CANADIAN WOOD VILLA AT BTR GREENS

The versatility, beauty and diversity of British Columbia's (B.C.) timber products are showcased in this two-storey 6,000 square-foot single family demonstration home located in the BTR Greens Community, Hyderabad, India. Dubbed the Canadian Wood MAK Villa, the home features B.C.'s wide range of sustainably harvested, durable and resilient wood species, well-suited for an assortment of exterior and interior applications.

It is one of the first projects of its kind in the region to use mass timber and prefabricated construction in combination with light wood frame construction. This wood home takes full advantage of the design, environmental and performance benefits of eco-friendly wood construction. MAK Projects is spearheading this project with support from Canadian Wood India.

Exterior of the building | Credit: Canadian Wood India

Project Overview

The Canadian Wood Villa demonstrates how B.C.'s diverse species and innovative wood products can offer excellent performance and environmental benefits for structural and non-structural uses.

This demonstration home and pilot project is constructed with B.C. wood species and products, including spruce-pine-fir (S-P-F), western red cedar (WRC), yellow cedar, western hemlock and engineered wood products.

Boasting a generous floorplan, the home's ground floor includes a three-car garage, spacious foyer, open concept living and dining space, a large private kitchen, washroom, bedroom with ensuite and multipurpose spaces that can be used as a home office, gym or for other activities. The second floor includes a master and two standard bedrooms, all with ensuite bathrooms, a central family/recreation lounge and multipurpose hall.

As a demonstration home it serves as a cost-effective, replicable design within this 300-premium-villa community spread across 250 acres, offering all the conveniences and luxuries of city-life in a peaceful, natural setting.

The project takes full advantage of the benefits of prefabricated wood construction. Inside the home, interior finishes were made with B.C. species and manufactured in India. An abundant use of wood—and offsite fabrication—reduces the home's carbon footprint, boosts its thermal performance, gives residents biophilic benefits, ensures long-term durability, offers seismic resilience and speeds up assembly.

"Wood is amongst the few natural elements that can simultaneously achieve reduced carbon emissions, bring about increased sustainability in a building's life cycle and offer improved occupant well-being. As compared to concrete and steel, it offers high strength-to-weight ratio and excellent design flexibility."

Mir Osman Ali Khan, Director - Business Development, MAK Projects Pvt. Ltd.

LOCATION
Hyderabad, India

SIZE
6,000 ft²

COMPLETION
2022

ARCHITECT
Jenish House Design Ltd.

STRUCTURAL ENGINEER
Fast+Epp

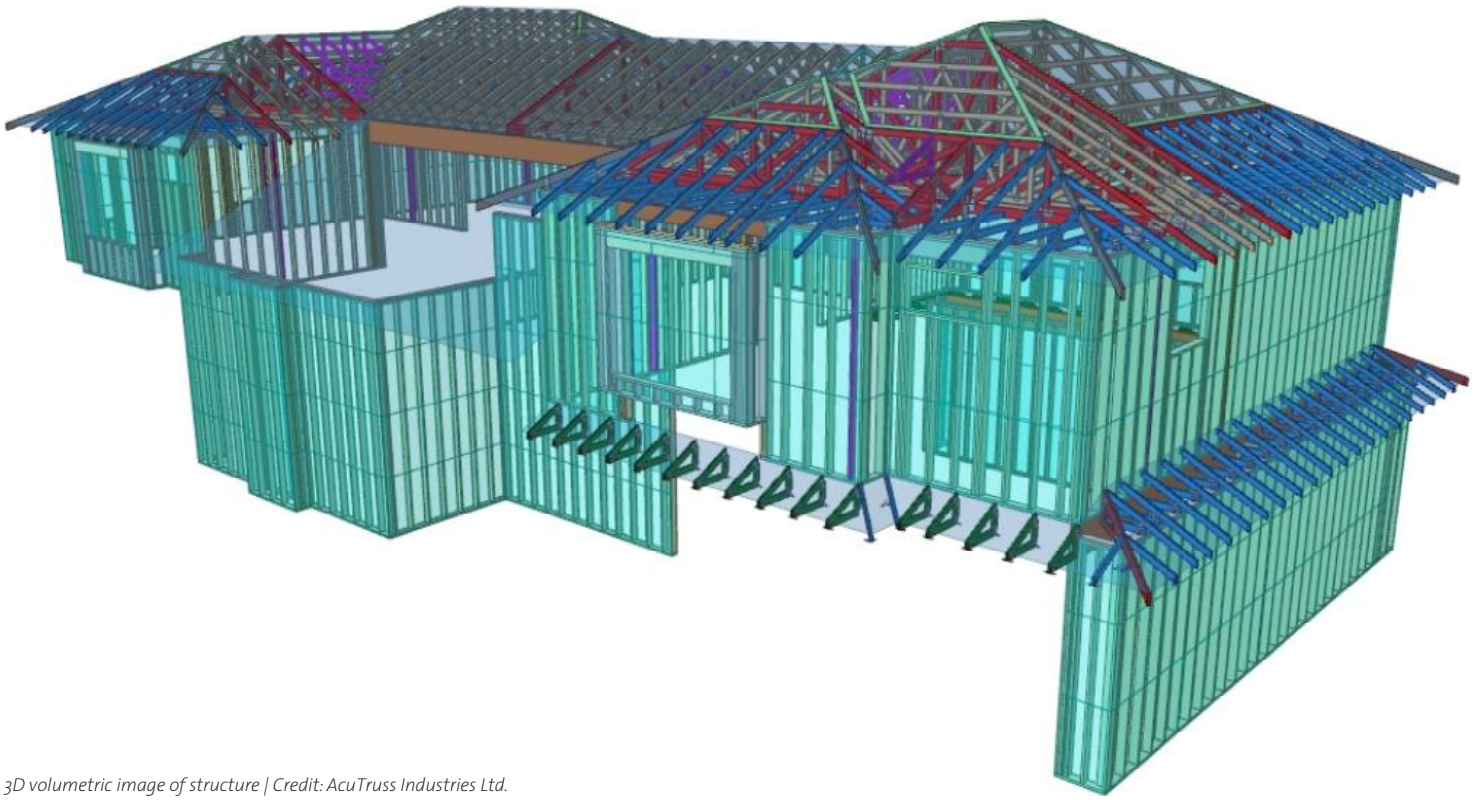
GENERAL CONTRACTOR
Nesca Homes

GLULAM AND NLT MANUFACTURER
Kalesnikoff Lumber Company

PROJECT OWNER
MAK Projects

B.C. WOOD PRODUCTS
Glue-laminated timber, oriented strand board, laminated veneer lumber, nail-laminated timber and dimension lumber.

B.C. WOOD SPECIES
Spruce-pine-fir, western red cedar, western hemlock and yellow cedar.



3D volumetric image of structure | Credit: AcuTruss Industries Ltd.

Structure + Design

Exterior Products and Design

The villa's two-storey structural design is a combination of light wood frame construction using S-P-F lumber and mass timber products—including laminated veneer lumber (LVL), western hemlock glue-laminated timber (glulam) columns, beams and floor system, the first of its kind in India. The roof structure is detailed with western hemlock glulam beams, S-P-F trusses and oriented strand board (OSB) sheathing. A covered exterior deck on the second level is supported by glulam beams and columns with a floor that was fabricated on site with hemlock nail-laminated timber (NLT) and OSB sheathing. Along with stone and masonry, the exterior is clad in western red cedar.

SPF wall framing and OSB sheathing | Credit: Canadian Wood India

Interior Products and Design

Inside the home, is a spacious open plan concept with high ceilings, abundant natural light and expansive outdoor views. Windows and exterior doors are made with naturally durable yellow cedar and manufactured by Delhi-based Artius Interior Products. All internal flush doors were made by Metal World Furniture, based in Hyderabad, using S-P-F internal frames and western hemlock laminate. The home's interior also features a staircase as a central design element, specified with glulam stair treads, also made with western hemlock.

The plans for the villa were developed and engineered in B.C., in collaboration with MAK Projects. The intent of the design is to expose key interior and exterior wood architectural and structural elements in an aesthetically pleasing, practical and sustainable manner. All lumber and engineered wood products in the residence were sourced and produced in B.C. and shipped to India, including prefabricated S-P-F roof trusses.

Dining area with exposed glulam beams and ceiling | Credit: Canadian Wood India

Western hemlock is a diverse species and used in a range of products in this villa including exposed glulam columns, beams and stair treads, plus the 3,000-square-foot glulam floor system, left exposed as natural wood ceiling in all the downstairs rooms and garage area.

Living area with exposed glulam beams and second storey flooring | Credit: Canadian Wood India

"Wood is an exceptional insulator and energy saver. There is less energy dissipation from a wooden home in comparison to other materials such as glass, marble and steel, meaning wood is a natural alternative to brick or concrete. And wood's thermal insulation properties ensure a timber frame home will use less energy."

Peter Bradfield, Technical Advisor, Canadian Wood, India.

Project benefits from rapid, light-weight wood contruction | Credit: Canadian Wood India

Sustainability, Certification + Performance

As a nearly all-wood project, the Canadian Wood MAK Villa offers all the environmental benefits of wood construction—carbon storage, excellent thermal performance as a natural insulator and less waste through the use of prefabricated methods. All the wood products for this project were sourced from certified and sustainably managed B.C. forests.

B.C.'s strong system of forest legislation, monitoring and enforcement ensures buyers are sourcing wood from sustainably managed certified forests. The province has some of the most comprehensive practices in the world and roughly 95 percent of B.C. forests are publicly owned and governed by stringent laws and environmental regulations.

Forest certification is conducted by an independent third party that confirms the sustainability and quality of a company's forest management against a set of defined standards. 76 percent of B.C.'s forests are certified and Canada accounts for almost 35 percent of all certified forests globally—the largest of any country worldwide.

Second floor under construction | Credit: Canadian Wood India

ESTIMATED ENVIRONMENTAL IMPACT OF WOOD USE

- Volume of wood products used: **192 cubic metres (6,792 cubic ft)**
- Canadian forests grow this much wood in: **1.6 minutes**
- Carbon stored in the wood: **154 metric tons of CO_2**
- Avoided greenhouse gas emissions: **327 metric tons of CO_2**
- Total potential carbon benefit: **481 metric tons of CO_2**

GHG EMISSIONS ARE EQUIVALENT TO:

- **102** cars off the road for a year
- Energy to operate **51** homes for a year

**Estimated by the Wood Carbon Calculator for Buildings, cwc.ca/carboncalculator.*

**CO2 refers to CO2 equivalent.*

FOR MORE INFORMATION

This profile is published by Canadian Wood India, a market development agency of the Government of British Columbia, the westernmost province of Canada. For more information on Canadian wood products, visit:

canadianwood.in

Canadian Wood

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