

# VIRTUOSO

## PROJECT OVERVIEW

Virtuoso is a 10,000m<sup>2</sup>, six-storey residential condominium building located in the Wesbrook Village neighbourhood on the Vancouver campus of the University of British Columbia (UBC). The building is the tenth project to be constructed by developer Adera at UBC, and the first to use a hybrid system of light wood-frame and mass timber construction. The six-storeys of wood sit on top of a two-storey underground parking garage that is constructed in concrete.

The residential accommodation comprises 106 two- and three-bedroom apartment and townhouse units, varying in size from 120m<sup>2</sup> to 150m<sup>2</sup>, and some with decks up to 80m<sup>2</sup> in area. The plan of the building consists of a short block with the longer side facing a committee path.

**LOCATION**  
Vancouver, British Columbia

**SIZE**  
10,000 m<sup>2</sup>

**COMPLETION**  
2017

**ARCHITECT**  
Rositch Hemphill Architects

**STRUCTURAL ENGINEER**  
WHM Structural Engineers

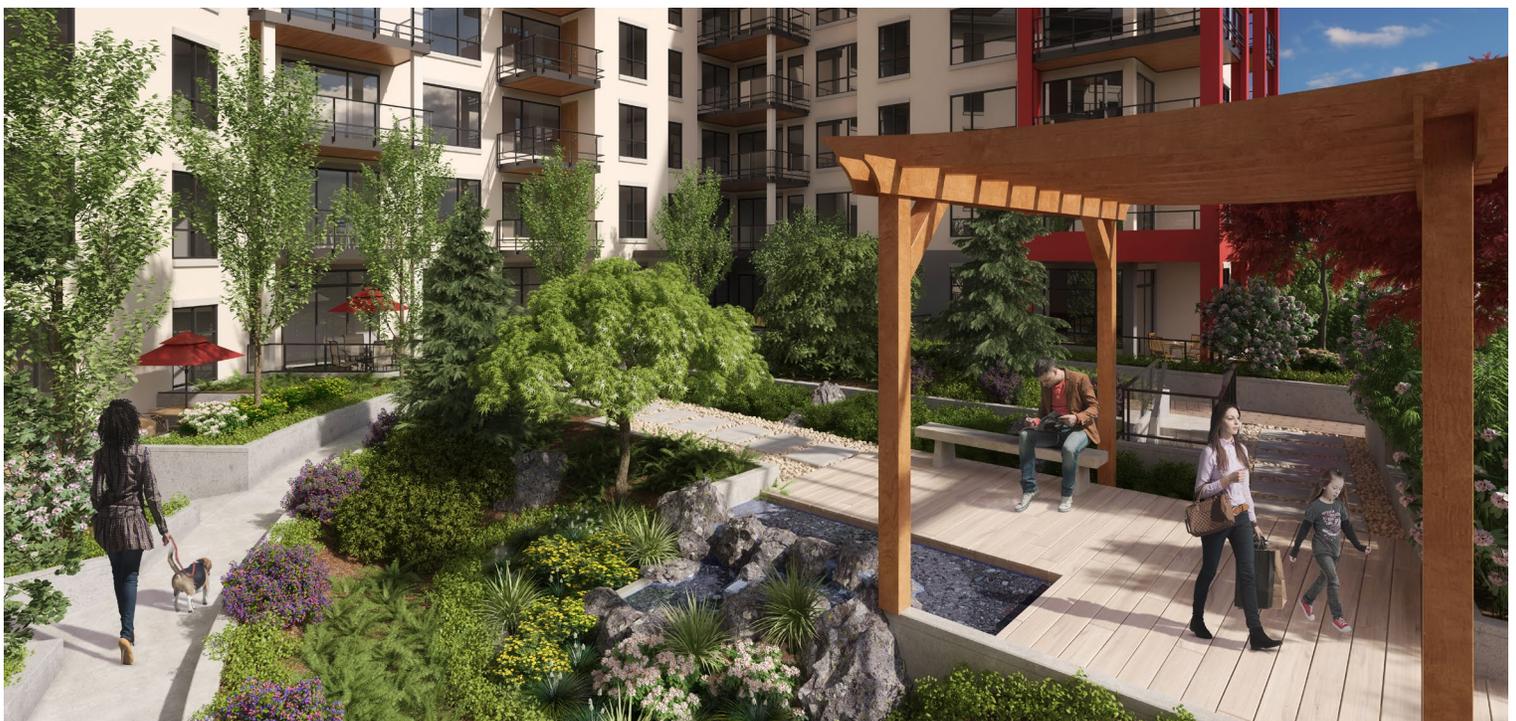
**CONSTRUCTION MANAGER**  
Adera

**ENGINEERED WOOD SUPPLIER**  
Structurlam

**OWNER**  
Adera

The exterior of the building features exposed wood elements, including horizontal glue-laminated timber (glulam) beams at each floor level and cross laminated timber (CLT) balcony soffits. Together with the brick cladding on the first five storeys, the wood alludes to the natural character and materials of the nearby Pacific Spirit Regional Park, with its more than 750 hectares of forests and shoreline.

For acoustic and thermal comfort, Virtuoso features Energy Star rated windows, hardwood and ceramic floors laid over a semi-rigid acoustic mat, and an air conditioning system that provides both heating and cooling using low velocity tempered air from a central plant located on the first parking level.



Rendering courtesy of Adera

*“Adera is the first developer to adopt the innovative mass timber technology with the Crosslam CLT panels that make up the floors and ceilings of Virtuoso. The installation of this CLT technology is positively disrupting the future of residential development in Vancouver and around the world. It’s faster to assemble, cost effective, safer on-site and produces a lower carbon footprint compared to concrete and steel.”*

**Eric Andreasen, Vice President, Sales & Marketing, Adera**

## WOOD USE

Virtuoso departs from the traditional wood-frame construction typical of multi-family residential buildings by introducing CLT panels in place of the more familiar wood I-joist and plywood floors. CLT is also used for the walls of the elevator shafts, the structural roof deck and exterior balconies.

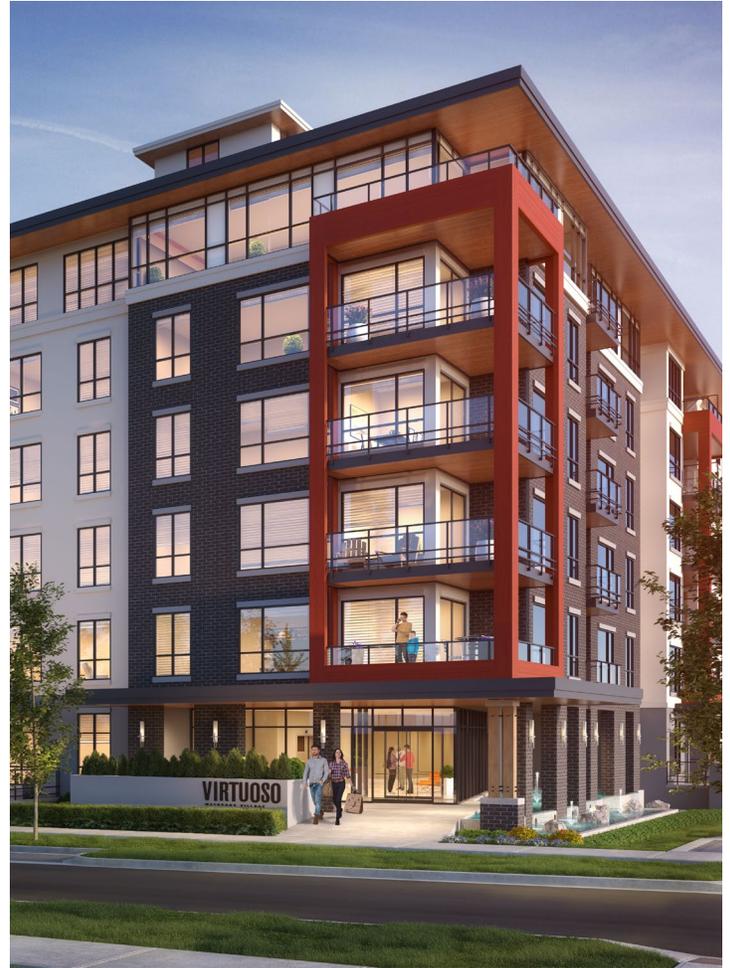
The exterior and interior walls are wood-frame construction, with 2x6 Douglas fir studs being used throughout to provide the extra load carrying capacity that is required for five- and six-storey buildings. The three-layer, 105mm thick CLT panels span either 2.7m or 4.2m between party walls and/or interior load bearing partitions. Some of these walls include a glulam header beam that cantilevers up to 1.8m beyond the building envelope to support exterior balconies that are also made from CLT panels.

The interior floor panels are joined together along their

edges using closely spaced stainless steel screws arranged at 45 degrees to one another, much like the toe-nailing used to fasten studs to plates in conventional framing. This same method, known as ‘dragon’s teeth’, is used to connect the vertical CLT panels that make up the elevator shafts.

Considerable time was taken during the design and development phase to optimize the sizes, connection details and arrangement of CLT panels to minimize waste and maximize the speed of installation. A 3-D model was used to test the various options. Other penetrations were drilled on site, and air conditioning ductwork was run within suspended ceilings.

With its hybrid approach, Virtuoso is an innovative prototype, not only for residential buildings, but for the six-storey commercial buildings that will soon be permitted under the National Building Code of Canada.



Rendering courtesy of Adera

## ESTIMATED ENVIRONMENTAL IMPACT OF WOOD USE

<b>V</b>	Volume of wood products used: <b>3,032 cubic meters</b>	<b>GHG EMISSIONS ARE EQUIVALENT TO:</b>
	U.S. and Canadian forests grow this much wood in: <b>8 minutes</b>	<b>1,241 cars off the road for a year</b>
<b>C</b>	Carbon stored in the wood: <b>2,559 metric tons of CO<sub>2</sub></b>	<b>Energy to operate 620 homes for a year</b>
	Avoided greenhouse gas emissions: <b>3,313 metric tons of CO<sub>2</sub></b>	<small>*Estimated by the Wood Carbon Calculator for Buildings, cwc.ca/carboncalculator.</small>
	Total potential carbon benefit: <b>5,872 metric tons of CO<sub>2</sub></b>	<small>**CO<sub>2</sub> refers to CO<sub>2</sub> equivalent.</small>

## 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](http://naturallywood.com)