

CANADIAN CONSULTING ENGINEERING AWARDS 2022

WANUSKEWIN HERITAGE PARK RENEWAL - BISON MANAGEMENT & CARE FACILITIES

LOCATION: SASKATOON, SK

CLIENT/OWNER: WANUSKEWIN HERITAGE PARK AUTHORITY

LEAD CONSULTANT: ASSOCIATED ENGINEERING

SUB CONSULTANTS: CROSBY HANNA & ASSOCIATES, AODBT

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PROJECT SUMMARY

Wanuskewin Heritage Park near Saskatoon is a world-renowned research centre that honours Indigenous peoples and educates visitors about local Indigenous tribes. Associated Engineering provided design and project management for facilities to care for bison, facilitating their return to Wanuskewin. The project involved a unique collaboration and a cultural awareness journey that resulted in a shared vision for the facility. In 2019, 150 years after they were driven near extinction, bison returned to the Northern Plains.



COMPLEXITY

For thousands of years, the Indigenous peoples of the Northern Plains followed the bison, which provided them with food, clothing, shelter, and tools. Following the arrival of settlers and construction of homesteads and ranches in the late 1800s, hunting and loss of habitat drove the bison to near extinction, dwindling from 30 million to less than 1,000.

Established in 1992, Wanuskewin Heritage Park near Saskatoon has become a world-renowned centre to research and honour the Indigenous peoples of the Northern Plains, and educate visitors on Indigenous history and the plains' bison.

By 2015, the park needed to be refurbished and upgraded. As part of the renewal, the Wanuskewin Heritage Park Authority saw an opportunity to return a resident herd of genetically pure bison to the Northern Plains. The Park Authority retained Associated Engineering to design, tender, oversee construction, and manage the \$3.5 million program to build facilities to protect and care for the bison.

For the Park Authority which owns and operates the site, and to the First Nations, Elders, and other stakeholders, it was crucial that our team understood the significance of this undertaking, not only the principles of designing bison facilities, but also the cultural significance of the project.

We learned from leaders and elders and participated in cultural events to understand the relationship between the land, the bison, and the First Nations. We consulted with a wide range of professionals - those who have experience with bison and understand the animal and its behaviour. We consulted equipment vendors, facility contractors, and experienced bison herd managers from Parks Canada who helped establish herds at Banff, Elk Island and Grasslands National Parks.

Our design included 73 hectares of paddocks, conversion of lands to native grasses, bison fencing and perimeter fencing; a 223 square metre bison handling building with fenced sorting facility; a 201 square metre maintenance operations building; a 84 square metre storage building; site grading and utility servicing; and upgrades to the sanitary sewer system that serves the main facilities.

The project was tendered via traditional design-bid-build and design-build delivery methods to meet stringent project deadlines. Construction had to be completed ahead of the arrival of the bison.

Through a collaborative approach with the Park Authority, First Nations, Elders, stakeholders, and experts, the team delivered Wanuskewin's bison facilities on time and under budget.

For the first time in more than 150 years, bison graze on the Northern Plains.



MEETING CLIENT'S NEEDS

The Wanuskewin Heritage Park Authority owns and operates an internationally renowned interpretive centre – a focal point for researching and improving our understanding of the Indigenous tribes of the Northern Plains. The Park Authority wished to raise the visibility of the Park on the world stage through advancement of its education programs, preservation of its biodiversity and unique ecology, and the return of the bison to Wanuskewin's plains.

To achieve its vision, Wanuskewin announced a \$40 million Thundering Ahead Campaign, which comprised facility renewal and upgrade. Associated Engineering managed design and the construction of facilities and infrastructure to facilitate the return of and care for bison, as well as safe public engagement with the animals.

Our collaborative approach with the Park Authority, First Nations, Elders, and stakeholders fostered the free flow of ideas. We agreed that what everyone said was important and had a purpose, which ultimately helped achieve consensus and improved the design.

In December 2019, six young bison from the Grasslands National Park herd in southwestern Saskatchewan returned to Wanuskewin. A month later, four pregnant cows and a mature bull from the United States reconnected with the herd. All bison were descendants of the historic Northern Plains bison.

Four months later, the first bison calf in 150 years was born on the plains of Wanuskewin. Today, 17 bison make up the herd. Wanuskewin's bison facility has begun to fulfill the vision of the return the majestic animals to the Northern Plains—a symbol of hope and reconciliation.



ENVIRONMENTAL BENEFITS

As part of the Wanuskewin Thundering Ahead campaign, the return of the bison was a very powerful statement for the First Nations people, and one that resonates for everyone who visits the Wanuskewin Heritage Park.

The project restored what was cattle pasture and crop land to natural grassland, allowing these Northern Plains to be grazed by bison once again. The new bison facilities are an environmental, cultural, and historic achievement, protecting and preserving not only an animal species that was near extinction, but also the plains grassland ecology, which is also one of the most threatened on the planet.

The unique collaborative effort between the Wanuskewin Heritage Park Authority, First Nations, Elders,

stakeholders, and our project team, which went far beyond project meetings and progress reports, was critical to achieving a shared vision, development of the site, and the positive environmental impact on the land.

In 2020, bison activity – including “wallowing,” where bison roll in the grass and create dust pits – uncovered a major archaeological discovery: submerged boulders with carvings, or petroglyphs, as well as the stone knife that was used to carve the drawings, near an ancient bison jump. Later archaeologists found three additional petroglyphs, all dating back 300 to 1,800 years. Return of the bison to the Northern Plains led to the discovery of these historic, hidden petroglyphs which shed additional light on the connection between the Indigenous tribes and these majestic animals.



INNOVATION

Associated Engineering drew upon our previous experience with livestock facilities to design a facility to care for and nurture bison throughout their entire lifecycle, and allow safe interactions with the public. Understanding that cattle and bison are different animals and the facilities for the large bison would require unique design and specifications, we employed advanced software programs, and analyzed a set of unique “technical” factors driven by the bison’s physical attributes as North America’s largest native mammal.

The design of the paddocks, alleys, and pens concentrated on moving the animals with as little stress as possible on the physically imposing and intelligent bison, with equal importance placed on the safety of the handlers and the general public. For example, the alley leading to the main

building is long and wide, strategically designed with watering stations and feed to encourage the animals to become comfortable in the space throughout the year.

The heavy board fencing in the main facility’s loading area was constructed so handlers in an alley or chute can quickly climb out to safety. For example, the gap in the fencing was designed to be wide enough to fit handlers’ heavy winter boots. To ensure public safety – which primarily meant protecting visitors from potentially unsafe actions – we incorporated a high “people fence” adjacent to the viewing area and public facilities, in addition to the double fencing around the paddocks.

Wanuskewin’s bison facilities are a model for future facilities to support the return of the bison.



SOCIAL AND ECONOMIC BENEFITS

The project involved a cultural journey for our team. We partnered with construction contractors and Indigenous leaders in social awareness activities established by the Park Authority and Elders. Our team participated in overnight stays to understand the cultural and historic significance of the project, complete with Indigenous foods, presentations, and a traditional sweat. Activities included contemplation and reflection, leading to an increased awareness among our staff and the contractors about the history and traditional beliefs of First Nations people.

Our team learned that bison were not just production animals or a zoo attraction; they were sacred, part of nature and the land, and the cultural fabric and the identity of the Plains Cree. The demise of the bison was

simultaneous with the destruction of the way of life for Indigenous people on the Prairies. The bison's return is a dramatic statement of renewal and reconnection with the Northern Plains.

At Wanuskewin, the goal was to provide the facilities needed to preserve and protect the animals, while also connecting the herd to the cultural and educational experience of the park.

From an economic standpoint, the bison are definitely a major attraction for the park. A large, elevated "Bison Viewing Area" adjacent to the main building entrance gives visitors an ideal vantage point throughout the year. In addition to increasing attendance at Wanuskewin, the project also helped to attract multi-million-dollar donations and will aid in securing a world heritage designation through UNESCO, building upon Wanuskewin's current status as a National Historic Site.

