



Case Study

Earth Sciences Building, University of British Columbia



The University of British Columbia's recently completed Earth Sciences Building had to live up to the university's strong reputation in the earth, ocean and atmospheric sciences. It would have to be iconic and use green building technologies. The solution was the extensive and innovative use of cross-laminated timber (CLT), a new solid wood product that is as strong as reinforced concrete.

The building used more than 1,300 cubic metres of CLT, all sourced and engineered in B.C. Each ton of dry wood product offsets between 1.8 and 2.0 tonnes of CO₂, so the wood materials in the Earth Sciences Building will sequester about 1,094 tonnes of CO₂. The facility has two five-storey wings connected by an atrium and provides modern learning

spaces for earth sciences students and leading-edge laboratories for many researchers.

One of the wings, features wood as its primary structural material, using new products and finding new ways to use existing products. When the building was completed, it was North America's largest panelized wood building and the largest application of CLT.

Wood Features

Innovative techniques: The building has a hybrid floor system of wood and concrete that is lighter than solid concrete and provides excellent sound absorption. A five-storey free-floating cantilevered staircase built entirely of solid timber is the first of its kind in the world – with oversized landings, it can act as informal meeting

SUSTAINABILITY

"Our extensive use of wood helped create a warm and welcoming learning environment for thousands of students at UBC. It's also a dramatic, very tangible example of the University's strong connections to innovation in the resource sector, and of our commitment to sustainability."

— Simon M. Peacock
Dean UBC Faculty of Science



areas. Full-storey steel glulam hybrid transfer trusses convert the entire second floor structure into a "roof truss" capable of carrying the load of the remaining floors.

Enhanced fire safety: The structure has a fire retardant coating that slows or eliminates fires from growing across the wood's surface. Engineering of the wood product and building design ensures exterior layers char, preventing the interior from burning and maintaining structural integrity.



Safe and efficient connections and braces: Throughout the building, special connections were put in place to attach steel beams and wood beams to engineered wood columns. Diagonal glulam heavy timber braces at the end walls of each storey are used to resist seismic loads. Wood was a natural choice for the Earth Sciences Building. Wood-based building designs have a lower energy and carbon footprint and wood is durable, adaptable and versatile.

Link to nature: The building benefits from wood's tangible connection to nature

and the outdoors, something that cannot be matched by other building materials. Research by the University of British Columbia and FP Innovations concludes that wood interiors reduce stress, which creates a productive and high-quality learning environment for teachers and students.

Location Vancouver: British Columbia
Size: Five-storey, 15,238sqm Gross area 158,767sqft
Capacity: 615 full-time equivalents
Architect: Perkins+Will Canada
Construction Company: Bird Construction
Engineer: Equilibrium Consulting Inc.
Project Owner: University of British Columbia

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