site to minimize the need to introduce structural changes; stabilization until a more permanent intervention is undertaken; undertaking a condition assessment to determine the most appropriate intervention; regular and ongoing maintenance to minimize deterioration; compatible and identifiable interventions; making new additions compatible, subordinate, and distinguishable from the original structure; and, reversible interventions that would enable the structure to be returned to its original form if desired.

The SHF grant guidelines place emphasis on the following interventions in priority order:

**First Priority** - Preservation - Create a stable environment to retard deterioration of character defining elements

**Second Priority** - Restoration - Recover the state of an historic place to a particular time period

**Third Priority** - Rehabilitation - Revitalize historical elements, replicate existing features, use compatible new designs.

*Krivoshein / Oscar Lake School
Meeting Lake RM 466, near Hafford*

(top) Before roofing repairs.

(bottom) After application of new wood shingles.
Standards and Guidelines for the Conservation of Historic Places in Canada
(Abridged Summary)

1. Conserve heritage value of an historic place. Do not remove, replace or substantially alter intact or repairable Character Defining Elements (CDEs). Do not move part of a place if its location is a CDE
2. Conserve changes that have become CDE's
3. Minimal intervention
4. Recognize the place as a record of its time. Do not create a false sense of development by combining elements which never co-existed
5. Find an appropriate use – original use; adaptive Reuse
6. Stabilize until an intervention is undertaken. Protect archaeology

7. Assess condition prior to intervention; use the gentlest means possible
8. Maintain and repair rather than replace - using a “recognized conservation method”; replace "in kind"
9. Create compatible and identifiable interventions; document for future reference
10. Repair rather than replace; match original elements if replacement needed; if insufficient historical evidence - form missing element compatible with character
11. Make new work compatible & subordinate

12. Reversibility: large scale; reversibility: small scale or temporary
13. Repair rather than replace; replace deteriorated or missing elements to match sound versions
14. Replace missing features using historical evidence as a guide

Kerrobert Area Residence Damaged by Fire
RM of Mariposa, SK

While not eligible for SHF funding because it is a new, non-original material, some heritage property owners are exploring the use of “Enviroshakes” - a composite roof shingle product with a cedar-like appearance.

The above example used this product on the main roof of the historic building pictured above. This roofing alternative is made from recycled materials.
Asphalt shingles were introduced in the United States in the 1890s, but did not become popular in Saskatchewan until the mid 20th century. Hence, unless it can be proven that they are part of the original roofing material, asphalt shingles are generally not considered appropriate for pre-1940 historic structures in Saskatchewan. Most historic sloped roofs in Saskatchewan were covered with wooden cedar shingles. In some instances, sheet metal or metal shingles were utilized. An imitation shingle pattern was common throughout much of Saskatchewan at the turn of the 20th century. Metal roofing predates the 20th century, but was seldom used in Saskatchewan at that time. Under certain circumstances, sheet metal or metal shingles may be used in place of traditional wooden shingles, provided that the design is appropriate to the building, and is in keeping with similar metal roofing used elsewhere in Saskatchewan at the time of the building’s construction.

SAMPLES OF METAL ROOFING WHICH CAN STILL BE REPLICATED.

Town Hall / Opera House, Prince Albert SK
Fleur de Lys design (18 x 22 inches)

Philbert Residence, Meyronne SK
Roof shingle (18 x 22 inches)

Land Registry Office, Battleford SK
Inverted “Y” design (9 x 14 inches)
The colour scheme for metal roofing should be appropriate to the building and era. The bright oranges, greens and blues presently in vogue are probably not appropriate to historic buildings in Saskatchewan. Silver, grey, beige, black and maroon may be acceptable, however, depending on the original colour of the building’s roof. Individual metal shingles are appropriate to most historic buildings; long sheets are less common. However, each case should be judged on its own merits, based in part on what types of metal roofing was utilized on comparable historic buildings at that time.

*Will the use of modern substitute roofing materials affect my grant application?*

Yes. Non-original materials are not eligible for SHF funding consideration. If the grant application is approved for in-kind replica materials, and then modern substitute materials are used without the approval of the Foundation, the Foundation will not fund the work.

*Alternative Roofing Materials: A Guide for Historic Structures*

There are many aspects to professional roof inspection that require extensive training, skill, and specialized tools for probing, testing and sampling materials, reviewing workmanship, site preparation for repairs, roof surfaces, weathering and ultra violet degradation, hidden cavities, and structural capacity.

Roof Exterior Preliminary Visual Inspection Checklist

1. General Condition
   Flashing, caulking, screening:
   ✔ Vents
   ✔ Mechanical and electrical equipment penetrations
   ✔ Chimney
   ✔ HVAC hardware systems
   ✔ Structural anchors
   ✔ Roof mounted hardware
   ✔ Fire escape mounting brackets
   ✔ Signage mounting anchors
   ✔ Pedestrian and equipment enclosures
   ✔ Walkways
   ✔ Communications antennae
   ✔ Grounding wires
   ✔ Condition of ridge, parapet, chimney and vent caps
   ✔ Soffits, fascia, rafter ends
   ✔ Fire and Building Code Requirements

2. Remember
   When buying a car we always “look under the hood”. Similarly, when determining the condition of the roof, remember to look underneath:
   ✔ Inside the attic
   ✔ Ceilings, floors and walls on the upper floor and elsewhere throughout the building for signs of moisture, mold, and leakage that could be symptoms of roof problems.

3. Other Considerations
   Identify areas that cannot be fully inspected from a preliminary walk through and require:
   ✔ Dismantling
   ✔ Access from safety equipment
   ✔ Specialist training and knowledge
4. Design Considerations
✓ Adequacy of structure, insulation, venting
✓ Evidence of ice damming, areas of heat loss
✓ Original materials and subsequent alterations
✓ Design appropriateness

5. Condition of parapet walls
✓ Anchorages
✓ Joints
✓ Flashing
✓ Structural Integrity

6. Evidence of Moisture penetration
✓ Moss, vegetation growth, staining
✓ Dampness indications of moisture build-up
✓ Ponding or inadequate drainage slope
✓ Animal or insect damage or access points

7. Care and Maintenance
✓ Seasonal and preventative maintenance
✓ Maintenance programming and scheduling
✓ Roof membrane and parapet integrity
✓ Sagging
✓ Cracking / blistering
✓ Curling
✓ Loose or missing parts or materials
✓ Wear
✓ Delamination
✓ Movement
✓ Impact damage or trauma
✓ Age / lifespan, condition, workmanship
✓ Clear roof drains and debris build-up
✓ Eaves / downspouts / drainage
✓ Overhanging trees
✓ Material life-spans
✓ Wind / water / sun damage
Ice damming - results from poorly insulated and vented attic spaces that enable interior warmth to rise through the roof structure. The resulting heat loss can melt snow on the roof. Ice damming is particularly evident at the outer edges of sloped roofs (particularly low-sloped roofs) where melting run-off refreezes and builds up as ice over cool roof overhangs and soffits. The confined, irregularly shaped attic air cavities at building perimeters are difficult to insulate, and cause additional ice damming through the proximity of warm building envelope heat loss immediately adjacent to cold eaves.


**Attic Venting** - If attic space is not properly ventilated humidity can build up resulting in moist insulation that looses its thermal effectiveness.

**Attic Insulation** - Adding insulation in accessible attic spaces is very effective at saving energy, reducing heat loss and can generally be done at a reasonable cost, but it does require some skill to install. In the winter, moist heated air constantly rises and attempts to pass through ceilings and walls. It is better to allow some of the moisture to escape into a properly ventilated attic than to seal your heritage building up tight. Blanket or batt insulation with a treated kraft paper vapour retarder already attached to it, will effectively slow vapor movement without completely stopping it. Natural, fibre based materials (ex: cellulose) also provide good thermal insulation and do not hinder the movement of moisture. If there are older electric cables or lights, check with an electrician before covering them with insulation because they could overheat. When an attic is unheated (not used for living space), insulation should be placed between the floor joists, with the vapor barrier facing down towards the warm living area. If the attic is a heated living space, then the insulation should be placed between the roof rafters with the vapour barrier facing into the room. New insulation can be installed over existing loose-fill insulation, but ensure that the new insulation doesn’t have a vapor barrier, which would trap moisture inside the old insulation and cause decay.
Saskatchewan's climate requires insulated and vented roofs that can function equally well in extreme heat and cold. A poorly maintained roof will permit water entry and accelerate the deterioration of interior finishes.
Sprayed-in-place Polyurethane Foam (SPF) - In response to inquiries from heritage property owners, the following information on spray-applied / sprayed-in-place polyurethane foam (SPF) will provide a brief outline of some of the items that users should consider regarding SPF for roofing applications. Detailed information and standards on spray-applied / sprayed-in-place polyurethane foam roofing systems, pros and cons can be found by referring to technical papers at the following websites:

- National Research Council Canada / www.nrc-cnrc.gc.ca
- The Canadian Roofing Contractors Association / www.roofingcanada.com
- Canadian Urethane Foam Contractors Association / www.cufca.ca
- U.S National Roofing Contractors Association / www.nrca.net
- A vast amount of information is also available using the internet search term: "sprayed-in-place polyurethane foam".

Long-term maintenance of the SPF roofing installation relies on the establishment and maintenance of jobsite records that track installation and repair information such as: dates, weather conditions, material quantities and batch numbers, proper material storage and temperatures, examination of coating applications, and test specimens to measure foam thickness and uniformity.

### CONSIDERATIONS REGARDING SPF ROOFING APPLICATIONS

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<th>1. Protect SPF from ultraviolet sunlight degradation.</th>
<th>2. Rigorous quality control during SPF field fabrication and application.</th>
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<td>3. A well maintained protective coating: resistant to impact, abrasion, temperature, moisture, and weathering; with qualities of strength, elasticity, fire resistance, and dependable adhesion.</td>
<td>4. Proper substrate preparation, tight installation scheduling, good weather application, qualified inspection, prevention and correction of coating defects such as pin holes, blistering, cracking.</td>
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<tr>
<td>5. Need for periodic recoating by accredited SPF applicators. Dependence on applicators skill and quality equipment.</td>
<td>6. Potential for wind-conveyed spray during application: attention to site proximity to areas vulnerable to damage.</td>
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As a non-traditional material, SPF applications for roofing, cavity wall insulation, or exterior below grade thermal and moisture protection are not funded by the Saskatchewan Heritage Foundation. However, building systems are integrated and choices for the use of SPF will impact other restoration decisions and options. When heritage property owners submit requests to the SHF for other work that might be eligible for funding, they should identify the use of SPF and include documentation by the project architect or engineer (not sales representatives) confirming their selection criteria.

Considerations for SPF installation and maintenance include: protection from ultraviolet light, a durable protective covering, potential health risks, proper substrate preparation, and a long-term maintenance program with access to skilled applicators.

Interested heritage property owners can use the following references as starting points for additional information on the use of SPF. Standards are revised on an ongoing basis.

The Manual of Low-Slope Roof Systems

The Canadian Roofing Contractors Association

The National Building Code of Canada
NBC sets out technical provisions for the design and construction of new buildings. It also applies to the alteration, change of use and demolition of existing buildings. www.nrc-cnrc.gc.ca/eng/ibp/irc/codes/05-national-building-code.html

Underwriters Laboratories of Canada
ULC is an independent product safety testing, certification and inspection organization that has tested products for public health and safety for 90 years. They are accredited by the Standards Council of Canada. www.ul.com/canada/eng/pages/
Left page clockwise from top:

St. Anthony’s RC Church, Eye Hill RM 382, near Salvadore SK
St. Joseph’s RC Church, Claybank SK
East Stock Shed, Claybank Brick Plant SK
Former Union Bank / Law Office, Maple Creek SK
Close-up of steeple repair / St. Joseph’s RC Church, Claybank SK

Right page clockwise from top left:

Thompson Family Heritage Farmstead / File Hills Post Office, Tullymet RM 216 SK
Assumption RC Church, Marysburg SK
Assumption of St. Mary’s (Boychuk) Ukrainian Orthodox Church, near Canora SK
There are many excellent on-line publications about the assessment and repair of heritage roofs, including the following references:

**Start with the Roof**
National Trust For Historic Preservation
www.preservationnation.org/issues/weatherization/roofing/additional-resources/nthp_roofing.pdf
Roofing energy efficiency, Roof Failures, Roof Forms, Roof Replacement and Materials, Anatomy of a Roof

**Barn Aid Series Number 4, Barn Roofs**
National Trust for Historic Preservation
www.preservationnation.org/issues/rural-heritage/barn-again/additional-resources/Barn-Aid-4-Barn-Roofs.pdf
Evaluating Your Roof, Roof Repair, Roof Replacement, Roof Safety, Roof Maintenance

**Historic Building Roofing: Technical Preservation Guidelines**
Center for Historic Buildings
Office of the Chief Architect
Public Buildings Service
U.S. General Services Administration (GSA)

**Roofs:**
**Standards for Preservation**
www.nps.gov/history/HPS/tps/standguide/preserve/preserve_roofs.htm U.S. National Park Service
Guidelines on identifying, retaining and preserving roofs

**Roofs on Historic Buildings** District of Columbia Historic Preservation Guidelines
www.planning.dc.gov/planning/lib/planning/preservation/design_guides/roofs.pdf
Illustrated guidelines on roof details, materials, maintenance, and repair options.
Practical Preservation Guidelines

The Saint John NB Planning and Development Office has developed an excellent conservation series that includes guides on Roofs, Dormers, Gables, Eaves & Cornices. Other titles in this series include: Preservation Programs, Dictionary, Contracts, Masonry, Wood, Doors, Windows, Shutters, Porches, Storefronts, Paint & Colour, Signs, Awnings, and Architectural Styles. The Typical Details series also includes brochures on Doors, Windows, Paint & Colour, Awnings, Signs, Facades, and Stairs, Decks & Fire Escapes.

For publications not available on-line contact:
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These suggested resources for further research note the environmental benefits of proper historic building stewardship and outline philosophical perspectives for heritage decisions. Qualified practitioners should be consulted; their assessments would be based on comprehensive site reviews to determine the nature and extent of appropriate interventions. Conservation Bulletins are not technical manuals that attempt to transform novices into qualified technicians, contractors, engineers or architects.
St. John's Lutheran Church
New Finlandia, RM of Willowdale SK

The New Finland congregation was formed in 1893, north of Whitewood, and St. John’s Lutheran Church was built in 1907 with volunteer labour. It is said to be the oldest Finnish Lutheran Church still in use in Canada. In 1934 the church was cut in half, using a hand saw, and moved five miles by steam engine and gas tractor to its present location.

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Cover Photo - Government of Saskatchewan / Korvemaker
Page 4 (bottom) Via Station, Eatonia - Government of Saskatchewan / Zelmer
Page 5 - Lutheran Church, Lisieux - Government of Saskatchewan / Zelmer
Page 5 - Round Barn Interior - Government of Saskatchewan / Korvemaker
Page 6 - Legislative Building, Regina - Government of Saskatchewan / Zelmer
Page 7 - Stanley Mission - Government of Saskatchewan / Zelmer
Page 7 - Stanley Mission Historic Photo - Saskatchewan Archives Board
Page 14 (bottom) Round Barn, Drake - Government of Saskatchewan / Korvemaker
Page 17 - Residence, Saskatoon - Government of Saskatchewan / Korvemaker
Page 17 - Church, Esterhazy - Government of Saskatchewan / Korvemaker
Page 20 (bottom right) Claybank Stock Shed / Dan Flegel
It is important to remember that each site, location and project will have unique circumstances. Products and references in Saskatchewan Heritage Foundation conservation bulletins are not endorsements and projects require consultation with qualified professionals who will need to visit your site, assess the situation and recommend the appropriate treatments.
The Saskatchewan Heritage Foundation is the primary agency providing financial support to preserve and restore heritage property in our province.

50% Assistance* for eligible costs related to restoration and repair of designated heritage resources.

*Up to 50% depending on funds available. Visit our website for details: www.tpcs.gov.sk.ca/SHF

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