

# 1 Lonsdale

2022 Canadian  
Green Building Awards



# PART 1

## PROJECT DESCRIPTION

Use for all categories. Projects are judged based on criteria of sustainable design, architectural merit and innovation.

2022

# CANADIAN GREEN BUILDING AWARDS

THE NATIONAL PROGRAM OF  
SUSTAINABLE ARCHITECTURE  
& BUILDING MAGAZINE

**SABMag**

## Project categories

Identify which Award category you are entering

☐ **1. Residential [small]**

Open to new or renovated buildings less than 600m<sup>2</sup> in area, of which a minimum of 75% is dedicated to single-family or multi-family residential uses.

☐ **2. Residential [large]**

Open to new or renovated buildings [typically multi-unit buildings or groups of related buildings] greater than 600m<sup>2</sup> in area, of which at least 75% is dedicated to residential uses.

☒ **3. Commercial/Industrial [small]**

Open to new or renovated buildings up to 2,000m<sup>2</sup> in area, of which more than 75% is dedicated to commercial or industrial uses.

☐ **4. Commercial/Industrial [large]**

Open to new or renovated buildings [or groups of related buildings] greater than 2,000m<sup>2</sup> in area, of which at least 75% of the floor area is dedicated to commercial or industrial uses.

☐ **5. Institutional [small]**

Open to new or renovated buildings up to 2,000m<sup>2</sup> in area, of which more than 75% is dedicated to institutional uses.

☐ **6. Institutional [large]**

Open to new or renovated buildings [or groups of buildings] greater than 2,000m<sup>2</sup> in area, of which at least 75% of the floor area is dedicated to institutional uses.

☐ **7. Mixed Use**

Open to new or renovated buildings [or groups of related buildings] of any size, in which no individual use exceeds 75% of the overall floor area.

☐ **8. Existing Building Upgrade**

Open to buildings of any size or type in which the primary focus of the work has been to enhance the performance or extend the life of an existing structure. Entries in this category are required to respond only to the submission criteria appropriate to the project.

☐ **9. Interior Design**

Open to interior design projects of any size or type. Entries in this category are required to respond only to the submission criteria appropriate to the project.

**An award will be given in each category at the discretion of the jury.**

## PROJECT DETAILS

Project name: 1 Lonsdale

Address: 1 Lonsdale, North Vancouver, BC

Year completed: 2021

## PROGRAM AND CONTEXT

**Project type:** [Identify all uses occupying 10% or more of gross floor area]

Commercial Building with a Restaurant on the ground floor and office space on the upper two floors

**Project site:** [Check all that apply]

☐ Previously undeveloped land

☒ Urban

☐ Rural

☒ Previously developed land

☐ Suburban

**Other Building description:** [Check only one]

☒ New

☐ Renovation

☐ Both [If both, list \_\_\_% new and \_\_\_% renovation]

**STATISTICS\*** Provide the following metrics as applicable to your project.

• Site Area: 255.7 m<sup>2</sup>

• Building gross floor area: 628.2 m<sup>2</sup>

• Energy Intensity: 194 KWhr/m<sup>2</sup>/year [Include both base building and process energy]

[Optional: report energy intensity separately as follows:

• Energy Intensity, base building: \_\_\_\_\_ KWhr/m<sup>2</sup>/year

• Energy Intensity, process energy: \_\_\_\_\_ KWhr/m<sup>2</sup>/year

• Reduction in energy intensity: \_\_\_\_\_ %.

• State the reference standard on which the % reduction is based: MNECB, NECB or ASHRAE 90.1

[include version]: \_\_\_\_\_

• Recycled materials content: \_\_\_\_\_ % by value

• Water consumption from municipal source: \_\_\_\_\_ litres/occupant/year

[Include both base building and process consumption]

• Reduction in water consumption: \_\_\_\_\_ %

• State the reference on which the % reduction is based: LEED ☐ or other ☐

• Construction materials diverted from landfill: \_\_\_\_\_ %

• Regional materials by value: \_\_\_\_\_ %

**\*NOTE FOR PART 9 RESIDENTIAL PROJECTS: PROVIDE THE STATISTICS ABOVE IF AVAILABLE.** Include in the Executive Summary [see next page] the EnerGuide or the Home Energy Rating System [HERS] ratings if available, and the WalkScore rating [see [www.walkscore.com](http://www.walkscore.com)]. Also, a qualitative assessment of project performance should be included in the appropriate sections of the narrative.



## Project Summary

The property at 1 Lonsdale has been owned by a local family for three generations. When the existing building was reaching the end of its lifespan, the family chose to use this as an opportunity to develop a new three storey, Mass Timbre, Passive House building that would serve as a sustainable benchmark for the fast changing Lower Lonsdale District.

Consisting of a restaurant on the ground floor with two floors of office above, the building is a contemporary interpretation of the brick clad, heavy timber, warehouse buildings that formed the backbone of the working waterfront. The fenestration of the upper two floors has been 'randomly' distributed to offer visual interest whilst allowing for ample daylighting and views for the tenants. The corner of the building was eroded to express the mass timber structure and provides the upper floor tenants with stunning views of Vancouver harbour. The restaurant has large sliding glazing on the south side to open onto an exterior deck that will activate the street.

The main sustainable design strategies for the project were the use of mass timber, maximizing daylight and views, and minimizing the energy use of the building. The project is seeking Passive House certification.



# Main Project Description

## 1. Strategic Decisions

The building form is defined by the reality of its tight urban site at a busy corner with significant pedestrian and vehicular traffic. In order to achieve the allowable area, the building extends right to the property lines on three sides, with a small set back on the west side. This decision to extend the building right to the property lines while using a mass timber structure necessitated an alternative solution to use CLT panels as a 1-hour demising wall on a zero lot line. The busy surroundings led the team to develop a prefabricated structure and exterior walls to minimize the disruption on the neighbouring businesses and community. This approach allowed for the entire structure and exterior walls to be erected in just 10 days.

The building itself was conceived with the service spaces along the north side where no windows were possible due to the demising wall, and the occupiable space along the south side to take advantage of the daylight and views. Additionally, all of the mechanical and electrical services were carefully concealed on the north side, resulting in a beautiful exposed wood structure.

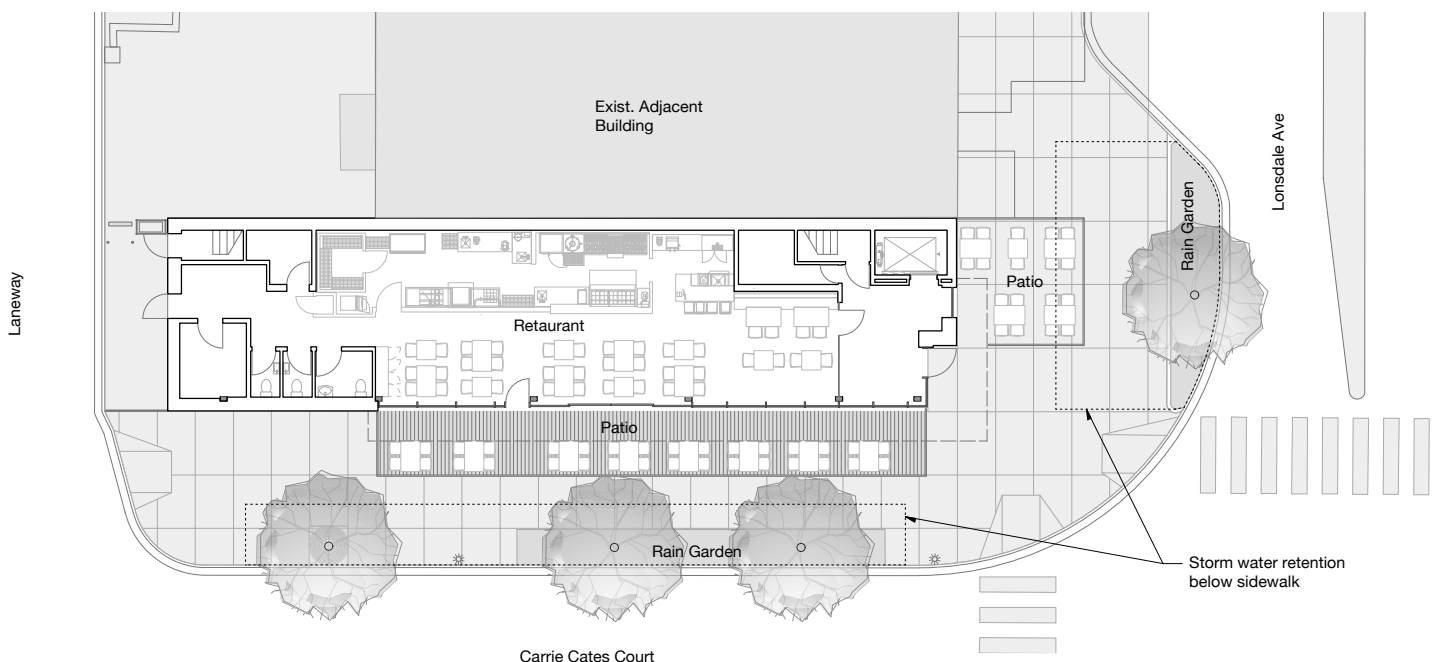
## 2. Community

1 Lonsdale is located at the foot of Lonsdale and bookends what is known as 'restaurant row'. The scale of the project was carefully considered to complement the surroundings and act as a transition between the single storey buildings along Lonsdale and the new Polygon Gallery across Carrie Cates. The building's ground floor was designed to 'open' onto Carrie Cates by incorporating floor-to-ceiling windows and sliding doors with the restaurant having a large outdoor deck. This will wrap restaurant row around the corner, and in combination with the Polygon Gallery and associated plaza across the road will activate Carrie Cates as a pedestrian area in the Lower Lonsdale precinct.

The site is centrally located with a SeaBus terminal and the main bus loop for the City located within a 5 minute walk while the North Shore Spirit Trail for cycling runs right in front of the building. The close proximity to so many sustainable transportation options allowed for the project to be the first zero parking commercial building in the City of North Vancouver.

## 3. Site Ecology

The small size of the property, and fact that the building occupies 92% of the site, did not leave much space for site ecology on the site itself. Instead, the project made use of the sidewalk space on both Lonsdale and Carrie Cates to create two rain gardens and planting beds. The sidewalks were designed to slope towards these rain gardens, allowing them to act as stormwater management and offsetting the built footprint of the building. A Silva Cell system extends from the rain gardens below the sidewalks to increase the capacity of the system.



Site Plan



#### 4. Light and Air

Maximizing day lighting was one of the main sustainable design strategies of the project. The design carefully balanced the desire for daylight with the need to achieve Passive House energy performance and ensure occupant comfort. Deep window recesses, and a canopy on the ground floor shade the windows from excessive solar gain during the summer months. The design team purposefully located all of the occupiable spaces on the south side of the building to take advantage of the extensive glazing on that side. The lighting system uses occupancy sensors throughout the space to turn the lights off when not needed. This system is further enhanced by daylight sensors that dynamically dim the lights when there is sufficient natural light. The combination of abundant daylight and advanced controls resulted in a lighting system that is projected to consume 20kWh/m<sup>2</sup>/year.

Fresh air ventilation was achieved through the use of ERV's on each floor with a Make-Up Air unit to handle the larger demand of a commercial kitchen in the restaurant. All incoming air is filtered using MERV 13 filter to enhance the indoor air quality. In addition to the HVAC system, the layout of operable windows was carefully considered to ensure that all occupants had access to natural ventilation to supplement fresh air delivery through the mechanical systems. The result is that over 98% of the top two floors and 100% of the ground floor located within 7m of operable windows.

#### 5. Wellness

From the start of design, one of the key goals of the project to create an inviting and healthy environment for the occupants. The two main strategies to achieve this were abundant natural light and an exposed mass timber structure. Research has confirmed that exposure to wood is correlated with a reduction in stress, blood pressure, and heart rates in addition to improved focus and concentration. The glulam columns and beams are exposed throughout, with the underside of the CLT floor and roof panels exposed as the ceiling on the floor below. Additionally the CLT walls are exposed on the north side and in the stairwells. The door to the staircase was deliberately placed closer to the entry than the elevator to encourage the building users to use the stairs and engage in physical activity.

#### 6. Water Conservation

The project used low flow plumbing fixtures throughout to minimize the consumption of water. Additionally, rain gardens have been incorporated into all landscaped areas to minimize the need for any irrigation.

#### 7. Operating Energy

The project mandate was to achieve Passive House certification. This necessitated close collaboration between the architectural, mechanical, electrical, and passive house consultants. Additionally, the kitchen consultant for the future restaurant tenant was included to make sure that the kitchen design would work with the energy targets of the building. Due to the small size of the building, having a full commercial kitchen for an Italian restaurant and the subsequent required air exchanges made it quite challenging to achieve the PH energy targets. This necessitated directly retaining the Passive House Institute in Germany to review the proposed design.

A high performance building envelope with effective R values of 39 for the walls and 65 for the roof, in addition to triple glazed, PH certified windows, and R-43 effective insulation below the entire slab on grade and foundations resulted in minimal heat loss or gain. A blower-door test was used to ensure the air tightness of the building. Brick cladding was chosen for the exterior to provide a thermal mass to minimize the cooling load in the summers. Energy Recovery Ventilators, in combination with air to water heat pumps dramatically reduce the energy requirements for the mechanical systems. Empty conduits have been installed in the service shaft to the rooftop to allow for the easy connection of future photovoltaic panels, future proofing the building against a shortage of fossil fuels.

#### 8. Materials and Resources

The use of wood was integral to the project and promotes both thermal efficiency and occupant health. The glulam structure and CLT panels were made by Structurlam using local BC wood and FSC certified. The project used 33 m<sup>3</sup> of lumber for the glulams and 196 m<sup>3</sup> for the CLT, resulting in 50,380 kilos of carbon captured in the structure. By prefabricating the structure and walls on site in a controlled environment, waste was kept to a minimum while allowing the entire structure to be erected on site in only 10 days. This minimized the impact on the surrounding neighbours and significantly reduced the noise pollution so often caused by construction.

#### 9. Building Life Cycle Considerations

Life cycle considerations were key in the choice of building systems and materials through the project. The glulam and CLT structure is bolted / screwed together for easy disassembly and re-use at the end of the building's service life. Minimal interior finishes expose the wood, providing a timeless material palette that both reduces the amount of materials used, and minimizes the need to renovate the interior as tastes change over time.

The form of the building, as a simple rectangle, with no intermediate columns provides maximum flexibility for the space to be reconfigured to accommodate future tenant needs.

#### 10. Education and Information Sharing

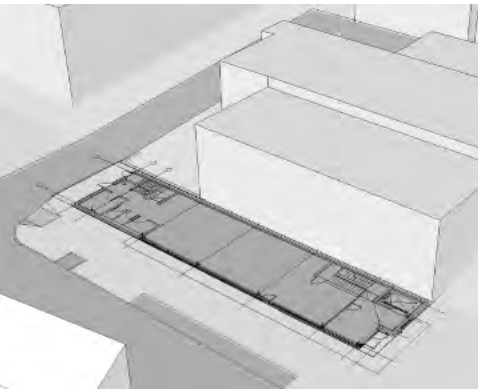
The sharing and dissemination of information from the project has been a constant from the beginning. This has included a number of tours through the building during construction for a range of professionals and developers interested in how they could use mass timber in their future projects, to being featured in a case study for wood in low-rise commercial buildings by the Canadian Wood Council, being published (including in SAB magazine), and through technical videos accessible on youtube.



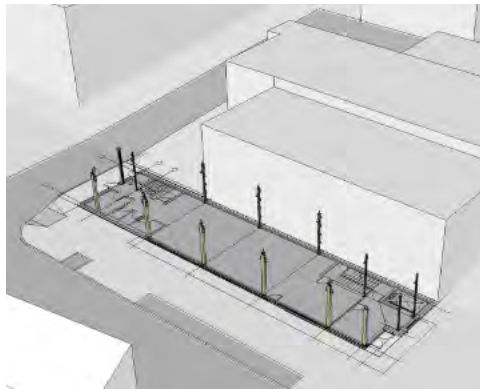




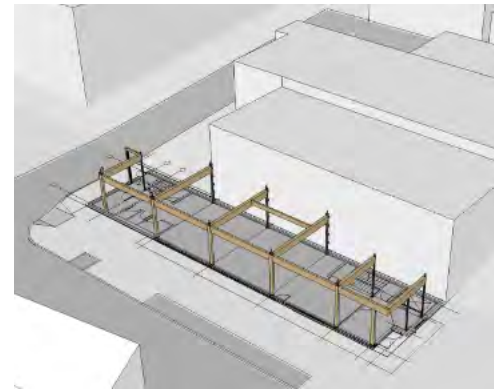
## Construction Sequence



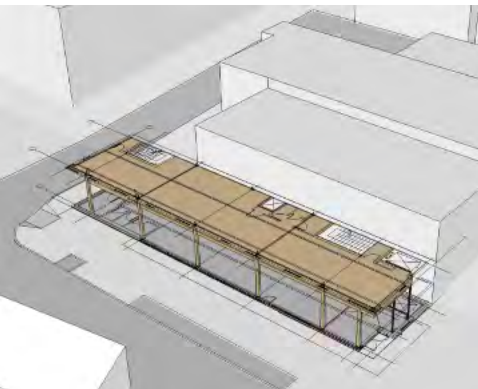
Slab on Grade



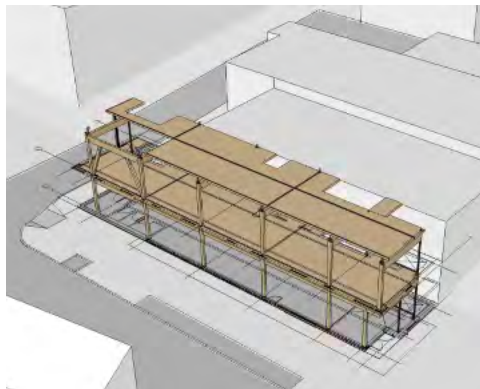
Day 1 • 1st floor columns



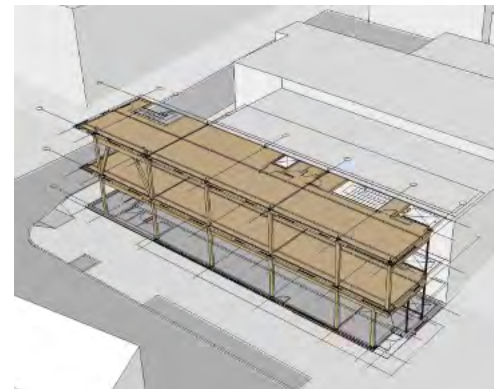
Day 2 • 1st floor beams



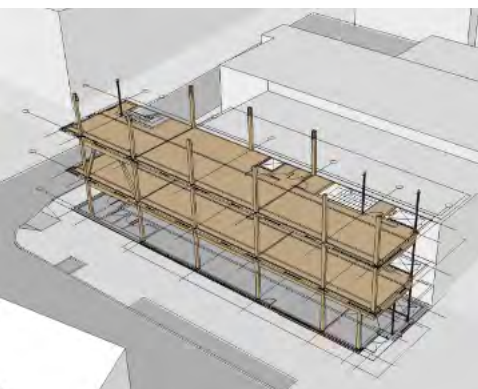
Day 3 • 2nd floor CLT panels



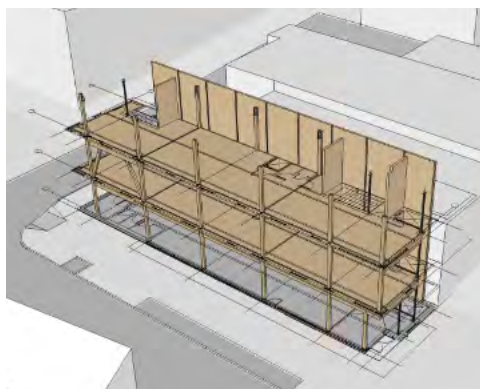
Day 4 • 2nd floor beams, columns & 3rd floor CLT panels



Day 5 • 3rd floor CLT panels



Day 6 • 3rd floor columns



Day 7 • north CLT pre-fab panels



Day 8 • 3rd floor beams & roof CLT panels



Day 9 • Passive House pre-fab wall panels



Day 10 • Passive House pre-fab wall panels



Final Project

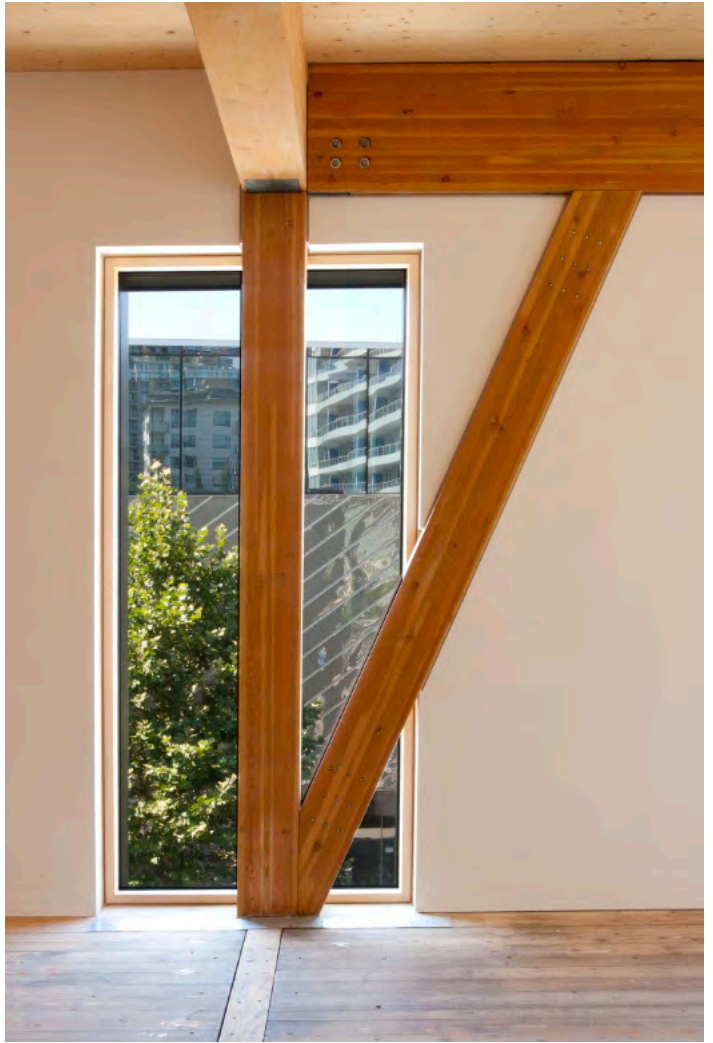






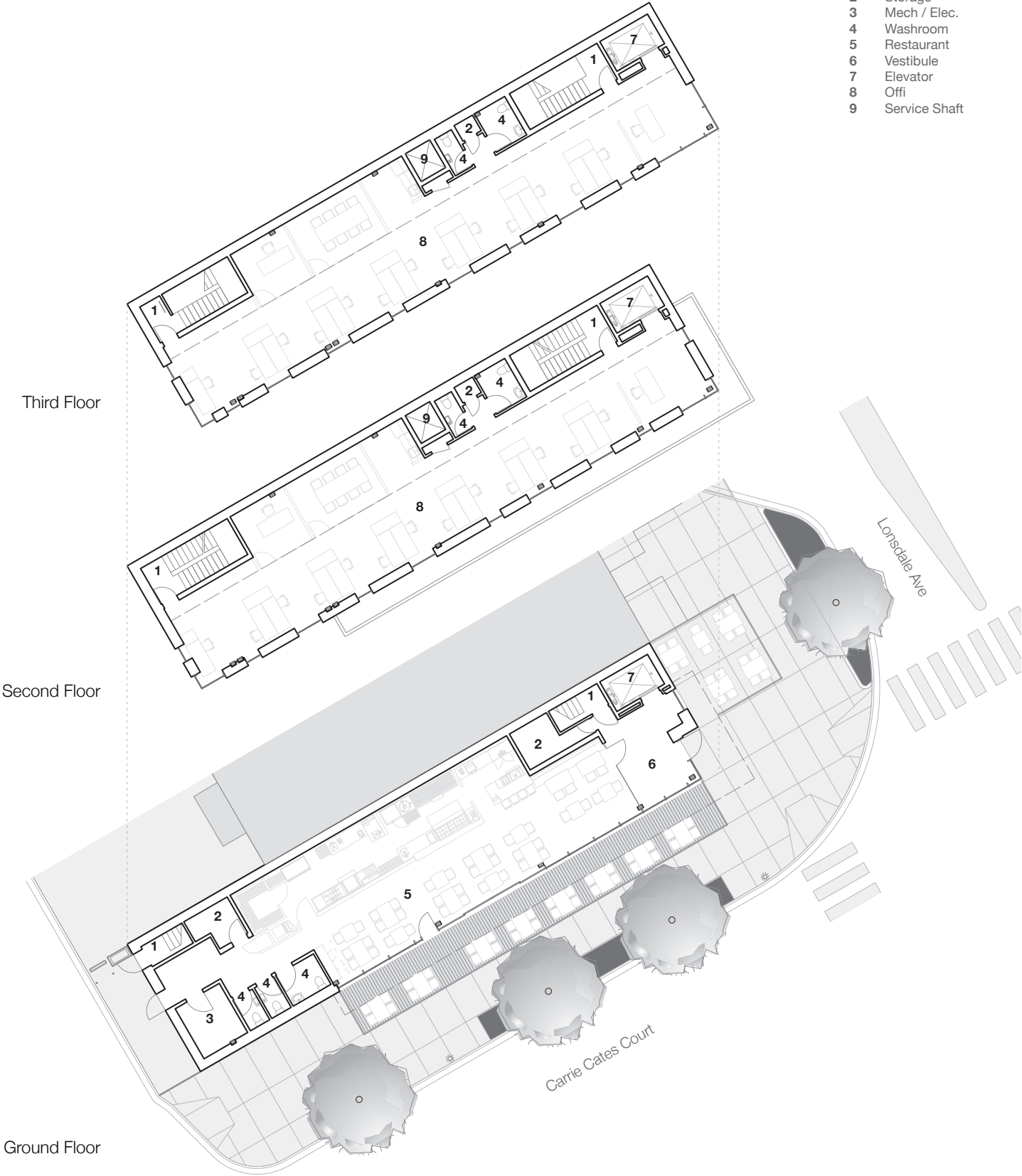






Floor Plans

- 1 Stairs
- 2 Storage
- 3 Mech / Elec.
- 4 Washroom
- 5 Restaurant
- 6 Vestibule
- 7 Elevator
- 8 Offi
- 9 Service Shaft





# Wall and Building Section

