

BUILDER INSIGHT



FACTS AND FIGURES

Construction timeline:

November 2023 – late 2025

Construction budget: \$54.9 M

Residential Units: 123

Site Area: 2,968 m², 31,945 ft²

Total Gross Floor Area: 13,039 m², 140,334 ft²

Net Floor Area: 10,446 m², 112,433 ft²

Building Height: 22.64 m, 74.29 ft

Volume of Mass Timber: 1,194.67 m³ of CLT

Annualized Whole Life Carbon Emissions:

7.8 kgCO₂e/m²/year

Total Energy Use Intensity: 49 kWh/ m²/year

PROJECT TEAM

Owner: More Than A Roof Housing Society

Land: Non-Market Housing Development & Operations

Architect: PUBLIC Architecture

General Contractor: Kindred Construction Ltd.

Owners BIM Consultant: Summit BIM

Design BIM Consultant: BIMOne

Construction BIM Consultant: Modelo Tech Studio

Structural Engineering: Wicke Herfst Maver Consulting Inc.

Mechanical and Electrical: Introba

Fire Suppression: Introba

Energy Modeling: Introba

Passive House Consultant: Introba

Embodied Carbon Modeling: Introba

Civil: Core Group Civil Consultants Ltd.

Landscape: Matthew Thomson Design Ltd.

Building Code: GHl Consultants Ltd.

Building Envelope: Morrison Hershfield

Acoustical: BKL Consultants Ltd.

Passive House Certification: Steven Winter Associates, Inc.

Elevator: GUNN Consultants

Project Management: CPA Development

Research Management: Scius Advisory

KEY STAKEHOLDERS

City of Vancouver

BC Housing

City of Vienna

Rüdiger Lainer + Partner

Bulletin No 6 | Vienna House

Landscaping and Public Realm

Vienna House is a National Housing Strategy project that demonstrates sustainability and innovation in construction. The project will be Passive House certified. It is the first non-market multi-family housing project in B.C. to use Building Information Management (BIM). BIM was used throughout concept design, project delivery and facility management.

The seven-storey mass timber and lightwood frame hybrid building will provide 123 units ranging from studio to four bedrooms. It is an efficient mid-rise building type, with the potential for it to be recreated in B.C. and across Canada. The project has a counterpart housing project in the City of Vienna, Austria. This provides a unique opportunity to share knowledge and best practices in housing design. It will be subjected to acoustical and vibration testing prior to occupancy and will be monitored for ongoing environmental and structural performance.



Figure 1. Rendering of Vienna House from Stainsbury Ave. (source: PUBLIC Architecture).

This bulletin series describes innovative technologies and processes of the Vienna House project. Find them all in the BC Housing Research Centre Library.



These bulletins discuss the Vienna House project as construction is getting underway. Completion is expected in November 2025.

Building Form

The unusual lot shape for the Vienna House location is a result of the curves where the SkyTrain line and Victoria Drive meet, which some may see as a challenging space (Figure 2). The unique shape allowed architects to design an innovative form that incorporates a courtyard, which is a common form in Vienna, Austria. The operators, More Than a Roof Housing Society, embraced this design as it facilitates community building and provides outdoor space for people to gather. It has also helped the

designers to address acoustic issues from proximity to the SkyTrain and Victoria Drive while allowing for passive cooling options for residents.

Access to nature, public space and community amenities — places where people can connect, exercise and build social bonds — are critical in supporting healthy living. Prioritizing green spaces and enhancing the public realm in urban residential areas has many positive impacts, such as:

- Promotes the wellbeing of residents,
- Increases biodiversity for birds and pollinators,
- Reduces the heat emanating from paved spaces (the “urban heat island” effect),
- Manages the amount of water and pollution entering municipal stormwater systems.

The courtyard and public spaces around Vienna House are designed to take advantage of these effects.



Figure 2. Overview of Vienna House form, showing planting areas (source: Matthew Thomson Design).

Courtyard Trees and Plants

The courtyard space provided a unique landscape design challenge. It is 6 storeys deep and tapers at the east end. Managing pedestrian flows and encouraging social interaction while respecting the privacy of homes that enter from the ground floor was a key challenge. It was also important to ensure the space felt safe, comfortable and functioned at a human scale.

Deciduous vine maple trees and native shrubs (including evergreen huckleberry, vancouveria, sweet box and lily of the valley) have been selected for their colour and texture

to visually soften the space throughout the seasons. As the courtyard is built over the parkade, maple trees will be planted in large planters and will mature to provide a delicate canopy within the first few storeys. These trees are common to this area of British Columbia and naturally occur in the shady understory of the forests, which should help them thrive in the low light levels of this 6 storey tall courtyard. The trees also offer shade to cool the space in the summer while allowing daylight through in the winter. Fragrance and acoustical baffling from the trees will also encourage residents to interact, gather and hold events in the courtyard.

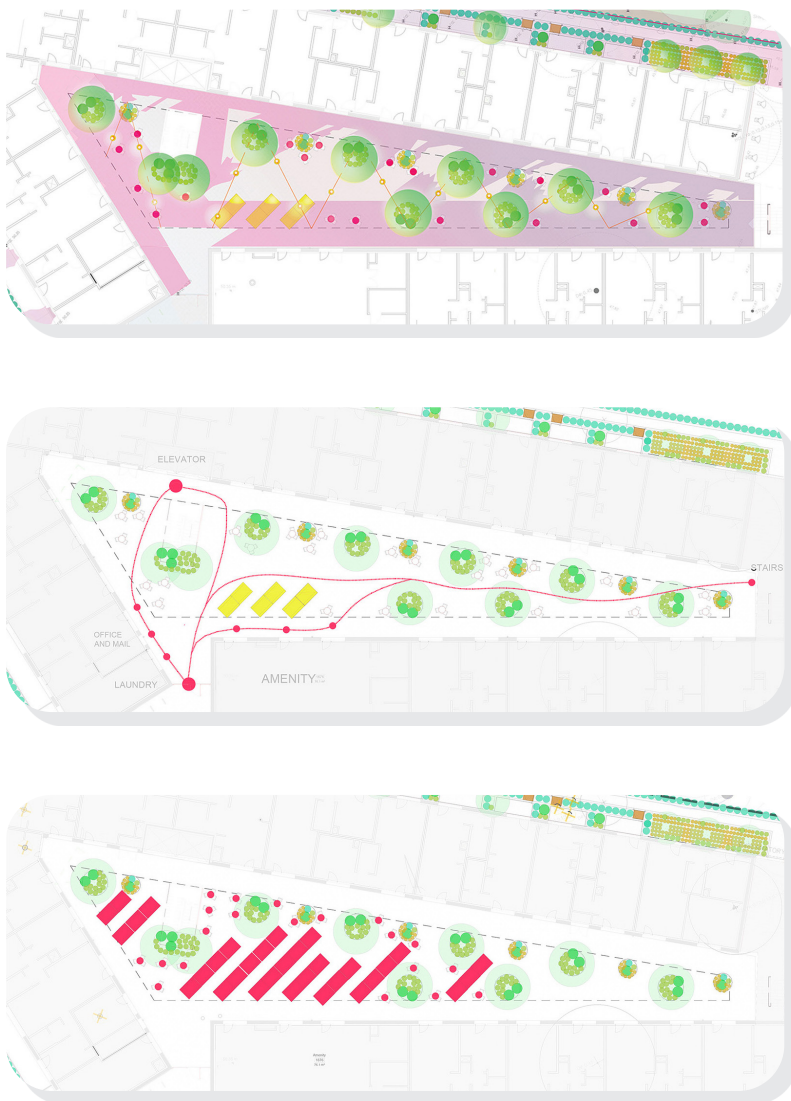


Figure 3. Courtyard overview showing pedestrian traffic flow and event setup (source: Matthew Thomson Design).

Other shade tolerant plants will be contained in smaller planters positioned near columns for the walkways. This will allow vertical vines to take hold and grow towards the light, especially on the north side where they will receive the most sunlight.

Exterior catenary lights will be strung across the courtyard at the second storey creating low levels of light and a cozy, intimate human-scale to the courtyard space.

The courtyard is designed for many functions (Figure 3). Groups of small tables and chairs create casual areas for people to meet. The space can also be set up with large tables for community events. The courtyard design subtly manages the delineation between public and private areas. Public gathering places are positioned away from the doors and windows of those who live on the courtyard level.

An amenity room near the entrance to the building provides an event space that is adjacent to the courtyard,

as well as an outdoor amenity area to the south to provide a children's play space (Figure 4). To the east of the play space is a small picnic table and planting area that families with younger children might use to grow food. Along Stainsbury Avenue to the east end of the building, additional raised planters will be provided for residents to engage in urban agriculture.

Existing mature street trees have been retained on Victoria Drive, Stainsbury Avenue and Hull Street. On all sides of the development, site opportunities to integrate on-grade plantings were found. On the north and east sides, native shade tolerant plants include vine maples, goat's beard, ferns and various ground covers and edible and therapeutic plants such as vanilla leaf, Indian plum and salal. Along the south and west aspects of the building, native plants were chosen to thrive in the sunnier conditions.

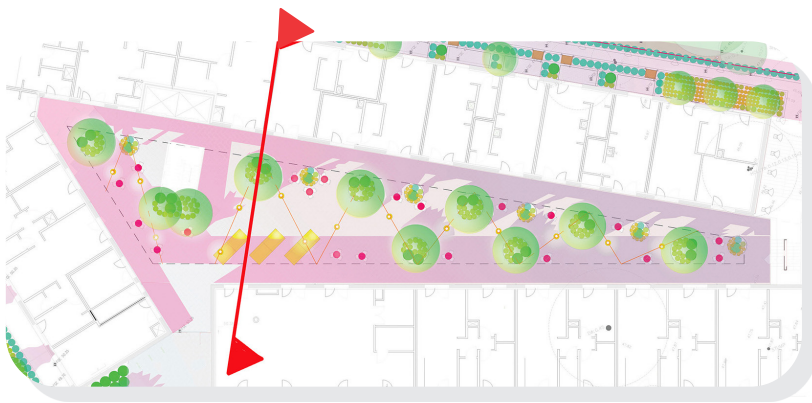
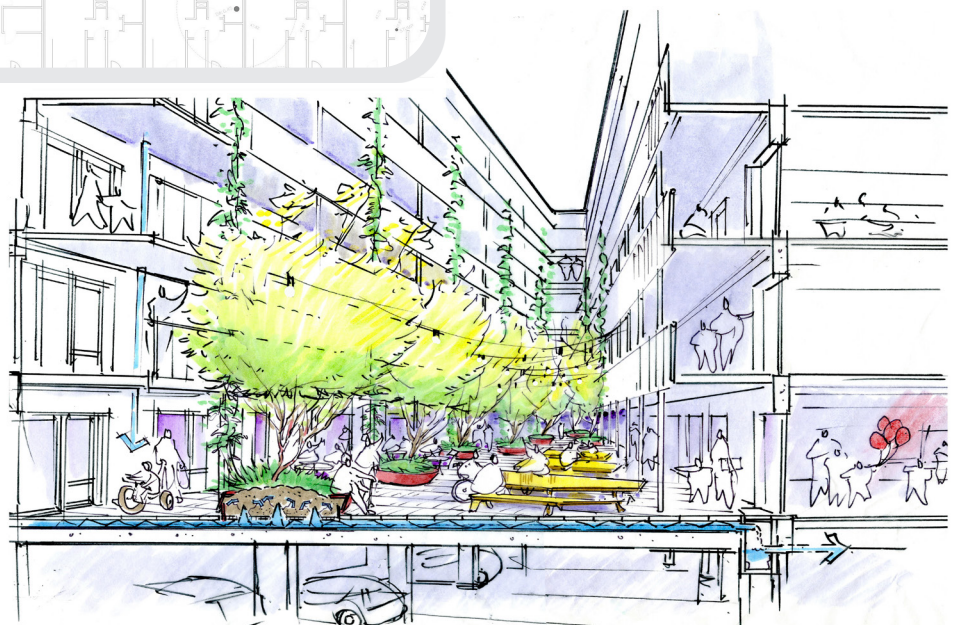


Figure 4. Cross section of courtyard and amenity room (source: Matthew Thomson Design).



The landscape design follows the City of Vancouver Biodiversity Strategy’s Bird Friendly Design Guidelines to ensure that the plants are not only shade tolerant but appropriate for the areas around the building.

For the children’s play space, custom structures that provide for informal play to foster children’s creativity will be placed on a rubberized surface made from recycled materials that is safe and easily maintained.

Locating the amenities in the courtyard, play area, and indoor amenity room, along with the gardens and landscaping near each other is intended to enhance a sense of community for residents by providing an outdoor area for recreation (Figure 5).

Stormwater Management

During a series of Mobilizing Building Adaptation and Resilience (MBAR) workshops conducted by BC Housing (see the Process Innovation insight), methods were identified to mitigate any risks occurring during a range of natural events such as earthquakes, over land flooding and heatwaves, etc. One strategy included creating a planted swale along the south-west edge of the property, along Victoria Drive (Figure 6). Victoria Drive curves downhill from south to north. As such, high volumes of water with debris such as oils, heavy metals, or tire-derived compounds (6PPD-quinon) might be washed into downstream sensitive marine habitats. During extreme storm events, water may jump the street curb and potentially create overland flooding that negatively impacts the Vienna House building. To mitigate this possibility, the proposed grades form earthworks against the south-westerly parkade wall, creating a natural depression or channel which should help direct any such flows away from the building.

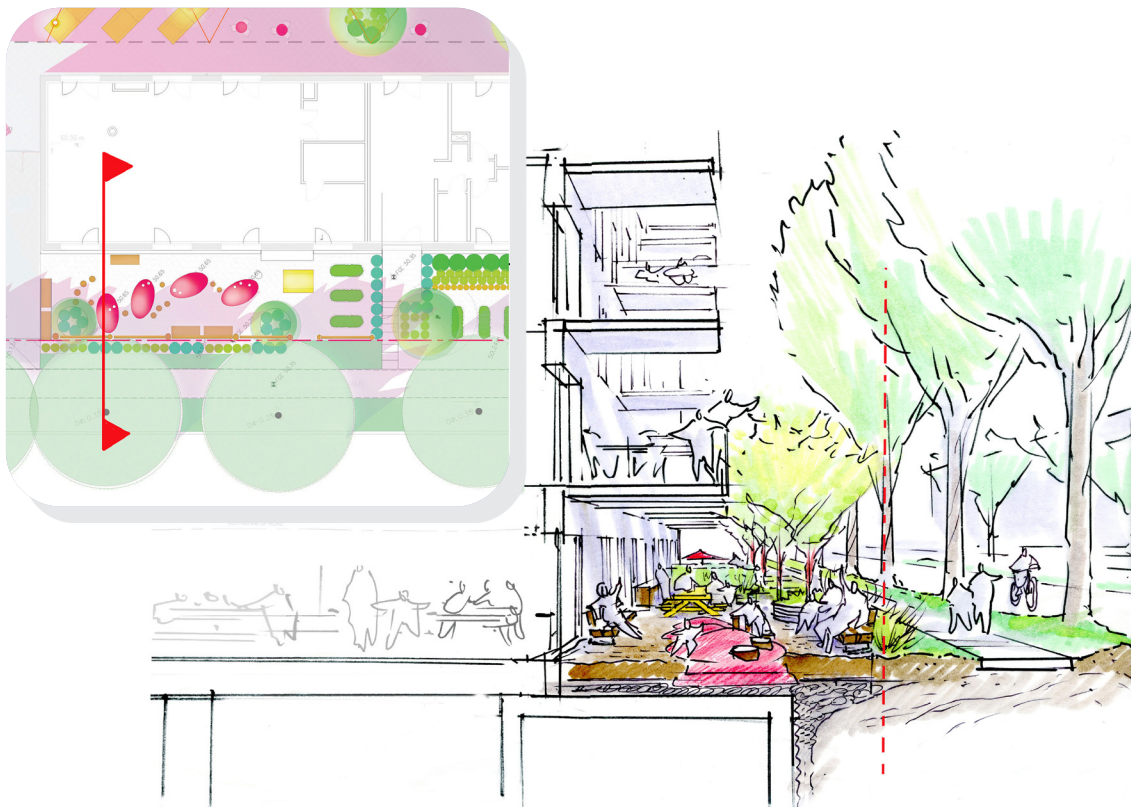


Figure 5. Cross section of amenity room and play area
(source: Matthew Thomson Design).

Subject to future approval from the City staff, and with strong potential to become integrated into the City's larger stormwater management strategy, the swale-like earthworks can be developed further. Future development could create a lush biodiverse drainage course that could help slow, cool, and filter rainwater while removing any street-born contaminants from Stainsbury Avenue and other adjacent streets.

Salmon-Safe Certification

As a Demonstration Project, Vienna House seeks to be a model for best practices and innovations in construction of multi-family housing. While it addresses the urgent need for affordable, inclusive and climate-resilient housing, it also offers an opportunity to align with strategies to encourage biodiversity and keeping natural waterways healthy for aquatic wildlife. To this end, Vienna House is implementing strategies that have been identified by Salmon-Safe, a nonprofit organization based in Portland, Oregon, and is seeking certification through their program.

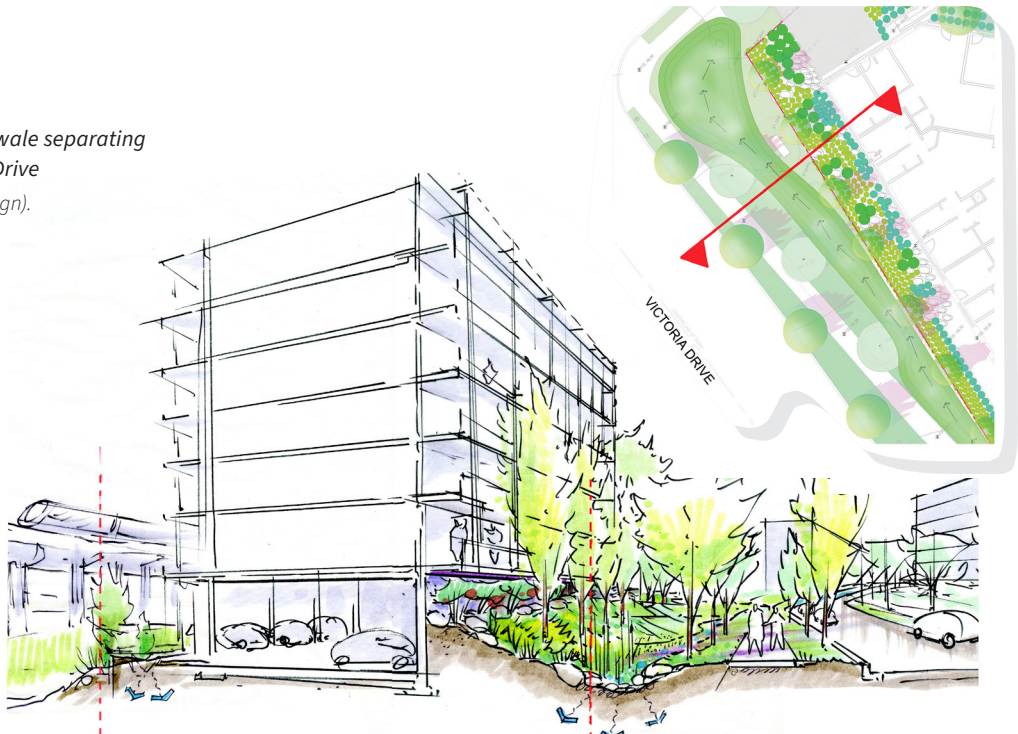
SALMON SAFE

Salmon-Safe operates in the Pacific Northwest and leads a movement to implement farming practices and developments that protect water quality, maintain watershed and restore habitat.

The organization works with farmers, developers, breweries, distilleries, wineries, corporate and university campuses, food processors, and retailers on a variety of commitments including:

- Protection of soil health,
- Water conservation and quality,
- Biodiversity,
- Rain gardens and stormwater infrastructure,
- Limiting use of pesticides.

Figure 6. Rain garden and swale separating Vienna House from Victoria Drive
(source: Matthew Thomson Design).



Courtyard Green/Blue Roof

The courtyard sits over the parkade and has been designed with a green roof technology that contributes to the project's integrated stormwater management plan. Rain leaders direct roof water to be collected in a retention and detention layer that sits directly below the courtyard. Precipitation that falls on the roof of the structure or in the courtyard will be collected and slowly released into the stormwater system. A small portion of that water will be retained to provide passive irrigation for plants in the courtyard, drawing upon it through a capillary system. This approach was chosen because of the limited availability of space elsewhere on the property for a retention tank and the height of the outflow to the city stormwater system on Stainsbury Ave.

A system that allows rainwater that falls on the roof of the building or in the courtyard to be collected and

slowly released to stormwater systems or stored for use in landscape irrigation is commonly known as a green roof. A system that does not incorporate plants but retains water can also be known as a blue roof. The courtyard system is considered a blue-green roof. Below the paving slabs of the courtyard, a bedding of stone chippings and gravel will sit above polypropylene retention spacers and a waterproofing layer that is applied to the top of the parkade roofslab.

The retention area will have a storage volume of 64 m³. Approximately 25% of the water will be retained for irrigation in the courtyard to limit the requirements of fresh water for those plants. This system replaces a normal water detention tank that might be used on site and provides the added benefit of discharging at a high level relative to the city stormwater connection on the adjacent street, thus requiring no pumping.

Figure 7. Cross section of courtyard water retention system with rainwater leader
(source: PUBLIC Architecture).

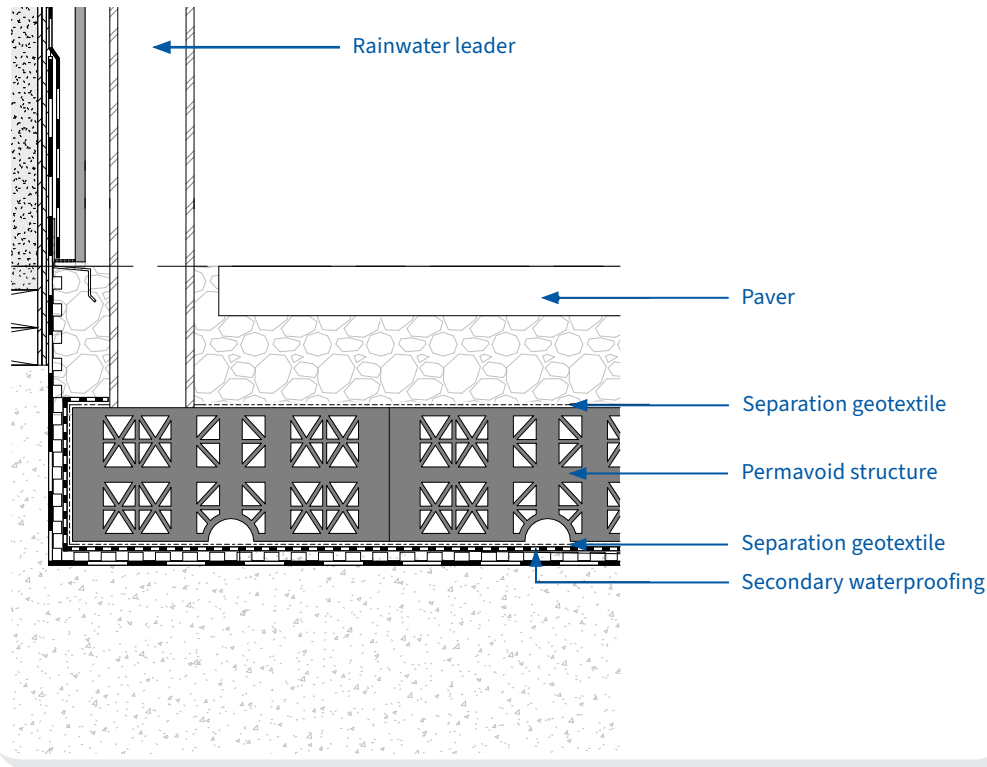




Figure 8. Rendering of Vienna House, courtyard
(source: PUBLIC Architecture).



The Vienna House Multi-Unit Affordable Housing Demonstrations Initiative received funding from Canada Mortgage and Housing Corporation (CMHC) under the National Housing Strategy Demonstrations Initiative. The views expressed are the personal views of the author and CMHC accepts no responsibility for them.

Acknowledgement

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