CANADA
PROVINCE OF QUEBEC
CITY OF WESTMOUNT

BY-LAW 15XX

At a regular sitting of the Municipal Council of the City of Westmount, duly called and held at City Hall on _____, at which were present:

The Mayor: Peter F. Trent, Chairman

Councillors: Philip A. Cutler
Rosalind Davis
Victor M. Drury
Nicole Forbes
Cynthia Lulham
Patrick Martin
Theodora Samiotis
Christina Smith

WHEREAS Notice of Motion of the presentation of this By-law was given at the regular sitting of the Municipal Council of the City of Westmount, duly called and held on December 5, 2016;

WHEREAS a special notice was sent to each owner of the recognized heritage immovable;

WHEREAS the Local Heritage Council duly called and held, on January 25, 2017 a public consultation on the draft by-law;

It is ordained and enacted by By-law 15XX entitled "*BY-LAW TO RECOGNIZE THE GLEN VIADUCT AS A HERITAGE IMMOVABLE*", as follows:

CHAPTER I – PURPOSE OF THE RECOGNITION

1. The Glen Viaduct, as indicated in the technical description reproduced in **Schedule I** to form an integral part of this by-law, is recognized as a heritage immovable.

CHAPTER II – REASONS FOR THE RECOGNITION

2. The City recognizes the Glen Viaduct as a heritage immovable for the following reasons:

1° Historical value:

a. The Viaduct as part of a national railway system.

The Viaduct is a railway structure belonging to Canadian Pacific. The railway system, with its transcontinental routes and oceanic connections, was instrumental in the country's development. As a railway passage, the Viaduct played a role in the economic dominance of the Island of Montreal across Canada at the turn of the 20th century. This

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structure was also located within a major railway complex, which includes the Glen Yard and the Westmount Train Station.

b. The Viaduct as the first major civil works structure in Westmount.

The stone arch was built in 1892 to span the Glen valley and stream. This structure was erected to replace the wooden bridge, which had been in use since 1889. The Town of Côte St. Antoine, which would become the City of Westmount, bore the construction costs, in exchange for the right to plot out Glen Road and to channel the Glen stream under the road. This ambitious project also shows the innovative overall vision of the municipality at the turn of the 20th century.

c. The toponym “Glen” in reference to the old Glen stream.

The term “Glen” referred to the old Glen stream (“The Glen”), which, in the past, extended to the St. Pierre River. This name was likely assigned in the early 19th century by the Scottish who settled in this area and originated from the Scottish Gaelic word *glenn* or *gleann*, which means “mountain valley […] narrow, secluded valley.” This name relates to various locations, including the Glen Viaduct (also known as “Glen Arch”) and Glen Road.

2° Technological value:

a. A Viaduct with proven durability.

The stability of this structure lies in the ingenuity of its construction and stems from the rigorous requirements developed by P. Alex Peterson, the Canadian Pacific Railway’s Chief Engineer, and from the work supervised by the Town of Côte St. Antoine. The Viaduct consists of a semi-circular barrel vault. This construction technique, which has been used for millenniums, holds an exemplary structural quality. The structure mass and load capacity have enabled it to withstand the weight of railway equipment until present. The enlargement of the arch in 1918-1919, to triple the rail lines, was designed according to the same engineering design.

b. The Viaduct as part of a network of civil works structures.

The Viaduct is part of a set of civil works projects carried out in the Glen area during the same period. These projects included draining and channelling the Glen stream with a hydraulic routing system, as well as building a road (Glen Road).

3° Architectural value:

a. A railway Viaduct emblematic of the Richardsonian Romanesque Revival architecture style.

The Viaduct was constructed in the Richardsonian Romanesque style, an American architectural style prevalent in the last quarter of the 19th century. This Viaduct is characterized by stylistic elements drawn from 10th- and 12th-century Romanesque architecture as well as the picturesque effects of the late Victorian era (use of rusticated masonry, recessed entrances, etc.) This remarkable engineering work was built according to the Canadian Pacific Railway’s plans.

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b. A Viaduct that respects the tradition of railway viaducts in North America.

Between 1885 and 1912, the Canadian Pacific favoured the Richardsonian Romanesque style. The stone arch, built in 1892, was also designed in an era in which limestone rock was used for railway viaducts in North America. This same material was used when the arch was enlarged in 1918-1919, despite the building materials in fashion at the time. From a stylistic perspective, these elements contribute to the picturesque character of the Viaduct and to the integrity of its composition.

c. The materials which contribute to the physical integrity of the Viaduct.

The Viaduct is made of grey Trenton limestone, which came from the old quarries in Pointe-Claire. The enlargement of the arch in 1918-1919 was carried out while respecting the original materials and with similar finishing (limestone). However, the stone details reveal that the materials were treated differently.

4° Landscape value:

a. The Viaduct as a picturesque site.

The Viaduct is incorporated into a landscape corridor radiating north, starting at the Westmount southern city limit, up to Westmount Park. This vegetative and ecological cover has a pastoral character with its abundant green spaces and its stone Romanesque Revival structure. The site's landscaping was designed in the picturesque spirit of the 19th century, respecting natural watercourses, as well as ravines and wooded areas. Nowadays, this site constitutes a unique landscape on the Island of Montreal, as it is the only stone viaduct within a landscaped area in the heart of an old valley.

b. A Viaduct that provides remarkable views and a landscape experience.

Remarkable views are created by the Viaduct and the significant change in grade. The route's curvature, the vegetative landscape, and the sunken effect gradually unveil this century-old arch. From inside the tunnel, the play of light highlights the monumentality of the structure. Along the route, the old valley and its impressive vegetative cover offer users a discovery-filled experience.

5° Symbolic value:

a. The Viaduct as an important visual landmark on a municipal scale.

A scenic view, formed by the stone arch and its vegetative corridor, represents an important visual landmark as it marks the gateway to the City of Westmount. For centuries, Glen Road has also been a passageway and transition point between two areas, known today as Westmount and the Southwest Borough.

b. The Viaduct and its commemorative monument.

Westmount's local and community organizations have led sustained mobilization efforts aimed at protecting the Viaduct. A commemorative stone, located in the vicinity of the structure, was inaugurated on November 27, 2012, in honour of the 120th anniversary of the Viaduct's construction.

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CHAPTER III – EFFECTS OF THE RECOGNITION

3. The owners of the recognized heritage immovable must take the necessary measures to preserve the heritage value of the property.

4. A person who in any way alters, restores, repairs or changes the recognized heritage immovable must comply with the provisions of Chapter V, as well as the conditions that may be set by the Municipal Council pertaining to the conservation of the heritage value of the immovable, in addition to the municipal by-laws.

In addition, no person may perform any of the acts mentioned in the first paragraph without giving at least 45 days' notice to the municipality. The application for the permit or the certificate stands in lieu of notice.

Before imposing conditions, the Municipal Council must obtain the opinion of the Local Heritage Council.

A copy of the resolution setting out the conditions, if applicable, must accompany the permit or the certificate otherwise issued that authorizes the act involved.

5. No person may, without the authorization of the Municipal Council, demolish all or part of the recognized heritage immovable, move them or use them as a backing for a construction.

Before ruling on an application for authorization, the Municipal Council must obtain the opinion of the Local Heritage Council.

A person performing an act described in the first paragraph must comply with any conditions the Municipal Council sets out in its authorization.

The authorization of the Municipal Council is withdrawn if the project described in an application submitted under this section is not begun within one year after the authorization is given or if the project is interrupted for more than one year.

6. On the request of a person whose application for an authorization has been refused, the Municipal Council must provide a substantiated notice of the refusal and a copy of the opinion of the Local Heritage Council.

7. No provision of the by-law may be interpreted as exempting any persons from the application of a federal or provincial law, or any other municipal by-law.

8. The provisions of this by-law shall not apply to the City of Westmount, its agents, servants or employees or to contractors whose services have been retained by the City.

Moreover, no provision of this by-law shall be interpreted as impeding the normal course of operations of the City of Westmount.

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CHAPTER IV – PROCEDURE FOR AN APPLICATION FOR AUTHORIZATION

9. The procedure for submitting an application for authorization is as follows:

i. The application for authorization shall be made by applying for a permit or certificate following the procedure established by the Urban Planning Department.
ii. The application for authorization is sent to the Municipal Council, who mandates the Local Heritage Council for examination of the file;
iii. The application for authorization is sent to the secretary of the Local Heritage Council, who will arrange a meeting for the Local Heritage Council for examination of the file;
iv. Following the examination of the application, the Local Heritage Council sends its opinion to the Municipal Council;
v. The Municipal Council makes a decision regarding the application for authorization;
vi. A copy of the resolution authorizing the work and setting out the conditions must, if applicable, accompany any permit or certificate issued.

10. The fees incurred for an application for authorization include:

i. The fees for an application for plan review as set forth in the by-law concerning tariffs; and
ii. If applicable, the fees depending on the proposed works as set forth in the by-law concerning tariffs and the by-law concerning specific construction, alteration or occupancy proposals for an immovable.

11. The fees incurred for an application for authorization shall be paid upon the opening of a file and are non-refundable.

CHAPTER V – CONDITIONS FOR CONSERVATION

12. Any work affecting the recognized heritage immovable shall be authorized if it respects the municipal by-laws in force, any conservation plan that the Municipal Council may adopt, as well as guidelines 4.1 and 4.4 included in the *Standards and Guidelines for the Conservation of Historic Places in Canada* which are reproduced in **Schedule II** to form an integral part of this by-law.

The corresponding guidelines are as follows:

i. 4.1 Guidelines for Cultural Landscapes, including Heritage Districts;
ii. 4.4 Guidelines for Engineering Works, including Civil, Industrial, and Military Works.

13. Any work carried out on the recognized heritage immovable must ensure the conservation of the elements that characterize it, such as:

BUILT FEATURES

1° Form (barrel vault with circular arc segment);

2° Construction method;

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3° Structural composition, including retaining walls;

4° Nature and finish of materials;

5° Dimensions;

6° Massing;

7° Function as a “gateway”.

LANDSCAPE FEATURES

1° Landforms (topography);

2° Vegetative cover, including among others the presence of mature trees;

3° Ecosystem of the vegetative mass;

4° Viewscapes from different vantage points of the Viaduct;

5° The layout of Glen Road;

6° The landscaping layout.

CHAPTER VI – PENAL PROVISIONS

14. Every person who contravenes provisions 3, 4, or 5 of this by-law commits an infraction and is liable to a fine:

i. Of at least $2 000 up to a maximum of $190 000 in the case of a natural person; or
ii. Of at least $6 000 up to a maximum of $1 140 000 in the case of a legal person.

For a second offence, the amounts of the fines are doubled and for a subsequent offence, they are tripled.

CHAPTER VII – COMING INTO FORCE

15. This by-law comes into force on the date the special notice is notified to the owners of the recognized heritage immovable.

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ANNEXE I / SCHEDULE I

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DESCRIPTION TECHNIQUE

<u>Partie du lot 4 673 861</u> (parcelle 1)

Une partie du lot **QUATRE MILLIONS SIX CENT SOIXANTE-TREIZE MILLE HUIT CENT SOIXANTE ET UN (4 673 861 Ptie)** du cadastre du Québec, circonscription foncière de Montréal, dans la municipalité de la Ville de Westmount, de figure irrégulière et plus explicitement décrite comme suit: Le point de rattachement de ladite parcelle étant le coin Nord dudit lot 4 673 861 point de départ de la parcelle à décrire; de là, et successivement bornée vers le Nord-Est par une partie du lot 4 145 283 composant le chemin Glen (parcelle 4), mesurant vingt et un mètres et cinquante-huit centièmes (21,58 m) dans une direction de 140°31'13'' le long de cette limite; bornée vers Nord-Est par une partie du lot 4 145 283 composant le chemin Glen (parcelle 4), mesurant quarante-quatre centièmes de mètre (0,44 m) dans une direction de 140°14'40'' le long de cette limite; bornée vers le Sud par une partie du lot 4 673 861, mesurant cinquante-trois mètres et quarante centièmes (53,40 m) dans une direction de 255°34'05'' le long de cette limite; bornée vers le Nord-Ouest par une partie du lot 4 145 364 (compagnie de chemin de Fer Canadien Pacifique) (parcelle 2), mesurant quarante-huit mètres et trente-huit centièmes (48,38 m) dans une direction de 51°12'39'' le long de cette limite jusqu'au point de départ.

Contenant en superficie cinq cent trente-deux mètres carrés et huit dixièmes (532,8 m^2).

<u>Partie du lot 4 145 364, (compagnie de chemin de Fer Canadien Pacifique)</u> (parcelle 2)

Une partie du lot **QUATRE MILLIONS CENT QUARANTE-CINQ MILLE TROIS CENT SOIXANTE-QUATRE (4 145 364 Ptie)** du cadastre du Québec, circonscription foncière de Montréal, dans la municipalité de la Ville de Westmount, de figure irrégulière et plus explicitement décrite comme suit: Le point de rattachement de ladite parcelle étant le coin Est dudit lot 4 145 364 point de départ de la parcelle à décrire; de là, et successivement bornée vers le Sud-Est par une partie du lot 4 673 861 (parcelle 1), mesurant quarante-huit mètres et trente-huit centièmes (48,38 m) dans une direction de 231°12'39'' le long de cette limite; bornée vers Sud-Ouest par une partie du lot 4 145 364 (Compagnie de chemin de Fer Canadien Pacifique), mesurant vingt-cinq mètres et cinquante centièmes (25,50 m) dans une direction de 321°05'55'' le long de cette limite; bornée vers le Nord-Ouest par une partie du lot 4 142 487 (parcelle 3), mesurant quarante-huit mètres et treize centièmes (48,13 m) dans une direction de 51°05'55'' le long de cette limite; bornée vers le Sud-Ouest par une partie du lot 4 142 487 (parcelle 3), mesurant quinze mètres et quatre-vingt-douze centièmes (15,92 m) dans une direction de 320°43'00'' le long de cette limite; bornée vers le Nord-Ouest par une partie du lot 4 145 283 composant le chemin Glen, mesurant sept mètres et sept centièmes (7,07 m) dans une direction de 25°50'12'' le long de cette limite; bornée vers le Nord-Est par une partie du lot 4 145 283 composant le chemin Glen (parcelle 4), mesurant trente-six mètres et cinquante-trois centièmes (36,53 m) le long d'un arc de cercle ayant un rayon extérieur de cent un mètres et soixante-dix-sept centièmes (101,77 m) le long de cette limite; bornée vers le Nord-Est par une partie du lot 4 145 283 composant le chemin Glen (parcelle 4), mesurant huit mètres et soixante-neuf centièmes (8,69 m) dans une direction de 141°33'56'' jusqu'au point de départ.

Contenant en superficie mille trois cent deux mètres carrés et cinq dixièmes (1 302,5 m^2).

<u>Partie du lot 4 142 487</u> (parcelle 3)

Une partie du lot **QUATRE MILLIONS CENT QUARANTE-DEUX MILLE QUATRE CENT QUATRE-VINGT-SEPT (4 142 487 Ptie)** du cadastre du Québec, circonscription foncière de Montréal, dans la municipalité de la Ville de Westmount, de figure irrégulière et plus explicitement décrite comme suit: Le point de rattachement de ladite parcelle étant le coin Est dudit lot 4 142 487 point de départ de la parcelle à décrire; de là, et successivement bornée vers le Sud-Est par une partie du lot 4 145 364 (compagnie de chemin de Fer Canadien Pacifique) (parcelle 2), mesurant quarante-huit mètres et treize centièmes (48,13 m) dans une direction de 231°05'55'' le long de cette limite; bornée vers Nord-Ouest par une partie du lot 4 142 487, mesurant cinquante mètres et soixante centièmes (50,60 m) dans une direction de 32°45'35'' le long de cette limite; bornée vers le Nord-Est par une partie du lot 4 145 364 (parcelle 2), mesurant quinze mètres et quatre-vingt-douze centièmes (15,92 m) dans une direction de 140°43'00'' le long de cette limite jusqu'au point de départ.

Contenant en superficie trois cent quatre-vingt-trois mètres carrés et un dixième (383,1 m^2).

<u>Partie du lot 4 145 283 (chemin Glen)</u> (parcelle 4)

Une partie du lot **QUATRE MILLIONS CENT QUARANTE-CINQ MILLE DEUX CENT QUATRE-VINGT-TROIS (4 145 283 Ptie)** du cadastre du Québec, circonscription foncière de Montréal, dans la municipalité de la Ville de Westmount, de figure irrégulière et plus explicitement décrite comme

suit: Le point de rattachement de ladite parcelle étant le coin Sud du lot 4 145 191 point de départ de la parcelle à décrire; de là, et successivement bornée vers le Nord-Est par le lot 5 064 110, mesurant neuf mètres et treize centièmes (9,13 m) dans une direction de 140°27'02'' le long de cette limite; bornée vers Sud-Est par une partie du lot 4 145 283 composant le chemin Glen, mesurant vingt mètres et trente-trois centièmes (20,33 m) dans une direction de 235°51'58'' le long de cette limite; bornée vers le Sud-Ouest par une partie du lot 4 673 861 (parcelle 1), mesurant quarante-quatre centièmes de mètre (0,44 m) dans une direction de 320°14'40'' le long de cette limite; bornée vers le Sud-Ouest par une partie du lot 4 673 861 (parcelle 1), mesurant vingt et un mètres et cinquante-huit centièmes (21,58 m) dans une direction de 320°31'13'' le long de cette limite; bornée vers le Sud-Ouest par une partie du lot 4 145 364 (compagnie de chemin de Fer Canadien Pacifique) (parcelle 2), mesurant huit mètres et soixante-neuf centièmes (8,69 m) dans une direction de 321°33'56'' le long de cette limite; bornée vers Sud-Ouest par une partie du lot 4 145 364 (compagnie de chemin de Fer Canadien Pacifique) (parcelle 2), mesurant trente-six mètres et cinquante-trois centièmes (36,53 m) le long d'un arc de cercle ayant un rayon intérieur de cent un mètres et soixante-dix-sept centièmes (101,77 m) le long de cette limite; bornée vers le Nord-Ouest par une partie du lot 4 145 283 composant le chemin Glen, mesurant dix-sept mètres et quatre-vingt-onze centièmes (17,91 m) dans une direction de 52°07'30'' le long de cette limite; bornée l'Est par une partie du lot 4 145 191 (compagnie de chemin de Fer Canadien Pacifique) (parcelle 5), mesurant douze mètres et trente-neuf centièmes (12,39 m) le long d'un arc de cercle ayant un rayon extérieur de quatre-vingt-cinq mètres et un centième (85,01 m) le long de cette limite; bornée vers le Nord-Est par une partie du lot 4 145 191 (compagnie de chemin de Fer Canadien Pacifique) (parcelle 5), mesurant

quarante-sept mètres et treize centièmes (47,13 m) dans une direction de 140°25'25'' le long de cette limite jusqu'au point de départ.

Contenant en superficie mille trois cent deux mètres carrés et trois dixièmes (1 302,3 m^2).

<u>Partie du lot 4 145 191 (compagnie de chemin de Fer Canadien Pacifique)</u> (parcelle 5)

Une partie du lot **QUATRE MILLIONS CENT QUARANTE-CINQ MILLE CENT QUATRE-VINGT-ONZE (4 145 191 Ptie)** du cadastre du Québec, circonscription foncière de Montréal, dans la municipalité de la Ville de Westmount, de figure irrégulière et plus explicitement décrite comme suit: Le point de rattachement de ladite parcelle étant le coin Sud du lot 4 145 191 point de départ de la parcelle à décrire; de là, et successivement bornée vers le Sud-Ouest par une partie du lot 4 145 283 composant le chemin Glen (parcelle 4), mesurant quarante-sept mètres et treize centièmes (47,13 m) dans une direction de 320°25'25'' le long de cette limite; bornée vers l'Ouest par une partie du lot 4 145 283 composant le chemin Glen (parcelle 4) et par une autre partie du lot 4 145 283 composant le chemin Glen, mesurant vingt-cinq mètres et soixante-dix centièmes (25,70 m) le long d'un arc de cercle ayant un rayon intérieur de quatre-vingt-cinq mètres et un centième (85,01 m) le long de cette limite; bornée vers le Nord par le lot 4 144 504, mesurant quarante-trois mètres et cinquante et un centièmes (43,51 m) dans une direction de 91°01'01'' le long de cette limite; bornée vers le Nord-Est par une partie du lot 4 145 191 (compagnie de chemin de Fer Canadien Pacifique), mesurant vingt-cinq mètres et dix-huit centièmes (25,18 m) dans une direction de 141°10'40'' le long de cette limite; bornée vers le Sud-Est par le lot 5 064 110, mesurant quarante-six mètres et cinquante-quatre centièmes

(46,54 m) dans une direction de 209°06'57'' le long de cette limite jusqu'au point de départ.

Contenant en superficie deux mille cent vingt-quatre mètres carrés et six dixièmes (2 124,6 m^2).

Les dimensions sont en mètres (SI).

Les directions indiquées dans ce document sont des gisements en référence au système SCOPQ, (fuseau 8), NAD83.

Les parties des lots 4 673 861, 4 145 364, 4 142 487, 4 145 283 et 4 145 191 ci-haut décrites sont sujettes à une vérification notariale des titres et des servitudes.

Le tout est tel qu'indiqué sur la copie ci-jointe du plan **numéro M 27925**, **minute 25077**, **référence 2016-11-17**, en date du 22 décembre 2016 et préparé par l'arpenteur-géomètre soussigné.

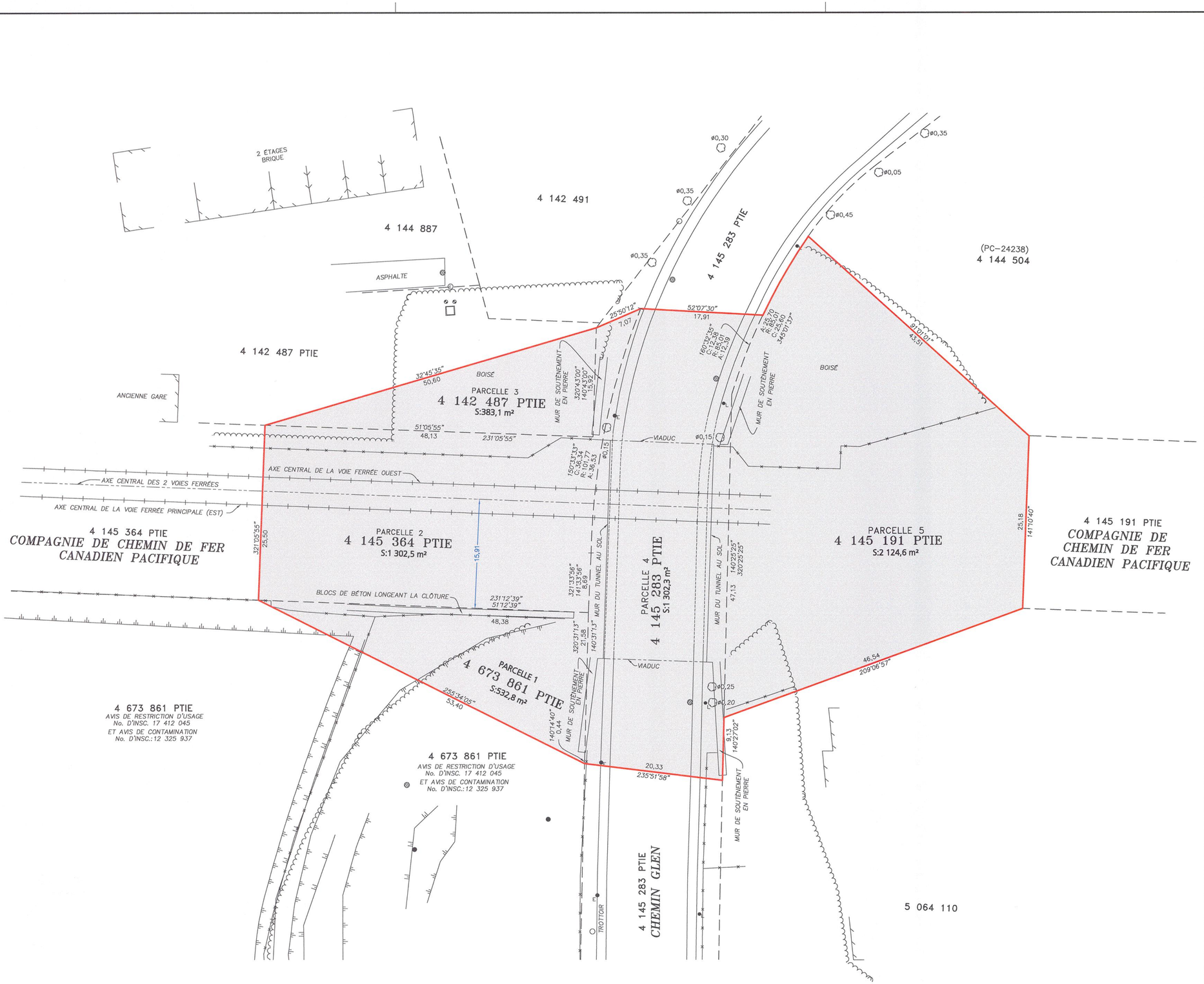
Montréal, le 22 décembre 2016.

JACQUES GOUDREAULT
arpenteur-géomètre
3285, boul. Cavendish, bureau 300
Montréal (Québec) H4B 2L9
Tél.: (514) 489-9708

CONFORME À L'ORIGINAL

Le

_____
arpenteur-géomètre



LÉGENDE

- REGARD ÉLECTRIQUE
- REGARD
- PUISARD
- POTEAU
- LAMPADAIRE
- ENSEIGNE
- PUITS D'OBSERVATION
- ARBRE
- LIMITE DE BOISÉ
- HAUT DE TALUS
- BAS DE TALUS
- LIMITE DE L'EMPLACEMENT
- LIMITE DE LOT BORNANT
- CLÔTURE
- VOIE FERRÉE

NOTES

- AUCUNE SERVITUDE N'EST INDIQUÉE SUR CE PLAN.
- CERTAINS DÉTAILS EXISTANTS POURRAIENT NE PAS APPARAÎTRE SUR CE PLAN À CAUSE DES CONDITIONS D'ENNEIGEMENT À LA DATE DU RELEVÉ.
- LES LIMITES DE PROPRIÉTÉ MONTRÉES SUR CE PLAN SONT APPROXIMATIVES ET SONT SELON LA RÉNOVATION CADASTRALE SONT SUJETTES À UN ARPENTAGE TERRAIN DE CONTRÔLE.

- LES MESURES INDIQUÉES SUR CE PLAN SONT EN MÈTRES (SI).
- LES DIRECTIONS INDIQUÉES SUR CE PLAN SONT DES GISEMENTS EN RÉFÉRENCE AU SYSTÈME SCOPQ (FUSEAU 8, MÉRIDIEN CENTRAL 73°30') NAD83.
- SUJET À UNE VÉRIFICATION NOTARIALE DES TITRES ET DES SERVITUDES.

PROTECTION DU VIADUC GLEN

ARPENTEURS-GÉOMÈTRES
ARSENAULT LEMAY
t. 514 489-9708
f. 514 489-5261
arsenaultlemay.ca
3285, boul. Cavendish, bureau 300
Montréal (Québec) H4B 2L9

PLAN ACCOMPAGNANT
UNE
DESCRIPTION TECHNIQUE

préparé par
JACQUES GOUDREAULT A.G.
copie conforme à l'original
date .....
A.G.

lot(s)	VOIR PLAN		
cadastre	DU QUÉBEC		
circ. fonc.	MONTRÉAL		
municipalité	VILLE DE WESTMOUNT		
échelle	1 : 300	minute	25077
Travail exécuté sur le terrain le	NOVEMBRE 2016	dossier	2016-11-17
MONTRÉAL,	LE 22 DÉCEMBRE 2016	plan	M 27925

1611-17-005.DWG

ANNEXE II / SCHEDULE II

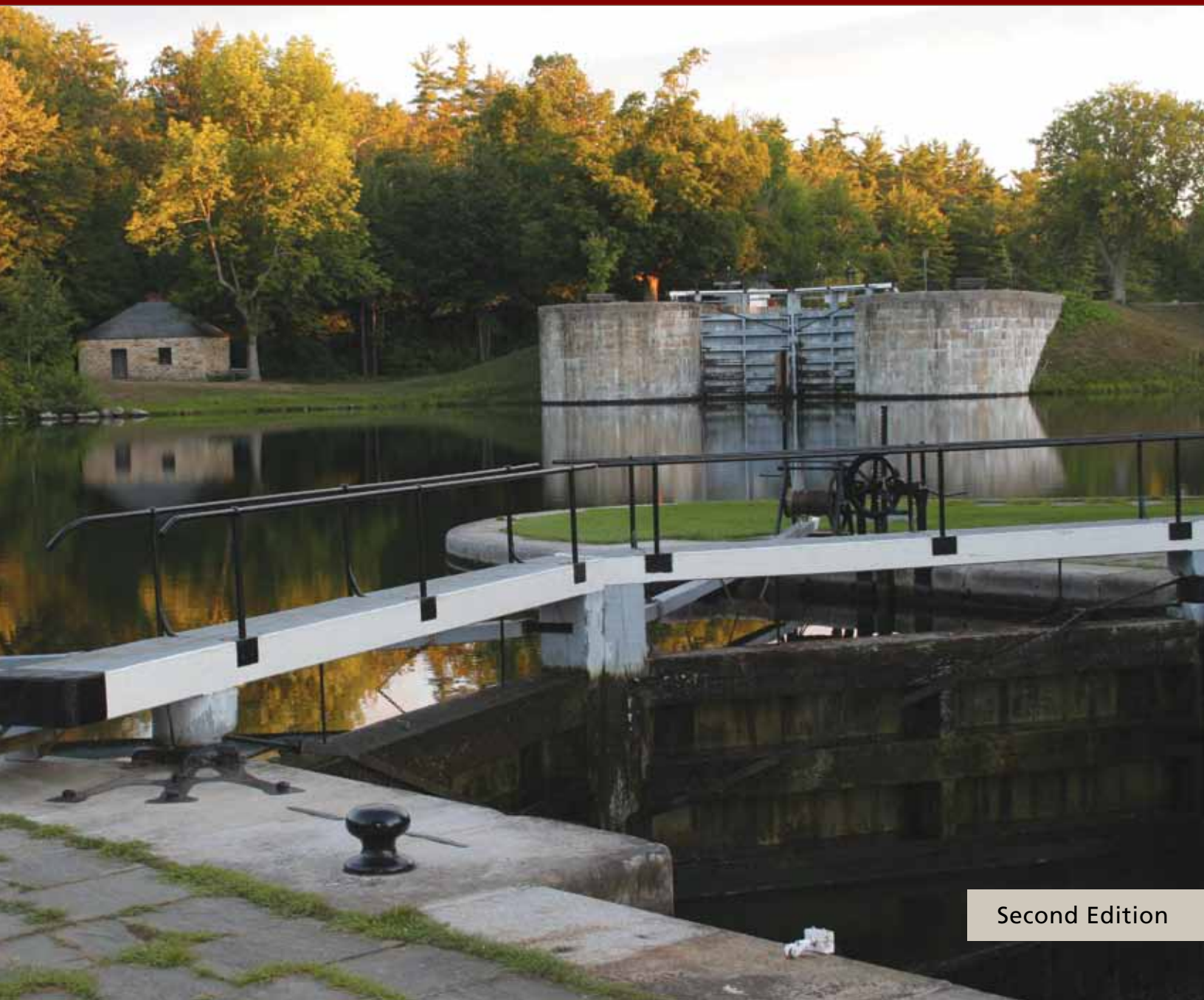
PROJET_DRAFT

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

STANDARDS AND GUIDELINES

FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA

A Federal, Provincial and Territorial Collaboration

Second Edition

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.

4.4

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.

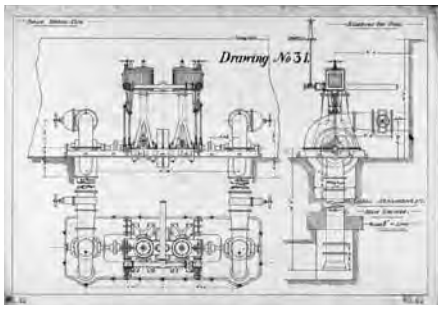
Constructed elements offer a physical record of the work; its purpose, operation and evolution; the engineering innovation and design it embodies; and its impact on the environment. Their form, scale, massing, materials and construction type can all have heritage value, because they illustrate the purpose, 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.

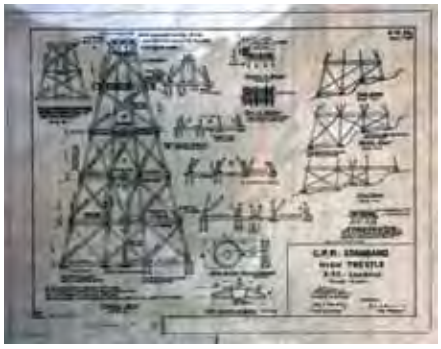
The functional arrangement of the work can often be as important and valuable an aspect of the engineering work as the design of its constructed elements. For example, the routing of the Rideau Canal and the locations and interrelationships of its dams, weirs, lockstations and blockhouses are all character-defining 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.

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