Fire Hall No. 5

Vancouver, BC

Wood in Civic Buildings

Radium Hot Springs Community Hall and Library

Radium, BC

A CASE STUDY

Canadian Wood Council
Conseil canadien du bois

WoodWORKS!
Program of the Canadian Wood Council

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3.13 Jeff Poss
3.14 Dave Best
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1.2 The Radium Hot Springs Community Hall and Library utilized a wide variety of wood products and assemblies, most of which were sourced from within 100 miles of the site.

1. INTRODUCTION

In April 2019 John Horgan, Premier of British Columbia, announced a new directive to require municipalities and the BC government to strongly consider the use of wood in public buildings, both as a structural material and for interior finishes. The goal of this initiative is to increase demand for BC's wood products and to assist the forest industry in dealing with the significant impacts of climate change. To date, these have included the mountain pine beetle infestation and an increase in the frequency and severity of forest fires, both of which have had widespread negative consequences for the industry across the province.

When announcing the initiative, Premier Horgan stated: "We will expect the result to maximize the potential of the existing timber supply, maintain jobs, incorporate First Nations' interests, and address the economic, cultural, recreational and other uses of BC's land base."

New engineered mass timber products, supported by new legislation, now make it possible for wood to be used in a wide range of projects, both urban and rural. This case study showcases two recent projects that illustrate the value and versatility of wood, both in its response to technical challenges and in its contribution to economic and social sustainability in communities around the province.

In Vancouver, Fire Hall No. 5 (Figure 1.1) is an example of an innovative response to rising land costs and the shortage of affordable social housing; while in the Kootenay village of Radium Hot Springs, a wealth of local wood products, manufacturing capabilities and craft skills combine in a community hall and library that can truly be called a '100-mile building' (Figure 1.2).

2. FIRE HALL No. 5

Vancouver, BC

It is no secret that Vancouver has the highest land costs of any city in Canada and, as a consequence, a daunting challenge in maintaining an adequate supply of affordable housing. Among the strategies employed to address this situation is to reconsider permissible density and land use on city-owned property. This has given rise to some interesting and innovative examples of co-location, most recently Fire Hall No. 5, which combines a state-of-the-art fire station with 31 units of supportive transitional housing for vulnerable mothers and their children.

2.1 Background

The original two-bay Fire Hall No. 5 was built in 1952, at the intersection of Kerr Street and 54th Avenue in the southeast corner of the city. Over its 60-year life, population growth in the surrounding neighbourhood, the introduction of extra-long ladder trucks and changes in the seismic code for post-disaster buildings had rendered it obsolete. Upgrading and expansion was determined to be both impractical and uneconomical, so the building was dismantled in 2016 to make way for the new mixed-use structure.

For the new fire hall, the major components to be included in the project were three apparatus bays with related operational areas, crew dormitories, washrooms and fitness areas, a community training room and a self-contained breathing apparatus (SCBA) maintenance room serving the entire Vancouver Fire Rescue Service (VFRS).

The requirement to re-zone the property, together with the lengthy period of consultation needed to find the right organization to lease the residential portion of the building, meant that the project was several years in the making. In 2013, the City of Vancouver signed an agreement with YWCA Metro Vancouver, one of the largest and most diversified non-profits in the region. Through this partnership, 31 units of safe affordable housing for low-income woman-led families and their children became the second component of the project.

This combination of uses was particularly challenging for the architectural team at Johnston Davidson Architects, who had to maximize the program area within the height limitations on a tight site, while facilitating fire truck access and separating the fire hall and residential uses. In addition, the entire building had to be designed to meet current post-disaster standards; and able to resist seismic forces 1.5 times those for a regular building.

2.1 The corner site allows the fire hall and residential components to have separate entrances.

> "Thanks to a new and creative approach, we're taking city-owned land and transforming it into not only a much-needed new fire hall, but also 31 safe new homes for dozens of women and children."
>
> Kennedy Stewart, Vancouver Mayor

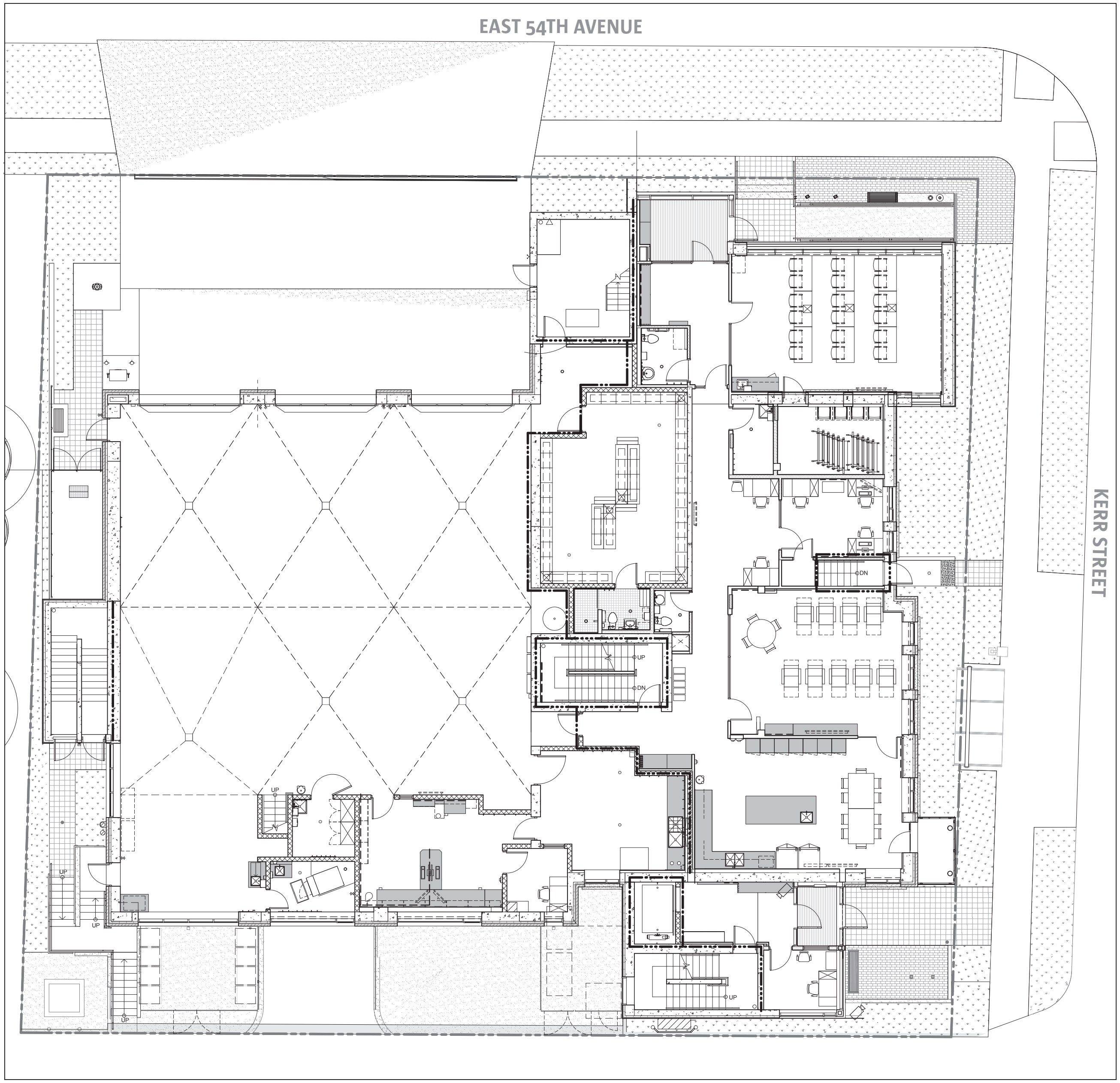
2.2 Planning and Architecture

With the corner site facing two streets, it was possible to create two different entrances to the building; one for the fire hall off 54th Avenue; the other for the YWCA housing off Kerr Street. This was an important consideration that has ensured the two organizations are seen and understood by those accessing the building to be separate and distinct (Figure 2.1).

Apart from shared, secure underground parking and service rooms, the latter only accessible to qualified personnel, the two organizations have no physical connection anywhere in the building. At grade level, VFRS occupies the first two floors and YWCA occupies floors three to six.

The majority of the main floor is taken up by VFRS operational spaces and the apparatus bays where the emergency vehicles are stored. These vehicles leave and return through overhead doors across the concrete apron located off 54th Avenue (Figures 2.2 and 2.3).

The glazed fire hall entry is denoted by its coloured interior and proximity to the traditional concrete hose tower. The entry gives access to a community/training room and washroom, separated from the remainder of the hall by a secure point, making it accessible for community groups without impacting the daily routine



2.2 Main floor plan showing apparatus bays (left) administration (right) and community room (top right).

2.3 Concrete apron outside apparatus bays.


2.4 Meeting room.

of the VFRS (Figure 2.4). Especially interesting is the integration of the SCBA facility, which will maintain the specialized breathing equipment used by the entire VFRS fleet. The entry to the YWCA residences is also at this level, facing across Kerr Street to the Champlain Mall retail development.

The second floor is entirely occupied by the VFRS and houses the crew dorms, washrooms and fitness facilities. Single washrooms provide space-efficient gender inclusive facilities for use by everyone. Dorm areas provide semi-private space, also usable by either gender. This means team members are not closed off from one another, a key contributing factor in maintaining team morale and well-being.

Above the fire hall, the project includes four floors of housing for the YWCA's female tenants and their children. The suite layouts are almost identical on all floors with the exception of the third floor, which also incorporates a common room and laundry facilities (Figure 2.5). Each suite focuses on livability and sustainability, providing the YWCA, the City of Vancouver and the occupants with an energy efficient solution for affordable housing. Outdoor social spaces are located on the third floor and the roof.

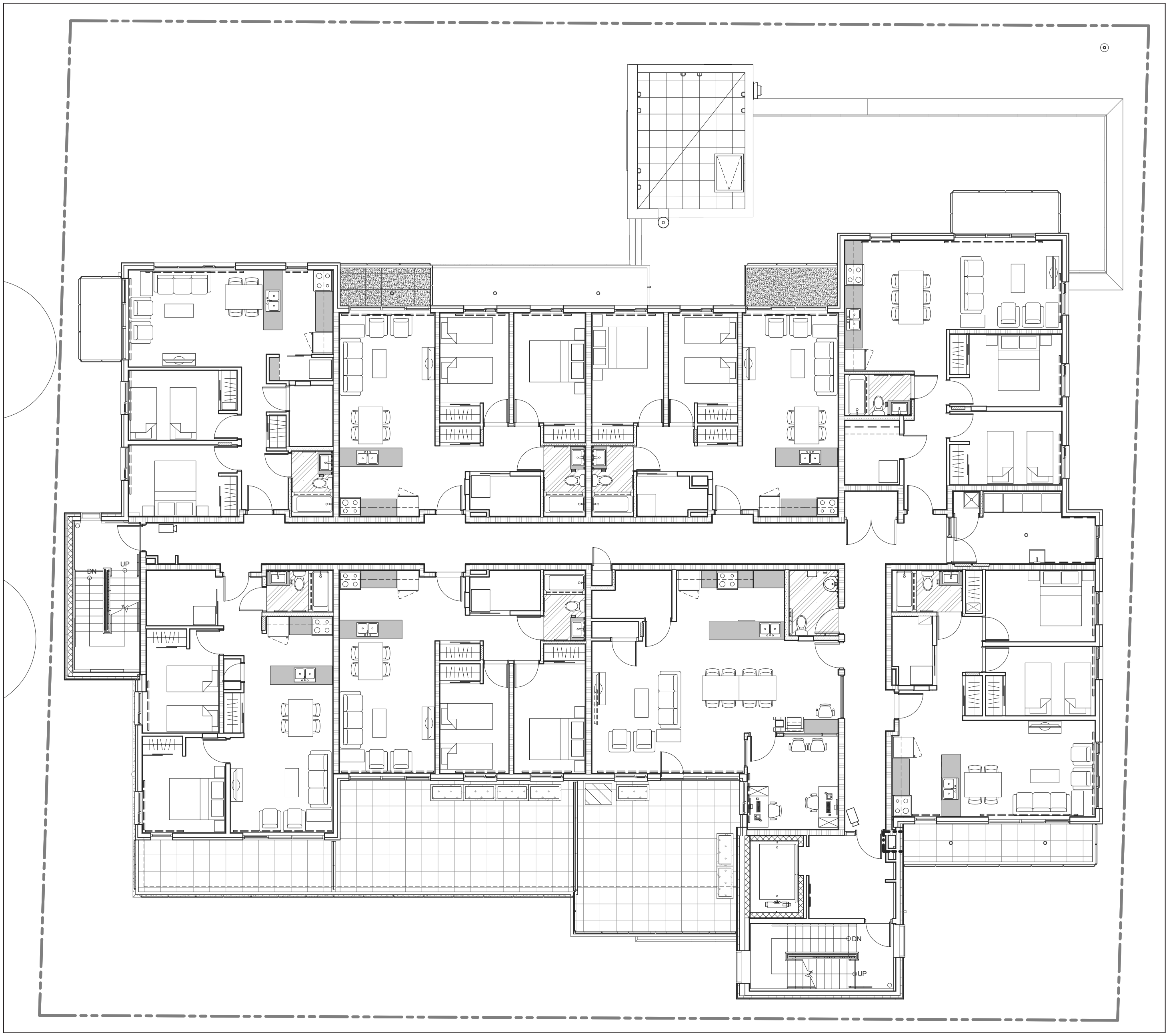
The colour and texture of the materials used throughout the building play a role in the well-being of all occupants and also contribute to easier way-finding. Large text and photo graphics are found throughout the building, including stairways, apartment doorways and on the exterior of the hose tower and apparatus bays. These not only provide visual interest but also harken back to earlier fire hall design in which crews were commonly identified by number.

2.3 Sustainability

The building is designed to meet the LEED (Leadership in Energy and Environmental Design) Gold standard for environmentally sustainable buildings. On the main and second floors where the fire hall is located, access to natural light, exterior views and operable windows, particularly in the most frequently occupied spaces, was a key component in the design. This increases the comfort for fire crews and reduces the requirement for artificial light and thus the related energy demand.

The residential floors are constructed in light wood frame, a highly efficient building system that utilizes a renewable material, harvested from sustainably managed forests. Solid sawn lumber is also inherently low in embodied energy.

All of the apartments have abundant natural light and access to generous balconies and, in many cases, views of the city (Figures 2.6 and 2.7). In response to the city's urban agriculture mandate, the common roof terrace has both a children's play area and large planter boxes that serve as a community garden.



2.5 Typical residential floor with 1 and 2-bedroom apartments.

"This is the second mixed-use housing community we have opened in partnership with the city, and we are grateful for their ongoing support and willingness to explore these innovative housing solutions."

Deb Bryant, YWCA Metro Vancouver CEO


2.6 Dining area in typical apartment.


2.7 Apartment bedroom with windows to balcony and views of city.

2.4 Structure

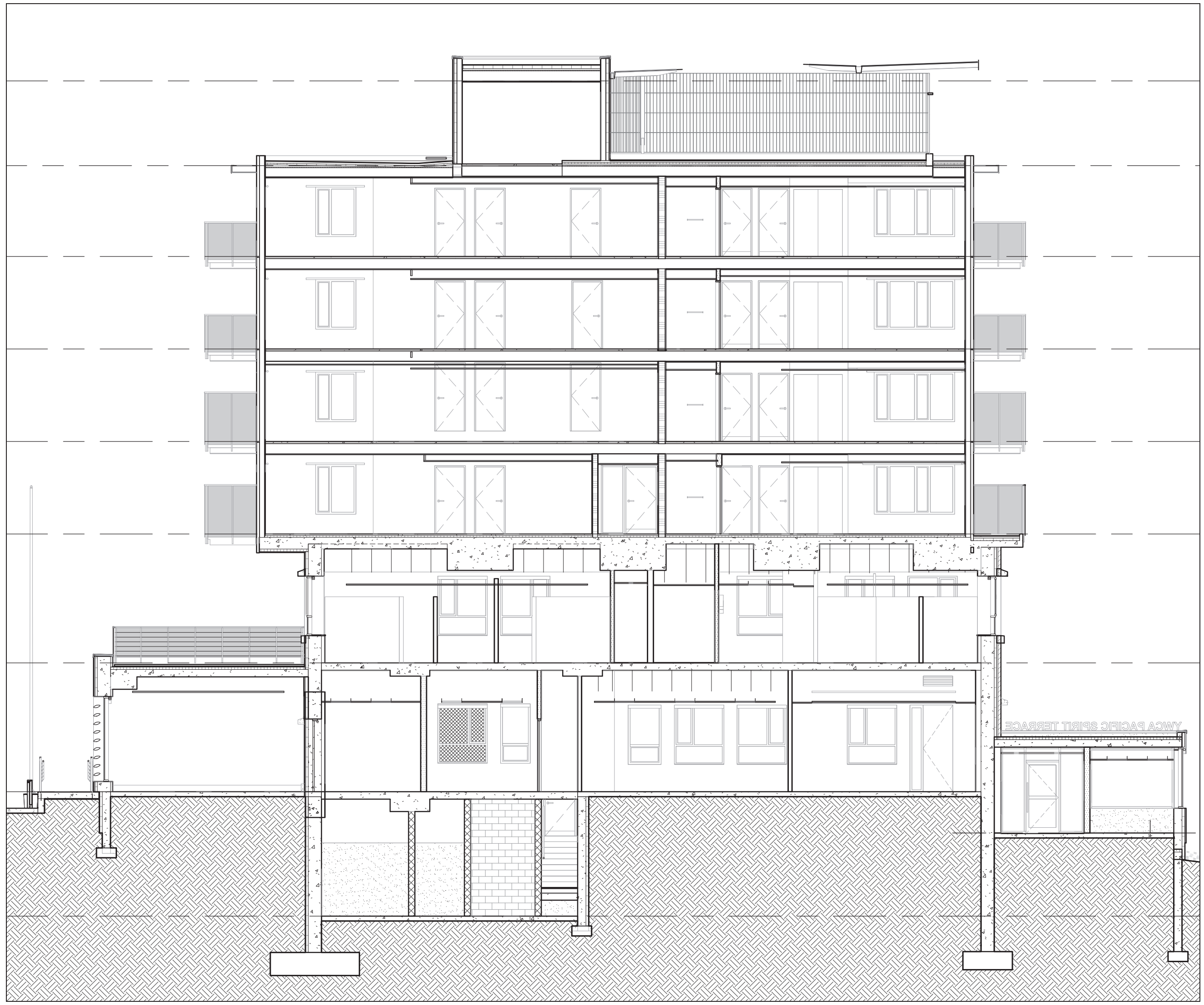
Just as this project broke new ground in terms of its mixed-use program, it also posed structural engineering challenges not dealt with in the current BC Building Code. Although Herold Engineering Ltd. had considerable experience with both fire halls and multi-storey light wood-frame construction, there were no precedents to guide them through the design of a hybrid structure of this type that was also required to perform to post-disaster standards.

2.4.1 Challenges and Constraints

In such circumstances, the engineer-of-record is required to consult with professional peers to confirm the validity of the design assumptions being made. In concert with the City of Vancouver, an independent technical review was undertaken and design parameters agreed upon prior to the final structural design phase.

While the decision to construct the fire hall portion in concrete was made at the outset of the project, the material of choice for the residential floors was reviewed with several options being put forward for cost analysis. Cross-laminated timber (CLT) and steel were both considered, but with each iteration of the design, the consulting team returned to traditional light wood frame as the most flexible and economical choice.

Creating a hybrid structure that behaves harmoniously under seismic, wind and other dynamic loads is a challenge when the concrete spans are long, such as in a fire hall. This contrasts with the more common situation of a commercial podium or parking garage, where the close spacing and repetition of column and beam elements enables imposed loads to be distributed more easily throughout the podium structure. In addition, the zoning restricted the overall building height to 18 metres from average grade to the floor of the uppermost storey. This meant that floor-to-floor heights (and hence structural depths) on all levels had to be minimized to ensure the required residential program could be accommodated (Figure 2.8).



2.8 North-South section: With the overall height limited by the zoning, it was necessary to minimize the structural depth of each floor.

2.10 Above the fire hall, the residential floors of the building are of light wood-frame construction.

The apparatus bay required an 18-metre span to a central wall, then an additional adjacent 17-metre span over the fire department accommodation area. To fit within the height restrictions noted above, the overall depth of the concrete structure had to be minimized. A further complication was the need to provide three large apparatus door openings in the north wall, limiting the number of columns that could be used (Figure 2.9).

To create consistent diaphragm action at the third floor level at the base of the wood-frame structure, the concrete slab was designed with a series of down-stand ribs that help to transfer loads evenly. These ribs also provided the additional thickness necessary to cast in the multitude of screw anchors required to hold down the light wood building above, against seismic and wind uplift loads.

In addition, because of the long span, there was a requirement to cast the 18- and 17-metre slabs with a crown in the centre, in anticipation of the deflections occurring during construction and over time. This posed challenges for the four-storey common wood-frame construction with gypsum board panelling being erected above the slab.

Comparing the predictions from several analytical software applications, the decision was made to camber the slabs accordingly and to monitor deflection during construction. Shims were used to level the prefabricated light wood-frame wall elements as they were installed. As construction proceeded, measurements were recorded confirming that deflection of the long span suspended slabs was small enough to avoid excessive cracking in finishes.

2.9 The long span and large wall openings in the apparatus bay presented structural challenges.

2.4.2 Seismic Considerations

Vancouver is in a very high seismic zone, so considerable analysis is required to ensure that fire hall structures meet the BC Building Code requirements for post-disaster use. As this building uses wood framing for the four-storey residential portion, the wood structure makes use of conventional 2x6 frame construction (Figure 2.10) with single- and double-sided plywood sheathed shear walls along the corridors, at demising walls between suites, and for bearing walls within each suite. The higher than usual number and cumulative length of shear walls, built-up posts, and seismic tie downs were needed to meet the more rigorous code requirements for this type of building (Figure 2.11).

With concrete and wood frame having decidedly different ductility and over-strength parameters, which are important predictors of seismic performance, the structural engineers worked closely with their professional peer reviewers to achieve the optimal solution within the design and detailing provisions of the code.

2.4.3 Wood Structure

The floor structure on levels four through six comprises wood I-joists and, where loads are greatest, laminated veneer lumber (LVL) beams. In the third floor common room, where spans are greatest, steel beams were used in concert with wood beams and joists. These measures were required because of the height restriction noted previously. This restriction also required the elimination of suspended ceilings except in corridors, and the careful routing of mechanical ductwork through and between the I-joists (Figure 2.12).

The use of hydronic heating also added complexity, as the 50 mm concrete topping on each floor added considerably to the dead weight of the building and also to the magnitude of the lateral forces that had to be resisted and resolved.

At roof level, the provision of a play area in the centre portion of the roof required the mechanical units to be located around the perimeter, rather than positioned directly above the zone of the building they served. As a result, additional lengths of ductwork were required to connect the units with the appropriate zone below, and the structural engineer and I-joist manufacturer worked collaboratively to optimize wood-frame layouts.

The other structural issues at roof level included the provision of support beams for the loads of heavy planters, the anchorage points for the perimeter fence around the community garden and play area (Figure 2.13) and anchorage points for safety harnesses used by window cleaners and other workers.

2.11 Post-disaster framing includes many laminated post and shear walls with plywood on both sides.

2.12 The overall height restriction required careful routing of mechanical services through the wood floor structure.

> "I'm so grateful for this life-changing opportunity.
> Because of this type of affordable housing,
> I am able to move forward confidently knowing that
> I can provide the life my daughter deserves, on my own."
> (Figure 2.15)
>
> Andrea, new resident of YWCA Housing

2.13 Roof construction showing line of steel stanchions required to support fence posts for play area.

2.5 Conclusion

The success of this highly innovative project is in part due to the adaptability and affordability of contemporary light wood-frame construction. Faced with height restrictions, post-disaster seismic requirements and unusual loading conditions, it nonetheless proved the most viable choice for the residential portion of the building (Figure 2.14). In these ways, wood demonstrated once again the value it offers to the communities of British Columbia.

2.14 The flexibility and economy of light wood-frame construction is demonstrated in the residential portion of the building.

2.15 The building provides safe housing for mothers and children.

3.1 Set in a natural kettle hole and fringed with pine trees, the site is a microcosm of the Columbia Valley in which it sits.

3. RADIUM HOT SPRINGS COMMUNITY HALL AND LIBRARY

Radium, BC

The Village of Radium Hot Springs is located in the Columbia River Valley, in the East Kootenay region of southern British Columbia. With a permanent population of 800 and a summer population of 5,000, Radium is considered a resort municipality, known for the natural hot springs in nearby Kootenay National Park, the Columbia Valley wetlands, and the Rocky Mountain culture. Perched on the edge of a natural kettle hole and lined with pine trees, the site of the new 800-square-metre community hall and library is a microcosm of the Columbia Valley (Figure 3.1). Vancouver-based Urban Arts Architecture was selected to design the project following a Request for Proposals (RFP) issued by the village.

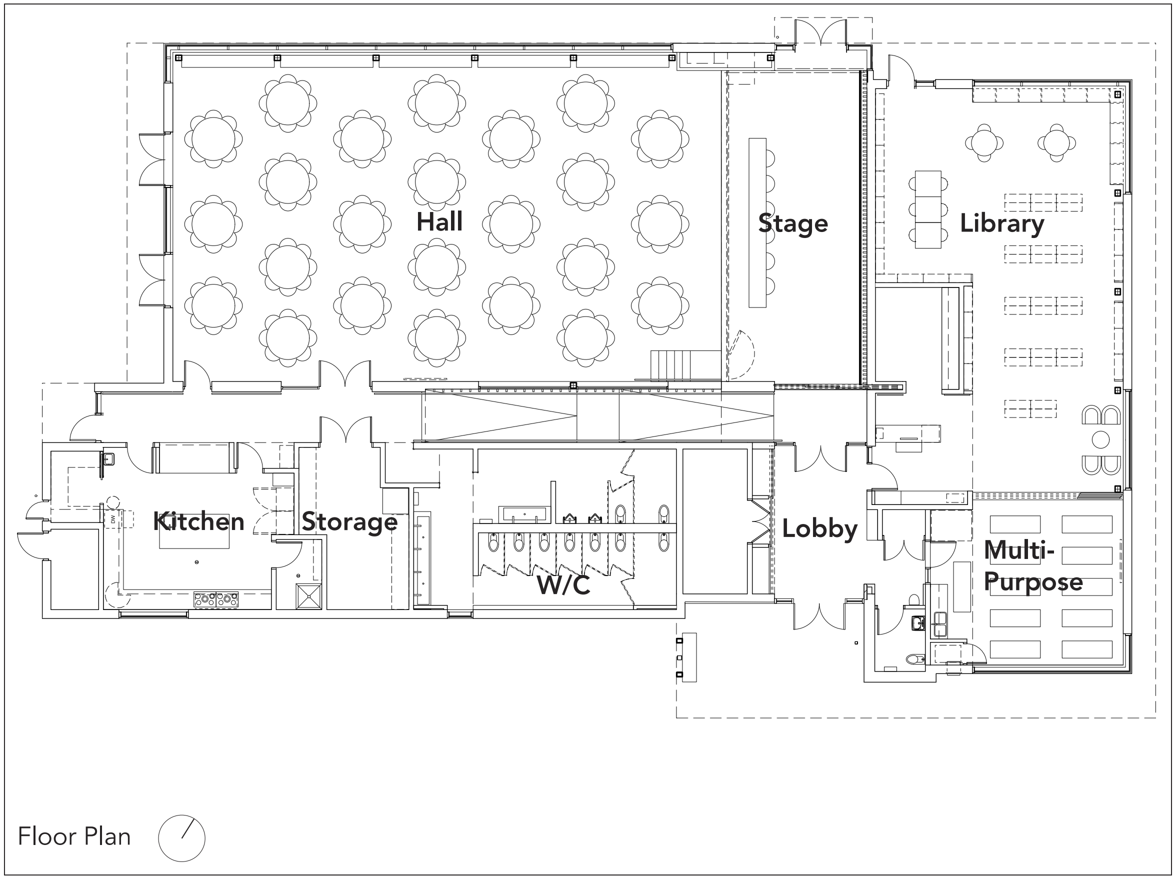
3.1 Design Process

The RFP made it clear that the village wanted the project to fulfill the Wood First[1] policy and bylaw recently adopted by the municipality. The overarching vision for the project was to create a "100-mile building", maximizing the use of locally harvested wood, processing capacity, manufacturing and fabrication capabilities and craft skills – all of which would combine to provide the greatest possible social and economic benefits to valley communities.

To meet this mandate, Urban Arts set up an integrated design process to facilitate stakeholder engagement. This began with three days of meetings and open house events, in which various municipal departments, user groups, local industry representatives and members of the broader community were invited to contribute their ideas and expertise to the conceptual development of the project. In bringing the community together, these meetings also helped to build a broad consensus and strong commitment to the project which later translated into a successful referendum on project funding and many donations of money and materials.

1 The Wood First Act was passed by the BC government in October 2009, with the aim of generating demand for wood products, promoting climate-friendly construction and stimulating economic activity in forest-dependent communities.

3.2 The building incorporates 288 cubic metres of locally harvested wood, milled or fabricated into a wide variety of products.



3.3 The plan is arranged along an east-west axis to optimize passive energy performance.

3.4 Windows in the building are configured to capture views of the mountains and park.

3.2 Planning and Architecture

By identifying the wealth of local materials, resources and labour that could be incorporated into the project, the consultation process also ensured that, by reducing the impact of materials transportation, the embodied energy, carbon footprint and life cycle impacts of the building would be minimized. The result is a building that incorporates approximately 288 cubic metres of wood products (Figure 3.2) harvested from local and regional forest licences and processed at the nearby Canfor mill.

The building is organized and oriented to maximize the effectiveness of passive design strategies, with a long linear form on the east-west axis, permitting natural daylighting and cross ventilation (Figure 3.3). Strategically located roof overhangs control solar exposure. Window locations are carefully calibrated to capture the views of the mountains and connect to the park (Figure 3.4) while maintaining less than 40 per cent window-to-wall ratio for energy efficiency.

The formal inspiration for the building comes from the simple utilitarian sheds that dot the Columbia Valley. While some locals felt that a chalet-style roof would

3.6 The siding was charred by running it through a custom machine fitted with propane burners.

"Our use of wood helps the interior beauty of this unique building really stand out. The project re-vitalized our community meeting space and turned this community hall and library into a centrepiece project for the municipality. We've had tremendous buy-in from the residents of Radium as well as from our wood suppliers who came together on this."

Arne Dohlen, Director of Planning & Development Services, Village of Radium Hot Springs

3.5 The shallow shed roof and charred siding reference the agricultural and ranching traditions of the valley.

3.7 The corrugated DLT ceiling and simple detailing seen here in the library.

3.8 Wood screens flank the ramp that leads to the library.

have been more appropriate, a tour of local buildings in the depths of winter, confirmed that most such structures encouraged the formation of formidable icicles along their eaves. By contrast, those with shed roofs had no such issues; with snow accumulating throughout the season until the spring thaw.

The exterior of the building is clad in charred wood siding, referencing the agrarian shed forms and ranching tradition of the valley (Figure 3.5). Manufactured in Brisco, 26 kilometres from the site, an auger system was custom built to allow for a controlled charring of the timber. The charring machine took the form of a pizza oven fitted out with propane burners (Figure 3.6). The depth of char was controlled by varying the speed at which the material was run through the oven.

The interior spaces are defined by the variegated dowel-laminated timber (DLT) roof structure, and are layered with minimal wood detailing at key areas (Figure 3.7). The ramp down into the hall is lined with a wood screen (Figure 3.8), emphasizing the changing height of the space, filtering views into the hall, and referencing the pine forests. Composite wood and acoustic panels provide sound attenuation at the stage.

Beyond its energy efficient design and locally sourced materials, the building acts as the living room and social heart of the community. Co-locating the library and community hall provides cross-pollination and increases overall usage. The community kitchen was designed with the local seniors' group to ensure accessibility and ease of use.

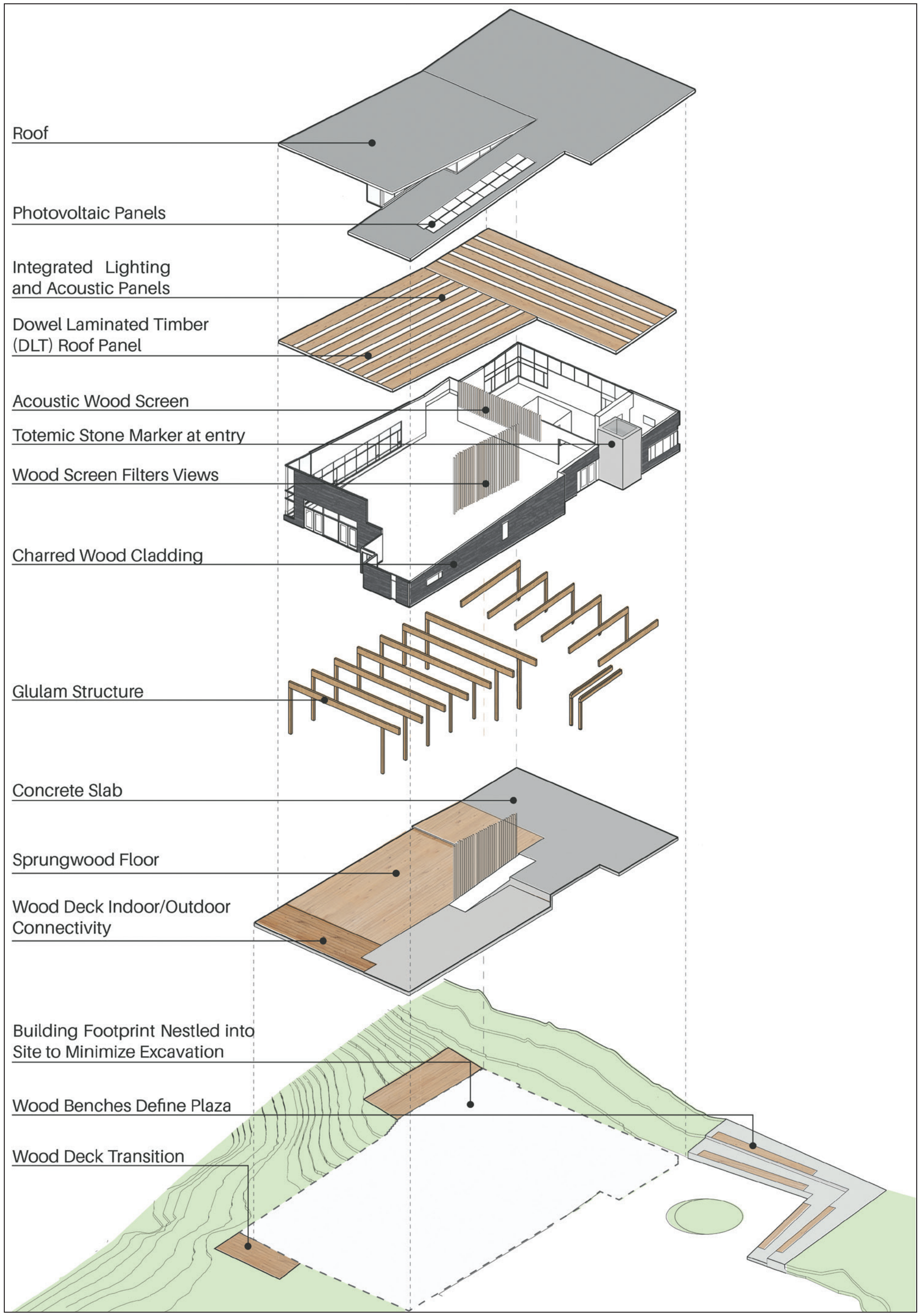
The siting of the building creates a variety of exterior rooms within the public realm that can be occupied throughout the year. Indoor-outdoor connectivity promotes social well-being and expands year-round use of the adjacent park.

3.3 Structure

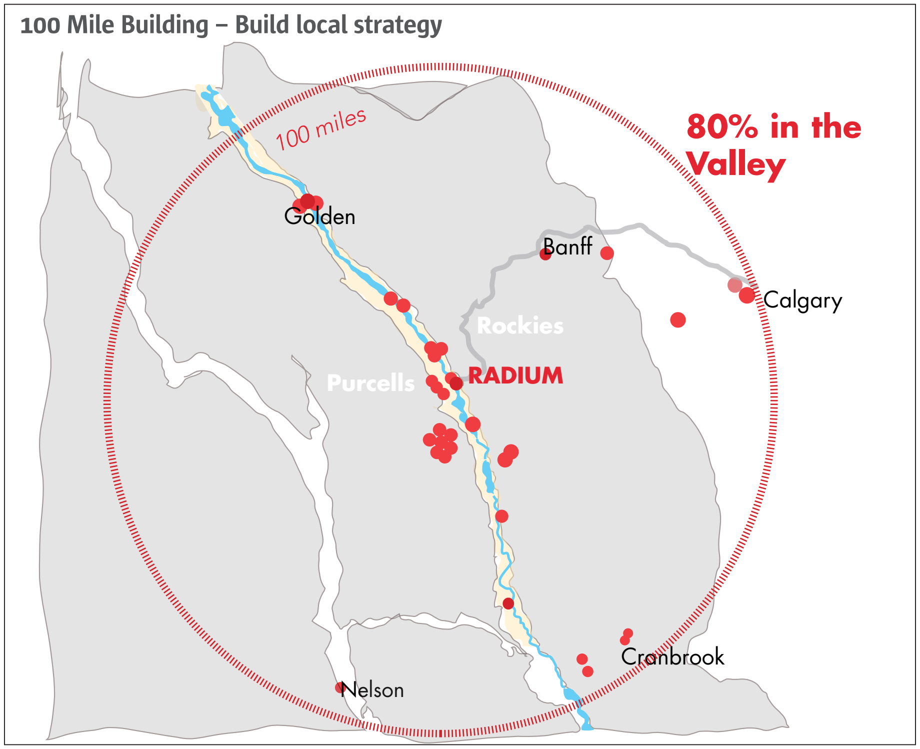
The structural design of the building is relatively simple, with a post-and-beam frame supporting a shallow shed roof. With a very tight budget, it was important to give the various product suppliers in the region equal opportunity to participate in the project. Accordingly, structural engineers Equilibrium Consulting created a schematic design and performance specification that would accommodate either glulam or laminated veneer lumber (LVL) columns and beams, cross-laminated timber (CLT), nail-laminated timber (NLT) or DLT panels (Figure 3.9).

The successful bidders were International Timberframes of Golden, BC, who fabricated and installed DLT roof panels[2] and Western Archrib of Edmonton, AB, who supplied the main glulam beams and columns for installation by International Timberframes. Golden is just 103 kilometres from Radium (well within the desired 100 mile limit),

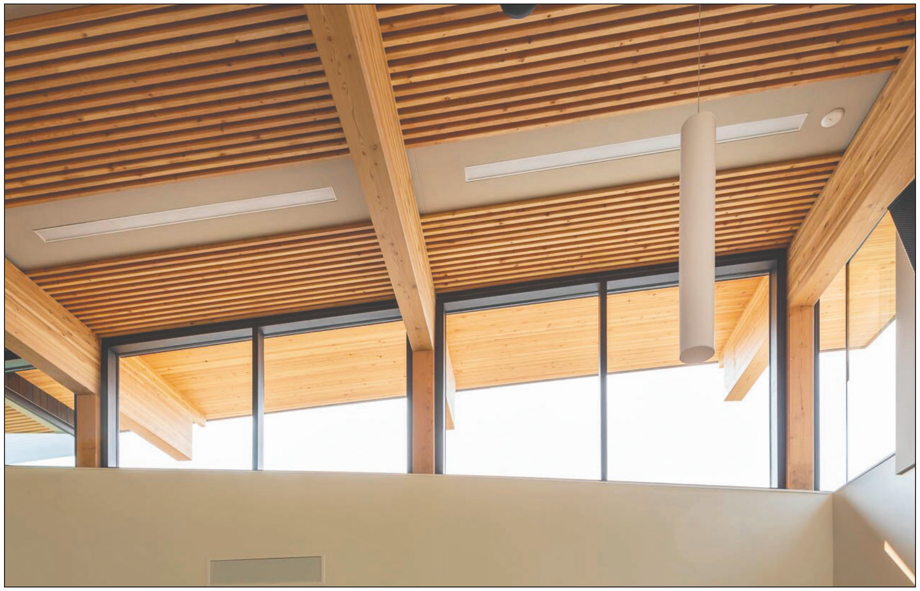
2 DLT is a mass timber structural panel constructed of standard dimensional lumber, friction-fit together with hardwood dowels, not requiring the use of nails, screws, or adhesives. This combination results in a structural system with a high potential for demountability, adaptability and reuse.



3.9 Exploded view of the structural system, designed by structural engineer Robert Malczyk to accommodate different beam and panel products.



3.10 Key plan of the valley indicating location of resources, trades and materials utilized in the construction of the building.


3.11 DLT panels have alternate 2x4 and 2x6 members creating a corrugated soffit. The 600 mm gap between panels accommodates lighting and is concealed with an acoustic panel.

while Edmonton is 540 kilometres away - outside the 100 mile limit, but still complying with the LEED definition of a regionally sourced material (Figure 3.10).

International Timberframes prefabricated 1220 mm-wide DLT panels with lengths up to 6000 mm, using 2×4 and 2×6 Douglas fir dimensional lumber. The panels were hand assembled using jigs to ensure accuracy and consistency, with the members fastened together using beech dowels. No adhesives were used to fabricate the panels. The tolerances achieved were in the order of 2 mm, much finer than those for the cast-in-place concrete foundations – and remarkable given that no CNC (computer numerically controlled) machinery was used.

Alternating the 2×4 and 2×6 timbers created a self-finished ceiling with a variegated texture. By spacing the panels 600 mm apart, the modular system was able to integrate lighting services in the gaps, which were later bridged by smaller removable panels finished with sound absorbent material to enhance room acoustics (Figure 3.11).

To ensure ease of site assembly, International Timberframes surveyed the concrete and modified timber dimensions to suit. When completed, the DLT panels were transported to the site in a choreographed sequence to maximize efficiency, then lifted into place by crane (Figure 3.12).

Interior light wood framing was prefabricated on site and installed in panels. The use of prefabrication for all elements of the structure reduced the overall construction time and helped the project stay within a tight budget.

3.4 Sustainability

The embodied energy and carbon impact of the building are greatly reduced through the use of wood for both structure and finishes. The 288 cubic metres of wood used in the project stores 245 tonnes of carbon dioxide and avoids 522 metric tonnes of carbon dioxide when compared with a concrete building of the same size.


3.12 DLT panels were lifted into place by crane.

Operating energy is reduced through the specification of a high-performance building envelope, combined with passive design strategies and energy efficient mechanical systems. A heat recovery ventilation system is augmented with large low velocity fans and passive ventilation strategies to reduce cooling demand. Air source heat pumps and high efficiency boilers provide heating for the building, switching between systems to maximize efficiency.

3.13 The community came together for the opening ceremony.

3.5 Conclusion

The participatory design process has been shown to instil pride of ownership in a new building, encourage ongoing care and maintenance of the facility and improve its overall life cycle performance.

For Urban Arts Architecture, this project was unique, with village and valley residents coming together to create a facility for their community in which the whole was greater than the sum of its parts.

With its simple form and extensive use of wood, the building fits seamlessly into its setting (Figure 3.14).

> "The building opening was amazing with the incredible display of pride and ownership. For the librarian in particular, it was an emotional occasion, moving from a dark and cluttered basement, to a bright, airy and attractive new space. It speaks to the vision of the village that the entire community was involved from the beginning of the project." (Figure 3.13)
>
> Shelley Craig, Principal, Urban Arts Architecture

4. WOOD USE AND THE NATIONAL BUILDING CODE OF CANADA

The past decade has seen a number of important changes in the size and types of buildings permitted to be constructed in wood in Canada. It is important to remember that the requirements for the specification of structural wood products and wood building systems are set out in the model National Building Code of Canada (NBCC), which is concerned with health, safety, accessibility and the protection of buildings from fire or structural damage. Since its inception in 1941, the NBCC has been subject to regular reviews and updates approximately every five years. In the 2015 edition of the NBCC, changes were made to increase the permitted height limit for wood construction for some buildings. These changes were incorporated into the British Columbia Building Code (BCBC) in 2018.

All changes relating to the height and occupancy of buildings permitted to be constructed in wood are the result of a rigorous, broad-based engineering and scientific review by expert committees of the Canadian Commission on Building and Fire Codes. These independent technical committees are made up of professionals from all aspects of the construction industry, including developers, designers, builders, construction material manufacturers, the regulatory community (e.g. building officials and fire service personnel) and general interest groups.

The current five- and six-storey mid-rise wood construction option provides builders with “code compliant” alternatives that fully meet the safety, health, and accessibility, as well as fire and structural protection objectives of the NBCC. Whether built with light wood framing materials or engineered mass timber products, the added height and area of these buildings have given designers new options for an expanded range of occupancy types.

The BCBC mid-rise changes are applicable to residential and office-type buildings, but also allow mixed-type occupancies on the first two storeys. As a result, buildings may now have office, residential, mercantile, assembly, low hazard or storage/garage-type tenants. Further changes are scheduled in the new 2020 National Building Code which will permit up to 12 storeys of mass timber construction using Encapsulated Mass Timber Construction (EMTC). British Columbia adopted the EMTC provisions in December 2019 which will be permitted for local governments on a jurisdictional basis.

All of these changes reflect the broad consensus that wood is a safe, economic and more environmentally responsible alternative to concrete apartments and office buildings. In addition, the local availability of wood products and building systems in most regions of the country means that the majority of Canadian communities can benefit both economically and socially from the expanded opportunities offered by the new code provisions.

5. PROJECT CREDITS

5.1 Fire Hall No. 5

Client: City of Vancouver

Architect: Johnston Davidson Architecture and Planning Inc.

Structural Engineer: Herold Engineering Ltd.

Independent Technical Review Engineer: John Sherstobitoff, P.Eng. (Ausenco Engineering Consultants)

Civil Engineer: Core Group Consultants

Mechanical Engineer: Flow Consulting Inc.

Electrical Engineer: Roy Campbell Ltd.

General Contractor: Mierau Contractors Ltd.

Landscape Architect: Greenway Landscape Architecture

Photographer: Latreille Architectural Photography

Certified Professional (Building Codes & Fire Science): GHL Consultants Ltd.

Building Envelope Specialists: RDH Building Engineering Ltd.

LEED Consultant and Energy Modeller: Recollective Consulting

Specifications Writer: Keyword Specifications Inc.

Acoustics Consultant: Daniel Lyzun & Associates Ltd.

Arborist Consultant: Arbortech Consulting Ltd. Group

Commission Agent: CES

Elevator Consultant: Apex Elevator

5.2 Radium Hot Springs Community Hall and Library

Client: Village of Radium Hot Springs

Architect: Urban Arts Architecture

Structural Engineer: Equilibrium Canada

Civil Engineer: Core Group Consultants

Electrical Engineer: Applied Engineering Solutions

Mechanical Engineer: Rocky Point Engineering Ltd.

Construction Manager: Ken Willimont

Landscape Architect: Hapa Collaborative

Photographer: Dave Best

3.14 The building fits comfortably into its setting and has become a popular meeting place and a source of pride for the community.

NATIONAL FUNDER

Natural Resources Canada / Ressources naturelles Canada

NATIONAL PARTNERS

CertainTeed SAINT-GOBAIN • StructureCraft • STRUCTURLAM Intelligence In Wood • Western Archrib Structural Wood Systems • Weyerhaeuser • LP Building Products

PROVINCIAL FUNDER

Forestry Innovation Investment

INDUSTRY FUNDERS

COFI BC Council of Forest Industries • ILMA Interior Lumber Manufacturers Association • CMSA

PROVINCIAL PARTNERS

Boise Cascade Engineered Wood Products • rothoblaas

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Canadian Wood Council / Conseil canadien du bois

BC Program	Alberta Program	Ontario Program	Québec Program	Atlantic Program	National Office	US Program
1-877-929-9663	1-780-392-1952	1-866-886-3574	1-418-650-7193 ext. 413	1-902-667-3889	1-800-463-5091	1-858-243-1620