SPECIAL 8-PAGE SUPPLEMENT

EDUCATIONAL FACILITIES

WINTER 2014 – VOLUME 3, ISSUE 2

WHAT'S INSIDE

WOODWORKS! Program of the Canadian Wood Council

cecobois Centre d'expertise sur la construction commerciale en bois

Canadian Wood Council / Conseil canadien du bois

Tried, Tested and True – Teaching by Example

ABBOTSFORD SENIOR SECONDARY SCHOOL
PHOTO CREDIT: AARON MILLAR, CRAVEN | HUSTON | POWERS ARCHITECTS

Nelson Mandela once said, "Education is the most powerful weapon which you can use to change the world." One of the main objectives of the Canadian Wood *WORKS!* program is to educate the design community and future practitioners about the opportunities that exist for wood products within construction. The perception of wood's capabilities needs to catch up with the research and technology that confirms that wood is a safe, sophisticated and viable option for a variety of building projects.

Taking a multifaceted approach toward education, the Wood *WORKS!* programs throughout Canada seek to inspire designers through workshops, Wood Solutions Fairs, conferences, awards programs and galas. Acting as a hub of excellence for wood education is the eLearning Center (www.woodworkselearning.com), a free, online, self-paced forum offering an assembly of lectures from internationally renowned architects, engineers, researchers, and educators who present professional development programs that provide viewers with the most current information on new wood products, designs and applications.

With the underlying theme of education threaded throughout many of the Wood *WORKS!* initiatives, we thought it fitting to feature educational facilities in our Winter 2014 magazine insert. Talk about seeing the fruits of our labor – Wood *WORKS!* educational efforts resulting in the predominant use of wood throughout educational facilities.

Interested in attending a Wood *WORKS!* educational opportunity in your region? Check out the events listed in this insert and get involved with your regional Wood *WORKS!* today.

Etienne Lalonde

Mark your CALENDARS
2015 EVENTS

JANUARY

Jan. 23
Prairie Wood Design Awards
Deadline for submissions
www.wood-works.ca/alberta/wda

Jan. 29
International Wood Symposium
Vancouver, BC
http://wood-works.ca/bc/educational-events/symposiums

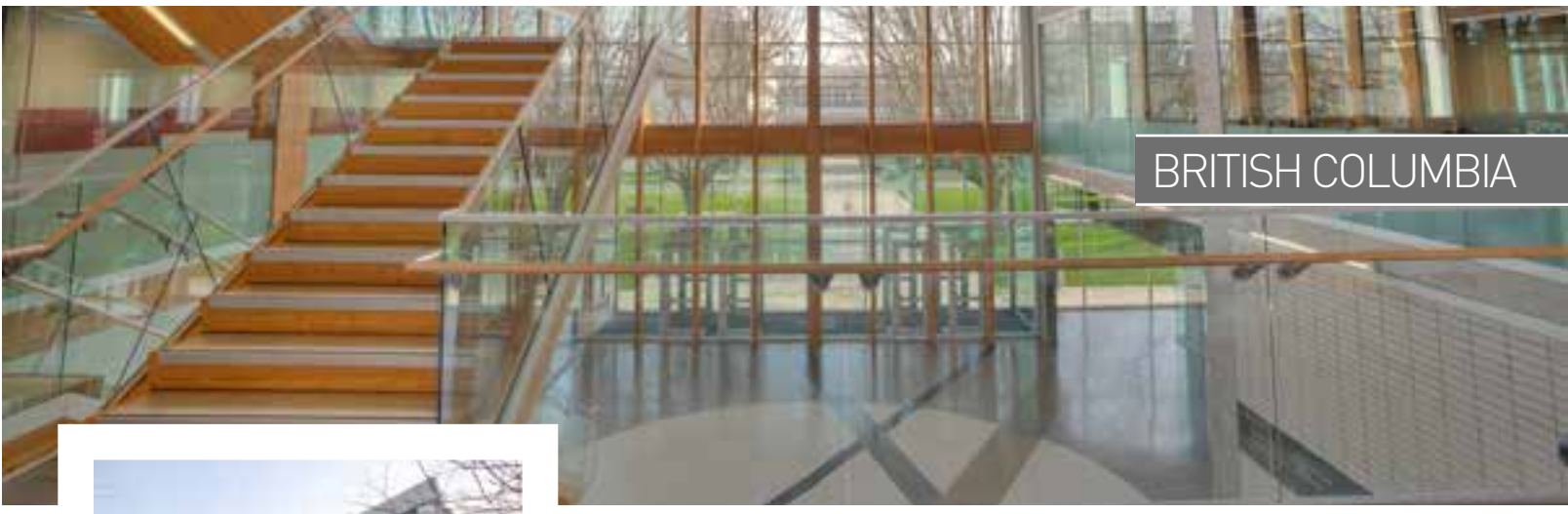
FEBRUARY

Feb. 19, 20
Timber Connections Design
2-Day Workshop
Kelowna, BC
http://wood-works.ca/bc/educational-events/workshops

MARCH

Mar. 2
BC Wood Design Awards Gala
Vancouver, BC
http://wood-works.ca/bc/wda/event-information

This Wood *WORKS!* magazine insert was created to help inspire design professionals throughout Canada. Do you have a project that features wood as a primary building material? Take advantage of our Wood *WORKS!* magazine insert and get featured today! Contact Natalie Tarini at ntarini@cwc.ca, and share your story.



BRITISH COLUMBIA

PHOTO CREDITS: NATURALLY:WOOD

Earth Sciences Building, UBC

Vancouver, BC

The Earth Sciences Building (ESB) is located on the Vancouver campus of the University of British Columbia (UBC). Shared between Earth, Ocean and Atmospheric Studies, the Department of Statistics, the Pacific Institute for the Mathematical Sciences and the Dean of Science, ESB is designed to enhance the growing links between each department, providing valuable opportunities for shared learning and collaboration.

The building is located along Main Mall of UBC, the primary north-south pedestrian route on campus, providing opportunity to add visual interest to the pedestrian experience by displaying the research taking place inside the building. To achieve this, the ground floor is considered the primary public space, and is glazed on all sides to maximize visibility into the building.

The building contains faculty and staff offices for each department, research laboratories, teaching spaces that include three lecture theatres, a museum component and a cafe. A five-story atrium divides the north and south wings of the building, providing an organization structure for the different departments while at the same time providing an east-west pedestrian route directly through the building. Unlike the concrete south wing that contains labs and offices, the north wing houses offices and lecture theaters, with wood as the primary structural material. The wood structure provides a welcoming environment for the inhabitants of the building. The embodied carbon footprint of the heavy timber structure is almost 50 per cent less than the concrete structure and is less than the average UBC laboratory building.

To provide rain cover for pedestrians in line with the university's design guidelines, a solid wood CLT canopy wraps three sides of the project. It extends from inside the building, where it forms the interior ceiling finish of the museum and cafe, blurring the boundaries between interior and exterior space. Located in the atrium is a free-floating cantilevered solid timber staircase. The dramatic stair is fully cantilevered off the bridge floors and is composed of a seamless folding "ribbon" of rigid glulam stringers, a first of its kind in the world. The clean and elegant lines of the massive timber seem to defy gravity and dramatically demonstrate the aesthetic and structural capabilities of modern engineered timber.

The ESB project sets a new standard of structural performance and innovation in heavy timber construction and demonstrates how modern engineered timber can be used efficiently and competitively in the most demanding of institutional projects.

ARCHITECT	STRUCTURAL ENGINEER	GENERAL CONTRACTOR	MASS TIMBER CONTRACTOR
Perkins+Will	Equilibrium	Bird Construction	Nicola Logworks

ALBERTA

PHOTO CREDITS: BARBARA MURRAY

SAIT Polytechnic Trades and Technology Complex

Calgary, Alberta

By Thomas Riley

SAIT Polytechnic's Trade and Technology Complex is a series of three buildings designed upon the consideration of future advancements of academic curriculums and the delivery of education, while also incorporating a high level of reverence to the unique and collegiate architecture of Heritage Hall – the institution's historical and inspirational focal point at the heart of the campus. The architecture reflects consideration not just of functionality, but of the character and nature of SAIT Polytechnic. A close look at SAIT Polytechnic's spirit revealed a great sense of fun as well as a reverence for tradition and history, which was not only reflected in the architecture of the Trades and Technology Complex, but also in the Master Plan, a design conceived by Gibbs Gage Architects.

The Thomas Riley Renovation, which involved extensive renovations throughout the building and the replacement of the East Atrium, figured prominently in the Master Plan. As a north-south link from the community through to the heart of the campus, the atrium is an introduction to the new vision for the campus. Following the pedagogical approach of the building as a tool for learning, the Thomas Riley building was designed to illustrate methods of framing with wood. Starting with the dramatic roof form, the building features a repeating elegant S-curved glulam structure. The warmth of this engineered wood structure reflects the use of the building as a school that trains and educates framers. The connections are simple steel to wood strapping that sits on a slightly tapered glulam column. The curved roof also curves up along the length of the building from bean to beam with a more traditional framing system built off the more engineered S members. This additional framing that makes reference to residential roof framing steps up in successive heights, creating a dramatic entrance to the campus on the north. The entire addition flanks the east end of the Thomas Riley building and provides a new and welcoming entrance to the school as a significant urban educational facility in the Calgary landscape.

ARCHITECT
Gibbs Gage Architects

STRUCTURAL ENGINEER
DIALOG

TIMBER SUPPLIER
Structurlam

ONTARIO

Ed Lumley Centre for Engineering Innovation

Windsor, Ontario

Designed to meet the university's 21st-century needs – with more classrooms and meeting rooms, expanded laboratory facilities, and the latest technological tools – the Ed Lumley Centre for Engineering Innovation has transformed the Faculty of Engineering, greatly enhancing the student experience at the University of Windsor.

This complex is the Faculty of Engineering's flagship facility and includes student study and activity spaces and faculty offices in addition to the 80 flexible high-tech classrooms and specialized research labs designed to meet the faculty's emerging teaching and research demands.

The 310,000-sq.ft. (28,800 m²) center is a pedagogical tool for students that represents a significant leap in the evolution of educational buildings. It is a living and learning building where a combination of exposed structures and monitored systems exhibit construction concepts and illustrate engineering principles through environmentally friendly technologies. It is a facility where students actively learn through their surroundings, collaboration and experience.

The cutting-edge project also had significant sustainability targets where wood played an important role as a renewable and sustainable material. Wood is highly visible throughout the building in the structural roof applications, laser cut acoustical wood panels used for acoustic mediation in the atrium and classrooms, as well as on the exterior of the building in the form of fins and solar shades that reduce the effect of western solar gain.

The atrium structure is comprised of long roof beams supported by a series of inverted pyramidal glulam-steel hybrid frames. The resulting structure is elegant and sophisticated. Even though the structural system is complex, the overall effect is very streamlined and the use of glulam in the atrium infuses the building's primary gathering space with warmth.

"The glulam and steel really worked to their particular strengths in this building," says Chris Williams, Vice-President of Timber Systems Limited, the project's timber supplier. "We were able to tackle the support conditions by using the high tensile capacity of the steel bridging to tie the pyramids together, while keeping its visual profile low – the timber is really the star of the show there, and most of the 'action' is concealed within the timbers. The result is the appearance of independent bays, when the structure actually works as an interconnected space-frame."

Windsor's Centre for Engineering Innovation is not just a remarkable building, it is also a tool that transforms the student experience. The building's many visible and often interactive architectural features provide hands-on experiences that bring the engineering principles taught in the classroom to life.

OWNER
University of Windsor

LEAD ARCHITECT
B+H Architects

ASSOCIATE ARCHITECT
Di Maio Design Associates

STRUCTURAL ENGINEER
Halsall Associates Ltd.

TIMBER SUPPLIER
Timber Systems Limited

QUÉBEC

PHOTO CREDITS: LAURENT GOULARD

La Maison Mazda

Saint-Félicien, Quebec

La Maison Mazda in Saint-Félicien represents a first in Canada for a car dealership. Not only is the building made entirely of wood, it also combines the advantages of three structural systems: a glue-laminated timber frame for the fully glassed-in showroom, a traditional light-frame for the offices, as well as a prefabricated light-frame of engineered wood for the garage.

After issuing a first call for tenders with plans for an all-steel frame, and noting the high prices of the resulting bids, owner Luc Verreault learned that there was a way to realize his project at a comparable cost, if not at a lower cost, using a combination of wood systems. The key would be the use of laminated finger-jointed lumber (LFL) which can reach up to 400 mm wide and 10 m long. Assembled from 2 x 4s which were mechanically tested (MSR), the strength provided by the LFL members allowed for a design that included very tall wall panels.

"The masterstroke of the project is the showroom, with its three sides of full windows and its high exposed columns reaching almost seven meters," says Christyne Fortin of Gosselin & Fortin Architectes. The exposed structure consists of glue-laminated timber and, in order to comply with Mazda's requirements, all the exposed wood is coated with a protective grey linseed oil stain which reveals the wood grain.

On the outside, a more than 10 m-high glue-laminated timber wall projects perpendicularly from the lateral facade of the building, protruding upward and surpassing the height of the roof by three meters. This "performance wall" found in all Mazda dealerships and usually built of steel, was built here with a prefabricated engineered light frame, which also led to substantial savings.

Verreault is proud to have been able to implement this project at a competitive cost, using a 100 per cent locally sourced product, thereby also helping to stimulate the local economy and local employment. "I wanted to send the message that it can be done, building with wood, regardless of the type of construction," declared Verreault.

ARCHITECT
Gosselin & Fortin Architectes

STRUCTURAL ENGINEER
Structure Fusion

GENERAL CONTRACTOR
Construction Bon-Air

WOOD PRODUCT SUPPLIERS
Lamco Forest Products (LFL wood) and Art massif structure de bois (glulam)

PREFABRICATED WOOD STRUCTURE
La Charpenterie

ATLANTIC

PHOTO CREDITS: JAMES STEVENS

Mona Campbell Building

Halifax, Nova Scotia

The Mona Campbell Building acts as a gateway from the north end of Halifax into the Studley Campus of Dalhousie University. Located at the intersection of two main streets, Coburg Road and LeMarchant Street, the building interacts with the university campus and the surrounding residential communities.

A university is a place to promote the exchange of ideas. It is important to provide not only teaching and learning spaces but in-between spaces, where opportunities for the informal discussion of ideas occur between staff, students and visitors. These connective, non-programmed spaces form the soul of the Mona Campbell Building, in the four-story, south-facing central spine or atrium. This provides both physical and visual interaction with all departments, access to daylight and the exterior green space.

The building is programmatically diverse and houses four departments: the College of Continuing Education, the School of Social Work, the Faculty of Computer Science's research space and the College of Sustainability. It also contains the PCPC computer store, a pizza shop and 10,000 sq.ft. of classroom space, all within 100,000 sq.ft. Such density of program was only possible by the precise integration of mechanical, structural, electrical and architectural systems, making single components serve multiple functions. This economy was achieved throughout the project by using an integrated design approach with a diverse client group, a skilled construction manager and a complete consultant team.

Wood is used throughout public spaces. Its highly tactile quality invites people to touch and linger, in contrast to the rawness of the concrete structure. One room has wood used on multiple surfaces, and this becomes a precious place within the building: the thesis defense room, in many ways signifying the highest level of academic achievement within academia.

The form of the building and the building section address sustainability, programme and context. The building is clearly ordered – with zones for each function. The office spaces are located on the north and the classroom spaces are located to the south with the interstitial south-facing atrium encouraging socializing, integration and learning. Plywood panels integrated with acoustical panels enhance this space by adding the warmth of wood whilst improving the acoustics of the space, making it one of the most used spaces on campus.

ARCHITECT
Fowler Bauld & Mitchell Ltd.

STRUCTURAL ENGINEER
CBCL Engineering Ltd

GENERAL CONTRACTOR
AECON Atlantic

NATIONAL PARTNERS

Canadian Wood Council / Conseil canadien du bois

Natural Resources Canada / Ressources naturelles Canada

BSLC

StructureCraft

STRUCTURLAM
structurlam.com

western archrib
structural wood systems

Weyerhaeuser

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