

# HILLCREST CENTRE

**LOCATION**  
Vancouver, British Columbia

**SIZE**  
6,200 m<sup>2</sup>

**COMPLETION**  
2011

**ARCHITECT**  
HCMA Architecture + Design

**STRUCTURAL ENGINEER**  
RJC Engineers

**CONSTRUCTION MANAGER**  
Stuart Olson Inc.

**ENGINEERED WOOD SUPPLIER**  
Western Archrib

**PROJECT OWNER**  
Vancouver Board of Parks and Recreation

## PROJECT OVERVIEW

British Columbia has a history of constructing community recreation centres and aquatic facilities using wood. The Hillcrest Centre furthers that tradition, proving that wood can continue to perform in a pool environment for decades while giving visitors a beautiful and inspiring space to gather.

Designers chose wood for several reasons, it handles the corrosive pool environment better and requires less maintenance than other building materials. Wood naturally absorbs and releases moisture without loss of performance, and when properly detailed, resists decay.

Wood also helps absorb sound, which can be a challenge in a noisy pool environment. Hillcrest Centre's architects placed acoustical panels between the glue-laminated timber

(glulam) beams and then installed lights behind the panels; this helped reduce glare and projects a more even, warm light onto the water's surface.

The aquatic portion of the complex was originally constructed for the Vancouver 2010 Olympic and Paralympic Winter Games to provide space to stage athletes and equipment. After the games ended, they transformed the building into an aquatics centre.

Today, the facility houses a 50-metre lap pool and a large recreation pool. Large doors open to a third pool outside. The timber roof structure spans the main pool, with glulam columns and beams, wood decking between.



*“We must have an open mind when it comes to using wood in aquatic buildings; we try to use wood as much as we can, but it must also make sense. It doesn’t mean wood, steel and concrete must be winners or losers; we shouldn’t look at construction materials in this way. With the Hillcrest project, we used the right combination of wood and steel. Wood is well-suited to a pool environment, so it was a good choice.”*

**CC Yao, PhD, P. Eng., Struct. Eng., Principal, RJC Engineers**

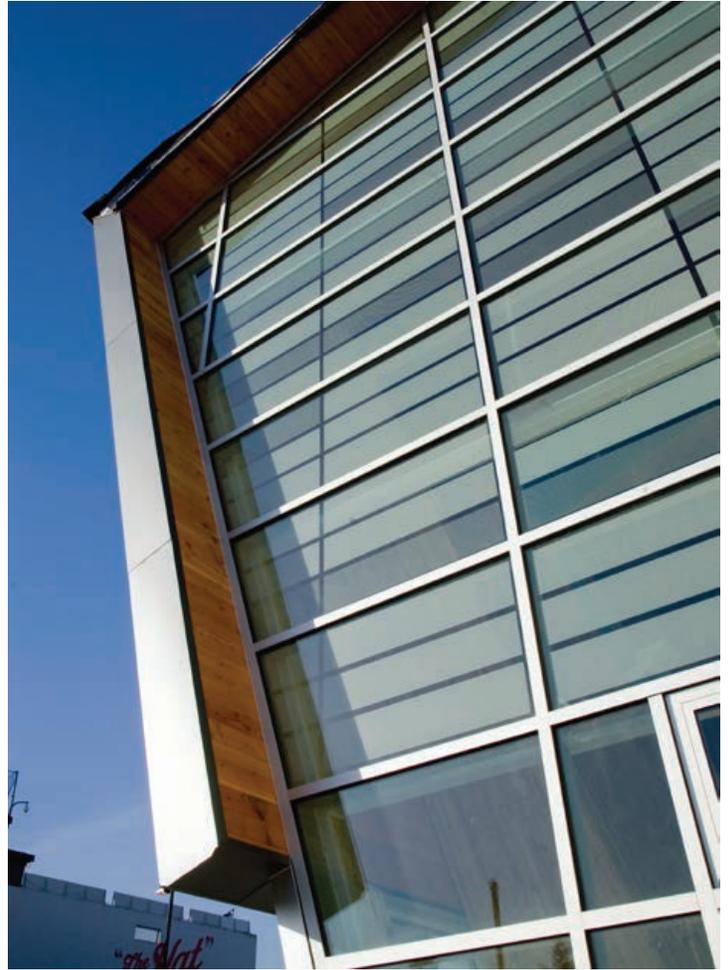
## WOOD USE

Curved Douglas-fir glulam roof beams, 43 metres long and typically spaced at 3.6 metres, are set atop a v-shaped structural steel support mid-span and glulam columns at the walls. The mid-span support reduced the required depth of the roof beams, and helps define activity areas within the big space, separating the lap pool from the leisure pool. The rhythmic spacing of the roof is adjusted by a pair of glulam beams at every 12.73 metres spaced at 1.93 metres to form a mechanical ventilation duct.

Due to transportation limitations, each roof beam was site-connected from two pieces; one beam cantilevers out over the midline steel support. Engineers calculated the optimum splice location to minimize internal bending forces, which made the main beam very efficient both structurally and cost-wise.

The joints between beams and columns were designed to look like Japanese joinery. The graceful, continuous connection (similar to a tenon-and-mortise joint) defies the fact that the beams actually sit atop the columns. Because there is no visible steel connector, there is less complication of corrosion but most importantly, the sleek joint creates a sense of visual continuity while achieving structural requirements.

Wood was also used as interior cladding for both the roof and walls. They placed 3-inch tongue-and-groove wood decking between the beams; the decking was topped by a layer of 5/8-inch plywood sheathing, which formed the structural diaphragm of the building. Inside, the beams and decking were coated with a protective polyurethane finish that still allows the wood to breathe.



Photos courtesy of naturally:wood

## 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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