A HEALTH AND WELL-BEING APPROACH TO AGING

THE BENEFITS OF WOOD IN ASSISTED LIVING FACILITIES




Gateway Lodge Long-term Care
Photo: Derek Lepper

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The world's population is getting older and living longer. Globally, the number of people over the age of 65 is set to double by 2050, reaching over 2 billion. Thanks to advancements in science and medical care, people go on to live healthy, fulfilling lives well into their 80s and beyond. With this comes a growing need for versatile, flexible and high-quality assisted living and long-term care residences that accommodate a wide spectrum of needs as we age. At the same time, more importance is being placed on creating warm and welcoming, light-filled spaces that are non-institutional in their feel and support an improved sense of well-being. Both here at home and abroad, wood products from British Columbia's (B.C.) sustainably managed forests are helping do just that, serving as the primary building material for assisted living facilities that meet new contemporary standards for residential care. Architects, long-term care providers and residents benefit from a variety of B.C. wood products that deliver high-quality, cost-competitive design solutions. All in all, wood offers a number of practical benefits helping to support and house older people in the decades to come.

PRACTICAL BENEFITS OF WOOD

As the need to accommodate an aging population continues to rise, wood offers quick, easy-to-construct and high-quality facilities that minimize a building's carbon footprint while delivering additional health benefits to its occupants.

Wood is A Low Carbon Eco-friendly Building Solution

When it comes to environmental impact, wood products offer clear advantages over other building materials. The energy required to produce wood products is less than that required for steel. Trees take carbon out of the atmosphere when growing, and wooden buildings contribute to negative emissions by storing it. And wood is the only major building material that is both naturally renewable and sustainable when sourced from responsibly managed forests. All of this is becoming increasingly important as jurisdictions in B.C. and beyond are shifting towards mandatory low-carbon building solutions.

Wood is a Cost-Effective, Versatile Solution

Wood buildings are versatile, flexible and resilient, allowing for off-site fabrication and easy on-site modifications. Whether selecting a mass timber or conventional wood-frame construction, architects and operators have a suite of wood products available to them that can help ensure new facilities are built on time, on budget and with a high level of precision. Not only is wood widely available and durable, but its capacity for rapid construction and prefabrication can help meet the rising demand for such facilities. Wood buildings that take advantage of light-frame construction are typically less expensive to build, which can mean lower rental costs for individuals who may be living on fixed incomes.

Wood Promotes Wellness and Added Health Benefits

Timber is multifunctional, delivering structural, aesthetic and health benefits. It is light and strong to build with, and warm and welcoming to live within. When it comes to health and design, science is confirming the emerging concept of biophilia: the fact that being exposed to nature—and natural, organic materials such as wood—not only calms our mind, it can contribute to reduced stress and better healthcare outcomes. There is perhaps no better place to apply biophilic principles and increase our use of wood than in the design of facilities for aging populations.

GATEWAY LODGE LONG-TERM CARE

PRINCE GEORGE, B.C., CANADA

In contemporary long-term care facility design, a growing challenge is achieving a balance between a home-like interior environment that creates equal opportunities for privacy and social interaction, while at the same time providing the necessities of institutional care. The needs of residents can vary greatly from significant autonomy to around-the-clock supervision and assistance. Northern Health, the owner-operator of the Gateway Lodge Long-term Care, endeavoured to provide a residential environment using Canadian wood products that would engage the community and reflect the unique qualities of northern British Columbia.

Gateway Lodge Long-term Care provides 94 complex care beds using a decentralized approach that places small groupings of 14 to 20 residents into linear 'home areas'. The residential rooms located along the perimeter of each home area have views to the site's many secured gardens and courtyards. The double exposure of each home area ensures abundant access to natural light, views and fresh air.

Faced with a long winter and a short construction season, the architects expedited the construction schedule by taking advantage of a 2x6 dimensional lumber and Douglas-fir plywood prefabricated wall panel system, which allowed the construction team to frame the entire 13,750-square-metre facility in only 12 weeks. As foundation work progressed, the panels were manufactured off site and delivered as the foundation of each 'home area' was completed.

Structurally, the use of wood reflects the hierarchy of the interior spaces. Exposed Douglas-fir glue-laminated timber (glulam) beams and columns create the large spans of the social spaces such as the community hall, entrances and garden pavilion, while the pre-assembled panelized walls create the smaller private spaces. The use of prefabricated wall panels enabled the design team to achieve a higher level of quality with less back framing and fewer on-site modifications. Painted Douglas-fir plywood is used on window bays and soffits.

Wood is effective at imparting a domestic feel to otherwise institutional scales. To capitalize on wood's capacity to create warm and comfortable interiors, the architects used solid maple and maple veneer, which features prominently in millwork and finishing elements, throughout the building.

SIZE	13,750 m^2
COMPLETION	2009
ARCHITECT	NSDA Architects
STRUCTURAL ENGINEER	Krahn Engineering Ltd.
OWNER	Northern Health Authority
PHOTOS	Derek Lepper

"For the main spaces, we used structural glulam beams and a post and beam approach. That allowed for large open spaces, large spans and lots of glass, meaning the residents could look outside. A connection through to nature."

–Jerry Doll, NSDA Architects

TS'I'TS'UWATUL' LELUM ASSISTED LIVING FACILITY

DUNCAN, B.C., CANADA

Since time immemorial, B.C.'s forests have provided shelter, clothing, food and medicine for the region's Indigenous Peoples. They have long understood the central role of wood in their everyday living and its positive impact on the health and wellness of the occupants of a building, especially those that serve as places of healing.

Located in the traditional Territory of the Cowichan Tribes, just outside of Duncan, B.C., the 5,100-square-metre Ts'i'ts'uwatul' Lelum Assisted Living Facility provides 46 single occupancy rooms and four double rooms to deliver fully accessible assisted living accommodation for 54 of the First Nations' elders. All wood used for the project was locally sourced and, where possible, the project employed band workers, trades and craftspeople.

Three storeys of conventional wood-frame construction using both 2x6 and 2x4 dimensional lumber framing in combination with wood I-joist floors are set atop a concrete podium to form a four-storey structure. Douglas-fir was used for the struts and soffits of the upper 'butterfly' roof, as well as in the design of the feature semi-circular trellis and pergola around the fire pit. Conventional wood-frame shear walls with plywood sheathing on one side create the lateral system for the structure separating the suites from the circulation corridors.

The exterior of the building draws inspiration from elements of traditional First Nations architecture, including inclined post and beam construction, which forms the entrance canopy, roof deck and rear patio covered areas. This detail is repeated at a smaller scale to create awnings that project out and over the ground level and fourth storey windows. For the entrance canopy, the architects used locally-sourced Douglas-fir heavy timber and dimensional lumber.

The culture of the Cowichan Tribe is reflected in the artwork and furnishings throughout the building and includes a 13-metre-high totem pole carved from western red cedar that occupies the central atrium and acts as an organization device, dividing the facility into two wings. Interior wood finishes include feature ceiling treatments and door, window sills and frames.

SIZE	5,100 m^2
COMPLETION	2012
ARCHITECT	Low Hammond Rowe Architects
STRUCTURAL ENGINEER	WSP Global (formerly Genivar)
OWNER	M'akola Housing Society
PHOTOS	M'akola Housing Society

"For the Cowichan First Nations, wood is important from both a cultural and spiritual perspective. The significant presence of wood throughout Ts'i'ts'uwatul' Lelum creates a familiar and welcoming atmosphere, where the elders feel connected to the community."

–Keven Albers, CEO, M'akola Housing Society

MINORU CENTRE FOR ACTIVE LIVING

RICHMOND, B.C., CANADA

A successful design of a community recreation centre offers inviting spaces for both formal and impromptu gathering and socializing. With this in mind, the architects of the Minoru Centre for Active Living, designed the spaces in-between the facility's activity-dedicated areas to be equally rich with opportunities for social interaction. Recognizing the importance of interconnectedness not only between spaces, but also between people, the two-storey, 10,220-square-metre building replaced a cluster of three aging and outdated facilities in Richmond City Centre. The new facility unifies a centre for older adults, state-of-the-art aquatics facility, and several fitness and leisure-dedicated spaces topped with a hybrid glulam and steel roof.

The facility's seniors-dedicated components are fully accessible for people with disabilities and offers active, healthy and social opportunities for adults aged 55 and older. At approximately 2,785 square metres, the space is double that of the facility it replaced. In addition to a dedicated entrance and lobby, the facility includes a lounge, full-service cafeteria, arts studio, woodworking shop, billiards room, music room, dance studio and several multipurpose rooms.

The warmth of wood as a material and its ability to tie the various program spaces together was of interest to the Richmond Seniors Society. Spruce glulam beams support the roof over double-height spaces including the Fireside Lounge and Café/Bistro. Interiors feature maple veneer millwork, and the entry of each activity room includes wood doors with slatted maple ceilings.

All programs in the unified facility are defined by high ceilings and a variety of gathering spaces. The undulating form of the roof is achieved using locally sourced 80 millimetre x 450 millimetre glulam beams comprised of 10 different radius profiles. Concealed steel connections ensure the visual continuity of the roof, which appears to float over the variety of interior spaces. Clerestory windows emerge where the beams diverge, peak and dip.

The decision to use wood over other available construction materials was due to the City of Richmond's high water table and geotechnical concerns including soil instability and buoyancy which would put a considerable amount of pressure on the underground pool tanks. Because wood is significantly lighter than steel or concrete, the structural load of the roof was reduced, minimizing the facility's foundation requirements.

SIZE	10,220 m^2
COMPLETION	2018
ARCHITECT	HCMA Architecture + Design
STRUCTURAL ENGINEER	Fast + Epp
OWNER	City of Richmond
PHOTOS	Exterior: Lucas Findlay Photography Interior: HCMA Architecture + Design/ Nic Lehoux

"The City of Richmond's goal was to develop an iconic facility, so wood became a material of choice for the undulating roof. Wood has a highly aesthetic appeal, while delivering the required durability, acoustic, and structural characteristics necessary for the project."

–Jim Young PE, Senior Manager of Capital Buildings Project Development, City of Richmond

The four freestanding buildings are connected by external walkways with pitched roofs supported on paired wood columns.

BEICHUAN LEIGU TOWN ELDERLY CARE CENTER

BEICHUAN COUNTY, CHINA

The earthquake that struck Sichuan Province in May 2008 tragically killed around 70,000 people, injured 375,000 and left more than 5 million homeless due to the collapse of many buildings. The town of Beichuan was most severely affected, with almost half its population perishing in the disaster. A series of aftershocks and repeated flooding in the area delayed the rebuilding efforts for several months.

The Beichuan Leigu Town Elderly Care Center was built using funds donated by the Government of Canada and the Province of British Columbia. These donations were part of a program set up to assist in the reconstruction of the devastated region and to showcase the advantages of wood-frame construction for energy efficiency and resistance to earthquakes. The thermal and seismic benefits of wood are of particular importance in a country with climate extremes, and where more than 60 percent of the population live in areas prone to earthquakes.

China's senior population is growing exponentially, and the national government has made building more senior care facilities a priority. The Beichuan Leigu Town Elderly Care Center is a multipurpose, multi-unit complex, composed of four buildings of one- and two-storey construction with a total floor area of 5,600 square metres. The building includes accommodation for more than 200 seniors as well as communal facilities.

The building incorporates standard dimensional framing lumber and oriented strand board sheathing with horizontal and vertical western red cedar and local exterior stone cladding. When constructed, this seniors' facility was the first of its kind in China to be built in wood-frame construction and helped demonstrate this technology for multi-storey, multi-residential accommodation specially designed for the elderly population.

SIZE	5,600 m^2
COMPLETION	2011
ARCHITECT	Initial Design: James Lee Final Design: FII China/ Sichuan Haichen Design
STRUCTURAL ENGINEER	Thomas Leung and Associates
OWNER	Beichuan County Government
PHOTOS	Canada Wood China

SIZE	2,305 m^2
COMPLETION	2019
ARCHITECT	Yoshitaka Architects, Engineers & Consultants
STRUCTURAL ENGINEER	Yoshitaka Architects, Engineers & Consultants
GENERAL CONTRACTOR	Nagai Komuten
OWNER	Kohoen Social Welfare Corporation
PHOTOS	Yoshitaka Architects, Engineers & Consultants

KAMISHAKUJII KOHOEN SENIORS RESIDENCE

NERIMA CITY, TOKYO, JAPAN

After having successfully completed 19 wood-frame seniors' residences in Japan over the last 12 years, it was natural for the architects to recommend wood to the owner of the Kamishakujii Kohoen Seniors Residence as the preferred construction material. Located in a quiet, low-lying residential neighbourhood in Tokyo, the two-level, 2,305-square-metre facility provides 44 rooms grouped into four-unit care home areas for seniors with varying needs.

Due to the residential character of the surrounding area, it was important for the owner to minimize disruption to the community. A prefabricated wall system constructed off site using SPF dimensional lumber and OSB sourced from B.C. demonstrated to be a cost-effective solution, and allowed many components to be delivered to the site pre-assembled and fixed into place. Laminated veneer lumber was used to achieve the longer spans required for the communal spaces.

Often cited for its warm tones and soothing effects, wood construction can also contribute to the safety of residents. As a comparatively soft material, the architects preferred to build with wood because it is gentle on the body, making it an ideal choice for individuals experiencing mobility issues or increased frailty as they age. Wood-floor construction assemblies reduce the burden of time spent on feet not only on residents, but also on facility staff.

With more than 28 percent of its population already over the age of 65, Japan faces a rapidly growing need for high-quality seniors housing while at the same time a diminishing workforce to construct such facilities. The speed and efficiency of prefabricated wood building systems can reduce labour requirements and minimize complications that may arise from the coordination of trades.

"The design and flexibility of wood construction fits in nicely with the surrounding area. Because wood is a natural element, it contributes to the feel of the neighbourhood."

–Project Owner, Kohoen Social Welfare Corporation


上石神井幸朋苑 竣工式

Minoru Centre for Active Living
Photo: HCMA Architecture + Design / Nic Lehoux

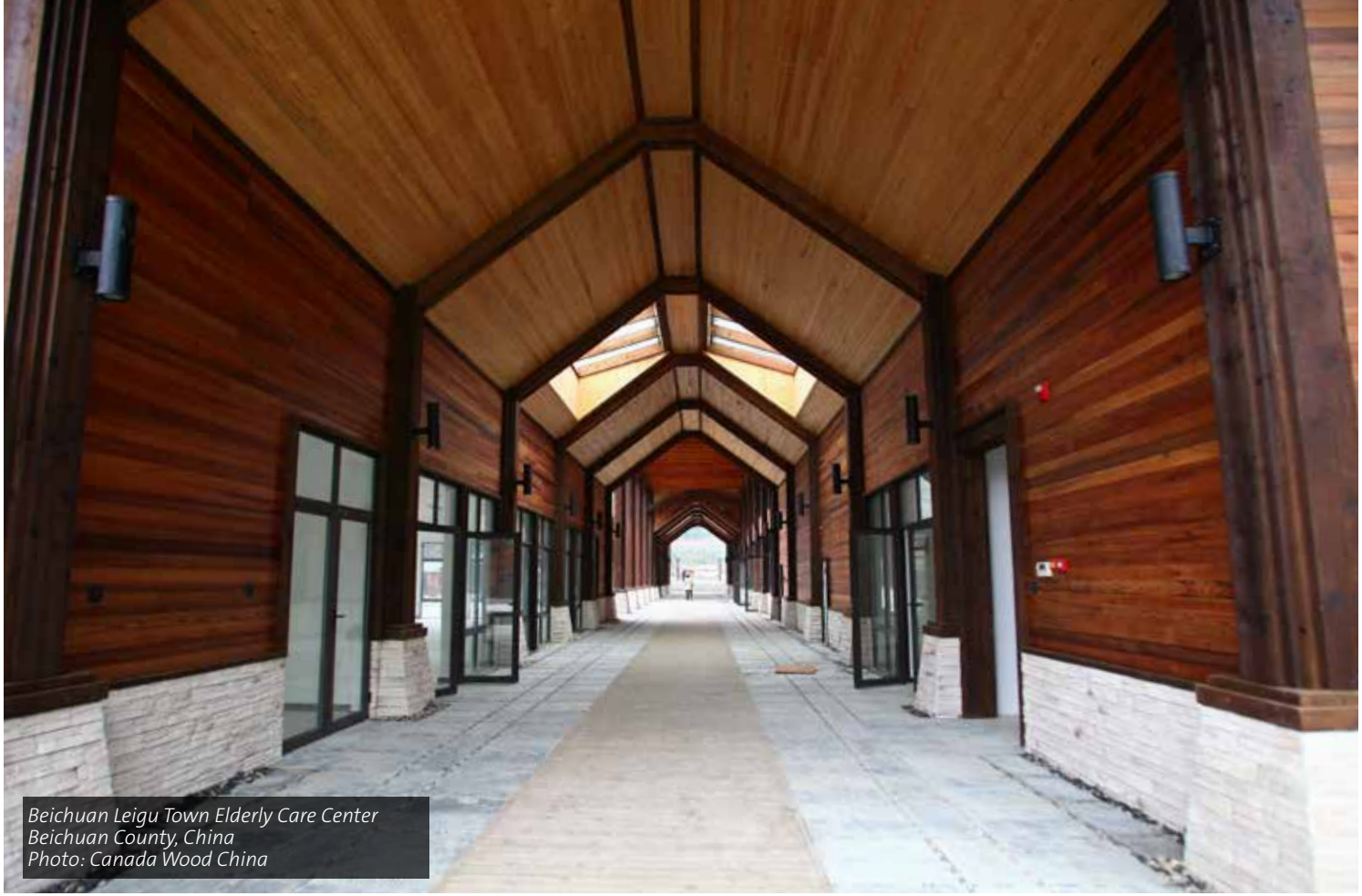
RAISING THE STANDARD FOR ASSISTED LIVING WITH WOOD

With today's aging population living longer and staying active, there is a growing need for assisted living facilities that adapt to a wide range of requirements. Wood offers the flexibility, warmth and durability to do just that. Interior spaces that incorporate wood are welcoming, inviting and deliver natural biophilic benefits. Structurally, wood is a versatile and cost-effective building material that lends well to quick prefabricated construction that can be assembled off site in a controlled environment. This efficient time-saving benefit means construction can keep pace with the rising demand for affordable long-term residential care.

Along with construction and design advantages, wood is a more eco-friendly, low-carbon alternative to conventional steel and concrete. This is becoming increasingly important as jurisdictions in British Columbia and elsewhere are shifting focus from net-zero to carbon-zero buildings. This means using materials such as wood to help reduce the energy consumed by all of the processes associated with the production of a building, from the processing of natural resources to manufacturing, transport and product delivery.

British Columbia's wood products from sustainably managed forests offer these practical and environmental benefits here at home and abroad. With the global need for assisted living facilities set to grow in the coming years, wood is an ideal building material that can meet the new and emerging expectations of this valued segment of our society.

Minoru Centre for Active Living
Photo: Lucas Findlay Photography



Beichuan Leigu Town Elderly Care Center
Beichuan County, China
Photo: Canada Wood China

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