

# Standards and Guidelines for Ontario's Heritage Bridges

## Managing Ontario's Industrial Heritage

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### Introduction

The Industrial Revolution profoundly altered the world's landscapes. It provided humans with previously unimaginable means to extract raw materials and minerals from the earth, and conduct agriculture at a previously inconceivable scale. The grand achievements of this period are a testament to the creativity and engineering genius of humankind.

Industrial sites, whether active or inactive, are reminders of the exploits of the individuals who designed them, built them, and laboured there. They act as physical reminders of technological milestones in history, and represent the hopes of one generation for the improvement of the lives of future generations

Since the 1970s there has been an increased awareness of the value of industrial history in understanding cultural heritage, and as a result the discipline of industrial archaeology has evolved. This movement celebrates workplace artifacts that hold as much meaning as domestic and religious artifacts. It aims to "raise the awareness of the importance of industrial history in understanding heritage" (Falser & Yang, 2001).

### Research Question & Definitions

This report is structured in an attempt to explore the following research question: What are the unique challenges of ensuring the conservation of industrial heritage when the site or artifact in question is still functioning in its intended capacity?

While not intended to provide any conclusive answers to this question, it furthers policy-related discussion that is occurring at the international, national, and provincial levels. The case study of the Ontario Heritage Bridges program will be used to examine how high level policy directives are being translated to practical and useful management plans for Ontario's industrial heritage resources. Ultimately, this paper seeks to explain what

international industrial heritage management policy looks like when the proverbial rubber hits the road.

For the purpose of this report, industrial heritage is defined according to the Final Draft Joint ICOMOS - TICCIH Charter on *The Principles for the Conservation of Industrial Heritage Sites, Structures, Areas, and Landscapes*, as "site, structures, complexes, areas and landscapes as well as the related machinery, objects or documents that:

- Provide evidence of past or ongoing industrial processes: Processes of production, the extraction of raw materials, their transformation into goods, and the related energy and transport infrastructures.
- Reflect the profound connection between the cultural and natural environment: Industrial processes – whether ancient or modern – depend on natural sources of raw materials, energy and transportation networks to produce and distribute products to markets.
- Include a variety of assets: This includes both material assets (immovable and movable), and intangible dimensions (such as the technical know-how, the organisation of work and workers, and the complex social and cultural legacy that shaped the life of communities)."

Further, the following terms will be defined as per the *Standards and Guidelines for the Conservation of Historic Places in Canada*:

- "Conservation: all actions or processes that are aimed at safeguarding the character-defining elements of a cultural resource so as to retain its heritage value, and extend its physical life. This may involve "Preservation," "Rehabilitation," "Restoration," or a combination of these actions or processes."
- "Heritage Value: the aesthetic, historic, scientific, cultural, social, or spiritual importance or significance for past, present or future generations. The heritage value of a historic place is embodied in its character-defining materials, forms, location, spatial configurations, uses and cultural associations."

### **Why Study Industrial Heritage?**

Industrial heritage offers citizens the opportunity to learn about a different dimension of history, one which isn't often celebrated as beautiful or picturesque in the traditional sense. An examination of industrial heritage is important for several reasons:

Firstly, industrial heritage offers a unique insight into the relationship between people and the natural environment. As outlined in the Joint ICOMOS – TICCIH Principles, industrial heritage represents the activities of extraction and primary manufacturing: processes that are entirely reliant on the natural environment. This differs from the conservation of heritage homes or monuments, which may be less contextually sensitive.

Additionally, industrial heritage sites inform the understanding of the socio-economic dimensions of the society in which they developed. Unlike the traditional concept of heritage conservation, which mostly strove to protect important memorials, religious houses, or the homes of the wealthy and powerful, industrial heritage tells another story. Industrial heritage speaks to the day-to-day life of both blue-collar workers as well as white-collared management—an interesting counterpoint to contemporary great works of architecture.

Industrial heritage is also unique for the universal relevance these sites can offer. While much of what is identified as industrial heritage is representative of local processes, technologies and regional historical conditions, any number of these elements (tangible and intangible) has also been exported for use in a similar context across the world. With this in mind, these processes and technologies have evolved to become of global influence, as either the application of the management practice, technology or manufacturing process spread (ICOMOS - TICCIH, 2011). An example of this would be the Union Canal in Pennsylvania, completed in 1828. Its technological processes were adopted to complete sister canals, the Pennsylvania Canal, and the Schuylkill Canal.

### **Challenges of Industrial Heritage Conservation**

There are a number of challenges unique to the practice of industrial heritage conservation. While some of these challenges are addressed by

international and federal policy directives, some issues have not been addressed as of yet. The issues include the following:

- Heritage value is poorly understood: Often there is not a great understanding of the role industrial heritage has played in regional, national, and international development. On the local scale, industrial sites or complexes are often passed by every day, and little critical thought is given to the role they either played historically or continue to play today. This is a challenge when trying to engage community support to carry out the designation process.
- Negative perceptions/environmental concerns: These sites often have historical or contemporary contamination issues, and can be associated with painful collective memories related to war, a history of worker exploitation, or unsafe working practices. Similar to the above point, this creates a challenge when trying to rally support and buy-in from both the broader community and the private sector that could be interested in remediating and repurposing a site.
- Large-scale, high level of complexity: The Tagil Charter defines industrial heritage in a very broad sense, from landscapes down to artefacts and the documentation related to industrial processes. It also includes the intangible heritage that was a part of the culture of the site; including the technological know-how related to the processes and techniques used on-site.

This is a challenge from the perspective of the heritage professional in trying to capture the complexity of vast and varied sites and establish an appropriate public interpretation plan. It is also challenging to ensure the continued legacy of understanding of these industrial practices (for example, trying to train a machinery operator or mechanic when the machinery or a process is obsolete).

Functionality/intellectual property rights: In some cases, industrial heritage sites are still functional in their original (or adapted) use. This adds additional layer of complication in terms of intellectual property rights and patents for processes or products (TICCIH, 2012). This is a challenge because it can reduce the property-owner's willingness or ability to participate in heritage conservation activities for fear of liability

issues or industrial espionage.

Abandonment or repurposing: Due to changing economic trends, industrial heritage sites are constantly at the risk of loss through abandonment. This is a concern for many in the heritage community, in particular related to the adaptive reuse of former industrial sites. This is a concern when the proposed adaptive reuse project converts a former industrial site for a use that is incompatible with the heritage value of the site.

Continued functionality: As pointed out by both the Tagil Charter and the TICCIH – ICOMOS Joint Principles, in some cases the heritage significance of an industrial site may be tied to its continued use and function. This is a challenge in terms of ensuring access to sites for interpretation of ongoing industrial activity.

### **Policy Framework**

This section will examine a selection of policies and legislation related to the conservation of industrial heritage. It will attempt to situate Ontario's provincial policy related to heritage bridges within the framework of national and international industrial heritage policy and guidelines/best practices.

Of note, at the provincial and national level in Canada, there are no policy directives that address industrial heritage specifically. Therefore, these sections will summarize the key elements of each piece of policy or legislation, and then identify how this is relevant to the conservation of industrial heritage specifically.

### ***International***

The International Committee for the Conservation of the Industrial Heritage (TICCIH) is the international organization "for industrial archaeology and the industrial heritage. Its aim is to study, protect, conserve and explain the remains of industrialization" (TICCIH, 2012). TICCIH's mandate is to promote the preservation, conservation, investigation, documentation, research and interpretation of industrial heritage. This includes the material remains of industry (sites, buildings, plant, machinery/ equipment, etc.) as well as housing, industrial settlements, industrial landscapes, products and processes, and the documentation of the industrial society (TICCIH, 2012). TICCIH, both

independently and as the special industrial heritage advisor to the International Council on Monuments and Sites (ICOMOS), has developed two pieces of international industrial heritage policy.

The *Nizhny Tagil Charter for the Industrial Heritage* (the Tagil Charter) was authored in 2003 by TICCIH as the first reference text for the protection and conservation of industrial heritage (TICCIH, 2012; ICOMOS - TICCIH, 2011). The Tagil Charter states that in the spirit of the Venice Charter of 1964, the most significant and characteristic examples of industrial heritage should be identified, protected and maintained, for today and the future (ICOMOS - TICCIH, 2011).

The Tagil Charter was ratified more or less in its entirety by ICOMOS as part of the Draft Joint ICOMOS – TICCIH *Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes* (the Dublin Principles). This was completed at the 17th ICOMOS General Assembly in 2011 (ICOMOS - TICCIH, 2011).

The Dublin Principles provide the first sanctioned international reference to guide the conservation of these unique sites and landscapes. These principles stress the importance of the contextualization of industrial heritage sites in the time period in which they were developed, and the importance of examining the sites through many different lenses: industrial design and architecture, as well as the contemporary sociological and technological development. It also highlights the importance of preserving these sites or complexes in their entirety, including machinery and other elements.

Additionally, the Dublin Principles provide some direction as to ensuring the continued maintenance of complex industrial sites by suggesting that adaptive reuse is the most sustainable way to guarantee long term conservation "so long as these projects are completed in a way that preserves the site's heritage significance." Dismantling and relocating sites is identified as the last resort for conservation, and I would suggest this is due to the fact that the environmental context is so critical to the heritage value of these sites.

Finally, the Dublin Principles stress the importance of communicating and relaying the values of industrial heritage to the public in order to raise awareness and appreciation of industrial heritage in

the full richness of its meaning for contemporary industry and society (ICOMOS - TICCIH, 2011).

In 2001, of the 690 sites inscribed on the World Heritage List, only 28 were considered industrial heritage, representing 5.3% of cultural sites (4% of all sites). Of the 28 inscribed sites at the time, 22 of them were in either Europe or North America. Of those remaining, four were in Latin America, and two were in the Asia/Pacific region. In the Arab States or Africa, no industrial sites had been inscribed (Falser & Yang, 2001).

According to ICOMOS, as of 2006 there were still just 43 industrial sites on UNESCO World Heritage Sites List (ICOMOS, 2006). As of this date, there were still no inscribed sites in either the Arab States or Africa. Industrial sites that were included on the List were varied, and included sites as diverse as the archaeological landscape of the first coffee plantation in Cuba, railways in India, and a number of resource-related towns throughout Europe (including a number of those which feature unique sites of Roman ingenuity). This focus differs from that of the Tagil Charter and the Dublin Principles, which emphasize the conservation of artifacts of the Modern Industrial Revolution. None of Canada's World Heritage Sites are considered industrial heritage sites.

### *Canadian (Federal)*

At the federal level, there are several key pieces of legislation that govern heritage conservation. While none are specifically geared towards the conservation of industrial heritage sites, they all contribute to the related designation and management framework.

The Historic Sites and Monuments Act of 1953 (the Act) provides the federal Minister of the Environment with the power to recognize the historic places of importance and designate them as National Historic Sites. However, this designation is only commemorative, and does not include any protection mechanisms. (Heritage Canada Foundation, 2009)

This Act also established the Historic Sites and Monuments Board of Canada (HSMBC), whose role is to advise the Federal Government (via the Minister of the Environment) on the commemoration of nationally significant aspects of Canadian history. HSMBC's mandate was expanded to include the designation of historic railways, the operation the grave sites of Canadian Prime Ministers, and the

protection of lighthouses. In total, there are five categories for federal heritage designation: National Historic Sites, National Historic Events, National Historic People, Heritage Railway Stations, and Federal Heritage Buildings. Nationally designated industrial heritage sites fall into either the National Historic Sites or the Heritage Railway Stations categories (HSMBC, 2012).

The Federal Heritage Building Review Office (FHBRO) is an entity within the Heritage Conservation branch of Parks Canada. FHBRO is responsible for the consistent heritage evaluations of federally- owned buildings, and to provide guidance and advice to federal departments regarding the heritage buildings they are responsible for (Parks Canada, 2012).

The existing Federal Heritage Building Policy of 1982 is not binding or enforced by the federal government, and 54 designated federal heritage buildings have been demolished since policy implementation (HCF, 2009). However, since 2006, all management decisions related to federal heritage properties has been guided by the Treasury Board Policy on Management of Real Property (Parks Canada, 2012).

A few of the buildings that fall under FHBRO are specifically industrial sites or sites related to military uses, including Building 6 at the Royal Military College of Canada (Kingston, ON), and the Gilmour Hughson Lumber Co. building (Gatineau, QC).

Another key document for the management of Canadian National Historic Sites is the Parks Canada Guiding Principles and Operational Policies. The objective of these policies is to help the federal government "Manage cultural resources administered by Parks Canada in accordance with the principles of value, public benefit, understanding, respect and integrity" (Parks Canada, 2009). This policy document applies to both the overall management of National Historic Sites, and the management of individual cultural resource assets that are contained in a national historic site.

This document identifies the principles that guide all of Parks Canada's activities related to cultural resource management, including the management of industrial heritage sites. It commits Parks Canada, as one of the key Cultural Resource Management organizations in the country, to managing its resource

in an integrated and holistic way.

This is relevant to the conservation of industrial heritage as it acknowledges the difficulties inherent in the management of complex assemblages of tangible and intangible heritage, and the additional complexities in interpreting them to the public.

### *Provincial (Ontario)*

With the exception of the Ontario Heritage Act, Ontario provincial policy largely deals with heritage conservation indirectly. This section examines contributing legislation and puts together the final pieces of the framework into which the Ontario Heritage Bridge Standards Guidelines will fit.

In Ontario, the Planning Act is the enabling document for municipal and provincial land use planning. It pertains to heritage conservation as it sets the basis for the consideration of provincial interests and enables municipalities to create planning policies related to designation and management of municipal heritage sites (Ministry of Municipal Affairs and Housing, 2010).

The Provincial Policy Statement (PPS) outlines provincial policy interests as they pertain to land use planning. The most recent PPS, released in 2005, provided strong policy direction related to the protection of natural and cultural heritage resources in communities across the province (Ministry of Municipal Affairs and Housing, 2010). These documents are important to industrial heritage conservation as they raise the profile of cultural heritage by requiring all municipal plans to be in alignment with a provincial policy that identifies heritage conservation as a key priority.

The Ontario Heritage Act of 1976 enables the conservation of built heritage at the site level, as a district, or through easements, either by the province or through Municipal Councils. The Ontario Heritage Act is administered by the Ontario Ministry of Tourism, Culture, and Sport. The Minister's powers were significantly increased in 2005 due to an amendment that strengthened municipal and provincial powers to identify and protect cultural heritage resources (Ministry of Tourism, Culture and Sport, 2012).

A key aspect of the amendment is Part III.1, which enables the Minister of Tourism, Culture, and Sport

in consultation with Ministries and public bodies affected, "to prepare standards and guidelines for the management of properties of cultural heritage value that are owned or controlled by the province" (MTCS, 2012). This is relevant as a large number of provincially managed industrial heritage sites and artifacts are now subject to a new set of standards and guidelines with the aim to protect and promote their heritage value.

Environmental assessments aim to determine the ecological, economic, social, and cultural impact of any proposed project, and represent another a key part of the planning process in Ontario.

Ontario's Environmental Assessment Act (1990) requires that an environmental assessment be conducted for any major public sector undertaking that has the potential for significant environmental effects. This includes any number of large-scale projects including roads, transit, waste water and storm water installations. The Act does not apply to private sector projects, unless stated in regulations.

In order to protect the integrity of a heritage site, an assessment of the impact of undertakings on cultural heritage resources is a required part of the standard Environmental Assessment (EA), and therefore, this piece of legislation is critical to protecting the integrity of an industrial heritage site.

Ontario's Environmental Protection Act is the key legislation for environmental protection in the province. The Act grants the Ministry of the Environment broad powers to deal with the discharge of contaminants, which cause negative environmental effects. The Act also deals with commercial transactions involving contaminated land (Ministry of the Environment, 2012).

Many industrial heritage sites have a long history of contamination through industrial or military activities. If these sites in Ontario are to be repurposed and adaptively reused, as identified by the Dublin Principles, then there are a set of stringent remedial requirements and regulations to be met.

Brownfield redevelopment and remediation are governed by Part XVI of the Ontario Environmental Protection Act and O.Reg 153/04. These documents stipulate when a "record of site condition" is required: before land is transferred, and when the owner is seeking to change land use (MOE, 2011).

The Government of Ontario owns and manages many significant heritage buildings and other cultural heritage resources. As mentioned above, due to the 2005 amendments to the Ontario Heritage Act, the MTCS now has the authority to develop standards and guidelines for the conservation of provincially owned and managed heritage properties. As a result, the province now has the “responsibility to establish a comparable standard of identification, protection and care for provincial heritage properties as already exists for private property” (MTCS, 2012).

Provincial heritage properties include built heritage resources, cultural heritage landscapes and archaeological sites, such as (but not limited to):

- Courthouses and jails
- Monuments and cemeteries
- Parks and gardens
- Bridges and bodies of water
- Museums and historic houses
- Trails and open spaces

Like other heritage sites in Ontario, they can be designated municipally under Part IV of the Ontario Heritage Act. If the sites are held by the province of Ontario, their maintenance should adhere to the specific standards and guidelines established for the property type (MTCS, 2012).

### **Case Studies: Ontario Heritage Bridges**

Bridges can have significant cultural heritage value. They represent important architectural and engineering feats, and have been critical to the development of regional and national transportation networks, building local economies across Canada. Ontario has a long history of the construction of unique bridges. It is home to a substantial number of steel truss bridges, several pin-connected truss bridges, and innumerable concrete bridges, as well as a number of movable bridges along the Welland Canal (Historic Bridges.org, 2005).

The Ontario Ministry of Transportation manages provincial highways and provincially owned bridges. With the help of the Ministry of Tourism, Culture and Sport, the MTO maintains a heritage bridge list that includes both provincially and municipally designated bridges. As per the 2005 amendments to the Ontario Heritage Act, the new standards and guidelines for heritage bridges set out the criteria and processes for the identification of provincial heritage properties, and set standards for the protection,

maintenance, use and sale of such sites.

The following section examines how a bridge is listed, and what this means for the future of its management. It also examines how this program fits into the larger framework provided by the legislation and policy directives outlined above.

### *Identification and Listing of Heritage Bridges*

O. Reg 9/06 of the Ontario Heritage Act lists the criteria for determining the cultural heritage value or interest of a property. However, in order to be considered to have provincial importance, a bridge must pass an additional test: it must be evaluated in a Cultural Heritage Evaluation Report (CHER) and obtain a score of 60/100 or higher, based on the criteria described in Table 1.

The bridge evaluation process is initiated in one of three ways: bridge repair or improvements; when ownership is transferred from the province; or during a standalone inventory.

Most commonly, a bridge will be designated as part of a repair or upgrade program. When repairs are required on any bridge, the project manager must check the Ontario Heritage Bridge List to see if the bridge in question is listed. If it is not, then the age of the bridge must be established. If it is over 40 years old, then it is subject to a CHER and an evaluation score is established.

Once the bridge has been evaluated, the MTO Heritage Bridge Committee will recommend to the Ministry of Tourism, Culture and Sport that the bridge either be added or left off of the Heritage Bridge List.

### *Conservation of Listed Heritage Bridges*

For all bridges that are listed (or eligible to be listed) and are subject to repair, rehabilitation, or replacement, a number of careful interventions are to be considered.

The conservation options listed below are considered appropriate interventions for the management of heritage bridges. They are ranked according to degree of intervention, from minimum to maximum, and are to be applied in rank order such that “Option 1 (the lowest level of intervention) must be shown to be non-viable before Option 2 can be considered and so

on” (MTO, 2008, p. 19). The ranked options are outlined below:

1. Retention of existing bridge with no major modification;
2. Restoration of missing or deteriorated elements where documentary evidence exists for design;
3. Retention of bridge with sympathetic modification;
4. Retention of existing bridge with sympathetically designed new structure;
5. Retention of existing bridge but no longer for vehicular use (i.e. adaptive reuse);
6. Retention of bridge as a heritage monument, not in use;
7. Relocation of smaller bridges to new site for continued use or adaptive reuse; or
8. Bridge removal and replacement with a sympathetically designed structure.

As indicated by this list of ranked options, there is a clear preference for a cautious approach towards the conservation of heritage bridges, while still recognizing the importance that upgrades and rehabilitation may have given the roles these bridges play as part of a larger transportation network.

The following tables summarize how the Ontario Heritage Bridges Standards and Guidelines fits into the complex framework laid out by some of the directives and legislation described in Section two above.

Table 1: Ontario Heritage Bridge Standards and the Joint ICOMOS - TICCIH Principles

	Key elements of the Joint ICOMOS – TICCIH Principles				
	Importance of Contextualization	Preservation of industrial heritage sites or complexes in their entirety	Suggests adaptive reuse	Dismantling and relocating sites is a last resort	Importance of communicating and relating the values of IHI to the public
How do the Ontario Heritage Bridge Standards and Guidelines respond to these principles/policies?	Acknowledges the importance of ensuring a bridge remains in its intended location	Ranks the retention of the bridge in its entirety above any other management option	Suggests the adaptive reuse as a pedestrian or cycling facility if it is unsuitable to continue in its existing capacity as a bridge for vehicle traffic	Dismantling and relocating bridge is ranked as 7 of 8 options	Does not explicitly address the importance of communicating the value of industrial heritage to the public.

### **Conclusions and Recommendations for Further Research**

After examining the existing policy framework for industrial heritage at the international, national, and

provincial levels, it is evident that there is a significant amount of continuity in terms of conservation principles and approaches in Canada and Ontario. Some of the key common themes include:

- The emphasis on the importance of education and the interpretation of the site;
- The importance of retaining a complex heritage site in its entirety;
- Acknowledging the importance of the intangible heritage of industrial heritage sites, and the importance that continued functionality plays in retaining heritage value; and
- The importance of taking a cautious approach towards site alterations or modifications.

Due to this consistency, it appears that the values captured in the highest level documents (the Joint Principles) have translated fairly effectively into the standards and guidelines that are used to manage industrial heritage on a day to day basis. To these ends, it would appear that the *Standards and Guidelines for Ontario Heritage Bridges* harmonize well with the priorities set out in provincial, federal, and international policy and best practices.

### **Further Research**

The preceding report has suggested several areas for further research:

- Adaptive reuse of industrial heritage sites: How do these challenges change when the industrial heritage site is repurposed for another use?
- Conservation of the obsolete: How do we ensure the conservation of industrial heritage when an artefact or a process is obsolete?

Research in these areas will help to improve the knowledge base upon which policy related to the management of industrial heritage sites is developed.

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