BROCK COMMONS TALLWOOD HOUSE

LOCATION
Vancouver, British Columbia

SIZE
15,120 m²

COMPLETION
2017

ARCHITECT
Acton Ostry Architects Inc..

TALL WOOD ADVISOR
Architekten Hermann Kaufmann ZT GmbH

STRUCTURAL ENGINEER
Fast+Epp

CONSTRUCTION MANAGEMENT
Urban One Builders

WOOD INSTALLERS
Seagate Structures

CLT AND GLULAM MANUFACTURER
Structurlam Products

PROJECT OWNER
University of British Columbia

Project Overview

Brock Commons Tallwood House is a mass timber hybrid student residence at the University of British Columbia (UBC).

The building consists of a 17-storey mass timber hybrid superstructure atop a one-storey concrete podium with two full-height concrete cores that house elevators, stairs and services conduits. The roof is made of prefabricated sections of steel beams and metal decking. It houses more than 400 students in 272 studios and 33 four-bedroom units as well as study and social gathering spaces.

As one of the first buildings of its kind in the world to be constructed at 18 storeys, a full-scale, two-storey proof of concept mock-up was built off-site early in the planning process. It was used to test and validate the construction of the mass timber, steel and concrete hybrid structural system, as well as the prefabricated mass timber and building envelope components.

Construction of Brock Commons finished on schedule and on budget. The structure was completed by a crew of nine wood installers 70 days after the prefabricated components were first delivered to the site—two months faster than planned.

The building demonstrated mass timber as a practical building material in a high-rise application.

Photo courtesy of naturallywood.com | Photo: Michael Elkan Photography

"Wood is increasingly recognized as an important, innovative and safe building material choice. This new tall wood building reflects UBC's leadership in sustainable construction and our commitment to providing our students with more on-campus housing."

***Santa J. Ono**, President, University of British Columbia*

Wood Use

Innovation and advancements in mass timber products and construction systems are enabling developers to build taller and larger with wood.

The Brock Commons Tallwood House includes 17 storeys of cross laminated timber (CLT) floors supported on glue laminated timber (glulam) and parallel strand lumber (PSL) columns atop a concrete base. An extensive CLT canopy runs the length of the building. On the 18th floor, the wood structure has been left exposed for demonstration purposes.

There are two 18-storey concrete cores containing exit stairs and elevators in the building. The structure was built to meet enhanced fire and seismic safety regulations.

The design approach emphasized the project as a whole rather than viewing it as a set of separate building components, systems or applications. Involving the construction trades in the design process and maximizing the use of prefabricated components successfully streamlined construction. It also addressed supply chain considerations, such as materials sourcing, coordination, costs, and scheduling.

UBC and the design team chose mass timber due to its strength, safety and performance, as well as wood's lighter carbon footprint. The innovative structural system is economically viable, repeatable and adaptable to other building types and uses. The construction of the mass timber structure resulted in one-third of the traffic to site to transport materials, resulting in significant benefits to neighbours.

The wood grain featured in this profile is Douglas fir.

Photo courtesy of naturallywood.com

ESTIMATED ENVIRONMENTAL IMPACT OF WOOD USE

- Volume of wood products used: **2,233 cubic metres**
- U.S. and Canadian forests grow this much wood in: **6 minutes**
- Carbon stored in the wood: **1,753 metric tons of CO_2**
- Avoided greenhouse gas emissions: **679 metric tons of CO_2**
- Total potential carbon benefit: **2,432 metric tons of CO_2**

GHG EMISSIONS ARE EQUIVALENT TO:

- **511** cars off the road for a year
- Energy to operate **222** homes for a year

**Estimated by the Wood Carbon Calculator for Buildings, cwc.ca/carboncalculator.*

**CO2 refers to CO2 equivalent.*

FOR MORE INFORMATION

This profile is published by Forestry Innovation Investment, the Government of British Columbia's market development agency for forest products.

For more examples of innovative wood building projects throughout British Columbia, visit:

naturallywood.com