

THE HANGAR: UBCO FITNESS & WELLNESS CENTRE

LOCATION

Kelowna, British Columbia

SIZE

820 m²

COMPLETION

2013

ARCHITECT

McFarland Marceau Architects

STRUCTURAL ENGINEER

Equilibrium Consulting

GENERAL CONTRACTOR

Kindred Construction

HEAVY TIMBER INSTALLATION

Nicola Logworks

PROJECT OWNER

The University of British Columbia

PROJECT OVERVIEW

Rapidly outgrowing the existing athletic facilities at its Okanagan campus, the University of British Columbia held a design competition for an addition to the gymnasium — a new Fitness and Wellness Centre (FWC). The winning entry chose to depart from the rectilinear geometry of the existing building and to experiment with a new way of using cross laminated timber (CLT).

To facilitate the maximum use of wood, and to offer freedom of aesthetic expression, the new two-storey building has been designed as freestanding structure, connected to the main gymnasium only by an upper level bridge.

Whereas most CLT structures built to date in North America use the building product in the form of rectangular panels for floors, ceilings and walls, the design team for the FWC chose to explore and exploit the expressive potential of CLT.

Structural Engineer Eric Karsh of Equilibrium Consulting Inc. was inspired by his boyhood experience constructing balsa wood airplanes. The upper-level structure of the FWC is a scaled up version of the wing structure of these planes, with a series of curved ribs of CLT braced with rectangular panels of the same material to create an egg-crate configuration.

This lattice creates a series of deep coffers that perform multiple functions: providing large planar surfaces to bounce light; sufficient depth to conceal services and, where the structure folds down to meet the floor, separate areas for individuals to work.

The centre includes spaces for cardio and strength training, yoga, dance, martial arts and other activities.



Photo courtesy of Don Erhardt

“We could not be more pleased with the decision to use wood as the primary construction component of our beautiful new fitness centre, The Hangar. Not only does the wood give the facility a warm and welcoming feel, but it aligns very well both with UBC’s major sustainability efforts and with its desire to be an economic catalyst in the community, the province and the country.”

**Rob Johnson, Director, Athletics and Recreation,
UBC Okanagan Campus**

WOOD USE

This project explores innovative approaches to CLT, using new jointing and detailing techniques to create a curvaceous, lightweight and efficient structure.

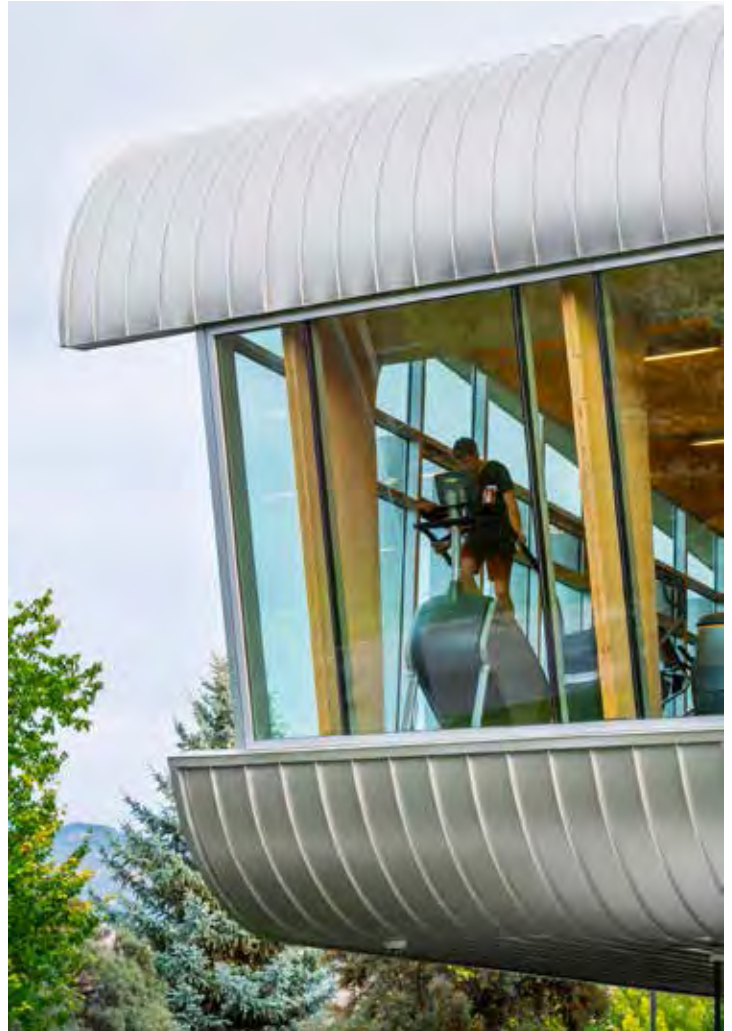
The distinctive profile of the building is achieved using a series of CLT moment frames, in which both the beams and columns are tapered. Across the width of the building, the beams increase from 940 mm in depth to approximately 1500 mm at the point where they are connected by a split joint to the columns. In turn, the columns taper to 600 mm at the base, where they are connected to projecting glulam beams.

The moment frames are set at 2.3 metres on centre, and are braced laterally at the ceiling level by CLT ribs also set at 2.3

metres on centre. The result is a deep lattice or egg-crate structure that, like cellular structures in nature, is both lightweight and strong.

The elements of the lattice structure are connected using a new generation of proprietary epoxy-based connectors imported from Europe. These connectors rely on strips of heavy-gauge, perforated metal mesh set in deep grooves pre-cut in the two components to be joined. The mesh is factory glued into one component and, when the pieces are connected in the field, epoxy is injected into the groove in the second.

The selection of mass timber serves many uses at once, and its low ecological footprint and carbon sequestering properties mesh well with a sustainable ethos.



Photos courtesy of Don Erhardt

FOR MORE INFORMATION

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

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