



CONSTRUCTION IS UNDERWAY AT THE UBC GATEWAY BUILDING ON JUNE 19, 2024

Source: RJC Engineers; Credit: Justin Eckersall

CASE STUDY: UBC GATEWAY

UBC GATEWAY: INTRODUCING A HYBRID SYSTEM TO NORTH AMERICA

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| PROJECT OWNER: UNIVERSITY OF BRITISH COLUMBIA, UBC PROPERTIES TRUST | GENERAL CONTRACTOR: HEATHERBRAE BUILDERS, URBAN ONE BUILDERS |
| PROJECT LOCATION: 5955 UNIVERSITY BOULEVARD, VANCOUVER, BC, CANADA | STRUCTURAL ENGINEER: RJC ENGINEERS |
| COMPLETION DATE: SEPTEMBER 1, 2025 | MECHANICAL, ELECTRICAL, AND PLUMBING: STANTEC (MECHANICAL AND PLUMBING), SMITH + ANDERSON (ELECTRICAL) |
| ARCHITECT/DESIGNER: PERKINS&WILL, SCHMIDT HAMMER LASSEN ARCHITECTS | |
| MASS TIMBER ENGINEER/MANUFACTURER: ENGINEER: RJC ENGINEERS WITH SUPPORT FROM CREE BUILDINGS | |
| MANUFACTURER/SUPPLIER: CON-FORCE STRUCTURES, VAAGEN TIMBERS | |
| | UNIVERSITY OF BRITISH Columbia’s (UBC) \$180 million Gateway building is the first landmark to welcome students on campus—a gateway to the school. Now under construction, this 6-story, mass timber space champions UBC’s com- |

mitments to relations with Indigenous peoples, low-carbon resilience, and community health.

The 270,000-square-foot facility will house an array of features, including lecture theaters, classrooms, wet and dry labs, gyms, and offices. To promote interaction, UBC Gateway will co-locate the schools of nursing and kinesiology, integrated student health services, and UBC Health.

Inspired by traditional Musqueam building materials, UBC Gateway's architecture is a creative collaboration between Perkins&Will and Schmidt Hammer Lassen. The design considers natural light, warm aesthetics, and the way people will move through space.

Aligning with these architectural priorities, RJC Engineers offered the CREE Buildings system as 1 of 4 options, and the team ultimately chose it as the best option. This proprietary system revolutionizes how structures are constructed with hybrid panels made of precast concrete and glulam beams. Using hybrid timber as a major component enables the structure to resist heavy loading from large labs and amenities. It also makes long-span structural designs and high ceilings possible. The resulting warmth of elegantly exposed timber columns reinforces the idea of wellness.

UBC Gateway is North America's first-ever building to leverage CREE solutions. Spearheading the structural engineering, RJC sets a new standard for sustainable construction. Although CREE Buildings provided engineering and design support, their designs and tree species were based on European standards. Bridging the gaps between national codes was crucial for design decisions. RJC developed new design considerations to solve vibrations, as well as seismic considerations that are specific to British Columbia.

UBC Gateway called for 3-meter by 10.5-meter panels, the longest span with which CREE Buildings has ever worked. RJC designed all components, working with the contractor and subtrades to revise original system details with a focus on expediting construction.

To learn from active projects in Germany, RJC traveled to Brussels, Belgium, and Heiden, Germany, with the contractor and erector. Employing techniques from overseas in conjunction with other innovations, RJC Engineers designed a new system tailored to Gateway. The new design incorporated suggestions from both the contractor and trades to make erection smoother. This included the panel-to-panel connection, end connections, and grouting sequences to get to the next level quickly.

When fabrication kicked off, RJC visited the fabricator to review the complete system, fabrication ideas, and expected quality control. The visit was a chance to share the wood system along with necessary design considerations for this concrete-only precast plant. A subsequent trip entailed working hands-on with the trades—rebuilding the ends of a panel to show how the system could come together more easily. Direct collaboration on the plant floor paved the way for an efficiently fabricated and erected system with a short turnaround time.

Using Wood First principles, the project targets Leadership in Energy and Environmental Design (LEED) Gold for energy performance. Additionally, UBC Gateway is on track to become the university's first building to meet the Canada Green Building Council's Zero Carbon Building Design Standard.

This case study has not been fact-checked, but it has been edited for length, clarity, grammar, and style. 🟢