

MAKE HISTORY.

Preserve Manitoba's Past.




HERITAGE BUILDING MAINTENANCE MANUAL



Canada's
Historic Places

Lieux patrimoniaux
du Canada

Manitoba 



This manual contains useful information on restoring and preserving heritage buildings, but it is intended as a general guide only. The Provincial Government has taken all reasonable steps to ensure the accuracy of the information in this publication. However, it recommends that building owners consult with specialists, such as contractors, builders, plumbers, heating and air professionals and electricians, when doing any renovations, repairs or construction on their properties. The province does not assume responsibility for any loss or damage resulting from reliance on the information in this manual.

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INTRODUCTION

No building is maintenance-free, so every structure, heritage or new, requires care to limit deterioration.

Exposure to the elements causes all building materials to wear down eventually. Periodic inspections can help you find problems early and, along with regular maintenance, will extend the life of your building. They will also help you avoid the need for potentially expensive and disruptive repair work, which may damage your building's heritage value.

It's a good idea to set up a building maintenance schedule to remind you of any inspections or work that needs to be done. It will also help you prioritize maintenance, preventing avoidable, costly, future repairs.

A Maintenance Manual as a Guide

One maintenance manual does NOT fit all because every building is unique. This manual provides general guidelines on topics common to most buildings.

Starting with the roof and moving through various major building components, the manual focuses on typical issues of deterioration. There are worksheets included for your convenience. They will help you do regular inspections of your building to look for deterioration at its earliest stage. The manual will also help you organize the maintenance and repair jobs that must be done regularly.

This manual will help you:

- plan your building's maintenance to conserve your heritage building
- maintain the basic parts of your building
- solve common problems of typical building systems

Please note that this manual provides a general overview of building maintenance and does not replace any operations or maintenance manuals published by the manufacturers of specific building materials. Ensure any manuals or other publications you consult are appropriate to heritage buildings in our unique climate. You may find that published advice on building topics such as insulation or moisture accumulation may not be applicable in Manitoba.

Architectural materials and construction methods used in other areas of North America may be similar, yet significantly different, from those used in Manitoba. Relying on out-of-province manuals can lead to inappropriate maintenance practices.

The Heritage Buildings Unit team invites your maintenance-related questions, comments or suggestions. Please contact:

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PART 1: WHAT IS MAINTENANCE?

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All building materials decay eventually due to sunlight, rain and wind, and therefore they require continued attention if a building's condition is to be maintained. Modest spending on regular maintenance can reduce the need for costly repairs, protect the fabric of your building and save you money in the longer term.

As defined by the *Standards and Guidelines for the Conservation of Historic Places in Canada* (2004), MAINTENANCE is:

Routine, cyclical, non-destructive actions necessary to slow the deterioration of a historic place. It entails periodic inspection; routine, cyclical, non-destructive cleaning; minor repair and refinishing operations; replacement of damaged or deteriorated materials that are impractical to save.

Maintenance can be broken down into three categories:

- **Corrective Maintenance:** work necessary to bring a building to an acceptable level (often recommended by a conservation plan), such as treatment for moisture.
- **Emergency Maintenance:** work that must be done immediately for health, safety or security reasons or that may result in the rapid deterioration of the structure or fabric if not done, such as roof repairs after a storm or repairing broken glass.
- **Planned Maintenance:** work to prevent problems which can happen predictably within the life of a building, such as cleaning gutters or painting.

The best type of protection is to do regular and routine maintenance, to prevent extensive and expensive repairs. Maintenance planning must be consistent with your needs and respectful of your financial means, while ensuring that your building is evaluated annually. A plan that is too complicated or onerous will simply not get completed.

Much of the work we are encouraging in this manual is planned maintenance. In the initial phases of developing a maintenance plan, there may be corrective or emergency maintenance that must be done before a routine, cyclical approach can be adopted.

The Importance of Maintenance

Given the importance of material integrity in a heritage building, it is obvious that, whenever the option presents itself, preserving an original building element is preferred to a replica. To ensure that a building maintains its integrity, it is critical that maintenance takes a leading role in a building owner's plans and activities.

By maintaining heritage sites -- repairing, cleaning, or correcting defects -- we are not only preventing deterioration of precious original materials, we are also ensuring that possible hazards are avoided. The purpose of maintenance is to ensure longevity, reduce costs and improve value.

So what is the dividing line between maintenance and repair? Basically, if things are let go too long, you can almost be assured of more serious problems. Occasionally, materials such as roof shingles, will require replacement. However, the implementation of a diligent maintenance program will limit the need to repair or replace on a large scale and extend the life of those original materials.



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PART 2: **PRE-PLANNING**

PART 2. PRE-PLANNING

There are several practical questions a building owner should ask before undertaking maintenance work. Answering these questions will help establish the scope of work and will allow a building owner to identify the various resources that will make the work a success.

Can you undertake the work yourself?

- To answer this question you need to know exactly what the job will entail. Consider any special skills required such as turning wood on a lathe or the proper strike when repointing masonry.
- In your day-to-day activities involving family, work and other interests, do you have the time you will need to commit to the project you are planning? Should you hire someone else to do the work?
- Is it physically possible for you to carry out the work without the committed assistance of others? Can you rely on the assistance of others for the duration of the project?
- If you are unable to carry out all the work yourself, you will need to consider where to find the appropriate trades required for the job.

Can you undertake the work safely?

- Are you aware of all the necessary precautions that must be observed with all aspects of the job? For example, it's not unusual for people to be unaware of dangerous compounds that form when mixing chemicals. And that materials such as asbestos siding and urea-formaldehyde foam insulation (UFI) require specific protective equipment and disposal.
- Safety harnesses, headgear, footwear and breathing equipment are just a few of the pieces of items required for building-related work. Are these items available to you and do you know how and when to use them?
- The safety of occupants, visitors to the site and the general community must be considered when any project is planned. Be aware of Health and Safety regulations. Even as a volunteer organization, you will be held responsible in the case of an accident. Proper signage and fencing of the worksite are just a few considerations for the safety of others.

Will the planned tasks affect other parts of the site?

- Often, a maintenance project can affect other parts of a building. For example, applying a waterproof coating to prevent moisture penetration could damage the masonry. If these byproducts of your work are not anticipated, then you may not budget the right amount of resources to ensure a satisfactory outcome.
- If you are undertaking a project that requires the placement of heavy equipment outside the building, consider the damage the equipment may make to your grounds, fencing or neighbouring properties.
- Whenever you are planning a project, think about how your work activities, or the activities of others on the project, may affect areas that are not within the scope of the project.

Is your budget realistic?

- The potential for unforeseen events or delays during the course of a renovation project are always present and can greatly affect the final cost of the work. Unwelcome surprises in the building itself (especially in walls, where shoddy work may have been masked, or where an unusual procedure has been employed) can also escalate costs.
- Thoroughly investigating the area to be worked on, checking for hidden or unused building elements within walls (such as radiant heat lines in a building converted to forced air) will reduce the element of surprise in a project, in turn making cost estimates more accurate.
- Plan for cost overruns. Apply a contingency element in your budget that, if necessary, can be made available to bring your project to completion.
- After factoring in the potential for surprises, is the project still within your budget?

Do you require heritage and/ or building permits?

- It is important to realize that once a building has been designated under the Heritage Resources Act, a heritage permit must be granted by the municipal and/or provincial government before any major physical alterations take place. However, most of what would be classified as maintenance should not need a heritage permit, as it should not dramatically interfere with the physical integrity of the building.
- One of the primary intents of building permits is to ensure that a project is conducted in a safe manner, using appropriate standards and materials, thereby reducing the risk of hazardous environments for occupants, now and in the future.
- Be sure to ask staff at the Historic Resources Branch and/or your municipal office to find out what permits you require.

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PART 3: **WHERE DO I START?**

PART 3. WHERE DO I START?

This is a familiar question to anyone who has faced the sheer volume of work to be done and tried to prioritize the needs of a conservation project. This next section identifies five steps of the conservation process. These steps will apply to any conservation project, not just maintenance tasks, and may be useful for you to review whenever you are considering work to your historic place.

STEP 1: Identify the heritage value and character-defining elements



Manitoba's Statement of Significance Certificate

Before planning any maintenance to a historic place, it is essential to understand its heritage value and to recognize its character-defining elements, so you know what's important to protect.

For most designated sites, a Statement of Significance (a brief report on what makes the site important, used on the Canadian Register of Historic Places, www.historicplaces.ca) will provide details on why a place is important and what physical elements are most important. Pay particular attention to the character-defining elements. These building features will give you clearer

direction on the most significant physical aspects of your building, and help you prioritize your conservation efforts.

If your property is not designated, you can conduct your own physical survey so you have list of building features that will need to be considered in your conservation planning.

- Start with the building's overall features such as the form, scale and massing.
- Look at the immediate site, gardens and landscaping that may directly affect the building.
- Look more closely at the exterior and record the materials used.
- Finally, it is important to look inside your building and record the interior features, finishes and notable details.

STEP 2: Review the Standards and Guidelines

The *Standards and Guidelines for the Conservation of Historic Places in Canada* is the first-ever pan-Canadian benchmark for heritage conservation practice in this country. It offers results-oriented guidance for sound decision-making when planning for, intervening in and using historic places. These guidelines are not intended to replace the role of conservation specialists or to provide detailed technical instructions, but can help you through the process of making decisions about your property.

The Standards are the fundamental principles of conservation applicable to all types of heritage resources, including archaeological sites, landscapes, buildings or engineering works.

According to Standard #8, maintenance is an essential task in the conservation process and should be undertaken regularly:

Standard #8:

- Maintain character-defining elements on an ongoing basis. Repair character-defining elements by reinforcing their materials using recognized conservation methods. Replace in-kind any extensively deteriorated or missing parts of character-defining elements, where there are surviving prototypes.

The Guidelines provide practical advice for decision-making when interventions are undertaken on historic places. Recommended and not-recommended interventions to historic places are detailed in ascending sequence from minimal to major interventions. There are several recommended guidelines that refer to “protecting and maintaining,” and should be reviewed before intervening on any historic place. These have been included in section 6.2 of this manual.

STEP 3: Do an inspection

The purpose of an inspection is to get an overall, accurate view of the entire property. This will help you set goals and objectives to fulfill your needs. Begin with a complete inspection, which will give you a detailed critical review of all parts of the building and grounds. This should be done by someone who has a broad and detailed knowledge of the building trades, both past and present. An understanding of how the building was meant to work when it was built and a knowledge of modern technologies are both necessary to accurately determine conditions.

It may be valuable to hire a professional for your first maintenance cycle. Once the initial assessment has been done, the cyclical plan should be manageable for you to handle.

Additionally, past records or reports can be very useful in understand your building and its maintenance needs. Inspection and/or condition reports or structural assessments from the past (if available) pinpoint chronic problems or areas that should be monitored.

Inspections for each building part are discussed more thoroughly in **Part 4. Maintaining the Parts**. Examine each part of the building and make notes on the current condition. Records will not only help you decide what needs to be done immediately, it will also help you understand the changes that may occur to your building over the years. There is an inspection checklist template in **Part 5. Worksheets** of this manual for your use. You may want to add items specific to your building so you ensure a thorough inspection every year.

STEP 4: Complete corrective or emergency maintenance (if necessary)

After your initial inspection is complete, it will be important to prioritize what needs immediate attention and what can be included in your regular maintenance planning cycle. The immediate needs can be categorized as corrective or emergency maintenance.

Corrective maintenance includes tasks that stabilize the building to stop deterioration. To repair is to take it a step further to eliminate previous damage. Decide in every case whether to stabilize only and defer repair – or whether it makes more sense to go ahead with a complete and proper repair.

Corrective maintenance may include:

- inspecting the exterior for suspected water penetration -- exterior leaks eventually cause interior damage
- fixing obvious leaks and water penetration, including downspout problems
- inspecting for and exterminate termites and other wood-destroying insects

In developing a treatment for a specific condition, be sure to address all of the causes of the deterioration and not just the symptoms.

Treat the Cause Not the Symptom

When you find poor conditions, determine the fundamental cause. Ask the five “W” questions (who, what, where, when and why). Begin with the obvious and let the questions lead you to the unknown.

EXAMPLE:

Why did the cornice fall off? It was weak and the ice pulled it down.

Why was it weak? Excessive moisture and decay caused the weakness.

Where was the moisture? It was found in the cornice and the gutter.

Why was the moisture in the gutter? Debris buildup trapped it there.

Where did the debris come from? Trees overhanging the roof.

So debris buildup is the cause. A corrective treatment to rebuild the cornice and a preventative treatment to clean the gutters regularly should take care of it.

But, if you ask a few more questions, you will see you have not found the fundamental cause.

What other moisture problems are there? Just inside the cornice, water condensed on the inside of the bathroom walls due to heat loss.

Why was there so much ice buildup? The lack of insulation let heat rise to the roof, melting the snow and forming an ice dam.

Without these additional facets, the problem would have cropped up again because a fundamental cause, heat loss, was left untreated. A more effective treatment would control the heat loss with insulation, and the moisture with vapor retarders and ventilation of the cornice. Be certain you find the most fundamental cause for poor conditions or you will only be treating the symptom.

It is important to separate determining conditions from developing treatments. It is tempting and common to look at an obviously damaged cornice and specify a treatment, without determining the cause. The danger is in treating single symptoms, such as a decayed hole in the gutter, rather than an underlying cause, such as an overhanging tree that drops leaves in the gutter or lack of regular cleaning. Standard treatments which come to mind quickly may not be adequate and can even cause harm, such as treating wooden gutters with tar.

*Courtesy of John Leeke (2000):

www.oldhousechronicle.org/archives/vol02/issue14/technical/maintenance.html

Emergency maintenance includes those tasks which require immediate attention to prevent personal injury or serious deterioration. After your initial assessment, if there appears to be tasks that cannot wait for routine maintenance, you should do the work as soon as possible.

Emergency maintenance may include:

Eliminating fire hazards:

- exposed or otherwise improper wiring
- overloaded electrical circuits
- thorough electrical inspection by a licensed electrician
- inspect and repair boiler and chimney.

Eliminating additional personal injury hazards such as:

- broken steps
- electrical shock hazards
- loose building elements
- immediate, obvious health hazards such as loose, crumbly asbestos, airborne lead dust from chipped paint

Determine Primary Treatment: Preservation, Rehabilitation or Restoration?

When conducting corrective or emergency maintenance ensure that you are doing minimal work to stabilize the immediate problem. According to *The Standards & Guidelines for the Conservation of Historic Places in Canada*, it is recommended that any intervention, including temporary repairs or stabilization, should involve the least intervention possible, and should be reversible. Be sure that a temporary repair does not cause more damage than it prevents. If the temporary repair will be expensive or if it could cause additional damage, it would be better to do a proper repair immediately.

Preservation

“The action or process of protecting, maintaining and/or stabilizing the existing materials, form and integrity of a historic place, or of an individual component, while protecting its heritage value.”

- materials and features are essentially intact and no extensive repair or replacement is necessary

Rehabilitation

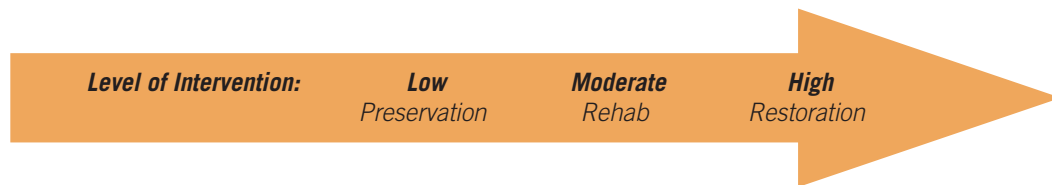
“The action or process of making possible a continuing or compatible contemporary use for a historic place, or of an individual component, through repair, alterations and or additions, while protecting its heritage value.”

- more than just minor repairs are needed
- may include the replacement of missing elements and/or the introduction of new features

Restoration

“The action or process of accurately revealing, recovering or representing the state of a historic place, or of an individual component, as it appeared at a particular period in its history, while protecting its heritage value.”

- the depiction of a particular period of the historic place outweighs the potential loss of material
- may include the removal of features and/or the reconstruction of missing features



Most maintenance tasks will be classified as preservation because the planned work is typically about stabilization, with no major replacement of original material. The level of intervention is a sliding scale depending on the type of work being completed.

STEP 5: Develop a cyclical plan for maintenance

Finally, develop your routine for planned maintenance.

The maintenance cycle diagram is one method to seasonally develop your regular maintenance plan. It is divided into incremental tasks that you may be able to tackle yourself, or at least plan for, on a regular basis.

In the fall, before the first snowfall is a good time to do a general site inspection, including walking around the building and recording the physical elements that need attention. It can be especially valuable to inspect your building in the rain, so you can see how water falls onto the building, and how it drains away from the building, which may help identify any potential moisture problems. If you identify conditions that need immediate attention, get the work done before the next season so the conditions don't get worse over winter.

During the winter, review your inspection report and make a plan for the spring. This may include researching funding opportunities, getting quotes on tasks that are beyond your scope of knowledge or availability, and recruiting partners and/or volunteers to help you with the work. The Historic Resources Branch has a list of grants available to historic places in Manitoba at: www.manitoba.ca/heritage

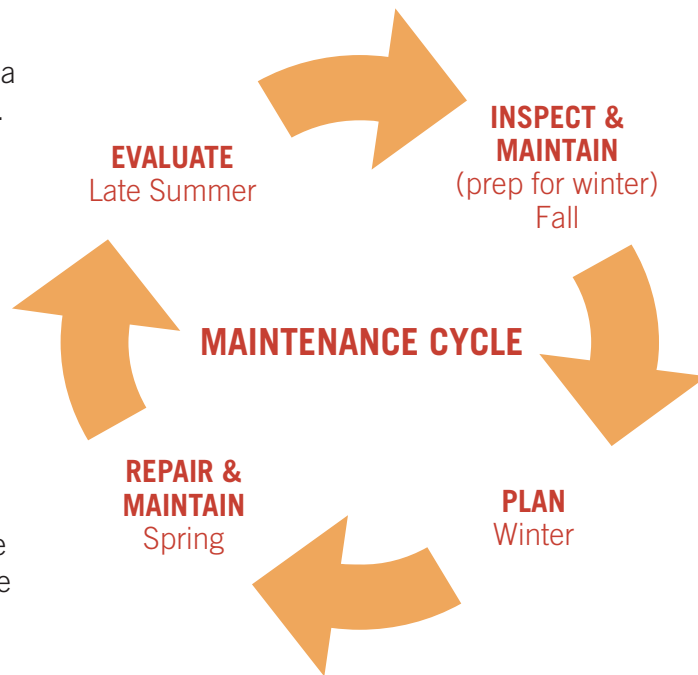
In the spring, put your plan into action. This will likely be your best opportunity and busiest season for maintenance, so ensure that you prepare accordingly. Finally, in the late summer, evaluate your plan and make note of any adjustments you may want to make for the following year. Over time, the annual plan will become easier, more routine, and will result in fewer surprises. In general, consider the following questions when making your maintenance plan:

What needs to be done? Make a list of the problems you see during inspection. Use a camera to record any identified problems.

When should it be done? Prioritize the tasks. Problems that raise safety issues, suggest structural instability or that allow water to enter the building need to be dealt with first.

Who will do the work? You may be able to do some of the work yourself, but recognize when it might be best to bring in a professional.

How much will it cost? In the long run, the costs associated with regular maintenance will be less than waiting to do repairs, which may also be more disruptive.



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PART 4: MAINTAINING THE PARTS

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While every part of your building needs ongoing maintenance, some parts need more constant care than others. The exterior of your building is subject to constant deterioration due to the rain, sun, wind and snow. The exterior elements often have the most heritage value, so they will likely be the focus of your maintenance efforts.

Specific areas and components to consider include roof, gutters and downspouts, site drainage, foundations, exterior walls, windows, doors, features and details. The following section will provide you with more specific information about these parts, including checklists which can be adapted for your property.

4.1 BUILDING ENVELOPE

Buildings are made up of a series of connected parts that fit together to make a strong and comfortable structure. The building envelope is generally the shell of the building that separates the interior from the exterior. The finishes are those final touches that make your building functional, comfortable and attractive.

The main function of the building envelope is to keep water out of the building, which is the single most damaging element to a heritage building.

Signs of moisture problems:

- stains on drywall or plaster
- mold or mildew (especially in corners)
- damp or wet insulation
- damp or rotted wood framing members
- rust and corrosion stains on metal elements
- paint that's peeling or blistering
- rotten wall sheathing or siding
- efflorescence (salt deposits) on interior or exterior surfaces
- dank, musty smells, particularly in the basement or other poorly ventilated spaces

Frame

The frame of the building is the skeleton which supports the body of the building. Typical elements include beams, floor joists, the sub-floor, studs and trusses. Together with the foundation, the frame bears the load of the building. The frame is generally completely enclosed by other materials and therefore does not usually require any maintenance, unless there is water penetration because another system has failed.

4.2 FOUNDATIONS

Foundations provide a stable surface on which buildings are constructed, allowing weight to be transferred evenly into the ground and anchoring the building in the face of lateral forces such as high winds. Without a proper foundation, buildings are prone to large amounts of movement and shifting due to settlement or frost heave. Movement in a building often results in cracked walls and window panes, heaving floors, and stuck doors.

Heritage structures will have foundation types that range from boulders at the corners of a log structure to full basements under multi-storey buildings. Often, the more elaborate the foundation the more stable, but if there are problems, the more extensive will be the repair needs. Foundations should be inspected at least annually, with additional checks following any severe rainstorms or nearby construction or excavation.

For many older buildings, most of the settlement has long since stopped. However, some changes to a building's surroundings can bring about more shifting. Changes are often gradual and not noticeable over a short period of time. Monitoring movement of a structure typically takes an extended period of time. Some events that may lead to renewed settling of the foundation include:

- change in the amount of ground and surface water around the foundation
- new construction or excavation close to the building
- significant increase in the load that a floor must carry, often occurring when the use of a building is changed
- installation of an HVAC (heating, ventilation, air-conditioning) system requiring new loads on the floors; new HVAC may also require cutting into the existing wall and floor system, which may affect the load capacity of the structure and the foundation's stability
- introduction of air conditioning and humidification may result in an increase or decrease of the normal moisture content in foundation or structural materials leading to shifting in the foundation
- tree roots in clay soils will extract moisture, producing voids in the soil, which the foundation needs for lateral support



Without knowing if this crack has changed over time, it is difficult to assess its severity. Inspect the crack for changes and consult a professional if necessary.

Common Signs of Shifting Foundations

Interior

- misaligned doors and windows
- cracks in the plaster or drywall
- doors and windows that stick
- sloping or cracks in the floor

Exterior

- cracks in the brick
- gaps around the doors and windows
- cracks in the foundation
- fascia board pulling away

Inspecting Foundations

Movement

Check for signs of recent building settlement.

- Are any serious cracks visible?
- Are there any signs of movement -- patched cracks re-opening, cracks in walls, bulging siding, windows or doors out of square?
- Is the roofline straight and horizontal?
- Are beams, columns, posts and joists sound?
- Are posts vertical and stable?
- Are the foundation walls plumb?

Moisture

- Are there any signs of leaking?
- Are there any signs of excessive moisture -- musty smell, corrosion?
- Is there any efflorescence or peeling paint on the walls or floor?
- Is there any condensation forming?
- Are there water stains or rotted wood near the floor?
- Are the wood posts, beams or floor joists damp or soft?

Exterior

- Is the parging in good condition? Are there any new cracks or flaking?
- Is the ground properly sloped away from the building?
- Are there any trees or saplings growing near the foundation?



Bowing of an exterior wall, likely due to foundation issues, will eventually collapse if not repaired.

4.3 EXTERIOR WALLS

Along with the roof, it is a building's exterior walls that produce its overall character, giving it colour, texture and detail. It is important to undertake regular site inspection and maintenance of the exterior walls in order to preserve their structure and character.

When inspecting the condition of the exterior walls, not only is it important to identify areas of deterioration, it is also important to recognize potential sources of problems in the future. This preventive approach to evaluating the building enables you to take action early, minimizing both damage and cost of repair or maintenance. There are three principal causes of wall deterioration: organic, mechanical or chemical.

Causes that are classified as organic result from the direct impact of a living organism on the physical structure. Deterioration from mechanical causes can often be recognized by breakage or crumbling of materials. The source of the problem is either an object striking the building or of water forcing building materials apart through expansion - an especially harmful process during the winter's freeze/thaw cycle. Chemical deterioration results from localized contamination of the air or moisture, or from material incompatibility.

Inspecting Walls

- Have the roots of ivy, creepers or over-growth penetrated the surface of the walls? These encourage moisture and insect intrusion.
- Are there lichens and mosses present? These retain moisture and can stain wall surfaces.
- Is there damage from wind? After any windstorm, inspect the walls to ensure that there was no damage as a result of objects striking the exterior.
- Are there bird droppings? Acids in droppings can severely damage stone.
- In masonry walls, is there evidence of anchor corrosion? Cracking or spalling of masonry can occur as a result of corroding metal set into masonry. Corrosion can also lead to staining via water runoff.
- Is there evidence of moisture penetration? In buildings whose walls are sheathed with wooden siding this will be expressed as peeling or blistered paint. In masonry and stucco-covered buildings this will be expressed through efflorescence (deposits of white or grey powdery salts left by moisture that travels through building materials), or more often, through cracks.
- Cracks are the most obvious expression of a failure in a masonry wall. Some forms of cracking are more serious than others. The level of concern depends on: the size of the crack, the location and direction of the crack, and the rate of change in the crack. Keep in mind that it is not unusual for a masonry building to have some cracking. However, it is also important to recognize and monitor closely those cracks that change in length and gap, run horizontally or through building materials, or are large enough to insert a pencil. If possible, cracks of this nature should be examined by a qualified assessor of structures (e.x. an engineer or architect).
- In masonry walls, is there evidence of mortar deterioration (e.x. no mortar present in the joint within 4 cm of the wall surface, mortar that can be easily scraped from the joint, mortar that has taken on a sand-like texture and crumbles, or mortar that cleanly separates from the brick). In such cases a repointing project, in which mortar is removed and replaced, will be necessary.

Log Buildings

Water, incompatible materials, and lack of maintenance are the major causes of damage to log buildings. Water damage is usually the result of the incorrect use of materials and the lack of maintenance; 95% of all deterioration can be linked to water.

To preserve the natural beauty of a log building, routine maintenance is essential. The natural elements (rain, wind, sun) and your building's location affects how often you will need to refinish or reseal, as well as, the quality of product needed. Regular exterior maintenance, inspecting logs for large cracks that catch water, etc. will help prevent costly repairs.

Important features of log buildings include large overhangs to help protect the logs from sun and rain. Rain gutters are important to keep water from splashing back onto the lower logs, especially where decks are involved. Keeping logs dry and off the ground as well as directing water away from log structures are critical.



This log has been damaged by water. Investigate the source of the water and address the cause of deterioration before replacing the log.

Cleaning

The reasons for cleaning any building must be considered carefully before making a decision to clean. Abrasive cleaning methods can damage historic building materials, and generally are not acceptable conservation treatments for historic structures. *The Standards and Guidelines for the Conservation of Historic Places in Canada* recommends “using the gentlest means possible” when cleaning a historic building. Sandblasting and water blasting are NOT recommended treatments as they can permanently and severely damage exterior surfaces. A detergent solution, a medium soft bristle brush and a garden hose for the purpose of rinsing, is the gentlest method involving water and is recommended when cleaning historic surfaces.

Before starting any cleaning program, ask yourself:

Is the cleaning being done to improve the appearance of the building or to make it look new? The so called “dirt” actually may be weathered masonry, not accumulated deposits. A portion of the masonry itself thus will be removed if a “clean” appearance is desired.

Is there any evidence that dirt and pollutants are having a harmful effect on the exterior? Improper cleaning can accelerate the deteriorating effect of pollutants.

Is the cleaning an effort to “get your project started” and improve public relations? Cleaning may help local groups with short term fund-raising, yet cause long term damage to the building.



Peeling or flaking paint is often a sign of heat or water damage. The best treatment is to remove as much loose paint as possible; identify if the existing layer is oil-based or latex paint; prime with appropriate exterior primer; and apply a fresh coat of paint.



The missing downspout has created a build up on the exterior wall. Cleaning may do more damage, so it may be better to just leave it there.

The restoration of heritage buildings can involve the removal of materials that may be hazardous to your health. Before sanding or removing old paint, it is best to ensure that proper safety equipment is being used. We recommend reading Canada Mortgage and Housing Corporation’s pamphlet “Lead in Your Home”. A copy can be obtained by http://www.cmhc.ca/en/co/maho/yohoyohe/inaiqu/inaiqu_007.cfm

4.4 THE ROOF

The roof is the first line of defence in preventing water from entering a building. Effective water drainage from roof to gutters and downspouts minimizes the possibility of seepage. A roof is designed to withstand the harsh climatic extremes that a building may face in any given year - direct sunlight, scorching heat, extreme cold, high winds, hail, freeze/thaw cycles, and debris from trees. However, when the surface of a roof is pierced for the installation of roof vents, vent stacks, chimney stacks and skylights, there are naturally opportunities for water to penetrate at those points.

The roof requires regular inspection to guard against deterioration and water damage. Visual inspections can be helpful, particularly after any major storm, but only an up-close rooftop inspection will prove reliable in deeming a roof weather-tight. A rooftop inspection should be conducted at least annually.

Generally, where a third or more of the shingles are missing or have deteriorated, the entire roof will need to be replaced. It is recommended that Grade 1 red cedar shingles be used during replacement.

Inspecting A Roof

- Check the covering over the ridge or hip of a roof to make sure it is tight, without gaps.
- Where ventilation is introduced to a roof system (ridge vent, soffit vent, gable end vent) ensure that the sealing details (screens, flashing, caulking) are visually inspected.
- Check for loose or missing shingles. Look for moss growth, overhanging branches, levelness of roof.
- Check the roof at changes in pitch or direction (gambrel roof or at the valleys) for failing materials or gaps.
- Look at flashing for cracks, holes and looseness.
- Search roofing materials for deterioration - cracks, blisters or curling, and for any loose or missing parts.
- Inspect soffits and fascia for deterioration (sagging) or openings where animals/insects could find access or where they could nest.
- Inspect the joints where roof and siding meet for cracks.
- Look for evidence of decay in the rafter ends and for water damage on a cornice.
- Look for signs of clogging, inadequate slopes, or defects in the gutters and downspouts.

Chimney

Traditionally, chimneys have been built of brick and mortar, lined with fireproof flue tiles and capped to seal the top against the weather. Often the chimney is the least maintained part of a building, as it is inaccessible, is exposed to the severest weather elements, and is attacked by sooty acids internally. It's recommended that chimney inspections be done at the beginning of each heating season.

Inspecting a Chimney

- Is the chimney leaning above the roof line?
- Are the bricks near the top of the chimney deteriorated?
- Is the chimney free of obstructions and soot build-up?
- Is the mortar crumbling or are there loose or missing bricks?
- Is the flashing rusted or pulling away from the roof and chimney?

Flashing

Flashing protect your roof's most vulnerable points from water penetration. It is used as a sealant around roof and plumbing vents, chimneys, and anywhere water can seep through open joints into the roof sheathing. Also vulnerable are surfaces where water runoff can be heavy, such as roof valleys and eaves. Flashing is key to keeping your roof watertight.

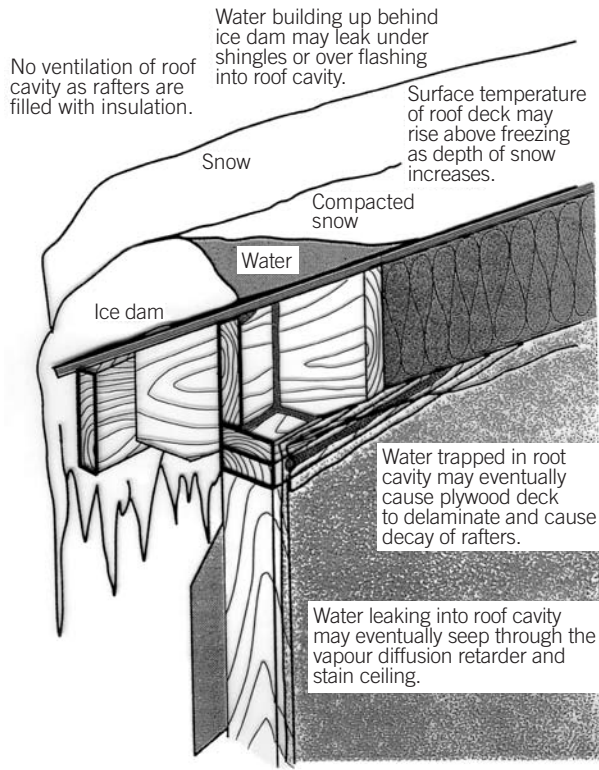
Maintenance Tips:

- Call a professional to install new flashing; usually when the roof is being replaced is the best.
- Check yearly for gaps, cracks or missing flashing, around any change in plane of the roof or protrusions in the roof.
- Chimney flashing should be installed into the mortar joint.
- Do not depend upon caulks, sealants or "goop" to do what metal flashing can do better.



This chimney has been neglected for many years. A mason will have to rebuild the chimney with new bricks because of the degree of deterioration.

Ice Dams



The ice has been allowed to build up at the eaves, potentially damaging the roof line. The best remedy is to improve the insulation in the attic and seal any leaks.

Ice damming occurs when melting snow freezes and accumulates at the overhang of a building, preventing water from draining off the roof. When this happens, the accumulated water can flow back under the shingles and into the interior space below. This occurrence is often a shared failure of the eavestroughs and the attic insulation. Attic spaces that are poorly insulated and/or poorly ventilated are unable to prevent the warmth of the interior from rising to the exterior surface. This allows the accumulated water on the roof to stay fluid and enter under the shingles.

The basic fix for ice damming is to seal all attic leaks and insulate thoroughly. Some attics don't have space for proper ventilation at the edge of the attic floor. Attempt to put the best insulation possible at the edge to reduce heat loss. Consider blown foam insulation, which seals and insulates.

4.5 GUTTERS AND DOWNSPOUTS

Gutters and downspouts (eavestroughing) make up a significant part of a building's water removal system, strategically directing all water accumulated from rain, ice and snow towards specific areas around the base of a building. Neglected or deteriorated eavestroughing will promote damage to various parts of a building's exterior and interior elements.

The gutters and downspouts of a building require regular inspection to guard against damage from debris accumulation and ice damming. A significant contributor to faulty eavestroughs is accumulated debris. Leaves, branches, birds, toys and insect hives will impede the flow of water, causing slow drainage and overflow. This can lead to rot of the fascia and ultimately to a breakdown of the fastening points of the gutters.

Much like inspecting a roof, visual inspections of gutters and downspouts can be helpful, particularly after any major storm, but only an up-close inspection will be able to detect accumulation or blockages. The gutters and downspouts should be inspected at least twice a year; once in the spring and then in the fall.



The gutter has fallen off, onto a power line. This is now more than a maintenance issue, but a fire hazard.



A good paint job would improve the architectural detail, and overall image of this site.

Inspecting Gutters

- Check for blockage, clogging, corrosion, and leaks.
- Remove all leaves and debris from gutters and check for loose joints.
- Check for corroded, broken and loose fasteners.
- Check fascia boards for rot.
- Check for cracked soldering at all joints.
- Check gutter outlet where water flows to downspout. It should have a screen to prevent large debris from entering.
- Check for proper pitch of the gutter for adequate drainage. If water does not drain properly the pitch will require adjusting.
- Any leak in a gutter may be patched (if from puncture or corrosion) or soldered (if located at a joint).

Inspecting Downspouts

- Ensure all outlets from the gutters have downspouts to direct the water to extensions or splashbacks.
- Check downspouts for water flow and leaks.
- Auger any blockage from the outlet.
- Check all joints in the downspouts, ensuring no breaks.
- Check hanging brackets of downspouts, ensuring they are tight.
- Make sure that no tree limbs are within striking distance of the downspouts.
- Ensure laterally hung downspouts have sufficient pitch, without sags.
- Splashbacks, or extensions should be installed to direct water at least one metre away from the foundation.
- Ensure that the splashbacks have not settled, allowing water to run back to the building.
- Ensure the slope of the ground around the downspout runs away from the foundation.



This downspout has come detached between the first and second floors making it completely ineffective. Also it is missing a leader to direct the water away from the building, which would cause foundation damage.

4.6 SITE DRAINAGE

Anyone who has experienced a heavy Manitoba rain can appreciate how important proper site drainage is in keeping a building free from flooding and seepage. When water pools around the perimeter of a building it will drain alongside the foundation and possibly enter through cracks in the foundation walls or basement slab. It may also cause sewer back-up through the floor drain and heaving of foundation systems. By applying relatively simple site drainage techniques through proper landscaping and drainage systems, a building owner can dramatically reduce the risk of flooding or seepage.

Gutters and downspouts are essential for reducing water damage to a building. However, simply moving water off the building does not mean that problems will not occur at a lower level, such as the foundation. In an average rainfall, gallons of water can be funnelled by a gutter system to the base of the foundation. Weeping tiles, a drainage system located at the base of the foundation, collects this water in the ground and channels it to a sewer line. However, many older buildings do not have a weeping tile system or the one present has become congested with silt and mud. Instead, such buildings rely largely on the absorption of water in the ground and proper grading away from the building.

The first line of defence in any drainage system is proper grading away from the foundation. Grading may require building up the ground around the foundation, making sure not to get within 150 mm of siding or other exterior cladding in order to prevent rot, due to splashback.

If the ground is already high against the building, then the site may need to have a more aggressive slope carved into the ground, away from the building. Digging a channel, or swale, through a high area and seeding it will provide adequate drainage away from the building when rainfalls are particularly heavy.



With a missing downspout and inadequate grading, water is allowed to collect at the base of the building and can cause significant damage.

Sewer Back-up Valves

Where a public drainage system experiences a short-term demand that is greater than its capacity, the result can be water back up through low-lying drains, such as floor drains in basements. Sewer back-up can be alleviated by installing a back-up valve, either in-line or at the floor drain. An in-line valve is placed in the main sewer line, located in front of any drainage lines from the building, protecting back-up from occurring at any location in the building. A floor drain back-up is installed at the floor drain and is more economical. However, it provides protection from back-up only at the floor drain, allowing spillage at higher levels (such as a washer or toilet in the basement).

Sump Pumps

When a back-up valve has been activated, and the weeping tile is congested with water, the basement may experience flooding due to seepage from the tile. The weeping tile water is drained via the sewer line. However, when the sewer line is closed by the back-up valve, the water can seep into the basement. This is the primary reason for installing a sump pump in your building's basement.

A sump pump is installed in a sump hole, which collects any water that is building up in the weeping tile and is unable to be channeled through the sewer line. The sump pump then moves the water from this pit out of the basement, through the foundation, to a low lying area or swale that moves the water away from the building.

4.7 WINDOWS AND DOORS

The openings into a building — the doors and windows — are often subject to harder use than other parts of a building, so they require more frequent and careful examination.

Windows

Windows in historic buildings are typically constructed with wooden frameworks (main frame, mullions and muntins). As such, they require periodic sealing and painting and if applicable, puttying and even reglazing.

Like other building components, a window's primary enemy is water. Everything should be done to limit its deleterious effects:

- Window sills should be examined frequently for signs of softness or rot.
- In those buildings where wooden window frames meet a masonry wall, that connection should be examined. If there are openings that have developed, caulking should be applied between wood and masonry.
- Windows can become misaligned when a building shifts on its foundation. Check where they have sagged, shifted or settled, or where hardware is out of line, allowing openings for rain and air, even animals and insects.
- Examine the elements of the window frame, looking for signs of rot (softness) and for places where paint or lacquer has blistered, cracked or has worn off. Because paint is a protective covering, every effort should be made to ensure that affected areas are repainted as soon as possible. Where it is necessary to repaint, use a wood preservative and good primer coat prior to painting.
- Watch for cracks and holes in window panes -- water seeping in will rot the sills.
- Windows sweat -- where possible, decrease interior humidity and improve weather stripping.
- If the building has storm windows, ensure that channels or holes are drilled at sill to allow driven rain to drain out.
- Do not caulk storms across the sill.



Water sitting on the sill has caused the paint to flake and the wood to deteriorate. The window sash and frame will have to be repaired with epoxy, or replaced depending on the severity of the rot.

Doors

Doors that are subject to constant use (even abuse) need frequent attention. Most doors on historic buildings are of wooden construction, and are subject to shrinkage, warping, swelling, cracking and decay. Some key things to be aware of with your building's doors include the following:

- Doors need to be painted to create a secure barrier. They should be painted on all sides, including tops and bottoms and sides. Unpainted parts invite moisture (and problems inherent with water wicking into wood). They must also have good weather-stripping to keep water and snow out.
- Hinges and hardware should be periodically checked for tightness.
- Doors can become misaligned. Note where they have sagged, shifted or settled, or where hardware is out of line, creating openings for rain and air, even animals and insects.
- Check the door for lost or damaged seals.



This door needs a new coat of paint to retain the original integrity. The weatherstripping should also be inspected.

4.8 FEATURES AND DETAILS

The various features and details on a building — porches and verandahs, steps, entrance roofs — are often either heavily used or are constructed in such a way to make them more susceptible to damage or decay than other parts of a building.

Steps And Rails

These elements require close attention because of safety concerns and also because of their constant exposure to elements and use.

- Masonry steps are subject to the freeze/thaw cycle, which causes spalling and cracking in the materials. Because of their weight they are also subject to settlement, and thus to falling out of level.
- Wooden steps are subject to water pooling and rot. It is necessary to drain them of water. Decay from contact with ground is also a possibility, so proper drainage is important. It is not advised that wooden steps be painted. This creates a slippery surface that is almost impossible to maintain. It is also a hazard in winter when these steps become icy.
- Steps need to be periodically inspected to ensure treads are securely screwed in place.
- Wooden rails and spindles are subject to rot -- paint is the best preventive measure to deal with this problem.



These steps need to be inspected as the freeze/thaw cycle is causing some lifting. A mason may have to re-level them.

Porches And Verandahs

Because they are often built on separate and less substantial foundations, porches and verandahs tend eventually to move away from a building. Look for the following signs:

- Is the roof detached from the main building?
- Is there water penetration into the porch?

Also look for evidence of insect or animal habitation under the porch.

If there are columns or other delicate woodwork (spindles, balusters, railings), are these intact (painted, dry, etc.)?

Bay Windows

Is there any sign of movement away from the main building?

Are roof shingles intact?

Are window panes in good condition (glass, putty, window frames, etc.)?

Minor Roofs

Many buildings feature small protective roofs over their entrances which can be subject to the same kind of problems associated with porches:

- Is the roof detached from main building?
- Is there water penetration visible under the roof?

Also look for evidence of insect or animal habitation under the roof.

If there are decorative brackets or other woodwork present, are these intact (painted, dry, etc.)?

Other Details

Any other details on a building (ex: window boxes) should be examined for water penetration and for secure connections.



This eave bracket needs to be painted to prevent further deterioration by rust.

4.9 ENERGY EFFICIENCY

Existing buildings have the potential to be brought up to contemporary standards of energy efficiency, without compromising the heritage value of the building. The following are just a few ways that the energy efficiency of a heritage building can be improved.

Air sealing

- Comprehensive air sealing is one of the least obvious and most effective retrofit projects for older buildings.

Heating system

- A total tune-up of the heating system is another inexpensive, effective and invisible measure for older buildings.
- Sealing your chimney if it is not used, can be an effective way to eliminate drafts.

Insulation

- Preserving the structure is especially important. Provide a vapour barrier and air barrier when insulating. Basements and attics can often be reinsulated without affecting the appearance or historic character of the building. Where it is desirable to preserve both the interior and exterior wall finishes, blowing insulation into the cavity of a wood-frame wall is an option.

Weatherstripping

- Weatherstripping prevents air from leaking through gaps around doors and the moving parts of an operable window.
- Weatherstripping should be easy to replace. To be effective, it must seal gaps completely.
- Weatherstripping should be flexible and spring back to its original shape. It should allow you to open and close windows and doors easily.

Windows

- Windows are one of the most important aspects of a building's historic character. Careful weatherstripping of older, single-pane, wood-frame windows will do much to improve their energy efficiency. If the original wood storm windows are not salvageable, it's possible to have custom wood storms made to order. If the object is to preserve the appearance of the building, avoid metal storms or storm-and-screen combinations.
- Interior storms are also a good alternative. These are less noticeable than exterior metal storms, and they can be made to fit on the sash or the window trim. If the window sash is badly deteriorated, replacement units can be made to fit the existing frame.
- A traditional single-glazed, double-hung window has an R-value of 1, compared to R3 for a new double-glazed, low-e, double-hung window. If the historic wall assembly has an R-value in the teens, taking a window from R1 to R3 will not provide sufficient energy savings to offset the cost of replacement windows and associated waste. The primary cause of infiltration can be addressed with jamb insulation, weatherstripping, and trim repair.

Doors

- Preserving the original doors is important to the overall appearance of an older building. Careful weatherstripping will improve their performance. As with windows, avoid aluminum storms.
- Weatherstripping can be applied to the tops and sides of any door frame.
- V-shaped weatherstripping creates an excellent seal by making contact with the edge of the door. It maintains a good seal even if the door warps.
- At the bottom of the door, apply weatherstripping to either the sill or the door itself.
- When weatherstripping your door, use a durable material that can withstand traffic but is flexible enough to adapt to changes caused by humidity and temperature.

For more information, see:

- National Parks Service's Preservation Brief 3: *Conserving Energy in Historic Buildings*
www.nps.gov/history/hps/tps/briefs/brief03.htm
- Natural Resources Canada
oee.nrcan.gc.ca/residential/persona/new-home-improvement/heritage.cfm?attr=4
- *Standards and Guidelines for the Conservation of Historic Places in Canada* (energy efficiency section)
www.pc.gc.ca/docs/pc/guide/nldclpc-shchpc/index_e.asp



MAKE HISTORY.

Preserve Manitoba's Past.

PART 5: WORKSHEETS

PART 5. WORKSHEETS

Documenting maintenance and repair work is an essential part of any maintenance program. Details of all inspections, the work done as a result of the inspection, contact information of the person, craftsman or company that did the work, and the costs associated with those tasks is useful information. It ensures that current and future stewards of Manitoba's historic places are aware of the work that has been done, when it was done, and what is due to be done again.

Additional information may include any professional reports from architects or contractors, warranties, estimates, plans, etc.

The worksheets provided in this manual may be useful when compiling your records.

These worksheet templates are available online at: www.manitoba.ca/heritage for you to adapt and reprint annually.

INSPECTION CHECKLIST			
Date _____ Inspector _____		Weather Conditions _____	
SITE	NOTES	YES	NO
Is there adequate site drainage around the building?			
<p>To prevent the possibility of arson, ask the following questions:</p> <ul style="list-style-type: none"> o Is there overgrowth that obscures vision of any activity adjacent to your building? o Are dark corners or pockets of your site illuminated at night? o Could someone gain access to the roof or an upper floor window? o Are there any flammable items visible on the site? o Are trash receptacles kept next to your building? o Are there combustibles (ex: boxes, lumber) stored unsecured or next to the building? o Is there accumulation of debris on your site? 			
ROOF			
<ul style="list-style-type: none"> o shingles ___ cedar ___ asphalt o chimney o flashing o gutters 			
Are shingles warped, curled, cracked; have they lost their grit?			

Are there loose or missing shingles?						
Is the ridge covering tight, without gaps?						
Is the ridge of the roof level, or does it sag?						
Are fascia boards and soffits intact, secured to structure?						
Is the chimney sagging, leaning or bowing?						
Is the chimney intact and protected with a cap? Is the chimney cap rusting?						
Are bricks or stones cracked, loose or missing? Are the mortar joints tight?						
Is flashing and caulking around the chimney secure? Is the flashing loose, missing or rusted?						

Are vents and other openings caulked and secure, without cracks or holes?				
Are rafter ends dry?				
In winter, are ice dams forming?				
Is paint peeling or blistering at the cornice (eaves), especially on the underside? (Check the edge of the roof overhand for evidence of ice dams and water damage)				
GUTTERS AND DOWNSPOUTS				
Are gutters and downspouts clear of leaves and debris?				
Are there loose, rotted or missing gutters or downspouts? Is there rust or paint loss?				
Are joints in downspouts secure from leaks?				

<p>Do all outlets from downspouts have extensions and splashbacks? Are gutters secure and appropriately angled to drain?</p>			
<p>Are there tree limbs within striking distance of gutters or downspouts?</p>			
<p>Are splash-backs above grade, allowing water to drain away from building?</p>			
<p>WALLS</p>			
<ul style="list-style-type: none"> o shingles o cornerboards o stucco o clapboard o paint 			
<p>Is the wall out of plumb or unlevel? Is the wall leaning, bowing or bulging?</p>			
<p>For wood-sheathed walls, is paint chipped, blistered, etc.?</p>			
<p>For wood-sheathed walls, is wood trim dry and solid to the touch? Are the walls water stained?</p>			

<p>Are there any creepers, ivy or overgrowth directly on the walls (ex: not on trellises)?</p>							
<p>Are there lichens or mosses on the walls?</p>							
<p>Is there any mold or mildew on the wall surface?</p>							
<p>Are there bird droppings on the walls?</p>							
<p>On masonry walls, are there cracks, gaps or holes?</p>							
<p>On masonry walls, is mortar loose or easily scraped out?</p>							
<p>On masonry walls, are there signs of efflorescence?</p>							
<p>On masonry walls, are there signs of spalling (brick face falling off) or crumbling?</p>							

FOUNDATIONS	<ul style="list-style-type: none"> o concrete o masonry 							
		<p>Are there any cracks visible? (Vertical or diagonal cracks through masonry units and joints in particularly can signal problems.)</p>						
		<p>Have any patched cracks re-opened?</p>						
		<p>Is the foundation wall bulging or bowing?</p>						
		<p>Is masonry missing, loose, flaking, crumbling or cracking? Is the mortar loose or crumbling?</p>						
		<p>Are doors or windows out of square?</p>						
		<p>Inside, are posts, beams, joists sound?</p>						
		<p>Inside, are there any signs of leaking? Any musty smell, efflorescence or peeling paint?</p>						

<p>Is the ground properly sloped away from building? Does water collect excessively in any areas?</p>		
<p>Are there any trees or saplings growing near the foundation?</p>		
<p>Is vegetation growing on the foundation, causing water infiltration?</p>		
<p>FEATURES AND DETAILS</p>		
<ul style="list-style-type: none"> <input type="checkbox"/> steps and rails <input type="checkbox"/> porches and verandahs <input type="checkbox"/> window bay <input type="checkbox"/> minor roofs <input type="checkbox"/> other: 		
<p>Are steps level?</p>		
<p>If the steps are masonry (concrete or brick), are cracks or spalling visible?</p>		
<p>If the steps are wooden, are there signs of water pooling?</p>		

<p>If the building has a porch or verandah, is that feature securely attached to the main building?</p>				
<p>Are there gaps between the porch wall and the main building?</p>				
<p>Are there signs of water penetration into a porch or verandah?</p>				
<p>Is the roof of a porch or verandah in good shape?</p>				
<p>If there is detailed woodwork on a porch or verandah, is it dry and painted?</p>				
WINDOWS				
<p>o wooden sash ___ number of windows o aluminum sash o double-hung o casement</p>				
<p>Are there any missing panes?</p>				

<p>Are there any cracks or holes in any panes?</p>			
<p>Has putty or caulking cracked or fallen out?</p>			
<p>Do windows open and close smoothly? Do they stick due to excessive paint buildup?</p>			
<p>Is there any moisture build-up in the window cavity? Is there evidence of excessive moisture penetration around the sash or at the sills on the interior?</p>			
<p>Does condensation build up on interior or exterior storm sash during winter months? (some condensation is normal, but high amounts of condensation can deteriorate wood quickly)</p>			
<p>Are window sash cords broken or missing?</p>			
<p>Is the putty around the panes of glass firm and painted? Do the glass panes fit securely?</p>			
<p>Are storm windows available for use during the winter months? Is so, do they fit tightly?</p>			

EXTERIOR DOORS						
___ number of doors						
Are doors in good alignment?						
Are seals intact and effective?						
Is paint or protective coating damaged, blistered?						
Is hardware (ex: hinges, passage sets) in good working order? Is the door securely fastened?						
Is the door's threshold rotted?						

SPRING MAINTENANCE CHECKLIST		
Date _____ Inspector _____		Weather Conditions _____
TASK	NOTES	INITIAL
Check gutters and downspouts for debris; touch up paint.		
Inspect exterior walls and roof and flashing for winter and seasonal storm damage.		
Check the foundation walls for cracks. Caulk and patch all exterior cracks and openings.		
Clean the roof and oil wood shingles.		
Repair holes and tears in window and door screens and wash them.		
Replace storm windows with screens. Repair storm windows as necessary and store them for the off-season.		
Inspect weatherstripping around doors and windows. Caulk window trim and door frames if necessary.		
Check for efflorescence, fungus and mold in the crawlspace or basement.		
Brick walls may need to be repointed if the mortar joints between the bricks show gaps or dissolve into sand when touched.		

With stucco, small cracks around doors and windows should be repaired so that moisture doesn't seep into the frame of the house.	
Do any exterior paint touchups as needed.	
Inspect the attic for signs of roof leaks.	
Inspect railing and ornamental iron for rust and touch up paint.	
Adjust sticking doors.	
Tighten and lubricate door knobs, locks and latches.	
Have a chimney sweep clean and inspect the chimney.	
Clean lint from dryer duct and from the interior of dryer housing.	
Check indoor and outdoor vents for blockage and clear them if necessary.	
Change the batteries in your smoke detector (twice a year).	
Inspect the grading around the house to be sure water drains away from the foundation on all sides	

SUMMER MAINTENANCE CHECKLIST

Date _____ Inspector _____ Weather Conditions _____

TASK	NOTES	INITIAL

FALL MAINTENANCE CHECKLIST		
Date _____ Inspector _____		Weather Conditions _____
TASK	NOTES	INITIAL
Check gutters and downspouts for debris; touch up paint.		
Repair (tuckpoint) mortar joints around masonry surfaces.		
Check for efflorescence, fungus and mold in the crawlspace or basement.		
Inspect the roof. Prepare for and prevent roof ice dams.		
Look for loose shingles, siding, trim or anything else that could become airborne in a winter storm.		
Caulk and patch all exterior cracks and openings.		
Caulk window trim and door frames if necessary.		
Check the condition of heat duct and water pipe insulation.		
Change the batteries in your smoke detector (twice a year).		
Replace screens with storm windows. Clean and repair screens as necessary, then store them for the off-season.		

<p>Drain outside hoses and close the shutoff valves to outside faucets and waterlines.</p>	<p>Check the weather-stripping and caulking on all windows and doors for damage and tightness of fit. Replace if you see gaps or cracks.</p>										

WINTER MAINTENANCE CHECKLIST

Date _____ Inspector _____ Weather Conditions _____

TASK	NOTES	INITIAL
Check your roof for any ice damming.		

MAINTENANCE RECORD									
PROJECT	LOCATION	COST	START DATE	NOTES	DONE				
		\$							
		\$							
		\$							
		\$							
		\$							
		\$							
		\$							
		\$							
		\$							

PROJECT WORKSHEET

PROJECT:

DESCRIPTION:

DIY

HIRE PRO

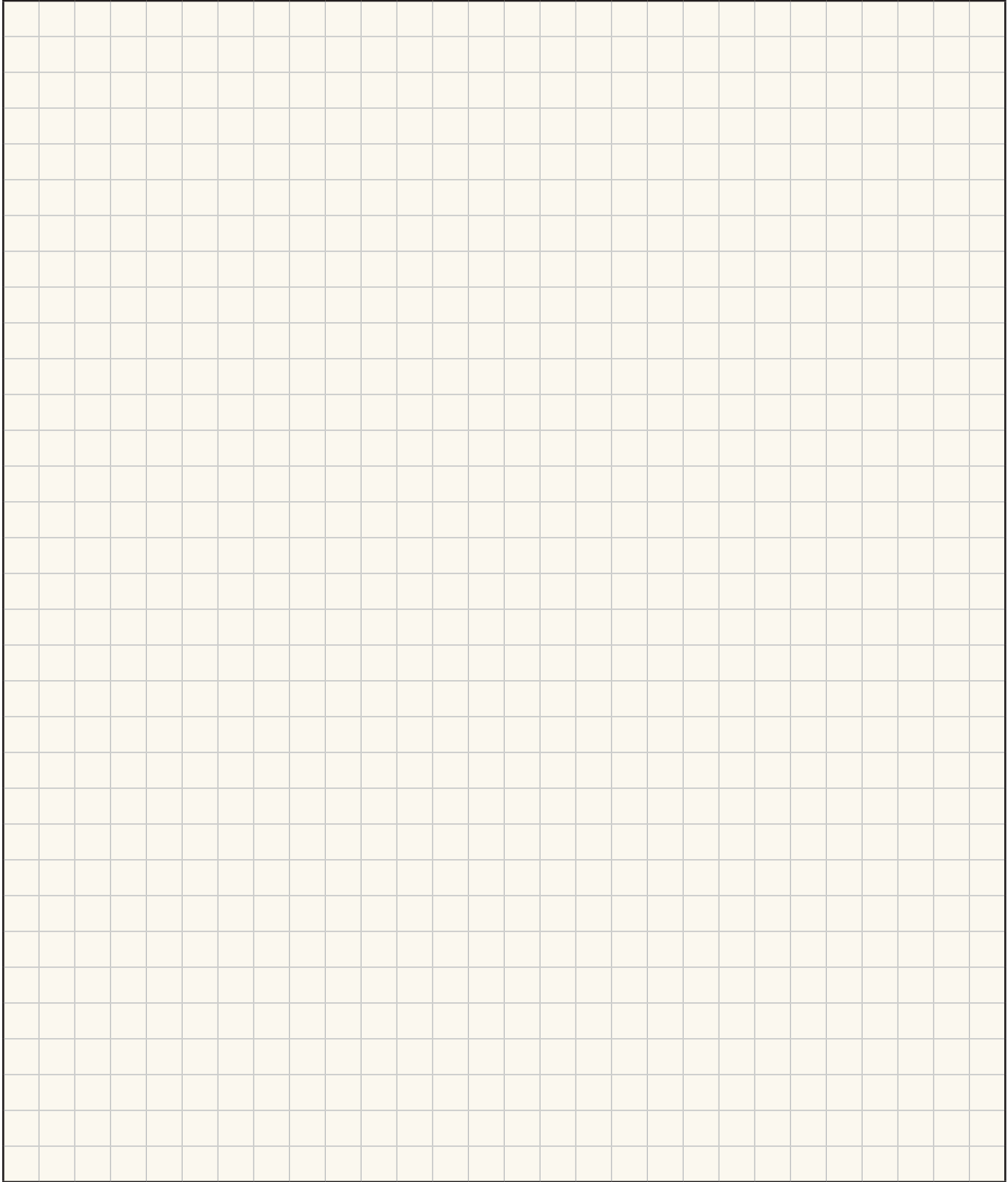
DIMENSIONS

ITEM	DIMENSIONS	NOTES

SKETCH

PROJECT: _____

DATE: _____



BUDGET						
	ITEM (and number) SPECS	SOURCE	COST per ITEM	QTY	BUDGET	ACTUAL
1			\$		\$	\$
2			\$		\$	\$
3			\$		\$	\$
4			\$		\$	\$
5			\$		\$	\$
6			\$		\$	\$
7			\$		\$	\$
8			\$		\$	\$
9			\$		\$	\$
10			\$		\$	\$
STARTING BUDGET:			TOTALS:		\$	\$

FREQUENTLY CALLED NUMBERS

CONTACT	SPECIALTY	NOTES
COMPANY: NAME: PHONE:		
COMPANY: NAME: PHONE:		
COMPANY: NAME: PHONE:		
COMPANY: NAME: PHONE:		
COMPANY: NAME: PHONE:		
COMPANY: NAME: PHONE:		
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MAKE HISTORY.

Preserve Manitoba's Past.



PART 6: REFERENCES

PART 6. REFERENCES

6.1 TOOLKIT CHECKLISTS

The toolkit checklist provides you with a list of useful tools and gear. For information on specialized jobs and tools, ask for guidance at your local hardware store or consult a professional. Often tools – especially expensive or specialized ones – can be rented from your local home improvement store.

Inspection Toolkit:

- binoculars
- flashlight
- level
- Swiss army knife or small screwdriver
- clipboard, pen and inspection checklist
- camera
- shoulder bag
- raincoat

Basic Tool Kit:

- safety goggles
- an 8- or 16-ounce (225-250 grams) claw hammer for installing and removing nails
- an adjustable wrench for tightening and loosening bolts
- a screwdriver with assorted tips for tightening and loosening screws
- long-nose and slip-joint pliers for holding or turning things
- retractable-blade utility knife for cutting softer materials
- 5 metre tape measure
- a carpenter's level
- putty knife
- caulking gun
- restoration pry bar
- wood chisel
- handsaw
- sandpaper
- paint scraper

Helpful Extras:

- duct, masking, painters and electrical tape
- carpenter's glue
- cordless drill
- assorted drill bits
- assorted nails and wood screws
- utility vacuum cleaner
- wood epoxy

MAINTENANCE: TOOLS

Here are a few maintenance tips that will make your tools last longer.

- Keep your tool box away from humidity (in a cupboard instead of a basement).
- Keep your tools clean and functional by oiling and sharpening them when necessary.
- Always keep the blades of your cutting tools, such as saws, in a protective guard.

6.2 THE STANDARDS AND GUIDELINES FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA


The Standards

Following are the 14 standards from the *Standards and Guidelines for the Conservation of Historic Places in Canada*. They are intended as general guidelines only.

These are explained more fully in the full document, available online at www.historicplaces.ca.

Hard copies are available upon request from the Historic Resources Branch at 945-2118 in Winnipeg or toll free: 1-800-282-8069, extension 2118.

1. Conserve the heritage value of a historic place. Do not remove, replace, or substantially alter its intact or repairable character-defining elements. Do not move a part of a historic place if its current location is a character-defining element.
2. Conserve changes to a historic place which, over time, have become character-defining elements in their own right.
3. Conserve heritage value by adopting an approach calling for minimal intervention.
4. Recognize each historic place as a physical record of its time, place and use. Do not create a false sense of historical development by adding elements from other historic places or other properties or by combining features of the same property that never coexisted.
5. Find a use for a historic place that requires minimal or no change to its character-defining elements.
6. Protect and, if necessary, stabilize a historic place until any subsequent intervention is done. Protect and preserve archaeological resources in place. Where there is potential for disturbance of archaeological resources, take mitigation measures to limit damage and loss of information.
7. Evaluate the existing condition of character-defining elements to determine the appropriate intervention needed. Use the gentlest means possible for any intervention. Respect heritage value when undertaking an intervention.
8. Maintain character-defining elements on an ongoing basis. Repair character-defining elements by reinforcing their materials using recognized conservation methods. Replace in-kind any extensively deteriorated or missing parts of character-defining elements, where there are surviving prototypes.
9. Make any intervention needed to preserve character-defining elements physically and visually compatible with the historic place, and identifiable upon close inspection. Document any intervention for future reference.

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- 10.** Repair rather than replace character-defining elements. Where character-defining elements are too severely deteriorated to repair, and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements. Where there is insufficient physical evidence, make the form, material and detailing of the new elements compatible with the character of the historic place.
 - 11.** Conserve the heritage value and character-defining elements when creating any new additions to a historic place or any related new construction. Make the new work physically and visually compatible with, subordinate to and distinguishable from the historic place.
 - 12.** Create any new additions or related new construction so that the essential form and integrity of a historic place will not be impaired if the new work is removed in the future.
 - 13.** Repair rather than replace character-defining elements from the restoration period. Where character-defining elements are too severely deteriorated to repair and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same element.
 - 14.** Replace missing features from the restoration period with new features whose forms, materials and detailing are based on sufficient physical, documentary and/or oral evidence.

6.2 THE GUIDELINES

Following are excerpts from the *Standards and Guidelines for the Conservation of Historic Places in Canada* for protecting and maintaining specific materials. They emphasize non-destructive methods and daily, seasonal and cyclical tasks such as maintenance. Protection generally represents the least degree of intervention. For example, protection includes the maintenance of historic material through treatments such as rust removal, limited paint removal and the re-application of protective coatings; cyclical pruning, top-dressing and cleaning of drainage inlets or outlets; or installation of fencing, alarm systems and other preventive measures. The full document can be found at www.historicplaces.ca.

The guidelines' approaches to work, treatments and techniques that are consistent with the *Standards for the Conservation of Historic Places in Canada* are listed in the **Recommended** column on the left. Those that are not, appear in the **Not-Recommended** column on the right. The guidelines are not meant to give case specific advice or to address exceptions or rare cases.

	RECOMMENDED	NOT-RECOMMENDED
EXTERIOR WOOD	<p>Protecting and maintaining exterior wood elements by preventing water penetration and by maintaining proper drainage so that water or organic matter is not allowed to stand on flat, horizontal surfaces or accumulate in decorative features.</p> <p>Inspecting painted exterior wood surfaces to determine whether repainting is necessary or if cleaning is all that is required.</p> <p>Retaining coatings such as paint that help protect the exterior wood from moisture and ultraviolet light. Paint removal should be considered only where there is paint surface deterioration and as part of an overall maintenance program that involves repainting or applying other protective coatings in kind.</p> <p>Removing damaged or deteriorated paint to the next sound layer using the gentlest method possible (scraping and sanding by hand), then repainting in kind.</p>	<p>Failing to identify, evaluate and treat the causes of exterior wood deterioration, including faulty flashing, leaking gutters, cracks and holes in siding, deteriorated caulking in joints and seams, plant material growing too close to wood surfaces, or insect or fungus infestation.</p> <p>Removing paint that is firmly adhering to and thus protecting exterior wood surfaces.</p> <p>Stripping paint or other coatings to reveal bare wood, thus exposing historically coated surfaces to the effects of accelerated weathering.</p> <p>Using destructive paint removal methods such as propane or butane torches, sandblasting or water-blasting. These methods can irreversibly damage exterior woodwork or cause catastrophic fires.</p>
MASONRY	<p>Protecting and maintaining masonry by preventing water penetration and by maintaining proper drainage so that water or organic matter does not stand on flat, horizontal surfaces or accumulate in curved decorative features.</p> <p>Cleaning masonry using recognized preservation methods and only when necessary to halt deterioration or remove heavy soiling or graffiti.</p>	<p>Failing to evaluate and treat the various causes of mortar joint deterioration such as leaking roofs or gutters, differential settlement of the building, capillary action, failed flashings or extreme weather exposure.</p> <p>Applying water-repellent coatings to stop moisture penetration when the problem could be solved by repairing failed flashings, deteriorated mortar joints or other mechanical defects.</p> <p>Cleaning masonry surfaces when they are not heavily soiled in order to create a new appearance, thus needlessly introducing chemicals or moisture into the materials.</p>

ARCHITECTURAL METALS	<p>Protecting and maintaining architectural metals from corrosion by preventing water penetration and by maintaining proper drainage so that water or organic matter does not stand on flat, horizontal surfaces or accumulate in curved, decorative features.</p>	<p>Failing to identify, evaluate and treat the causes of corrosion such as moisture from leaking roofs or gutters.</p> <p>Placing incompatible metals together without providing a reliable separation material. Such incompatibility can result in galvanic corrosion of the less noble metal, e.g., copper will corrode cast iron, steel, tin and aluminum.</p>
ROOF	<p>Protecting and maintaining a roof by cleaning and maintaining the gutters and downspouts and replacing deteriorated flashing in kind. Roof sheathing should also be checked for proper venting to prevent moisture condensation and water penetration; and to ensure that materials are free from insect infestation.</p> <p>Providing adequate anchorage for roofing material to guard against wind damage and moisture penetration.</p>	<p>Failing to replace deteriorated flashing or to clean and maintain gutters and downspouts properly so that water and debris collect and cause damage to roof fasteners, sheathing and the underlying structure.</p> <p>Allowing roof fasteners such as nails and clips to corrode so that roofing material is subject to accelerated deterioration.</p>
WINDOWS	<p>Protecting and maintaining the wood and architectural metals that comprise the window frames, sashes, muntins and surrounds through appropriate surface treatments such as cleaning, rust removal, limited paint removal and re-application of protective coating systems in kind.</p> <p>Making windows weathertight by re-puttying and replacing or installing weatherstripping. These actions also improve thermal efficiency (see also section 4 ENERGY EFFICIENCY CONSIDERATIONS, BUILDINGS: WINDOWS).</p>	<p>Failing to provide adequate protection of materials on a cyclical basis, which results in deterioration of the window.</p> <p>Retrofitting or replacing windows rather than maintaining the sash, frame and glazing.</p>
ENERGY EFFICIENCY	<p>Identifying the historic place's heritage value and character-defining elements (materials, forms, location, spatial configurations, uses and cultural associations or meanings) so that energy efficiency modifications will not damage or eliminate them.</p>	<p>Undertaking energy efficiency modifications before identifying the elements that define the overall heritage value of the historic place.</p>
	<p>Complying with energy efficiency objectives so that character-defining elements are conserved and the heritage value is maintained.</p>	<p>Damaging or destroying character-defining elements, or undermining the heritage value while modifying a historic place to comply with energy efficiency objectives.</p>
	<p>Working with energy efficiency and conservation specialists to determine the most appropriate solution to energy conservation problems to minimize the impact on character-defining elements and the overall heritage value.</p>	<p>Making changes to historic places without first exploring equivalent energy efficiency systems, methods or devices that may be less damaging to character-defining elements and heritage value.</p>



6.3 HIRING A PROFESSIONAL

Some projects require professional assistance to guide you through the conservation process. Hiring an architect to plan the work and a contractor to execute the plans eliminates many of the pitfalls and risks associated with heritage building renovations. Professionals have the experience to save you money in the long term by identifying the priorities and providing the best solutions for your particular situation.

Define the Scope of Work

When making maintenance or repair decisions, ensure you are not removing or altering any significant heritage characteristics. Any alteration should be reversible and make as little an impact on the building as possible. Any alterations should be done to protect buildings from deterioration, and ensure their long-term viability and the safety of users. The Statement of Significance, as well as archival images of your building can aid you in making decisions that respect its heritage value.

The following questions may help you determine the building's future viability.

- Can you maintain the original function of the building (the preferred option)?
- If you can't maintain the original function, can you introduce a new function that would have the minimum impact on the building's original character (room layouts, finishes, etc.)?
- Is the proposed re-use a reasonable, economically viable option?
- Is the use one which will ensure the building is well used and well maintained over the long term?
- If the new use requires visitation for its success, either from tourists or customers, is the building in an advantageous location? Is it in or near an urban centre? If not, can you make the public aware of the building's existence and location?
- Have you done a complete inspection of the building to identify all necessary work to prolong its life?
- Have there been major interior or exterior alterations to the building (additions or removals) that adversely affect its original character? Can they be reversed as part of this project?
- Does your proposed project remove or replace any original features? Are there ways to repair those features instead?
- Have you considered the **gentlest** means of treatment?
- Will your new work be clearly **distinguishable** from the original features?
- Is the new work appropriate and respectful of the original building (ex: accurate colours and features?)
- Does the work repair an ongoing issue, or will the situation arise again (ex: water damage, shifting foundation, etc.)?
- Are your repairs **reversible** and easily maintainable?
- Does your building meet current building code?

- How much will the renovation and repair work cost?
- Can you afford those costs, or will they be recouped in the new business venture?
- If you cannot afford these costs, have you investigated other funding sources?
- Does your proposal include plans for ongoing maintenance?
- Have you recorded the condition and materials of the original building?

Selecting a Contractor

Finding a qualified and reliable contractor can be difficult, especially in smaller communities. Try some of the following suggestions to select the right person for the job:

- ask for recommendations from friends, relatives, co-workers, and at your local building supply store
- consult professional organizations
- phone the Better Business Bureau for any records of complaints
- check the phone book
- talk to the Historic Resources Branch or your local Culture, Heritage, Tourism and Sport Regional Office

If possible, try to get two to four contractors to bid on the work.

Questions for Prospective Contractors

- Does the contractor have extensive experience with heritage buildings or does he/she specialize in new construction?
- Does the contractor carry Workmen's Compensation and general liability insurance? What are the limits? Can you be named "additionally insured"?
- Can the candidate supply a list of at least three references for you to call or previous work sites you can visit to evaluate the quality of his/her work?
- Does the contractor have a license?
- How long has the contractor been in business?
- Is the candidate willing to supply credit references from suppliers, such as lumber stores, sheetrock vendors, and others so that you can be confident that he/she is financially solvent?
- Is the contractor comfortable working with architectural drawings and partnering with architects?
- Is your contractor skilled at getting your project through the permitting process?
- Will the contractor be able to adapt the draw schedule that your lender may dictate?
- When will the contractor be able to start your project? How long does he expect your project to take?
- How many other projects does your contractor have in progress? How often does he/she expect to be on site at your project?

Questions for Prospective Architects

- Is the architect familiar with the *Standards and Guidelines for the Conservation of Historic Places in Canada*?
- Does the architect have experience designing for old buildings? Or does he/she prefer to work on new construction?
- What services does the architect offer? A full range of services include schematic design, working drawings, specification of materials, bidding and negotiations with contractors, and supervision of the construction phase. If you wish to work with the architect on just the preliminary phases of the process, will the architect agree to such an arrangement? The scope of the project may determine the extent of services you'll need an architect to provide.
- Is the architect knowledgeable about the requirements of the municipal departments?
- Does the architect charge based on a percentage of the construction costs, on an hourly basis, a flat fee, or a combination?
- Is the architect able to show you a portfolio of his or her work and supply references you can talk to?
- When will the architect be able to start work on the project? How long will the various phases take?

TROUBLESHOOTING

TOPIC	WHERE TO START?
<p>Drafts</p>	<ul style="list-style-type: none"> • Review the <i>Windows and Doors</i> section of this manual. • Check windows and doors for drafts; these may be caulked to improve energy efficiency. • Inspect weatherstripping, which needs to be replaced periodically. • Check insulation.
<p>Cracks – foundation</p> <p>Hairline cracks are generally not a problem, unless water is leaking in through them. However, large cracks or bulges need to be watched, and in some cases should be examined by a structural engineer.</p>	<ul style="list-style-type: none"> • Review the <i>Foundation</i> section of this manual. • Regularly inspect the cracks to observe changes in length or width. Record changes, both written observations and with photos. • Consult a structural engineer for assistance. • Ensure the grading around the foundation is sufficient to take water away from the building. • Maintain minimal heat in the basement to prevent shifting.
<p>Cracks or gaps – exterior cladding</p> <p>Minor cracks or gaps may not be a problem if the siding continues to shed water. Similarly, hairline cracks in stucco or the mortar between bricks or stones are common and not generally a cause for concern. Larger cracks, or cracks causing leaks, deserve attention.</p>	<ul style="list-style-type: none"> • Review the <i>Exterior Walls</i> section of this manual. • Regularly inspect the cracks to observe changes in length or width. Record changes, both written observations and with photos. • Consult a structural engineer for assistance.
<p>Doors or windows jamming, rubbing or refusing to close</p> <p>Changes in humidity can affect wooden doors. Shifts in the foundation may also cause doors or windows to be “out of square.”</p>	<ul style="list-style-type: none"> • Review the <i>Windows and Doors</i> section of this manual. • Examine foundation for major shifting.
<p>Basement leaks</p> <p>Many things can cause a basement to leak. To prevent structural or other damage, address the problem quickly.</p>	<ul style="list-style-type: none"> • Review <i>Foundation, Exterior Walls, Gutters and Downspouts</i> and <i>Site Drainage</i> sections of this manual. • Install backwater valve and sump pit drainage system. • Check and maintain the drainage system regularly. • Ensure the gutters and downspouts are free of debris and take the water well away from the building. • Use a clay-based soil any time soil is replaced around the foundation.

<p>Roof leaks</p> <p>Many things can cause a roof to leak, including damage to roofing materials or flashing, deterioration of caulking or ice dams.</p>	<ul style="list-style-type: none"> • Review <i>Roofing</i> section of this manual. • Inspect roof regularly with binoculars and record any changes. • To prevent future leaks and solve current ones, check the slope of the roof make sure water is not pooling. • Replace any missing shingles promptly.
<p>Roof damage</p> <p>A severe wind storm can tear shingles loose, even from a new roof. Over the years, roofing material will age and deteriorate.</p>	<ul style="list-style-type: none"> • Review <i>Roofing</i> section of this manual. • Inspect roof after any major storms for damage. Record and repair immediately if necessary. • For cedar shingle roofs, replace missing or damaged shingles using Grade 1 western red cedar shingles.
<p>Deteriorated mortar</p>	<ul style="list-style-type: none"> • Review the <i>Exterior Walls</i> section of this manual. • Inspect the mortar and identify why the mortar has deteriorated. • Repaint as necessary, ensuring consistency of colour, texture and style (which may require the services of a professional – see <i>Hiring a Professional</i> section of this manual)
<p>Exterior dirt</p>	<ul style="list-style-type: none"> • Review the <i>Exterior Walls</i> section of this manual. • Decide whether cleaning is necessary, as it may be more damaging to the historic fabric than it's worth.
<p>Peeling paint</p> <p>TIP: It's best to paint in dry weather with temperatures between 15 and 25 degrees Celsius for at least 10 hours.</p>	<ul style="list-style-type: none"> • Review the <i>Exterior Walls</i> section of this manual. • Before repainting, diagnose the cause of the problem to determine if repair is required before repainting. • Remove flaking paint and repaint. • Record the paint type, brand and product, and stockpile two unopened gallons for future spot paint maintenance needs.



6.5 RESOURCE LIST

This resource list is not intended to be exhaustive, and is only a list of some of the sources that may be useful to the users of this manual. New sources are continually being developed, so this list is only a starting point for developing your maintenance strategy.

Websites

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