



# 80 Atlantic Avenue

TORONTO, ON

Canadian  
Wood  
Council

Conseil  
canadien  
du bois



**WOODWORKS!**  
Program of the Canadian Wood Council

## Table of Contents

- 3 Introduction**
- 4 Project Description**
- 5 Structure**
- 8 Materials**
- 9 Technology & Design**
- 10 Conclusion**
- 11 Project Team**

Cover photo: Bob Gundu  
All photos Doublespace Photography unless otherwise noted.





## Introduction

Ontario's first mass timber commercial building in over 100 years, 80 Atlantic pioneers a new urban office typology for potentially many more timber-frame projects across the province, and the country. Comprising four storeys of mass timber above a one-storey concrete podium, the 8,825-sq.m. (95,000-sq.ft.) building completes a courtyard with 60 Atlantic to create a paired commercial development.

Revisions to the Ontario Building Code in 2015 made it possible to build commercial wood buildings up to six storeys high. The developer and architect saw this as an opportunity to demonstrate leadership in the rapidly developing field of mass timber, and to attract tenants seeking a premium workplace environment associated with innovation and sustainability. The client requested that the building harmonize with the Liberty Village neighbourhood, noted for its wealth of converted factories and warehouses, which attract high-calibre, creative tenants in this section of downtown Toronto.



**Bird's-eye view of 80 Atlantic during the installation of the timber columns and beams for the third floor.**

## Project Description

80 Atlantic is a modern take on the iconic, century-old brick and beam warehouse buildings that are being adapted for reuse as offices, condos and studio lofts in major cities everywhere. The project incorporates an open, spacious layout, generous ceiling heights and the warm aesthetic of exposed wood, which is known to have a positive impact on human well-being. Gone, however, are the dust, the draughts, the poor acoustics, energy inefficiency and obtrusively placed pipes and cables usually seen in older examples of this typology. An engineered floor plenum within a raised access floor system integrates the mechanical, electrical and telecommunications systems and tucks these out of view beneath tenants' feet; this design enables workspaces to be easily reconfigured as required. Wiring runs from floor to ceiling in channels concealed inside the columns. Flexible HVAC ducts in the plenum keep the air moving and temperatures comfortable. Unobscured by ducts or bulkheads, the natural wood columns and ceilings are on display throughout.

The design team took a chance with this unusual development by adopting a construction methodology still in its infancy, but owing to the quality, uniqueness and appeal of the final product, the developer was able to attract lead tenant Universal Music Canada, and other prime tenants, paying premium rents. The interiors were left raw for fit-out, exposing long expanses of the NLT and columns, and empowering the tenants to make the space their own while still celebrating the nature of this 21st century wood building.



Carpenter uses 600 mm screws to stitch together two pieces of glulam to complete the assembly of a beam prior to its installation.

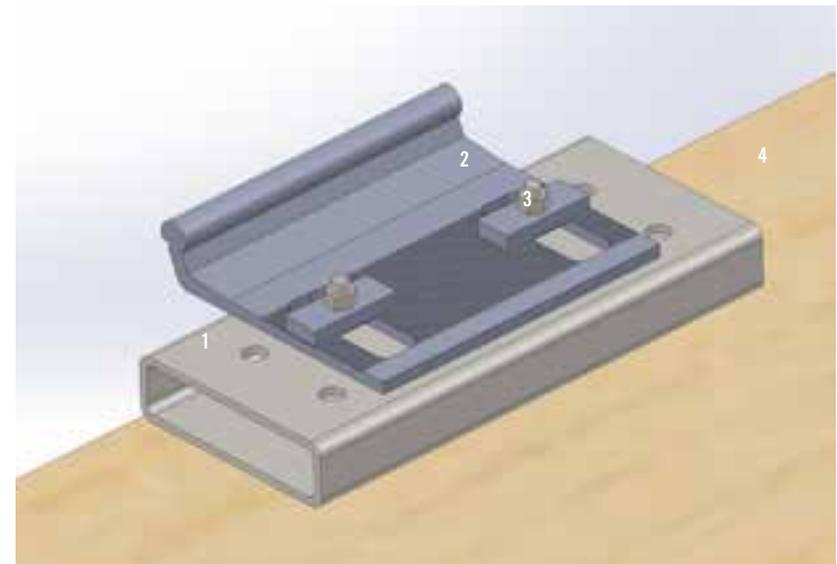


Raising crew lifts NLT panel into place.

## Structure

Above a cast-in-place concrete podium, the upper four floors are composed of glulam beams and columns on a 6.1 x 8.5-m. grid, supporting nail-laminated timber (NLT) floor deck panels. The wood is spruce-pine-fir (90 percent black spruce). The floor assembly is completed with plywood sheathing, an acoustic mat and 50 mm of concrete topping to reduce sound transmission and to create a level surface for a raised-access floor. The concrete topping also provides the non-combustible surface required within the concealed plenum of the access floor.

The one-way NLT slab, comprised of grade 2 SPF 2x8s, is completely exposed on the underside, uninterrupted apart from sprinklers and the occasional conduit feeding power to the smoke detectors and suspended lights. The lower 400 mm of each glulam column is clad in a

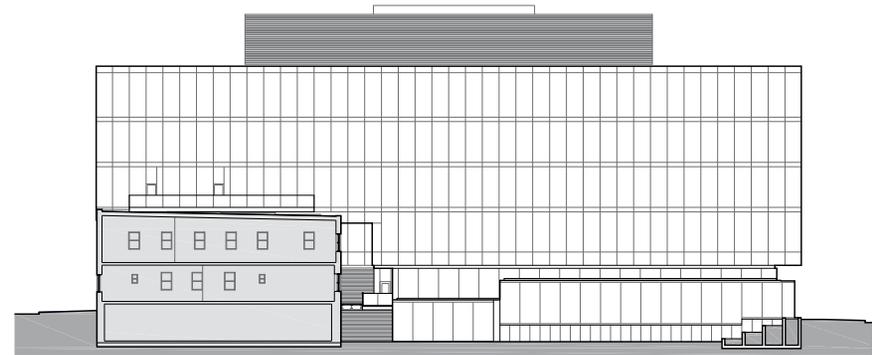


- 1. HSS 178 x 51 x 6.4 screwed to NLT panel. Concrete overpour flush to top of HSS.
- 2. aluicor unizite anchor plate
- 3. Ø1/2" stud welded to HSS
- 4. NLT panel

Curtain Wall Attachment



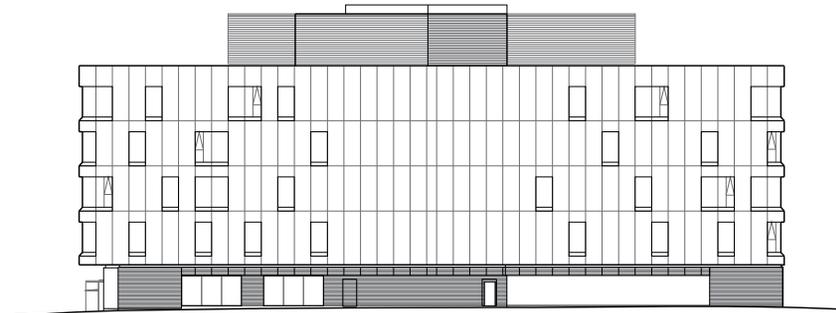
**East Elevation**



**South Elevation**



**West Elevation**



**North Elevation**

non-combustible gypsum assembly. Above this, a metal flange lifts the exposed glulam atop the access floor, creating a reveal that ensures a neat termination regardless of the tenant's flooring choice.

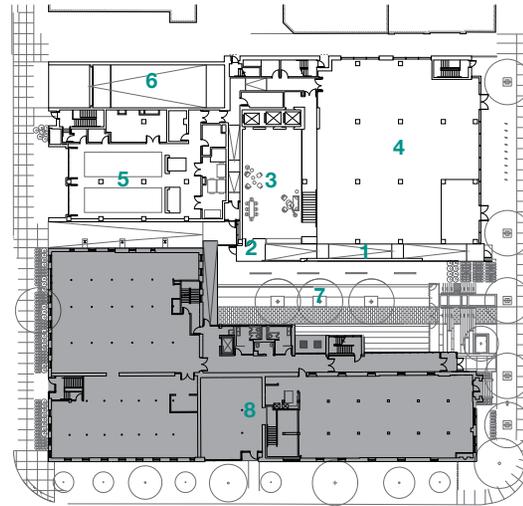
The steel connections between column and beam are concealed (and fire protected) within the structure. Timmerman Timberworks, the NLT fabricator and erector, designed custom column-to-beam and beam-to-panel concealed connections in house, and had the connections made at a specialized metal fabrication shop. Beyond the aesthetic appeal of invisible connections, concealed steel elements actually perform

better in a fire event than their exposed counterparts. The heavy timber surrounding the steel connection burns first, resulting in a char layer on the outside of the beam that serves to insulate the rest of the beam, maintaining the structural capacity of the wood member and protecting the concealed connection at the same time.

From the first-floor ceiling down, a concrete slab on a 9x9-m. column grid ensures compliance with the required fire separations between retail and office uses. The building's elevator core and fire stairs are also structural concrete, providing lateral bracing to the mass timber structure

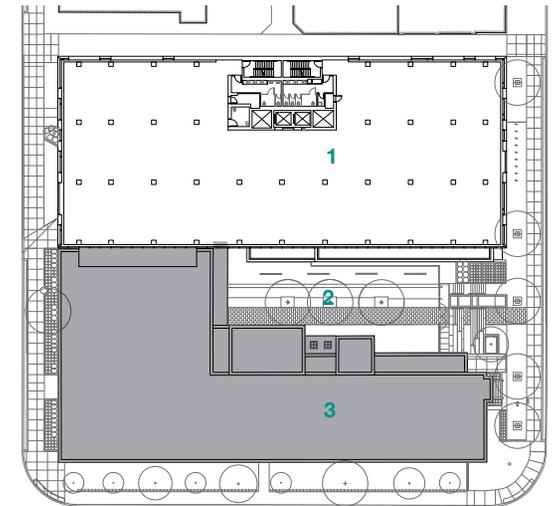


Photo: Bob Gundu



- 1. entry ramp
- 2. main entry
- 3. office lobby/  
lounge
- 4. retail
- 5. shared storage  
between 80 and  
60 Atlantic
- 6. ramp to parking
- 7. courtyard
- 8. 60 Atlantic

**Ground Floor Plan**



- 1. office space
- 2. courtyard
- 3. 80 Atlantic

**Floor Plan**

on the upper four floors.

The north, east (main entrance) and west exterior facades are constructed of insulated Ceramitex porcelain rainscreen tiles attached to adjustable girts, behind which is semi-rigid insulation; all insulation is in front of the AB/VB membrane, and the entire assembly is supported by structural steel studs. The three large-format tile panel facades feature punched openings with high-quality operable windows.

Facing the interior courtyard, the only non-street-facing facade (south)

is fully glazed, with a curtain wall anchored to the edge of the wood panels using steel HSS members and connectors. The dramatic, high-visibility glass curtain wall ties into the heavy timber superstructure with a custom anchor designed by Timmerman Timberworks; the connection is similar to the kind that would be used for concrete, but it was redesigned specifically for the wood frame. Special consideration was given to the glass coatings to manage solar heat gain and control glare. Under certain lighting conditions, the transparent wall frames a dramatic view of the mass timber interior that passersby can enjoy from outside the building.

# Materials

## STRUCTURAL

**Frame:** Glulam beams and columns by Nordic Structures.

**Floor and roof systems:** NLT floor and roof slabs by Timmerman Timberworks Inc.

**Interior partitioning:** Concrete block partitions at ground floor only. Stud partitions by Cesaroni.

## EXTERIOR/INTERIOR

**Siding:** Ceramitex tiles by Ontario Panelization.

**Roofing:** Soprema Composite Reinforced, Modified Bituminous Roofing System. Pre-Vegetated Green Roof Assembly by Ginkgo Sustainability Inc.

**Windows/doors:** Carey Glass by Stouffville Glass.

**Ceilings:** Exposed NLT floor and roof slabs by Timmerman Timberworks Inc.

## SPECIAL TECHNICAL CONSIDERATIONS

Large wood members exposed to fire burn slowly, and they develop a char layer that slows the rate of burning. For example, when building a campfire, small pieces of kindling burn quickly, whereas logs can take hours to burn. The same principle applies to wood buildings. The time it takes for wood to develop a protective char layer is very predictable, and this char rate has been established in extensive scientific testing. Understanding this behaviour, timber columns and beams are sized to allow a sacrificial layer of wood in addition to the size required to maintain the structural integrity of the building long into a fire. As with most modern buildings, however, a sprinkler system is required throughout mass timber projects as the primary means of fire suppression to extinguish fires at the source and limit the reliance on timber's natural fire-resistive properties.



Photo: Bob Gundu

## Technology & Design

Assembly of the wood structure progressed quickly and on schedule, thanks to the efficiency of wood construction. The project had a “raising crew” of six to 10 people, depending on the day – including a foreman, a crane operator, a lead hand to direct the crane and ensure hoisting apparatus is rigged correctly, and several skilled carpenters.

The entire project team participated in a training exercise at the College of Carpenters and Allied Trades, where a full-scale mockup of one of 80 Atlantic’s corner bays was completed. This hands-on trial run gave every player a clear understanding of the scale, scope of work and sequencing for the project.

Once the concrete foundation was complete, construction sequencing for the wood structure began with the installation of the first floor’s column bases, followed by the columns, beam hangars, beams and then the NLT floor plate. A soundproofing membrane with water-wicking properties was added on top of the NLT panels once the level above was installed; the membrane is not robust enough to withstand equipment like the scissor lift, so adding it after the next level was complete ensured that the soundproofing wouldn’t be damaged. A two-inch layer of concrete topping was applied over the membrane to increase the acoustic performance of the system.

The large glulam beams for this project were actually manufactured in two parts and “stitched” together on site with screws. This strategy made sense from an economic standpoint and also facilitated transportation of the beams; this solution addresses the manufacturing challenge of creating very large beams.





## Conclusion

80 Atlantic sheds a more sustainable light on warehouse-style commercial buildings, by reinterpreting a classic typology in an innovative and unconventional way. The use of wood offers more than aesthetic appeal; whereas building materials such as concrete and steel generate high levels of emissions, wood sequesters carbon for the life of the building. Also, prefabricated mass timber panels can be manufactured off site, thereby improving construction safety, reducing waste and decreasing overall construction time.

As an example of what can be accomplished within current code requirements, 80 Atlantic proves that mass timber can have a dramatic effect on the overall project, not only by increasing efficiencies but also through its inherent appeal and biophilic qualities. This project | won a 2019 *Wood Design & Building Award* (Citation) and the Ontario Wood *WORKS!* Mass Timber Wood Design Award, to recognize the high level of finish quality and innovative design. 80 Atlantic is a leader among a new generation of mass timber office buildings.



## Project Team

### Developer

Hullmark Developments Ltd.  
474 Wellington St. W.  
Toronto, ON M5V 1E3  
Tel: 416.510.1700  
[hullmark.ca](http://hullmark.ca)

### Architect

Quadrangle Architects Ltd.  
901 King St. W., Suite 701  
Toronto, ON M5V 3H5  
Tel: 416.598.1240  
[quadrangle.ca](http://quadrangle.ca)

### Structural Engineer

RJC Engineers  
100 University Ave. North Tower, Suite 400  
Toronto, ON M5J 1V6  
Tel: 416.977.5335  
[rjc.ca](http://rjc.ca)

### General Contractor

Eastern Construction Co. Ltd.  
1200-2075 Kennedy Rd.  
Toronto, ON M1T 3V3  
Tel: 416.497.7110  
[easternconstruction.com](http://easternconstruction.com)

### Wood Suppliers

Timmerman Timberworks Inc. (NLT fabricator)  
2 Greengage Rd.  
New Lowell, ON L0M 1N0  
Tel: 705.424.2222  
[timmermantimberworks.com](http://timmermantimberworks.com)

Nordic Structures (glulam fabricator)  
100-1100 Canadiens-de-Montreal Ave.  
Montreal, QC H3B 2S2  
Tel: 514.871.8526  
[nordic.ca](http://nordic.ca)



Photo: Bob Gundu

Canadian  
Wood  
Council

Conseil  
canadien  
du bois



Wood WORKS! is a program of the Canadian Wood Council  
[www.wood-works.ca](http://www.wood-works.ca) | [www.cwc.ca](http://www.cwc.ca)

Ontario Wood WORKS!: 866.886.3574  
 Alberta Wood WORKS!: 780.392.1952  
 BC Wood WORKS!: 877.929.WOOD (9663)  
 Quebec — cecobois: 418.650.7193  
 Atlantic Wood WORKS!: 902.667.3889  
 Wood WORKS! National Office: 800.463.5091  
 US Program: [help@woodworks.org](mailto:help@woodworks.org)

NATIONAL PARTNERS



Natural Resources  
Canada    Ressources naturelles  
Canada



PROVINCIAL PARTNERS

