

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 600m² 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 600m² in area, of which at least 75% is dedicated to residential uses.

☐

3. Commercial/Industrial [small]

Open to new or renovated buildings up to 2,000m² 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 2,000m² 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 2,000m² 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 2,000m² 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: _____

Address: _____

Year completed: _____

PROGRAM AND CONTEXT

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

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: _____ m²

• Building gross floor area: _____ m²

• Energy Intensity: _____ KWhr/m²/year [Include both base building and process energy]

[optional: report energy intensity separately as follows:

• Energy Intensity, base building: _____ KWhr/m²/year

• Energy Intensity, process energy: _____ KWhr/m²/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]. Also, a qualitative assessment of project performance should be included in the appropriate sections of the narrative.



**SABMag
Canadian Green
Building Awards 2022:**

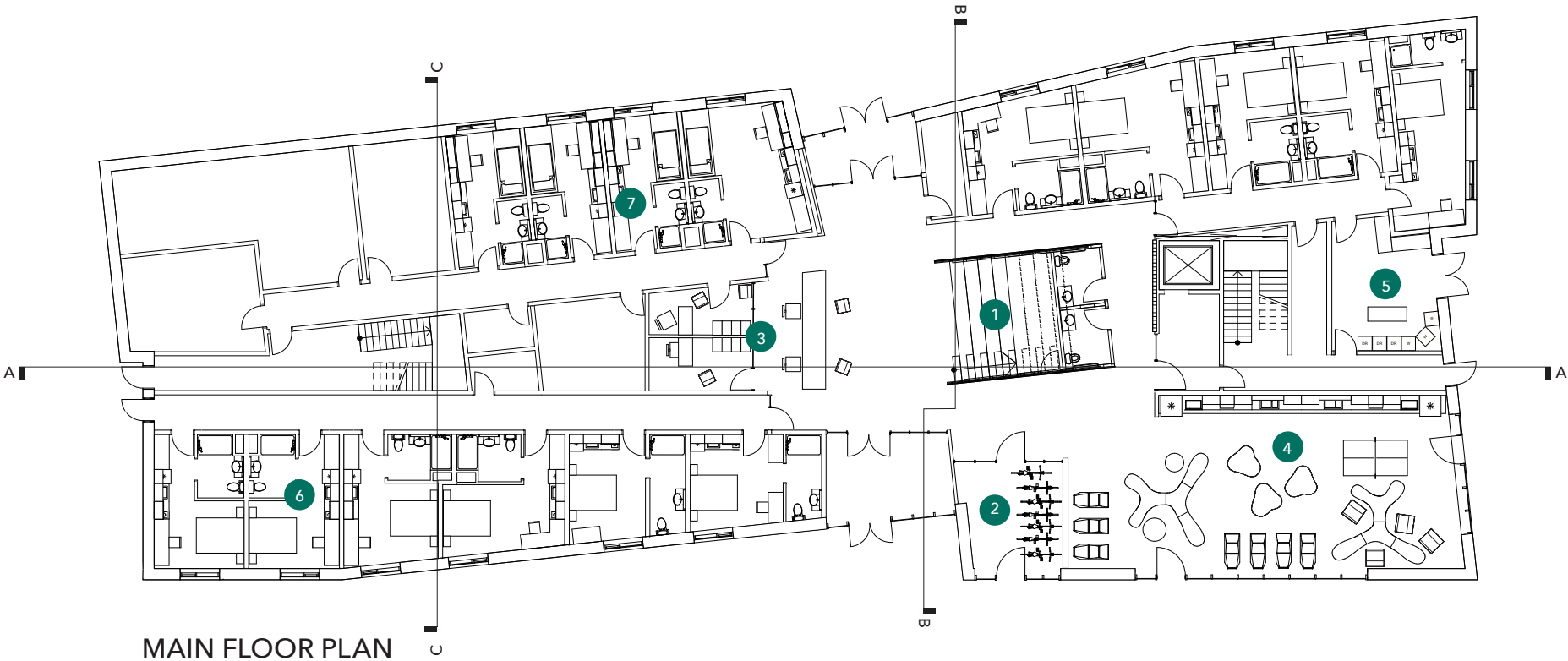
RED DEER POLYTECHNIC STUDENT RESIDENCE



Building Facade with Integrated Photovoltaic

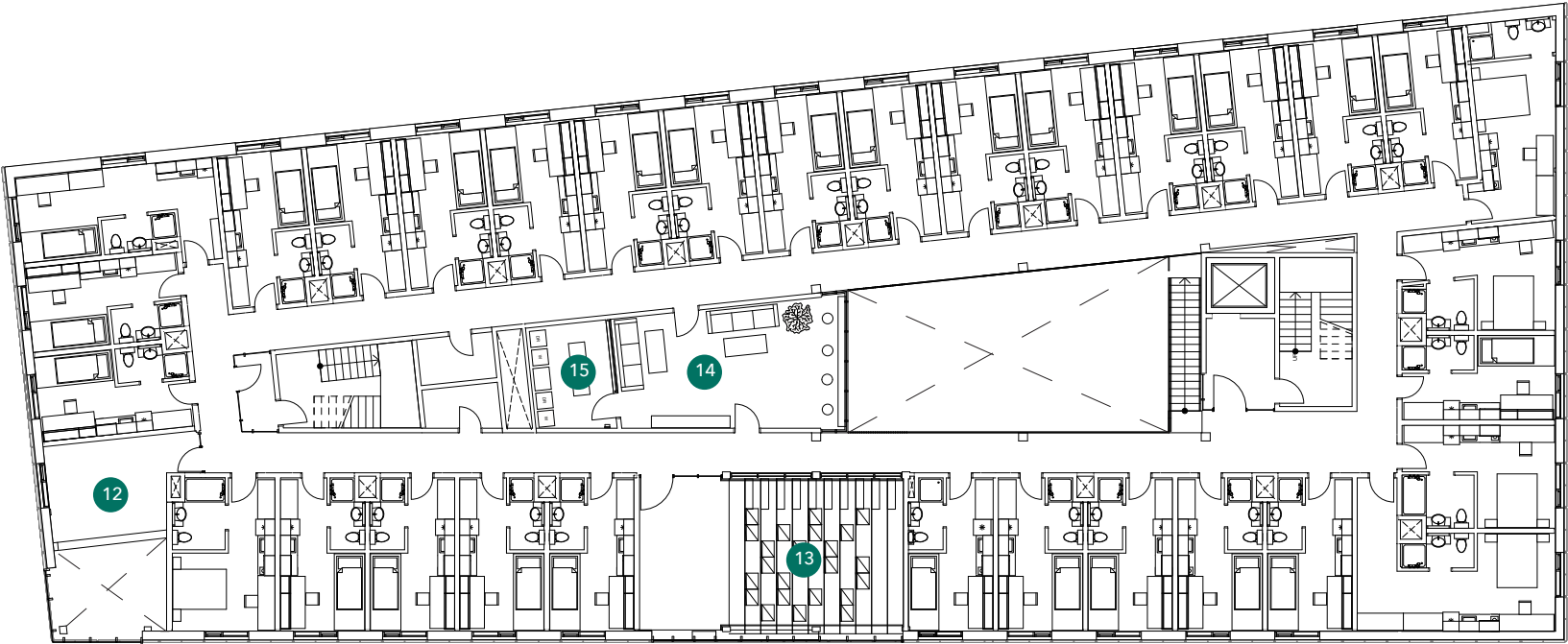
PROJECT SUMMARY

Red Deer Polytechnic Student Residence is a 5,800 m², five-storey, 145-unit mass timber structure. Although its inaugural guests were the 300 athletes who came to Red Deer to compete in the Canada Winter Games in February 2019, the long-term purpose of the building is to house Red Deer Polytechnic's growing student base. Additionally, this student residence functions as a hotel, providing accommodation for short- and long-term guests that include faculty and external users. The Polytechnic's vision was to create a building that will retain the students through play and fun on campus, rather than driving students to go for a coffee in downtown Red Deer. The result is a compelling take on a Residence which offers huge amounts of social spaces in the form of seven distinct Stages, scattered around the perimeter of the building. Its highly collaborative and integrated team used an Integrated Project Delivery [IPD] poly-party contract to meet these hefty goals.



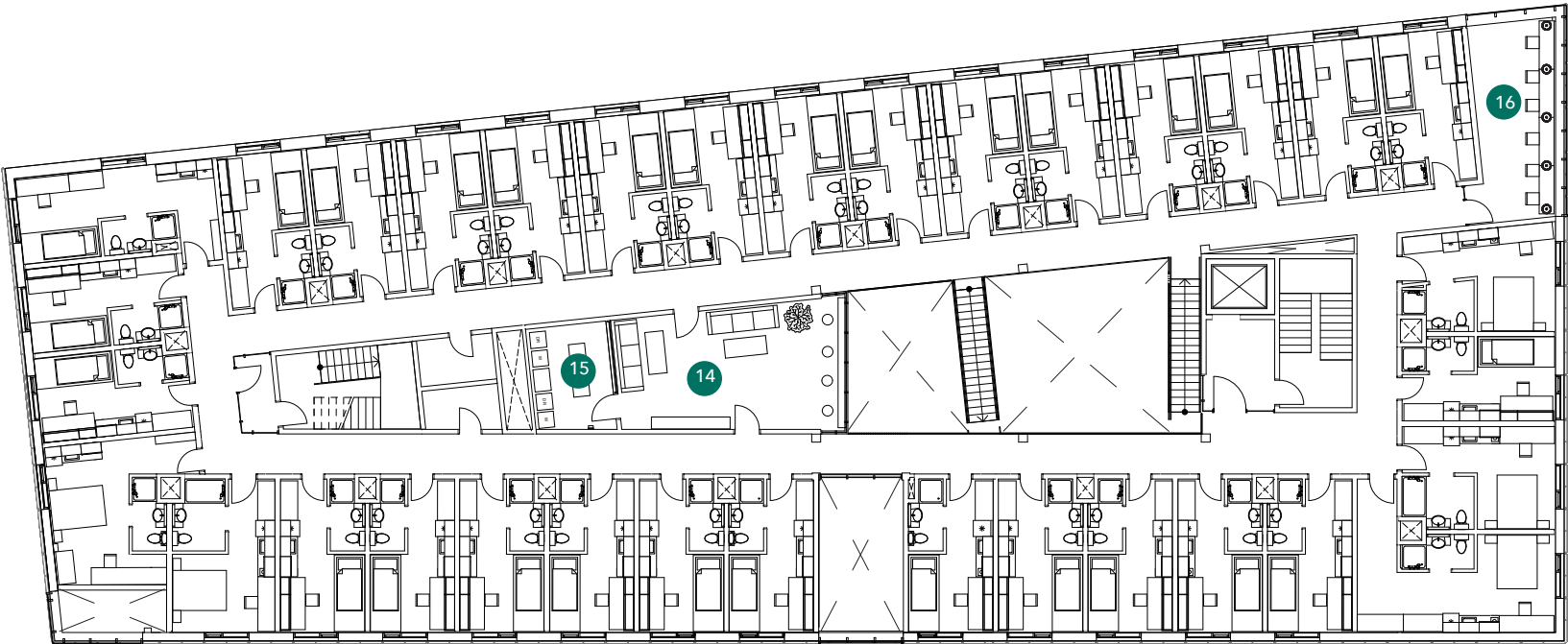
- LEGEND**
- 1 STAGE 1 - GATHERING STAIR
 - 2 BIKE ROOM
 - 3 RECEPTION & STAFF OFFICES
 - 4 STAGE 2 - KITCHENETTE & LOUNGE
 - 5 COMMERCIAL LAUNDRY
 - 6 TYPICAL BARRIER FREE UNIT
 - 7 TYPICAL STANDARD UNIT
 - 8 STAGE 3 - RELAXATION ROOM
 - 9 STAGE 4 - GATHERING STAIR & PRESENTATION SPACE
 - 10 LOUNGE
 - 11 STUDENT LAUNDRY



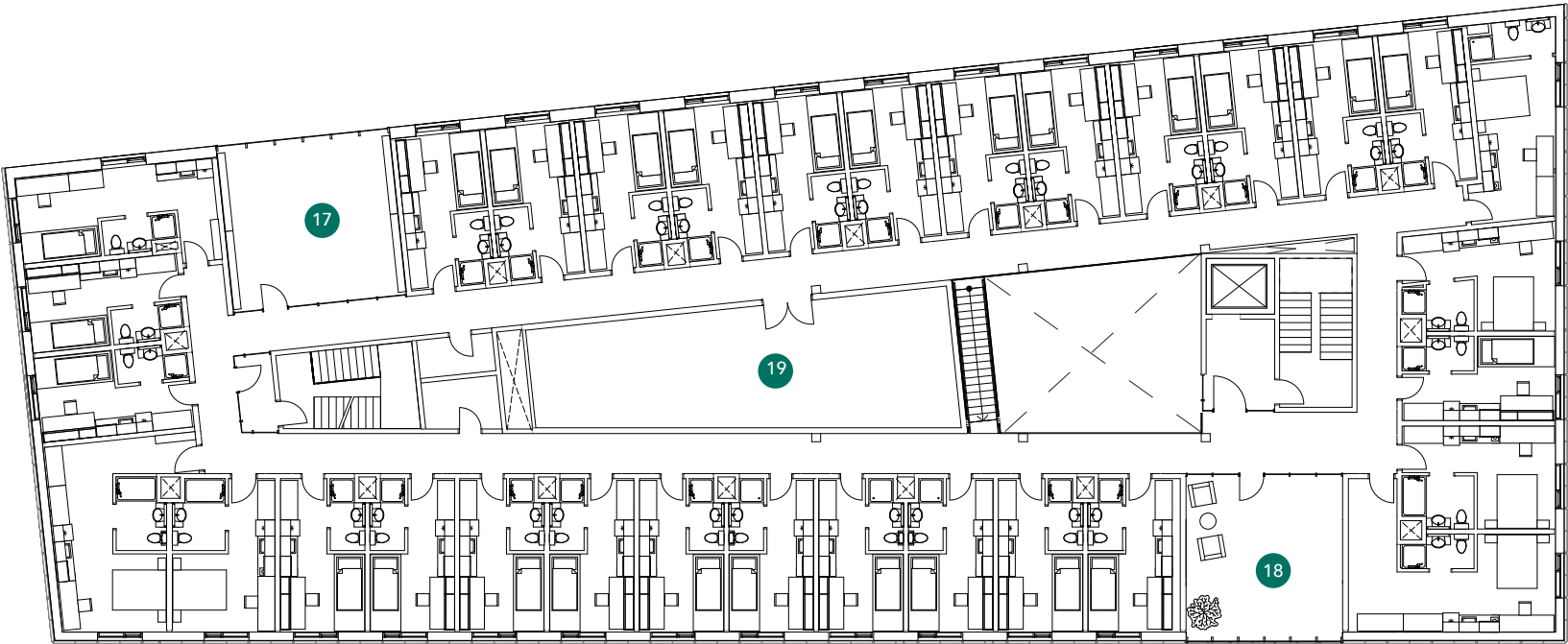


THIRD FLOOR PLAN

- LEGEND**
- 12 STAGE 3 - RELAXATION SPACE
 - 13 STAGE 4 - GATHERING STAIR & PRESENTATION SPACE
 - 14 LOUNGE
 - 15 STUDENT LAUNDRY
 - 16 STAGE 5 - STUDY SPACE

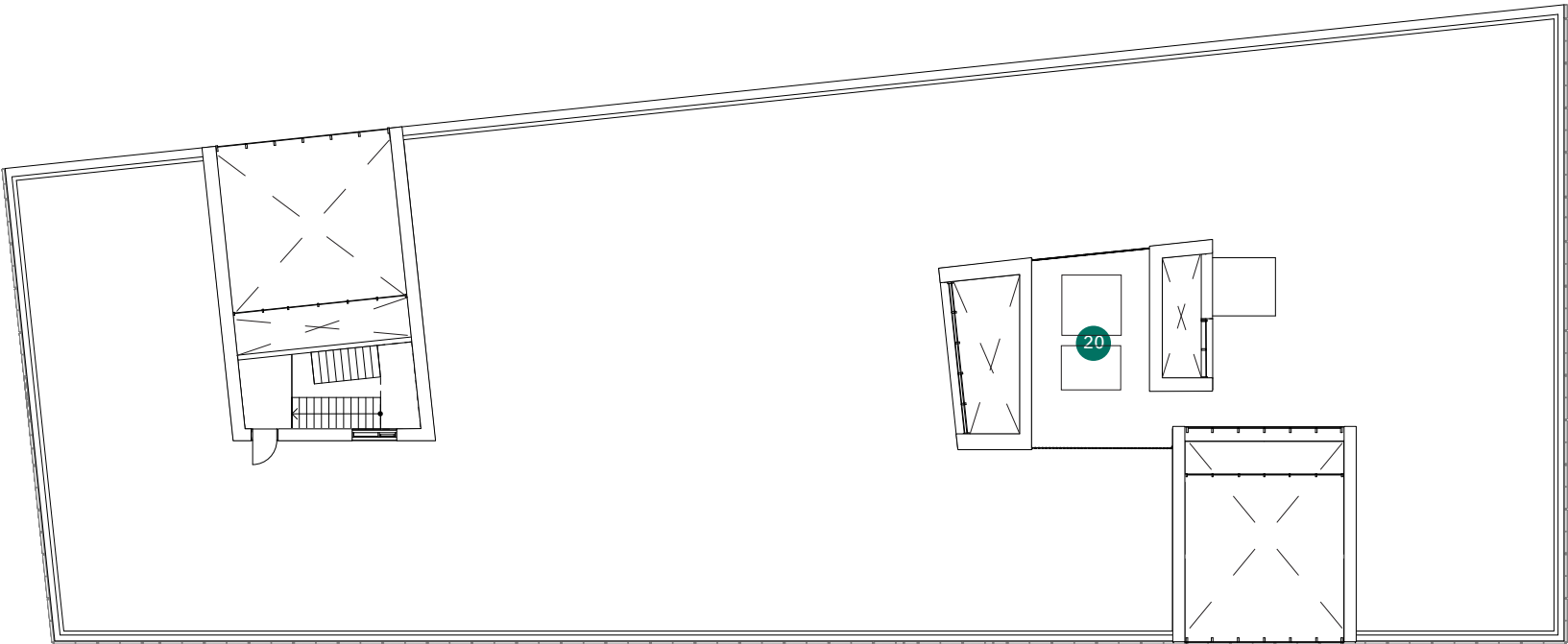


FOURTH FLOOR PLAN

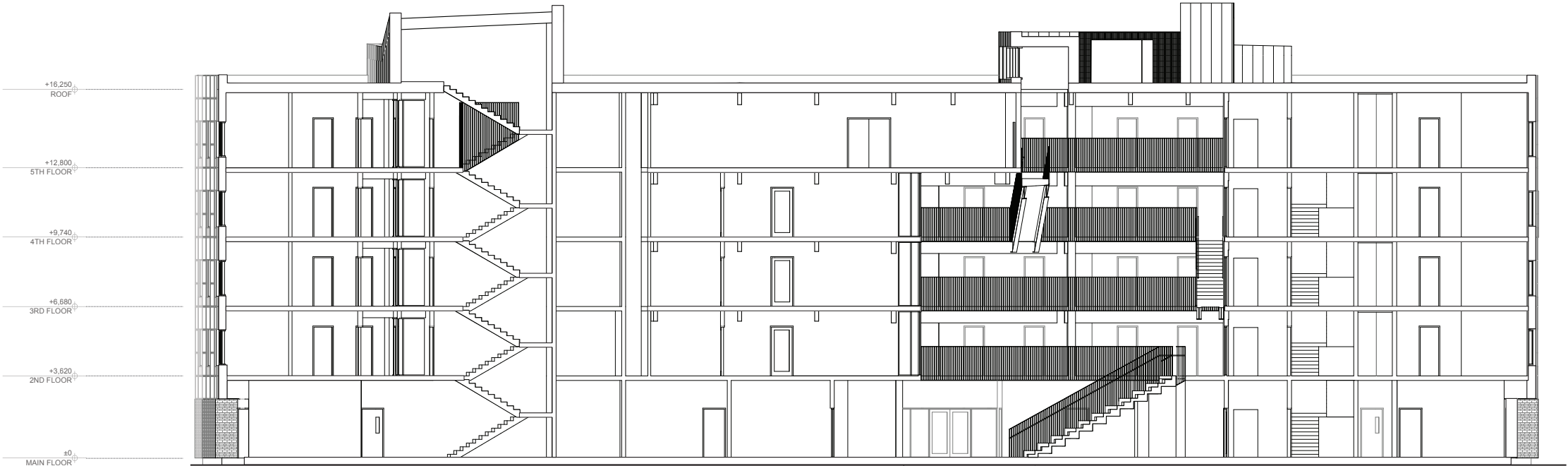


FIFTH FLOOR PLAN

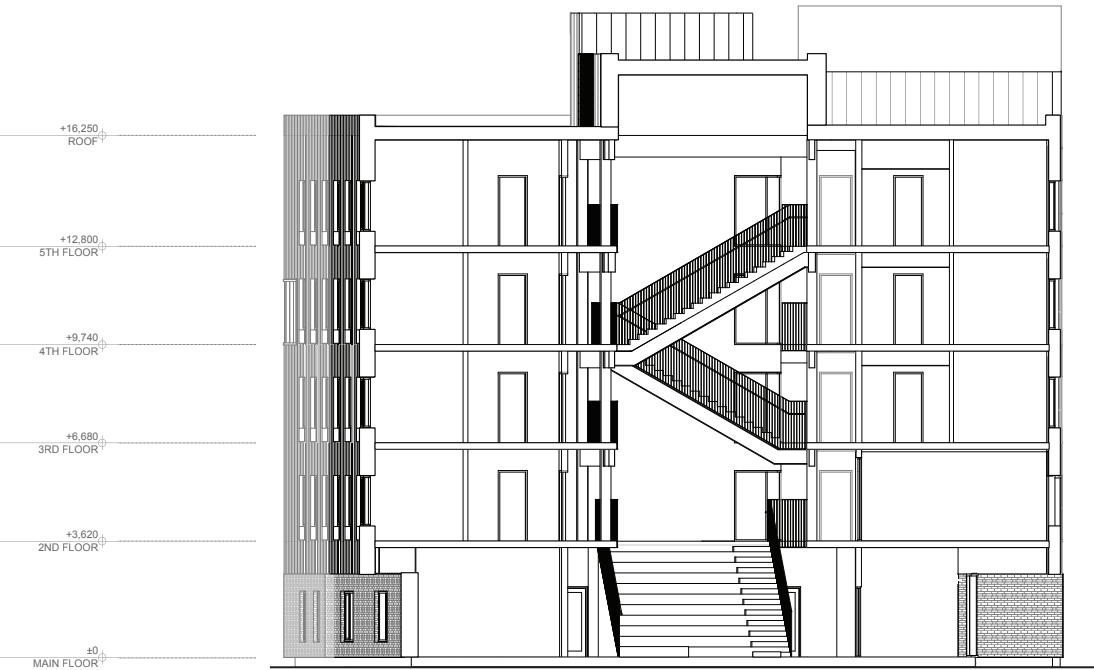
- LEGEND**
- 17 STAGE 6 - READING ROOM
 - 18 STAGE 7 - MULTIPURPOSE SPACE
 - 19 MECHANICAL ROOM
 - 20 SCREENED-IN MECHANICAL ENCLOSURE



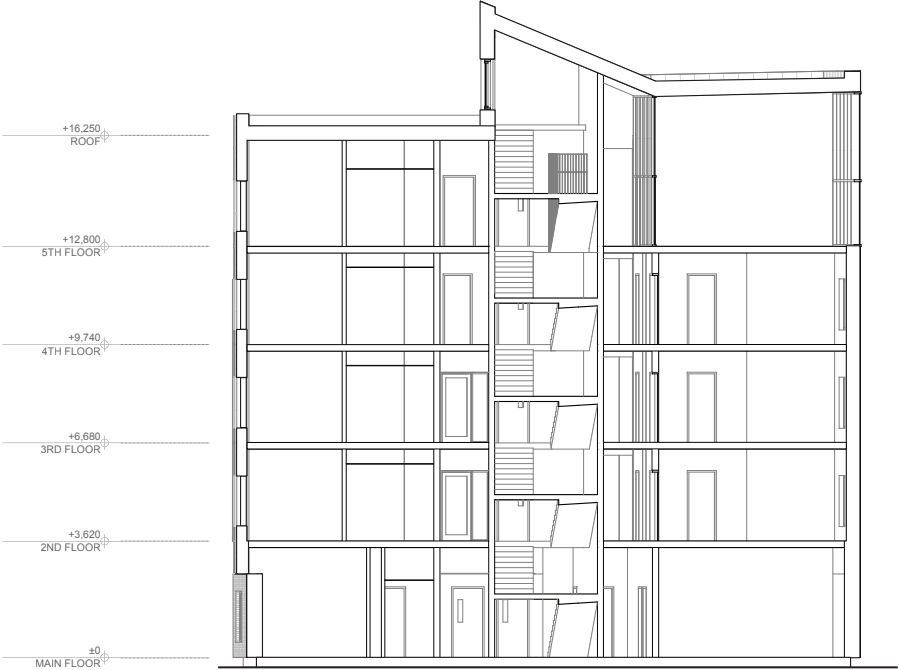
ROOF PLAN



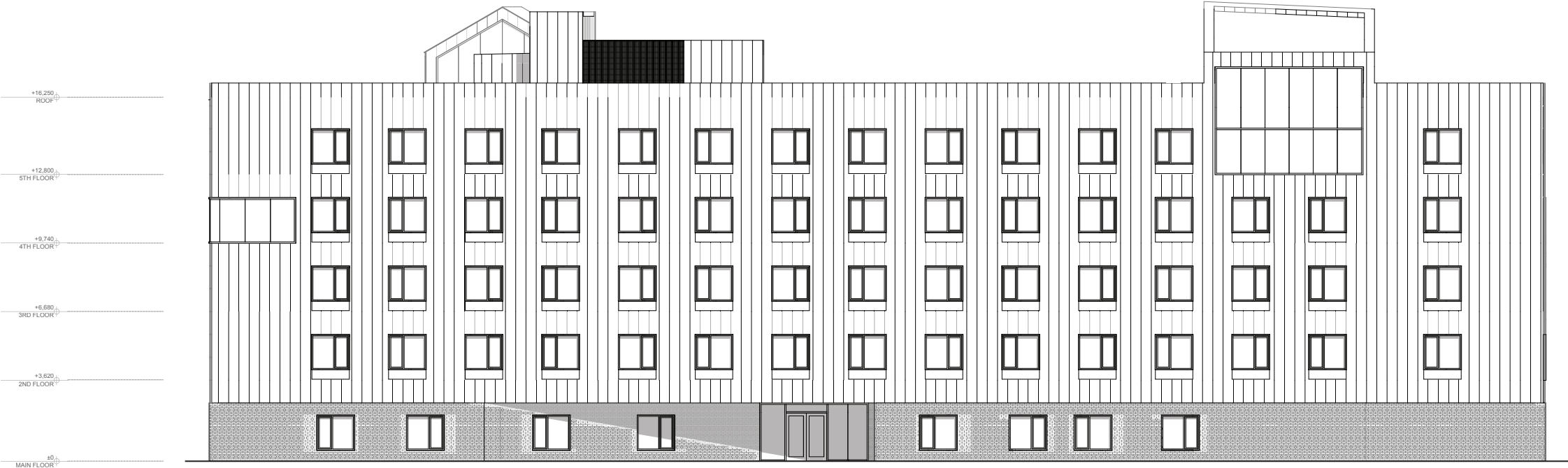
LONG SECTION A-A



SHORT SECTION B-B



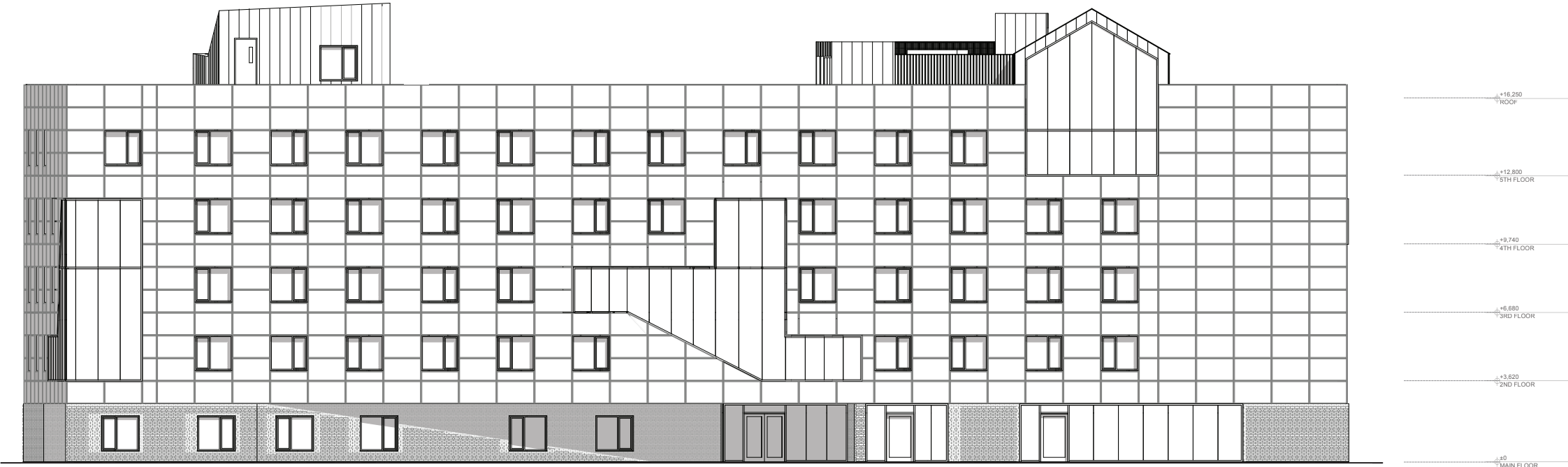
SHORT SECTION C-C



NORTH ELEVATION



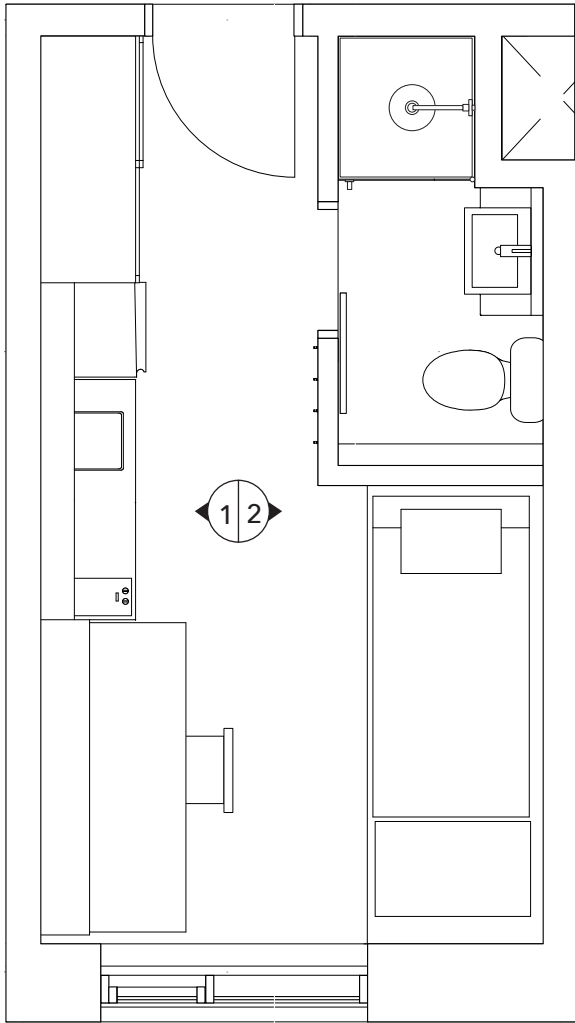
EAST ELEVATION



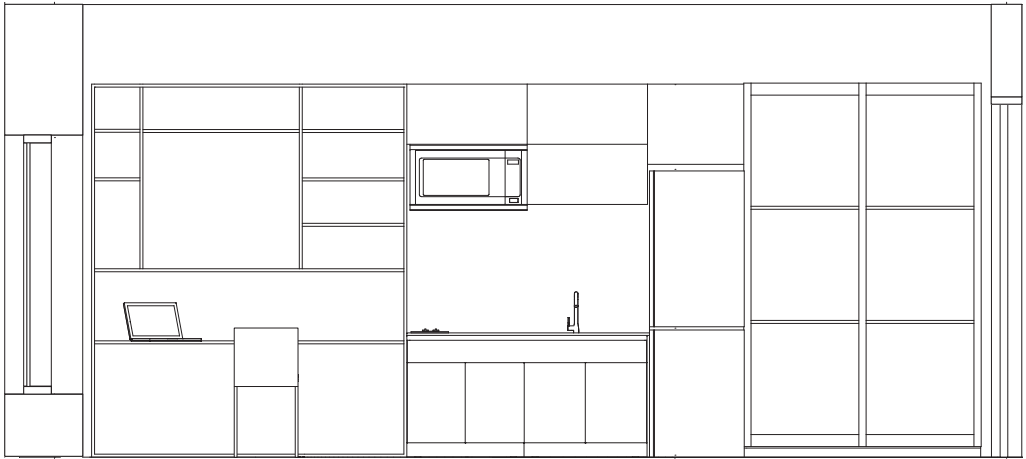
SOUTH ELEVATION



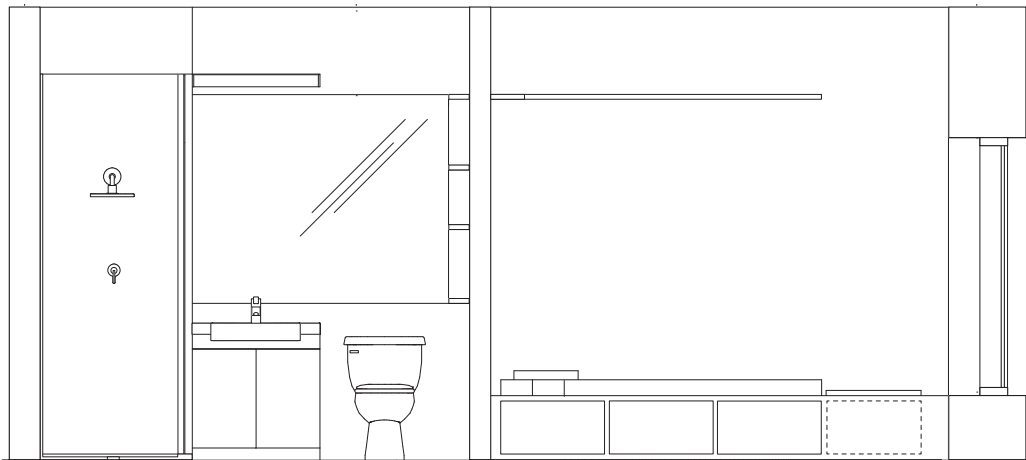
WEST ELEVATION



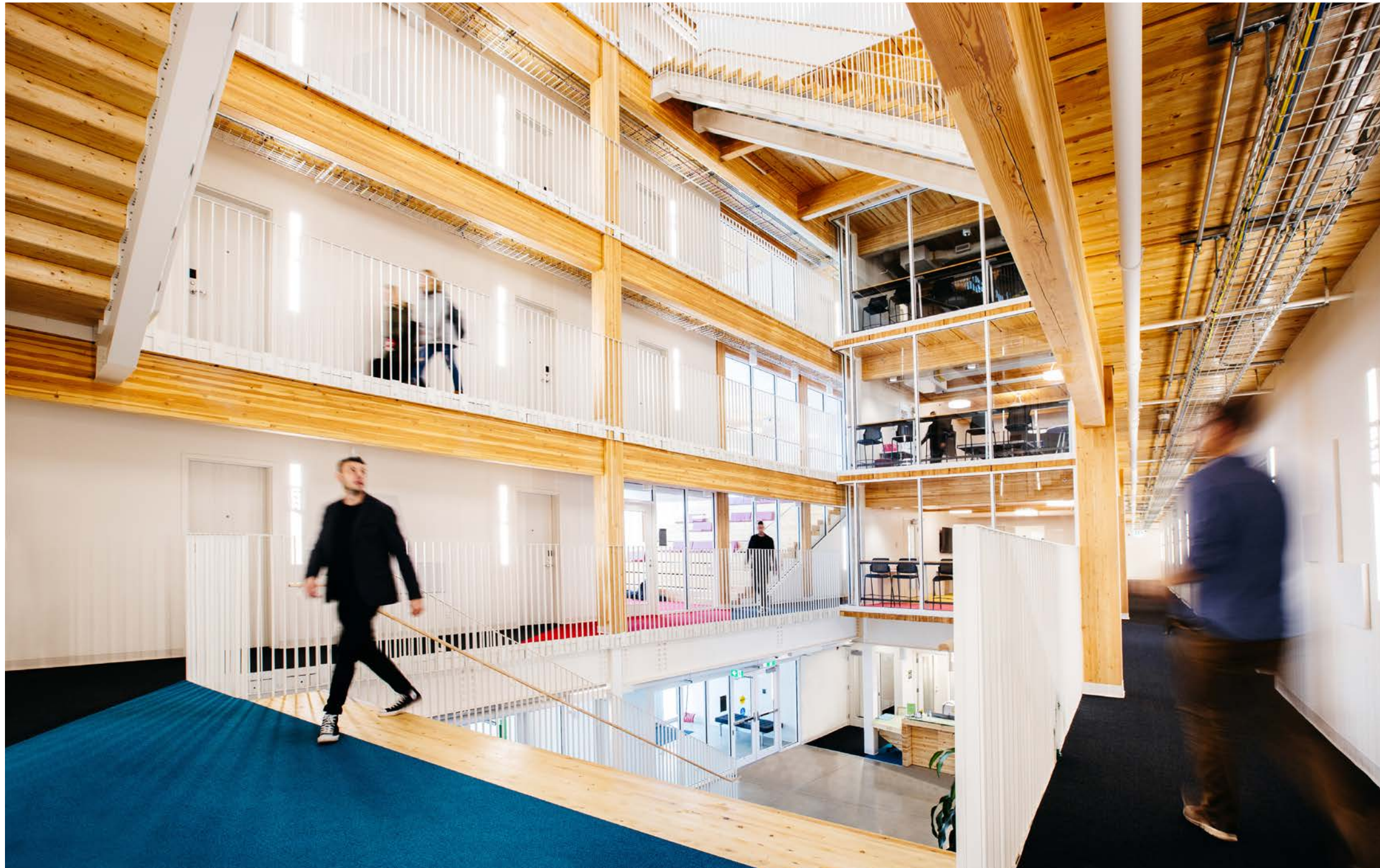
TYPICAL UNIT FLOOR PLAN



TYPICAL UNIT INTERIOR ELEVATION 1



TYPICAL UNIT INTERIOR ELEVATION 2



MAIN PROJECT DESCRIPTION

1. Strategic Decisions

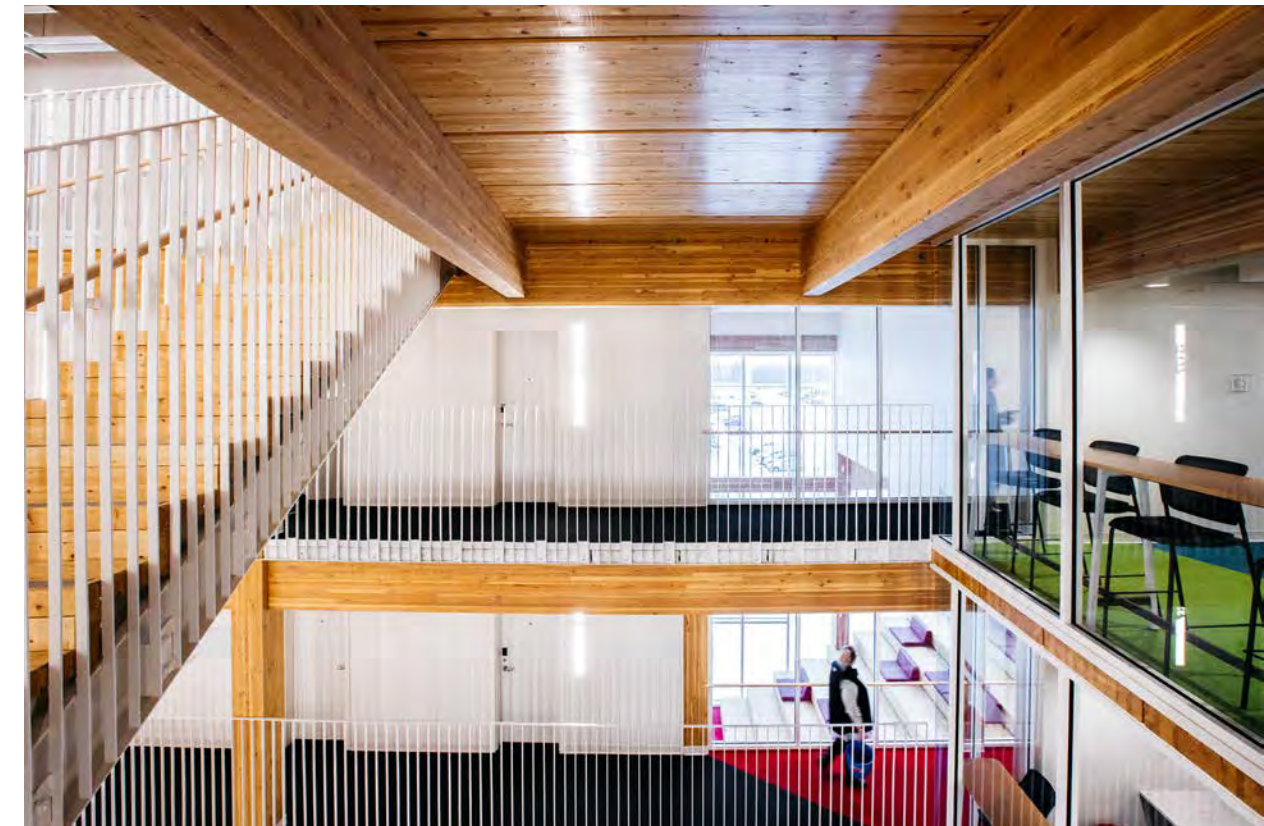
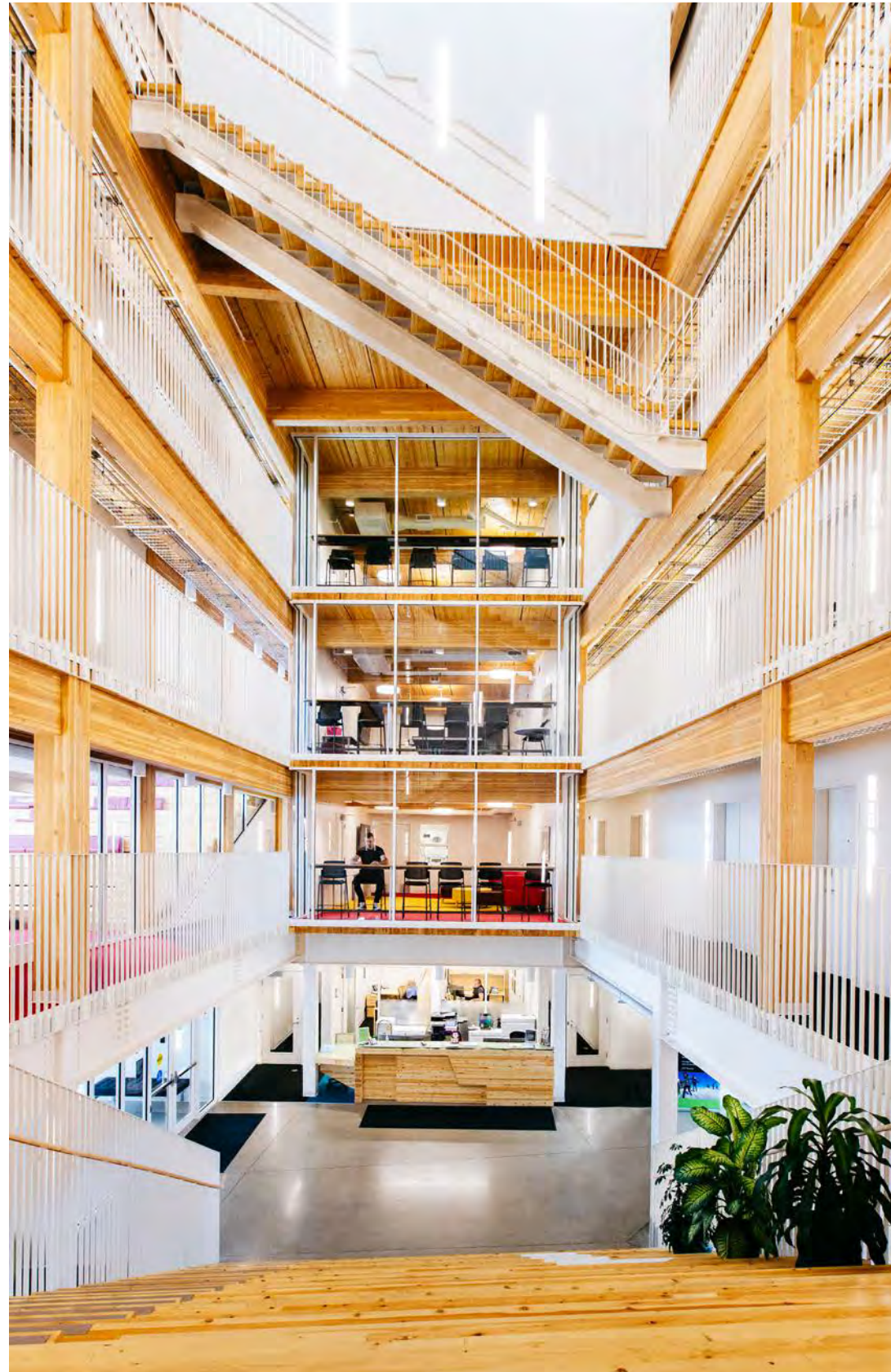
Although Red Deer Polytechnic Student Residence wasn't given a mandate to meet any green building certification, it was designed to LEED Gold standards. With its R35 walls, R45 roof, R7 windows and Passive-House Certified fibreglass curtainwall, it exceeds the prescriptive requirements of the NECB [Energy Code]. Special attention was given to maximizing walkability within the building and minimizing use of the elevator, maximizing solar heat gain in the winter, using operable windows for natural ventilation, leveraging natural daylight and views, indoor plants, 100% LED lighting, and a 90% efficient HVAC system. By using a wooden structure, the need for a suspended ceiling was eliminated. All the wood was locally harvested spruce pine, milled in an Edmonton shop to minimize transportation costs and GHG impacts. Instead of spending resources on building cladding, the East, West and South façade are covered with a 163 kW integrated PVs array that offsets approximately 40% of building's annual energy consumption.

2. Community

The Polytechnic was well aware that isolation and lack of community support for students has a negative influence, not only on their ability to perform in the classroom, but also their mental, physical and emotional well-being. The design team saw an opportunity to reconceptualize the typical student residence type. In a traditional residence, the student gathering spaces are treated as auxiliary programs – but for Red Deer Polytechnic Student Residence, these gathering spaces were prioritized as essential. The building features seven distinct Stages, or gathering spaces, scattered around the perimeter of all five storeys of the building. In a bid to foster enhanced student mental health and well-being, this building increased the conventional amount of social space by a factor of ten.

To create opportunity for more natural light, air volume and views, and to ensure constant interaction between students, its design eliminated the need for soul-crushing double-loaded corridors. This new design thinking dramatically increased the quality of inner life of the building and created a meaningful relationship between the building and the surrounding landscape, yet kept within the budget and square meterage of the project.

The location of the Residence was carefully chosen to minimize the walking distance to neighbouring student amenities on campus, including the existing bus stop that is only 35m away from the building's main entry. Car commuting is discouraged, and the parking requirement was reduced by approximately 30% to a total of 110 parking stalls on-site. A generous bike room is provided right beside the main entry.



7 large gathering spaces, called Stages, are scattered throughout the Residence

3. Site Ecology

Prior to starting the design of Red Deer Polytechnic Student Residence, the design team had completed a masterplan for the portion of the campus where future student residences were to be built.

The site is a mixture of designated natural wetlands, berms, self-made walking trails, old growth and newly planted trees, remnants of a past farmer's field and an old community garden. The wetlands have been retained, and the existing berms on site inspired a site design that celebrates undulation as a unique landscape, contributes to a sense of place, and also translates into an alternative expression of the building's main floor. Choosing to retain the existing berms is not only to the aesthetic benefit of the project; the berms also help maintain the site's natural drainage, and support the wetlands while providing a transition from the natural landscape at the north, to the urban environment at the south.

The building orientation integrates with the site; it is an elongated rectangle, rotated toward the adjacent wetlands, so that one corner is in dialogue with the campus, and one corner is in dialogue with nature.

The Residence adds an urban sense of place to the site, by encouraging social connections and integrating into the walking, bicycling and public transit systems that are used to get to, from and around campus.



Existing wetlands and berms inspired the site design

4. Light and Air

Natural daylight and views were an essential element of the Residence's design. Inside the centre of the building's five-storey atrium, diffused light pours in through clerestories. Glazing separates common areas, to encourage daylight to spread through these spaces. 65% of the occupied area is within 7 meters of an operable window.

100% LED fixtures were provided throughout the building.

Airflow within the building is achieved by means of a locally controlled 90% efficient HVAC system, and operable windows allow for natural ventilation. Dedicated Outside Air System (DOAS) is used and the entire volume of ventilated air gets replaced with outside fresh air at every exchange cycle.



More of the 7 Stages, each offering students a unique experience



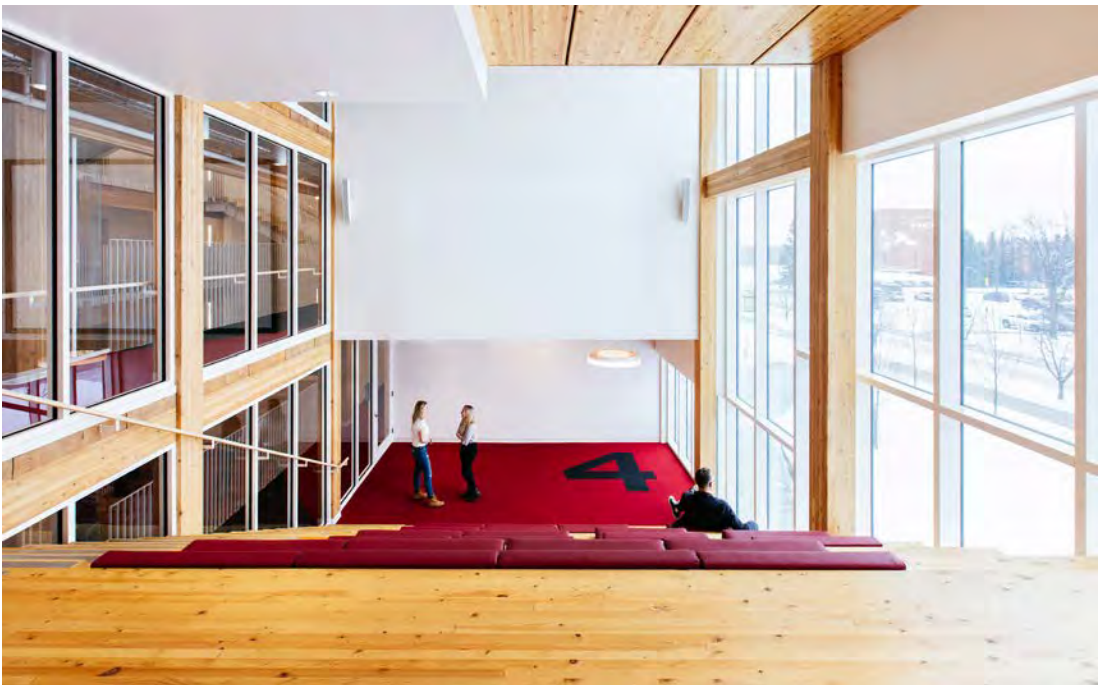
5. Wellness

The Red Deer Polytechnic Student Residence design is cohesive, yet provides an array of varied spaces for its occupants. The design’s ambition ensures that the building offers a perfect space for each user: whether one may digest space through sight, sound, smell, taste, touch, kinesthetic or gravity, and whether one may be extroverted or introverted, the building offers a place where every “body,” and every learner can feel good. This is achieved by negotiating the solid and void, the public and the private, the indoor and the outdoor, as well as individual and gathering spaces.

The seven Stages, gathering spaces scattered around the building’s perimeter, transform the Residence into a wonderland; as students explore secret corners of their building on foot, a shift in the flooring colour indicates a different Stage is nearby. Each of these stages differs in form, character, acoustics and light, and more importantly, each Stage represents a stage of growth in the journey students share with the Polytechnic. The first Stage, for example, is designed to help new students feel at home on campus and in the building, while the seventh Stage reflects the experience of a student at the end of their educational experience at the institution.

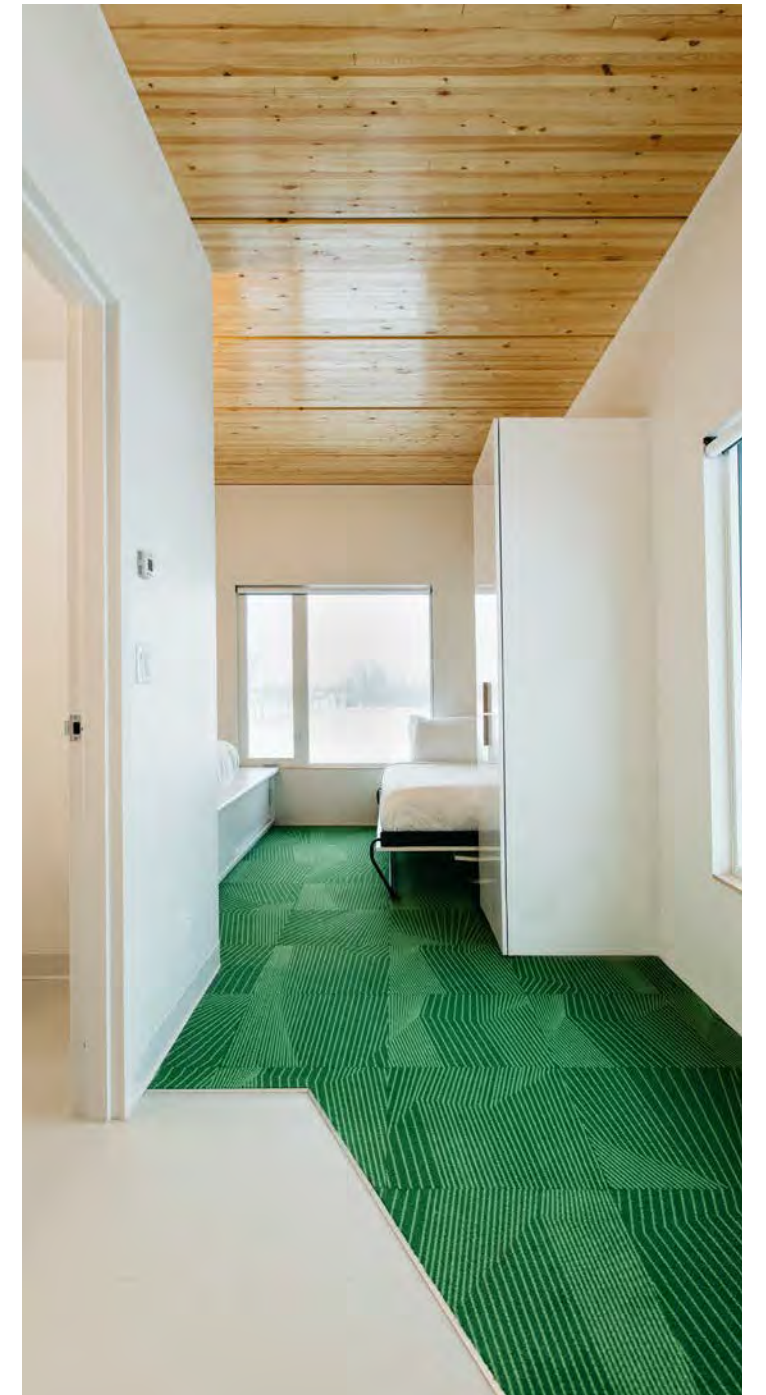
The building is designed to encourage students to explore the spaces on foot, and this reduced the elevator requirements for the Residence to one single elevator.

The 7 Stages inspire students to move through the building, just like they move through the post-secondary experience - learning new things along the way





Although the Residence is built on the premise that gathering spaces are crucial, it still offers a variety of modern, comfortable suites that offer many customizable amenities that students can use to express themselves in their suite



6. Water Conservation

Throughout Red Deer Polytechnic Student Residence, low-flow fixtures are installed, as well as shared laundry for students. Out of doors, the landscape design is based on a selection of plant material that do not require irrigation.

7. Operating Energy Present and Future

Although the Red Deer Polytechnic Student Residence wasn't mandated to meet any green building certification, it was designed to LEED Gold standards. With its R35 walls, R45 roof, R7 windows and Passive-House Certified fibreglass curtainwall, it exceeds the prescriptive requirements of the NECB [Energy Code]. Special attention was given to maximizing walkability within the building and minimizing use of the elevator, maximizing solar heat gain in the winter, using operable windows for natural ventilation, leveraging natural daylight and views, indoor plants, 100% LED lighting, and a 90% efficient HVAC system.

As cohesively beautiful as the user experience of the Residence is the building is also designed for a sustainable future, based on renewable energy. Red Deer Polytechnic integrated the scope of a new Alternative Energy Lab into the project just before the Development Permit submission, and consequently, the entire East, South, and West faces of the Residence will be clad in a vertical 163 kW array of photovoltaic (solar) panels.



The Residence features photovoltaic panels as cladding, on the East, South and West faces of the building; a visible reminder of the Polytechnic's commitment to a sustainable future



8. Materials and Resources

Wood was a crucial design element for the Residence. By using a wooden structure, the need for suspended ceiling was eliminated. All the wood was locally harvested spruce pine, milled in an Edmonton shop to minimize transportation costs and GHG impacts. Exposed structural wood is featured throughout the building interiors, with white walls accented by vibrant floor and furnishing colours selected to correspond with sun orientation; “hot” colours (orange, yellow) are placed on the “cool” sides of the building, while green and aqua are used in the “hot” zones.

A central five-storey atrium connects the floors visually, with diffused natural light entering from the clerestories. Open railing along the hallways and interior glazing between common areas encourage interaction among different spaces, while the predominance of light wood enhances natural warmth; all ceilings are exposed spruce pine glulam panels, while glulam posts and lintels are also visible throughout the building.

The Residence features large amounts of wood for both structural and aesthetic reasons



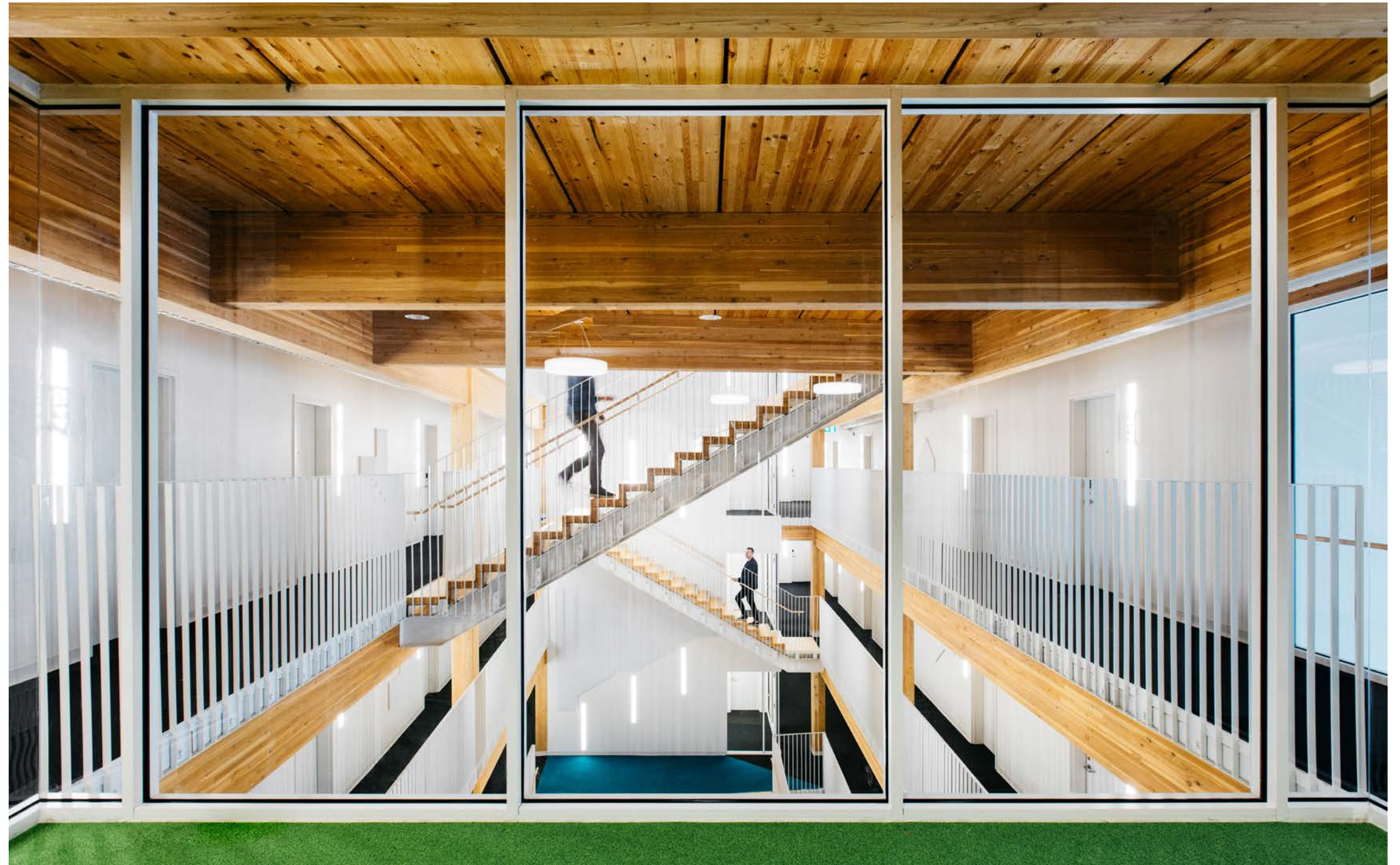
9. Building Life Cycle Considerations

The Red Deer Polytechnic Student Residence is designed for a 200+ year lifetime. While not all materials that were chosen are recyclable or locally supplied (for example, PV modules are highly non-recyclable and non-locally manufactured), extreme care was dedicated to the choice of materials that are predominantly used in the building.

Wood was chosen for superstructure, as it offers additional benefits, one of which is the reduction of ceiling finish materials (as the wooden superstructure was left exposed). At the time of design, ABC (Code) had only recently adopted mid-rise (up to 6-storeys) mass timbers in Alberta. This Residence is the first “tall” mass timber building in Alberta. Other than timber, most of the used materials are highly durable and recyclable.

The choice of mechanical and electrical systems was based on capital and operational cost. Substantial consideration was paid to creating a highly efficient mechanical system and low operational costs. Fan-coil units, used for both heating and cooling, have good local maintenance support, and the units were left exposed and easily accessible in all areas of the building. The IPD method had a profound influence on the final materials and systems selection. Some of the tools that the design team used within the IPD environment, such as Choosing By Advantages, allowed us to comprehensively compare sustainable, aesthetic and performance characteristics and the capital cost investment of the proposed design components. That way, the Polytechnic was able to fully understand the value and the impact of the proposed design and how our selections manifest throughout the lifespan of the building.

The building design inspires students to explore on foot, which meant that only a single elevator is sufficient to service the Residence



10. Education and Information Sharing

The project’s IPD procurement method made it possible for consultants to discuss and co-create the design with the general contractor and trades. This collaborative process gave the consultants a deep understanding of the behavioural culture of the building’s end users, while the Polytechnic better understood the practical value that the sustainable design offers to both the experience and operational costs of the building, and the contractors understood how to provide more competitive pricing and a faster timeline for construction.

After the building was fully occupied and operational for one year, the Polytechnic implemented the lessons learned in their curriculum and general communication across the campus. Recently, the Polytechnic formed an energy innovation group within their Alternative Energy Lab, where they monitor the energy performance of the Residence, and teach actual classes based on their findings. Residents of the building can learn about the building’s performance in real time, too. The Polytechnic installed energy performance monitors that show historic and real-time energy generation of the façade integrated PV array of the Residence. These performance monitors are installed at prominent locations within the building’s important gathering spaces, and align with the Polytechnic’s ambition to achieve net-zero energy performance for the entire campus, in the near future.

