ACTON OSTRY ARCHITECTS INC

AUDP Development Application Submission

MEETING DATE: 9 April 2015

Student Residence at Brock Commons

UBC Point Grey Campus | Gage North Precinct

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cladding and cornice

THE UNIVERSITY OF BRITISH COLUMBIA

UBC PROPERTIES TRUST

ACTON OSTRY ARCHITECTS INC

Architekten Hermann Kaufmann ZT GmbH

GHL CONSULTANTS LTD
Building Codes & Fire Science

Fast + Epp

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RWDI

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Stantec

Kamps Engineering Limited

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CadMakers Inc.

HAPA

URBAN ONE builders

SEAGATE Structures
QUALITY + INTEGRITY

WHITEWATER CONCRETE LTD.

location plan

context aerial

1. Introduction

Overview

The mandate for the Student Residence at Brock Commons is to deliver student residence beds as part of the *Student Housing & Hospitality Services* strategy to address a current 3,500 student wait list for on-campus housing.

The building is proposed to deliver 408 beds, with 18 storeys, a maximum height of 53m, a typical building footprint measuring approximately 15m x 56m, a typical gross floor area of approximately 840m^2 and a total gross floor are of approximately 15,200m^2. The functional program is for the housing of upper year and graduate students consisting of single-bed studios and 4-bed quad units, both with kitchen components and bathrooms. Additional program uses include social and study spaces, laundry, administration, and storage space for the use of students, all located on the ground floor.

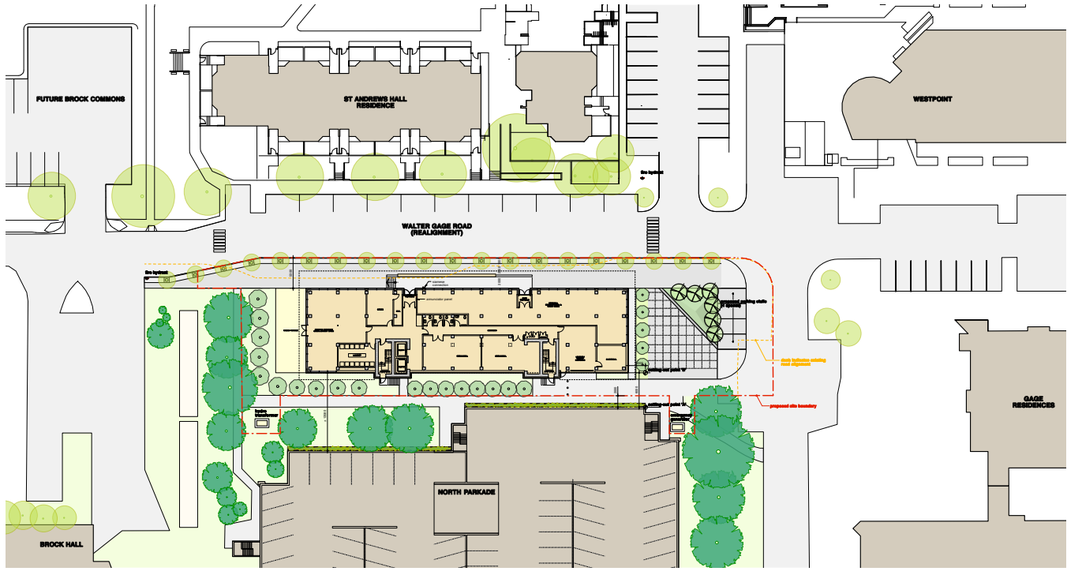
Another University mandate for the project is to investigate the potential use of a hybrid mass wood and concrete structure and to assess the technical and financial viability for the project to demonstrate the applicability of wood in BC's development and construction industries. The hybrid structure is proposed to be 17 storeys of mass wood combustible construction above 1 storey of noncombustible concrete construction at grade level, with two concrete exit stair and elevator cores serving all floor levels.

The challenge and objective for the Project Team is to determine if a project utilizing a hybrid mass wood and concrete structure can be constructed for a cost similar to that for a building using a typical concrete or steel structure. If determined to be viable, the project is to be a Living Laboratory in which UBC faculty and engineering and forestry professionals will collaborate with operations staff and industry partners on the design, development and construction of the project. UBC intends to monitor and evaluate the project to provide reference knowledge for possible changes to the *2020 Canadian National Building Code* for mass wood structures.

Project Team

The Project Team is comprised of representatives from the University of British Columbia and UBC Properties Trust; as well as architectural, engineering, landscape, sustainability and specialty consultants, and representatives from the construction industry.

excerpt from Design Brief showing Brock Commons massing



context and site plan

2. Context & Site

The Student Residence at Brock Commons will be an integral part of the future Brock Commons, a mixed-use hub that is intended to build on the success of the Ponderosa Commons and Orchard Commons hub projects. The future Brock Commons is envisioned as an ensemble of student residence buildings that will contribute to student life within and toward a centrally located pedestrian-focused open space shared with Water Gage Road.

Although the draft *Design Brief* anticipates future construction of a mixed-use six-storey structure to be built east of the Student Residence at Brock Commons, given that the student residence project is proposed to have a hybrid mass wood and concrete structure, fire safety requirements would dictate that a 2 hour firewall be constructed between the two developments.

A third phase of Brock Commons is planned as a traditional campus quad with a central courtyard framed on three sides by contiguous six storey mixed-use buildings and Allard Hall to the north. Urban form and architectural character for each structure within the Brock Commons are to contribute to a shared character that unifies the hub. Designs considerations toward this goal include massing expression, materiality, detailing and landscape strategies.

To contribute to the establishment of Brock Commons, public realm upgrades to Walter Gage Road are to be undertaken in the future and will include repaving, planting, seating walls, benches, street lights and garbage and recycling disposal.

Although the *Design Brief* envisions ground-oriented townhouses facing Walter Gage Road with grade separated entries raised between 3’ to 5’ above finished grade with layered landscaping, it is instead proposed that the ground floor may potentially consist of student-oriented study and social uses located directly at grade for ease of access and to contribute to the vitality of the surrounding public realm.

The *Design Brief* suggests there would be a podium/tower expression for the project; however, the narrowness of the site and desired efficiencies of the proposed hybrid mass wood and concrete structure have lead to a simple, rectilinear, extruded slab-form massing. The *Development Application* for the project proposes that the massing appropriately mediates between the Buchanan academic tower to the west, the Gage Residential towers to the east and the Axis Tower to the north.

Buchanan Buildings, UBC - 1959

Lasserre Building, UBC - 1962

Frederick Wood Theatre, UBC - 1963

Henry Angus Building - 1965

BC Electric, Victoria - 1955

BC Electric, Vancouver - 1957

3. Design Rationale

UBC Campus Design Guidelines

The Student Residence at Brock Commons has been designed in compliance with *The University of British Columbia Vancouver Campus Plan*. Specifically, *Part 3 Design Guidelines* of the *Campus Plan* were used to inform the design of the building, landscape and infrastructure of the project to ensure that all component systems work in harmony to achieve the functional, sustainability and character objectives of the campus.

Campus Core District Guidelines

The Student Residence at Brock Commons is located in the *Campus Core District* of the University. The *Campus Core District* is characterized by a mix of Collegiate Gothic academic buildings interspersed among Arts and Crafts and West Coast Regional style architecture.

In keeping with the style precedents for new development in the *Campus Core District*, the design of the project takes its inspiration from the collection of International style modernist buildings located on campus, specifically those designed by *Thompson Berwick and Pratt Architects* including: *Buchanan Buildings*, 1959; *Lasserre Building*, 1962; *Frederick Wood Theatre*, 1963; and the *Henry Angus Building*, 1965. These precedent buildings are particularly significant in that their expression is that of simple, rectilinear plan forms and massing that is consistent with the campus grid. In response to their relatively low height of 2 to 4 storeys, the buildings exhibit a primarily horizontal massing, with the exception of the 4 and 9 storey *Henry Angus Building* that has a combination of horizontal and vertical massing expression.

The design of the project has been further informed and inspired by taller buildings designed by *Thompson Berwick & Pratt Architects* that are located off campus including: *BC Electric* Victoria, 1955; and *BC Electric*, Vancouver, 1957. The 6 storey *BC Electric* in Victoria, with it's rectilinear slab-form is decidedly vertical in its expression, as is the 22 storey *BC Electric* in Vancouver. Similar to both of these precedent buildings, the massing of the Student Residence at Brock Commons is simple in plan and form, rising upward as an uninterrupted slab.

Of particular note for *BC Electric* in Vancouver is the soaring verticality of the facade, the expressive canopy at the base and the striking cornice at the crown—all architectural devices that have been a source of inspiration in the design of the Student Residence at Brock Commons.

Site

The site is located within the Brock Commons student housing hub site designated in the *UBC Vancouver Campus Plan*. The site fronts onto Walter Gage Road, immediately north of the North Parkade on a gently sloping, narrow, open grassed area. The first phase Student Residence will be dedicated for student housing use only. Future phases will provide additional student housing, as well as amenities and academic spaces.

The building is located 6m from the North Parkade to allow for a 5.3m public realm zone along Walter Gage Road. The 5.3m frontage will include a linear sub-walkway that runs approximately one-third the length of the building to mediate the sloping grade and provide accessibility at two points into the building. The linear sub-walkway is defined by a concrete upstand and wood bench. A 3m wide CLT canopy covers the sub-walkway. A raised terrace for use by students residing in the building is located to the west and a public open space is located to the east to acts as a hinge for movement of people around the site. The public open space is generally hardscaped and includes a triangular-shaped berm defined by an angled bench and bosques and rows of trees. Existing pathways through the existing site will be retained and strengthened.

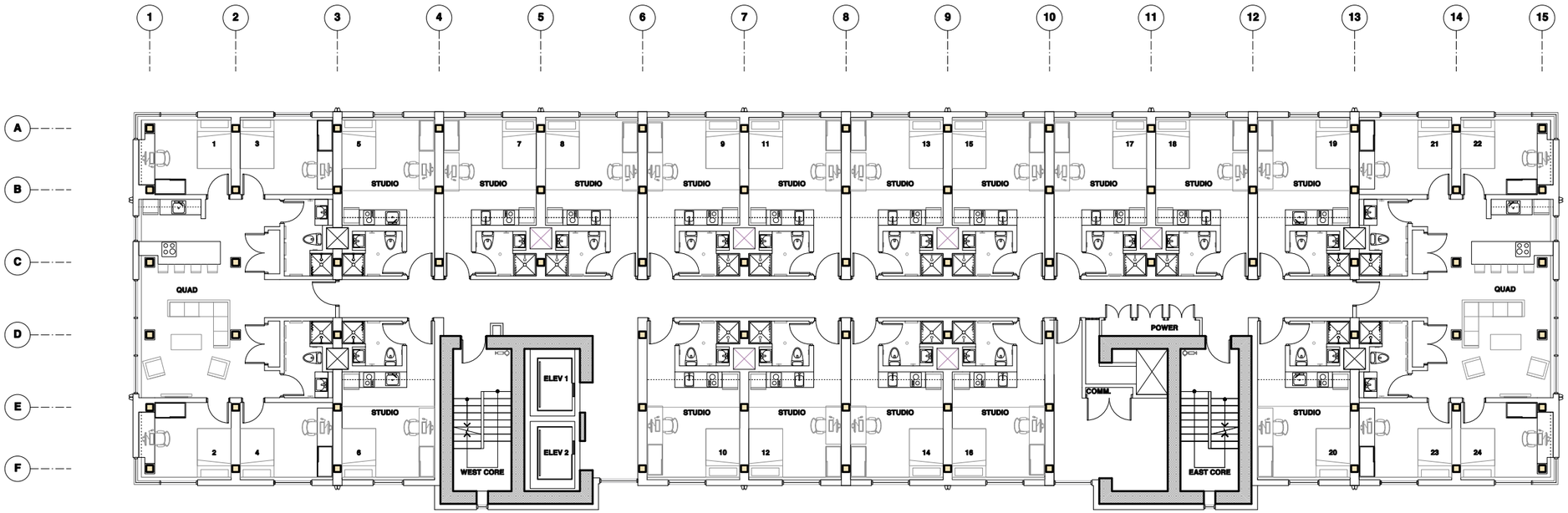
Building

The narrow, slab-form of the building is informed by the constraints of the site and structural considerations regarding the use of a hybrid concrete and mass wood structure. As a result, the floor plan is symmetrically laid out with the primary north and south elevations following suit, while the east and west elevations reflect the asymmetrical layout of the quad end-units within.

The concrete structure at the base is wrapped with extensive floor-to-ceiling curtain wall glazing, coloured glass spandrel panels and transparent coloured glass. Above the base the facade is clad with a combination of white and charcoal metal panels punctuated by an oscillating rhythm of floor-to-ceiling clear-glazed openings with accents of coloured blue glass that create a continuous vertical band of striations. Glazing wraps the corners to dematerialize the edges of the building.

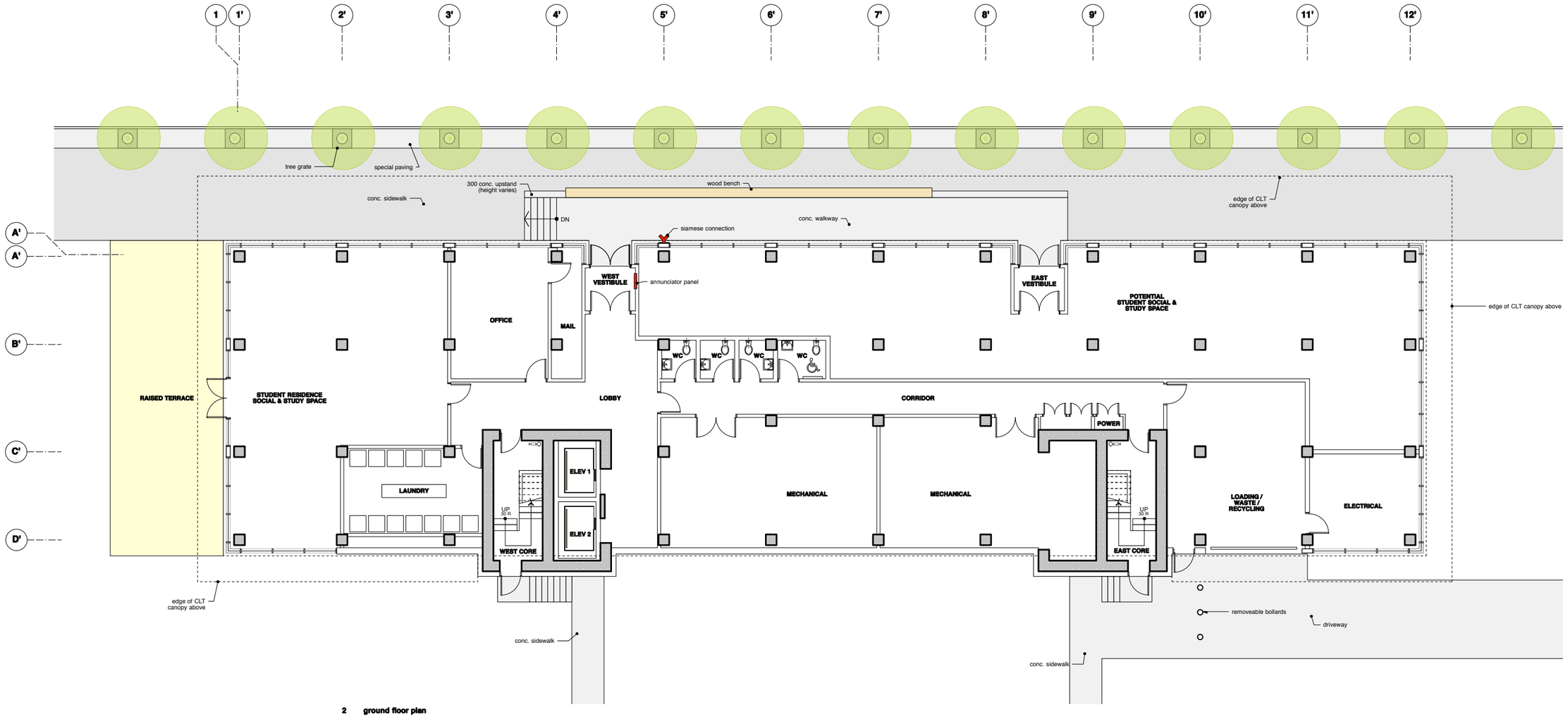
Further accentuating the vertical expression is a series of raised, blue-black vertical splines that draw the eye up to a metal cornice that crowns the building. The cornice is delineated by a series of charcoal-coloured aluminum structural sections set amongst a field of charcoal-coloured metal cladding. The cornice is capped with plates of prefinished aluminum that rise and float above the building parapet.

4. Drawings | Floor Plans



2 typical floor plan (level 2-16)
1:100

typical floor plan



2 ground floor plan

ground floor plan

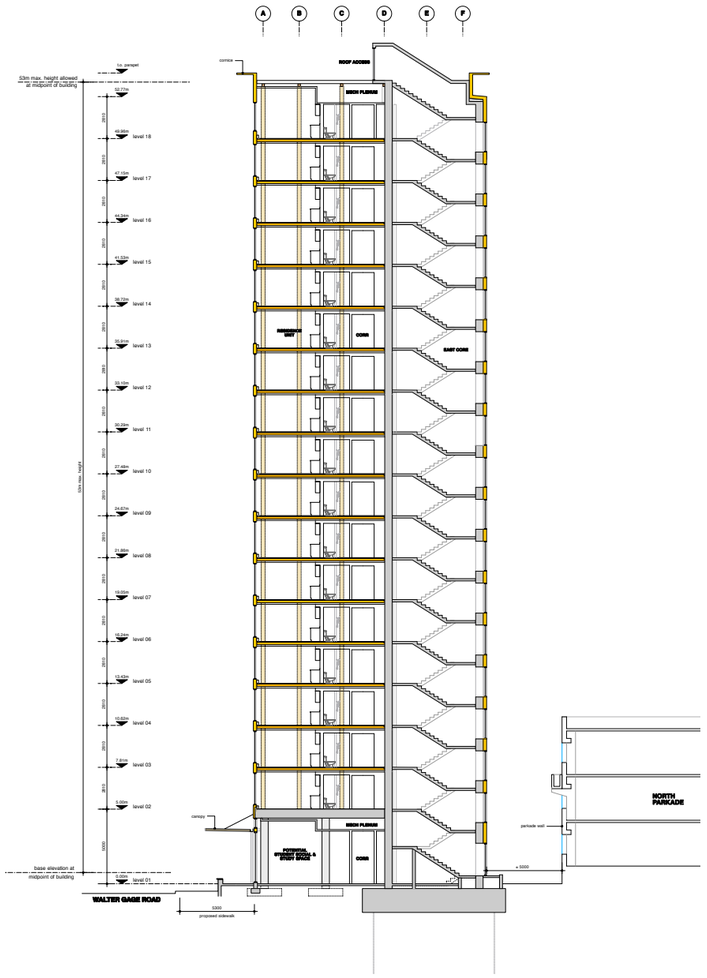
4. Drawings | Elevations & Section

south elevation

0 5 10 15 M

east elevation

west elevation



section

north elevation at Walter Gage Road

4. Drawings | 3D Model Views

view west at Gage Residence

northeast view at Walter Gage Road

view south at Walter Gage Road

view east at Walter Gage Road

4. Drawings | 3D Model Views

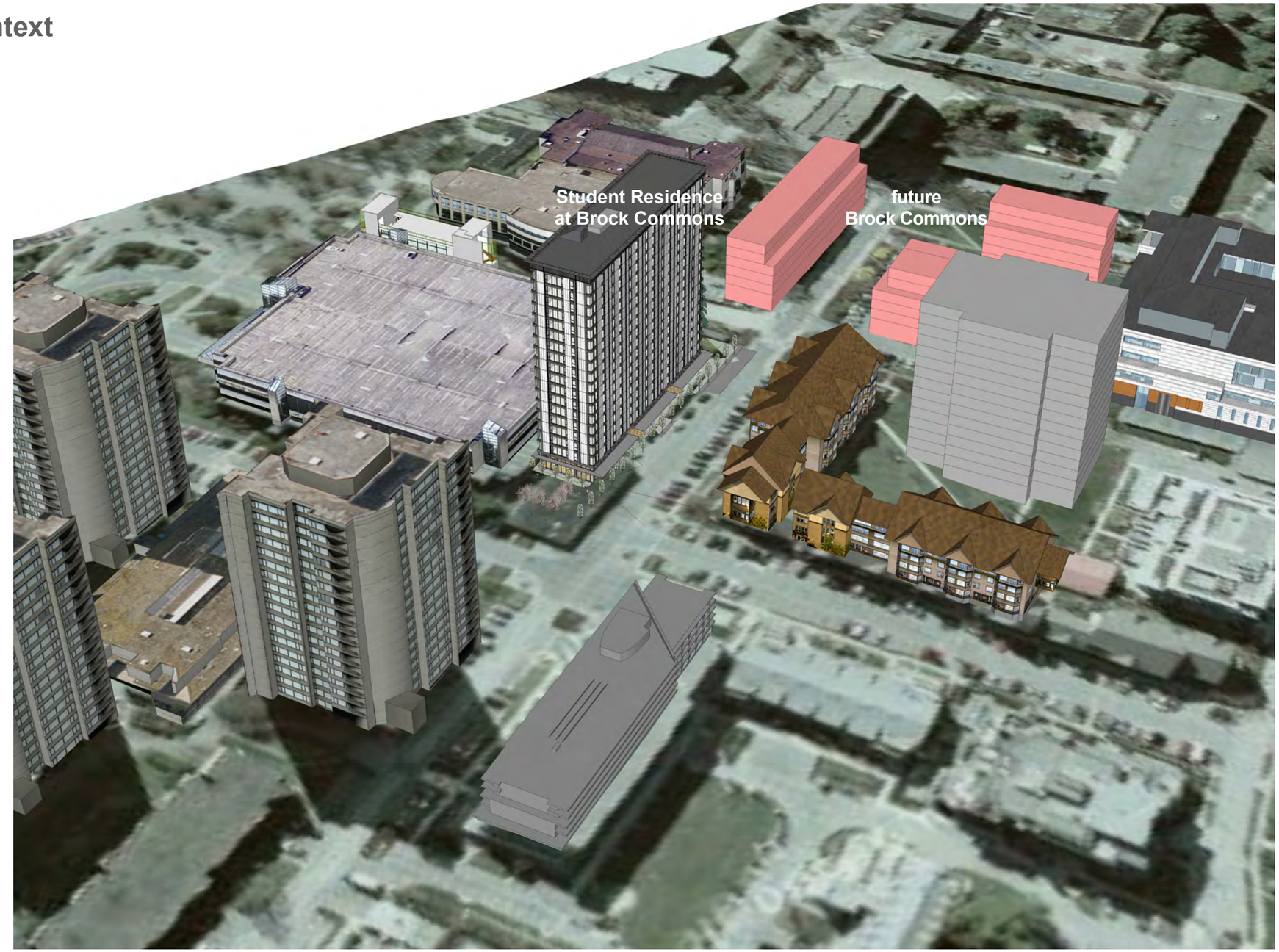
view west from public open space down Walter Gage Road

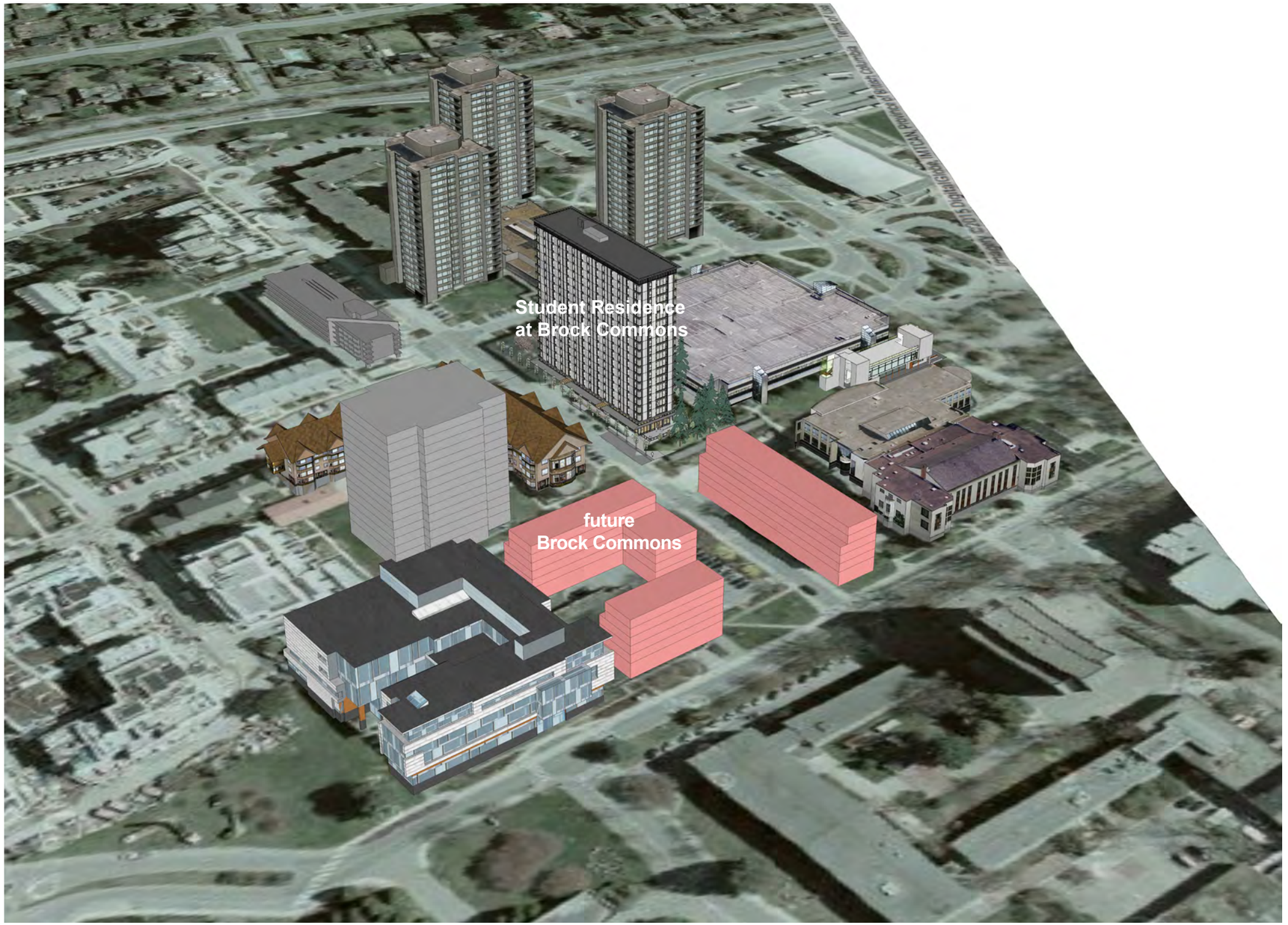
student residence entrance and social space

approach from west at student residence social space

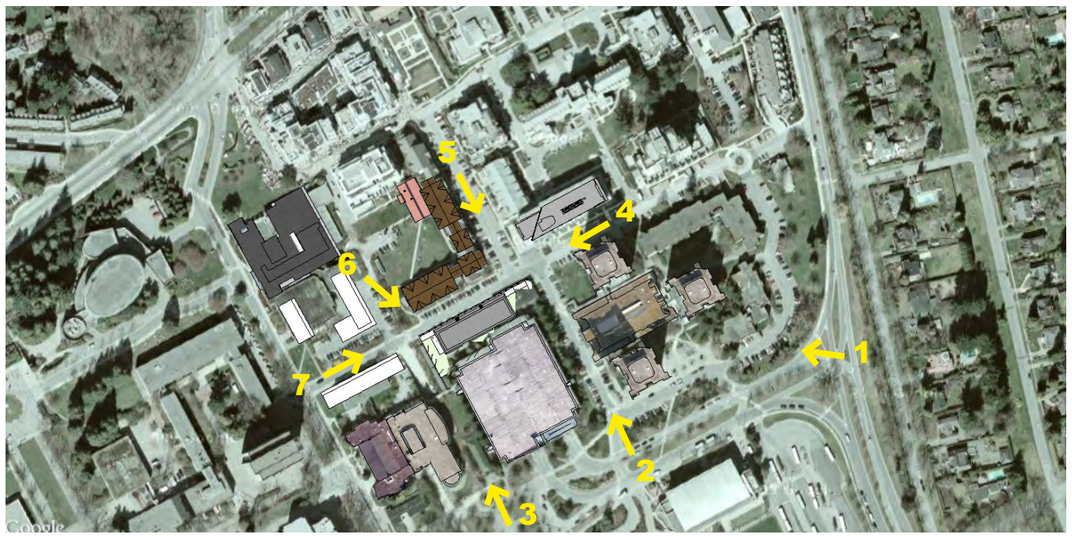
view east up Walter Gage Road at student residence social space

4. Drawings | Project in Context




Student Residence
at Brock Commons
future
Brock Commons

4. Drawings | Project in Context



key plan

2. view north between North Parkade and Gage Residence

1. view northwest from Wesbrook & Student Union Boulevard

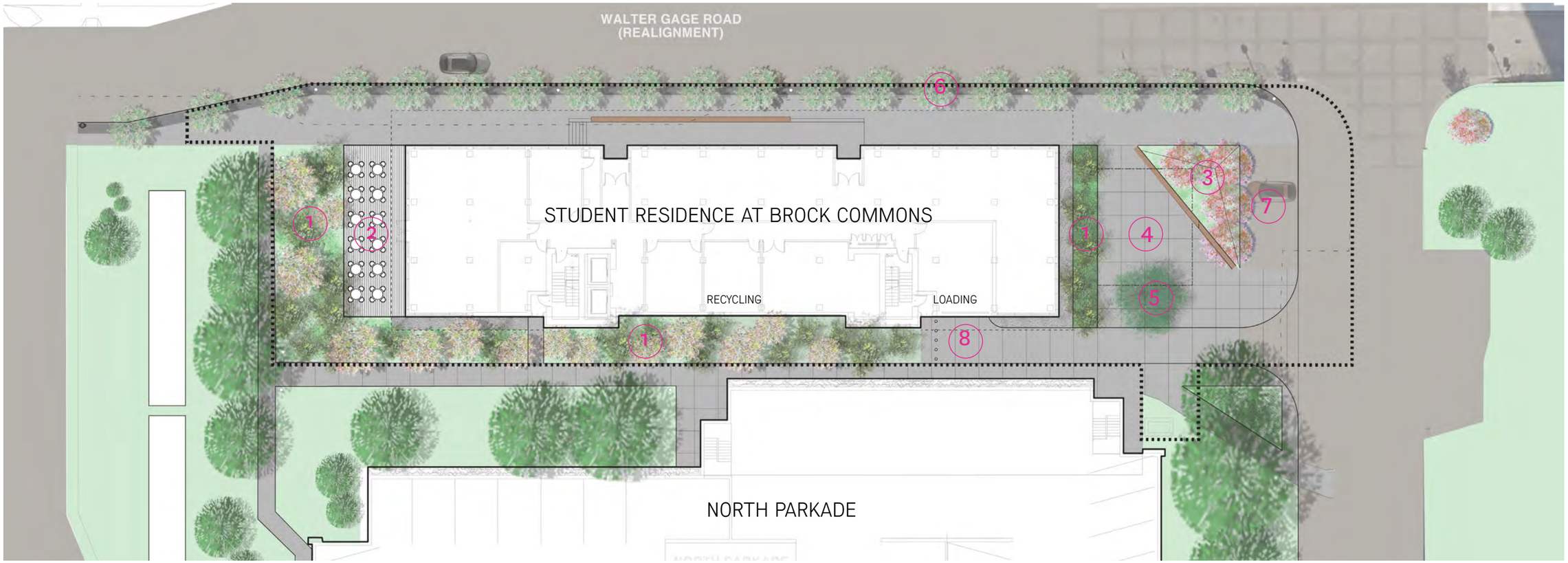
3. view north between Brock Hall and North Parkade

4. view west up Walter Gage Road at Gage Residence

5. view east up Walter Gage Road at East Mall

6. view southeast at St. Andrew's Hall Residence

7. view east up Walter Gage Road at East Mall from future Brock Commons



1 **West Coast Woodland**
Vine maples and Dogwoods with native ferns

2 **Outdoor Terrace**
Raised indoor/outdoor terrace enclosed with guardrails;
Cafe tables and chairs

3 **Cherry Mound**
Cherry trees on mounded lawn with long bench facing plaza

4 **Plaza**
Open CIP concrete paving plaza

5 **Feature Tree**
A single feature Douglas Fir tree

6 **Walter Gage Street Trees**
Raywood Ash trees following the UBC Campus Street Tree Plan v
UBC standard street lights

7 **Temporary Parking**
Four temporary parking stalls

8 **Service Lane**
CIP concrete paving to match plaza and sidewalk;
Removable bollards

TREE LEGEND

Existing Tree
Cherry
Douglas Fir
Raywood Ash
Vine Maple
Dogwood

site and landscape plan

5. Landscape

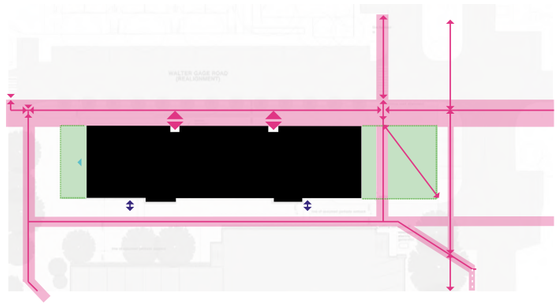
The design of the landscape builds upon the hierarchy of spatial corridors and open spaces that distinguish the *Campus Core District* International Style modernist character that is expressed through a strong interplay of building and landscape.

The 5.3m frontage along Walter Gage Road will be interfaced with a sloping sidewalk and a linear sub-walkway that will run approximately one-third the length of the building to mediate the sloping grade and provide accessibility at two points into the building. The linear sub-walkway will be defined by a concrete upstand and wood bench. A 3m wide CLT canopy will cover the sub-walkway. A line of slender Raywood Ash street trees along Walter Gage Road will further define the public realm and complement the vertical expression of the building.

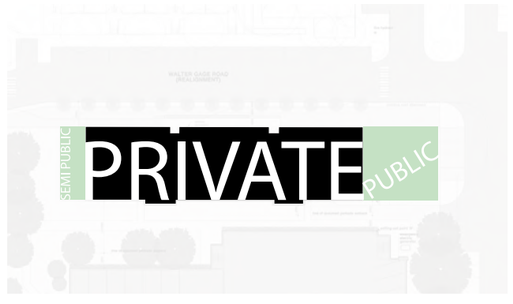
A raised terrace for use by the students residing in the building is located to the west adjacent to the ground level student residence social space. A public open space is located to the east and acts as a hinge for movement of people from the building, the North Parkade and passersby. The public open space is generally hardscaped and includes a triangular-shaped berm defined by an angled bench and planted with a bosque of Cherry trees, a line of Vine Maples alongside the east face of the building, and a single Douglas Fir that connects the site to the landscape of the North Parkade that is surrounded with rows of existing Douglas Firs.

The remainder of the site will be landscaped with a Westcoast woodland combination of Vine Maples, Dogwoods and ferns. The existing pathways through the site will be retained and strengthened.

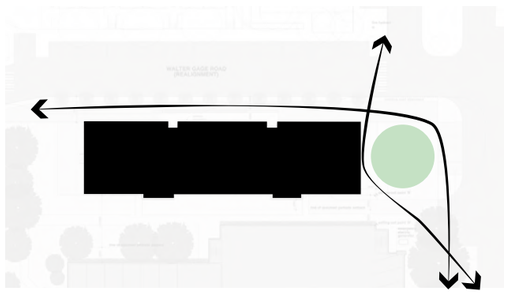
It is anticipated that the disused planter at the North Parkade may potentially be reinstated with planting to provide enhanced visual screening of the parking structure.



1. CIRCULATION/ EXISTING + PROPOSED

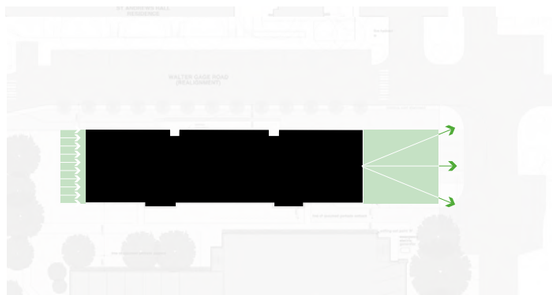


2. GREEN SPACE AS BOOKENDS- PUBLIC/ PRIVATE



3. PLAZA AS HINGE POINT

4. GRADES



5. INWARD VS. OUTWARD LOOKING

5. DAY VS. NIGHT

guiding principles

HAPA

1 CAMPUS POCKET PLAZAS

There are two small plazas (east and west) that act as social book ends for the project. The east end of the site provides an open public plaza integrating future pedestrian circulation as well as encouraging social interaction between residents, other students, faculties and visitors at UBC. The space will be universally accessible and flexible to accommodate different needs, where one can sit solo at the bench and study with a laptop computer or relax in a small group on the lawn under the cherry trees.

The west end of the site provides an outdoor patio surrounded by a grove of trees that extends from the building. This semi-private "outdoor living room" will create opportunities for residents within the building to socialize and create a place of belonging for residents.

2 CONTEMPORARY WEST COAST WOODLAND

A large portion of the landscape planting area is covered by native trees, shrubs and groundcovers inspired by Pacific Spirit Park, evoking the surrounding environment and revealing materials used for the building.
The west and south sides of the site are planted by a West Coast forest edge planting palette such as vine maples and dogwood trees with native and adopted shade loving ground covers.
The east plaza holds a single Douglas fir tree as a symbol of the coniferous West Coast forest while providing contrast to the mounded lawn and cherry trees.

3 HIGH AND LOW TECH ENVIRONMENTAL SUSTAINABILITY

Sustainability will be presented in both high and low technological forms in this project. While the building showcases significant opportunity for sustainable building practices, in contrast the sustainable landscape will be expressed in a low tech approach. This includes native and adopted woodland planting ideal for low water usage (lowered irrigation), storm water reduction, lower maintenance, and habitat contribution. The site furnishings and hardscape materials selection are both sensitive to local and recycled materials where possible.

landscape design rationale

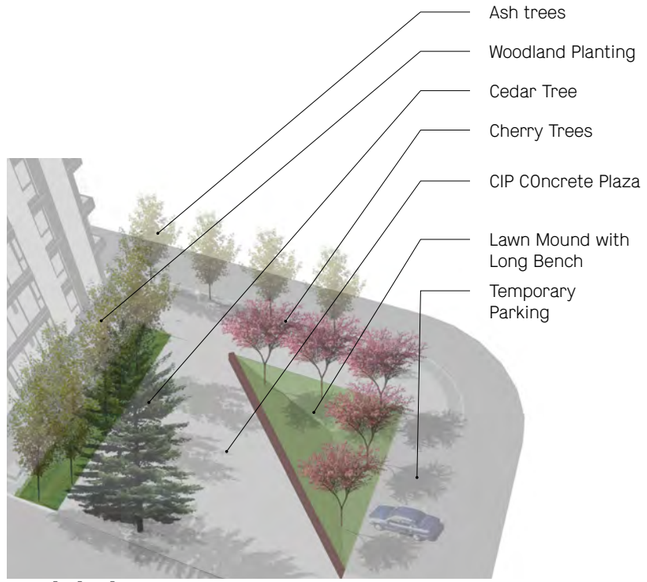
section

plant list

PLANT LIST

SYM	QTY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE	COMMENTS
TREES					
AC	22	ACER CIRCINATUM	VINE MAPLE	2.5-3.0m CLUMP B&B	UNIFORM SIZE AND QUALITY, FIELD GROWN
CN	14	CORNUS NUTTALLII	CORNUS DOGWOOD	5 cm CAL. B&B	UNIFORM SIZE AND QUALITY
FA	19	FLAVINUS ANGUSTIFOLIA 'RAYWOOD'	RAYWOOD ASH	7.0m CAL. B&B	UNIFORM SIZE AND QUALITY
PM	1	PEUDOTSUGA MENZIESII	DOUGLA FIR	2.5m HT. B&B	SPECIMEN QUALITY
P	5	PRUNUS	CHERRY	5.0cm CAL. B&B	UNIFORM SIZE AND QUALITY
SHRUBS AND GROUDCOVERS					
Ac	250	ASARUM CAUDATUM	WILD GINGER	#1 POT, 450mm O.C.	FULL
At	250	ASPLENIUM SCOLOPENDRUM	HART'S TONGUE FERN	#1 POT, 450mm O.C.	FULL
Bs	250	BLECHNUM SPICANT	DEER FERN	#1 POT, 450mm O.C.	FULL
Po	150	POLYSTICHM MUNITUM	SWORD FERN	#2 POT, 450mm O.C	FULL

Trees



aerial view

6. Lighting

The lighting strategy around the perimeter of the building includes sconces at the north face along Walter Gage Road that illuminate both the sidewalk and the underside of the canopy. The concrete upstand and long wood bench delineating the linear sub-walkway that provides access into the building will include steplights to define and illuminate the sidewalk. Light standards will be provided along Walter Gage Road as per UBC requirements.

The public open space to the east of the building will include light fixtures atop poles to illuminate the plaza and the trees. Lighting will be provided alongside pathways located to the south and west of the building.

The extensive use of floor-to-ceiling curtain wall glazing at ground level will also serve to illuminate areas surrounding the building.

7. Crime Prevention Through Environmental Design

Crime Prevention Through Environmental Design (CPTED) strategies include an “eyes on the street” approach through the extensive use of floor-to-ceiling curtain wall glazing at the ground level and the provision of large floor-to-ceiling windows in the student residence units to increase opportunities for natural surveillance of the surrounding site. Vestibules at the two primary building entry points are highly-glazed and illuminated.

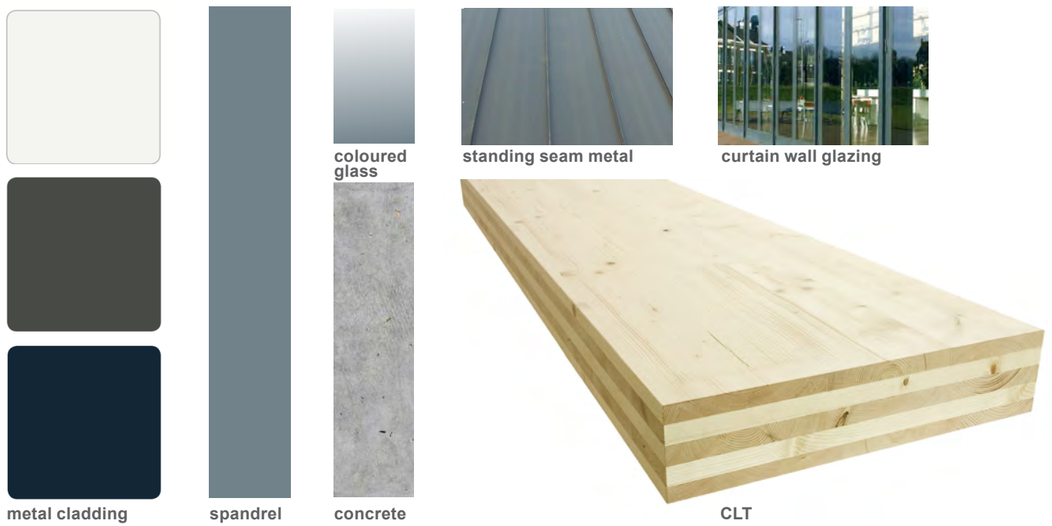
The raised terrace located off of the student residence social space at the west of the site and the public open space at the east of the site further extend opportunities for natural surveillance of the site. Extensive benches and seating areas provide places for socialization and activity around the building.

Pathways are provided around the site and lighting is located to define and illuminate pedestrian routes of travel.

8. Materials

In support of the Campus Core material palette and to strengthen campus legibility and historical character, the Student Residence at Brock Commons builds on the campus’ legacy of International Style buildings with primary materials at the base of the building that include cast-in-place concrete, charcoal-coloured curtain wall with clear glazing and coloured glass spandrel panels, and a linear wood bench along Walter Gage Road below an extensive CLT canopy clad on top with charcoal-coloured standing seam metal cladding. Entry points into the building are marked and punctuated with glass canopies supported on wood beams.

Above the base the building will be clad with a combination of white and charcoal prefinished metal panels. Window frames match the charcoal metal cladding to create a continuous vertical band of striations across a field of white metal cladding. Clear glazing is punctuated with accents of coloured blue glass. Accentuating the vertical expression is a series of raised, blue-black vertical splines that draw the eye up to a metal cornice that crowns the building. The cornice is delineated by a series of charcoal-coloured aluminum structural sections set amongst a field of charcoal-coloured standing seam metal. The cornice is capped with plates of prefinished aluminum that rise and float above the building parapet.



9. Sustainability

The *Design Brief* requires achieving LEED Gold Certification with *LEED v4*, and targeting all mandatory credits on the *UBC LEED Implementation Guide*. While an updated version has yet to be released, achieving the required credits may pose challenges or may be unachievable, given the project typology and limitations of the site.

Energy

The Student Residence at Brock Commons will connect to the UBC Academic District Energy System. Although the *Design Brief* identifies a theorectical maximum energy use intensity (EUI) of 80 kWh/m^2/yr as a target for the project, a conceptual energy analysis based on the project design configuration, combined with actual data from Ponderosa Commons Phase 1 (actual comparable EUI of 120 kWh/m^2), suggests that a potentially achievable EUI may be in the order of 110 kWh/m^2. Further analysis will be conducted as the design moves forward.

Water

Achieving the *Design Brief* minimum indoor water use reduction of 35% may prove challenging as actual data from Ponderosa Commons shows only a 32.9% water use reduction. Even higher-efficiency fixtures must be specified to meet the target. UBC Landscaping requirements have been repeatedly noted for cross-disciplinary uses in stormwater, CPTED and campus connections. Given the tight site boundary, opportunities for incorporating natural elements to the exterior design are limited. The *Design Brief* makes reference to green and vegetated roofs; however, there will be no green walls or vegetated roofs within the project boundary, although there may be an opportunity to install a green wall at the North Parkade.

Materials

Significant changes have been made to the Materials credits for *LEED v4* that go beyond those for regional and recycled content by minimizing environmental impacts through the use of products that have low embodied energies and do not contain ingredients on the *Living Building Challenge Red List*.

Life Cycle Analysis

A Life Cycle Analysis will identify potential reduced life cycle assessment impacts and life cycle costs for the building's structural materials with the following categories being analyzed: global warming potential, ozone depletion potential, acidification of land and water sources, eutrophication, smog potential and fossil fuel use.

Student Residence at Brock Commons
LEED v4 Preliminary Scorecard
6088 Walter Gage Road, UBC

Stantec

19-Mar-2015

Y	?	N	Credit	Comments
63	20	39	126 Possible Points	Certified, 40-49; Silver, 50-59; Gold, 60-79; Platinum, 80+
1	0	0	**Integrative Process (IP)**	
1			Integrative Process	Development process to meet requirements for integrative project planning.
11	1	17	**Location and Transportation (LT)**	
		16	LEED for ND Location	Project is not located within a LEED ND certified boundary.
1			Sensitive Land Protection	Project is located on a previously developed site.
		1	High Priority Site	Project is not located on a historic, priority or contaminated site.
3			Surrounding Density and Diverse Uses	Project meets diverse uses. Residence itself meets density requirements.
5			Access to Quality Transit	Project in close proximity to UBC bus loop
1			Bicycle Facilities	UBC bicycle storage requirements are adequate, and surrounding bicycle network meets credit requirements.
1			Reduced Parking Footprint	No new parking to be installed. Transit service adequate for credit requirements.
	1		Green Vehicles	Pending coordination with UBC Sustainability.
3	4	2	**Sustainable Sites (SS)**	
Y			Construction Activity Pollution Prevention	Standard ESC practices expected to meet Credit requirements.
Y			Environmental Site Assessment	Site assessment to be conducted.
	1		Site Assessment	To be determined with existing research and literature available at UBC.
		1	Site Development—Protect or Restore Habitat	Site conditions do not meet credit requirements
		1	Open Space	Site conditions do not meet credit requirements
	3		Rainwater Management	Pending outcome of UBC's Integrated Stormwater Management Plan
2			Heat Island Reduction	Roof and non-roof materials specified must be reflective.
1			Light Pollution Reduction	Lighting design expected to meet credit calculations. BUG ratings to be examined by electrical engineer and interiors.
5	0	6	**Water Efficiency (WE)**	
Y			Indoor Water Use Reduction	Prerequisite achievement expected.
Y			Outdoor Water Use Reduction	Reduced irrigation option to be applied.
Y			Building-Level Water Metering	Prerequisite achievement expected.
2			Outdoor Water Use Reduction	Minimal irrigation to be installed on site.
2		4	Indoor Water Use Reduction	30% feasible, based on Ponderosa design.
		2	Cooling Tower Water Use	No cooling provided in the building. Credit not applicable.
1			Water Metering	Install permanent water meters for 2 water supplies (irrigation, indoor plumbing and fixtures, domestic hot water, boiler, reclaimed water or other process water)

Student Residence at Brock Commons
LEED v4 Preliminary Scorecard
6088 Walter Gage Road, UBC

Stantec

19-Mar-2015

20	4	9	Energy and Atmosphere (EA)	
Y			Fundamental Commissioning and Verification	Commissioning agent to be engaged earlier, before design development phase is complete.
Y			Minimum Energy Performance	5% improvement for new construction required, based on ASHRAE 90.1-2010.
Y			Building-Level Energy Metering	Building level metering is a UBC requirement.
Y			Fundamental Refrigerant Management	Refrigerants expected to meet credit requirements.
11	3	4	Optimize Energy Performance	ASHRAE 90.1-2010 is a more stringent standard compared to its 2007 predecessor. In general, this may result in less energy savings as the baseline has become more stringent. The buildings' timber frame is expected to have a greater thermal performance compared to conventional designs due to less thermal bridging.
1	1	1	Renewable Energy Production	At least 1 point expected from the BRDF contribution to the campus' energy supply.
6			Enhanced Commissioning	Commissioning scope to include monitoring-based, and building envelope commissioning options. Additional fees to be expected.
1			Advanced Energy Metering	Consistent with UBC technical guidelines for energy metering
		2	Demand Response	High effort credit, which will reduce peak energy demand and limited reductions on overall consumption.
1			Enhanced Refrigerant Management	Refrigerants expected to meet credit requirements. Preliminary calculations to be completed during design development.
		2	Green Power and Carbon Offsets	Green Power not encouraged at UBC.
5	3	5	**Materials and Resources (MR)**	
Y			Storage and Collection of Recyclables	Additional recycling room space will be required to include batteries, mercury-containing lamps, e-waste.
Y			Construction and Demolition Waste Management Planning	Creation of Construction Waste Management Plan is standard practice for contractors.
		5	Building Life-Cycle Impact Reduction	Not applicable to the project.
	2		Building Product Disclosure and Optimization - Environmental Product Declarations	Depending on the products available to the BC market, products that contribute to the achievement of this credit will be considered. Stantec will work closely with the contractor to monitor and recommend products that meet the criteria.
2			Building Product Disclosure and Optimization - Sourcing of Raw Materials	Stantec to work closely with contractor to ensure that thresholds are met.
1	1		Building Product Disclosure and Optimization - Material Ingredients	Stantec to work closely with contractor to ensure that products meet the declaration programs specified.
2			Construction and Demolition Waste Management	A high percentage of construction waste diversion expected.

Student Residence at Brock Commons
LEED v4 Preliminary Scorecard
6088 Walter Gage Road, UBC

Stantec

19-Mar-2015

8	8	0	Indoor Environmental Quality (EQ)	
Y			Minimum Indoor Air Quality Performance	Prerequisite requirements expected to be met. Active ventilation for each of the occupied spaces in the suite to be provided.
Y			Environmental Tobacco Smoke (ETS) Control	Smoking prohibited by student housing.
1	1		Enhanced Indoor Air Quality Strategies	EQ credits from 2009 combined to this credit. Increased ventilation, CO2 monitoring, exterior contamination prevention and additional source control montoring required for an additional point.
1			Construction Indoor Air Quality Management Plan	Contractor IAQ management protocol expected.
	2		Indoor Air Quality Assessment	Flushing and air testing are difficult and/or expensive to execute in a multi-unit residential building.
3			Low Emitting Materials	Products specified will be below VOC limits.
2			Interior Lighting	Adequate lighting controls expected.
1			Thermal Comfort	Mechanical system expected to comply with ASHRAE 55-2010
	3		Daylight	Daylight modeling to confirm credit compliance. Daylight measurement for an additional point.
	1		Quality Views	Further analysis required, given that the building will be adjacent to a parkade.
	1		Acoustic Performance	Further analysis of building materials required.
6	0	0	**Innovation (IN)**	
5			Innovation	Possible innovation strategies include: Community engagement, Red list items, Structural innovation, Whole-Building Life Cycle Analysis
1			LEED Accredited Professional	LEED APs in the project team.
4	0	0	**Regional Priority (RP)**	
1			Regional Priority	
1				
1				
1				

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