EARTH SCIENCES BUILDING UNIVERSITY OF BRITISH COLUMBIA

LOCATION
Vancouver, British Columbia

SIZE
14,963 m²

CAPACITY
615 full-time equivalents

COMPLETION
2012

ARCHITECT
Perkins+Will Canada Architects

CONSTRUCTION COMPANY
Bird Construction

ENGINEER
Equilibrium Consulting Inc.

PROJECT OWNER
University of British Columbia

B.C. GOVERNMENT MINISTRY
Ministry of Advanced Education, Innovation and Technology

Project Overview

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 tons of CO_2, so the wood materials in the Earth Sciences Building will sequester about 1,094 tonnes of CO_2.

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 incorporate existing products.

When the building was completed in August 2012, it was North America's largest panelized wood building and the largest application of CLT.

Photo Martin Tessler; courtesy of Perkins+Will

"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*

Wood Features

INNOVATIVE TECHNIQUES: ATTRACTIVE AND EFFECTIVE

The Earth Sciences 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 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.

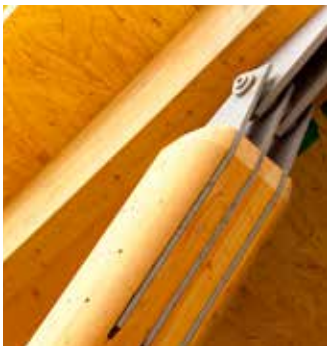
SAFE AND EFFICIENT CONNECTIONS AND BRACES

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.

NATURAL CHOICE, CLEAR BENEFITS – 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: POSITIVE ENVIRONMENT

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 FPInnovations concludes that wood interiors reduce stress, which creates a productive and high-quality learning environment for teachers and students.



Top & bottom right photos Martin Tessler; courtesy of Perkins+Will
Bottom left photo courtesy of naturallywood.com

The wood grain featured in this profile is Douglas-fir.

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