



Prefabricated Housing Module Advances Wood Research at the University of British Columbia

[NEWS]

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Housing module designed by Perkins+Will improves prefabrication and livability

A wood modular housing prototype designed by global architecture and design firm Perkins+Will is now helping to advance academic research at the University of British Columbia (UBC). Originally developed for Nexen CNOOC Limited's Remote Workforce Accommodation project in Dilly Creek, British Columbia, the 312-square-foot cross-laminated timber (CLT) module is designed to be highly energy efficient, durable, and constructed with minimal waste—offering advancements in both prefabrication and livability. The replicated module is part of one of the largest proposed CLT structures at 646,000-square-feet.

"The module was designed to address the construction challenges inherent in the Workforce Accommodation project's remote location and harsh weather conditions," says [Susan Gushe](#), managing director at Perkins+Will's [Vancouver office](#). "By providing a unique off-site prefabricated and modular solution, we were able to ensure that a high quality, healthy, and durable building was constructed efficiently while further reducing labour inputs."

The prototype was built to test the process of using CLT within a factory setting, confirm durability of transport, and ensure an efficient project delivery. Nexen supplied the prototype to UBC's Timber Engineering and Applied Mechanics lab who will conduct further research and investigate themes including structural integrity, prefabrication, hybrid high-rise buildings, floor vibration, soundproofing, long-term heat and moisture movement through CLT panels, and transportation of modules.

"We look forward to the opportunity to study the prototype and test its prefabricated

construction using CLT panels,” says Frank Lam, senior chair professor of wood building design and construction research at UBC. “We are very interested in innovative applications of wood in construction, particularly as interest in prefabrication with CLT is growing in Canada.”

UBC will host the prototype for one year providing the opportunity to see first-hand the possibilities of prefabricated modular design, and how CLT can be a practical and appealing material for construction. Off-site prefabrication and modularization is an approach to construction that offers many benefits, such as an accelerated schedule, increased quality control, and cost savings, as well as reduction in waste and site disturbance.

With livability in mind, the module improves upon the aesthetic, materials, acoustics, and thermal performance of Nexen’s current conventional housing camps, and uses Passive House principles to achieve a robust building envelope. The module will have a 50-year life span and require minimal maintenance, as opposed to the predominant approach that requires replacement every ten to fifteen years.

“We wanted this project to set an example of an accommodation that is not only appealing to the remote project’s workforce, but also energy efficient, healthy, and durable,” says Mark Topolynski, Nexen’s senior project manager. “Perkins+Will’s innovation and design work on the module and the overall accommodation project surpassed our expectations.”

Perkins+Will’s Vancouver office has a long history of wood innovation. The office’s expertise in prefabricated and modular construction has evolved and been refined over the past 20 years—achieving both aesthetically beautiful design while meeting pragmatic requirements. This approach has benefited several project types, including multi-family residential, transit stations, commercial buildings, and schools.

Recent projects that have used the prefabricated and modular approach include UBC’s [Orchard Commons mixed-use student residence](#), two [Evergreen Line stations](#), and Peregrine™ House School Children’s Pavilion in Langley, British Columbia—the first school of its kind in the nation. (The school was inspired by Perkins+Will’s acclaimed [Sprout Space™](#), a revolutionary modular classroom facility that uses cutting-edge green building strategies.) Currently under design is a prefabricated landmark [Pavilion](#) that will be located at the entrance to the Great Northern Way campus in Vancouver.

The project team also included ATCO Structures & Logistics, AHC+Derix, Bird Construction, Equilibrium Consulting, AME Group, AES Engineering, CFT Engineering, RWDI Consulting Engineers, and Altus Group.

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