



# LOW-RISE CONSTRUCTION

**SPECIAL  
8-PAGE SUPPLEMENT**

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## **What's Inside**

**Letter from the National Director**

**Low-Rise Construction**

**National Partners**

## ABOUT US:

### WOOD WORKS!

Wood WORKS! is a national initiative by the Canadian Wood Council (CWC) that advocates for the adoption of wood in the building and construction sector. With the goal of transforming markets and promoting holistic built environments, this industry-led initiative enables innovative systems integration, provides strategic market outreach and supports the sector through training, best practices, research, networking and direct technical support.

**Contact us for support on your next Low-Rise Project:**

Toll Free: (800) 463-5091

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Thank you to the design and construction professionals who shared their expertise for this supplement:

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**TEAL Architects + Planners.**  
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East Hants, NS  
**Krystie Babalos**, Vice-President,  
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**Robert Malczyk**, Principal –  
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**Tim Ryce**, Chief Building Officer –  
City of North Vancouver

Project: 1 Lonsdale Avenue  
**Michael Krans**, President, Timmerman  
Timberworks

**Louis Poliquin**, Director, Cecobois

# Low-Rise Buildings Provide Opportunities for Growth

The low-rise commercial sector in Canada offers significant opportunities for wood construction. Nearly three-quarters of all square footage constructed annually consists of one-to four-storey retail, office, warehouse and light industrial buildings.

Choosing wood for low-rise construction presents municipalities and designers with a huge opportunity to reduce the environmental impact of construction in Canada. Commercial and industrial buildings that reduce emissions and promote a healthy workplace have been increasingly recognized in recent years. The aesthetic and biophilic benefits of wood are also driving its use in designs.

Low-rise construction offers economic benefits as well. According to the Forest Products Association of Canada (FPAC), Canada's forest products sector is one of the country's largest employers, operating in more than 600 communities, providing 230,000 direct jobs and over 600,000 indirect jobs.

We dedicate this insert to the incredible low-rise wood buildings across Canada. As you can see from our highlighted examples, incorporating wood makes any building extraordinary. With the added benefits of supporting local economies and the well-being of endusers, the real question is, why wouldn't you choose to build with wood?

**Andrew Bowerbank**  
Vice President, Market Development  
*Vice-président, Développement des marchés*  
Canadian Wood Council

## Did you know that nearly 75 percent of all square footage constructed annually in Canada consists of one- to four-storey buildings?

We reached out to our regional offices to showcase the opportunities in low-rise construction across Canada and share the inside scoop and inspiration to elevate architecture across the country. The professionals that we interviewed have chosen wood for its inherent safety, sustainability, biophilic properties and, in most cases, cost effectiveness.

Featured projects for this edition include a swimming pool in Nova Scotia, a medical clinic in Alberta and a Passive House warehouse in North Vancouver.

Read on to discover the many benefits of low-rise wood buildings.



1 Lonsdale Avenue Commercial Building

### WHY CHOOSE WOOD?

In North Vancouver, 1 Lonsdale Avenue used an Integrated Project Delivery process to achieve greatness with a small infill project. Despite its modest size, the building successfully addresses a number of the major challenges facing designers, builders and municipalities as they confront climate change. The Passive House design reduces operating energy by 66 percent compared to a standard code-compliant building and the sustainably harvested mass timber structure greatly reduces the carbon footprint. Virtual construction and offsite prefabrication resolved logistical uncertainties and shortened construction time to 10 days during which time there weren't any of the usual community complaints about noise and traffic disruption typically associated with building in dense urban areas.

Architect John Hemsworth reflects, "We use timber as a departure point for all our projects, asking ourselves, 'Why wouldn't you do this?' There is a movement toward this kind of building across the planet; part of our job is to design the buildings, to coordinate them and also to educate everybody around us."

### SYSTEM AND EFFECT

Buildings across Canada are diverse, responsive to unique regional circumstances and opportunities. The systems explored in Calgary by 5468796 Architecture achieved extraordinary results in a low-rise mixed-use building. Johanna Hurme, founding partner at 5468796 Architecture, shares the challenges using their innovative mass timber roof system in the 25,000-sq.ft., two-storey Beacon Clinic building, and how it was achieved:

"Brisco [Fine Line Beams] was the only manufacturer open to testing and obtaining the required certification by authorities for a taller vertical application of a mass timber product. This wall-like application enabled the dramatic coffered ceiling of the medical space, the main design element of the entire project." A curved roofline merges into a pine ceiling that meets deep wood beams inside, creating dramatic height above the top-floor medical offices. The offices feature clerestory windows along the perimeter and a glass-enclosed lightwell that takes full advantage of the daylight. The natural colour of the exposed wood structure enhances the bright, warm atmosphere.



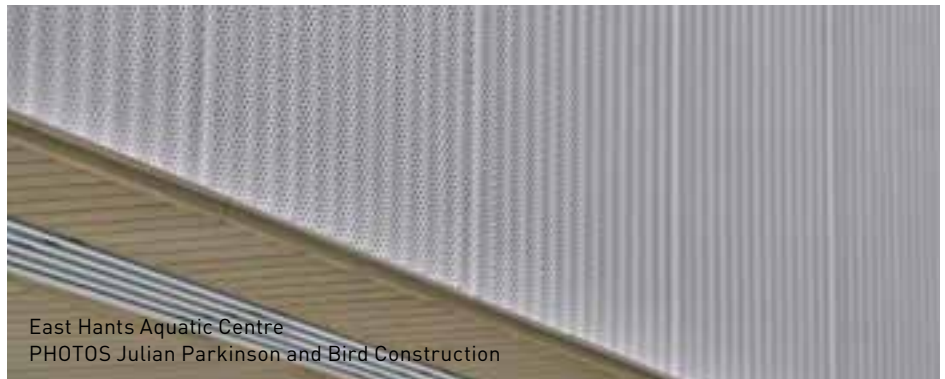
East Hants Aquatic Centre  
PHOTOS Julian Parkinson and Bird Construction



1 Lonsdale Avenue Commercial Building



In Nova Scotia, the East Hants Aquatic Centre – designed by an integrated team led by Toronto-based MacLennan Jaunkalns Miller Architects, in association with TEAL Architects + Planners, in Halifax – has become a popular community destination. The program includes a six-lane, 25-metre lap pool, a moving-water pool, hot tub, climbing wall, multipurpose room and other public spaces. The 28,800-sq.ft. interior is exposed to warm, humid conditions, and the chlorine that’s required to maintain clean water is slightly corrosive to some surfaces. This is almost entirely mitigated by a carefully designed air-handling system, and the NLT roof panels help to maintain a healthy indoor environment by not interacting with airborne elements. Mass timber consistently performs well in high-humidity environments. Since the facility was completed in 2020, it has become a well-loved centre for the community of Elmsdale.



East Hants Aquatic Centre  
PHOTOS Julian Parkinson and Bird Construction



East Hants Aquatic Centre  
PHOTOS Julian Parkinson and Bird Construction

## WOOD FOR WELL-BEING

Employees are more satisfied with the presence of wood. According to the 2018 Pollinate Health Report, *Workplaces: Wellness + Wood = Productivity*, satisfaction with work life and the physical workplace increases steadily in relation to the proportion of natural-looking wood surfaces. People in offices with less than 20 percent exposed wood surfaces are much less satisfied with their surroundings and work life.

**“People are asking for these buildings because they are visually warmer, healthier and more environmentally friendly.”**

John Hemsworth, Principal,  
Hemsworth Architecture



1 Lonsdale Avenue Commercial Building

"Exposed wood became the natural choice for its warmth and material quality that we felt was ideal for a medical space. Medical facilities tend to be more sterile design environments [often for good reasons], but we tend to underestimate the psychological power of natural materials and quality of light on our everyday experiences." Johanna Hurme, Founding Partner, 5468796 Architecture

**"Biophilic design was a factor in choosing to build a wood-frame building. Biophilia is about our innate need to connect with nature. When we do, we experience many benefits, like less stress, lower blood pressure, more relaxation and positive moods."**

Krystie Babalos, Vice-President, Development,  
Babco Equities Ltd.

## INNOVATIVE OPPORTUNITIES

Mass timber for low-rise buildings offers a wide range of possibilities and benefits. Traditional post-and-beam construction, like in the system used in a hardware store designed by TK, or the 80,000-sq.ft. Ameublements Tanguay furniture store designed by Quebec City's Coarchitecture is very well suited to large commercial buildings. A recent example of a cost-effective industrial building with a wood structure is the Charpentes Montmorency plant, designed by Cargo Architecture.

Charpentes Montmorency  
PHOTO Dave Tremblay



Charpentes Montmorency  
PHOTO Dave Tremblay

Mass timber construction has gained momentum and popularity in recent years due to its long-span capabilities, speed of construction, aesthetic warmth and environmental sustainability. These qualities make it an excellent choice for low-rise commercial buildings such as restaurants, coffee shops, retail stores and offices, which in past years were built primarily with light steel, concrete block or cast-in-place concrete. Wood can meet the structural performance and quality objectives of even the most demanding projects, so many low-rise commercial buildings are incorporating mass timber because it has the flexibility to meet many needs, from structural to aesthetic.

Commonly, low-rise commercial spaces are designed to be as open and unobstructed as possible. They tend to have high ceilings, open floor plans and the flexibility to be reconfigured according to a tenant's needs. Even for structures that require "tall walls," such as those over 20 ft. tall, mass timber can fulfill the needs of almost any low-rise commercial project.

Developers and designers seeking to use wood in low-rise commercial projects have a number of options, from exposed mass timber systems utilizing innovative products like CLT, NLT, DLT and glulam to traditional dimension lumber framing. Construction with wood is versatile enough to meet virtually any low-rise project requirement.





## Tapping the Potential of Wood Construction

Glulam beams and columns can be curved and shaped to suit a variety of profiles and dimensions, making it an exciting product to work with for a wide variety of building configurations. Parametric design technologies and CNC machines, which are now common in the industry, multiply the possibilities for wood building shape and design. As such, we are seeing an increasing number of professionals exploring the design possibilities of modern mass timber.



**MICHAEL KRANS, PRESIDENT OF TIMMERMAN TIMBERWORKS IN ONTARIO, SHARES HIS PERSPECTIVE ON THE OPPORTUNITIES FOR WOOD PRODUCTS:**

*"I believe the potential for the low-rise market has really increased over the last few years. We are being helped by climate concerns, an industry-wide push for prefabrication, strong market conditions and price increases in competing structural systems."*

If a decision to use wood were divided into "hard" and "soft" factors, and hard factors included cost, availability and structural suitability, then biophilia and overall aesthetics could be characterized as soft factors. Interestingly, environmental concerns kind of straddle the categories – on some projects, environmental concerns loom large and on others, they are perceived as more of a bonus than anything else.



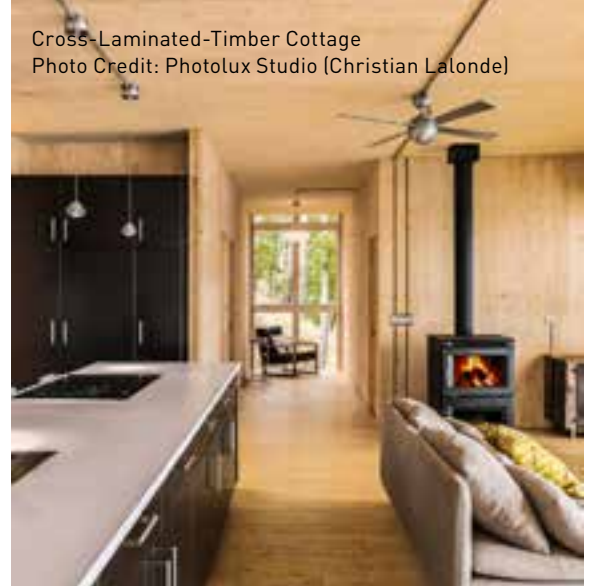
Cross-Laminated-Timber Cottage  
Photo Credit: Photolux Studio (Christian Lalonde)

Mass timber still can't compete with light framing on a cost-per-sq.ft. basis, but the advantages of mass timber regarding fire and sound performance, coupled with the fact that mass timber is faster again than light framing, have helped foster opportunities in the market. Some developers have pushed past the fire limitations and/or used mass timber in those applications where a combustible core is allowed, and although the cost of a mass timber core is still significant, it is faster and less expensive than cast-in-place cores and it completes well with CMU and precast.



Cross-Laminated-Timber Cottage  
Photo Credit: Photolux Studio (Christian Lalonde)

Cross-Laminated-Timber Cottage  
Photo Credit: Photolux Studio (Christian Lalonde)



**LESSONS LEARNED**

**Advice from professionals with experience in low-rise wood construction**

"The interesting thing to me is that encapsulated mass timber, which is now in the B.C. Building Code, is actually considered a form of non-combustible construction. That blew my mind! Through fire modelling, good design sense and some encapsulation, wood meets the definition of 'non-combustible,' and so has a place in our construction future."  
—Tim Ryce

"For the first time in my life, we had a meeting with the contractor, the architect, the crane operators, the installer – and did the full-blown installation on the computer. We proposed something, then someone would say, 'No, no – there is a better way,' so it went back and forth with these brilliant guys from the installation side. This was fantastic!"  
—Robert Malczyk

"Immediately go talk to the municipal officials, tell them what you are doing and ask how they can help. If you are proposing a building that is more energy-conscious, that is sequestering carbon and has other environmental benefits, the response should be positive and help should be provided."  
—John Hemsworth

"We did have to convince the client and contractor that this was a beneficial strategy for making the roof assembly. Lifecycle costing supported the decision, as well as the [other] benefits."  
—Johanna Hurme TEAL Architects + Planners



## NATIONAL PARTNERS



## WOOD WORKS! REGIONS IN CANADA



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