ABBOTSFORD SENIOR SECONDARY SCHOOL

LOCATION
Abbotsford, British Columbia

SIZE
10,700 m²

COMPLETION
2012

ARCHITECT
Craven Huston Powers Architects

STRUCTURAL ENGINEER
Bush, Bohlman & Partners

GENERAL CONTRACTOR
Unitech Construction Management

PROJECT OWNER
School District No. 34 Abbotsford

B.C. GOVERNMENT MINISTRY
Ministry of Education

Project Overview

The City of Abbotsford is located in the Fraser Valley east of Vancouver, British Columbia. In the 60 years that elapsed between the establishment of the original Abbotsford Secondary School in 1952 and the completion of this rehabilitation and replacement project in 2012, Abbotsford grew from a village of fewer than 1,000 inhabitants to a city of more than 125,000.

Originally located in the village, Abbotsford Senior Secondary is now at the heart of the city. As such, the Abbotsford School Board saw the renewal of the school as an opportunity to enhance its role as an educational and cultural hub for the greater community.

Based on the condition of the structure and services, and the cost of upgrading to current building code standards, the design team concluded that the old classroom blocks, shops, cafeteria and office should be demolished, while the gymnasia, Abbotsford Arts Theatre, music room and multi-purpose room could be upgraded and renovated.

Thus the project included construction of a new LEED Gold Certified, three-storey, 10,700 square metre replacement school for grades 9-12, a new 1,400 square metre City / School Library, and a new, three-storey Sweeney Neighbourhood Learning Centre that contains community service agencies. The new school accommodates 950 students.

The most striking new feature is the entrance rotunda, that connects the old and new portions of the building. A finely detailed radial wood roof structure creates a focal element for the space.

Photo courtesy of Aaron Miller

"The rotunda is such a great space for kids to learn in."

***Lance McDonald**, Principal, Abbotsford Senior Secondary School*

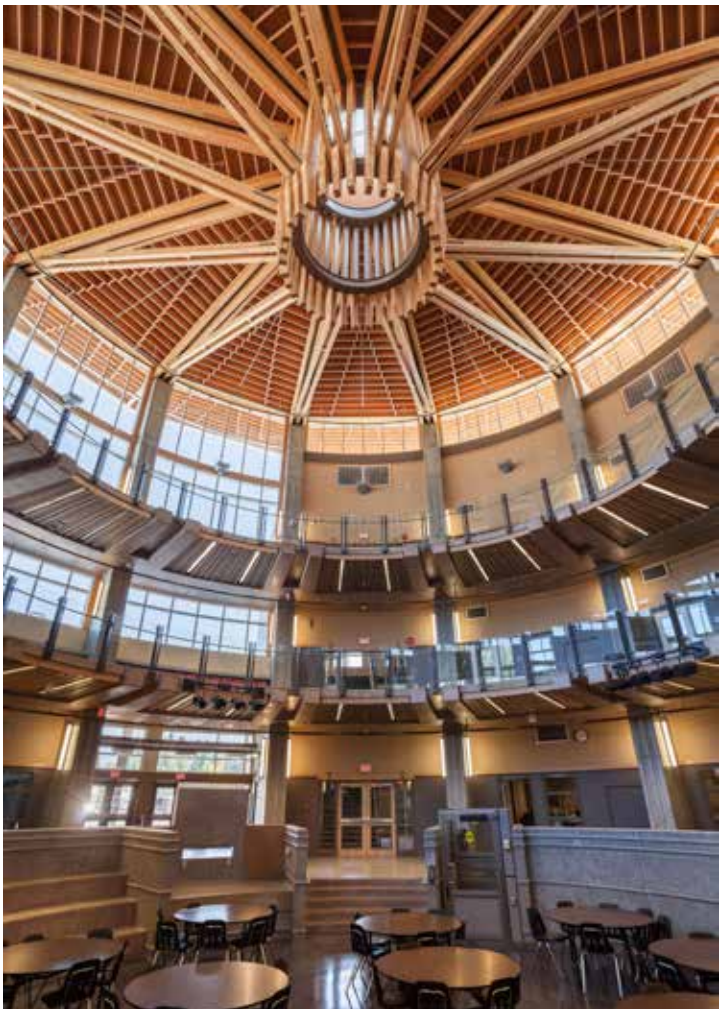
Wood Use

In keeping with current practice in school design throughout British Columbia, significant amounts of wood are featured in both structural and non-structural applications. The use of wood draws its inspiration from the detailing of the 3.6-metre deep roof trusses previously hidden above the suspended ceiling of the gymnasium and exposed during the renovation work. Glulam beams and purlins, timber decking for the roof, exterior heavy timber loggia, accent beams, and wood panels and grids are used throughout. Glulams salvaged from the demolition of the old building have been refashioned into benches.

However, it is the rotunda roof that is the most complex. It consists of exposed glulams and wood decking with a central steel compression ring hovering three storeys above the main floor. The wood provides a perfect complement to the concrete and steel vertical structure supporting the roof and the extensive areas of glazing cladding the vertical structure. The glulams support 2x12 dimensional wood framing and a plywood deck.

The wood components were all double clear coated prior to arrival on site, and the assembly was carried out under a tent to avoid any possibility of water staining from inclement weather. The roof structure was prefabricated in 12 triangular pieces on the ground before being lifted into place by crane. An internal scaffolding was erected to support the compression ring during the construction process, giving construction crews access to fasten and finish the roof panels.

Because the BC Building Code required a structure of this size and type to be of non-combustible construction, an 'alternative solution' was required to permit the use of wood for the roof assembly. This was achieved using heavy timber for the primary structure, treating secondary members with fire retardant, using 28-millimetre-thick plywood for the roof diaphragm, and installing fast-response sprinklers. Fire simulation software was used to demonstrate that these measures would meet the provisions of the Code.



Photos courtesy of Aaron Miller

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.

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