

North Shore Credit Union Environmental Learning Centre



The remarkable new \$5.8 million North Shore Credit Union Environmental Learning Centre, an addition to the North Vancouver Outdoor School (NVOS) in Brackendale near Squamish, is an 850-square-metre building which reflects the environmental principles it espouses. The facility, set in a magnificent forest with a treehouse aesthetic, includes a welcoming space, featuring a nature gallery, exhibition space; assembly/dining hall, and classrooms/learning spaces. The building is both energy and water efficient fitting into the area's ecosystem, and befitting of the centre's purpose for environmental leadership and learning. Using structural mass timber construction to conserve energy and reduce the centre's environmental footprint, it is truly a showcase for wood innovation.

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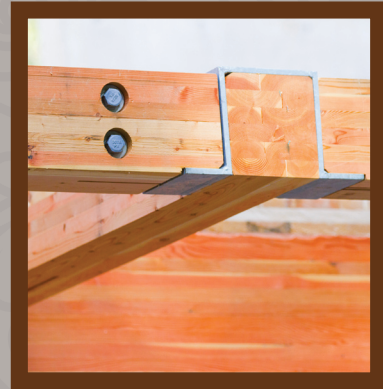
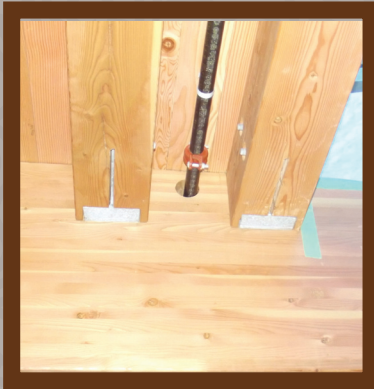
The aesthetics of the wood inside the building create a seamless connection to the outside world. With a lighter environmental footprint, our building speaks the language of its purpose.

John Lewis
Superintendent of Schools & CEO
North Vancouver School District



North Shore Credit Union Environmental Learning Centre

Innovating with wood: Mass Timber – expanding the possibilities of wood



Key wood innovation features:

- *Cross-laminated timber (CLT) walls and floors*
- *Glulam column and beam super-structure*
- *Reclaimed timber ceiling/roof*

Mass timber systems are very large, complete wall, floor and roof sections made from engineered wood products, and used in a variety of building types and sizes. These products offer significant benefits in terms of fire, acoustic and structural performance; scale possibilities, rigidity, strength, stability and construction efficiency.

The North Shore Credit Union Environmental Learning Centre is constructed with **cross-laminated timber**, which is a large multi-layer wooden panel made of lumber, and engineered for strength through laminations of different layers placed cross-wise to the adjacent layers.

The use of **cross-laminated timber (CLT)** in the North Shore Credit Union Environmental Learning Centre demonstrates its strength and stiffness, proving it to be a valid alternative to concrete and steel. They are lighter, more environmentally-friendly and easier to install.

The centre also features a **glulam column and beam super-structure** made from engineered timbers consisting of wood laminations that are bonded together with strong, waterproof adhesives, creating an ideal structural component.

This project also demonstrates the effectiveness of off-site prefabrication using state-of-the-art design/fabrication technologies, such as computer numerically-controlled equipment to ensure absolute precision of structural components.

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Only wood starts off green, and stays green.



“Comparative life cycle assessment studies generally show wood in construction performs well relative to non-wood materials in a number of environmental impact measures, including greenhouse gas emissions, other emissions to air and water, embodied energy and carbon storage.”

FPIInnovations

With growing pressure to reduce the carbon footprint of the built environment, building designers are increasingly being called upon to balance functionality and cost objectives with reduced environmental impact. Wood can help to achieve that balance. Wood costs less—economically and environmentally—while delivering more in terms of its beauty, versatility and performance. Innovative new technologies and building systems have enabled longer wood spans, taller walls and higher buildings, and continue to expand the possibilities for wood use in construction. Wood is more than a building material; it's a renewable and responsible choice.

reTHINK
WOOD

North Shore Credit Union Environmental Learning Centre
June 2012

Architect: McFarland Marceau Architects Ltd.
Engineer: Equilibrium Consulting Inc.

V Volume of wood products used: 396 cubic metres

C Carbon stored in the wood: 302 tonnes of CO₂

This is equivalent to either

88 cars off the road for one year, or

Energy to operate a home for 39 years

The wood products used in this building help minimize its environmental footprint.

BC forests grow this much wood in: 7 minutes

Avoided greenhouse gas emissions: 138 tonnes of CO₂

BRITISH COLUMBIA

woodWORKS!
Project of the Canadian Wood Council

Forestry Innovation Investment

Canadian Wood Council
Conseil canadien du bois

North Shore Credit Union Environmental Learning Centre



The North Shore Credit Union Environmental Learning Centre is one of several demonstration projects in the province selected in July 2010 to expand the use of wood products by applying traditional products in non-traditional ways, or creating innovative wood solutions. This and two other projects have been supported by the forest products and wood design industries and by the Government of British Columbia (Forestry Innovation Investment) along with Wood WORKS! BC and FPIInnovations.

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The North Shore Credit Union Environmental Learning Centre demonstrates a blend of leading-edge international technologies and BC design concepts. This further accelerates wood design and construction in BC to the forefront of the global experience.

Mary Tracey
Executive Director, Wood WORKS! BC

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We used the natural beauty and warmth of the reclaimed Douglas fir roof structure and exposed glulam beams and columns, to evoke a sense of familiarity and comfort for the students and teachers. We then clad the building in vertical cedar slats that were treated with a natural preservative, to allow the building to slowly weather and take on the qualities of the surrounding trees. And finally, we developed a system of structurally reinforced glulam floor beams that were penetrated allowing the mechanical ducting to be hidden from view, and then used CLT panels as the structural floor system. The result is a building that explicitly shows how ‘wood first’ initiatives are not only achievable, but rather, intrinsic in our realization of a more satisfying built environment.

John Hemsworth
MAIBC | M.ARCH | B.ENG | LEED AP
Project Architect
MCFARLAND MARCEAU ARCHITECTS LTD