Métis Crossing Cultural Gathering Centre

SMOKY LAKE, AB

Canadian Wood Council
Conseil canadien du bois

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All photos by Cooper & O'Hara

Introduction

The Métis Crossing grounds sit on a 512-acre site – river lot titles from the original Métis settlers to the region in the late 1800s – along the North Saskatchewan River, just outside Smoky Lake, Alberta (about 120 km northeast of Edmonton). As the first major Métis cultural interpretive centre in the province, it is a premier destination for Métis cultural education and public gatherings. The Cultural Gathering Centre site is bordered by Victoria Trail (north), an access road to the existing barn (west), the riverbank (south) and a zipline along an existing ravine (east). Camping, guided tours and other activities are hosted on the property; the facility is open year-round. A boutique lodge is under construction and will accommodate 40 families by the fall of 2021.

The new Cultural Gathering Centre provides over 10,000 sq.ft. of gathering spaces, meeting rooms, classrooms and interpretive spaces. Designed to seat over 350 people indoors, it is an ideal venue for weddings and large gatherings, such as corporate retreats. The expansive 2,600-sq.ft. deck and canopy on the south side provides stunning views of the river valley. Timber was a natural choice for the primary structural material, given its long history of use in traditional Métis construction practices. In keeping with the structure's connection to its heritage, the building was designed by Métis architect Tiffany Shaw-Collinge, from Manasc Isaac Architects, now Reimagine Architects.

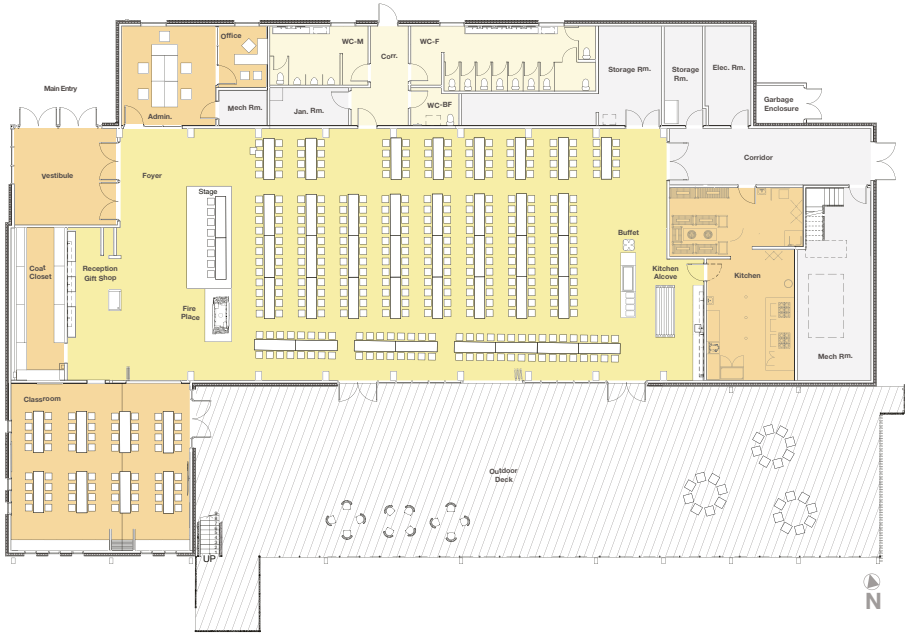
Project Description

The Cultural Gathering Centre hints at the building style of the fur trade–era riverlot homes, yet offers modern functionality. To make the best use of timber's natural properties and strengths, many different types of wood were utilized throughout the building to achieve the functional and aesthetic goals. The selected types included traditional methods such as heavy timber and stud framing, to newer engineered wood products such as glulam and engineered lumber. The exposed timber structure is featured prominently in the main gathering hall, while the truss shape is intended to mimic the infinity symbol, an important image in Métis culture.

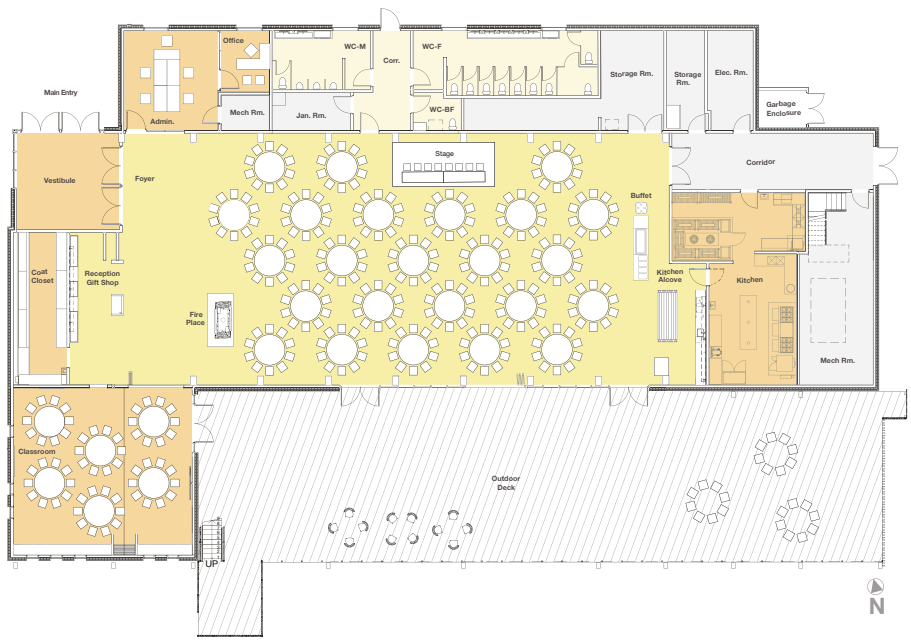
Métis employment also was a large consideration on the project. Big Ray Dumais Construction, a 100 percent Métis-owned and -operated company, was the subtrade selected for the framing of the building, while Carvel Electric, another Métis-owned and -operated company, was engaged as the electrical subtrade.

Designed around a significant fireplace, the Cultural Gathering Centre invites people to gather and share stories, play music and share in celebrations. The base of the fireplace is detailed with dovetail joints, evoking Métis construction techniques. The dovetails appear again at the massive "kitchen table" a moveable table adjacent to the generous commercial kitchen, that invites conversation.

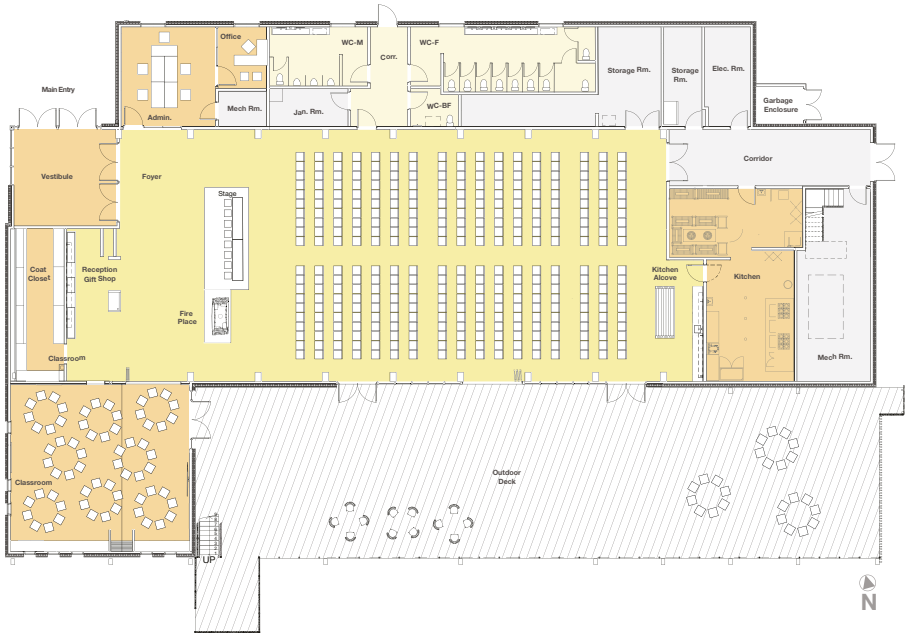
This highly sustainable building is very energy efficient, using a high-performance curtainwall, triple-glazed windows and high levels of thermal performance in the building envelope. The large verandah shades the south side of the building, minimizing overheating, and the north side has high-level windows that open to provide natural ventilation.



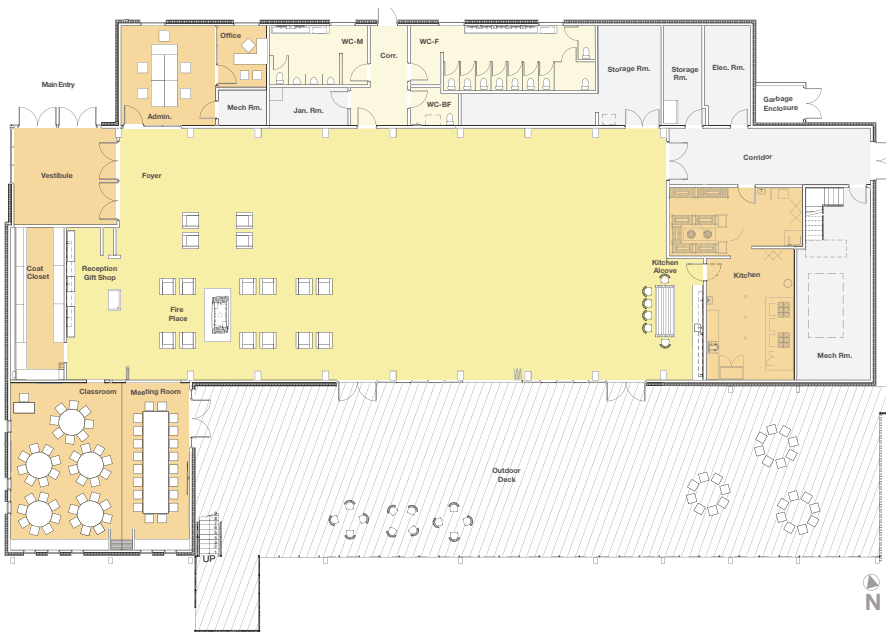
Conference Layout – 336 seats and 64 seat classroom



Banquet Layout – 248 to 298 seats and 60 seat classroom



Lecture Layout – 340 seats and 64 seat classroom



Open Hall Layout – 20 seat meeting room and 40 seat classroom

Northwest View – Main Entrance

Structure

The butterfly-shaped roof presented a unique challenge for the design team, as this area was intended to be entirely column-free, while spanning 47 ft. across the hall. To achieve the long spans needed with readily available solid timber lengths, Fast + Epp developed a unique truss system which allowed the timber chords to be discontinuous in the middle, at the low point of the roof. This timber truss shape was separated purposely from the Douglas fir glulam columns that support the hybrid trusses and glulam roof beams, as a statement towards the integration of historical and contemporary materials.

The roof framing utilizes rustic, spruce-pine glulam decking panels supported by heavy timber and steel trusses; each truss consists of solid 10x12-in. Douglas fir timber chords and circular steel web members. The truss connections consist entirely of countersunk self-tapping screws to ensure a clean aesthetic.

Douglas fir glulam columns were used throughout the building to support the hybrid trusses as well as additional glulam roof beams. In areas where the timber framing was not exposed (offices, mechanical room, classroom), engineered timber joists were used to minimize the structural

Southwest View – Deck & Terrace

depth and optimize the costs. Conventional wood stud walls (SPF framing with Douglas fir plywood) were used at the building perimeter and at shear wall locations. The expansive exterior deck also was framed in timber, with built-up dimensional lumber and engineered joists.

The dovetail joint and post and beam detail was utilized in the millwork of the Cultural Gathering Centre, to reflect techniques which were historically utilized in the fur trade when building homesteads or forts. A vertical Accoya screen surrounds the deck area, where post and beam detail can be found on the outside corners. The dovetail joint is utilized in the bench of the fireplace, the Métis kitchen table and the mobile kiosk cart.

The roof over the deck utilizes Accoya structural joists supported by Douglas fir glulam beams and columns. The large roof canopy over the south deck explores the nuance of Métis culture, where indoor and outdoor integration is key. This extended deck tempers the division between the two environments in a significant and considered way. Wood is also used for a timber-framed picnic shelter and playground elements.

Materials

STRUCTURAL

Frame:
Douglas fir glulam beams and columns by Western Archrib;
Douglas fir timber and steel roof trusses

Floor and roof systems:
Spruce-pine glulam roof panels; PKI floor and roof joists;
Accoya structural joists

Interior partitioning:
2x4 and 2x6 wood walls

EXTERIOR/INTERIOR

Siding:
Accoya

Roofing:
MBM

Windows/doors:
Glascurtain curtainwall, Fiberglass operable windows, Nanadoors

Ceilings:
Exposed glulam roof panels by Western Archrib

Technology & Design

Métis Crossing incorporates sustainable features, including generating 100kW of green energy at the site. The Cultural Gathering Centre is a model site for renewable resources. To achieve increased efficiency, the design includes:

- Improved glazing performance over minimum standards (triple glazing with high-performance fiberglass frames)
- Optimized glazing quantity to reduce cost and energy loss
- Increased daylighting to reduce the need for electric lighting; east-west building orientation extends daylight hours
- Improved air circulation through passive ventilation, which also provides cooling

The above-grade portion of the building is a high-performance, pressure-equalized rain-screen design. The air barrier/vapour retarder for the wall system is applied to the exterior surface of the wood stud-framed infill wall; it is thermally protected by two layers of 75-mm insulation. The air barrier membrane is lapped into door and window openings to provide an airtight, waterproof transition between the wall systems, achieving an approximate insulation value of R30 for the roof and R27 for the walls.

For the exterior, an engineered wood siding with a Dutch lap pattern provides a similar effect to the “piece on piece” technique seen on the property’s historical cabins, and the corner details mimic the “post and sliding piece” construction technique that was prevalent during the fur trade era. A grey wood is used for these areas and a honey-brown wood screen is used for the exterior deck covering, with vertical shingle siding in some of the higher locations, such as the gable, to break up the massing. The timber frame is exposed in areas near the deck and entrance, while a clear, operable triple-glazed curtainwall opens to the southern views of the river.

The roof is a two-ply SBS system, topping two layers of 75-mm (rigid and semi-rigid) insulation. The air-seal membrane is similar to the walls, and it is wrapped and sealed to the wall membrane to connect the two systems; penetrations are at an absolute minimum. Where penetrations could not be avoided, they are connected and sealed to both the air-seal and waterproofing membranes. Surrounding the roofs is a continuous parapet, guiding water and snow to rainwater leaders; the water is further guided away from the building with splash pads.

Carbon Summary

Results

Volume of wood products used:
264 cubic meters (9,324 cubic feet)

U.S. and Canadian forests grow this much wood in:
1 minutes

Carbon stored in the wood:
216 metric tons of carbon dioxide

Avoided greenhouse gas emissions:
84 metric tons of carbon dioxide

Total potential carbon benefit:
300 metric tons of carbon dioxide

Equivalent to:

63 cars off the road for a year

Energy to operate 32 homes for a year

Project Name:	Metis Crossing
Date:	March 29, 2021

Results from this tool are based on wood volumes only and are estimates of carbon stored within wood products and avoided emissions resulting from the substitution of wood products for non-wood products. The results do not indicate a carbon footprint or global warming potential and are not intended to replace a detailed life cycle assessment (LCA) study. Please refer to the References and Notes' for assumptions and other information related to the calculations.

Conclusion

Métis Crossing Cultural Gathering Centre is a stunning structure that integrates traditional craftsmanship with modern materials, designed to engage and excite visitors through an exploration of Métis cultural experiences. Here, visitors can learn about Métis traditions, and even stay overnight in the RV camp, the trapper's tents or the future Boutique Lodge, set to open in 2021. Activities offered include tours of historic Métis homesteads, fiddling, jigging lessons and traditional crafts such as sash-making, which provide an immersive experience that celebrates both traditional and contemporary Métis culture. Additionally, the Metis Crossing site will be almost entirely self-sufficient, with a buffalo paddock to raise meat and vegetable gardens to grow food for preparation in the generous commercial kitchen. By creating a structure to unify these experiences, the architects also established a more tangible connection to the modern Métis identity. The prominence of wood evokes a timeless tradition of using, and honouring, what the land provides.

Owner

Métis Crossing Inc.
Juanita Marois,
Executive Director
Métis Nation of Alberta
Audrey Poitras, President

Project Team

Architect
Manasc Isaac Architects,
now Reimagine Architects
10225-100 Ave.
Edmonton, AB T5J 0A1
Tel: 780.429.3977
reimagine.ca

Structural Engineer
Fast + Epp
201-1672 West 1st Ave.
Vancouver, BC V6J 1G1
Tel: 604.731.7412
fastepp.com

General Contractor
GenMec ACL
7301 50 Ave.
Bonnyville, AB T9N 2P3
Tel: 780.826.4450
genmecacl.com

Wood Supplier
Western Archrib
4315 92 Ave. NW
Edmonton, AB T6B 3M7
Tel: 780.465.9771
westernarchrib.com

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