



Slave Lake Government Centre and Library

Canadian
Wood
Council

Conseil
canadien
du bois





Photo: Steve Nagy Photography

Introduction

Located 250 km north of Edmonton, the Town of Slave Lake, Alberta, is home to 7,000 residents and serves as a regional hub for a population of 25,000. It's economic base includes tourism, oil, gas and forestry industries.

Designed and build to consolidate many government services that were distributed throughout the community of Slave Lake in outdated facilities, the new Slave Lake Government Centre and Library, a combination of renovated space and new construction (Figure 1), is a reorganization of how public services are delivered in Slave Lake – a place where citizens can meet, interact and conduct daily business in one stop.

“The building is the Town centerpiece.... The ceilings in the council chamber are quite stunning... Library enrolment has increased and it has become a magnet for residents of all ages.”

Mayor Karina Pillay-Kinnee

Table of Contents

3	Introduction	10	Building Code Requirements
4	Building Description	10	The Environmental Benefits of Using Wood
7	Design Development	14	Conclusions
7	New Construction		
9	Reused Materials		
9	Sustainable Design		

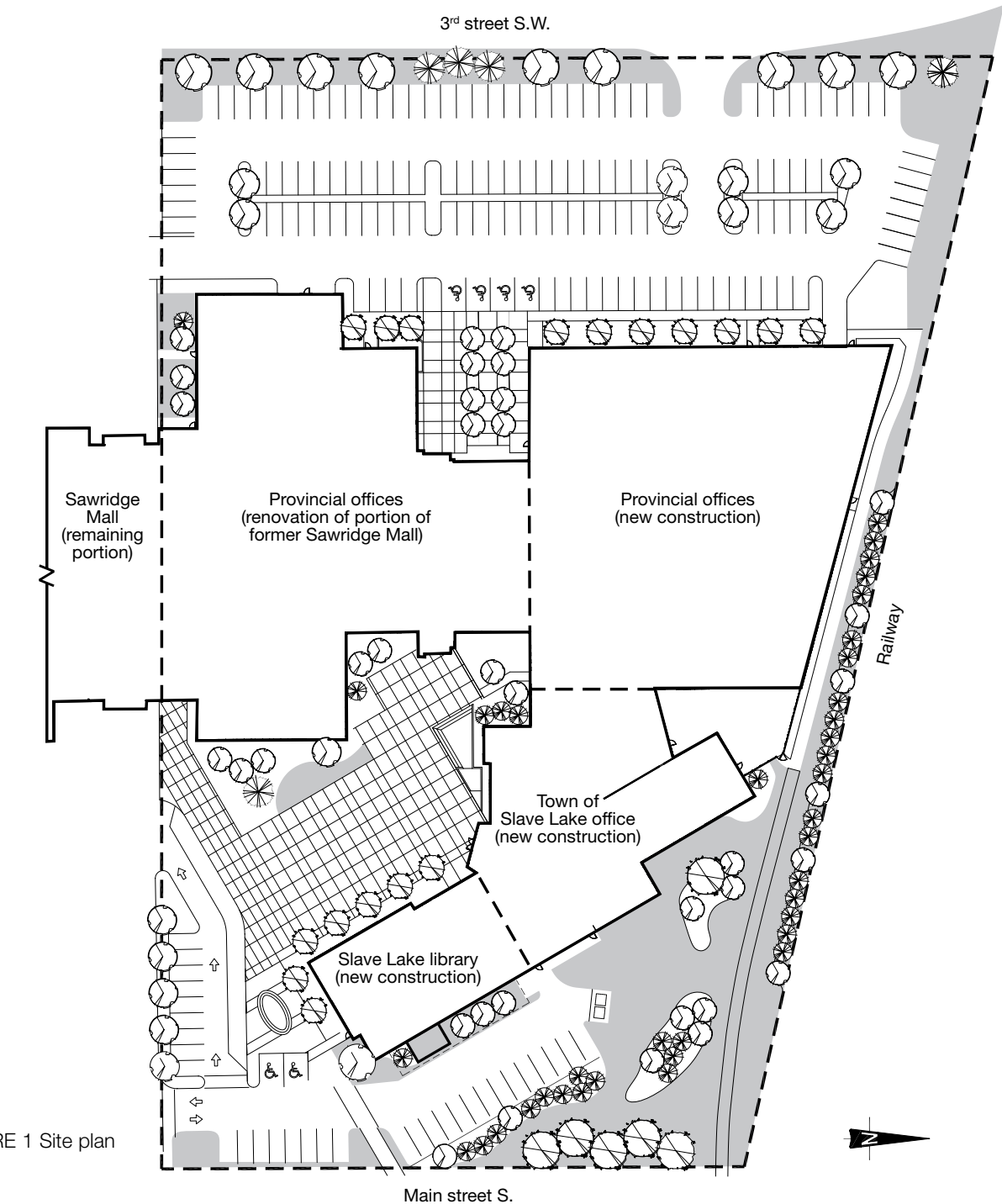


FIGURE 1 Site plan

Building Description

The Slave Lake Government Centre and Library allowed the amalgamation of government services and replaced Town offices that were outdated. The project involved acquiring and renovating redundant space from the existing Sawridge Mall and constructing new space. In an arrangement that benefitted the Sawridge Corporation and the Town of Slave Lake, the Town purchased the north half of Sawridge Mall. A firewall was constructed to separate the remainder of the mall from the renovated north portion and the new construction.

The Town of Slave Lake owns the building and leases office space to several Alberta government offices. The renovation and part of the new construction houses government of Alberta offices. The other part of the new construction houses the Town of Slave Lake municipal offices and the Slave Lake Library (Figure 2).

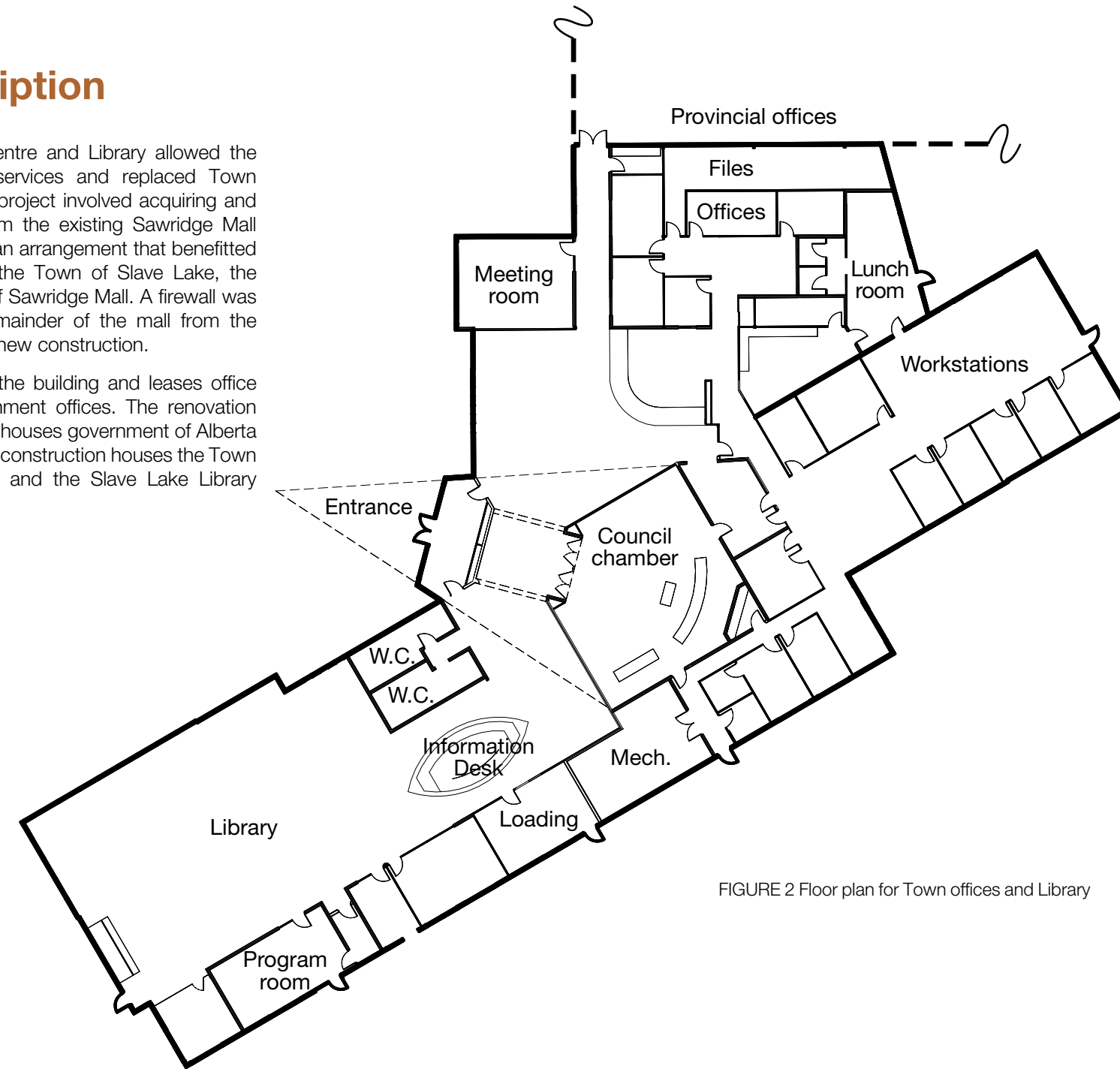


FIGURE 2 Floor plan for Town offices and Library



Photo: Steve Nagy Photography

The renovation involved upgrading the walls and roof of the existing structure and adding high-performance windows and adapting the space for offices using the existing structure. The walls were constructed to provide an R-value of XX and the roof provides an R value of XX.

The new construction is comprised of glulam columns beams supporting wood roof decking, with wood-frame exterior walls. The total area of the building is 7,863 m² (84,900 ft.²), of which 6,009 m² (65000 ft.²) is leased by the Province and 1,854 m² (19,900 ft.²) is used for Slave Lake municipal offices and

the Library. The provincial area includes office space for 13 government departments and a courthouse and two courtrooms. The Town area includes office and meeting space, the council chamber, and the municipal library.

This new community hub and government centre is a one-stop, service-oriented landmark for the citizens of the Slave Lake region. Centralizing services was seen as a way of reducing car use and increasing walking. It results in a more pedestrian friendly and green downtown by maximizing green space, preserving the site's existing trees and offering a public



Photo: Steve Nagy Photography

square and walkways. The project was designed to achieve a LEED® Silver minimum certification. Demolition and renovation started in January 2008, new construction began in May 2008, and the new facility was ready for use in December 2009.

Design Development

Initial planning for the facility was initiated by the Town of Slave Lake and the government of Alberta in 2004 by establishing area, size and function needs for each of the departments. Architects Manasc Isaac met with department representatives to understand their needs and working relationships between departments.

The centrally-located facility was intended to become a permanent anchor for the town, revitalizing the downtown area while enhancing the presence of provincial government services. Using the SMART™ (Specific, Measurable, Achievable, Realistic and Timely) project management process, Manasc Isaac consulted Town representatives, citizens and provincial representatives to define a number of success factors for the facility including:

- “a facility that is friendly to the street, encourages walking and bicycling and reflects the culture, history, and future viability of the community”
- “a bright, attractive, and welcoming building that draws people to it”
- “uses best practices to achieve long-term sustainable design”
- “demonstrates commitment to stewardship of the environment and the community of Slave Lake”

New Construction

The new portion of the building is comprised of glulam beams and columns with steel decking and wood-frame exterior walls, serving as shearwalls. Wood was selected due to its architectural appearance and the connection of the Town Slave Lake to the forest and tourism industries.

The new building is supported on timber piles with concrete pile caps, matching the sub-surface foundation a system used for the original Sawridge Mall to which the new building areas are connected. The piles are 305 mm (12 in.) diameter treated Douglas fir piles.

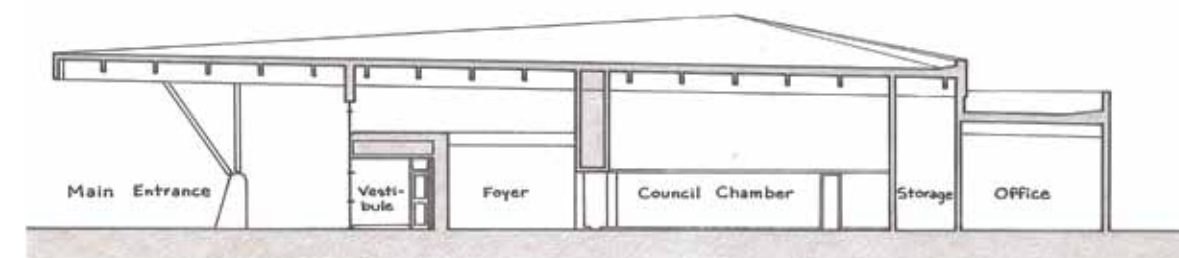


FIGURE 3 Cross-section through the Council Chamber and main entrance



Photo: Steve Nagy Photography

Reused Materials

The Slave Lake Government Centre and Library made use of wood materials obtained from a deconstructed church in Edmonton. The seating in the Courtroom in the Provincial portion of the building is provided by pews salvaged from the church in Edmonton. The pews were refinished to match the rest of the wood trim.

The roof decking in the Council Chamber is 3.6 x 12.5 mm (1 ½ x 5 in.) yellow cedar decking salvaged from the church. It was attempted to find structural uses for glulam beams also salvaged from the church but it was determined the glulam should be used for non-structural applications. The glulam was reprocessed and used for the louvers on the building exterior. For protection from the elements, the glulam louvers were treated with one coat of Timberlox® oil base semi-transparent stain and two coats of ClovaThane® aliphatic urethane.

Sustainable Design

The Slave Lake Government Centre and Library was designed to achieve the Leadership in Energy and Environmental Design (LEED®) Silver rating level. By engaging in a collaborative process with the community of Slave Lake, Manasc Isaac integrated a number of sustainable design and urban design strategies that will enhance the Town of Slave Lake's new building, including:

- Making use of redundant space in Sawridge Mall and placing a high priority on urban revitalization, enhanced green space and site landscaping.
- Retarding storm water runoff from the site to the surrounding, low-lying area.



Photo: Manasc Isaac

Photo: Manasc Isaac

Photo: Manasc Isaac

- Designing for energy efficiency 45% below the requirements of the Model National Energy Code for Buildings (MNECB) through high-performance walls, windows, roof and mechanical system.
- Incorporating a construction waste management plan in the construction specifications to divert the maximum amount of waste from landfill.
- Using regional materials and reused wood materials.
- Specifying low-emitting materials to minimize the emission of indoor air contaminants.
- Maximizing the use of daylight to reduce the need for electric lighting.



Photo: Steve Nagy Photography

Carbon Dioxide

Carbon dioxide is a key factor of global warming and it is also a major ingredient of wood. As trees grow, they draw carbon dioxide from the atmosphere and, using solar energy, convert the carbon dioxide into wood fibre (50% of wood is carbon) while releasing oxygen back into the atmosphere. If trees are harvested before they burn or decay, the carbon is stored indefinitely in the wood products, and new trees are planted to begin the cycle again. Wood products sequester more carbon dioxide than the amount emitted during harvesting, transportation and manufacturing, which means they actually have a negative greenhouse gas footprint.

Photo: Steve Nagy Photography

“**Specifying wood in public procurement can help fulfil national and local climate change programmes.** Encouraging the use of wood products can act as a greener alternative to more fossil-fuel intensive materials. Substituting a cubic metre of wood for other construction materials (concrete, blocks or bricks) results in the significant average of 0.75 to 1 t CO₂ savings.”

International Institute for Environment and Development
<http://www.iied.org>

Building Code Requirements

The Building was designed to the Alberta Building Code for A (Assembly) and D (Office) occupancies. The building is sprinklered and as a single-story building is accessible for fire-fighting from three streets. These conditions permitted the use of wood-frame and heavy timber construction.

The Environmental benefits of Using Wood

The United Nations' Intergovernmental Panel on Climate Change deems buildings to be the greatest opportunity for making considerable reductions in carbon dioxide emissions. Using sustainably harvested wood as a construction material is a simple and cost-effective step in this direction. Re-using existing materials further adds the sustainability of the use of wood on this project.





Photo: Steve Nagy Photography



Photo: Steve Nagy Photography



Photo: Steve Nagy Photography



Photo: Steve Nagy Photography

Wood and Life Cycle Assessment

Life cycle assessment is a scientific measure of the environmental impact of a product throughout its entire life – from resource extraction through to product manufacturing, on-site building construction, occupancy, and eventual demolition, as well as disposal, reuse, or recycling. Numerous life cycle assessment studies worldwide have shown that wood products yield clear environmental advantages over other building materials at every stage.

Life cycle assessment takes away environmental performance guesswork by calculating actual outcomes based on quantifiable indicators of environmental impact, such as global warming potential, resource use, embodied energy, air pollution, water pollution and solid waste.

The ATHENA® EcoCalculator for Assemblies is a tool based on life cycle assessment that allows architects, engineers and others to quickly assess and compare environmental impacts of hundreds of building assemblies that are commonly used in construction. The ATHENA EcoCalculator is available free at www.athenasmi.ca

Scientific analysis of building materials shows that wood has the lowest environmental footprint of all major building materials (Figure 4).

As environmental awareness grows, building professionals are finding wood is an excellent choice for green construction designs that minimize the use of energy, water and materials, and reduce negative impacts on human health and the environment. Wood is a high-performance and versatile choice for any new construction or renovation. Wood is light in weight, yet strong. It has excellent load-bearing and thermal properties, is easy to work with, and is well suited for large or small projects. Wood adds warmth and beauty to any building, enhancing the well being of occupants.

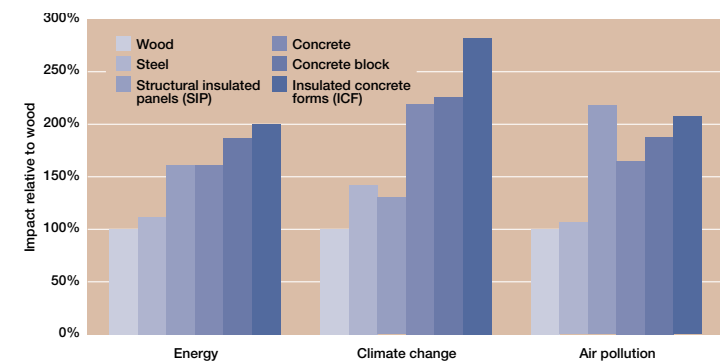


FIGURE 4: Embodied environmental impacts of various exterior wall assemblies

Conclusions

The Slave Lake Government Centre and Library reorganized and centralized government services. Reused and new wood construction was used to provide a comfortable, attractive working and public services environment. The building is designed to meet LEED® Silver and has an energy consumption 45% below the Model National Energy Code for Buildings requirements. The facility has provided a new focal point for the Town of Slave Lake, combining government services, shopping, library services and public functions, all in one location.

Photo: Steve Nagy Photography



Project Team

Architect
Manasc Isaac
10225 100 Avenue
Edmonton AB T5J 0A1
Tel: 780-784-1177
www.manascisaac.com

Structural Engineer
Fast + Epp
201 – 1672 West 1st Avenue
Vancouver, BC V6J 1G1
Tel: 604-731-7412
www.fastepp.com

Landscape/Civil
ISL Engineering and Land
Services Ltd.
Suite 100, 7909-51 Avenue NW
Edmonton, AB T6E 5L9
Tel: 780-438-9000
www.islengineering.com

Mechanical/Electrical
Stantec
10160 – 112 Street
Edmonton, AB T5K 2L6
Tel: 780-917-7000
www.stantec.com

General Contractor
Chandos Construction Ltd.
6720 104 St NW
Edmonton AB, T6H 2L4
Tel: 780-436-8617

Glulam Supplier
Western Archrib
4315-92nd Avenue
Edmonton, Alberta T6B 3M7
Tel: 780-465-9771
Fax: 780-469-1667
www.westernarchrib.com



Canadian Wood Council

Conseil canadien du bois



www.wood-works.org

Wood WORKS! is a Canadian Wood Council initiative
www.cwc.ca

For more information on Wood WORKS!,
contact:

National Office 1-800-463-5091

Ontario Projects: 1-866-886-3574

Alberta Projects: 1-780-392-1952

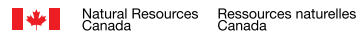
BC Projects: 1-877-929-WOOD (9663)

Quebec Projects: 418-650-6385 ext. 310

US Program: 1-866-996-3448

Photo: Steve Nagy Photography
<http://stevenagyphotography.paradepro.com/>

NATIONAL PARTNERS



PROVINCIAL PARTNERS

