



**SPECIAL 8-PAGE SUPPLEMENT**

# EMERGENCY BUILDINGS

WINTER 2018 – VOLUME 5, ISSUE 3



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STEVESTON FIRE HALL  
PHOTO CREDIT: HUBERT KANG PHOTOGRAPHY

## SAFETY is a top priority

Did you know that the development of the *National Building Code* in Canada is on a five-year cycle? As part of this process, experts representing various professional backgrounds and building materials take part in committee work to review existing code provisions and to evaluate requests for changes. A portion of the review process involves a public consultation period. After the process is complete, the model *National Building Code* still has to be reviewed and adopted by each province and territory. Why is this process so long? Because safety is of the utmost importance! Regardless of the building material used, if something does not meet the code requirements then it does not get built.

Wood use in construction offers social benefits; people often prefer to live, work, and play in visually appealing surroundings. The use of natural elements such as wood products, plants, and daylight help to create a positive space that is shown to reduce stress and improve productivity and attention. Considering all the biophilic benefits, it makes sense that emergency responders would prefer to work in such an environment; especially given their line of work and the challenges and issues they encounter on a daily basis.

Throughout this magazine insert, our regional Wood WORKS! teams have highlighted the use of wood in emergency buildings. It seems fitting that the men and women who dedicate their careers to ensuring the safety of Canadians, would work in buildings that are safe and socially beneficial.

To learn more about the Canadian Wood WORKS! program, please visit [www.wood-works.ca](http://www.wood-works.ca).

Etienne Lalonde  
National Director  
Wood WORKS!

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.

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@cwcc.ca](mailto:ntarini@cwcc.ca), and share your story.

## Mark your CALENDARS 2018 EVENTS

### February 1

Wood Solutions Conference  
Montreal, QC  
[www.cecobois.com](http://www.cecobois.com)

### February 7

TimBEER Engineering Workshop  
Ottawa, ON  
[www.wood-works.ca/ontario](http://www.wood-works.ca/ontario)

### February 8

TimBEER Engineering Workshop  
Toronto, ON  
[www.wood-works.ca/ontario](http://www.wood-works.ca/ontario)

### February 21

Ottawa Wood Conference  
Ottawa, ON  
[www.wood-works.ca/ontario](http://www.wood-works.ca/ontario)

### February 26

Wood Design Awards in BC  
Vancouver, BC  
[www.wood-works.ca/bc](http://www.wood-works.ca/bc)

### March 13

Prairie Wood Design Awards Gala  
Edmonton, AB  
[www.wood-works.ca/alberta](http://www.wood-works.ca/alberta)

### April 11

Winnipeg Wood Solutions Fair  
Winnipeg, MB  
[www.wood-works.ca/alberta](http://www.wood-works.ca/alberta)

### November 6

Wood Solutions Conference  
Vancouver, BC  
[www.wood-works.ca/bc](http://www.wood-works.ca/bc)

## BRITISH COLUMBIA



PHOTO CREDIT: 2016 WOOD DESIGN AWARDS IN BC

## Qualicum Beach Fire Hall

By naturally:wood

Qualicum Beach, BC

The town of Qualicum Beach is situated on the northeast coast of Vancouver Island at the foot of Mount Arrowsmith. Together with neighboring communities, this fast-growing region has a population of around 45,000. Forestry has always been important to the local economy. With 85 per cent local timber content for the primary structure of the apparatus bays and as a cladding material, the Qualicum Beach Fire Hall project supported jobs in the nearby town of Parksville.

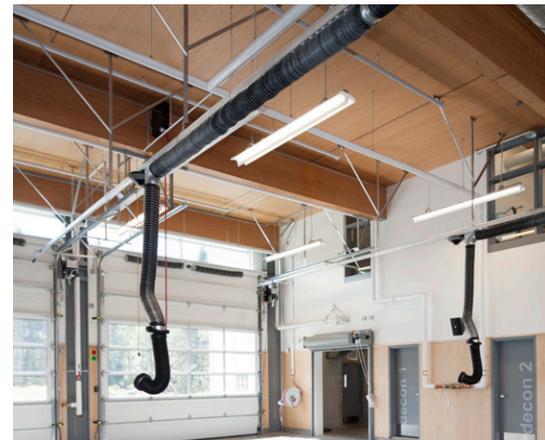
The new fire hall serves as the headquarters of the Qualicum Beach Fire Department and is designed to meet the needs of both career and volunteer personnel. The building includes four tandem drive-through bays, with related apparatus storage and required fire facilities, along with administrative/training areas and a fire department training room large enough to divide successfully into two functional rooms.

Designed to post-disaster standards,

which require the structure to resist seismic loads 50 per cent higher than those for regular buildings, Qualicum Beach Fire Hall was constructed using a concrete slab on grade, with dimensional lumber for its wood-frame vertical structure and laminated veneer lumber panels (LVL) for its upper floor and roof systems.

This integration of LVL panels for the roof is an innovation that brought multiple benefits to the project. From the point of view of embodied and operating energy, wood has a lower carbon footprint compared to concrete or steel equivalents. The low air permeance of the LVL panels also improves energy efficiency, reducing heat loss through the building envelope, which was an important consideration for the municipality which both owns and operates the building.

With a shorter time required for shop drawings, it is estimated that



the use of LVL on this project reduced the overall construction time for the structure by 65 per cent compared to a conventional steel or concrete system. Furthermore, the use of wood, a familiar local material, provided the greatest opportunity to engage local labor in the project, maximizing the economic and social benefits to the community.

**OWNER**  
Town of  
Qualicum Beach

**ARCHITECT**  
Johnston Davidson  
Architecture + Planning Inc.

**STRUCTURAL  
ENGINEER**  
Herold Engineering Ltd.

**GENERAL  
CONTRACTOR**  
Windley Contracting Ltd.

**TIMBER SUPPLIER**  
Brisco  
Manufacturing Ltd.



PHOTO CREDIT: CITY OF CALGARY

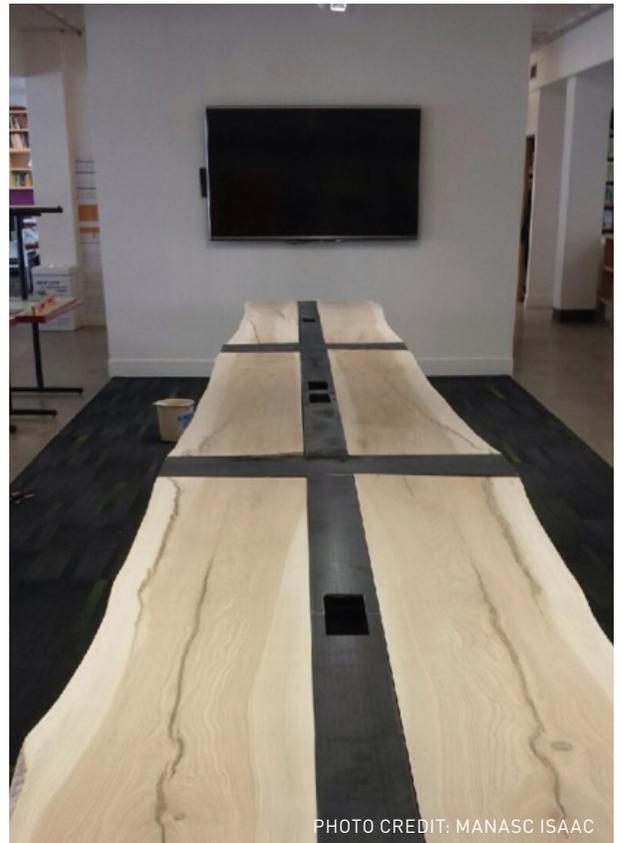


PHOTO CREDIT: MANASC ISAAC

## A Modern Emergency Operations Centre

By Kent McKay, Communications Director, Manasc Isaac

Calgary, AB

Calgary needed a new Emergency Operations Centre (EOC) badly. The city's archaic 1940s-era clinker brick bungalow located on a discreet residential site, was no longer capable of meeting the city's needs, and it needed to be replaced.

The Emergency Operations Centre was completed in 2012. Its completion was timely, as the EOC was put to the test and served as home base for the Calgary Emergency Management Agency's 30 partners and members during the catastrophic floods, which struck the city in 2013.

Setting a new standard for EOCs across Canada through its innovative design and harmonious integration into its site, the building features wood prominently. The EOC's sustainable design, which was recently rewarded

with LEED Gold certification, is expressed in the adaptive reuse of wood; glulam beams from an old post-war community hall that previously sat on the building site were repurposed to structure the new EOC.

Wood also plays a major part in the look and feel of the EOC, especially in the innovative Media Pavilion – which is not traditionally a programme component of this building type. The design team included the pavilion to provide a convenient and discrete space – away from emergency responders – for media who might need to report on an emergency. The liberal use of wood in the space was applied to imbue a sense of warmth and calm in the space – a natural feel to help calm occupants who could be facing stress or tragedy.

The team ended up taking a wooden symbol of the EOC project home with them, too! Working on a parking lot plan adjacent to the building, it became clear that a 65-year-old green ash tree would need to be cut down. Most people saw a pile of mulch, but the design team saw the potential for a showpiece for its Edmonton studio.

The tree was cut into four pieces and delivered to a local carpenter who transformed the wood into a stunning custom table to complement Manasc Isaac's redesigned Edmonton office, reinforcing the space's open, Activity Based Working plan. Featuring integrated power and data cables, the 30-foot table can accommodate multiple meetings at one time, and provides a warm community hub for staff events.

**OWNER**  
City of Calgary

**ARCHITECT**  
Manasc Isaac

**STRUCTURAL ENGINEER**  
Stantec

**GENERAL CONTRACTOR**  
BIRD Construction

**TIMBER SUPPLIER**  
Western Archrib

## Durham Region Police Service, Clarington Police Complex

Clarington, ON

Durham Region Police Service's new home provides the police with a highly functional, purpose-built facility to serve the needs of their growing community. The Clarington Police Complex (CPC) developed a Master Plan for the use of a 27-acre greenfield site that was divided into two phases. Phase I of the police complex included the development of the site to accommodate future phases as well as the construction of the first two structures: the East Division Building and the Forensic Investigation Facility.

The 47,600-sq.ft. East Division Building (EDB) is the "face" of the complex and the main community-oriented facility. Designed to be flexible and to accommodate projected growth to 2035, the facility accommodates 170 people working in shifts. The floor plan includes

general administration and investigative offices, interview rooms, project and parade rooms, staff kitchen, locker and gym areas, secure IT and file storage, gun room facilities, holding/booking and sally port areas, vehicle storage, and property maintenance facilities.

This is not a typical-looking police station. The exterior of the building incorporates natural stone and wood that complements the naturalized site and provides an attractive view for neighboring residents. Inside the EDB, the lobby is inviting and open – a welcoming first impression for visitors where the warmth of natural wood finishes defines the information desk. To reduce the intimidating factors sometimes associated with police stations, the EDB incorporates separate entryways for the public, staff and processing of detainees.

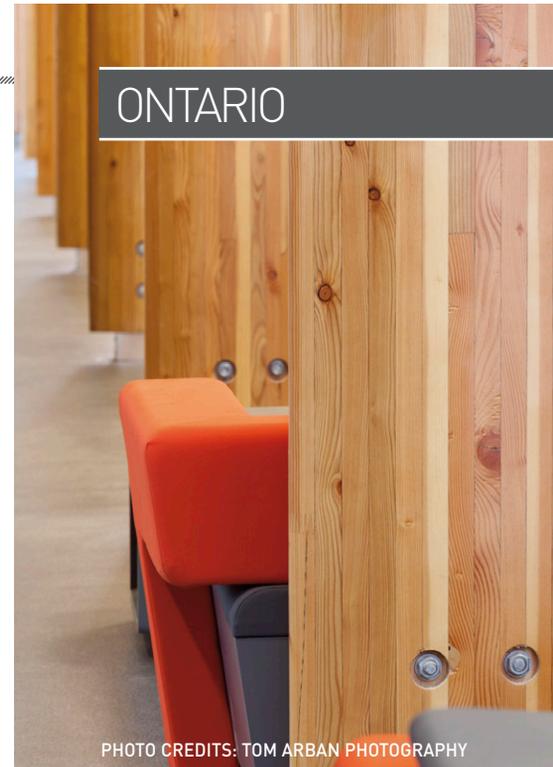


PHOTO CREDITS: TOM ARBAN PHOTOGRAPHY



The EDB is arranged around a large inner courtyard, adjacent to the internal kitchen and lunch room, to provide private space for the police in a secure area. The abundance of light streaming in through the courtyard also filters into the common work areas and offices, providing bright and healthy working conditions.

The design team highlighted the use of engineered wood products as key parts of the interior design. The cross-laminated timber panels and glulam beams and columns that form the structure are left exposed, and contribute generous, balancing warmth to the space that keeps the masonry and extensive glazing from giving the interior an institutional feel.

The exposed wood structure and abundant daylight provided in the building's central spine create a natural calming effect. Occupants who travel down this principal corridor are subconsciously linked to forms and patterns from nature. This effect is called biophilia, the pleasant feeling that people experience from connecting to nature in all its forms. The form of the structure in this area, including curved columns and repeating patterns, evokes the natural world and helps put building occupants at ease.

**OWNER**  
Regional Municipality  
of Durham

**ARCHITECT**  
DIALOG

**STRUCTURAL  
ENGINEER**  
DIALOG

**TIMBER  
SUPPLIER**  
Nordic Structures



## Fire Station 34

Longueuil, QC

From the outset, the City of Longueuil wanted to use wood for its new fire station in the borough of Saint-Hubert. Aware that this material is not frequently used for these types of buildings, but eager to take a further step in its sustainable development goals, the city did not hesitate: inaugurated in the summer of 2015 near the Promenades Saint-Bruno shopping centre, Fire Station 34 is designed almost entirely of wood. Its structure features a combination of heavy timber, light wood framing and steel.

Erected on a 49,514-sq.ft. plot, the building stands out as a beacon in the peri-urban commercial environment. Its architecture takes inspiration from previous firehouses, whose firehose drying towers were considered landmarks in villages, much like church steeples were. Though the tower of this one-story building is not as high, it still serves as a central visual element.

What particularly characterizes this construction, however, is its use of three different structural systems: a light



PHOTO CREDITS: VINCENT LECLERC + ASSOCIÉS ARCHITECTES

wood frame for the administrative area, which covers a little more than one-third of the entire 12,077-sq.ft. area; a steel structure over 15 per cent of the surface area, for the drying tower and for two sections above the garage doors; as well as the heavy timber framework necessary to support the long spans in the garage space, covering half of the total surface area. The whole building serves as the perfect illustration of the rule, "the right system in the right place".

According to calculations carried out for the entire building, the use of wood resulted in the sequestration of 290 tonnes of carbon dioxide, the equivalent of the gases generated by 80 average

North American vehicles in one year. In addition, the wood used was a local product, meaning that its manufacturing and transport required much less energy than other structural products. Furthermore, all the wood used for the garage structure, including the 90 m<sup>3</sup> of beams and columns and 50 m<sup>3</sup> of CLT panels, originated from FSC-certified forests.

The new fire station houses four teams of six firefighters, including fire chiefs, on a 24-hour rotation. The firefighters were pleased to set up in such a quality environment and the administration has expressed its complete satisfaction with the result.

**OWNER**  
City of Longueuil

**ARCHITECT**  
Vincent Leclerc +  
Associés Architectes

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ENGINEER**  
Groupe SM

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CONTRACTOR**  
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Kéfor Structures Ltée



ATLANTIC

PHOTO CREDITS: DEBORAH NICHOLSON AND NYCUM STAFF

## St. John Ambulance NS/PEI Headquarters

Dartmouth, NS

This new building for St. John Ambulance (Nova Scotia/PEI Council) was designed to create a memorable experience for students enrolled in first aid training while providing instructors with flexible classrooms and other facilities that support multiple teaching and learning styles. The design brief was to provide an intuitive, comfortable and accessible experience for students who might only use the facility once every two years, while consolidating administrative instructor support and warehouse functions.

The facility supports the needs of a province-wide instructor program where instructors collect materials such as CPR training aids and manuals in the morning, returning them at the end of the day to be cleaned, processed and stored. Atlantic administrative headquarters for St. John Ambulance are also housed in the building.

A clear floor plan for the building carefully arranges the functions

to be discrete, yet linked where they support and enhance one another. The straightforward design means students, administrative staff and instructors are all accommodated and supported. Through careful planning, development of multi-use spaces, careful material selections and a close working relationship with the contractor, the new headquarters provides highly functional and low-maintenance and cost effective facilities.

Wood was chosen to work in conjunction with steel in order to take advantage of efficiencies for different spans, provide character to interior spaces where exposed, and offer an easy-to-source and easy-to-work-with material.

Steel post and beam structure provides a framework within which a curving and expressive exterior curtain wall is implemented: wood trusses continue from the interior to provide a generous and protective overhang

that helps keep the interior spaces at the curtain wall comfortable, while connected to the exterior. The use of steel in this area minimized the number and size of columns and allowed them to more easily be located outside of the building envelope.

Wood provided a familiar building material and economical choice for smaller-scaled portions of the building. The administration wing of the project is primarily standard dimensional framing, easily adaptable and configurable for standard office layouts for private and shared workspaces. Wood trusses in the classroom wing provide column-free learning spaces and enhance the aesthetics of the exposed tongue and groove structural pine decking. Clerestory windows are spaced between each of the classrooms' trusses with light fixtures integrated into the truss forms themselves, providing an integrated approach to daylighting and artificial lighting strategies.

**OWNER**  
St. John Ambulance

**ARCHITECT**  
William Nycum &  
Associates Limited

**STRUCTURAL  
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Pinto Engineering Ltd.

**GENERAL  
CONTRACTOR**  
Lindsay Construction

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