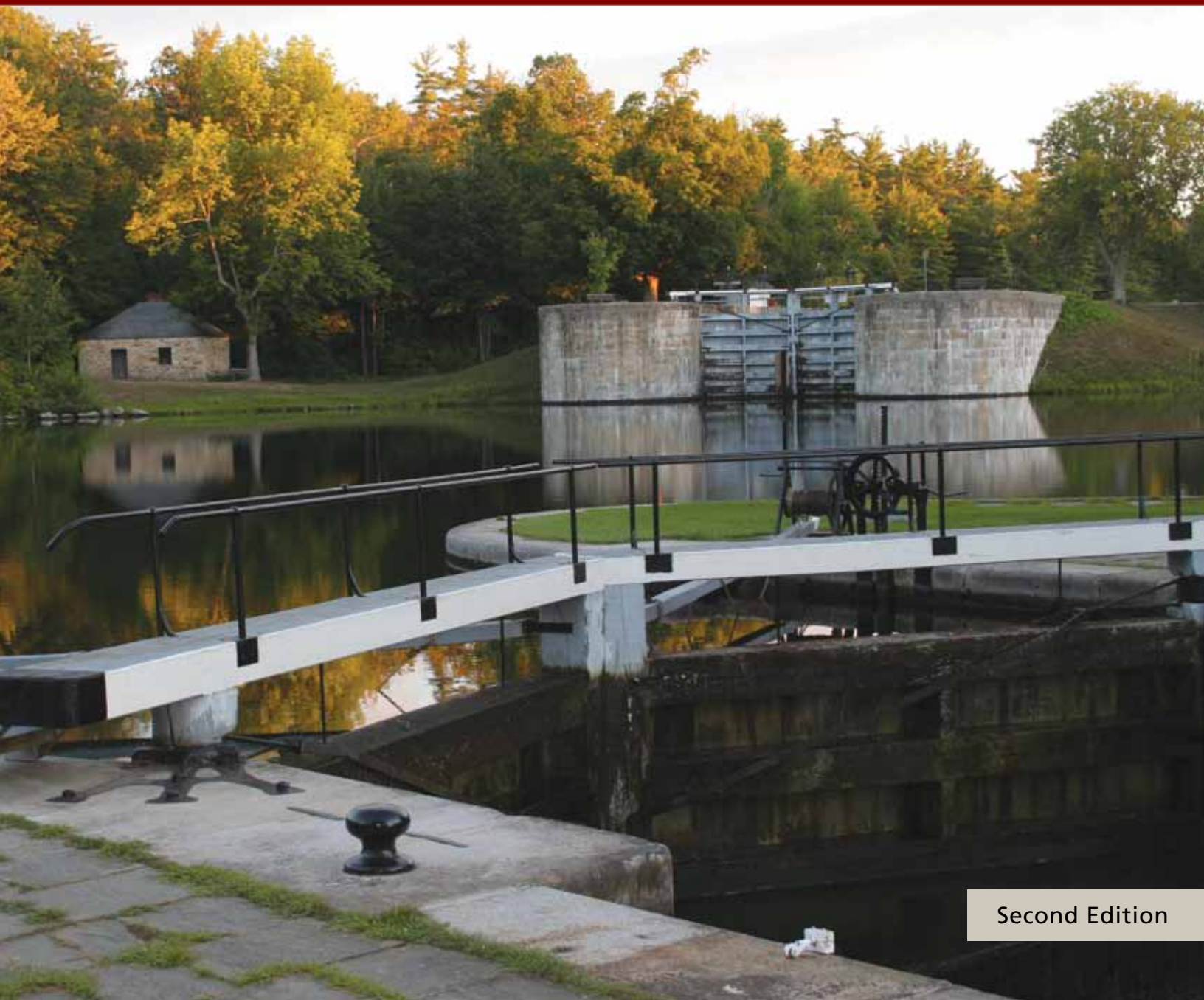
Canada's Historic Places
Lieux patrimoniaux du Canada

STANDARDS AND GUIDELINES

FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA

A Federal, Provincial and Territorial Collaboration



Second Edition

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Front Cover photograph:
The Jones Falls lockstation is part of the Rideau Canal waterway in Ontario, a national historic site of Canada and a world heritage site. The site contains known archaeological resources, buildings and engineering works situated in a cultural landscape.

Back Cover photographs:
Clockwise, from top left: Lunenburg, NS; Beechey Island, NU; Britannia Mines, BC; Quebec City, QC

Compliance with the *Standards and Guidelines for the Conservation of Historic Places in Canada* does not, in and of itself, confer immunity from legal obligations.

The *Standards and Guidelines for the Conservation of Historic Places in Canada* is a pan-Canadian collaboration. The participating governments are:

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FOREWORD

Canada's historic places are a living legacy for all Canadians. Ensuring a future for these treasures will allow the next generations to use these exceptional places in ways both old and new. This revised edition of the *Standards and Guidelines for the Conservation of Historic Places in Canada* constitutes an essential tool to guide decisions that will give historic places new life while protecting their heritage value.

The 2003 version of the *Standards and Guidelines for the Conservation of Historic Places in Canada* has been a tremendous success. It has been adopted by government bodies and major municipalities across Canada, thereby helping to create a culture of conservation to preserve Canada's unique and irreplaceable heritage for successive generations. Since then, regular use in the field by federal, provincial, territorial and municipal governments, heritage conservation professionals, heritage developers and many individual Canadians has provided the practical experience and insights to formulate additional guidance on categories of historic places such as cultural landscapes, archaeological sites, modern buildings and engineering works.

The development of this 2010 edition of the *Standards and Guidelines* has built on the strong foundation of the initial version using a similar collaborative, pan-Canadian approach. New categories and topics have been added and best practices updated. This federal, provincial, territorial collaboration ensures that the unique experiences of Canada's primary departments and organizations responsible for heritage were reflected in this important tool.

On behalf of Parks Canada, I am proud to adopt the 2010 edition of the *Standards and Guidelines for the Conservation of Historic Places in Canada*. This document will guide Parks Canada and its partners in heritage stewardship across the country and in the establishment of world class conservation practices that help conserve our national treasures and ensure that Canadians can learn about—and have extraordinary experiences of discovery at—these historic places.

Alan Latourelle
Chief Executive Officer
Parks Canada

PREFACE AND ACKNOWLEDGEMENTS

The primary purpose of the *Standards and Guidelines for the Conservation of Historic Places in Canada* is to provide sound, practical guidance to achieve good conservation practice. This document establishes a consistent, pan-Canadian set of conservation principles and guidelines that will be useful to anyone with an interest in conserving Canada's historic places. It also provides guidance to those interested in applying for financial incentives for the conservation of historic places.

The intent of the document is not to replace the role of conservation practitioners or provide detailed technical specifications appropriate to every situation. Instead, it offers results-oriented guidance for sound decision-making when planning for, intervening on, and using an historic place.

The *Standards and Guidelines* have already been adopted by a number of federal, provincial, territorial and municipal authorities as a benchmark for assessing proposed conservation interventions on the *character-defining elements* of an historic place. When adopted by a government or funding organization, the *Standards and Guidelines* may form the basis for review and assessment of a conservation project before the project starts, and again upon completion.

Since their publication in 2003, the *Standards and Guidelines* have become an essential tool for heritage conservation across Canada. Together with the Canadian Register for Historic Places, the practice of heritage conservation has been transformed, opening the door to new tools and programs that support the continued use and enjoyment by Canadians of the historic places around them.

CHANGES SINCE THE LAST EDITION

This second edition of the *Standards and Guidelines* expands and clarifies the information contained in the original 2003 edition. The revisions in this edition:

- Address comments received from users of the first edition of the *Standards and Guidelines*;
- Clarify the relationship between the *Standards and Guidelines* and a Statement of Significance;
- Better explain the conservation decision-making process;
- Provide interpretation of the fourteen Standards to clarify these important principles;
- Add guidance for typical sustainability-related interventions;
- Address new topics such as cultural landscapes, including heritage districts;
- Address recent heritage, including the specific issues of conserving modern materials and assemblies;
- Improve the guidance provided for engineering works; and
- Provide a more comprehensive set of Guidelines for Archaeological Sites generally, and in a specific setting.

ACKNOWLEDGEMENTS

In 2003, the publication of the *Standards and Guidelines for the Conservation of Historic Places in Canada* provided, for the first time, all levels of government, conservation specialists, contractors and individuals with a pan-Canadian set of principles and guidelines for the conservation of buildings, archaeological sites, landscapes and engineering works.

This second edition of the *Standards and Guidelines* builds on this initial version. It was made possible by concerted analysis and review in order to update and enhance a document that has become an essential reference in the Canadian conservation world.

The second edition of the *Standards and Guidelines* was produced thanks to the efforts of many individuals. In particular, I would like to acknowledge the guidance and direction of Claude Charbonneau, chair of the Standards and Guidelines Standing Committee, and the participation of its members representing the federal government and all provincial and territorial jurisdictions across Canada. The Standing Committee members were: for the Federal Government, Christiane Lefebvre, Shannon Ricketts and Geneviève Charrois; for Newfoundland and Labrador, George Chalker; for Nova Scotia, Jeffrey Reed; for Prince Edward Island, Darin MacKinnon; for New Brunswick, Jim Bezanson and Carlo Laforge; for Québec, Gérald Savoie and Chantal Grisé; for Ontario, Deborah Hossack; for Manitoba, Susan Boissonneault and Marnie Gartrell; for Saskatchewan, Bernard Flaman, Ann De Mey, Bruce Dawson and Liberty Walton; for Alberta, Tom Ward; for British Columbia, Bob Parliament; for

Yukon, Doug Olynyk and Brent Riley; for Northwest Territories, Tom Andrews; and for Nunavut, Ashley Fleischer and Shamus MacDonald.

I would also like to thank the consulting team without whom this document would have never come to fruition. The core team that helped coordinate, write, edit and select photos for the second edition was headed by Susan Ross, conservation architect, at the Heritage Conservation Directorate (HCD) of Public Works and Government Services Canada and included architect Susan Coles, engineer Bob Kirkhope, landscape architect Marie-Claude Quessy of HCD, and archaeologist Virginia Sheehan of Parks Canada. Engineer John G. Cooke, P.Eng, RSW, and architect Michael McClelland, OAA, FRAIC, took part in the review of the second edition from the private sector perspective. Additionally, a working group on cultural landscapes was formed under the leadership of Joann Latremouille. This group was comprised of Susan Buggey, Lyle Dick, James Douglas, Chantal Prud'homme, Wendy Shearer and John Zvonar. In addition to leading this working group, Joann Latremouille provided an inspired draft version of the revised Guidelines for Cultural Landscapes before her untimely passing in August, 2008. Lastly, I would like to acknowledge Christophe Rivet of Parks Canada who initiated the development, testing and review of the new Guidelines for Archaeological Sites.

I hope that you will find this new edition of the *Standards and Guidelines* useful in your daily activities as stewards and promoters of good conservation practice in Canada.

Larry Ostola
Director General
National Historic Sites Directorate
Parks Canada

INTRODUCTION

Whether you live in a town or city, you are likely not far from one of Canada's *historic places*. These legacies became historic places when an authority formally recognized their heritage value and character-defining elements, or when they were nominated to the *Canadian Register of Historic Places*.

The Standards and Guidelines for the Conservation of Historic Places in Canada is a tool to help users decide how best to conserve historic places. But to do so first requires an understanding of the historic place in question and why that place is significant. In other words, what is it about the historic place that is important to conserve? For the answer, we look to its values.

Conservation practitioners operate in what is referred to as a 'values-based context' using a system that identifies and manages historic places according to values attributed through an evaluation process. These values generally include the aesthetic, historic, scientific, cultural, social and/or spiritual importance of a place, and:

- May be singular or multiple;
- Are subjective, wide-ranging, and can overlap;
- Can be differently assigned by different groups, and may even change over time.

How can you establish the heritage value of an historic place? Values are usually identified by a community associated with a site, making the identification and management of historic places more publicly accessible. Canadian jurisdictions at the federal, provincial, territorial, municipal and Aboriginal levels may review and formally recognize historic places within their respective authority. These agencies keep records of formally recognized sites and recently collaborated to create the *Canadian Register of Historic Places* (CRHP), a web-based record of historic places in Canada (www.historicplaces.ca).

The CRHP provides the base information against which the *Standards and Guidelines* can be applied. The publication of a value statement (referred to as a Statement of Significance, or SoS, in the CRHP) identifies the *heritage value* of an historic place and lists the *character-defining elements* that must be retained to preserve this value. The SoS allows professionals, planners, and the public at large to understand a community's recognition and valuation of the historic place.

Anyone carrying out an intervention at an historic place must be mindful of its overall heritage value, using the documented character-defining elements as a starting point and guide. This understanding, along with the *Standards and Guidelines*, provides both a conceptual and practical framework for how interventions should be carried out. While the public is increasingly engaged in the evaluation and management of historic places, there remains a need for skilled conservation specialists, especially when it comes to physical interventions to historic places.

The Statement of Significance and the *Standards and Guidelines* relate respectively to the phases of understanding and planning of the conservation decision-making process. When used together, the two become powerful tools in a values-based system that help ensure the conservation and ongoing use of historic places in the life of communities.

OVERVIEW OF THE STANDARDS AND GUIDELINES

The Standards and Guidelines for the Conservation of Historic Places in Canada contains four chapters:

Chapter 1: The Conservation Decision-making Process includes a description of the conservation decision-making process, a step-by-step guide to understanding, planning and intervening on an historic place as part of an ongoing cycle of use, maintenance, repair, and adaptation.

Chapter 2: The Conservation Treatments introduces and explains the three conservation treatments: preservation, rehabilitation and restoration, as well as the notion of primary treatment.

Chapter 3: The Standards for the Conservation of Historic Places in Canada introduces and explains the fourteen standards, with interpretations and illustrated examples.

Chapter 4: The Guidelines for the Conservation of Historic Places in Canada forms the bulk of the document. The Guidelines are intended to assist in applying the Standards and determining whether their intent has been met in the context of specific interventions to historic places. There are five principal sections. The first four correspond to main categories of historic places (cultural landscapes, archaeological sites, buildings and engineering works) and the fifth, to materials.

The final section, **References**, includes a glossary of terms used in the *Standards and Guidelines*, a selected bibliography and the photo credits. Although the language of the Guidelines is intended for non-experts, certain terms may be unfamiliar. For this purpose, the glossary defines the words that appear in *italics*.

1

THE CONSERVATION DECISION-MAKING PROCESS

1 THE CONSERVATION DECISION-MAKING PROCESS

Conservation activities can be seen as a sequence of actions — from **understanding** the historic place, to **planning** for its conservation and **intervening** through projects or maintenance. Because conservation is an ongoing and cyclical process, people involved in conservation must often retrace their steps to re-examine their approaches, namely, to assess the impacts of planned interventions on character-defining elements, or to obtain additional information.

Understanding an historic place is an essential first step to good conservation practice. This is normally achieved through research and investigation. It is important to know where the heritage value of the historic place lies, along with its condition, evolution over time, and past and current importance to its community. The traditional practices associated with the historic place and the interrelationship between the historic place, its environment and its communities should also be considered. The understanding phase can be lengthy and, in some cases, may run in parallel with later phases as the understanding of the place evolves and continues to inform the process. The information collected in this phase will be used throughout the conservation decision-making process and should remain accessible.

Planning is the mechanism that links a comprehensive understanding of an historic place with interventions that respect its heritage value. Planning should consider all factors affecting the future of an historic place, including the needs of the owners and users, community interests, the potential for environmental impacts, available resources and external constraints. The most effective planning and design approach is an integrated one that combines heritage conservation with other planning and project goals, and engages all partners and stakeholders early in the process and throughout.

For historic places, the conservation planning process also needs to be flexible to allow for discoveries and for an increased understanding along the way, such as information gained from archaeological investigations or impact assessments. It is important to maintain a firm sense of the larger picture over the long term, and not to emphasize particular character-defining elements at the expense of others.

Intervening on an historic place, that is, any action or process that results in a physical change to its character-defining elements, must respect and protect its heritage value. Interventions can include:

- Preservation actions that are part of the ongoing maintenance of an historic place;
- Rehabilitation activities related to a new use or code upgrades;
- Restoration activities associated with the depiction of an historic place at a specific period in its history.

Intervening on archaeological sites may focus on:

- Preserving the physical integrity of fragile elements;
- Recording them;
- Providing access for public visitation;
- Integrating them into a new structure.

These three phases can further be defined through a series of steps. Although presented sequentially, these steps should be revisited regularly as part of the ongoing conservation decision-making process.

UNDERSTANDING

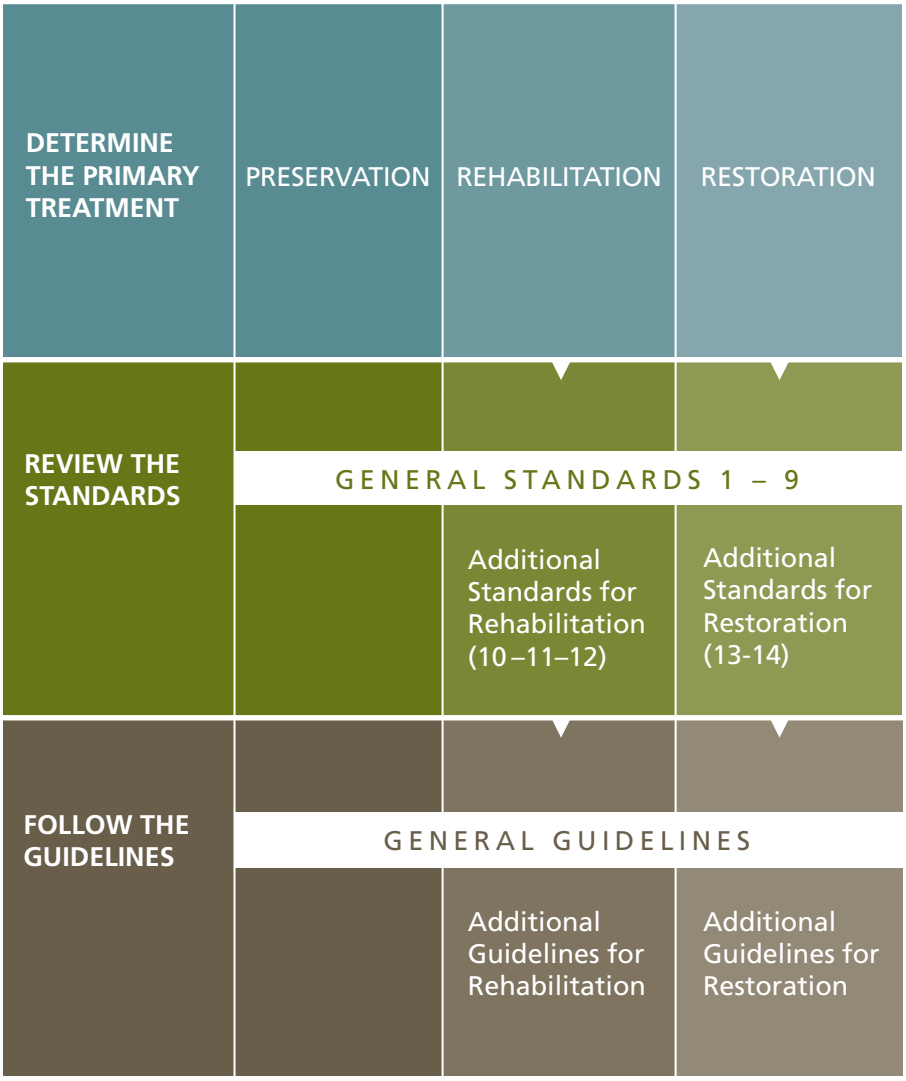
Refer to Heritage Value and Character-defining Elements

An historic place's heritage value and character-defining elements are identified through formal recognition by an authority or by nomination to the *Canadian Register of Historic Places*. If this has not yet been done, the first essential step in any conservation project is to identify and describe the character-defining elements that are important in defining the overall heritage value of the historic place. The essence of these elements is captured in a *Statement of Significance* (SoS) or equivalent document. For assistance in writing a SoS, consult the document *Writing Statements of Significance* at www.historicplaces.ca.

Investigate and Document Condition and Changes

On-site investigation as well as archival and oral history research should be carried out as a basis for a detailed assessment of current conditions and previous maintenance and repair work. Known changes should be documented in a chronology or report. If no existing plans are found, then a photographic survey should be carried out and drawings or sketches prepared to record current conditions.

The Standards and Guidelines apply particularly to these three steps of the conservation decision-making process: Determine the Primary Treatment, Review the Standards and Follow the Guidelines.



PLANNING

Maintain or Select an Appropriate and Sustainable Use

If the use of an historic place is part of its heritage value, every effort should be made to retain that use. Otherwise, a use compatible with its heritage value should be found. It is important to find the right fit between the use and the historic place to ensure this use will last and provide a stable context for ongoing conservation. A viable use better guarantees the long-term existence of an historic place and limits deterioration caused by human activity and the environment.

Identify Project Requirements

Defining the needs of existing or future users and determining the scope and cost of conservation work are essential in establishing realistic objectives. It may be necessary to define priorities and organize the work in logical phases. Contemporary considerations such as health and safety, security, accessibility and sustainability, and changes in use can substantially impact on the heritage value and character-defining elements of an historic place. It is important to assess these considerations together with all the other functional goals of the project, including upgrades to improve performance.

Determine the Primary Treatment

Based on the requirements identified above, the next step is to determine the conservation approach. To do so, it helps to determine a primary treatment. While any conservation project may involve aspects of more than one of the three conservation treatments, it helps to decide during the planning stage whether the project primarily falls under *Preservation*, *Rehabilitation* or *Restoration*. A clear idea of the project's primary focus or objective and the heritage value of the historic place will contribute to the success of the conservation project. The conservation treatments and selection of a primary treatment are explained in more detail in Chapter 2.

Review the Standards

The Standards, which are the principles at the heart of this document, are central to the process of preserving, rehabilitating or restoring an historic place in a consistent manner. Because they provide the broader philosophical basis for conservation, it is important to review the Standards before the Guidelines. Note that the Standards are interrelated and should all be considered.

Nine General Standards (1 to 9) apply to all conservation projects. These nine standards also correspond to the standards for a *Preservation* project. This reflects that *Preservation* is core to all conservation projects because it extends the physical life of an historic place through proper care and maintenance. Three Additional Standards (10, 11 and 12) relate to *Rehabilitation*. All three must be considered in a *Rehabilitation* project, in addition to the nine General Standards. Two Additional Standards (13 and 14) relate to *Restoration*, both of which must be considered in a *Restoration* project, in addition to the nine General Standards. The Standards are explained in more detail in Chapter 3.

Follow the Guidelines

To ensure that conservation is based on a thorough understanding of an historic place and its character-defining elements, the Guidelines always recommend documenting and assessing the form, materials and condition of an historic place and its character-defining elements before any intervention decision and subsequent work.

KEY DEFINITIONS

Historic Place: a structure, building, group of buildings, district, landscape, archaeological site or other place in Canada that has been formally recognized for its heritage value.

Heritage Value: the aesthetic, historic, scientific, cultural, social or spiritual importance or significance for past, present and future generations. The heritage value of an historic place is embodied in its character-defining materials, forms, location, spatial configurations, uses and cultural associations or meanings.

Character-defining Element: the materials, forms, location, spatial configurations, uses and cultural associations or meanings that contribute to the heritage value of an historic place, which must be retained to preserve its heritage value.

Similar to the Standards, General Guidelines apply to all conservation projects. The General Guidelines also correspond to the Guidelines for a *Preservation* project. Additional Guidelines relate to *Rehabilitation* and *Restoration*, and where applicable, should be followed in addition to the General Guidelines.

There are specific Guidelines for four categories of historic places: Cultural Landscapes, Archaeological Sites, Buildings, and Engineering Works. These sections are divided into separate subsections that provide guidance on character-defining elements, such as landforms or windows. A fifth category of guidelines addresses the Materials that may be part of all these historic places.

The Guidelines should not be used in isolation. There may be heritage value in the relationships between cultural landscapes, archaeological sites, buildings, or engineering works. These values should not be compromised when undertaking a project on individual character-defining elements of an historic place. The Guidelines are explained in more detail in the introduction to Chapter 4.

INTERVENING

Undertake the Project Work

The project work is a critical phase in the conservation process. It is equally important to have well-supervised people with the right skills undertake the work as it is to determine the right work to undertake. Every effort should be made to familiarize those working on the project with the planned conservation approach and to ensure they understand the scope of the project. Hiring processes for consultants and contractors should identify the need for heritage expertise and experience.

Carry out Regular Maintenance

While significant interventions may be necessary in a conservation project, the best long-term investment in an historic place is adequate and appropriate maintenance. It helps to develop and implement a maintenance plan that includes a schedule for regular inspection to proactively determine the type and frequency of necessary maintenance work. This assures a high degree of user satisfaction with the historic place, slows the rate of deterioration, and maximizes the long-term protection of heritage value.

APPLYING THE CONSERVATION DECISION-MAKING PROCESS TO THE GRIER BLOCK, A SMALL EARLY TWENTIETH CENTURY COMMERCIAL BUILDING

The Grier Block is a large, two-story commercial building prominently located within the historic commercial district of Fort Macleod, Alberta. Built in 1902, the building is notable for its imposing pressed metal front façade, a pre-fabricated system manufactured by the Mesker Brothers of St. Louis, Missouri, that was once widespread across North America but rare in western Canada. Historically home to a wide range of retail businesses, professional offices, and community organizations such as the Masons, the Grier Block is also significant for its role in the development of Fort Macleod prior to the First World War, then one of southern Alberta's fastest-growing communities. The Grier Block continues to be fully occupied by a variety of businesses on the main floor and tenants in the rehabilitated second floor residential suites.

1906 photograph of Grier Block (at right) from southeast.

UNDERSTANDING

Identify heritage value and character-defining elements

The heritage value of the Grier Block is identified in the Statement of Significance on the *Canadian Register of Historic Places*. Its heritage value lies in its "association with the development of the business district of [Fort] Macleod" and as an important example of "new construction materials for commercial and public buildings at the turn of the twentieth century." The building's character-defining elements include the pressed metal façade, with its prominent cornice and classical details such as egg-and-dart mouldings, engaged columns, and urns; and the brick masonry walls and sandstone window sills on the north and west elevations.

Investigate and document conditions and changes

Investigation of a small-town commercial building such as the Grier Block would include research into its construction, historical uses, and evidence of major alterations. This information might be found in historic photographs, architectural plans, and other information from such sources as municipal tax rolls and other records, local archives and museums, former owners and tenants, and members of the community. A detailed physical inspection of the building would look for evidence of these documented (and undocumented) changes and establish the building's overall condition. Professional expertise helps in assessing the state of a building's character-defining elements and overall condition and is essential where a building has experienced structural problems or is to undergo a major change of use that might trigger new building code requirements. The inspection results should be documented in a written report accompanied by drawings and photographs to guide future planning and interventions.

In the case of the Grier Block, no original blueprints of the building existed, but the historic design was recorded in old photographs and could be compared to pressed metal elements of Mesker facades elsewhere. The major alterations lay in the storefronts themselves, where the original recessed entrances typical of the period had been replaced by elements dating from the 1960s—a common occurrence with commercial buildings in communities both small and large. Inspection of the building by a conservation architect determined that, despite an early fire, the brick exterior walls and wood frame interior were essentially sound.

Circa 1910 photograph of Grier Block storefront, south bay. Photographs like this were an indispensable resource in developing the storefront restoration plans.

PLANNING

Select an appropriate and sustainable use

The owners had determined that continued use of the main floor by commercial tenants combined with residential occupancy on the second floor was most appropriate in the context of Fort Macleod's historic main street. Local demand for commercial space is steady, and second floor residential suites provide additional income, enhance security, and contribute to activity within the historic district. With these uses already well established in the Grier Block, the physical requirements of the historic building would remain fundamentally unchanged even though substantial upgrades would be needed to meet current building codes, provide better energy efficiency, and meet tenant requirements.

Identify project requirements

The rehabilitation goals for the Grier Block were to ensure the integrity of the building envelope, improve energy efficiency, and enhance the building's appeal to commercial and residential tenants in conjunction with the conservation of heritage value.

Although structurally sound overall, the rehabilitation was comprehensive in scope and included replacement of the roof membrane; replacement of the badly deteriorated windows with wood frame units matching the configuration of the original windows; masonry repairs; removal, cleaning, repainting and reassembly of the pressed metal façade; and restoration of the missing storefronts based on historic photographs.

The extensive interior work consisted of the addition of insulation and vapour barrier to the perimeter walls; complete upgrades to the building's electrical and mechanical systems; refinishing and replacement, where required, of the original wood floors; removal and reinstallation of original pressed metal ceilings for fire-rating purposes; and minor alterations to the floor plan to accommodate new functional requirements.

Before rehabilitation: east façade, looking southwest.

East façade after restoration of storefronts and preservation of pressed metal façade. Maintenance (repainting) in progress.

Determine the Primary Treatment

The primary conservation treatment of the Grier Block was determined to be rehabilitation, since the wide-ranging interventions all aimed at enabling the continued commercial and residential use of the building while protecting its heritage value. Within a rehabilitation approach, the conservation program included the retention and repair of existing historic fabric such as the pressed metal façade (preservation); the alteration of existing elements and addition of new ones, such as the construction of fire-rated walls (rehabilitation); and the accurate representation of missing elements through reinstatement of the storefronts to the original design (restoration).

Review the Standards

The general standards 1 to 9 and additional standards for Rehabilitation 10 to 12 apply to rehabilitation projects such as the Grier Block. The restoration component of the work, rebuilding of the missing storefronts, was guided by Standards 13 and 14 for Restoration. Each aspect of the conservation program was referred to the applicable standards to identify interventions that optimized the conservation of heritage value while satisfying the project requirements within the resources available.

Follow the Guidelines

The appropriate Guidelines for Buildings (4.3) and Materials (4.5) were consulted for each intervention on the Grier Block. For example, the guidelines for Exterior Walls and Structural Systems (Buildings) and the guidelines for All Materials and Masonry (Materials) directed the conservation of the exterior brick masonry and the addition of insulation. The Additional Guidelines for Rehabilitation found throughout the Buildings section provide guidance on interventions related to sustainability, health, safety and accessibility requirements.

Detail of pressed metal facade after rehabilitation, showing the hallmarks of the original Mesker design. The work consisted of the following: removal of the metal panels, carefully identifying their original locations; removal of multiple layers of paint using a chemical bath; recoating with an epoxy-based paint system; and reinstallation in the original locations on furring strips according to a rain screen principle.

INTERVENING

Undertake project work

Conservation of the Grier Block progressed over nearly a decade, beginning with the rehabilitation of the retail bays and residential suites as revenue generators. Restoration of the pressed metal storefront was instrumental in the initial rehabilitation of the main floor commercial areas, which was followed by rehabilitation of the retail bays one-by-one, as resources and tenant opportunities presented themselves. The comprehensive rehabilitation plan prepared by a conservation architect and the construction expertise of the building owners contributed greatly to the successful and cost-effective implementation of the conservation program.

Carry out regular maintenance

Conservation is an ongoing process. In southern Alberta, where wind-driven sand scours paint and exposed wood and intense freeze-thaw cycles crumble masonry, regular maintenance is an important part of preserving the Grier Block's character defining elements and extending the service life of building systems and fabric. A maintenance plan helps with this, and it is good conservation practice to document both periodic rehabilitation and ongoing maintenance, and to store these documents in a well-identified, appropriate location.

Left: North façade window prior to rehabilitation showing eroded mortar joints, cracking due to frost action within the wet wall, and delamination of the sandstone sill.

Right: North façade window, after replacement with new wood units and repointing mortar joints and replacing damaged bricks with salvaged historic brick matching the original. The replacement sandstone sill reproduces the rock-faced appearance of the original unit but introduces a slope to improve drainage. (A drip edge is to be added.) Since the original quarry no longer exists, the stone itself is from a different source but is of the same type ("Paskapoo" sandstone) typical of buildings in Fort Macleod and southern Alberta generally. This specimen, selected to avoid the flaws that often contribute to delamination in this type of stone, will weather to a colour closer to that of the original element.

The decision was made to not remove the paint on the brick at this time, since it was weathering away of its own accord and appeared to be causing no moisture-related distress within the wall.

Left: Interior of west (rear) wall of north retail bay, showing as-found condition of load-bearing masonry after removal of the lath and plaster interior finishes for inspection purposes. Uncontrolled runoff from the roof had saturated the wall, washed out the mortar, and caused localized collapse around the window opening.

Right: Rear wall after masonry repairs. The 2x6 stud wall for insulation creates a small cavity to allow for the evacuation of any potential moisture.

HOW PRIVATE PROPERTY OWNERS CAN PRESERVE A HERITAGE DISTRICT: THE CASE OF GRAND-PRÉ RURAL HISTORIC DISTRICT, NOVA SCOTIA

Grand-Pré Rural Historic District, located on the shores of the Minas Basin of the Bay of Fundy in Nova Scotia, is one of the oldest settlements and evidence of land use patterns of two cultural groups of significance: the Acadians and the New England Planters. Commemorated as the centre of Acadian settlement from 1682 to 1755, the site is strongly identified with the 1755–1762 deportation of the Acadians. In 1995, the site was declared Canada's first rural historic district.

The district includes the Villages of Grand-Pré, Hortonville and North Grand-Pré, as well as the surrounding farmlands, vast stretches of tidal marshes—much of which was dyked to create arable land—and orchards extending to the uplands. Grand-Pré Rural Historic District is a good example of an *organically evolved cultural landscape* that illustrates the dynamics of human interaction with the landscape namely the successive occupations of different cultural groups. This unique rural landscape reflects the overlay of one cultural tradition onto another and contains archaeological evidence of Mi'kmaq, Acadian and New England Planter peoples.

Contemporary agricultural activities by property owners at Grand-Pré continue traditional practices.

Grand-Pré Rural Historic District is an evolved cultural landscape.

UNDERSTANDING

Refer to Heritage Value and Character-defining Elements

As there may not be any Statement of Significance (SoS) for individual properties in a historic district, owners should refer to the heritage value of the historic district identified in the SoS on the *Canadian Register of Historic Places*. In the case of the Grand-Pré Rural Historic District, this document indicates that its heritage value of resides "in the blending of natural and built features, and in the retention and development of land use patterns originating with the Acadians (particularly in the spatial distribution of arable land, orchards, dykelands, and residential hamlets)." Its character defining elements include those related to "the preponderance of agricultural land use; the organization of the landscape into three primary zones (i.e. dyked marshlands, uplands, and open fields); the circulation patterns evident in pathways, roadways and the railway line which follow topographical features that create the informal boundaries of the three zones; the gently rolling topography of the dyked marshlands; and the system of drainage and dykes bordering the tidal flats."

Investigate and Document Condition and Changes

At this stage, the owner should contact and seek guidance from the relevant authority, in this case the Nova Scotia Special Places Program. Dialogue will confirm whether or not any information is available for the property in question. Subsequent discussions between parties will help the owner recognize and understand the characteristics specific to the site and to identify character-defining elements. Research should focus on the site's history, including the introduction of elements to the site and any evidence of significant alterations. This information can be obtained from town records, local archives and museums, through period photographs, site surveys, and insurance maps. Oral history obtained through former owners, tenants and other knowledgeable community members is also useful. The relationship between different components of past landscapes can be studied through the use of archaeology.

The system of drainage and dykes bordering the tidal flats is a character-defining element of Grand-Pré Rural Historic District.

Based on this research, if parts of the site are found to have archaeological potential, or to contain character-defining elements, careful site investigation should be undertaken by experts to determine its physical condition. Together, expert and local knowledge will help to properly evaluate and articulate recommendations for conservation needs. A written report amply illustrated with drawings and photographs should be prepared to guide future planning and interventions.

Because the district is an evolved cultural landscape, it is important that any character-defining element related to the successive occupations of the district be protected; for example, dyke facings from the 20th century.

The Acadians built aboiteaux as part of the system of drainage and dykes.

PLANNING

Maintain or Select an Appropriate and Sustainable Use

It is important that private owners confirm that the proposed use is appropriate and sustainable over the long term to minimize the impact on the heritage values expressed through the character-defining elements. For example, the continued use of traditional agricultural activities by property owners in Grand-Pré have made it the place it is today: a place that still boasts many of the character-defining elements of the original settlement. For this reason, many of these activities can still be performed while their impacts on the character-defining elements of the historic place are mitigated.

Identify Project Requirements

At this phase of the project, the owner and relevant authority should have a good understanding of the scope of work and know the potential impacts on the character-defining elements of the site. When a project is planned in a zone identified as having archeological potential, most provinces or territories request or require that an archaeological investigation be undertaken prior to beginning the work.

Determine the Primary Treatment

It is expected that most interventions by private landowners will relate primarily to agricultural land use. Such interventions fall under *Preservation* as these projects continue a traditional practice that has existed for 300 years and contribute to protecting character-defining elements. In other cases, the primary conservation treatment would be considered *Rehabilitation*, such as the construction of a new barn.

Review the Standards

For a *Preservation* project, the General Standards 1 to 9 must be considered and applied where appropriate; for a *Rehabilitation* project, Standards 1 to 12 must be considered. Each standard should be reviewed in relation to the proposed work and the potential impact on the heritage value and character defining elements. The chosen approaches must balance the needs of the proposed land use development and the protection of the heritage value of the site.

Follow the Guidelines

For each intervention in the district, the appropriate Guidelines for Cultural Landscapes and Guidelines for Archaeological Sites should be consulted. For example, if a character-defining element of the historic district, such as a pathway, is affected by the intervention, then the guidelines for Circulation should be consulted. If archaeological remains are anticipated or encountered, the general guidelines for Archaeological Sites should be consulted as well as the guidelines for Sites in a Cultural Landscape.

The spatial organization of orchards contributes to the heritage value of the historic district.

INTERVENING

Undertake the Project Work

It is important that people who undertake the project work have the necessary knowledge and skills. A phased implementation of the work is critical, keeping in mind that *Preservation* (Stabilization) of the character-defining elements of the site should be the first priority.

Carry out Regular Maintenance

Maintenance is an important part of the *Preservation* process. Regular maintenance will preserve character defining elements and extend the service life of functional components.

Site investigation has found archaeological evidence of Mi'kmaq, Acadian and New England Planter peoples.

2

THE CONSERVATION TREATMENTS: PRESERVATION, REHABILITATION AND RESTORATION

2 THE CONSERVATION TREATMENTS: PRESERVATION, REHABILITATION AND RESTORATION

The overarching term for protecting historic places in Canada is *Conservation*, which is described as: all actions or processes aimed at safeguarding the *character-defining elements* of an *historic place* to retain its *heritage value* and extend its physical life. This may involve *Preservation*, *Rehabilitation*, *Restoration*, or a combination of these actions or processes. Reconstruction, or reconstitution of a disappeared historic place, is not considered conservation and is therefore not addressed in this document.

The Swift Current Creek Petroglyph Boulder in Saskatchewan is an outstanding example of precontact rock art dating from at least 1,200 years ago. The pictographs are executed in rarely seen black pigment. One of the best preserved petroglyph sites in Saskatchewan, it is notable for its bison carvings and the occurrence of both petroglyphs and pictographs on the same rock. In order to maintain the fine condition of the petroglyphs, the boulder's physical properties were analyzed to assess possible ***preservation*** methods. Maintaining the confidentiality of the location of the site also helps protect against unauthorized activities.

SELECTING A PRIMARY TREATMENT

While any conservation project may involve aspects of more than one of these three conservation treatments, it is important to decide during the planning stage whether the project falls under *Preservation*, *Rehabilitation* or *Restoration*. A clear idea of the project's primary focus or objective, as provided in a conservation plan, and the heritage values of the historic place will contribute to the success of a consistent and coherent conservation project.

Once the primary treatment type is established, it is important to refer consistently to the standards related to that treatment type for the overall project. If a different treatment is required for certain character-defining elements, then the related standards will guide interventions on those elements. For example, in a project where rehabilitation is the primary treatment, it may be appropriate to preserve certain character-defining elements, such as repairable original windows or archaeological soil layers, or to restore certain missing or altered elements, such as a hedgerow or water wheel. In those cases, the *Preservation* or *Restoration* standards apply. The interventions specific to those character-defining elements can be considered as secondary treatments.

PRESERVATION

Preservation involves protecting, maintaining and stabilizing the existing form, material and integrity of an historic place or individual component, while protecting its heritage value. *Preservation* can include both short-term and interim measures to protect or stabilize the place, as well as long-term actions to stave off deterioration or prevent damage. This will keep the place serviceable through routine maintenance and small repairs, rather than inoperable during intrusive interventions, extensive replacement and new construction. In archaeological sites, *Preservation* can consist of creating or maintaining a stable environment for the character-defining elements to extend their physical life.

Consider *Preservation* as the **primary treatment** when:

(a) Materials, features and spaces of the historic place are essentially intact and convey the historic significance, without extensive repair or replacement;

(b) Depiction during a particular period in its history is not appropriate; and,

(c) Continuation or new use does not require extensive alterations or additions.

Preservation tends to be the most cautious of the conservation treatments and retains the most materials. It is therefore more appropriate when heritage values related to physical materials dominate. A plan for Preservation should be developed before work is undertaken.

The nine General Standards (see Chapter 3) and the General Guidelines (see Chapter 4) relate directly to *Preservation*. Since protecting, maintaining and stabilizing are at the core of all conservation projects, the General Standards and General Guidelines must be considered, and applied where appropriate, to any conservation project.

REHABILITATION

Rehabilitation involves the sensitive adaptation of an historic place or individual component for a continuing or compatible contemporary use, while protecting its heritage value. *Rehabilitation* can include replacing missing historic features. The replacement may be an accurate replica of the missing feature or it may be a new design compatible with the style, era and character of the historic place. In the context of archaeological sites, *Rehabilitation* allows their compatible use through actions aimed at communicating and conveying their heritage value.

Consider *Rehabilitation* as the **primary treatment** when:

(a) Repair or replacement of deteriorated features is necessary;

(b) Alterations or additions to the historic place are planned for a new or continued use; and,

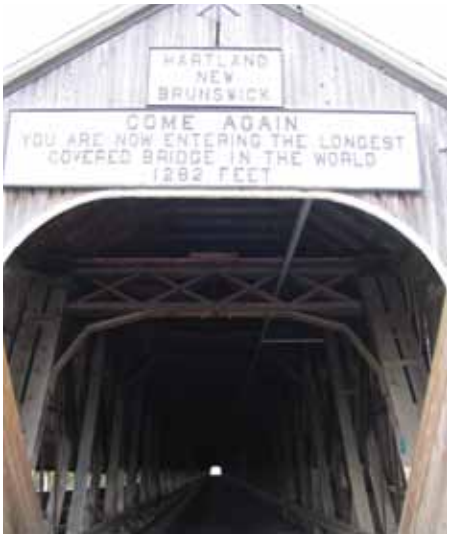
(c) Depiction during a particular period in its history is not appropriate.

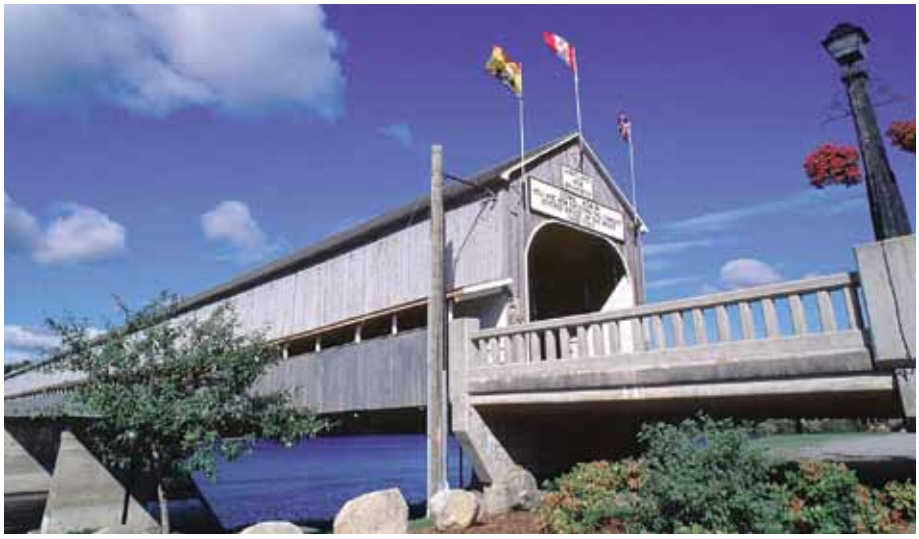
Rehabilitation can revitalize historical relationships and settings and is therefore more appropriate when heritage values related to the context of the historic place dominate. A plan for Rehabilitation should be developed before work begins.

Three Additional Standards (10–11–12) relate to *Rehabilitation* and all three must be considered, and applied where appropriate, to a *Rehabilitation* project, in addition to the nine General Standards (see chapter 3). Both the General Guidelines and the Additional Guidelines for Rehabilitation must also be considered, and applied where appropriate, to any *Rehabilitation* project (see chapter 4).

RESTORATION

Restoration involves accurately revealing, recovering or representing the state of an historic place or individual component as it appeared at a particular period in its history, while protecting its heritage value. *Restoration* may include removing non character-defining features from other periods in its history and recreating missing features from the restoration period. *Restoration* must be based on clear evidence and detailed knowledge of the earlier forms and materials being recovered. *Restoration* does not apply to archaeological sites because archaeology does not favour one period over another. The value lies partly in the information the sites contain. In a cultural landscape, the difference must be clearly understood between ecological restoration and restoration as a heritage conservation treatment. For ecological restoration,





The Hartland Covered Bridge, crossing the St. John River at Hartland, NB, is the world's longest covered bridge. It is significant for its structural qualities, contributions to transportation and as a symbol of the heritage of covered bridges in New Brunswick. The present bridge is a standard covered bridge structure composed of a Howe truss superstructure enclosed with vertical unpainted weatherboard siding. When the New Brunswick Department of Transportation recently ***rehabilitated*** the bridge by installing a fire suppression system, care was taken to ensure that this new system was barely visible in the upper structural system.

consult the *Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas* (Parks Canada and the Canadian Parks Council, 2008).

Consider *Restoration* as the **primary treatment** when:

(a) An historic place's significance during a particular period in its history significantly outweighs the potential loss of existing, non character-defining materials, features and spaces from other periods;

(b) Substantial physical and documentary or oral evidence exists to accurately carry out the work; and,

(c) Contemporary additions or alterations and are not planned.

Restoration is most appropriate when strong associative or symbolic values have been obscured and can be revealed through removals, repairs and replacements based on historical evidence. Before the work begins, the restoration period must be selected and justified and a plan for *Restoration* developed. The use of traditional methods and techniques should be encouraged, where possible, in a restoration project.

Restoration is rarely used today as the primary treatment for an entire historic place, but rather as a secondary treatment for specific character-defining elements. If changes to an historic place have acquired value over time, then *Preservation* or a combination of *Preservation* and *Rehabilitation* would be more appropriate.

In addition to the nine General Standards, two Additional Standards (13–14) relate to *Restoration*. These eleven standards must be considered, and applied where appropriate, to a *Restoration* project (see chapter 3). The General Guidelines and Additional Guidelines for Restoration must be considered, and applied where appropriate, to any *Restoration* project (see chapter 4).

KEY DEFINITIONS

Conservation: all actions or processes that are aimed at safeguarding the character-defining elements of an historic place so as to retain its heritage value and extend its physical life. This may involve *Preservation*, *Rehabilitation*, *Restoration*, or a combination of these actions or processes.

Preservation: the action or process of protecting, maintaining, and/or stabilizing the existing materials, form, and integrity of an *historic place*, or of an individual component, while protecting its *heritage value*.

Rehabilitation: the action or process of making possible a continuing or compatible contemporary use of an *historic place*, or an individual component, while protecting its *heritage value*.

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

Chiefswood, birthplace of famed poetess, E. Pauline Johnson, is in Ohsweken, ON, in the Six Nations of the Grand River Territory. It was built between 1853–1856 by her father, Mohawk Chief George H. M. Johnson, a leading figure of the Six Nations. Located on a knoll overlooking the Grand River, the Italianate-style house, set back from the county highway, represents the Johnson family's interpretation of a rural Picturesque estate.

The meadow and summer kitchen, two of the site's character-defining elements, were removed in the 1960s and replaced with a manicured lawn. On the basis of both documentary and physical evidence, the summer kitchen was rebuilt and the meadow ***restored*** using native plant species.

3

THE STANDARDS FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA

3 THE STANDARDS FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA

The Standards for the Conservation of Historic Places in Canada promote responsible *conservation* practices to help protect Canada's historic places. They provide a philosophical approach to conservation work. While neither technical nor case-specific, they offer a framework for making essential decisions about which *character-defining elements* of an *historic place* should be preserved and which ones can be altered while protecting *heritage value*.

These Standards are, in fact, principles that express the collective wisdom that has accumulated in heritage conservation practice. They are rooted in practical and theoretical arguments that evolved as the field of conservation developed over the years. Working from these basic principles gives consistency and an ethical foundation to the decisions that must be made when conserving an historic place. The Standards are to be broadly applied throughout the conservation process and read as a whole, because they are interconnected and mutually reinforcing.

Conservation is a case-by-case pursuit, based on an understanding of the specific values of an historic place. While the applicability of each standard is unique to each case or *intervention*, nevertheless, there is a consistency in applying the standards to different types of places. Chapter 4, which forms the bulk of this document, provides detailed guidelines for four categories of historic places and materials.

Because the standards are basic principles to be applied using a reasoned process unique to each historic place, it is important to fully understand their meaning. This chapter explains the meaning of each standard and gives examples for their application. Because many of the standards describe multiple principles, it is important to consider every sentence in a standard. The individual principles associated with each standard are separated into part (a), (b), etc. The explanations that follow further define each separate principle.

The first nine standards relate to *Preservation*, which is at the core of all conservation projects. As such, these general standards must be applied to all conservation projects regardless of treatment type. Three additional standards are specific to *Rehabilitation* projects—Standards 10, 11 and 12—and two additional standards are provided for Restoration—Standards 13 and 14.

REPAIRING OR REPLACING?

Standards 8, 10 and 13 are related standards; each one describes the importance of repairing before replacing for each of the three treatment types based on the condition of the character-defining elements and the type of evidence available.

- Standard 8, in the context of *Preservation*, where the condition allows more for repair than replacement, assumes that material evidence is available to use as a basis when part of a character-defining element needs to be replaced;
- Standard 10, in the context of *Rehabilitation*, permits compatible, distinguishable new elements to be inserted when replacing elements too deteriorated to repair;
- Standard 13, in the context of *Restoration*, requires that replacement elements be based on evidence from the restoration period.

THE STANDARDS

The Standards are not presented in a hierarchical order. All standards for any given type of treatment must be considered, and applied where appropriate, to any conservation project.

General Standards for Preservation, Rehabilitation and Restoration

1. Conserve the *heritage value* of an *historic place*. Do not remove, replace or substantially alter its intact or repairable *character-defining elements*. Do not move a part of an historic place if its current location is a character-defining element.
2. Conserve changes to an *historic place* that, 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 an *historic place* that requires minimal or no change to its *character-defining elements*.
6. Protect and, if necessary, stabilize an *historic place* until any subsequent *intervention* is undertaken. Protect and preserve archaeological resources in place. Where there is potential for disturbing 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 on close inspection. Document any intervention for future reference.

Additional Standards Relating to Rehabilitation

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 an *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 an *historic place* will not be impaired if the new work is removed in the future.

Additional Standards Relating to Restoration

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 elements.

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.

STANDARD 1

The character-defining interior features and finishes, such as the birch floors, window frames and views of the city at Habitat 67 in Montreal, have been carefully maintained, repaired and retained.

(a) Conserve the *heritage value* of an *historic place*. (b) Do not remove, replace or substantially alter its intact or repairable *character-defining elements*. (c) Do not move a part of an historic place if its current location is a character-defining element.

Part (a) states that the overarching objective of heritage conservation is to conserve heritage value. If an historic place has been formally recognized, the designating authority will likely have prepared a document outlining the place's values, such as a Statement of Significance. These values are embodied in character-defining elements.

Part (b) outlines how to conserve heritage value by minimizing changes to character-defining elements. Identifying character-defining elements helps guide where necessary interventions should and should not take place.

Part (c) addresses the wholeness of a place and reinforces that spatial relationships can be character-defining. In a garden, for example, moving a central feature to another location affects the heritage value of the entire landscape. In an archaeological site, location may be critical to understanding other elements that are now missing. In an engineering work, machinery moved from its original position can lose part of its meaning, thus diminishing its heritage value.

Centuries ago, the inland Inuit, or Kivallirmiut, recognized the hunting potential of the annual fall crossing of massive herds of caribou and began establishing seasonal camps along the Kazan River. Today Fall Caribou Crossing NHSC in Nunavut, is noted not only for its archaeological remains and former importance to the Kivallirmiut, but also for its natural landscape, continued use as a hunting area and the vitality of the oral history and traditions of the people who know it best. Moving any of these stones would impair heritage value.

STANDARD 2

Conserve changes to an *historic place* that, over time, have become *character-defining elements* in their own right.

It is natural and necessary for places to evolve, reflecting changes in the community and culture of that they are a part. Places may be modified for reasons of taste, for the changing nature of their use, or to adapt to evolving conditions and technologies. Changes that mark significant changes, or that are considered expressions of their time, may be deemed to have a value in their own right.

Factories and other industrial works are constantly adapted. Retaining these adaptations may be important in telling the story of changing technology or the growth of a particular industry. Commercial and residential interiors were often changed with new ownership or passing trends. For example, a 1950s cafeteria in a 1910 office building may have its own distinct value as part of the evolution of that historic place.

A fine old storefront that has been modernized may have lost its heritage value. However, some changes may have acquired value, such as an art-deco stainless steel over-cladding or a marquee added to a popular urban theatre. Not every change to an historic place has heritage value, but those that do should be identified in a Statement of Significance. For historic places that were formally recognized some time ago, the process of determining if there is heritage value associated with later changes is an important step in the conservation process.

The lean-to is a character-defining element that shows the evolution of the Addison Sod House in Saskatchewan from a rustic sod dwelling to a comfortable home. Removing the later changes to restore the house to an earlier period would not be appropriate because it would remove elements that have heritage value.

Over the years, several landscape architects and architects have made specific contributions to the evolving functions of Vancouver's Stanley Park. These include the play areas, totem groupings and aquarium that are now integral to the park's heritage value.

STANDARD 3

When the windows of Lefurgey House in Summerside, PEI were damaged in a fire, instead of replacing the entire windows, only the broken glass was replaced. The replacement glass, salvaged from a nearby house that was replacing its windows, had similar properties and wavy appearance.

Conserve *heritage value* by adopting an approach calling for *minimal intervention*.

Minimal intervention in the context of heritage conservation means doing enough, but only enough to meet realistic objectives while protecting heritage values.

Minimal does not mean, doing little or nothing, or the least possible. In fact, enough intervention to arrest and correct deterioration, meet codes, or introduce new services, can be quite extensive. Determining minimal intervention is a matter of rigorous assessment, options analysis and creativity to identify the intervention that balances technical and programmatic requirements with protecting heritage value.

The application of Standard 3 varies depending on the nature of the character-defining element. In a landscape where value resides in living things that mature and die, substantial replanting may be necessary. In the case of an historic bridge that is unable to support current traffic loads, minimal intervention might well mean significant interventions to assure public safety.

For archaeological sites, minimal intervention calls for striking a balance between gaining knowledge from investigations and preserving the resources *in situ*. A certain level of intervention is often necessary to sufficiently understand the heritage value of the archaeological site and to determine the best preservation approach. This can be achieved by selecting the most appropriate and effective research methodology for a specific project such as targeting only necessary excavations and using non-intrusive means of investigation, when appropriate.

Minimal intervention has different meanings for *Preservation*, *Rehabilitation* and *Restoration*. In the context of Preservation, it means undertaking sufficient maintenance or repairs to ensure the longevity of the place while protecting heritage value. In the context of *Rehabilitation*, it might mean limiting the proposed new use, addition or changes. In a *Restoration*, minimal intervention is a delicate balance between removals and recreations to represent the historic place's condition at a specific time in its history.

The extensive damage caused by Hurricane Juan to the Halifax Public Gardens required substantial replanting. The large scope of work is still considered a minimal intervention because any less work would have negatively affected the heritage value of the place.

STANDARD 4

(a) Recognize each *historic place* as a physical record of its time, place and use. (b) 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.

Part (a) of this standard requires us to respect the historic place and to conserve, as best we can, the physical evidence that conveys the significance of the historic place, including its contribution to a specific context and to the social history associated with its uses.

Part (b) discourages the creation of additions that falsify the story of a place. There is always a high risk of loss of authenticity when adding elements from other places or eras.

The materials removed from historic places are often salvaged and reused. Careful consideration must be given to how and where this is done. For example, using a salvaged lamppost from an historic landscape with identifiable characteristics at another site does not conform to the standard. On the other hand, using recycled bricks of the same age and appearance, or reusing identical windows within a building are appropriate from both conservation and *sustainability* standpoints. Where it is deemed critical to the honesty of the work, such additions can be rendered distinguishable in a discreet way.

The original plans for the Margaret Marin Residence in Edmonton indicate a decorative upper balcony that was never built. During recent renovations, it was decided not to construct this balcony because it would have conveyed a false sense of historical development.

The Old Strathcona Provincial Historic Area in Edmonton is a diverse historic district. The individuality of each building and evidence of the era of its construction has been maintained. Earlier simply constructed wood buildings stand alongside later more sophisticated masonry buildings and modern infill structures.

STANDARD 5

Despite changing requirements in education, the Lunenburg Academy in Nova Scotia remains in its original building and setting. The Academy was designed using green space, natural lighting and ventilation in a way that is still valid for school use today.

Find a use for an *historic place* that requires minimal or no change to its *character-defining elements*.

Standard 5 advocates maintaining the use of the place or finding a new viable use that has little impact on its character-defining elements. It is important to find the right function for an historic place to ensure a long-term, stable context for conserving heritage value.

If the current use is a character-defining element, maintaining this use is in accordance with the standard, as long as growth or technological change does not become destructive to its character-defining elements. If maintaining the original use leads to the removal or significant alteration of character-defining elements, the owners and users may need to consider a compatible new use for the historic place.

Finding a new use depends on an analysis of heritage value and physical compatibility with the historic place and its likeliness to provide a lasting, new life for the historic place. Using an old jail as a youth hostel may initially seem like an unusual concept, but it illustrates resourceful, clear-sighted functional analysis as the generator of good reuse: both jails and hostels provide a lot of small rooms for sleeping.

Old buildings are often considered as venues for museums or galleries, but if strict interior environmental conditions are required for that function, complex and potentially destructive interventions may be needed. New uses that require substantial alteration of character-defining elements do not conform to the standard.

In the case of archaeological sites, the intention is seldom to use the archaeological site itself, but rather the space that contains it. It is therefore important that a new use requires minimal intervention and does not alter the character-defining elements that are often submerged or buried underground.

After serving the community for many years as a primary school, the Charlotte Street School in Fredericton now has a new community use as the Charlotte Street Arts Centre. This use required little change to the building's layout and character. Classrooms were maintained to serve as open art studios, dance and music studios and an art gallery. The existing wide corridors and staircases, as well as the classrooms and other spaces, fit the new needs well.

This Dawson City building, originally built to be the temporary location for the government telegraph office, was rehabilitated into housing units.

STANDARD 6

(a) Protect and, if necessary, stabilize an *historic place* until any subsequent *intervention* is undertaken. (b) Protect and preserve archaeological resources in place. Where there is potential for disturbing archaeological resources, take mitigation measures to limit damage and loss of information.

While Standard 5 reinforces the need for an appropriate and sustainable use, part a) of Standard 6 recognizes that there may be a period of vacancy in the life of any historic place, such as a period of inaction at a former industrial site or farm.

Mothballing, the temporary closure of an historic place with measures to protect it from vandalism and weather, is a process that requires planning and continual monitoring. For a landscape, mothballing might include taking measures to diminish the risk of insect infestation or plant disease. Archaeological sites can be particularly vulnerable because the resources are often not visible.

Part b) acknowledges a responsibility to protect archaeological resources, but also reinforces the message that they must be protected and preserved *in situ*. This is a highly regulated aspect of conservation: one must identify and engage the authority having jurisdiction. The information required to best preserve and protect the site is gained from a variety of archaeological interventions. A strategy to recover the information using the most appropriate and effective methods needs to be developed in an effort to strike a balance between gaining knowledge from investigations and preserving the resources *in situ*.

Nearby archaeological resources were protected when stabilizing the Prince of Wales Fort in Manitoba. Strategically placed archaeological investigations on the surface of the ramparts established the extent of artifacts, including their depth below the surface.

These buildings, along with others at St.Luke's Anglican Rectory and Church in the Yukon, were temporarily stabilized using a variety of measures including adding sandwich bracing, cable bracing, heavy frames, roll roofing, and covering door and window openings in order to keep out snow and rain. Stabilization allows the structures to be adequately researched and their eventual restoration to be planned.

STANDARD 7

Ground-penetrating radar was used at McPherson House in Fort Simpson, NT; this guided archaeological excavations limiting the impact on the site.

(a) Evaluate the existing condition of *character-defining elements* to determine the appropriate *intervention* needed. (b) Use the gentlest means possible for any intervention. Respect *heritage value* when undertaking an intervention.

Part (a) of Standard 7 refers to a comprehensive examination and assessment of the physical place. Determining if an intervention is needed, and what an appropriate intervention might be, requires an understanding of the physical condition and behaviour of the character-defining elements and the historic place as a whole. The cause and extent of any decay should be based on evidence from a site investigation.

If the condition evaluation reveals a weakness that threatens the historic place's long-term survival, the standard requires assessments and options analysis to determine the appropriate course of action. This standard, in combination with Standard 3, usually leads to intervening only where the existing condition is actively causing further deterioration or weakening the asset.

Part (b) addresses the course of action once it is clear that an intervention is needed. The gentlest means to achieve a reasonable level of conservation should be selected. This includes the technique or methodology itself and the extent of the intervention being considered.

Investigations themselves are forms of intervention and as such should follow a minimal intervention approach. Investigations should begin with observation and non-invasive probes followed by careful sampling and physical openings or selective disassembly if required. The objective is to obtain enough evidence without unnecessarily disturbing the historic place.

A condition assessment and evaluation undertaken before an intervention at Belvedere Cemetery in St.John's Ecclesiastical District, would reveal that the well-aged and weathered patina found on the grave markers is not damaging. It is in fact a character-defining element of this historic place and should be preserved.

STANDARD 8

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

This standard introduces the basic hierarchy of interventions. Maintain first, then repair rather than replace the deteriorated parts of character-defining elements. If the replacement of a part is the only option, it should be done *in kind*. This approach is closely tied to *minimal intervention* (Standard 3).

Part (a) of this standard promotes the ongoing maintenance of an historic place, an essential but often undervalued aspect of conservation. Rigorous maintenance reduces long-term costs as well as the frequency of major interventions.

Part (b) emphasizes the use of recognized conservation methods when carrying out repairs. Past experiences in conservation offer many cases where the application of unproven new materials or techniques resulted in more damage than good. Techniques and materials must have proven track records and be based on research, analysis and review.

Part (c) introduces the concept of replacement *in kind*. In kind is defined as: with the same form, material and detailing as seen in the existing elements. If the character-defining element is a wood shingle, the standard states that it must be replaced with a wood shingle, and not an asphalt shingle.

Replacement *in kind* may sometimes be difficult, and substitute materials may be necessary when the original materials are damaging to character-defining elements or hazardous to public health. Some mid-20th century materials are no longer made or cannot be manufactured in small batches. In a place where the heritage value depends on a material that is no longer available, the ongoing loss of the material will eventually lead to a difficult choice: accepting breakage or replacing the entire material or assembly with one that is physically and visually compatible with the original.

When restoring decorative plaster in the Walker Theatre in Winnipeg, moulds were made of existing plaster elements. The deteriorated plaster was then patched and repaired using the moulds to match the original.

A condition assessment of the exterior walls and frame of this Storehouse at Fort Langley, BC found extensive deterioration of some timbers, which required replacement in kind. The dimensions, hewn finish and species of wood used in the repairs matched those replaced. The photograph shows part of one storehouse wall after the repairs were completed, but before the new timbers were whitewashed.

Wrecks at Red Bay NHSC, NL, such as this Basque Period wreck, are reburied using sand and tarp to ensure their long-term preservation. Their condition is periodically assessed through monitoring.

STANDARD 9

The new pieces of stone on the Wellington Wall at the Parliament Grounds in Ottawa are clearly visible on close inspection due to a different tooling technique.

(a) Make any *intervention* needed to preserve *character-defining elements* physically and visually compatible with the *historic place* and identifiable on close inspection. (b) Document any intervention for future reference.

Part (a) of this standard speaks to balancing the need for an *intervention* to be appropriate in physical and visual terms and subtly distinguishable. Compatibility can allow for some variation in the finish or patina, which will serve as the distinguishing factor. Generally, repair and replacement work only needs to be identifiable on close inspection. However, honesty requires that new work be clearly distinguishable from the old by subtle visual means or by date stamping in inconspicuous locations.

Part (b) emphasizes the requirement for documentation to help future decision makers better understand the historic place. It is important to keep good records of all conservation work, including *maintenance*, and to plan for easy retrieval of that data in the future.

While the main reason for making interventions identifiable is honesty, it is also a means of keeping a record of the place. The historic place itself is its own best document.

The grand residential estate at Parkwood in Oshawa is a cultural landscape that covers 4.8 hectares. Aerial photography was used to document the large-scale site during the conservation process.

STANDARD 10

(a) Repair rather than replace *character-defining elements*. (b) 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. (c) Where there is insufficient physical evidence, make the form, material and detailing of the new elements compatible with the character of the *historic place*.

In areas of Maplelawn and Gardens NHSC in Ottawa where insufficient historical evidence existed, a Rehabilitation approach was taken. New perennial beds were designed using adjacent layouts and historical information from other parts of the garden as inspiration. This approach resulted in compatible new beds that completed the garden and strengthened its overall heritage value.

This standard advocates restraint during a *Rehabilitation* project, recognizing that the wholesale replacement of elements will inevitably have an impact on heritage value. *Rehabilitation* is meant to preserve and not diminish the heritage value of a place; a new use or a substantial reinvestment does not justify extensive replacement.

Part (a) discourages replacing elements that can be repaired. In a rehabilitation project, more latitude is available in choosing the techniques and methods of repair. Modifying a technically problematic detail may be required to ensure long-term performance. In archaeological sites, elements are rarely repaired or replaced. However, in some cases, this may be the most appropriate way to slow deterioration and prevent the loss of heritage value.

Part (b) encourages replacing elements with in-kind versions, when the original is too deteriorated to repair, but enough evidence is available to accurately reproduce the element in kind.

Part (c) addresses the case of historic places in a more advanced state of disrepair, or where significant elements or assemblies are missing. A rehabilitation project must conserve the heritage value of the place despite the insertion of a new element. Compatibility with the historic place is achievable through a range of approaches. The new element could be discreet and compatible in form, material and detailing, or contemporary in design, achieving compatibility through proportion, scale or massing.

Addressing significant deterioration is an implicit goal of this standard. If deterioration is not properly addressed, it can result in a loss of heritage value.

The character-defining elements of Doukhobor Dugout House NHSC in Saskatchewan, such as the window frames, had suffered visible deterioration from exposure to the elements. A long-term repair solution was necessary to prevent further decay and to preserve the site's heritage value.

Following the reinforcement treatment of treating the logs with preservatives, collapsed character-defining elements were reassembled based on records from previous interventions and existing traces on the site.

STANDARD 11

(a) Conserve the *heritage value* and *character-defining elements* when creating any new additions to an *historic place* or any related new construction. (b) Make the new work physically and visually compatible with, subordinate to, and distinguishable from the historic place.

In a rehabilitation project, additions or new construction may be needed to assure the continued use of an historic place. Part (a) indicates that when this is the case, such additions or new construction must not obscure, radically change or have a negative impact on character-defining materials, forms, uses or spatial configurations.

Part (b) requires physical compatibility with the historic place. This includes using materials, assemblies and construction methods that are well suited to the existing materials. New materials and assemblies should also have compatible service lives or durability, so that *maintenance* and repair work can be undertaken concurrently. Not doing so can lead to prematurely replacing adjacent historic materials for the sake of efficiency.

Part (b) also requires that additions or new construction be *visually* compatible with, yet distinguishable from, the historic place. To accomplish this, an appropriate balance must be struck between mere imitation of the existing form and pointed contrast, thus complementing the historic place in a manner that respects its heritage value.

Part (b) also requires an addition to be subordinate to the historic place. This is best understood to mean that the addition must not detract from the historic place or impair its heritage value. Subordination is not a question of size; a small, ill-conceived addition could adversely affect an historic place more than a large, well-designed addition.

These two additions in Montreal show the range of possibilities for successful additions to historic places. Although the addition to Shaughnessy House by the Canadian Centre for Architecture has a larger footprint than the original building, it demonstrates a subtle approach, using compatible scale, proportions of openings, materials and details, which acknowledges the original building. Pointe-à-Callière Museum of Archaeology and History illustrates a contrasting contemporary approach where an archaeological site has been successfully integrated into a new design in ways that communicate the site's heritage value.

STANDARD 12

Create any new additions or related new construction so that the essential form and integrity of an *historic place* will not be impaired if the new work is removed in the future.

The dome of Melville City Hall was originally an uninsulated, painted-metal covering that caused persistent condensation problems. Applying insulating polyurethane foam with aluminized coating was a cost-effective solution that was compatible with the historic metallic look of the dome. If a more elaborate solution is contemplated in the future, the polyurethane could be removed.

Reversible interventions are those that can be removed at a later date without damaging the character-defining elements of the historic place. This is particularly important if the intervention is related to a new use that may later change. For example, a temporary access ramp could be constructed in a manner that allows for easy dismantling without damaging an adjacent character-defining foundation wall or front garden. Reversible interventions are not destructive. A proposal to tear down a wall and store the stone so that it might someday be rebuilt is not a reversible intervention.

A sound addition can enhance the value of an historic place. An addition, in itself, can be intended to last, and should be designed to be physically compatible. Although a certain amount of irreversible change may be unavoidable, strategies to reduce the size and impact of the addition should be explored. This can be achieved, for example, by using existing window openings to insert a connecting door, or attaching an addition to an elevation that is not character defining.

Interventions to accommodate rapidly evolving technologies or short-lived objectives must be designed with particular attention to reversibility. If the new element is equipment that requires regular replacement, it is important to anticipate a large enough access for future upgrades.

Space to temporarily house the Library of Parliament in the former Bank of Nova Scotia Building on Sparks Street in Ottawa. The entire intervention was designed to be reversible.

STANDARD 13

These cast iron columns were uncovered and restored when CentreBeam Place, in St. John, was rehabilitated.

(a) Repair rather than replace *character-defining elements* from the *restoration* period. (b) 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.

Part (a) of Standard 13 emphasizes repairing deteriorated elements from the restoration period. The act of repairing a character-defining element supports the goal of authenticity.

Part (b) recognizes that elements may deteriorate beyond repair, but their deteriorated state, or the state of adjacent surviving elements, may still contain sufficient physical evidence to allow their accurate replacement. Replacing individual components is an ongoing activity where the loss of small parts, such as decorative finials on a fence post, is common. The value does not reside in a single one of these elements, but their continual loss can eventually compromise the heritage value of the whole.

A preservation or rehabilitation project may also include elements of restoration, such as work on an ornamental fountain in the centre of a formal garden. Any restoration interventions must be based on clear physical, documentary or oral evidence and detailed knowledge of the earlier forms and materials.

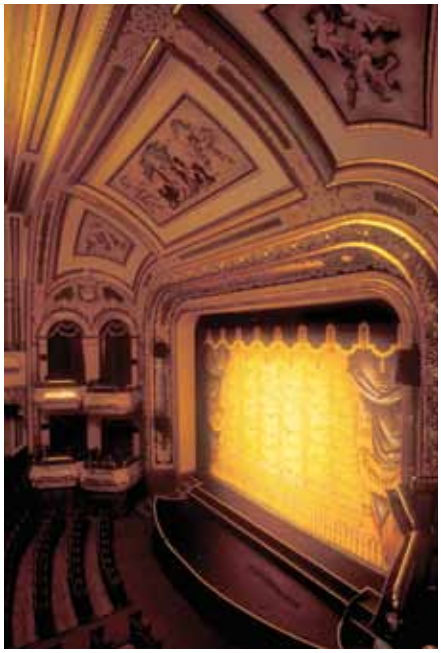
The rhythmic pattern created by the regular spacing of trees along the street is a character-defining element of the Avenue of Trees in Surrey, BC that can be used as evidence to restore the row if a gap develops.

STANDARD 14

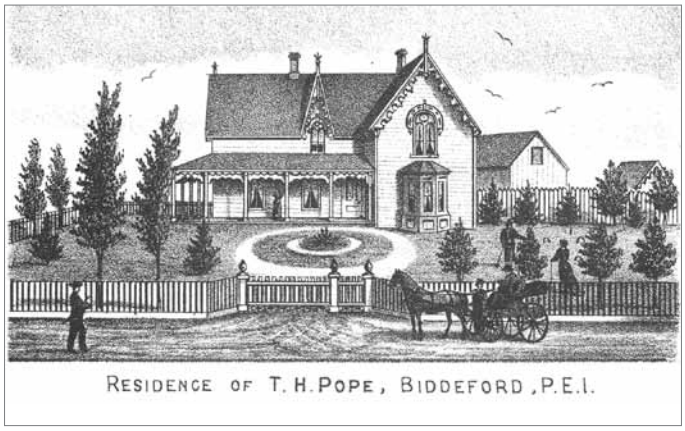
Replace missing features from the *restoration* period with new features whose forms, materials and detailing are based on sufficient physical, documentary and/or oral evidence.

This standard applies mainly to projects where *Restoration* is the primary treatment type and where the absence of character-defining elements from the restoration period has a negative impact on the heritage value of the historic place. Recreating large missing assemblies is challenging because of the extraordinary amount of evidence required to avoid conjecture. Where resources are limited, the urge to restore should be balanced with the practicality of replacing and later maintaining long-missing features.

The reconstruction of an entire historic place is not considered conservation and is not addressed in this document. However, the recreation of a missing built feature in a landscape or heritage district is best regarded as an addition to an historic place, and would be subject to Standards 11 and 12.



In the restoration of the Capitol Theatre in Moncton, photographic and physical evidence supported restoring the interior decorative frescoes in their original colours. Other elements, such as the marquee, were reproduced from documentary photos using new elements to match the forms, materials and detailing.



Based on documentary evidence, including an 1880 engraving, the original fenestration of the Bideford Parsonage Museum in P.E.I. was restored and roof finials replaced.

4

THE GUIDELINES FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA

These examples illustrate the four categories of historic places. Clockwise, from top left: Bar U Ranch in Alberta is a cultural landscape; Saguenay-St. Lawrence Marine Park contains underwater archaeological sites; the Hartt Boot and Shoe Factory in Fredericton is an example of an historic building; and Dredge No. 4 in Dawson City is an engineering work.

4 THE GUIDELINES FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA

Those caring for *historic places* must make specific decisions on how to conserve them, based on a thorough understanding of their *heritage value* and *character-defining elements*. The Guidelines provide direction on how to interpret and apply the *Standards for the Conservation of Historic Places in Canada* to selected aspects of the *conservation* of historic places. The Guidelines provide sound and practical guidance to those involved in conservation planning, bringing them one step closer to an *intervention*, yet stopping short of recommending specific methods or products.

The Guidelines should be consulted throughout the conservation decision-making process. All stakeholders in a conservation process—owners, managers and developers of historic places, conservation professionals and contractors, and regulatory authorities—will benefit from them. The Guidelines are not meant to give case-specific advice or address exceptions or rare examples. Ultimately, it is the responsibility of the owner and the conservation team to understand the particular case and make detailed conservation decisions for the specific historic place.

To cover any and every type of historic place, separate Guidelines are provided for four broad categories of historic places: Cultural Landscapes, Archaeological Sites, Buildings and Engineering Works. Any given historic place may be a mix of these four categories. A thorough understanding of the site will indicate what mix of guidelines could apply to a given project or maintenance activity. All relevant guidelines should be consulted. The introductions to the sections for each category of historic place should be read first, followed by those guidelines relevant to the given work.

Because materials are common among the different categories of historic places, a fifth category, Guidelines for Materials, addresses the materials that may be part of each. For example, advice related to conserving the wooden shingles of a roof will be found in the Guidelines for Buildings under Roofs, and in the Guidelines for Materials under Wood and Wood Products.

APPLYING THE GUIDELINES

The Guidelines should be consulted only when the element to be intervened upon has been identified as a character-defining element in a Statement of Significance or equivalent document. The General Guidelines apply to all interventions, whether the primary treatment is Preservation, Rehabilitation or Restoration. There are additional guidelines for Rehabilitation and Restoration projects.

The Guidelines are presented in an ascending sequence of lesser to greater intervention—from **documenting**, to **maintaining**, **repairing**, and **replacing** character-defining elements. Because the expressed objective of the Standards is to conserve the heritage value of an historic place, projects should focus on the first activities in the sequence of Guidelines; that is, applying the standard of *minimal intervention* and resorting to the last activities in the sequence only when essential functional goals cannot otherwise be met.

The Guidelines use a **Recommended** and **Not Recommended** format. Approaches or techniques that are consistent with the *Standards for the Conservation of Historic Places in Canada* are listed in the Recommended column on the left. The Not Recommended column on the right identifies actions or approaches that do not conform to the Standards. In cases where a non-recommended action does not enrich the understanding of the advice offered, the Not Recommended column remains blank. The guidelines are numbered for easy referencing. For example, the ninth guideline under 4.3.4, Exterior Walls, can be identified as guideline 4.3.4.9.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

The Guidelines always begin with a recommendation on **understanding** the character-defining element and how it contributes to the heritage value of the historic place.

Next are recommendations on **documenting** the character-defining elements before beginning project work. An overall **assessment** of their physical condition, using methods that respect the principle of minimal intervention, should always begin at this level.

Recommendations are then presented on **protecting and maintaining** elements, with an emphasis on recognized conservation methods, and daily, seasonal and cyclical maintenance. Protection generally represents the least degree of intervention.

Then, recommendations are provided on **retaining** sound elements and elements that can be repaired, rather than removed or replaced.

Recommendations on **stabilizing** fragile and deteriorated elements follow. This typically involves interim structural reinforcement, weather protection or correcting unsafe conditions, as required, until any additional work is undertaken. A limited amount of **repair and replacement** may be acceptable at this point for extensively deteriorated or missing parts of an element, if the repair focuses on using limited reinforcement or well-tested *consolidants*, or if the replacement is done *in kind* , where there are surviving prototypes. See the info-box below on Replacing Character-Defining Elements. Note that in the context of specific historic places and associated character-defining elements, the verb "repair" may not be suitable. For example, as part of the restoration of vegetation features of a cultural landscape, the verbs "re-establish", "reinstate" or "rejuvenate" may be more appropriate.

ADDITIONAL GUIDELINES FOR REHABILITATION

In each section of the Guidelines, additional guidelines are provided for work that relates to additions or alterations to accommodate an expanded program or a new use, and the application of current codes and standards to meet the requirements of health, safety, security, accessibility and sustainability.

Additions or Alterations to an Historic Place

The construction of an exterior addition in an historic place may seem essential for a proposed new use, but the Guidelines emphasize that such new additions should be avoided, if possible, and considered only after it is determined that those needs cannot be met on another site or by altering secondary, non character-defining interior spaces. An addition should be designed so that the heritage value of the historic place is not impaired and its character-defining elements are not obscured, damaged or destroyed. The addition should be physically and visually compatible with, subordinate to, and distinguishable from the historic place as stated in Standard 11.

The guidelines on Additions or Alterations found under the Additional Guidelines for Rehabilitation Projects apply to additions that range in size from a new building in a heritage district, to a new wing or storey on an existing historic building, to a new element like an interior partition or handrail. While the same principles of minimal intervention, compatibility and reversibility apply regardless of size, the ultimate goal is to protect heritage value.

In a *Rehabilitation* project, some alterations to an historic place may be needed to assure its continued use. There is a need to find creative solutions that balance health, safety, security, accessibility, sustainability and other regulations, and the preservation of the character-defining elements of an historic place.

Health, Safety and Security

In undertaking work on historic places, consider the impact that compliance with current health and safety codes (public health, occupational health, life safety, fire safety, electrical, seismic, structural and building codes) and increased security requirements will have on an historic place's heritage value and character-defining elements. Special coordination with the proper code officials may be required. It is often necessary to look beyond the 'letter' of code requirements to their underlying objective; most modern codes allow for alternative approaches and reasonable variance to achieve compliance.

Some historic materials (for example, insulation, lead paint, etc.) contain toxic substances that are potentially hazardous to people. Careful investigation and analysis may determine that some form of abatement is required. All workers involved in the encapsulation, repair or removal of known hazardous materials should be adequately trained and wear proper protective gear as required by applicable legislation. Finally, a maintenance protocol for historic places known to contain such materials should be developed to include proper warnings and precautions.

Increased concerns about security within or around buildings and public places can also lead to introducing new measures, such as equipment and barriers that should be carefully planned to reduce their impact on the heritage value of an historic place. Approaches based on the objectives of minimal intervention and compatibility should be developed for these requirements.

Accessibility

Providing people of all ages, interests and abilities with access to historic places is highly desirable and a frequently mandated social goal. Generally, the solutions that best balance accessibility needs with heritage value are those that enhance the use and appreciation of an historic place for everyone. Work should be carefully planned and undertaken so that impact on an historic place's heritage value and character-defining elements is minimized: the objective is to provide the highest level of access with the lowest level of impact. To determine the most appropriate solutions, accessibility and conservation specialists, and users, should be consulted early in the planning process.

Sustainability

The goals of environmental *sustainability* should be balanced with heritage conservation objectives when making decisions on sustainability-related interventions. Environmental assessment, which is a legislated requirement in many jurisdictions, identifies possible effects, intended or unintended, on both ecological and cultural resources. Understanding the past and current environmental characteristics and performance of an historic place is

required to identify appropriate solutions. Before adapting or retrofitting historic places to make them more sustainable, the first step should always be to identify and evaluate character-defining features to assess their inherent environmental potential. Any decision to proceed with resource-saving measures involving energy, water or materials should include a step where the environmental benefits of these measures is weighed against their impact on heritage value. Solutions should be found that take advantage of the inherent durability and adaptability of most historic places.

Modifications undertaken to comply with environmental assessment or to meet environmental objectives, such as protecting the nesting area of an endangered species, should not result in the damage or loss of an historic place's heritage value. To determine the most appropriate solutions to meet environmental objectives, experts and officials should be consulted early in the planning process. It may be possible to develop systems, methods, devices or technologies of equivalent or superior effectiveness to those prescribed by regulation to minimize the impact on character-defining elements.

ADDITIONAL GUIDELINES FOR RESTORATION

In each section of the Guidelines, additional guidelines are provided for work that relates to irreversible changes, including removing elements from periods other than the chosen restoration period and recreating missing features from the restoration period. The preservation and restoration of existing elements should be addressed before considering work of this kind.

In a *Restoration* project, the goal is to depict the appearance of an historic place or an individual component as it appeared at a particular period in its history (usually the most significant). Thus, specific guidance is included on **removing** or altering non character-defining features from periods other than the restoration period. (Because this can result in considerable change to an historic place, *Restoration* should be undertaken only when the place's heritage value relates specifically to a single period in its history.) Before such materials, features, spaces, or finishes from other periods are altered or removed, they should be well documented.

Additional guidance on **recreating missing features** from the chosen restoration period of an historic place is provided below in the discussion on replacement as part of a restoration project.

REPLACING CHARACTER-DEFINING ELEMENTS

Replacement of all or parts of character-defining elements should only be considered when repair is not possible, and if there is sufficient physical evidence to match the forms, materials and detailing of a sound version of the same element. Replacement may be required because an existing feature is so severely deteriorated or damaged that repair is not possible, or because a feature is missing entirely. In all cases where replacement is required, sound elements that may be part of a larger grouping should be preserved. For example, a few brackets in a cornice, a few windows in a factory or a few plantings in a flowerbed may be salvageable, even though the overall character-defining element is severely damaged.

It is particularly important to understand the distinction between replacement as part of rehabilitation or restoration, as described in Standards 10 and 13.

Replacement as Part of Rehabilitation
In a *Rehabilitation* project, replacing a character-defining feature that is beyond reasonable repair may be appropriate if its essential form and detailing are still evident. Replacing a feature that is missing, but known from physical, documentary and oral evidence, may be appropriate; however, accepting the loss and not intervening is another possibility. (Where an important feature is missing, its replacement is always recommended in these Guidelines as the preferred course of action.) The approach for replacement work will depend on the overall design approach and design intentions, and most particularly, on achieving a visual and functional balance between the new work and the historic place. In some cases, the preferred design approach will be replacement *in kind* ; in other cases, substitute forms, materials or detailing may be appropriate. In both situations, the replacement should be visually and physically compatible with, and distinguishable from, the historic place. If the replacement is in kind, the work need only be distinguishable on close inspection.

Replacement as Part of Restoration
In a *Restoration* project, replacement, as a rule, should be done in kind. Recreating earlier forms, materials, textures, finishes, colours and detailing, and patterns and relationships, can help recover or represent an historic place as it appeared at a particular period in its history. Success is largely a question of accuracy. This requires scrupulous attention to the physical, documentary and oral evidence, and careful monitoring of the replication process. The replacement work is normally distinguishable only on close inspection or as part of the project documentation. If there is insufficient physical, documentary and oral evidence to establish a reasonable level of accuracy, then *Restoration* is probably not an appropriate treatment.

APPLYING THE GUIDELINES TO MONTMORENCY FALLS, A CULTURAL LANDSCAPE THAT INCLUDES BUILDINGS, ENGINEERING WORKS AND ARCHAEOLOGICAL SITES

Designated a historic site in 1994, Montmorency Falls is a place of natural beauty that includes tourism and recreational buildings and built features. In addition to the river and 84 metre high waterfall, the site includes exceptional water and geomorphological features, and six known archaeological sites, as well as landscape elements, structures, buildings and vestiges of 17th century agricultural settlements, 18th century farmhouses, 19th century industry, and 19th and 20th century tourism activities. Framed by a partly wooded escarpment, the site is located on two levels formed by a deep crevasse: the plateau of the Montmorency River and the basin of the falls at the St. Lawrence River level. (Source: Site historique de la Chute-Montmorency, *Canadian Register of Historic Places*.)

The Montmorency Falls Historic Site is a natural site that includes the falls as well as archaeological sites, landscape elements, structures, buildings and vestiges of 17th century agricultural settlements.

Refer to Heritage Value and Character-defining Elements

According to the Quebec government's Statement of Significance (SOS) posted on the *Canadian Register of Historic Places*, "the heritage value of the Montmorency Falls historic site resides in its historic significance, which is linked to various human activities and the surrounding land." The site's character-defining elements include features that relate to its historic significance such as built elements that document the history of varied human activities, vestiges of industrial activities and archaeological sites and potential archaeological resources that remain buried.

"The site's heritage value also stems from its outstanding landscape." Character-defining elements of its landscape include natural features located upstream or near Montmorency Falls, such as the Montmorency River with its wooded banks and the waterfall itself; water resurgences and geological formations visible at this location; park landscaping, lookout belvederes, stairways and many pathways; and views of the site itself and the surrounding panoramas of the St. Lawrence River, Île d'Orléans and Quebec City. Finally, "the site's heritage value also rests on its ethnological significance due to the diversity in cultural events that are evoked."

Conservation Treatments and Standards

A wide variety of conservation work is required for a complex historic place such as the Montmorency Falls Historic Site. This work would include *Preservation*, through maintenance or small repairs of character-defining elements, and *Rehabilitation* for more major repairs, upgrades or additions to address public use, codes and standards. The *Restoration* of deteriorated or missing character-defining elements is less common. *Restoration* is associated with interventions on features where the values are clearly related to a specific period in the past. Depending on the proposed intervention or activity, consult the General Standards (1 to 9) along with the related Additional Standards for Rehabilitation (10 to 12) or Additional Standards for Restoration (13 and 14).

Guidelines for Cultural Landscapes

As a site that has changed over time due to human activities and one that is largely valued today for its natural features, the Montmorency Falls Historic Site is an evolved cultural landscape. Protection and conservation of natural features, such as the hydrological and geomorphological systems and woods and ecosystems, must be balanced with the conservation and ongoing use of structures associated with past and surviving farming, industrial and tourism activities.

For example, for an intervention that might affect the landscape, such as the installation of elevated footpaths above and below the falls along the cliffs, the Guidelines for Visual Relationships, Landforms, Spatial Organization, Circulation, Ecological Features and Water Features should all be considered.

Guidelines for Archaeological Sites

The SoS for Montmorency Falls Historic Site refers to both known archaeological sites and potential archaeological resources that remain buried. Archaeological sites provide evidence of activities from pre-historic times, to early European settlement and industrial uses. Protecting and conserving archaeological sites must be carefully balanced with projects that address their interpretation or public use.

For example, for an intervention that might affect an archaeological site, such as the maintenance of an exposed industrial vestige by removal of vegetation, consult the guidelines for Archaeological Sites as well as the guidelines for Industrial Sites, and Sites in Cultural Landscapes.

Guidelines for Buildings

The SoS for the Montmorency Falls Historic Site identifies multiple buildings as features related to its historic significance including Manoir Montmorency and its outbuildings, St. Mary's Anglican Chapel, the guardhouse and Wolfe's house. It also identifies the Vézina and Claude-Gilbert-et-Claire-Gagnon family homes as "monuments historiques cités" (recognized historic monuments). Protecting and conserving these buildings and their character-defining elements must be balanced with adaptation or upgrades for new uses.

Both known archaeological sites and those that remain buried are mentioned in the Statement of Significance for the site.

For example, for an intervention that might affect a building, such as the rehabilitation (including an addition) and partial restoration of exterior and interior elements of the Ste-Marie Chapel, the guidelines for Exterior Form, Interior Arrangement, Roofs, Exterior Walls, Windows, Doors and Storefronts, and Interior Features should all be considered.

In addition, the Guidelines for Materials and the related Guidelines for Cultural Landscapes that guide the treatment of the building setting should be consulted.

St. Mary's Anglican Chapel.

Guidelines for Engineering Works

The SoS for the Montmorency Falls Historic Site refers to engineering works at Montmorency Falls, including civil, industrial and military works. These works include the reconstructed 1759 British redoubt; the bridge spanning the Montmorency Falls; the piers supporting the 1856 bridge; and vestiges of industrial activities, including hydroelectric installations at Montmorency Falls and Marches-Naturelles Falls. Protecting and conserving these works and their character-defining elements must be balanced with adaptation or upgrades for new uses.

For example, for an intervention that might affect an engineering work, such as the stabilization and repair of the piers supporting the bridge over the falls, the guidelines for Constructed Elements and Functional Arrangement should be considered.

As well, the Guidelines for Buildings, the Guidelines for Materials and the related Guidelines for Cultural Landscapes that guide the treatment of the setting should be consulted.

Guidelines for Materials

While specific materials are not identified in the SoS, protecting and conserving the materials found in the site's various buildings, built features and constructed elements, including groups of buildings, engineering works and park structures, are essential for conserving these structures and the overall site. Conserving materials that are part of character-defining elements may be necessary in the ongoing maintenance, or in larger conservation projects that address major repairs. Both the general guidelines that apply to all materials and the guidelines that apply to the specific materials of each character-defining element should be consulted.

For example, for an intervention that might affect the materials of a character-defining element, such as the repair and partial replacement of a "tôle à la canadienne" metal roof, the guidelines for All Materials and Metals should be considered, in addition to the appropriate guidelines for Buildings, in this case, Roofs.

As this example illustrates, there is often a strong overlap between the five sections of the guidelines. The guidelines should therefore be used in an integrated manner that balances the conservation objectives of a variety of resource types of historic places with their specific heritage values and character-defining elements. The appropriate guidelines to follow should be determined following an analysis of how the character-defining elements can best be protected in the context of a specific conservation intervention.

The bridge over the falls.

Remains of hydroelectric installations.

Elevated footpaths along the cliffs.

4.1

GUIDELINES FOR CULTURAL LANDSCAPES, INCLUDING HERITAGE DISTRICTS

Cultural landscapes are divided into three categories and also include heritage districts. Clockwise, from top left: Confederation Centre of the Arts in Charlottetown is an example of a designed landscape; the Victoria Settlement in Alberta illustrates an organically evolved landscape; Xá:ytem (Hatzic Rock) in British Columbia is an associative landscape; and the Winnipeg Exchange District is an urban heritage district.

4.1 GUIDELINES FOR CULTURAL LANDSCAPES, INCLUDING HERITAGE DISTRICTS

From its dense urban areas in the South to the wide open expanses in the North, the Canadian landscape exhibits countless contrasts and subtleties. Natural forces and climatic conditions have combined to form landscapes that are uniquely different from one region to another. Across this land, and across the centuries, the peoples of Canada have continually shaped these landscapes, which today bear witness to their individual histories, traditions and lifestyles.

For the purposes of these guidelines, a *cultural landscape* is defined as any geographical area that has been modified, influenced or given special cultural meaning by people, and that has been formally recognized for its heritage value. Cultural landscapes are often dynamic, living entities that continually change because of natural and human-influenced social, economic and cultural processes.

While the resulting forms may sometimes be simple and other times complex, there is a common language and approach developed for the conservation of cultural landscapes. For example, a widely accepted framework developed by UNESCO places cultural landscapes into three categories: *designed; organically evolved (vernacular); and associative* (UNESCO, Operational Guidelines for the Implementation of the World Heritage Convention, 2008, Annex 3).

Cultural landscapes vary dramatically in size and character—from heritage districts, to prehistoric rock art sites, and to designed landscapes, such as parks and gardens. Indeed, cultural landscapes can be as old as ancient land and water routes, or as recent as a mid-20th-century parkway system.

Before undertaking project work affecting character-defining elements, a survey of their characteristics, conditions and interrelationships should be prepared—such as the interrelationship between built features, water, vegetation and viewscapes at Hatley Park near Victoria.

Regular, ongoing maintenance helps extend the life of character-defining elements, and is an essential part of the conservation program. Every year dedicated volunteers spend thousands of hours caring for and preserving the historic garden at Maplelawn and Gardens NHSC in Ottawa.

HERITAGE DISTRICTS

A heritage district is a cultural landscape. The Canadian Register of Historic Places (CRHP) defines a heritage district as "a place comprising a group of buildings, structures, landscapes and/or archaeological sites and their spatial relationships where built forms are often the major defining features and where the collective identity has heritage value for a community, province, territory or the nation." Heritage districts can be urban or rural. Most heritage districts are governed by municipal by-laws that are complemented by guidelines to protect their heritage value.

Different Canadian jurisdictions use different terms to identify heritage districts, including: "historic district", "heritage precinct", "heritage conservation area", and "secteur patrimonial" and "arrondissement historique" (French). Each jurisdiction provides its own definition of what constitutes this type of historic place.

APPLYING THE GUIDELINES

The Guidelines for Cultural Landscapes are divided into 11 subsections: evidence of land use; evidence of traditional practices; land patterns; spatial organization; visual relationships; circulation; ecological features; vegetation; landforms; water features; and built features. These guidelines pertain to the elements of a cultural landscape or to the spatial or visual relationships between them. The elements may have been introduced or transformed by people or may be natural with a recognized heritage value. Because these elements are usually interrelated, users should refer to other relevant guidelines when conserving a cultural landscape, to ensure that all character-defining elements are protected, and the heritage value of the historic place preserved.

All treatment types apply to cultural landscapes. However, restoration as a primary treatment usually applies only to designed cultural landscapes or organically evolved, relict landscapes for which the heritage value relates to a specific period in time. Restoration as a 'secondary' treatment can also apply to specific character-defining elements in an organically evolved, continuing landscape or in an associative landscape (See UNESCO categories of *cultural landscapes* in the Glossary).

Because cultural landscapes can also contain buildings, engineering works and archeological resources, reference should be made to those guidelines when appropriate. Also refer to the Guidelines for Materials, which encompass traditional as well as modern construction and finishing materials.

THE IMPORTANCE OF SETTING IN THE SIGNIFICANCE OF CULTURAL LANDSCAPES

The setting often contributes to the significance of a cultural landscape and may help explain its origins and subsequent development and evolution. The International Council on Monuments and Sites (ICOMOS) defines the setting of a heritage structure, site or area as "the immediate and extended environment that is part of, or contributes to, its significance and distinctive character" (ICOMOS, Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas, 22 November 2005, p. 2).

In a cultural landscape, the setting often corresponds to the visible boundaries (whether natural or human-made) that encompass the site. In most cases, the setting goes beyond the boundaries of the historic place and understandably, interventions within the broader setting, such as the addition of a high-rise building in the sight line of a heritage district, can affect its heritage value. A good strategy for the preservation of the setting of an historic place is to ensure that adjacent property owners are aware of its heritage value and how interventions on their property can affect that value.

4.1.1 EVIDENCE OF LAND USE

These guidelines provide direction when the evidence of a land use has been identified as a character-defining element of an historic place. They apply specifically to the features that express or support a past or continuing land use when these features have been identified in a *Statement of Significance*.

In the context of these guidelines, land use refers to the human use of the natural environment. It includes activities that significantly modify aspects of the natural environment into a built environment, such as fields, pastures and settlements, but also includes land uses that have a lighter impact, such as hunting and trapping, maple syrup harvesting, or fishing.

Buxton Settlement in Chatham, ON, survives today as a distinct cultural landscape that continues to function as a rural agricultural community while preserving tangible reminders of its historic past. Tree lines and hedgerows are character-defining elements that help define the historic agricultural land use. Preserving the evidence of land use includes maintaining the tree lines and hedgerows and replacing those that are extensively deteriorated.

Land use can evolve over time. When a required change in land use demands changes to the physical form of the landscape, it is important to carefully assess the viability of the proposed changes to avoid consecutive land use changes that might gradually erode the heritage value of the historic place. For example, changing from an industrial use to a residential use in a heritage district may require changing the landscape character or increasing the built density of the historic place.

These guidelines provide general recommendations for the conservation of the features of a cultural landscape that express or support a past or continuing land use. While other guidelines focus on specific evidence of land use, such as built features or circulation, these guidelines address land use as a general consideration. Other relevant guidelines, such as Land Patterns or Evidence of Traditional Practices, should be consulted when appropriate.

The huge and uncluttered lawn of the Parliament Hill Grounds in Ottawa is an outstanding landscape feature that expresses the symbolic importance of Parliament Hill. It continues to be used for many nationally significant events and ceremonies, including the annual celebration of Canada Day.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** land use and how it contributes to the heritage value of the cultural landscape.	
2	**Understanding** the environmental, economic and social contexts that support past or continuing land uses. This can include climate and ecological processes, available workforce and markets, and consultation with practitioners and community dwellers.	
3	**Documenting** the evidence of past or continuing land uses and any evolution in land use before beginning project work.	Undertaking interventions that will have an impact on the evidence of past or continuing land uses, without first understanding and documenting the values that contribute to their meaning.
4	**Assessing** the overall condition of the feature that supports a land use early in the planning process so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining a feature that supports a land use by adopting non-destructive maintenance methods in daily, seasonal and cyclical tasks to extend the life expectancy.	Allowing the features that support a land use to be altered or lost by incompatible development or neglect.
6	**Repairing** deteriorated parts of a feature that supports a land use, using recognized conservation methods.	Replacing a feature that supports a land use when that feature can be repaired.
7	**Replacing** in kind extensively deteriorated or missing parts of a feature that support a land use where there are surviving prototypes.	Replacing an entire feature that supports a land use, when limited replacement of deteriorated and missing parts is appropriate.
8	**Documenting** all interventions that affect the land use and ensuring that this documentation will be available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
9	**Repairing** an extensively deteriorated or missing feature that supports a past or continuing land use by using non-destructive methods and materials, such as regenerating a deteriorated pasture at a designated farm site and reintroducing grazing animals to maintain the meadow.	Replacing an entire feature that supports a past or continuing land use, when repair or limited replacement of deteriorated or missing parts is possible.
10	**Replacing** in kind an entire feature that supports a past or continuing land use when that feature is too deteriorated to repair, such as replanting a clear-cut woodlot with the same tree species that was removed.	Replacing an irreparable feature with a new feature that does not support the past or continuing land use.
11	**Replacing** a missing historic feature by designing a new built or landscape feature that is compatible with the land use of the cultural landscape, and is based on physical, documentary or oral evidence.	Creating a false historical appearance because the new feature is incompatible, or based on insufficient physical, documentary or oral evidence.
	ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE	
12	**Designing** a new feature when required by a new use that is compatible with the past or continuing land use. For example, building a visitor access road along the margin of a field and woodlot in an historic farm site, so that both can continue to function.	Adding a new feature that alters or obscures a continuing land use, such as locating a visitor parking lot in a character-defining farmyard. Introducing a new feature that is incompatible in function with the past or continuing land use.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
13	**Repairing** a deteriorated feature that supports the land use from the restoration period using a minimal intervention approach.	Replacing an entire feature that supports the land use from the restoration period, when repair is possible.
14	**Replacing** in kind an entire feature from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented to guide future research and treatment.	Removing an irreparable feature from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
15	**Removing** or altering non character-defining features that support the land use from periods other than the chosen restoration period.	Failing to remove non character-defining features from another period that confuse the depiction of the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
16	**Recreating** a missing feature that supports the land use from the restoration period, based on physical, documentary and oral evidence.	Installing a feature that was part of the original plan, but was never actually built, or constructing a feature thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.2 EVIDENCE OF TRADITIONAL PRACTICES

These guidelines provide direction when the evidence of a traditional practice has been identified as a character-defining element of an historic place. They apply specifically to the features that express or support a past or continuing traditional practice when these features have been identified in a *Statement of Significance*.

Located south of Rankin Inlet, NU, Marble Island has a long history of diverse use. Inuit first came to the island as seasonal hunters, followed by European explorers and then by Scottish and American whalers. Today, traces of each group, such as stone tent rings, graves and kayak remnants, can be found among the summer vegetation. Understanding the users' traditional practices and how they have contributed to the heritage value of this cultural landscape is essential to good preservation practice.

Traditional practices are based on the close observation and understanding of a local landscape by a cultural community who has a long association with that place. These practices include the beliefs, wisdom, activities, traditions and skills derived from extended observations of the land and its creatures, weather, seasonality and other cycles, and spiritual associations.

Traditional practices are passed down to generations and provide a sense of continuity for the individuals in the cultural community. The length of association with a place may vary among peoples and different cultural groups may value the same cultural landscape. When planning interventions that could affect the cultural landscape, it is important to balance these interests and ensure that the capacity to express the traditional practices of each community is respected.

Any historic place may have been influenced by traditional practices that evolve over time; for example, stone masonry traditions were transferred and adapted through apprenticeship systems from the Middle Ages to the present day. Traditional practices may be the strongest influence in determining heritage value, even if evidence of any type of construction or human-generated change appears insignificant. The natural landscape may reflect traditional knowledge through beliefs, oral traditions and practices known only to the cultural community.

Material features or landscape patterns or forms that result from traditional practices may be identified as character-defining elements in a cultural landscape. In Aboriginal cultural landscapes, the extent to which such character-defining elements can be identified will depend on how much information the communities are willing and able to share.

These guidelines provide general recommendations for the conservation of the features of a cultural landscape that express or support past or continuing traditional practices. Other relevant guidelines, such as Evidence of Land Use or Land Patterns, should be consulted when appropriate.

Victoria's Chinese cemetery lies near the rocky shore of Harling Point. Here simple markers are found among wildflowers in a setting selected according to the ancient concept of feng shui. Descendants of families buried in this cemetery still visit the site to burn incense, leave offerings of food and artificial paper money following traditional practices. All Preservation activities affecting character-defining elements on this site should only be done after consulting the cultural community.

Preservation of the totems at Nan Sdins, Gwaii Haanas includes their stabilization, while continuing to allow their gradual deterioration. The values associated with the totems include their eventual return to the earth.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** traditional practices and how they contribute to the heritage value of the cultural landscape.	
2	**Understanding** the local environmental context, including climate, prevailing winds, underlying topography and ecological processes integral to traditional practices.	
3	**Documenting** aspects of traditional practices prior to beginning project work, including consulting with the cultural community on the ways that traditional practices have changed over time.	Documenting only material features of the cultural landscape, and neglecting to document the traditional practices associated with them.
4	**Assessing** the overall condition of the features that support traditional practices early in the planning process, so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining the features that support traditional practices by using non-destructive methods in daily, seasonal and cyclical tasks in keeping with those practices.	Allowing the features that support traditional practices to be altered or lost through incompatible development or neglect.
6	**Repairing** or rejuvenating deteriorated parts of features that support traditional practices using recognized conservation methods. Where possible, conservation work should be done according to traditional practices.	Replacing features that support traditional practices when those features can be repaired or rejuvenated.
7	**Replacing** in kind extensively deteriorated or missing parts of features that support traditional practices where there are surviving prototypes. The new work should match the old in form, location, orientation, materials, detailing and craftsmanship.	Replacing an entire feature that supports traditional practices, when limited replacement of deteriorated and missing parts is possible.
8	**Documenting** all interventions that affect the features that support traditional practices, and ensuring that this documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
9	**Repairing** or rejuvenating extensively deteriorated or missing features that support traditional practices within the cultural landscape, by using non-destructive methods and materials. For example, using only native plant species significant to the cultural community, when rejuvenating vegetation or ecological features important to traditional practices.	Replacing an entire feature that supports traditional practices when repair or rejuvenation is possible.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Replacing** in kind an entire feature that supports traditional practices when that feature is too deteriorated to repair or rejuvenate, such as replanting a clear-cut forest with the type and mix of trees removed.	Replacing an irreparable feature with a new feature that does not support the past or continuing traditional practice.
	ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE	
11	**Designing** a new feature when required by a new use that does not obscure, damage or destroy other features also important to traditional practices.	Adding a new feature that detracts from, damages, or destroys features that support traditional practices. Introducing a new feature that is incompatible with the past or continuing traditional practice.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
12	**Repairing** deteriorated features that support traditional practices from the restoration period using a minimal intervention approach. Where possible, repair activities should be done according to traditional practices.	Replacing an entire feature that supports traditional practices from the restoration period when repair is possible.
13	**Replacing** in kind an entire feature from the restoration period that is too deteriorated to repair or rejuvenate, using the same configuration and design details. The new work should be well documented to guide future research and treatment.	Removing an irreparable feature from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
14	**Removing** or altering non character-defining features from periods other than the chosen restoration period that obscure the historic features that support traditional practices within the cultural landscape.	Failing to remove non character-defining features from another period that confuse the understanding of traditional practices during the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
15	**Recreating** a missing feature that supports traditional practices from the restoration period, based on physical, documentary and oral evidence.	Installing a feature that could have been important to traditional practices, but was never implemented, or introducing a feature thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.3 LAND PATTERNS

These guidelines provide direction when land patterns have been identified as character-defining elements of an historic place. Land pattern refers to the overall arrangement and interrelationship of the larger-scale aspects of a cultural landscape, whether natural or human-made.

Land patterns help us understand how naturally occurring elements, such as forests, meadows, rivers, lakes, hills or valleys, fit together and fit with human-made elements such as farm fields, pastures, significant built features and major circulation systems.

The overall arrangement of landscape may best be appreciated from an aerial perspective. The land patterns created by the interrelationship of larger landscape components, such as the topography, cultivated fields and human settlements of Neubergthal in Manitoba are often more obvious from the air.

Historic aerial photography and maps are important tools for describing land patterns and their changes over time. As well, consultation among communities, Aboriginal groups and ecosystem specialists can help us understand the traditional practices and natural processes that may have shaped land patterns.

Because land patterns refer to the mutual influences and interactions between nature and humans and the interrelationships of large-scale elements, they can be important character-defining elements of a cultural landscape. Land patterns are important for cultural landscapes regardless of whether they are relatively unchanged from their natural state, or highly manipulated through human activity or natural events.

These guidelines provide general recommendations for the conservation of the land patterns of a cultural landscape. Other relevant guidelines, such as Evidence of Land Use or Evidence of Traditional Practices, should be consulted when appropriate.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the land patterns and how they contribute to the heritage value of the cultural landscape.	
2	**Understanding** the local environmental context, including climate, prevailing winds, geology, underlying topography and ecological processes.	
3	**Documenting** the overall pattern of the landscape: the size, configuration, proportion and relationship of its larger components, such as forests, fields or subdivisions, and its evolution and condition before beginning project work. This can include identifying the values that contribute to the meaning of land patterns, such as associations from Aboriginal oral traditions, or the expression of cultural traditions that originated from other countries.	Undertaking interventions that will affect land patterns without first documenting and understanding their characteristics, relationships, evolution, conditions, intangible values and environmental context.
4	**Assessing** the overall condition of the land patterns early in the planning process so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining features that define land patterns by using non-destructive methods in daily, seasonal and cyclical tasks. This could include limiting the impact of ecological processes, such as erosion, and monitoring sensitive areas.	Allowing land patterns to be altered or lost by incompatible development or neglect.
6	**Retaining** sound land patterns or deteriorated land patterns that can be repaired or rejuvenated.	
7	**Repairing** or rejuvenating deteriorated parts of a feature of the land pattern, using recognized conservation methods. Repair may also include the limited replacement in kind of those extensively deteriorated or missing parts of land pattern elements. Repairs should be physically and visually compatible.	Replacing a feature of the land pattern when that feature can be repaired or rejuvenated.
8	**Replacing** in kind extensively deteriorated or missing parts of land patterns where there are surviving prototypes.	Replacing an entire feature of the land patterns when limited replacement of deteriorated and missing parts is possible.
9	**Documenting** all interventions that affect the land pattern, and ensuring that this documentation will be available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Repairing** or rejuvenating an extensively deteriorated or missing feature that defines a land pattern, by using non-destructive methods and materials, such as regenerating a deteriorated meadow.	Replacing an entire feature that defines a land pattern when repair or limited replacement of deteriorated or missing parts is possible.
11	**Replacing** in kind an entire feature that defines a land pattern when that feature is too deteriorated to repair, such as replanting a clear-cut woodlot. The replacement feature should be as similar as possible to the original, both visually and functionally.	Replacing an irreperable feature with a new feature that does not respect the land pattern.
12	**Replacing** a missing historic feature by designing a new feature that is compatible with the land patterns of the cultural landscape, and is based on physical, documentary and oral evidence.	Creating a false historical appearance because the new feature is incompatible with the land pattern, or based on insufficient physical and documentary evidence.

ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE

13	**Designing** a new feature when required by a new use that does not obscure, damage or destroy character-defining land patterns, such as locating a new road along the edge of a forest.	Introducing a new feature that is incompatible in size, scale or design with the land pattern.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
14	**Repairing** or rejuvenating a declining feature that defines a land pattern from the restoration period using a minimal intervention approach.	Replacing an entire feature that defines a land pattern from the restoration period, when repair or rejuvenation is possible.
15	**Replacing** in kind an entire feature that defines a land pattern from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable feature that defines a land pattern from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
16	**Removing** or altering non character-defining features from periods other than the chosen restoration period, which intrude on the land patterns.	Failing to remove non character-defining features from another period that confuse the depiction of the land patterns during the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
17	**Recreating** a missing feature important to the land patterns that existed during the restoration period, based on physical, documentary and oral evidence.	Installing a feature that was part of the original land pattern, but was never actually built, or constructing a feature of the land pattern that was thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.4 SPATIAL ORGANIZATION

These guidelines provide direction when spatial organization has been identified as a character-defining element of an historic place. Spatial organization refers here to the arrangement of spaces in a cultural landscape.

Landscape features, whether natural or human-made, can define the volume of an outdoor space. In small landscapes, the vertical planes of an outdoor space may be formed by vegetation, such as hedges, garden beds or forest margins, or by the exterior walls of buildings, earthen ramparts, fences or stone walls. The ground plane may be made of natural materials, such as earth, sand or grass; or manufactured materials, such as pavers, asphalt or gravel. The overhead plane can be provided by the tree canopy, but can also be defined by built features such as *pergolas*.

The character-defining spatial organization of Motherwell Homestead in Saskatchewan was conserved when the landscape was restored. The orientation, alignment, size, configuration and interrelationships of its component features, including the formal tennis lawn and ornamental garden (foreground), the household vegetable garden (beside the implement shed) and the grain fields beyond, were carefully preserved.

The position of natural and built elements, and how they are visually and physically connected, are also important when describing spatial organization, especially as it relates to the intended user experience. The functional relationships between the spaces are also important; for example, building living quarters on a ranch in relation to barns and roads are critical to the efficiency of its operation.

In urban heritage districts, land use, buildings, streets and topography often define or influence spatial organization. The buildings' siting, the open spaces between them and the circulation corridors, are often identified as character-defining elements in urban heritage districts. In natural environments, the spatial organization of the features of the landscape can have spiritual significance.

Because buildings and their landscapes were often designed together, it is important to understand and respect their relationships. Architects and landscape architects often worked together to design sites as a whole, making the exterior spaces an integral part, or extension of the interior spaces, and vice versa.

These guidelines provide general recommendations for spatial organization in a cultural landscape. Other relevant guidelines, such as Visual Relationships and Circulation, should be consulted when appropriate. When spatial organization is part of an engineering work, refer to Functional Arrangement in the Guidelines for Engineering Works; for buildings, refer to Exterior Form or Interior Arrangement.

Ministers Island is a 2km² island in Passamaquoddy Bay near the town of St. Andrews, NB. This cultural landscape includes the entire island that encompasses a shell midden archaeological site, the home of Loyalist and Anglican minister Samuel Andrews and the summer estate of Sir William Cornelius Van Horne. The island's spatial organization as a grand estate with a core residential area, formal gardens, recreational spaces, agricultural spaces and forest is a character-defining element of the site.

The Bonar Law House is a 9 hectare property along the north side of the Richibucto River in the Village of Rexton, NB. This complex contains a simple 19th century wood farm house facing the river and a barn and wagon shed. Board fencing connects the buildings to form an enclosed courtyard. New community facilities are being implemented to increase community use while maintaining the site's original spatial organization.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the spatial organization and how it contributes to the heritage value of the cultural landscape.	
2	**Understanding** the function and form of designed landscapes, and the planning principles behind the spatial organization of the cultural landscape.	
3	**Documenting** the spatial organization of the cultural landscape, including the orientation, alignment, size, configuration and interrelationships of its component features; the relationship of features to the overall landscape; and its evolution and condition before beginning project work.	Undertaking interventions that affect the spatial organization without first documenting and understanding its characteristics, relationships, evolution, conditions and intangible values.
4	**Assessing** the overall condition of the spatial organization early in the planning process, so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining the features that define the spatial organization by using non-destructive methods in daily, seasonal and cyclical tasks.	Allowing the spatial organization to be altered by incompatible development or neglect.
6	**Retaining** sound or deteriorated features of the spatial organization that can be repaired or rejuvenated.	
7	**Repairing** or rejuvenating deteriorated parts of a feature of the spatial organization, using recognized conservation methods. Repair may also include the limited replacement in kind of those extensively deteriorated or missing parts of the spatial organization.	Replacing a feature of the spatial organization when repair or limited replacement of deteriorated or missing parts is possible.
8	**Replacing** in kind extensively deteriorated or missing parts of the spatial organization where there are surviving prototypes.	Replacing an entire feature of the spatial organization when limited replacement of deteriorated and missing parts is possible.
9	**Documenting** all interventions that affect the spatial organization, and ensuring that this documentation will be available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Repairing** or rejuvenating extensively deteriorated features that define the spatial organization, by using non-destructive methods and materials.	Replacing an entire feature that defines the spatial organization when repair or limited replacement of deteriorated or missing parts is possible.
11	**Replacing** in kind an entire feature of the spatial organization that is too deteriorated to repair. The replacement feature should be as similar as possible to the original, both visually and functionally.	Replacing an irreperable feature with a new feature that does not respect the landscape's spatial organization.
12	**Replacing** missing historic features by designing new features that are compatible with the spatial organization of the cultural landscape, and are based on physical, documentary and oral evidence.	Creating a false historical appearance because the new feature is incompatible, or based on insufficient physical, documentary and oral evidence.

ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE

13	**Designing** a new feature when required by a new use that is compatible with the character-defining spatial organization.	Adding a new feature that alters or obscures the spatial organization, such as constructing a farmhouse addition on an area that was traditionally used as a kitchen garden. Introducing a new feature that is incompatible in size, scale or design with the spatial organization.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
14	**Repairing** or rejuvenating declining features from the restoration period that define the spatial organization using a minimal intervention approach.	Replacing an entire feature that defines the spatial organization from the restoration period when repair or rejuvenation is possible.
15	**Replacing** in kind an entire feature from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented to guide future research and treatment.	Removing an irreparable feature from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
16	**Removing** or altering non character-defining features from periods other than the chosen restoration period.	Failing to remove non character-defining features from another period that confuse the depiction of the spatial organization during the restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
17	**Recreating** a missing feature important to the spatial organization from the restoration period, based on physical, documentary and oral evidence.	Installing a feature of the spatial organization that was part of the original design, but was never actually built, or constructing a feature that was thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.5 VISUAL RELATIONSHIPS

These guidelines provide direction when visual relationships have been identified as a character-defining element of an historic place. They pertain to the visual relationships between an observer and a landscape or landscape feature (a viewscape) or between the relative dimensions of landscape features (scale).

Small unit pavers provide appropriate texture and give a pedestrian scale to Dalhousie Square which is part of a larger plan to revitalize the east end of the Old Montreal historic district. The new paving patterns of the square combine a range of materials, forms and scales to evoke the former location of the 18th century fortification walls and country road, as well as the 19th century train lines of the adjacent former Canadian Pacific train station.

The Saskatchewan Legislative Building and Grounds balance the formal and the picturesque by using informal spaces, organized plantings and promenades, and strategically placed statues and monuments. Visual Relationships are also important character-defining elements of the site: the viewscape across Wascana Lake establishes a connection with downtown Regina and contributes to the site's heritage value.

The Bar U Ranch NHSC visitor centre was built beyond the immediate view of the historic ranch complex, which preserves the historic viewscapes.

A viewscape can include scenes, panoramas, vistas, visual axes and sight lines. In designed landscapes, a viewscape may have been established following the rules of pictorial composition: elements are located in the foreground, middle ground and background. A viewscape may also be the chief organizing feature when a succession of focal points is introduced to draw the pedestrian onward through a landscape.

The scale of a cultural landscape can produce emotional responses in people. Large landscapes either intimidate or inspire us, while small landscapes tend to make us feel comfortable. The texture of a given surface can also affect the perception of scale. For example, a street or courtyard covered in cobblestones or brick seems smaller than the same area covered in asphalt, a much smoother surface.

The visual relationships between elements of natural or designed landscapes, or heritage districts, can influence the user experience. For example, a tall building in a low-rise heritage district may be perceived as out of scale.

The addition of green technologies to a cultural landscape, such as wind turbines or solar panels, may affect its heritage value. While recognizing the importance of renewable energy sources, it is important to consider the visual impact these technologies may have on the cultural landscape. Visual impact assessments need to be integrated at an early stage in project planning so that potential impacts on the heritage value of the cultural landscape are clearly understood.

These guidelines provide general recommendations for the conservation of the visual relationships in a cultural landscape. Other relevant guidelines, such as Built Features and Vegetation, should be consulted when appropriate.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the visual relationships and how they contribute to the heritage value of the cultural landscape.	Undertaking interventions without understanding their impact on the visual relationships in the cultural landscape; for example, removing vegetation that was intended to frame an important view in the historic place.
2	**Understanding** designed landscapes, and the planning principles behind the visual relationships in the cultural landscape.	
3	**Understanding** the evolution of visual relationships. This could include using historic photographs or artwork to understand how the visual relationships may have changed or been lost over time.	
4	**Documenting** the visual relationships in the cultural landscape, including viewscapes and their foreground, middle ground and background; landmarks, edges and skyline; prospects, both to and from the historic place; and condition, before beginning project work.	Undertaking interventions that affect the visual relationships without completing a survey of characteristics and conditions.
5	**Assessing** the overall condition of the visual relationships early in the planning process so that the scope of work is based on current conditions.	
6	**Protecting** and maintaining the features that define the visual relationships by using non-destructive methods in daily, seasonal and cyclical tasks, such as pruning, to retain sight lines. This could also include maintaining the size and massing of vegetation and built features that contribute to the overall scale of the historic place.	Allowing visual relationships to be altered by incompatible development or neglect. Using maintenance methods that alter or obscure the visual relationships in the cultural landscape, such as removing planting that reduces the perceived size of a parking lot to make winter snow removal easier.
7	**Retaining** sound features that define the visual relationships in the cultural landscape, or deteriorated features that can be repaired or rejuvenated.	
8	**Repairing** or rejuvenating deteriorated parts of features that define the visual relationships using recognized conservation methods. Repair may also include the limited replacement in kind of those extensively deteriorated or missing parts of features. Repairs should match the existing work as closely as possible, both physically and visually.	Replacing a feature that defines the visual relationships when that feature can be repaired or rejuvenated. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving parts of the feature, nor is physically and visually compatible.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
9	**Replacing** in kind extensively deteriorated parts of features that define the visual relationships where there are surviving prototypes. The new work should match the old in form and detailing.	Replacing an entire feature that defines the visual relationships when limited replacement of deteriorated or missing parts is possible.
10	**Documenting** all interventions that affect the visual relationships and ensuring that this documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
11	**Rehabilitating** the visual relationships, if an evaluation of their overall condition determines that more than preservation is required.	
12	**Repairing** or rejuvenating features that define the visual relationships, by using non-destructive methods and materials, such as regenerating vegetation that frames an important view.	Failing to perform necessary work, resulting in the loss of character-defining visual relationships. Replacing a feature that defines the visual relationships when repair is possible.
13	**Replacing** in kind an entire feature that is too deteriorated to repair.	Replacing an irreperable feature with a new feature that does not respect the visual relationships in the cultural landscape.
14	**Replacing** missing historic features by designing new features that are compatible with the visual relationships in the cultural landscape, based on physical and documentary evidence.	Introducing new features that are incompatible in size, scale, material, style and colour. Creating a false historical appearance because the new feature is based on insufficient physical and documentary evidence.

ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE

15	**Designing** a new feature when required by a new use that respects the historic visual relationships in the cultural landscape. This can include matching established proportions and densities, such as maintaining the overall ratio of open space to building mass in an urban heritage district when designing an infill building.	Introducing a new feature that alters or obscures the visual relationships in the cultural landscape, such as constructing a new building as a focal point, when a character-defining vista was traditionally terminated by the sky.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
16	**Repairing** or rejuvenating a deteriorated or declining feature that defines the visual relationships from the restoration period using a minimal intervention approach.	Replacing an entire feature that defines the visual relationships from the restoration period when repair or rejuvenation is possible. Using a substitute material for a replacement part that neither conveys the same appearance of the surviving features from the restoration period, nor is physically or visually compatible.
17	**Replacing** in kind an entire feature that defines the visual relationships from the restoration period when that feature is too deteriorated to repair, using the same configuration and design details. The new work should be well documented to guide future research and treatment.	Removing an irreparable feature from the restoration period and not replacing it, or replacing it with a new feature that does not respect the visual relationships in the cultural landscape.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
18	**Removing** or altering non character-defining features from periods other than the chosen restoration period.	Failing to remove non character-defining features from another period that confuse the visual relationships of the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
19	**Recreating** a missing feature important to the visual relationships that existed during the restoration period, based on physical, documentary and oral evidence.	Introducing a feature that was part of the original design, but was never actually built, or a feature that was thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.6 CIRCULATION

These guidelines provide direction when a circulation system or feature has been identified as a character-defining element of an historic place. Circulation refers to individual elements that facilitate or direct movement and travel, such as human or animal paths, traditional trails, roads, parkways, highways, railways, canals and portages. The linkages of such elements create circulation systems.

Various aspects of circulation can be character-defining. For example, in an urban context, historical circulation needs and subsequent patterns typically determined the alignment of streets. The water levels needed to maintain water-borne traffic are also important character-defining elements of a canal.

When describing a circulation feature or system, important characteristics may include: alignment; width; finished grade or gradients; surface materials; edge treatment; infrastructure and relationships with neighbouring features.

These guidelines provide general recommendations for the conservation of the circulation systems or features in a cultural landscape. Other relevant guidelines, such as Land Patterns and Spatial Organization, should be consulted when appropriate.

Circulation systems largely define the character of the Sault Ste. Marie Canal NHSC where a historic canal, paths, roadways, parking lots and railways converge in a very small area. Protecting and maintaining this landscape requires carefully managing the site's circulation infrastructure.

The Carré Royal in Sorel-Tracy, QC was first used for military exercises in 1780. In 1785, a military engineer drew up site plans in the shape of the Union Jack. In 1868, it was opened to the public as an urban park, which continues to this day. Its original layout of walkways, configured to match the original cross patterns of the Union Jack flag, is in full evidence. This is a fine example where a circulation pattern is considered an important character-defining element of a cultural landscape.

Alterations or new construction designed to meet requirements, such as accessibility, need to be carefully considered to respect the character-defining elements of a historic place. Accessibility requirements at Province House in Charlottetown required careful landscape assessment and rehabilitation in order to respect the original approach to the building. Here, the change in grade was limited to the building's middle section to preserve the view of the base course and sections of the original steps.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the heritage value of the circulation patterns and systems, and how they contribute to the heritage value of the cultural landscape.	
2	**Understanding** the evolution of circulation systems, including using aerial photographs to understand a transportation corridor's change from a two-lane road to a six-lane highway, or using archaeological methods and historical maps to locate pathways and roads not obvious from surface investigation. It may also include researching oral traditions and written documents to understand the heritage values that may be associated with circulation systems.	Undertaking project work without understanding the evolution of the circulation systems, such as changing road alignments and widths.
3	**Documenting** the characteristics of circulation systems, such as location, alignment, surface treatment, edge, grade, materials, infrastructure and condition before beginning project work.	Undertaking interventions that affect character-defining circulation systems, without preparing a survey of their characteristics and condition.
4	**Assessing** the overall condition of circulation systems early in the planning process, so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining circulation systems by using non-destructive methods in daily, seasonal and cyclical tasks, including seasonal clearing of trails, or using rubberized blade edges on snow plows to prevent damaging stone curbs.	Using materials such as salts and chemicals that can accelerate the deterioration of surfaces.
6	**Retaining** sound circulation systems or deteriorated circulation systems that can be repaired.	
7	**Stabilizing** a deteriorated circulation system by using structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	
8	**Repairing** a deteriorated circulation system by patching, consolidating, or otherwise reinforcing, using recognized conservation methods. Repair may also include the limited replacement in kind of those extensively deteriorated or missing parts of the circulation systems.	Removing a deteriorated circulation system that could be stabilized or repaired.
9	**Replacing** in kind extensively deteriorated parts of the circulation system where there are surviving prototypes. The new work should match the old in form and detailing.	Replacing an entire feature, such as a stone curb, when limited replacement of deteriorated and missing parts is possible.
10	**Documenting** all interventions that affect the circulation system, and ensuring that this documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
11	**Repairing** extensively deteriorated circulation features by using non-destructive methods and materials.	Replacing or altering features and materials of a circulation system when repair is possible.
12	**Replacing** a deteriorated circulation feature by using the physical evidence of its form, detailing and alignment to reproduce it. If using the same kind of material is not technically, economically or environmentally feasible, then a compatible substitute material may be considered; for example, replacing the decayed timber edge in kind along an historic trail. The replacement feature should be as similar as possible to the original, both visually and functionally.	Replacing an irreperable feature with a new feature that does not convey the same visual appearance.
13	**Replacing** a missing historic feature by designing a new feature compatible with the circulation of the cultural landscape, based on physical and documentary evidence.	Creating a false historical appearance because the new feature is incompatible, or based on insufficient physical and documentary evidence.
	ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE	
14	**Designing** and installing a new circulation feature, when required by a new use, that is compatible with the heritage value of the historic place, including controlling and limiting new access points and intersections along an historic road.	Installing a new circulation feature in a way that detracts from the historic circulation pattern; for example, creating a new bike path when an existing path can accommodate the new use. Introducing a new circulation feature that is visually incompatible in terms of scale, alignment, surface treatment, width, edge treatment, grade, materials or infrastructure.
	ACCESSIBILITY CONSIDERATIONS	
15	**Complying** with accessibility requirements in a manner that conserves character-defining circulation systems or features.	Damaging character-defining circulation systems or features while making modifications to comply with accessibility requirements.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
16	**Repairing** a deteriorated circulation feature from the restoration period using a minimal intervention approach.	Replacing an entire circulation feature from the restoration period when repair is possible.
17	**Replacing** in kind an entire circulation feature from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable circulation feature from the restoration period that is beyond repair and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
18	**Removing** or altering non character-defining circulation features from periods other than the chosen restoration period.	Failing to remove non character-defining circulation features from another period that confuse the depiction of the circulation system during the restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
19	**Recreating** a missing circulation feature that existed during the restoration period, based on physical, documentary and oral evidence, such as duplicating paving patterns based on surviving prototypes.	Installing a circulation feature that was part of the original design, but was never actually built, or constructing a new circulation feature thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.7 ECOLOGICAL FEATURES

These guidelines provide direction when an ecological feature has been identified as a character-defining element of an historic place. In the context of these guidelines, an ecological feature is a natural element, such as a marsh, a pond or a stand of trees, which can be part of a larger ecosystem. While ecosystems at an historic place should be evaluated and managed for their natural values by ecologists and other natural resource specialists, these guidelines apply only to the features of those ecosystems determined to have heritage value.

The Melanson Settlement in Annapolis, NS reflects Acadian family communities that settled along the Dauphin (now Annapolis) River, and a form of agriculture unique in North America. One of the site's character-defining elements is the nearness of this settlement to salt marshes that embody natural and ecological values. Documenting and understanding the structure, function and dynamics of this ecological feature is an important step before working on the site.

Ecological features vary in size but are typically studied at the scale of a pond or stand of trees. Character-defining ecological features are also found in urban areas. When using these guidelines, it is important to work with natural resource conservation and environmental assessment specialists, and where appropriate, with aboriginal groups and other partners and stakeholders to ensure that diverse knowledge and information are used to conserve the natural structure, function and dynamics of the entire ecosystem.

The potential for adverse environmental impacts (e.g., introduction or re-introduction of invasive species) must also be considered, regardless of whether it is required by environmental assessment or related legislation. The pan-Canadian approach to ecological restoration described in the "Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas" (Parks Canada and the Canadian Parks Council, 2008) provides additional guidance on integrating consideration of natural and cultural heritage values in conservation planning and intervention. This document is particularly relevant when rehabilitation or restoration is the selected approach.

Ecological features are character-defining elements of many Aboriginal cultural landscapes where traditional practices have been sustained for centuries. In addition, ecological features associated with an historic place can extend far beyond its established boundaries.

These guidelines provide general recommendations for the conservation of ecological features in a cultural landscape. Other relevant guidelines, such as Vegetation and Water Features, should be consulted when appropriate.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the ecological features and how they contribute to the natural and cultural heritage value of the cultural landscape.	
2	**Understanding** the natural structure, function and dynamics of the ecological feature and of the ecosystem of which it is part.	
3	**Documenting** the characteristics and condition of the ecological feature and its relationship with the ecosystem of which it is a part, before beginning project work. Documentation should combine the best available scientific and traditional knowledge.	Undertaking interventions that affect a character-defining ecological feature without first documenting and understanding its characteristics, relationships, evolution and condition.
4	**Assessing** the overall condition of the ecological feature early in the planning process, so that the scope of work is based on an understanding of current conditions and predicted changes.	
5	**Protecting** and maintaining the ecological feature by using non-destructive methods in daily, seasonal and cyclical tasks.	Allowing ecological features to degrade by incompatible development or neglect. Using maintenance methods that damage or destroy an ecological feature.
6	**Retaining** intact ecological features and degraded ecological features that can be returned to good ecological condition.	Replacing degraded ecological features that could be returned to good ecological condition; for example, clear cutting a declining forest stand to create a parking lot or meadow.
7	**Repairing** degraded ecological features or parts of ecological features using recognized methods and trained personnel; for example, using a certified arborist to heal a mature tree. The work should be physically and visually compatible with the cultural and natural heritage values of the cultural landscape.	Removing ecological features or parts of ecological features that could be conserved, or using untested methods and untrained personnel, thus causing further damage to fragile features and relationships.
8	**Replacing** extensively degraded or missing ecological features or parts of ecological features based on physical and documentary evidence; for example, replanting a documented shrub species lost through erosion, with the same native species from a local source.	Replacing an entire ecological feature, such as a stand of trees, when limited replacement of deteriorated and missing parts (e.g., one or a few trees) is possible.
9	**Documenting** all interventions that affect the ecological feature, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Repairing** or rejuvenating extensively deteriorated ecological features by using non-destructive methods and materials, such as planting native species to facilitate the regeneration of a deteriorated meadow.	Failing to perform necessary work, including removing invasive species, resulting in the loss of ecological features and their components.
11	**Replacing** in kind an entire ecological feature that is too deteriorated to repair, such as replanting a clear-cut stand of trees with locally obtained saplings, and in similar density.	

ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE

12	**Introducing** a new element, when required by a new use, that does not have a negative impact on the heritage value and condition of the ecological feature.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
13	**Restoring** an ecological feature if an evaluation of its overall condition determines that more than preservation is required; i.e., if an intervention on the ecological feature is necessary to sustain it into the future. For example, removing invasive tree species from a character-defining escarpment and replanting it with a mix of plant material corresponding to the natural conditions of the escarpment. This work should be based on physical and documentary evidence.	Restoring an ecological feature to an historic condition that is no longer sustainable given current physical and ecological conditions, including climate.
14	**Repairing** or rejuvenating a declining ecological feature that contributes to the sustainability of the cultural landscape, by using non-destructive methods.	Replacing an entire ecological feature when repair or rejuvenation is possible, or using destructive repair or rejuvenation methods, causing further damage to the ecological feature.
15	**Replacing** in kind an entire ecological feature that contributes to the sustainability of the cultural landscape when that feature is too deteriorated to repair or rejuvenate. The new work should be well documented to guide future research and treatment.	Removing an ecological feature that is beyond repair and not replacing it, or replacing it with an inappropriate ecological feature.

4.1.8 VEGETATION

Honeywood Nursery in Saskatchewan was established and operated by Dr. A. J. (Bert) Porter, a self-taught, award-winning horticulturalist who developed many fruits and ornamental plants capable of thriving on the Prairies. The property's planting beds, orchards and examples of various plant varieties are character-defining elements that illustrate Mr. Porter's contributions to the development of Saskatchewan's horticulture.

These guidelines provide direction when vegetation has been identified as a character-defining element of an historic place. For direction on how to treat vegetation as part of a natural system that is a character-defining element, also refer to the Guideline on Ecological Features.

Vegetation refers to trees, shrubs, herbaceous plants, grasses, vines, aquatic and wetland plants, and other living plant material. Vegetation may include individual plants, such as a sentinel (single specimen) tree in a pasture, or specimen trees in a garden; designed groupings, such as hedges, *allées* and perennial borders; and groupings used to control sun and wind patterns. Vegetation can also refer to planted crops, re-forested hillsides and naturally occurring plant communities.

Vegetation may have historical associations as well as functional and aesthetic qualities. As well, vegetation may have historical and scientific value, which can contribute to maintaining the biodiversity of native, horticultural or agricultural varieties. Vegetation in a cultural landscape can also represent the genetic repository of species once present, but now largely disappeared.

The Trappist Monastery Ruins recall a complex of religious architecture unique to Manitoba and the early French-speaking Métis community. Damaged by fire in 1983, the stabilized ruins, and the grounds featuring mature trees, expanses of lawn and open fields, now form the Trappist Monastery Provincial Heritage Park. Protecting and maintaining the vegetation is essential to preserving the site's historical values.

Vegetation is often the most dynamic and memorable feature in a cultural landscape. In addition to the continuous cycle of growth and decay, there will be variations in form, colour and canopy across the seasons. In describing vegetation as a character-defining element, the following concepts should be considered: growth habit, including juvenile or mature form; leaf and bloom; colour and texture; bark; bloom periods; fruit; fragrance; and context. Vegetation also contributes to other character-defining elements, such as land patterns, visual relationships and spatial organization.

These guidelines provide general recommendations for the conservation of vegetation in a cultural landscape. Other relevant guidelines, such as Ecological Features and Spatial Organization, should be consulted when appropriate.

A large site in Calgary's inner city that evolved during the early 20th century, this naturalistic rock garden is significant for its association with the noted horticulturalist William Reader and as a botanical laboratory to study the receptivity of Alberta's soils to a variety of plant species. The extensive arrangements of local rocks and plantings, many of which had become overgrown, were meticulously restored using careful plant analysis and by referring to William Reader's own detailed documentation.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** vegetation and how it contributes to the heritage value of the cultural landscape.	
2	**Understanding** the evolution of a landscape's vegetation over time, using archival resources, such as plans and photographs or, when appropriate, archaeological analysis or minimally destructive techniques. This could include using resistivity testing to determine the age of a tree, or understanding the heritage value of a vegetation feature, such as the oak as a symbol of fortitude.	Undertaking interventions, such as indiscriminately clearing a woodland understorey without understanding its impact on historic vegetation.
3	**Understanding** the roles of people, animals and insects in producing and maintaining the existing vegetation.	
4	**Documenting** the extent and condition of vegetative cover in forests, woodlands, meadows, planted and fallow fields, and the genus, species, calibre, height, colour, form and texture of significant, individual tree specimens, before beginning project work.	Undertaking interventions that affect character-defining vegetation, without preparing a survey of existing plant material and its condition.
5	**Assessing** the overall condition of the vegetation early in the planning process so that the scope of work is based on current conditions.	
6	**Protecting** and maintaining the vegetation by using non-destructive methods and daily, seasonal and cyclical tasks, including pruning or establishing colonies of beneficial insects that protect fruit trees from pests.	Failing to perform preventive maintenance on character-defining vegetation.
7	**Using** maintenance practices that respect the habit, form, colour, texture, bloom, fruit, fragrance, scale and context of the vegetation.	Using maintenance practices and techniques that fail to recognize the individual plant materials' uniqueness. Examples include poorly timed pruning or application of insecticide, which may alter fruit production.
8	**Using** traditional horticultural and agricultural maintenance practices when those techniques are critical to maintaining the vegetation's character, such as manually removing dead flowers to ensure continuous bloom.	
9	**Retaining** and perpetuating vegetation by preserving seed collections and stock cuttings to preserve the genetic pool.	Failing to propagate vegetation from original stock cuttings, when few or no known sources for replacement are available.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
10	**Securing** and protecting deteriorated vegetation by structural reinforcement, or correcting unsafe conditions, as required, until additional work is undertaken; for example, using steel cables to support large branches.	Failing to secure and protect deteriorated vegetation, thus putting it at risk of further deterioration.
11	**Replacing** in kind extensively deteriorated or missing parts of vegetation where there are surviving prototypes. The new plantings should match the old in species, colour and texture.	Removing deteriorated vegetation that could be stabilized and conserved, or using untested techniques and untrained personnel, thus causing further damage to fragile elements. Introducing or re-introducing a species or variety that is known or suspected to be invasive. Replacing entire vegetation when limited replacement of deteriorated and missing parts is appropriate. Using replacement material that does not match the historic vegetation.
12	**Documenting** all interventions that affect the vegetation, and ensuring that this documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
13	**Rejuvenating** historic vegetation by corrective pruning, deep-root fertilizing, aerating the soil, renewing seasonal plantings, and/or grafting onto historic root stock.	Replacing vegetation when rejuvenation is possible, including removing a deformed or damaged plant when corrective pruning could be successfully employed.
14	**Replacing** a deteriorated or declining vegetation feature with a new feature, based on the physical evidence of its composition, form and habit. If using the same kind of material is not technically, economically or environmentally feasible, then a compatible substitute material may be considered. For example, a diseased sentinel tree in a meadow may be replaced with a disease-resistant tree of similar type, form, shape and scale.	Replacing a deteriorated feature with a new feature that does not convey the same appearance, such as replacing a large, declining canopy tree with a dwarf flowering tree.
15	**Replacing** missing historic features by installing a new vegetation feature. It may be a new feature that is compatible with the habit, form, colour, texture, bloom, fruit, fragrance, scale and context of the historic vegetation; for example, replacing a lost vineyard with hardier stock similar to the historic plant material.	Creating a false historical appearance because the replacement vegetation is based on insufficient physical, documentary and oral evidence.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE		
16	**Introducing** new vegetation, when required by a new use, to ensure that the heritage value of the cultural landscape is preserved, including planting a hedge to screen new construction.	Placing a new feature where it may cause damage or is incompatible with the character of the historic vegetation; for example, erecting a new building or structure that adversely affects the root systems of historic vegetation. Locating a new vegetation feature that detracts from, or alters the historic vegetation; for example, introducing exotic species in a landscape historically comprised of only indigenous plants. Introducing a new vegetation feature that is incompatible in terms of its habit, form, colour, texture, bloom, fruit, fragrance, scale or context.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
17	**Rejuvenating** declining vegetation from the restoration period by corrective pruning, deep-root fertilizing, aerating the soil, renewing seasonal plantings, and/or grafting onto historic stock.	Replacing vegetation from the restoration period when rejuvenation is possible, or using destructive repair methods, thus causing further damage to fragile plant material.
18	**Replacing** in kind a declining vegetation feature from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the feature. The new work should be well documented to guide future research and treatment.	Removing a deteriorated vegetation feature from the restoration period and not replacing it, or replacing it with a new feature that does not convey the same appearance.
REMOVING EXISTING FEATURES FROM OTHER PERIODS		
19	**Removing** or altering non character-defining vegetation from periods other than the chosen restoration period, such as removing later foundation planting or aggressive exotic species.	Failing to remove non character-defining vegetation from another period that confuses the depiction of the chosen restoration period.
RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD		
20	**Recreating** a missing vegetation feature that existed during the restoration period, based on physical, documentary and oral evidence. For example, replanting crop types based on pollen analysis.	Planting vegetation that was part of the original design, but was never installed, or installing vegetation thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.9 LANDFORMS

These guidelines provide direction when a landform has been identified as a character-defining element of an historic place. Landform refers to the shape of the Earth's surface at a particular place.

Some naturally occurring landforms include mountains, hills, canyons, valleys and plains. Human-made landforms include terraces, embankments, *ramparts*, *berms*, ditches and *swales*. When describing a particular landform, whether natural or built, it is important to consider shape, slope, dimensions and geological material, such as sand and silt.

Naturally occurring landforms may have been significant factors in determining the location and development of a cultural landscape; for example, choosing to build a fortress on high land for military advantages.

Throughout history, human beings have used landforms as landmarks and manipulated natural topography for functional and aesthetic reasons: *swales* remove water from building foundations; ditches keep roads dry; *berms* provide wind shelter or hide undesirable views; *ramparts* and *glacis* provide unobstructed surveillance; and paired embankments frame views.

These guidelines provide general recommendations for the conservation of the landforms of a cultural landscape. Other relevant guidelines, such as Evidence of Land Use and Circulation, should be consulted when appropriate.

Landforms can be natural, such as hills and plains, or they can be human-engineered. Dramatic examples of human-engineered landforms are the early 20th century tailing fields in the Yukon's Klondike Gold Fields. These views help define and interpret Dredge #4 NHSC.

The Frank Slide is the site of a catastrophic landslide in spring 1903 that destroyed part of the town of Frank, Alberta. One of the largest landslides in Canadian history, it is historically significant for its impact on the area's mining communities. It is geologically interesting for the information it yields on the dynamics of large-scale rock slides. Barren of vegetation and devoid of buildings, the boulder-strewn debris field extending across the valley floor is a character-defining landform that is maintained due to a moratorium on development.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** landforms and how they contribute to the heritage value of the cultural landscape.	
2	**Understanding** the evolution of landforms over time, using archival resources, such as plans and aerial photographs. This can also include archaeological analysis or oral history to understand the landforms and any cultural values associated with them.	Undertaking interventions without understanding its impact on historic landforms.
3	**Documenting** the geological material, elevation, slope, shape, orientation, contour, condition and function of landforms before beginning project work.	Undertaking project work that will affect landforms without documenting the existing topographic variation, condition and function.
4	**Assessing** the overall condition of landforms early in the planning process so that the scope of work will be based on current conditions.	
5	**Protecting** and maintaining landforms by using non-destructive methods in daily, seasonal and cyclical tasks. This may include mowing vegetative cover to reveal the landform.	Allowing landforms to be altered by incompatible development or neglect.
6	**Retaining** sound landforms or deteriorated landforms that can be repaired or reinstated.	
7	**Repairing** or reinstating a deteriorated feature of the landform, using recognized conservation methods. Repair may also include the limited replacement in kind of those extensively deteriorated or missing parts of landforms. Repairs should match the existing work as closely as possible, both physically and visually.	Replacing landforms that can be repaired or reinstated.
8	**Replacing** in kind extensively deteriorated or missing parts of the landform where there are surviving prototypes. The new work should match the old in form and detailing.	Replacing an entire feature of the landform when limited replacement of deteriorated or missing parts is possible.
9	**Documenting** all interventions that affect the landform, and ensuring that this documentation will be available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Repairing** or reinstating an extensively deteriorated or missing landform. This could include re-excavating a silted swale through appropriate re-grading, or re-establishing an eroding agricultural terrace.	Modifying the shape, slope, elevation or contour of a landform when repair is possible.
11	**Replacing** in kind an entire feature of a landform, using the physical evidence of its form and composition.	Replacing an irreparable feature with a new feature that does not convey the same visual appearance, for example, changing stepped terracing to a graded slope.
12	**Replacing** missing historic features by designing new features that are compatible with the landforms of the cultural landscape, based on physical, documentary and oral evidence.	Creating a false historical appearance because the new feature is based on insufficient physical, documentary or oral evidence.
	ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE	
13	**Designing** a new feature when required by a new use that is compatible with the character-defining landform.	Introducing a new feature where it may alter the character-defining landform. This could include failing to provide proper drainage for a new feature, resulting in the decline or loss of an historic landform.
	ACCESSIBILITY CONSIDERATIONS	
14	**Respecting** the landform when locating new accessibility-related features. For example, introducing a gently sloped walkway instead of a constructed ramp with handrails.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
15	**Repairing** or reinstating a declining landform feature from the restoration period using a minimal intervention approach.	Replacing an entire landform feature from the restoration period when repair or reinstatement is possible.
16	**Replacing** in kind an entire landform feature from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented to guide future research and treatment.	Removing a deteriorated landform feature from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
17	**Removing** or altering non character-defining landform features from periods other than the chosen restoration period.	Failing to remove non character-defining features from another period that confuse the depiction of the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
18	**Recreating** a missing landform feature from the restoration period, based on physical, documentary and oral evidence; for example, recreating a trench and fortification from the restoration period based on stratigraphic research.	Introducing a feature that was part of the original plan but that never actually existed, or a feature that was thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.10 WATER FEATURES

These guidelines provide guidance when a water feature is identified as a character-defining element of an historic place. Water features can include constructed elements, such as canals, ponds, reflecting pools and fountains as well as natural elements, such as lakes, rivers and streams. Their role may be functional or aesthetic, or a combination of both.

Beaver Lake is a constructed pond that has become a central feature in Montreal's Mount Royal Park, within the natural and historic district of Mount Royal. Its intense use throughout the seasons puts great pressure on its condition. Protecting and maintaining water features includes daily, seasonal and cyclical tasks. Maintaining a constructed water feature's mechanical, plumbing and electrical systems is essential to ensure the appropriate depth and quality of water.

Water features may be part of the natural hydrology of the historic place, or fed artificially from a separate, dedicated water source. When assessing a constructed water feature, the water supply, drainage and mechanical system required for its functioning should be identified. Additionally, shape, dimensions, materials, water level and quality, flow rate, reflectivity and associated plant and animal life should be listed as important characteristics.

These guidelines provide general recommendations for the conservation of water features in a cultural landscape. For direction on conserving natural water features that are part of a larger ecosystem, refer to the Guidelines for Ecological Features. For recommendations on specific materials that make up constructed water features, refer to the Guidelines for Materials. Other relevant guidelines, such as Built Features and Vegetation, should be consulted when appropriate.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the water feature and how it contributes to the heritage value of the cultural landscape.	
2	**Understanding** the evolution of water features over time and their role in the overall hydrology of the landscape. This includes using archaeological techniques to determine the changing path of a watercourse, using infrared aerial photographs to map hydrological patterns.	Undertaking interventions without understanding the evolution of water features.
3	**Documenting** water features before beginning project work. Documentation should include shape, edge and bottom condition and materials; water level, sound and reflective qualities; associated plant and animal life; water quality; natural erosion and flooding; and overall condition.	Undertaking interventions that affect the water features and associated hydrology, without undertaking a survey of their character and condition.
4	**Assessing** the overall condition of water features early in the planning process, so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining water features by using non-destructive methods in daily, seasonal and cyclical tasks, such as cleaning leaf litter or mineral deposits out of drainage inlets or outlets.	Allowing water features to be altered by incompatible development, maintenance methods or neglect.
6	**Retaining** sound or deteriorated water features that can be repaired or rejuvenated.	
7	**Stabilizing** deteriorated water features by using structural reinforcement, weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	
8	**Repairing** deteriorated water features using recognized conservation methods. Repair may also include the limited replacement in kind of extensively deteriorated or missing parts of water features. Repairs should match the existing work as closely as possible, both physically and visually.	Removing deteriorated water features that could be stabilized or repaired.
9	**Maintaining** a built water feature's mechanical, plumbing and electrical systems to ensure appropriate depth of water or direction of flow, including maintaining the timing and sequencing mechanisms for irrigation systems.	Allowing mechanical systems to fall into a state of disrepair, resulting in degradation of the water feature. For example, allowing algae to develop because a pool's aeration system is not maintained.
10	**Replacing** in kind extensively deteriorated or missing parts of water features where there are surviving prototypes. The new work should match the old in form and detailing.	Replacing an entire water feature when limited replacement of deteriorated and missing parts is possible

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Testing** interventions to establish appropriate replacement materials, quality of workmanship and methodology. This includes reviewing samples, testing products, methods or assemblies, or creating a mock-up.	
12	**Documenting** all interventions that affect the water features, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
13	**Repairing** extensively deteriorated water features by reinforcing materials or improving mechanical systems. For example, patching a crack in a pond liner, or repairing a failed pump mechanism.	Replacing or removing water features or systems when repair is possible.
14	**Replacing** in kind a deteriorated water feature by using the existing physical evidence of its form, depth and detailing, to reproduce it. If using the same kind of material is not technically or environmentally feasible, then a compatible substitute material may be considered; for example, replacing a lead pond liner with a plastic one. The replacement feature should be as similar as possible to the original, both visually and functionally.	Replacing a water feature with a new feature that does not convey the same appearance, including, replacing a single orifice nozzle with a spray nozzle, changing an historic fountain's appearance from a single stream of water to a mist-like stream.
15	**Replacing** missing historic features by designing new features compatible with the water features of the cultural landscape, based on physical, documentary and oral evidence. For example, a lost irrigation feature may be replaced by using materials that convey the same appearance.	Introducing new features that are incompatible in size, scale, material, style and colour, such as replacing a natural pond with a manufactured pool. Creating a false historical appearance because the replaced features are based on insufficient physical, documentary and oral evidence.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
	ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE	
16	**Designing** and installing a new water feature, when required, by a new use in a way that preserves the cultural landscape's heritage value. For example, locating a new retention basin in a secondary or non-character-defining space.	Placing a new water feature where it may cause damage or is incompatible with the heritage value of the cultural landscape, such as, locating a Baroque fountain within a Picturesque-style garden.
	HEALTH AND SAFETY CONSIDERATIONS	
17	**Complying** with the health and safety requirements, in a manner that minimizes the impact on heritage value.	Damaging or destroying features while making modifications to comply with health and safety requirements.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
18	**Repairing** deteriorated water features from the restoration period by reinforcing the materials that comprise those features. Repairs include the limited replacement in kind of those extensively deteriorated or missing parts of features, when there are surviving prototypes.	Replacing an entire water feature from the restoration period, when repair or limited replacement of deteriorated or missing parts is appropriate, or using destructive repair methods that damage the water feature.
19	**Replacing** an entire water feature from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing a deteriorated water feature from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
20	**Removing** or altering non character-defining water features from periods other than the chosen restoration period, such as a later retention pond that is no longer needed.	Failing to remove non character-defining water features from another period that confuses the depiction of the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
21	**Recreating** a missing water feature that existed during the restoration period, based on physical, documentary and oral evidence. An example could include recasting a fountain from its original mould.	Creating a water feature that was part of the original design, but was never actually built, or constructing a water feature thought to have existed during the restoration period, but for which there is insufficient documentation.

4.1.11 BUILT FEATURES

These guidelines provide direction when the built features of a cultural landscape have been identified as character-defining elements of an historic place. Built features can include archaeological remains; residential, commercial and institutional buildings; structures, such as dams or bridges; and caribou fences. A building may play a role as a character-defining element in a cultural landscape, in addition to having its own heritage value. Smaller features, such as gazebos, fences, free-standing walls and *statuary*, as well as site furnishings, such as benches, light standards and drinking fountains, are also built features. Built features may also include culturally significant objects or constructed symbols, such as *inukshuks*, crosses and medicine wheels.

Modern cultural landscapes, such as campuses and plazas, were planned and designed as a cohesive whole. Adding new features to satisfy regulatory requirements, such as ramps, guardrails and *bollards*, could affect their heritage value. Additions to recent cultural landscapes should be undertaken with the utmost respect and care, and complement the heritage value of the historic place.

Interpretive panels and directional signs are often added to historic places. If appropriate, these interventions should be integrated into the landscape in a manner that does not impair its heritage value.

These guidelines provide general recommendations for built features in a cultural landscape. When the built feature is an archaeological site, a building, or part of an engineering work, refer to the specific guidelines for those categories of historic places. For recommendations on specific materials that make up built features, refer to the Guidelines for Materials. Other relevant guidelines, such as Water Features and Spatial Organization, should be consulted when appropriate.

The East Gate Entrance Building at Manitoba's Riding Mountain National Park is a character-defining element of this cultural landscape that needs to be protected.

Key elements that define the modern heritage character of the former Ottawa City Hall include the ornamentation of the building's exterior with publicly commissioned art work. Exterior elements that contribute to the heritage value of a place should be part of a cyclical maintenance program to the same level as the building itself.

The original weathered sandstone gravemarker for John Parot's Grave is one of the oldest in Newfoundland and Labrador. It was replaced with a wooden replica made by a local resident, while the original was taken away for conservation.

The character-defining elements of Habitat 67 in Montreal include modern urban concrete furniture. These built features of the landscape complement and reinforce the building's forms, materials and colour.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the built features and how they contribute to the heritage value of the cultural landscape.	
2	**Understanding** the evolution of built features over time. Examples could include, using historic aerial photographs to understand the relationship of windmills, silos and water troughs in a ranch compound, or the placement of cairns on a jump site.	Undertaking project work without understanding the evolution of built features.
3	**Documenting** the function, condition, materials and surroundings of built features and the relationship of those features to each other and to the historic place, before beginning project work.	Undertaking interventions that affect the built features without conducting a survey of conditions, materials, surroundings and interrelationships.
4	**Assessing** the overall condition of built features early in the planning process so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining the built features by using non-destructive methods in daily, cyclical and seasonal tasks. This may include limited rust or paint removal and reapplication of protective coating systems in kind.	Using maintenance practices and materials that are abrasive or unproven; for example, using potentially damaging cleaning methods, such as grit blasting on wood, brick or soft stone, or using harsh chemicals on masonry or metals.
6	**Retaining** sound built features or deteriorated built features that can be repaired.	
7	**Stabilizing** a deteriorated built feature by using structural reinforcement, weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	
8	**Repairing** a deteriorated built feature by using recognized conservation methods. Repair may also include the limited replacement in kind of those extensively deteriorated or missing parts of built features.	Removing a deteriorated built feature that could be stabilized or repaired.
9	**Replacing** in kind extensively deteriorated parts of built features where there are surviving prototypes. The new work should match the old in form and detailing.	Replacing an entire built feature when limited replacement of deteriorated and missing parts is possible.
10	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This may include reviewing samples, testing products, methods or assemblies, or creating a mock-up.	
11	**Documenting** all interventions that affect the built features, and ensuring that this documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
12	**Repairing** extensively deteriorated built features by using non-destructive methods and materials.	Replacing an entire built feature when repair or limited replacement of deteriorated or missing parts is possible.
13	**Replacing** in kind an entire built feature by using the physical evidence of its form, material and detailing to reproduce it. If using the same kind of material is not technically, economically or environmentally feasible, then a compatible substitute material may be considered; for example, replacing redwood decking with cedar, a less endangered species. The replacement feature should be as similar as possible to the original, both visually and functionally.	Replacing an irreparable built feature with a new feature that does not convey the same visual appearance.
14	**Replacing** missing historic features by designing new built features that are compatible with the cultural landscape and based on physical, documentary and oral evidence.	Creating a false historical appearance because the new built feature is incompatible, or based on insufficient physical and documentary evidence.
	ADDITIONS OR ALTERATIONS TO A CULTURAL LANDSCAPE	
15	**Designing** a new built feature, when required by a new use, to be compatible with the heritage value of the cultural landscape. For example, erecting a new farm outbuilding, using traditional form and materials, or installing signs and lighting compatible with the cultural landscape.	Locating a new built feature in a manner that undermines the heritage value of the cultural landscape. Introducing a new built feature, such as an interpretive panel, that is visually incompatible with the cultural landscape.
	HEALTH AND SAFETY CONSIDERATIONS	
16	**Complying** with the health and safety requirements, in a manner that minimizes impact on the character-defining elements of the cultural landscape.	
	ACCESSIBILITY CONSIDERATIONS	
17	**Finding** solutions to meet accessibility requirements that are compatible with the built feature. For example, introducing a gently sloped walkway instead of a constructed ramp with handrails in a manner that does not detract from the built feature.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
18	**Repairing** deteriorated built features from the restoration period by reinforcing the materials and assemblies that comprise those features. Repairs will also generally include the limited replacement—preferably in kind—of those extensively deteriorated or missing parts of features when there are surviving prototypes. The new work should be unobtrusively dated to guide future research and treatment.	Replacing an entire built feature from the restoration period when repair or limited replacement of deteriorated or missing parts is possible, or using destructive repair methods, causing further damage to fragile historic material.
19	**Replacing** in kind an entire built feature from the restoration period that is too deteriorated to repair, using the same configuration and design details. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing a deteriorated built feature from the restoration period and not replacing it, or replacing it with an inappropriate new feature.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
20	**Removing** or altering non character-defining built features from periods other than the chosen restoration period.	Failing to remove non character-defining built features from another period that confuse the depiction of the chosen restoration period.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
21	**Recreating** a missing built feature that existed during the restoration period, based on physical, documentary and oral evidence, such as duplicating a corn crib from an existing *prototype*.	Installing a built feature that was part of the original design, but was never actually built, or constructing a built feature that was thought to have existed during the restoration period, but for which there is insufficient documentation.

4.2

GUIDELINES FOR ARCHAEOLOGICAL SITES

Archaeological sites fall under several categories and settings. Clockwise, from top left: the excavations at the Mansion House at Ferryland in Newfoundland and Labrador are an example of historical archaeology; Fathom Five National Marine Park in Ontario illustrates underwater archaeology; Writing-on-Stone Provincial Park in Alberta contains specimens of rock art; and Sirmilik National Park in Nunavut is a pre-contact site.

4.2 GUIDELINES FOR ARCHAEOLOGICAL SITES

Archaeological sites are places or areas where tangible evidence of past human activity is located *in situ* on, below or above ground, or on lands under water. In the context of historic places, Archaeological sites fall under two categories, and these guidelines apply to both. They are:

1. Archaeological sites that are historic places because they have been formally recognized by an authority as having *heritage value*;
2. Archaeological sites that are part of an historic place, such as a building, engineering work, cultural landscape or heritage district, and that contribute as *character-defining elements* to that historic place's *heritage value*.

An archaeological site is characterized by its environment including stratified deposits with physical traces of the site's formation that help determine its age and interpret its complexity. A site can also include one, or a combination of, the following character-defining elements:

- Features, such as postholes, hearths, stone tool manufacture areas, industrial staging areas, cairns and rock art, and natural features that have cultural significance;
- Structures, such as remains of stone walls, industrial machinery, fish weirs, tent rings and wharves, which can be below or above-ground, or underwater;

Because their character-defining elements are often submerged or underground, a large number of archaeological sites are not accessible. Communicating their heritage value is a challenge. Exposed remains, such as at the ones at Champs-de-Mars, Montreal not only add to our knowledge of past times and people, but they can also enrich our environment.

- *Archaeological objects*, such as artifacts, soil and botanical samples, animal remains, pollen, or any specimen associated with the site that provides information on its characteristics, function and significance;
- Physical places with evidence of human activity identified through local knowledge or oral tradition;
- Spatial relationships between the features, structures, objects and physical places identified above.

These elements embody the heritage value of the archaeological site. *Character-defining elements* may include elements of aesthetic, historic, scientific, cultural, social or spiritual importance, and intangible qualities and uses. A site's heritage value may lie as much in the information contained in the elements as in their evocative force, as vestiges of past histories.

Federal, provincial and territorial authorities maintain extensive inventories of archaeological sites that often include information on location, type of resources, state of conservation and time period. However, only a fraction of known archaeological sites are formally recognized in Canada. When such information is available in the inventories, it should be taken into account before conducting an intervention that may affect archaeological resources.

In principle, archaeological sites should be preserved *in situ* by limiting negative impacts on the site's physical integrity. However, in situations where preservation is threatened, a controlled archaeological investigation should be undertaken, using the highest recording standards to document the site's physical features. This would include situations where:

- Natural impacts threaten the site;
- Assessment demonstrates that unavoidable conflicts with a proposed project could jeopardize the site's heritage value;
- An archaeological research project is planned to enhance the site's heritage value by contributing to knowledge about the site or historic place.

ARCHAEOLOGICAL SITES AND THE NATURAL ENVIRONMENT

The maintenance of archaeological sites relies on periodic evaluations, and focuses on the archaeological site and its natural environment. Monitoring environmental conditions can help preserve archaeological sites and maintain the balance between the site and its environment.

The physical integrity of this excavated archaeological site at Fort Battleford, Saskatchewan, was temporarily protected from accidental disturbance by covering the ground with plastic sheets and erecting a small barrier fence. As required by law, the archaeological intervention was authorized and a permit was obtained before excavation began.

Any intervention or maintenance activity on historic places should endeavour to safeguard archaeological sites based on their contribution to the historic place's *heritage value*. An intervention planned on an archaeological site or area containing an archaeological site should involve an archaeologist and, where appropriate, other field scientists, conservators, architects, engineers, Elders and other knowledge keepers.

Before a conservation intervention takes place, essential steps must be taken to implement an appropriate conservation strategy. This would include, understanding the historic place's heritage value and character-defining elements; thoroughly planning the proposed intervention; and identifying an appropriate use of the place. Additionally, most jurisdictions require that archaeological impact assessments be performed before any project is undertaken.

When carrying out interventions at an historic place, new archaeological resources may be discovered that directly relate to the historic place's heritage value. In this situation, impact assessments should be carried out to evaluate the significance of a newly discovered resource, and how this will impact on the historic place's heritage value.

Because most archaeological investigations in Canada are performed as impact assessments, these guidelines are useful in guiding the evaluation, planning and mitigation measures required at historic places. The principle of minimal intervention should always guide any actions affecting archaeological sites.

Archaeology and the Law

All provinces and territories have legislation that protects, to varying degrees, the physical evidence connected to archaeological sites. Generally, this legislation provides for:

- Protecting and managing archaeological sites and resources;
- Issuing permits to qualified archaeologists for archaeological investigations;
- Carrying out archaeological impact assessments prior to development, or activities that may have an impact on the site;
- Identifying repositories for the archaeological objects collected;
- Discussing plans with affected groups;
- Issuing stop work orders when accidental discoveries are made, and/or human remains are discovered.

There is no federal legislation specific to archaeological sites on federal lands. The *Canadian Environmental Assessment Act* is the main, relevant federal legislation. The Act covers the impacts of development projects on the environment and on cultural and archaeological resources. Under the *Canada Shipping Act, 2001* (CSA 2001), all recovered material of wrecks (ships and aircrafts) must be reported directly to the regional Receiver of Wreck, an officer of Transport Canada. Any person who recovers material from a wreck during an activity, such as fishing or diving, or during an archaeological excavation, has to comply with the CSA 2001. The federal government also has various policies and departmental directives that support archaeological assessment and mitigation, when projects could potentially disturb archaeological resources on federal land.

In some parts of Canada, Aboriginal land claim agreements address issues such as archaeological site protection, ownership and access rights, consultation, permit and reporting requirements and conservation planning.

ACCIDENTAL DISCOVERIES

Where archaeological resources are inadvertently discovered, the appropriate archaeological authorities should be contacted and an archaeologist assigned to evaluate the site. A clear understanding of the value of the archaeological site is crucial to determining the appropriate course of action.

In the case of human remains, all activities should be halted and the police authorities or coroner must be contacted. If the police authorities determine that the remains are not the subject of a police or coroner's investigation, then the appropriate archaeological authorities in the jurisdiction should be contacted.

EVALUATING AN ARCHAEOLOGICAL SITE

Archaeological sites should not be impaired prior to evaluation. As with other types of heritage places, an archaeological site must be evaluated before an intervention, and its heritage value and character-defining elements identified. However, given the nature of archaeology, interventions often uncover new data, in which case, the heritage value of new finds will need to be evaluated. As such, an archaeological site may be subject to re-evaluation as new information is gathered.

Cemeteries, Burial Grounds and Other Culturally Sensitive Places

Culturally sensitive places are defined here as officially recognized places that have been given special meaning by a group or a community. Those places can include burial grounds, above-ground burials, abandoned cemeteries and other sites that may have cultural or spiritual value to a community.

Each province or territory has its own heritage/archaeology/cemetery statutes that relate to burial sites and human remains. In addition, some settled land claims agreements set out obligations related to burial sites and human remains.

It is best practice to inform, and in some cases mandatory to consult, the local and/or culturally affiliated Aboriginal and non-Aboriginal communities before visiting or intervening on a culturally sensitive place, or before removing human remains and funerary objects considered archaeological.

APPLYING THE GUIDELINES

The Guidelines for Archaeological Sites contain guidelines that apply to Archaeological Sites, regardless of setting, and guidelines related to archaeological sites in seven settings, including: the urban environment; industrial sites; sites in cultural landscapes; sites in protected natural areas; sites underwater; rock art and culturally modified trees; and culturally sensitive places. When conserving any archaeological site, first refer to the guidelines for Archaeological Sites and then to the subsequent guidelines related to the setting in which the archaeological site is located, if applicable.

These guidelines cover two conservation treatments:

1. *Preservation*, which applies to all projects involving archaeological sites;
2. *Rehabilitation*, which covers interventions to sites that will be made accessible and visible, and interventions to sites that will be incorporated into a contemporary project in an *historic place*.

An intervention an archeological site will focus on *Preservation* first, but may also include *Rehabilitation*. *Restoration*, on the other hand, is never applied to the conservation of archeological sites.

This tent ring overlooking an unnamed lake in Tuktut Nogait National Park, Northwest Territories, is part of a larger site that includes several large tent rings and hunting blinds. Moving any of the stones forming the tent ring would cause a loss of heritage value.

These guidelines should not be used in isolation. As there may be heritage value in the relationships between archaeological sites and cultural landscapes, buildings or engineering works, those guidelines should also be consulted, and applied where appropriate, before undertaking an intervention.

UNDERSTANDING AND ARCHAEOLOGY

Archaeological resources differ from extant resources because their character-defining elements are often hidden or unknown. Depending on the information on hand, understanding and documenting the heritage value of an historic place before carrying out an intervention may require archaeological research, in addition to documentary research and local knowledge. Such endeavours must be grounded in the principle of minimal intervention. Archaeological investigation includes surveying, testing and excavation. Throughout the process, all work is documented. Documenting an archaeological site involves the recording of information gained through a variety of methods, including, but not limited to: written documents, such as field notes generated by fieldwork; photographic documents, such as rectified photographs; and non-photographic documents, such as maps and plans drawn from results of surveys.

4.2.1 ARCHAEOLOGICAL SITES

These guidelines provide direction for the conservation of archaeological sites when formally recognized as an historic place, or part of an historic place.

At archaeological sites, remnants of the past may be deeply buried, leaving no indication of their existence, or they may be partially or completely submerged in a lake, river, or sea (for example, a shipwreck). They can also rest above ground, or on the surface of the ground, such as the remains of a dugout house.

At the Colony of Avalon site in Ferryland, Newfoundland, its heritage value lies as much in character-defining elements, such as the in-situ archaeological remnants of early 17th century plantation life, as in the continued public use of the traditional fishing premises.

Archaeological excavations are conducted to better understand the occupation of the site by the Beothuks, seasonal European fishermen and settlers such as David Kirke.

Preservation

Preservation may involve documenting, stabilizing, sheltering, capping or reburying the site. This may be the primary treatment when:

- The historic place's materials, features and spaces are essentially intact, thus conveying the heritage value without extensive repair or replacement;
- When the historic place's materials, features and spaces could be disturbed by natural or human-induced activities, resulting in the loss of *heritage value*.

A *Preservation* plan should be developed before the works begin.

Rehabilitation

Rehabilitation involves actions to present and convey the *heritage value* of an archaeological site. These actions may include reassembly; integration; ground markings; pathways or trails; and structures, such as *interpretive constructs*.

Reassembly refers to putting back together existing but dismembered parts, based on research, and performed as part of the site's *Rehabilitation*. Minimal repairs and replacement of deteriorated features should only be considered when the original material cannot be retained. These interventions should be identifiable.

Integration can involve incorporating the archaeological site's *heritage value* and *character-defining elements* in a project, such as the archaeological remains of a stone wall into a new construction. The project should be designed so that the site's *heritage value* is neither affected nor its *character-defining elements* obscured, damaged or destroyed. Integration may be considered when the archaeological site's *heritage value* has been considered in a project that protects it; or when the archaeological site is a *character-defining element* of an historic place that contributes to the *heritage value* of that historic place; or when the archaeological site acquires a contemporary function while retaining its *heritage value*.

Ground markings, such as stones or vegetation, are often used to identify the presence of an archaeological site when it is not visible. Markings should be kept to a minimum to avoid cluttering the site. Alternative methods, such as self-guided tour maps and escorted walking tours, should also be considered as a means to provide information.

Pathways or trails may be required to provide access to and between archaeological sites. The new pathway can either follow an historic access route, provided that the archaeological resources are not impaired, or be situated in a non character-defining area of the site.

Structures, such as shelters and *interpretive constructs,* should avoid disturbing surviving archaeological evidence. In addition, *interpretive constructs*, such as plaques or panels, should take into account evidence from all available sources to communicate the site's *heritage value*, and be clearly identifiable.

Identifying the presence of archaeological features by using ground markings is an excellent way to communicate the heritage value of a site. The location and size of the northwest tower of the second Habitation de Champlain, uncovered at Place-Royale in the arrondissement historique de Québec, has been highlighted with ground markings without affecting the site's character-defining elements.

When considering a new use for an archaeological site, the use should be determined from the planning phase after a clear understanding of the site's *heritage value* has been obtained through archaeological investigations and other research. If the use of an historic place is part of its *heritage value*, then that use should be retained. This is particularly relevant for spiritual places and places of memory that have a strong archaeological dimension.

Rehabilitation may be considered as the primary treatment when the archaeological site's features, structures and objects have been stabilized, and there is an opportunity to allow access and convey its *heritage value*. A plan for Rehabilitation should be developed before work is undertaken. When planning a *Rehabilitation* project on archaeological sites, also consult the Guidelines for Materials.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the character-defining elements of the archaeological site and how they contribute to its heritage value.	
2	**Understanding** the archaeological site through documentary research, local knowledge and archaeological investigations.	
3	**Documenting** the historic place and surroundings before beginning project work, or in anticipation of future projects, particularly where the terrain will be altered, to determine the presence of archaeological sites and the potential impact on them from the project work.	Proceeding with an intervention without properly documenting the historic place to determine the potential presence of an archaeological site.
4	**Documenting** the archaeological site to determine the natural and human impacts that could affect it.	
5	**Documenting**, protecting and maintaining the archaeological site's heritage value and character-defining elements, by reaching a reasonable balance between the objectives of archaeological research and their preservation *in situ*. Choices should be periodically reassessed during the investigation.	Carrying out archaeological investigations without periodically weighing the benefits of pursuing the excavation against those of ceasing the work.
6	**Protecting** an archaeological site from disturbances by planning and undertaking the necessary archaeological investigation and mitigation work. The work should involve qualified individuals and be undertaken only when there is potential for disturbance.	Allowing unqualified personnel to perform archaeological mitigation work and data recovery, resulting in the loss of important archaeological data or material.
7	**Protecting** and maintaining the physical integrity of an archaeological site, including soil, stratigraphy and spatial distribution of artifacts, from natural and human-induced deterioration by identifying, evaluating, minimizing and monitoring the disturbance to the archaeological site and its setting.	Disturbing the context of an archaeological site, thus compromising its physical integrity and associated scientific and research information.
8	**Protecting** and maintaining the physical integrity of character-defining elements, including archaeological objects and records that relate to the site, from natural and human-induced deterioration, during and after excavations. This could include appropriate installations, such as fences, caps, shelters or infill, or proper long-term storage for objects and records.	Introducing a use, activity, feature or equipment into areas where it disturbs or damages the archaeological site.
9	**Protecting** and maintaining an archaeological site by striking a balance with the objectives of conserving its natural environment.	Damaging an archaeological site as a consequence of efforts to preserve, rehabilitate, or restore a natural environment.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
10	**Protecting** and maintaining the environment of an archaeological site, for example, by preventing water penetration and maintaining proper drainage in dry environments, and preventing dehydration of waterlogged character-defining elements in wet environments.	
11	**Stabilizing** deteriorated, collapsed or deformed features and structures through appropriate and reversible methods, such as structural consolidation, shelters, capping, or infill.	
12	**Assessing** the factors that will affect protective and stabilizing installations, such as shelters or caps. For capping, factors could include soil composition, level of humidity, terrain, presence or absence of vegetation, compression strength and permeability. For shelters, factors could include the geological structure that supports the site, the nature of the materials and environmental and human-induced stressors.	
13	**Designing** protective and stabilizing structures, such as caps, shelters or fences in a manner that does not disturb or affect character-defining elements.	Designing protective and stabilizing structures that disturb or affect character-defining elements, such as resting a fencepost on the remains of a stone wall,
14	**Protecting** character-defining elements when installing protective and stabilizing structures. This includes activities associated with setting up the structures, such as the placement of soil and mineral layers and the circulation of heavy machinery.	Using materials to mark the location of a site without assessing their physical properties and their effect on resources.
15	**Marking** the location of the site and the limits of the excavated area with a reversible protective layer such as a geotextile membrane.	Using materials that can be confused with the site's cultural layers.
16	**Infilling** or backfilling the archaeological site, when appropriate, to stabilize the *in situ* remains and the stratigraphic profiles, using excess excavation sediments or new fill. This will provide a proper preservation environment that balances appropriate levels of humidity, soil acidity, compaction and protection from roots.	Infilling or backfilling the archaeological site in ways that negatively impact on the character-defining elements.
17	**Removing** fragile objects, features or structures with surrounding soil from environments that prove difficult to control, such as a wet environment or permafrost.	
18	**Stabilizing** the archaeological object, feature or structure before its removal.	

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
19	**Documenting** the state of conservation of the archaeological object, feature or structure at the time of its removal.	
20	**Preserving** the archaeological object once removed from its discovered location. The work should be performed by qualified individuals.	
21	**Retaining** sound wooden and masonry elements, earthworks or deteriorated elements that can be repaired.	
22	**Cleaning** objects, features and structures, using recognized preservation methods, when necessary, to halt deterioration.	
23	**Carrying out** surface cleaning tests to determine the gentlest method possible and the appropriate level of cleanliness. The test should be observed over a sufficient period of time to determine its immediate and long-term effects.	
24	**Developing** a maintenance strategy that considers both existing vegetation and new appropriate vegetation. Monitoring the effects of vegetation on the character-defining elements.	Allowing for vegetation to grow, or removing vegetation without considering the potential effects on the *in situ* resource, and failing to monitor the effects of changes in vegetation.
25	**Monitoring** the effectiveness of protective and stabilizing structures regularly to assess whether they are achieving expected preservation results.	
26	**Documenting** interventions that affect the archaeological site, and ensuring that the documentation is readily available to those responsible for future work.	

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
27	**Preserving** and revealing the character-defining elements to convey the site's heritage value. This should be based on sound and up-to-date research.	
28	**Repairing** deteriorated, collapsed, deformed, or incorrectly placed components of features and structures through minimal intervention. This could include resetting, reassembling, retying and jointing, using original building methods and materials whenever possible.	Repairing deteriorated, collapsed, deformed or incorrectly placed components of features and structures, using incompatible contemporary building methods and materials. This could include such approaches as dismantling and *in situ* reconstruction, or reassembling without proper documentation.
29	**Repairing** and stabilizing deteriorated wooden or masonry elements with structural reinforcement and weather protection, or correcting unsafe conditions, as required, until any additional work is undertaken. Repairs should be physically and visually compatible with the heritage value of the archaeological site.	Proceeding with physically and visually incompatible temporary repairs and stabilizing work.
30	**Balancing** the need to preserve the site's heritage value and character-defining elements with the desire to allow public access for educational purposes.	Allowing access while compromising heritage value and character-defining elements.
31	**Exhibiting** archaeological sites only when the proposed project maintains the site's heritage value.	Exhibiting archaeological sites, i.e., exposing character defining elements, when such actions impair heritage value.
REASSEMBLY		
32	**Reassembling** components of character-defining elements, using the least intrusive method when the information about their original location and materials, degree of deterioration and human-induced and natural pressures have been recorded and assessed. Reassembly should only be performed if it contributes to the heritage value of the archaeological site and does not impact on its character-defining elements, either directly or indirectly.	Considering the reassembly of components of the site's character-defining elements, without adequately assessing and recording the site's original location and materials, its degree of deterioration, and human-induced and natural pressures.
33	**Replacing** missing components by designing new components that are compatible with the character-defining elements of the archaeological site, based on physical, documentary or oral evidence. The new work should be well documented, distinguishable, and unobtrusively dated to guide future research and treatment.	Replacing missing elements in a manner that confuses the authenticity of the site's character-defining elements.

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
INTEGRATION		
34	**Integrating** an archaeological resource into a landscape, building or structure in a manner that communicates its heritage value and preserves its character-defining elements.	Integrating an archaeological resource into a landscape, building or structure in a manner that affects its heritage value and character-defining elements, such as creating a design where a structural load is supported by the archaeological remains.
35	**Preserving** archaeological resources through appropriate maintenance of the new landscape, building or structure.	
GROUND MARKINGS		
36	**Ground marking** in areas where the archaeological site was found, surveyed, recorded and preserved *in situ*. Ground marking should only be considered when there is no risk of negatively affecting the site's heritage value and character-defining elements.	
37	**Protecting** archaeological resources by using a design and materials that do not affect the physical integrity of the character-defining elements, such as installing surface stones to delineate the perimeter of a buried foundation wall. The materials should be compatible with the setting, texture, colour and shape of the site.	Selecting a design or materials that are incompatible with the site's heritage value.
PATHWAYS OR TRAILS		
38	**Introducing** new pathways or trails in a manner that does not affect the physical integrity of the character-defining elements, such as locating them in areas of the site free of archaeological resources. New pathways or trails should not follow the course of historic circulation routes unless this can be achieved without damaging character-defining elements.	Introducing new pathways or trails directly on top of former historic routes.
39	**Selecting** new materials that are compatible with those used in existing circulation patterns, with the setting, and with the site's heritage value.	
40	**Designing** pathways or trails that allow access to the character-defining elements, while protecting the archaeological site. If a new access point is required, it should be distinguishable and have minimal impact on the site's heritage value.	
41	**Providing** safe and secure access to the archaeological site while protecting heritage value.	Compromising the heritage value of an archaeological site in an attempt to allow safe and secure access.

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
STRUCTURES		
42	**Installing** a shelter that respects the heritage value of the archaeological site and its setting, where appropriate.	Installing a shelter that obscures the site or the understanding of its heritage value.
43	**Designing** and building structures, such as shelters, buildings or *interpretive constructs*, that neither affect the physical integrity of the character-defining elements, nor the historic place's heritage value.	
44	**Selecting** materials and forms in designing structures that are physically and visually compatible with the site and setting.	Selecting materials and forms that are incompatible with the historic place's heritage value and character-defining elements.
45	**Designing** interpretive constructs, speculative components and access points in a manner that clearly distinguishes what is historic and what is new.	Creating interpretive constructs and speculative components that could be confused with the site's character-defining elements, thus creating a false sense of history.
46	**Maintaining** structures from decay to protect the historic place's character-defining elements.	

4.2.2 SITES IN URBAN ENVIRONMENTS

These guidelines provide direction when an archaeological site is located in an urban environment and contributes to its heritage value. Urban environments refer to settlements, such as villages, towns and cities that have been densely populated over an extensive period. They potentially provide a large concentration and complexity of archaeological sites, including historic period structures and features, such as burials, buildings and remains of public works, and Aboriginal sites.

Urban sites potentially provide a large concentration and complexity of archaeological sites. A witness of market, civic, commercial and residential uses for over two centuries, the Market Square Heritage Conservation District in Kingston ON, contains significant archaeological resources. Archaeological investigations have revealed a series of surfaces from different time periods. Qualified personnel expose a cobblestone surface as daily market activities continue beyond the fence.

Conserving archaeological sites in urban environments, such as the St-Louis Forts and Château National Historic Site of Canada in Québec City beside the heavily visited Château Frontenac and Dufferin Terrace, faces numerous challenges such as pollution, new constructions, upgrades for public works and intensive traffic.

Conserving archaeological sites in urban environments includes two perspectives: the challenges of preserving archaeological sites in densely populated areas, or archaeology in the city; and the study of the evolution of the settlement itself, or archaeology of the city. Both perspectives are essential in preserving the relationship between individual sites and the settlement as a whole. Maps and historical accounts can help us understand this evolution, but certain elements of the evolution can be missing from these sources, such as an Aboriginal presence. Archaeological surveys are a key resource in providing this missing information. The intent is to focus on preserving components whose significance contributes to an understanding of the whole.

Urban environments are rapidly changing, which may lead to the disappearance of past functions and uses. Having to deal with numerous stakeholders and uses, such as private owners, intensive traffic, pollution, new construction, upgrades to public works, and pressures for private development or public activities can also be a challenge. The proximity of archaeological sites to public services makes them more accessible to the local community, while also making them vulnerable to damage.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites. When conducting work on archaeological sites in an urban environment, also consult the Guidelines for Cultural Landscapes, including Heritage Districts.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the urban environment of the archaeological site before any intervention is undertaken.	
2	**Documenting** archaeological sites, including determining their individual significance in the settlement history of an urban environment.	Documenting archaeological sites individually, without considering the evolution of the urban environment to which it belongs.
3	**Preserving** archaeological sites in urban environments in situ, through minimal interventions, such as stabilization and consolidation.	Preserving archaeological sites in urban environments *in situ*, without adequately protecting the site from the potentially harmful effects of contemporary uses.
4	**Documenting** the site thoroughly when contemporary uses could threaten archaeological resources.	
5	**Preserving** links with nearby features and settlement patterns to better understand the heritage value of the archaeological site.	Preserving the archaeological site in isolation or destroying significant elements of the settlement pattern resulting in the loss of the understanding of the settlement's evolution.
6	**Protecting** the character-defining elements from excess traffic by limiting access to and around the archaeological site.	Allowing access to and around the archaeological site without adequately protecting the character-defining elements.
7	**Maintaining** and preserving archaeological sites by controlling vegetation, cleaning traces of pollution, and removing graffiti from character-defining elements using recognized conservation methods.	Failing to take actions to adequately maintain the site and preserve the character-defining elements.

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
8	**Revealing** the presence of archaeological sites in urban environments with ground markings, interpretive constructs, or other appropriate methods.	
9	**Creating** a buffer area around the site to enhance visitor experience. The buffer area should help to communicate the site's heritage value and not detract from it.	
10	**Integrating** archaeological sites in the urban environment while preserving their heritage value, including finding uses or activities that complement the heritage value of the site.	Allowing uses or activities that undermine the heritage value of the archaeological site.

4.2.3 INDUSTRIAL SITES

These guidelines provide direction when an archaeological site is associated with, or is a part of an industrial site, and contributes to its heritage value.

This partially uncovered hydraulic turbine at Pointe-des-Seigneurs, Lachine Canal National Historic Site of Canada in Montreal was installed and used by the Caledonian Iron Works Co. in the late 19th century.

Conserving archaeological remains of industrial components *in situ*, such as this turbine, contributes to our understanding of industrial processes and helps illustrate a site's functional arrangement.

In a comprehensive approach, industrial archaeology deals with all the components that contribute to understanding and communicating the knowledge and values associated with an industrial site. Industrial archaeological sites contain physical elements organized in a system constructed and used for industrial activities. The purpose of these sites often resides in their design, or in the concept behind their functions, reflecting an industrial process that is inherent in the interrelations of the site's material remains. As such, industrial archaeology aims to conduct a systematic study of structures and archaeological objects to better understand the industrial past. The process of industrial archaeology is usually part of a co-ordinated multidisciplinary approach.

Conserving an industrial site involves not only preserving physical remains, but also recognizing the site's development phases by studying the physical remains and how they evoke the human activities that took place at the site. Appreciating physical industrial remains is based on understanding the knowledge, values and messages they convey. A successful rehabilitation helps to understand the connection between a conserved physical record and the site, and to appreciate the interdependence of the site's character-defining elements. The chain of production, brand image, various technologies and social trends underlying this cultural heritage, are often studied. As well, physical and visual connections can communicate the interrelations between the industry, communication networks and adjacent human communities.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites. When conducting work on an industrial archaeological site, it is important to also consult the Guidelines for Cultural Landscapes, the Guidelines for Buildings and the Guidelines for Engineering Works.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the industrial environment of the archaeological site before any intervention is undertaken.	
2	**Documenting** and protecting character-defining archaeological remains *in situ*, such as industrial components, where possible, to illustrate the functional arrangement of the industrial site.	Removing, damaging or destroying industrial components and storing them in a location that impairs their heritage value. Failing to prepare an adequate inventory of the industrial components.
3	**Researching** and documenting industrial processes and operations contributing to the knowledge of the site, including oral history accounts of former workers, where appropriate.	Failing to undertake adequate research to document various aspects of operations.
4	**Preserving** documentary and corporate written records associated with the industrial site and making them accessible for future research.	
5	**Protecting** and maintaining the remains of industrial machinery *in situ* to preserve their heritage value.	Moving the remains of industrial machinery thus affecting their heritage value.
6	**Carrying out** archaeological work to collect data before the archaeological site is disrupted by soil decontamination operations.	Failing to consider the archaeological work when planning decontamination operations, thus running the risk of losing information in last-minute salvage operations.

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
7	**Respecting** the symbolic and associative value of the character defining elements of the site when developing the rehabilitation concept.	
8	**Ensuring** consistent comprehension of the various components of the industrial site by drawing from its constructed elements, industrial components and objects, and their functional arrangement.	
9	**Preserving** the remains of industrial structures and components *in situ* to retain their functional arrangement.	Removing or relocating the remains of industrial structures and components that contribute to the site's heritage value.
10	**Integrating** a new structure into an existing industrial archaeological site in a manner that respects its heritage value and character-defining elements.	
11	**Maintaining**, re-establishing or illustrating the functional arrangement of the industrial archaeological site when new structures are added.	

4.2.4 SITES IN CULTURAL LANDSCAPES

The heritage value of the Fortress of Louisbourg NHSC in Nova Scotia resides in a number of character-defining elements, including preserved elements of an 18th Century cultural landscape and a number of known and unknown archaeological resources. Several of these archaeological resources, in particular those situated along the coastline, are at risk due to the storm surges hitting the site in the past years.

These guidelines provide direction when an archaeological site is located in a cultural landscape and contributes to its heritage value. In this document, a cultural landscape is defined as any geographical area that has been modified, influenced or given special cultural meaning by people. Cultural landscapes are often dynamic, living entities, continually changing because of natural and human-influenced social, economic and cultural processes. Archaeological sites in cultural landscapes can be components of Aboriginal landscapes, city parks, or rural areas. Those landscapes may include gardens, hunting and fishing sites, bison jumps, medicine wheels, cairns and Aboriginal sites that have a spiritual dimension.

An appropriate conservation approach should consider the relationship between dispersed archaeological sites and between the sites and their environment. Factors, such as the visual impacts of interventions, must be considered to preserve the cultural landscape. In addition, these can be living sites where local communities still carry out activities. Archaeological sites located in cultural landscapes can be identified by traditional archaeological techniques. The evolution of these sites can also be documented through oral history of local communities or groups; written records, such as censuses; and visual records, such as aerial photographs and historic artwork.

Archaeological sites in cultural landscapes can be vulnerable to natural erosion, animal grazing and burrowing, and land alteration. Human factors, such as plowing, infrastructure development and recreational activities, can also affect an archaeological site in a cultural landscape.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites. When conducting work on archaeological sites in cultural landscapes, also consult the Guidelines for Cultural Landscapes.

Kejimkujik National Historic Site of Canada in Nova Scotia has been designated as a Mi'kmaq cultural landscape. Archaeological remains of fishing and sites such as fish weirs, are part of the cultural landscape. Stone alignments set across a stream, with baskets and wooden traps, helped the Mi'kmaq harvest seasonal runs of fish on the Mersey River. The stone vestiges of weirs, as well as their position in the cultural landscape, must be preserved.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the cultural landscape in which the archaeological site is located before any intervention is undertaken.	
2	**Documenting**, protecting and maintaining the patterns of archaeological sites located in a cultural landscape where their multiplicity constitutes a character-defining element.	Documenting sites individually, without documenting their pattern on the cultural landscape.
3	**Preserving** archaeological sites *in situ*, for example, when numerous sites form a network, such as military sites on a defensive line.	Preserving a sample of *in situ* resources without considering the relationship between the selected sites, thus affecting the heritage value.
4	**Preserving** representative samples *in situ* as well as their spatial relationships.	
5	**Protecting** and maintaining past links connecting archaeological sites, such as roads, trails, paths and visual relationships.	Damaging or altering former links connecting archaeological sites.
6	**Protecting** and maintaining the environmental conditions in which the archaeological site has been preserved.	Altering environmental conditions that could result in damage to the archaeological site.
7	**Protecting** character-defining elements from the impacts of agricultural activities, by selecting sensitive agricultural practices, such as lifting the plowshare or cultivator; avoiding identified areas; managing grazing by livestock; and assessing appropriate stock levels.	Selecting agricultural practices without considering their potential effects on the site's character-defining elements.
8	**Stabilizing** archaeological sites by maintaining appropriate vegetation. The potential impact of the planting material on the character-defining elements should be evaluated.	Failing to maintain vegetation, or using inappropriate vegetation, resulting in a deterioration of the archaeological site and loss of information.
9	**Protecting** and maintaining character-defining natural features and environments, such as cliffs, hills, shores and viewscapes.	Damaging character-defining natural features and environments; for example, remodelling or reshaping the landscape, or installing structures that negatively impact on the site and the viewscapes.
10	**Protecting** and maintaining archaeological sites by developing a vegetation management strategy, including opening up the landscape by thinning or removing trees from the archaeological site, without compromising its heritage value.	Altering the landscape, without previously developing a vegetation management strategy based on the archaeological site's heritage value.

4.2.5 SITES IN PROTECTED NATURAL AREAS

These guidelines provide direction when an archaeological site is located in a protected natural area — such as a national or provincial park, conservation area or wetland — and contributes to its heritage value. Large areas of historical significance, such as rural heritage districts, can also include protected natural areas or ecosystems that contribute to the historic place's heritage value.

Ecological restoration programs can be an opportunity to maintain or enhance the preservation of archaeological sites. They can also be destructive if archaeological investigations are not conducted. When engaging in the ecological preservation or restoration of a protected natural area, it is important to understand the area's evolution and human settlement to preserve the archaeological site and the environmental conditions that allowed its preservation.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites. For additional information, consult the guidelines for Ecological Features (4.1.7) and the "Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas" (Parks Canada and the Canadian Parks Council, 2008).

Archaeological sites in natural protected areas, such as these remains of a caribou fence near Firth River, in Ivvavik National Park, Yukon, contribute to our understanding of the evolution and the human settlement of these areas.

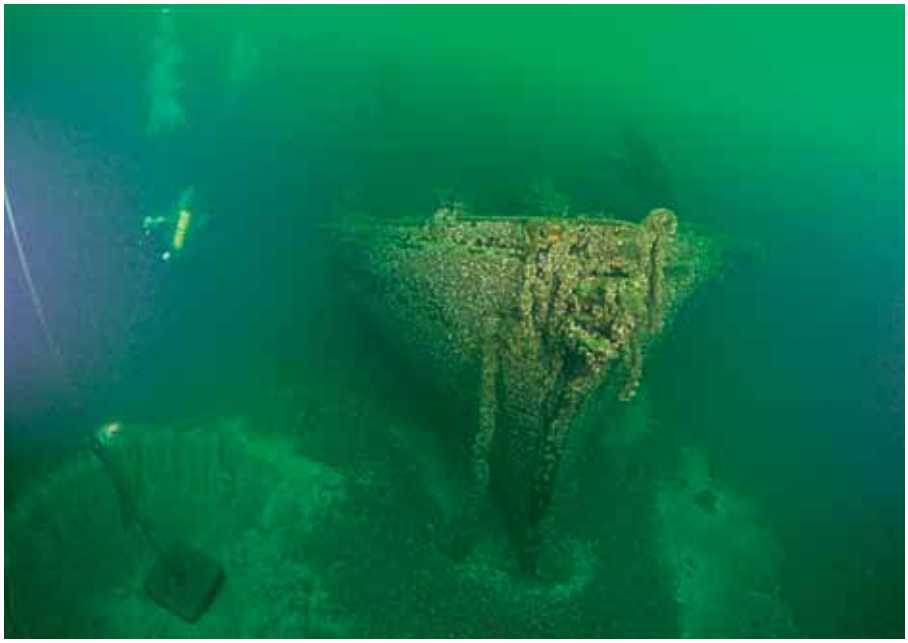
Non-intrusive activities, such as surveying this wreck in the Saguenay-St. Lawrence National Marine Park in Quebec, help preserve both the site's character-defining elements and the area's ecosystem.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

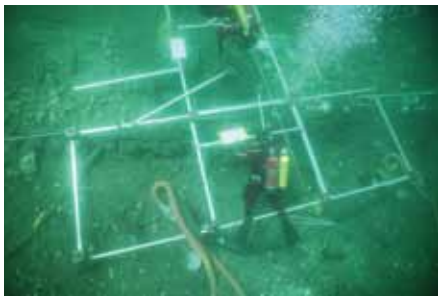
	Recommended	Not Recommended
1	**Understanding** the protected natural area where the archaeological site is located, before any intervention is undertaken.	
2	**Understanding** the heritage value of archeological sites in a protected natural area, including understanding the effects of human settlement on the environment.	Failing to understand the effects of human settlement on the environment of a protected natural area.
3	**Preserving** the heritage value and character-defining elements of an archaeological site *in situ* without compromising the ecological integrity of the protected natural area.	Destroying archaeological sites to preserve the ecological integrity of the protected natural area.
4	**Protecting** and preserving the heritage value and character-defining elements of an archaeological site when developing and implementing ecological restoration strategies.	
5	**Protecting** and maintaining the environmental conditions that preserve the archaeological site.	Altering the environmental conditions without considering their role in preserving the archaeological site.
6	**Stabilizing** an archaeological site with the appropriate use of vegetation to preserve both its heritage value and character-defining elements, and the area's ecosystem. The potential impact of the planting material on the character-defining elements should be evaluated.	Planting vegetation that would negatively affect the preservation of archaeological sites.
7	**Protecting** and maintaining an archaeological site by developing and implementing a vegetation management strategy that preserves both its heritage value and character-defining elements, and the area's ecosystem.	Developing and implementing a vegetation management strategy that negatively affects the heritage value and character-defining elements of the archaeological site, or the ecosystem of the protected natural area.
8	**Protecting** and maintaining the character-defining natural features and environment of an archaeological site, such as cliffs, hills, shores and viewscapes.	Altering landscape features to maintain the ecosystem, without considering the effects on the heritage value of the archaeological site.

4.2.6 SITES UNDERWATER

These guidelines provide direction when an archaeological site is located underwater. Underwater archaeological sites can be submerged, or in intertidal or wetlands environments, and include sites as varied as shipwrecks and their debris fields, intertidal structures, such as fishing weirs or canoe runs, harbour works, wharves and submerged landscapes. They also include archaeological sites on land inundated by reservoirs or rises in sea level.



Installing permanent boat mooring systems away from the archaeological site's structures and features is an excellent way to prevent visitors from mooring and anchoring their boats on a site's structure, which could damage the character-defining elements.



Interventions, such as this archaeological excavation of a Basque period wreck at Red Bay National Historic Site of Canada, Newfoundland and Labrador, are documented in many ways such as field notes, drawings, photographs, as well as videos.

Although found in diverse environments, these sites are usually partially or wholly submerged in water, whether by the sea, lakes, rivers, marshes or bogs. They can be subjected to cyclical wet–dry exposure due to tides or other water level fluctuations. Found on a range of substrates, from rock to soft sediments, sites underwater can be completely uncovered, buried, or periodically revealed due to sediment movement caused by waves and currents. Some sites are reached easily, while others are found in deeper water far from shore and accessible only by diving or other underwater investigation methods. Like terrestrial sites, they host a range of plant and animal life.

Natural environmental factors affect a site's condition. Underwater sites usually settle into equilibrium with their environment, which can foster slow rates of decay and promote good site preservation for hundreds, or even thousands of years. Underwater sites, particularly those buried by sediment, are particularly rich in organic material, which creates a significant conservation and preservation challenge. All underwater archaeological sites can be damaged, not only by complex and dynamic natural forces, but also by human activities, such as construction, dredging, commercial fishing and some forms of recreational diving and anchoring, as well as vandalism and looting. Sites, such as shipwrecks, can retain a high level of structural integrity similar to a heritage building on land. In some cases, it is possible to mitigate naturally induced deterioration. Non-intrusive approaches that promote *in situ* conservation, *minimal intervention* and non-intrusive study and appreciation are recommended.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the underwater site and its environment before any intervention is undertaken, including factors such as water depth, temperature, salinity, currents and biological activity.	Conducting an intervention without understanding the underwater site and its environment.
2	**Preserving** the underwater archaeological resources *in situ*.	
3	**Removing** artifacts under exceptional circumstances and only after thorough documentation and surveying have been carried out.	
4	**Protecting** underwater sites from human impacts, such as marine construction, dredging, log salvage, shoreline development, anchoring and unauthorized artifact removal.	Failing to protect underwater archaeological sites from damaging human impacts and unauthorized activities.
5	**Creating** protected zones, where appropriate, to control and monitor human access and activities.	
6	**Maintaining** and stabilizing environmental conditions to preserve character-defining elements, where possible and practicable.	Modifying the environmental conditions that contribute to preserving the site's character-defining elements.
7	**Protecting** underwater resources by installing specialized protective and stabilizing systems; for example, structural reinforcement, replenishing sand, ballasted tarps, sandbagging, sacrificial anodes and sediment traps, only after measures are taken to document and maintain the integrity of the character-defining elements.	Installing specialized protective and stabilizing measures without prior documenting.
8	**Monitoring** and maintaining underwater protective and stabilizing interventions.	Stabilizing underwater sites using methods that damage their character-defining elements, or failing to monitor and maintain underwater protective and stabilizing interventions.
9	**Removing** flora and fauna only when necessary to protect or record underwater resources.	Removing flora, such as kelp, or fauna, such as mussels, from the underwater resources, resulting in the loss of heritage value.

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
	PATHWAYS OR TRAILS	
10	**Preserving** and exhibiting the site's heritage value through low-impact diving practices using pre-planned trail and signage systems.	Allowing visitors to access sites with no instruction, code of practice, preventive signage, or trail system to help protect the site's integrity.
11	**Protecting** submerged archaeological sites from visiting divers and charter boats, by installing permanent boat mooring systems independent of the site's structures or features.	Attaching boat moorings directly to a site's structure and anchoring into a site to provide access to visiting divers.
12	**Monitoring** visitor impact on underwater archaeological sites.	

4.2.7 ROCK ART AND CULTURALLY-MODIFIED TREES

These guidelines provide direction when an archaeological site includes or consists of rock art, or *culturally-modified trees* (CMTs) that contribute to its heritage value. Rock art and CMTs are more susceptible to environmental and human impacts than most types of archaeological sites because they are often more exposed and visible. They usually have a strong association with their natural surroundings and may be associated with a local community.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites.

Rock art, such as this 1847 grave marker at the spiritual site of Merrymakedge Cemetery at Kejimkujik National Historic Site of Canada in Nova Scotia, should be preserved *in situ*.

It is recommended to document culturally modified trees, such as these ancient adze marks made by Haida ancestors, at Bag Harbour, Gwaii Haanas, using non-intrusive methods such as photography and drawings.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the heritage value of rock art and culturally-modified trees before any intervention is undertaken.	
2	**Documenting** rock art and culturally-modified trees using non-intrusive methods, such as photography and drawing.	Enhancing faint engravings and paintings by wetting paintings and chalking engravings to better record the rock art. This can destroy evidence and make analysis and dating difficult.
3	**Preserving** and stabilizing rock art and culturally modified trees *in situ*.	Highlighting, repainting or regrooving faded rock art or adding new images for aesthetic purposes, thus compromising heritage value.
4	**Removing** non character-defining graffiti from rock art, as needed, to preserve the site's heritage value, only after recording graffiti and character-defining motifs, and documenting removal.	Removing graffiti to an extent that affects the heritage value.
5	**Avoiding** over-cleaning and infilling the damaged spaces within the character-defining motifs. If the character-defining motifs of rock art are badly damaged and infill is necessary, it should be done by qualified individuals, and distinguishable as an addition.	
6	**Protecting** rock art from animals, wind, sunlight, water, natural growths, such as algae and fungi, and dust. In all cases, a proper assessment should be undertaken to understand the materials and natural forces before work begins.	Proceeding with preservation methods against animals, wind, sunlight, water, natural growths, and dust without assessing their impact on the rock art's heritage value.
7	**Monitoring** the stability of the rock surface, salt and moisture distribution, and levels of air pollution so that appropriate measures are taken to protect the rock art.	Proceeding with preservation methods without first monitoring the stability of the rock surface, salt and moisture distribution, and levels of air pollution.
8	**Protecting** and maintaining the surroundings of culturally-modified trees and archaeological rock art sites by regular maintenance and cleaning by specialized personnel, as required.	Failing to maintain and clean the surroundings of rock art sites and culturally-modified trees.
9	**Protecting** and preserving culturally-modified trees *in situ*.	Removing dead culturally-modified trees or relocating culturally-modified trees when their preservation *in situ* is possible.
10	**Protecting** and maintaining culturally-modified trees by monitoring environmental impacts, such as insects, fungi and water.	Failing to protect and maintain the surroundings of culturally-modified trees, resulting in loss of information and inappropriate environmental conditions.
11	**Protecting** culturally-modified trees by identifying them, using non-intrusive and non-permanent methods.	Identifying culturally-modified trees, using intrusive methods that leave visible, permanent traces. Altering culturally-modified trees; for example, by regrooving graffiti.

ADDITIONAL GUIDELINES FOR REHABILITATION

	Recommended	Not Recommended
12	**Removing** recently deposited dust on rock art for preservation and rehabilitation purposes.	Removing surface accretions to make rock art more visible or attractive, when the surface accretions may contain valuable information.
13	**Limiting** access to rock art sites and culturally-modified trees through guided tours and visitor quotas, to control deterioration from visitor contact.	
14	**Protecting** rock art sites and culturally-modified trees by installing barriers that allow visual contact. These barriers should be discreet and removable, and not be supported by the character-defining elements.	Protecting rock art and culturally-modified trees with an installation supported by the character-defining elements that is physically and visually incompatible with the site and its surroundings, and cannot be removed without damaging, in part or in whole, the archaeological site.
15	**Providing** effective and simple installations for remote sites to indicate their importance, such as a visitor registry that explains the site's heritage value and provides a place for visitors to record comments and impressions.	
16	**Protecting** rock art sites and culturally-modified trees by installing removable structures, pathways, trails and boardwalks to allow access and viewing. They should be designed to avoid trampling the site, stirring up dust particles, scratching the rock surface, and damaging vegetation and rock features	Installing structures, pathways, trails and boardwalks, where installation or removal could affect the character-defining elements.

4.2.8 CULTURALLY-SENSITIVE PLACES

These guidelines provide direction when an archaeological site is considered to be, or is located in, a culturally-sensitive place. This document defines culturally-sensitive places as formally recognized places that have been given special meaning by a group or a community. These places include burial grounds, above-ground burials, and abandoned cemeteries, Aboriginal spiritual places, such as medicine wheels and effigies, and other sites that may have spiritual value for a community.

Planning archaeological investigations should be done, when appropriate, in consultation with local Elders or other knowledge keepers.

Culturally-sensitive places deserve a separate section in these guidelines because their *heritage value* most often resides in their cultural, social and spiritual significance. The heritage value of culturally sensitive places is not always proportional to the extent or state of their physical remains. Therefore, great sensitivity is required so that conservation strategies preserve the associated values of these places, even when there is little tangible evidence on or in the ground. These types of archaeological sites can be found in many contexts, in urban as well as natural environments.

If human remains are discovered, all activities must stop, and the proper authorities must be contacted. Any action on human remains should only be performed according to provincial and territorial legislation and be supported by the affiliated community.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites.

Preserving relationships with a site, such as this traditional gathering held at Arvia'juaq and Qikiqtaarjuk National Historic Site in Nunuvut can contribute to the site's heritage value. Access to sites should be balanced with the need to preserve their character-defining elements.

GENERAL GUIDELINES FOR PRESERVATION AND REHABILITATION

	Recommended	Not Recommended
1	**Understanding** the potentially sensitive nature of an archaeological site and its environment, for a group or community, before any intervention is undertaken.	
2	**Protecting** and preserving the landscape and its natural features that directly contribute to the site's heritage value.	
3	**Recording** without disturbance the elements that contribute to the heritage value in consultation with the affiliated community.	Recording the elements that contribute to the heritage value, using methods that disregard the sensitive nature of the sites.
4	**Stabilizing** the character-defining elements, using methods that do not affect the site's heritage value.	
5	**Working** with interested parties, particularly the affiliated community, to define acceptable activities at a culturally sensitive place.	Allowing activities in culturally sensitive places, without notifying interested parties, resulting in negative impacts on the heritage value.
6	**Preserving** the heritage value of a site by enabling a continued relationship between cultural groups and culturally-sensitive places, when this relationship contributes to the heritage value of the site. This includes access and use for rituals, ceremonies and traditional gatherings, while ensuring measures to protect heritage value are in place. The need to preserve the community's relationship with the place should be balanced with the need to preserve the character-defining elements.	
7	**Protecting** the archaeological context of burials to preserve associated information.	
8	**Removing**, when appropriate, human remains with associated funerary objects and surrounding soil, with the support of the affiliated community and after documenting their position.	Removing human remains without the support of the affiliated community, and without including information about context and location, such as soil, position, funerary objects, etc.

4.3

GUIDELINES FOR BUILDINGS

The historic buildings illustrated on this page are clockwise, from top left: the old Anglican Church in Tulita, Northwest Territories; a stone farmhouse at Minister's Island in New Brunswick; the Bloedel Conservatory in Vancouver; and Union Station in Toronto.

4.3 GUIDELINES FOR BUILDINGS

Buildings illustrate the evolution of Canadian architecture in terms of their form and setting and their assemblies, systems and materials. Buildings can express cultural, regional, local or individual uses, or construction practices, and embody meanings that evolve over time.

The broad range of buildings that are considered historic varies from modest to monumental, ancient to recent, and private to public. Buildings in a heritage district, or in a complex of buildings, may not be formally recognized individually, but may be recognized as contributing to the larger historic place. There is no typical historic building. Each is valued for its own reasons and faces its own challenges.

Buildings can represent identifiable expressions of one or more of the many different cultural, religious or interest groups that make up Canada's multicultural population. They can also be designated because they demonstrate an appropriate and/or innovative response to their climate and setting. Often the heritage value of a building, or group of buildings, illustrates a specific phase, or various phases, in the development of a particular building type, style or aesthetic. Some buildings are historic places because of their association with a particular person, event, theme or achievement.

These guidelines provide general recommendations appropriate to all types of buildings. However, because buildings can also be part of cultural landscapes, engineering works and archaeological sites, those guidelines should be consulted when appropriate. Also refer to the Guidelines for Materials that include traditional as well as modern building and finishing materials.

A building's setting can be as important to its interpretation and understanding of a historic place as is the structure itself. A train station moved away from its tracks is clearly out of context. A lighthouse is equally connected to its setting. The character-defining elements of the Head Harbour Light Station in New Brunswick includes all of the 3,000 square metres of the rocky outcropping and two nearby rocks as well as the five buildings on the site.

BALANCING CONSERVATION PRINCIPLES AND SUSTAINABILITY OBJECTIVES

Both heritage conservation and sustainability aim to conserve. In the case of heritage buildings, this includes considering the inherent performance and durability of their character-defining assemblies, systems and materials, and the minimal interventions required to achieve the most effective sustainability improvements. For example, it may be possible to improve the energy efficiency of an historic building by insulating the attic and basement rather than removing or concealing character-defining brick or plaster to insulate the walls.

APPLYING THE GUIDELINES

The Guidelines for Buildings are divided into three main groups: Form, Assemblies and Systems. Traditional construction methods, and the complex assemblies and systems found in recent heritage buildings, are both addressed.

Form

Most interventions to an historic building—including interventions to its architectural assemblies, engineered systems and materials—have some impact on its overall appearance. This impact is particularly apparent when constructing additions or making modifications to the building form. Two sets of guidelines are provided to address the impact of additions and alterations on form: Exterior Form and Interior Arrangement.

Assemblies

Many building interventions involve preserving or modifying one or more architectural assemblies. In these guidelines, architectural assemblies are seen as complex elements composed of distinct parts and materials that work together to help the building fulfill its purpose. Assemblies also define a building's architectural expression. Five sets of guidelines address architectural assemblies: Roofs; Exterior Walls; Windows, Doors and Storefronts; Entrances, Porches and Balconies; and Interior Features.

Ongoing maintenance is the simplest, most effective and least glamorous method to ensure the lasting conservation of buildings. The Hôpital general de Québec built between 1671 and 1692, is a model example of the result of centuries of appropriate ongoing maintenance.

Systems

Building interventions often involve adding, removing, replacing or modifying engineered systems. For the purposes of these guidelines, engineered systems are composed of connected elements that work together to ensure that an historic place is capable of fulfilling its design or modified purpose, and/or providing a safe and comfortable environment. Two sets of guidelines pertain to systems: Structural Systems, and Mechanical and Electrical Systems.

INHERENT VICE

Inherent vice is an old concern with a new significance with respect to recent heritage. It can include faulty assemblies or details, such as binding together galvanic materials, but also experimental materials that are unable to perform their intended function over the long term. The overarching requirement is to conserve the heritage value of an historic place. Defective details or inappropriate material choices should not be duplicated when improvements are possible without significantly affecting the place's value.

4.3.1 EXTERIOR FORM

These guidelines provide direction when a building's exterior form is identified as a character-defining element of an historic place. They also give direction on how to minimize the impact of alterations and additions on the building's exterior due to a change in use or regulations.

Exterior form refers to a building's orientation, scale, massing, composition, proportions, colour and texture. A building's exterior form is also related to its surroundings, which includes spatial relationships with adjacent buildings, plazas or natural features, views, climatic considerations and circulation for vehicles and pedestrians.

St. Jean Baptiste Church and Rectory are situated on a single, large town lot on Main Street in Morinville, AB. The church steeple is clearly visible on the landscape and helps convey the Catholic Church's role in the settlement of the district.

The exterior form usually expresses ideas on how to locate and plan a building. The location, massing, aesthetics, style, plan form, roof shape and position of entrances may have responded to orientation, topography or functional requirements. The interrelationships of site and setting with broader environmental considerations are addressed in more detail in the Guidelines for Cultural Landscapes.

Typical interventions that are addressed here include large and small additions, including both building expansions and smaller interventions, such as stairway, elevator or mechanical equipment enclosures. Exterior form often has a strong relationship with the Interior Arrangement of a building, thus the impact on Interior Arrangement should be considered when making changes to the exterior form.

These guidelines offer practical advice for conserving character-defining elements, such as the size, number, form, proportion and position of openings, or the form and articulation of walls and roofs. Specific guidelines for related assemblies or systems are found in the Guidelines for Roofs; Exterior Walls; Windows, Doors and Storefronts; Entrances, Porches and Balconies; and Mechanical and Electrical Systems.

Undertaking a successful large-scale addition to a historic place is challenging. For certain buildings with a distinctive form it may be almost impossible. The Fraser Octagon House in Tatamagouch, NS is a one-and-a-half storey wood frame structure built to a near octagonal plan form. A large addition to this unusual character-defining form would be very challenging.

A compatible addition to the rear of the Yukon Sawmill Co. Office provides space for services. If necessary, it could be removed without affecting the building's historic fabric. One window opening and the surrounding wall framing were altered to provide space for a connecting door.

THE RELATIONSHIP BETWEEN EXTERIOR FORM AND SETTING

In heritage districts and modern campus-like landscapes, the exterior form of buildings often plays an important role in defining plazas, open spaces and streetscapes. Prior to making any changes to the exterior form of a building, it is important to understand how the proposed changes affect the setting of the historic place. The definition of setting and its interrelationship with the broader environment are addressed in more detail in the Introduction to the Guidelines for Cultural Landscapes.

A new rear addition to the Strathcona Public Library in Edmonton respects the primary value on the site—the historic library—while expanding the floor space to better serve the neighbourhood in the future. The addition is a successful example of meeting requirements for a new addition to be subordinate, distinguishable and compatible.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the exterior form and how it contributes to the heritage value of the historic building.	
2	**Understanding** the design principles used by the original designer or builder, and any changes made to the exterior form over time.	
3	**Documenting** the building's exterior form before undertaking an intervention, including the form and massing, and viewscapes, sunlight and natural ventilation patterns.	Undertaking an intervention that affects the building's exterior form without first documenting building, site and setting relationships.
4	**Assessing** the condition of the building's exterior form early in the planning process so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining elements of the building's exterior form through cyclical or seasonal maintenance work.	
6	**Retaining** the exterior form by maintaining proportions, colour and massing, and the spatial relationships with adjacent buildings.	
7	**Stabilizing** deteriorated elements of the exterior form by using structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated elements that could be stabilized or repaired.
8	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	
9	**Documenting** all interventions that affect the exterior form, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Reinstating** the exterior form by recreating missing, or revealing obscured parts to re-establish character-defining proportions and massing.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ADDITIONS OR ALTERATIONS TO THE EXTERIOR FORM		
11	**Accommodating** new functions and services in non-character-defining interior spaces as an alternative to constructing a new addition.	Constructing a new addition when the proposed functions and services could be accommodated by altering existing, non-character-defining interior spaces.
12	**Selecting** a new use that suits the existing building form.	Selecting a use that dramatically alters the exterior form; for example, demolishing the building structure and retaining only the street façade(s).
13	**Selecting** the location for a new addition that ensures that the heritage value of the place is maintained.	Constructing a new addition that obscures, damages or destroys character-defining features of the historic building, such as relocating the main entrance.
14	**Designing** a new addition in a manner that draws a clear distinction between what is historic and what is new.	Duplicating the exact form, material, style and detailing of the original building in a way that makes the distinction between old and new unclear.
15	**Designing** an addition that is compatible in terms of materials and massing with the exterior form of the historic building and its setting.	Designing a new addition that has a negative impact on the heritage value of the historic building.
HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
16	**Adding** new features to meet health, safety or security requirements, such as an exterior stairway or a security vestibule in a manner that respects the exterior form and minimizes impact on heritage value.	Constructing a new addition to accommodate code-required stairs or elevators on a highly visible, character-defining elevation, or in a location that obscures, damages or destroys character-defining elements.
17	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to the exterior form without first exploring equivalent health, safety and security systems, methods or devices that may be less damaging to the character-defining elements and overall heritage value of the historic building.
ACCESSIBILITY CONSIDERATIONS		
18	**Finding** solutions to meet accessibility requirements that are compatible with the exterior form of the historic building. For example, introducing a gently sloped walkway instead of a constructed ramp with handrails in front of an historic building.	Radically altering the building's exterior form to comply with accessibility requirements. Relocating primary entrances when undertaking interventions to accommodate accessibility-related features.
19	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the historic building.	Altering character-defining elements, without consulting the appropriate specialists and users.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
	SUSTAINABILITY CONSIDERATIONS	
20	**Adding** new features to meet sustainability requirements, such as solar panels or a green roof, in a manner that respects the exterior form and minimizes impact on character-defining elements.	Adding a new feature to meet sustainability requirements in a location that obscures, damages or destroys character-defining elements.
21	**Working** with sustainability and conservation specialists to determine the most appropriate solution to sustainability requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to the exterior form, without first exploring alternative sustainability solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.
22	**Complying** with energy efficiency objectives in a manner that minimizes impact on the character-defining elements and overall heritage value of the historic building.	Damaging or destroying character-defining elements or undermining their heritage value, while making modifications to comply with energy efficiency objectives.
23	**Accommodating** functions requiring a controlled environment, such as artefact storage or exhibits in an addition, while using the historic building for functions that benefit from existing natural ventilation and/or daylight.	Introducing new mechanical systems based on airtight building envelope design in buildings that were designed to use natural ventilation.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

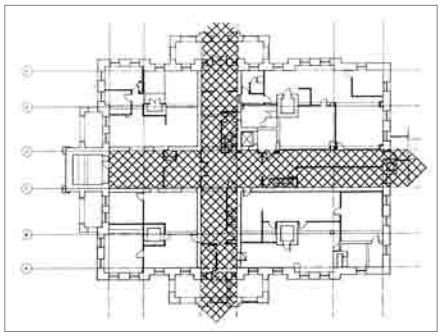
	Recommended	Not Recommended
24	**Reinstating** the building's exterior form from the restoration period, based on documentary and physical evidence.	
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
25	**Removing** a non character-defining feature of the building's exterior form, such as an addition built after the restoration period.	Failing to remove a non character-defining feature of the building's exterior form that confuses the depiction of the building's chosen restoration period. Removing a feature from a later period that serves an important function in the building's ongoing use, such as a fire escape.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
26	**Recreating** missing features of the exterior form that existed during the restoration period, based on physical or documentary evidence; for example, duplicating a dormer or restoring a carport that was later enclosed.	Constructing a feature of the exterior form that was part of the building's original design but was never actually built, or a feature thought to have existed during the restoration period but for which there is insufficient documentation.

4.3.2 INTERIOR ARRANGEMENT

These guidelines provide direction when a building's interior arrangement is identified as a character-defining element of an historic place. They also give direction on how to minimize the impact on heritage value of additions or alterations to the building's interior due to a change in use or regulations.

The interior arrangement and planning principles employed in a building are often character defining. When considering adaptive reuse, it is important to select a new use that is compatible with the existing interior arrangement such as converting one wing of this convent (Monastère-des Augustines-de-l'Hôtel-Dieu-de-Québec) into temporary accommodations for the parents of sick children in the hospital.

Having served a number of different denominations over the years, the Free Meeting House in Moncton was restored to its earliest, 1821 interior configuration by following floor marks and other physical and documented evidence. Missing features from the selected restoration period were replaced.



Changing or reorganizing the way one moves through a building, such as the Calgary City Hall, shown here, can greatly affect heritage character. The procession through a series of spaces, or the inter-relationship between certain rooms, may be character defining. This should be considered when providing space for security desks or when free entry into certain parts of a building must be prevented. Every attempt should be made to continue the original flow of movement.

Interior arrangement refers to the overall organization or layout of a building's interior spaces, including the configuration and relationship of rooms and circulation spaces. These guidelines also apply to the elements that define the quality of the interior spaces and arrangement, such as interior walls, ceilings and floors. Interior arrangement also relates to the relationship between a building's interior design and use, and its exterior form.

Interior arrangement includes the functional relationships between spaces, such as the connection between a kitchen and dining room. It also includes circulation patterns and layout of rooms, including their proportions and scale, and planning associated with a style or period, such as the open plan and modular proportions of a modernist office tower interior.

Some non character-defining interior features may be replaced without altering the interior arrangement. For example, a theatre may still retain its original spatial arrangement, including balconies and stage openings, even if the furnishings and finishes are replaced. More recent interior interventions may also acquire value.

Typical interventions in an interior arrangement include adaptations to meet contemporary regulations, such as redesigning a lobby to meet security requirements, providing universal accessibility, or adding fire separations and exits. The interior arrangement often has a strong relationship with the building's exterior form, thus the impact on the exterior form should be considered when making any changes to the interior arrangement. The deterioration or loss of interior features can affect the overall heritage value of an historic building.

These guidelines provide general recommendations appropriate to all types of interior arrangements. For recommendations on specific architectural assemblies of interiors, refer to Interior Features. When spatial relationships are part of an engineering work, refer also to Functional Arrangement in the Guidelines for Engineering Works.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the interior arrangement and how it contributes to the heritage value of the historic building.	
2	**Understanding** the planning principles used by the original designer or builder, and any changes made to the interior arrangement over time.	
3	**Documenting** the interior arrangement, including the form and relationship between circulation patterns and interior spaces, and the condition, interrelationships and evolution of the elements that define the arrangement, before undertaking an intervention.	Undertaking an intervention that affects the interior arrangement, without first documenting the existing arrangement.
4	**Assessing** the integrity of the interior arrangement early in the planning process so that the scope of work is based on current conditions.	
5	**Protecting** and maintaining elements of the building's interior arrangement through cyclical or seasonal maintenance work.	
6	**Retaining** the interior arrangement by maintaining historic circulation patterns and spatial relationships.	Altering the interior arrangement by modifying or obscuring circulation patterns and spatial relationships.
7	**Protecting** adjacent character-defining elements from accidental damage, or exposure to damaging materials during maintenance or repair work.	
8	**Documenting** all interventions that affect the interior arrangement, and ensuring the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
9	**Re-establishing** the interior arrangement by reinstating missing or obscured parts of the arrangement, such as removing a drop ceiling to reveal the proportions of a character-defining space.	
10	**Designing** interior spaces and circulation that are compatible with the interior arrangement of the historic building.	Altering or destroying character-defining interior spaces by inserting floors, lowering ceilings, or adding or removing walls. Relocating an element related to circulation patterns, such as a staircase or main entrance, thereby altering the interrelationship between interior spaces and exterior form.

ADDITIONS OR ALTERATIONS TO THE INTERIOR ARRANGEMENT

11	**Accommodating** service functions, such as bathrooms, mechanical equipment and office machines required by the building's new use in non-character-defining spaces, such as previously undeveloped attics or storage spaces.	
12	**Designing** a new, compatible interior addition in a manner that draws a clear distinction between what is historic and what is new.	Duplicating the exact form, material, style and detailing of interior features, in a manner that makes the distinction between old and new unclear.
13	**Installing** permanent partitions in secondary spaces, and making use of demountable partitions, when subdivision of a character-defining space is required to accommodate a new use.	Installing permanent partitions that damage or obscure character-defining spaces.
14	**Adding** a new floor in a manner that minimizes the impact on character-defining interior spaces, features and finishes.	Inserting or removing floors in a manner that radically changes the interior space, or obscures, alters or destroys the decorative detailing or windows of the building.

HEALTH, SAFETY AND SECURITY CONSIDERATIONS

15	**Adding** new features to meet health, safety or security requirements, such as a fire separation in a lobby or an interior stairway, in a manner that respects the interior arrangement and minimizes impact on heritage value.	Constructing a new feature to meet health, safety and security requirements in a location that obscures, damages or destroys character-defining elements.
16	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to the interior arrangement without first exploring equivalent health, safety and security systems, methods or devices that may be less damaging to the character-defining elements and overall heritage value of the historic building.
17	**Placing** new functional or code-required stairways or security screening functions in the building's secondary and service areas.	Radically changing, damaging or destroying character-defining spaces, features or finishes when adding new functional or code-required features.
18	**Complying** with requirements, such as seismic standards, in a way that minimizes impact on the interior arrangement.	Damaging or destroying character-defining aspects of the interior arrangement when adding seismic reinforcement.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ACCESSIBILITY CONSIDERATIONS		
19	**Respecting** the interior arrangement of the building when locating new accessibility-related features, such as ramps and lifts.	Radically altering the building's interior arrangement or circulation patterns to comply with accessibility requirements.
20	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the historic building.	Altering character-defining elements, without consulting the appropriate specialists and users.
21	**Locating** public functions strategically to limit changes to the building. For example, providing new functions for the public on the ground floor or in areas already served by exits.	Relocating primary entrances or stairways when undertaking intervention to accommodate accessibility-related features.
SUSTAINABILITY CONSIDERATIONS		
22	**Adding** new features to meet sustainability requirements, in a manner that respects the interior arrangement and minimizes impact on character-defining elements.	Adding a new feature to meet sustainability requirements in a location that obscures, damages or destroys character-defining elements.
23	**Working** with sustainability and conservation specialists to determine the most appropriate solution to sustainability requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to the interior arrangement, without first exploring alternative sustainability solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.
24	**Retaining** or reinstating character-defining aspects of the interior arrangement which contribute to the historic building's inherent sustainability, such as natural daylight and ventilation.	Destroying character-defining interior arrangements to introduce daylight or ventilation into a space where it never existed.
25	**Accommodating** equipment designed to increase energy efficiency in secondary, non character-defining spaces, such as service areas.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
26	**Reinstating** the interior arrangement from the restoration period by reintroducing the layout, circulation patterns and spatial relationships, based on physical and documentary evidence.	
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
27	**Removing** a non character-defining feature of the building's interior arrangement, such as a wall added to subdivide a character-defining room.	Failing to remove a non character-defining feature of the building's interior arrangement that confuses the depiction of the building's chosen restoration period. Removing a feature from a later period that serves an important function in the building's ongoing use, such as an accessible washroom or exit stairway.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
28	**Recreating** a missing feature of the interior arrangement that existed during the restoration period, based on physical or documentary evidence.	Constructing a feature of the interior arrangement that was part of the building's original design but was never actually built, or a feature thought to have existed during the restoration period but for which there is insufficient documentation.

4.3.3 ROOFS

These guidelines provide direction when a roof or roof element is identified as a character-defining element of an historic place. Roof assemblies include both visible elements, such as cupolas, turrets, cresting, chimneys, gutters, weathervanes, gables, eaves, parapets, dormers, soffits and fascias, and components, such as the cladding, substructure, insulation, vapour controls, flashing and ventilation, that are critical in providing a weatherproof enclosure for the building.

As the most exposed architectural assembly, the roof is vital in protecting the rest of the building from the weather. A deteriorated roof can cause catastrophic damage to interiors and to the building structure. The roof is also an important architectural feature that contributes to a building's form and aesthetics. The profile and details of a flat roof may also be character-defining despite its more understated appearance compared to a large hip or gable roof.

The steep copper roof of the Fort Garry Hotel in Winnipeg is defined by a multitude of small shed- and hip-roofed dormers, highly elaborate stone dormer facades at the corners, a wealth of pinnacles and large ornate chimneys.

The Rehabilitation of the Truro Post Office, in Truro, NS included restoring its distinctive slate roof. In Rehabilitation, the replacement of missing historic features with a replica based on physical and documentary evidence, as in this project, is acceptable, as is a new design that is compatible with the heritage value of the historic place.

When restoring the former post office in Dawson, YK, the metal roofing surface, which was too deteriorated to repair, was replaced in kind. Physical evidence from the restoration period was used as a model to reproduce the characteristic standing seam detail.

In order to accommodate new condominium units in the upper floor of this building on Queen Street in Charlottetown, new dormers were added. In Rehabilitation, the design of new elements should be compatible with the heritage value of the historic place.

A surviving pressed metal shingle was used as a prototype for manufacturing replacement shingles when restoring the main house at the Motherwell Homestead near Abernathy, SK. In Restoration, repairs or replacements of extensively deteriorated or missing parts of features are done in kind, and are based on physical, documentary and oral evidence.

It is important to consider the expected life span of all elements that make up a roof assembly when repairing or replacing a roof such as this one on St.Dunstan's Basilica in Prince Edward Island. Roofing materials, such as copper and slate, need to be matched with flashings of a similar life span.

Given the constant exposure to the environment, roofing materials do not last indefinitely. While some materials, such as copper sheeting and slate shingles, can last for many decades if properly designed and maintained, other materials, such as wood and asphalt shingles and membrane roofing, need to be replaced more frequently. The need for regular replacement makes roofs vulnerable to changes that may affect their heritage value. Careful attention must be given to the detailing, pitch, exposure, material and shape when replacing a roof. Preserving durable roofing materials will prolong the building's service life, sometimes by decades.

These guidelines provide general recommendations appropriate to all types and shapes of roofs. For recommendations on form and structural issues related to roofs, refer to Exterior Form and Structural Systems, respectively. For specific materials that make up roofs, refer to the Guidelines for Materials.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the roof and how it contributes to the heritage value of the historic building.	
2	**Understanding** the properties and characteristics of the roof as well as changes and previous maintenance practices.	Failing to consider the impact of previous changes and maintenance practices on the roof.
3	**Documenting** the form, materials and condition of roof assemblies before undertaking an intervention, including the roof's pitch, shape, decorative and functional elements, and materials, and its size, colour and patterning.	Undertaking an intervention that affects character-defining roofs and roof elements, without first documenting their existing character and condition.
4	**Assessing** the condition of the roof assembly and materials early in the planning process so that the scope of work is based on current conditions.	
5	**Determining** the cause of a roof's distress, damage or deterioration through investigation, monitoring and minimally invasive or non-destructive testing techniques.	
6	**Protecting** and maintaining a roof by cleaning and maintaining the gutters, downspouts and flat roof drains, 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.	Failing to maintain roofs on a cyclical basis. Failing to replace deteriorated flashing, or to clean and properly maintain gutters and downspouts and flat roof drains so that water and debris collect and damage roof fasteners, sheathing and the underlying structure.
7	**Retaining** sound or deteriorated roof assemblies that can be repaired.	Stripping the roof of sound or repairable character-defining materials, such as slate, clay tile, wood and architectural metal.
8	**Stabilizing** deteriorated roofs by structural reinforcement, weather protection or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated roof elements that could be stabilized or repaired.
9	**Repairing** parts of roofs by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods. Repair may also include the limited replacement in kind, or with a compatible substitute material, of extensively deteriorated or missing parts of the roof. Repairs should match the existing work as closely as possible, both physically and visually.	
10	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Replacing** in kind extensively deteriorated or missing parts of roof assemblies where there are surviving prototypes.	Replacing an entire roof element, such as a dormer, when limited replacement of deteriorated and missing parts is possible. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving parts of the roof element, nor is physically or visually compatible.
12	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
13	**Documenting** all interventions that affect the building's roof, and ensuring that the documentation is available to those responsible for future interventions	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
14	**Repairing** a roof assembly, including its functional and decorative elements, by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on documentary or physical evidence.	Replacing an entire roof element, such as a cupola, dormer or lightning rod, when the repair of materials and limited replacement of deteriorated or missing elements is feasible. Failing to reuse intact roofing materials when only the roofing structure or sheathing needs replacement.
15	**Improving** the detailing of roof elements, following recognized conservation methods, to correct faulty details. For example, adjusting the slope of a cornice to prevent ponding, or introducing a new drip edge at the eave to better direct water runoff away from a masonry wall. Such improvements should be physically and visually compatible.	
16	**Replacing** in kind an entire element of the roof that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model to reproduce the element. This can include a large section of roofing, a dormer, or a chimney. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.	Removing a roof element that is irreparable, such as a chimney or dormer, and not replacing it, or replacing it with a new element that does not convey the same appearance or serve the same function. Replacing deteriorated roof elements and materials that are no longer available with physically or visually incompatible substitutes.
17	**Replacing** missing historic features by designing and constructing a new roof feature, based on physical and documentary evidence, or one that is compatible in size, scale, material, style or colour.	Creating a false historical appearance because the replicated feature is incompatible or based on insufficient physical and documentary evidence.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ADDITIONS OR ALTERATIONS TO ROOFS AND ROOF ELEMENTS		
18	**Modifying** or replacing a roof or roof element, to accommodate an expanded program, a new use, or applicable codes and regulations, in a manner that respects the building's heritage value.	Constructing an addition that requires removing a character-defining roof. Changing the configuration of a roof by adding new elements, such as dormer windows, vents or skylights, in a manner that negatively affects its heritage value.
19	**Selecting** appropriate rooftop mechanical and service equipment and associated piping and cabling, such as air-conditioning components, transformers or solar collectors, and installing the equipment as inconspicuously as possible, while respecting the building's heritage value and character-defining elements.	Selecting inappropriate rooftop mechanical or service equipment, or installing such equipment in a manner that compromises the building's heritage value and character-defining elements. Adding significant loads to a roof without assessing the impact on the building's structure.
20	**Designing** and constructing additions to roofs, such as access stairs, elevator or mechanical equipment housing, decks and terraces, and dormers and skylights that are inconspicuous from the public right of way and do not damage or obscure character-defining elements.	Designing and constructing a roof addition that compromises the building's character-defining roof elements, its structural integrity, or its overall appearance. Constructing a rooftop addition that blocks natural light patterns or important views.
HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
21	**Complying** with health and safety requirements, by providing lightning protection, or snow and ice guards, or roof anchors in a manner that conserves the roof's heritage value and minimizes impact on its character-defining elements.	Damaging or destroying character-defining elements while making modifications to comply with health and safety requirements.
22	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to character-defining roofs, without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements and heritage value of the historic building.
23	**Removing** or encapsulating hazardous materials, such as asbestos insulation, using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	
24	**Protecting** roofs against loss or damage by identifying and assessing the specific fire risks, and by implementing an appropriate fire-protection strategy that addresses those risks.	Covering flammable character-defining elements with fire-resistant sheathing or coatings that alter their appearance. Replacing wood roof elements with alternate materials, without carefully considering other options for reducing fire spread. Failing to take proper fire protection precautions when using a technique that could endanger the building, such as applying membranes on wood roofs using heat.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
SUSTAINABILITY CONSIDERATIONS		
25	**Complying** with energy efficiency objectives in upgrades to the roof assembly in a manner that respects the building's character-defining elements, and considers the energy efficiency of the building envelope and systems as a whole.	Damaging or destroying character-defining elements while making modifications to comply with energy efficiency requirements.
26	**Working** with energy efficiency and sustainability specialists to determine the most appropriate solution to energy efficiency and sustainability requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to the roof assembly, without first exploring alternative sustainability solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.
27	**Exercising** caution and foreseeing the potential effects of insulating the roof on the building envelope to avoid damaging changes, such as displacing the *dew point* and creating *thermal bridges*, or increasing the snow load.	Installing insulation without anticipating its potential impact on the building envelope. Inserting thermal insulation in roof assemblies, without providing appropriate vapour barriers or ventilation.
28	**Installing** thermal insulation in non-character-defining roof spaces, such as attics, without adversely affecting the building envelope.	Installing insulation in habitable attic spaces without considering its effect on character-defining interior features such as mouldings.
29	**Ensuring** that structural, drainage and access requirements to improve the roof's energy efficiency can be met without damaging character-defining elements.	
30	**Assessing** the addition of vegetated roof systems (green roofs) or storm water cisterns to flat-roof assemblies, and their impact on the building's heritage value and structural integrity, before work begins.	Adding a vegetated or reflective membrane roof system that might compromise the building's heritage value or its structural integrity.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
31	**Repairing** a roof assembly from the restoration period by reinforcing its materials.	Replacing an entire roof feature from the restoration period, such as a cupola or dormer, when the repair of materials and limited replacement of deteriorated or missing parts is possible.
32	**Replacing** in kind an entire roof feature from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the feature. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable roof feature from the restoration period and not replacing it, or replacing it with an inappropriate new roof feature. Reinstating a roof detail that is damaging to character-defining elements.

REMOVING EXISTING FEATURES FROM OTHER PERIODS

33	**Removing** or altering a non character-defining roof or roof element, such as a later dormer or asphalt roofing, dating from a period other than the restoration period.	Failing to remove a non character-defining roof or roof element from another period that confuses the depiction of the building's chosen restoration period.
34	**Retaining** alterations to roof assemblies that address problems with the original design if those alterations do not have a negative impact on the building's heritage value.	Removing a roof element from a later period that serves an important function in the building's ongoing use, such as a skylight for natural daylight, or a vent for natural ventilation.

RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD

35	**Recreating** a missing roof element that existed during the restoration period, based on physical or documentary evidence; for example, reinstating a dormer or cupola.	Constructing a roof element that was part of the building's original design, but never actually built, or constructing a feature thought to have existed during the restoration period, but for which there is insufficient documentation.

4.3.4 EXTERIOR WALLS

These guidelines provide direction when exterior walls and their elements are identified as character-defining elements of an historic place. Exterior walls include foundation walls, structural masonry or log walls, and wood, concrete or steel framing with an exterior cladding, such as *curtain-wall systems*. The guidelines also provide direction on how to minimize the negative impact of additions or alterations on exterior walls.

Exterior walls perform many functions, including those of structure, weatherproofing, thermal protection, daylight control and ventilation. Traditional load-bearing walls, such as log or masonry walls, perform all of these functions in a single composition. Later, the development of frame-based structural systems led to the separation of these functions. In modern buildings, components, such as cladding, air barriers and insulation, are combined to create a complex exterior wall assembly. These components act both independently and as a whole; consequently, there may be specific conservation issues associated with the materials concealed in the core or cavity of the assembly.

Because they are largely below the surface, foundations are often dismissed as not contributing to a building's heritage character. However, it is important to remember that heritage value is not only found in what can be seen. Construction methods, materials and techniques can all be character defining, as is the case for the Grange Alexander-Salomon-Wallbridge in Quebec.

Log, stone and concrete foundations are visually and functionally very different. The decision to repair, replace in kind or rehabilitate a foundation should be determined by both the condition of the foundation and its compatibility with the heritage values of the place.

A modern building envelope includes multiple materials, such as a concrete structure, metal curtain wall mullions and glazed panels. Each of these materials ages differently and reacts in its own way to stresses, heat and cold. For a face-sealed curtain wall like this one, it is important to select sealants that make the assembly weathertight and that are compatible with all the materials with which they come into contact. Sealant materials generally have a shorter service life than adjacent materials and will eventually fail due to exposure to weather, stress and age. Regularly replacing appropriate sealants is an important part of building maintenance.

When frame-based cladding and curtain walls were developed, air and vapour barriers were introduced, as well as mechanical heating, ventilating and air conditioning (HVAC) systems that changed the thermal and moisture conditions in the walls. Changes to existing HVAC systems, or introducing mechanical systems in buildings where the walls were designed without insulation or air barriers, often led to the deterioration of exterior wall assemblies. It is, therefore, important to understand how the exterior wall relates to the building systems.

Curtain wall systems present a range of new conservation challenges, because they were the result of an era of experimentation in structures and materials, and predate higher standards for energy efficiency. Their conservation should be examined on a case-by-case basis, taking into account the heritage value of the design and the actual conditions and causes of deterioration, while planning for extended or improved performance.

These guidelines provide general recommendations appropriate to all types of exterior walls. For recommendations on associated issues related to walls, refer to the individual guidelines for Exterior Form; Windows, Doors and Storefronts; and Structural Systems. For specific materials that make up exterior walls, refer to the Guidelines for Materials.

New signs (top right) should be compatible with the building in terms of size, scale, material, style and colour. They should also not obscure, damage or destroy character-defining elements. In some cases, as Mel's Tea Room in Sackville, NB (left), signs added later become character-defining elements in their own right. Character defining signage should also be maintained despite a change in use, such as this painted sign for the Hartt Boot and She Factory in Fredericton (bottom right), which has been converted into apartments.

Responding to the dangers of arctic exploration and the loss of the Franklin Expedition, Kellett's Storehouse in Nunuvut was built in 1853 for sailors in distress. Constructed from local stone, it was filled with enough provisions to maintain a large group for several months. Conserving building remains or above-ground archaeological resources pose unique challenges. In this case, the walls and foundations were stabilized and an insulated floor was installed allowing remaining soil layers and associated artifacts to be left in place while being protected from theft and further exposure to the elements.

The impact of adding insulation to an exterior wall assembly that was not historically insulated should be carefully considered, including by measurement of the current performance of the wall and energy modelling the performance of different approaches. Adding insulation on the exterior or interior of solid masonry or log walls may impact on heritage character and lead to deterioration of the wall, if not based on a through understanding of the wall's physical characteristics and context, including its exposure to air, water and vapour pressures. Any changes to an exterior wall should be based on the building envelope science for the type of historic assembly.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the exterior walls and how they contribute to the heritage value of the historic building.	
2	**Understanding** the properties and characteristics of the exterior walls as well as changes and previous maintenance practices.	Failing to consider the impact of previous changes to the exterior wall assembly, such as the addition of insulation and vapour barriers, or new heating or cooling systems.
3	**Documenting** the composition, form, materials, details, dimensions and condition of exterior wall assemblies before undertaking an intervention. This includes geometry, scale, proportions, openings, form and supporting frames or structures.	Undertaking an intervention that affects exterior wall assemblies without first documenting their existing character and condition.
4	**Assessing** the condition of wall assemblies and their materials early in the planning process so that the scope of work is based on current conditions.	
5	**Determining** the cause of distress, damage or deterioration of exterior walls through investigation, monitoring and minimally invasive or non-destructive testing techniques.	
6	**Protecting** and maintaining exterior walls by cleaning and repairing damaged materials, and checking exterior wall assemblies for moisture penetration and insect infestation, taking corrective action, as necessary and as soon as possible.	Failing to maintain exterior walls on a cyclical basis. Failing to correct causes of deterioration of the exterior wall assembly, such as failed sealants.
7	**Retaining** sound or deteriorated exterior wall assemblies that can be repaired.	
8	**Stabilizing** deteriorated exterior walls by using structural reinforcement, weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated exterior wall elements that could be stabilized or repaired.
9	**Repairing** parts of exterior walls by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods. Repair may also include the limited replacement in kind, or with a compatible substitute material, of extensively deteriorated or missing parts of the exterior wall assembly. Repairs should match the existing work as closely as possible, both physically and visually.	
10	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Replacing** in kind extensively deteriorated or missing parts of exterior wall assemblies where there are surviving prototypes.	Replacing an entire exterior wall assembly when only limited replacement of deteriorated and missing parts is possible. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving parts of the element, nor is physically or visually compatible.
12	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
13	**Documenting** all interventions that affect the exterior walls, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
14	**Repairing** an exterior wall assembly, including its functional and decorative elements, by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement using an appropriate substitute material of irreparable or missing elements, based on documentary or physical evidence. Repairs might also include dismantling and rebuilding a masonry or wood wall, if an evaluation of its overall condition determines that more than limited repair or replacement in kind is required.	Over-cladding a deteriorated or poorly insulated exterior wall with a new material or assembly, without considering the impact on heritage value or the condition of underlying materials. Replacing an entire exterior wall assembly when the repair and limited replacement of deteriorated or missing elements is feasible. Failing to reuse intact cladding when only the internal parts of the wall assembly need replacement.
15	**Improving** the drying ability of exterior wall assemblies through suitable heating and/or ventilation measures.	Damaging the masonry of an exterior wall by drilling drainage holes into the masonry units or into the joints, with a drill bit wider than the mortar joints. Introducing a vapour barrier in an exterior wall that was constructed to be permeable or breathable.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
16	**Accommodating** the thermal expansion and contraction of masonry, concrete and curtain wall assemblies, by introducing expansion or control joints, and incorporating those joints into existing crack patterns, where feasible, to minimize impact on character-defining elements.	Filling moving cracks or expansion joints in exterior wall assemblies with materials that inhibit or prevent thermal expansion and contraction.
17	**Replacing** in kind an irreparable exterior wall assembly, based on documentary and physical evidence. If using the same kind of material is not environmentally sound, or technically or economically feasible, then a compatible substitute material may be considered.	Removing an irreparable exterior wall assembly, such as a cornice or *brise-soleil*, and not replacing it, or replacing it with a new element that does not convey the same appearance or serve the same function. Replacing deteriorated elements and materials in curtain wall assemblies that are no longer available, with physically and visually incompatible substitutes.
18	**Replacing** missing historic features by designing and constructing a new portion of the exterior wall assembly, based on physical and documentary evidence, or one that is compatible in size, scale, material, style and colour.	Creating a false historical appearance, because the replicated feature is incompatible or based on insufficient physical and documentary evidence.
	ADDITIONS OR ALTERATIONS TO EXTERIOR WALLS	
19	**Modifying** exterior walls to accommodate an expanded program, a new use, or applicable codes and regulations, in a manner that respects the building's heritage value.	
20	**Designing** a new addition in a manner that preserves the character-defining exterior walls of the historic building.	Constructing an addition that requires the removal of character-defining exterior walls.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
21	**Complying** with health, safety and security requirements in a manner that conserves the heritage value of the exterior wall assembly and minimizes impact on its character-defining elements.	Damaging or destroying elements while making modifications to comply with health, safety or security requirements.
22	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to exterior walls, without first exploring equivalent systems, methods or devices that may be less damaging to character-defining elements and the heritage value of the historic building.
23	**Removing** or encapsulating toxic materials, using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	
24	**Protecting** exterior walls against loss or damage by identifying and assessing specific risks, and by implementing an appropriate fire-protection and blast protection strategy that addresses those risks.	Covering flammable character-defining walls with fire-resistant sheathing or coatings that alter their appearance.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
SUSTAINABILITY CONSIDERATIONS		
25	**Complying** with energy efficiency objectives in upgrades to exterior wall assemblies in a manner that respects the building's character-defining elements, and considers the energy efficiency of the building envelope and systems as a whole.	Changing the composition or materials of the exterior wall assembly in a manner that compromises the building's character-defining elements and the durability of its materials. Replacing single pane glazing with sealed thermal units, without considering the impact on interrelated elements, such as curtain wall connections.
26	**Assessing** the potential impacts of adding insulation to the building envelope, such as displacing the *dew point* and creating *thermal bridges*.	Inserting thermal insulation in exterior wall cavities, in attics, and in unheated cellars and crawl spaces, that might adversely affect the building's envelope and character-defining elements. Installing insulation on the inside of exterior walls without considering the effect on character-defining interior mouldings or detailing.
27	**Working** with energy efficiency specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to the exterior walls, without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
28	**Repairing** an exterior wall assembly from the restoration period by reinforcing its materials; for example, using heavier gauge metal to reinforce a mullion in a curtain wall.	Replacing an entire exterior wall assembly from the restoration period when the repair of materials and limited replacement of deteriorated or missing parts is possible.
29	**Replacing** in kind an entire exterior wall assembly from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the assembly. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable exterior wall assembly from the restoration period and not replacing it, or replacing it with an inappropriate exterior wall assembly. Reinstating an exterior wall detail that is damaging to adjacent character-defining elements.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
30	**Removing** or altering a non character-defining exterior wall assembly or element from a period other than the restoration period.	Failing to remove a non character-defining exterior wall assembly or element from another period that confuses the depiction of the building's chosen restoration period.
31	**Retaining** alterations to exterior wall assemblies that address problems with the original design, if those alterations do not have a negative impact on the building's heritage value.	Removing an exterior wall assembly or element from a later period that serves an important function in the building's ongoing use.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
32	**Recreating** a missing exterior wall assembly from the restoration period, based on physical or documentary evidence.	Constructing an exterior wall assembly that was part of the building's original design, but was never actually built, or constructing a feature thought to have existed during the restoration period, but for which there is insufficient documentation.

4.3.5 WINDOWS, DOORS AND STOREFRONTS

These guidelines provide direction when windows, doors or storefronts are identified as *character-defining elements* of an historic place. They also give direction on how to minimize the impact of introducing a new element, or changing existing non-character-defining windows, doors and storefronts in an historic building.

The character-defining form and features of the Byrnes Block storefronts in Gastown, Vancouver, including their large plate-glass display windows with multi-pane transom windows above and recessed central doorways, have been retained through Preservation.

The windows of the Aberdeen Pavilion in Ottawa, a building that is valued as an example of a large-scale exhibition structure from the 19th century, include monitor windows at the top of the curved roof structure to provide daylight to the wide open space from above. Preservation of the character-defining wood windows involved scraping, sanding, re-puttying and repainting. While some replacement in kind was undertaken, almost all the original windows were retained, including the glass. Wholesale replacement of window units is not an appropriate Preservation treatment.

Doors are often targets for replacement because of security, energy efficiency or fire separation needs. Often it is possible to meet all these needs while retaining a historic door. Adding weather stripping can contribute greatly to a door's efficiency. Modern locks and locking mechanisms can often be installed with little damage. The fire rating of a solid wood door may meet certain code requirements.

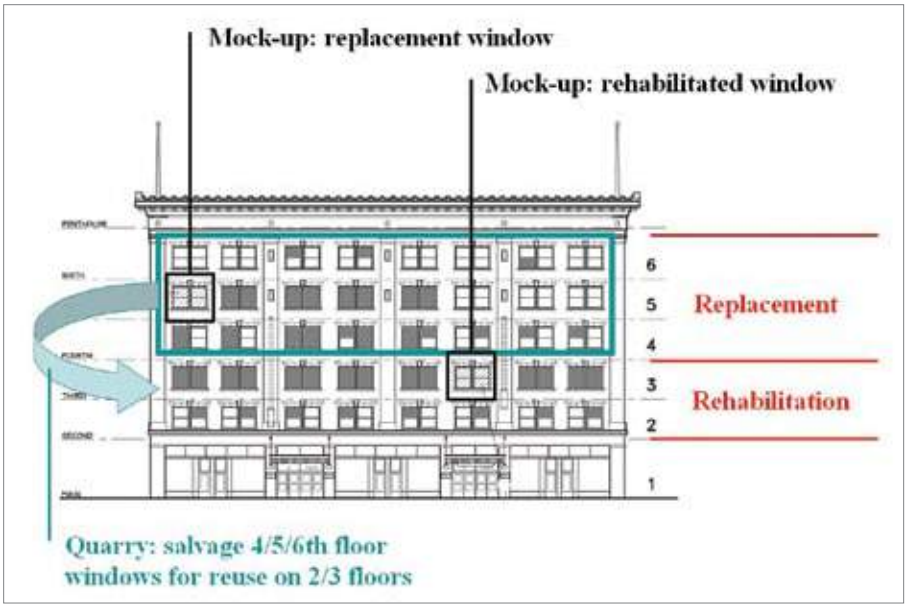
Windows and doors range from traditional wood and steel assemblies to modern sealed units, skylights, conservatories and revolving doors. They also come with a wide range of functional and decorative components, including frames, sashes, *muntins*, stained glass, glazing, hardware, sills, *hoodmoulds*, panelled or decorated jambs and mouldings, and interior and exterior shutters.

Windows, doors and storefronts are among the most conspicuous of any building's features. They punctuate the façade or, in the case of curtain wall construction, are integral to the exterior wall assembly. In addition to their function—providing light, views, fresh air and access to the building—their arrangement and design is fundamental to the building's appearance and heritage value. Each window, door or storefront is, in itself, a complex assembly whose function and operation must be considered as part of its conservation.

Windows and doors are vulnerable to wear and tear, changing tastes and functional requirements. The ongoing need for maintenance and upgrades can, however, motivate interventions that can have a negative impact on their heritage value. Often, windows and doors are replaced with newer units that have a much shorter service life, in the name of energy efficiency.

Storefronts often provide display space and are susceptible to rapidly changing commercial requirements. They are included in this section along with their functional and decorative features, such as windows, doors, transoms, cornices, corner posts, awnings, signs and lighting.

These guidelines provide general recommendations for windows, doors and storefronts. For recommendations on related issues, refer to the individual guidelines for Exterior Form and Mechanical and Electrical Systems. For materials that make up these assemblies, refer to the Guidelines for Materials.



While rehabilitating the Lougheed Building in Calgary, the windows in the best condition were repaired and consolidated on the lower levels where they were most visible from the street. New windows based on the existing were specially constructed for the upper levels. The location and reuse of the windows was carefully and clearly documented both for construction purposes and for future reference.

The Leopold Roy House in Saint-Quentin NB is a good example of a window, door and storefront restoration. Based on photographic and physical evidence, the original finishes and designs were uncovered and repaired or replaced in kind.

These large windows on King Street in St.John were originally slated for removal and replacement as part of the CentreBeam Place rehabilitation project. Instead, a condition revealed that the original windows could be retained and repaired, with the addition of interior storm to meet energy efficiency requirements.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** windows, doors and storefronts and how they contribute to the heritage value of the historic building.	
2	**Understanding** the properties, operation and characteristics of the windows, doors and storefronts as well as changes and previous maintenance practices.	Failing to consider the impact of previous changes and maintenance practices, such as sealed windows or the removal of awnings or sunshades.
3	**Documenting** the form, materials and condition of windows, doors and storefronts, and their elements, before undertaking an intervention. This includes the configuration, style, method of operation and materials.	Undertaking an intervention that affects windows, doors and storefronts without first documenting their existing character and condition.
4	**Assessing** the condition of windows, doors and storefronts, including hardware, early in the planning process so that the scope of work is based on current conditions.	
5	**Determining** the cause of distress, damage, or deterioration of windows, doors and storefronts through investigation, monitoring, and minimally invasive or non-destructive testing techniques.	
6	**Protecting** and maintaining windows, doors and storefronts by using appropriate surface treatments, such as cleaning, rust removal, limited paint removal, and reapplying protective coating systems in kind.	Failing to adequately maintain windows, doors and storefronts on a regular basis.
7	**Making** windows, doors and storefronts weather tight and energy efficient by re-puttying and replacing or installing weatherstripping, adjusting hardware, and sealing openings and joints.	
8	**Retaining** sound and repairable windows, doors and storefronts, including their functional and decorative elements, such as hardware, signs and awnings.	Removing or replacing windows, doors and storefronts that can be repaired. Peeling paint, broken glass, stuck sashes, loose hinges or high air infiltration are not, in themselves, indications that these assemblies are beyond repair.
9	**Stabilizing** deteriorated windows, doors and storefronts by using structural reinforcement, and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Adding protective glazing or exterior storms to stained glass elements, without the involvement of a specialist conservator.
10	**Repairing** parts of windows, doors, or storefronts, by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods. Repair may also include the limited replacement in kind, or with a compatible substitute material, of those extensively deteriorated or missing parts of windows, doors and storefronts. Repairs should match the existing work as closely as possible, both physically and visually.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Protecting** adjacent character-defining elements from accidental damage, or exposure to damaging materials during maintenance or repair work.	
12	**Replacing** in kind extensively deteriorated or missing parts of windows, doors and storefronts, where there are surviving prototypes.	Replacing an entire functional or decorative element, such as a shutter with a broken louver, or a door with a missing hinge, when only limited replacement of deteriorated or missing part is possible. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving parts of the element, nor is physically or visually compatible.
13	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
14	**Documenting** all interventions that affect the building's windows, doors and storefronts, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
15	**Repairing** windows, doors and storefronts by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on documentary or physical evidence.	Replacing an entire window, door or storefront when the repair of materials and limited replacement of deteriorated or missing elements is feasible. Failing to reuse serviceable hardware, such as sash lifts and sash locks, hinges and doorknobs.
16	**Replacing** in kind irreparable windows, doors or storefronts based on physical and documentary evidence. If using the same materials and design details is not technically or economically feasible, then compatible substitute materials or details may be considered.	Removing an irreparable window, door or storefront and not replacing it, or replacing it with a new one that does not convey the same appearance or serve the same function. Stripping storefronts of character-defining materials or covering over those materials.
17	**Replacing** missing historic features by designing and installing new windows, doors and storefronts based on physical and documentary evidence, or one that is compatible in size, scale, material, style and colour.	Creating a false historical appearance because the new window, door or storefront is incompatible, or based on insufficient physical and documentary evidence.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
18	**Designing** and constructing a new window, door or storefront when it is completely missing, with a new design that is compatible with the style, era and character of the historic place, or a replica based on documentary evidence.	Changing the number, location, size, or configuration of windows, doors and storefronts, by cutting new openings, blocking in existing openings, or installing replacement units that do not fit the opening.
19	**Using** signs, awnings, canopies or marquees of a scale and design that is compatible with the historic building.	Introducing a new design that is incompatible in size, scale, material, style or colour.
	ADDITIONS OR ALTERATIONS TO WINDOWS, DOORS AND STOREFRONTS	
20	**Designing** and installing new windows, doors or storefronts required by a new use on non-character-defining elevations in a manner that is compatible with the building's style, era and character.	Installing new windows, doors or storefronts that are incompatible with the building's style, era and character, or that obscure, damage or destroy character-defining elements.
21	**Providing** a setback in the design of drop ceilings, when required, to allow for full height window openings.	Inserting new floors or drop ceilings that cut across windows openings, changing the interior and exterior appearance of the building, and reducing access to daylight.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
22	**Complying** with health, safety and security requirements in a manner that conserves the heritage value of the windows, doors and storefronts and minimizes impact on its character-defining elements.	Damaging or destroying elements while making modifications to comply with health, safety and security requirements.
23	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to windows, doors or storefronts without first exploring equivalent health, safety and security systems, methods or devices that may be less damaging to the character-defining elements of the historic building.
24	**Removing** or encapsulating hazardous materials, such as lead-based paint, using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	
25	**Protecting** windows, doors or storefronts against loss or damage by identifying and assessing specific risks, and by implementing an appropriate fire protection strategy that addresses those risks. For example, replacing a character-defining wood door with a compatible fire-rated door, only after carefully considering other options.	Implementing a generic fire-protection strategy, or one that does not appropriately address the specific fire risks of the historic building. Covering flammable, character-defining elements with fire-resistant sheathing or coatings that alter their appearance.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ACCESSIBILITY CONSIDERATIONS		
26	**Complying** with accessibility requirements in a manner that conserves, where possible, character-defining doors and storefronts, including their decorative and operating hardware. This can include using an automatic door opener instead of providing the required manoeuvring space for wheelchairs at doors.	Installing new hardware that damages character-defining doors and mouldings without considering alternate means of meeting accessibility requirements
27	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the historic building.	Altering character-defining windows, doors and storefronts without consulting the appropriate specialists and users.
SUSTAINABILITY CONSIDERATIONS		
28	**Complying** with energy efficiency objectives in upgrades to character-defining doors, windows and storefronts by installing weather-stripping, storm windows, interior shades and, if historically appropriate, blinds and awnings. The energy efficiency of the building envelope and systems as a whole should be considered.	Replacing character-defining, multi-paned sashes with new thermal sashes with false *muntins*.
29	**Working** with specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to windows, doors or storefronts without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.
30	**Maintaining** the building's inherent energy-conserving features in good operating condition, such as operable windows or louvered blinds for natural ventilation.	Replacing repairable windows with new ones, without evaluating the performance and remaining service life of the existing windows.
31	**Installing** interior storm windows where original windows are character-defining and exterior storms are inappropriate.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
32	**Repairing** windows, doors and storefronts from the restoration period, using a minimal intervention approach, such as patching, splicing, consolidating, or otherwise reinforcing their materials and improving weather protection.	Replacing an entire window, door or storefront from the restoration period, when the repair of materials and limited replacement of deteriorated or missing parts is possible.
33	**Replacing** in kind an entire window, door or storefront from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the assembly. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable window, door or storefront and not replacing it, or replacing it with an inappropriate window, door or storefront. Reinstating a window, door or storefront detail that is damaging to character-defining elements.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
34	**Removing** or altering non character-defining windows, doors or storefronts, or their associated functional or decorative elements, from a period other than the restoration period.	Failing to remove a non character-defining window, door or storefront from another period that confuses the depiction of the building's chosen restoration period.
35	**Retaining** alterations to windows, doors or storefronts that address problems with the original design, if those alterations do not have a negative impact the building's heritage value.	Removing a window, door or storefront from a later period that serves an important function in the building's ongoing use, such as an emergency exit door.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
36	**Recreating** a missing window, door or storefront from the restoration period, based on physical or documentary evidence.	Installing a window, door or storefront that was part of the building's original design, but was never actually built, or constructing a feature thought to have existed during the restoration period, but for which there is insufficient documentation.
37	**Recreating** missing signage, awnings or canopies where sufficient physical or documentary evidence exists, and the building's current use allows.	Installing signs, awnings, canopies or marquees, for which there is insufficient physical or documentary evidence.

4.3.6 ENTRANCES, PORCHES AND BALCONIES

These guidelines provide direction when entrances, porches and balconies are identified as a *character-defining element* of an historic place. Lobbies, vestibules, stairs, canopies, verandas, overhangs, *widow's walks* and *pergolas*, and their decorative and functional elements, such as pilasters, entablatures, fire escapes, lights and balustrades are also included, as well as features that allow access to the building by car, such as a drive-through, ramp, canopy or carport.

Entrances, porches and balconies contribute to a building's aesthetic and retain heat, block sun, or provide natural ventilation. Because entrances, porches and balconies are exposed to the elements, they require regular maintenance. Modifications may also be needed due to new functional requirements, code compliance, or accessibility. The addition of a new ramp or security clearance area are common interventions that may affect the layout and functional configuration of both the interior and exterior of an entranceway.

In Rehabilitation, deteriorated features should be repaired, whenever possible, and replaced when the severity of the damage makes it necessary. The stone steps of this house entrance were cracked. Appropriate work included repairing the stone steps and walls and installing a compatible metal handrail to meet building code requirements.

Porches, such as this portico on the old Bonsecours Market in Montreal (built 1844–1847) with its striking Greek Doric cast iron columns, can play a significant role in defining a building's character. Maximizing the retention of character-defining elements, including the portico, was the primary conservation objective when the building was rehabilitated into a municipal offices, exhibition spaces and restaurants.

The guidelines address these types of projects and provide general recommendations appropriate to all types of entrances, porches and balconies. For recommendations on associated issues, refer to the individual guidelines for Interior Arrangement; Roofs; Doors, Windows and Storefronts; Exterior Walls; and Structural Systems. For recommendations on specific materials that make up entrances, porches and balconies, refer to the Guidelines for Materials.

The curved, ornate metal canopy extending over the sidewalk at the Maltese Cross Building in Winnipeg's Exchange District clearly marks one of the buildings main entrances. Not using this entrance or establishing a new primary entrance in a different location would be inappropriate.

In Restoration, reinstating the historic paint colours from the restoration period should be based on physical or documentary evidence such as on-site paint analysis and colour photographs.

Adding a ramp to meet accessibility requirements should be designed to be compatible with a building's character. This new ramp at Province House in Charlottetown was discretely integrated into one side of an existing entrance porch.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** entrances, porches or balconies and how they contribute to the heritage value of the historic building.	
2	**Understanding** the functions, properties and characteristics of entrances, porches and balconies, as well as changes and previous maintenance practices.	Failing to consider the impact of previous changes and maintenance practices, such as the removal of an awning or porch.
3	**Documenting** the form, materials and condition of entrances, porches and balconies before undertaking an intervention.	Undertaking an intervention that affects entrances, porches and balconies without first documenting their existing character and condition.
4	**Assessing** the condition of entrances, porches and balconies early in the planning process so that the scope of work is based on current conditions.	
5	**Determining** the cause of distress, damage or deterioration of entrances, porches and balconies through investigation, monitoring and minimally invasive or non-destructive testing techniques.	
6	**Protecting** and maintaining entrances, porches and balconies, by using appropriate surface treatments, such as cleaning, rust removal, limited paint removal, and reapplying protective coating systems in kind.	Failing to maintain paint and coatings, to replace damaged flashings, and to prevent the growth of plants and access by animals.
7	**Retaining** sound or repairable entrances, porches and balconies and their functional and decorative elements.	Removing sound or repairable elements, such as decorative woodwork, wrought iron detailing, or terra cotta tile.
8	**Stabilizing** deteriorated entrances, porches and balconies by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated entrances, porches or balconies that could be stabilized or repaired.
9	**Repairing** parts of entrances, porches or balconies by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods. Repair might also include the limited replacement in kind, or with a compatible substitute material, of those extensively deteriorated or missing parts of entrances, porches and balconies. Repairs should match the existing work as closely as possible, both physically and visually.	
10	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Replacing** in kind extensively deteriorated or missing parts of entrances, porches or balconies where there are surviving prototypes.	Replacing an entire functional or decorative element when limited replacement of deteriorated and missing parts is possible. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving element, nor is physically or visually compatible.
12	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include, reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
13	**Documenting** all interventions that affect the building's entrances, porches and balconies, and ensuring the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
14	**Repairing** an entrance, porch or balcony by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on documentary or physical evidence.	Replacing an entire entrance, porch or balcony when the repair of materials and limited replacement of deteriorated or missing elements is feasible.
15	**Replacing** in kind an irreparable entrance, porch or balcony based on physical and documentary evidence. If using the same materials and design details is not technically or economically feasible, then compatible substitute materials or details may be considered.	Removing an irreparable entrance, porch or balcony and not replacing it, or replacing it with a new one that does not convey the same appearance or serve the same function.
16	**Replacing** missing historic features by designing and constructing a new entrance, porch or balcony, based on physical and documentary evidence, or one that is compatible in size, scale, material, style or colour.	Creating a false historical appearance because the new entrance, porch or balcony is incompatible, or based on insufficient physical and documentary evidence.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ADDITIONS OR ALTERATIONS TO ENTRANCES, PORCHES AND BALCONIES		
17	**Modifying**, replacing or designing a new entrance, porch or balcony required by a new use or applicable codes and regulations, in a manner that is compatible with the building's style, era and character.	Altering a secondary entrance to give it the appearance of a main entrance. Enclosing a porch or balcony in a manner that has a negative impact on the building's heritage value. Removing character-defining entrances, porches or balconies that are no longer needed for the new use. Constructing an addition that requires the loss of a character-defining entrance, porch, or balcony.
HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
18	**Adding** new features to meet health, safety and security requirements, such as a new handrail, in a manner that conserves the heritage value of the entrance, porch or balcony and minimizes impact on its character-defining elements.	Damaging or destroying an entrance, porch or balcony while making modifications to comply with health, safety and security requirements.
19	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to entrances, porches or balconies without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements of the historic building.
20	**Exploring** all options for modifications to existing entrances, porches and balconies to meet code and regulation requirements, prior to considering removal or replacement.	Removing an entrance, porch or balcony that does not comply with codes or regulations, and not replacing it with a compatible new assembly.
21	**Removing** or encapsulating hazardous materials, using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	
22	**Protecting** entrances, porches or balconies against loss or damage by identifying and assessing specific risks, and by implementing an appropriate fire-protection strategy that addresses those specific risks.	Covering flammable, character-defining elements with fire-resistant sheathing or coatings that alter their appearance.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ACCESSIBILITY CONSIDERATIONS		
23	**Respecting** the location of existing entrances, and porches when providing new accessibility-related features, such as ramps and lifts. For example, providing new functions for the public on the ground floor, or in areas already served by exits.	Relocating a main entrance when undertaking interventions to accommodate accessibility-related features.
24	**Exploring** all options for modifications to existing entrances, porches and balconies to meet accessibility requirements prior to considering removal or replacement.	Removing an entrance, porch or balcony that does not meet accessibility requirements, and not replacing it with a compatible new assembly.
25	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the historic building.	Altering character-defining entrances, porches and balconies without consulting the appropriate specialists and users.
SUSTAINABILITY CONSIDERATIONS		
26	**Complying** with energy efficiency objectives by maintaining inherent energy conserving features, such as overhangs, awnings and vestibules while preserving heritage value.	Removing character-defining vestibules, porches and balconies that contribute to the inherent energy efficiency of the historic building.
27	**Working** with specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to entrances, porches and balconies without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
28	**Repairing** entrances, porches and balconies from the restoration using a minimal intervention approach, such as patching, splicing, consolidating or otherwise reinforcing its materials and improving weather protection.	Replacing an entire entrance, porch or balcony from the restoration period when the repair of materials and limited replacement of deteriorated or missing parts is possible.
29	**Reinstating** an open porch or balcony that was enclosed.	
30	**Replacing** in kind an entire entrance, porch or balcony from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the assembly. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable entrance, porch or balcony from the restoration period and not replacing it, or replacing it with an inappropriate entrance, porch or balcony. Reinstating an entrance, porch or balcony detail that is damaging to character-defining elements.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
31	**Removing** or altering a non character-defining entrance, porch or balcony from a period other than the restoration period.	Failing to remove a non character-defining entrance, porch or balcony from another period that confuses the depiction of the building's chosen restoration period.
32	**Retaining** alterations to entrances, porches or balconies that address problems with the original design, if those alterations do not have a negative impact on the building's heritage value.	Removing alterations to an entrance, porch or balcony that serve an important function in the building's ongoing use, such as a ramp or handrail.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
33	**Recreating** a missing entrance, porch or balcony, or one of its features, from the restoration period, based on physical or documentary evidence; for example, duplicating a fanlight or porch column.	Constructing an entrance, porch or balcony that was part of the building's original design but was never actually built, or a feature thought to have existed during the restoration period but for which there is insufficient documentation.

4.3.7 INTERIOR FEATURES

These guidelines provide direction when a building's interior features are identified as *character-defining elements* of an historic place. They also give direction on how to preserve those features through maintenance and repair, or when a change in use or regulations dictates the need for alterations or additions.

Interior features can include elements such as interior walls, floors and ceilings, mouldings, staircases, fireplace mantels, faucets, sinks, built-in cabinets, light fixtures, hardware, radiators, mail chutes, telephone booths and elevators. Because their heritage value resides not only in their physical characteristics, but also in their location in the historic building, it is important to protect them from removal. This is particularly true of doors, banisters, church pews, fireplace mantels, sinks and light fixtures, which are often replaced instead of being upgraded. Reuse in their original location not only protects their heritage value, but is also a more sustainable approach to conserving these artefacts.

Artwork, including sculpture and murals may contribute to the character of an interior. The murals in the Saskatchewan Legislature Building required the expertise of art conservators for their repair and cleaning undertaken for the Saskatchewan Centennial.

When adding any new features to meet functional requirements, adjacent character-defining elements should be conserved. A new glass wall in the Dominion Public Building in Halifax was carefully designed to complement the quality of the lobby's materials and finishes, and installed to avoid damaging the adjacent character-defining plasterwork and stone wainscoting.

These guidelines provide general recommendations appropriate to all types of interior features. For recommendations on associated issues related to interior features, refer to Interior Arrangement. For recommendations on specific materials that make up interior features, refer to the Guidelines for Materials.

Functional elements, such as radiators and decorative grilles, can contribute to the overall heritage character of a place. Opportunities to retain these features when upgrading or replacing mechanical systems should be explored. This heating grate is one of many that were retained and repaired for use with a new heating plant when the Dawson City Telegraph office was rehabilitated into housing.

These large light fixtures in the main hall of the Jasper train station were rewired and adapted to accept compact fluorescent bulbs in order to meet sustainability and current health and safety concerns. Light fixtures of any scale can be similarly rehabilitated rather than being replaced.

Historic guards and handrails often do not conform to current codes and safety regulations. Modifying historic balustrades in a compatible way to meet these requirements is recommended over replacement. The balustrade at the National Archives and Library in Ottawa underwent a sensitive rehabilitation to meet current requirements for spacing between balusters.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** interior features and how they contribute to the heritage value of the historic building.	
2	**Understanding** the properties and characteristics of interior features as well as changes and previous maintenance practices; for example, investigating the reconfiguration of a staircase or removal of a reception counter, or testing the loading capacity of a period elevator.	Failing to consider the impact of previous changes and maintenance practices on the interior features.
3	**Documenting** the form, materials and condition of interior features before undertaking an intervention.	Undertaking an intervention that affects interior features without first documenting their character and condition.
4	**Assessing** the condition of interior features early in the planning process so that the scope of work is based on current conditions.	
5	**Determining** the cause of distress, damage or deterioration of interior features through investigation, monitoring and minimally invasive or non-destructive testing techniques.	
6	**Protecting** and maintaining interior features through appropriate repairs to their functional parts and by using appropriate surface treatments, such as cleaning, rust removal, limited paint removal and reapplying protective coating systems in kind.	Failing to maintain interior features on a regular basis.
7	**Using** proven cleaning methods. More aggressive cleaning should be considered only after other gentler methods have proven to be ineffective.	Changing the texture and patina of interior features and finishes through the use of abrasive methods to remove paint or finishes.
8	**Using** paint or coating systems of appropriate colour and texture.	
9	**Preserving** the method of operation of interior features that contribute to the heritage value of the historic place. For example, continuing to use a fireplace.	Altering or eliminating the method of operation of interior features that contributes to the heritage value of the historic building.
10	**Retaining** sound and repairable interior features.	Removing character-defining interior features, such as light fixtures, radiators and wood work. Applying paint, plaster or other finishes to surfaces that have historically been unfinished. Removing paint, plaster or other finishes from historically finished surfaces, such as removing plaster to expose a brick wall, or stripping paint from doors and trim work.
11	**Stabilizing** deteriorated interior features by structural reinforcement, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated interior features that could be stabilized or repaired.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
12	**Repairing** parts of interior features by patching, piecing-in, consolidating or otherwise reinforcing, using recognized conservation methods. Repair may also include the limited replacement in kind, or with a compatible substitute material, of those extensively deteriorated or missing parts of interior features. Repairs should match the existing work as closely as possible, both physically and visually.	
13	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	Failing to protect interior features against damage, theft or vandalism during construction.
14	**Replacing** in kind extensively deteriorated or missing parts of interior features where there are surviving prototypes.	Replacing an entire interior feature when only limited replacement of deteriorated and missing parts is possible. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving interior feature, nor is physically or visually compatible.
15	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
16	**Documenting** all interventions that affect the building's interior features, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
17	**Repairing** interior features by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on physical or documentary evidence.	Replacing an entire interior feature, such as a staircase, paneled wall, parquet floor or cornice, when the repair of materials and limited replacement of deteriorated or missing parts is feasible.
18	**Replacing** in kind an irreparable interior feature based on physical and documentary evidence. Examples include wainscoting, a pressed-metal ceiling or interior stairs. If using the same material and design details is not technically or economically feasible, then compatible substitute material or details may be considered.	Removing an element that is irreparable and not replacing it, or replacing it with a new feature that does not convey the same appearance or serve the same function.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
19	**Replacing** missing historic features by designing and installing a new interior feature, based on physical and documentary evidence, or one that is compatible in size, scale, material, style or colour.	Creating a false historical appearance because the new interior feature is incompatible or based on insufficient physical and documentary evidence.
20	**Operating** and using a functioning interior feature that is important to the heritage value of the historic building, such as rewiring a character-defining light fixture according to the appropriate safety codes.	Ceasing use of or altering a functioning interior feature that is important in defining the heritage value of the historic building.
	ADDITIONS OR ALTERATIONS TO INTERIOR FEATURES	
21	**Designing**, locating and installing new interior features, such as stairways, cabinetwork or fireplaces, in a manner that respects the building's heritage value.	Introducing a new interior feature that is incompatible in size, scale, material, style or colour with the existing features.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
22	**Upgrading** interior features to meet health, safety and security requirements, in a manner that preserves the existing feature and minimizes impact on its heritage value.	Damaging or destroying interior features while making modifications to comply with health, safety and security requirements.
23	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to interior features, without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements of the historic building.
24	**Exploring** all options for modifications to existing interior features to meet functional requirements prior to considering removal or replacement.	Removing an interior feature, such as a security desk, without investigating options to meet current requirements.
25	**Removing** or encapsulating hazardous materials, such as friable asbestos insulation, using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	Neglecting to maintain and repair the cladding protecting encapsulated asbestos insulation.
26	**Installing** sensitively designed fire-suppression systems that retain character-defining elements and respect heritage value.	Covering flammable character-defining elements with fire-resistant sheathing or coatings that alter their appearance.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ACCESSIBILITY CONSIDERATIONS		
27	**Finding** solutions to meet accessibility requirements that minimize impact on interior features, such as locating public functions strategically to limit changes to the interior.	
28	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the historic building.	Altering character-defining interior features, without consulting the appropriate specialists and users.
29	**Respecting** the location of existing staircases when providing new accessibility-related features, such as ramps and lifts.	Locating accessibility-related features in secondary or service areas, when making compatible modifications to primary vertical circulation areas is possible.
30	**Exploring** all options for modifications to existing interior features, prior to considering removal or replacement.	
SUSTAINABILITY CONSIDERATIONS		
31	**Complying** with energy efficiency objectives by maintaining energy-conserving interior features, such as interior shutters, transoms and vestibules.	Failing to incorporate interior features, such as ventilation grilles or radiator covers, as part of upgrades to heating and ventilation systems.
32	**Complying** with energy-efficiency objectives by upgrading rather than replacing character-defining light fixtures.	
33	**Working** with specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to interior features, without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
34	**Repairing** interior features from the restoration period by using a minimal intervention approach such as patching, splicing, consolidating or otherwise reinforcing its materials.	Replacing an entire interior feature from the restoration period, such as a staircase, when the repair of materials and limited replacement of deteriorated or missing parts is possible.
35	**Replacing** in kind an entire interior feature from the restoration period that is too deteriorated to repair, using the physical evidence as a model for reproduction. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable interior feature from the restoration period and not replacing it, or replacing it with an inappropriate interior feature. Reinstating a detail of an interior feature that is damaging to character-defining elements.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
36	**Removing** or altering a non character-defining interior feature from a period other than the restoration period.	Failing to remove a non character-defining interior feature from another period that confuses the depiction of the building's chosen restoration period.
37	**Retaining** alterations to interior features that address problems with the original design if those alterations do not have a negative impact on the building's heritage value.	Removing an interior feature that serves an important function in the building's ongoing use, such as a security desk or accessible washroom.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
38	**Recreating** a missing interior feature from the restoration period, based on physical or documentary evidence; for example, duplicating a marble mantel or staircase.	Constructing an interior feature that was part of the building's original design but never actually built, or a feature thought to have existed during the restoration period but for which there is insufficient documentation.

4.3.8 STRUCTURAL SYSTEMS

These guidelines provide direction when a structural system is identified as a *character-defining element* of an historic place. They also provide direction on maintaining, repairing and replacing structural components or systems.

In Preservation, visible structural systems that are important in defining a building's overall character should not be removed or obscured. When evaluating the physical condition of the structural system (using minimally destructive techniques) indicates that repairs of deteriorated parts are required, they should match the old in form and detailing and have adequate strength.

Analyzing structural systems built using traditional materials and assemblies can be challenging. These historic materials and assemblies often have variable properties, and can include flaws or deterioration that have developed over time. Testing can give some insight into these properties. However, extrapolating findings from localized tests to describe the strength and stiffness of a larger structural assembly is not always straightforward. Thus, any analysis should account for the variability of the materials and assemblies, and should be repeated using different assumptions to arrive at a range of results predicting how the assembly will behave.

Structural systems are the deliberate assembly of distinct components that ensure a structure or building will stand up. A structural system must meet life safety requirements (i.e., it should not collapse) and serviceability requirements for the architectural elements and finishes attached to it (i.e., it should not bend or deform excessively). Structural systems are typically composed of two distinct components: the substructure or foundation; and the superstructure above. Structural systems can take many forms, such as post and beam, arches, domes, trusses or frames, and use many different materials, such as stone, brick, steel, wood or concrete.

The regulations to which building structures must perform have evolved considerably over time. Building codes first appeared in Canada in the 1940s, and now include requirements to resist loads such as earthquakes, that were never considered in earlier times. Modern codes also no longer address materials and construction techniques that were used to build many historic building structures. Despite these changes, early structural systems, when properly interconnected and maintained in good condition, can be made to work effectively. The challenge of conserving the structures often lies in confirming whether they can achieve the level of performance expected from today's building codes. The services of a professional engineer are mandatory whenever a structural system is investigated, analysed or modified. Knowledge of structural behaviour and period materials and technology are essential to the investigation and analysis of an historic structure.

These guidelines provide general recommendations appropriate for all types of structural systems. Because structural systems can also form the wall assembly, such as in load-bearing masonry or log structures, it may be difficult to perform work on a structural system without adversely affecting character-defining architectural components and assemblies.

When intervening on an historic building's structure, refer to the related Guidelines for Buildings. For recommendations on specific materials that make up structural systems, refer to the Guidelines for Materials. When undertaking any excavation work, consult the Guidelines for Archaeological Sites. Structural systems are also present in many engineering works, therefore, the Guidelines for Engineering Works should be referred to when conserving those types of historic places.

It is important to adapt interim stabilization interventions to the anticipated lifespan of the intervention and make it as reversible as possible. Temporary steel cross bracing supports an exterior wall at St. Peter's Dynevor Anglican Church Rectory in Selkirk MB.

When a building's structure has performed satisfactorily for many years, and has had no recent change in use, its structure is likely satisfactory for wind and gravity loads. The National Building Code of Canada, Commentary L, describes applying this logic when evaluating and upgrading an existing building. This logic, however, cannot be applied when there is significant deterioration, a change in use is planned or seismic strength is in question. Under these circumstances, a detailed engineering investigation and analysis is necessary to verify the structure's performance.

The McLeod Building, an early terra-cotta high-rise in Edmonton, was rehabilitated from office space to condominiums with no need for alterations to the structural system.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the structural system and how it contributes to the heritage value of the historic place.	
2	**Understanding** the techniques and materials used in the construction of the structural system, any subsequent alterations and their effects, and the loads it was subjected to over its history.	
3	**Documenting** the form, materials, function and condition of structural systems before undertaking an intervention.	Undertaking an intervention that affects structural systems, without first documenting their existing character and condition.
4	**Assessing** the condition of structural systems, including the foundations, early in the planning process so that the scope of work is based on current conditions.	Carrying out a level of conservation work that exceeds what is required, or taking action based on assumptions or rules of thumb.
5	**Determining** the physical condition of structural systems or their components, and the cause of distress, damage or deterioration through investigation, analysis, monitoring and minimally invasive or non-destructive testing techniques.	Using highly destructive probing or sampling techniques that damage or destroy structural systems or their components. Failing to identify, evaluate and treat the causes of distress, damage or deterioration of structural systems or their components. Carrying out a repair that does not treat or address the cause of the problem.
6	**Verifying** the theoretical characteristics of structural systems by testing them in place to determine their actual characteristics, provided the appropriate precautions are taken to avoid their failure or destruction.	Reinforcing or replacing structural systems or their components that are theoretically overloaded, without validating the analysis through an accurate comparison with their actual, observed performance.
7	**Taking** into account the past performance and load history of structural systems or their components when determining their present or future capacity.	
8	**Reviewing** the requirements of codes and regulations for structural performance, and involving experts and code officials early in the process to investigate systems, methods or devices that minimize the impact on character-defining elements.	Forcing generic or conventional code solutions on an historic place, without thoroughly assessing their effect on character-defining elements and rigorously investigating alternatives with the authority.
9	**Determining** the appropriate performance requirements that must be applied in assessing the condition and performance of an historic structural system.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
10	**Protecting** and maintaining structural systems by maintaining the building envelope—roof to foundation—including roofing, flashings, gutters and downspouts, wall components of masonry, concrete, wood and metals; ensuring positive drainage away from foundations; and ensuring that structural members are free of fungal decay and insect infestation.	Failing to adequately maintain structural systems and their components on a cyclical basis, causing the materials to deteriorate.
11	**Imposing** limits on the acceptable use of structures based on their actual characteristics and capacities, to protect them from damage; balancing present and anticipated usage demands with heritage value; and avoiding, where possible, any use that would damage or destroy the structural system.	
12	**Retaining** sound structural systems or deteriorated structural systems that can be repaired.	Replacing or rebuilding structural systems that can be repaired. Relocating structural components when their location is part of their heritage value.
13	**Stabilizing** deteriorated structural systems by structural reinforcement, weather protection or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated structural systems that could be stabilized or repaired. Leaving known structural problems untreated.
14	**Repairing** deteriorated structural systems and their components in a manner that is physically and visually compatible with the historic building or structure.	Replacing an entire structural system or component when repair or limited replacement of deteriorated or missing parts is possible.
15	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	
16	**Accommodating** the thermal expansion and contraction of structural systems by introducing expansion or control joints, and incorporating such joints into existing crack patterns of masonry and concrete structures where possible.	Filling moving cracks or expansion joints with materials that inhibit or prevent the thermal expansion and contraction of the structural system.
17	**Replacing** in kind extensively deteriorated or missing parts of structural systems where there are surviving prototypes. The new work should match the old as closely as possible in form, materials and detailing, and have adequate strength.	Replacing an entire structural system or component when limited replacement of deteriorated and missing parts is possible. Altering a structural system by adding new structural members that alter the load-carrying system of the original structure.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
18	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
19	**Documenting** all interventions that affect structural systems, and ensuring the documentation is available to those responsible for future interventions.	

GENERAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
20	**Repairing** structural systems by augmenting or upgrading individual components, such as *sistering joists* with new wood to improve structural efficiency. Repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on documentary or physical evidence. Repairs might also include dismantling and rebuilding a masonry or timber structure, if an evaluation of its overall condition determines that more than limited repair or replacement in kind is required.	Upgrading a structural system in a manner that alters the character-defining exterior of an historic building, or damages character defining interior features or spaces. Replacing a structural member or component when it could be augmented and retained.
21	**Repairing** deteriorated structural systems or their components, using new technologies where the original technology has been found to accelerate deterioration. The new technology should be chosen based on its compatibility with the historic element, its reliability and its visual impact on the character-defining elements and structural system as a whole.	Repairing deteriorated structural systems or their components, using new technologies to improve durability when the original technology performs adequately. Reinforcing structural systems or their components, without verifying the effectiveness or the level of benefit achieved by the reinforcement work.
22	**Replacing** in kind an irreparable structural system or component based on physical and documentary evidence.	
23	**Replacing** missing historic features by designing and installing a new structural system or component based on physical and documentary evidence, or one that is compatible in size, scale, material, style and colour.	Creating a false historical appearance because the new structural system or component is incompatible, or based on insufficient physical and documentary evidence.

GENERAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ADDITIONS OR ALTERATIONS TO STRUCTURAL SYSTEMS		
24	**Designing** the structural system of a new addition or altering an existing structure in a manner that is compatible with the building's structural system and respects its heritage value.	Radically changing character-defining interior spaces, or damaging or destroying interior features or finishes, while attempting to correct structural deficiencies in preparation for a new use.
25	**Limiting** new excavations adjacent to foundations to avoid undermining the stability of the structural system or adjacent structures.	
HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
26	**Complying** with health, safety and security requirements, such as seismic upgrades or blast protection, in a manner that conserves the structural system and minimizes impact on its heritage value.	Damaging or destroying character-defining elements, while making modifications to comply with health, safety and security requirements.
27	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic place.	Making changes to structural systems without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements of the historic place.
28	**Removing** or encapsulating hazardous materials, using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	
29	**Protecting** structural systems against loss or damage by identifying and assessing specific risks, and by implementing an appropriate fire-protection strategy that addresses those specific risks.	Covering flammable, character-defining structural components with fire-resistant sheathing or coatings that alter their appearance.
30	**Applying** fire retardant materials that do not damage or obscure character-defining structural systems. For example, applying fire-retardant, *intumescent paint* to an exposed column to further protect its steel.	
SUSTAINABILITY CONSIDERATIONS		
31	**Working** with specialists to determine the most appropriate solution to energy efficiency and sustainability requirements with the least impact on the character-defining elements and overall heritage value of the historic place.	Making changes to character-defining structural systems, including foundations, without first exploring alternative sustainability solutions that may be less damaging to the character-defining elements and overall heritage value of the historic place.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
32	**Repairing** the structural system from the restoration period by stabilizing, reinforcing or otherwise upgrading individual components in a manner that is consistent with the restoration period.	Replacing an entire structural system or its component from the restoration period when the repair or limited replacement of deteriorated or missing components is possible.
33	**Replacing** in kind an entire structural system or component from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the system or component. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable structural system or component from the restoration period and not replacing it, or replacing it with an inappropriate new system or component.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
34	**Retaining** alterations to structural systems that address problems with the original design, if those alterations do not have a negative impact on the building's heritage value.	Removing alterations to structural systems or components that serve an important function in the building's ongoing use.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
35	**Recreating** a missing structural component from the restoration period, based on physical or documentary evidence.	Installing a structural system or component that was part of the building's original design but never actually built, or constructing a structural system or component thought to have existed during the restoration period but for which there is insufficient documentation.

4.3.9 MECHANICAL AND ELECTRICAL SYSTEMS

These guidelines provide direction when a mechanical or electrical system is identified as a *character-defining element* of an historic place. They also give information on how to minimize the impact of introducing a new, or changing an existing non-character-defining mechanical or electrical system. Conserving these systems can be a challenge because their construction and operation are governed by stringent safety codes and regulations, and because historic installations and materials may no longer meet code requirements.

Mechanical systems (heat, ventilation, air conditioning and refrigeration) control a building's interior environment. They also include systems that provide necessary services, such as septic systems, potable water supply and fire suppression. The most visible components of mechanical systems include interior features such as radiators, vents, fans, grilles and plumbing fixtures.

In modern buildings, reinforced concrete is often left exposed or simply painted in order to display a distinctive structural form, such as this waffle slab ceiling in the Victoria City Hall Annex. Inserting new wiring or services into such spaces can be challenging. Discreetly using conduit is recommended rather than installing false ceilings or walls that cover the historic structure.

When upgrading the mechanical system at the George Brown House in Toronto, the design solution integrated original heating and ventilation systems, such as operable windows and the existing hot water radiator system, with technological interventions to provide increased levels of controlled cooling and heating. The original boiler was restored and incorporated into a modern hot water radiator system, and the interior finishes were retained by strategically locating drop ceilings and reusing historic fireplace flues and 'warm' and 'foul' air shafts.

During the rehabilitation of the Gooderham & Worts Distillery district in Toronto much of the original alcohol production equipment was retained in place, this included distribution piping that traveled throughout the large site, within and between buildings.

A cyclone blower and related ductwork on the 5th floor of the granary was also retained. Some of the lengths of duct were adjusted to accommodate a new concrete floor and other lengths were removed where they blocked access or were a hazard.

Contemporary building design typically uses an active approach to controlling the building environment with fans, blowers, boilers, furnaces, ducts and plenums. In some cases, the systems are deliberately exposed as an aesthetic display or an architectural expression of the component's functionality. More traditional building designs, however, often used passive techniques that were integrated into the building's design. These passive designs can include character-defining elements such as high ceilings, open corridors and transoms that facilitate air circulation, operable windows and shutters, and canopies and plantings that provide shade and act as windbreaks.

Electrical systems include power and communication systems such as electric lighting, intercoms, doorbells, telephones, buzzers, alarm systems and detectors. The proliferation of equipment such as computers, telephones and lighting can place extreme demands on electrical systems necessitating their upgrade or replacement. While the conservation of electrical and communications systems often focuses on fixtures, other aspects should also be considered, such as sounds made by alarms, bells or buzzers, and lighting design, including light levels and colour, and relationships to sources of natural light.

These guidelines provide general recommendations for mechanical and electrical systems. For recommendations on the conservation of mechanical and electrical fixtures, refer to Interior Features. For recommendations on architectural features and assemblies related to passive mechanical and lighting systems, refer to Windows, Doors and Storefronts; Exterior Walls; Exterior Form; and Interior Arrangement. Mechanical systems can also form an important part of an engineering work; the Guidelines for Engineering Works should be referred to when conserving those types of historic places.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the mechanical or electrical system and how it contributes to the heritage value of the historic building.	
2	**Understanding** the construction history, theory and design behind the mechanical or electrical system, and its relationship with the building's site and climate.	
3	**Documenting** the form, materials, function and condition of mechanical and electrical systems before undertaking an intervention.	Undertaking an intervention that affects a mechanical or electrical system without first documenting its components, layout, materials, operation and condition.
4	**Assessing** the condition of mechanical and electrical systems and their components early in the planning process so that the scope of work is based on current conditions.	
5	**Determining** the physical condition of mechanical and electrical systems or their components, and the cause of distress, damage or deterioration through investigation, analysis, monitoring and minimally invasive or non-destructive testing techniques.	Using highly destructive probing or sampling techniques that damage or destroy mechanical and electrical systems or their components. Failing to identify, evaluate and treat the causes of distress, damage or deterioration of mechanical and electrical systems, or their components. Carrying out a repair that does not treat or address the cause of the problem.
6	**Testing** mechanical and electrical systems or their components to determine their actual characteristics provided the appropriate precautions are taken to avoid their failure or destruction.	
7	**Protecting** and maintaining mechanical or electrical systems and their components through cyclical cleaning and other appropriate measures.	
8	**Preserving** abandoned systems that are character-defining, such as wire bell pull systems, speaking tubes and mail drops.	
9	**Preserving** the method of operation of mechanical and electrical systems that contribute to the heritage value of the historic place. For example, maintaining a passive ventilation system in a building, rather than switching to forced air ventilation.	Altering or eliminating the method of operation of mechanical and electrical systems that contributes to the heritage value of the historic building.
10	**Retaining** sound mechanical and electrical systems or deteriorated systems that can be repaired.	Replacing or removing mechanical and electrical systems or their components that can be repaired.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Repairing** deteriorated mechanical or electrical systems and their components in a manner that is physically and visually compatible with the historic place.	Replacing an entire mechanical or electrical system or component, when repair or limited replacement of deteriorated or missing parts is possible.
12	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work.	
13	**Replacing** in kind extensively deteriorated or missing parts of mechanical or electrical systems where there are surviving prototypes. The new work should match the old as closely as possible in form, materials and detailing and have adequate capacity.	
14	**Operating** and using functioning mechanical and electrical systems that are important in defining the heritage value of the historic place, according to the appropriate safety codes.	Ceasing to use or altering a functioning mechanical or electrical system that is important in defining the heritage value of the historic place.
15	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
16	**Documenting** all interventions that affect the building's mechanical and electrical systems, and ensuring that the documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
17	**Repairing** mechanical and electrical systems that contribute to the heritage value of the historic place. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing components, based on documentary or physical evidence.	Replacing a mechanical or electrical system or component that could be upgraded and retained.
18	**Repairing** deteriorated mechanical and electrical systems or their components, using new technologies when the original technology has been found to accelerate deterioration. The new technology should be chosen based on its compatibility with the historic element, its reliability, and its visual impact on the character-defining elements and mechanical or electrical system as a whole.	Repairing deteriorated character-defining mechanical and electrical systems or their components, using new technologies to improve durability when the original technology performs adequately.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
19	**Replacing** in kind those portions or components of mechanical and electrical systems that are either extensively deteriorated or missing, when there are surviving prototypes.	Installing a visible replacement element that does not convey the same appearance.
20	**Replacing** missing historic features by designing and installing new mechanical or electrical systems or components, based on physical and documentary evidence, or one that is compatible in size, scale, material, style or colour.	Creating a false historical appearance because the new mechanical or electrical system or component is incompatible, or based on insufficient physical and documentary evidence.
	ADDITIONS OR ALTERATIONS TO MECHANICAL AND ELECTRICAL SYSTEMS	
21	**Using** planned additions to provide space for new functions requiring controlled ambient conditions, such as exhibition or storage spaces in a museum, while using the historic building for functions that can be accommodated by the existing systems.	Introducing functions that require a controlled environment in buildings that were designed for natural light or ventilation. Locating additions where they block existing windows or skylights that provide natural ventilation and daylight.
22	**Installing** a new mechanical or electrical system, if required by the new use, while ensuring the least alteration possible to the building's interior arrangement and exterior form, and the least damage to the character-defining elements of the historic building.	Concealing systems in walls or ceilings causing the removal of character-defining elements.
23	**Placing** new mechanical or electrical systems in existing, non-character-defining spaces, rather than constructing a new addition.	Installing a drop ceiling to hide mechanical equipment when it alters the proportions of character-defining interior spaces.
24	**Installing** new heating/air conditioning units in a manner that does not damage or obscure character-defining elements and generate excessive moisture.	Installing heating/air conditioning units in window frames rather than improving the efficiency and operation of the existing mechanical system.
25	**Installing** individual heating/air conditioning units in window frames, if necessary, so that sashes and frames are protected. Consider window installations only when all other viable heating/cooling systems would result in significant damage to character-defining materials.	Radically changing the appearance of the historic building, or damaging or destroying windows by installing heating/air conditioning units in character-defining windows.
26	**Installing** the vertical runs of ducts, pipes and cables in non-character-defining spaces, such as closets, service rooms and wall cavities.	Installing vertical runs of ducts, pipes and cables in places where they will damage, radically alter, or obscure character-defining elements.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
27	**Removing** or encapsulating hazardous materials using the least-invasive abatement methods possible, and only after thorough testing has been conducted.	Neglecting to maintain and repair the cladding protecting encapsulated asbestos insulation.
28	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic place.	Making changes to mechanical and electrical systems without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements of the historic place.
SUSTAINABILITY CONSIDERATIONS		
29	**Reinstating** , where possible, character-defining natural ventilation and daylight, such as operable transom windows and atrium skylights.	Introducing airtight mechanical systems and artificial lighting in buildings that were designed for natural daylight and ventilation.
30	**Ensuring** that the introduction of new types of mechanical and electrical systems, such as solar, geothermal or heat-exchange systems, will have minimal impact on the character-defining elements of the historic building.	
31	**Working** with specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the historic place.	Making changes to character-defining mechanical and electrical systems, without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the historic place.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
32	**Repairing** mechanical and electrical systems by stabilizing, reinforcing, or otherwise upgrading individual components in a manner that is consistent with the restoration period.	Replacing an entire mechanical or electrical system from the restoration period when the repair or limited replacement of deteriorated or missing components is possible.
33	**Replacing** in kind an entire mechanical or electrical system or component from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the system or component. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable mechanical or electrical system or component and not replacing it, or replacing it with an inappropriate new system or component.
	REMOVING EXISTING FEATURES FROM OTHER PERIODS	
34	**Removing** or altering non character-defining mechanical and electrical systems from a period other than the restoration period.	Failing to remove visible, non character-defining components of mechanical or electrical systems from another period that confuse the depiction of the building's chosen restoration period.
35	**Retaining** alterations to mechanical or electrical systems that address problems with the original design, if those alterations do not have a negative impact on the building's heritage value.	Removing alterations to mechanical or electrical systems or components that serves an important function in the building's ongoing use.
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD	
36	**Recreating** a missing mechanical or electrical system or component from the restoration period, based on physical or documentary evidence.	Installing a mechanical or electrical system or component that was part of the building's original design but never actually built, or a system or component thought to have existed during the restoration period but for which there is insufficient documentation.

4.4

GUIDELINES FOR ENGINEERING WORKS, INCLUDING CIVIL, INDUSTRIAL AND MILITARY WORKS

Engineering Works fall under three categories. Clockwise, from top left: Fort Rodd Hill in BC is an example of a military work; the grain elevator in Hepburn, Saskatchewan is an industrial work, and the SS Klondike in Whitehorse and the Quebec Bridge illustrate civil engineering works.

4.4 GUIDELINES FOR ENGINEERING WORKS, INCLUDING CIVIL, INDUSTRIAL AND MILITARY WORKS

Engineering works, including civil, industrial and military works, are constructions built or sites transformed for purposes other than habitation; they exist primarily to produce goods or provide services for the benefit of human needs. Major engineering works have stimulated and facilitated development across Canada—significant innovations made in resource extraction, industry, transportation, and communications have contributed towards developing new, or adapting existing technologies to suit Canada's climate and geography.

Civil works can include constructions associated with:

- Transportation of humans or goods by land, rail, water or air, such as historic roads and routes, bridges, tunnels, highways, ships, lighthouses, and railways, canals, airports, harbours, subways and their associated supporting infrastructure;
- Energy-generation and transmission facilities and infrastructure, such as hydroelectric dams, powerhouses, power-generating stations and transmission towers and systems;
- Communications facilities and infrastructure, such as telephone, microwave, radio and television networks and systems; and,
- Water supply, flood control and irrigation facilities and infrastructure, such as waterworks, pump houses, sewer networks and water treatment plants, dams, canals, floodways and aqueducts.

The Doukhobor Suspension bridge, near Castlegar, BC, is an example of a civil engineering work with significant cultural symbolic value. Erected by members of the Doukhobor community, its construction represents a major achievement for a pioneer community and demonstrates the considerable capabilities of a people acting communally.

Industrial works can include constructions associated with:

- Manufacturing or industry, such as mills, factories and warehouses;
- Resource exploitation facilities and infrastructure, such as mines, quarries, oil wells and drilling sites, collieries, dredges, concentrators, laboratories and refineries; and,
- Agriculture and food processing facilities and infrastructure, such as farms, ranches, packing houses, grain elevators, breweries and canneries.

Military works can include defence-related constructions associated with:

- Fortifications or military ships;
- Naval, army and air bases, or missile ranges; and,
- Unique constructions, such as the *DEW line* or the *Diefenbunker*.

The heritage value of engineering works may be historical, technological, social, scientific or architectural. Some works may also have considerable aesthetic value due to the quality of their architecture, design or planning. Often, there is also heritage value in the relationship between an engineering work and adjoining or nearby archaeological sites, cultural landscapes or buildings.

The Percival Windmill, restored in 1995, is valued for its association with Saskatchewan's rural water system. Because of the semi-arid climate and general lack of standing water in the south of the province, windmills gave many early residents access to underground water during the settlement period. Windmills were particularly important prior to the 1950s when widespread rural electrification enabled electric pumps to become regular farm features.

The Brooks Aqueduct, in Newell County, AB, is a significant civil engineering work from the development of irrigation in Alberta, and a significant example of the role the Canadian Pacific Railway (CPR) played in settling the region. It is one of the largest aqueducts of its kind in the world. An integral part of a larger irrigation system, it brought water to over 50,000 hectares of land that was susceptible to drought. The system allowed the CPR to open the area to agricultural settlement and supplied water to area farmers from 1914 to 1979.

Engineering works should not be viewed as being exclusively the work of professional engineers. Achievements in *empirical engineering*, inventions and innovations made by lay-persons, and achievements associated with *artisanal technologies* can also be considered engineering works.

Finding sustainable uses for engineering works is a significant challenge because their condition can range from archaeological resources to fully functioning installations. The continued use of an industrial or military work can seldom be accommodated when its original function has become redundant or obsolete. The engineering work may also have been abandoned for a long time, or the new planned use may have significantly different requirements for human comfort and safety than was required when it was originally built.

Civil works, such as bridges, dams and canals, present a different challenge. These works often remain fully functional and so must meet stringent contemporary safety codes that did not exist at the time of their construction. Their continued use is contingent on meeting these standards, often necessitating significant rehabilitation.

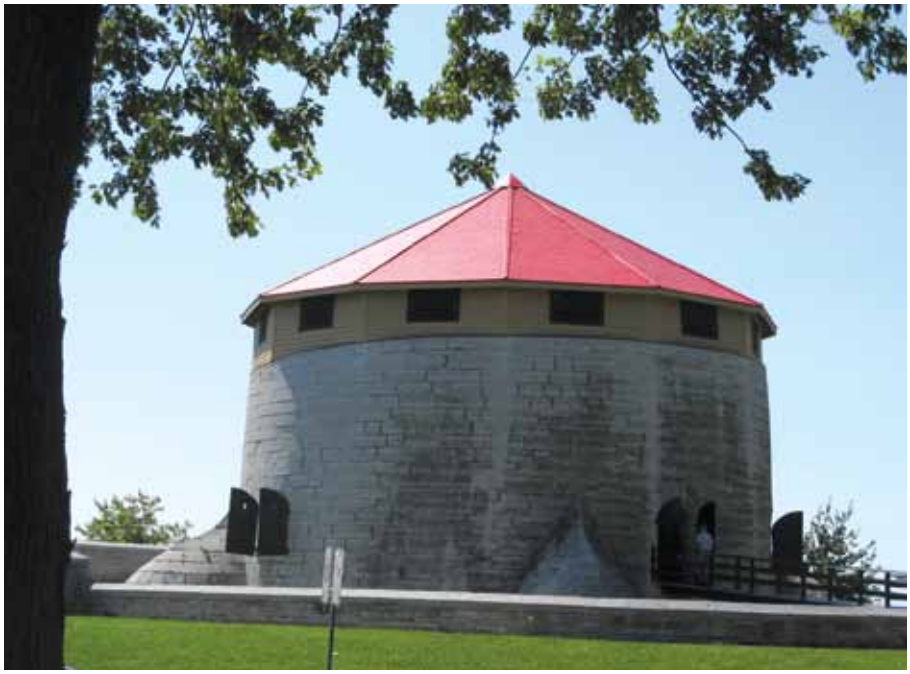
Engineering works can also be challenging to conserve because of possible site contamination issues, or because of the considerable evolution they may have undergone during their operating life, resulting in multiple constructions from varying eras that may or may not have heritage value.

APPLYING THE GUIDELINES

The Guidelines for Engineering Works are presented in two main groups: Constructed Elements and Functional Arrangement. This grouping is designed to help the reader to understand how these concepts apply to the engineering work, and how they interact. The user should always refer to both subsections when conserving an engineering work to ensure that the physical features (Constructed Elements) and their spatial configuration (Functional Arrangement) are protected.

These guidelines provide general recommendations appropriate to all types of engineering works. Because many engineering works incorporate buildings, contain archaeological resources (i.e. industrial archaeology), and are located within cultural landscapes, reference should be made to those guidelines when appropriate. Also consult the Guidelines for Materials that contain traditional as well as modern construction and finishing materials, and the guidelines for Structural Systems under Buildings when appropriate.

The Lachine Canal, in Montréal, is a 14.5 kilometre-long canal that runs from the old port of Montréal to Lake Saint-Louis. It contains a significant number of civil engineering and industrial works. Opened to shipping in 1825, it was closed in 1970 after the St. Lawrence Seaway was built. The Lachine Canal was the forerunner of the early 19th century transportation revolution in Canada and played an important role in the industrial development of Montréal. The canal corridor was also one of the main manufacturing production centres in Canada until the Second World War. The LaSalle Coke crane located on the banks of the canal and formerly used for unloading coal, is a prominent engineering work of the Canal.



Murney Tower, in Kingston, ON, is a martello tower that forms part of the defence system built for Kingston Harbour during the Oregon Crisis of 1845–1846. It is a squat round tower with four hive-like caponiers at its base and a conical roof and is surrounded by a dry ditch. Murney Tower is valued for its excellent portrayal of the martello tower military structure, its built and landscaped forms, and also its strategic setting and defensive inter-relationship with other parts of the Kingston Fortifications.

4.4.1 CONSTRUCTED ELEMENTS

These guidelines provide direction when the constructed elements of an engineering work are identified as *character-defining elements* of an historic place.

Constructed elements are the distinct constructions that were built, erected or fabricated for the operation or use of the engineering work. Constructed elements can also be associated with the evolution of the work or with the transformation of the landscape resulting from the creation or operation of the work, which can include remnants, such as ore tailings from mining or dredging operations.

The deteriorated heavy timber bow gantry frame of Dredge No. 4, in Dawson City, YK, was dismantled and replaced in kind with a new frame, built from new timbers sized to match the original timbers and reusing all original metal brackets and fixtures. The bow gantry, which supports the digging ladder, is a significant constructed element in the dredge's operational design.

The types of constructions that can be considered constructed elements are extremely varied, including, for example:

- Structures that housed a warehouse, mill, factory, refinery, cannery or hydro-generating station;
- Landforms such as earth embankments and retaining walls of a dry ditch at a fort;
- Bridge superstructures;
- Tunnels, rock cuts and fills for a railway or highway right-of-way;
- Locks, dams and weirs of a canal system;
- Industrial machinery at a factory, or operational equipment inside a refinery, such as piping and steam tunnels;
- Ships such as paddle steamers or dredges; and,
- Ancillary equipment such as liquid or gas storage tanks, ore bins, cranes, derricks, chutes, conveyors or smokestacks at a factory.

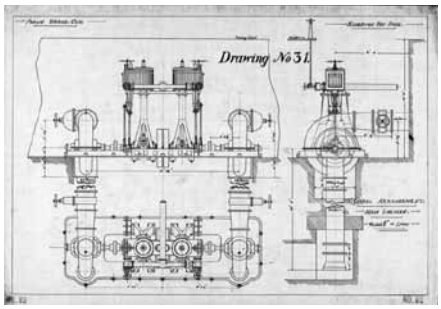
Constructed elements offer a physical record of the work; its purpose, operation and evolution; the engineering innovation and design it embodies; and its impact on the environment. Their form, scale, massing, materials and construction type can all have heritage value, because they illustrate the purpose, operation and use of the work. Constructed elements help to illustrate and demonstrate the process, operation or activity that is, or once occurred, in the work. The condition of the constructed elements (including patina, graffiti and signs of wear) and the remnants or by-products from their operation (such as debris), can also hold value by demonstrating the evolution and function of the work in its environment.

These guidelines focus on stationary constructed elements; that is, character-defining machinery and ancillary equipment that are fixed in place. Movable equipment and artifacts are not covered under these guidelines, although they are often indispensable in helping to explain, interpret and illustrate the distinct stages of processes that once occurred in the works.

These guidelines provide general recommendations for constructed elements of an engineering work. When the constructed element is a building or part of a building, a built feature in a cultural landscape or an archaeological resource, also refer to the corresponding guidelines when appropriate. For recommendations on specific materials that make up constructed elements, refer to the Guidelines for Materials.

Completed in 1904, the tall wood frame Clearwater Canadian Pacific Railway Water Tower in Manitoba is an excellent example of an intact railway water tower. Twelve thick timbers are set on concrete bases and are strengthened with cross-braces that support the cedar-lined water tank, which occupies the top half of the structure. The water tower retains many of the original pipes, valves and controls used in filling and using the tank. When ceasing operation at a work such as this, the character defining pipes, valves and controls should continue to be subjected to regular maintenance to prevent their deterioration.

The Eagle Creek Cement Bridge in Saskatchewan is a good example of the nearly 90 reinforced concrete bowstring bridges that were constructed during the 1920s and 1930s as part of a comprehensive road building program in southern Saskatchewan. The graceful bowstring arches of these bridges, which blended functional engineering technology with aesthetically pleasing design, are character-defining elements. Repair or replacement of any parts of the bowstring arches should carefully designed for compatibility, matching the original form, materials and detailing of the arches.



Fully understanding the complexity and behaviour of a constructed element, such as pumps at the Kingston Dry Dock and Pumphouse can include determining its original design, purpose, operating theory, construction, operation, evolution over time, structural behaviour, structural performance over time including load history, performance under environmental loads, current condition and the deterioration mechanisms of its construction and materials.

Before beginning project work, the form, materials and condition of engineering works should be documented. Heritage recording of the Powerscourt Covered Bridge, National Historic Site of Canada in Powerscourt, QC, the only surviving bridge that uses the McCallum inflexible arch construction, included detailed measurements and a photographic record.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the constructed element and how it contributes to the heritage value of the engineering work.	
2	**Understanding** the construction history, theory, functional basis and design behind the constructed element.	
3	**Documenting** the form, materials and condition of the constructed element before undertaking an intervention.	Undertaking an intervention that affects a constructed element without first documenting its existing character and condition.
4	**Documenting** the operation and maintenance of constructed elements in sufficient detail to fully understand their operational characteristics. This can include obtaining an oral history of operation procedures, recording the machinery in operation or preserving records associated with the engineering work, and making these available for future research.	
5	**Assessing** the overall condition of constructed elements early in the planning process so that the scope of work is based on current conditions.	Carrying out a level of intervention that exceeds what is required, or taking action based on assumptions or rules of thumb.
6	**Determining** the appropriate level of investigation and analysis required to understand the overall condition of constructed elements, and analyzing the constructed elements in sufficient detail to fully understand their complexity and behaviour.	
7	**Determining** the physical condition of constructed elements or their components, including the causes of distress, damage or deterioration through investigation, analysis, monitoring and minimally invasive or non-destructive testing techniques.	Using highly destructive probing or sampling techniques that damage or destroy constructed elements or their components. Carrying out a repair that does not treat or address the cause of the problem.
8	**Testing** constructed elements or their components in place to determine their characteristics, provided the appropriate precautions are taken to avoid their failure or destruction.	
9	**Taking** into account the past performance and load history of constructed elements or their components when determining their present or future capacity.	
10	**Protecting** constructed elements through appropriate and regular maintenance.	Failing to adequately maintain constructed elements on a cyclical basis, causing their components to deteriorate.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Protecting** evidence of the evolution process or operation of constructed elements that contribute to the heritage value of the engineering work, including protecting patinas, soiling or debris, wear patterns and graffiti, resulting from the operation of the work or its associated machinery. For example, cleaning machinery just enough to reduce deterioration and danger to the public, rather than attempting to clean it to a "like new" condition.	
12	**Preserving** the method of operation of an engineering work or its constructed elements that are important in defining the overall heritage value of the historic place. For example, continuing to hand-operate a canal lock gate mechanism, rather than switching to a motor.	
13	**Imposing** limits on the acceptable use of constructed elements, based on their actual characteristics and capacities to protect them from damage. There is a need to balance present and anticipated usage demands with heritage value, and to avoid, if possible, any use that would damage or destroy the constructed elements.	Subjecting constructed elements to uses that could overload existing systems, such as installing equipment or systems that undermine the heritage value of the engineering work.
14	**Balancing** the need to alter constructed elements to meet current safety codes and standards (to allow continued use) with the need to preserve the heritage value of the work's functionality and operation.	
15	**Retaining** sound constructed elements or deteriorated constructed elements of engineering works that can be repaired.	Replacing or rebuilding constructed elements that can be repaired.
16	**Stabilizing** deteriorated constructed elements on an interim basis by structural reinforcement, weather protection, or correcting unsafe conditions, as required, until any additional work is undertaken.	Neglecting to treat known conditions that threaten the constructed elements of engineering works.
17	**Adapting** interim stabilization interventions to the anticipated lifespan of the constructed element, so that they remain as reversible as possible.	
18	**Repairing** deteriorated parts of constructed elements in a manner that is physically and visually compatible with the engineering work.	Failing to undertake necessary repairs, resulting in the loss of constructed elements. Replacing an entire constructed element when repair or limited replacement of deteriorated or missing parts is possible.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
19	**Protecting** adjacent character-defining elements and components of constructed elements from accidental damage or exposure to damaging materials during maintenance or repair work.	
20	**Replacing** in kind extensively deteriorated or missing parts of constructed elements using physical and documentary evidence as a model for reproduction. The new work should match the old as closely as possible in form, materials and detailing, and have adequate strength.	Replacing an entire constructed element when limited replacement of deteriorated and missing parts is possible.
21	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
22	**Operating** and using a functioning engineering work or its constructed elements appropriately and according to applicable codes, to preserve the functional purpose of the work that is important in defining the overall heritage value of the historic place. For example, maintaining a canal route open to navigation, or reinforcing a highway bridge so that it can remain in service.	Ceasing to use or altering the functional purpose of a functioning work, or its constructed elements, that is important in defining the overall heritage value of the historic place. Operating and using a functioning engineering work without providing appropriate and timely maintenance, or without appropriate safety equipment, guards or training.
23	**Documenting** all interventions that affect constructed elements, and ensuring that this documentation will be available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
24	**Repairing** constructed elements or their components using recognized conservation methods. Repairs might include the limited replacement *in kind*, or replacement with an appropriate substitute material, of irreparable or missing components, based on physical or documentary evidence.	Failing to undertake necessary repairs, resulting in the loss of constructed elements. Replacing or demolishing an entire constructed element, when repair and limited replacement of deteriorated or missing parts is possible.
25	**Proof-testing** repairs to reinforce constructed elements or their components in place, to confirm their actual rather than theoretical performance, provided the appropriate precautions are taken to avoid their failure or destruction.	Reinforcing constructed elements or their components, without verifying the effectiveness or the level of benefit achieved by the reinforcement work.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
26	**Replacing** in kind an entire constructed element that is too deteriorated to repair, using physical and documentary evidence as a model for reproduction. The new work should match the old as closely as possible in form, materials and detailing, and have adequate strength.	Replacing a constructed element with one that does not follow the same engineering concept as the original. For example, replacing a character-defining mass masonry retaining wall with a reinforced concrete retaining wall faced with stone.
27	**Replacing** missing historic features by designing and installing a new constructed element based on physical or documentary evidence, or one that is compatible in size, scale, material, style or colour.	Creating a false historical appearance by replacing a constructed element with one that is based on insufficient physical and documentary evidence.

ADDITIONS OR ALTERATIONS TO CONSTRUCTED ELEMENTS

28	**Designing** additions for a new use in a manner that is compatible with the constructed element and respects the heritage value of the engineering work.	Introducing additions to constructed elements that are incompatible with the character of the engineering or that alter the historic relationships of the work.
29	**Building** an addition to a constructed element that retains as many of the historic materials as possible, and ensures that the constructed elements are not obscured, damaged or destroyed, or the heritage value undermined.	
30	**Designing** a new addition to a constructed element in a manner that draws a clear distinction between what is historic and what is new.	Duplicating the exact form, material, style and detailing of the original constructed element so that the new work appears to be part of the historic place.
31	**Considering** the design of an attached exterior addition in terms of its relationship to the engineering work. The design for the new work may be contemporary or refer to design motifs from the historic place. In either case, it should be compatible in terms of massing, materials and colour, yet be distinguishable from the historic place.	Designing and building new additions that negatively affect the heritage value of the engineering work, including its design, materials, workmanship, location or setting.
32	**Placing** a new addition on a non-character-defining elevation and limiting its size and scale in relation to the engineering work.	Designing a new addition that obscures, damages or destroys constructed elements, or undermines the heritage value of the engineering work.
33	**Undertaking** soil mechanics studies and limiting new excavations adjacent to constructed elements to avoid undermining the structural stability of the engineering work or adjacent historic structures. Archaeological investigations should be undertaken before any excavation to avoid damaging potential archaeological resources. Refer to the Guidelines for Archaeological Sites for additional recommendations on excavation work.	Carrying out excavations or re-grading that could cause constructed elements or adjacent historic structures to settle, shift or fail, or that could damage archaeological resources.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
34	**Correcting** the structural deficiencies of constructed elements when preparing for a new use in a manner that preserves their character-defining elements and the overall heritage value of the engineering work.	
35	**Designing** and installing new mechanical or electrical systems or equipment when required for the new or continued use, in a manner that minimizes adverse effects on the constructed elements.	
36	**Adding** a new structural system to a constructed element when required for the new or continued use, in a manner that does not obscure, damage or destroy character-defining elements.	
37	**Creating** a habitable space when required for the new use, in a manner that assures that character-defining elements will be preserved.	
38	**Removing** non character-defining constructed elements when required by the new use.	Removing, relocating and displaying non character-defining constructed elements in a new location, creating a false impression of the engineering work.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
39	**Adding** new features to meet health, safety or security requirements, in a manner that conserves the constructed elements and minimizes impact on the heritage value of the engineering work.	
40	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the engineering work.	Making changes to constructed elements, without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements of the engineering work.
41	**Protecting** constructed elements against loss or damage by identifying and assessing specific risks, and by implementing an appropriate fire protection strategy that addresses those specific risks.	Implementing a generic fire protection strategy or one that does not appropriately address the specific fire risks of the engineering work.
42	**Installing** sensitively designed fire-suppression systems, such as sprinklers, that retain the character-defining elements and respect the heritage value of the engineering work.	Installing fire-suppression systems in a manner that damages or destroys character-defining elements.
43	**Applying** fire retardant or protective materials that do not damage or obscure constructed elements. For example, applying fire-retardant, *intumescent paint* to a deck to further protect its steel.	Covering flammable, character-defining constructed elements or their components with fire-resistant sheathing or coatings that alter their appearance.
44	**Removing** hazardous materials from engineering works, their constructed elements or their components, only after thorough testing has been conducted and less-invasive abatement methods have been shown to be inadequate. Where applicable, archaeological work to collect data should be carried out before the site is disrupted by soil decontamination operations.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ACCESSIBILITY CONSIDERATIONS		
45	**Introducing** a new feature to meet accessibility requirements in a manner that conserves the constructed element and respects the overall heritage value of the engineering work.	
46	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the engineering work.	Altering character-defining constructed elements without consulting the appropriate specialists and users.
SUSTAINABILITY CONSIDERATIONS		
47	**Complying** with energy-efficiency objectives in upgrades to the constructed elements in a manner that respects the engineering work's character-defining elements.	Damaging or destroying constructed elements and undermining the heritage value of the engineering work while making modifications to comply with energy-efficiency objectives.
48	**Working** with specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the engineering work.	Making changes to constructed elements, without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the engineering work.
CEASING OPERATION OF AN ENGINEERING WORK		
49	**Following** appropriate *mothballing* procedures when ceasing operation of an engineering work so as to maintain the potential for future operation of the work or its constructed elements, including installing appropriate safety shut-offs, and carrying out regular maintenance on the shut-down mechanisms to prevent their deterioration.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
50	**Repairing** constructed elements from the restoration period using a minimal intervention approach, such as patching, splicing, consolidating or otherwise reinforcing its materials and improving weather protection.	Replacing an entire constructed element from the restoration period when the repair of materials and limited replacement of deteriorated or missing parts is possible.
51	**Replacing** in kind an entire constructed element from the restoration period that is too deteriorated to repair using the physical evidence as a model to reproduce the element. The replacement should have the same form, appearance and material properties as the replaced element, and have adequate strength or load-bearing capabilities. The new work should be unobtrusively dated to guide future research and treatment.	Removing an irreparable constructed element from the restoration period and not replacing it, or replacing it with an inappropriate new element.

REMOVING EXISTING FEATURES FROM OTHER PERIODS

52	**Removing** or altering a non character-defining constructed element or component from a period other than the restoration period.	Failing to remove a non character-defining constructed element or component from another period that confuses the depiction of the engineering work's chosen restoration period. Removing a feature from a later period that serves an important function in the engineering work's ongoing use, such as an emergency exit door, or signage associated with a new use.

RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD

53	**Recreating** a missing constructed element from the restoration period, based on physical or documentary evidence.	Installing a constructed element that was part of the engineering work's original design but was never actually built, or a constructed element that was thought to have existed during the restoration period but for which there is insufficient documentation.

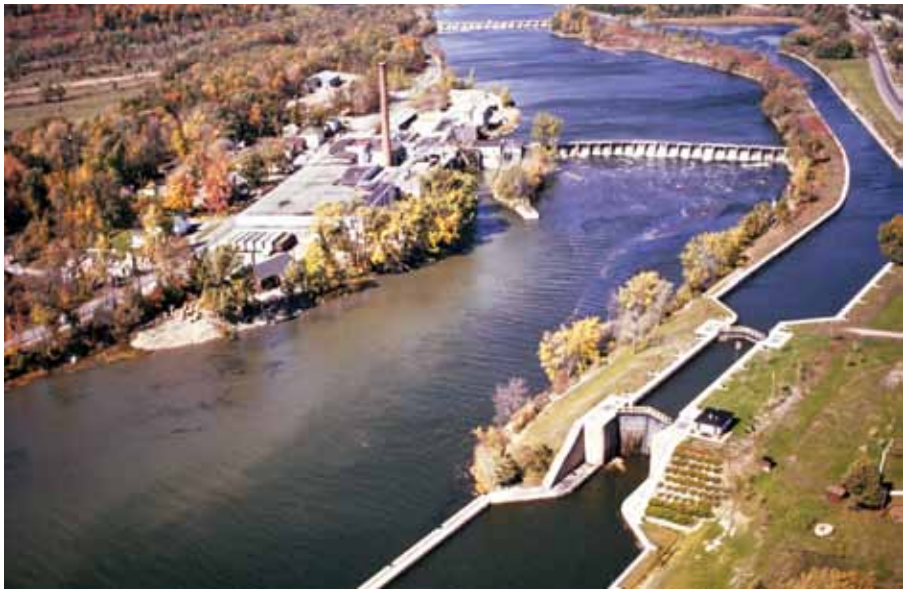
RESTORING OPERATION TO AN ENGINEERING WORK

54	**Restoring** operation to an engineering work that is important in defining its heritage value.	Keeping an engineering work in a non-operational state when the operation of the work is important in defining its heritage value.

4.4.2 FUNCTIONAL ARRANGEMENT

These guidelines provide direction when the functional arrangement of an engineering work is identified as a character-defining element of an historic place.

Functional arrangement, in the context of these guidelines, is the interrelationship of the constructed elements of the engineering work. Essentially, it is the layout of the work.



Large-scale Functional Arrangement: The Trent–Severn Waterway is an example of large-scale Functional Arrangement at a civil engineering work. The nearly 400 kilometre-long natural and human-made waterway crosses central Ontario linking Georgian Bay to the Bay of Quinte. The waterway's character-defining elements include many Functional Arrangement elements such as: the route of the waterway; the unity and completeness of the waterway, its engineering structures and buildings that support it, and the special cultural landscapes it has generated; the disposition and relationship of the waterway's Constructed Elements to their surroundings; and the legibility of the cultural landscapes and patterns between and among the Constructed Elements.

THE RELATIONSHIP BETWEEN AN ENGINEERING WORK AND ITS SETTING

There is often a strong connection between the functional arrangement of an engineering work and its setting. The setting explains the location of a civil, industrial or military work. Prior to making any changes to the functional arrangement of an engineering work, it is important to understand how the proposed changes will affect its relationship with the setting, and the heritage value of the engineering work. The definition of setting and its relationship with the broader environment are addressed in more detail in the Introduction to the Guidelines for Cultural Landscapes.

On a large scale, functional arrangement can include a landscape that envelops and extends beyond the engineering work, such as the right-of-way of a railway passing through a mountain range, or a canal route that connects lakes and rivers across great distances. On a more moderate scale, functional arrangement can be limited to the site of the engineering work, such as the grouping of different buildings and equipment that supports a manufacturing or refining process. On a small scale, functional arrangement can be limited to what is internal to a single constructed element of the engineering work, such as the layout of a building that was determined by the process housed in that building.

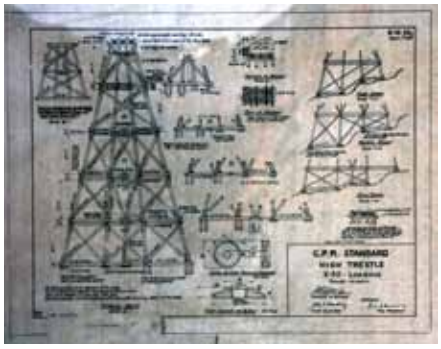
The functional arrangement of the work can often be as important and valuable an aspect of the engineering work as the design of its constructed elements. For example, the routing of the Rideau Canal and the locations and interrelationships of its dams, weirs, lockstations and blockhouses are all character-defining elements of that historic place. The functional arrangement is often directly related to the human and engineering struggle encountered in imposing the work on the environment, to the distinct stages of the manufacturing or reduction process carried out at the work and to the patterns of circulation and activity involved in operating the work.

These guidelines provide general recommendations for the functional arrangement of an engineering work. When the engineering work is part of a cultural landscape, also refer to Spatial Relationships in the Guidelines for Cultural Landscapes.

Moderate-scale Functional Arrangement: Claybank Brick Plant, located near Claybank, SK, consists of about 132 hectares containing over 20 Constructed Elements, including a brick plant, clay-pits, houses, rail spur and a rail siding. An example of a moderate-scale functional arrangement at an industrial work, the plant includes distinct areas for brick production and storage; internal transportation systems for both clay and bricks; transportation facilities for shipping out finished brick; an administration area; and residential areas that reflect the roles and relationships of members of this industrial community such as the location of the detached residences and bunkhouse.

Small-scale Functional Arrangement: The interior of the Britannia Mines Concentrator, in Britannia Beach, BC, is an example of a small-scale Functional Arrangement at an industrial work. The concentrator processed copper ore for one of Canada's largest mining operations in the 1920s and 1930s. The concentrator used innovative technologies and took advantage of gravity to move the ore downwards through the building at each stage. The functional layout of the building's interior, and particularly the definition and respective locations of special-purpose areas, is a character-defining element.

The *Diefenbunker* is valued for the comprehensive physical evidence it presents confirming Canada's determination to survive and function as a nation during a nuclear attack. The Functional Arrangement of the Diefenbunker, including the relative placement of the surrounding buildings associated with its operations (the guard house and related shelter, the underground garage, the fibreglass tuning hut, the underground communications vault), is a character-defining element. Any new functions or services at the site should be located in a manner that does not obscure or alter this arrangement.



The routing of the Kettle Valley Railway through the Myra Canyon in British Columbia used a network of trestles, tunnels, rock cuts and fills. Constructed in 1915 as part of a secondary main line route that operated across southern British Columbia, the construction and positioning of the trestles greatly reduced the amount of rock excavation required to route the railway through the canyon. In 2003, a forest fire destroyed 12 of the 16 wooden trestles and damaged two steel structures in the canyon. The wooden trestles were rebuilt based on original construction specifications.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the functional arrangement and how it contributes to the heritage value of the engineering work.	
2	**Understanding** the construction history, theory, and functional basis and design behind the functional arrangement.	
3	**Documenting** the functional arrangement, including the circulation patterns and process sequence, and the orientation, alignment, size, juxtaposition and interrelationships of the constructed elements that define their organization, evolution and condition, before undertaking an intervention.	Undertaking an intervention that will affect the functional arrangement without first documenting the existing arrangement.
4	**Assessing** the physical integrity of the functional arrangement early in the planning process so that the scope of work is based on current conditions.	
5	**Protecting** the functional arrangement by securing and maintaining the circulation patterns and process sequence, and the orientation, alignment, size, juxtaposition and interrelationships of the constructed elements.	Allowing the functional arrangement to be altered by incompatible development or neglect.
6	**Retaining** the functional arrangement by maintaining the circulation patterns and process sequence as well as the orientation, alignment, size, juxtaposition and interrelationships of the constructed elements.	Altering the functional arrangement by removing or relocating sound or repairable constructed elements that define the functional arrangement.
7	**Retaining** the functional arrangement by maintaining the relationship between the engineering work and its site, when this relationship is part of its heritage value.	Removing or relocating an engineering work when its location is character-defining, thus affecting the relationship between the work and its site.
8	**Documenting** all interventions that affect functional arrangement, and ensuring that this documentation is available to those responsible for future interventions.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
9	**Rehabilitating** the functional arrangement by re-establishing the circulation patterns and process sequence, and the orientation, alignment, size, juxtaposition and interrelationships of the constructed elements, using physical and documentary evidence as a model for reproduction.	
10	**Rehabilitating** the functional arrangement by replacing missing constructed elements that define the arrangement. Designing and installing new constructed elements using physical and documentary evidence as a model for reproduction.	Allowing the functional arrangement to be obscured by failing to replace a missing constructed element that defines the arrangement.
	ADDITIONS OR ALTERATIONS TO THE FUNCTIONAL ARRANGEMENT	
11	**Locating** new functions and services in existing non-character-defining spaces, in a manner that does not obscure or alter the functional arrangement.	Radically changing the functional arrangement to adapt to a new use.
12	**Introducing** new circulation in a way that respects character-defining circulation patterns and process sequence, and the functional arrangement of the constructed elements.	
13	**Removing** the non character-defining constructed elements that do not contribute to the functional arrangement, when required by the new use.	Altering the functional arrangement to suit a new use by removing character-defining constructed elements. Relocating non character-defining constructed elements to a new location, in a manner that alters or impairs the functional arrangement, thus creating a false impression of the engineering work.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
14	**Adding** new features to meet health, safety and security requirements in a manner that conserves the functional arrangement of the engineering work and minimizes impact on its character-defining elements.	Damaging or destroying character-defining elements while making modifications to comply with health, safety and security requirements.
15	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the engineering work.	Making changes to the functional arrangement without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements of the engineering work.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
ACCESSIBILITY CONSIDERATIONS		
16	**Introducing** a new feature to meet accessibility requirements in a manner that conserves the functional arrangement and respects the overall heritage value of the engineering work.	
17	**Working** with accessibility and conservation specialists and users to determine the most appropriate solution to accessibility issues with the least impact on the character-defining elements and overall heritage value of the engineering work.	Altering character-defining elements without consulting the appropriate specialists and users.
CEASING OPERATION OF AN ENGINEERING WORK		
18	**Following** appropriate *mothballing* procedures when ceasing the operation of an engineering work so as to maintain the potential for future operation of the work.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

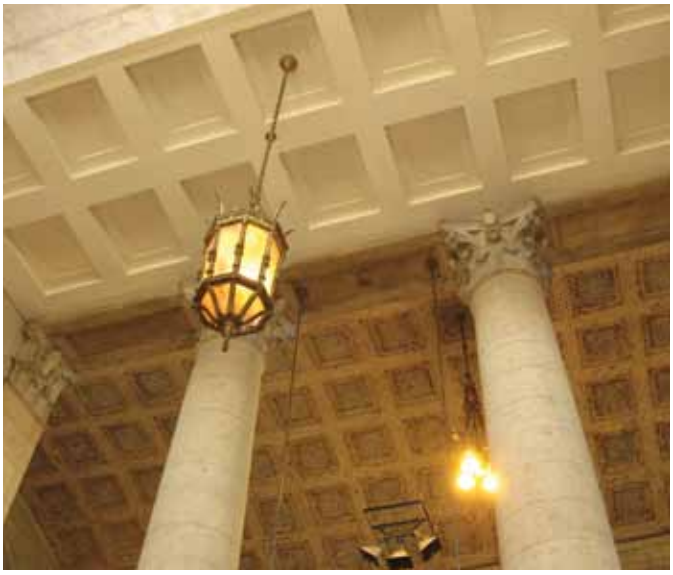
	Recommended	Not Recommended
19	**Reinstating** the functional arrangement from the restoration period by re-establishing the circulation patterns and process sequence, and the orientation, alignment, size, juxtaposition and interrelationships of the constructed elements that define the arrangement, using documentary and physical evidence as a model for reproduction. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Replacing a constructed element that defines the functional arrangement from the restoration period when repair is possible, or using destructive repair methods, thus causing further damage to fragile historic materials.
20	**Replacing** in kind entire constructed elements that define the functional arrangement from the restoration period that are too deteriorated to repair, using physical evidence as a model to reproduce the element. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing a constructed element from the restoration period that is beyond repair and not replacing it, or replacing it with a new constructed element that does not respect the functional arrangement of the engineering work.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
REMOVING EXISTING ARRANGEMENTS FROM OTHER PERIODS		
21	**Removing** or altering a non character-defining functional arrangement from a period other than the restoration period.	Failing to remove a non character-defining functional arrangement from a period other than the restoration period that confuses the depiction of the engineering work's chosen restoration period. Removing a functional arrangement from a later period that serves an important function in the engineering work's ongoing use.
RECREATING MISSING ARRANGEMENTS FROM THE RESTORATION PERIOD		
22	**Recreating** a missing functional arrangement from the restoration period, based on physical or documentary evidence.	Establishing a functional arrangement that was part of the original design, but was never actually built, or creating a functional arrangement that was thought to have existed during the restoration period, but for which there is insufficient documentation.
RESTORING OPERATION TO AN ENGINEERING WORK		
23	**Restoring** operation to an engineering work that is important in defining its heritage value.	Keeping an engineering work in a non-operational state when the operation of the work is important in defining its heritage value.

4.5

GUIDELINES FOR MATERIALS



The following section addresses many types of materials. Clockwise, from top left are examples of landscape materials, masonry, fabric, and glass and concrete.

4.5 GUIDELINES FOR MATERIALS

The guidelines apply to the materials that compose buildings, built features of cultural landscapes and constructed elements of engineering works. Because materials are often identified as character-defining, they contribute to the heritage value of historic places and should be conserved. The ongoing care of materials, including appropriate maintenance and repair, contributes to the integrity and lifespan of an historic place.

In-kind materials should be used whenever possible. Sourcing materials for repair and replacement can be challenging, especially if the materials are from an historic source that no longer exists, such as a quarry, an old-growth forest, or a manufacturing facility that has closed down. It may be possible to find salvaged materials from other buildings or, in some cases, find the needed materials elsewhere in the historic place to use for small repairs.

DURABILITY

Traditional building materials, such as masonry and wood, are inherently durable. Over time, they have demonstrated a significant capacity to withstand surface degradation without losing structural capacity, or frequent repairs as long as basic maintenance is carried out.

PATINA

There is a fine distinction between patina and decay. Patina is the natural aging of materials; an organic and superficial surface degradation that is usually not harmful to the material. It can also be caused by use and wear. Understanding patina and its heritage value in the context of an historic place is part of assessing the condition of materials. It may be important to conserve patina for reasons of appearance, such as moss growing on a mature tree or the changed colour of a building stone, or for natural protection, such as on metals, where corrosion may form a protective coating.

Substitute Materials

Substitute materials should be explored only after all other options for repair and replacement have been ruled out. They should be used only when the original materials or craftsmanship are no longer available, when the original materials are of poor quality or damage adjacent character-defining materials, or when specific regulations rule out using hazardous materials. Because there are so many unknowns about the long-term performance of substitute materials, their use should not be considered without a thorough investigation of their composition, compatibility, durability and installation. The importance of finding visually and physically compatible substitute materials cannot be overstated.

APPLYING THE GUIDELINES

The Guidelines for Materials contain guidelines that apply to all materials, and guidelines related to specific materials. When conserving any material, first refer to the guidelines for All Materials and then to the guidelines related to the specific material: Wood and Wood Products, Masonry, Concrete, Architectural and Structural Metals, Glass and Glass Products, or Plaster and Stucco. The Miscellaneous Materials subsection includes general guidance for the conservation of materials that do not fall into one of these categories.

The Guidelines for Materials should not be used in isolation, but in conjunction with the appropriate section for the related building assembly, built feature, or constructed element.

4.5.1 ALL MATERIALS

These guidelines provide direction when a material is identified as a character-defining element of an historic place. The material may have been identified specifically, or may be an integral part of a character-defining element. These guidelines provide direction on documentation, condition assessment, testing and maintenance activities, repair and replacement in kind that apply to all materials. For the investigation, analysis and modification of materials that are part of engineering works, the services of a professional engineer are required by code.

The Guidelines for All Materials do not provide complete guidance on materials conservation; they provide general advice common to all materials. As such, they should be referred to in conjunction with the following guidelines for specific materials:

4.5.2 Wood and Wood Products

4.5.3 Masonry

4.5.4 Concrete

4.5.5 Architectural and Structural Metals

4.5.6 Glass and Glass Products

4.5.7 Plaster and Stucco

4.5.8 Miscellaneous Materials.

Wood: An example of "limited replacement in kind" describes an appropriate scope of work in the Preservation treatment. Only the damaged corner of a stair's newel post at the Commissioner's Residence in Dawson City, has been replaced (it will be stained to match). Only repairing deteriorated parts meant that most of the character-defining elements were retained.

Masonry: In this rehabilitation project of the Rideau Canal, some of the original limestone blocks remained in good condition. Others, which were too deteriorated to repair, were replaced in kind with new limestone blocks.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the materials that comprise the historic place and how they contribute to its heritage value.	
2	**Documenting** all interventions that affect materials, and ensuring that the documentation is available to those responsible for future interventions.	
3	**Determining** the appropriate level of investigation required to understand the properties and overall condition of the material.	Failing to undertake an appropriate level of investigation and analysis before identifying the level of conservation work required.
4	**Assessing** materials fully to understand condition, evolution over time, deterioration and mechanical and chemical properties. This should be done early in the planning process so that the scope of work is based on current conditions.	Carrying out a level of conservation work that exceeds what is required, or taking action based on assumptions or rules of thumb. Failing to assess the impact of maintenance practices on materials. Failing to consider the relationship between materials and adjacent elements as a source of deterioration.
5	**Testing** and examining materials and coatings to determine their properties and causes of deterioration, damage or distress, through investigation, monitoring and minimally invasive or non-destructive testing techniques.	Using highly destructive probing or sampling techniques that damage or destroy materials. Undertaking work without understanding the mechanical and chemical properties of the material. Carrying out a repair that does not treat or address the cause of the problem.
6	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.	
7	**Maintaining** materials on a regular basis, as described in the relevant material subsection.	Failing to adequately maintain materials, or carrying out maintenance on an ad-hoc basis.
8	**Carrying** out regular monitoring and inspections of materials to proactively determine the type and frequency of maintenance required.	
9	**Developing** a maintenance plan, where appropriate, that includes schedules for monitoring and inspection.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
10	**Updating** and adapting maintenance activities, as conditions and knowledge about the materials and maintenance products and methods evolve.	
11	**Cleaning** materials only when necessary, to remove heavy soiling or graffiti. The cleaning method should be as gentle as possible to obtain satisfactory results.	
12	**Carrying** out cleaning tests, after it has been determined that a specific cleaning method is appropriate.	
13	**Protecting** adjacent materials from accidental damage during maintenance or repair work.	Allowing character-defining elements to be exposed to accidental damage by nearby work.
14	**Repairing** or replacing materials to match the original as closely as possible, both visually and physically.	Using inappropriate or untested materials or consolidants, or using untrained personnel for repair work.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
15	**Replacing** character-defining materials with compatible substitute materials, when the original is found to accelerate deterioration and only after thorough analysis and monitoring confirms that the material or construction detail is problematic. Substitute materials should be as durable as the overall assembly to maintain its expected service life.	Using new materials and new technologies that do not have a proven track record. Replacing deteriorated character-defining elements using new materials or technologies to improve durability, when the original material performs adequately.

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
16	**Documenting** materials dating from periods other than the restoration period before their alteration or removal. If possible, selected samples of these materials should be stored to facilitate future research.	Failing to document materials that are not from the restoration period before removing them.

4.5.2 WOOD AND WOOD PRODUCTS

These guidelines provide direction when wood and wood products are identified as character-defining elements of an historic place. They also give direction on maintaining, repairing and replacing wood or wood products.

Wood and wood products refer to wood elements used in exterior or interior systems and assemblies. Wood elements include logs, sawn or hewn timbers, and milled or sculpted lumber. Wood products include plywood, glue-laminated timber, or composites, such as particleboard or wafer board. Both wood and wood products can be found in roofs, cladding, structure, windows and doors, interior finishes, carvings and fences.

An organic material, wood has a wide range of physical properties that vary significantly, depending on species, cut, grade and age. Wood is especially vulnerable to fire, moisture, ultraviolet radiation and insect infestation, thus protection from these threats is crucial to its conservation. This includes applying and maintaining suitable coatings and treatments, such as paints, stains, varnishes and preservatives.

It is important to identify the cause of any damage to a wooden building element before beginning a Preservation treatment. For the former machine shop of the North Pacific Cannery in Port Edward BC, exposure to marine conditions caused the exterior wood cladding to deteriorate.

Using minimally destructive testing methods can help evaluate the condition of wood without damaging it. Here a resistance measuring micro drill is being used to evaluate the condition of a log wall at Fort Walsh, NHSC in Saskatchewan. A drilling needle penetrates the wood at a constant speed and measures the resistance encountered to advance the drill bit. The resistance the wood offers indicates its condition: low resistance can indicate decay.

Repairing wood elements typically involves consolidating or replacing decayed or damaged wood, and correcting the conditions that caused the decay or damage. The use of traditional carpentry techniques in repairing architectural and structural wood elements is well established. However, repairing more recently introduced wood products, such as plywood and composites, may not be possible, due to the manufacturing process involved and their modular nature. In this case, replacement in kind may be more appropriate. The difficulty in locating a sustainable source for replacement in kind of old growth or exotic wood may result in the need to select an appropriate replacement material.

These guidelines provide general recommendations for wood and wood products and should be used in conjunction with 4.5.1, All Materials. Because wood can form part of the structure or envelope of a building or engineering work, also refer to the specific system or assembly in the Guidelines for Buildings.

Deteriorated logs at the John Walter Historic Site in Edmonton were replaced in kind with hewn logs that used the originals as templates to reproduce tooling marks on visible surfaces. On close inspection, this distinguishes the new materials if the logs are separated in the future.

Wood was often used in modern buildings as a finish to contrast with more industrial materials, or as part of an acoustical treatment on ceilings and walls. The wood ceiling and column claddings of the Beaver Lake Pavilion in Montreal were carefully preserved as part of the recent rehabilitation of the pavilion.

Preserving the wood doors of the Langevin Block in Ottawa included carefully dismantling the doors to permit the damaged and decayed wood to be repaired.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of wood and its finishes or coatings, such as its species, grade, strength and finish, or the chemical make-up of its coating.	
2	**Documenting** the location, dimension, species, finish and condition of wood before undertaking an intervention.	Undertaking an intervention that affects wood, without first documenting its existing characteristics and condition.
3	**Protecting** and maintaining wood by preventing water penetration; by maintaining proper drainage so that water or organic matter does not stand on flat, horizontal surfaces or accumulate in decorative features; and by preventing conditions that contribute to weathering and wear.	Failing to identify, evaluate and treat the causes of wood deterioration.
4	**Creating** conditions that are unfavourable to the growth of fungus, such as eliminating entry points for water; opening vents to allow drying out; removing piled earth resting against wood and plants that hinder air circulation; or applying a chemical preservative, using recognized conservation methods.	
5	**Inspecting** coatings to determine their condition and appropriateness, in terms of physical and visual compatibility with the material, assembly, or system.	
6	**Retaining** coatings that help protect the wood from moisture, ultraviolet light and wear. Removal should be considered only as part of an overall maintenance program that involves reapplying the protective coatings in kind.	Stripping paint or other coatings to reveal bare wood, thus exposing historically coated surfaces to moisture, ultraviolet light, accelerated weathering and mechanical wear.
7	**Removing** damaged, deteriorated, or thickly applied coatings to the next sound layer, using the safest and gentlest method possible, then recoating in kind.	Using destructive coating removal methods, such as propane or butane torches, sandblasting or water-blasting. These methods can irreversibly damage woodwork.
8	**Using** the gentlest means possible to remove paint or varnish when it is too deteriorated to recoat, or so thickly applied that it obscures details.	Using thermal devices improperly in a manner that scorches the woodwork. Failing to neutralize the wood thoroughly after using chemical strippers, thereby preventing the new coating from adhering. Allowing detachable wood elements to soak too long in a caustic solution, causing the wood grain to raise and the surface to roughen. Stripping historically coated wood surfaces to bare wood, then applying a clear varnish or stain.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
9	**Applying** compatible coatings following proper surface preparation, such as cleaning with tri-sodium phosphate.	Failing to follow the manufacturer's product and application instructions when applying coatings.
10	**Ensuring** that new coatings are physically and visually compatible with the surface to which they are applied in durability, chemical composition, colour and texture.	
11	**Applying** chemical preservatives to unpainted wood elements that are not exposed to view.	Using chemical preservatives, such as copper naphtanate, if these materials have not been used historically, and are known to change the appearance of wood elements.
12	**Preventing** the continued deterioration of wood by isolating it from the source of deterioration. For example, blocking windborne sand and grit with a windbreak, or installing wire mesh over floor joists in a crawlspace to thwart rodents.	Neglecting to treat known conditions that threaten wood, such as abrasion, animal gnawing, fungal decay, or insect infestation.
13	**Treating** active insect infestations by implementing an extermination program specific to that insect.	
14	**Retaining** all sound and repairable wood that contributes to the heritage value of the historic place.	Replacing wood that can be repaired, such as wood components from old growth timber that is inherently more durable.
15	**Stabilizing** deteriorated wood by structural reinforcement, weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated wood that can be stabilized or repaired.
16	**Repairing** wood by patching, piecing-in, consolidating, or otherwise reinforcing the wood, using recognized conservation methods.	Replacing an entire wood element, when repair and limited replacement of deteriorated or missing parts is appropriate.
17	**Replacing** in kind extensively deteriorated or missing parts of wood elements, based on documentary and physical evidence.	Using a substitute material for the replacement part that neither conveys the same appearance as the wood element, nor is physically or chemically compatible.
18	**Replacing** in kind the entire panel of an extensively deteriorated or missing modular wood product, such as plywood, on a unit-by-unit basis.	

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
19	**Repairing** wood elements by patching, piecing-in, consolidating or otherwise reinforcing the wood, using recognized conservation methods. Repair might include the limited replacement in kind, or replacement with compatible substitute material, of extensively deteriorated or missing wood, where there are surviving prototypes. Repairs might also include dismantling and rebuilding a timber structure or wood assembly, if an evaluation of its overall condition determines that more than limited repair or replacement in kind is required.	
20	**Replacing** in kind an irreparable wood element, based on documentary and physical evidence.	Removing an irreparable wood element and not replacing it, or replacing it with an inappropriate new element.

HEALTH, SAFETY AND SECURITY CONSIDERATIONS

21	**Removing** or encapsulating hazardous materials, such as lead paint, using the least-invasive abatement methods, and only after adequate testing has been conducted.	

SUSTAINABILITY CONSIDERATIONS

22	**Selecting** replacement materials for character-defining old-growth, exotic, or otherwise unavailable wood, based on their physical and visual characteristics.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
23	**Repairing**, stabilizing and securing fragile wood from the restoration period, using well-tested consolidants, when appropriate. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing wood from the restoration period that could be stabilized and conserved. Replacing an entire wood element from the restoration period when repair and limited replacement of deteriorated or missing parts is possible. Using a substitute material for the replacement that neither conveys the same appearance as the surviving wood, nor is physically or chemically compatible.
24	**Replacing** in kind a wood element from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable wood element from the restoration period and not replacing it, or replacing it with an inappropriate new element.

4.5.3 MASONRY

These guidelines provide direction when masonry is identified as a character-defining element of an historic place. They also give direction on maintaining, repairing and replacing masonry elements.

Masonry refers to mortared or dry laid natural stone as well as brick, cast stone, terra cotta and concrete block. The aesthetic characteristics of the masonry, such as the finish dressing, texture and colour of the stone, brick or mortar, the coursing pattern, and the joint width and profile, along with the careful integration of decorative sculptural and functional elements, such as band courses, lintels, water tables, cornices, scuppers and carvings, all contribute to its heritage value and require careful consideration.

Masonry construction in Canada ranges from statues and simple stone pathways, to massive fortifications and modern brick veneers on high-rise buildings. In many early uses, masonry played a dual role, acting as both the structural system and the building envelope. When conserving these types of masonry, it is important to consider both of these roles.

Sandblasting was once a popular method of removing paint from brick; however, it also removed the brick's outer hardened "crust" causing the brick to deteriorate.

Preserving the exterior of the British Columbia Legislative Building (its rear façade shown here), including its masonry walls, steps, columns, pilasters, window surrounds, decorative details and cornices, began with documenting the material, form, jointing, tooling, bonding patterns, coatings, colour and conditions of these elements before beginning project work.

The harsh climate in many parts of Canada can seriously damage masonry elements. This wall has suffered irreversible damage from water penetrating the brick façade and freezing, causing the faces of many bricks to pop off. To avoid such damage, repair failed flashings, deteriorated mortar joints or other mechanical defects, but do not apply water-repellent coatings, which can trap moisture inside the masonry.

Masonry should be cleaned only when necessary to halt deterioration or remove heavy soiling. If surface cleaning is appropriate, test to select the gentlest cleaning method possible, and observe the result over time to determine the immediate and the long-term effects. Test cleaning the left portion of this brick and stone wall (using low pressure water and detergents, when there was no chance of freezing) created an acceptably clean wall.

One of the primary causes of deterioration of glazed architectural terra cotta, like that shown on the Confederation Life Building in Winnipeg is water. Water-related damage to the glazed units, mortar, metal anchors or masonry backfill can be repaired only after eliminating the sources of that water. In order to ensure that the actual root problem is being solved, investigation work would need to be completed prior to any repairs in order to identify that source.

Deteriorated slate pavers should be replaced in kind from the same source of the original material. If the original quarry is closed, a suitable match should be located and attention given to the stone's composition, strength and colour.

A wide variety of stone has been used in historic places. Each type has different properties and behaviours that must be understood to ensure their proper conservation. Because stone is a natural material, it can possess inclusions of minerals or clay that can weaken it and reduce its durability. Poor-quality design and workmanship can aggravate these inherent weaknesses.

Brick is a solid or hollow masonry unit, typically made of clay, calcium-silicate, or concrete, and used for both cladding and structural work. Terra cotta is also made of clay mixed with sand. It is used for ornamental work, roof and floor tiles, interior partitions and as fire proofing for metal structures. Terra cotta is not a load-bearing material.

The preservation of masonry can best be ensured through appropriate and timely maintenance. Cleaning treatments for purely aesthetic purposes should be avoided because they can aggravate and accelerate deterioration.

These guidelines provide general recommendations for masonry and should be used in conjunction with 4.5.1, All Materials. Because masonry can form part of the structure or envelope of a building or engineering work, also refer to Structural Systems and to Exterior Walls in the Guidelines for Buildings.

Tenby School in Lansdowne MB is a well-preserved and rare example of a village school built with concrete blocks, a material commonly used between 1890 and 1905 for homes and commercial buildings in southern Manitoba. The blocks were artfully formed on site by using three distinct moulds.

Using brick masonry in interiors is a long lasting, almost indestructible finish for public spaces. Brick walls and floors are character defining in many modern interiors such as the Joseph Shepard Building in Toronto. It is not recommended to apply paint or other coatings to masonry that has been historically unpainted or uncoated.

Many stone masonry monuments, such as the Brock Monument in Queenston, ON, are historic places. A monument does not face many of the challenges of historic buildings or engineering works. Its purpose and use are the same today as when it was built. A monument is expected to remain constant and unchanged despite time, deterioration and weathering. Continuous maintenance and repairs are required and interventions or major repairs must be carefully considered to evaluate their potential impact on each part of the monument.

Masonry used on the exterior of modern buildings is generally a cladding attached to a separate structure. Clips, anchors or shelf angles are used to attach the stone panels or brick masonry. The deterioration of these anchors is an area of potential deterioration and failure. Monitoring the condition of these anchors is a vital part of a maintenance plan, as their failure can lead to very significant damage.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of the masonry of the historic place.	
2	**Documenting** the form, materials and condition of masonry before undertaking an intervention. For example, identifying the particular characteristics and source of the type of stone or brick used, and the composition of the mortar.	Undertaking an intervention that affects masonry without first documenting its existing character and condition.
3	**Protecting** and maintaining masonry by preventing water penetration, and maintaining proper drainage so that water or organic matter does not stand on flat surfaces, or accumulate in decorative features.	Failing to identify, evaluate and treat the causes of masonry deterioration. 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.
4	**Applying** appropriate surface treatments, such as breathable coatings, to masonry elements as a last resort, only if masonry repairs, alternative design solutions or flashings have failed to stop water penetration, and if a maintenance program is established for the coating.	
5	**Sealing** or coating areas of *spalled* or blistered glaze on terra cotta units, using appropriate paints or sealants that are physically and visually compatible with the masonry units.	
6	**Cleaning** masonry, only when necessary, to remove heavy soiling or graffiti. The cleaning method should be as gentle as possible to obtain satisfactory results.	Over-cleaning masonry surfaces to create a new appearance, thus introducing chemicals or moisture into the materials. Blasting brick or stone surfaces, using dry or wet grit sand or other abrasives that permanently erode the surface of the material and accelerate deterioration. Using a cleaning method that involves water or liquid chemical solutions when there is a possibility of freezing temperatures. Cleaning with chemical products that damage masonry or mortar, such as using acid on limestone or marble. Failing to rinse off and neutralize appropriate chemicals on masonry surfaces after cleaning. Applying high-pressure water cleaning methods that damage the masonry and mortar joints and adjacent materials.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
7	**Carrying out** masonry cleaning tests after it has been determined that a specific cleaning method is appropriate.	Cleaning masonry surfaces without sufficient time to determine long-term effectiveness and impacts.
8	**Inspecting** painted masonry surfaces to determine whether paint can successfully be removed without damaging the masonry, or if repainting is necessary. Testing in an inconspicuous area may be required.	
9	**Removing** damaged or deteriorated paint only to the next sound layer, using the gentlest method possible; for example, hand scraping before repainting.	Removing paint that is firmly adhering to masonry surfaces. Using methods of removing paint that are destructive to masonry, such as sandblasting, application of caustic solutions, or high-pressure water blasting.
10	**Re-applying** compatible paint or coatings, if necessary, that are physically compatible with the previous surface treatments and visually compatible with the surface to which they are applied.	Applying paint, coatings or stucco to masonry that has been historically unpainted or uncoated. Removing paint from historically painted masonry, unless it is damaging the underlying masonry. Removing stucco from masonry that was historically never exposed.
11	**Retaining** sound and repairable masonry that contributes to the heritage value of the historic place.	Replacing or rebuilding masonry that can be repaired.
12	**Stabilizing** deteriorated masonry by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	
13	**Repairing** masonry by repointing the mortar joints where there is evidence of deterioration, such as disintegrating or cracked mortar, loose bricks, or damp walls.	Removing sound mortar.
14	**Removing** deteriorated or inappropriate mortar by carefully raking the joints, using hand tools or appropriate mechanical means to avoid damaging the masonry.	Using rotary grinders or electric saws to fully remove mortar from joints before repointing. In some instances it may be acceptable to make a single pass with a cutting disk to release tension in the mortar before raking the joint. Extreme caution must be used to prevent accidental damage.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
15	**Using** mortars that ensure the long-term preservation of the masonry assembly, and are compatible in strength, porosity, absorption and vapour permeability with the existing masonry units. Pointing mortars should be weaker than the masonry units; bedding mortars should meet structural requirements; and the joint profile should be visually compatible with the masonry in colour, texture and width.	Repointing with mortar of a higher Portland cement content than in the original mortar. This can create a bond stronger than the historic material (brick or stone) and cause damage as a result of the differing expansion coefficients and porosity of the materials. Repointing with a synthetic caulking compound. Using a 'scrub' coating technique to repoint instead of using traditional repointing methods.
16	**Duplicating** original mortar joints in colour, texture, width and joint profile.	
17	**Replacing** in kind extensively deteriorated or missing parts of masonry elements, based on documentary and physical evidence	Using a substitute material for the replacement part that neither conveys the same appearance as the masonry element, nor is physically or chemically compatible.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
18	**Repairing** masonry by patching, piecing-in or consolidating, using recognized conservation methods. Repair might include the limited replacement in kind, or replacement with a compatible substitute material, of extensively deteriorated or missing masonry units, where there are surviving prototypes. Repairs might also include dismantling and rebuilding a masonry wall or structure, if an evaluation of its overall condition determines that more than limited repair or replacement in kind is required.	
19	**Replacing** in kind an irreparable masonry element, based on documentary and physical evidence.	Removing an irreparable masonry element and not replacing it, or replacing it with an inappropriate new element.

HEALTH, SAFETY AND SECURITY CONSIDERATIONS

20	**Removing** hazardous materials from masonry, using the least-invasive abatement methods, and only after adequate testing has been conducted.	

SUSTAINABILITY CONSIDERATIONS

21	**Selecting** replacement materials from sustainable sources, where possible. For example, replacing deteriorated stone units using in-kind stone recovered from a building demolition.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
22	**Repairing**, stabilizing and securing masonry elements from the restoration period, using recognized conservation methods. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing masonry elements from the restoration period that could be stabilized and conserved. Replacing an entire masonry element from the restoration period, when repair and limited replacement of deteriorated or missing parts is possible. Using a substitute material for the replacement that neither conveys the same appearance as the surviving masonry, nor is physically or chemically compatible.
23	**Replacing** in kind a masonry element from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable masonry element from the restoration and not replacing it, or replacing it with an inappropriate new element.

4.5.4 CONCRETE

These guidelines provide direction when concrete is identified as a character-defining element of an historic place. They also give direction on maintaining, repairing and replacing concrete elements.

Cape Race Lighthouse, on the southernmost tip of the Avalon Peninsula in Newfoundland and Labrador, is Canada's most prominent landfall marker. Built in 1906–1907, Cape Race was the first Canadian lighthouse to be constructed in reinforced concrete and probably the second lighthouse constructed in reinforced concrete in the world.

Early uses of concrete were typically utilitarian and formed part of structures that were hidden from view. The earliest concrete was massive, un-reinforced, cast-in-place construction containing variable aggregates that were obtained from local sources. Beginning in the early 1900s, the use of concrete as an aesthetic material became more common and was fully embraced by the middle of the 20th century. Reinforced concrete began appearing in the early 1900s, introducing more efficient designs of concrete members and structures. This, in turn, allowed for increased spans and the creation of architectural features, such as sculptural staircases and organic roof forms. Pre-cast concrete, where the members are fabricated off-site and brought to the site for erection, was first used in the 1930s. This coincided with the increased use of concrete as an exposed architectural, decorative and functional element, such as paving tiles and exterior wall cladding.

Special formwork or chemical or mechanical treatments can create a wide variety of concrete finishes, such as these pre-cast panels with exposed Laurentian granite aggregate at the National Arts Centre in Ottawa. Recreating these finishes when repairing or replacing-in-kind should be preceded by a mock up to ensure that the new work will be compatible with the historic place.

Architectural uses for concrete include exterior cladding, flooring and paving. The aesthetic qualities of concrete can include the texture created by formwork, such as smooth or board formed, and the colour and finish, such as exposed aggregate or terrazzo.

Finding recognized conservation techniques for concrete can be a challenge because these are part of a relatively new area of conservation. Some repair techniques may not have been thoroughly tested. A significant industry exists in Canada for repairing recent concrete structures; however, commonly used repair techniques and materials are usually not suited to historic concrete. The monolithic nature of concrete complicates its repair. High-quality workmanship and compatible materials are necessary in any repair to reduce the abrupt altering of the properties of the matrix, which could lead to shrinkage cracking.

These guidelines provide general recommendations for concrete and should be used in conjunction with 4.5.1, All Materials. Because concrete can also form part of the structure or cladding of a building or engineering work, also refer to Structural Systems or Exterior Walls in the Guidelines for Buildings.

Deterioration of concrete is a significant conservation issue, particularly in the Canadian climate. Deterioration typically results from environmental factors, such as moisture, temperature and the presence of salts and carbon dioxide, which can corrode the steel reinforcements. Durability factors related to the original materials and workmanship, and improper maintenance, can also significantly affect concrete.

Important properties to match when patching concrete can include the modulus of elasticity, cement to aggregate ratio, aggregate gradation, compressive and shear strength, and coefficient of thermal expansion. In this case the coarse aggregate in the repair patch does not match that of the original concrete.

In the early 20th century, concrete was still an experimental material. The early designers and fabricators did not have full knowledge about the properties and characteristics of the concrete or its performance in the Canadian environment. Early examples of concrete construction often have inherent problems, are in poor condition and can require considerable conservation work.

The skills and expertise to repair or replace sections of cracked and chipped terrazzo flooring are still available. These specialised skills should be sought our when repairs are needed. The colourful, decorative and functional finish of this crest in the floor at the Royal Canadian Legion Branch Nº 1 in Regina is an important character-defining feature of the building.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of the concrete of the historic place.	
2	**Documenting** the form, composition, strength, colour, texture, details and condition of the concrete before undertaking an intervention. For example, identifying the particular characteristics and source of the type of aggregate used.	Undertaking an intervention that affects concrete, without first documenting its existing character and condition.
3	**Protecting** and maintaining concrete by preventing moisture penetration; maintaining proper drainage; improving water shedding; and by preventing damage due to the overuse of ice-clearing chemicals.	Failing to identify, evaluate and treat the various causes of concrete deterioration. Applying water-repellent coatings to above-grade concrete to stop moisture penetration, when the problem could be solved by repairing failed flashings or other mechanical defects.
4	**Cleaning** concrete, only when necessary, to remove heavy soiling or graffiti. The cleaning method should be as gentle as possible to obtain satisfactory results.	Over-cleaning concrete surfaces to create a new appearance, thus introducing chemicals or moisture into the concrete. Using a cleaning method that involves water or liquid chemical solutions when there is a possibility of freezing temperatures. Cleaning with chemical products that damage the concrete. Failing to rinse off and neutralize appropriate chemicals on concrete surfaces after cleaning. Blasting the concrete with abrasives that permanently erode the surface and damage soft or delicate materials adjacent to it. Applying coatings or paint over the concrete to present a uniform appearance.
5	**Testing** cleaning methods in inconspicuous areas before cleaning the entire concrete surface, and observing the results of the cleaning tests over a sufficient period of time to determine their immediate and long-term effect.	
6	**Inspecting** painted concrete surfaces to determine whether repainting is necessary.	
7	**Removing** damaged or peeling paint, using the gentlest method possible before repainting.	Removing paint that is firmly adhered to concrete.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
8	**Reapplying** compatible paint or coatings, if necessary, that are physically and chemically compatible with the previous surface treatment, and visually compatible with the surface to which they are applied.	Removing paint from historically painted concrete unless it is damaging the underlying concrete. Removing stucco or cement parging from concrete that was historically never exposed.
9	**Selecting** an appropriate approach to corrosion protection to minimize damage to the concrete, including regular inspection and maintenance.	Introducing a corrosion protection system for the concrete, without verifying the effectiveness or the level of benefit achieved by the work, or without taking appropriate steps to address the cause of the corrosion.
10	**Retaining** sound and repairable concrete elements that contribute to the heritage value of the historic place.	Removing deteriorated concrete that could be stabilized or repaired.
11	**Stabilizing** deteriorated concrete elements by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	
12	**Repairing** deteriorated concrete by patching or consolidating, using appropriate conservation methods.	Repairing concrete without treating the cause of deterioration. Replacing an entire concrete element when selective repair or replacement is possible. Using coatings or finishes to cover and hide surface repairs.
13	**Minimizing** damage to early concrete by limiting the size of the chipping equipment to better control the degree of removal, remembering that the compressive strength of early concrete may be much lower than modern concrete.	
14	**Cleaning** concrete before repair to remove contaminants, dirt and soil, so that the new concrete patches match the cleaned surface.	
15	**Sealing** inactive cracks in concrete by pointing with a cementitious mortar, or injecting epoxies to prevent moisture from entering the concrete mass.	Sealing active cracks with hard mortars or other hard materials that could prevent seasonal movements. Repairing cracks in concrete elements, without first determining the cause or significance of the crack.
16	**Replacing** in kind extensively deteriorated or missing parts of concrete elements, based on documentary and physical evidence.	Using replacement material that is incompatible with adjacent concrete work Recreating formwork finishes, such as form lines, wood grain, or knots, using grinders or trowels.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
17	**Repairing** and reinforcing deteriorated concrete by encasing it in a jacket of new concrete, using appropriate conservation methods.	Failing to maintain the proportions or form of deteriorated concrete elements, when repairing by jacketing with new concrete.
18	**Replacing** in kind an irreparable concrete element, based on documentary and physical evidence.	Removing an irreparable concrete element and not replacing it, or replacing it with an inappropriate new element.
19	**Applying** appropriate surface treatments, such as breathable coatings, to concrete as a last resort, only if repairs, alternative design solutions, or flashings have failed to stop water penetration, and if a maintenance program is established for the coating.	Applying coatings to concrete instead of correcting the problem that caused the damage.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
20	**Removing** hazardous materials from concrete by using the least-invasive abatement methods and only after thorough testing has been conducted.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
21	**Repairing** deteriorated concrete from the restoration period by patching or consolidating, using recognized conservation methods. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing concrete from the restoration period that could be stabilized and conserved. Replacing an entire concrete element from the restoration period when repair and limited replacement of deteriorated or missing parts is possible. Using a substitute material for replacement that neither conveys the same appearance as the surviving concrete, nor is physically or chemically compatible.
22	**Replacing** in kind a concrete element from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable concrete element from the restoration period and not replacing it, or replacing it with an inappropriate new element.

4.5.5 ARCHITECTURAL AND STRUCTURAL METALS

These guidelines provide direction when architectural or structural metals are identified as character-defining elements of an historic place. They also give direction on maintaining, repairing and replacing metal elements.

Structural metals typically include steel or iron columns, beams, trusses, or frames. Architectural metals encompass all other metal elements, which include a wide variety of architectural elements, such as sculpture, roofing, flashings, cladding, cresting, windows, doors, curtain-wall mullions and spandrel panels, railings and banisters, stairs, bathroom fixtures and partitions, hardware, gates, fences, and sign posts.

The metals used in the construction of historic places throughout Canadian history include, but are not limited to, iron (cast and wrought), steel, stainless steel, galvanized steel, tin, copper and copper alloys, zinc, aluminum, lead, nickel and bronze.

The long-term performance of metal components depends on their physical and chemical properties, the environment they are exposed to, design details, and their proximity to other metallic and non-metallic components. Typical forms of metal deterioration include corrosion, erosion, abrasion, deformation, cracking and fatigue, and flaws due to original design, manufacture or assembly.

Some metal elements of a historic place may originally have been finished with a protective coating under shop conditions that are difficult to reproduce on site when repairs are required. In this case, the character-defining black anodized aluminium mullions and spandrel panels have deteriorated due to decades of exposure to sunlight. The approach to repair should be based on the analysis of all repair options, thorough testing of the chosen techniques, and careful protection of the curtain wall from further damage during all interventions.

The first step in preserving architectural metals is to identify the type of metal. Before cleaning, determine that the method is appropriate for the particular metal: removing the patina from these bronze doors would not be appropriate if the patina is a character-defining finish of the metal, or if it provides a protective coating. Testing is recommended to ensure that the gentlest cleaning method possible is used.

Generally, metal components tend to be durable, but components that are not suited to a particular location or function, or not receiving adequate maintenance, may become fragile. To correct damage to a metal component, the cause of its deterioration must be understood and the type of metal correctly identified. If the metal's properties are not understood, inappropriate treatment may cause an adverse reaction and further deterioration. Some metals, such as wrought iron, cast iron and steel, are easy to recognize, but alloys can be challenging to identify. Accurately identifying an alloy may require help from a metals conservator or conservation professional.

These guidelines provide general recommendations for architectural and structural metals, and should be used in conjunction with 4.5.1, All Materials. For structural metals, also refer to Structural Systems in the Guidelines for Buildings.

Under certain circumstances, substitute materials may be appropriate. As part of a Rehabilitation project, new finials were designed based on original remains. The originals were fabricated of wafer-thin galvanized metal soldered together. The substitute material used in the new design was plate aluminum.

Most historic lighthouses have faced accelerated deterioration due to changes in how they operate; in addition, wet, salty costal environments are challenging conditions in which to conserve metals. The heat produced by the original light source once helped keep the lantern dry, as did roof top ventilators and gutter systems. Electric lights and the lack of regular on-site personnel to maintain and operate these features have necessitated a pro-active conservation approach and likely the involvement of metal conservators.

The two remaining decorative sheet metal urns at the top of the façade of the M & J Hardware Building in Lacombe, AB were determined to be beyond repair due to weathering over time. A third sheet metal urn (centre) was missing. The existing deteriorated elements and photographic documentation were used to replicate these elements. The M & J Hardware Building is an example where missing features from the restoration period have been re-instated based on physical and documentary evidence.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of metals and their finishes or coatings.	
2	**Documenting** the form, composition, and condition of metals, before undertaking an intervention.	Undertaking an intervention that affects metals without first documenting their characteristics and condition.
3	**Protecting** and maintaining metals from corrosion by preventing water penetration and maintaining proper drainage, so that water or organic matter does not stand on flat surfaces or accumulate in decorative features.	Failing to identify, evaluate and treat the causes of corrosion.
4	**Ensuring** that incompatible metals are not in contact with each other by installing an appropriate separator to prevent galvanic corrosion.	
5	**Identifying** the type of metal and the most appropriate cleaning method, and testing it in an inconspicuous area to ensure an appropriate level of cleanliness.	Over-cleaning metal elements. Using cleaning methods that alter or damage the character-defining colour, texture and finish of the metal.
6	**Determining** the appropriate level of patina before cleaning, and ensuring that this level is maintained for the entire element.	Removing the character-defining patina of a metal element.
7	**Cleaning** painted metals using appropriate techniques and products to remove corrosion and layers of paint, if required, before repainting.	Exposing metals intended to be protected from the environment. Applying paint or other coatings to metals that were meant to be exposed.
8	**Cleaning** soft metals, such as lead, tin, copper, aluminum, brass, silver, bronze and zinc, with appropriate non-abrasive methods.	Using abrasives on soft metals.
9	**Using** the gentlest cleaning methods for hard metals, such as cast iron, wrought iron and steel, to remove excessive paint build-up and corrosion.	
10	**Applying** an appropriate protective coating to an unpainted metal element that is subject to frequent use and handling, such as a bronze door or brass hardware, or to corrosion due to environmental factors, such as abrasives in winter. The coating should be regularly reapplied, as required, to ensure ongoing protection.	

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
11	**Re-applying** appropriate paint or coating systems after cleaning to decrease the corrosion rate of painted or coated metals.	
12	**Retaining** all sound and repairable metals that contribute to the heritage value of the historic place.	Replacing metals that can be repaired.
13	**Stabilizing** deteriorated metals by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated metals that could be stabilized or repaired.
14	**Repairing** parts of metal elements by welding, soldering, patching, or splicing, using recognized conservation methods.	Replacing an entire metal element, when repair and limited replacement of deteriorated or missing parts is possible.
15	**Replacing** in kind, extensively deteriorated or missing parts of metal elements, based on physical and documentary evidence.	Replacing an entire metal element, when limited replacement of deteriorated and missing parts is appropriate. Using a substitute material that neither conveys the appearance of the surviving parts of the metal element, nor is physically or chemically compatible.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
16	**Repairing** metal elements by welding, soldering, patching, or splicing, using recognized conservation methods. Repair may also include the limited replacement in kind, or replacement with a compatible substitute material, of extensively deteriorated or missing metal elements, where there are surviving prototypes.	
17	**Reinforcing** metal elements, following recognized conservation methods to improve their strength. Reinforcement should be physically and visually compatible.	Replacing an entire metal element when reinforcement is feasible.
18	**Replacing** in kind an irreparable metal element, based on documentary and physical evidence.	Removing an irreparable metal element and not replacing it, or replacing it with an inappropriate new element.

HEALTH, SAFETY AND SECURITY CONSIDERATIONS

19	**Removing** hazardous materials from metals using the least-invasive abatement methods and only after adequate testing has been conducted.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
20	**Repairing**, stabilizing and conserving fragile metal elements from the restoration period, using well-tested consolidants, when appropriate. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing metal elements from the restoration period that could be stabilized and conserved.
21	**Replacing** in kind a metal element from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable metal element from the restoration period and not replacing it, or replacing it with an inappropriate new element.

4.5.6 GLASS AND GLASS PRODUCTS

These guidelines provide direction when glass and glass products are identified as character-defining elements of an historic place. They also give direction on maintaining, repairing and replacing glass elements.

Glass and glass products refer to the glass used in exterior and interior windows, doors and storefronts, built-in cabinetry and floors, and the glazing used in curtain walls, mirrors, floors, skylights and conservatories.

Glass elements can be considered character-defining due to their aesthetic or functional characteristics, including translucency or opacity, colour, texture, reflectivity or treatment. Glass varies in size and form, from tiny mosaic pieces to large flat sheets, or curved panes for corner windows. Glass elements may also be valued as artifacts from specific periods in the development of glass technologies, such as prismatic glass associated with the strategies to improve daylight in commercial spaces. Stained glass has been widely used in Canadian churches, colleges and public buildings, and to some extent in houses, in a range of aesthetic expressions. Conserving glass, particularly stained glass, requires specialists who may involve art conservators.

Historic glass has certain characteristics that cannot be matched by modern production techniques. Coloured, patterned or curved glass can be expensive or impossible to replace. Careful recording and regular monitoring of conditions are the most effective ways to conserve historic glass. If repairs are required, an experience stained-glass conservator can assess and recommend appropriate repair techniques.

Stained glass panels are susceptible to distortion over time, which may cause the glass to crack. Interventions to reinforce panels or protect windows with a second sash should be overseen by a conservator specializing in stained glass. The placement and method of installation of such work must be carefully designed to ensure that this does not cause further deterioration.

The type of glass and its division into multiple lights often defines the character of windows in historic buildings. The reflective quality of double-glazing from double sashes or storm windows is different than that of modern insulated glass. Inspections should be undertaken regularly to ensure that glazing putty is in good condition.

The character-defining transparency of the glass-enclosed factory wings of the National Printing Bureau in Gatineau, QC was preserved during conservation work on the glass and aluminium curtain walls. After the thin aluminium frames were cleaned, the opaque ribbed glass and clear plate glass were carefully reset in their original positions that reflect the pattern of solids and voids in the masonry wall behind.

Glass block has been manufactured in many different shapes, sizes, patterns and opacities. All these features should be considered when seeking a replacement block. Searching architectural salvage yards and contacting manufacturers may locate compatible replacements.

In the 20th century, a number of glass products were developed in response to curtain wall technology and other modern architectural forms. These products include *spandrel glass*, laminated glass, coloured glass panels or structural glass, and glass block, as well as thermally-insulated double- or triple-pane glazing units that are the norm today.

Interventions to improve building envelope performance should focus on improving the efficiency of the entire wall assembly, rather than focusing on replacing glass or glass products such as windows. Double glazing changes the reflectivity and colour of the glass, and often requires changes to the framing or wall system supporting it.

These guidelines provide general recommendations for glass and glass products and should be used in conjunction with 4.5.1, All Materials. Because these materials are usually part of an assembly, their conservation must be closely coordinated with the related framing and structural elements and surrounding materials such as wood, metals or masonry. For recommendations on these assemblies, refer to Windows, Doors and Storefronts and Exterior Walls in the Guidelines for Buildings and to other appropriate sections in the Guidelines for Materials.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of glass and glass products, such as age and thickness, and the composition of any applied coatings.	Undertaking work that affects glass and glass products without first understanding their mechanical and chemical properties.
2	**Documenting** the composition, colour, texture, reflectivity, treatment and condition of glass and glass products before undertaking an intervention.	Undertaking an intervention that will affect glass and glass products without first documenting their existing characteristics and condition.
3	**Identifying** all of the different types of glass and glass products used and their unique properties.	
4	**Assessing** and treating the causes of glass damage, breakage, or deterioration of its frame or structure.	Failing to consider the impact and condition of surrounding frames or structural elements, before identifying the level of conservation work required.
5	**Protecting** glass from breakage, chipping and abrasion caused by ongoing maintenance.	
6	**Assessing** the impact of previous maintenance practices on glass and adjacent materials.	Failing to replace deteriorated sealants at glass joints to prevent moisture penetration. Failing to clean glass surfaces to prevent the accumulation of corrosive grease or dirt.
7	**Identifying** the type of glass and the most appropriate cleaning method, and testing it in an inconspicuous area to ensure an appropriate level of cleanliness.	Using cleaning methods that alter or damage the colour, texture or finish of the glass elements.
8	**Retaining** sound or deteriorated glass elements that can be repaired.	Removing or radically changing glass elements that contribute to the heritage value of the historic place.
9	**Securing** and protecting deteriorated glass by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated glass elements that could be stabilized or repaired. Adding protective glazing or exterior storms to stained glass elements, without the involvement of a specialist conservator.
10	**Repairing** parts of glass elements by patching, piecing-in, or otherwise reinforcing, using recognized conservation methods.	Using a substitute material for the replacement part that neither conveys the same appearance as the surviving parts of the glass element, nor is physically or chemically compatible.
11	**Replacing** in kind irreparable or missing glass, based on documentary and physical evidence.	Replacing an entire glass element when repair and limited replacement of deteriorated and missing parts is possible.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
12	**Repairing** a glass element using recognized conservation methods. Repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of extensively deteriorated or missing glass elements, where there are surviving prototypes.	Using an inappropriate substitute material. Failing to repair the deteriorated frame or structure around the glass element.
13	**Replacing** in kind an irreparable glass element based on documentary and physical evidence.	Removing an irreparable glass element and not replacing it, or replacing it with an inappropriate new glass element.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
14	**Removing** hazardous materials from glass, such as lead paint, by using the least-invasive abatement methods, and only after adequate testing has been conducted.	
15	**Monitoring**, stabilizing and repairing glazing systems used in character-defining curtain walls, skylights and atriums, to ensure that any loose or cracked pieces are detected to prevent further deterioration.	Applying security film that cannot be removed at a later date.
	SUSTAINABILITY CONSIDERATIONS	
16	**Retaining** and carefully storing historic glass elements and making them available for reuse.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
17	**Repairing**, securing and conserving fragile glass from the restoration period using appropriate methods and materials. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing glass from the restoration period that could be stabilized and conserved.
18	**Replacing** in kind a glass element from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable glass element from the restoration period and not replacing it, or replacing it with an inappropriate new element.

4.5.7 PLASTER AND STUCCO

These guidelines provide direction when plaster or stucco is identified as a character-defining element of an historic place. They also give direction on maintaining, repairing, and replacing plaster and stucco and their coatings.

Plaster and stucco are finishing or surface materials made by applying a lime, gypsum or cement-based coating to a supporting lath or substrate. Plaster is an interior finishing material, while stucco is usually an exterior material. The supporting substrate, which may be lath, masonry or wood frame, is an integral component of the assembly that requires as much careful consideration as the plaster and stucco itself.

In the 20th century, technologies for applying plaster and stucco evolved to include new types of supports and finishes. These finishes could be character-defining, such as specific finishes applied to concrete, or specialty treatments, such as pebble-dash stucco.

As these materials continued to evolve, synthetic versions were developed. These synthetic stucco and plaster materials have different characteristics and should be avoided when repairing traditional stucco or plaster.

These guidelines provide general recommendations for plaster and stucco, and should be used in conjunction with 4.5.1, All Materials. Because these materials are usually part of an architectural assembly, their conservation must be closely coordinated with the assemblies and elements that support these materials, such as exterior walls, interior partitions, ceilings and columns. For recommendation on these assemblies, refer to Exterior Walls and to Interior Features in the Guidelines for Buildings.

Before repairing or patching historic plaster or stucco, such as on the Commanding Officer's Residence at Fort Battleford NHSC in Saskatchewan, it is important to determine the composition of the material. Patches and repairs should be both visually and physically compatible with the existing historic material. Materials with different physical characteristics will likely not properly adhere to one another, necessitating repeated maintenance in the near future.

The repair of a deteriorated intricate plaster cornice should involve recognized conservation techniques, such as consolidation of the original materials in good condition. One goal should be to limit the amount of introduced material. Surface repairs may be filled with a compatible traditional plaster mix, but for larger elements, some form of adhesive or fastener may be required, and should be carefully selected.

Certain stucco treatments, such as pebble-dash stucco, are difficult to replicate. Applying glass or rocky aggregate to the wet stucco is an art that is all but lost. Pebbles imported from Scotland for the Dr. Woods House in Leduc, AB are virtually impossible to replicate. The repairs resulted in a sound exterior envelope, but are clearly distinguishable from the original.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of the plaster or stucco of the historic place.	Undertaking work that affects plaster or stucco without understanding its mechanical and chemical properties.
2	**Documenting** the properties, characteristics and condition of the plaster or stucco before undertaking an intervention; for example, the chemical composition of the material and the type of substrate to which it is applied.	Undertaking an intervention that affects plaster or stucco, without first documenting its existing characteristics and condition.
3	**Protecting** and maintaining plaster and stucco from damage by preventing moisture penetration, accumulation of organic matter, and structural movement.	
4	**Applying** an appropriate coating or paint system. The selection of the system should be based on its compatibility with previous layers of character-defining paint, colour, finish and texture.	Using coatings of inappropriate colour, finish or texture that will have a negative impact on the heritage value of the historic place.
5	**Removing** layers of paint from plaster details to make them legible, using recognized conservation methods.	Using paint removal methods and materials that damage plaster details. Failing to test paint removal methods in an inconspicuous location before beginning the work.
6	**Retaining** sound or deteriorated plaster and stucco that can be repaired.	Removing or radically changing plaster or stucco that contributes to the heritage value of the historic place.
7	**Securing** and protecting deteriorated plaster and stucco by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated plaster or stucco that could be stabilized or repaired.
8	**Repairing** plaster or stucco by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods.	Using a substitute material that neither conveys the same appearance as the surviving parts of the plaster or stucco, nor is physically or chemically compatible.
9	**Replacing** in kind irreparable or missing parts of plaster or stucco elements, based on documentary and physical evidence.	Replacing an entire plaster or stucco element when repair and limited replacement of deteriorated or missing parts is possible.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
10	**Repairing** plaster or stucco following recognized conservation methods. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of extensively deteriorated or missing plaster or stucco, where there are surviving prototypes.	
11	**Repairing** plaster or stucco by removing the damaged material and patching with new stucco or plaster that duplicates the old in strength, composition, colour, porosity, and texture.	Removing sound plaster and stucco, or repairing with new material that does not match the old in strength, composition, colour, porosity and texture.
12	**Replacing** in kind an irreparable plaster or stucco element, based on documentary and physical evidence.	Removing an irreparable plaster or stucco element and not replacing it, or replacing it with an inappropriate new element or material.

HEALTH, SAFETY AND SECURITY CONSIDERATIONS

13	**Removing** or encapsulating hazardous materials contained in plaster or stucco, such as asbestos, by using the least-invasive abatement methods, and only after adequate testing has been conducted.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
14	**Repairing**, securing and retaining plaster and stucco from the restoration period, using appropriate methods and materials. Repairs should be physically and visually compatible and identifiable upon close inspection for future research.	Removing plaster or stucco from the restoration period that could be stabilized and conserved.
15	**Replacing** in kind, plaster or stucco from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing irreparable plaster or stucco from the restoration period and not replacing it, or replacing it with inappropriate new material.

4.5.8 MISCELLANEOUS MATERIALS

These guidelines provide direction when a material, other than those specified above, is identified as a character-defining element of an historic place. This section includes recent materials produced by a fabrication process and interior and exterior materials that are not clearly categorized. Due to the range of materials these guidelines apply to, general guidance is given to help with maintaining, repairing, and replacing miscellaneous materials.

These diverse materials may be character-defining in their own right, or used in character-defining assemblies or systems. Materials, such as plastic, plexiglass, asbestos, asphalt, rubber, thatch, sod and fiberglass, have served a multitude of uses in construction. Flooring surfaces, including cork, linoleum, carpet or ceramic tile, and decorative or functional treatments, such as fabrics, wall coverings and acoustical panels, may also be character-defining. Modern materials, such as plastic have been used as lighter, less breakable alternatives to glass, metal or wood in exterior cladding, interior partitions, canopies, screens and signage.

Plastic and fibreglass can be moulded into a variety of shapes to create decorative, colourful wall panels. These green moulded panels are unique and difficult to replicate if damaged. Removing intact panels from a less visible part of the building to replace broken panels in a more prominent area is one possible strategy.

Mass-produced elements, such as ceramic tiles, are frequently used in buildings. Finding matching replacements for repair work can be almost impossible. If tile needs to be removed from one area, it is good conservation practice to save nd stockpile it for later use elsewhere in the building. These tiles from the washrooms in Union Station in Toronto were removed from one set of washrooms in order to provide a stockpile of tiles to use in the repair of the remainder of the washrooms.

Some miscellaneous materials are not expected to last indefinitely, such as carpeting or a fabric awning. Others may be difficult to clean or maintain when they age, such as plastics that can become brittle or discoloured, or experimental materials that have not stood the test of time. Some materials manufactured in factories using specialized techniques and processes are more difficult to repair than traditional materials, and almost impossible to replace, if the original manufacturing process has been discontinued. Other natural and synthetic materials historically used in construction have since been found to be toxic and can pose health risks. A material's properties, characteristics and contribution to the heritage value of the historic place must be fully understood before undertaking an intervention.

Information on the repair and maintenance of rare materials may be difficult to find. Even seemingly simple cleaning instructions may no longer be available. Research and testing may be the only way to understand the material.

These guidelines provide general recommendations for materials not covered in sections 4.5.2 to 4.5.7 above, and should be used in conjunction with 4.5.1, All Materials.

Fabric awnings are subject to damaging environmental effects including sunlight, wind and water, which eventually may cause the loss of the historic awning fabric. Repairing the original frame or mechanism and installing new awning fabric are recommended and will also help provide shade. Awning manufacturers may be able to match or provide similar fabrics compatible with the character of the place, as was done at Laurier House in Ottawa.

Asbestos is an extremely durable material that is often found in excellent condition. Although loose asbestos fibres pose health risks, tightly bound asbestos found in extant siding or tile, such as at the Gulf of Georgia Cannery NHSC in Steveston, BC are not hazardous and should be retained where they contribute to the heritage character of the place. Broken or missing siding would need to be replaced with another material that matches its appearance as asbestos products are no longer manufactured.

Sod was a simple, inexpensive and accessible roofing material used widely throughout the North and shown here at Knut Lang's place in the Northwest Territories. It is both waterproof and insulating and would last for decades before needing to be replaced. Frequently, when it began to fail, canvas was used as a temporary cover until a new sod layer could be applied.

GENERAL GUIDELINES FOR PRESERVATION, REHABILITATION AND RESTORATION

	Recommended	Not Recommended
1	**Understanding** the properties and characteristics of miscellaneous materials and their finishes or coatings, such as the age and availability of replacements and the chemical make-up of the product.	
2	**Documenting** the properties, characteristics and condition of miscellaneous materials before undertaking an intervention; for example, the chemical composition of the material and the type of substrate to which it is applied.	Undertaking an intervention that affects miscellaneous materials, without first documenting their characteristics and condition.
3	**Protecting** and maintaining miscellaneous materials by protecting fragile elements and preventing exposure to damaging environmental conditions.	Failing to identify, evaluate and treat the causes of deterioration of miscellaneous materials, such as exposure to ultraviolet light, airborne pollution, and excessive moisture.
4	**Cleaning** miscellaneous materials using appropriate cleaning methods and products.	
5	**Retaining** or reapplying coatings that help protect miscellaneous materials from wear, moisture or ultraviolet light.	Removing appropriate coatings that protect surfaces. Ignoring the manufacturer's product information and application instructions when reapplying protective coatings.
6	**Ensuring** that new coatings are compatible with the material, its earlier treatments and its environment.	
7	**Retaining** sound and repairable miscellaneous materials that contribute to the heritage value of the historic place.	Replacing miscellaneous materials that can be repaired.
8	**Stabilizing** deteriorated miscellaneous materials by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated miscellaneous materials that could be stabilized or repaired.
9	**Repairing** miscellaneous materials by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods.	Replacing an entire element when repair and limited replacement of deteriorated or missing parts are appropriate.
10	**Replacing** in kind extensively deteriorated or missing parts of miscellaneous materials, based on documentary and physical evidence.	Replacing an entire element when limited replacement of deteriorated and missing parts is possible.

ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS

	Recommended	Not Recommended
11	**Repairing** miscellaneous materials by patching, piecing-in, consolidating, or otherwise reinforcing the material. Repair might include the limited replacement in kind, or replacement with an appropriate substitute material, of extensively deteriorated or missing materials, where there are surviving prototypes.	Replacing an entire material, when repair and limited replacement of deteriorated or missing parts is possible. Using a substitute material for replacement that neither conveys the same appearance, nor is physically or chemically incompatible with adjacent materials.
12	**Testing** repair methods before undertaking work when there are no established conservation methods.	
13	**Replacing** in kind irreparable miscellaneous materials, based on physical and documentary evidence. If using the same material is not technically or economically feasible, a compatible substitute material may be considered.	Removing miscellaneous materials and not replacing them, or replacing them with an inappropriate new material that does not convey the same appearance, or is physically or chemically incompatible with adjacent materials.
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS	
14	**Removing** hazardous materials, using the least-invasive abatement methods, and only after adequate testing has been conducted.	Removing or destroying character-defining materials by neglecting to conduct testing first.
	SUSTAINABILITY CONSIDERATIONS	
15	Salvaging character-defining miscellaneous materials that are no longer manufactured for reuse elsewhere in the building.	

ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS

	Recommended	Not Recommended
16	**Repairing**, stabilizing and conserving fragile miscellaneous materials from the restoration period, using well-tested consolidants, when appropriate. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing miscellaneous materials from the restoration period that could be stabilized and conserved.
17	**Replacing** in kind miscellaneous materials from the restoration period that are too deteriorated to repair based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing irreparable miscellaneous materials from the restoration period and not replacing them, or replacing them with inappropriate new materials.

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REFERENCES

GLOSSARY

Accessibility: *(accessibilité)* The degree to which an historic place is easy to access by as many people as possible, including people with disabilities.

Allée: *(allée)* A pathway or road between two rows of trees.

Ancillary structure: *(structure secondaire)* A structure, machine or component that plays a secondary or supporting role in the functions of a civil engineering, industrial or military work.

Archaeological object: *(objet archéologique)* An artifact, a sample or any material that is of archaeological interest.

Artisanal technology: *(technologie artisanale)* Technology that is based on tradition rather than the application of scientific knowledge.

Atrium: *(atrium)* An interior courtyard that is open to the weather; or a significant interior space, often skylighted.

Berm: *(talus)* A mound created to reduce noise, act as a screen, or protect a construction from flooding.

Bollard: *(bollard)* A thick post used for securing ropes or to limit access to an area.

Brise-soleil: *(brise-soleil)* A screen, usually louvered, placed on the outside of a building to shield windows from direct sunlight.

Canadian Register of Historic Places (CRHP): *(Répertoire canadien des lieux patrimoniaux)* The pan-Canadian list of historic places of local, provincial, territorial and national significance. The CRHP is administered by the Government of Canada, in collaboration with provincial and territorial governments.

Character-defining elements: *(éléments caractéristiques)* The materials, forms, location, spatial configurations, uses and cultural associations or meanings that contribute to the heritage value of an historic place, which must be retained in order to preserve its heritage value.

Conservation: *(conservation)* All actions or processes that are aimed at safeguarding the character-defining elements of a cultural resource so as to retain its heritage value and extend its physical life. This may involve "Preservation," "Rehabilitation," "Restoration," or a combination of these actions or processes.

Consolidant: *(consolidant)* Repair material that penetrates and strengthens a deteriorated element.

Cultural landscape: *(paysage culturel)* Any geographical area that has been modified, influenced, or given special cultural meaning by people.

- Designed cultural landscapes were intentionally created by human beings;
- Organically evolved cultural landscapes developed in response to social, economic, administrative or religious forces interacting with the natural environment. They fall into two sub-categories:
  - Relict landscapes in which an evolutionary process came to an end. Its significant distinguishing features are, however, still visible in material form.
  - Continuing landscapes in which the evolutionary process is still in progress. They exhibit significant material evidence of their evolution over time.
- Associative cultural landscapes are distinguished by the power of their spiritual, artistic or cultural associations, rather than their surviving material evidence.

Curtain wall: *(mur-rideau)* An exterior wall that is fastened to a frame and protects the building from the weather; it has no structural function, and supports only its own weight.

DEW line: *(ligne DEW)* The Distant Early Warning line was a system of radar stations in the far northern Arctic region of Canada. It was set up to detect potential invasions during the Cold War.

Dew point: *(point de rosée)* Temperature at which a parcel of air must be cooled in order to reach full saturation.

Diefenbunker: *(Diefenbunker)* A nuclear fallout shelter built secretely between 1959 and 1961 to protect Canadian government officials against a nuclear attack. Its name was inspired by Prime Minister John G. Diefenbaker who commissioned its construction. The Diefenbunker is a large underground complex containing offices, dormitories, radio transmitting facilities and decontamination chambers.

Empirical engineering: *(génie empirique)* Design or construction based on practical experience, observation, trial and error, or experimental data, rather than the application of scientific method, knowledge or theory.

Glacis: *(glacis)* A slope extending down from a fortification.

Herbaceous plants: *(plantes herbacées)* Plants with stems that are soft and not woody.

Heritage value: *(valeur patrimoniale)* The aesthetic, historic, scientific, cultural, social or spiritual importance or significance for past, present or future generations. The heritage value of an historic place is embodied in its character-defining materials, forms, location, spatial configurations, uses and cultural associations or meanings.

Historic place: *(lieu patrimonial)* A structure, building, group of buildings, district, landscape, archaeological site or other place in Canada that has been formally recognized for its heritage value.

Hoodmould: *(larmier)* A projecting molding over the head of an arch over a window or door opening, to throw off the rain.

In kind: *(à l'identique)* with the same form, material, and detailing as the existing.

Inspecting: *(inspecter)* Carrying out a survey or review of the condition of an historic place and its elements to determine if they are functioning properly; to identify signs of weakness, deterioration or hazardous conditions; and to identify necessary repairs. Inspections should be carried out on a regular basis as part of a maintenance plan.

In situ: *(sur place)* This term means 'in place' and as used in this document, it refers to the action of protecting, maintaining and/or stabilizing the existing materials in the location where they were found.

Interpretive Construct: *(éléments interprétatifs)* construction designed to support or present the interpretation of an archaeological site and its character-defining elements, and to help communicate its heritage value. Examples of interpretive constructs include plaques and panels.

Intervention: *(intervention)* Any action, other than demolition or destruction, that results in a physical change to an element of a historic place.

Intumescent paint: *(peinture intumescente)* A type of paint that when heated swells to form a fire-protective coating.

Inukshuk: *(inukshuk)* An Inuit stone cairn having the rough outline of a human figure.

Joist sistering: *(doublage des poutrelles)* Reinforcement or repair of joists by doubling.

Maintenance: *(entretien)* Routine, cyclical, non-destructive actions necessary to slow the deterioration of an 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.

Minimal intervention: *(intervention minimale)* The approach that allows functional goals to be met with the least physical intervention.

Mock-up: *(maquette)* A full-sized model of a structure or intervention used for demonstration, study or testing.

Monitoring: *(surveillance)* The systematic and regular inspection or measurement of the condition of the materials and elements of an historic place to determine their behavior, performance, and rate of deterioration over time.

Mothballing: *(mise sous cocon)* To temporarily close up a building or other structure to protect it from the weather as well as to secure it from vandalism.

Muntin: *(meneau)* A strip of wood or metal separating and holding panes of glass in a window or a vertical framing member set between two rails in a door.

Non-destructive testing: *(essai non-destructif)* Testing that does not result in the permanent deformation or damage of the element being tested.

Past performance: *(rendement antérieur)* The demonstration of a structure's ability to satisfactorily resist loads based on its history. Buildings and structures built in accordance with good building practices, prior to the development of building codes, may be considered to have proven their capacity to resist loads based on the fact that they have already been subjected to, and successfully resisted, these loads in the past.

Pergola: *(pergola)* An arbor or a passageway of columns supporting a roof of trelliswork on which climbing plants are trained to grow.

Piecing in: *(rapiéçage)* To repair or add to by inserting a piece.

Preservation: *(préservation)* 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.

Prototype: *(prototype)* An original model on which something is patterned.

Rampart: (rempart) A wide bank of earth, usually with a parapet on top, built around a fort to help defend it.

Rehabilitation: *(réhabilitation)* The action or process of making possible a continuing or compatible contemporary use of a historic place or an individual component, while protecting its heritage value.

Repointing: *(rejointoiement)* To repair masonry joints with mortar.

Restoration: *(restauration)* 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.

Spalled: *(effrité)* Breaking up of a masonry surface into chips or fragments.

Spandrel (panel): *(tympan/panneau d'allège)* Panel of wall between adjacent columns or pilasters; in multi-storey buildings, a panel between the top of one window and the sill of the window in the storey above.

Splicing: *(jointer)* To join two pieces by overlapping and binding at the ends.

Statement of Significance (SoS): *(énoncé d'importance)* A statement that identifies the description, heritage value, and character-defining elements of an historic place. A Statement of Significance is required in order for an historic place to be listed on the *Canadian Register of Historic Places*.

Statuary: *(statues)* A collection of statues

Stratigraphy: *(stratigraphie)* The composition and arrangement of geographic strata or layers of earth in a particular area.

Stressors: *(facteurs de stress)* Elements or events that could potentially disturb or put pressure on the archaeological site's character-defining elements and/or heritage value.

Sustainability: *(durabilité)* A group of objectives (economic, social and environmental) that must be coordinated and addressed to ensure the long term viability of communities and the planet.

Swale: *(baissière)* A low, usually wet piece of land.

Terrace: *(terrasse)* A flat level of land, often a component of a series of step-like flat levels on a slope.

Thermal bridge: *(pont thermique)* An element made of a material that is a poor heat insulator and that is placed in an assembly (between other materials, or between interior and exterior).

Truss: *(ferme)* A structural framework, made of either timber or metal, that is composed of individual members fastened together in a triangular arrangement.

Understorey: *(sous-étage)* Underlying layer of vegetation, especially the plants that grow beneath a forest's canopy.

Vernacular: *(vernaculaire)* Indigenous, made locally by inhabitants; made using local materials and traditional methods of construction and ornament; specific to a region or location.

Widow's walk: *(promenade des veuves ou plate-forme d'observation)* A railed platform atop a roof, typically on a coastal house, that was used to look out for returning ships.

Windbreak: *(brise-vent)* A row of tress or bushes planted to provide protection from the wind and, often, to prevent soil erosion.

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Acronyms of Heritage Organizations (in alphabetical order)

APTI: Association for Preservation Technology International
www.apti.org/

AQPI : Association québécoise pour le patrimoine industriel
www.aqpi.qc.ca/actions.html

DOCOMOMO: international committee for documentation and conservation of buildings, sites and neighbourhoods of the modern movement
www.docomomo.com/

EH: English Heritage (UK)
www.english-heritage.org.uk/

FHBRO: Federal Heritage Buildings Review Office
www.pc.gc.ca/progs/beefp-fhbro/index_e.asp

HCF: Heritage Canada Foundation
www.heritagecanada.org/eng/main.html

HELM: Historic Environment Local Management (UK)
www.helm.org.uk/

ICOMOS: International Council on Monuments and Sites
www.icomos.org/

ICOMOS CANADA
http://canada.icomos.org/home-E.html

ISCARSAH: International Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage
http://iscarsah.icomos.org/

NPS: National Parks Service (USA)
www.nps.gov/index.htm

PCA: Parks Canada Agency
www.pc.gc.ca/eng/index.aspx

SIA: Society for Industrial Archaeology
www.siahq.org/

TICCIH: The International Committee for the Conservation of the Industrial Heritage
www.mnactec.cat/ticcih/

UNESCO - WHC: United Nations Educational, Scientific and Cultural Organization - World Heritage Centre
http://whc.unesco.org/

Provincial and Territorial Heritage Branches (November 2010)

Alberta, Culture and Community Spirit – Historic Resources Management
http://culture.alberta.ca/heritage/resourcemanagement/default.aspx

British Columbia, Ministry of Tourism, Trade and Investment – Heritage Branch
www.tca.gov.bc.ca/heritage/index.htm

Manitoba, Culture Heritage and Tourism – Historic Resources Branch
www.gov.mb.ca/chc/hrb/index.html

New Brunswick, Wellness, Culture and Sport – Heritage Branch
www.gnb.ca/0131/heritage-e.asp

Newfoundland and Labrador, Tourism, Culture and Recreation – Heritage
www.tcr.gov.nl.ca/tcr/heritage/index.html

Nova Scotia, Tourism, Culture and Heritage
www.gov.ns.ca/Tch/heritage_mandate.asp

Northwest Territories, Education, Culture and Employment – Culture and Heritage
www.pwnhc.ca

Nunavut, Culture, Language, Elders and Youth
www.gov.nu.ca/cley/

Ontario, Ministry of Tourism and Culture – Heritage
www.culture.gov.on.ca/english/heritage/act.htm

Prince Edward Island, Tourism and Culture – Culture, Heritage and Libraries
www.gov.pe.ca/go/heritageplaces

Québec, Culture, Communications et Condition féminine – Patrimoine et muséologie
www.mcccf.gouv.qc.ca/index.php?id=24

Saskatchewan, Tourism, Parks, Culture and Sport – Heritage Conservation Branch
www.tpcs.gov.sk.ca/heritage

Yukon, Tourism and Culture – Historic Sites + Heritage Resources
www.yukonheritage.com/

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Rideau Canal, Jones Falls	Parks Canada / Simon Lunn	2005

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