

600 Kingsway

Amendment to Rezoning Application

September 3rd, 2025

Perkins&Will

BONNIS
PROPERTIES



A city-building and finely proportioned landmark structure that supports urgent housing needs while contributing significantly to economic, environmental, and social aspirations of the Broadway Plan.

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Aerial view looking over the walkway above the lane and a childcare pavilion with outdoor terrace on the second level.

Section 1.0

Executive Summary

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1.1 Introduction

1.1.1 Purpose of this report

This report is prepared for Bonnis Properties to assist in Application for Rezoning for 600 Kingsway.

1.1.2 Structure of this report

This report summarizes the work completed in the schematic design phase of 600 Kingsway. The report is broken down to eight sections:

01 Executive Summary: An executive summary of the project describing the rezoning zoning rationale and project concept design intent.

02 Context and analysis: A site analysis illustrating the urban context surrounding the building with key urban existing and future context elements that impact the project highlighted.

03 Applicable Policy and Rezoning Rationale: Regulatory and planning policy depicting implications of city zoning and by-laws on the project.

04 Sustainability: An environmental analysis looking at preliminary targets and strategies under the Green Buildings Policy for Rezonings.

05 Design Proposal: This section provides design and planning rationales on the proposed scheme. It also includes some preliminary design options explored during the schematic stage.

06 Architectural Drawings: In addition to basic information about the project including program and development statistics summary, this section documents the proposed schematic design scheme in appropriate detail for the Application for Rezoning.

07 Landscape Drawings: This section provides the documentation of public realm, as well as outlines its design rationale.

08 Appendices: This section includes a set of reports as per Rezoning Application checklist.

1.1.3 Project Team

Client	Bonnis Properties
Architect	Perkins&Will
Structural	Glotman Simpson
Mechanical	CIMA+
Electrical	CIMA+
Landscape	CIMA+
Geotechnical	GeoPacific
Energy Modeling	CIMA+
Sustainability	Perkins&Will
Surveyor	LNLS-Metro Vancouver Land Surveyors
Code	Jensen Hughes
Building Envelope	Morrison Hershfield Limited
Arborist	Froggers Creek Tree Consultants Ltd.
Traffic	Bunt & Associates Engineering Ltd.

1.1.4 Reference Documents

Broadway Plan - September 2022, last amended September 2024

Vancouver Plan 2050 - July 2022

Zoning and Development By-law, C-2C District Schedule, October 2023

C-2B, C-2C, and C-2C1 Guidelines, last amended July 2020

High-Density Housing for Families with Children Guidelines, 1992

Green Buildings Policy for Rezonings, last amended May 2022

Community Amenity Contributions Policy for Rezonings, last amended October 2023

Response Letter to the Enquiry Stage Submission by Planning Staff, July 2024

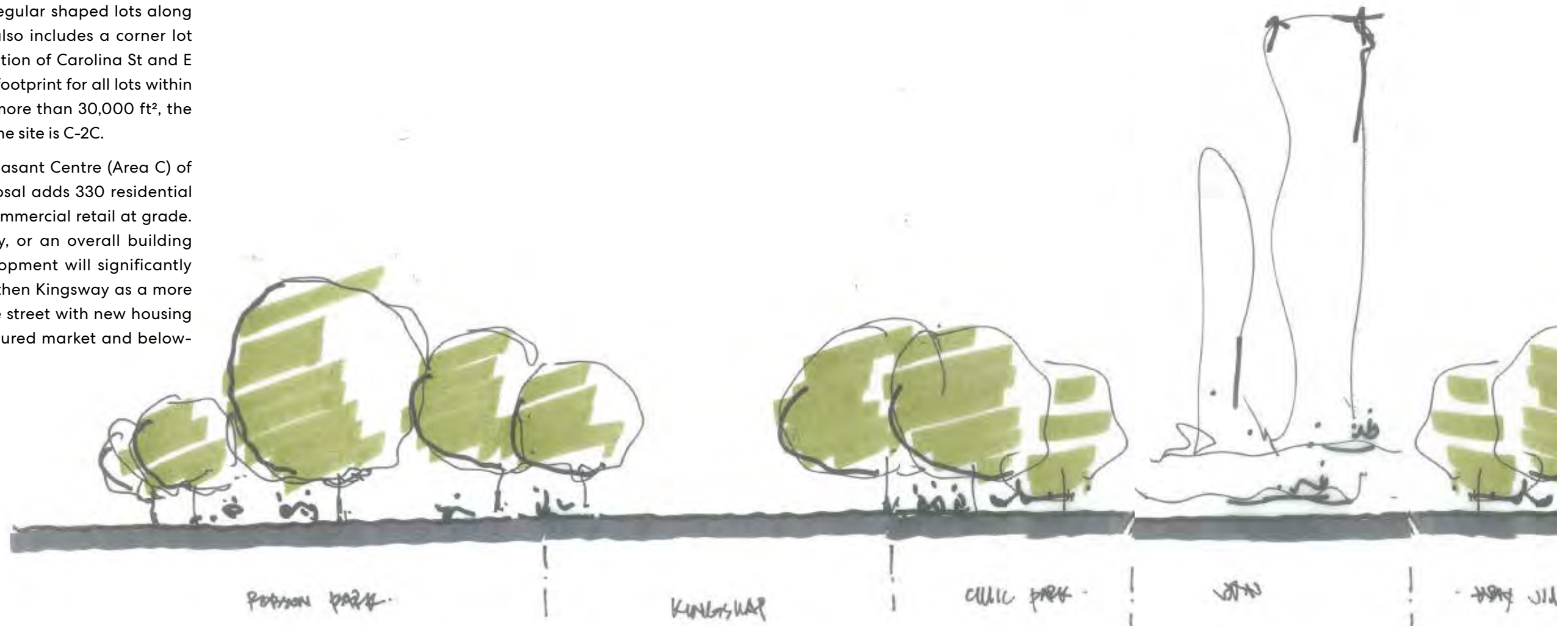
1.2 Development Summary and Project Intent

This *Application for Rezoning* submission concerns the rezoning of existing buildings at 602-646 Kingsway and 603 E 16th Ave in Vancouver, British Columbia, from C-2C to CD-1 while asking for a density increase up to 8.5 FSR which is permitted under the Mount Pleasant Centre policy area of Broadway Plan. The proposal represents an opportunity to provide a much-needed mixed-use rental residential development that will directly contribute to the rental housing stock and will embody the policy of Broadway Plan.

Located in the Mount Pleasant neighbourhood and being close to one of the city's oldest intersections of Kingsway and Fraser St, the property is relatively flat with an assembly of seven irregular shaped lots along Kingsway. The site property also includes a corner lot across the lane at the intersection of Carolina St and E 16th Ave. While the combined footprint for all lots within the development property is more than 30,000 ft², the existing governing zoning for the site is C-2C.

Situated within the Mount Pleasant Centre (Area C) of the Broadway Plan, our proposal adds 330 residential units and over 15,000 ft² of commercial retail at grade. Rising to a height of 25-story, or an overall building height of 273 feet, this development will significantly contribute to and help strengthen Kingsway as a more pedestrian-friendly mixed-use street with new housing opportunities, particularly secured market and below-market rental.

The concept sketch illustrates an activation and continuation of the street level retail and vibrant public realm along Kingsway, while new housing opportunities are introduced vertically in a discrete and unique form that speaks to irregular nature of the site footprint and surrounding streetscape.





An aerial photograph of the site facing North-West looking towards the North Shore Mountains and Downtown Vancouver.

Section 2.0

Context and Analysis

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2.1 Regional and Historical Context

The project site is situated in Vancouver's Mount Pleasant neighborhood and sits near the intersection of Fraser St and Kingsway which borders the adjacent Kensington Cedar Cottage and Riley Park neighborhoods. Categorized in the Broadway Plan as Mount Pleasant Centre (MCEC), the surrounding area comprises of shops, retail, and businesses along Kingsway with single detached homes and low-rise apartment buildings nearby. Mount Pleasant is known for its heritage buildings, artistic flair, and unusual stores which gives a distinct vibrancy to the area.

Based on the City of Vancouver Housing Needs Report in April 2022, since the 1970s the overwhelming majority of completions in Vancouver and the region have been condominium and freehold ownership housing rather than purpose-built rental. Over 80% of Vancouver's purpose-built rental housing was built prior to 1980. See image 1 on next page.

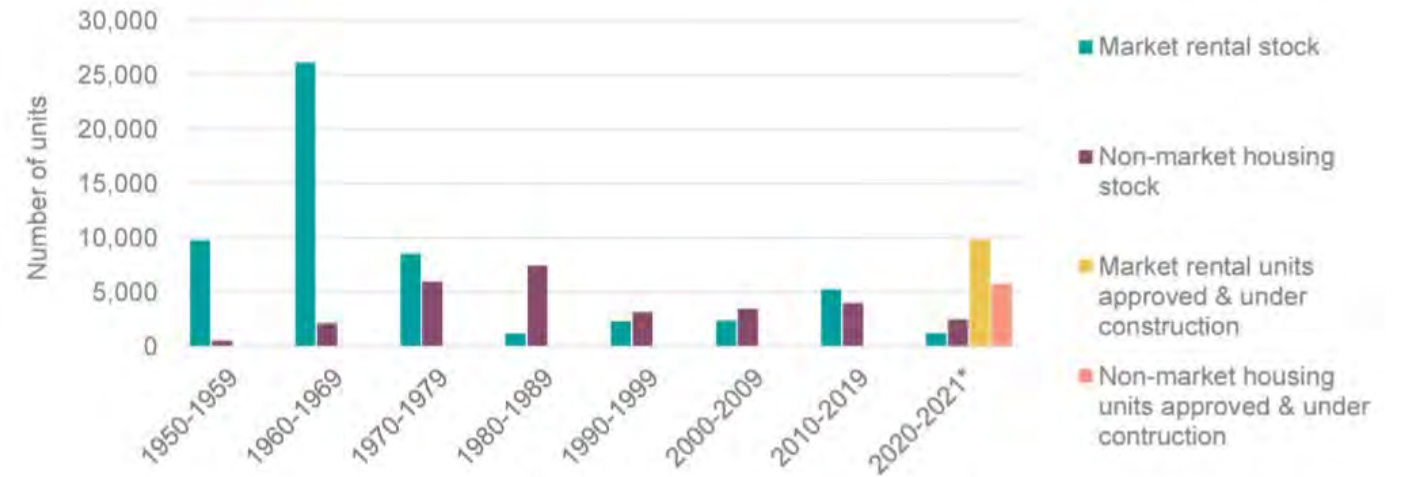
The report also states that most new Vancouverites are renting their homes with ownership costs out of reach for many residents. Over half of all households in Vancouver rented their homes as of the last census in 2016. This represented 150,750 households, most living in market rental housing. Low vacancy rates in both primary and secondary markets are signs of the strong demand for market rental housing and pressure on the existing stock. Data on the relationship between rents and vacancy rates (image 2 on next page) indicate that higher rental vacancy is associated with slower rent increases. Seventy-four percent of the purpose-built rental market stock was built before 1980 and is now reaching the end of its natural life or in need of major repairs; almost no new rental was added from 1980 to the late 2010s in Vancouver.



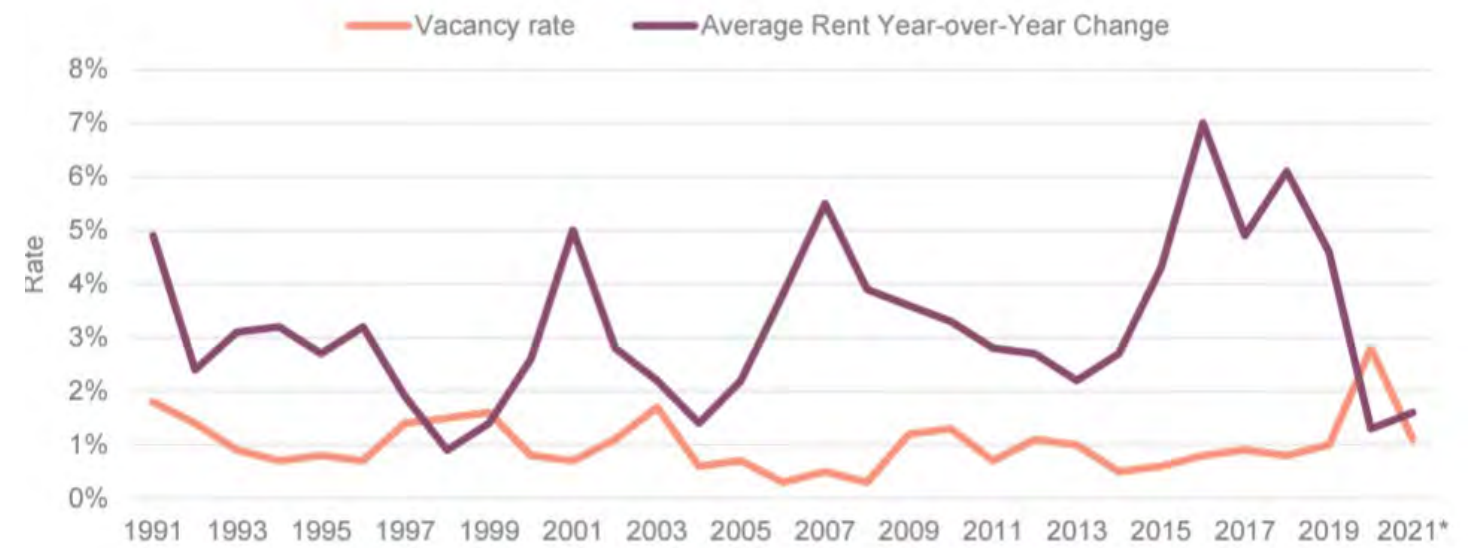
— 5 Minute Walk Radius



Regional and Historical Context



1. Rental housing stock by period, Vancouver. City of Vancouver Housing Needs Report, April 2022.

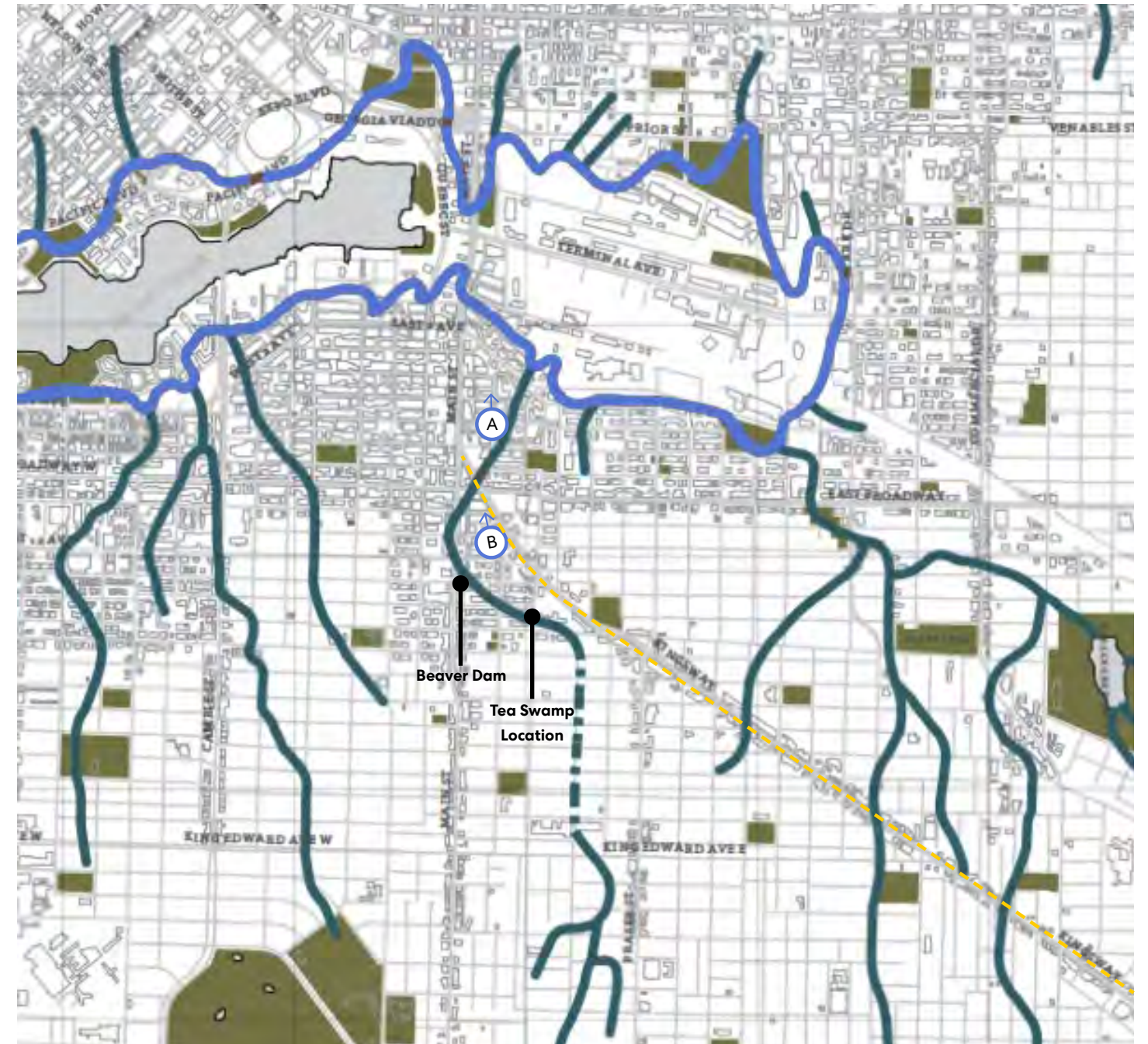


2. Annual average rent increase compared to vacant rate, Vancouver. City of Vancouver Housing Needs Report, April 2022.

Regional and Historical Context

The patch of land that became known as Mount Pleasant was originally shrouded in dense and dark rainforest. The creek that drained this forest into the salty waters of False Creek sat at the bottom of a large ravine that was open to the sky. It offered an abundance of flowers, berries, and other plants used by First Nations for medicine and food. The (now lost) waterway began near where Mountain View Cemetery is located today. Water flowed downhill just west of modern-day Fraser Street to a marshy, dammed area near 14th Avenue (Tea Swamp Park). From here, the creek flowed down the Mount Pleasant hillside, following a northeastern path alongside a First Nations trail (near where Kingsway cuts across Main Street), and continuing into the eastern waters of False Creek (which have since been filled in) near Terminal Avenue.

The intersection of Kingsway and Fraser has been one of the most important junction points in the history of the city. This area was known as “Junction” or “Pioneer Junction” after the aptly named Junction Inn – a stagecoach roadhouse. In 1858 the gold rush led to a substantial influx of non-native people occupying the lower Fraser River. From 1888-1912 a number of breweries were established in Mt Pleasant which took advantage of the water source from Brewery Creek. The Doering and Marstrand Brewery building on E 6th Ave is an example of Mt Pleasant’s brewery heritage which still stands today.



Vancouver's lost streams

Regional and Historical Context

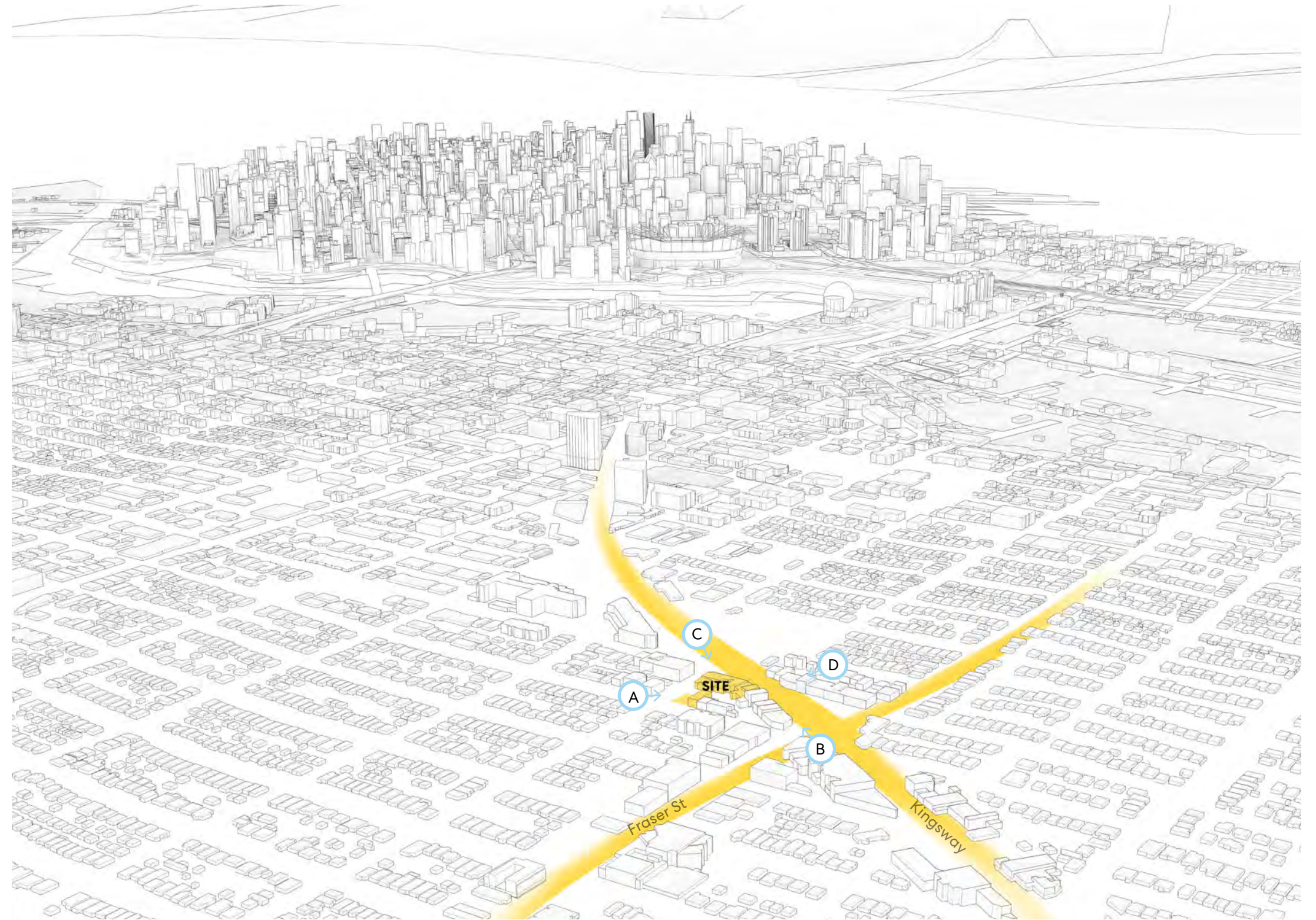
Historically, Mount Pleasant was home to a diverse ecology of plants, birds and animals, including beaver and elk which was a rich source of nutrients for First Nations peoples. Present day Kingsway which cuts through the neighborhood diagonally does not follow the street grid as it was once an ancient First Nations and animal trail. Between what is now Main and Fraser Street was a large opening in the forest where beaver dams backed up the now buried Brewery Creek, forming what was known as tea swamp.



Clockwise from Top Left:

1. Scotia and 6th Avenue (A)
2. Kingsway between 7th and 10th Avenue facing Northwest - 1890 (B)
3. Employees of Doering and Marstrand Brewery in Mount Pleasant enjoying their product in the brewery yard, ca.1890. The caption "Wohlsein" is a toast to good health.
4. Kingsway Near Fraser Looking South-East (1910)
5. The Vancouver Brewery on 7th Avenue just east of Main Street - 1910

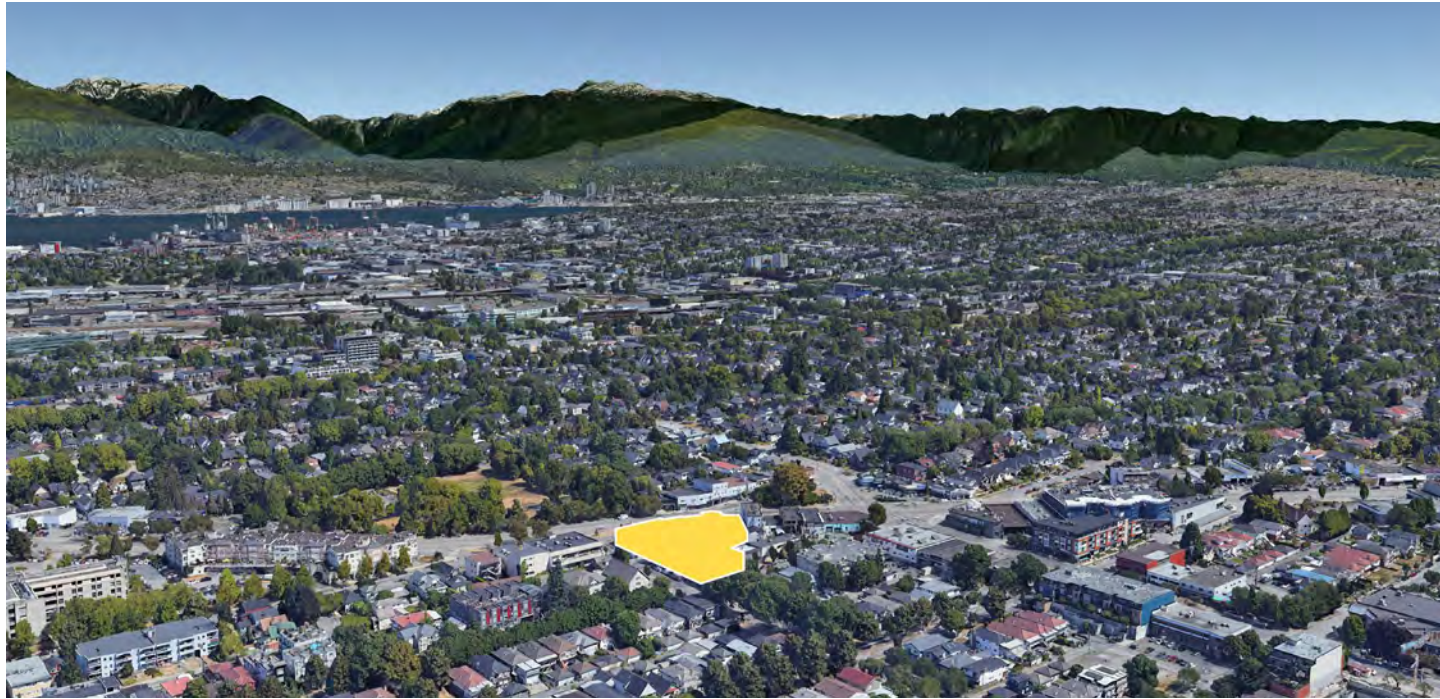
2.2 Existing Conditions



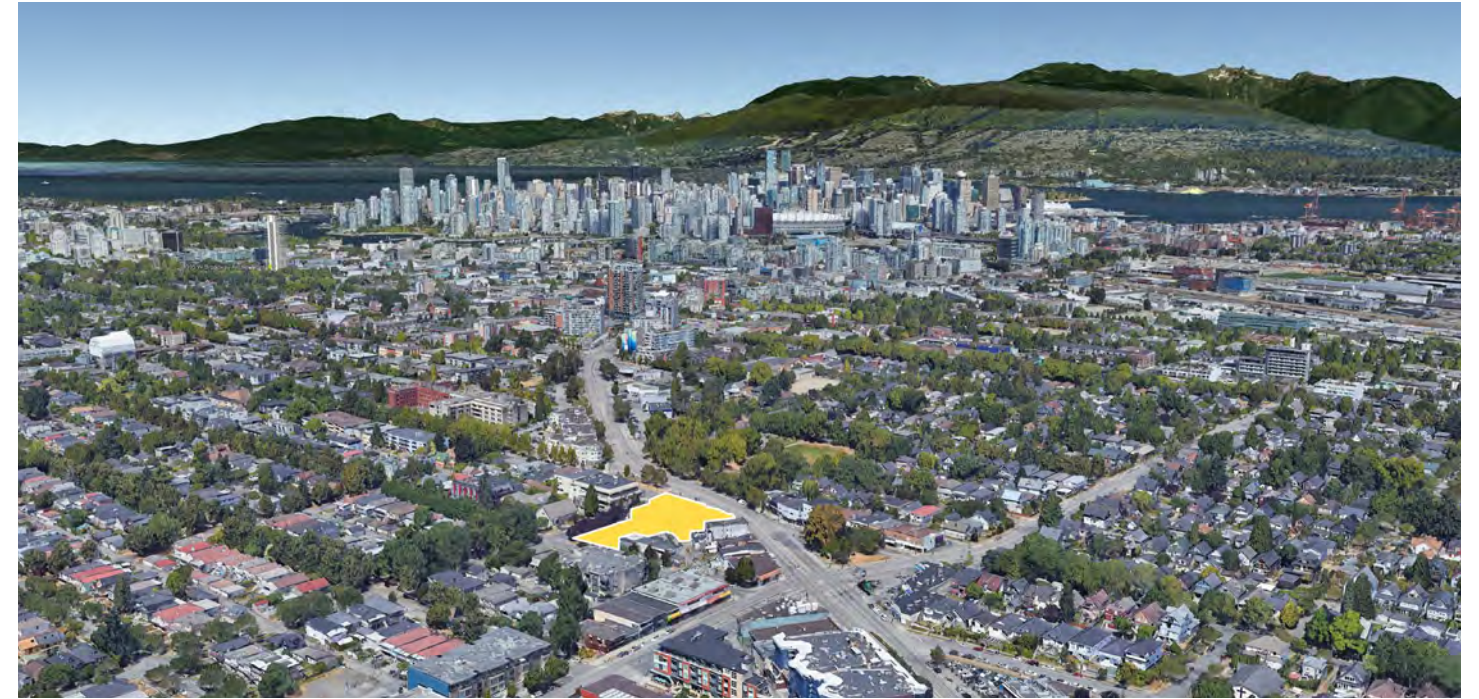
Located in the Mount Pleasant neighbourhood and Broadway Plan area, the site is near the intersection of Kingsway and Fraser St.



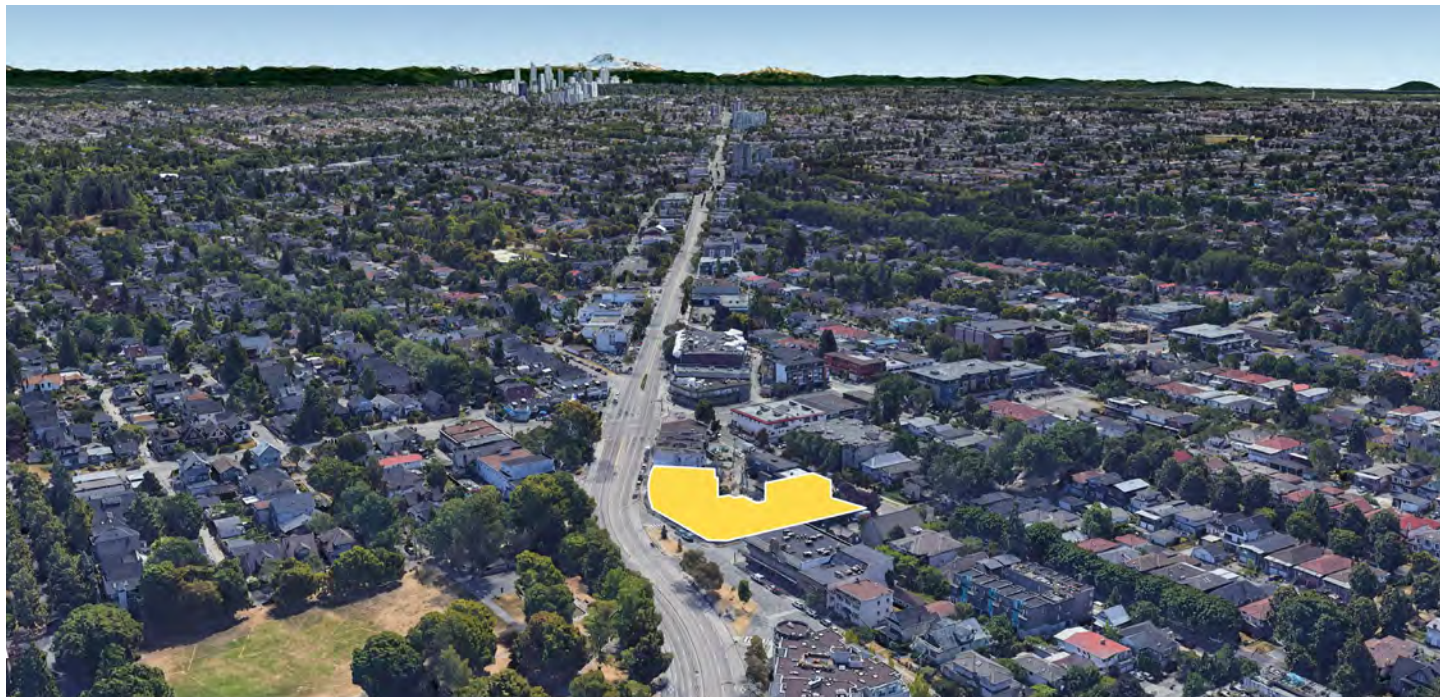
Existing Conditions



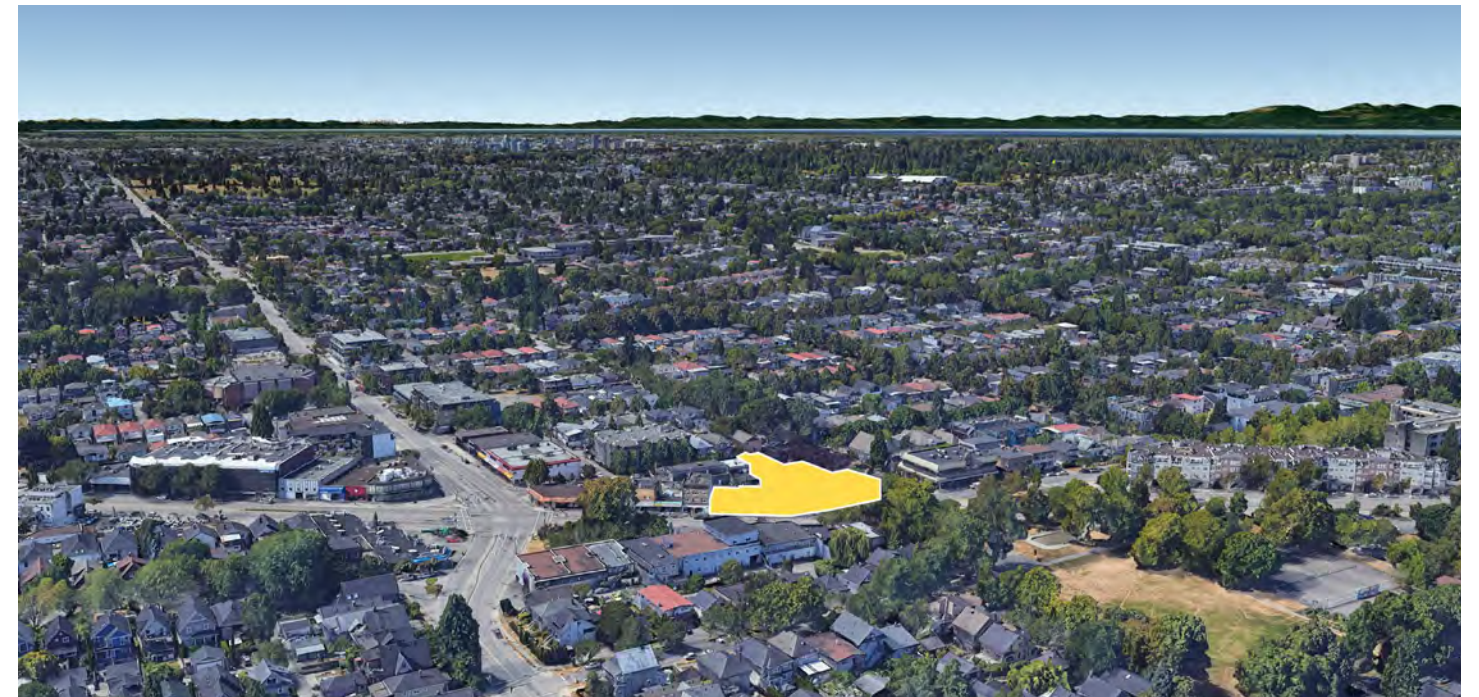
A. Kingsway, looking North-East



B. Kingsway, looking North-West



C. Kingsway, looking South-West



D. Kingsway, looking South-West

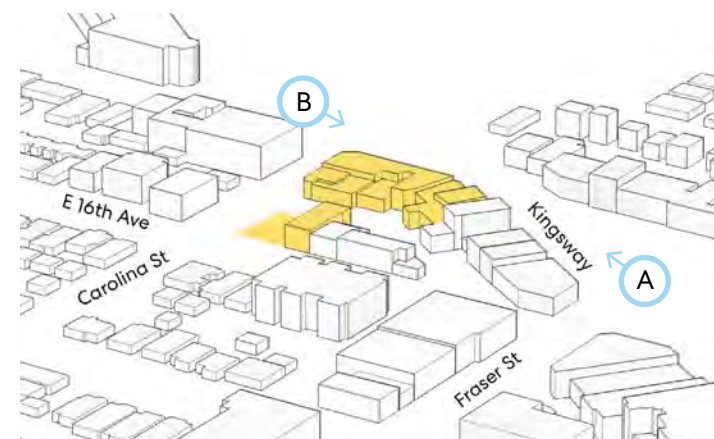
Existing Conditions

The buildings on this site were constructed between 1912 and 1937 but are not on the Vancouver Heritage Register. In the previous rezoning application for this site, Staff determined that retention would not be required if the site was developed with secured rental housing, given the costs to retain the buildings would render the rental proposal unviable. The remainder of the block also contains buildings constructed around 1900, however, none of those are listed on the Vancouver Heritage Register.

The streetscape along this site is uninspiring as such, it does not encourage movement of people and bike due to narrow sidewalk, lack of retail uses, and heavy traffic along Kingsway.



A. Kingsway, looking North-West



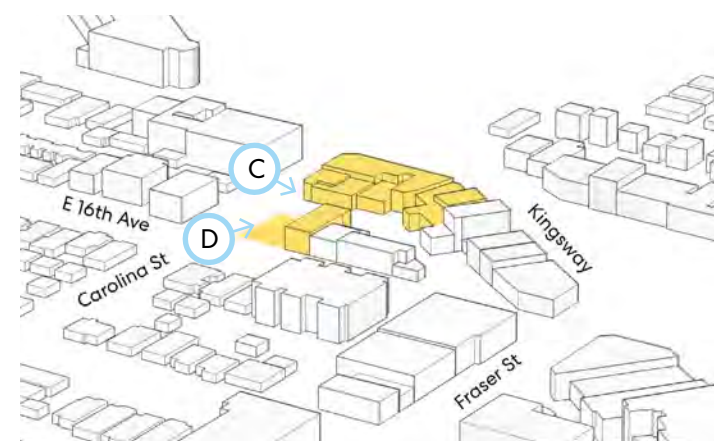
B. Kingsway, looking South-East

Existing Conditions

The parking lot across the lane is also part of the property as such, it will be developed as part of a comprehensive development while retaining trees that have values.



C. Alleyway, looking East



D. Carolina Street and E 16th Ave, looking North-East

2.3 Street Elevations



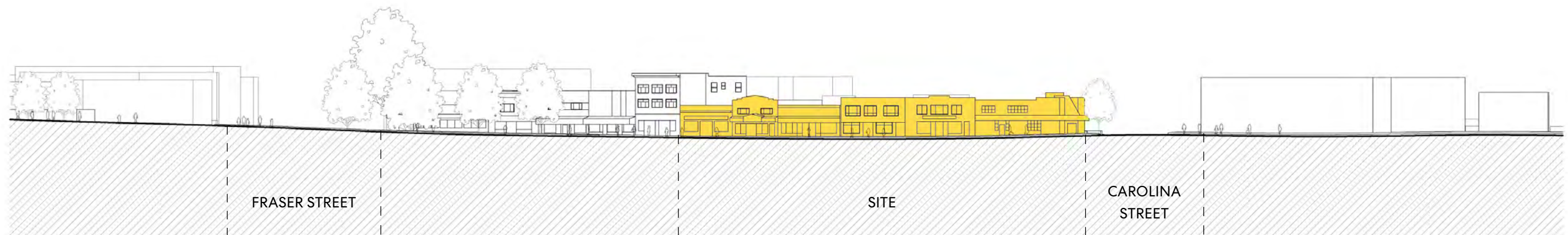
The site is located in the Mount Pleasant neighbourhood with Kingsway to the south, Carolina St to the west, Fraser Street to the east, and E 16th Ave to the south.



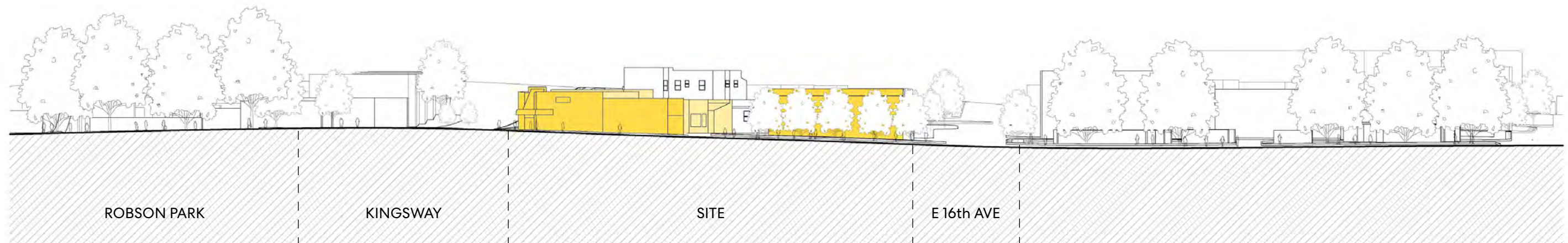
Street Elevations

1. KINGSWAY LOOKING SOUTH

While the property along Kingsway is relatively flat, the building grade slopes down from Kingsway to E 16th Ave along Carolina St.

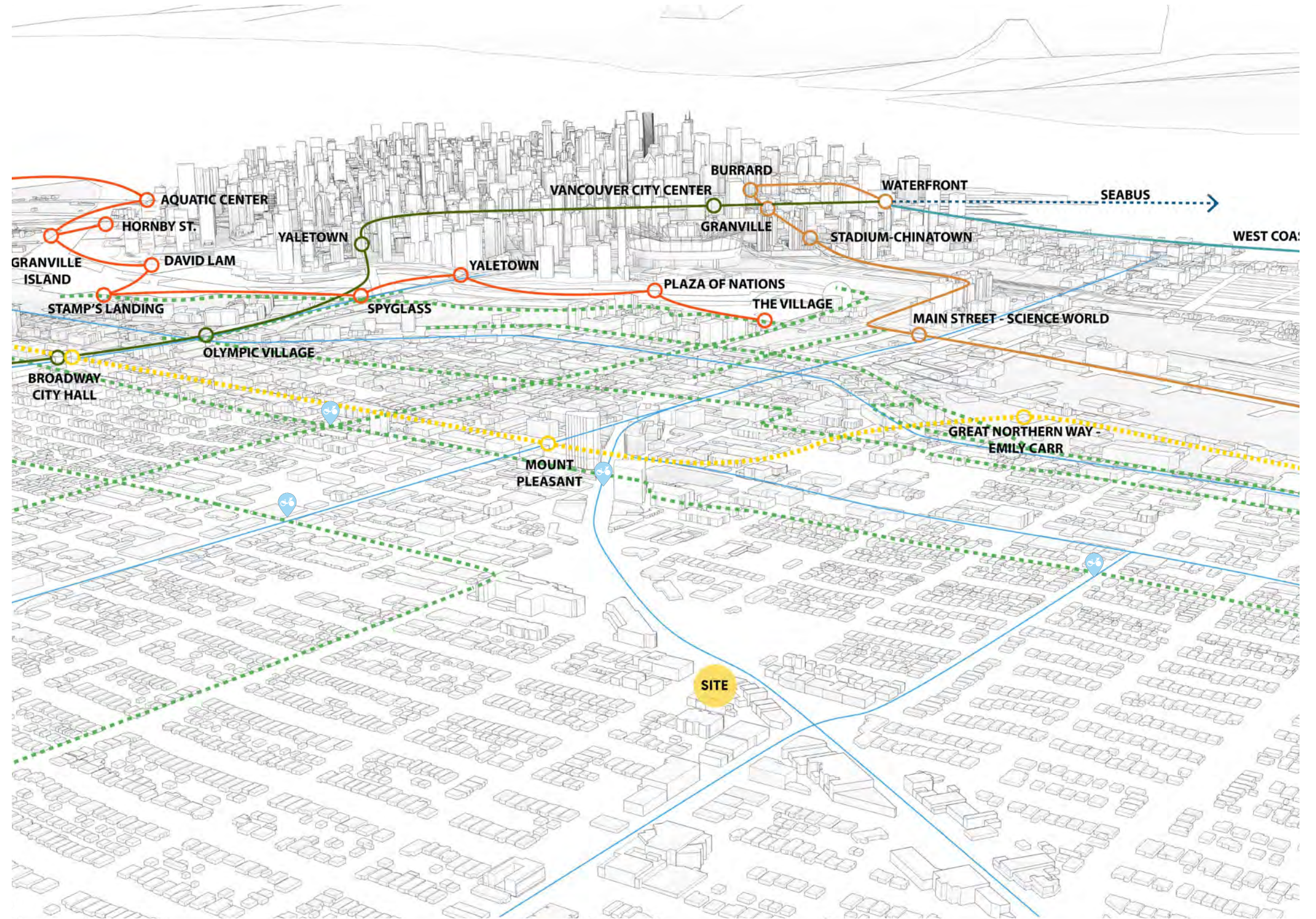


2. CAROLINA STREET LOOKING EAST



2.4 Transportation

- Future Broadway Line
- Future Broadway Station
- Canada Line
- Canada Line Station
- Expo Line
- Expo Line Station
- Seabus
- Bike Lane
- West Coast Express
- Passenger Ferry
- Passenger Ferry Station
- Bus Route
- + Mobi Bike Station



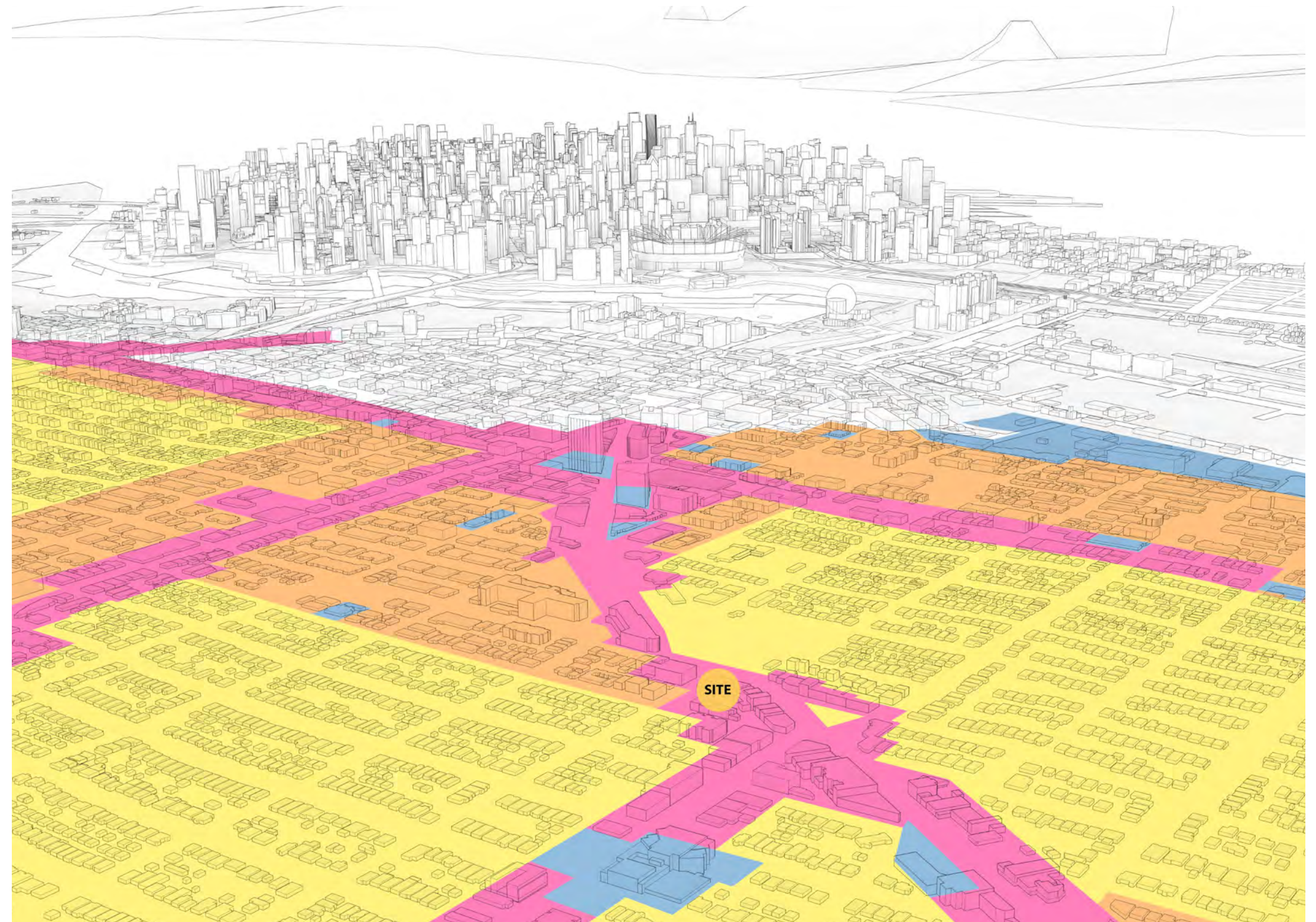
Located on Kingsway, the site benefits from access to current and future transportation infrastructure.

The proximity of designated bike lanes on East 10th Avenue as well as frequent buses along Kingsway and Fraser Street results in easy travel to downtown Vancouver and beyond.



2.5 Zoning District

- Residential - Single Detached / Duplex District
- Comprehensive Development
- Commercial
- Residential - Multiple Dwelling District



While located in the C-2C zoning district, the site is characterized as Mount Pleasant Centre in the Broadway Plan. One plan direction for the centre is the strengthening of Kingsway as a more pedestrian- and bike-friendly mixed-use street with new housing opportunities, particularly secured market and below market rental.



2.6 Broadway Plan



Located in the Mount Pleasant Centre of Broadway Plan, the site development is expected to help strengthen Kingsway as a more pedestrian and bike-friendly mixed-use street with new housing opportunities.



2.7 Green Space

■ Green Space

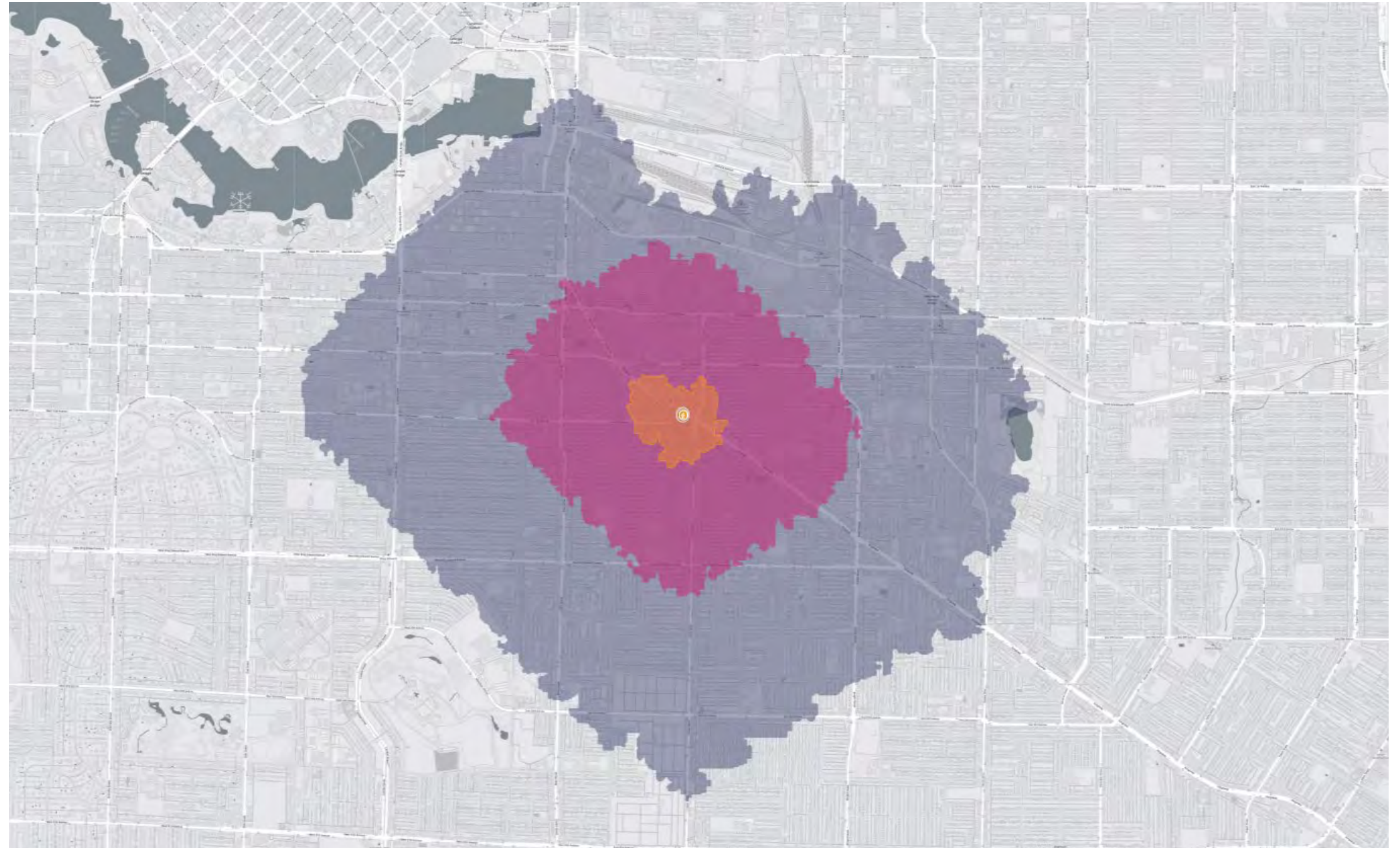


While the Mount Pleasant Centre generally lacks of green spaces, the site is within walking distance to Robson Park located across Kingsway to the north of the site, and the smaller McAuley Park across Kingsway to the east.



2.8 Walk Shed

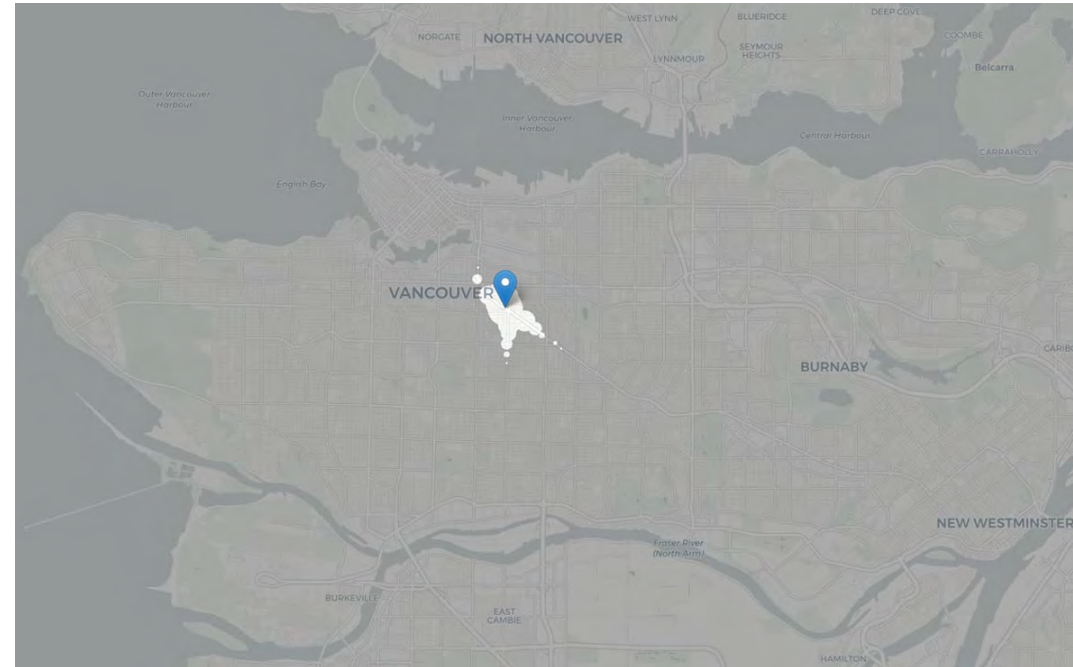
- 5 Minutes Walk
- 15 Minutes Walk
- 30 Minutes Walk



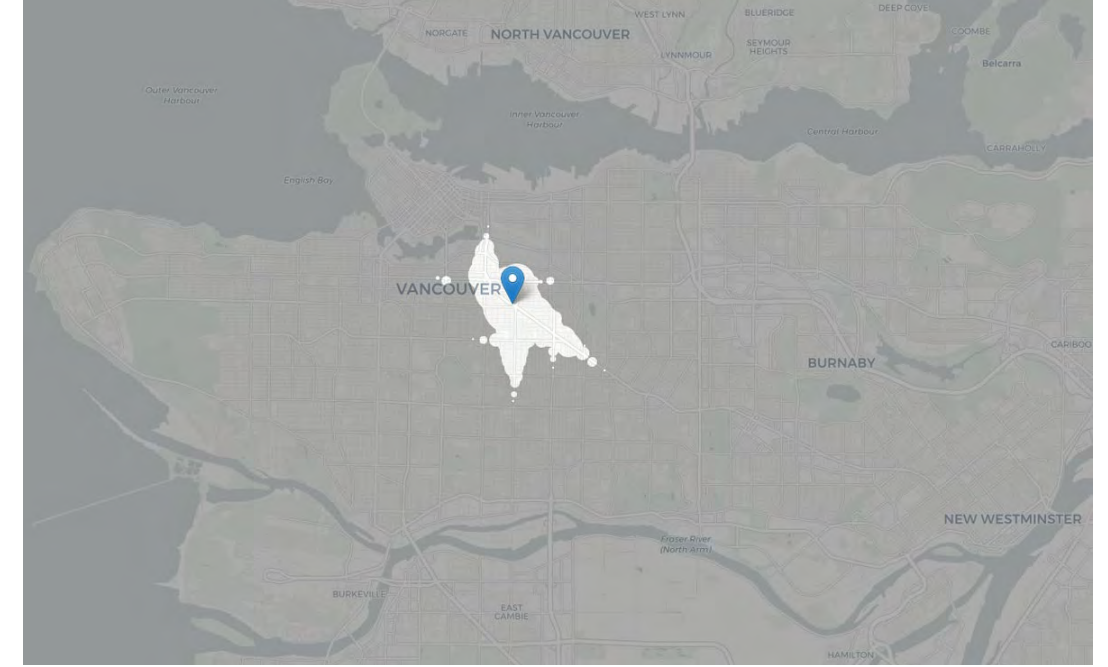
The site has a walk score of 92 out of 100, and a bike score of 85. Daily errands do not require a car as a variety of goods, services, and amenities are located close by. Multiple transit options are easily accessible if needed.



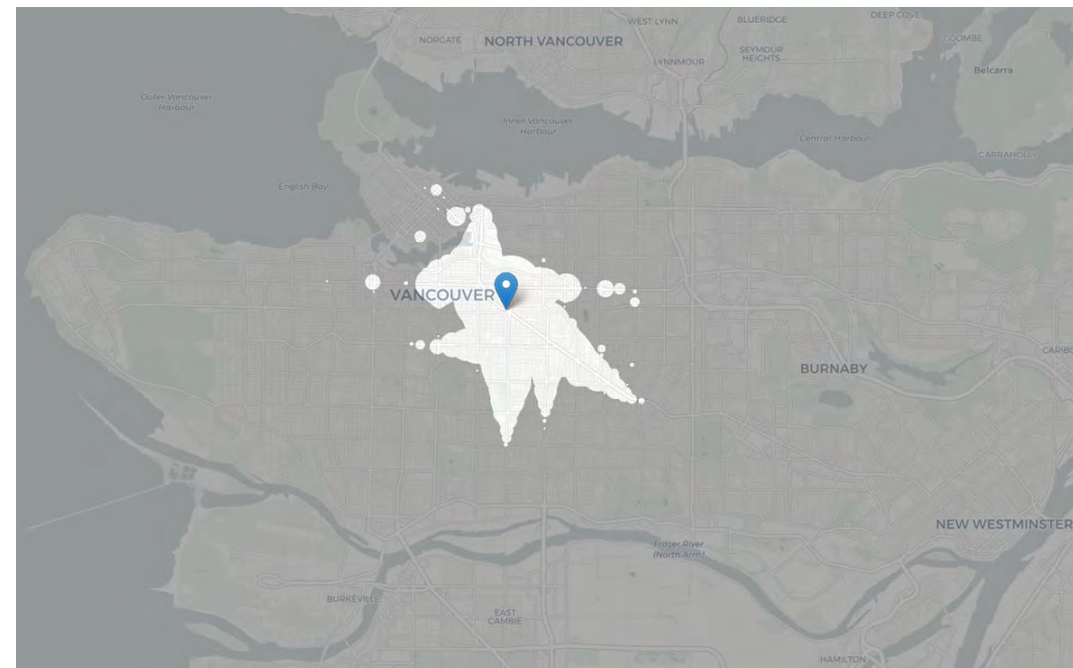
2.9 Transit Shed



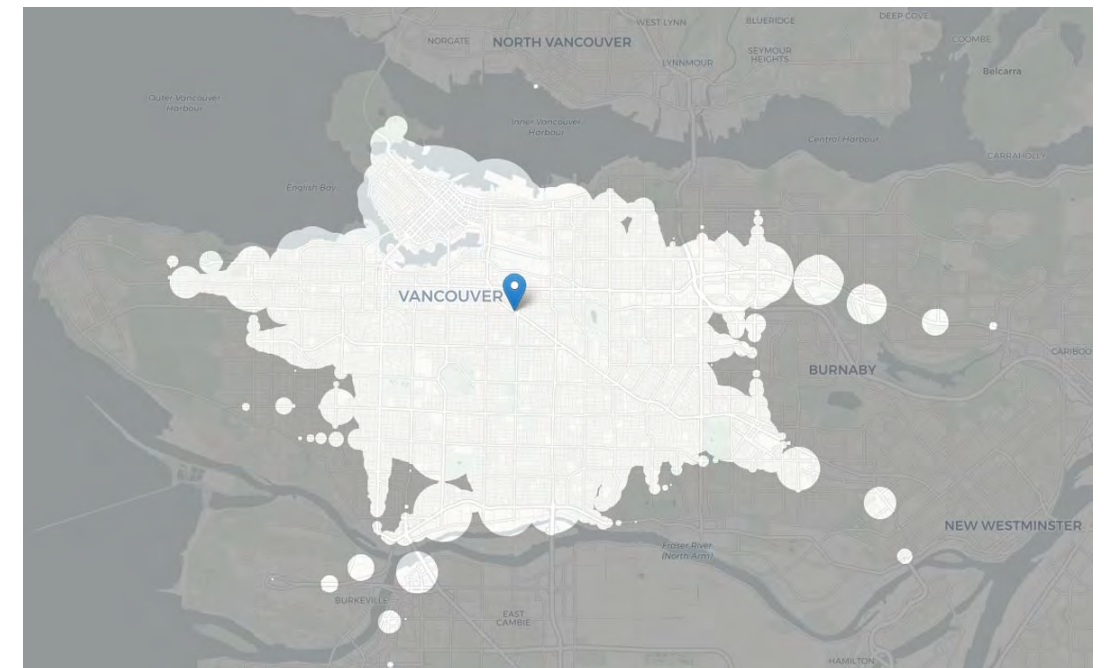
5 Minute Transit Shed



10 Minute Transit Shed



15 Minute Transit Shed



30 Minute Transit Shed

The site has a transit score of 66 out of 100 due to the availability of many nearby public transportation options. Immediate access to major transit routes provides convenient connections to the rest of Vancouver.

Image Source: Mapnificent, OpenStreetMap



2.10 Surrounding Amenities

Food

- 1. Save-On-Foods
- 2. Stock Greens
- 3. Nesters Market
- 4. Buy-Low Foods
- 5. Yat Ming Seafood Market
- 6. Tama Supermarket
- 7. Alenka European Foods

Restaurants/ Cafes

- 8. Pho Long
- 9. Osteria Savio Volpe
- 10. The Gluten Free Epicurean
- 11. The Peri Peri Shack
- 12. Les Faux Bourgeois
- 13. Sal y Limon
- 14. Honey Cafe
- 15. Kilimanjaro Snack House

Schools

- 16. Florence Nightingale Elementary
- 17. Mount Pleasant Elementary

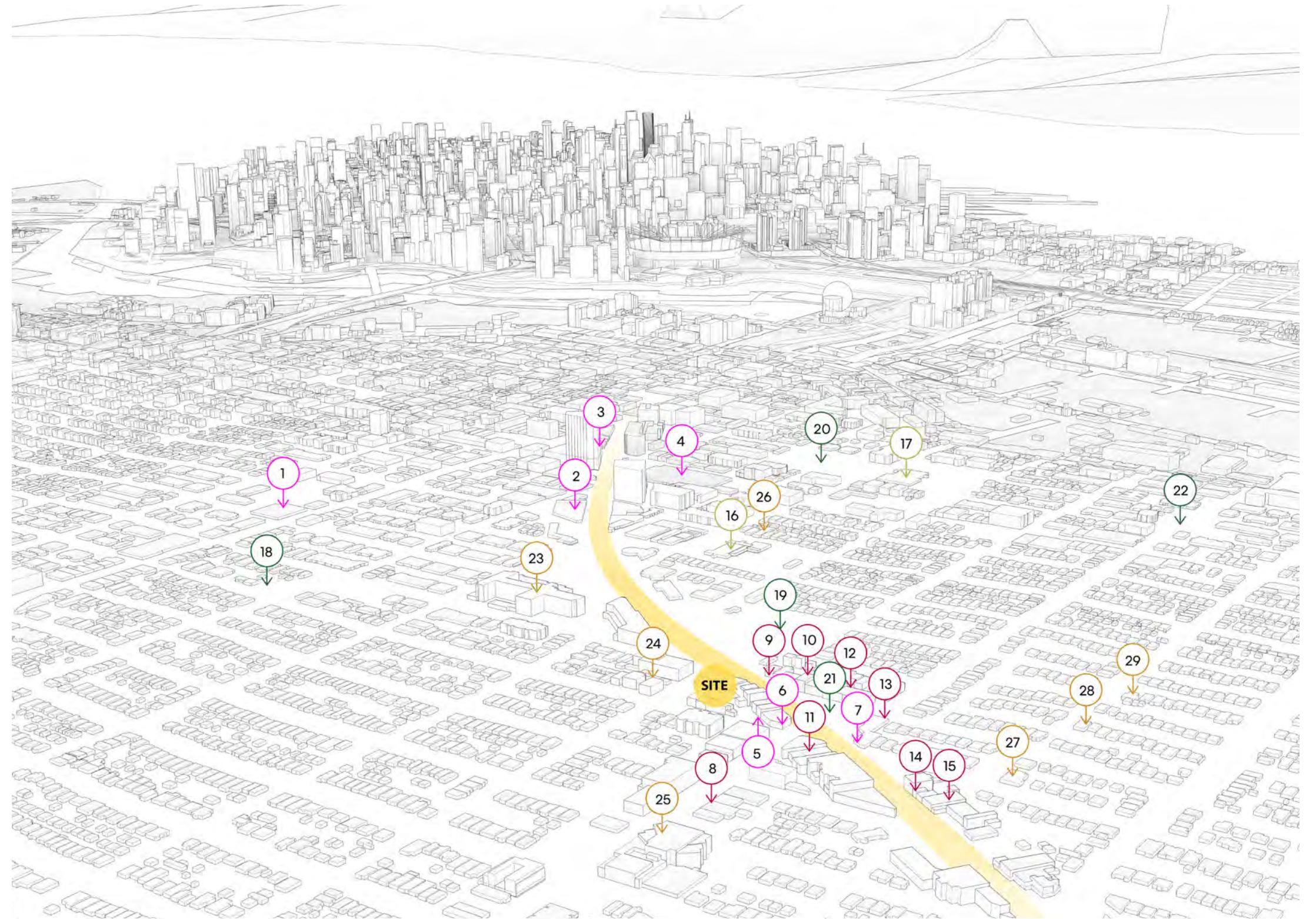
Parks/Greenspace

- 18. Tea Swamp Park
- 19. Robson Park

- 20. Guelph Park
- 21. McAuley Park
- 22. Sahalli Park


Civic and Cultural

- 23. Mount Saint Joseph Hospital
- 24. Ukrainian Pentecostal Temple
- 25. Glad Tidings Church
- 26. Shree Mahalakshmi Hindu Temple
- 27. Trinity Grace United Church
- 28. Chinese Tabernacle Baptist Church
- 29. Saint Nicholas Russian Orthodox Church



2.11 Heritage Buildings

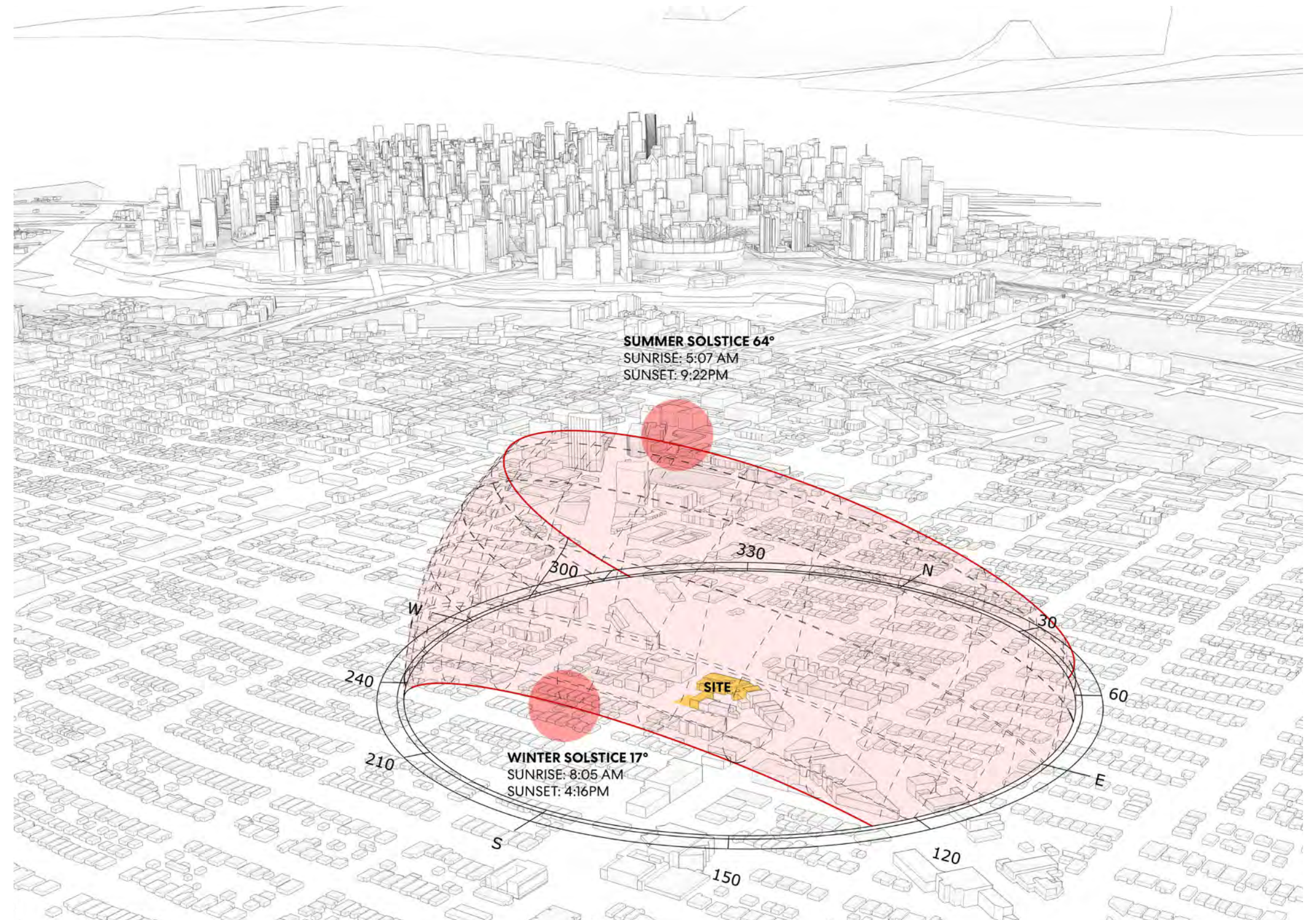


 Heritage Building (within 10-minute walking radius)

1. Miller Block
2. Cornerstone Baptist Church
3. 422 E 12th Ave, 432 E 12th Ave, 436 E 12th Ave
4. Nightingale School
5. 523 E 12th Ave, 525 E 12th Ave
6. 2721 Carolina St, 2713 Carolina St, 2797 Carolina St
7. 2722-2724 Carolina St, 2714 Carolina St, 2706 Carolina St
8. 544 E 18th Ave, 546 E 18th Ave



2.12 Solar Analysis



This diagram identifies the relative position of the sun throughout the year at hourly intervals. Understanding the solar geometry of the site will allow for the optimization of the massing and organization of functional uses to achieve the greatest positive influence on the site and overall design performance of the building while minimizing shadow on the park across Kingsway to the north.



2.13 Wind Analysis



This diagram identifies the wind patterns expected on the site, with the shaded blue region indicating that there is a prevailing easterly wind on the site.

The numbers indicate the speed of the wind. Larger gaps between wind speeds indicate a greater percentage of wind at that speed.

The highest percentage of wind expected is in the range of 14 km/h, while the site rarely receives winds at or above 35 km/h.

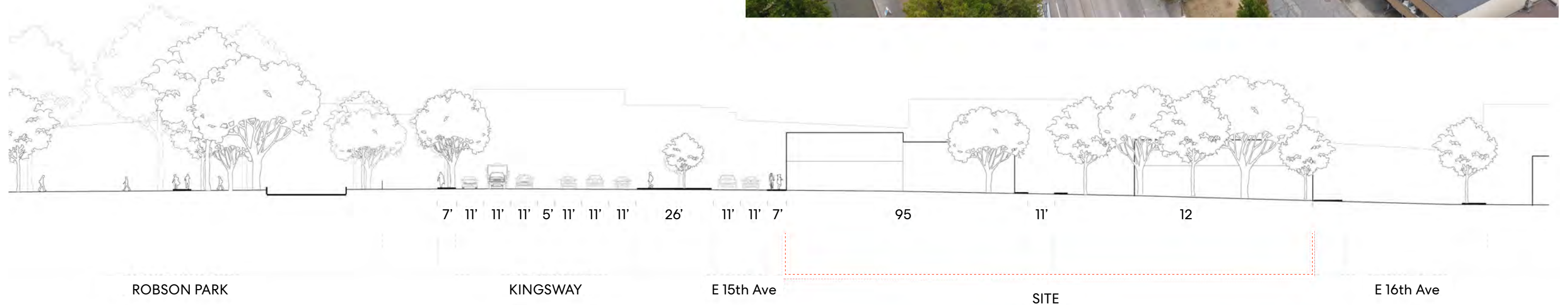


2.14 Future Context Along Kingsway

Existing

As a major street in the Vancouver, the Kingsway currently has three lanes of traffic for each direction running east and west, respectively. Kingsway pre-dates the city grid; the figure ground tells the story of how the system of roads resolves the diagonal route.

There are few trees along the Kingsway street with significantly narrow sidewalk, discouraging foot traffic. The wider roads prioritize car traffic rather than a comfortable pedestrian experience. In addition, Kingsway has currently no bike lanes while the area is characterized by the offset crossing roads and interstitial green spaces that were created from the residual geometry.



1:500

Future Context Along Kingsway

Broadway Plan Vision

The proposed Broadway Plan calls for wider sidewalks in the Mount Pleasant Centre Area C where the site is located while reducing the lanes of vehicle traffic, introducing a bike lane, and strengthening Kingsway as a more pedestrian and bike-friendly mixed-use street.



17' 5' 4' 8' 10' 10' 8' 5' 7' 8' Frontage Set-back 90'

Pentecostal Temple

Sidewalk

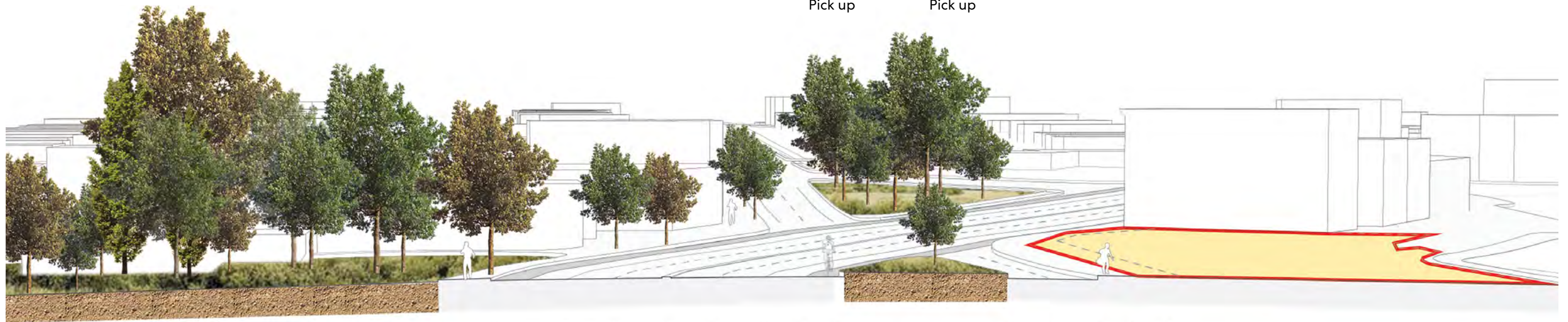
Driving lanes

Sidewalk

SITE

Parking/
Loading/
Pick up

Parking/
Loading/
Pick up

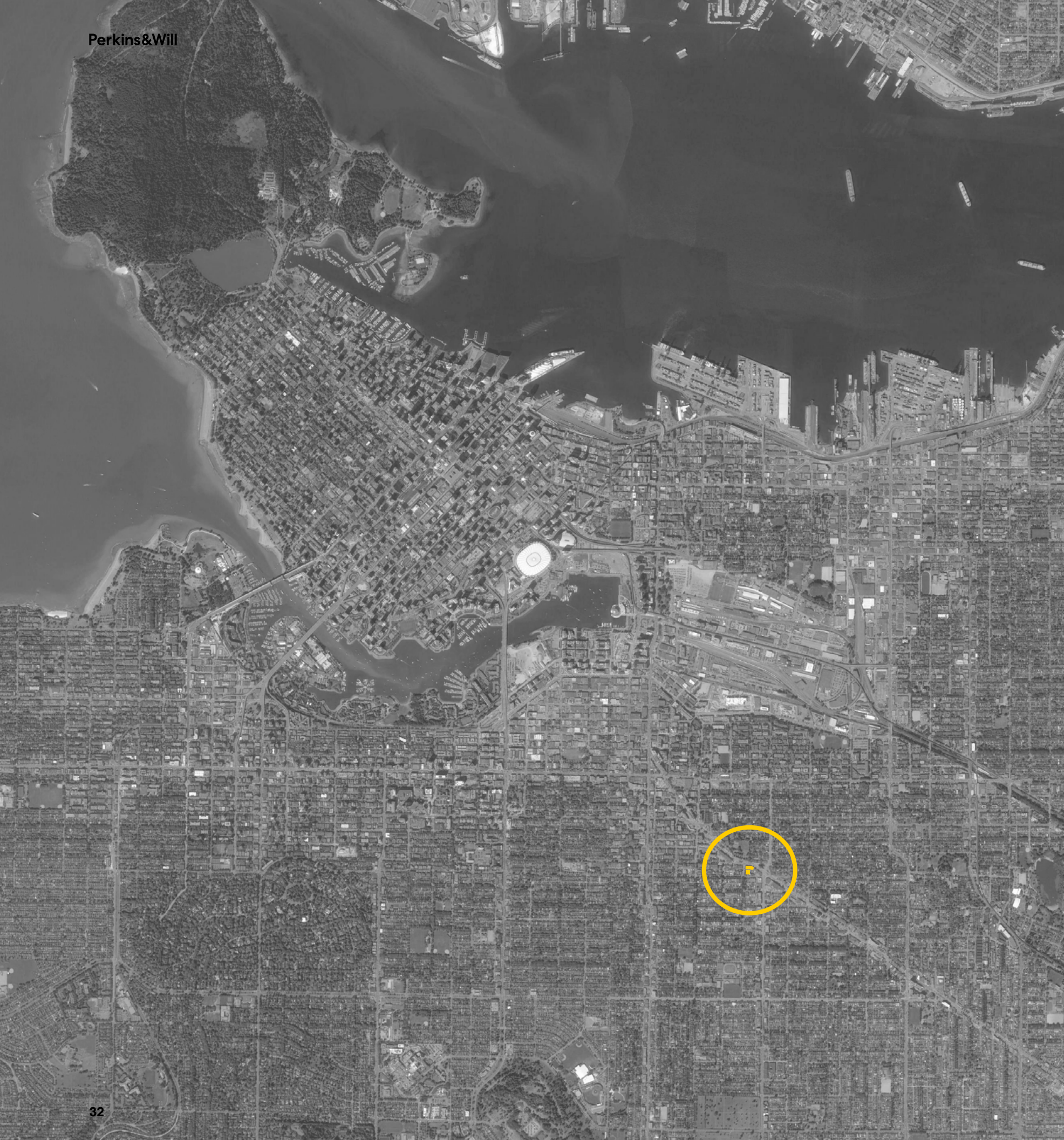


12' 7' 8' 10' 10' 3' 10' 10' 8' 7' 33' 10' 10' 7' 8' Frontage Set-back 80'

Robson Park

Residual Space

SITE



The subject site is located in the Mount Pleasant Area on Kingsway, recognized for its importance as a major transportation corridor with the capacity for commercial use in the area.

Section 3.0

Rezoning Rationale

contents

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The design proposal overwhelmingly conforms to the policy objectives and detailed requirements of Broadway Plan required for Mount Pleasant Centre Area C where the site is located, specially by creating much-needed 330 rental residential units (including 20% of those residential areas being secured at below-market rents), continuous commercial retail at grade, and a childcare space with outdoor terrace at Level 2. Aligning with policy requirements of Mount Pleasant Centre Area C under the Broadway Plan, the proposal targets a building height of 25-storey with 8.5 FSR upon the consolidated lots.

While the proposal recognizes and contributes significantly to strengthening Kingsway as a more pedestrian- and bike-friendly mixed-use commercial street with new rental housing types, we would like to explicitly point out that our proposal requests to rezone while:

- Consolidating the sites to apply 8.5 FSR over the entire site

- Different from the Application for Rezoning Advice, use of the land beneath the lane for parking is no longer the case for this revised Rezoning submission. The parking stalls are located under the lots along Kingsway, while the bike stalls being accommodated under the smaller lot along E 16th Ave.
- Relaxation for tower separation based on Horizontal Angle of Daylight and livability needs in residential buildings. The design proposal ensures access to adequate daylight, external views, and ventilation for habitable rooms between 25-storey and 14-storey towers within the development while allowing an adequate tower separation from an adjacent lot along Kingsway. Refer to Horizontal Angle of Daylight analysis in Chapter 5, in addition to supplemental study materials in the Appendix 8.10 demonstrating further design strategies implemented to further increase tower separation.

3.1 C-2C Zoning District & Urban Design Guideline

C-2C

C-2C

District Schedule

1 INTENT AND OVERVIEW

1.1 Intent

The intent of this schedule is to provide for a wide range of goods and services, to maintain commercial uses that require central locations to serve larger neighbourhoods, districts or communities, and to encourage creation of a pedestrian-oriented district shopping area by allowing more residential floor area and limiting the floor area for office uses. In addition, this schedule encourages mixed-use residential buildings that contain secure rental housing by including provisions for residential rental tenure buildings.

Without limitation, applicable Council policies and guidelines for consideration include the C-2B, C-2C and C-2C1 Guidelines, C-2C Broadway and Commercial Drive, Brewery Creek IC-3, C-3A, C-2C and RM-4/4N Guidelines and C-2, C-2B, C-2C, and C-2C1 Guidelines for Residential Rental Tenure Buildings.

1.2 Overview

The table below provides an overview of outright and conditional approval uses in the C-2C district, categorized by the minimum site area required, where applicable. Applicable density, form and placement regulations in section 3 of this schedule are cross-referenced in the third column.

Minimum Site Area	Use	Density, Form and Placement Regulations
—	Mixed-Use Residential Building that is a residential rental tenure building	3.1
—	Other uses in section 2.1 of this schedule	3.2

2 USE REGULATIONS

2.1 Outright and Conditional Approval Uses

All outright and conditional approval uses are subject to all other provisions of this by-law, including Section 2, Section 10 and Section 11, and compliance with the regulations of this schedule including section 2.2.

City of Vancouver Zoning and Development By-law October 2023 Page 1

City of Vancouver *Land Use and Development Policies and Guidelines*
 Planning, Urban Design and Sustainability Department
 453 West 12th Avenue, Vancouver, BC V5Y 1V4 | tel: 3-1-1, outside Vancouver 604.873.7000 | fax: 604.873.7100
 website: vancouver.ca | email: planning@vancouver.ca | app: VanConnect

BROADWAY/COMMERCIAL C-2C GUIDELINES

*Adopted by City Council on August 2, 2001
 Amended July 20, 2022*

Existing Zoning

The existing C-2C zoning that governs the site is augmented by the accompanying C-2C Urban Design Guidelines for Residential Rental Tenure Buildings.

Uses

The objective of the existing zoning is 'to provide for a wide range of goods and services, to maintain commercial uses that require central locations to serve larger neighbourhoods, districts or communities, and to encourage creation of a pedestrian-oriented district shopping area by allowing more residential floor area and limiting the floor area for office uses.' In addition, this schedule encourages mixed-use residential buildings that contain secure rental housing by including provisions for residential rental tenure buildings.

The proposal respects the overall objectives of this zoning schedule and what's been proposed from a programmatic standpoint is completely compatible with the existing uses found in the area and policy intent of C-2C district schedule.

Regulation - Floor Space Ratio

The floor space ratio permitted under

C-2C is 1.0, with discretion to allow up to 3.0. An additional 10% may be permitted, for a total floor space ratio of 3.3, if a transfer of density is approved under the Heritage Policies and Guidelines.

The proposal seeks to increase the floor space ratio permitted for the site to 8.5FSR based upon a consolidated site. This land use density proposed is fully compatible with the policy aspirations of and supported by Broadway Plan. Refer to additional policy rationale outlined in sections 3.2.

Regulation - Height

The height permitted under the current zoning is 13.8m.

Situated within the Mount Pleasant Centre Area 3 policy area under the Broadway Plan, the proposal is eligible for a height increase up to 25 storeys. As such, the proposed development height is built up to 25 storeys, at a height of 273ft, while limiting shadow on Robson Park across Kingsway

Regulation - Setback

A setback of 2.5m from the front property line shall be required for any parking area. In the case of a corner lot, a

C-2C Zoning District & Urban Design Guideline

setback of 1.2m from the side property line abutting the flanking street shall be required for any parking area.

The design proposal provides minimum setback of 2.5m from Kingsway while the setback from Carolina and E 16th Ave being 1.5m. As such, the proposed design meets setback requirements of the district schedule.

Parking By-Law Section 4.1.7

Mount Pleasant Industrial Area and Central Broadway Non-residential Uses shall provide at least one parking space for each 145 m² of gross floor area for the first 290 m² of gross floor area, and one additional space for each additional 70 m² of gross floor area, and not more than one space for each 40 m² of gross floor area.

The Broadway Plan has identified the prospect of new development within the policy plan area not having a minimum off-street vehicle parking requirement with the Parking Bylaw, similar to the current provisions for the Downtown District.

Also, the irregular site footprint limits the practicality of meeting underground parking requirements in an effective manner. As such, the proposal provides

141 parking stalls, substantially less than what's required in the parking bylaw.

Given the relatively high walkability, transit, and bike score offered by site, we propose a development with limited standard parking. While allowing some accessible stalls at back lane.

C-2C Urban Design Guidelines for Residential Rental Tenure Buildings

Intent

The design guidelines prescribe the general criteria for new development and form the basis for the preparation of, and approval of development proposals. The design guidelines are also intended to encourage increased awareness of the immediate and overall environment.

The intent, in the adoption of this C-2C Urban Design Guidelines and the accompanying it, is as follows:

Secure Rental: to encourage secured rental development to boost the city's rental supply through the introduction of residential rental tenure zoning in conjunction with building height and density bonus provisions, and simpler building forms.

As a rental residential development with 330 units, the proposal aligns with the intent of this design guideline section.

Building Form: to create more sustainable buildings by enabling simpler building forms.

As a compact tower typology, the proposal is unique in massing in a way it speaks to the irregular shape of the property footprint while ensuring appropriate street scale and spatial enclosure that is sensitive to the orientation and widths of the street, anchors pedestrian interest, and strengthens the public realm interfacing with ground-floor uses for local-serving retail and services.

Ground Floor Continuity: Points of entry to shops and building lobbies should open onto the street,

Comprised of commercial retail units and residential entry lobby directly accessing from Kingsway, the ground level material treatment is highly visible, clear glazed, easily recognized from the street.

3.2 Broadway Plan 2030

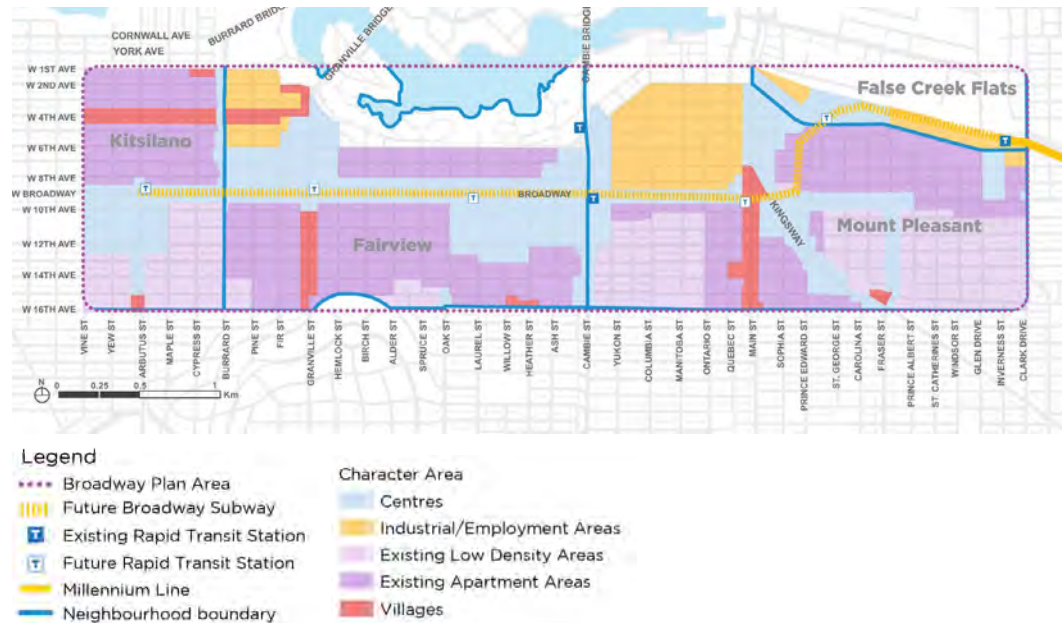


Diagram from the Broadway Plan (September, 2022) final approved report illustrating various character areas. The study area is centred along Broadway generally from Clark Drive to Vine Street and between 1st and 16th Avenues. The Plan sets out various land use and area-wide policies that support the vision for the area to be a highly walkable, vibrant, inclusive, and distinctive place to live, work, play, and learn. The proposed development is within Mount Pleasant Centre Area C, highlighted in blue color.

Broadway Plan

The Broadway Plan is a major planning initiative focusing on opportunities to integrate new housing, job space and amenities with the Broadway Subway. The Plan will provide a comprehensive framework to guide growth and positive change in the area over the next 30 years to meet the needs of today’s residents and generations in the future.

Key goals of the Broadway Plan include: addressing the need for more housing and job space close to rapid transit; greater affordability in housing and supports to allow current tenants stay in their neighbourhoods; new and improved ways for people to move around; improved parks and public spaces; more childcare spaces; and new and renewed public amenities to serve a growing community.

The goals will help the City respond to new priorities and needs over the next 30 years.

Plan Directions - Centres - Shoulder Areas

Strategically locate new housing opportunities, particularly secured rental and social housing through increased heights and densities.

As a mixed-use building, our proposal priorities retail and rental residential uses, strengthening street-level retail continuity along Kingsway and contributing to the improvement of housing affordability.

Outside the station areas but within the centres, the shoulder areas will have a mix of housing, job space, shops, services and amenities. Building heights will generally be up to 20 to 30 storeys. Streetscape improvements, active ground floor commercial uses and gathering places will foster a lively public realm, particularly along commercial streets.

Having a height of 25-storey while limiting shadow impact on Robson Park across Kingsway, our proposal prioritizes retail and rental residential uses, providing active commercial uses at ground level for retail continuity and 330 residential units between levels 2-25 with relatively easy transit access for tenants.

Mount Pleasant Centre - Overall Intent and the Big Moves

Overall Intent: Strengthen and diversify Mount Pleasant Centre as a vibrant mixed-use area close to rapid transit by providing opportunities for additional housing (particularly secured rental and social housing), job space,

Broadway Plan 2030

and amenities(e.g., cultural facilities and childcare).

Our proposal prioritizes rental residential and retail use, reinforcing the Mount Pleasant Centre’s key role in providing additional opportunities for housing and continuous commercial retails at grade along Kingsway.

Big Moves 1: Diverse and vibrant mixed-use area close to rapid transit.

The project intends to strategically maximize density on irregular site footprint to create a vibrant place to shop and live, supported by rooftop amenities, ground level retails and services, and convenient access to various modes of transit.

Big Moves 2: Continuous active ground floor retail/service uses (e.g. shops, cafes/ restaurants) along Broadway, Kingsway and Main Street with places to gather, particularly at key intersections and on larger sites.

The proposal includes commercial retail units at grade, located along and accessible from Kingsway, Carolina St, and E 16th Ave, with an intention of creating continuous active public realm for public to engage with. The proposed mini-park will encourage social interactions and gatherings.

Mount Pleasant Centre - Area C

Uses: Retail/service, residential.

Consisting of commercial retail at grade and residential uses above, the proposed programme is compliant with allowed uses under this policy area.

Max Height: Height can generally be considered up to 25 stories.

Situated within the Mount Pleasant Centre - Area C with a proposed secured rental market development, the proposal is eligible for a height increase up to 25 stories. As such, the proposed development height is at 273 ft while reducing shadow impact on the Robson Park across Kingsway.

Maximum Density: Allowed density is 8.5 FSR.

The proposed density is 8.5 FSR over the consolidated site. As such, the proposed development is compatible with maximum density requirements.

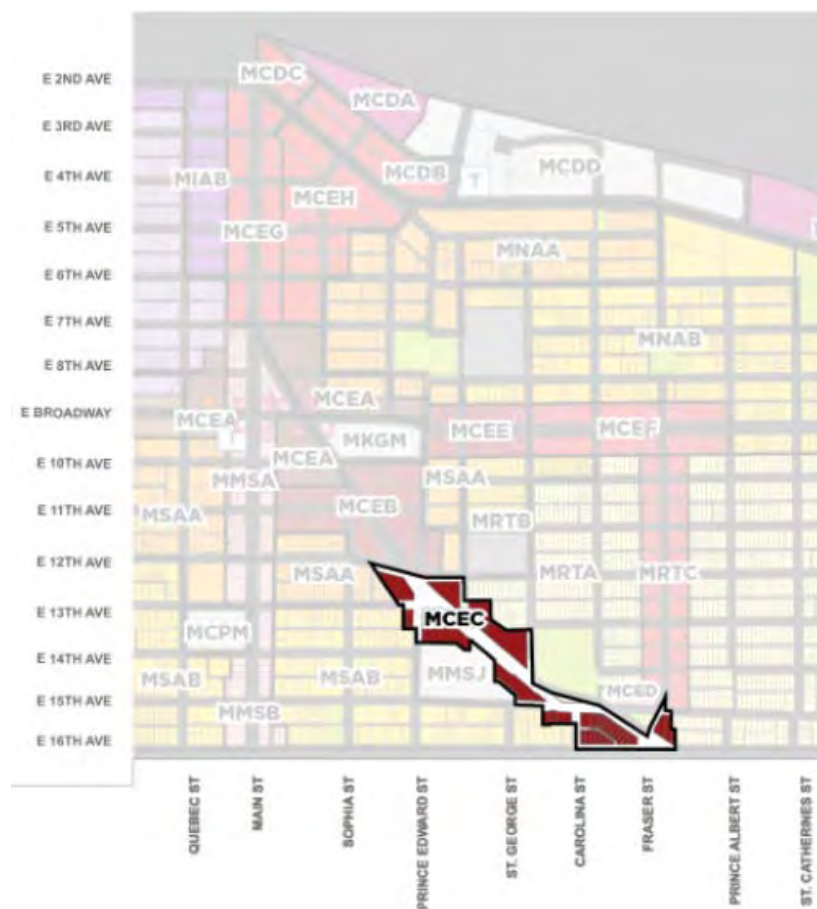
Minimum Frontage: The min. required street frontage is 150 ft (down to 99’ per Council’s recent motion in June 2022).

With 238’ of site length facing Kingsway and 100’ of site length facing E 16th Ave, the proposal meets the minimum frontage requirements of this policy area to have tower typologies on the site.

Additional Policies (10.4.7): Require continuous active ground floor retail/service uses along Kingsway and Fraser St.

By providing commercial retail spaces/services with access from Kingsway and Carolina St, the proposal contributes significantly toward the active retail continuity at grade.

Broadway Plan - Mount Pleasant Centre - Area C



3.3 Overview of City Goals

The City of Vancouver is widely recognized as one of the most livable cities in the world. As such, the City is committed to approving projects and developments that are sustainable and cost-effective. A number of policies, strategies and guidelines have been developed in order to align this commitment with Vancouver's objectives.

This project will adhere to the applicable general policies, as described on the following pages.



The Greenest City Action Plan (2020)

Vancouver City Council have targeted cutting carbon pollution in half by 2030, and to be carbon neutral before 2050. This plan builds on previous climate plans and focuses on cutting carbon pollution from the biggest local sources - burning fossil fuels in vehicles (37%) and in our buildings (57%).

RESPONSE

1. How we Move

The site has been designed to accommodate and promote active and public modes of transit and will include a first-class bike and maintenance facility.

2. How we Build and Renovate

The project team completed a energy model to estimate operational carbon and propose measures to reduce operational carbon.

The project team used the Embodied Carbon Pathfinder tool to perform early stage sensitivity studies for materiality and reduce embodied carbon.

3. How we capture Carbon

The site will be transformed into a biodiverse green environment with a healthy tree canopy capable of capturing and storing carbon.



Urban Forest Strategy (2018)

The Urban Forest Strategy provides direction to protect, plant, and manage trees to create a diverse, resilient, and beautiful urban forest on public and private lands across the city.

RESPONSE

Tree canopy cover made up of a biodiverse mix of native and adaptive plant species will thrive in generous depths of growing medium. Contiguous planting will be prioritised at roof level and at grade to enhance the urban forest and improve stormwater retention. Through arborist assessment healthy street trees will be retained and unhealthy trees replaced.



Rain City Strategy (2019)

This initiative focuses on rainwater infrastructure and management and aims to improve and protect Vancouver's water quality, increase Vancouver's resilience through sustainable water management, and enhance Vancouver's livability by improving natural and urban ecosystems.

RESPONSE

Rainwater management prioritizes low impact development vegetation cover capable of retaining water on sites through evapotranspiration and infiltration.



Biodiversity Strategy (2016)

The biodiversity strategy contains objectives and targets to increase biodiversity across Vancouver and access to nature for the City's inhabitants. Objectives include the restoration of habitats and species, to protect and enhance biodiversity during development, increase community engagement, and monitor biodiversity to track change and measure success.

RESPONSE

Currently, the site does not have any high value ecosystems present. The project will provide a biodiverse planting environment. Native and adaptive plant species will be selected to support local ecology and a healthy habitat.

Overview of City Goals



Vancouver Economic Action Strategy (2011)

The Vancouver Economic Strategy presents a city-wide vision for Economic development in Vancouver. Tactics include working with local planners and organizations to generate strategies in order to secure the required space for a growing work force that also align with local neighbourhoods. Complete neighbourhoods where people can live and work and which reduce automobile dependency are to be encouraged.

RESPONSE

478 residents introduced into the neighborhood will revitalize spending, and the economy. Retail space and public realm adds culture and entertainment to the local neighborhood.



Renewable City Strategy (2015)

The Renewable City Strategy establishes two targets for all of Vancouver:

- Derive 100% energy used in Vancouver from renewable sources before 2050
- Reduce Greenhouse Gas emissions by at least 80% below 2007 levels before 2050

The strategies to achieve these goals by 2050 include reducing demand, increasing the use of renewable energy and expanding the supply of renewable energy sources. The goals of the Renewable City Strategy guide the goals set in the Green Buildings Policy for Re-zonings. The Renewable City Strategy also calls for the expansion of existing neighbourhood Renewable Energy Systems and the development of new renewable energy systems.

RESPONSE

A high-performance building envelope with an optimised window to wall ratio and thermally broken balconies will establish an envelope first approach to design. Electrification of building systems will further reduce excessive greenhouse gas emissions associated with building operations.



Healthy City Strategy (2015)

This document aims to address the needs of Vancouver's inhabitants. Organized into three themes: Healthy People, Healthy Communities and Healthy Environments with targets that ensure people have access to housing, services, transit, food, culture and green space.

RESPONSE

The project provides approximately 298,451 sq.ft (27,727 sq.m) of secured rental housing totaling 330 units.

Reinvesting in the neighbourhood will benefit the City by improving the character of the street-scape and increase community health by encouraging tenants and building users to walk and come together as a community.



Transportation 2040 (2012)

Transportation 2040 is aligned with the Greenest City 2020 Action Plan. The three primary goals of the document are connected to Economy, People, and Environment. With a goal of hitting two thirds of all trips on foot, bike, or transit by 2040.

100% of residential parking and approximately 45% of non-residential parking will be EV ready with Level 02 charging. Two-way car membership will be offered to residents of each Strata unit free of charge and will be in force for 20 years. The parking strategy combined with a first-class bike parking and maintenance facility prioritizes walking and cycling to and from the site.

RESPONSE

The project encourages the use of public and active transportation through the design of a first-class bike parking facility and reduced parking footprint.



A childcare pavilion with outdoor terrace surrounded by residential amenity rooms at level 2.

Section 4.0

Sustainability and Resilience

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4.1 Sustainability Strategies



Water

- Reduce indoor water use by 30% through the selection of efficient low-flow fixtures.
- Reduce outdoor water use by 50% using drip irrigation systems with sensors and selecting plant species capable of thriving in Vancouver's warming climate.

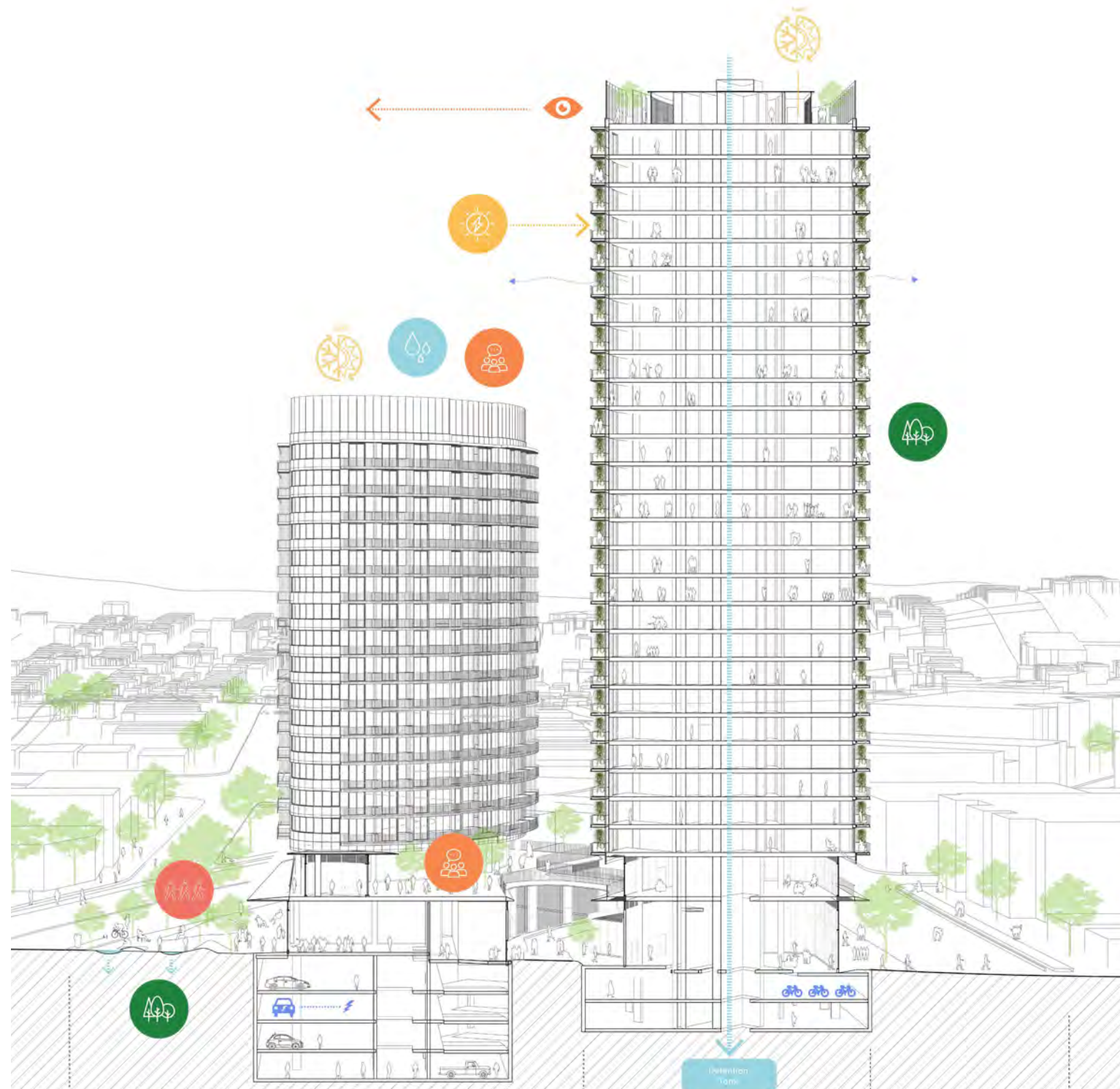


Health and Wellbeing

- Select low-emitting and healthy building materials for interior finishes.
- Provide occupants access to daylight through generous private balconies and optimized window-to-wall ratios.
- Connect occupants to nature through expansive views, accessible roof terraces, and centrally located park space.
- Encourage social gathering and community by activating the public realm with continuous accessible retail frontage.
- Implement universal design strategies to accommodate grade changes along Kingsway and Carolina Street, providing access for all.

Vegetation

- Create a mini park and extensive green roof, covering 30% of the total site area with vegetation.
- Provide generous soil depth in planters to improve plant health and contribute to rainwater management, retention, infiltration, and evapotranspiration on site.



Resilience

- Design the structure for an anticipated seventeen to twenty-five percent increase in seismic loads under the new building code.
- Provide air conditioning for all units to reduce the impacts of extreme heat and improve thermal comfort during summer months.
- Enhance occupant health with MERV 13 filters in air handling units, which remove most particulates and smoke pollutants, greatly improving indoor air quality.
- Locate emergency back-up systems above flood construction level.



Energy and Carbon

- Electrify a significant portion of the building and comply with Step Code 3 using a non-LCES path.
- Select materials with low global warming potentials.
- Meet TEDI, TEUI, GHGI, and GWP targets per the Green Building Policy and Vancouver Building Bylaw. Preliminary LCA and energy modeling confirm compliance.
- High efficient air to water heat pumps with low GWP refrigerants.



Transportation

- Exceptional active transit options. The development has a walk score of 97, transit score of 66, and bike score of 81.
- Provide first-class bike parking and maintenance facilities to promote active modes of transportation.
- Reduce underground parking to discourage single occupancy vehicle use.

4.2 Summary of Performance Goals

The 600 Kingsway project meets the Vancouver Building By-law requirements for Thermal Energy Demand Intensity (TEDI), Total Energy Use Intensity (TEUI), Greenhouse Gas Intensity (GHGI), and Global Warming Potential (GWP). The project aims to reduce the use of indoor and outdoor potable water and procure low-emitting, healthy materials as required by the Vancouver Building By-law (VBBL).

The VBBL requires at least 20 responsibly sourced or healthy materials for the project. Currently, the team is considering 35 products with third-party certifications confirming low VOC emissions or disclosed chemical composition.

The project's performance goals and expected performance based on a preliminary analysis of the design are depicted in the bar graph.

Embodied Carbon

Strategies to Reduce Embodied Carbon:

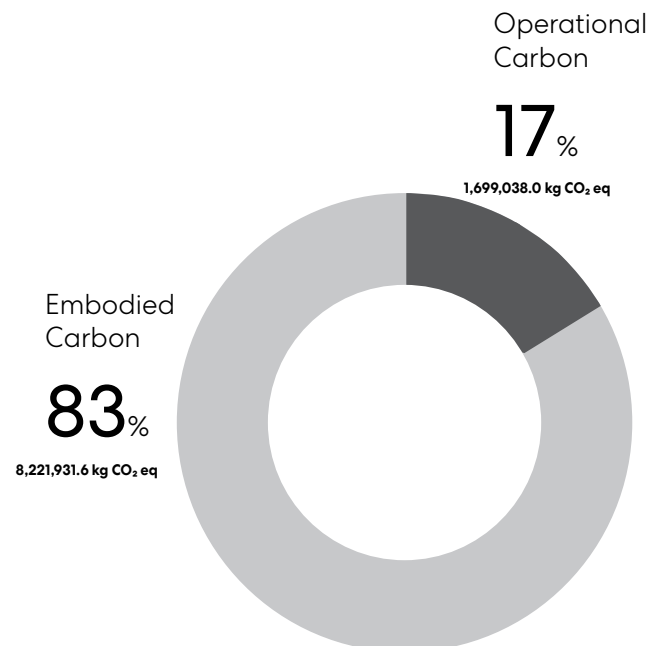
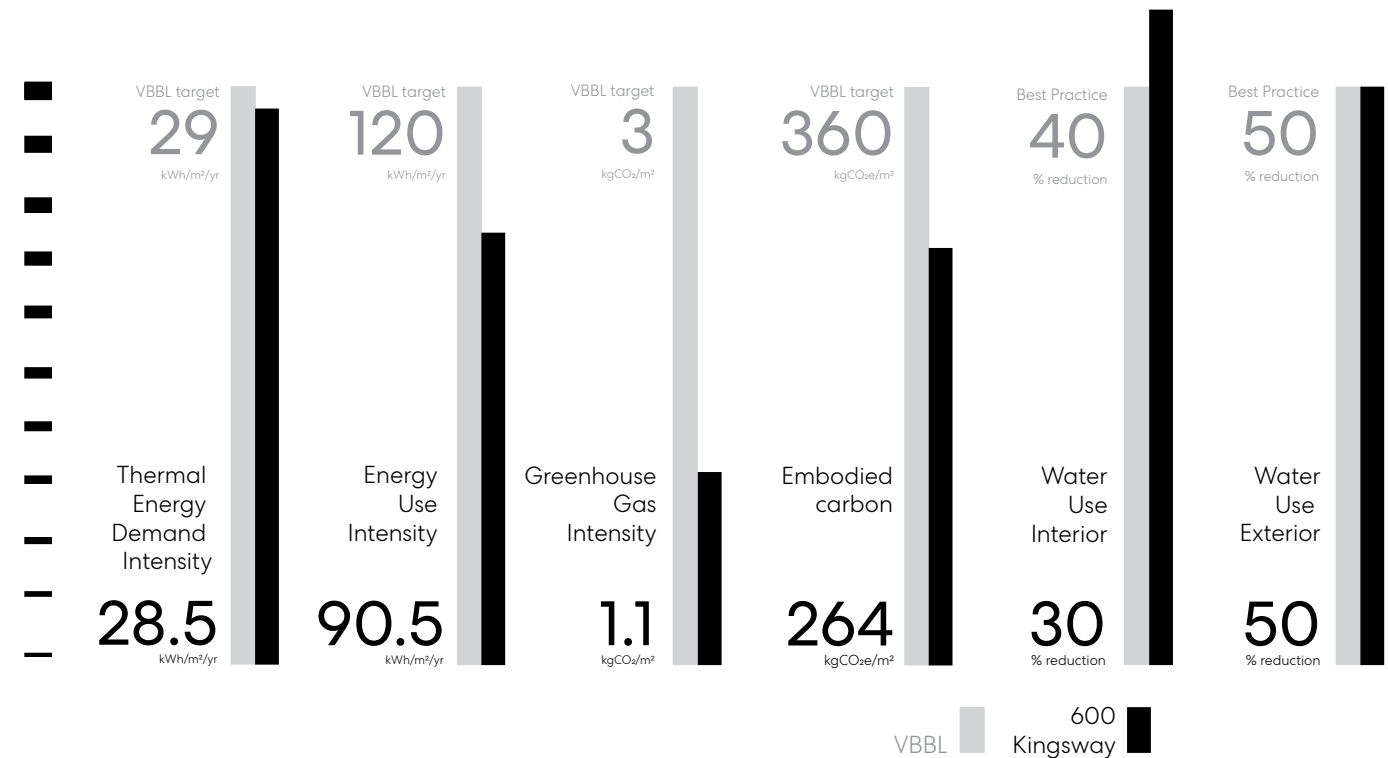
- Work with the structural engineer, contractor, and concrete supplier to establish a GWP budget for all concrete used in the project.
- Review envelope options and perform façade studies to optimize window-to-wall ratios, potentially switching from curtain wall to window wall systems.
- Study glazing options by comparing double and triple glazing to assess their impact on GWP.
- Optimize material and product choices by using the EC3 tool to choose low-carbon envelope materials.

Operational Carbon:

Strategies to Reduce Operational Carbon:

- Optimize building orientation and massing to maximize natural light and reduce heating and cooling loads.
- Design a high-performance building envelope with insulation, windows, and establish an airtightness plan during construction.
- Utilize efficient HVAC systems to lower energy consumption.
- Strategically design shades and balconies for solar control.
- Employ Air to Water Heat Pump (AWHP) integrated with ERV and with a high Sensible Recovery Efficiency (SRE).

600 Kingsway proposed and design metrics Rezoning Submission



4.3 Green Building Policy for Rezoning



In order to decrease the energy demands and carbon footprint of Vancouver’s building stock and design resilient adaptive infrastructure, the city has implemented and updated the Green Building Policy for Rezoning.

This page provides an explanation of how the project is meeting the amendments to the Green Building Policy for Rezoning as of June 2023. To support the submission the project has provided documentation required under the Green and Resilient Building Package in alignment with the Policy:

- Energy and Emissions Design Report.
- Embodied Carbon Design Report.
- Resilient Buildings Planning Worksheet.
- Letter of Commitment.

1. Energy and Emissions Performance Limits

All buildings shall meet or exceed the performance limits for TEUI, TEDI, and GHGI according to their building type and whether or not they are connected to a City-recognized Low Carbon Energy System (LCES).

RESPONSE: "The 600 Kingsway project will be a residential building with commercial spaces at grade. It will use a reversible air/water heat pump (AWHP) with backup condensing gas boilers, following the Non-LCES compliance path. The project team has completed a preliminary energy model. A summary of the performance results are provided below:

	TEUI (kWh/m²)	TEDI (kWh/m²)	GHGI (kgCO ₂ e/m²)
Performance Limits	120.0	29.0	3.0
Performance Results	90.5	28.5	1.1
% Improvement	24.5	1.72	63.3

Please refer to the Energy and Emissions Design Report for more details.

2. Embodied Carbon Limits

All buildings must meet or exceed embodied carbon reduction targets according to building type, height, and materiality. The project can choose between two pathways:

- an absolute Global Warming Potential Intensity target.
- A percentage reduction pathway as compared to a concrete baseline building.

RESPONSE: The project team used the Embodied Carbon Pathfinder Tool to estimate a GWP of 293.5 kgCO₂e/m². It is anticipated the project will meet the absolute pathway with a maximum GWP of 380kgCO₂e/m².

Several iterations of the Pathfinder tool were performed to understand the impact of concrete mix designs, window-to-wall ratio, and envelope materiality on GWP. These tradeoffs will be explored further in the next phase of design. Please refer to the Embodied Carbon Design Report for more details

3. Resilient Buildings Planning Worksheet

To strengthen the city's resilience against earthquakes, extreme weather, temperature fluctuations, and sea level rise, while enhancing disaster preparedness and social connections. This involves fulfilling the Climate Change Adaptation Strategy’s goal to increase the built environment’s resilience to future climate conditions.

RESPONSE: The team assessed the project’s risks, impacts, and mitigation strategies and completed a single Resilient Buildings Planning Worksheet for the Project. Medium and High risks were identified during a resilience planning workshop and strategies to mitigate risks for 2050 and 2100 future climate scenarios were considered.

The majority of strategies are multi-disciplinary in nature. The project team will continue to evaluate current and future climate projections to design a plan that meets current needs and adapts to a changing climate.

Please refer to the Resilient Buildings Planning Worksheet for more details.

4. Enhanced Commissioning

Complete an enhanced commissioning process for all building energy systems in accordance with CSA or ASHRAE guidelines, or an alternate acceptable commissioning standard.

RESPONSE: A Commissioning Authority will be retained, and the project will submit a copy of the Commissioning Plan at the Building Permit Stage.

Please refer to Bonnis Properties' letter of commitment for more details.

5. Energy System Sub-Metering

Provide separate metering for each energy utility as well as sub-metering of all major end-uses and major space uses within each building. Create an Energy Star Portfolio Manager account for each building.

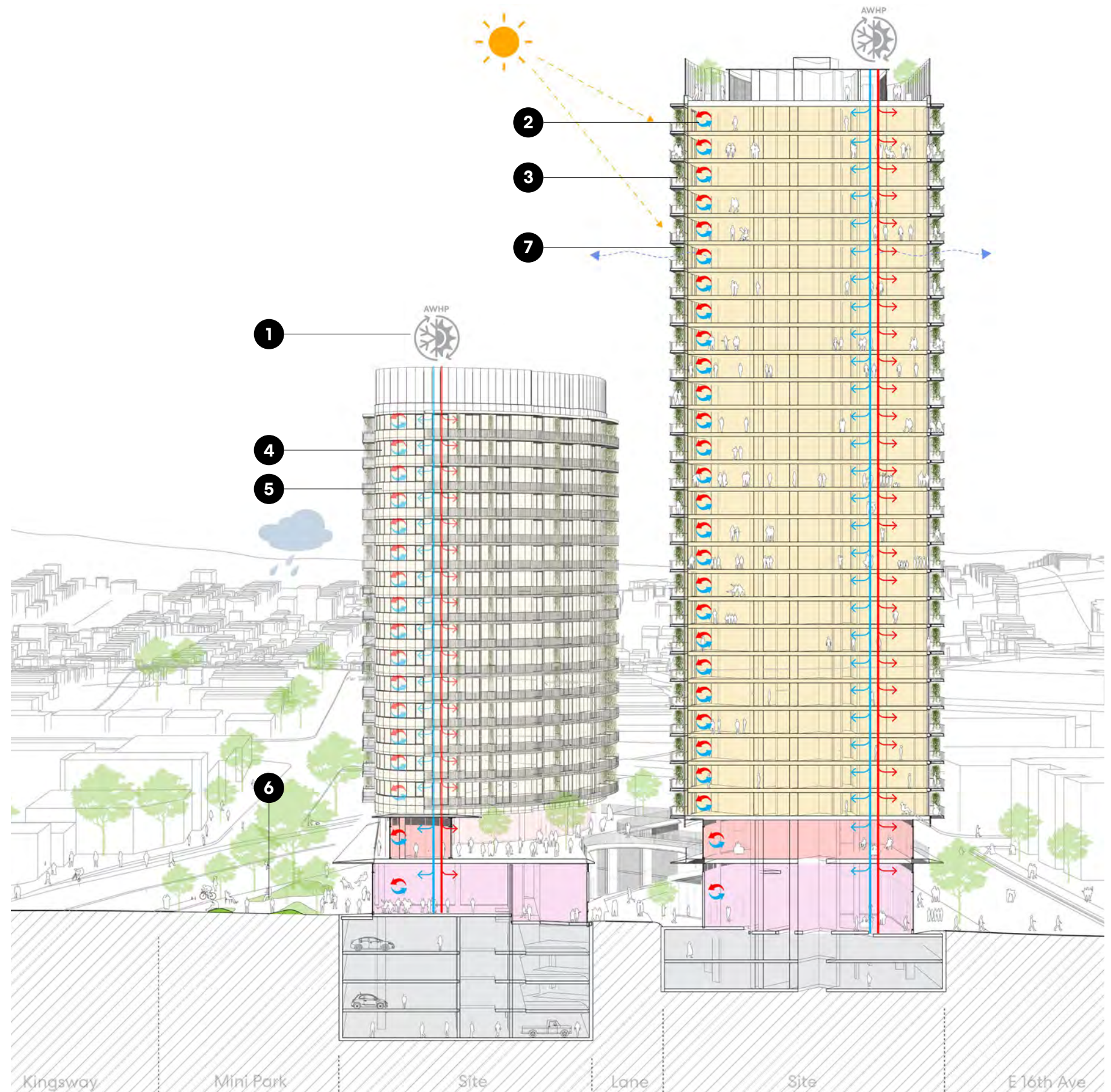
RESPONSE: Separate metering will be provided for each utility connection, additionally, all major energy and water uses will be sub-metered. A sub-metering plan and drawings for electrical and mechanical loads will be provided at the Building Permit Stage.

Please refer to Bonnis Properties letter of commitment for more details.

4.4 Systems Thinking

The project uses both active and passive strategies to meet holistic sustainability and energy use targets as outlined below:

1. An AHP provides both cooling and heating, with a backup condensing boiler.
2. Energy Recovery Ventilators (ERVs) with high Sensible Recovery Efficiency (SRE) are used for Multi-Unit Residential rental suites.
3. Strategically placed plants and balconies optimize solar heat gain.
4. Optimized window-to-wall ratio balances access to daylight and low energy use.
5. Thermally efficient building envelope design reduces air leakage and minimizes thermal bridging.
6. A mini park on the ground level supports stormwater retention on site.
7. Balconies have double swing doors in each room to enhance the connection to the outdoors, offering opportunities for natural ventilation..





A fully activated public realm with continuous retail/commercial frontage and purposeful framed residential lobby entrance to North Tower along Kingsway.

Section 5.0

Design Proposal

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Design Rationale:

The design proposal comprises a number of distinct architectural elements that provide clarity to the composition both as a whole and as legible expression of its constituent parts. These elements include articulation of massing and distribution of density, structural order, conceptual approach on the envelope and balcony system, building services including parking and loading, as well as creation of a civic park at the intersection of Kingsway and Carolina St.

- While the following pages illustrate, in a greater detail using parametric computational design simulations and methods, how we arrived to the proposed massing configuration and density distribution, it's worth pointing out that reducing shadow impact on Robson Park across Kingsway and McAuley Park at the intersection of Kingsway and Fraser St. played a critical role in resulting a two-tower scheme with a taller tower sitting on the smaller lot at the intersection of Carolina St and E 16th while the shorter tower is positioned on the larger lot along Kingsway. The shape of the towers is driven by the fact that the site footprint is an irregular shape due to a unique way Kingsway intersects with rest of city grids, and there are needs to satisfy livability requirements in residential towers by using Horizontal Angle of Daylight guidelines.
- The proposed tower massing geometry is further rationalized by a structural order while creating a 15' structural module and pairing columns at curved corners to capitalize on views and allow for an efficient unit layout.

- With an established structural order, the building enclosure system is consisted of 3' modules with a 40/60 window to wall ratio that strategically frames the units while being respectful of stringent energy requirements. With steel picket guards, the balconies are thermally broken with discreet point connections to floor slabs while adding visual richness and depth to overall building expression.

- Different from the concept proposal submitted during the enquiry stage, the land beneath the lane will not be used for parking across between two lots. However, the parking access is located off lane with four levels of parking stalls accommodated entirely under the site footprint of larger lot, while the smaller lot along E 16th Ave accommodates two levels of bike stalls. There will be a number of loading spaces with a combination of Class A and B on lane within the property. Provided parking stalls are less than required bylaw requirements, while bike stalls are associated amenities are prioritized as part of a green mobility strategy.

- A small portion of East 15th Ave is proposed to be closed to incorporate a small plaza park at the corner of Kingsway and Carolina Street. As an important public realm element, the mini park will engage the commercial frontage to help activate the retails and encourage social interactions by incorporating seating, planting, and varied paving treatments.

5.1 Kingsway Corridor

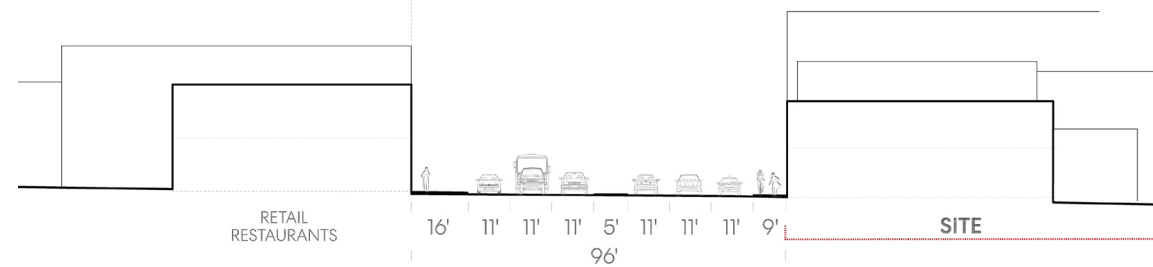
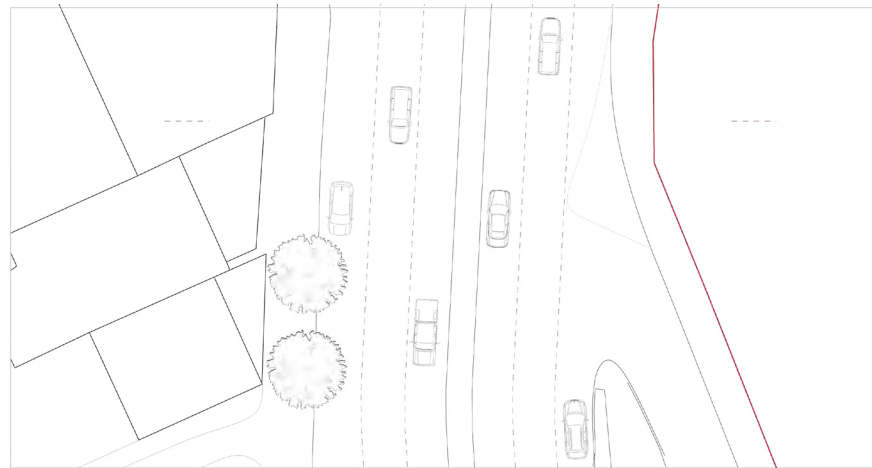
■ Site

Kingsway is a major regional corridor running east-west that connects Mt Pleasant and other major neighborhoods with downtown Vancouver. The diagonal nature of the street creates many interesting angled intersections and longer than usual blocks that are home to an eclectic mix of shops, housing, and retail spaces. Historically the street has served as a bustling area for shops but has shown steady decline and lack of pedestrian engagement due to its car-oriented design.

The Broadway Plans intent for the Mt Pleasant Center is to strengthen Kingsway as a more pedestrian- and bike-friendly mixed-use street with new housing opportunities, particularly secured market and below market rental as well as continuous active ground floor retail commercial uses along Kingsway and Fraser St. Near the project site, E 15th Avenue between Kingsway and Fraser Street has a cherished block of low-scale buildings containing a variety of cafes, restaurants, and small stores that face McAuley Park. The design proposal for the site supports the plan direction for the Mt Pleasant Centre and acts as a continuation of this cherished neighborhood area as well as the surrounding parks, providing an enhanced pedestrian realm with retail space at grade and additional green space.



5.2 Existing and Proposed Kingsway



1. EXISTING KINGSWAY STREET CONDITION: *Kingsway is currently a 6 lane wide street that is flanked by narrow sidewalks and divided by a concrete boulevard. Current configuration of Kingsway does not support pedestrian and bike-friendly public realms.*

2. FUTURE KINGSWAY STREET CONDITION: *The proposal for Kingsway is to provide bike lanes and wider sidewalks with an enhanced pedestrian realm.*

5.3 Urban Development Form - Directions Explored

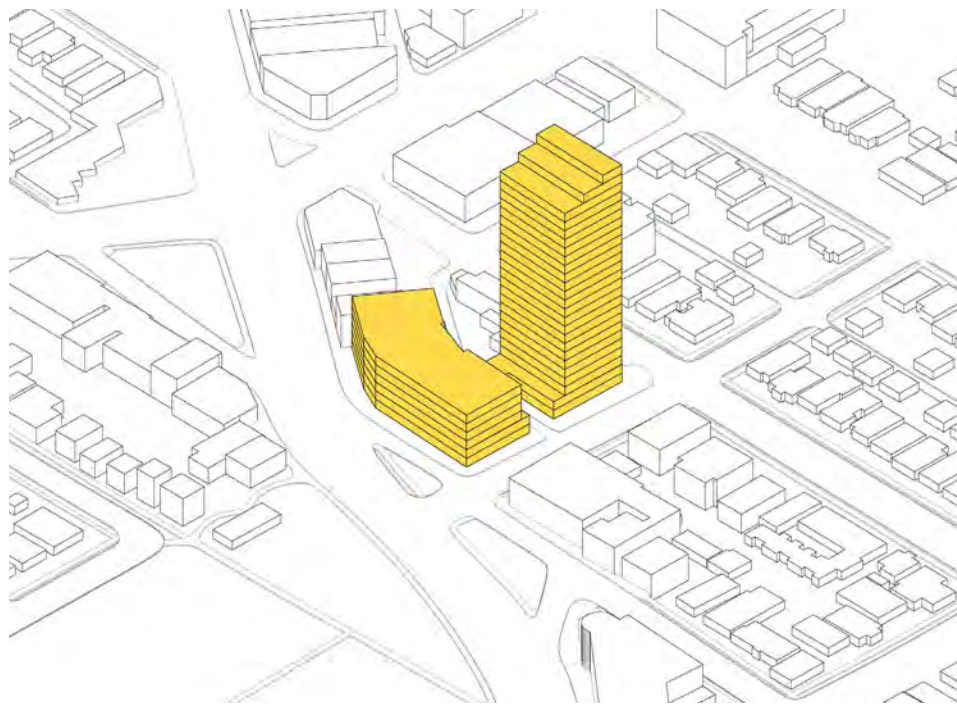
5.3.1 Physical Model Massing Exploration



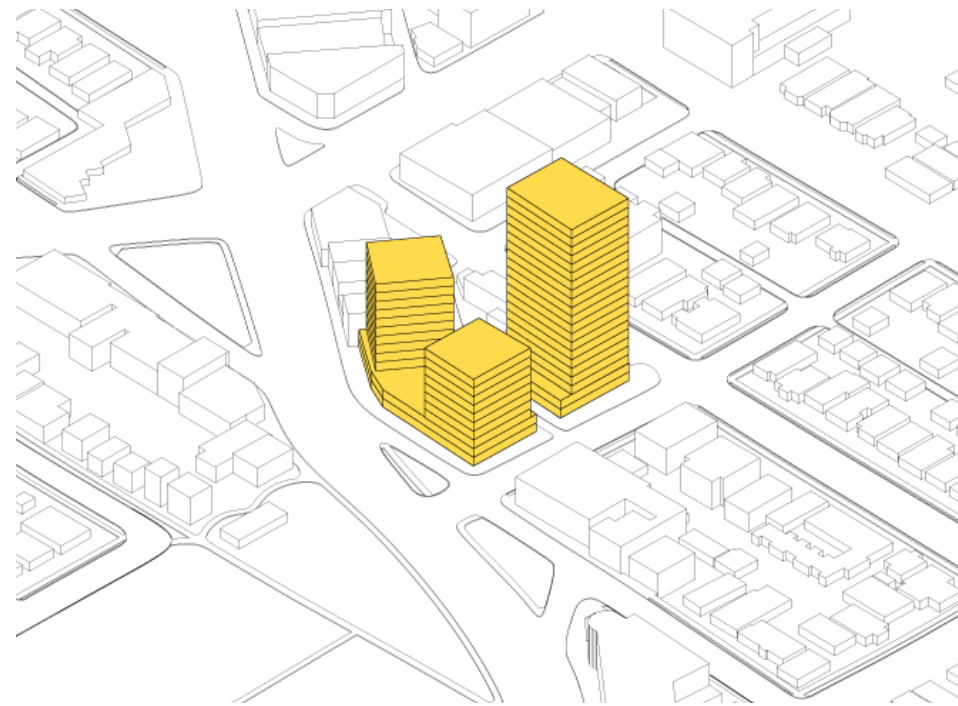
Three potential directions were explored through models and sketches. Considerations included how a distinct parti could emerge, core placement, and floor efficiency, along with occupant experience and how the public realm would interface not only at the ground level, but with the building as a whole.

Existing and Proposed Kingsway

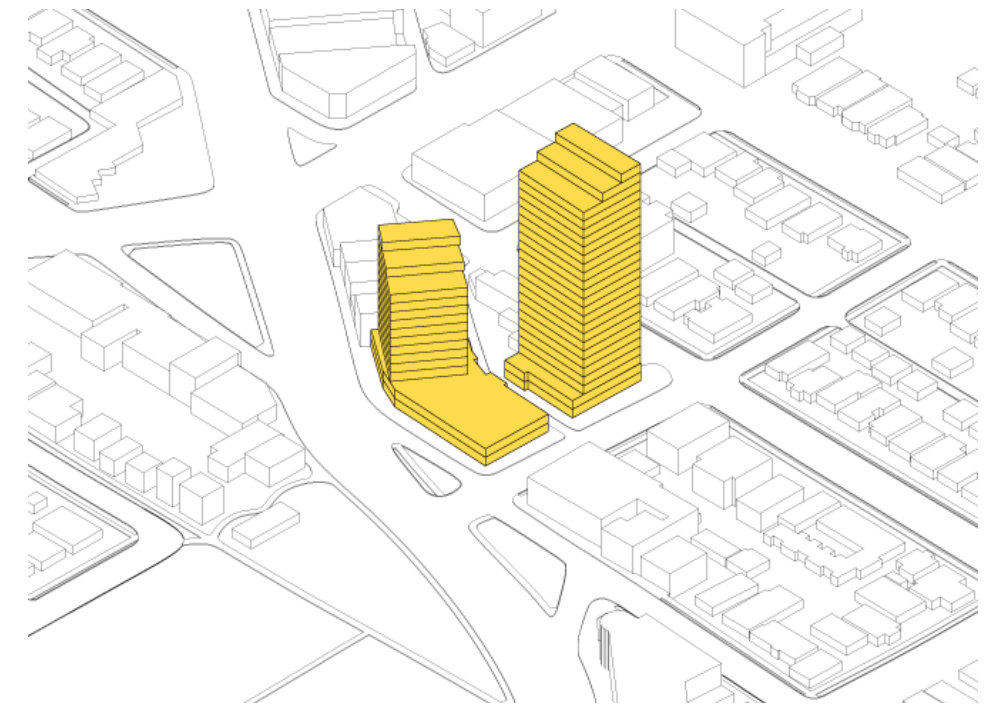
5.3.2 Initial Massing Exploration



1. Mid-rise and tower scenario



2. Three towers scenario



3. Two towers scenario

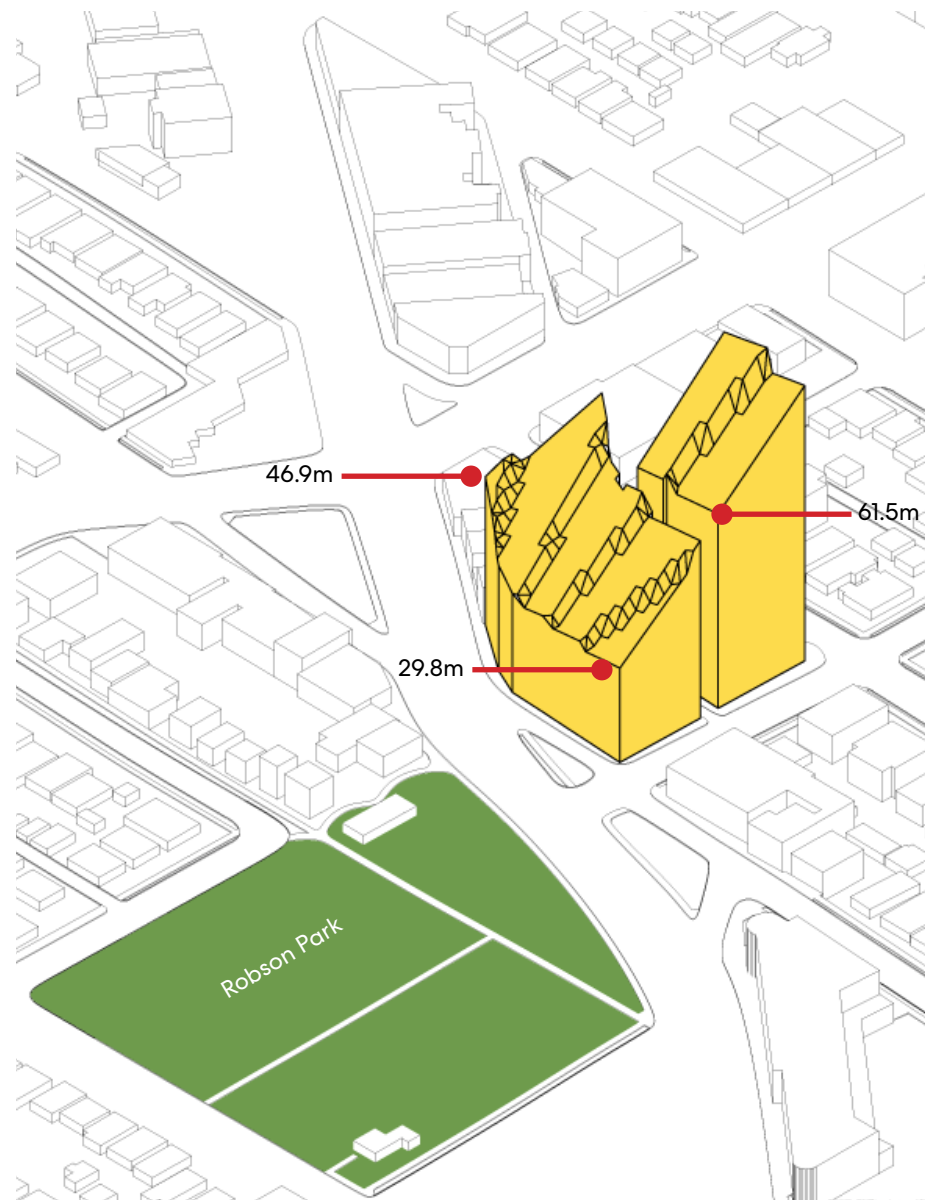


5.4 Parametric Solar Study

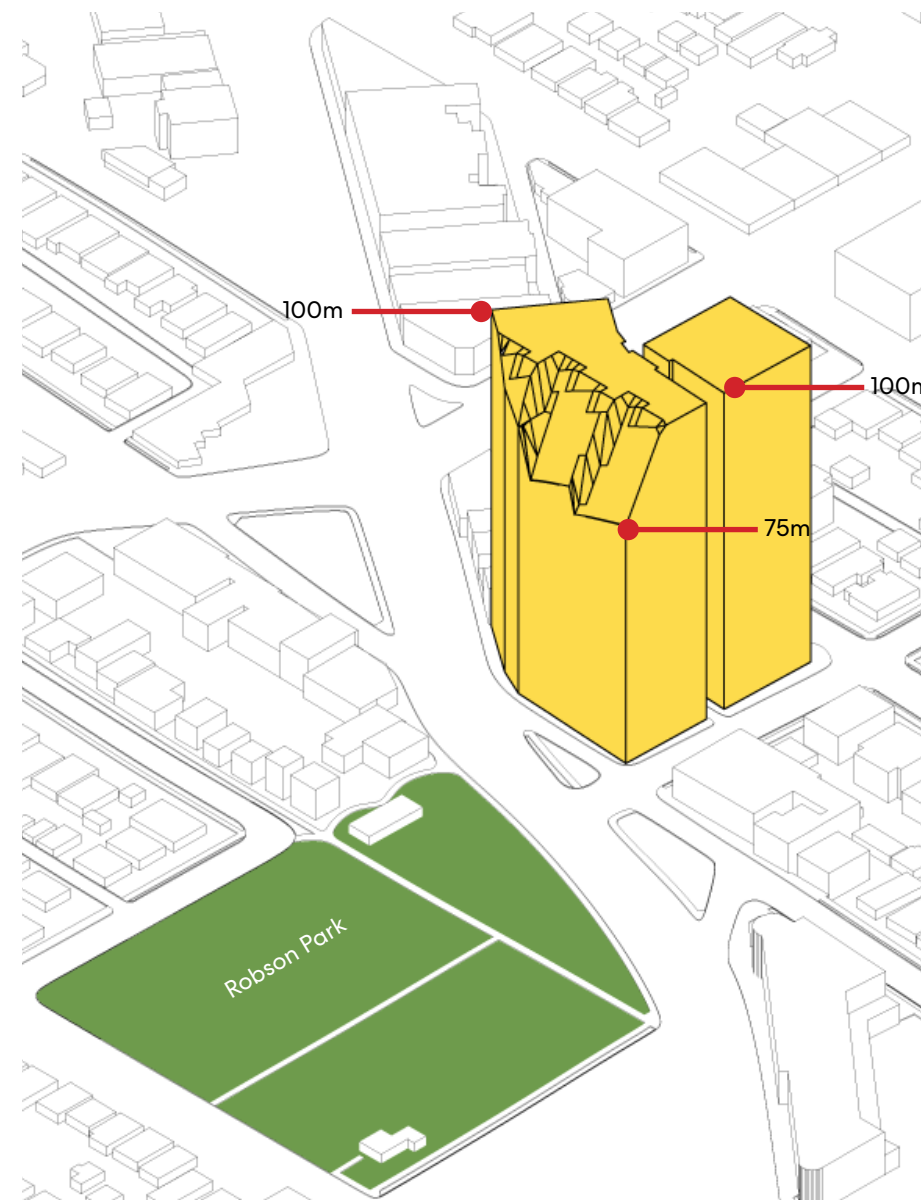
5.4.1 Solar Envelope with Extruded Site

Solar studies were conducted to determine what height could be achieved before shadows reached Robson Park. A site extrusion was created to determine overall building form followed by studies that looked at two tower and three tower scenarios determining tower shape based on separation and shading.

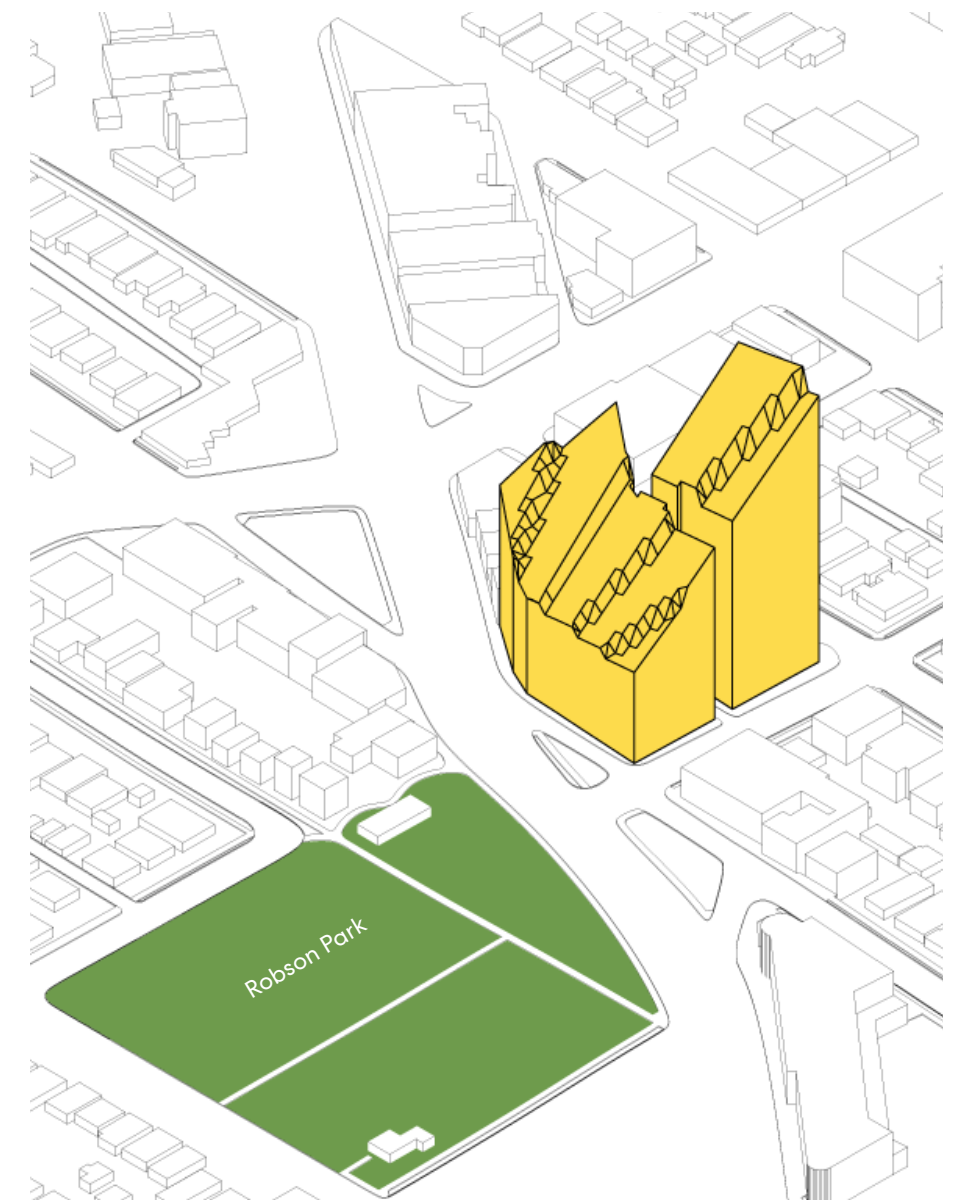
Maximum building envelope that does not cast shadow on Robson Park between 10am - 4pm on March 20th.



March 20, 10am-4pm



June 21, 10am-4pm

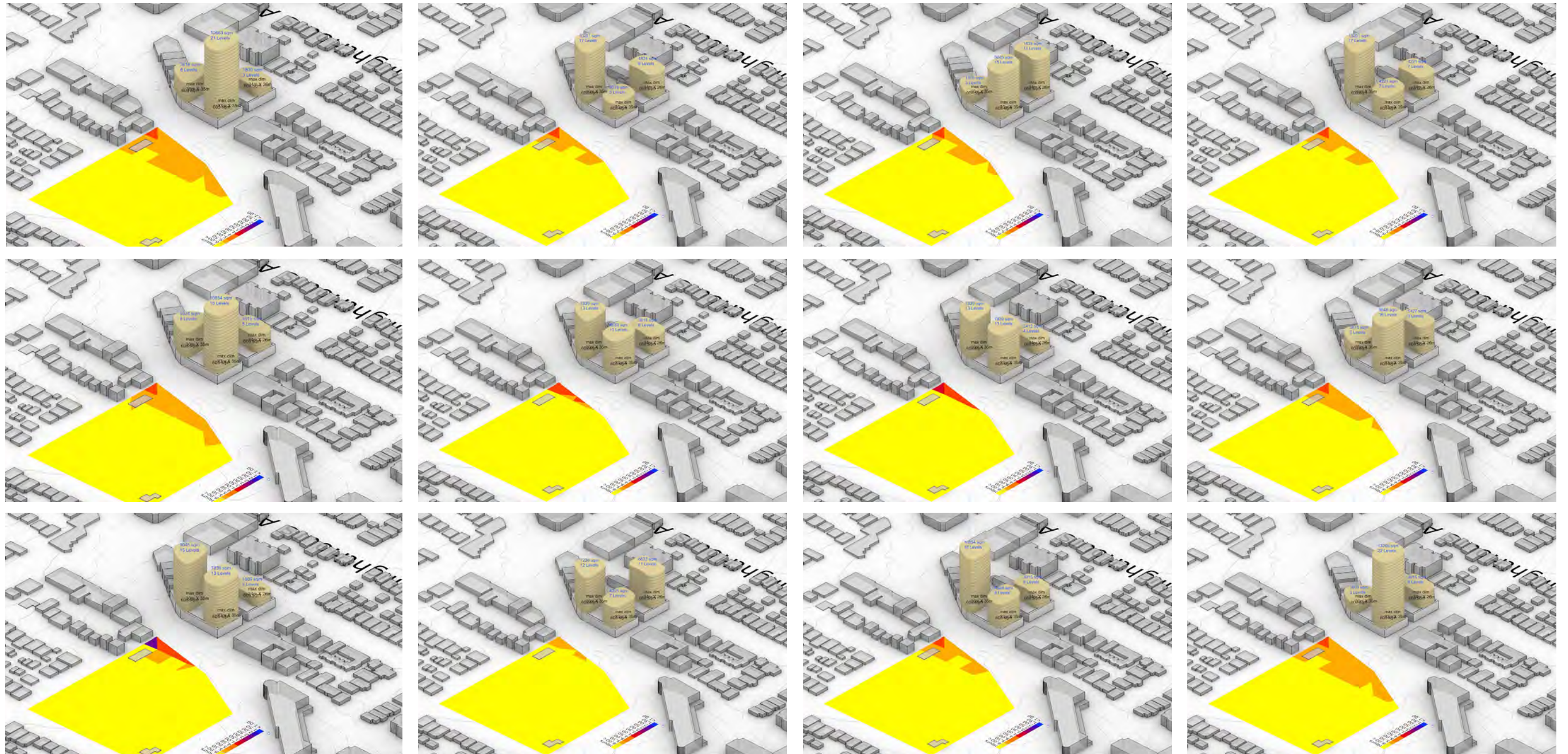


September 22, 10am-4pm

5.4.2 Solar Envelope Study - 3 Towers

- 6+ Hours of daylight
- 1.5-6 Hours of daylight
- 1.5 < Hours of daylight

In the 3-tower scenario, the shadow implication of the development between 10am to 4pm on March 20th has the largest impact on Robson Park when the tallest tower is placed closest to the intersection of Carolina St and Kingsway, as seen in the first scenario on the top-left. Placing the shortest tower at this corner of the site is best for reducing shadow impact as seen in the last scenario. However, achieving required tower separation in this 3-tower scenario will be challenging.

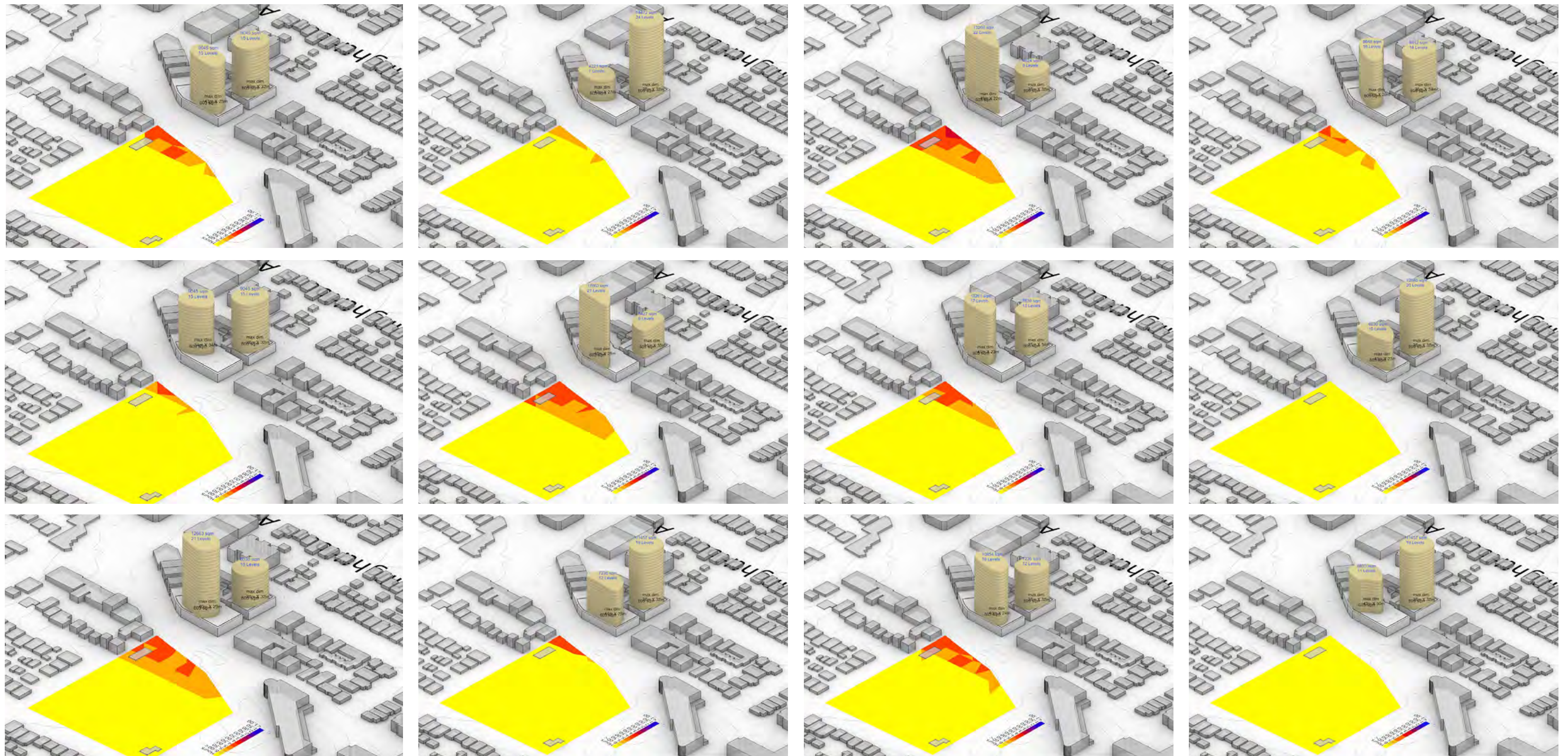


Shadow Impact of two towers with different heights, area, and form

5.4.3 Solar Envelope Study - 2 Towers

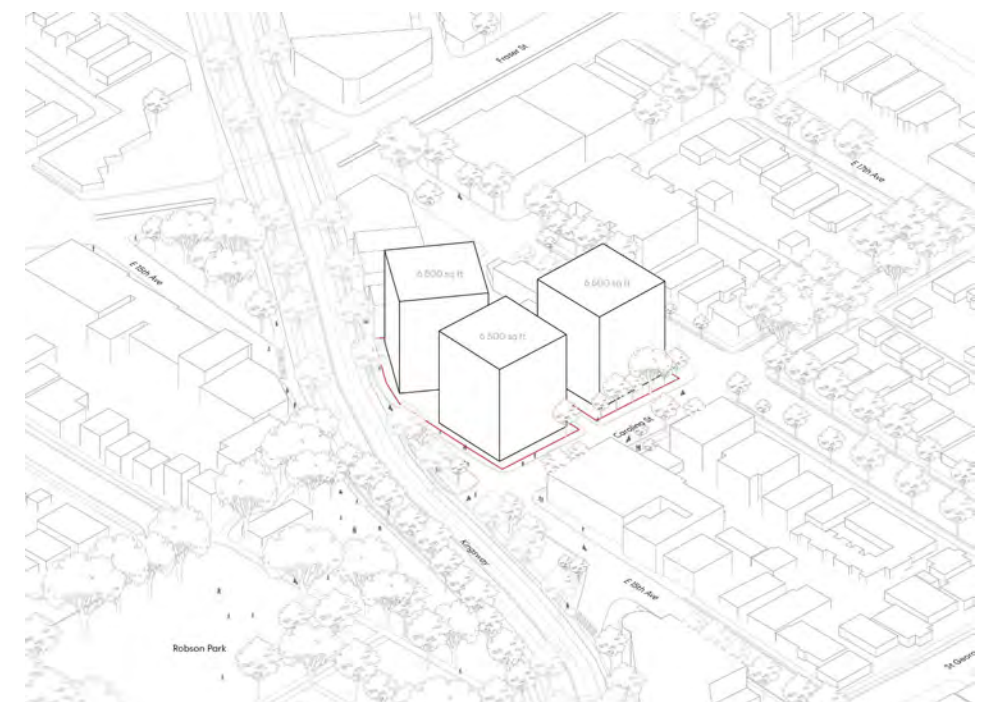
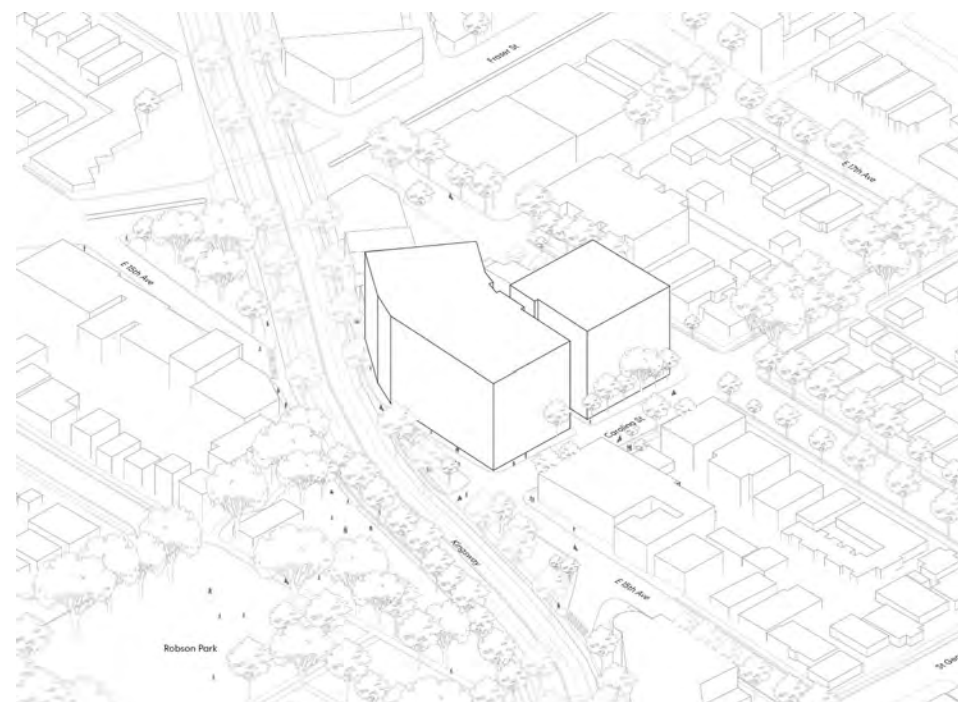
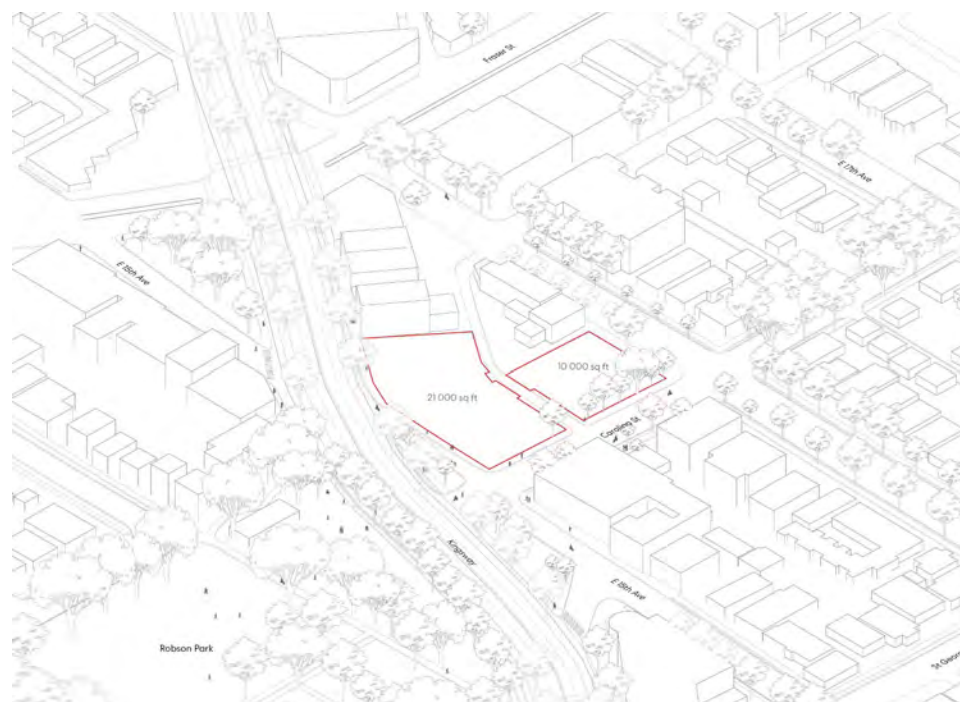
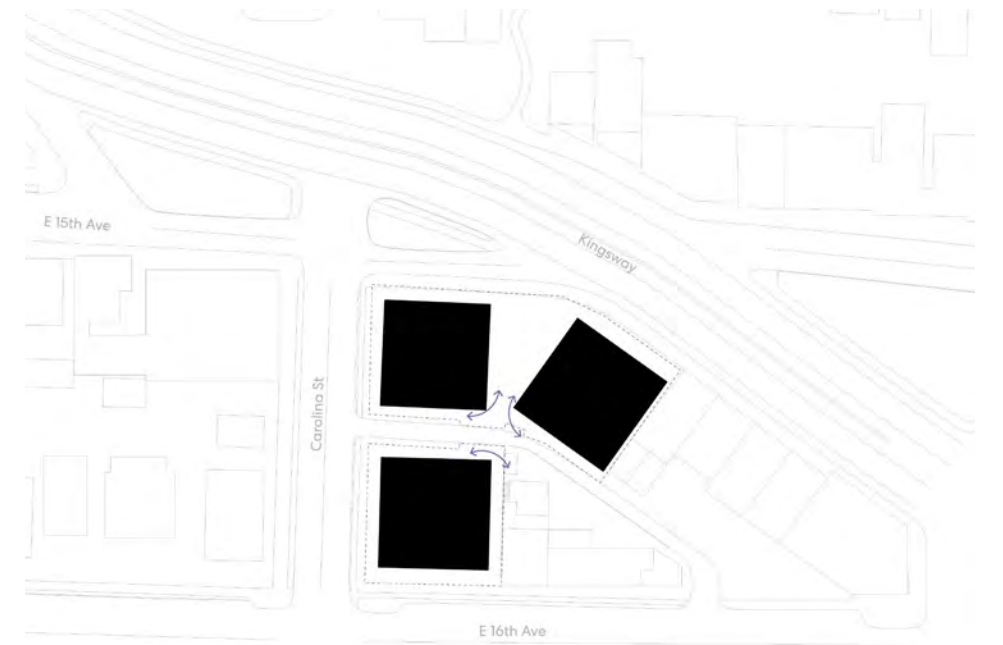
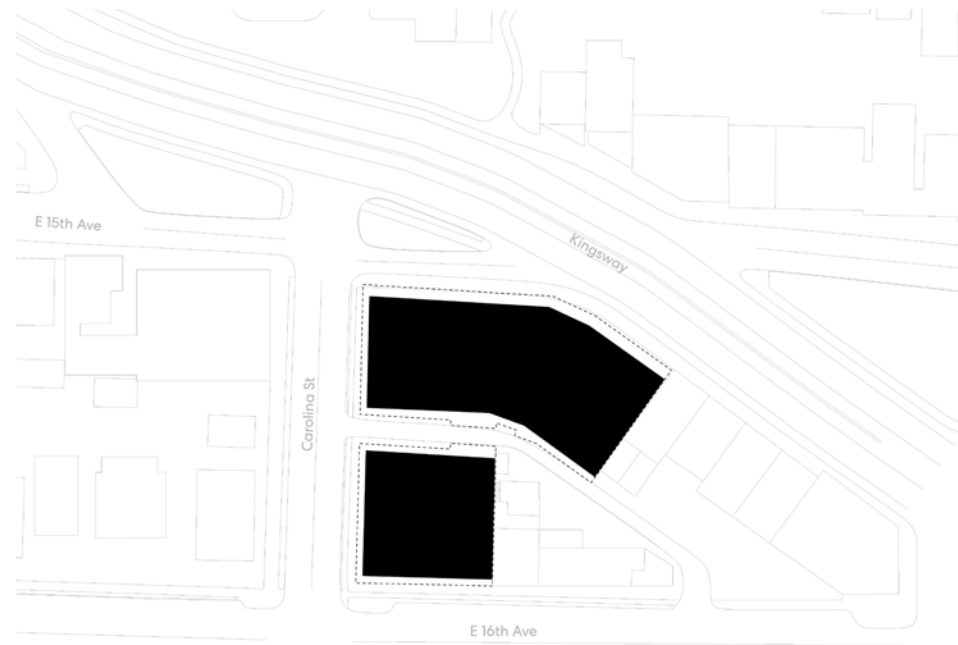
- 6+ Hours of daylight
- 1.5-6 Hours of daylight
- 1.5 < Hours of daylight

In the 2-tower scenario, the shadow implication of the development between 10am to 4pm on March 20th is minimal when the taller tower is located on the lot closest to the intersection of Carolina St and E 16th Ave and the shorter tower sits away from the corner along Kingsway while being respectful to 40 ft tower separation from the neighbouring site, as shown in the bottom-right scenario.



Shadow Impact of two towers with different heights, area, and form

5.5 Massing Design Rationale

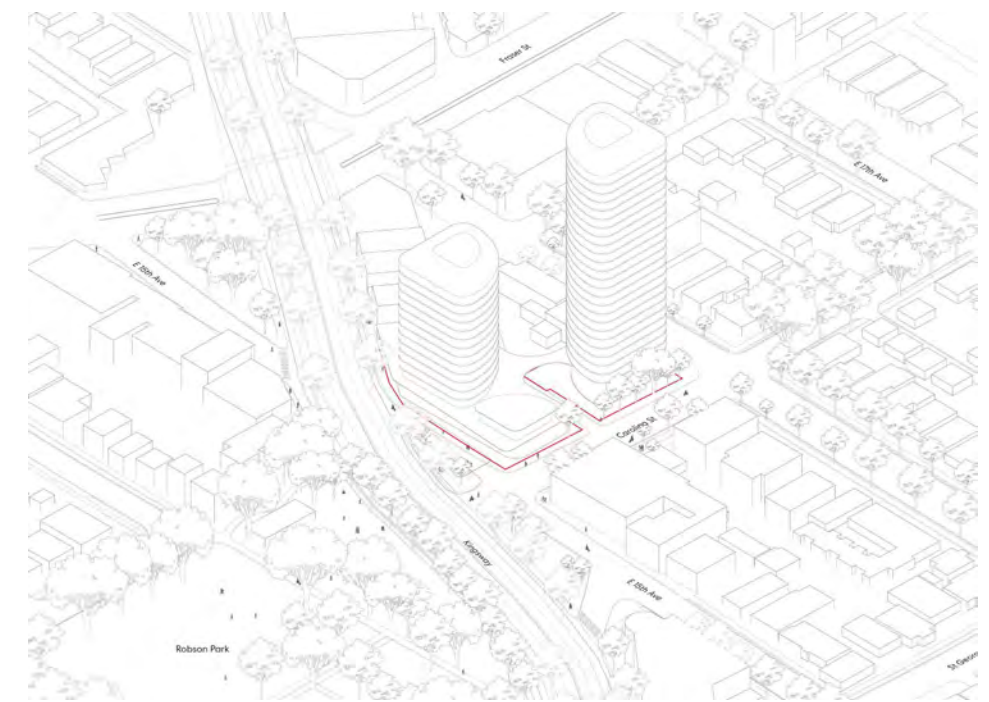
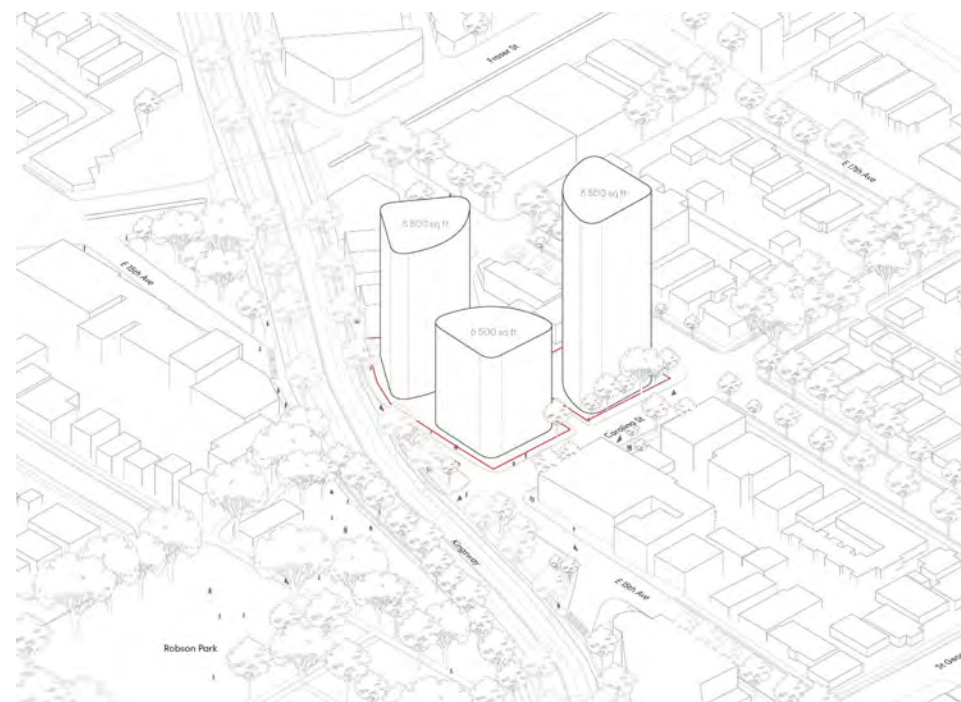
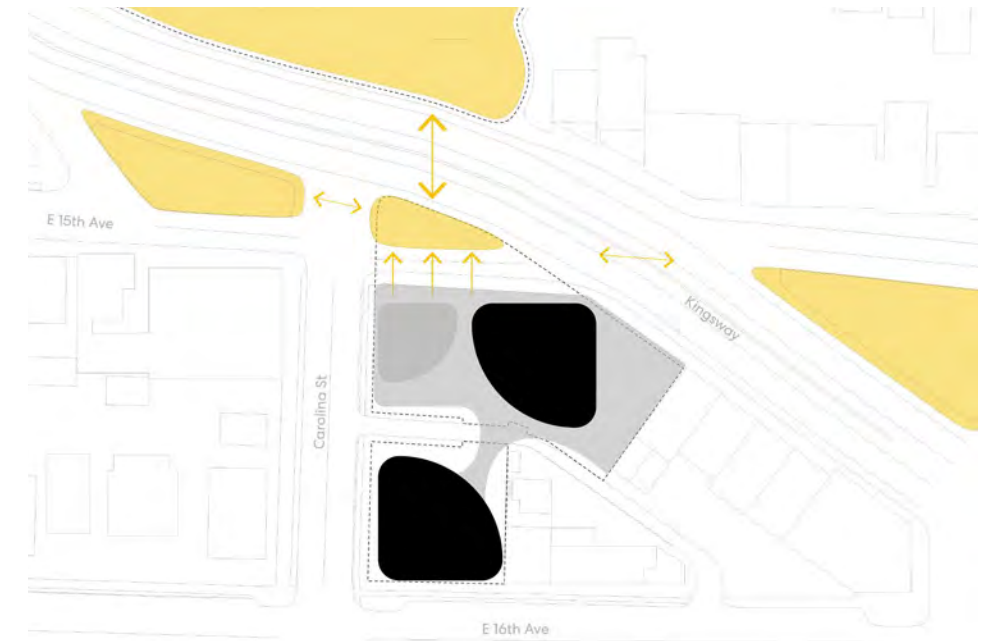
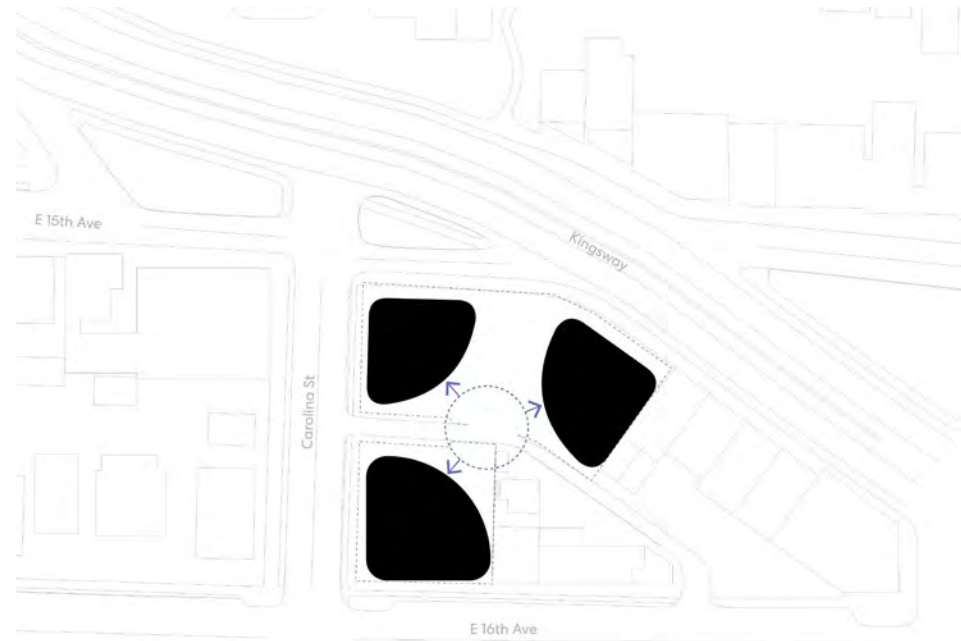


1. Site

2. Extruded mass.

3. Break up the mass.

Massing Design Rationale



4. Provide Adequate Tower Separation.

5. Reduce towers to address the setback challenge against the neighbouring site.

6. Create an inviting terrace and public space that enhances the surrounding parks.

5.6 Functional Program Rationale



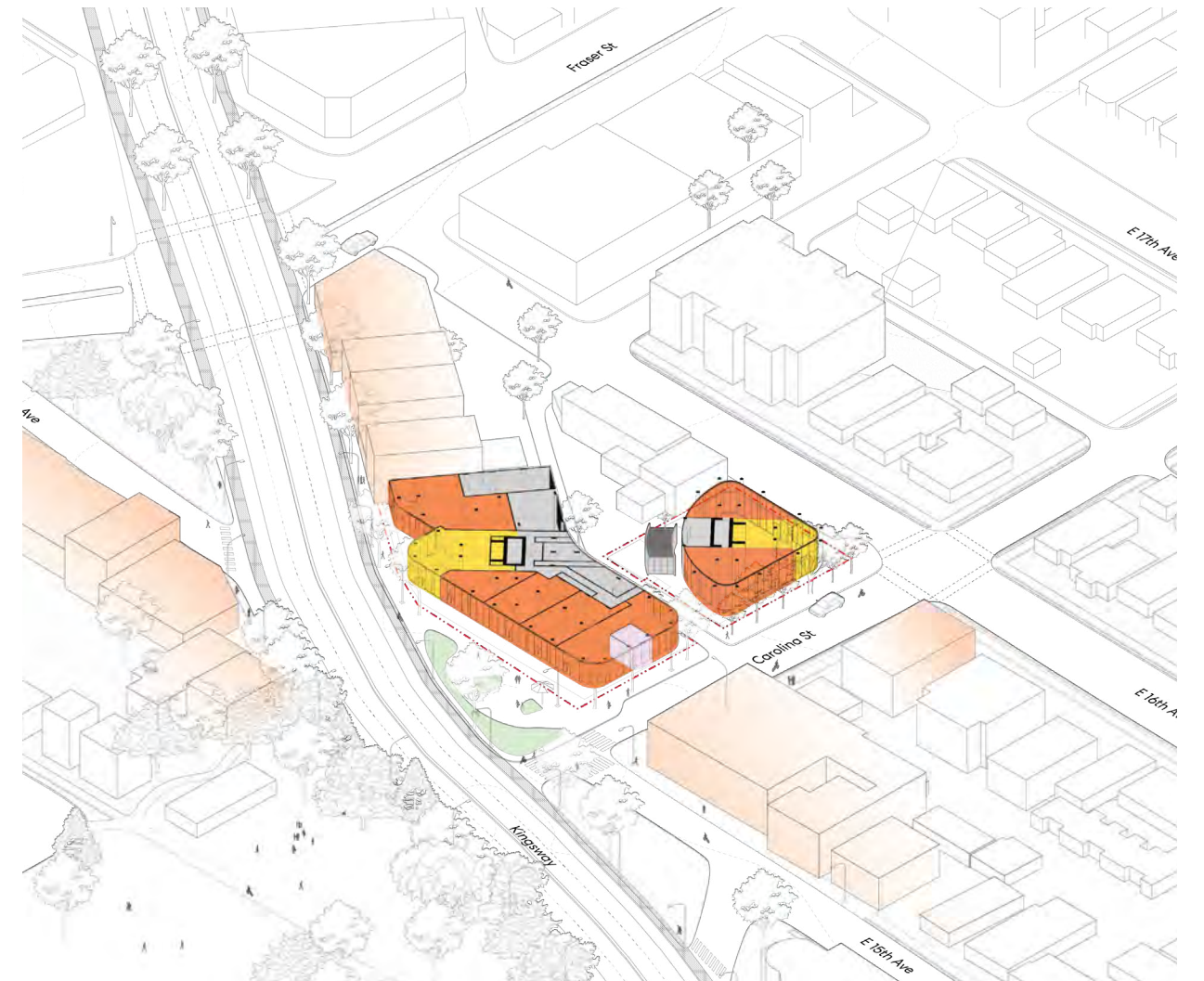
Rooftop Terrace

Residential Towers

Amenity/Community rooftop garden

Commercial/Retail

1. Program Breakdown



2. Activated Ground Level Public Realm

- Residential
- Commercial
- Loading/Service Area
- Childcare / Preschool

(Providing 20 spaces for preschooler, the proposed preschool facility at level 2 is privately run with dedicated parking space at level P1, refer to architectural drawings for details)

Functional Program Rationale



3. Amenity/Community rooftop garden



4. Residential Towers with Rooftop Terraces

- Community rooftop garden
- Resident Amenities
- Residential Towers
- Childcare / Preschool (Providing 20 spaces for preschooler, the proposed preschool facility at level 2 is privately run with dedicated parking space at level P1, refer to architectural drawings for details)

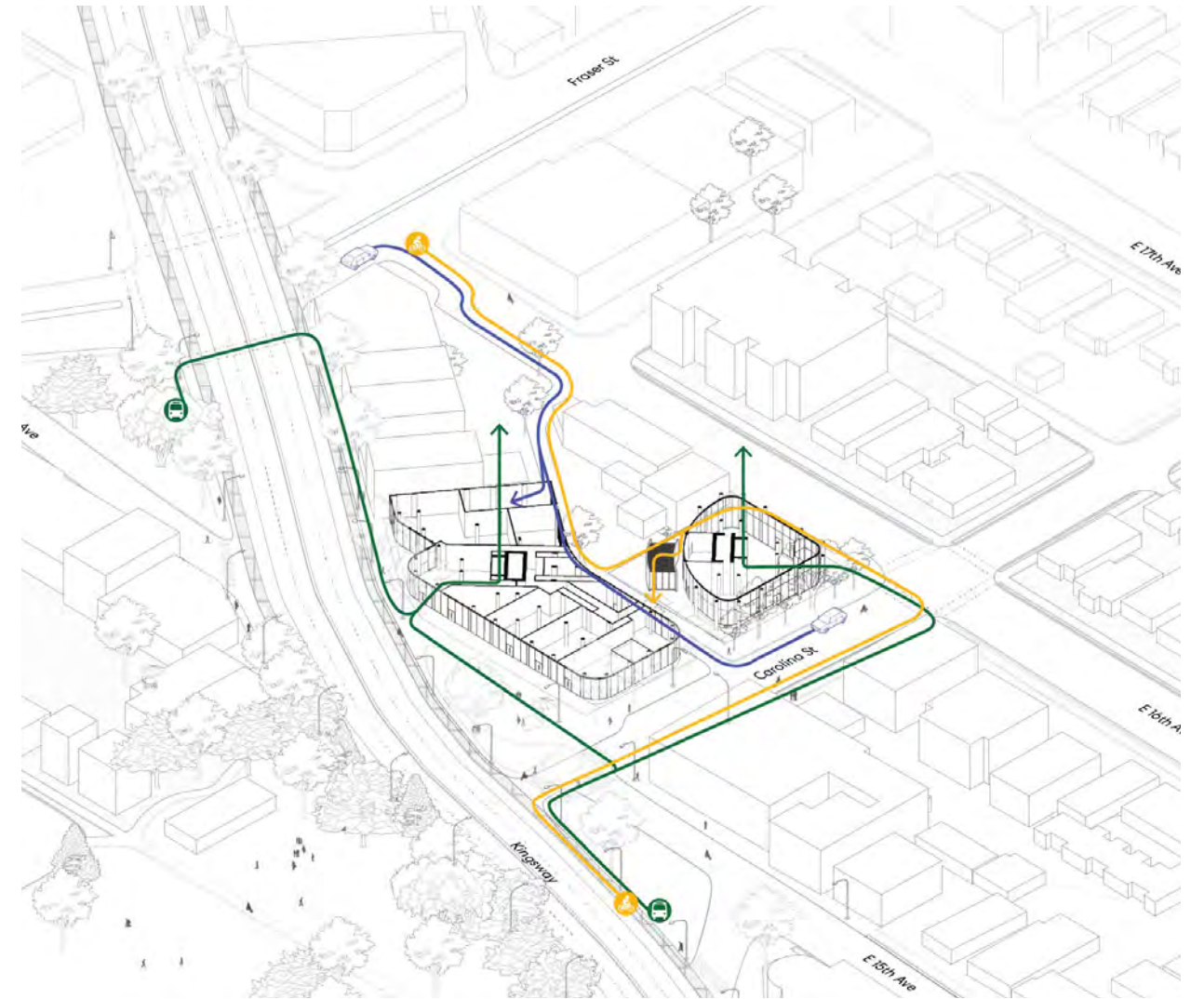
5.7 Circulation



1. Pedestrian Circulation

Pedestrian circulation along the site ensures seamless access from nearby bus stops with direct routes for commuters. Meandering walk paths through the Robson Park offer a scenic, leisurely experience, creating a shared connection with the proposed mini park adjacent to the retail frontage of the project.

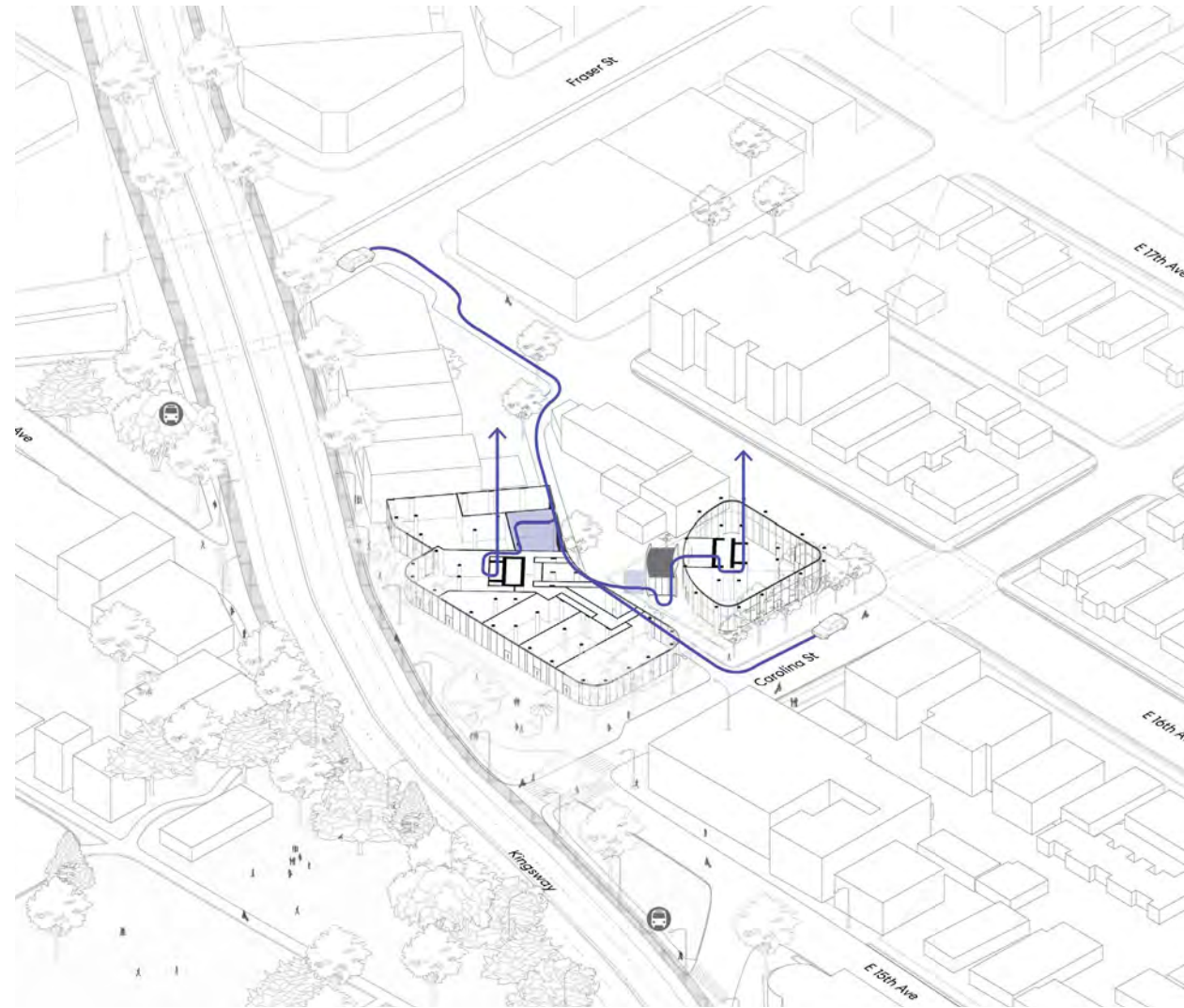
- Pedestrian
- Public Transit
- Bike
- Vehicle



2. Residence Circulation

The residence circulation diagram highlights pathways for commuters, bikers, and residents with cars. Commuters have direct access to into Tower North from Kingsway, or into Tower South from E 16th Ave. Bike users are provided with a bike shed/repair shop adjacent to Tower South, with an elevator to underground parking, accessed through Carolina St and E 16th Ave. Vehicle access to underground parking on the North parcel through the laneway.

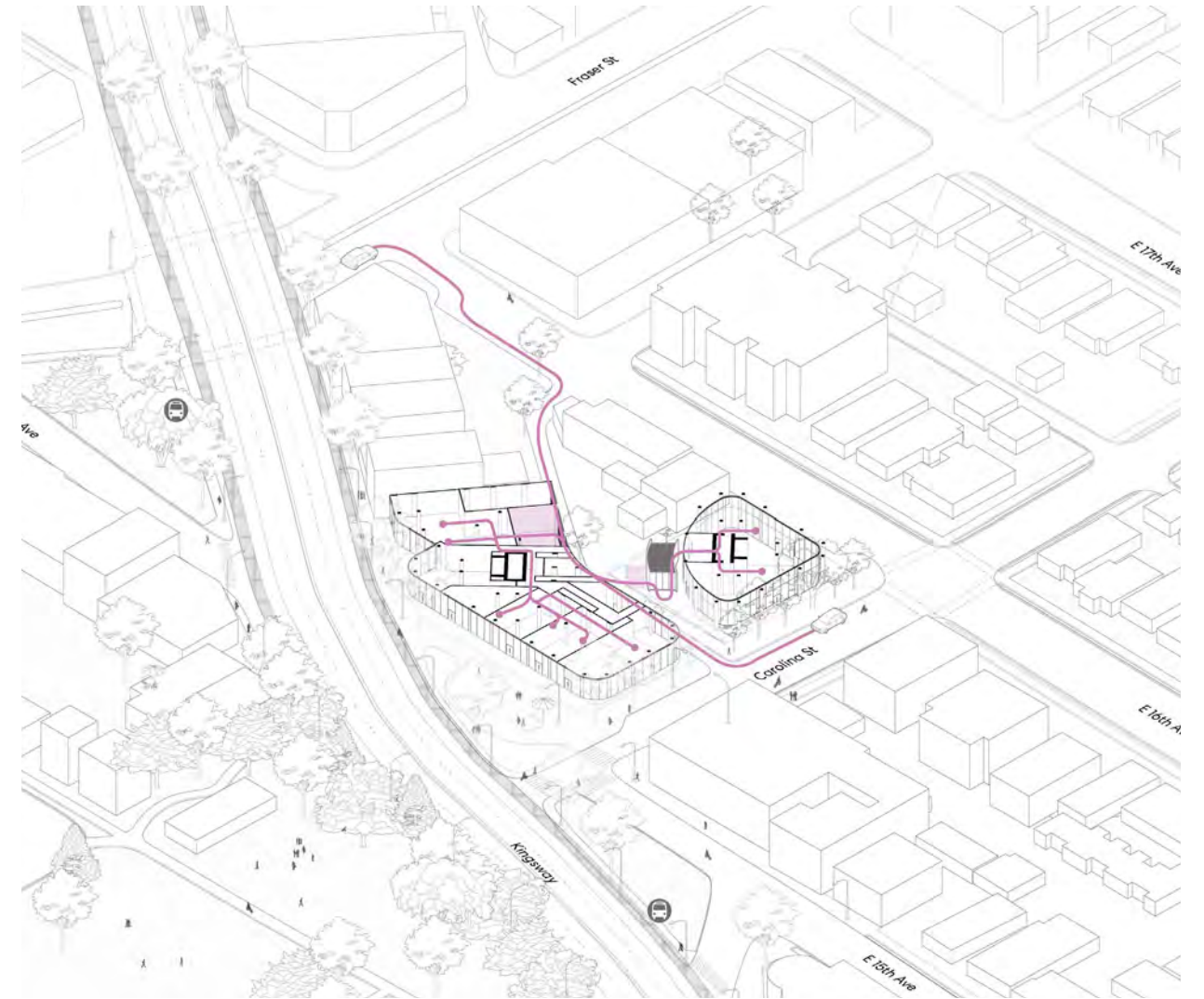
Circulation



3. Residential Loading Circulation

The residential loading circulation diagram highlights the designated paths for residential loading activities. The back-of-house space, accessible from the laneway, serves both towers. North tower offers a covered a Class A and two Class B loading spaces, with additional Class A loading on P1 Level.

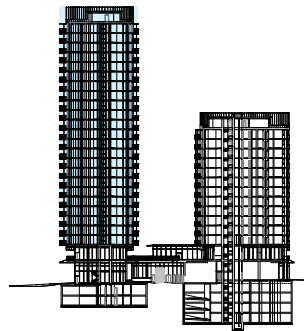
- ▭ Residential Loading
- ▭ Commercial Loading



4. Commercial Loading Circulation

The commercial loading circulation diagram illustrates that it shares the same loading areas as residential, accessible via the laneway. The illustrated loading distribution network ensures efficient delivery to each retail unit, with dedicated pathways connecting the shared loading zones to the individual retail spaces.

5.8 Horizontal Angle of Daylight



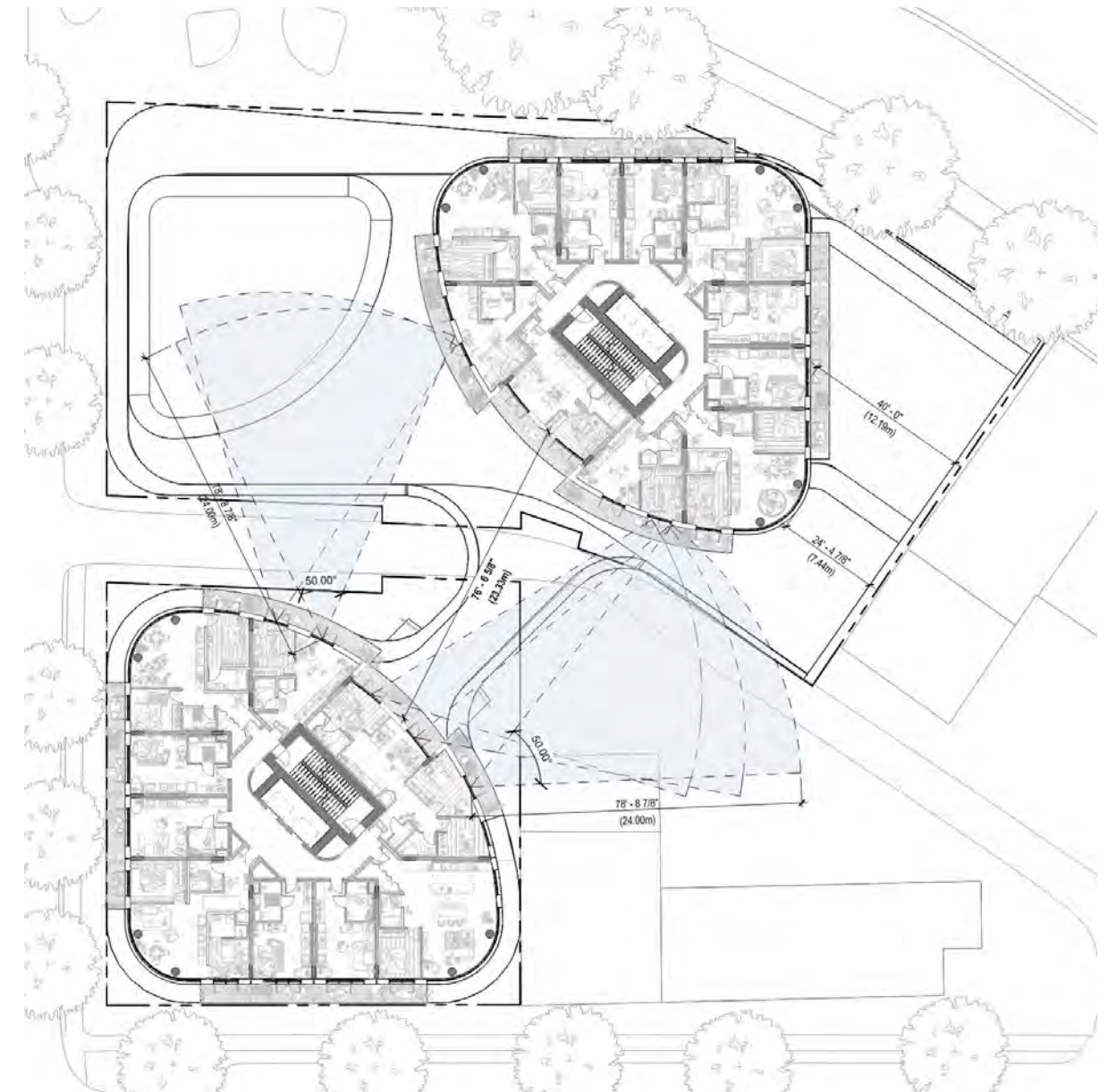
In order to satisfy the livability needs in residential buildings, tower sites in Vancouver typically require a minimum tower separation distance of 18m between a residential tower and adjacent commercial towers and 24m separation to adjacent residential towers.

The tower separation distance is measured using guidelines specified under CoV Horizontal Angle of Daylight regulations.

As illustrated on this page, the application proposes horizontal angle of daylight separations of 24m from impacted adjacent residential units. Complying directly with Horizontal Angle of Daylight regulations, the design proposal ensures access to adequate daylight, external views, and ventilation for habitable rooms between 25-storey and 14-storey towers.



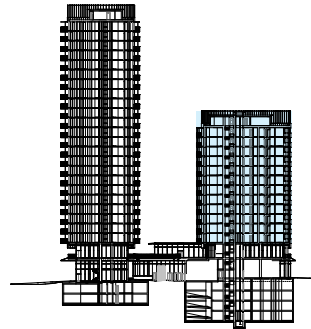
24m Long 50 ° Cone



Horizontal Angle of Daylight Separations of 24m from 25-Storey Tower to 14-Storey Tower



Horizontal Angle of Daylight



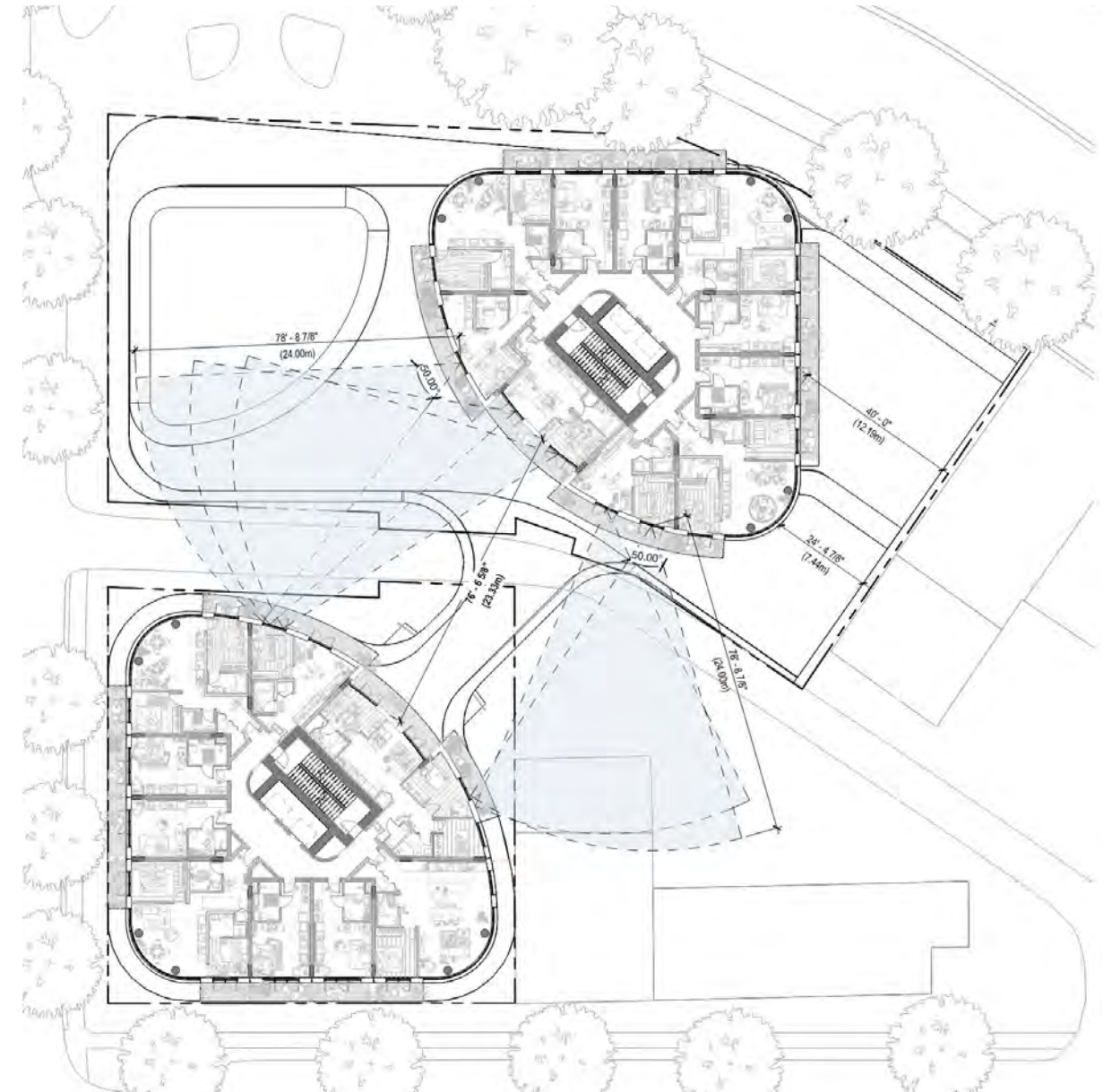
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24m Long 50° Cone

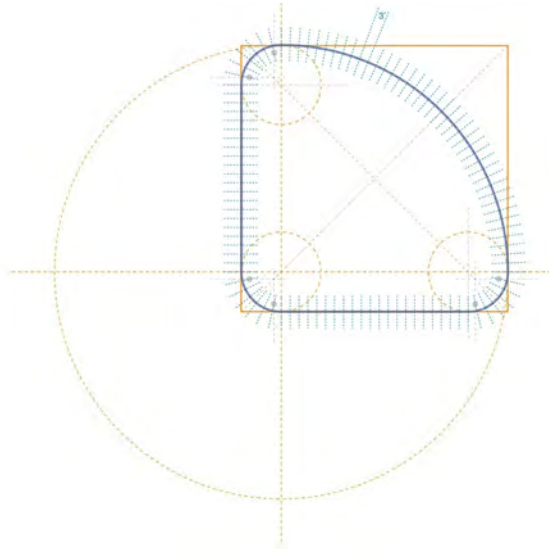


Horizontal Angle of Daylight Separations of 24m from 14-Storey Tower to 25-Storey Tower

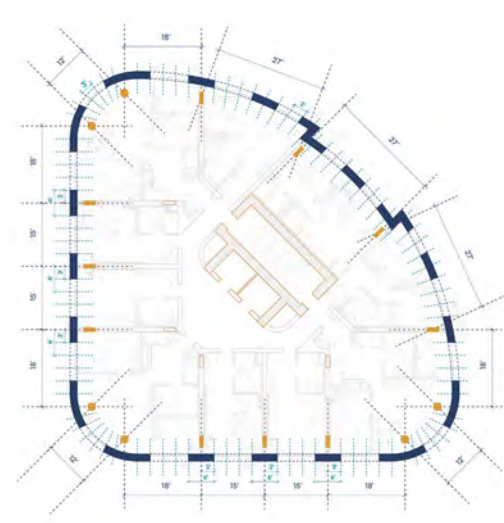


5.9 Facade Exploration

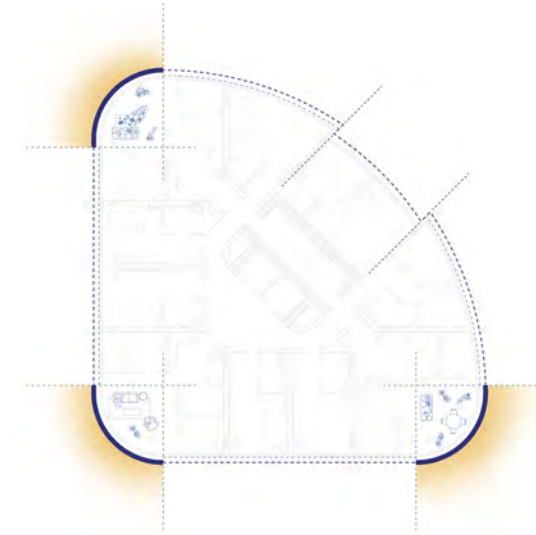
5.9.1 Structural Order



- Further rationalizing the geometry
- Same corners perfect circles to lend itself for repetition and economy of scale
- 3ft modules while corresponding structural order



- Start with the structural order that sets out an overarching façade organization guides
- With a clear structural logic, it results in dimensional clarities.

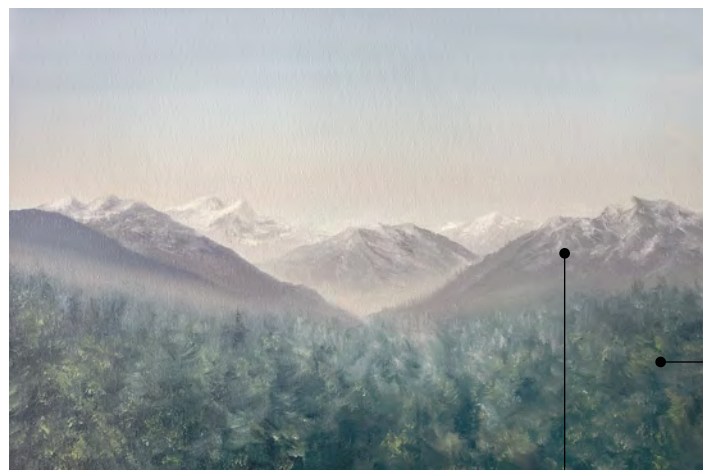


- Celebrating geometric conditions due to unique site opportunities
- Increased livability for livings spaces for inhabitants



- Purposeful and discrete openings where it makes sense
- Living rooms with larger openings while bedroom openings being framed to the need.
- Placement of opaque façade elements where there are demising walls or services.

5.9.2 Harmony between the Built Environment and Nature - Complimentary Dualities

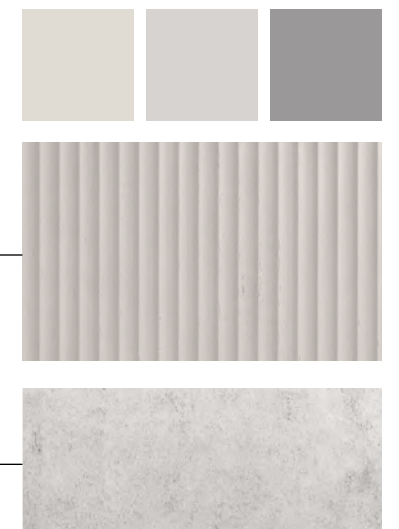


Context-Driven Approach: Material palette inspired by the neighbouring mountains; an oil painting as depicted above was created as a visualization tool and inspiration for the materiality and tonality of the tower facade

Enhancing inhabitant livability



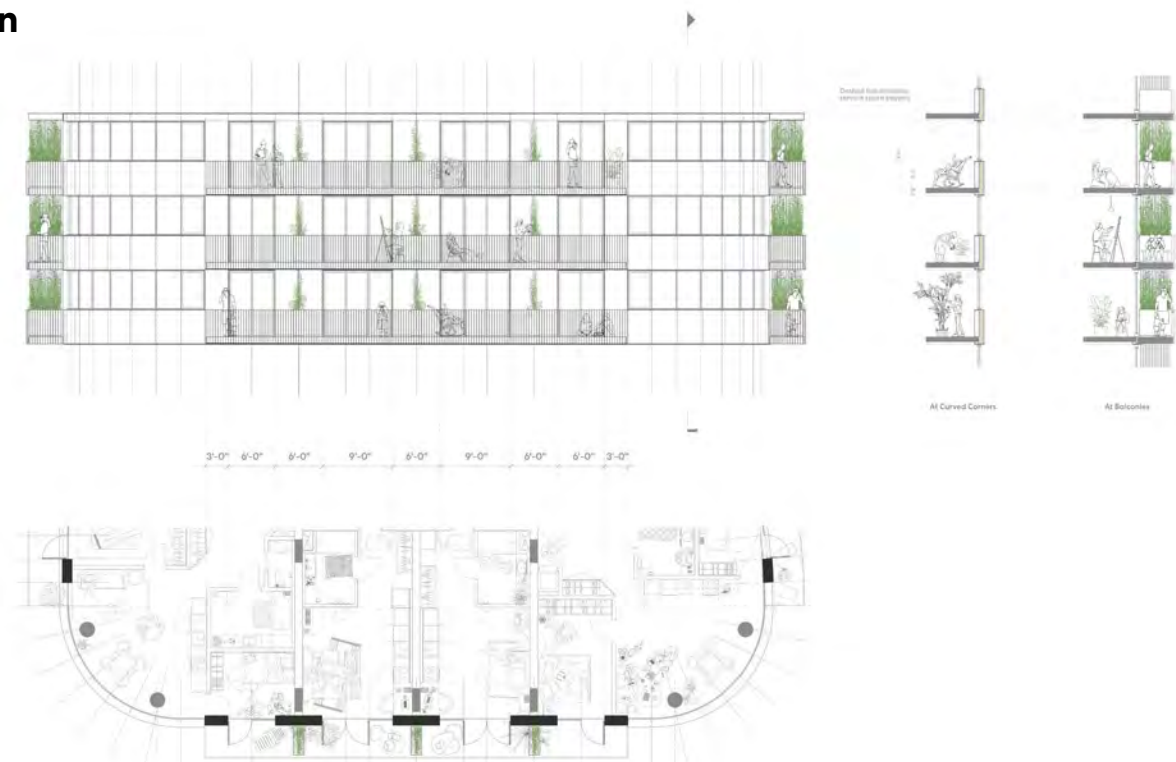
Adapting the poetry and tonality of the mountains in the distance



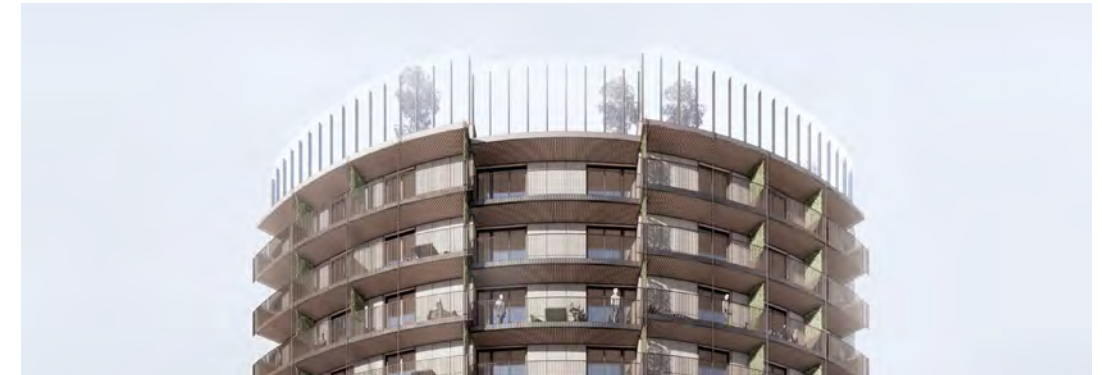
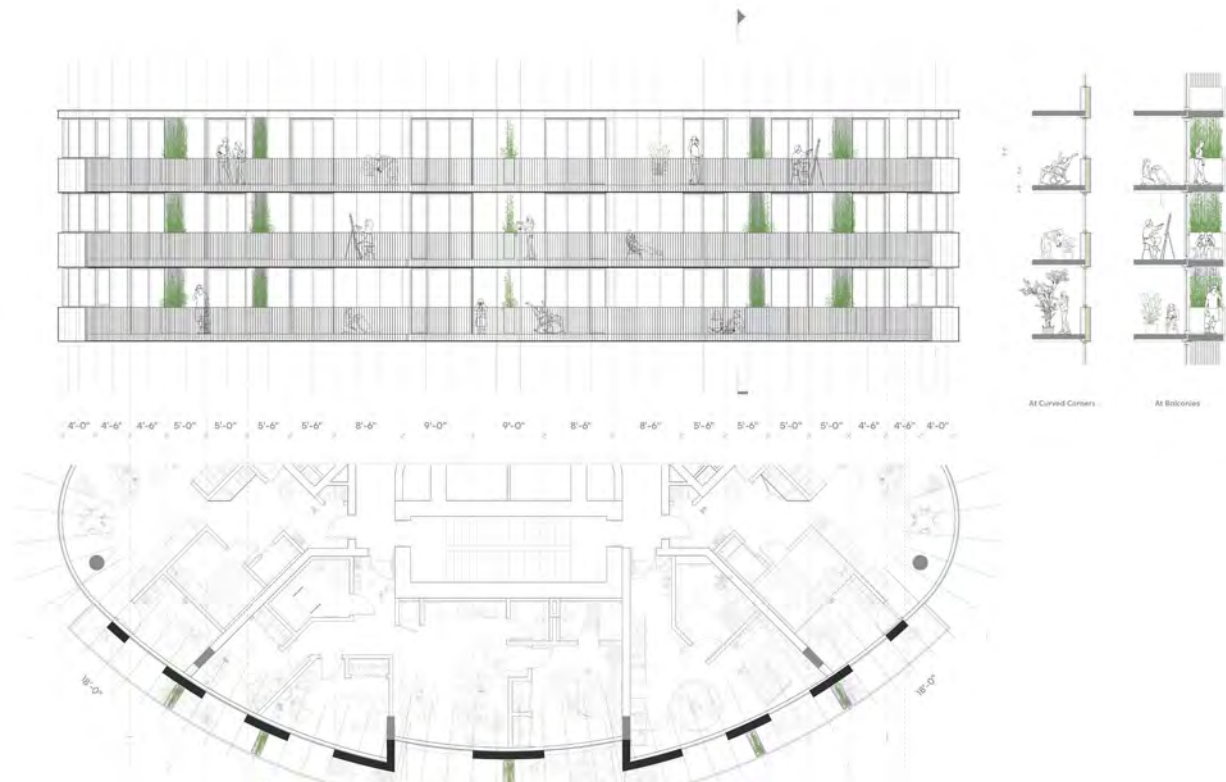
Facade Exploration

5.9.3 Envelope Direction

'Flat' Elevation



'Curved' Elevation

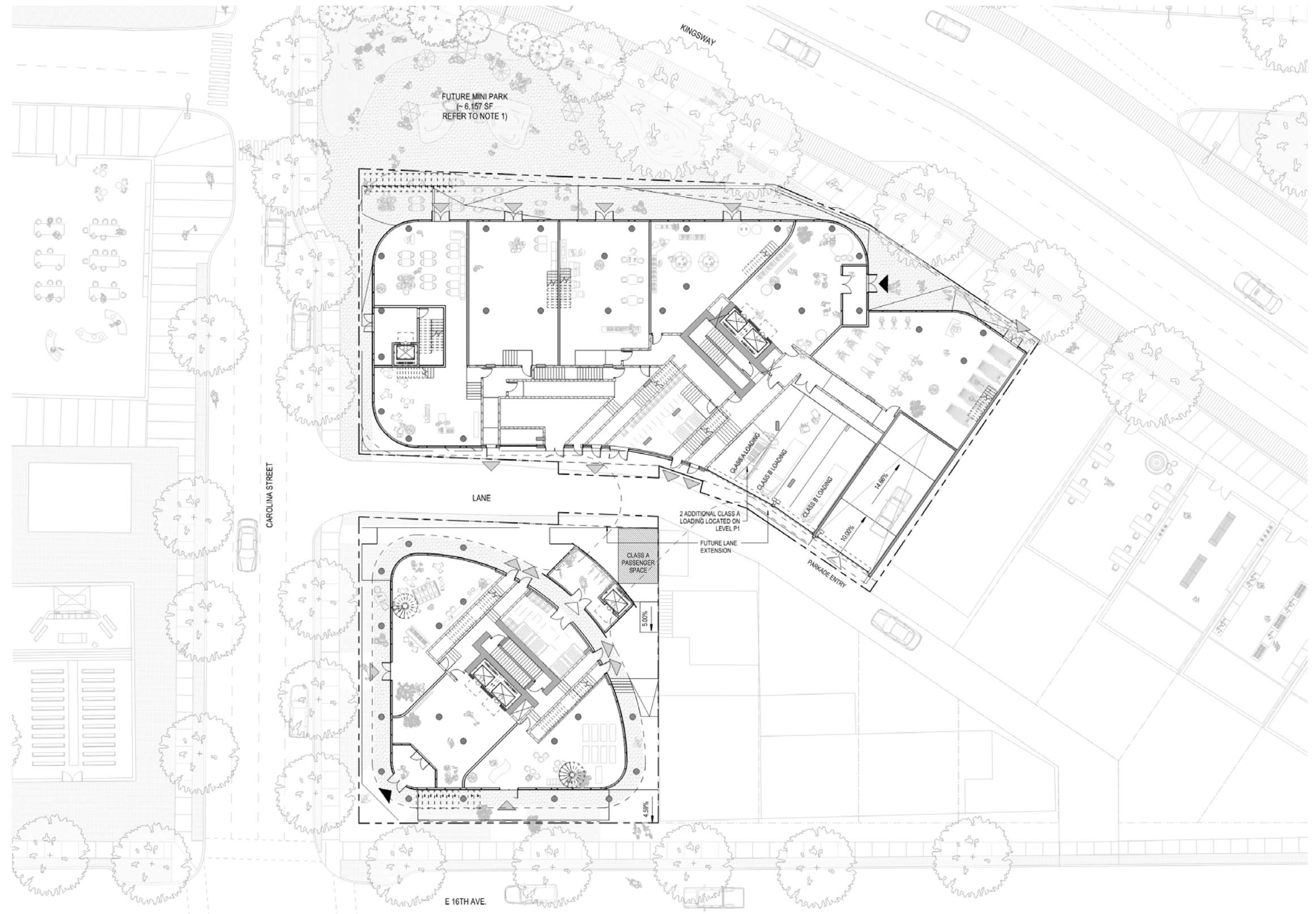


5.10 Public Realm

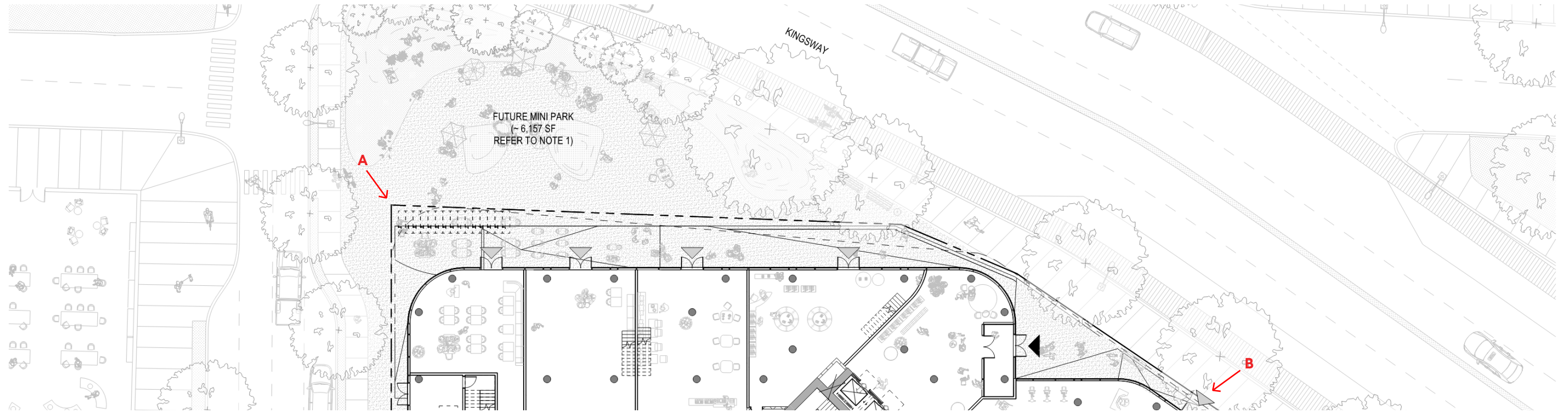
Active and accessible public realm for the residents and neighborhood to improve the quality of life.

- Enhancing Pedestrian Experience
- Introducing Public/Gathering Space
- Bringing Nature to the Community
- Accessible and Convenient Circulation

Regarding the proposed park/plaza, a portion of the existing road network along e 15th avenue, at the perimeter of the site to the north will be closed and replaced with a public park/plaza (~6,157 sf). While the same approach was reviewed and approved as part of the previous rezoning application for the site (see referral report cd-1 for 602-646 Kingsway), we do expect that there will be ongoing consultations and negotiations with engineering and park board as part of this rezoning review process.



Public Realm

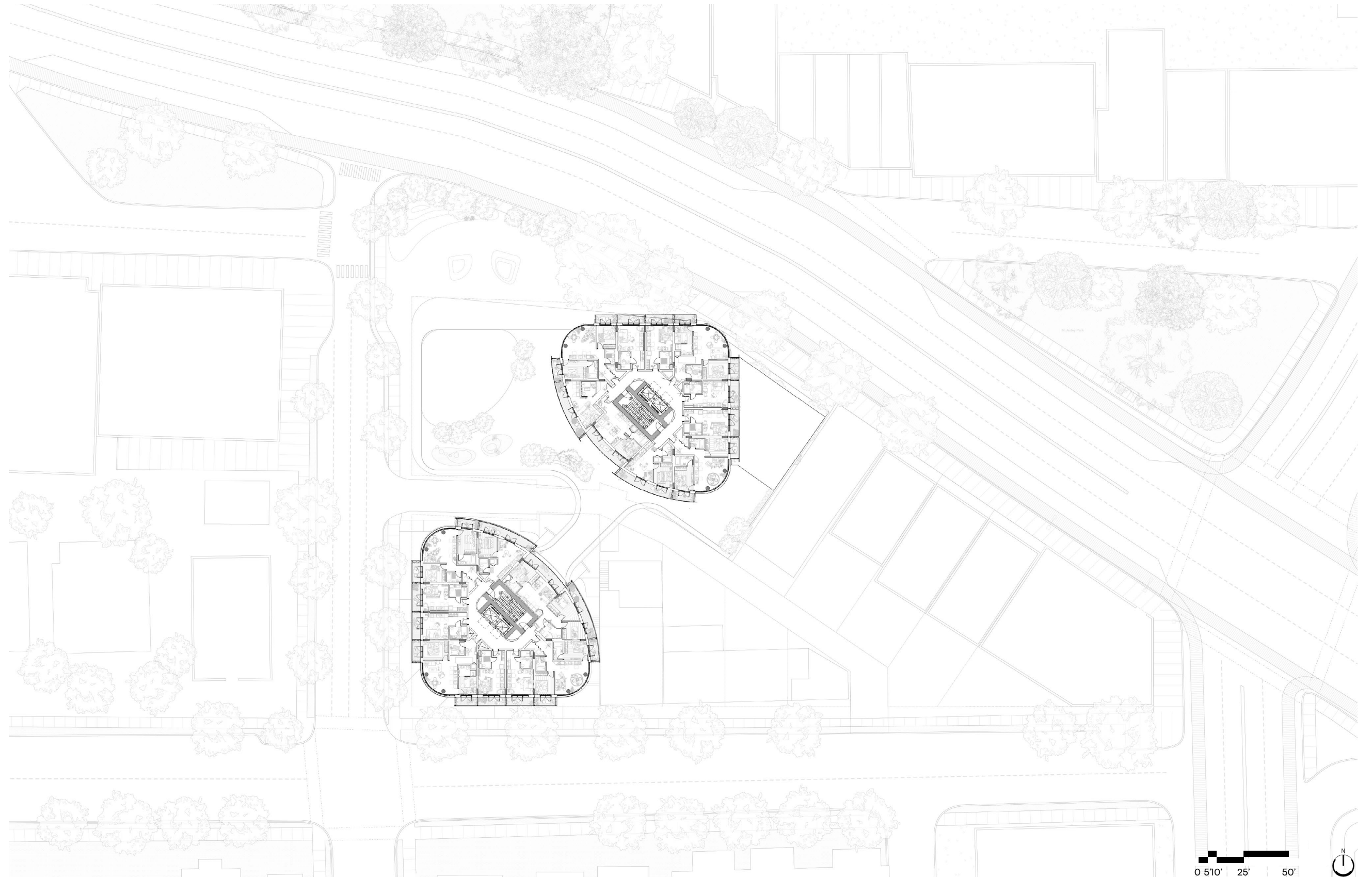


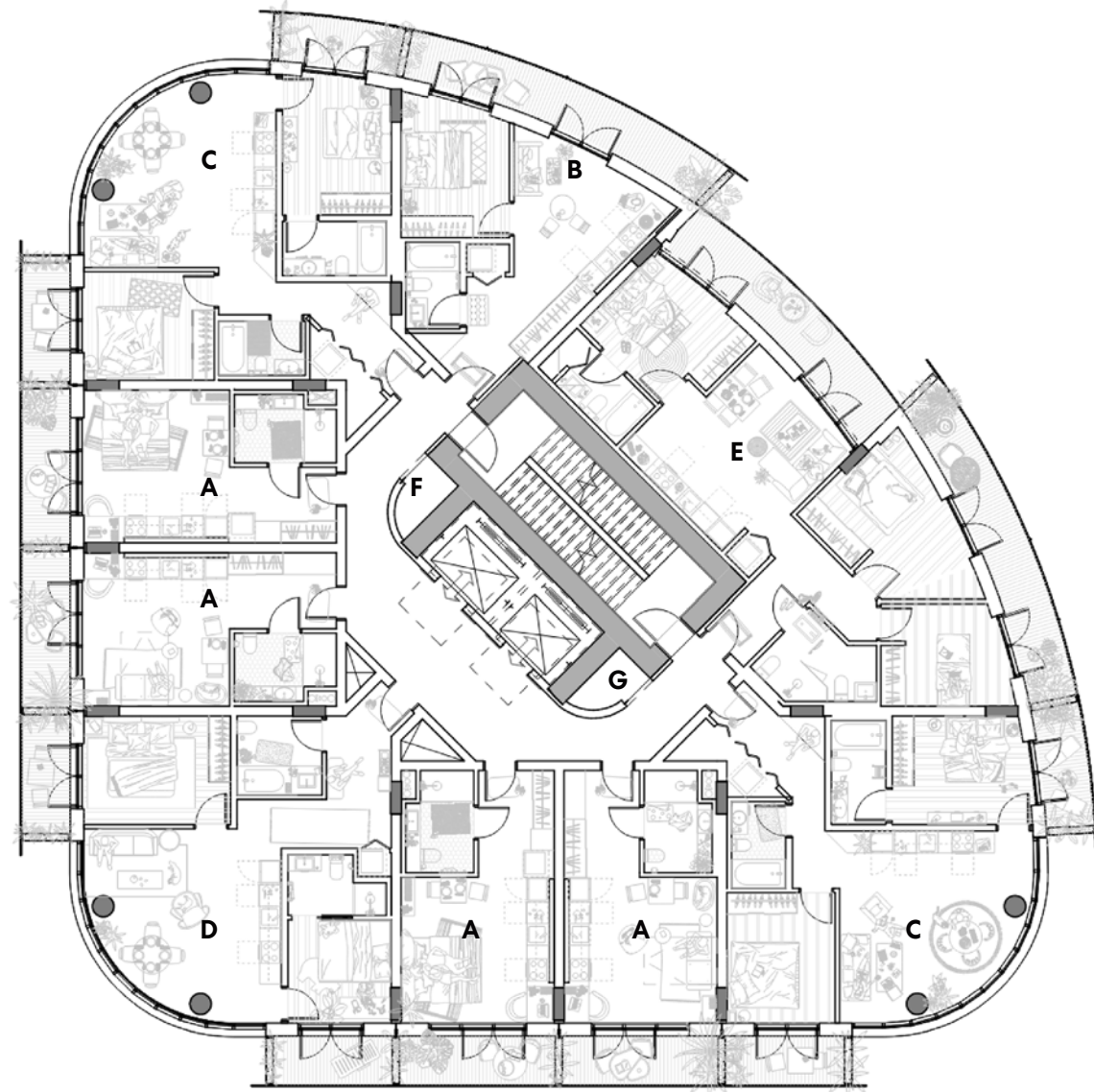
A. Mini park along Kingsway and Carolina St.



B. Main entrance and retail along Kingsway

5.11 Homes for Inhabitants



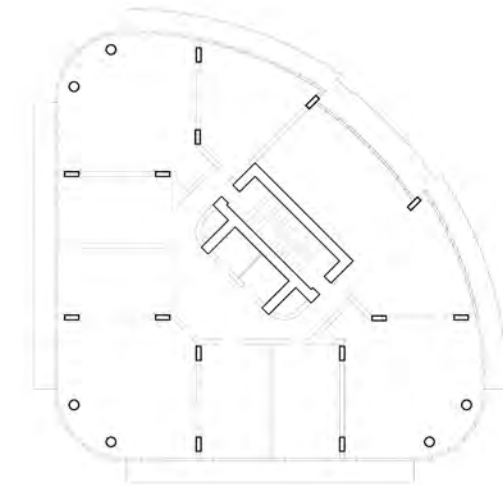


Experiential Quality for Inhabitants
Tower Level Floor Plan

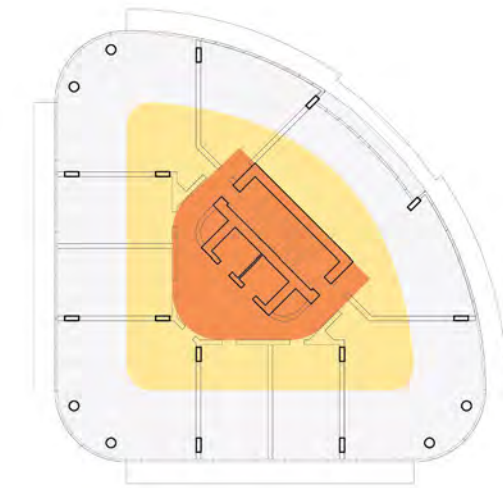
Delivering welcoming homes that not only meet the new 2024 BC Building Code requirements for adaptable dwelling units, but also provide elevated living and quality experience with access to natural daylight and views.

- Structural order as an organizing principle
- Systems as a part of a servant space
- Adaptability with equal access
- Experiential quality for inhabitants

- A. Studio Type A
- B. 1 Bed Type B
- C. 2 Bed Type A
- D. 2 Bed Type B
- E. 3 Bed
- F. Comm
- G. Elec



Structural Order as an Organizing Principle



Building Systems as Part of a Servant Space



Adaptability with Equal Access



Standing over the lane connection bridge at level 2 outdoor terrace and looking into residential amenity space.

Section 6.0

Architectural Drawings

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6.1 Project Data & FSR Summary

PROJECT INFORMATION BREAKDOWN (NORTH TOWER)

PROPOSED USE	RESIDENTIAL / COMMERCIAL					
FSR AREA - TOTAL	102,073.2 m ² (8,482.9 m ²)					
FSR AREA - COMMERCIAL	18,378.4 m ² (1,521.8 m ²)					
	89,694.8 m ² (7,961.1 m ²)					
BUILDING HEIGHT	165'-4" (50.39m)					
BUILDING STOREYS	14					
TOTAL NUMBER OF RESIDENTIAL UNITS	123					
UNIT MIX SUMMARY	UNIT TYPE	NO. OF UNITS	AVERAGE UNIT SIZE			
			NET		GROSS	
			m ²	ft ²	m ²	ft ²
	STUDIO	60	31.1	334.9	35.8	384.7
	1 BD	26	40.8	440.0	48.8	523.7
2 BD	37	72.3	778.0	81.2	874.0	
3 BD	0					

PROJECT INFORMATION BREAKDOWN (SOUTH TOWER)

PROPOSED USE	RESIDENTIAL / COMMERCIAL					
FSR AREA - TOTAL	156,090.0 m ² (14,501.3 m ²)					
FSR AREA - COMMERCIAL	3,105.4 m ² (288.5 m ²)					
	152,984.6 m ² (14,212.8 m ²)					
BUILDING HEIGHT	273'-0" (83.21m)					
BUILDING STOREYS	25					
TOTAL NUMBER OF RESIDENTIAL UNITS	207					
UNIT MIX SUMMARY	UNIT TYPE	NO. OF UNITS	AVERAGE UNIT SIZE			
			NET		GROSS	
			m ²	ft ²	m ²	ft ²
	STUDIO	92	30.5	328.1	34.8	374.8
	1 BD	25	37.5	433.3	46.4	499.5
2 BD	69	72.3	778.0	81.3	874.7	
3 BD	21	79.8	858.6	89.4	962.2	

RESIDENTIAL UNIT MIX SUMMARY (BELOW-MARKET RENTAL)

UNIT TYPE	NO. OF UNITS	% PROVIDED	FAMILY HOUSING		AVERAGE UNIT SIZE			
			REQUIRED	PROVIDED	NET		GROSS	
					m ²	ft ²	m ²	ft ²
STUDIO	36	45.5%	35%	38.4%	30.7	330.8	35.1	378.5
1 BD	10	15.2%			40.6	436.7	46.6	501.8
2 BD	21	31.8%			72.3	778.0	81.3	874.7
3 BD	5	7.6%			79.8	858.6	89.4	962.2
TOTAL	66	100.0%						

Family Unit 22 BD 26 39.4%
NOTE: 20% OF THE TOTAL RESIDENTIAL RENTAL AREA IS BELOW-MARKET RENTAL UNITS
**REFER TO REQUEST FOR RELAXATION #3

RESIDENTIAL UNIT MIX SUMMARY (NON-BELOW MARKET RENTAL)

UNIT TYPE	NO. OF UNITS	% PROVIDED	FAMILY HOUSING		AVERAGE UNIT SIZE			
			REQUIRED	PROVIDED	NET		GROSS	
					m ²	ft ²	m ²	ft ²
STUDIO	122	46.7%	38%	38.1%	30.7	330.8	35.1	378.5
1 BD	39	14.2%			40.6	436.7	46.6	501.8
2 BD	85	32.2%			72.3	778.0	81.3	874.7
3 BD	16	8.9%			79.8	858.6	89.4	962.2
TOTAL	264	100.0%						

Family Unit 22 BD 103 39.1%
NOTE: **REFER TO REQUEST FOR RELAXATION #3

CHILD CARE SUMMARY

	SPACES	GROSS INDOOR	COVERED OUTDOOR	TOTAL OUTDOOR
PRESCHOOL (PART-TIME)	20	268 m ² (2,884 ft ²)	33 m ² (355 ft ²)	141 m ² (1,520 ft ²)

NOTE: GROSS INDOOR AREA INCLUDES CHILD CARE LOBBY AND SUPPORT SPACE

PROJECT INFORMATION

PROJECT NAME	600 Kingsway		
CIVIC ADDRESS	602-644 KINGSWAY, VANCOUVER		
LEGAL DESCRIPTION	802-644 Kingsway (PID 004-696-760, Lot A Block 101 District Lot 301 Plan 20943; PID 004-696-786, Lot B Block 101 District Lot 301 Plan 20943; PID 004-696-808, Lot C Block 101 District Lot 301 Plan 20943; PID 625-965-813, Lot D Block 101 District Lot 301 Group 1 New Westminster District Plan BCP1296; PID 014-234-621, Amended Lot 3 (See 22485SL) Block 101 District Lot 301 Plan 1888; PID 014-234-611, Lot 6 Block 101 District Lot 301 Plan 1888; PID 014-234-629, Lot 7 Block 101 District Lot 301 Plan 1888) 803 E 16th Ave (PID 004-696-808, PID 004-696-786)		
CURRENT ZONING	C-2C		
PROPOSED ZONING	CD-1		
SITE DIMENSIONS	72.5m (238') x 25.9m (85') x 30.5m (100') x 30.2m (99')		
SITE AREA	2,817 m ² (30,321.8 ft ²)		
SITE COVERAGE	98%		
SETBACK	KINGSWAY CAROLINA ST E 16TH AVE LANE	MIN REQUIRED	PROVIDED
		6'3" (2.5m)	9' (2.74m)
		5' (1.5m)	5' (1.5m)
		5' (1.5m)	5' (1.5m)
		MAXIMUM ALLOWED (C-2C ZONING)	PROVIDED
		45.28 ft (13.8m)	273'-0" (83.21m)
BUILDING HEIGHT	273'-0" (83.21m)		
BUILDING STOREYS	25		
FSR	8.5		
USES	RESIDENTIAL / COMMERCIAL		

RESIDENTIAL UNIT MIX SUMMARY (TOTAL)

UNIT TYPE	NO. OF UNITS	% PROVIDED	FAMILY HOUSING		AVERAGE UNIT SIZE			
			REQUIRED	PROVIDED	NET		GROSS	
					m ²	ft ²	m ²	ft ²
STUDIO	152	46.1%	35%	38.0%	30.7	330.8	35.1	378.5
1 BD	51	15.5%			40.6	436.7	46.6	501.8
2 BD	106	32.1%			72.3	778.0	81.3	874.7
3 BD	21	6.4%			79.8	858.6	89.4	962.2
TOTAL	330	100.0%						

Family Unit 22 BD 127 38.5%
NOTE: **REFER TO REQUEST FOR RELAXATION #3

RESIDENTIAL UNIT MIX

UNIT TYPE	BEDROOMS	UNIT AREA				COUNT	% PROVIDED
		NET m ²	GROSS m ²	NET ft ²	GROSS ft ²		
STUDIO UNIT - TYPE A	0	39.5	34.8	326.06	374.37	140	42.4%
STUDIO UNIT - TYPE B	0	33.7	39.6	362.44	426.11	12	3.6%
1 BED UNIT - TYPE A	1	42.3	48.4	466.29	520.59	15	3.6%
1 BED UNIT - TYPE B	1	37.6	43.4	403.45	466.82	35	10.9%
1 BED UNIT - TYPE C	1	53.64	58.38	577.34	628.44	1	0.3%
1 BED UNIT - TYPE D	1	51.71	57.38	556.63	617.60	1	0.3%
1 BED UNIT - TYPE E	1	72.2	81.3	777.11	874.94	2	0.6%
2 BED UNIT - TYPE A	2	72.2	81.3	777.11	874.94	88	20.6%
2 BED UNIT - TYPE B	2	71.8	80.6	772.73	867.67	36	10.6%
2 BED UNIT - TYPE C	2	79.97	86.15	860.77	927.3	1	0.3%
2 BED UNIT - TYPE D	2	79.8	89.4	888.61	962.2	2	0.6%
3 BED UNIT - TYPE A	3	79.8	89.4	858.61	962.2	21	6.4%
TOTAL						330	

FSR SUMMARY

PERMITTED				PROVIDED			
FSR AREA				FSR AREA			
CATEGORY	fs	m2	ft2	CATEGORY	fs	m2	ft2
COMMERCIAL (MINIMUM REQUIRED)	6,641.18	616.98	6,641.18	COMMERCIAL	19,463.79	1,810	1,810
RESIDENTIAL	N/A			RESIDENTIAL	238,679.37	22,174	22,174
TOTAL	6,641.32	5,993.57	6,641.32	TOTAL	258,163.16	23,984	23,984
FSR				FSR			
COMMERCIAL FSR (MINIMUM REQUIRED)	0.35			COMMERCIAL FSR	0.6		
RESIDENTIAL FSR	N/A			RESIDENTIAL FSR	7.9		
TOTAL FSR	8.5			TOTAL FSR	8.5		
OPEN BALCONY				OPEN BALCONY			
PERCENTAGE OF PERMITTED FLOOR AREA: 8% (C-2C ZONING)*				PERCENTAGE: 13.7% OF TOTAL FSR**			
				3,279 m ²			

NOTE: *OTHER ZONING DISTRICTS IN VANCOUVER ALLOW OPEN BALCONY AREA UP TO 12% OF THE PERMITTED FLOOR AREA
**REFER TO REQUEST FOR RELAXATION #1

REQUEST FOR RELAXATION

- THE PROJECT PROPOSES A REQUEST FOR RELAXATION ON THE OPEN BALCONY FSR EXCLUSION TO 14.2% OF TOTAL FSR AREA BASED ON FOLLOWING DESIGN RATIONALE:

THE BALCONY DESIGN OF THE PROJECT IS INTENDED TO ENHANCE THE LIVABILITY OF RESIDENTS BY PROVIDING PLANTING BOXES BETWEEN UNITS, AS WELL AS BY EXTENDING THE BALCONY TO THE FULL WIDTH OF THE STUDIO AND 1-BED UNITS TO INCREASE THE PRIVATE EXTERIOR SPACE. AS A RESULT, THE OPEN BALCONY AREA ON EACH LEVEL IS INCREASED TO 14.2% OF TOTAL FSR AREA TO INCORPORATE THE ABOVE DESIGN STRATEGIES. IT IS UNDERSTOOD THAT THE BASE ZONING OF THE PROJECT SITE (C-2C) ALLOWS 8% OF PERMITTED FLOOR AREA AS OPEN BALCONY. WHILE THE PROJECT PROPOSES AN INCREASE IN THE OPEN BALCONY EXCLUSION AND NONE OF THE AREA WOULD BE ENCLOSED WITH REFERENCE TO OTHER ZONING DISTRICTS IN VANCOUVER WHICH ALLOWS OPEN BALCONY AREA UP TO 12% OF THE PERMITTED FLOOR AREA.
- THE PROJECT PROPOSES A REQUEST FOR RELAXATION ON THE TOWER SEPARATION REDUCTION TO 67'-7" AT THE PINCH POINT, DUE TO AN IRREGULAR SITE CONDITION AND TO AVOID SHADOWING OVER ROBSON PARK AND MCALEY PARK. HORIZONTAL ANGLE OF DAYLIGHT ANALYSIS ON SHEET RZ-G007 DEMONSTRATES THAT THE TOWER DESIGN IS ABLE TO ENSURE THE LIVABILITY OF EACH DWELLING UNIT WITH REDUCED 67'-7" TOWER SEPARATION, WHILE LIMITING SHADOW IMPACTS ON BOTH ROBSON AND MCALEY PARKS AS DEMONSTRATED IN THE SHADOW ANALYSIS (SHEET RZ-G006 - SHADOW STUDIES - PROPOSED MASSING)
- THE PROJECT PROPOSES LESS THAN 10% OF TOTAL UNITS BEING 3-BED UNITS. HOWEVER, THE PERCENTAGE FOR FAMILY SIZE UNITS IS WELL OVER THE 35% THRESHOLD.

ISSUED	
ISSUED FOR REZONING APPLICATION	2024/08/07
ISSUED FOR REZONING APPLICATION - UPDATED	2024/11/13
PROJECT STATISTICS APPLICATION ADDITIONAL CITY REQUEST	2025/02/19
AMENDMENT TO REZONING APPLICATION	2025/09/03

KEYPLAN



PROJECT

600 KINGSWAY
602-644 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

PROJECT DATA & FSR SUMMARY

SHEET NUMBER

RZ-G001

6.2 Parking Statistics

PARKING

REQUIRED						PROVIDED	
PARKING	BYLAW REFERENCE	UNITS	GFA	MAX	MIN	PARKING SPACE PROVIDED	
	Vancouver Off-Street Parking Space Regulations June 2024						
RESIDENTIAL (4.1.1)	No parking spaces are required for the off-street parking of motor vehicles accessory to any development in the City...	330			0	RESIDENTIAL	102
RES ACCESSIBLE (4.1.4a)	For multiple dwelling or live-work use in buildings that contain at least seven dwelling units, a minimum of 1.0 spaces... ...and an additional 0.034 space for each additional dwelling unit	330			11	ACCESSIBLE (RESIDENTIAL)	12
VAN ACCESSIBLE (4.1.4)	The first accessible parking space provided, plus every tenth accessible parking space provided, must be a van accessible parking space.				2	VAN ACCESSIBLE	2
VISITOR PARKING (4.1.3)	For dwelling uses, including live-work use, a minimum of 0.05 spaces and a maximum of 0.1 spaces per dwelling unit	330		33	19.5	VISITOR PARKING	16
RETAIL (4.2.5)	1 space for each 115 m ² of gross floor area		1,855 m ²	14	0	RETAIL	3
RETAIL ACCESSIBLE (4.1.4b)	for non-residential uses in buildings that contain at least 500 m ² of gross floor area, a minimum of 1.0 spaces ...plus an additional 0.4 parking space for each 1000 m ² of gross floor area		1,855 m ²		1	ACCESSIBLE (RETAIL)	2
CHILDCARE	Two (2) parking stalls for staff.				2	CHILDCARE STAFF	2
CHILDCARE	Two (2) parking stalls for childcare visitor.				2	CHILDCARE VISITOR	2
TOTAL						48	34.5

PASSENGER SPACES

REQUIRED						PROVIDED	
CLASS A	BYLAW REFERENCE	UNITS	GFA	MIN	MAX	CLASS A PASSENGER SPACES	
	Vancouver Off-Street Passenger Space Regulations June 2024						
RESIDENTIAL (7.2.1)	A minimum of 1 space for any development with 50 to 125 dwelling units, plus one space for every additional 150 dwelling units.	330			2	RESIDENTIAL	2
RETAIL (7.2.5.1)	A minimum of one space for each 4000 m ² of gross floor area		1,855 m ²		0	RETAIL	0
CLASS A TOTAL						2	2
CLASS B	BYLAW REFERENCE	UNITS	GFA	MIN	MAX	CLASS B PASSENGER SPACES	
	Vancouver Off-Street Passenger Space Regulations January 2024						
RESIDENTIAL (7.2.1)	No requirement.	330			0	RESIDENTIAL	0
RETAIL (7.2.5.1)	No requirement.		1,855 m ²		0	RETAIL	0
CLASS B TOTAL						0	0

LOADING

REQUIRED						PROVIDED	
LOADING	BYLAW REFERENCE	UNITS	GFA	CLASS A	CLASS B	LOADING	
	Vancouver Off-Street Loading Space Regulations June 2024						
RESIDENTIAL (5.2.1)	Class A: At least one space for 50 to 299 dwelling units, and at least one additional space for any portion of each additional 200 dwelling units. Class B: At least one space for 100 to 299 dwelling units; a minimum of one additional space for 300 to 499 dwelling units.	330		2	0	CLASS A	3
RETAIL (5.2.6)	Class A: No requirement Class B: A minimum of one space for the first 2325 m ² of gross floor area plus one space for any portion of the next 2325 m ²		1,855 m ²		1	CLASS B	2
TOTAL						2	3

INTERNAL STORAGE

REQUIRED				PROVIDED	
INTERNAL STORAGE		UNITS	AREA (m ²)	INTERNAL STORAGE	
RESIDENTIAL	5.7 m ² of storage required per dwelling unit	330	1,881	RESIDENTIAL	850 m ²
TOTAL				1,881	850m²

BICYCLE PARKING

REQUIRED						PROVIDED	
CLASS A	BYLAW REFERENCE	UNITS	GFA	MIN	MAX	CLASS A BICYCLE PARKING	
	Vancouver Off-Street Bicycle Space Regulations June 2024						
RESIDENTIAL (6.2.1.2)	A minimum of 1.5 spaces for every dwelling unit under 65 m ²	203			305	CLASS A BIKE PARKING ALLOCATION	
	A minimum of 2.5 spaces for every dwelling unit over 65 m ² and under 105 m ²	127			318		
	A minimum of 3 spaces for every dwelling unit over 105 m ²	0					
RETAIL (6.2.5.1)	A minimum of one space for each 340 m ² of gross floor area		1,855 m ²		5		
CLASS A TOTAL						628	628
CLASS B	BYLAW REFERENCE	UNITS	GFA	MIN	MAX	CLASS B BICYCLE PARKING	
	Vancouver Off-Street Bicycle Space Regulations January 2024						
RESIDENTIAL (6.2.1.2)	A minimum of 2 spaces for any development containing at least 20 dwelling units one additional space for every additional 20 dwelling units	330			2	RESIDENTIAL	18
RETAIL (6.2.5.1)	A minimum of 6 spaces for any development containing a minimum of 1,000 m ² of gross floor area		1,855 m ²		8	RETAIL	6
CLASS B TOTAL						24	24

END OF TRIP FACILITIES

REQUIRED						PROVIDED	
CLOTHING LOCKERS	BYLAW REFERENCE	CLASS A SPACES	MINIMUM REQUIRED	MAXIMUM ALLOWED		END OF TRIP FACILITIES	
	Vancouver Off-Street Bicycle Space Regulations June 2024						
CLOTHING LOCKERS FOR NON-DWELLING USE(6.5.1)	A minimum number of clothing lockers equal to 1.4 times the min number of required Class A spaces (Non-dwelling use)	5	7			CLOTHING LOCKERS	7
CLOTHING LOCKER ALLOCATION							
HALF HEIGHT	No more than 50% of lockers				3	HALF HEIGHT	3
FULL HEIGHT	At least 50% of lockers				4	FULL HEIGHT	4
WATER CLOSETS						WATER CLOSET TOTAL	
RESIDENTIAL	No requirement.	0	0			WATER CLOSETS	1
RETAIL (6.5A)	1 water closet for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50.	7	1			WASH BASINS	1
WATER CLOSET TOTAL						2	2
WASH BASINS						WASH BASIN TOTAL	
RESIDENTIAL	No requirement.	0	0			SHOWERS	1
RETAIL (6.5A)	1 wash basin for any development requiring between 5 and 10 Class A bicycle parking spaces ...plus one for every additional 20 spaces up to 50 spaces ...and one for every 40 spaces above 50	4	1				
WASH BASIN TOTAL						1	1
SHOWERS						SHOWER TOTAL	
RESIDENTIAL	No requirement.	0	0				
RETAIL (6.5A)	1 shower for any development requiring between 5 and 10 Class A bicycle spaces ...plus one for every 40 spaces above 10	4	1				
SHOWER TOTAL						1	1
GROOMING STATIONS						GROOMING STATION TOTAL	
	There shall be no less than 1 grooming station for each shower provided, and each station shall be separate from the.				1		
GROOMING STATION TOTAL						1	1

Perkins&Will



AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED
ISSUED FOR REZONING APPLICATION 20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST 20250219
AMENDMENT TO REZONING APPLICATION 20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#10293.000

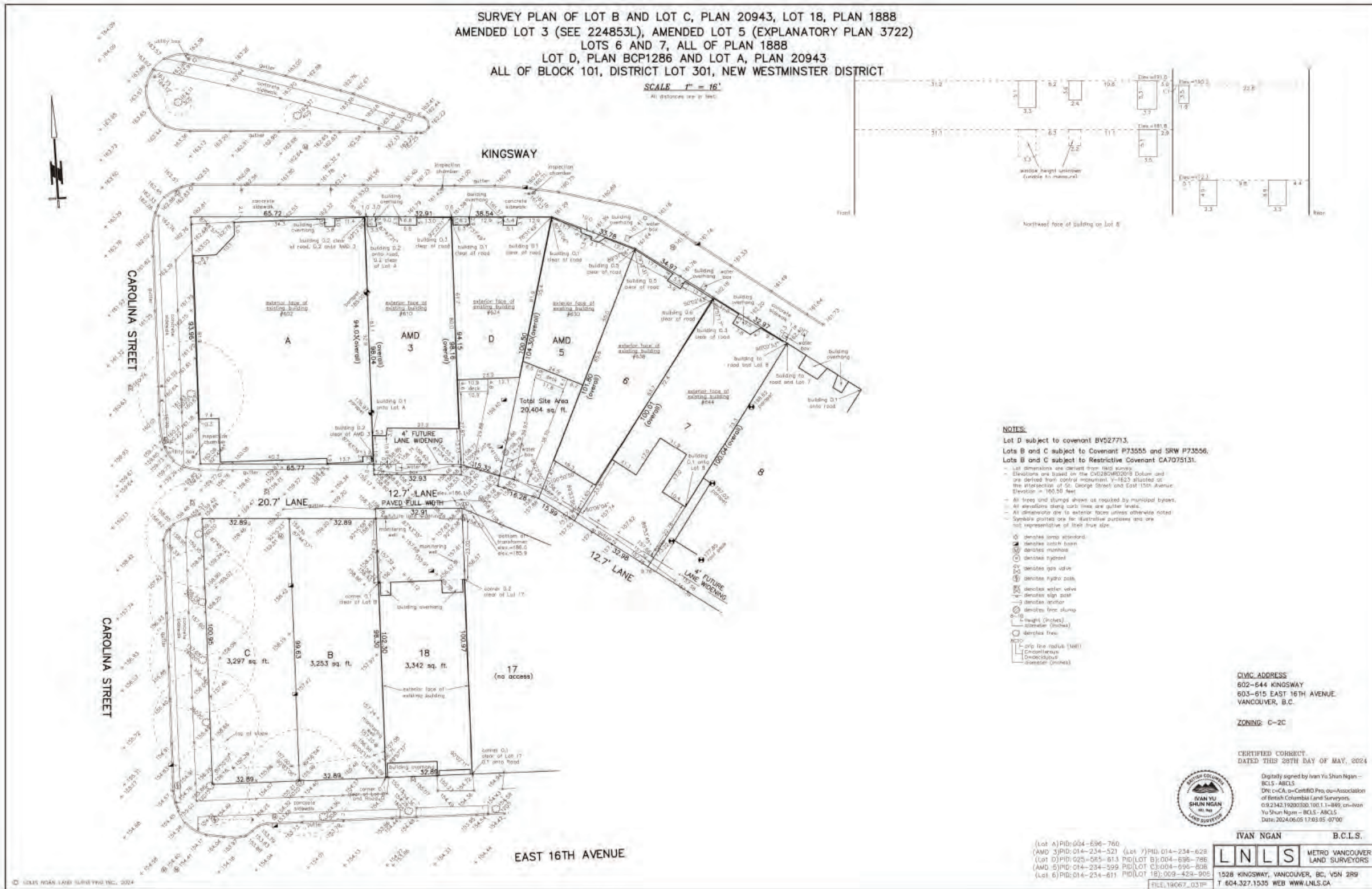
REVISIONS

TITLE
PARKING STATISTICS

SHEET NUMBER
RZ-G002

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6.3 Legal Survey



Perkins&Will



AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN

PROJECT

600 KINGSWAY
 602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
 #12313.000

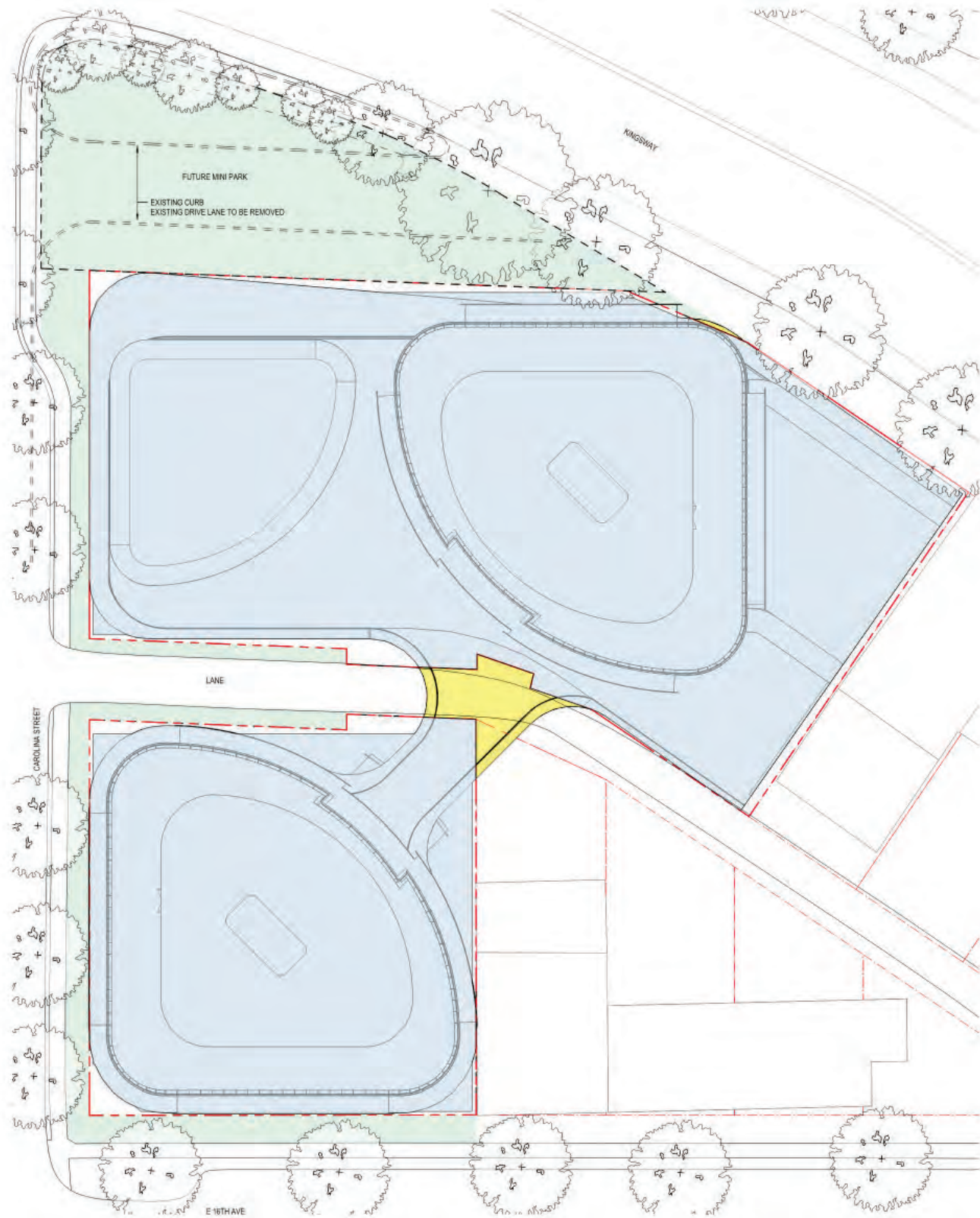
REVISIONS

TITLE
 SITE SURVEY

SHEET NUMBER
 RZ-G003

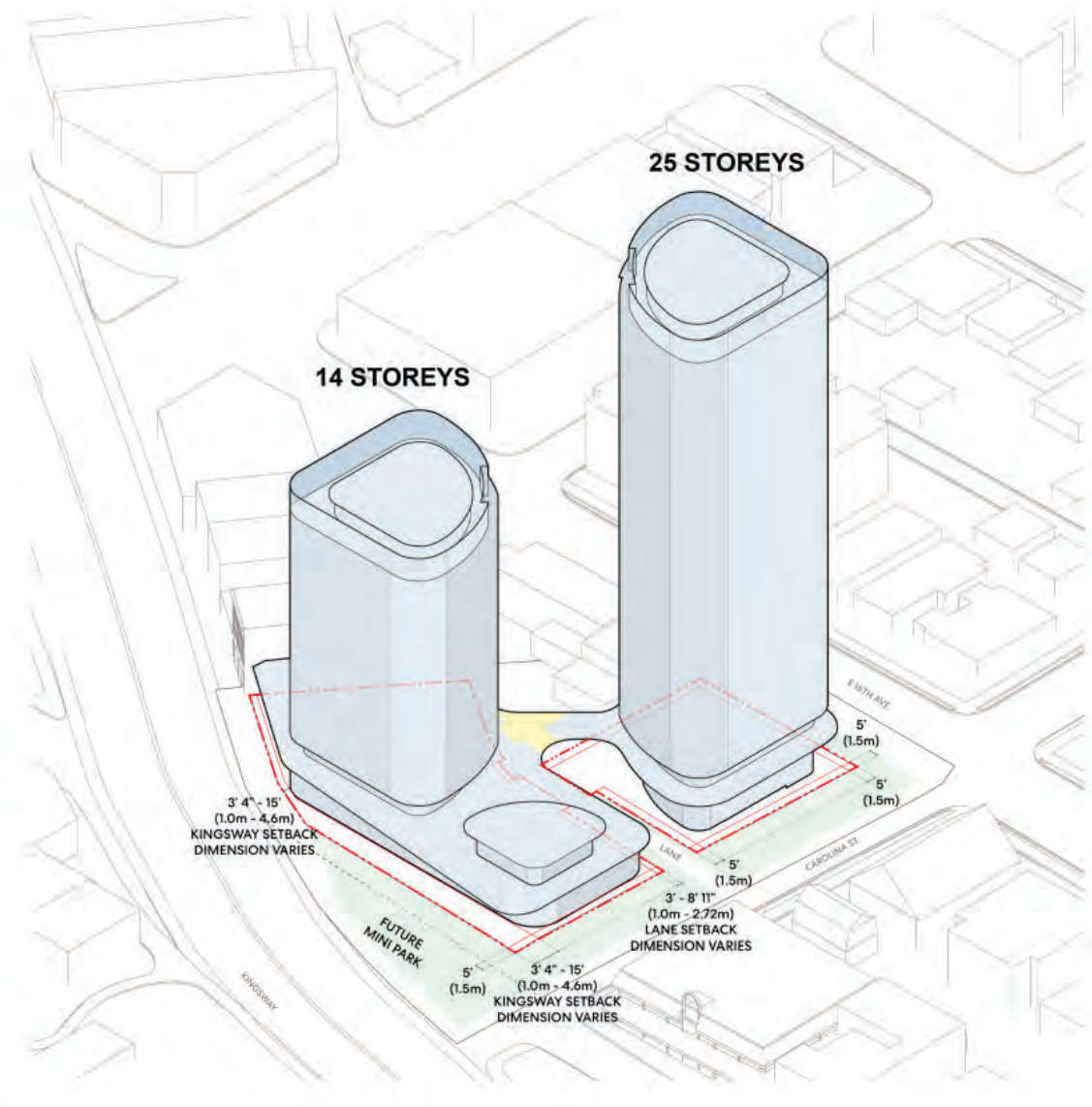
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6.4 Site Coverage Plan



SITE COVERAGE

SITE COVERAGE	30321.9 SF
SITE AREA	29197 SF
BUILT AREA INSIDE PROPERTY LINE	538.4 SF
BUILT AREA BEYOND PROPERTY LINE	
LANDSCAPING BEYOND PROPERTY LINE	
SITE COVERAGE	98%



1 SITE COVERAGE PLAN
1/16" = 1'-0"

2 ZONING DIAGRAM
1 1/2" = 1'-0"

Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	2025/02/19
AMENDMENT TO REZONING APPLICATION	2025/09/03

KEYPLAN

PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

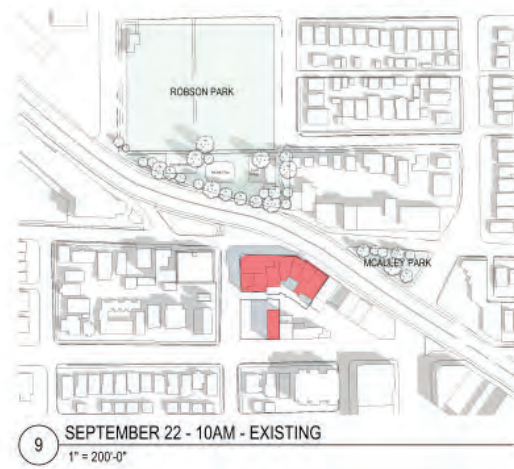
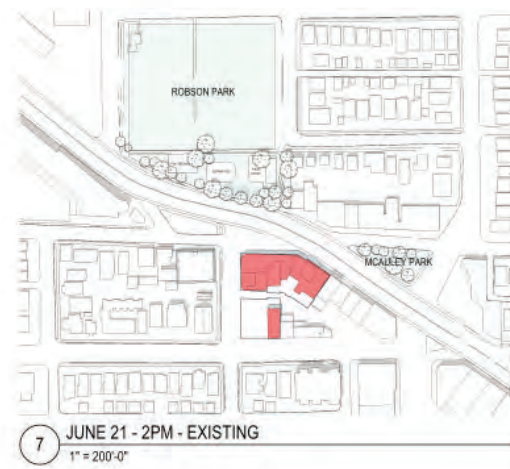
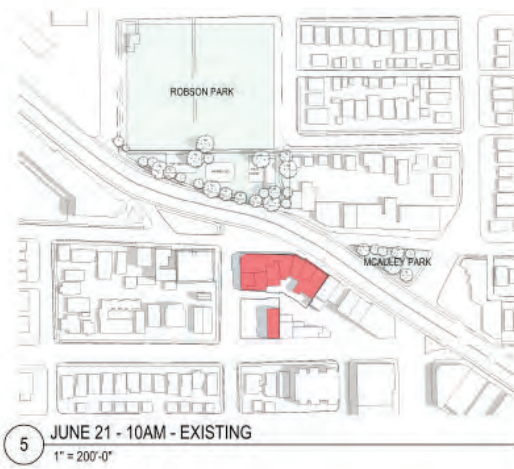
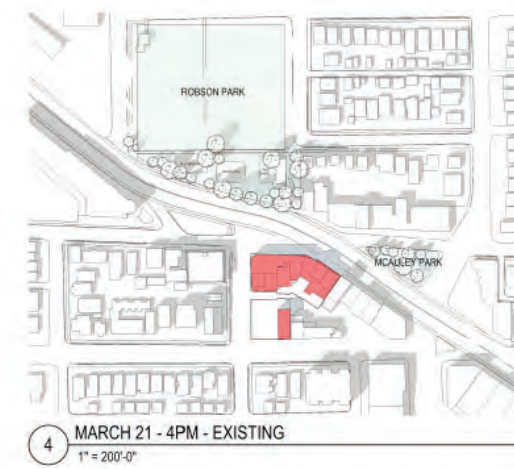
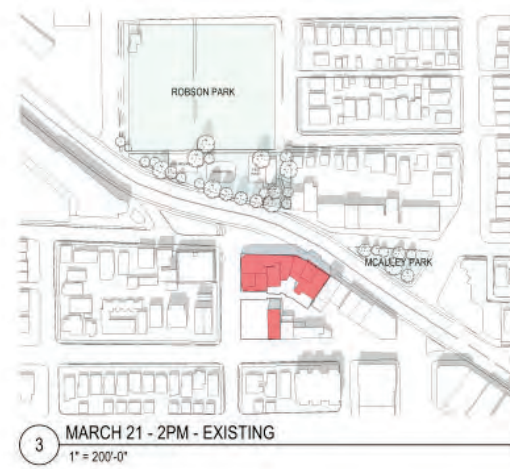
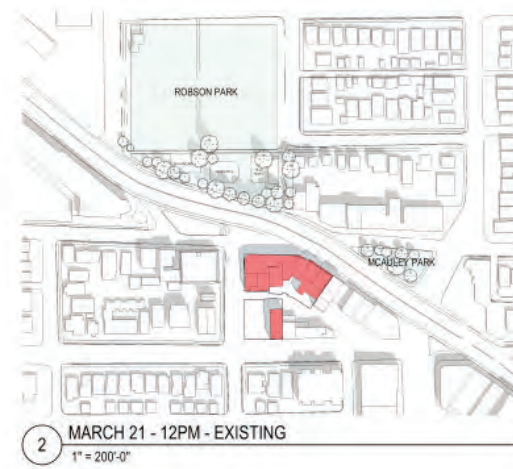
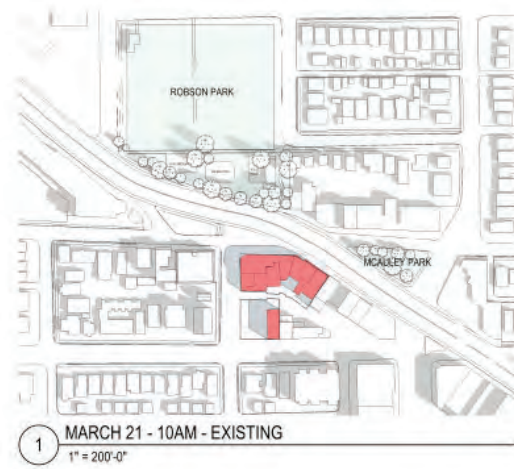
TITLE
BUILDING GRADE

SHEET NUMBER
RZ-G004

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6.5 Shadow Analysis

6.5.1 Existing Context



ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR RECEIVING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250803

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

SHADOW STUDIES - EXISTING MASSING

SHEET NUMBER

RZ-G006

Shadow Analysis

Robson Park & McAuley Park

Robson Park serves as a tranquil gateway, offering a serene escape from the hustle and bustle of the busy surrounding roads and leading into a vibrant and colorful neighborhood. As you stroll through the park, you can admire the charming community gardens, which are lovingly maintained by local residents. For a more leisurely experience, consider bringing a blanket to spread out on the grass and relax in the peaceful surroundings.

The park is named in honor of the Honourable John Robson, who was the Premier of British Columbia during the time of Vancouver’s incorporation. His legacy is remembered through this beautiful green space, which adds to the historical and cultural fabric of the city.

On the southern edge of Robson Park, a collection of mature trees provides a pleasant shade, creating a cool and inviting environment.

It is important to note that proposed development is not expected to significantly alter the current shading of the park, allowing it to continue serving as a cherished retreat for residents and visitors alike.



- Ball Hockey
- Basketball Courts
- Tennis Courts
- Soccer Field
- Field House (Washrooms)
- Playground
- Wadding Pool



1. Aerial Photo capturing Robson Park from south
source: Google Earth

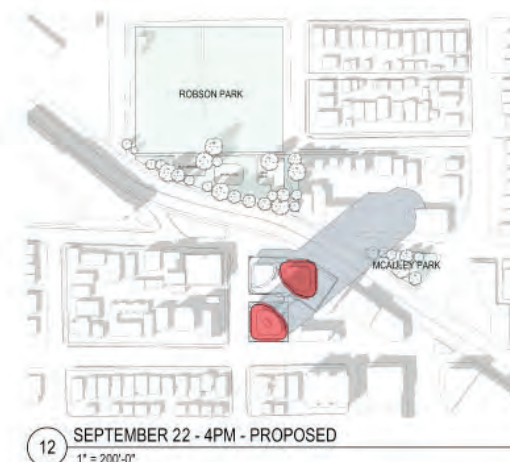
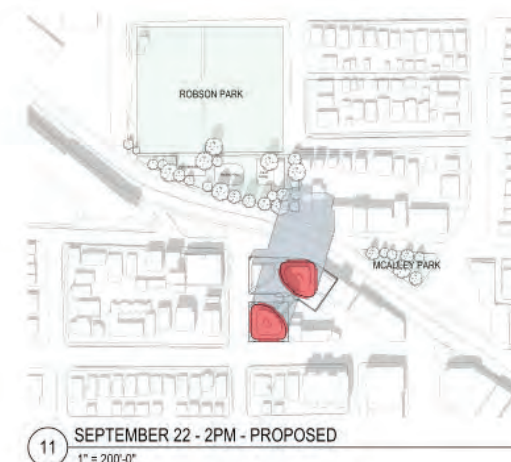
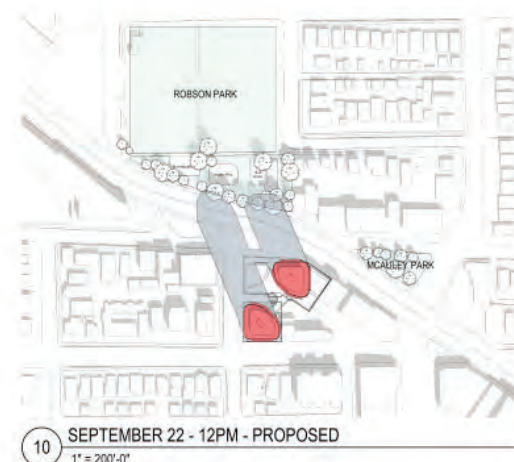
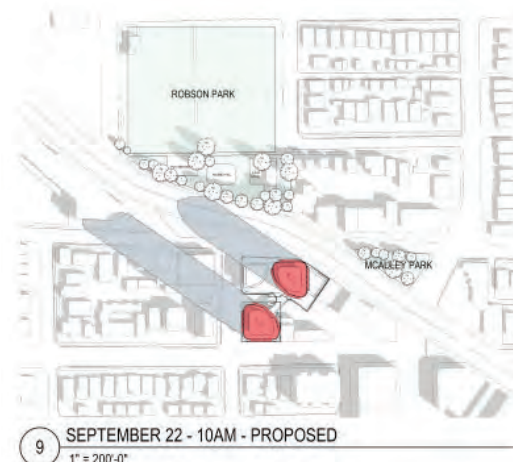
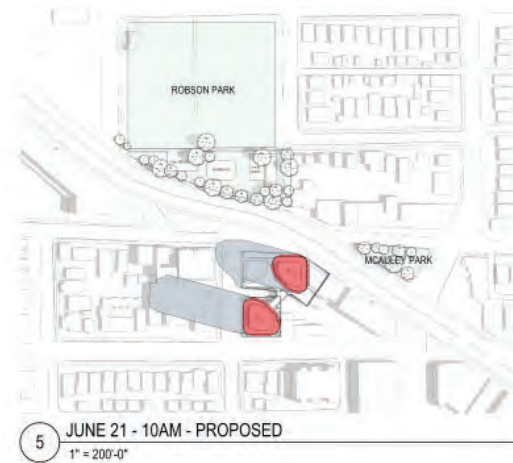
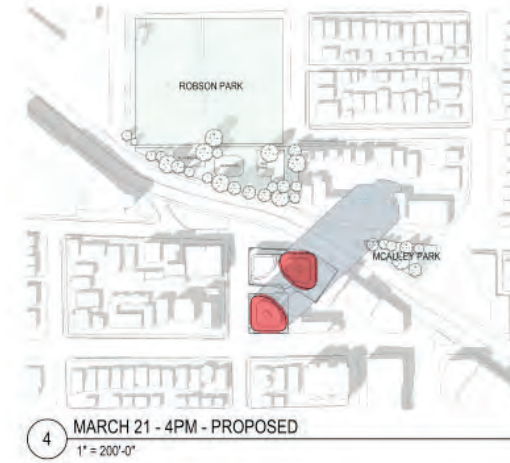
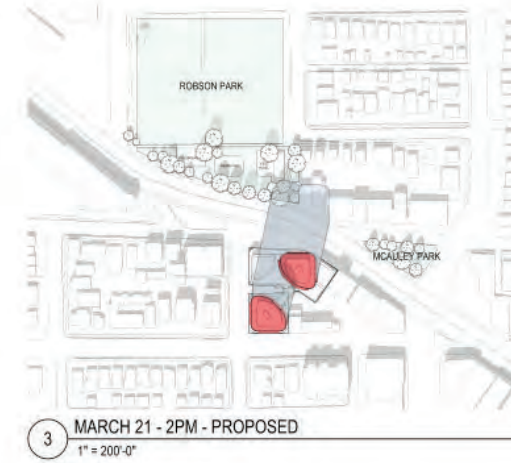
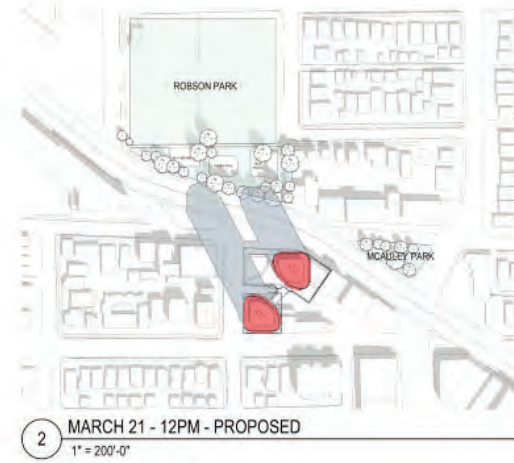
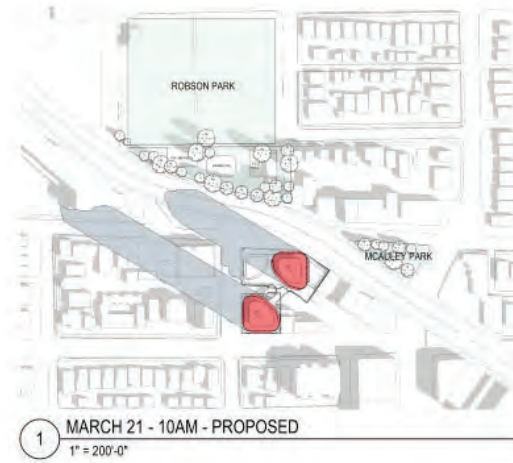
1. Aerial Photo capturing Robson Park from above
source: Google Earth



2. Aerial View capturing Robson Park from west

Shadow Analysis

6.5.2 Proposed Massing



ISSUED	
ISSUED FOR REZONING APPLICATION	2024/06/17
ISSUED FOR RECEIVING APPLICATION ADDITIONAL CITY REQUEST	2025/02/19
AMENDMENT TO REZONING APPLICATION	2025/09/03

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

SHADOW STUDIES -
PROPOSED MASSING

SHEET NUMBER

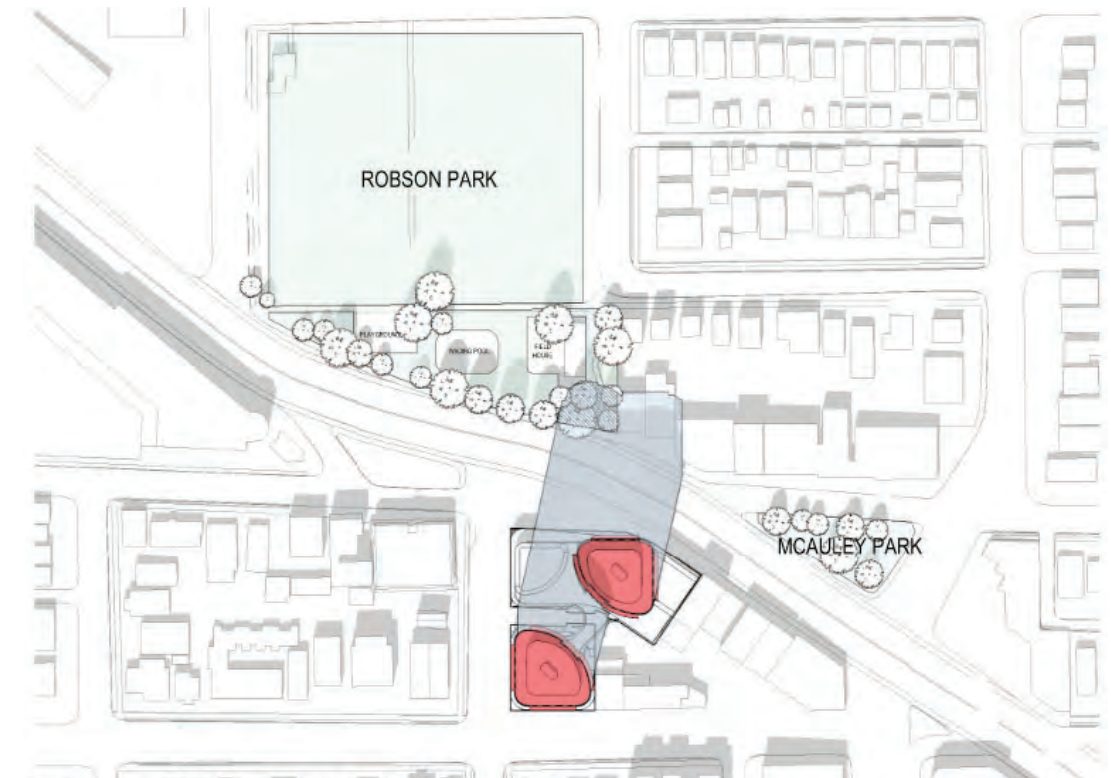
RZ-G007

Shadow Analysis

Robson Park & McAuley Park

The design of the proposed residential towers has been meticulously planned to cast minimal shadows on Robson and McAuley Park, therefore preserving their sunlight exposure and overall ambiance, and maintaining their usability and enjoyment for the community as well as the residents throughout the day.

Moreover, it is essential to consider that both Robson Park and McAuley Park are already subject to shading from their mature tree canopies along Kingsway. These existing trees naturally cast shadows across various areas of the park, especially during the early morning and late afternoon hours, while serving as a buffer space between Kingsway and the green communal spaces. The presence of these trees has been factored into the shadow analysis to ensure that any additional shading from the new towers remains minimal and within limits of the shadows already casted by the existing trees. By aligning the towers' design with the current shading patterns, the new development harmonizes with the existing environmental conditions, ensuring that the parks retain their current levels of natural light, and their role as vital community amenities.

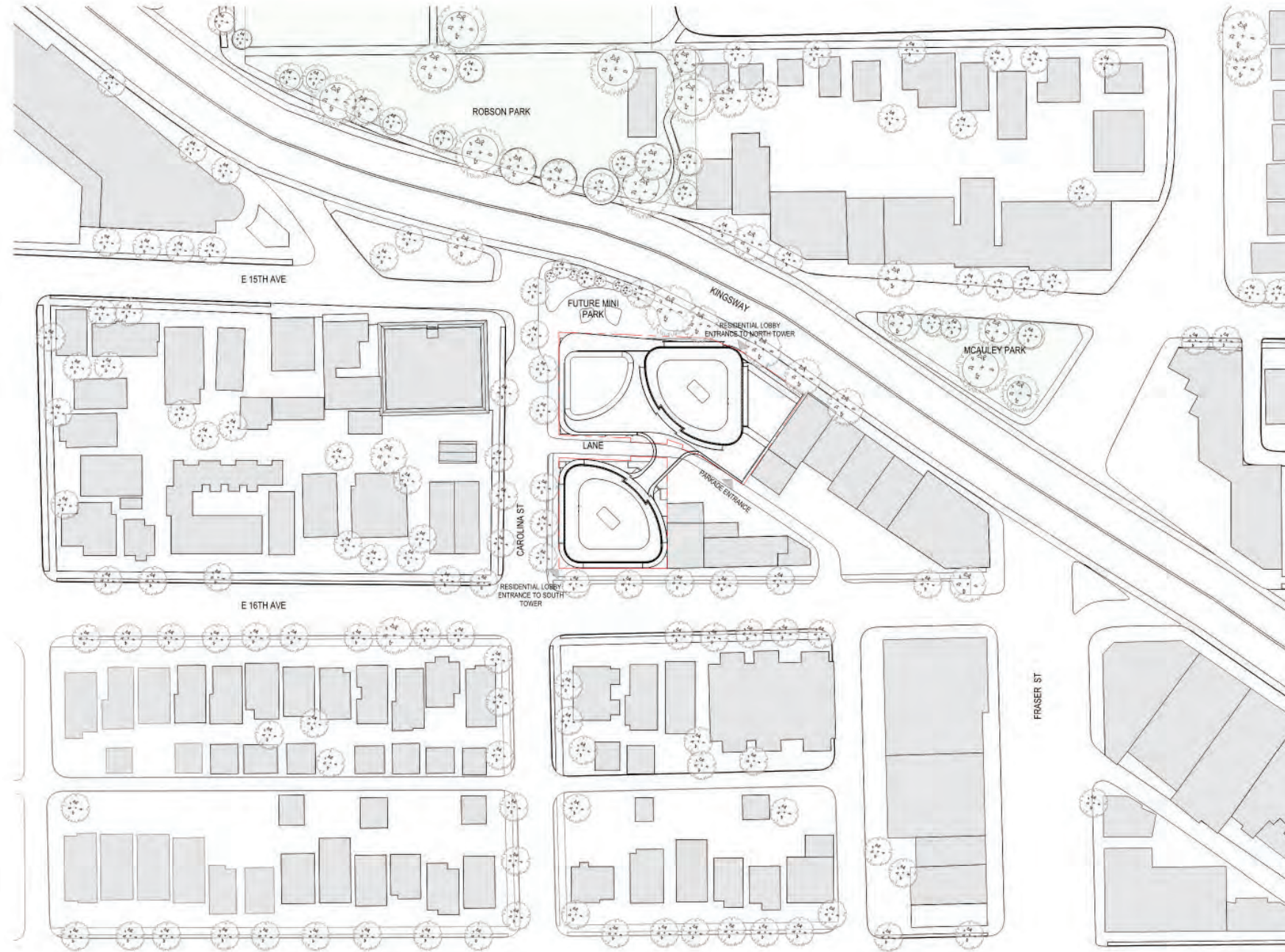


Shadow analysis on March 21 at 1:00PM shows the maximum shadow projection on Robson park, overlapping with existing tree shadows, indicating that the towers cast minimal additional shadows.



Shadow analysis on March 21 at 4:00PM shows the maximum shadow projection on McAuley Park, overlapping with existing mature canopy shadows.

6.6 Site Context



1 CONTEXT PLAN
1" = 50'-0"

ISSUED	
ISSUED FOR REZONING APPLICATION	2024/06/17
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	2025/02/13
AMENDMENT TO REZONING APPLICATION	2025/09/03

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

CONTEXT PLAN

SHEET NUMBER

RZ-A001

6.7 Site Context Photos



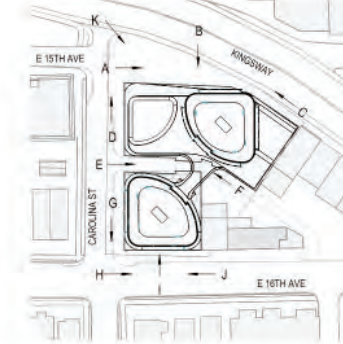
A. E 15TH AVE LOOKING EAST



B. KINGSWAY LOOKING SOUTH



C. KINGSWAY LOOKING WEST



D. CAROLINA ST LOOKING NORTH



E. LANE LOOKING EAST



F. LANE LOOKING NORTH WEST



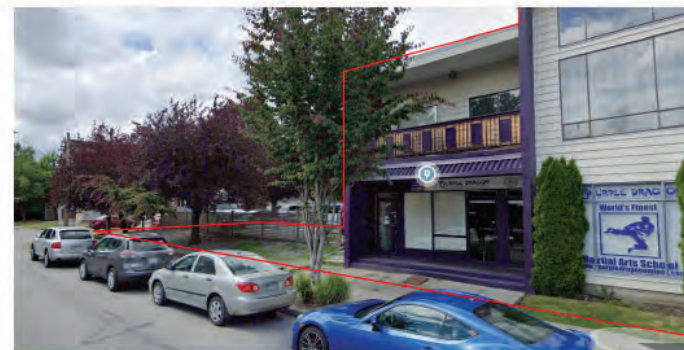
G. CAROLINA ST LOOKING SOUTH



H. E 16TH AVE LOOKING EAST



I. E 16TH AVE LOOKING NORTH



J. E 16TH AVE LOOKING WEST



K. AERIAL VIEW FROM NORTH WEST LOOKING SOUTH EAST

Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR RECEIVING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250803

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12353.000

REVISIONS

TITLE

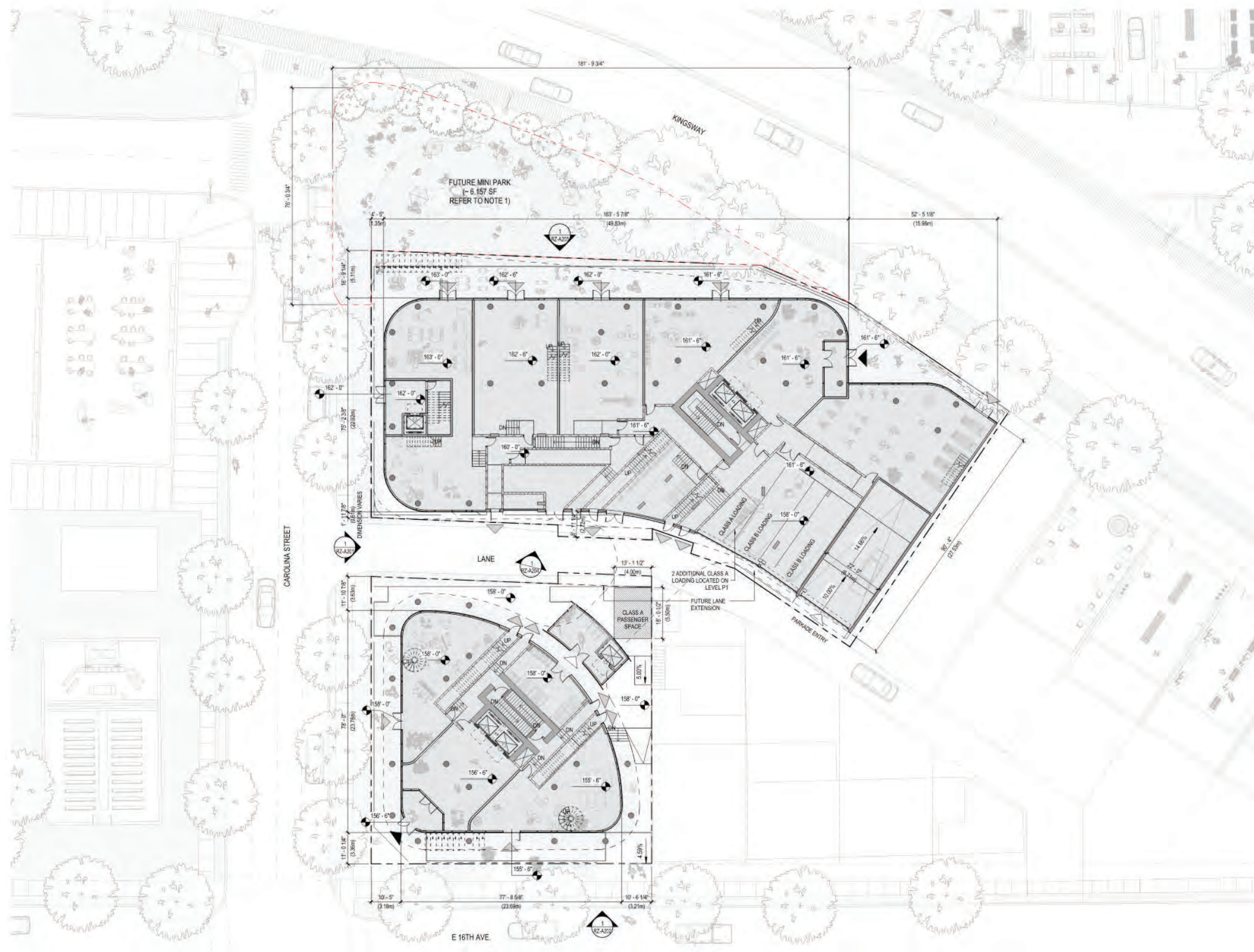
SITE CONTEXT PHOTOS

SHEET NUMBER

RZ-A002

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6.8 Architectural Site Plan



▲ RESIDENTIAL LOBBY ENTRANCE
 ▲ RETAIL ENTRANCE
 ▲ PARKADE / BIKE PARKING ENTRANCE

NOTE 1: REGARDING THE PROPOSED PARKPLAZA, A PORTION OF THE EXISTING ROAD NETWORK ALONG E 16TH AVENUE AT THE PERIMETER OF THE SITE TO THE NORTH WILL BE CLOSED AND REPLACED WITH A PUBLIC PARKPLAZA (~4,157 SF). WHILE THE SAME APPROACH WAS REVIEWED AND APPROVED AS PART OF THE PREVIOUS REZONING APPLICATION FOR THE SITE (SEE REFERRAL REPORT CD-1 FOR 602-644 KINGSWAY), WE DO EXPECT THAT THERE WILL BE ONGOING CONSULTATIONS AND NEGOTIATIONS WITH ENGINEERING AND PARK BOARD AS PART OF THIS REZONING REVIEW PROCESS.

Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
 SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN



PROJECT

600 KINGSWAY
 602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
 #12313.000

REVISIONS

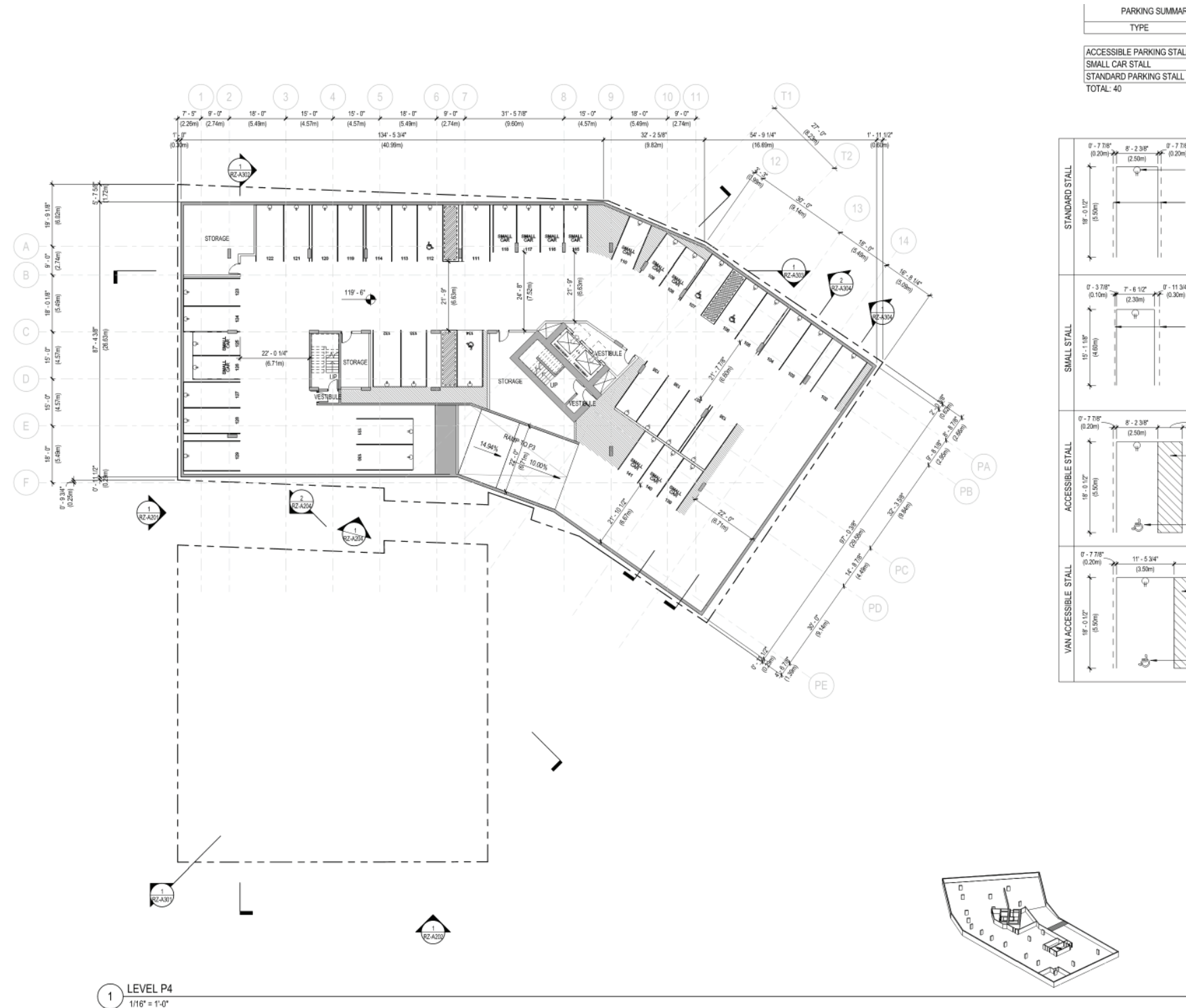
TITLE
 SITE PLAN

SHEET NUMBER
 RZ-A003

1 SITE PLAN
 1/16" = 1'-0"

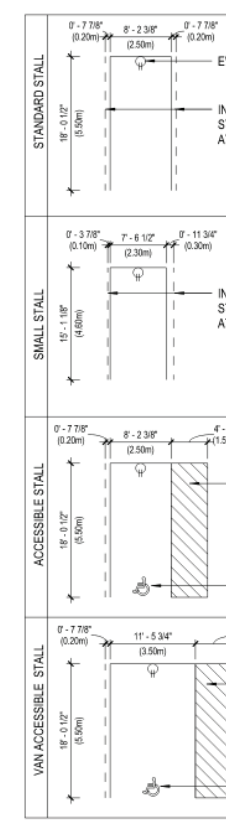
6.9 Floor Plans

6.9.1 Parking Level P4



PARKING SUMMARY

TYPE
ACCESSIBLE PARKING STALL
SMALL CAR STALL
STANDARD PARKING STALL
TOTAL: 40



1 LEVEL P4
1/16" = 1'-0"

Perkins&Will



AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

FLOOR PLAN - LEVEL P4

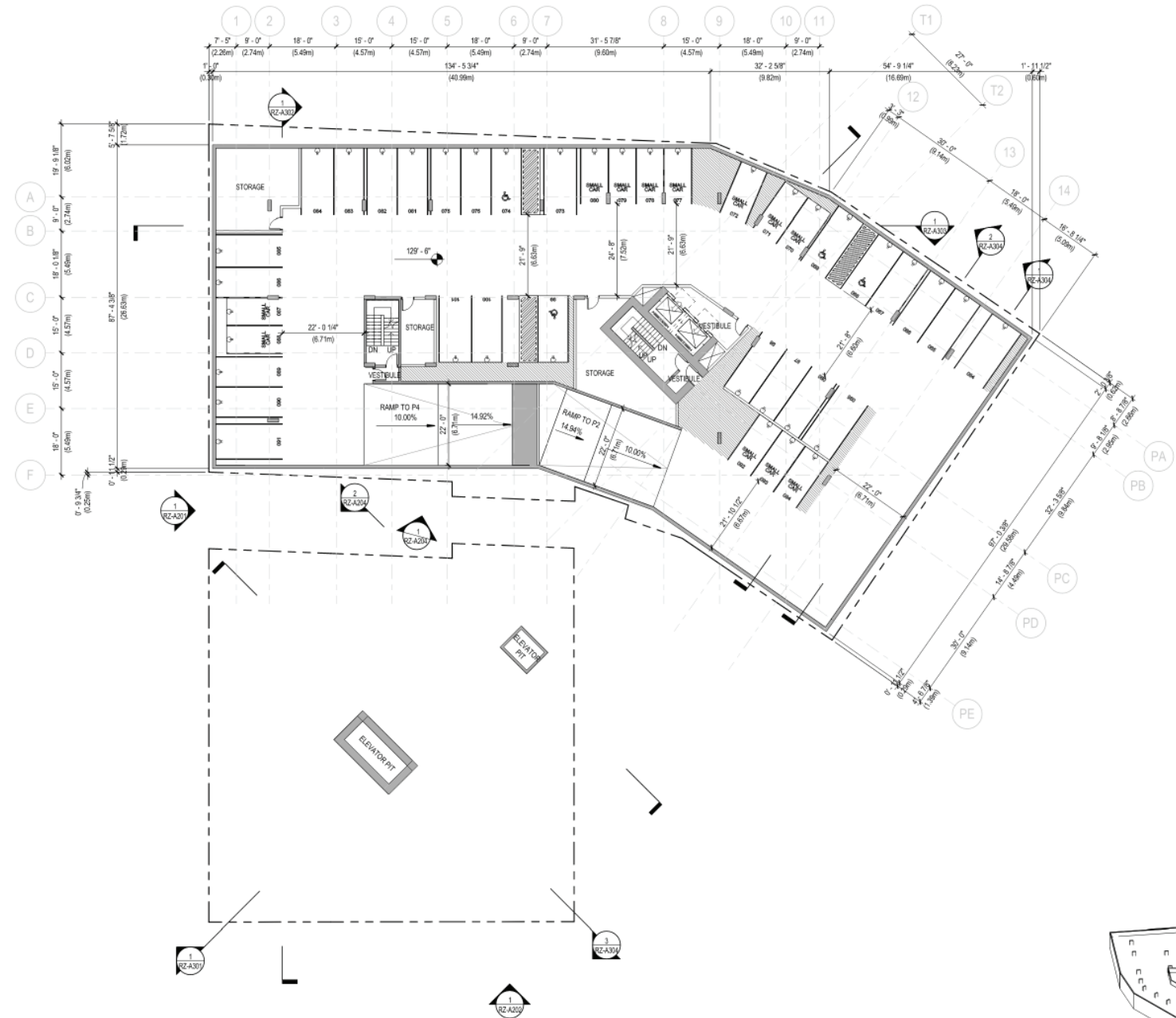
SHEET NUMBER

RZ-A101

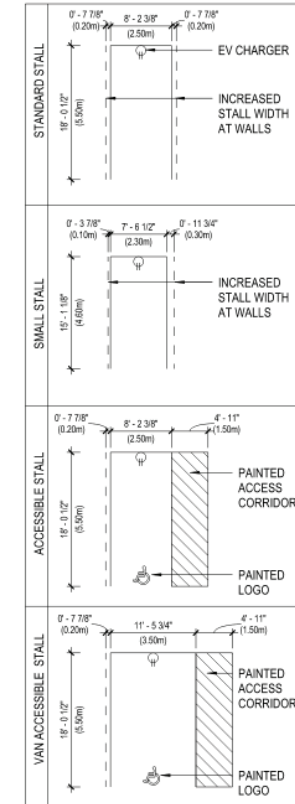
© 2025 PERKINS&WILL

Floor Plans

6.9.2 Parking Level P3



PARKING SUMMARY - P3	
TYPE	NUMBER
ACCESSIBLE PARKING STALL	4
SMALL CAR STALL	12
STANDARD PARKING STALL	22
TOTAL	38



1 LEVEL P3
1/16" = 1'-0"

AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

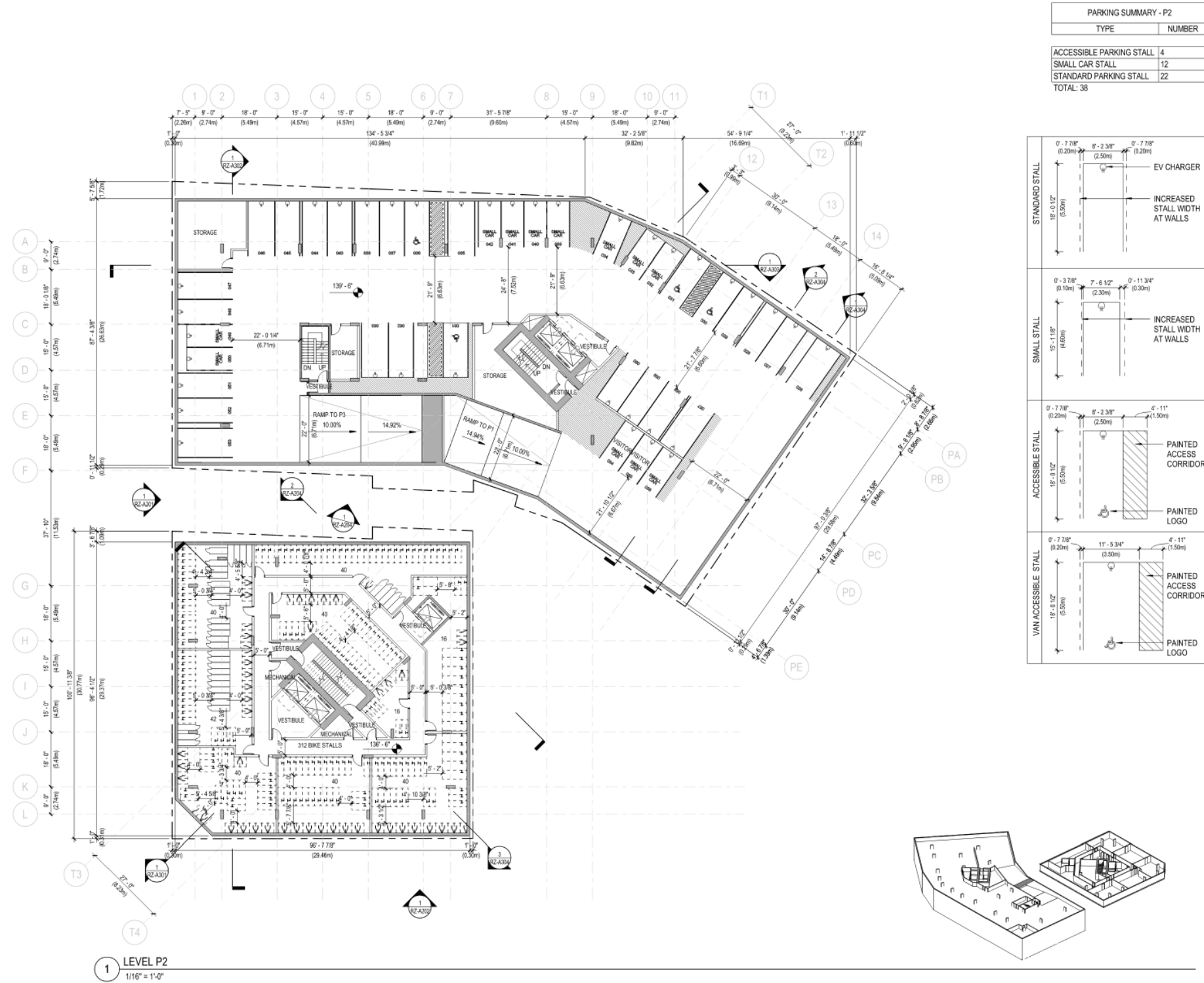
REVISIONS

TITLE
FLOOR PLAN - LEVEL P3

SHEET NUMBER
RZ-A102

Floor Plans

6.9.3 Parking Level P2



Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
 SEPTEMBER 03, 2025

ISSUED
 ISSUED FOR REZONING APPLICATION 20240807
 ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST 20250219
 AMENDMENT TO REZONING APPLICATION 20250801

KEYPLAN

PROJECT

600 KINGSWAY
 602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
 #12313.000

REVISIONS

TITLE

FLOOR PLAN - LEVEL P2

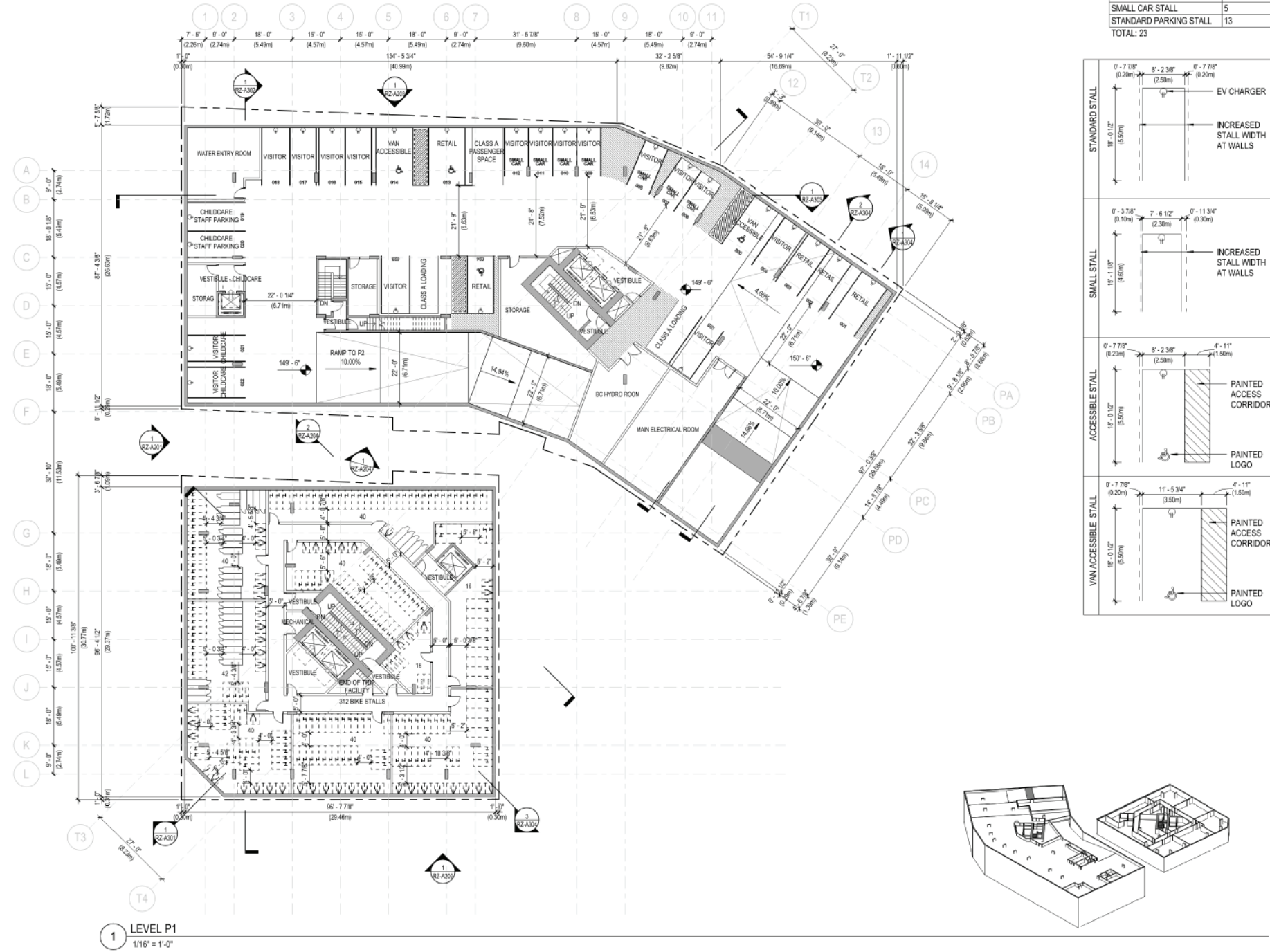
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RZ-A103

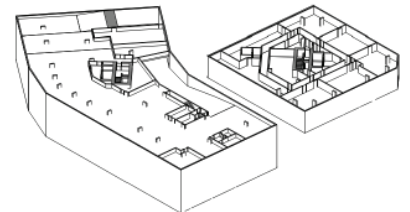
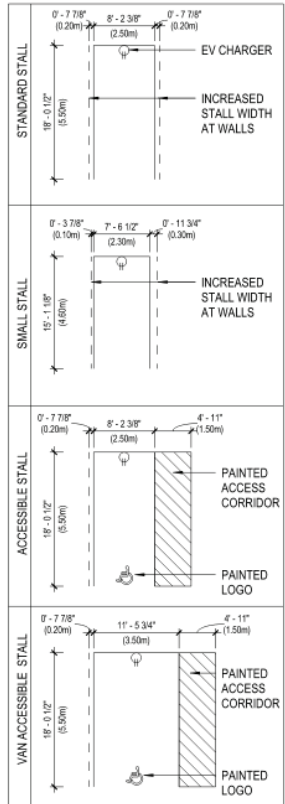
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Floor Plans

6.9.4 Parking Level P1



PARKING SUMMARY - P1	
TYPE	NUMBER
ACCESSIBLE PARKING STALL	2
ACCESSIBLE VAN STALL	1
SMALL CAR STALL	5
STANDARD PARKING STALL	13
TOTAL	23



AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

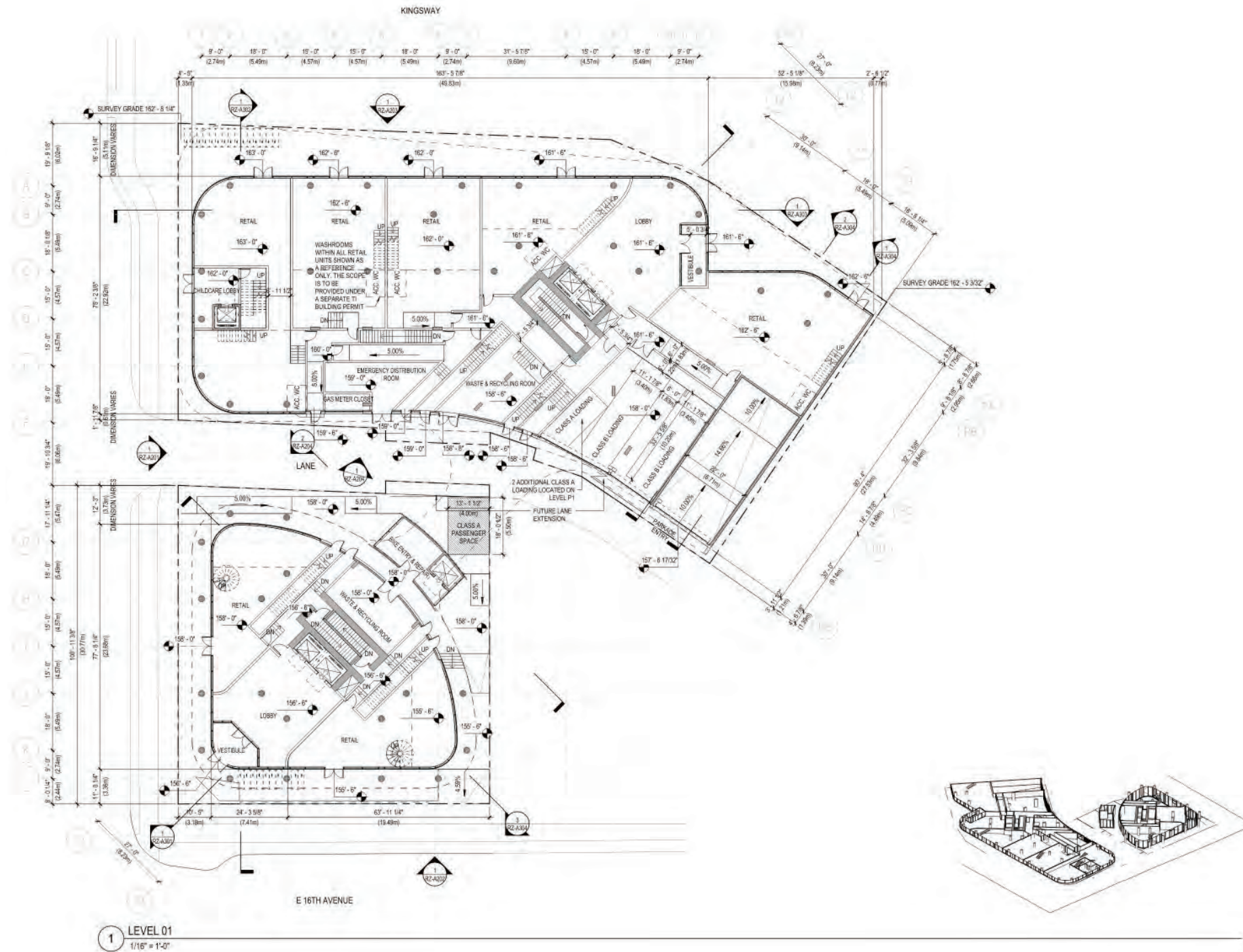
REVISIONS

TITLE
FLOOR PLAN - LEVEL P1

SHEET NUMBER
RZ-A104

Floor Plans

6.9.5 Ground Floor



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AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12373.000

REVISIONS

TITLE

FLOOR PLAN - LEVEL 01

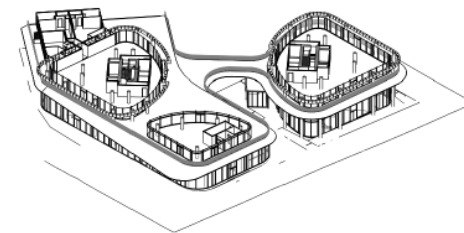
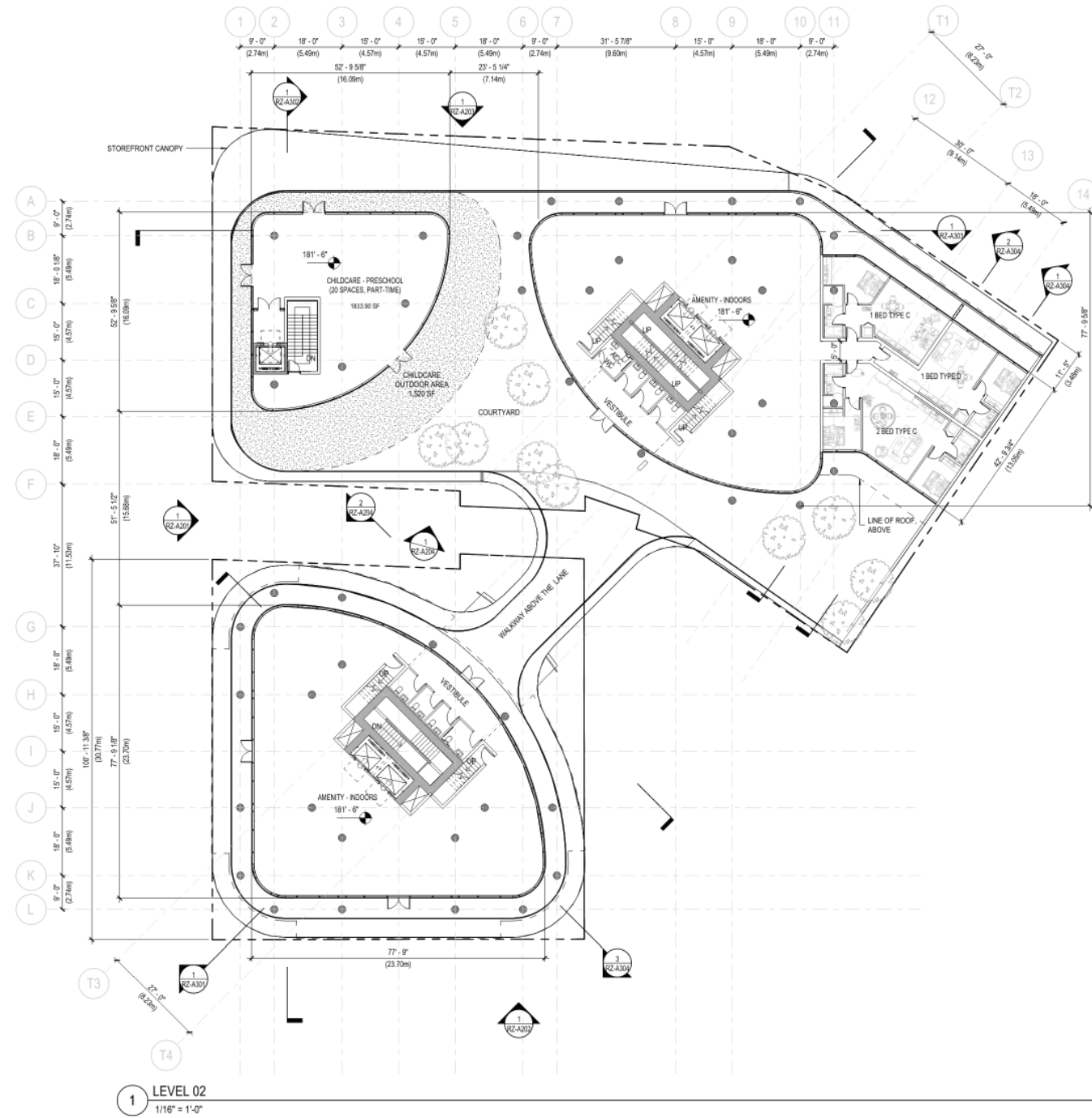
SHEET NUMBER

RZ-A105

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Floor Plans

6.9.6 Level 2



1 LEVEL 02
1/16" = 1'-0"

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250213
AMENDMENT TO REZONING APPLICATION	20250803

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

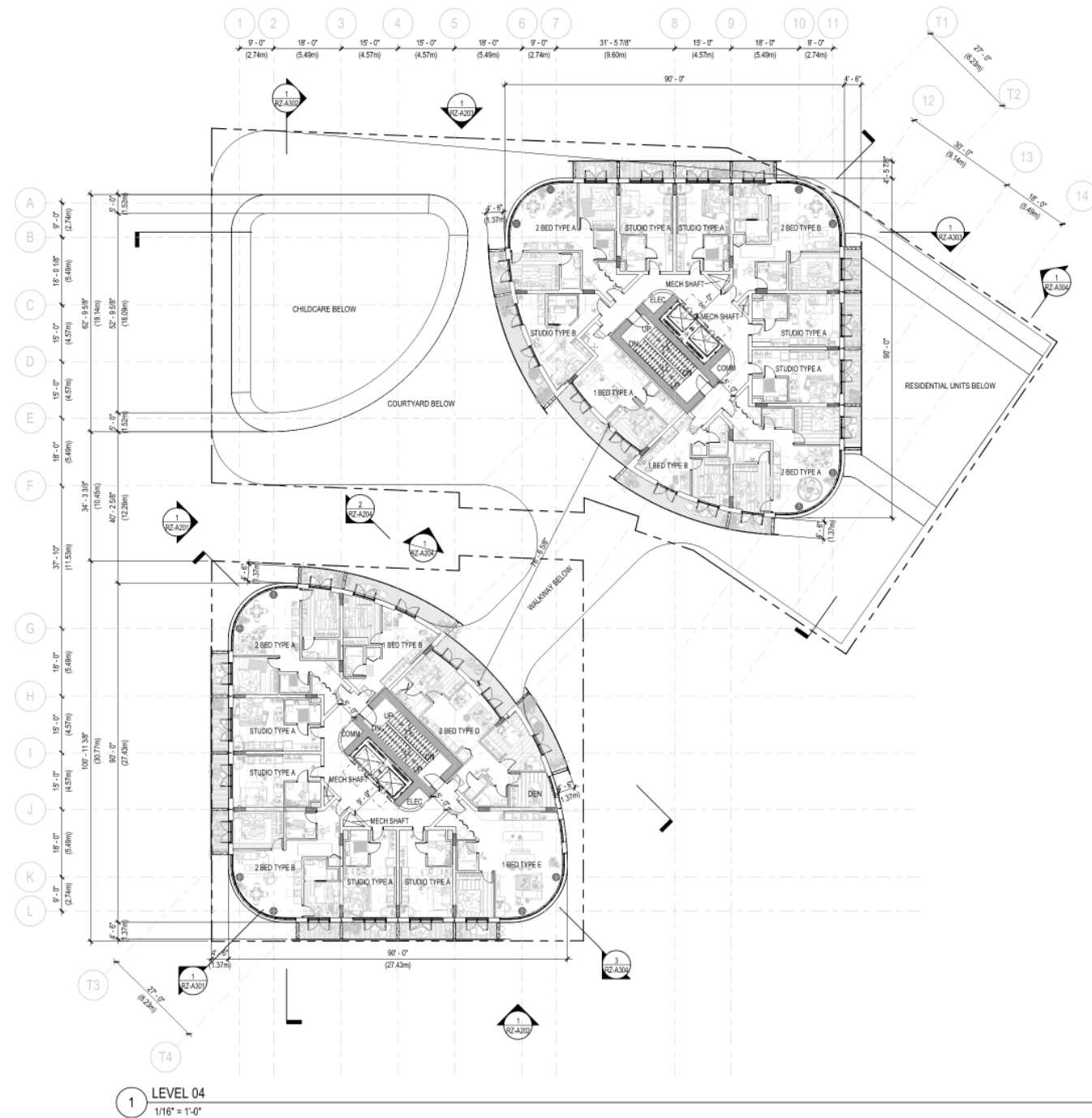
REVISIONS

TITLE
FLOOR PLAN - LEVEL 02

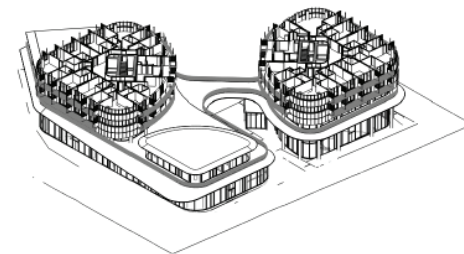
SHEET NUMBER
RZ-A107

Floor Plans

6.9.7 Level 3-4



1 LEVEL 04
1/16" = 1'-0"



Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

FLOOR PLAN - LEVEL 03-04

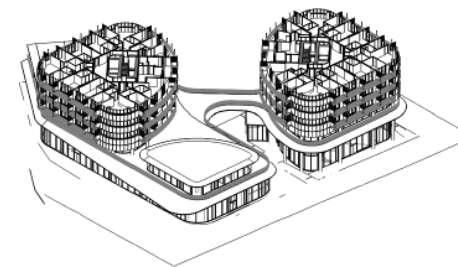
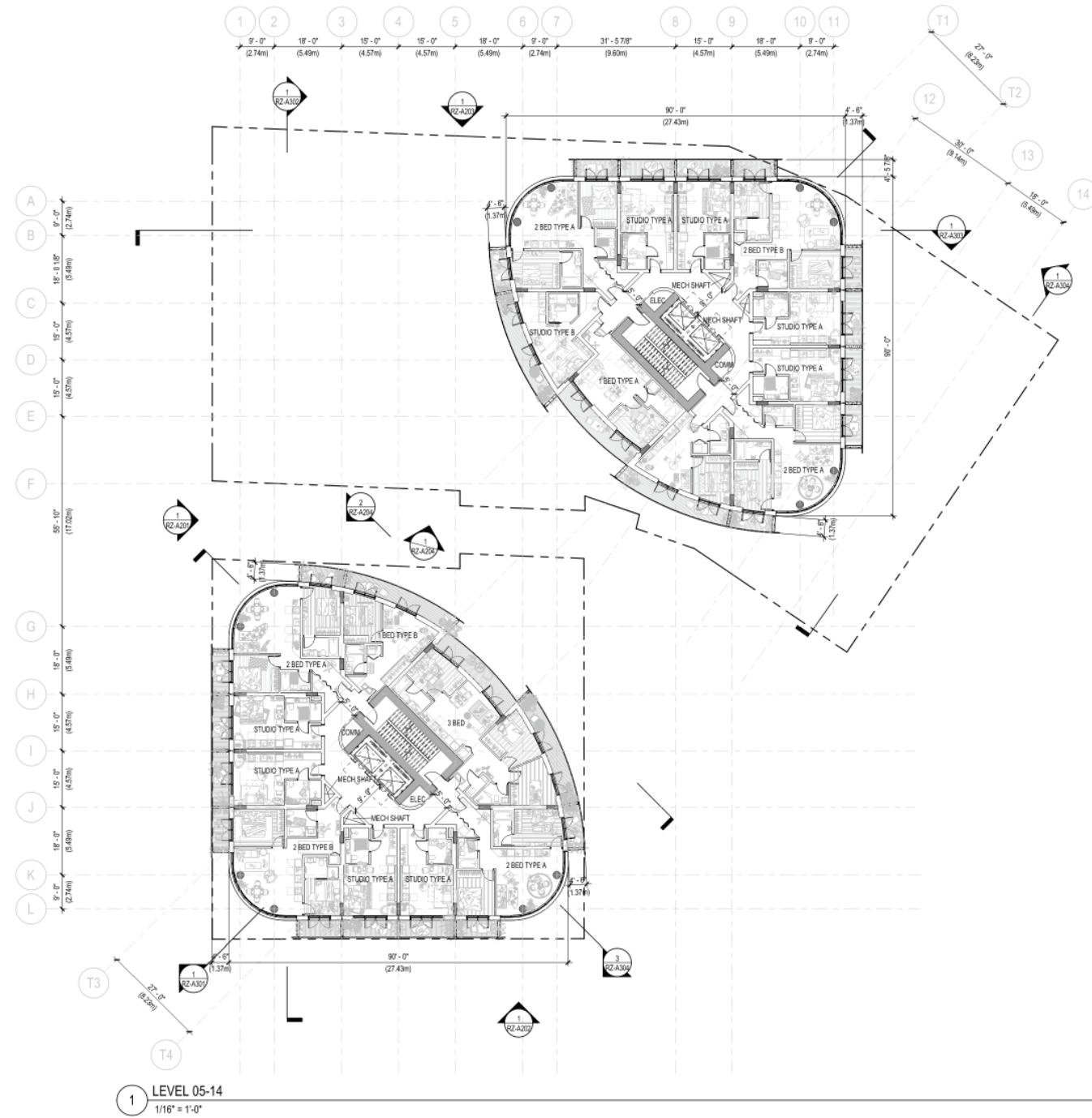
SHEET NUMBER

RZ-A108

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Floor Plans

6.9.8 Level 5-14



ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

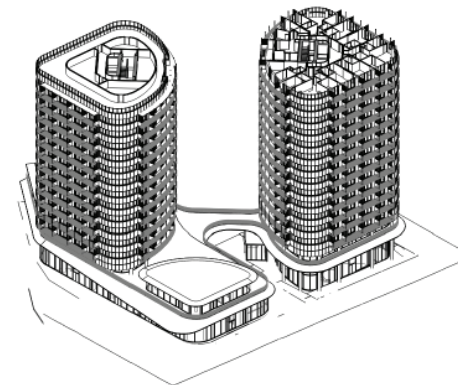
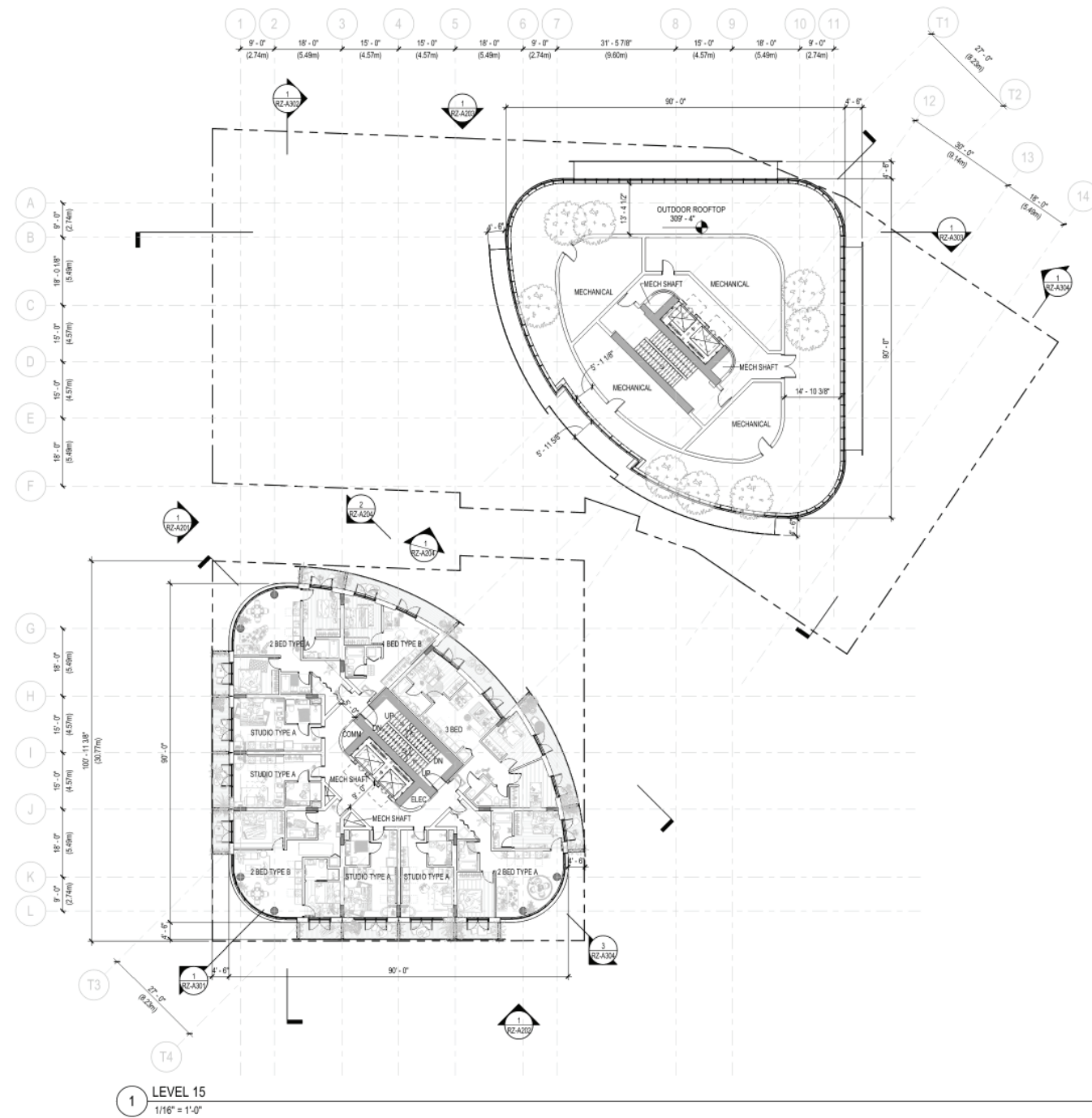
FLOOR PLAN - LEVEL 05-14

SHEET NUMBER

RZ-A109

Floor Plans

6.9.9 Level 15



1 LEVEL 15
1/16" = 1'-0"

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BONNIS
PROPERTIES

AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250213
AMENDMENT TO REZONING APPLICATION	20250803

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

FLOOR PLAN - LEVEL 15

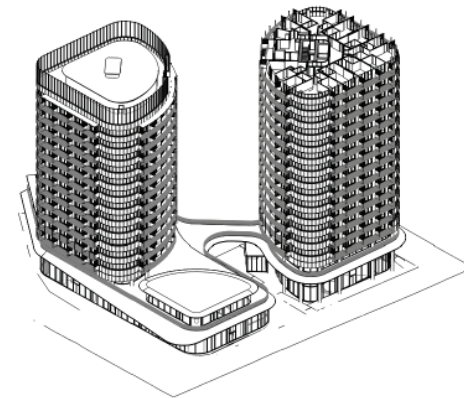
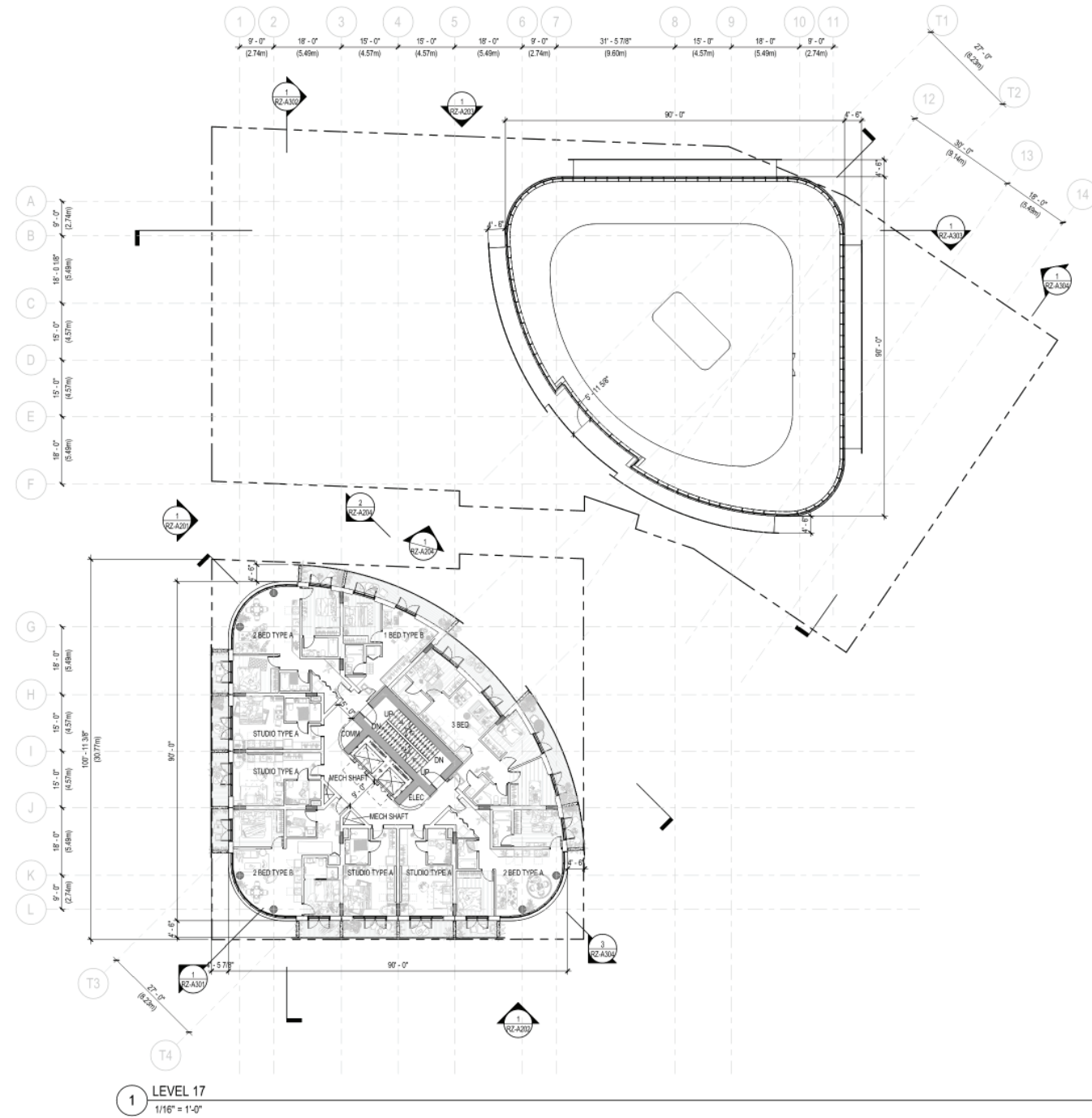
SHEET NUMBER

RZ-A110

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Floor Plans

6.9.10 Level 16-25



ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-606 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

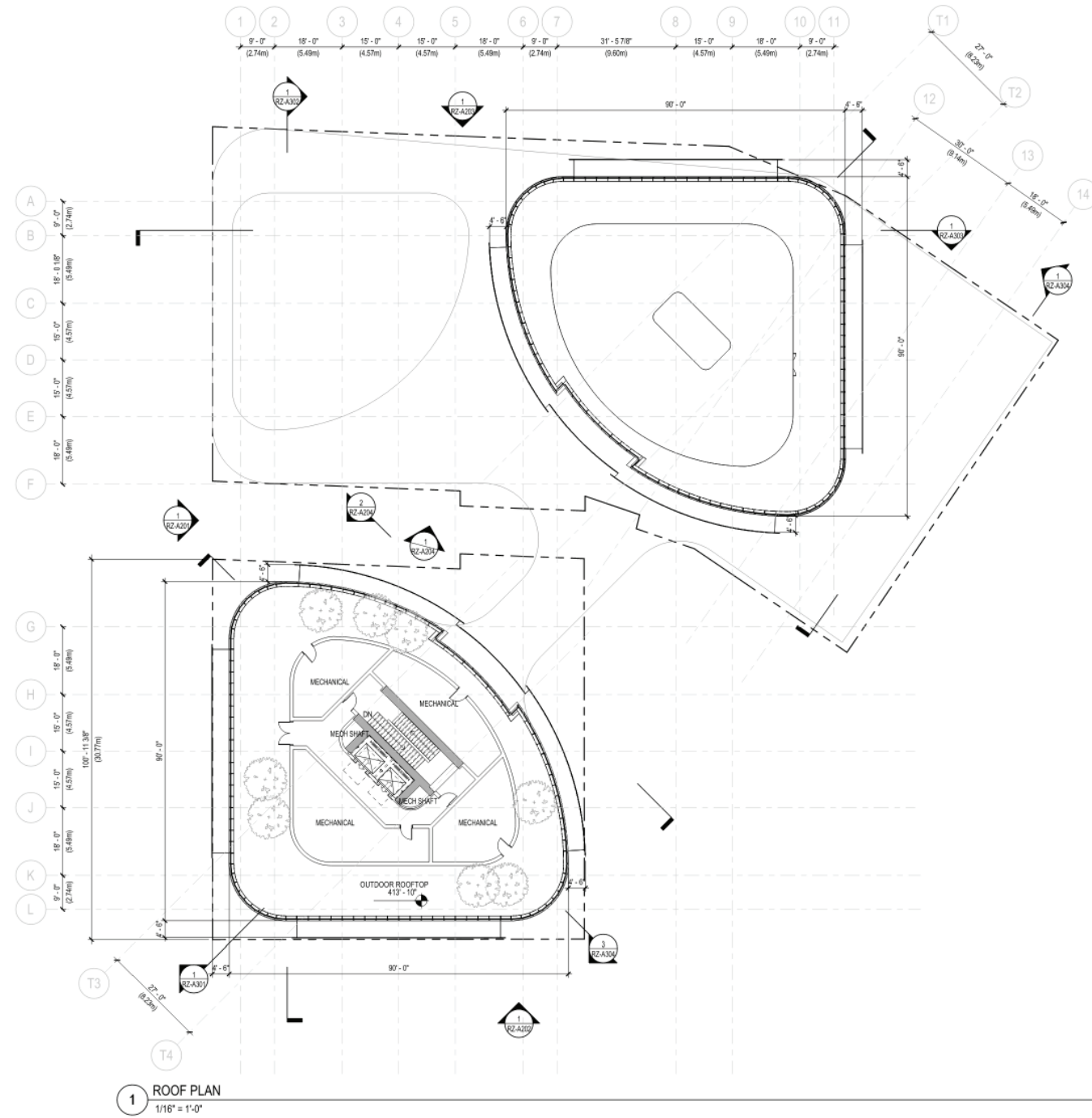
FLOOR PLAN - LEVEL
16-25

SHEET NUMBER

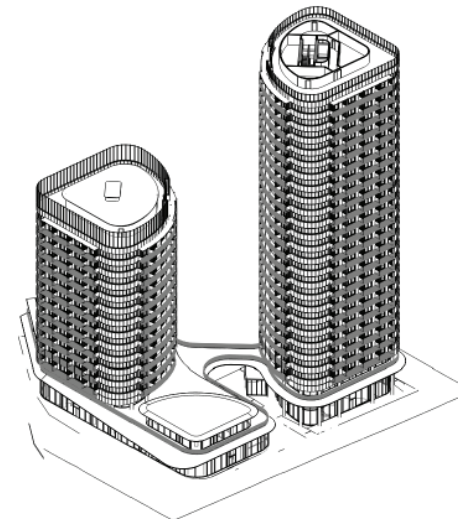
RZ-A111

Floor Plans

6.9.11 Roof



1 ROOF PLAN
1/16" = 1'-0"



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PROPERTIES

AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250213
AMENDMENT TO REZONING APPLICATION	20250803

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

ROOF PLAN

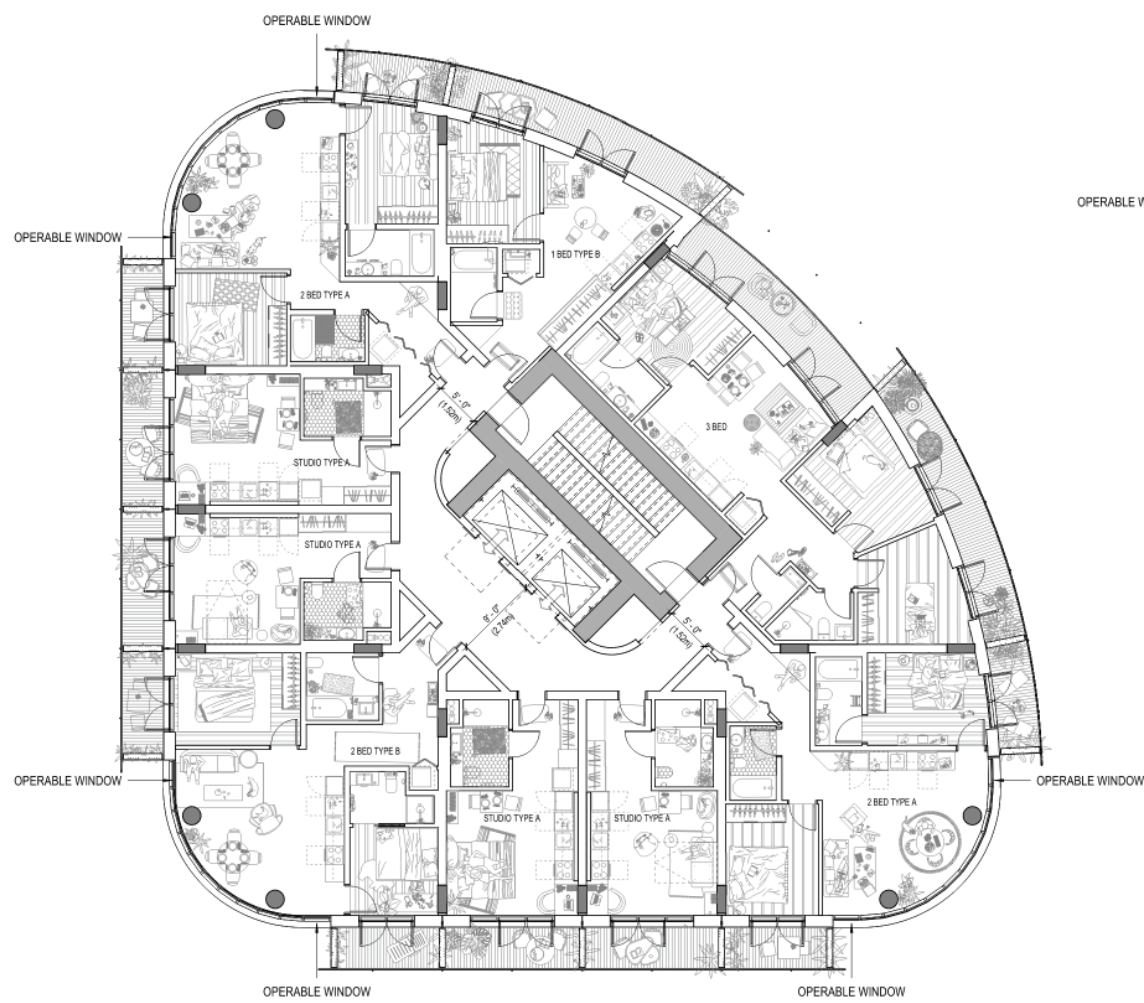
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RZ-A112

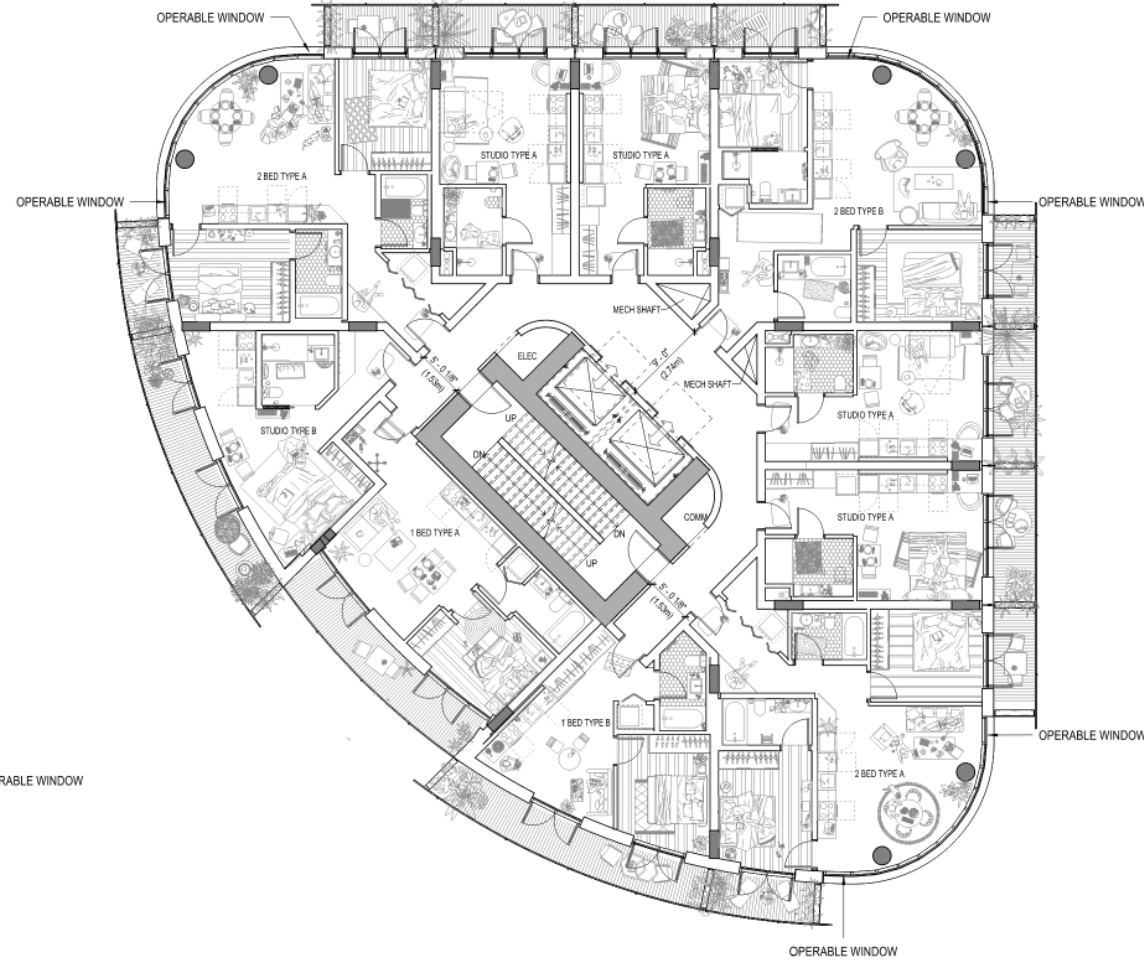
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Floor Plans

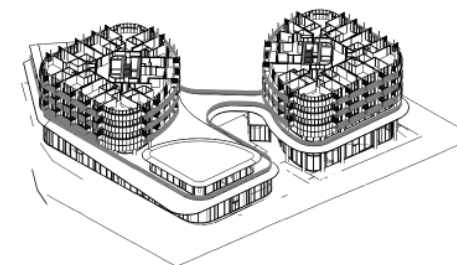
6.9.12 Enlarged Tower Plans



1 SOUTH TOWER - LEVEL 05-25
1/8" = 1'-0"



2 NORTH TOWER - LEVEL 03-14
1/8" = 1'-0"



	ISSUED
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

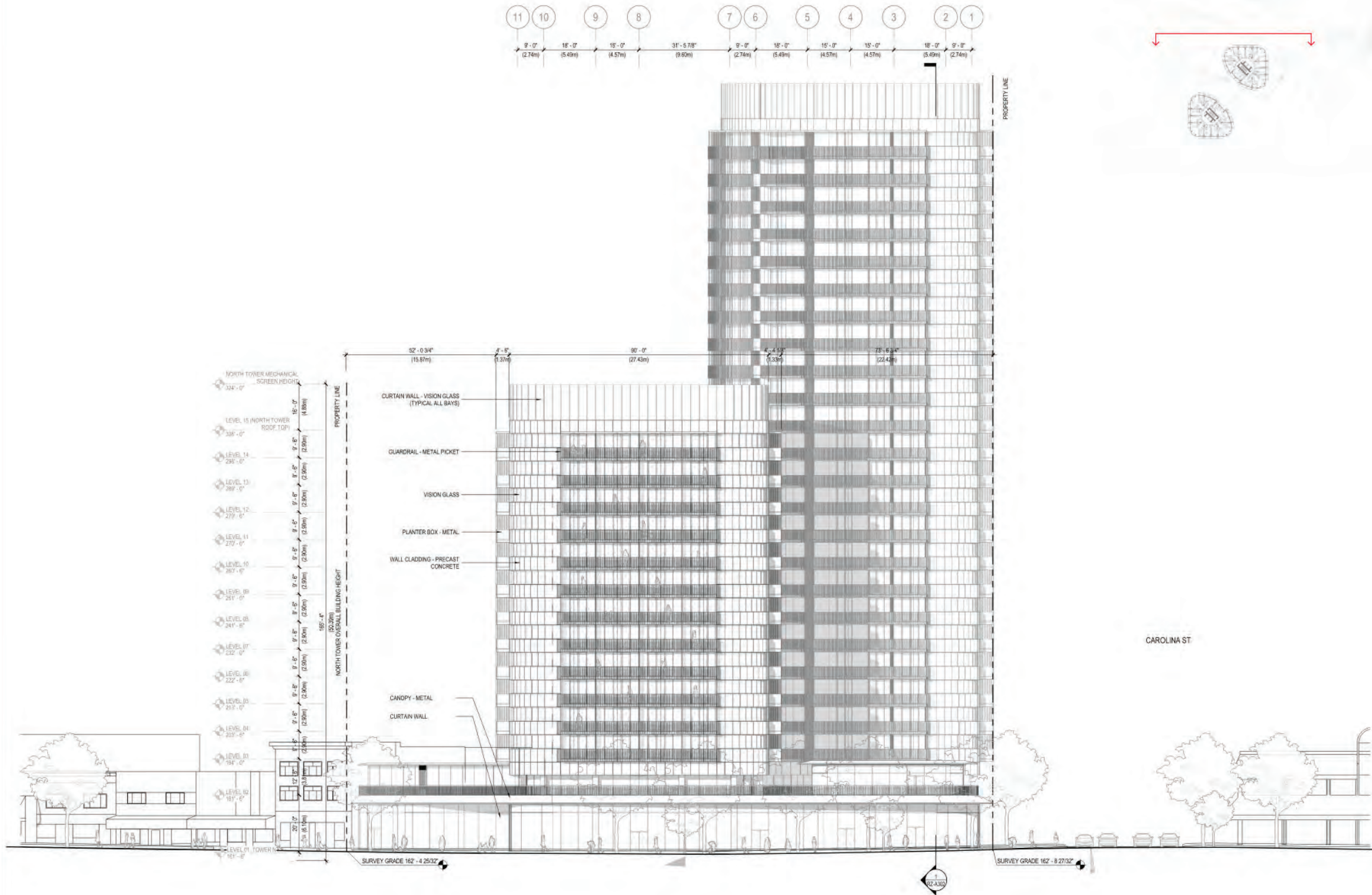
REVISIONS

TITLE
ENLARGED TOWER
PLANS

SHEET NUMBER
RZ-A113

6.10 Elevations

6.10.1 E 15th Ave Elevation



1 NORTH OVERALL ELEVATION
1/16" = 1'-0"

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BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250211
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

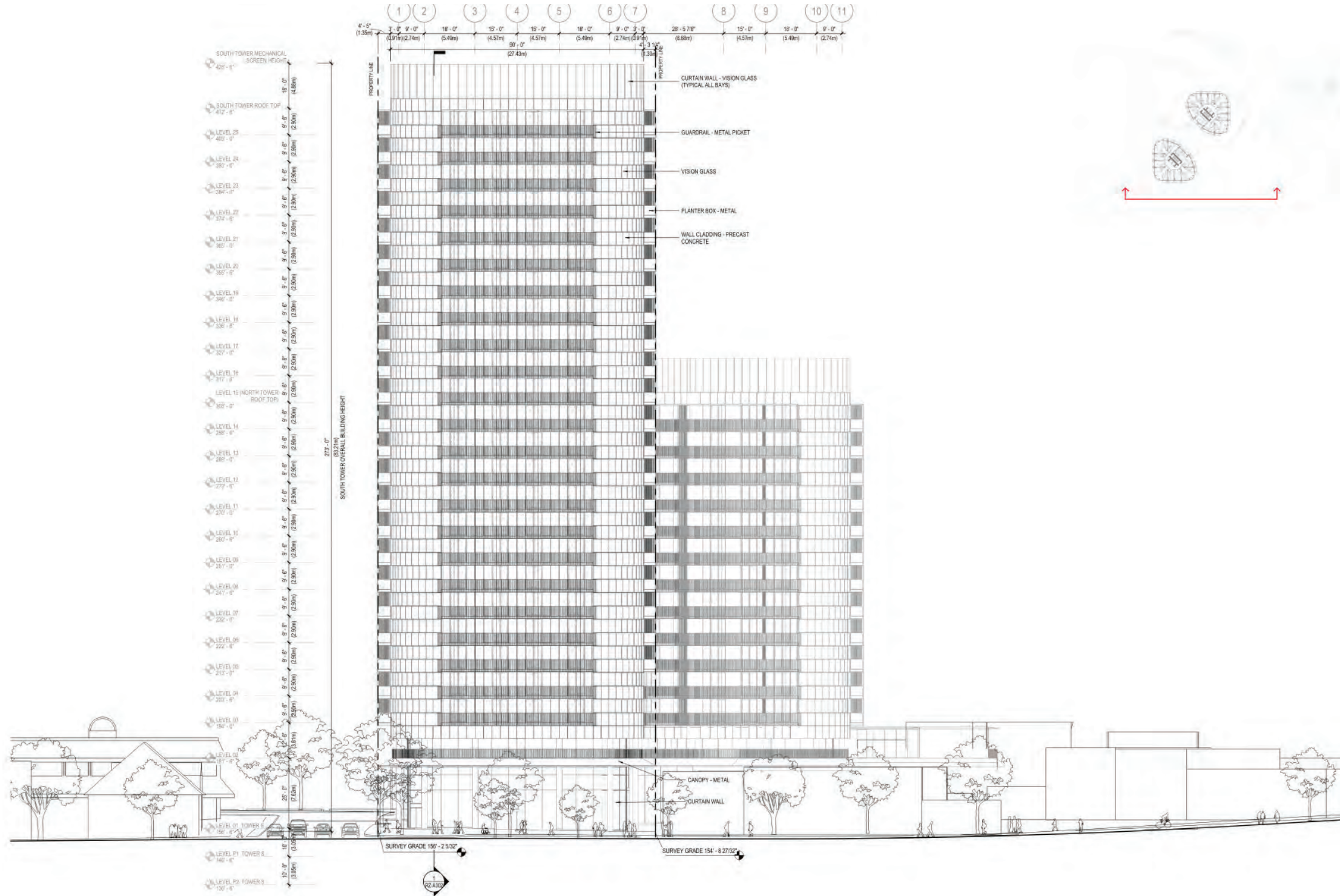
TITLE
OVERALL ELEVATION - NORTH

SHEET NUMBER
RZ-A203

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Elevations

6.10.2 E 16th Ave Elevation



ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

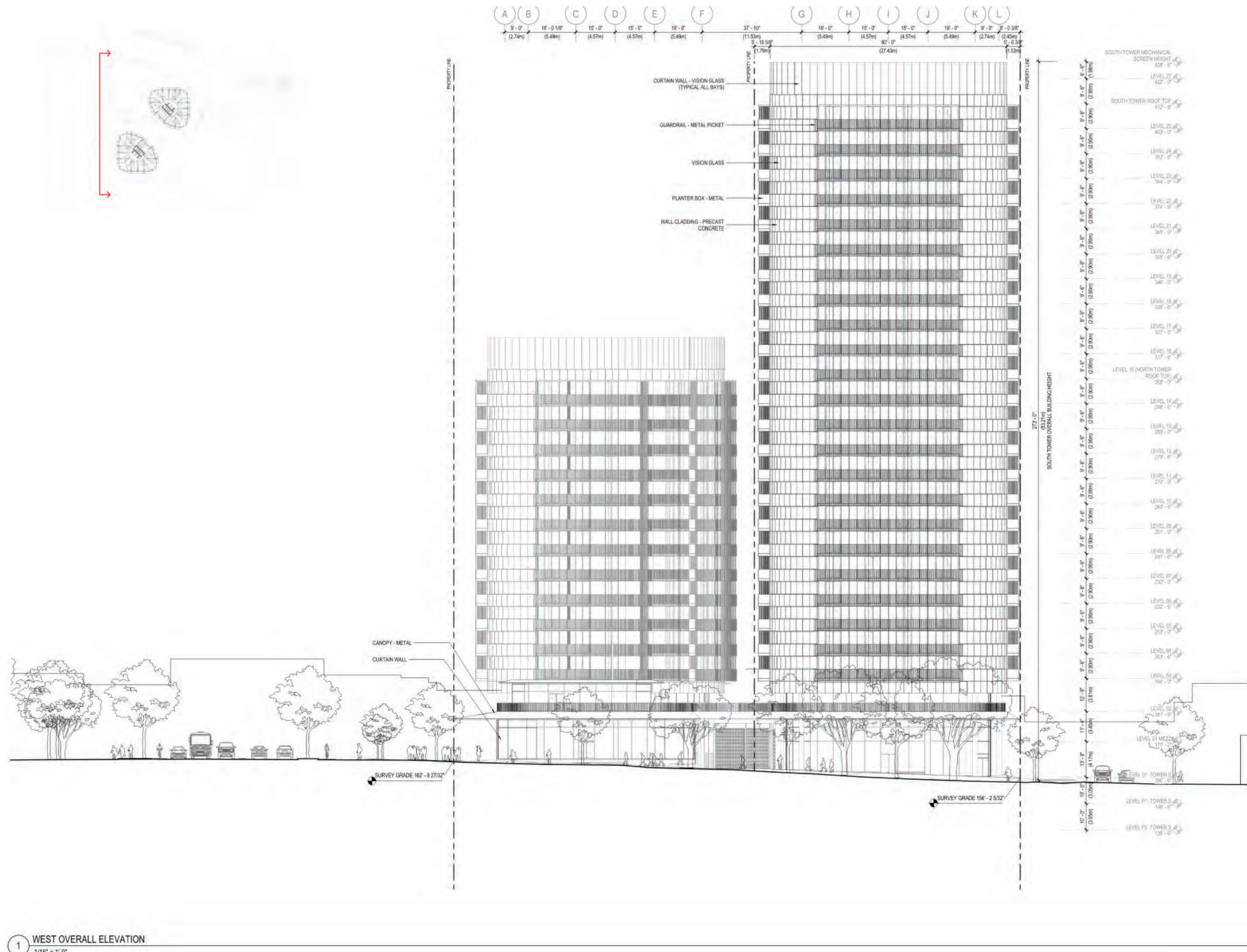
TITLE
OVERALL ELEVATION - SOUTH

SHEET NUMBER
RZ-A202

1 SOUTH OVERALL ELEVATION
1/16" = 1'-0"

Elevations

6.10.3 Carolina St Elevation



1 WEST OVERALL ELEVATION
1/16" = 1'-0"

Perkins&Will



AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12373.000

REVISIONS

TITLE

OVERALL ELEVATION -
WEST

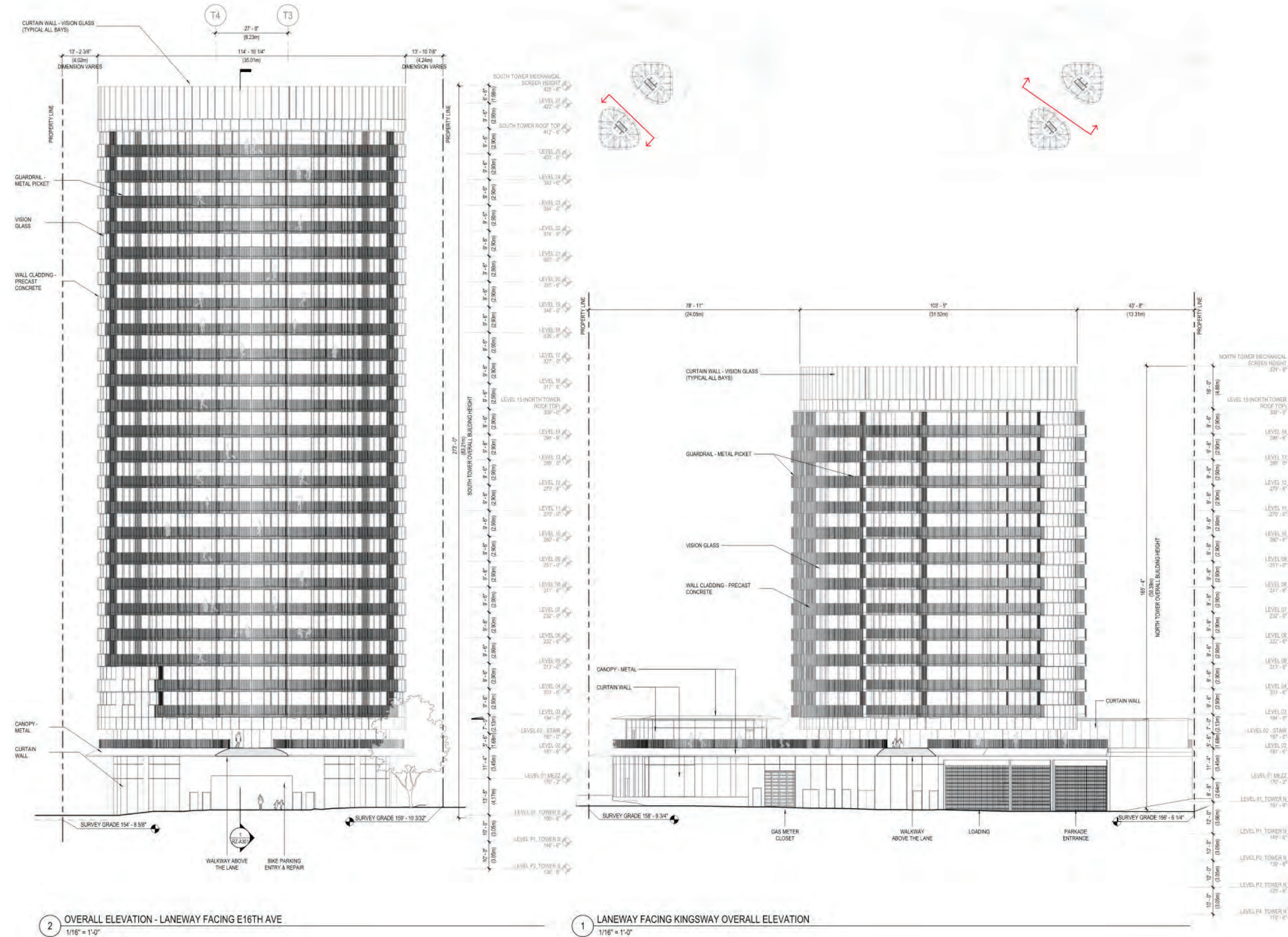
SHEET NUMBER

RZ-A201

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Elevations

6.10.4 Laneway Elevations



ISSUED

ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

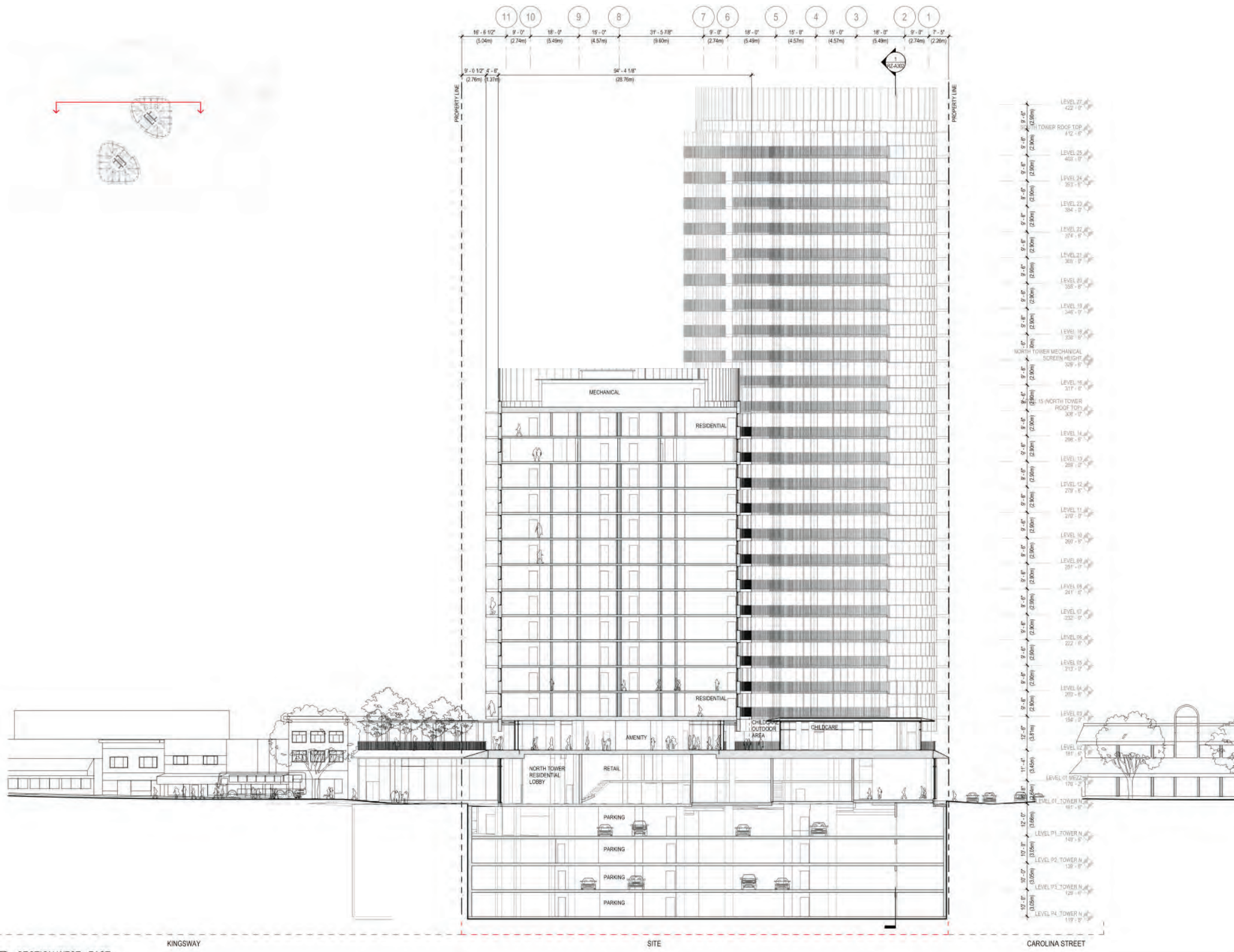
REVISIONS

TITLE
OVERALL ELEVATION - LANEWAY

SHEET NUMBER
RZ-A204

6.11 Sections

6.11.1 North Section through Kingsway



1 SECTION WEST - EAST
1/16" = 1'-0"

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AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
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KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

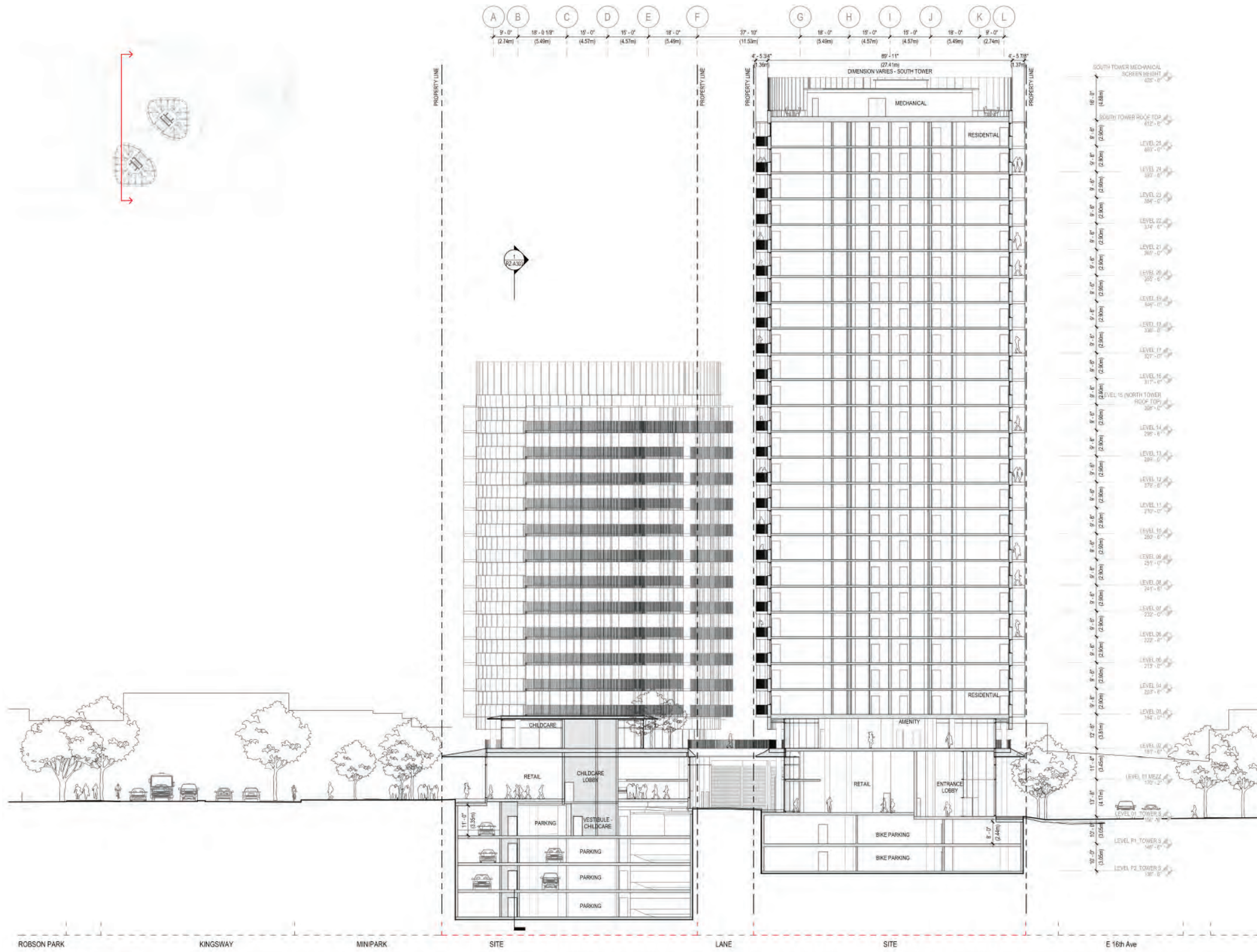
REVISIONS

TITLE
OVERALL BUILDING SECTION - W-E

SHEET NUMBER
RZ-A303

Sections

6.11.2 West Section through Carolina St



1 SECTION NORTH - SOUTH
1/16" = 1'-0"

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

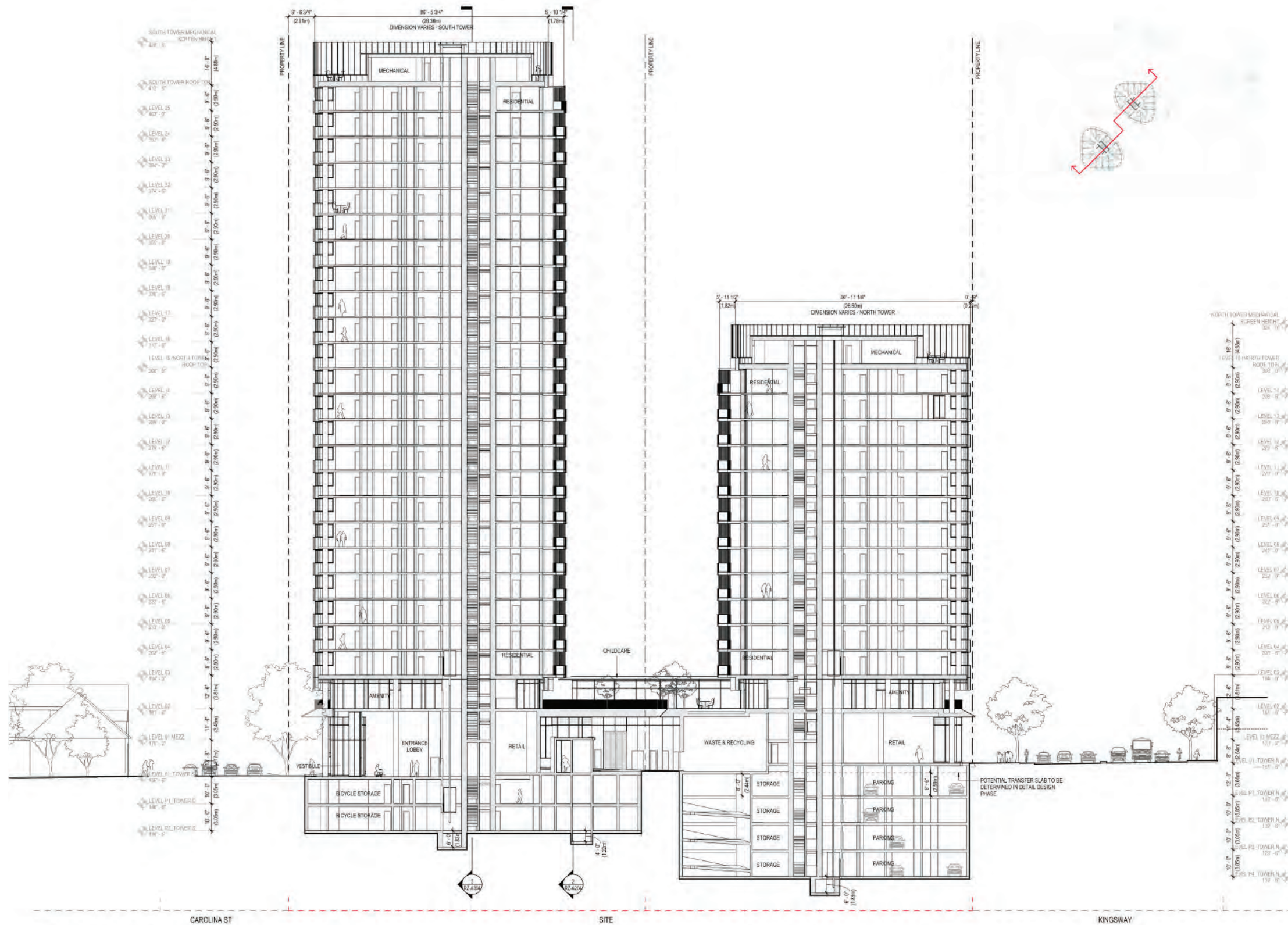
REVISIONS

TITLE
OVERALL BUILDING SECTION - N-S

SHEET NUMBER
RZ-A302

Sections

6.11.3 Diagonal Section Through Tower Cores



1 SECTION NORTH EAST - SOUTH WEST
1/16" = 1'-0"

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AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250801

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

OVERALL BUILDING
SECTION - NE-SW

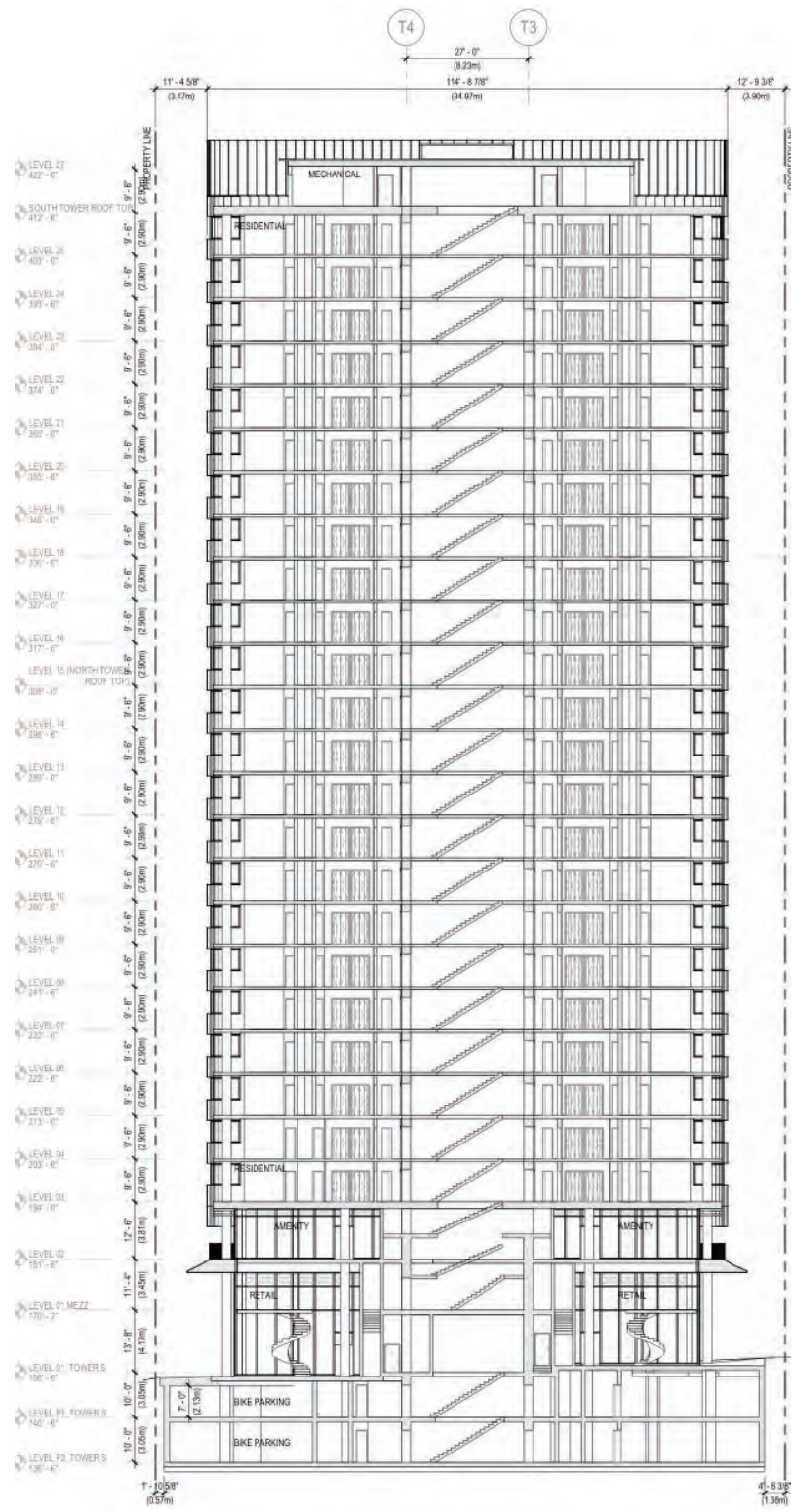
SHEET NUMBER

RZ-A301

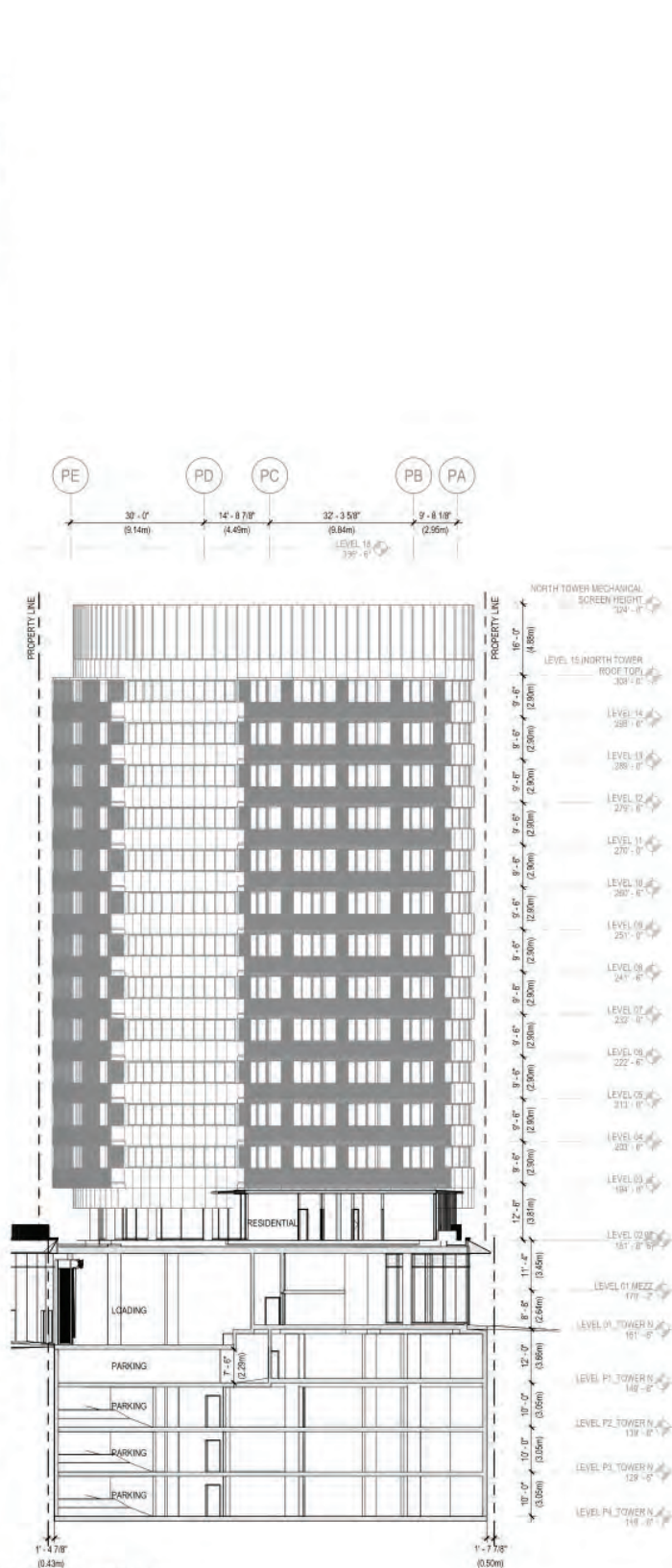
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Sections

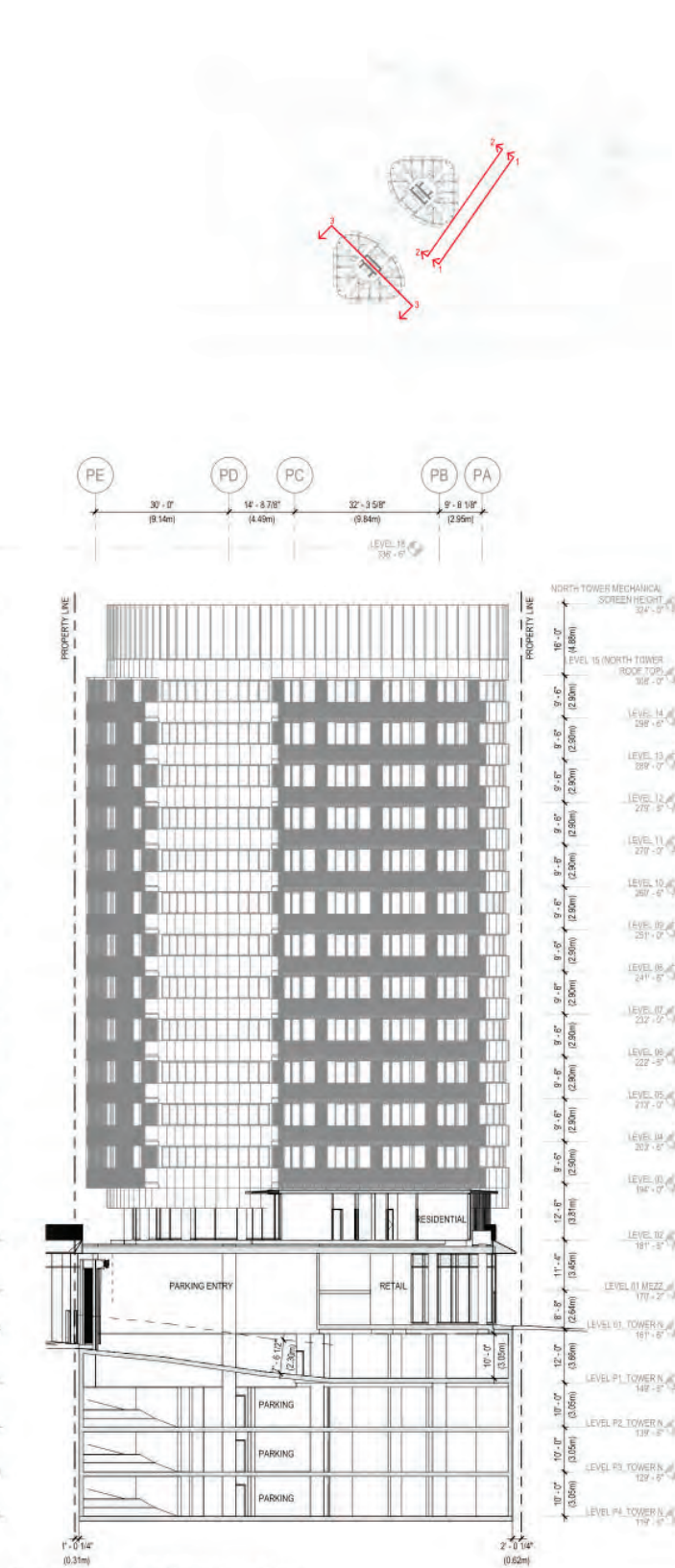
6.11.4 Building Sections



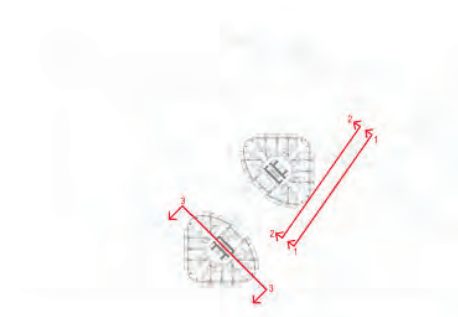
3 SECTION - EXIT STAIR
1/16" = 1'-0"



2 SECTION - LOADING
1/16" = 1'-0"



1 SECTION - PARKING ENTRY RAMP
1/16" = 1'-0"



ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

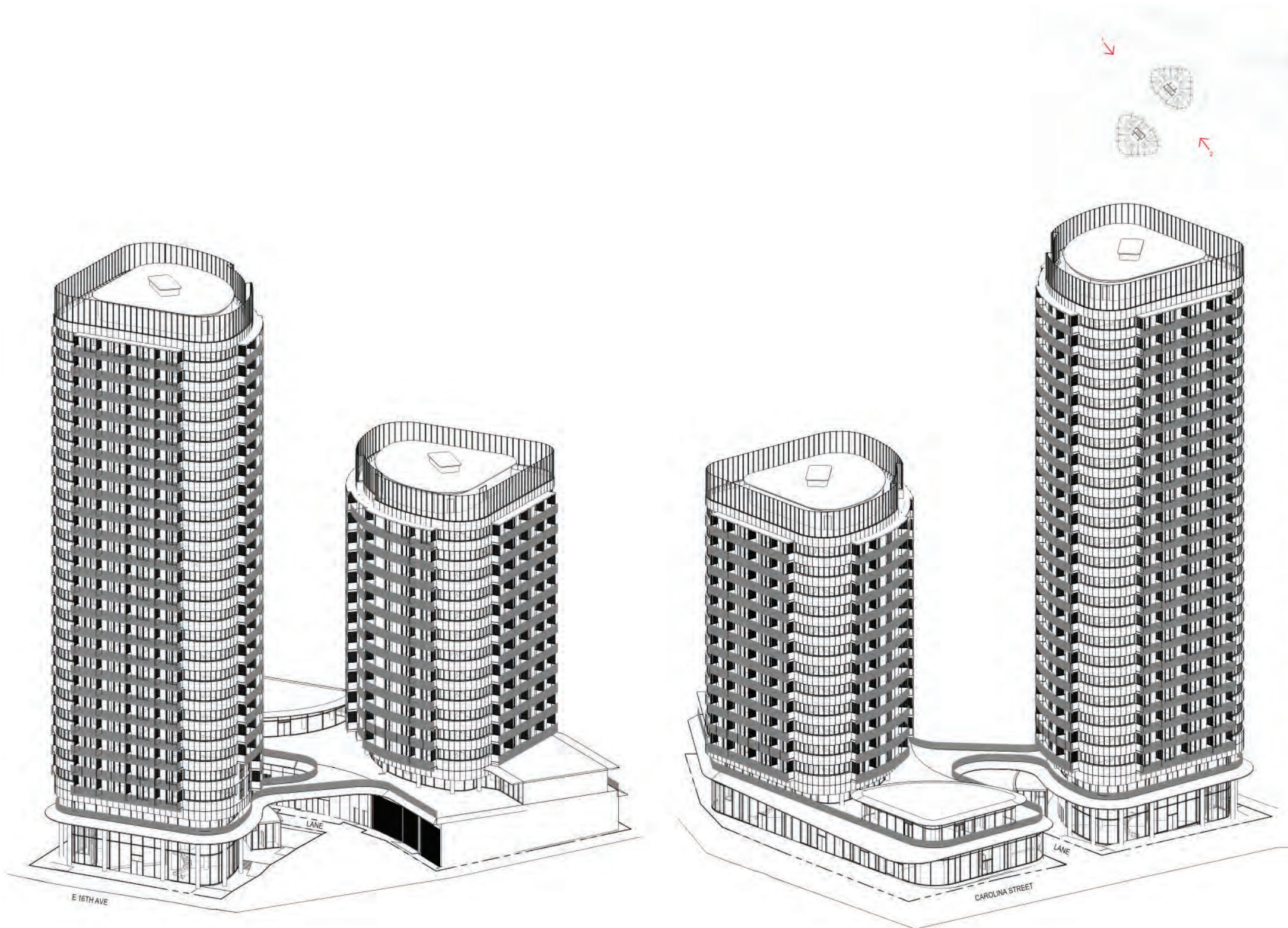
TITLE

BUILDING SECTIONS

SHEET NUMBER

RZ-A304

6.12 Overall Axonometric



2 AXONOMETRIC VIEW 2 - FROM SOUTH EAST LOOKING NORTH WEST

1 AXONOMETRIC VIEW 1 - FROM NORTH WEST LOOKING SOUTH EAST

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BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

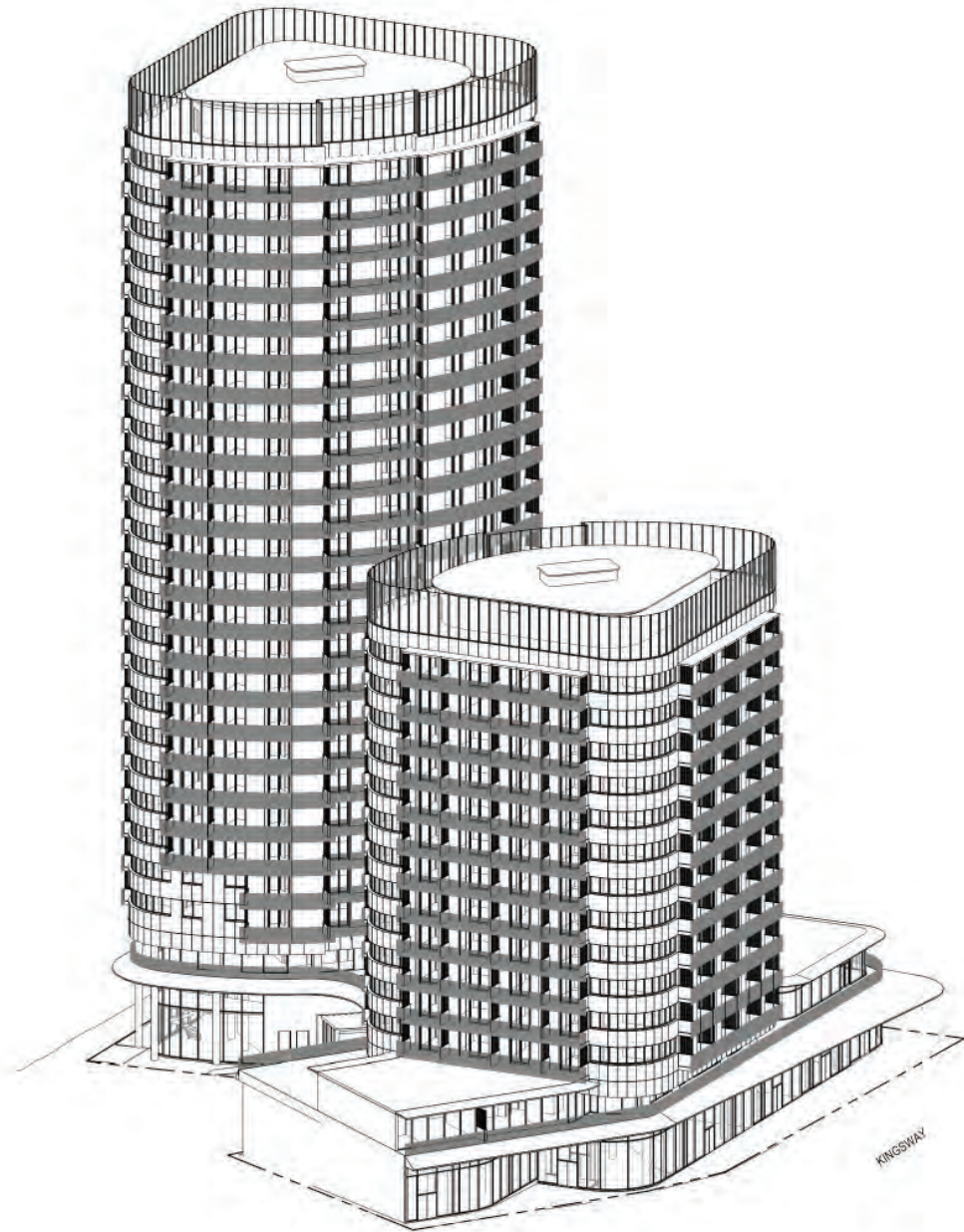
TITLE

3D AXONOMETRIC VIEWS

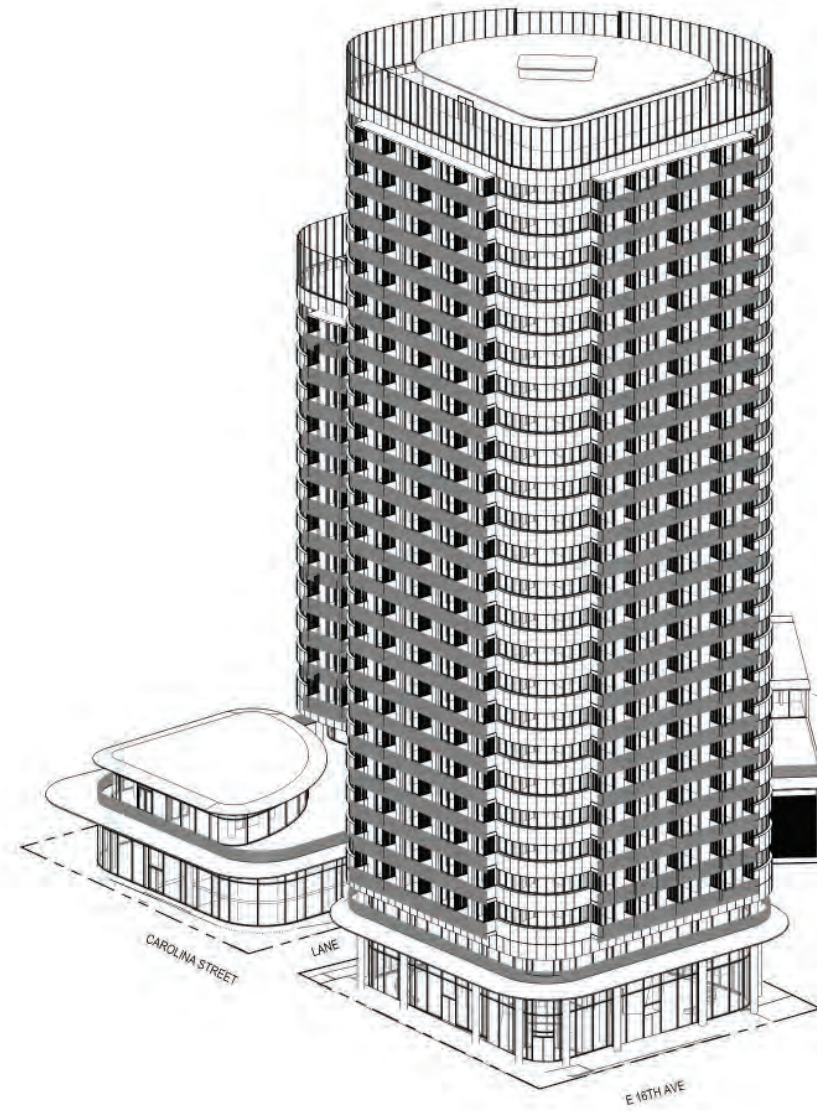
SHEET NUMBER

RZ-A701

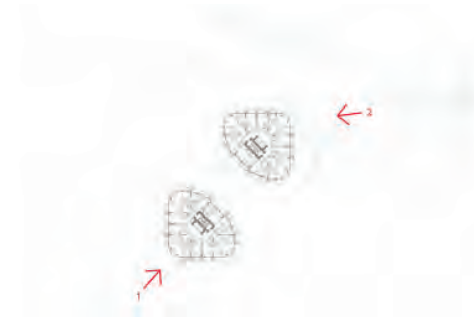
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2 AXONOMETRIC VIEW 4 - FROM NORTH EAST LOOKING SOUTH WEST



1 AXONOMETRIC VIEW 3 - FROM SOUTH WEST LOOKING NORTH EAST



ISSUED	
ISSUED FOR REZONING APPLICATION	2024/06/17
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	2025/02/19
AMENDMENT TO REZONING APPLICATION	2025/09/03

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

3D AXONOMETRIC VIEWS

SHEET NUMBER

RZ-A702

6.13 Floor Plans - FSR Overlay

6.13.1 Level 1



RESIDENTIAL AREA SUMMARY - LEVEL 01	
LOADING & PARKING ENTRY	839.35 SF
LOADING & PARKING ENTRY	1148.71 SF
RESIDENTIAL	1806.82 SF
RESIDENTIAL	2733.19 SF
RESIDENTIAL	192.53 SF
RESIDENTIAL	98.13 SF
TOTAL RESIDENTIAL FSR AREA	6640.72 SF

RETAIL FSR AREA - LEVEL 01	
RETAIL	1040.25 SF
RETAIL	5092.65 SF
RETAIL	1148.72 SF
RETAIL	1524.48 SF
RETAIL	1451.33 SF
RETAIL	1329.94 SF
RETAIL	1204.86 SF
RETAIL	2298.91 SF
RETAIL	1451.20 SF
RETAIL	1451.20 SF
TOTAL RETAIL FSR AREA	13910.33 SF

MECHANICAL EXCLUSION - LEVEL 01	
MECHANICAL	470.19 SF
MECHANICAL	37.87 SF
MECHANICAL	38.85 SF
MECHANICAL	37.58 SF
TOTAL MECHANICAL EXCLUSION	584.58 SF

CHILDCARE EXCLUSION - LEVEL 01	
CHILDCARE	470.48 SF
TOTAL CHILDCARE FSR AREA	470.48 SF

Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION 20240907
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST 20250213
AMENDMENT TO REZONING APPLICATION 20250303

KEYPLAN

PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

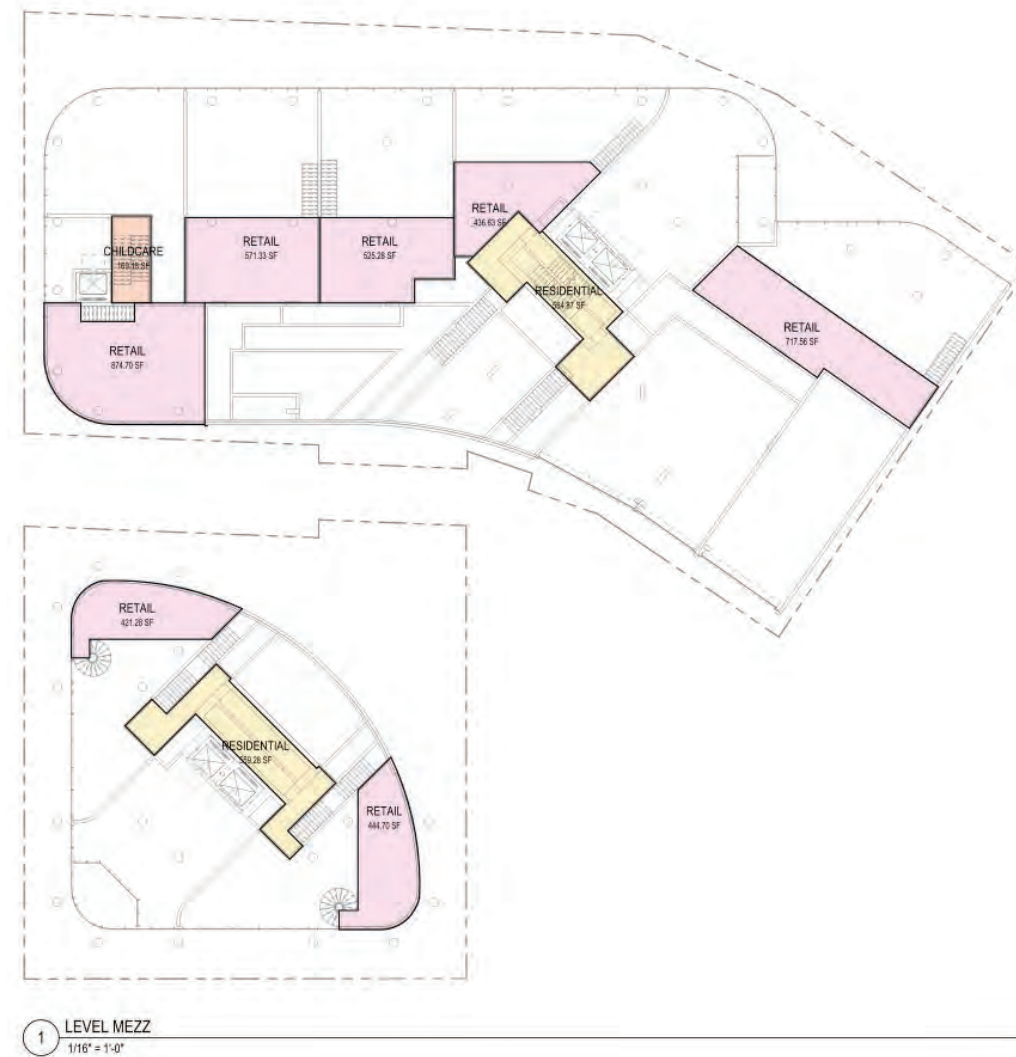
TITLE
LEVEL 01 FSR OVERLAY

SHEET NUMBER
RZ-FSR101

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Floor Plans - FSR Overlay

6.13.2 Mezzanine Level



RESIDENTIAL AREA SUMMARY - LEVEL MEZZ	
RESIDENTIAL	534.67 SF
RESIDENTIAL	529.26 SF
TOTAL RESIDENTIAL FSR AREA	1118.15 SF

RETAIL FSR AREA - LEVEL MEZZ	
RETAIL	444.70 SF
RETAIL	421.26 SF
RETAIL	571.33 SF
RETAIL	717.56 SF
RETAIL	874.70 SF
RETAIL	525.26 SF
RETAIL	438.63 SF
TOTAL RETAIL FSR AREA	3697.48 SF

CHILDCARE EXCLUSION - LEVEL MEZZ	
CHILDCARE	2244.56 SF
TOTAL CHILDCARE FSR AREA	2244.56 SF

Perkins&Will



AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250213
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE
LEVEL 01 MEZZANINE

SHEET NUMBER
RZ-FSR102

Floor Plans - FSR Overlay

6.13.3 Level 02



RESIDENTIAL AREA SUMMARY - LEVEL 02	
RESIDENTIAL	645.36 SF
RESIDENTIAL	448.39 SF
RESIDENTIAL	2248.01 SF
TOTAL RESIDENTIAL FSR AREA	3341.75 SF

AMENITY EXCLUSION - LEVEL 02	
AMENITY	4219.15 SF
AMENITY	4454.28 SF
TOTAL AMENITY EXCLUSION	8513.43 SF

MECHANICAL EXCLUSION - LEVEL 02	
MECHANICAL	33.69 SF
MECHANICAL	33.76 SF
MECHANICAL	36.06 SF
MECHANICAL	35.85 SF
TOTAL MECHANICAL EXCLUSION	139.20 SF

CHILD CARE EXCLUSION - LEVEL MEZZ	
CHILD CARE	2244.56 SF
TOTAL CHILD CARE FSR AREA	2244.56 SF

Perkins&Will

BONNIS PROPERTIES

AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250211
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN

PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

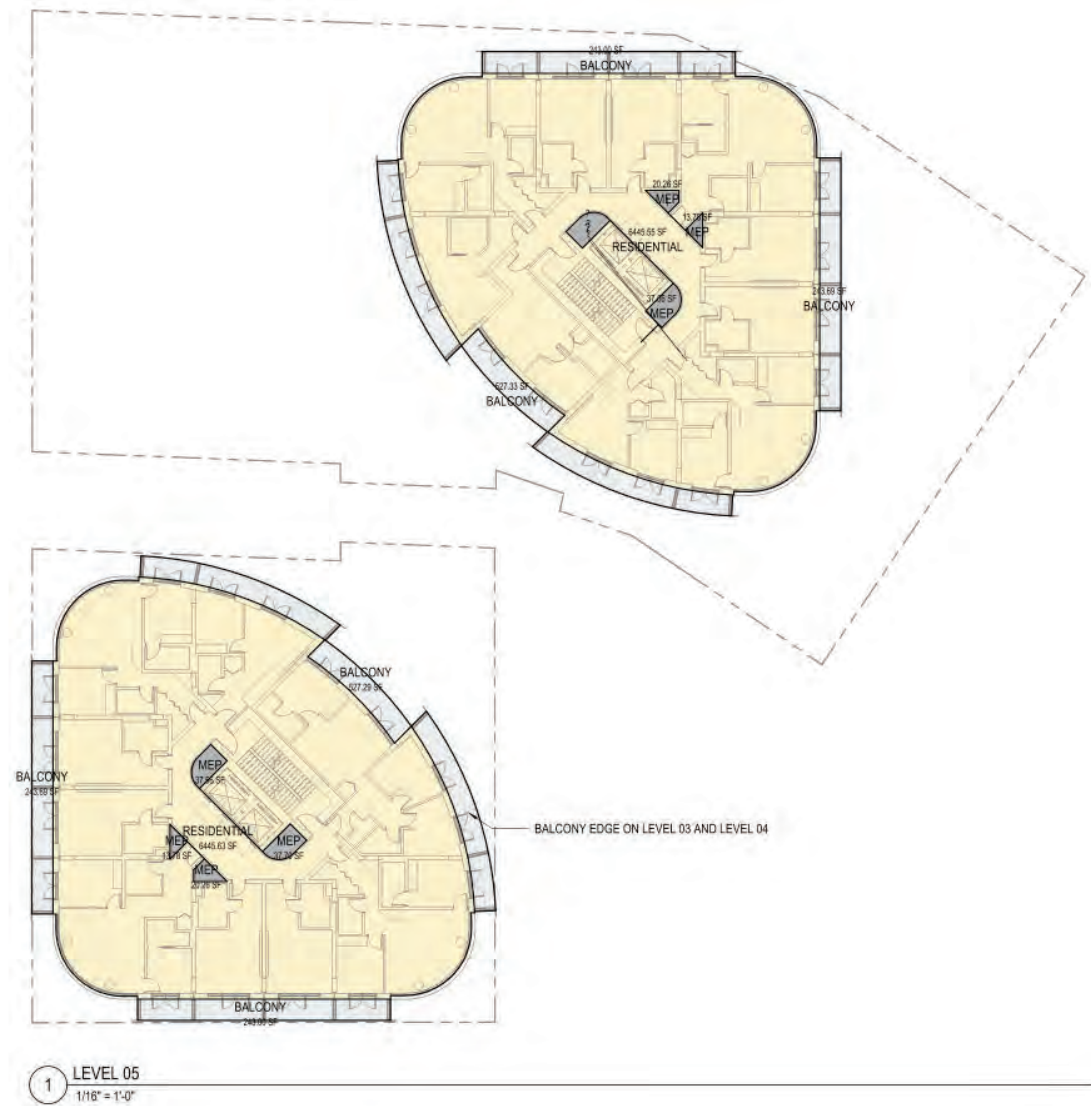
TITLE
LEVEL 02 FSR OVERLAY

SHEET NUMBER
RZ-FSR103

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Floor Plans - FSR Overlay

6.13.4 Level 03-14



RESIDENTIAL AREA SUMMARY - LEVEL 03	
RESIDENTIAL	6449.55 SF
TOTAL RESIDENTIAL FSR AREA	12899.19 SF
OPEN BALCONY EXCLUSION - LEVEL 03	
OPEN BALCONY EXCLUSION	2028.00 SF
MECHANICAL EXCLUSION - LEVEL 03	
MECHANICAL	37.56 SF
MECHANICAL	37.70 SF
MECHANICAL	13.76 SF
MECHANICAL	28.26 SF
MECHANICAL	37.56 SF
MECHANICAL	37.70 SF
MECHANICAL	28.26 SF
MECHANICAL	13.76 SF
TOTAL MECHANICAL EXCLUSION	218.56 SF



AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

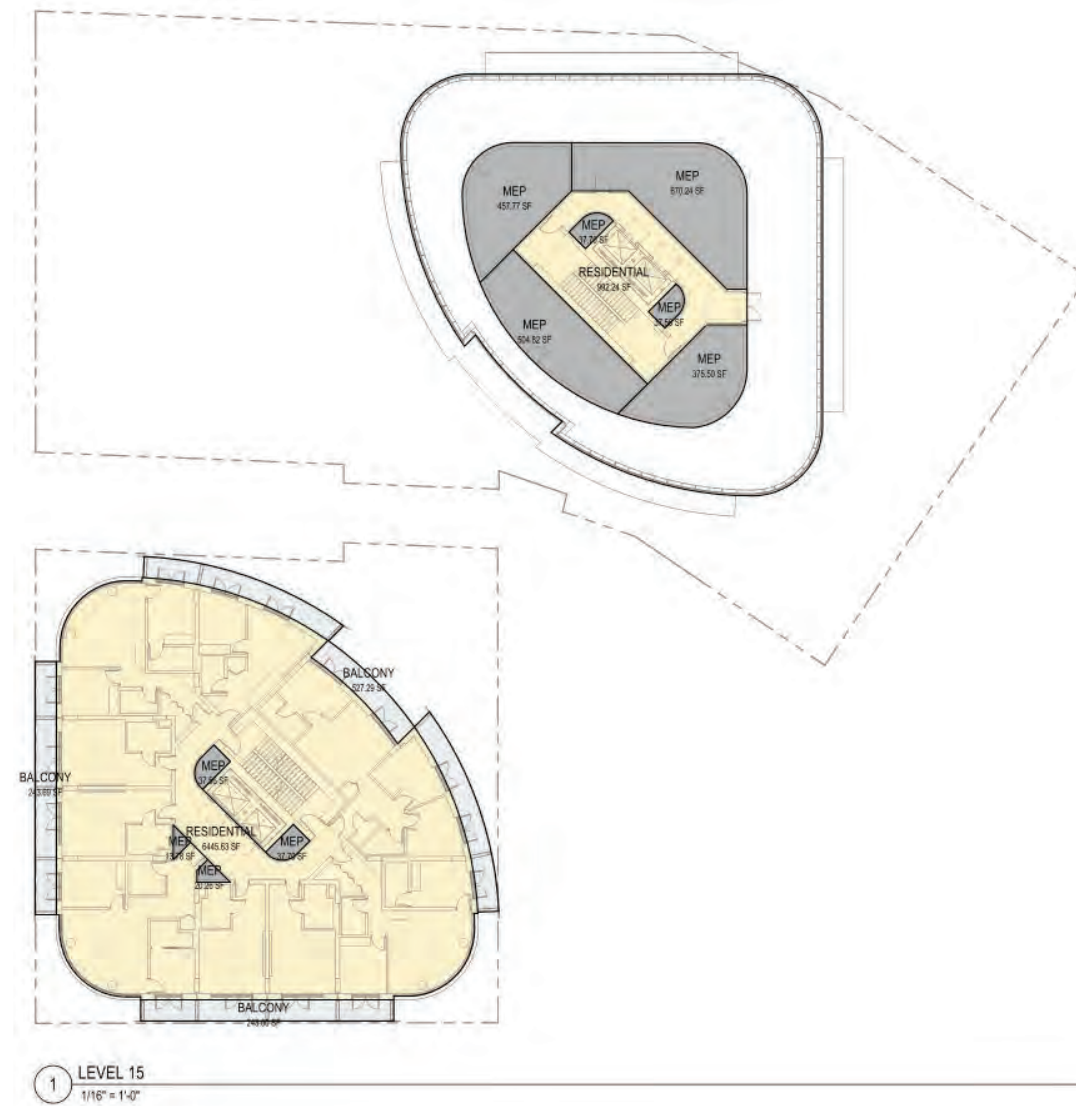
LEVEL 03-14 FSR OVERLAY

SHEET NUMBER

RZ-FSR104

Floor Plans - FSR Overlay

6.13.5 Level 15



RESIDENTIAL AREA SUMMARY - LEVEL 15	
RESIDENTIAL	8445.63 SF
RESIDENTIAL	992.24 SF
TOTAL RESIDENTIAL FSR AREA	7437.89 SF
OPEN BALCONY EXCLUSION - LEVEL 15	
OPEN BALCONY	1013.96 SF
TOTAL OPEN BALCONY EXCLUSION	1013.96 SF
MECHANICAL EXCLUSION - LEVEL 15	
MECHANICAL	37.56 SF
MECHANICAL	37.70 SF
MECHANICAL	13.76 SF
MECHANICAL	28.26 SF
MECHANICAL	37.70 SF
MECHANICAL	37.56 SF
MECHANICAL	670.24 SF
MECHANICAL	457.77 SF
MECHANICAL	504.92 SF
MECHANICAL	376.50 SF
TOTAL MECHANICAL EXCLUSION	2192.89 SF



AMENDMENT TO REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED	
ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250213
AMENDMENT TO REZONING APPLICATION	20250903



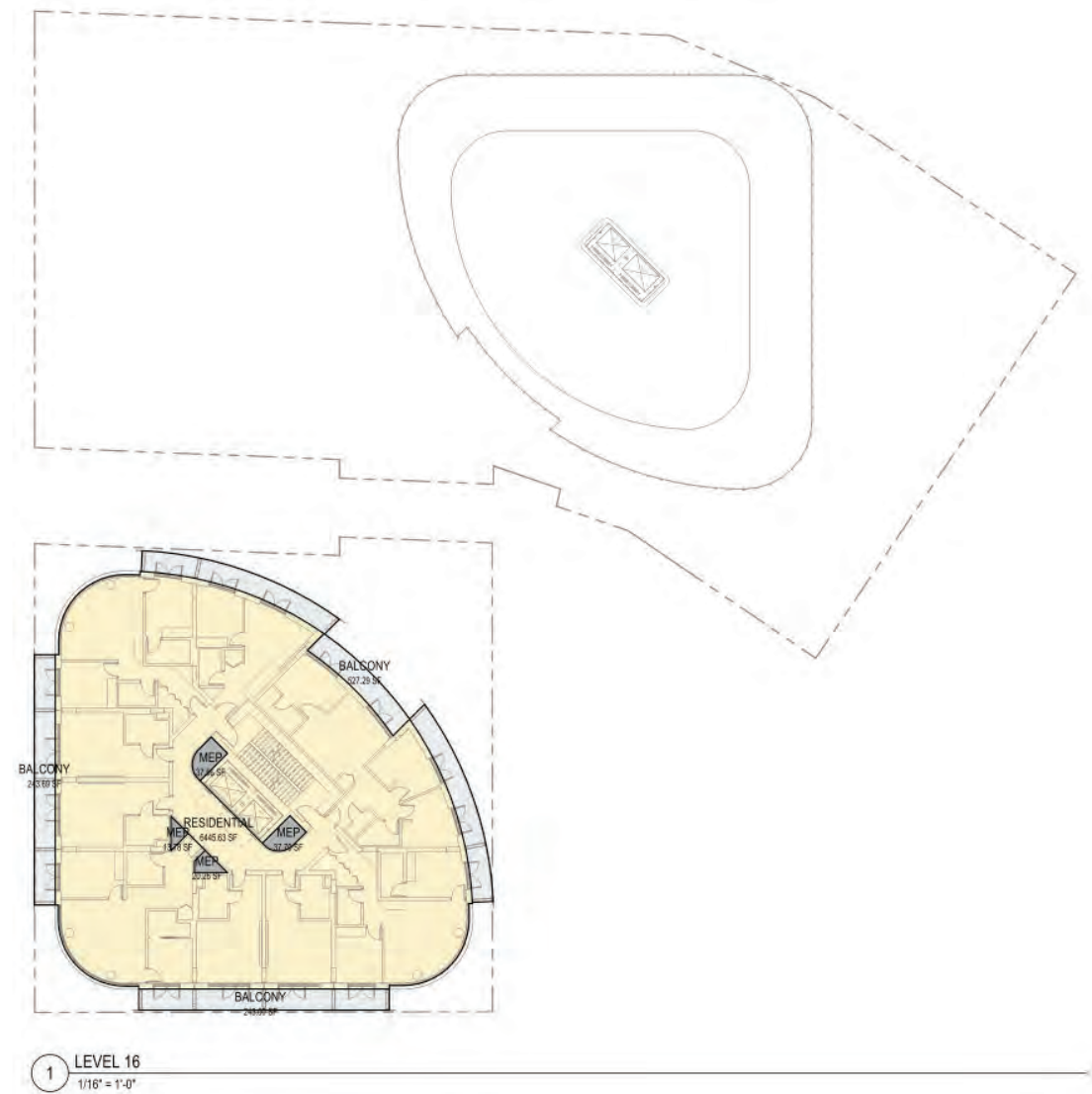
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600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC
PROJECT NUMBER
#12313.000

REVISIONS

TITLE
LEVEL 15 FSR OVERLAY
SHEET NUMBER
RZ-FSR105

Floor Plans - FSR Overlay

6.13.6 Level 16-25



RESIDENTIAL AREA SUMMARY - LEVEL 16	
RESIDENTIAL	8445.63 SF
TOTAL RESIDENTIAL FSR AREA	8445.63 SF
OPEN BALCONY EXCLUSION - LEVEL 16	
OPEN BALCONY	1013.98 SF
TOTAL OPEN BALCONY EXCLUSION	1013.98 SF
MECHANICAL EXCLUSION - LEVEL 16	
MECHANICAL	37.56 SF
MECHANICAL	37.70 SF
MECHANICAL	13.78 SF
MECHANICAL	20.26 SF
TOTAL MECHANICAL EXCLUSION	109.30 SF

Perkins&Will



AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240807
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250211
AMENDMENT TO REZONING APPLICATION	20250903

KEYPLAN



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E
16TH AVE. VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

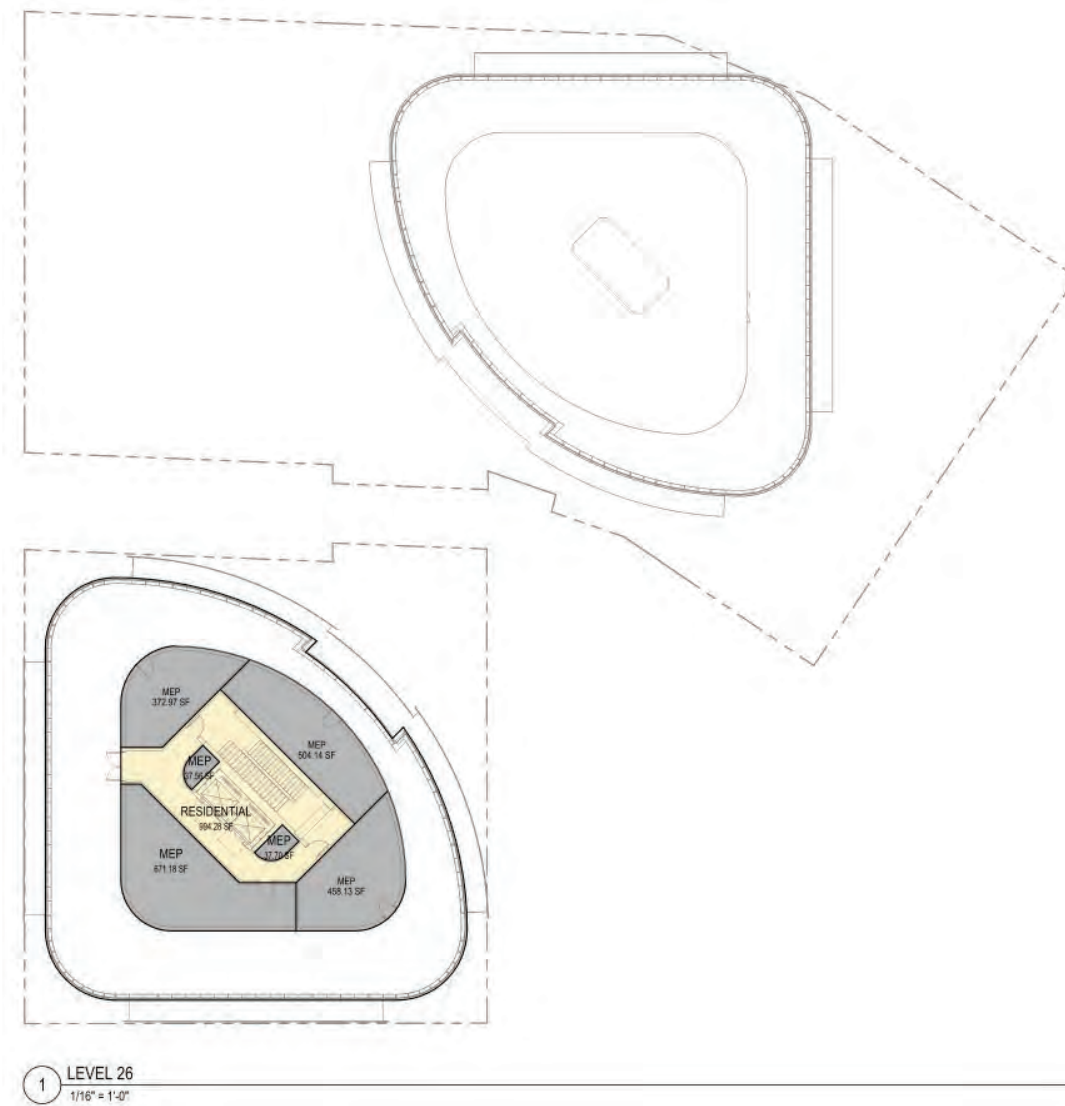
LEVEL 16-25 FSR
OVERLAY

SHEET NUMBER

RZ-FSR106

Floor Plans - FSR Overlay

6.13.7 Roof



RESIDENTIAL AREA SUMMARY - LEVEL 26	
RESIDENTIAL	594.28 SF
TOTAL RESIDENTIAL FSR AREA	594.28 SF

MECHANICAL EXCLUSION - LEVEL 26	
MECHANICAL	671.18 SF
MECHANICAL	37.56 SF
MECHANICAL	37.70 SF
MECHANICAL	458.13 SF
MECHANICAL	504.14 SF
MECHANICAL	372.97 SF
TOTAL MECHANICAL EXCLUSION	2081.68 SF



AMENDMENT TO
REZONING APPLICATION
SEPTEMBER 03, 2025

ISSUED

ISSUED FOR REZONING APPLICATION	20240907
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250219
AMENDMENT TO REZONING APPLICATION	20250903



PROJECT

600 KINGSWAY
602-646 KINGSWAY AND 603 E 16TH AVE, VANCOUVER, BC

PROJECT NUMBER
#12313.000

REVISIONS

TITLE

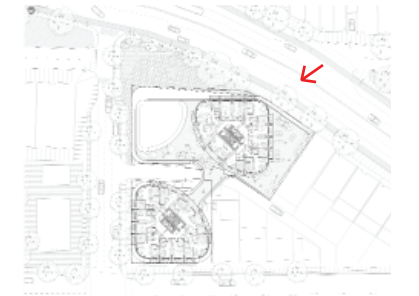
LEVEL ROOF FSR
OVERLAY

SHEET NUMBER

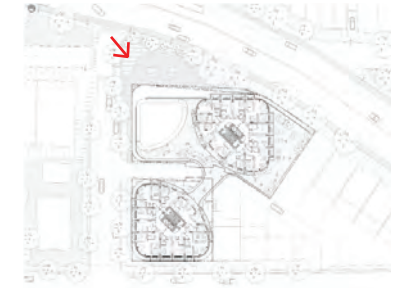
RZ-FSR107

6.14 Eye Level Views

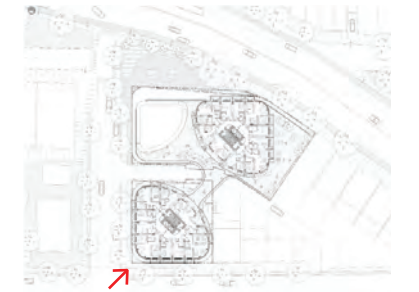
6.13.8 Eye Level View from Kingsway



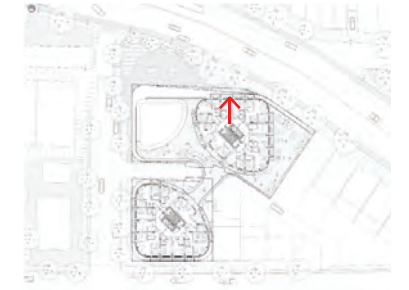
6.14.1 Eye Level View from Carolina St



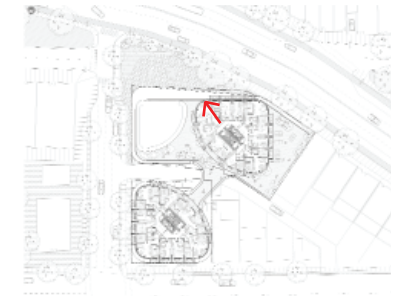
6.14.2 Entrance at South Tower



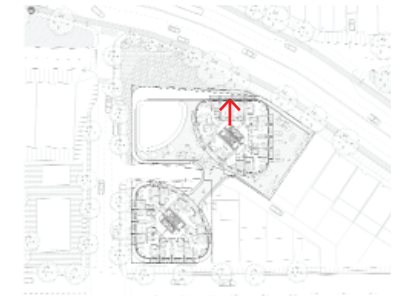
6.14.3 Eye Level View from Robson Park



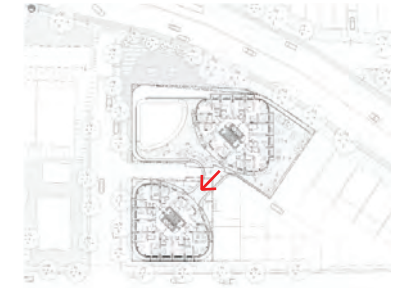
6.14.4 Interior View Looking at Corner



6.14.5 Studio Interior View



6.14.6 Terrace View II



6.14.7 Aerial View

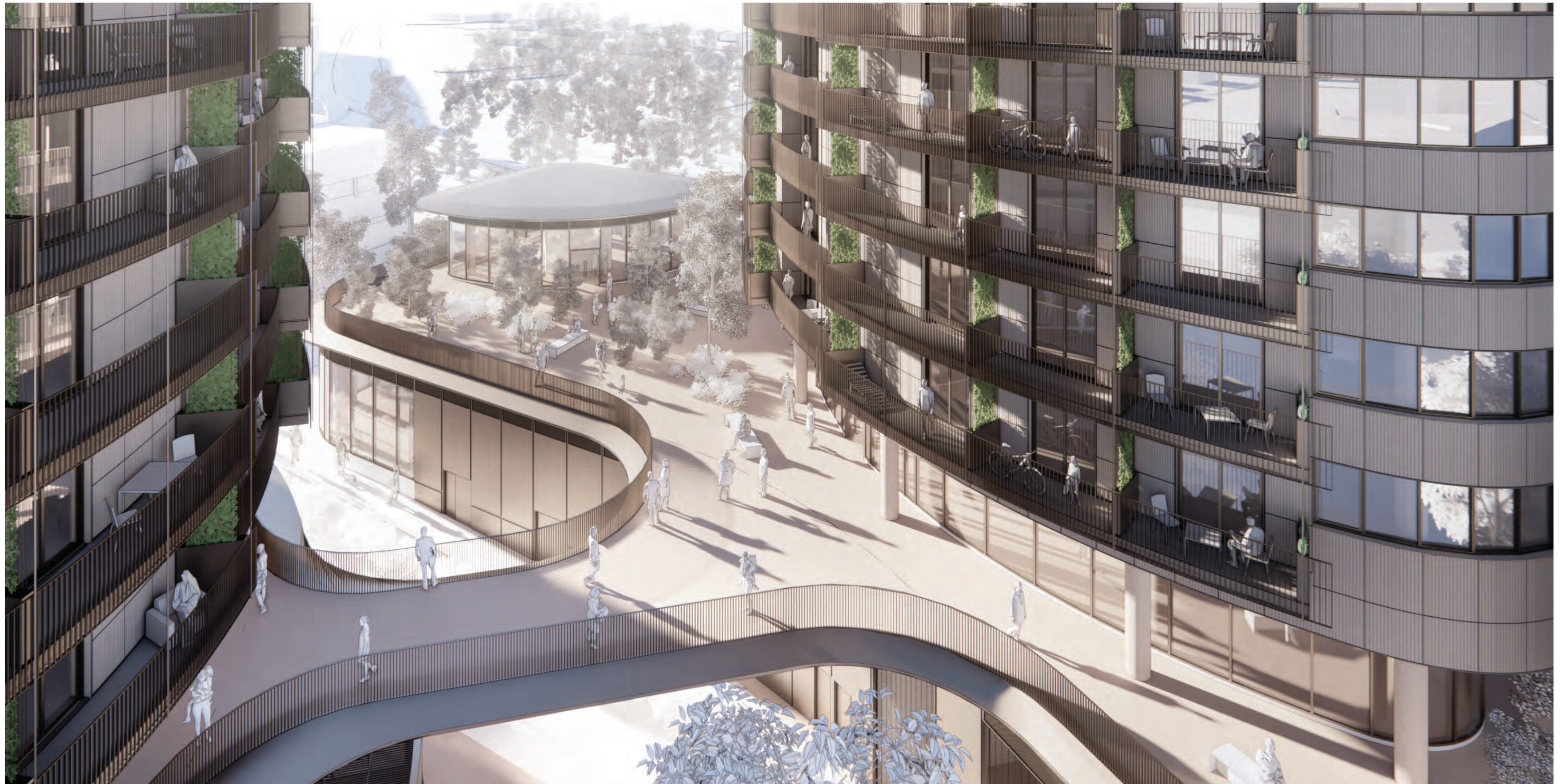
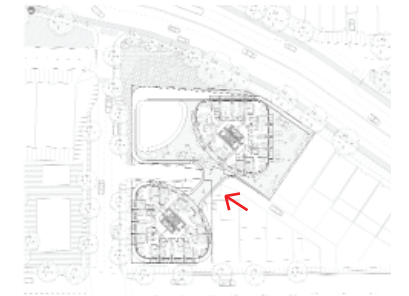


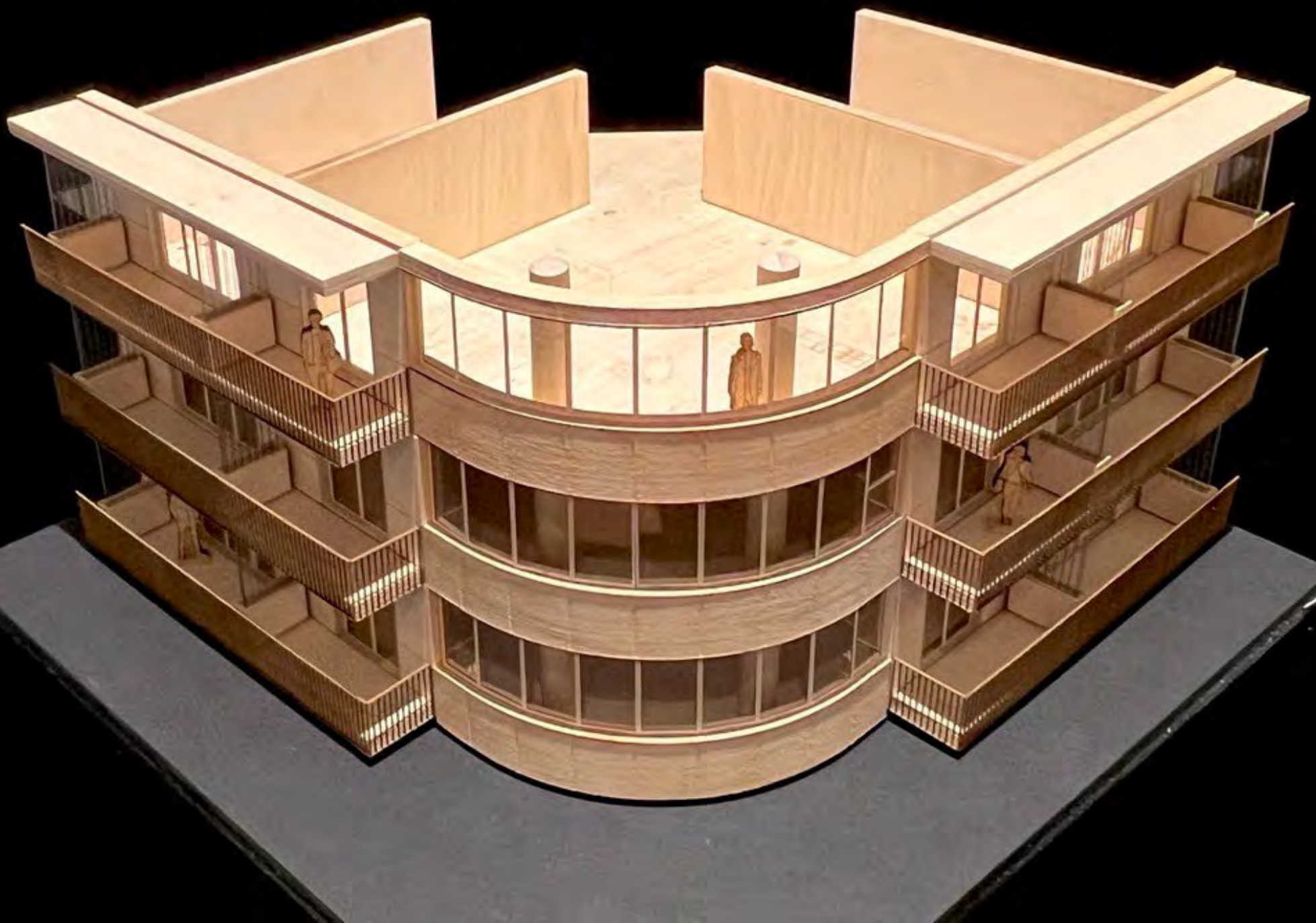
6.14.8 Terrace View from Balcony



6.15 Aerial Views

6.14.9 Aerial View over Bridge





1:50 facade study physical model, showcasing curved concrete paneling, as well as glazing and balcony approach.

Section 7.0

Landscape Drawings

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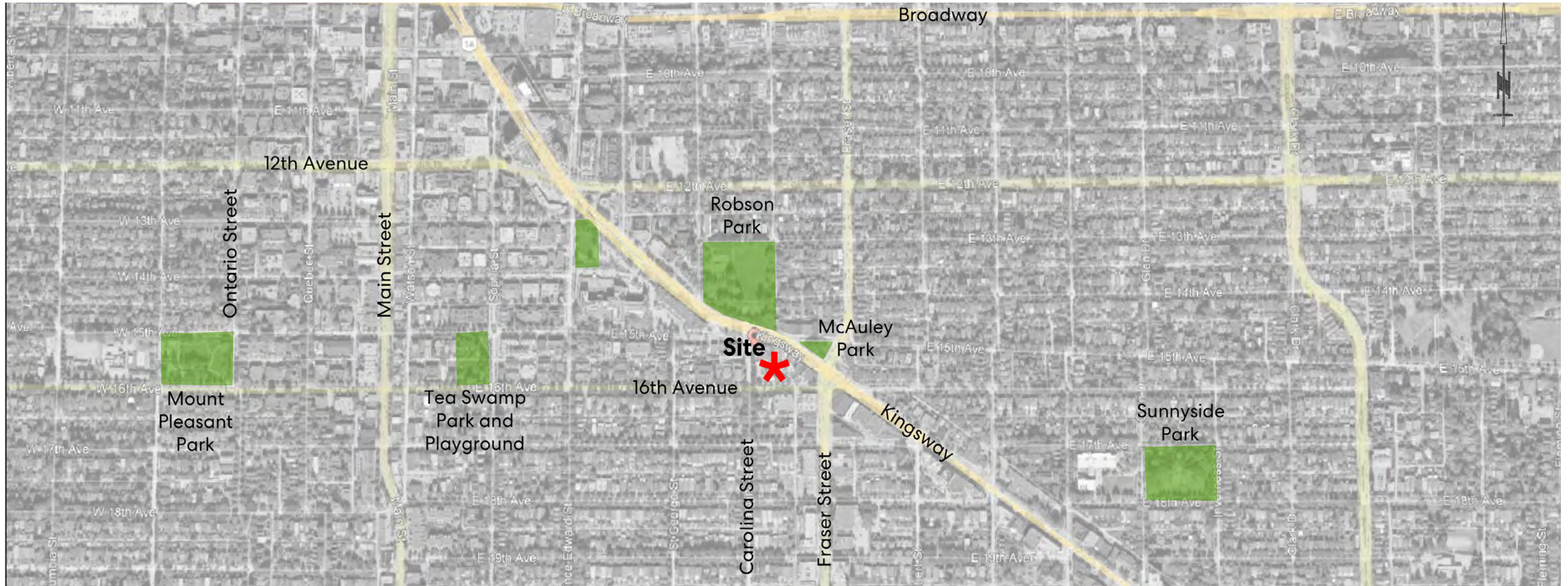
7.5 Plaza/Public Park Sections 126

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7.1 Project Context



History

Kingsway cuts across the street grid of Vancouver and Burnaby, and has been used as a direct means of wheeled travel since the late 19th century. However, the route was overlain on a centuries old Indigenous pathway that followed a gradual slope to the inlet that was later called False Creek. The development of the site at 600 Kingsway will help to resurrect a pedestrian friendly environment in the neighbourhood.

600 Kingsway is located within the southeast corner of the boundary of the Broadway Plan.

The Broadway Plan

The site is within Mount Pleasant Centre - Area C, which is being planned as a dense, high rise area with continuous active services and retail on the ground levels of residential developments. The area will be both diverse and vibrant, with a mix of uses, and a well-developed and accessible streetscape.

The City building objectives of the plan will guide the development of the site. In conjunction with responding to the character of the Mount Pleasant neighbourhood, techniques for the sustainable use of storm

water, planting regimes that recognize climate change patterns, and enhancing the streetscape, building entries and the pedestrian realm with well defined pedestrian spaces, will drive the landscape design.

With the overarching direction of the Broadway Plan, the City of Vancouver's Streetscape Design Guidelines (SDG) will guide the specific treatment of the public sidewalk on Kingsway.

Green Space Context

As Vancouver grew, this portion of Kingsway remained limited in terms of green space. However, Robson Park, one of the few parks within a 5 block radius, is directly across the street from the site, providing essential green space for future residents. The small pocket park of McAuley Park is immediately to the southeast. Street trees lining the north side of Kingsway enhance the feel of a green corridor.

Neighbourhood parks within a kilometer include Mouth Pleasant Park and Tea Swamp Park to the west, and Sunnyside Park to the

east. One of east Van's most popular parks, John Hendry Park (formerly Trout Lake Park) is 3.3 kilometer due east.

The adjacent residential neighbourhoods have a variety of street trees, many of which are decades old. Species include chestnuts, maples, hornbeam, ash and cherries, among others.

7.2 Existing Site



Median on Kingsway looking west



Median with pines at Kingsway



North on Carolina at Kingsway



Robson Park



Kingsway at 15th Avenue



Kingsway at Site looking west



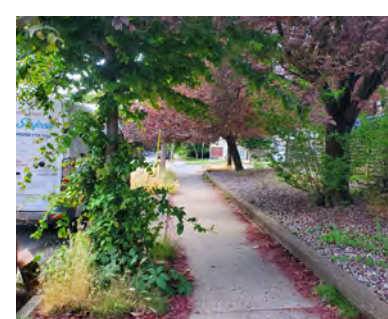
Kingsway, north side looking west



Looking north on Carolina



Looking south on Carolina



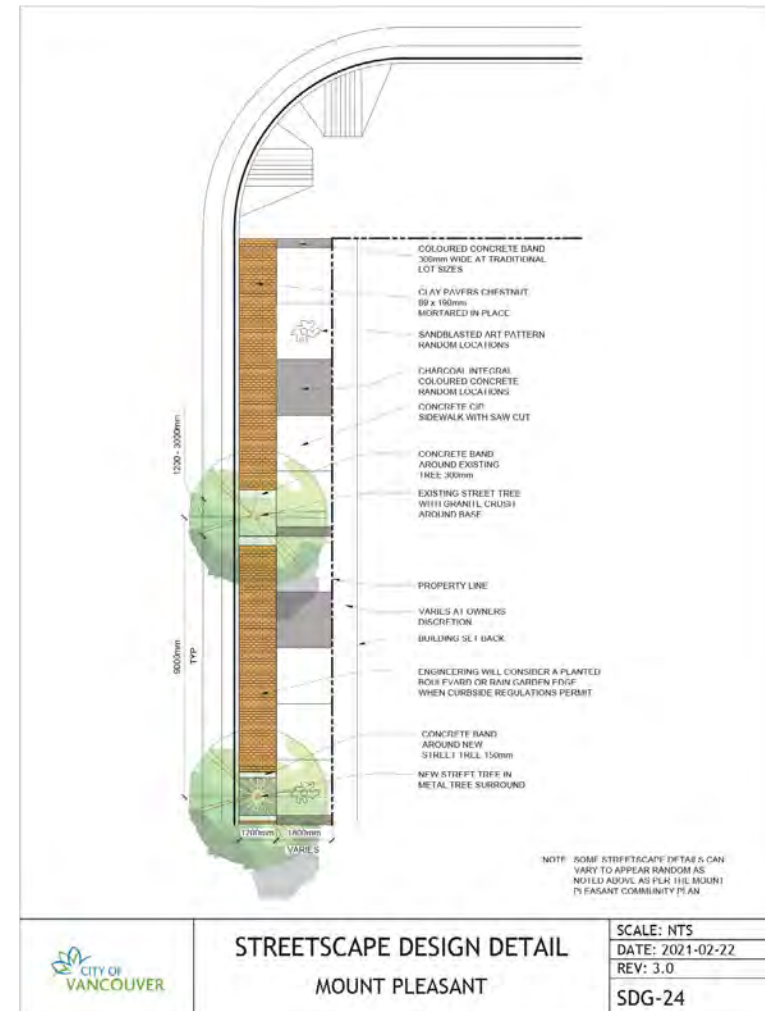
Looking west on 16th Avenue

Existing Site Character

The existing site has evolved within an urban landscape for at least one hundred years. Small businesses and services along Kingsway have been backed by residential areas to the south and north. The slopes are very moderate, and the site has strong southern exposure. *Prunus cerasifera* "Atropupuera" line Carolina Street and the corner of 16th/ Avenue, while three *Carpinus betulus* are immediately south the site, on 16th/ Avenue. Two *Pinus strobus* are located on the small, grassed median on the north side of the site. The Tree Report prepared for this project (Froggers Creek Tree Consultants Ltd, January 2024) makes recommendations regarding the site trees.

7.3 Landscape Plan

7.3.1 Landscape Plan



NOTE:

The Mount Pleasant Streetscape detail will be used as a guide for the development of Kingsway. For Carolina Street, we recommend a less urban treatment to integrate with adjacent neighbourhood streetscape.

LANDSCAPE CONCEPT

The landscape concept plan for 600 Kingsway has identified four main goals for the design:

- Develop well defined pedestrian spaces, both on private and public lands
- Provide a variety of accessible gathering spaces that enhance indoor event spaces
- Provide both visual and physical connections to the surrounding neighbourhood
- Mitigate adverse microclimate effects, including excessive heat from the urban heat island, traffic noise and fumes from Kingsway, and extreme moisture regimes from weather events.

The on-grade landscape design for 600 Kingsway will be a cohesive blending of the private and public realms, with the intent of establishing welcoming pedestrian spaces on the ground level, to meet the Broadway Plan's goal of developing the Kingsway streetscape as a pedestrian friendly environment.

The plaza on the north side of the site has several functions. It is an entry to the north building, including the residential entry, as well as acting as a foyer to several retail locations. It also provides opportunities for residents and visitors to gather and socialize within the plaza space. The plaza also functions as a transition space between the building entry and Kingsway and Carolina Street, making connections to the streetscape and neighbouring green spaces. It will also help to manage site stormwater.

The landscape treatment on Carolina Street transitions between the long standing residential neighbourhood west of the site, and retail services on the ground level of the proposed development. Formal hedging lines the building base, while street trees define the boulevard and provide shade and a green setting for shoppers on Carolina Street.

On level two, the amenity space will be developed for the residential community. An indoor event space on the west side of the level opens up to a large outdoor terrace, with a series of gathering areas that are defined by raised planters, benches and café seating.

The rooftop terraces on both buildings tower will give further opportunities for residents to enjoy an outdoor area - with planters, seating and views over the city.

7.4 Plaza/Public Park Landscape Plan

7.4.1 Landscape Plan - Ground Level



LEGEND

- DECIDUOUS TREE
- CONIFEROUS TREE
- MID-SIZED DECIDUOUS TREE
- SHRUBS IN RAISED PLANTER
- SHRUBS
- INTEGRATED BENCH ON RAISED PLANTER
- BENCH
- CAFE SEATING
- CONCRETE PLANK UNIT PAVERS (colour Warm Gray)

Design Highlights

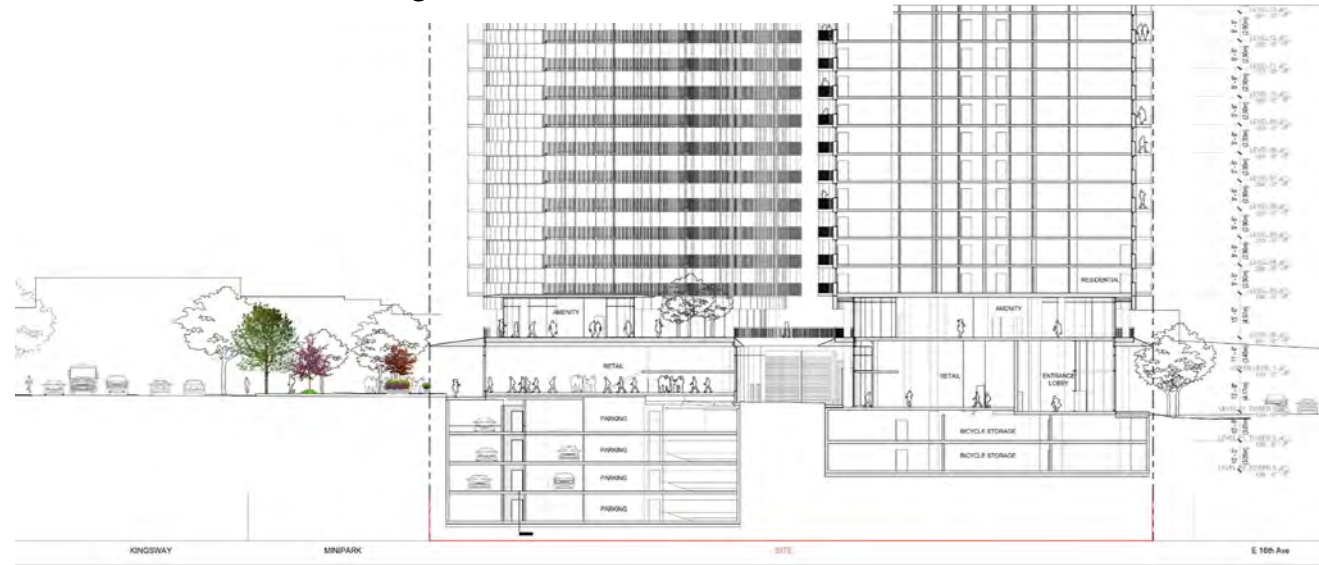
The north side of the complex supports an entry plaza to the building, giving access to the residential towers, and at grade cafes and services. The plaza will also function as a gathering space, with fixed benches and room for cafe seating as needed. The plaza merges into a small public park, which in turn transitions into a treed streetscape.

Access is from both Carolina Street on the west side, and Kingsway on the north. In an effort to promote climate resilience of the site, well planted berms with bioswales will be located on the north side of the plaza. The berms support resilient trees and shrubs and add verticality to the plaza space. They will also protect users from the effects of traffic on Kingsway, provide a green backdrop to the pedestrian space, and will help to manage the stormwater run-off from the plaza by directing flow from the plaza into bioswales at their base. The berms will have a maximum slope of 30%. The slopes of the berm, and the design of the bioswales will be coordinated with the site drainage regime, and be planted with mid-sized trees, both coniferous and deciduous, shrubs and groundcover/ grasses. Native material will be considered -its use based on tolerance of microclimate, and availability. In the center of the plaza space, smaller berms in raised planters mirror the curving shapes of the towers and provide integrated timber seating and greenery and shade to users. The plaza berms may support more ornamental plant material.

The plank paving pattern picks up on the dynamic angle of Kingsway. The treatment of the street trees and sidewalk on Kingsway will follow SDG.

7.5 Plaza/Public Park Sections

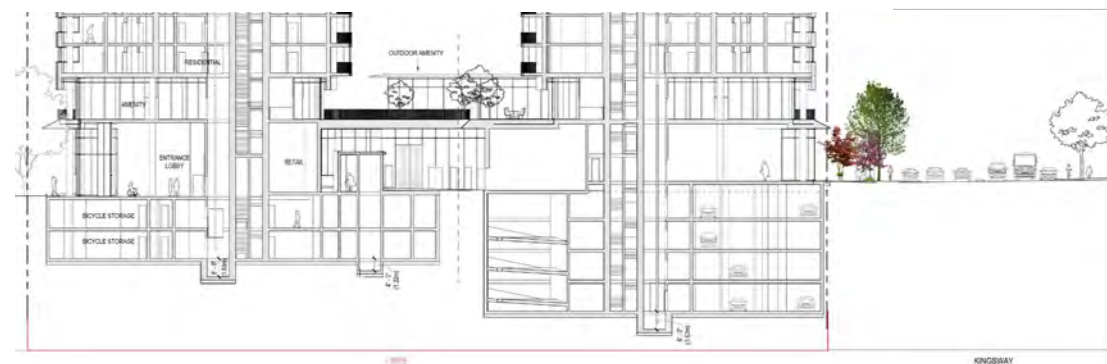
7.5.1 West Section through Carolina Street



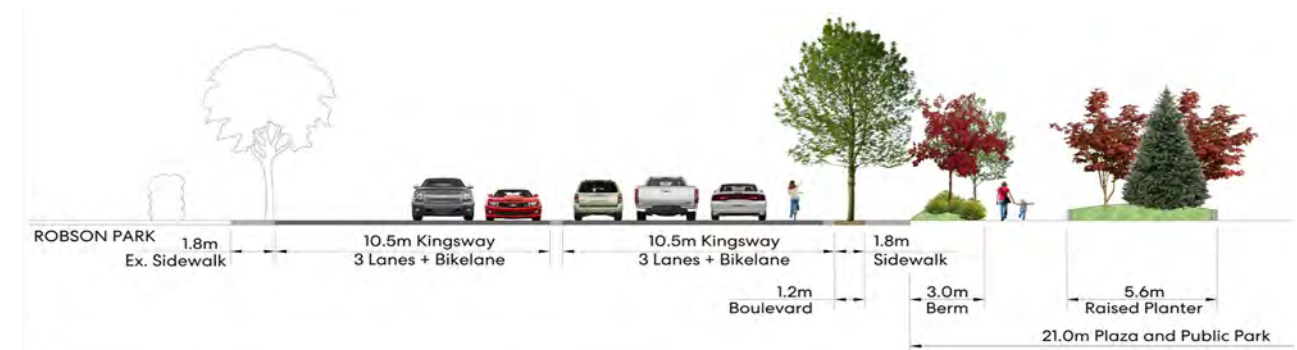
7.5.2 North Section through Kingsway



7.5.3 East Section 16th Avenue to Kingsway



7.5.4 Existing Conditions at Kingsway and Proposed Plaza and Public Park

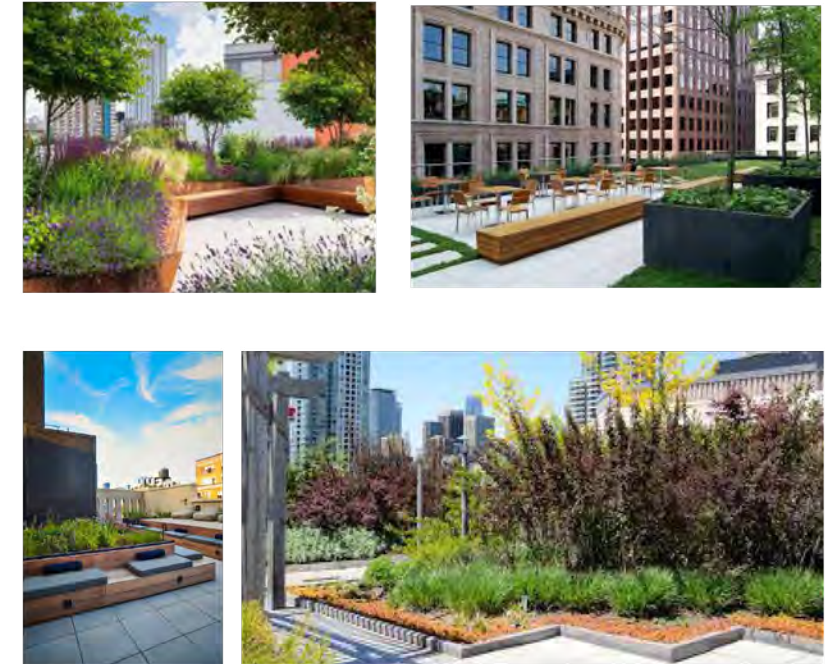


7.6 Amenity Level Plan and Sections

7.6.1 Landscape Plan - Amenity Level



7.6.2 Section East Side of Amenity Level



Design Highlights

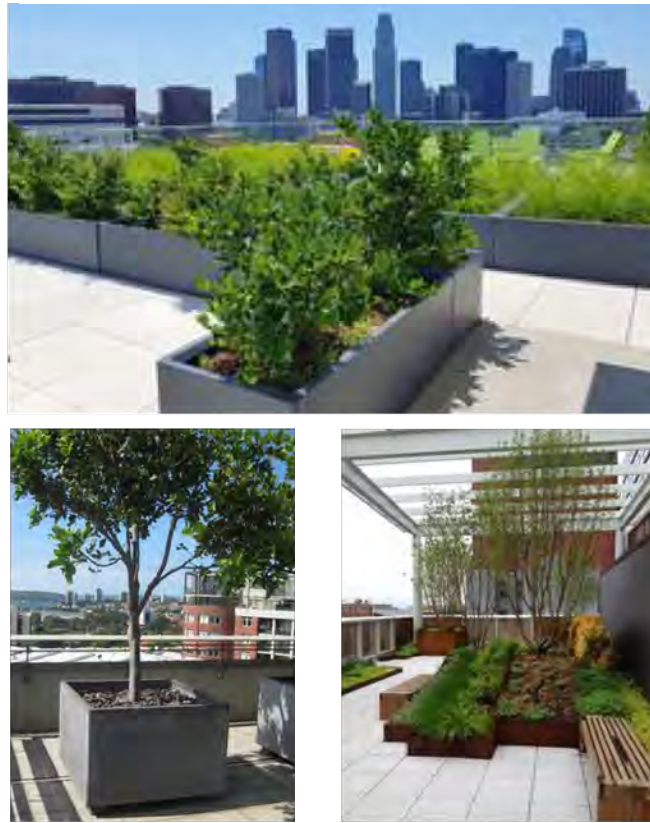
The Amenity Level provides an outdoor area for the multi-purpose room as well as places to gather and socialize. Small trees, low shrubs and groundcover will add depth and background to the gathering areas. Utilizing raised planters that reflect the curving shape of the towers, the planting breaks up the level into more intimate spaces while still allowing free flow through the space and peekaboo views through the dense, layered planting.

7.7 Roof Terraces Plan and Sections

7.7.1 Landscape Plan - Roof Terraces



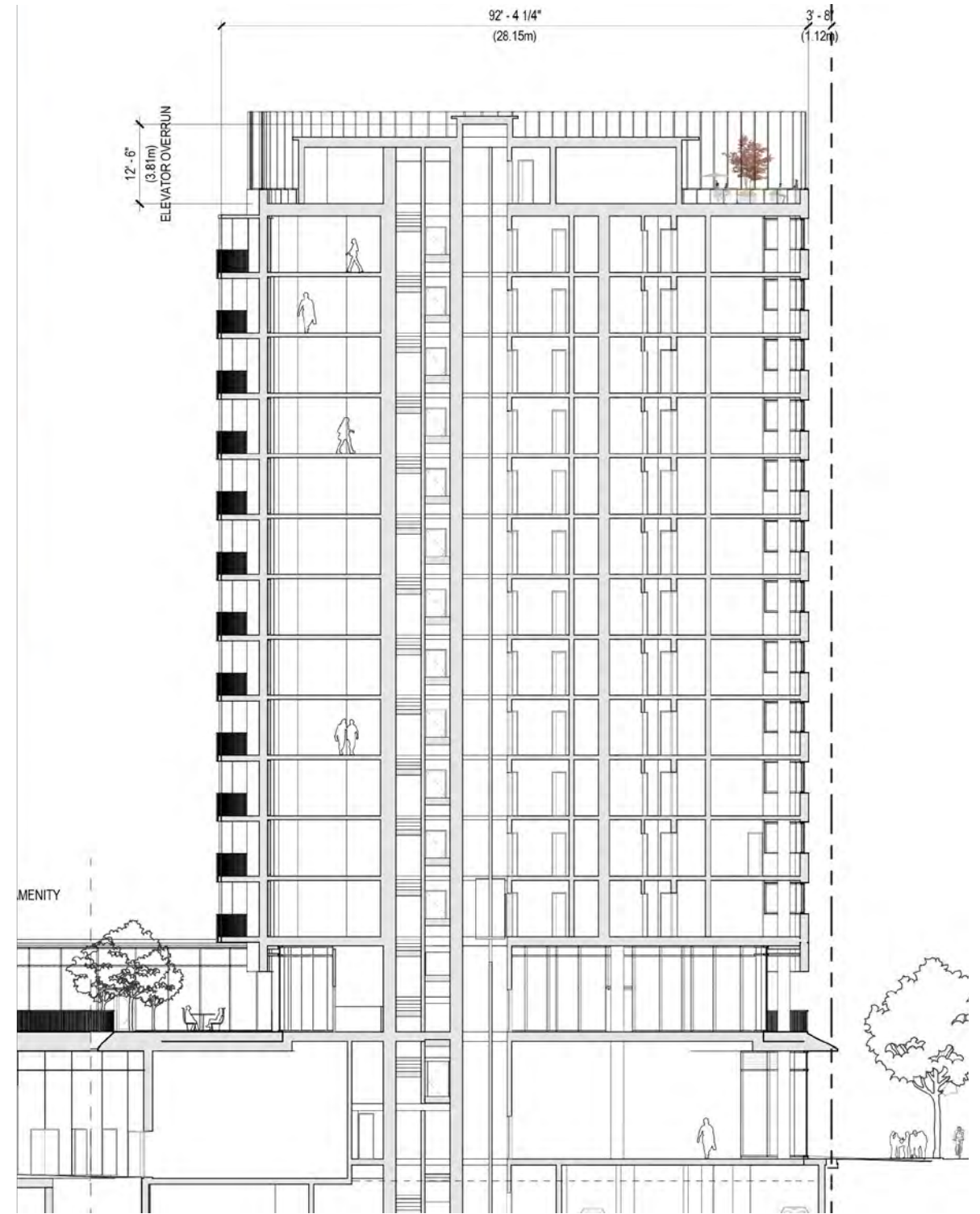
7.7.2 Section at Roof Terrace



Design Highlights

The roof terraces on each building provide planting and seating with which to enjoy panoramic views of the city. Raised planters include shrubs and in some spots, integrated timber seating. Flowering trees define the corners of the spaces.

LEGEND	
	FLOWERING TREE
	MID-SIZED DECIDUOUS TREE
	RAISED PLANTER
	SHRUBS AND PERENNIALS
	SHRUBS
	INTEGRATED BENCH ON RAISED PLANTER
	CAFE SEATING
	PEDESTAL PAVING - SQUARE (colour Grey)
	PROPERTY LINE

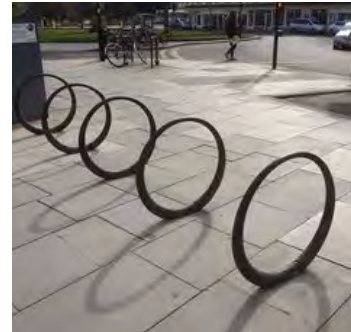


7.8 Landscape Details and Materials

7.8.1 Site Furnishings



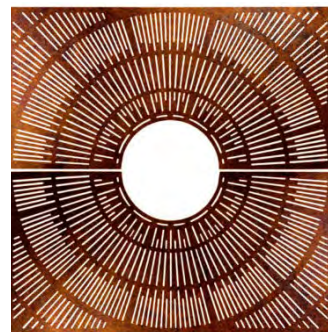
Free Standing Bench



Circular Bike Racks



Bollards



Tree Grate



Waste Bins



Integrated Timber Seating

Landscape Details

The landscape details and choice of materials will reflect the architectural language of the buildings, using simple, contemporary forms and compatible colours and textures. Hard landscape elements will include raised planters, inset timber seating, benches, waste bins, bike racks and paving. The paving on the amenity level and roof terraces will be light in colour to reflect solar rays and lower heat absorption.

The planting palette will strike a balance between verdant growth and species that have a tolerance for excessive heat and rain that is predicted to come with the change in climate.

The street trees on Kingsway will be planted in tree grates, with sidewalk details as per the SDG. Those trees on Carolina Street located on the plaza will be planted in tree grates and structural soil or soil cells. Street trees continue along the west side of the site on Carolina Street and will coordinate with the boulevard trees in the neighbourhood. Formal shrub planting will enhance the retail facades on the west side of the building.

7.8.2 Ground Plane/Amenity Deck/Roof Terraces Paving



Plank Unit Pavers
Ground Plane Paving



PEDESTAL PAVER SYSTEM IN LIGHT COLOUR TO REDUCE SOLAR ABSORPTION
Amenity/Roof Terrace Paving



Architectural Colour and Texture

7.8.3 Planting



Pin Oak



Scots Pine



Deutzia



Dwarf Viburnum



Lavender



Catsura Tree



Kousa Dogwood



Spiraea var.



Hosta



Ajuga



Japanese Maple



Red Maple



Privet



Ornamental Grasses



Daylilies



Service Berry



Ferns var.



Ornamental Grasses

On Grade Planting

Amenity and Roof Terrace Planting



A model showing the structural and formal expression of the proposed project viewed from the adjacent north-west corner of the site.

Section 8.0

Appendix

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Not included in the booklet - provided as a separate report:

- Development Water Demand Calculations
- Arborist Report
- Site Disclosure Statement
- Preliminary Hydrogeological Study
- Renter Screening Form
- Survey Plan
- Site Profile
- Change Summary and Title Search
- BC Company Summary
- Community-Serving Spaces Information Form

8.1 Green Buildings Policy for Rezoning

600 Kingsway | July 24, 2024

Green Buildings Policy for Rezoning

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Project Overview

The 600 Kingsway project encompasses two new high-rise towers: a 14-storey North Tower and a 25-storey South Tower, connected by a shared podium. The project includes mixed-use development, featuring commercial spaces, residential units, and ground-activating retail.

The project complies with the Green Building Policy for Rezoning last amended June 2023 and this document outlines the project's response to its requirements.

1. Reporting of Green and Resilient Building Measures

1.1. Energy & Emissions Performance Limits

1.1.1. Policy Requirement

The Green Building Policy for Rezoning requires completion of the Energy & Emissions Design Report for each building to demonstrate that the project is on track to meet the Vancouver Building By-law (VBBL) energy and emissions performance limits expected to be in force at the time of the project's first Building Permit application. The following targets apply to 600 Kingsway based on building type:

Performance Limits			
Building Type	TEUI (kWh/m ²)	TEDI (kWh/m ²)	GHGI (kgCO ₂ e/m ²)
Residential	120.0	29.0	.0

Table 1 - Performance Limits

1.1.2. Project Compliance

The 600 Kingsway project will use a reversible air and water heat pump (AWHP) with backup condensing gas boilers. The project is following a non-Low Carbon Energy System (LCES) compliance path. The project team has completed a preliminary energy model based on the City of Vancouver Energy Modelling Guidelines. The summary of performance results is as follows:

600 Kingsway Performance Results		
TEUI (kWh/m ²)	TEDI (kWh/m ²)	GHGI (kgCO ₂ e/m ²)
90.5	28.5	1

Table 2 - Energy Modelling Performance Results

Results are based on a mixed energy system with gas heating used for space heating in all residential and commercial units. For more details, refer to the Energy and Emissions Design Report.

1.2. Embodied Carbon Limits

1.2.1. Policy Requirement

The Green Building Policy for Rezoning, amended on July 25th, 2023, requires the completion of the Embodied Carbon Design Report for each building to demonstrate that the project is on track to meet the VBBL limits for life-cycle equivalent CO₂ emissions expected to be in force at the time of the project's first Building Permit application. Embodied carbon is calculated for each building in kgCO₂/m² using a Whole Building Life Cycle Assessment (WBLCA) based on standard assumptions outlined in the City of Vancouver Embodied Carbon Guidelines.

1.2.2. Project Compliance

Introduction

Perkins&Will has completed a study for 600 Kingsway North and South Towers using the Embodied Carbon Pathfinder tool. The tool calculates the approximate Global Warming Potential (GWP) of the buildings and was used to understand the Total GWP of the project and elements with the highest GWP, that can be studied further as the design evolves.

Due to the project's early stage, limited information was available for a detailed WBLCA. Instead, key inputs in Pathfinder include envelope and structural elements. The project consists of two towers on a shared podium: a 14-storey North tower and a 25-storey South tower. Both buildings, classified as high-rise (12 to 30 stories), share similar materiality, typology, and construction techniques, thus a single assessment was performed.

Results

The study results exclude biogenic carbon and include life cycle stages A to C. The GWP for 600 Kingsway is estimated at 293.5 kgCO₂/m². The exported results from Pathfinder are shown below in Figure 1.

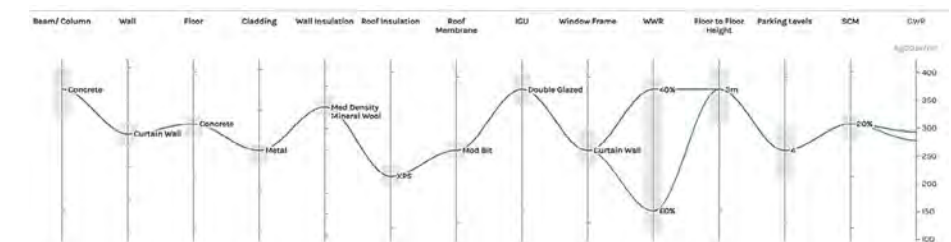


Figure 1 - Global Warming Potential Impact

The study indicates the absolute pathway is achievable and a maximum GWP of 360 kgCO₂/m² will be targeted. The results for each building are listed in Table 3.

Impact Category	North Tower	South Tower	Total Life Cycle Impact (A-C)
Global Warming Potential (KgCO ₂)	2,886,643.9	5,335,287.7	8,221,931.6
Intensity (KgCO ₂ /m ²)	293.5	293.5	293.5

Table 3 – Embodied Carbon Assessment Results

Reducing Embodied Carbon

From Rezoning through to Building Permit application, the project team will continue to explore design strategies to reduce the total embodied carbon of the buildings, including:

- Reducing the volume of glass by switching from a triple to double glazed system, if energy performance can be maintained.
- Optimize concrete mix designs by working with the structural engineer, contractor, and concrete supplier to set a GWP budget for the project's concrete.
- Working with the structural engineer to refine the design and reduce reinforcement rates and member sizes.
- Stacking vertical elements where possible to eliminate or reduce the size of transfer structures.
- Reviewing envelope material choices with the EC3 tool to further reduce the building's total embodied carbon.

Please refer to the Energy and Emissions Design Report for more details.

1.3. Resilient Buildings Planning Worksheet

1.3.1. Policy Requirement

This policy requires the completion of the Resilient Buildings Planning Worksheet to summarize the level of resilience planning undertaken by the project team and to identify proposed strategies. Projects must outline building strategies that eliminate, reduce, and mitigate adverse impacts, including those due to changing climate conditions and seismic events.

1.3.2. Project Compliance

The project team assessed the project's risks and mitigation strategies and completed a single Resilient Buildings Planning Worksheet for the project. During the resilience planning workshop, medium and high risks were identified for natural disasters, extreme weather, poor air quality, power outages, and pandemics.

and strategies to mitigate risks for 2050 and 2100 future climate scenarios were considered.

The majority of strategies are multi-disciplinary in nature and will be incorporated into the project during the Design Development phase. The project team will continue

to evaluate current and future climate projections to design a building that can meet current needs and adapt to a changing climate.

Please refer to the Resilient Buildings Planning Worksheet for more details.

2. Enhanced Commissioning

2.1. Policy Requirements

The City requires the engagement of a third-party commissioning authority to oversee an enhanced commissioning process for all building energy systems in accordance with CSA Z5000-18, or ASHRAE Guideline 0-2005 and 1.1-2007, or an alternate commissioning standard. As part of this requirement, the Commissioning Authority is responsible for developing a Commissioning Plan and Commissioning Report and submitting these documents to the City of Vancouver as per the policy's documentation requirements.

2.2. Project Compliance

A Commissioning Authority will be retained. The project will submit a copy of the Commissioning Plan at the Building Permit Stage, a draft Commissioning Report at Occupancy Permit, and a final Commissioning Report after Occupancy. Please refer to the Owner's letter of commitment for more details.

3. Energy System Sub-Metering

3.1. Policy Requirement

The policy requires separate metering for each energy utility and each building to provide sub-metering of all major energy end-uses and major space uses within each building. Details of the sub-metering requirements are further outlined in the policy document.

3.2. Project Compliance

A separate whole building metering will be provided for each utility connection, additionally, all major energy and water uses will be sub-metered. A metering plan and supporting drawings will be provided at the Building Permit Stage. Please see the Owner's letter of commitment for more details.

8.2 Letter of Commitment



#300-526 Granville Street
Vancouver, B.C. Canada
V6C 1W6
T: 604.738.4525

July 31, 2024

Attention: Carly Rosenblat
City of Vancouver | Planning, Urban Design & Sustainability
515 West 10th Avenue
Vancouver, BC V5Z 4A8

Dear Carly Rosenblat,

Re: 600 Kingsway Rezoning Application
Commitment to meet the requirements of the Green Building Policy for Rezoning

As part of our Rezoning application package for 600 Kingsway Bonnis Properties and/or its signee hereby commit to meet the requirements of the Green Building Policy for Rezoning and commits to providing the required documentation for the following sustainability requirements:

Enhanced Commissioning

A Commissioning Authority will be retained, and the project will submit a copy of the Commissioning Plan at the Building Permit Stage, and draft Commissioning Report at Occupancy Permit, and final Commissioning Report at Post Occupancy.

Energy System Sub-Metering

Separate whole building metering will be provided for each utility connection, additionally, all major energy and water uses will be sub-metered. An energy sub-metering design will be provided at the Building Permit Stage.

In the rezoning submission, we provide a brief outline of the project, our approach, our commitment to meeting the design and operation requirements and supporting documents required to meet the Green Building Policy for Rezoning.

Sincerely,

Bonnis Development King Inc.

A handwritten signature in black ink, appearing to read "DB", followed by a horizontal line.

Dimitri Bonnis
Vice President
dimitri@bonnis.net

8.3 Resilient Buildings Planning Worksheet

Resilient Buildings Planning Worksheet



Worksheet Instructions

A: About the worksheet

This worksheet is required for new development projects in Vancouver subject to the Green Buildings Policy for Rezoning (amended May 17, 2022) requirement for Resilience Buildings Planning Worksheet. It is designed to apply to developments of varying size and complexity (see also Section E Large Developments). The purpose of this worksheet is to provide a structured approach to examine and prioritize the climate and seismic risks to a project, so that project teams can make climate- and risk-informed decisions about the development. This worksheet aims to build capacity and knowledge in the local design and construction industry to advance the understanding of risks and available risk mitigation strategies. This worksheet contributes to the City of Vancouver's Climate Adaptation Strategy (2018) goal to future-proof buildings to create a resilient building stock.

This worksheet walks project teams through a 4-step qualitative risk assessment for the project to develop an understanding of the hazards and risks to the project and how the risks may change over time due to climate change. This worksheet encourages project teams to think through and summarize the possible risk mitigation strategies that can improve the building's resilience.

Depending on the scope, complexity, or urgency of the project, the project team may find this worksheet and worksheet does not provide sufficient level of analysis to meet the risk tolerance or resilience objectives of the project owner. In that case, the team is encouraged to conduct a climate and seismic hazard risk and vulnerability assessment using a more in-depth standard or requirement (e.g. Climate Resilience Guidelines for BC Health Facility Planning and Design, Climate Resilience Framework & Standards for Public Sector Buildings, the Integrated Building Adaptation and Mitigation Assessment (IBAMA) Framework, the PIEVC Protocol, etc.). For such projects, the report from that assessment may be submitted in lieu of this worksheet to meet requirements of the Green Buildings Policy for Rezoning (amended May 17, 2022).

This worksheet is adapted from existing risk assessment methodologies and frameworks, most notably the PIEVC High-Level Screening Guide and the Climate Resilience Framework & Standards for Public Sector Buildings (see 'Resources' tab). Data gathered through this worksheet will support the development of future codes and policies to improve the resilience and adaptability of the building stock.

For questions related to this worksheet, email Green.Buildings@vancouver.ca

B: Definition of Resilience & Risk

A resilient building is one built to withstand, or recover quickly from natural or human-caused hazards and disasters, and one that delivers co-benefits to people and systems in the absence of hazards and disasters. A resilient building has longevity, is safer, more durable and livable, supports a quicker recovery, and protects public and private investments.

In Vancouver, we are exposed to a range of hazards including but not limited to flooding, sea level rise, earthquakes, fires, poor air quality and hazardous materials incidents. A changing climate means that the risks created by these hazards may be exacerbated and increase in severity and/or frequency over the service life of the development project. The resilience of buildings may be improved by adding risk mitigation strategies that reduce the vulnerability of the buildings' various systems, components and occupants to the adverse effects of the hazards.

In the context of hazards, Vancouver's geography and dense population means that evacuation is a major challenge. The safety and resilience of residents and our community is closely tied to the ability to remain in, or return quickly, to their homes or workplaces when hazards strike. Sites that are designed to be inherently resilient will ensure the least amount of disruption to community and business. Preventing damage and ensuring capacity to withstand future threats and disasters also enhances the wellbeing of people and systems regardless of whether disaster strikes.

Thinking through climate and seismic risks to the project at the earliest stage of planning and design will help project teams uncover low- or no-cost risk mitigation strategies that can safeguard lives and protect investments in building assets in the future, while helping to meet low-carbon objectives.

For the purpose of this Resilient Buildings Planning Worksheet, the following definition of risk is used.

Exposure x Consequence x Likelihood = Risk

The 4 steps of this worksheet follows this definition to assess and prioritize the risks to the project.

C: Carrying out the assessment

This resilience assessment should be led by a project team member who has familiarity and experience with the general approach and process of risk assessments. Refer to the 'Resources' tab for a list of resources on risk assessment frameworks and training opportunities.

The assessment team should, at minimum, comprise all discipline leads involved in the project design, the project owner, builders, and representative(s) of the intended occupants and/or operators of the project buildings. All assessment team members should be provided with the opportunity to review the completed worksheet prior to submission to the City of Vancouver as part of a rezoning application. The risk assessment should be carried out based on the input provided by the assessment team members involved using their professional judgement.

The level and type of engagement and effort required to conduct this assessment should align with the complexity of the project. For many projects, Step 1 may be completed through a desktop review of available hazard and risk resources (see 'Resources' tab) by the resilience assessment lead. Steps 2, 3 and 4 are best completed through one or several workshops with the assessment team and facilitated by the resilience assessment lead. The workshop format is recommended as it provides the opportunity for assessment team members to:

- Review the range of hazards that the project may be exposed to;
- Consider the impacts of hazards on different components and systems within the project;
- Carry out cross-discipline conversations that identify specific risks to the project;
- Determine the level of risk and risk-mitigation efforts that is acceptable to the design team, the owner and building users;
- Generate project-specific resilience strategies to reduce the identified risks that can benefit multiple stakeholder objectives.

This worksheet is intended to be a planning tool to support the development of risk and resilience knowledge of the assessment team, and to help prioritize the climate and seismic risks facing the project, and to generate thoughtful discussions of possible resilience strategies that may be incorporated into the design or further evaluated during detailed design, construction or operational stages of the project.

D: Assessment Scope

For most projects, the assessment scope should comprise of the entire development site. Some project teams may need to expand the scope to beyond the physical boundaries of the site, depending on the complexity and criticality of the project. Some projects may need to expand the scope of the assessment to systems beyond the project boundary, and consider issues such as utility interconnections, transportation networks, and dependencies on other systems.

The systems and components that should be considered within the scope of the assessment are listed in the "Impact Categories" tab. This list is not exhaustive – the assessment team is encouraged to add to the list of categories or systems based on the characteristics, criticality and complexity of the project.

E: Large Developments

Some large development projects may contain multiple buildings planned to be built over several phases. For such projects, the minimum expectation is for teams to complete this resilience assessment based on the information available at the rezoning application stage, focusing the assessment on the first building(s) planned in the first phase of the development to meet the Resilient Buildings Planning requirement of Green Buildings Policy for Rezoning (amended May 17, 2022). For subsequent phases of the development, it is strongly recommended that the resilience assessment be reviewed and updated by the design and construction team at the development permit stage for each phase.

Resilient Buildings Planning Worksheet

Directions: Submit this worksheet as an excel file as part of the building rezoning application.

Please provide the following information:

Project Address	644 Kingsway
Secondary Address	
Project Working Title	BONNIS: 600 Kingsway North and South Tower
Rezoning Application Number (if known)	
Gross Floor Area indicated on Arch. Drawings (m ²)	28,013
Planned lifespan of building(s) on site (years)	60
Are there multiple buildings on this site? (Y/N)	Y
Expected building occupants	478



Section A: List who participated or was consulted in the creation of this resilience assessment. For any roles not represented in the assessment process, provide a rationale for why it is unnecessary or indicate if another qualified individual is representing the perspective of that role.

Role in Project	First Name, Last Name, and professional designation (if any)	Organization	Title (if available)	Email	Rationale if this role was not represented in the assessment process	How did this person participate in this worksheet?
Architecture	Aik Ablimit	Perkins&Will		aik.ablimit@perkinswill.com		Interviews & Workshops
Building Envelope						
Building Operations						
Building Users or Occupants						
Civil Engineering	jeffrey.halliday@cima.ca	jeffrey.halliday@cima.ca		jeffrey.halliday@cima.ca		Interviews & Workshops
Climate Change / Climate Science Specialist						
Construction Management						
Contractors						
Electrical Engineering						
Embodied Carbon or Life Cycle Carbon	Amy Brander	Perkins&Will		amy.brander@perkinswill.com		Interviews & Workshops
Energy Modelling	Rabeeh Hosseini	Cima		rabeeh.hosseini@cima.ca		
Fire Protection						
Geotechnical Engineering						
Landscape	Dawn Brockington	Cima		dawn.brockington@cima.ca		Interviews & Workshops
Mechanical Engineering	Jean-Sebastien Tessier	Cima		jean-sebastien.tessier@cima.ca		Interviews & Workshops
Project Owner						
Property Management						
Resilience						
Structural Engineering	Harrison Glotman	Glotman Simpson		hglotman@glotmansimpson.com		Interviews & Workshops
Sustainability	Amy Brander	Perkins&Will		amy.brander@perkinswill.com		Interviews & Workshops
Other (if applicable)						
Other (if applicable)						
Other (if applicable)						
Other (if applicable)						
Other (if applicable)						

Was an alternative risk and vulnerability assessment tool or process applied for the project? If yes, name the process, tool or methodology (For example: PIEVC Protocol, IBAMA) and provide the final report from that process in lieu of completing Steps 1 to 4 of this worksheet.

Section B: Sign-off

Has the owner or owner's representative participated in the assessment process and reviewed the risks and strategies identified in this worksheet?

Name, title and contact information of Owner or Owner's representative:

Date signed

Step 1: Exposure to Hazards Screen		
<p>Refer to 'Step 1 - Instructions' for detailed guidance on this step.</p> <p>Directions:</p> <p>(1) Evaluate exposure to the hazard column B for the each hazard in Column A.</p> <p>(2) Add "Other" hazards in rows 20 and beyond if additional hazard exposures are to be considered for the project.</p>	<p>Directions:</p> <p>Select the exposure level for this hazard.</p> <p>Yes/No</p>	<p>Directions:</p> <p>Describe rationale for exposure level and list sources referenced.</p>
Hazards	Hazard Exposure	Rationale Description
Earthquake (VBBL shaking levels)	Yes	
Extreme heat	Yes	Classified as a major impact of climate change CofV
Poor air quality (wildfire related)	Yes	Classified as a major impact of climate change CofV
Power outage	Yes	
Extreme cold during winter	Yes	Climate Change Infographics, City of Vancouver
Coastal or riverine flooding (including storm surges)	No	Based on Flood Plain Diagrams from the City of Vancouver Flood Plain Standards and Requirements the site is not within the flood plain boundary.
Decreased slope stability or landslide	No	Flat ground, excavated/site works.
Drought/Water Restrictions	Yes	Classified as a major impact of climate change CofV
Extreme rainfall related flooding	Yes	Classified as a major impact of climate change CofV
Hazardous material incidents	No	Not an industrial building or building handling hazardous waste.
Reduced freeze-thaw	No	City of Vancouver: 58% decrease in snow pack. Is this meant to say increased freeze-thaw?
Pandemic	Yes	
Sea level rise	No	Based on Flood Plain Diagrams from the City of Vancouver Flood Plain Standards and Requirements the site is not within the flood plain boundary.
Warmer summer temperatures	Yes	Classified as a major impact of climate change CofV
Warmer winter temperatures	Yes	Climate Change Infographics, City of Vancouver
Wind	No	Prevailing easterly wind was assessed. The highest percentage of wind speed expected is in the range of 14km/h.
Wildfire	No	Industrial/urbanised area. Not near Stanley Park or any other major green space. Poor air quality due to wildfire is marked yes.
Poor air quality (traffic related)	Yes	Located along Kingsway, a major road/intersection.
Other:	No	
Other:	No	
Other:	No	
Other:	No	
Other:	No	
Other:	No	
Other:	No	
Other:	No	
Other:	No	
Other:	No	

Impact Categories									
Directions									
1) Consider the following systems and components when thinking through impacts of a hazard in Steps 2, 3 and 4.									
2) This list is not exhaustive; the assessment team is encouraged to add to the list of systems or components based on the characteristics of and complexity of the project.									
3) Review columns A through H and add additional components as needed. Add additional systems and components in columns I & J as needed.									
Architectural Systems	Civil Engineering Systems	Emergency Preparedness, Planning and Response	Human Systems	Landscape & Ecological Systems	Mechanical & Plumbing Systems	Power & Electrical Systems	Structural Systems	Other System (Defined by assessment team)	Other System (Defined by assessment team)
Canopies, overhangs, awnings, external shading structures, balconies	Excavations	Building's ability to remain in use post hazard event	Amenity/refuge spaces	Irrigation systems	Below-grade systems & systems below flood construction level	Below-grade systems & systems below flood construction level	Foundation walls		
Entryways and exits including street access	Foundations	Emergency access	Below-grade storage	Green or natural infrastructure systems	Building pumps and controls	Building automatic control systems	Floor slabs		
Façade, cladding, siding, building envelope, weather sealing, air or vapour barrier systems	Membranes / waterproofing	Emergency/evacuation plans, building reaction plans	Building users and residents	Local habitats or ecological systems	Plumbing & venting system	Building conveyance/Elevators & associated machinery	Structural Systems		
Roofing	Site grading	Emergency shelter/refuge areas	Health and well-being (physical & mental)	Outdoor amenities, outdoor street furniture and playground equipment	Heating & cooling systems, central or decentralized or neighbourhood energy connections	Building information systems	Gravity systems (primary structural systems)		
Windows, doors, fenestration	Stormwater cisterns / irrigation, concrete works	Emergency supplies, access to water/sanitation	Maintenance & operations staff, standard operating procedures	Paving and outdoor space materials	Heat recovery systems	Energy management systems	Lateral systems (earthquake resisting systems)		
	Stormwater conveyance / drainage, green infrastructure elements		Vulnerable building users and residents (seniors, youth, children, those with mobility or health considerations)	Sidewalks and curbs	Life safety systems, sprinklers	Energy storage or battery systems			
	Utilities (above or below ground)			Trees/Vegetation/food gardens	Rooftop equipment	Lighting and plug loads			
	Underground parkades and access				Service hot water systems	Life safety systems, emergency lighting, fire suppression			
					Specialised application systems	Power supply systems including back-up power			
					Thermal storage systems				
					Ventilation & air filtration systems, exhaust systems				

Step 2: High Level Impact Assessment																				
Refer to Step 2 - Instructions for detailed guidance on this step. Directions: 1) All hazards selected as "Yes" for exposure from Step 1 will be shown in white rows. If "No" is selected from Step 1, the hazard will be shown in grey.		Directions: 1) Describe impact(s) of this hazard to elements within each Impact Category. Be specific with 'who', 'what', 'why', 'how' of each impact of the hazard. 2) Select Consequence Rating (from 1-5).																		
Hazards	Architectural Systems	Consequence Rating	Civil Engineering Systems	Consequence Rating	Emergency Preparedness, Planning and Response	Consequence Rating	Human Systems	Consequence Rating	Landscape & Ecological Systems	Consequence Rating	Mechanical and Plumbing Systems	Consequence Rating	Power & Electrical Systems	Consequence Rating	Structural Systems	Consequence Rating	Other System (Defined by assessment team)	Consequence Rating	Other System (Defined by assessment team)	Consequence Rating
Earthquake (VBBL shaking levels)	Collapse of architectural systems including but not limited to canopies, balconies and envelope.	4	Aggressive movement could shift civil connections and impact buildings freshwater, stormwater, and sanitary connections	4	Evacuation. Temporary closure of the building and its facilities in a post disaster event.	5	Refuge or compensation. Physical and mental impacts to occupants including injury, shock or fear.	5	potential physical damage of planting, site furnishing, paving, particularly roof and amenity decks	3	Result in structural failure of on-site support system, pipe joints and connections	3	Result in structural failure of on-site electrical distribution system, live wire disconnections (possible arcing), failure of building systems that require power, loss of normal power	3	Structural system designed to support life safety and egress, but damage possible depending on severity. Design is collapse prevention for large earthquake. Would expect damage to building structure.	4				
Extreme heat	Building envelope redundancy in keeping occupants comfortable and healthy.	3	Civil infrastructure not substantially impacted by excess heat. Heat may impact plant species resulting in loss and potential soil losses resulting in impacts on rainwater management system.	2	Closure or outdoor amenity.	1	Impact to physical health due to extreme heat, in particular vulnerable building users with health considerations.	5	detrimental to plant survivability for the types of plants suited to Vancouver	4	Increase stress on electrical and mechanical system components and decrease their efficiency and reliability	2	Increased electrical load on cooling system, which could overload electrical system. Electrical systems work less efficiently in hotter environments.	3						
Poor air quality (wildfire related)	Ongoing maintenance requirements of architectural systems may be increased. May impact detailing of building envelope	2			Closure or outdoor amenity.	1	Impact to physical health due to poor indoor air quality, in particular vulnerable building users with health considerations.	4	outdoor spaces unpleasant at best; polluted air will effect plant's health	3	Reduce cooling capacity, as well as creates additional maintenance of HVAC and air filtration systems.	2	Increased electrical load on HVAC system, which could overload electrical system.	2						
Power outage	Impact to way finding		Civil systems designed to function without pumping. Power outage should not impact stormwater management or waste conveyance. Sump pumps will likely be provided for elevators Cut off wall will likely be employed to manage groundwater infiltration without need for pumping Perimeter drain system could be pumped in event of extraordinary rainfall	1	If the back-up system were to reach its limit evacuation of building.	2	Slips, trips and falls. Injury.	2	if irrigation system used, and outage is long term, could effect plant health	3	Stress on electricity transmission result in failure of HVAC components. In addition, in a high rise building booster pumps will be non-operational which will prevent use of any domestic water system.	3	Building systems (not backed up by generator) are not operable. Normal lighting shuts off.	4						
Extreme cold during winter							Impact to physical health, in particular vulnerable building users with health considerations.	3	many plants chosen for this landscape will not be very cold tolerant	4	Freezing pipes, flexing and warping pipes, snow and ice accumulation around the exterior units and vents restricting airflow and reducing system efficiency	1	Increased electrical peak load on heating system, could overload electrical system.	3						
<i>Coastal or riverine flooding (including storm surges)</i>																				
<i>Decreased slope stability or landslide</i>																				
Drought/Water Restrictions	May impact maintenance of building.	1	Should be negligible so long as irrigation is in place. Sedum roof may require long term maintenance after establishment	2	Temporary closure of water-dependant facilities e.g. fountain, bike wash.	1			Detrimental to plant survivability for most plants chosen	4	Drop in water pressure affects flow dependent fixtures, increases pipe corrosion, clogs pipes and swere backups	2	N/A	1						
Extreme rainfall related flooding	Mould, pooling, envelope drainage problems, deterioration of the buildings façade.	3	Flooding of below-grade infrastructure. This could lead to economic loss and destruction of building systems.	3	Temporary closure of the building and its facilities.	3			will impact most plants if they sit in pooling water; plaza and amenity spaces compromised (inc. paved surfaces)	3	Exerting pressure on pipes and possibility of system failure, exceeding the capacity of infrastructure drainage systems that may lead to flooding, water infiltration or increased erosion of components	3	Electrical equipment in underground parkade(s) could be damaged and become unoperable.	4						
<i>Hazardous material incidents</i>																				
<i>Reduced freeze-thaw</i>																				
Pandemic							Refuge or compensation. Physical and mental impacts to occupants including sickness and fear.	5	people may use outdoor spaces more - so as not to be stuck inside - but will require distancing	3	Increase peak load and IAQ demand	4	May be challenging to schedule maintenance workers for electrical equipment	2						
<i>Sea level rise</i>																				
Warmer summer temperatures	Building envelope redundancy in keeping occupants comfortable and healthy.	3					Impact to physical health due to extreme heat, in particular vulnerable building users with health considerations.	3	more residences may seek shade in outdoor spaces	3	Unseen/underestimated demand affect the HVAC system sizing, efficiency, and air quality and comfort.	2	Increased use of cooling system in building may increase peak demand and overload electrical system.	3						
Warmer winter temperatures	Building envelope design for occupants health and comfort	1							plants may require more water	3	Overestimate demand affect the HVAC system sizing and efficiency and thermal comfort	1	Decrease use of heating system may decrease electrical peak demand load	1						
<i>Wind</i>																				
<i>Wildfire</i>																				
Poor air quality (traffic related)	Restricts occupants use of operable windows etc and relies on additional mechanical requirements	2					Impact to physical health due to poor indoor air quality, in particular vulnerable building users with health considerations such as asthma.	4	on grade spaces close to busy Kingsway - close to traffic fumes	3	Increase healthy IAQ demand and ventilation maintenance	2	Increase use of HVAC system may increase electrical peak demand	2						
<i>Other:</i>																				
<i>Other:</i>																				
<i>Other:</i>																				
<i>Other:</i>																				
<i>Other:</i>																				
<i>Other:</i>																				
<i>Other:</i>																				

Step 3: Likelihood and Risk Assessment			Risk Scores									
<p>Refer to 'Step 3 - Instructions' for detailed guidance on this step.</p> <p>Directions:</p> <p>1) For each hazard rows in white, select a hazard likelihood rating between 1 and 5 and provide a rationale. For hazard rows in gray (no exposure), leave Columns B and C blank.</p> <p>2) Do not adjust columns E-N. Risk Rating values are automatically calculated and colours are assigned based on the risk rating.</p>												
	Direction: Select hazard likelihood (1-5).	Directions: Describe rationale for likelihood rating; cite resources referenced as appropriate.										
Hazards	Hazard Likelihood	Rationale Description	Architectural Systems	Civil Engineering Systems	Emergency Preparedness, Planning and Response	Human Systems	Landscape & Ecological Systems	Mechanical and Plumbing Systems	Power & Electrical Systems	Structural Systems	Other System (Defined by assessment team)	Other System (Defined by assessment team)
Earthquake (VBBL shaking levels)	3		12	12	15	15	9	9	9	12	0	0
Extreme heat	5	https://climateatlas.ca/	15	10	5	25	20	10	15	0	0	0
Poor air quality (wildfire related)	5	Classified as a major impact of climate change CofV	10	0	5	20	15	10	10	0	0	0
Power outage	4	With increases in extreme weather, likelihood of power outages increases.	0	4	8	8	12	12	16	0	0	0
Extreme cold during winter	1	https://climateatlas.ca/	0	0	0	3	4	1	3	0	0	0
Coastal or riverine flooding (including storm surges)			0	0	0	0	0	0	0	0	0	0
Decreased slope stability or landslide			0	0	0	0	0	0	0	0	0	0
Drought/Water Restrictions	5	Classified as a major impact of climate change CofV: https://vancouver.ca/green-vancouver/climate-change-adaptation-strategy.aspx	5	10	5	0	20	10	5	0	0	0
Extreme rainfall related flooding	5	https://climateatlas.ca/	15	15	15	0	15	15	20	0	0	0
Hazardous material incidents			0	0	0	0	0	0	0	0	0	0
Reduced freeze-thaw			0	0	0	0	0	0	0	0	0	0
Pandemic	4	CDC: risk of infectious disease increases with climate change. https://www.cdc.gov/nceid/what-we-do/climate-change-and-infectious-diseases/index.html#:~:text=Our%20Risk%20For%20Infectious%20Diseases,harmful%20effects%20of%20climate%20change.	0	0	0	20	12	16	8	0	0	0
Sea level rise			0	0	0	0	0	0	0	0	0	0
Warmer summer temperatures	5	https://climateatlas.ca/	15	0	0	15	0	10	15	0	0	0
Warmer winter temperatures	4	Climate Change Infographics, City of Vancouver	4	0	0	0	12	4	4	0	0	0
Wind			0	0	0	0	0	0	0	0	0	0
Wildfire			0	0	0	0	0	0	0	0	0	0
Poor air quality (traffic related)	1	Cleaner fuel sources, trains and vehicles projected in the future. Electrification of systems.	2	0	0	4	3	2	2	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0
Other:			0	0	0	0	0	0	0	0	0	0


Step 4: Resilient Building Strategy Reporting						
Refer to 'Step 4 - Instructions' for detailed guidance on this step.						
Directions:						
(1) Refer to the Risk, Hazard and Resilience Strategies Count table below.						
(2) For each medium or high risk, provide the details of the hazard and impact categories associated with each risk (in Columns 2 through 4).						
(3) Describe the potential resilience strategies for each risk, select the current status of each strategy, and provide a rationale for each in Column 5.						
Risk, Hazard, and Resilience Strategy Reporting Table						
Risk	Select Hazard	Select Impact Category	Select the assessed risk level	Describe potential resilience strategy or strategies to reduce this risk	Select status of resilience strategy	Describe rationale for status
Risk, Hazard, and Resilience Strategy Count The following risk and hazard information has been identified in Steps 1 to 3:						
Medium risks:	High risks:	Hazards to consider:	Number of resilience strategies to report in Step 4:			
30	6	11	36			
Resilient Buildings Planning Worksheet v3 2023-05-18						
1	Earthquake (VBBL shaking levels)	Architectural Systems	Medium Risk	Envelope detailing to the new seismic code. Lateral loads on the envelope will increase and tolerances become stricter under the new seismic code. This will impact the design and detailing of the envelope. Consider opportunities to include a small fallout shelter structure for added safety.	Will incorporate into project	
2	Earthquake (VBBL shaking levels)	Emergency Preparedness, Planning and Response	Medium Risk	Develop and regularly update an earthquake emergency response plan, conduct drills, and ensure robust communication systems. Install a monitoring and alert system with radio capabilities to warn occupants in case of fire or earthquake.	Will incorporate into project	
3	Earthquake (VBBL shaking levels)	Human Systems	Medium Risk	Educate the community about earthquake safety and preparedness, establish clear evacuation routes, and provide mental health support post-earthquake. Install resilient drinking water fountains in lobby spaces and supply 24-hour emergency kits for all occupants.	Will be explored in future project stages - provide details	
4	Earthquake (VBBL shaking levels)	Landscape & Ecological Systems	Medium Risk	Design landscapes to recover quickly from seismic events, using native plants and high-quality hard landscape with strong foundations.	Will incorporate into project	
5	Earthquake (VBBL shaking levels)	Mechanical and Plumbing Systems	Medium Risk	Secure systems to prevent earthquake damage, use flexible connections, and conduct regular maintenance. Install seismic actuated gas shut-off valves to reduce fire risks from gas pipe failures and consider installing fountains/water systems for post-emergency use.	Will incorporate into project	
6	Earthquake (VBBL shaking levels)	Power & Electrical Systems	Medium Risk	Ensure all electrical equipment is installed with appropriate seismic supports and reviewed by a Seismic P.Eng. Implement backup power systems and use flexible conduits.	Will incorporate into project	
7	Earthquake (VBBL shaking levels)	Structural Systems	Medium Risk	Use advanced structural engineering techniques, such as base isolators and dampers, and regularly inspect and reinforce older structures. Design based on conventional concrete core construction to meet code requirements, anticipating a 17-25% increase in loads from the previous building code.	Will be explored in future project stages - provide details	The project is not considering strategies beyond current code requirements, as this is understood to provide best design practices in case of an earthquake. Increased robustness in structural design would also have significant cost implications.
8	Extreme heat	Architectural Systems	Medium Risk	Use passive cooling techniques, high-performance insulation, and energy-efficient windows to minimize reliance on mechanical systems. Adhere to Step Code 3 with a low carbon energy system and avoid fully glazed curtain walls, opting for a "punch window" approach. Incorporate screening elements and design balconies to function as a second skin to the building envelope.	Will incorporate into project	
9	Extreme heat	Civil Engineering Systems	N/A Low Risk	N/A Low Risk		Water supply system risk within the scope of utility service provider. On site response to consumption reduction and backup supply resolved through mechanical systems.
10	Extreme heat	Human Systems	High Risk	Educate residents on the dangers of extreme heat, ensure access to cooling centers, hydration, and medical care. Provide air conditioning in all rooms and rely on passive envelope strategies to reduce mechanical system size.	Will incorporate into project	
11	Extreme heat	Landscape & Ecological Systems	Medium Risk	Use heat-tolerant plants, design green spaces that provide cooling, and implement water management strategies like irrigation or drought-tolerant plant material.	Will incorporate into project	
12	Extreme heat	Mechanical and Plumbing Systems	Medium Risk	Ensure HVAC systems are efficient and capable of handling extreme heat loads. Incorporate operable windows to support natural ventilation and design cooling systems to meet elevated outdoor air temperatures, maintaining corridor temperatures at 24C. Ensuring HVAC efficiency and the use of operable windows for natural ventilation were discussed as essential strategies.	Will incorporate into project	
13	Extreme heat	Power & Electrical Systems	Medium Risk	Coordinate with Mechanical design to incorporate worst-case building cooling load into electrical system sizing.	Will incorporate into project	
14	Poor air quality (wildfire related)	Architectural Systems	Medium Risk	Design buildings with high-efficiency air filtration systems and ensure windows and doors seal tightly to prevent smoke entry. Use high-performance envelope designed for airtightness.	Will incorporate into project	
15	Poor air quality (wildfire related)	Human Systems	High Risk	Protect vulnerable populations with air conditioning in all rooms, providing health advisories and ensuring access to medical care.	Will incorporate into project	
16	Poor air quality (wildfire related)	Landscape & Ecological Systems	Medium Risk	Use dense planting to absorb and mitigate air pollutants, enhancing overall planting to mitigate poor air quality.	Will incorporate into project	
17	Poor air quality (wildfire related)	Mechanical and Plumbing Systems	Medium Risk	Provide filtration systems for outdoor air supply to MERV8, and design corridor units to accommodate MERV13 filtration, storing spare filters on-site for peak wildfire season.	Will be explored in future project stages - provide details	
18	Poor air quality (wildfire related)	Power & Electrical Systems	Medium Risk	Ensure power systems operate during worst case scenario events with redundant systems and backup power sources.	Will incorporate into project	
19	Power outage	Landscape & Ecological Systems	Medium Risk	Design landscapes that do not require or avoid power-dependent maintenance, using native and drought-resistant plants.	Will incorporate into project	
20	Power outage	Mechanical and Plumbing Systems	Medium Risk	Domestic (potable) water system serving the high rise portions of the building (above level 3) will not be operational. Water filling station in the amenity spaces and generally accessible space to be provided.	Will be explored in future project stages - provide details	
21	Power outage	Power & Electrical Systems	Medium Risk	Provide emergency backup power for egress and exit lighting out of the building. Provide backup or emergency generator to power building life safety systems and/or other building systems (i.e. mechanical). Provide UPS system for critical building systems.	Will incorporate into project	
22	Extreme cold during winter	Architectural Systems	Medium Risk	Use high-performance insulation and energy-efficient windows to maintain indoor temperatures, incorporating passive heating strategies. Provide active heating designed for peak use, and consider solarium screening on balconies.	Will be explored in future project stages - provide details	
23	Extreme cold during winter	Landscape & Ecological Systems	Medium Risk	avoid selection of tender plants (Zone 7 and above)	Will incorporate into project	
24	Extreme cold during winter	Mechanical and Plumbing Systems	Medium Risk	Risk low. System are regularly designed to prevent freezing and under extreme cold, indoor conditions can be slightly lower but not creating health related risks to occupants.	Will be explored in future project stages - provide details	
25	Extreme cold during winter	Power & Electrical Systems	Medium Risk	Coordinate with Mechanical design to incorporate worst-case heating load into electrical system sizing.	Will incorporate into project	
26	Drought/Water Restrictions	Civil Engineering Systems	Medium Risk	Incorporate water-saving fixtures and appliances, using drought-resistant landscaping and designing buildings to reduce water use.	Will be explored in future project stages - provide details	
27	Drought/Water Restrictions	Landscape & Ecological Systems	Medium Risk	emphasize prioritizing planted areas over paving, incorporating bioswales and berms for water absorption, using drought-tolerant plants, implementing tree trenches, opting for extensive green roofs, and using pervious paving. The main challenges include adapting to severe microclimates around towers and ensuring sustainable water usage specific to the project site conditions.	Will be explored in future project stages - provide details	
28	Drought/Water Restrictions	Mechanical and Plumbing Systems	Medium Risk	Rainwater harvesting systems can be considered for irrigation, requiring careful design to manage complexities, maintenance, and mechanical systems for safe and effective use. Compliance with building bylaws and implementing preventive measures are essential to avoid common plumbing mistakes and ensure the harvested rainwater is appropriately used, such as for toilet flushing.	Will be explored in future project stages - provide details	
29	Extreme rainfall related flooding	Architectural Systems	Medium Risk	Drainage detailing is essential to prevent flooding at parkade entry/exits, and unique planning solutions are needed to manage rainwater, including using extensive green space and mini parks for bioswales. The Vancouver-specific wall system, though costly, is effective in the rainy climate, and proper site grading, overflow management, and strategic drain placement are critical to ensure rainwater stays on the property and is directed appropriately.	Will incorporate into project	
30	Extreme rainfall related flooding	Architectural Systems	Medium Risk	Drainage detailing at parkade entry/exits is essential to prevent flooding. Unique planning for rainwater management includes using green spaces and mini parks for bioswales. Vancouver's unique rainscreen wall system, though costly, is effective in rainy conditions. Proper site grading, overflow management, and strategic drain placement are crucial for directing rainwater away from buildings and towards landscaped areas, ensuring water stays on the property and is managed effectively.	Will incorporate into project	
31	Extreme rainfall related flooding	Civil Engineering Systems	Medium Risk	Design infrastructure to manage significant flooding events, directing excess water to the city's major drainage system. Strategically place trench drains to collect runoff, and crown and extend driveways to direct water into bioretention systems, ensuring initial runoff is managed on-site before overflow is handled by city infrastructure.	Will be explored in future project stages - provide details	
32	Extreme rainfall related flooding	Emergency Preparedness, Planning and Response	Medium Risk	Relocation of all mechanical and electrical systems and services above the FCL of a floor for the portion of the site bridging the flood plain boundary.	Will be explored in future project stages - provide details	
33	Extreme rainfall related flooding	Landscape & Ecological Systems	Medium Risk	Use absorbent soil and ensure sufficient soil depth to manage drought and flooding, and support plant health. Install pipes under bioswales for extreme rain events and prevent pooling. Design site grading and drainage to avoid plant pooling, acknowledging that extreme weather may still cause temporary pooling, but aim to minimize such occurrences.	Will be explored in future project stages - provide details	
34	Extreme rainfall related flooding	Landscape & Ecological Systems	Medium Risk	ensure good drainage throughout outdoor space, if using bioswales, use drain pipes	Will incorporate into project	
35	Extreme rainfall related flooding	Mechanical and Plumbing Systems	Medium Risk	implement an overflow pipe on the storm retention system for events exceeding design conditions. Retain all water on-site for 24 hours to prevent direct discharge into the sewer system. Ensure effective rooftop drainage through the building's mechanical system, and install backflow prevention devices to protect against surcharges during extreme flooding events.	Will be explored in future project stages - provide details	
36	Extreme rainfall related flooding	Power & Electrical Systems	Medium Risk	Coordinate with mechanical team to ensure pump system is provided for areas where critical electrical equipment is located (i.e. Main Electrical Room, Generator Room, Telephone/Data Room) and equipped with backup power.	Will incorporate into project	
37	Pandemic	Architectural Systems	High Risk	Choose appropriate interior materials and finishes, considering the established material palette and avoiding undesirable materials. Design each unit with its own balcony access to ensure residents can enjoy outdoor space during lockdowns, pandemics, or extreme heat events. Provide both indoor and large outdoor amenity spaces on level two, and include various indoor amenities like coworking spaces and bookable area to ensure residents have access to communal spaces beyond their private units during a pandemic.	Will be explored in future project stages - provide details	
38	Pandemic	Human Systems	High Risk	Level 2 has a large amount of amenity space with connection to nature and the outdoor through views of nature, daylighting and physical connection. Every unit has a private balcony. Connection to nature and daylighting. Some unit have two separate bedrooms with two separate balconies. Two separate balconies allow for easier quarantining.	Will be explored in future project stages - provide details	
39	Pandemic	Landscape & Ecological Systems	High Risk	Provide enough outdoor space to allow people to social distance - should still provide smaller spaces as well.	Will incorporate into project	
40	Pandemic	Mechanical and Plumbing Systems	Medium Risk	Prevent the use of recirculating air units serving large areas. Ensure operable windows are provided to any gathering spaces to generated high outdoor air supply.	Will be explored in future project stages - provide details	
41	Pandemic	Power & Electrical Systems	Medium Risk	Ensure electrical rooms have adequate clearance for maintenance staff. Implement control systems to monitor air quality and humidity, and include operable windows in the design to allow self-regulation of indoor environments. Ensure sufficient power allocation for control and monitoring systems, coordinating with mechanical systems for temperature and air quality measurement.	Will incorporate into project	
42	Warmer summer temperatures	Architectural Systems	Medium Risk	Step code 3 with low carbon energy system. Rely of the passive envelope (envelope first approach) strategies to save reduce reliance and size of mechanical systems. Approx 50% WWR will mean a more robust envelope rather than up at 60%. Following the first energy model performance analysis (daylight analysis) will a more refine WWR. Minimum double pane windows to meet step code compliance. Operable windows on all sides of the building.	Will incorporate into project	
43	Warmer summer temperatures	Human Systems	Medium Risk	Air conditioning - VBLL. We are going beyond Policy and providing every apartment with air conditioning in all rooms. Air conditioning - VBLL. We are going beyond Policy and providing every apartment with air conditioning in all rooms. In the case of extreme heat and a power outage: Rely of the passive envelope (envelope first approach) strategies to save reduce reliance and size of mechanical systems.	Will incorporate into project	
44	Warmer summer temperatures	Mechanical and Plumbing Systems	High Risk	Same as 17 above: Full mechanical cooling will be provided and cooling systems will be designed to elevated outdoor air temperature meeting the BC Housing Technical Bulletin 3-2023. Residential corridors will also be cooled under to maintain a maximum temperature of 24C under the same environmental conditions.	Will incorporate into project	
45	Warmer summer temperatures	Power & Electrical Systems	High Risk	Coordinate with Mechanical design to incorporate worst case cooling load into electrical system sizing.	Will incorporate into project	
46	Poor air quality (traffic related)	Architectural Systems	Medium Risk	N/A Low Risk: Mini pocket park between the street and road at ground level. The missing of the site considers set back from the road. The City is future proofing street configuration under the Broadway plan - adding bike and pedestrian routes and removing a car lane. At the roof terrace there will be landscaping.	Will incorporate into project	
46	Poor air quality (traffic related)	Landscape & Ecological Systems	High Risk	provide strong buffer planting between Kingsway and open space, provide abundant planting generally	Will incorporate into project	
47	Poor air quality (traffic related)	Mechanical and Plumbing Systems	High Risk	Locate air intake per ASHRAE 62.1, away from vehicular traffic. Implement MERV 13 filtration in general spaces and hallways, while suites may face challenges due to pressure drops. Follow BC Housing Standards for rental facilities and large amenities, with additional filters available during smoke events. Store extra MERV 13 filters on-site for fire events, and allocate mechanical room space for storage. Prepare filter racks for future MERV 13 installation and establish an operational schedule for periodic checks and filter replacement, especially during fire events, emphasizing readiness for higher filtration needs.	Will incorporate into project	
48	Poor air quality (traffic related)	Power & Electrical Systems	Medium Risk	Coordinate with Mechanical design to incorporate worst case HVAC load into electrical system sizing.	Will incorporate into project	

28	Drought/Water Restrictions	Mechanical and Plumbing Systems	Medium Risk	Rainwater harvesting systems can be considered for irrigation, requiring careful design to manage complexities, maintenance, and mechanical systems for safe and effective use. Compliance with building bylaws and implementing preventive measures are essential to avoid common plumbing mistakes and ensure the harvested rainwater is appropriately used, such as for toilet flushing.	Will be explored in future project stages - provide details	
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32	Extreme rainfall related flooding	Emergency Preparedness, Planning and Response	Medium Risk	Relocation of all mechanical and electrical systems and services above the FCL of a floor for the portion of the site bridging the flood plain boundary.	Will be explored in future project stages - provide details	
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41	Pandemic	Power & Electrical Systems	Medium Risk	Ensure electrical rooms have adequate clearance for maintenance staff. Implement control systems to monitor air quality and humidity, and include operable windows in the design to allow self-regulation of indoor environments. Ensure sufficient power allocation for control and monitoring systems, coordinating with mechanical systems for temperature and air quality measurement.	Will incorporate into project	
42	Warmer summer temperatures	Architectural Systems	Medium Risk	Step code 3 with low carbon energy system. Rely of the passive envelope (envelope first approach) strategies to save reduce reliance and size of mechanical systems. Approx 50% WWR will mean a more robust envelope rather than up at 60%. Following the first energy model performance analysis (daylight analysis) will a more refine WWR. Minimum double pane windows to meet step code compliance. Operable windows on all sides of the building.	Will incorporate into project	
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44	Warmer summer temperatures	Mechanical and Plumbing Systems	High Risk	Same as 17 above: Full mechanical cooling will be provided and cooling systems will be designed to elevated outdoor air temperature meeting the BC Housing Technical Bulletin 3-2023. Residential corridors will also be cooled under to maintain a maximum temperature of 24C under the same environmental conditions.	Will incorporate into project	
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47	Poor air quality (traffic related)	Mechanical and Plumbing Systems	High Risk	Locate air intake per ASHRAE 62.1, away from vehicular traffic. Implement MERV 13 filtration in general spaces and hallways, while suites may face challenges due to pressure drops. Follow BC Housing Standards for rental facilities and large amenities, with additional filters available during smoke events. Store extra MERV 13 filters on-site for fire events, and allocate mechanical room space for storage. Prepare filter racks for future MERV 13 installation and establish an operational schedule for periodic checks and filter replacement, especially during fire events, emphasizing readiness for higher filtration needs.	Will incorporate into project	
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Resources			
Consider the following resources when completing this Resilient Buildings Planning Worksheet. This list is not exhaustive, worksheet users are encouraged to seek additional resources as necessary.			
Title	Organization	Link	Resource Type
The Climate Atlas of Canada	Prairie Climate Centre	https://climateatlas.ca/	Hazard, Exposure, and Likelihood Data
Climate Data Canada	Environment and Climate Change Canada / Ouranos / CRIM / PCIC / Prairie Climate Centre	climatedata.ca	Hazard, Exposure, and Likelihood Data
Downscaled Climate Scenarios	Environment and Climate Change Canada	https://climate-change.canada.ca/climate-data/#/	Hazard, Exposure, and Likelihood Data
PCIC Plan 2 Adapt	Pacific Climate Impacts Consortium	https://www.pacificclimate.org/analysis-tools/plan2adapt	Hazard, Exposure, and Likelihood Data
PCIC Climate Explorer	Pacific Climate Impacts Consortium	https://www.pacificclimate.org/analysis-tools/pcic-climate-explorer	Hazard, Exposure, and Likelihood Data
Leed Resilience Screening Tool for LEED v4 Projects	US Green Building Council	https://www.usgbc.org/resources/leed-climate-resilience-screening-tool-leed-v4-projects	Hazard, Exposure, and Likelihood Data
Climate Change Adaptation Strategy	City of Vancouver	https://vancouver.ca/files/cov/climate-change-adaptation-strategy.pdf	Hazard, Exposure, and Likelihood Data
Design Value Explorer	National Research Council Canada	https://climatedata.ca/the-design-value-explorer-improving-access-to-historical-and-projected-climatic-design-variables/	Hazard, Exposure, and Likelihood Data
Climate Resilience Guidelines for BC Health Facility Planning & Design	Climate Resilience Framework and Standards for Public Sector Buildings	https://bcgreencare.ca/wp-content/uploads/2021/09/ClimateResilienceGuidelinesForBCHealthFacilityPlanningAnd-Design_v1-1.pdf	Resilience and Risk Assessment Frameworks
CanAdapt and Communities of Practice	Climate Risk Institute	https://climateriskinstitute.ca/community-of-practice/	Resilience and Risk Assessment Frameworks
Climate Lens – Climate Change Resilience Assessment	Infrastructure Canada	https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html	Resilience and Risk Assessment Frameworks
PIEVC High Level Screening Guide	Institute for Catastrophic Loss Reduction and Climate Risk Institute	https://pievc.ca/pievc-high-level-screening-guide/	Resilience and Risk Assessment Frameworks
31000 Risk management	ISO (International Organization for Standardization)	https://www.iso.org/iso-31000-risk-management.html	Resilience and Risk Assessment Frameworks
14090 Adaptation to climate change - Principles, requirements and guidelines	ISO (International Organization for Standardization)	https://www.iso.org/obp/ui/#iso:std:iso:14091:ed-1:v1:en	Resilience and Risk Assessment Frameworks
Integrated Building Adaptation and Mitigation Assessment (IBAMA)	Pacific Institute for Climate Solutions	https://pics.uvic.ca/projects/adaptive-mitigation-framework-assessing-climate-change-solutions-urban-multifamily	Resilience and Risk Assessment Frameworks
Coastal flood risk assessment guidelines for buildings and infrastructure design: supporting flood resilience on Canada's coasts	NRC	https://nrc-publications.canada.ca/eng/view/object/?id=b4e8e5cd-ace2-4777-866f-1bb18bf77f0	Resilience and Risk Assessment Frameworks
Resilience Brief	BOMA	https://bomacanada.ca/wp-content/uploads/2019/11/BOMA_Resilience_Brief_Eng_v5.pdf	Resilience Strategies
MBAR Discussion Primers	BC Housing	https://www.bchousing.org/research-centre/library/residential-design-construction-guides/MBAR	Resilience Strategies
Climate-ready Housing Design Guide	BC Housing	https://www.bchousing.org/research-centre/library/residential-design-construction-guides/climate-ready-housing-design-guide	Resilience Strategies
Building Sustainability & Resilience Guide	ASHRAE BC	https://static1.squarespace.com/static/54762199e4b0f6ed696bf031/t/62fd59afd2fc2d056da51b2a/1660770738485/ASHRAE-BC+Building+Sustainability+%26+Resilience+Guide+-+Rev+1.1.pdf	Resilience Strategies
Climate Change Considerations for Building Enclosure Engineers, Engineers & Geoscientists British Columbia	EGBC (Engineers and Geoscientists BC)	https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMWZ4OQNSFORDEBA2GUPT6CRPJG7U/Climate%20Change%20Considerations%20for%20Building%20Enclosure%20Engineers	Resilience Strategies
Sustainability Professional Practice Guidelines	EGBC (Engineers and Geoscientists BC)	https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMWYXOJJABJXV2JBKDA5525CDJ6B/Sustainability%20Guidelines	Resources on Professional Practice related to risk and resilience
Overheating Considerations for Existing Multi-Unit Residential Buildings	EGBC (Engineers and Geoscientists BC)	https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW32WH5KF4WGZ7HYUQWQXCGSEWM/Overheating%20Considerations%20for%20Existing%20Multi-Unit%20Residential%20Buildings	Resources on Professional Practice related to risk and resilience
Electrical Considerations for Decarbonizing Existing Part 3 Buildings	EGBC (Engineers and Geoscientists BC)	https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW5K7QKYS6AQCZFYR4QVIBNKNMH/Electrical%20Considerations%20for%20Decarbonizing%20Existing%20Part%203%20Buildings	Resources on Professional Practice related to risk and resilience
Climate Change Considerations for Building Enclosure Engineers	EGBC (Engineers and Geoscientists BC)	https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMWZ4OQNSFORDEBA2GUPT6CRPJG7U/Climate%20Change%20Considerations%20for%20Building%20Enclosure%20Engineers	Resources on Professional Practice related to risk and resilience
Joint Professional Practice Guidelines on Whole Building Energy Modelling Services	EGBC (Engineers and Geoscientists BC)	https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories/Document/01525AMW7JPMODAJKVYBCLHGRA24FJJPH3/Whole%20Building%20Energy%20Modelling%20Services	Resources on Professional Practice related to risk and resilience

Resilient Buildings Planning Worksheet v1-2023-05-18

8.4 North Tower Embodied Carbon Design Report



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Instructions

Applicability


- This Embodied Carbon Design Report (Design Report) is the reporting template designed to be used for demonstrating compliance with the embodied carbon requirements specified in Section 10.4 of the VBBL.
- These VBBL requirements apply to all new Part 3 buildings.
- These requirements do not apply to alterations to existing buildings, unless alterations are so significant that they are generally treated as the construction of a new building. Applicants should consult with building officials to confirm the applicability in these cases.
- For guidance on applicability and embodied carbon emissions modelling refer to the corresponding version of Vancouver Embodied Carbon Guidelines (Guidelines).

General Instructions

- For additional submission requirements see Section 6.2 of the Guidelines.
- Projects with multiple buildings shall follow the guidance provided in Sections 2.4 (a) of the Guidelines to decide whether they should submit one Design Report per building or combine reporting in one report.
- This report shall be submitted in both Excel and PDF formats.
- Complete all fields that apply, using information that represents the current stage of design (For the City of Vancouver, submissions are required at Rezoning Permit and Building Permit).
- For fields that do not apply or for which there is no information available (e.g. at Rezoning Permit), leave them blank or enter "N/A".
- The row heights can be changed if more space is needed in any cell.
- For questions relating to this design report please email green.buildings@vancouver.ca

Cell Legends

Legend	
Required Field	<input style="width: 100%; height: 15px;" type="text"/>
Required Field with Dropdown Options	<input style="border-bottom: 1px solid gray;" type="text"/>
Optional Field	<input style="width: 100%; height: 15px; background-color: #e6f2ff;" type="text"/>
Optional Field with Dropdown Options	<input style="border-bottom: 1px solid gray;" type="text"/>
No Manual Entry Required	<input style="width: 100%; height: 15px; background-color: #e6f2ff;" type="text"/>



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Instructions


Tabs Overview

The user is encouraged to fill in the tabs in the following order, as answers to some questions will impact the following sections or tabs

Tabs	Requirement	Description
1. Instructions	Informative	(The current tab) Provides an overview of this design report
2. Project Info	Required	General information about the proposed project and building(s)
3. EC Modelling Info	Required	Information on the embodied carbon model, including the tool used and the scope
4. Results & Compliance	Required	Embodied carbon emissions results and compliance assessment with Vancouver Building By-law
5. Carbon Storage	Optional	Biogenic carbon and concrete carbonation reporting
6. Raw Data	Required	File names and submission requirements of raw data from different embodied carbon assessment software tools
7. Definitions	Informative	Definition of terms and description of the structural systems in "Project Info" tab

	Embodied Carbon Design Report Part 3 Buildings	Version 1.0 Updated: 2023-10-20
Project and Building Information		
Instructions		
<ul style="list-style-type: none"> ■ Use the form below to provide the general information regarding the proposed project and building(s) included in this Design Report. ■ See the definition of terms and description of the structural systems in "Definitions" tab. 		
Project Information		
Project Working Title / Name	BONNIS: 600 Kingsway North Tower	
Address <small>(Street No., Street Direction, Street Name)</small>	644 Kingsway	
City	Vancouver	
Province/State	British Columbia (BC)	
Postal Code <small>(A9A 9A9)</small>	V5T 3K4	
Secondary Address <small>(Street No., Street Direction, Street Name)</small>		
Secondary Postal Code <small>(A9A 9A9)</small>		
Number of Buildings in the Project	2	
Number of Buildings included in this Design Report	1	
Projected Date of First Building Permit Application <small>(YYYY-MM-DD)</small>	2025-07-01	
Date w/LCA Model Completed <small>(YYYY-MM-DD)</small>		
Estimated Project Completion Year <small>(YYYY)</small>		

	Embodied Carbon Design Report Part 3 Buildings	Version 1.0 Updated: 2023-10-20
Project and Building Information		
Building(s) Information		
Building Name <small>(If different from the Project)</small>		
Building Address <small>(If different from the Project)</small>		
Postal Code <small>(If different from the Project)</small>		
Project Phase	Schematic Design	
Permit Application Stage	Rezoning Permit	
Percent of Project Phase Completed (%)		
Drawing Set Used for Embodied Carbon Modelling	Rezoning Submission	
Primary Building Use	C (Residential Occupancies)	
Secondary Building Use		
Construction Type	New Construction	
Gross Floor Area without Parkade (m ²)	9,835	
Parkade Gross Floor Area (m ²)	3,157	
Gross Floor Area with Parkade (m ²)	12,992	
Storeys Above Grade	14	
Storeys Below Grade	4	
Parking Type	Below grade	
Building Height (m)		
No. of Units		
No. of Bedrooms		



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Project and Building Information

Structure

Primary Structural System	Concrete
Primary Horizontal Gravity System	Concrete: Non-PT Framing
Primary Vertical Gravity System	Concrete: CIP
Primary Lateral System	Concrete: Shear Walls
Podium	Primary system defined above is on a podium
Foundation Type	Shallow Foundation
Seismic Design Category	
Risk Category	
Seismic Site Class	
Allowable Soil Bearing Pressure (kg/m ²)	
Typical Column Grid, Long Direction (m)	
Typical Column Grid, Short Direction (m)	
Typical Floor Live Load (kg/m ²)	
Ground Snow Load (kg/m ²)	
Ultimate Wind Speed (kph)	


Multiple Buildings Information

Are the building(s) in this Design Report connected to other buildings in the project that are reported separately, i.e. are not included in this Design Report?

Yes

How is the common space allocated to the building(s) that their embodied carbon is reported in separate Design Reports?

Proportional to GFA



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Embodied Carbon Modelling Information

Instructions

- Use the form below to indicate the optional scope included in embodied carbon reporting and compliance with the City of Vancouver's requirements.
- Unless specified in "Reporting" and/or "Compliance" columns below as "Yes", all the optional scopes will be assumed to be excluded from the embodied carbon reporting and compliance.
- Emissions and benefits from module D, biogenic carbon, and concrete carbonation can be reported. However, these should be reported separately and are excluded from the results used for demonstrating compliance with the City of Vancouver's requirements.
- All optional scopes are excluded from the compliance, if the "Absolute Path" is selected in tab "Results & Compliance".
- Optional scopes are included in the results used for compliance, if the "Baseline Path" is selected in tab "Results & Compliance" and if they are indicated to be included in the "Compliance" column below.

wbLCA Model

LCA Modeller (<i>Company Name</i>)	Perkins&Will
LCA Modeller (<i>Contact Person Name</i>)	Nicole Pfeifer
Primary Material Quantity Source	BIM / Revit Takeoffs
Secondary Material Quantity Source	Project Drawing Takeoffs
Software Tool	Embodied Carbon Pathfinder

- Embodied Carbon Pathfinder (Pathfinder) is only acceptable at the Rezoning Permit stage.
- Pathfinder provides a high-level, order-of-magnitude estimate, based on modelled scenarios for select building archetypes, and is not specific to a project's geometry or material quantities.
- Project teams are encouraged to model the embodied carbon of their specific project early in the design process to help inform design and material selection.

Green Building Rating System or Certification Pursued

None

Building Life

Building Life Time

60

Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Embodied Carbon Modelling Information

Life Cycle Stages

Specify the life cycle stages that you are including in your reporting, using data from your software tool or using project-specific or regional data.

- The "Reporting" column is automatically populated based on the software specified in cell #D16, except for when "Other" is selected.
- Do not modify the auto-populated responses, unless the project is reporting embodied carbon of the missing life cycle stages using project-specific or regional data.

	Reporting	Compliance
Product (A1-A3)	Yes	Yes
Construction Process - Transport (A4)	Yes	Yes
Construction Process - Construction (A5)	Yes	Yes
Use (B1-B5)	Yes	Yes
End-of-Life (C1-C4)	Yes	Yes
Benefits and Loads Beyond the Building Life Cycle (D1-D4)	No	No

Building Elements

- See Section 3.3 and Table 5 in Appendix B.2 of Vancouver Embodied Carbon Guidelines for a detailed list of required and optional elements and sub-element for compliance with VBBL.

Required Elements

	Reporting	Compliance
(Foundations, Subgrade enclosure, Slab-on-grade) Substructure	Yes	Yes
(Superstructure, Below-grade interior structure, Envelope, Roof) Shell	Yes	Yes

Are any required sub-elements excluded from the reporting or are any optional sub-elements within mandatory elements included in the reporting?

Embodied Carbon Design Report

Part 3 Buildings

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Updated: 2023-10-20

Embodied Carbon Modelling Information


Optional Elements

Are you including building elements other than substructure and shell (i.e. structure and enclosure) in your embodied carbon reporting?

	Reporting	Compliance
(Interior Construction) Interior	<input type="text"/>	<input type="text"/>
(Interior Finishes) Interior	<input type="text"/>	<input type="text"/>
(Plumbing) Services	<input type="text"/>	<input type="text"/>
(HVAC) Services	<input type="text"/>	<input type="text"/>
(Electrical) Services	<input type="text"/>	<input type="text"/>
(Other) Services	<input type="text"/>	<input type="text"/>
(Fixed Furnishings) Furnishings	<input type="text"/>	<input type="text"/>
(Movable Furnishings) Furnishings	<input type="text"/>	<input type="text"/>
(Landscaping) Sitework	<input type="text"/>	<input type="text"/>
(Other) Sitework	<input type="text"/>	<input type="text"/>
Other	<input type="text"/>	<input type="text"/>

Carbon Storage (Optional)

	Reporting	Compliance
Biogenic Carbon Reported	No	No
Concrete Carbonation Reported	No	No



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Embodied Carbon Modelling Information

Embodied Carbon Reduction Strategies

Describe any strategies used in the proposed design to reduce embodied carbon emissions.

(Optional) Were design for disassembly and adaptability (DfD) strategies incorporated in the proposed design, based on the CSA Z782 or ISO 20887 standards?

Assumptions, Data Modifications, and Manual Calculations


■ If the baseline compliance path is used, answer the following questions for the proposed design and baseline.

Did you substitute any major material or component in the building design with a proxy, due to the lack of data availability in the software tool?

Did you modify any of default assumptions or data sources used in the software tool inside the tool or manually outside it?

Provide any additional information on the project, embodied carbon inputs, or outputs here.

The buildings in the project share a below grade parkade. The parkade area will be split equally among the north and south building.



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
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Results & Compliance

Instructions

- Use the form below to report the embodied carbon emissions and assess compliance with the embodied carbon requirements of Vancouver Building By-law.
- "Required Elements" should only include substructure and shell (i.e. structure and enclosure).
- "Optional Elements" shall include the other elements, indicated to be included in the "Building Elements" section of "EC Modelling Info" tab.
- Biogenic carbon and concrete carbonation shall not be included in this tab. They may be reported separately in "Carbon Storage" tab.

Compliance Path and Requirements

The embodied carbon of the proposed design should be 20% below the benchmark for Part 3 buildings that are up to 6 storeys and can be built with wood structure and 10% for all other Part 3 buildings. The benchmark is set based on the compliance path.

Compliance Path	Absolute Path
Gross Floor Area without Parkade (m2)	9,835
Projected Date of First Building Permit Application	2025-07-01


Is the project planning to achieve any of the "Responsible Material Sourcing" criteria?

Specify and describe the Responsible Material Sourcing criterion or criteria the project is meeting.
Additional details may be provided in a supporting report, as described in Section 6.2 (d) of the Guidelines.

A minimum of 20 distinct permanently installed interior materials will disclose their ingredients using HPD's, Declare labels or cradle to cradle certificates. Materials will fall within one of the following categories: flooring, insulation, wet applied products, ceilings, wall assemblies or composite wood.

Embodied Carbon Design Report Part 3 Buildings			
		Version 1.0 Updated: 2023-10-20	
Results & Compliance			
Compliance Assessment			
Embodied Carbon Limit			
	Proposed	Benchmark	Limit
Total Embodied Carbon Emissions (kg CO ₂ e)	2,886,644	3,934,097	3,540,688
Embodied Carbon Intensity (without Parkade) (kg CO ₂ e/m ²)	293.50	400.00	360.00
Embodied Carbon Reduction from the Benchmark (%)			
The proposed design meets the embodied carbon limit	Yes		
Minimum Reduction Required	10%		
Reduction Achieved	27%		
Results			
Proposed Design			
	Required Elements		
Total Embodied Carbon Emissions (kg CO ₂ e)			
Modules A-C	2,886,644		
Product (A1-A3)			
Transport - Construction Process (A4)			
Construction - Construction Process (A5)			
Use (B1-B5)			
End-of-Life (C1-C4)			
Total (A-C)			
Beyond the Building Life (D1-D4)			
Embodied Carbon Intensity (without Parkade) (kg CO ₂ e/m ²)			
Modules A-C	293		
Modules D			
Embodied Carbon Intensity (with Parkade) (kg CO ₂ e/m ²)			
Modules A-C	222		
Modules D			

Embodied Carbon Design Report Part 3 Buildings	
Version 1.0 Updated: 2023-10-20	
Results & Compliance	
Baseline	



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Carbon Storage

(Optional)

Version 1.0
Updated: 2023-10-20

Instructions

- Reporting biogenic carbon and concrete carbonation is optional.
- Carbon storage shall be reported separately in this form and is not included in the compliance assessment.


No input is required on this page.

Results

Proposed Design

	Required Elements	Required+Optional Elements (All)
Total Carbon Storage (kg CO₂e)		
Biogenic Carbon	<input type="text"/>	<input type="text"/>
Concrete Carbonation	<input type="text"/>	<input type="text"/>
Carbon Storage Intensity (without Parkade) (kg CO₂e/m²)		
Biogenic Carbon	<input type="text"/>	<input type="text"/>
Concrete Carbonation	<input type="text"/>	<input type="text"/>
Carbon Storage Intensity (with Parkade) (kg CO₂e/m²)		
Biogenic Carbon	<input type="text"/>	<input type="text"/>
Concrete Carbonation	<input type="text"/>	<input type="text"/>

Baseline



Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Raw Data Submission

Version 1.0
Updated: 2023-10-20

Instructions

- Follow the guidance provided in the link below to prepare and submit raw data from the wbLCA software tool.

<https://tinyurl.com/COV-ECDR>

File Names

- Provide the filename(s) of the raw data spreadsheet export from the software tool and a description of each file.
- Please ensure filenames are correct, as this will be used to link raw data files with this submission template. Example: "Project Name_Proposed_OCL LCC Results.xls"
- Select relevant file description for each filename.
- Dropdown options with * are Required file results to be included for each specific software tool. Other options without * are optional but highly recommended to be included.
- Depending on the tool, each scenario may have multiple spreadsheet exports that are relevant.


Proposed Design


File Name: 20240722_600 Kingsway_Preliminary Embodied Carbon Assessment Report	Description: Other
File Name: <input type="text"/>	Description: <input type="text"/>
File Name: <input type="text"/>	Description: <input type="text"/>
File Name: <input type="text"/>	Description: <input type="text"/>

Baseline

Embodied Carbon Design Report Part 3 Buildings		
		Version 1.0 Updated: 2023-10-20
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Building Information		
Project Phase	Concept Design	The concept phase includes developing the building concept, investigating its feasibility, and proposing the concept to stakeholders to make a decision to develop the concept further.
	Schematic Design	The schematic phase includes rough drawings or a narrative that illustrate the basic concepts of the building design which most often include spatial relationships as well as basic scale and forms the owner might desire. At this time, initial descriptions of the structural, mechanical, HVAC, plumbing and electrical, interior and exterior finishes and building site are often included. The schematic phase also includes initial cost estimates.
	Design Development	The design development phase involves finalizing the building design and specifying items such as materials, window and door locations and general structural details.
	Construction Documents	The construction document phase includes the development of final architectural, structural, civil, mechanical, and electrical drawings to be used for construction. These drawings are in greater detail than drawings produced during design development and typically include specifications for construction details and materials.
	Construction	The contractor constructs the building in accordance with the construction documents during the construction phase. The architect, engineers, and consultants perform quality control inspections, respond to Requests for Information (RFIs), review and approve technical submittals and generally ensure that the project is constructed by the contractor in accordance with the construction documents.
	As-Built	The contractor has completed the construction contract in accordance with the construction documents, and a Certificate of Occupancy has been issued.

Embodied Carbon Design Report Part 3 Buildings		
		Version 1.0 Updated: 2023-10-20
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Structure		
Primary Horizontal Gravity System	Concrete: PT Framing	Concrete framing with PT tendons and mild reinforcing bars. Includes 2-way slab and 1-way with beams.
	Concrete: Non-PT Framing	Cast-in-place concrete system with only mild reinforcing. Includes 2-way slab and 1-way with beams.
	Concrete: Precast	System of precast elements. System may be pre-stressed and may include a concrete topping.
	Concrete: Other	2/3 of the floor area is composed of a concrete framing system not listed above or a combination of different concrete framing systems.
	Steel: Frame + Concrete on Metal Deck	Concrete or Composite slab on metal deck with steel supports, such as wide-flange beams or open web steel joists (OWSJ).
	Steel: Frame + Bare Metal Deck	Steel framing members with bare metal deck. This system should be selected when a majority of the horizontal framing in the structure is metal roof deck.
	Steel: Other	2/3 of the floor area is composed of a steel framing system not listed above or a combination of different steel framing systems.
	Wood: Joists and Sheathing	Plywood or OSB decking supported by wood joists. Joists may be standard wood or engineered wood.
	Wood: Engineered Panels	CLT, DLT, NLT, GLT or other engineered wood panels. May include concrete topping.
	Wood: Other	2/3 of the floor area is composed of a wood framing system not listed above or a combination of different wood framing systems.
Primary Vertical Gravity System	Other Material (not concrete, steel, or wood)	2/3 of the floor area is composed of a framing system not listed above.
	Concrete: CIP	Cast-in-place concrete columns and walls
	Concrete: Precast	Precast concrete columns and walls
	Concrete: Other	Other Concrete Vertical Gravity System
	Steel: Columns	Steel wide flange or rectangular, square, or round hollow structural section columns
	Steel: Cold-Formed	Cold-formed steel columns and/or Light-frame cold-formed steel bearing walls
	Steel: Other	Other Steel Vertical Gravity System
	Wood: Mass Timber	Mass or heavy timber columns, e.g. Glulam
	Wood: Light-Frame	Light-Frame wood bearing walls
	Wood: Other	Other Wood Vertical Gravity System
Masonry	Masonry columns and/or bearing walls	
Other Material (not concrete, steel, wood, or masonry)	Not concrete, steel, wood, or masonry	

 Embodied Carbon Design Report Part 3 Buildings		
		Version 1.0 Updated: 2023-10-20
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Primary Lateral System	Concrete: Shear Walls	CIP or Precast Shear Walls
	Concrete: Moment Frames	CIP or Precast Concrete Moment Frames
	Concrete: Other	Other, including concrete cantilevered columns, or multiple steel systems including all-steel dual systems
	Steel: Braced Frames	Steel braced frame, including buckling restrained braces (BRB)
	Steel: Moment Frames	Steel moment frames
	Steel: Other	Other, including steel plate shear walls, steel cantilevered columns, or multiple steel systems including all-steel dual systems
	Light Frame Shear Panels	Wood or cold formed walls with shear panels such as plywood or OSB
	Masonry: Shear Walls	Masonry Shear Walls
	Wood: Shear Panels	Engineered wood shear panels, including CLT
	Wood: Other	Other, including wood cantilevered columns or light-framed walls with shear panels of non-wood materials
Other	Material not listed above, or no single material predominates (includes Dual Systems with multiple materials)	
Primary Lateral System	Not a podium building	Select this if the building does not have a podium (see definition below).
	Primary system defined above is on a podium	Select this when the majority of floors in the superstructure (excluding slab at grade) are above the podium.
	Primary system defined above is a podium	Select this when the majority of floors in the superstructure (excluding slab at grade) are a part of the podium.
Foundation Type	Shallow Foundation	Spread footings, strip foundations, mat foundations, or raft foundations
	Deep Foundations < 50ft/15m	Foundation systems with overall depth (e.g. piles) < 50 feet or 15m
	Deep Foundations > 50ft/15m	Foundation systems with overall depth (e.g. piles) > 50 feet or 15m
	Other Foundation System	Other foundations not listed above

 Embodied Carbon Design Report Part 3 Buildings		
		Version 1.0 Updated: 2023-10-20
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Seismic Design Category	A (Low Risk)	Buildings and other structures that represent a low risk to human life in the event of an earthquake, typically in areas of low seismic activity.
	B (Low to Moderate Risk)	Structures that represent a low-to-moderate risk to human life in the event of an earthquake, typically in areas of low-to-moderate seismic activity.
	C (Moderate Risk)	Structures that represent a moderate risk to human life in the event of an earthquake, typically in areas of moderate seismic activity.
	D (High Risk)	Structures that represent a high risk to human life in the event of an earthquake, typically in areas of high seismic activity.
	E (High Risk on Soft Soils)	Structures that represent a high risk to human life in the event of an earthquake, typically in areas of high seismic activity and with soft soils.
	F (Very High Risk)	Structures that represent a very high risk to human life in the event of an earthquake, typically in areas of very high seismic activity and with soft or problematic soils. These structures require a site-specific evaluation to determine their seismic design parameters.
Seismic Site Class	Class A (Hard Rock)	This is typically composed of hard rocks that have very high velocities such as crystalline bedrock.
	Class B (Rock)	This category is characterized by rocks that are not as hard as those in Class A, such as sedimentary layers.
	Class C (Very Dense Soil and Soft Rock)	These are dense or stiff soils like hard clay, and also soft rocks like hard shale or weathered rock.
	Class D (Stiff Soil)	This class is typical for urban areas and is composed of stiff soil, which could be clay, silt, or a mixture of these.
	Class E (Soft Clay Soil)	These are soft soils with high plasticity, such as clay, and soils that are prone to significant ground motion amplification.
	Class F (Soils Requiring Site-Specific Evaluations)	These are soils that are vulnerable to potential failure or collapse under seismic loading, such as liquefiable soils, quicksand, peat, etc. These soils require site-specific evaluations to determine their properties.

8.5 South Tower Embodied Carbon Design Report

Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Instructions

Applicability

- This Embodied Carbon Design Report (Design Report) is the reporting template designed to be used for demonstrating compliance with the embodied carbon requirements specified in Section 10.4 of the VBBL.
- These VBBL requirements apply to all new Part 3 buildings.
- These requirements do not apply to alterations to existing buildings, unless alterations are so significant that they are generally treated as the construction of a new building. Applicants should consult with building officials to confirm the applicability in these cases.
- For guidance on applicability and embodied carbon emissions modelling refer to the corresponding version of Vancouver Embodied Carbon Guidelines (Guidelines).

General Instructions

- For additional submission requirements see Section 6.2 of the Guidelines.
- Projects with multiple buildings shall follow the guidance provided in Sections 2.4 (a) of the Guidelines to decide whether they should submit one Design Report per building or combine reporting in one report.
- This report shall be submitted in both Excel and PDF formats.
- Complete all fields that apply, using information that represents the current stage of design (For the City of Vancouver, submissions are required at Rezoning Permit and Building Permit).
- For fields that do not apply or for which there is no information available (e.g. at Rezoning Permit), leave them blank or enter "N/A".
- The row heights can be changed if more space is needed in any cell.
- For questions relating to this design report please email green.buildings@vancouver.ca

Cell Legends

Legend	
Required Field	
Required Field with Dropdown Options	▼
Optional Field	
Optional Field with Dropdown Options	▼
No Manual Entry Required	

Embodied Carbon Design Report

Part 3 Buildings


Version 1.0
Updated: 2023-10-20


Instructions

Tabs Overview

The user is encouraged to fill in the tabs in the following order, as answers to some questions will impact the following sections or tabs

Tabs	Requirement	Description
1. Instructions	Informative	(The current tab) Provides an overview of this design report
2. Project Info	Required	General information about the proposed project and building(s)
3. EC Modelling Info	Required	Information on the embodied carbon model, including the tool used and the scope
4. Results & Compliance	Required	Embodied carbon emissions results and compliance assessment with Vancouver Building By-law
5. Carbon Storage	Optional	Biogenic carbon and concrete carbonation reporting
6. Raw Data	Required	File names and submission requirements of raw data from different embodied carbon assessment software tools
7. Definitions	Informative	Definition of terms and description of the structural systems in "Project Info" tab

	Embodied Carbon Design Report Part 3 Buildings	Version 1.0 Updated: 2023-10-20
Project and Building Information		
Instructions		
■ Use the form below to provide the general information regarding the proposed project and building(s) included in this Design Report. ■ See the definition of terms and description of the structural systems in "Definitions" tab.		
Project Information		
Project Working Title / Name	BONNIS: 600 Kingsway South Tower	
Address <small>(Street No., Street Direction, Street Name)</small>	644 Kingsway	
City	Vancouver	
Province/State	British Columbia (BC)	
Postal Code <small>(A9A 9A9)</small>	V5T 3K4	
Secondary Address <small>(Street No., Street Direction, Street Name)</small>		
Secondary Postal Code <small>(A9A 9A9)</small>		
Number of Buildings in the Project	2	
Number of Buildings included in this Design Report	1	
Projected Date of First Building Permit Application <small>(YYYY-MM-DD)</small>	2025-07-01	
Date w/LCA Model Completed <small>(YYYY-MM-DD)</small>		
Estimated Project Completion Year <small>(YYYY)</small>		

	Embodied Carbon Design Report Part 3 Buildings	Version 1.0 Updated: 2023-10-20
Project and Building Information		
Building(s) Information		
Building Name <small>(If different from the Project)</small>		
Building Address <small>(If different from the Project)</small>		
Postal Code <small>(If different from the Project)</small>		
Project Phase	Schematic Design	
Permit Application Stage	Rezoning Permit	
Percent of Project Phase Completed (%)		
Drawing Set Used for Embodied Carbon Modelling	Rezoning Submission	
Primary Building Use	C (Residential Occupancies)	
Secondary Building Use		
Construction Type	New Construction	
Gross Floor Area without Parkade (m ²)	18,178	
Parkade Gross Floor Area (m ²)	5,637	
Gross Floor Area with Parkade (m ²)	23,815	
Storeys Above Grade	25	
Storeys Below Grade	4	
Parking Type	Below grade	
Building Height (m)		
No. of Units		
No. of Bedrooms		

Embodied Carbon Design Report

Part 3 Buildings

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Project and Building Information

Structure

Primary Structural System

Primary Horizontal Gravity System

Primary Vertical Gravity System

Primary Lateral System

Podium

Foundation Type

Seismic Design Category	<input style="width: 100%;" type="text"/>
Risk Category	<input style="width: 100%;" type="text"/>
Seismic Site Class	<input style="width: 100%;" type="text"/>
Allowable Soil Bearing Pressure (kg/m ²)	<input style="width: 100%;" type="text"/>
Typical Column Grid, Long Direction (m)	<input style="width: 100%;" type="text"/>
Typical Column Grid, Short Direction (m)	<input style="width: 100%;" type="text"/>
Typical Floor Live Load (kg/m ²)	<input style="width: 100%;" type="text"/>
Ground Snow Load (kg/m ²)	<input style="width: 100%;" type="text"/>
Ultimate Wind Speed (kph)	<input style="width: 100%;" type="text"/>

Multiple Buildings Information

Are the building(s) in this Design Report connected to other buildings in the project that are reported separately, i.e. are not included in this Design Report?

How is the common space allocated to the building(s) that their embodied carbon is reported in separate Design Reports?

Embodied Carbon Design Report

Part 3 Buildings

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Embodied Carbon Modelling Information

Instructions

- Use the form below to indicate the optional scope included in embodied carbon reporting and compliance with the City of Vancouver's requirements.
- Unless specified in "Reporting" and/or "Compliance" columns below as "Yes", all the optional scopes will be assumed to be excluded from the embodied carbon reporting and compliance.
- Emissions and benefits from module D, biogenic carbon, and concrete carbonation can be reported. However, these should be reported separately and are excluded from the results used for demonstrating compliance with the City of Vancouver's requirements.
- All optional scopes are excluded from the compliance, if the "Absolute Path" is selected in tab "Results & Compliance".
- Optional scopes are included in the results used for compliance, if the "Baseline Path" is selected in tab "Results & Compliance" and if they are indicated to be included in the "Compliance" column below.

wbLCA Model

LCA Modeller (Company Name)

LCA Modeller (Contact Person Name)

Primary Material Quantity Source

Secondary Material Quantity Source


Software Tool

- Embodied Carbon Pathfinder (Pathfinder) is only acceptable at the Rezoning Permit stage.
- Pathfinder provides a high-level, order-of-magnitude estimate, based on modelled scenarios for select building archetypes, and is not specific to a project's geometry or material quantities.
- Project teams are encouraged to model the embodied carbon of their specific project early in the design process to help inform design and material selection.

Green Building Rating System or Certification Pursued

Building Life

Building Life Time



Embodied Carbon Design Report

Part 3 Buildings

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Embodied Carbon Modelling Information

Life Cycle Stages

Specify the life cycle stages that you are including in your reporting, using data from your software tool or using project-specific or regional data.

- The "Reporting" column is automatically populated based on the software specified in cell #D16, except for when "Other" is selected.
- Do not modify the auto-populated responses, unless the project is reporting embodied carbon of the missing life cycle stages using project-specific or regional data.

	Reporting	Compliance
Product (A1-A3)	Yes	Yes
Construction Process - Transport (A4)	Yes	Yes
Construction Process - Construction (A5)	Yes	Yes
Use (B1-B5)	Yes	Yes
End-of-Life (C1-C4)	Yes	Yes
Benefits and Loads Beyond the Building Life Cycle (D1-D4)	No	No


Building Elements

■ See Section 3.3 and Table 5 in Appendix B.2 of Vancouver Embodied Carbon Guidelines for a detailed list of required and optional elements and sub-element for compliance with VBBL.

Required Elements

	Reporting	Compliance
(Foundations, Subgrade enclosure, Slab-on-grade) Substructure	Yes	Yes
(Superstructure, Below-grade interior structure, Envelope, Roof) Shell	Yes	Yes

Are any required sub-elements excluded from the reporting or are any optional sub-elements within mandatory elements included in the reporting?



Embodied Carbon Design Report

Part 3 Buildings

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Embodied Carbon Modelling Information

Optional Elements

Are you including building elements other than substructure and shell (i.e. structure and enclosure) in your embodied carbon reporting?

	Reporting	Compliance
(Interior Construction) Interior	<input type="text"/>	<input type="text"/>
(Interior Finishes) Interior	<input type="text"/>	<input type="text"/>
(Plumbing) Services	<input type="text"/>	<input type="text"/>
(HVAC) Services	<input type="text"/>	<input type="text"/>
(Electrical) Services	<input type="text"/>	<input type="text"/>
(Other) Services	<input type="text"/>	<input type="text"/>
(Fixed Furnishings) Furnishings	<input type="text"/>	<input type="text"/>
(Movable Furnishings) Furnishings	<input type="text"/>	<input type="text"/>
(Landscaping) Sitework	<input type="text"/>	<input type="text"/>
(Other) Sitework	<input type="text"/>	<input type="text"/>
Other	<input type="text"/>	<input type="text"/>

Carbon Storage (Optional)

	Reporting	Compliance
Biogenic Carbon Reported	No	No
Concrete Carbonation Reported	No	No

Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
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Embodied Carbon Modelling Information

Embodied Carbon Reduction Strategies

Describe any strategies used in the proposed design to reduce embodied carbon emissions.

(Optional) Were design for disassembly and adaptability (DfD) strategies incorporated in the proposed design, based on the CSA Z782 or ISO 20887 standards?

Assumptions, Data Modifications, and Manual Calculations

■ If the baseline compliance path is used, answer the following questions for the proposed design and baseline.

Did you substitute any major material or component in the building design with a proxy, due to the lack of data availability in the software tool?

Did you modify any of default assumptions or data sources used in the software tool inside the tool or manually outside it?

Provide any additional information on the project, embodied carbon inputs, or outputs here.

The buildings in the project share a below grade parkade. The parkade area will be split equally among the north and south building.

Embodied Carbon Design Report

Part 3 Buildings

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Results & Compliance

Instructions

- Use the form below to report the embodied carbon emissions and assess compliance with the embodied carbon requirements of Vancouver Building By-law.
- "Required Elements" should only include substructure and shell (i.e. structure and enclosure).
- "Optional Elements" shall include the other elements, indicated to be included in the "Building Elements" section of "EC Modelling Info" tab.
- Biogenic carbon and concrete carbonation shall not be included in this tab. They may be reported separately in "Carbon Storage" tab.

Compliance Path and Requirements


The embodied carbon of the proposed design should be 20% below the benchmark for Part 3 buildings that are up to 6 storeys and can be built with wood structure and 10% for all other Part 3 buildings. The benchmark is set based on the compliance path.


Compliance Path	Absolute Path
Gross Floor Area without Parkade (m2)	18,178
Projected Date of First Building Permit Application	2025-07-01

Is the project planning to achieve any of the "Responsible Material Sourcing" criteria?

Specify and describe the Responsible Material Sourcing criterion or criteria the project is meeting.
Additional details may be provided in a supporting report, as described in Section 6.2 (d) of the Guidelines.

A minimum of 20 distinct permanently installed interior materials will disclose their ingredients using HPD's, Declare labels or cradle to cradle certificates. Materials will fall within one of the following categories: flooring, insulation, wet applied products, ceilings, wall assemblies or composite wood.

 Embodied Carbon Design Report Part 3 Buildings		Version 1.0 Updated: 2023-10-20	
Results & Compliance			
Compliance Assessment			
Embodied Carbon Limit			
	Proposed	Benchmark	Limit
Total Embodied Carbon Emissions (kg CO ₂ e)	5,335,288	7,271,261	6,544,135
Embodied Carbon Intensity (without Parkade) (kg CO ₂ e/m ²)	293.50	400.00	360.00
Embodied Carbon Reduction from the Benchmark (%)			
The proposed design meets the embodied carbon limit	Yes		
Minimum Reduction Required	10%		
Reduction Achieved	27%		
Results			
Proposed Design			
	Required Elements		
Total Embodied Carbon Emissions (kg CO ₂ e)			
Modules A-C	5,335,288		
Product (A1-A3)			
Transport - Construction Process (A4)			
Construction - Construction Process (A5)			
Use (B1-B5)			
End-of-Life (C1-C4)			
Total (A-C)			
Beyond the Building Life (D1-D4)			
Embodied Carbon Intensity (without Parkade) (kg CO ₂ e/m ²)			
Modules A-C	293		
Modules D			
Embodied Carbon Intensity (with Parkade) (kg CO ₂ e/m ²)			
Modules A-C	224		
Modules D			

 Embodied Carbon Design Report Part 3 Buildings		Version 1.0 Updated: 2023-10-20	
Results & Compliance			
Baseline			

Embodied Carbon Design Report

Part 3 Buildings

Version 1.0
Updated: 2023-10-20

Carbon Storage

(Optional)

Version 1.0
Updated: 2023-10-20

Instructions

- Reporting biogenic carbon and concrete carbonation is optional.
- Carbon storage shall be reported separately in this form and is not included in the compliance assessment.

No input is required on this page.

Results

Proposed Design

	Required Elements	Required+Optional Elements (All)
Total Carbon Storage (kg CO₂e)		
Biogenic Carbon	<input type="text"/>	<input type="text"/>
Concrete Carbonation	<input type="text"/>	<input type="text"/>
Carbon Storage Intensity (without Parkade) (kg CO₂e/m²)		
Biogenic Carbon	<input type="text"/>	<input type="text"/>
Concrete Carbonation	<input type="text"/>	<input type="text"/>
Carbon Storage Intensity (with Parkade) (kg CO₂e/m²)		
Biogenic Carbon	<input type="text"/>	<input type="text"/>
Concrete Carbonation	<input type="text"/>	<input type="text"/>

Baseline

Embodied Carbon Design Report

Part 3 Buildings

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Raw Data Submission

Version 1.0
Updated: 2023-10-20

Instructions

- Follow the guidance provided in the link below to prepare and submit raw data from the wbLCA software tool.

<https://tinyurl.com/COV-ECDR>


File Names


- Provide the filename(s) of the raw data spreadsheet export from the software tool and a description of each file.
- Please ensure filenames are correct, as this will be used to link raw data files with this submission template. Example: "Project Name_Proposed_OCL LCC Results.xls"
- Select relevant file description for each filename.
- Dropdown options with * are Required file results to be included for each specific software tool. Other options without * are optional but highly recommended to be included.
- Depending on the tool, each scenario may have multiple spreadsheet exports that are relevant.

Proposed Design

File Name: <input style="width: 90%;" type="text" value="20240722_600 Kingsway_Preliminary Embodied Carbon Assessment Report"/>	Description: <input style="width: 90%;" type="text" value="Other"/>
File Name: <input style="width: 90%;" type="text"/>	Description: <input style="width: 90%;" type="text"/>
File Name: <input style="width: 90%;" type="text"/>	Description: <input style="width: 90%;" type="text"/>
File Name: <input style="width: 90%;" type="text"/>	Description: <input style="width: 90%;" type="text"/>

Baseline

 Embodied Carbon Design Report Part 3 Buildings		
Version 1.0 Updated: 2023-10-20		
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Building Information		
Project Phase	Concept Design	The concept phase includes developing the building concept, investigating its feasibility, and proposing the concept to stakeholders to make a decision to develop the concept further.
	Schematic Design	The schematic phase includes rough drawings or a narrative that illustrate the basic concepts of the building design which most often include spatial relationships as well as basic scale and forms the owner might desire. At this time, initial descriptions of the structural, mechanical, HVAC, plumbing and electrical, interior and exterior finishes and building site are often included. The schematic phase also includes initial cost estimates.
	Design Development	The design development phase involves finalizing the building design and specifying items such as materials, window and door locations and general structural details.
	Construction Documents	The construction document phase includes the development of final architectural, structural, civil, mechanical, and electrical drawings to be used for construction. These drawings are in greater detail than drawings produced during design development and typically include specifications for construction details and materials.
	Construction	The contractor constructs the building in accordance with the construction documents during the construction phase. The architect, engineers, and consultants perform quality control inspections, respond to Requests for Information (RFIs), review and approve technical submittals and generally ensure that the project is constructed by the contractor in accordance with the construction documents.
	As-Built	The contractor has completed the construction contract in accordance with the construction documents, and a Certificate of Occupancy has been issued.

 Embodied Carbon Design Report Part 3 Buildings		
Version 1.0 Updated: 2023-10-20		
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Structure		
Primary Horizontal Gravity System	Concrete: PT Framing	Concrete framing with PT tendons and mild reinforcing bars. Includes 2-way slab and 1-way with beams.
	Concrete: Non-PT Framing	Cast-in-place concrete system with only mild reinforcing. Includes 2-way slab and 1-way with beams.
	Concrete: Precast	System of precast elements. System may be pre-stressed and may include a concrete topping.
	Concrete: Other	2/3 of the floor area is composed of a concrete framing system not listed above or a combination of different concrete framing systems.
	Steel: Frame + Concrete on Metal Deck	Concrete or Composite slab on metal deck with steel supports, such as wide-flange beams or open web steel joists (OWSJ).
	Steel: Frame + Bare Metal Deck	Steel framing members with bare metal deck. This system should be selected when a majority of the horizontal framing in the structure is metal roof deck.
	Steel: Other	2/3 of the floor area is composed of a steel framing system not listed above or a combination of different steel framing systems.
	Wood: Joists and Sheathing	Plywood or OSB decking supported by wood joists. Joists may be standard wood or engineered wood.
	Wood: Engineered Panels	CLT, DLT, NLT, GLT or other engineered wood panels. May include concrete topping.
	Wood: Other	2/3 of the floor area is composed of a wood framing system not listed above or a combination of different wood framing systems.
Primary Vertical Gravity System	Other Material (not concrete, steel, or wood)	2/3 of the floor area is composed of a framing system not listed above.
	Concrete: CIP	Cast-in-place concrete columns and walls
	Concrete: Precast	Precast concrete columns and walls
	Concrete: Other	Other Concrete Vertical Gravity System
	Steel: Columns	Steel wide flange or rectangular, square, or round hollow structural section columns
	Steel: Cold-Formed	Cold-formed steel columns and/or Light-frame cold-formed steel bearing walls
	Steel: Other	Other Steel Vertical Gravity System
	Wood: Mass Timber	Mass or heavy timber columns, e.g. Glulam
	Wood: Light-Frame	Light-Frame wood bearing walls
	Wood: Other	Other Wood Vertical Gravity System
Masonry	Masonry columns and/or bearing walls	
Other Material (not concrete, steel, wood, or masonry)	Not concrete, steel, wood, or masonry	

Embodied Carbon Design Report Part 3 Buildings		
		Version 1.0 Updated: 2023-10-20
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Primary Lateral System	Concrete: Shear Walls	CIP or Precast Shear Walls
	Concrete: Moment Frames	CIP or Precast Concrete Moment Frames
	Concrete: Other	Other, including concrete cantilevered columns, or multiple steel systems including all-steel dual systems
	Steel: Braced Frames	Steel braced frame, including buckling restrained braces (BRB)
	Steel: Moment Frames	Steel moment frames
	Steel: Other	Other, including steel plate shear walls, steel cantilevered columns, or multiple steel systems including all-steel dual systems
	Light Frame Shear Panels	Wood or cold formed walls with shear panels such as plywood or OSB
	Masonry: Shear Walls	Masonry Shear Walls
	Wood: Shear Panels	Engineered wood shear panels, including CLT
	Wood: Other	Other, including wood cantilevered columns or light-framed walls with shear panels of non-wood materials
Other	Material not listed above, or no single material predominates (includes Dual Systems with multiple materials)	
Primary Lateral System	Not a podium building	Select this if the building does not have a podium (see definition below).
	Primary system defined above is on a podium	Select this when the majority of floors in the superstructure (excluding slab at grade) are above the podium.
	Primary system defined above is a podium	Select this when the majority of floors in the superstructure (excluding slab at grade) are a part of the podium.
Foundation Type	Shallow Foundation	Spread footings, strip foundations, mat foundations, or raft foundations
	Deep Foundations < 50ft/15m	Foundation systems with overall depth (e.g. piles) < 50 feet or 15m
	Deep Foundations > 50ft/15m	Foundation systems with overall depth (e.g. piles) > 50 feet or 15m
	Other Foundation System	Other foundations not listed above

Embodied Carbon Design Report Part 3 Buildings		
		Version 1.0 Updated: 2023-10-20
Definitions		
■ The definition of terms and systems from the "Project Info" tab are provided below.		
Category	Term	Definitions & Description
Seismic Design Category	A (Low Risk)	Buildings and other structures that represent a low risk to human life in the event of an earthquake, typically in areas of low seismic activity.
	B (Low to Moderate Risk)	Structures that represent a low-to-moderate risk to human life in the event of an earthquake, typically in areas of low-to-moderate seismic activity.
	C (Moderate Risk)	Structures that represent a moderate risk to human life in the event of an earthquake, typically in areas of moderate seismic activity.
	D (High Risk)	Structures that represent a high risk to human life in the event of an earthquake, typically in areas of high seismic activity.
	E (High Risk on Soft Soils)	Structures that represent a high risk to human life in the event of an earthquake, typically in areas of high seismic activity and with soft soils.
	F (Very High Risk)	Structures that represent a very high risk to human life in the event of an earthquake, typically in areas of very high seismic activity and with soft or problematic soils. These structures require a site-specific evaluation to determine their seismic design parameters.
Seismic Site Class	Class A (Hard Rock)	This is typically composed of hard rocks that have very high velocities such as crystalline bedrock.
	Class B (Rock)	This category is characterized by rocks that are not as hard as those in Class A, such as sedimentary layers.
	Class C (Very Dense Soil and Soft Rock)	These are dense or stiff soils like hard clay, and also soft rocks like hard shale or weathered rock.
	Class D (Stiff Soil)	This class is typical for urban areas and is composed of stiff soil, which could be clay, silt, or a mixture of these.
	Class E (Soft Clay Soil)	These are soft soils with high plasticity, such as clay, and soils that are prone to significant ground motion amplification.
	Class F (Soils Requiring Site-Specific Evaluations)	These are soils that are vulnerable to potential failure or collapse under seismic loading, such as liquefiable soils, quicksand, peat, etc. These soils require site-specific evaluations to determine their properties.

8.6 Embodied Carbon Assessment

600 Kingsway

Embodied Carbon Study at Rezoning

REQUIREMENT

The Green Building Policy for Rezoning, amended on July 25th, 2023, requires the completion of the Embodied Carbon Design Report for each building to demonstrate that the project is on track to meet the Vancouver Building By-law (VBBL) limits for life-cycle equivalent CO₂ emissions expected to be in force at the time of the project's first Building Permit application. Embodied carbon is calculated for each building in kgCO₂/m² using a Whole Building Life Cycle Assessment (WBLCA) based on standard assumptions outlined in the City of Vancouver Embodied Carbon Guidelines.

INTRODUCTION

In alignment with the Embodied Carbon Guidelines, revised on October 18, 2023, Perkins&Will conducted a study for the North and South Towers at 600 Kingsway utilizing the Embodied Carbon Pathfinder tool. This tool estimates the buildings' Global Warming Potential (GWP), providing insights into the project's overall GWP and identifying elements with the highest GWP for further examination as the design progresses.

Preliminary calculations, key inputs, a breakdown of results, and potential measures to reduce embodied emissions during Design Development, have been provided. Due to the project's early stage, limited information was available for a detailed WBLCA. Instead, key inputs in Pathfinder include envelope and structural elements like the parking structure, wall assemblies, structural floors, roof assemblies, and concrete mix design, excluding interior finishes, excavation, interior partitions, and mechanical and electrical services.

The project consists of two towers on a shared podium: a 14-storey North tower and a 25-storey South tower. Both buildings, classified as high-rise (12 to 30 stories), share similar materiality, typology, and construction techniques, thus a single assessment was performed.

KEY INPUTS

Due to the early stage of the project, several assumptions were made. Refer to Table 1 for key assumptions of the baseline building.

Building Elements	Pathfinder High-rise Assumptions
Building Dimension	25 m x 25 m
Number of Floors	30
Service Life	60 years
Life Cycle Stages	A-C
Beam Span	8 m
Joist Span	6 m
Footings	300 mm x 100 mm below columns and perimeter walls
Slab on Grade	100 mm concrete slab
Slab on Grade	200 mm concrete
Structural component	Concrete 20% SCM
Exterior Walls	Curtain Wall
Cladding	Metal
Wall Insulation	Medium Density Mineral Wool
Roof Insulation	XPS
Roof Membrane	SBS Modified Bituminous Sheet
Glazing	Double Pane Glazing
Window Frame	Aluminum
Floor to Floor Height	3m
Window to Wall Ratio	40 - 60%
Parking Levels	4

Table 1 - Assumptions

RESULTS

The study results exclude biogenic carbon and include life cycle stages A to C. Based on the baseline assumptions in Table 1, the GWP for 600 Kingsway is estimated at 293.5 kgCO₂/m². The exported results from Pathfinder are shown below in Figure 1.

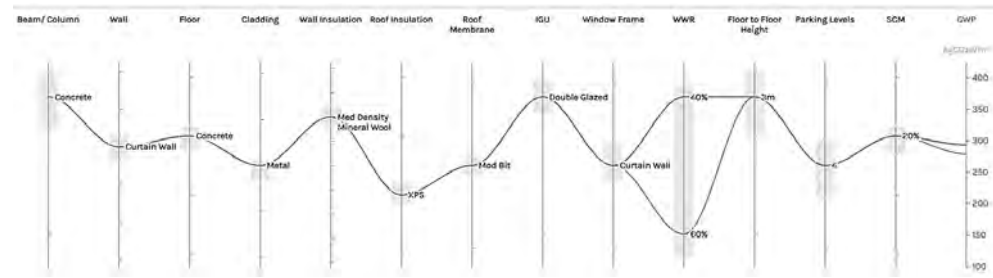


Figure 1 - Global Warming Potential Impact

EMBODIED CARBON REQUIREMENTS COMPLIANCE

The embodied carbon guideline introduces two pathways to meet the VBBL embodied carbon requirements (effective Jan 2025) at the time of project's building permit application.

Path 1 - Absolute	North and South Tower	360 kgCO ₂ /m ²
Path 2 - Baseline	North and South Tower	10% reduction from an equivalent baseline

Table 2 - Embodied Carbon Compliance Pathways

The results for each building are listed in Table 4 as well as the targeted compliance pathway. The study indicates the Absolute pathway is achievable and a maximum GWP of 360 kgCO₂/m² will be targeted.

Global Warming Potential	North Tower	South Tower
Total (kgCO ₂)	2,886,643.939	5,335,287.663
Intensity (kgCO ₂ /m ²)	293.5	293.5
Path 1 - Absolute	360	360
Path 2 - Baseline	264.15	264.15

Table 3 - Embodied Carbon Requirements at Building Permit

Early Stage Embodied Carbon Comparison

The design team explored opportunities to reduce the GWP of the building designs by comparing baseline assumptions with three different variation studies:

- Study 1 - Envelope.
- Study 2 - Glazing.
- Study 3 - Supplementary Cementitious Material (SCM) Content.

For all variations, detailed in figures 2 to 4, the baseline result is represented by the solid, thicker green line.

Study 1 - Envelope

The design is altered by replacing the curtain wall with a window wall system. The results of Study 1 range from 278.7 to 318.2 kg CO₂/m², illustrated in Figure 2. Depending on the pathway chosen, switching from curtain wall to window wall construction could impact the GWP of the project.

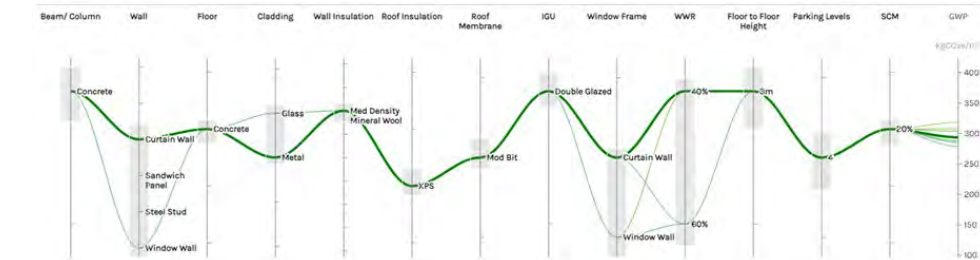


Figure 2 - Global Warming Potential Impact of Study 1 - Envelope

Study 2 - Glazing

Pathfinder was used to compare double and triple glazing, shown in Figure 3. Changing the design from triple to double glazing results in a reduction in GWP range from 296.9 to 278.7 kg CO₂/m² dependent on the pathway chosen.

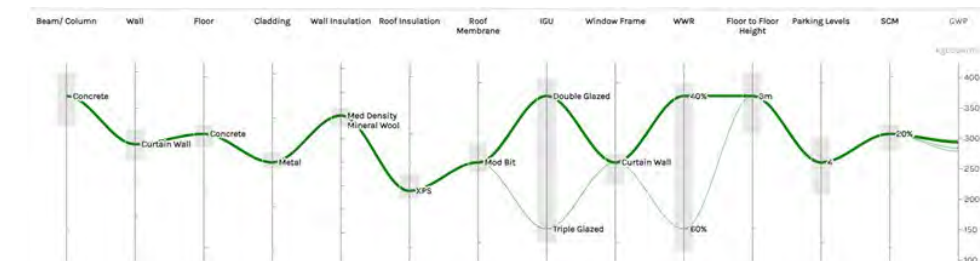


Figure 3 - Global Warming Potential Impact of Study 2 - Glazing

Study 3 - SCM Content

Changing the SCM percentage in the concrete mix from 20% to 30% was explored. According to the Concrete BC Member Industry-Wide EPD for Ready-Mix Concrete, a 20% SCM content typical in British Columbia and was considered the baseline for this study. Increasing the SCM content to 30% resulted in a lower GWP, ranging from 264 to 278.8 kgCO₂/m². This impact is illustrated in Figure 4.

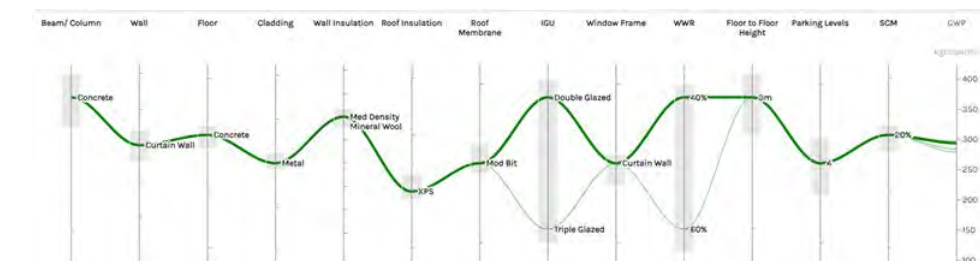


Figure 4 - Global Warming Potential Impact of Study 3 SCM Content

Embodied Carbon Reduction Opportunities

The design iterations reveal pathways to reduce embodied carbon, including:

- Reducing the volume of glass by switching from a triple to double glazed system, leading to a significant decrease in GWP.
- Optimizing concrete mix designs to reduce cement content and replace it with SCMs, further lowering the GWP.

From Rezoning through to the Building Permit application, the project team will continuously explore design strategies to minimize the buildings' total embodied carbon. These strategies include:

- Collaborating with the structural engineer to refine the design, thereby reducing reinforcement rates and member sizes.
- Stacking vertical elements where possible to eliminate or reduce the size of transfer structures.
- Evaluating envelope material choices using the EC3 tool to further decrease the building's total embodied carbon.

The team acknowledges that the Pathfinder results may be lower than those obtained from a more detailed WBLCA, nonetheless, this preliminary analysis provides valuable insights into design choices and their potential impacts on embodied carbon. The early-stage assessment using Pathfinder has been instrumental in identifying opportunities to reduce embodied carbon and ensuring alignment with the City of Vancouver requirements.

In the Design Development phase, a WBLCA will be performed using OneClick and incrementally updated through the design process to track and reduce embodied carbon.

8.7 Energy Modeling Report

600 Kingsway Towers
Preliminary Energy Modeling Report

CIMA+file number: Z0014529
26 July 2024 – Rezoning Submission

600 Kingsway Towers

Preliminary Energy Modeling Report

602-644 Kingsway and 603 E 16th Ave., Vancouver, BC, V5T 2V3, CANADA

Z0014529

Prepared by:

Rabeeh Hosseini, EIT, M.A.Sc.
Professional Sustainable Building

Verified by:



Jean-Sebastien Tessier, P.Eng.
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700 W Georgia St #900, Vancouver, BC
Canada V7Y 1K1

CIMA+file number: Z0014529
26 July 2024 – Rezoning Submission

TABLE OF REVIEW

Register of issues			
Issue No.	Reviewed by	Date	Description of the review
1 st	Keming Yan, P.Eng.	2024-07-26	Rezoning Submission

CONFIDENTIALITY AND OWNERSHIP

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EXACUTIVE SUMMARY

This report presents the energy modeling analysis of 600 Kingsway Towers, multiunit residential building located at 602-644 Kingsway and 603 E 16th Ave., Vancouver, BC. The building includes two major occupancies of 13 and 24 residential floors above the commercial retails at the ground level with four levels of parking below grade. The building is subject to rezoning and shall conform to the specified performance limit introduced by Bulletin “Green Building Policy Rezoning” amended July 2023, aligned with VBBL.

To simulate the building energy consumption, CIMA+ utilized IES VE 2023_v.5.2.0 (hourly-based energy simulation software), and the listed standards/guidelines as follows; (i) City of Vancouver Energy Modelling Guideline Version 2.0 (CoVEMG), (ii) VBBL 2024, (iii) NECB (2020)–Part 8, and (iv) EGBC–Whole Building Energy Modelling Services.

The building energy model was developed based on the architectural design and specifications listed in Table 2 and the results for TEDI, TEUI, and GHGI are recorded in Table 1. In addition, per CoVEMG, the MURB buildings are eligible for claiming the adjustment value for the identified metrics due to the air pressurization in corridors and the value is measured 10 (kWh/m²) for the specified project, see section 2. 2..

Considering the simulated energy performance and adjusting results with the claimed value for corridor pressurization, the building is completely meet the determined benchmark and complies with the city requirements. Please see the results before and after adjustment in Table 1.

Table 1: Summary of energy performance considered adjustment value

Metrics	City requirement	Design without adjustment value	Design with adjustment value	Result
Thermal Energy Demand Intensity (kWh/m ²)	29	38.5	28.5	Complies
Total Energy Use Intensity (kWh/m ²)	120	98.2	90.5	Complies
Green House Gas Intensity (kgCO ₂ /m ²)	3	1.1	1	Complies

Note:
Per CoVEMG section 2.5.2, MURB buildings are eligible for using the adjustment value provided by corridor pressurization and the value has been claimed at this stage.

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1. ENERGY MODELING INPUT

Table 2: Energy modeling input

LOCATION AND WEATHER DATA	
Project location	602-644 Kingsway and 603 E 16th Ave., Vancouver, BC, V5T 2V3, CANADA
ASHRAE climate zone	4C
Simulation weather	Vancouver_BC_CWEC.fwt
Winter Design Temperature	-9 C
Summer Design Temperature db	28 C db (July)
Summer Design Temperature wb	20 C db (July)
Modeling software	IES-ve version 2023.5.2.0
Occupancy class & Modeled floor area	Residential (C): 23072.5 m ² (94%) Commercial (E): 1518.5 m ² (6%)
ENVELOPE PERFORMANCE	
Overall roof U-value	0.187 (W/(m ² xK))
Overall opaque wall U-value	Residential opaque wall: 0.4 (W/(m ² xK)) Commercial opaque wall: 0.4 (W/(m ² xK))
Overall floor U-value	0.283 (W/(m ² xK))
Overall fenestration U-value (window/door)	1.4 (W/(m ² xK))

	SHGC: 0.31
Opening to wall ratio	34%
Infiltration rate ¹	0.2 (l/s/m ²) Per façade @75 pa (per COVEMG) 1.53 (l/s/m ²) Per enclosure @75 pa (calculated per designed enclosure)
INTERNAL GAIN	
Occupancy	Per COVEMG (1 person per single suite, 2 persons per 1Br., 3 persons per 2Br., and 4 persons for 3Br.)
Lighting power density	Lighting power density by space type per NECB 2020, Table 4.2.1.6 <ul style="list-style-type: none"> - Residential: 5 (W/m²) - Commercial: 11.3 (W/m²) - Amenity area: 6.3 (W/m²) - Corridors: 4.4 (W/m²) - Lobby: 9 (W/m²) - Stairs: 5.3 (W/m²) - Mechanical room: 4.6 (W/m²) - Washroom: 5 (W/m²) - Recycle room: 5 (W/m²) - Loading room: 9.5 (W/m²) - Parking: 1.5 (W/m²)
Lighting control	Lighting fraction per NECB 2020, A-8.4.3.2. (1)-G
Exterior lighting	Basic site allowance per NECB 2020, Table 4.2.3.1.-B
Plug load	Peak receptacle load by space type Per NECB 2020, Table A-8.4.3.2. (2)-B <ul style="list-style-type: none"> - Residential: 5 (W/m²) - Commercial: 2.5 (W/m²) - Amenity area: 1 (W/m²) - Service areas: [0-1] (W/m²)
Process load	4 set of elevators, 3kW per each per COVEMG

¹ Per VBBL 2019_ Section 10.2.2.21., buildings and major occupancies shall be tested for airtightness in accordance with "ASTM E 779" or "USACE Version 3" to an induced test pressure of not less than 75 Pa. The building is required to satisfy the claimed measure.

Domestic hot water consumption / Schedule	Service water heating load by space type per Table A-8.4.3.2. (2)-B <ul style="list-style-type: none"> - Residential: 3.45 (l/hr.person) - Commercial: 0.68 (l/hr.person) - Amenity area: 1.02 (l/hr.person)
Operation schedule	Modeling guidance by space type per NECB 2020, Table A-8.4.3.2. (2) Operating schedule per NECB 2020, <ul style="list-style-type: none"> - Residential A-8.4.3.2. (1)-G - Commercial A-8.4.3.2. (1)-B - Amenity area A-8.4.3.2. (1)-C - Service area A-8.4.3.2. (1)-K & H
Mechanical systems	
Indoor design setpoint temperature and fan operation	Operating schedule by space type per NECB 2020, <ul style="list-style-type: none"> - Residential: Table A-8.4.3.2. (1)-G - Commercial: Table A-8.4.3.2. (1)-B - Amenity area: Table A-8.4.3.2. (1)-C - Service area: Table A-8.4.3.2. (1)-K & H
Maximum Heating/Cooling air supply temperature	32.22 C/ 12.78 C
Outdoor air requirement	Per ASHRAE 62-2001, Table 2 <ul style="list-style-type: none"> - Residential: 8.5 l/s/person - Commercial: 1.5 l/s/m² - Amenity area: 15 l/s/person - Lobby: 0.25 l/s/m² - Mechanical/ Recycle/ Loading room: 0.75 l/s/m² - Lobby: 0.25 l/s/m²
Ventilation system	Vita H/ERV for Multi-Unit Residential <ul style="list-style-type: none"> - Airflow Range: 30 – 120 cfm - Power = 46 W - SRE = 80% @ 0C Make up air unit integrated with Air / Water Heat pump (MAU) <ul style="list-style-type: none"> - Refer to heating system description - Airflow MAU1: 4500 cfm - Airflow MAU2: 2350 cfm
Heating system	2x Reversible Electric Air / Water Heat pump (AWHP)_ Model: nyg-1000-1800-HP with 2x backup Condensing Gas Boiler AWHP <ul style="list-style-type: none"> - Heating capacity = 1560MBH (457 kWh) - Heating efficiency: COP 2.97

	<ul style="list-style-type: none"> - Minimum operating temperature in winter: 0 F (-17 C) <p>Condensing Gas Boiler</p> <ul style="list-style-type: none"> - Heating capacity = 300 kWh - Heating efficiency: 95% <p>Electric baseboard (EBB)</p> <ul style="list-style-type: none"> - Heating capacity = vari [1-3] kW - Heating efficiency: 100%
Cooling system	2x Reversible Air / Water Heat pump (AWHP)_ Model: nyg-1000-1800-HP <ul style="list-style-type: none"> - Cooling capacity:30 ton (480 kW) - Cooling efficiency: EER 9.95 - Maximum operating temperature in summer = 114.8 F (46 C)
Domestic water heater	Electric DHW heater <ul style="list-style-type: none"> - Thermal efficiency: 95%
Pump	ASWH- Hot water loop <ul style="list-style-type: none"> - 349 gpm ASWH- Chilled water loop <ul style="list-style-type: none"> - 326 gpm
HVAC service area	AWHP integrated with ERV: <ul style="list-style-type: none"> - Residential suites, - Commercial suites, - Amenity spaces, - Entrance lobbies, MAU integrated with AWHP: <ul style="list-style-type: none"> - Corridors, EBB with separated air ventilation system: <ul style="list-style-type: none"> - Service rooms (mechanical/ recycle/ loading), - Stairs.

2. RESULT

2.1. SIMULATION OUTPUT

Table 3: Energy performance of the designed scenario

End use group	Interior Lighting	Exterior Lighting	Receptacle Equipment	Elevators	Space Heating	Service Water Heating	Space Cooling	Heat Rejection	Interior Central Fans	Interior Local Fans	Pumps
Energy use intensity (kWh/m ²)	17.14	0.52	15.03	1.51	15.28	34.14	1.74	1.33	7.29	3.37	0.88
% of total energy use	17	1	15	2	16	35	2	1	7	3	1
Annual Energy Performance											
Annual energy use	GJ		8695.1								
Annual carbon emission	Tonne		28.1								
Annual heating demand intensity	(kWh/m ²)		38.5								
Annual cooling demand intensity	(kWh/m ²)		14.8								

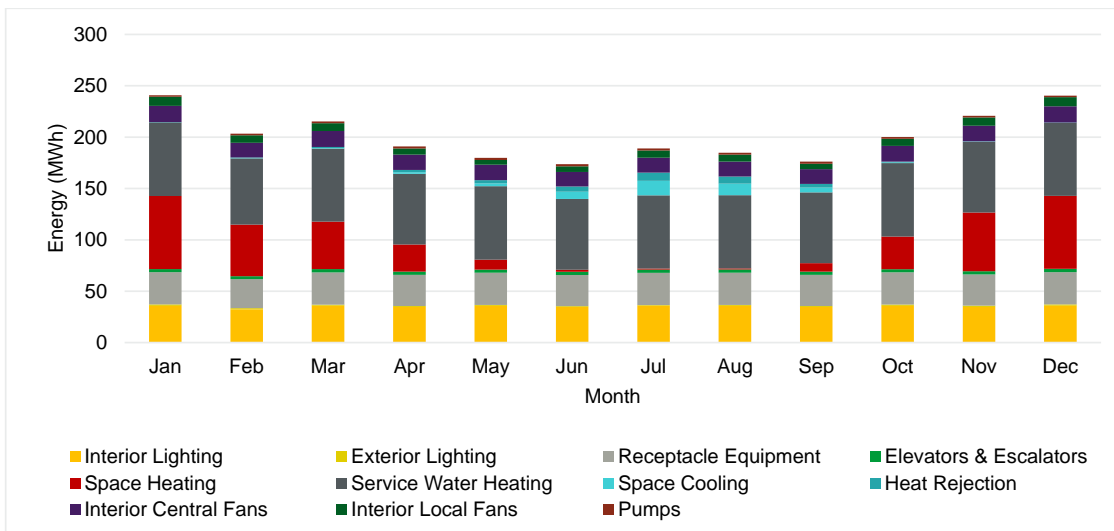


Figure 1: Monthly energy use of end-use group

2.2. TEUI/TEDI ADJUSTMENT CALCULATION

Per COVEMG, projects that provide additional airflow to corridors above the minimum required by code may subtract an adjustment value from the modelled TEUI, TEDI, and GHGI when demonstrating compliance with the performance limits. 600 Kingsway Towers have provided corridor pressurization, and the below calculation shows the possibility of utilizing the credit if needed.

$$TEDI \text{ Adjustment} = \frac{HDD \times ((0.029 \times \#Suites \times (L/s/door)) - (0.0073 \times Corridor \text{ Area}))}{MFA}$$

$$TEUI \text{ Adjustment} = TEDI \text{ Adjustment}$$

$$TEDI \text{ Adjustment} = \frac{2768 \times ((0.029 \times 315 \times 11.8) - (0.0073 \times 1753))}{24591} = 12.1 \sim (\text{max usable is } 10)$$

HDD = 2768

2.3. COMPLIANCE RESULTS

Table 4: Summary of energy performance

Metrics	City requirement	Design without adjustment value	Design with adjustment value	Result
Thermal Energy Demand Intensity (kWh/m ²)	29	38.5	28.5	Complies
Total Energy Use Intensity (kWh/m ²)	120	98.2	90.5	Complies
Green House Gas Intensity (kgCO ₂ /m ²)	3	1.1	1	Complies

8.8 TDM-TAMs

TRANSPORTATION PLANNERS AND ENGINEERS



MEMO

DATE: August 13, 2024
PROJECT NO: 04-24-0144
PROJECT: 600 Kingsway
SUBJECT: Transportation Review

TO: Aik Ablimit
Perkins+Will

PREPARED BY: Roxana Sorkhi, EIT
REVIEWED BY: Christephen Cheng, P.Eng.
APPROVED BY: Christephen Cheng, P.Eng.



1. INTRODUCTION

Bunt & Associates Engineering Ltd. (Bunt) has completed a Transportation Review for the proposed mixed-use redevelopment at 600 Kingsway in Vancouver, BC. The purpose of this study, supplied as supplementary information for the site’s rezoning application, is to provide an overview of the key transportation considerations of the development.

The following review includes: (1) a high-level traffic impact analysis which presents the estimated future site traffic for the development and discusses the anticipated traffic impact, (2) a review of the project’s Transportation Demand Management (TDM) Plan requirements, (3) a comprehensive summary of the project’s parking requirements concerning vehicle, bicycle, loading, and passenger spaces, in the context of the City of Vancouver Parking Bylaw, (4) a rationale for the loading space variance sought for this project and (5) a review of the proposed site design, focusing on vehicle access, parking layout and circulation, loading, and waste collection.

2. DEVELOPMENT PLAN

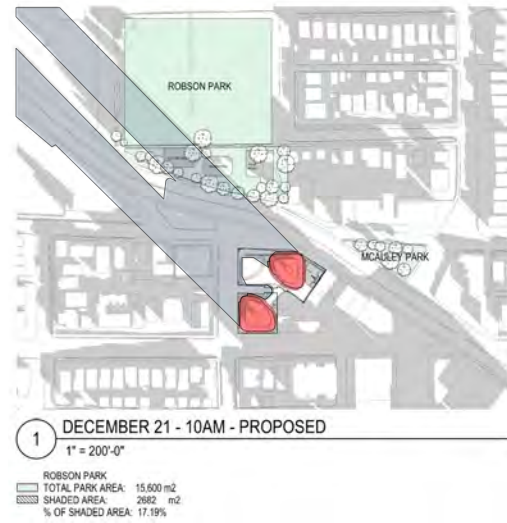
Bonnis Properties Inc. (Bonnis) is proposing to develop the 600-block of Kingsway, at the southwest corner of Kingsway & Fraser Street, into a mixed-use development featuring two residential towers with market and below-market rental units and ground-floor retail. The project would include approximately 327 dwelling units and approximately 19,962 square feet of ground-floor retail. The site is located adjacent to the Frequent Transit Network (FTN) along Kingsway and Fraser Street.

Bunt & Associates Engineering Ltd.

Calgary Edmonton Kelowna Vancouver Victoria www.bunteng.com

Written with respect and gratitude for the Traditional Territories upon which we work and live.

8.9 Shadow Study (Proposed - December)



ISSUED	
ISSUED FOR REZONING APPLICATION	20240607
ISSUED FOR REZONING APPLICATION ADDITIONAL CITY REQUEST	20250814
UPDATED REZONING APPLICATION	20250807

KEYPLAN



PROJECT

600 KINGSWAY
602-644 KINGSWAY AND 603 E
16TH AVE, VANCOUVER, BC

PROJECT NUMBER
R1213.000

REVISIONS

TITLE

SHADOW STUDIES -
PROPOSED MASSING
(DECEMBER)

SHEET NUMBER

RZ-G009

8.10 Additional Studies

Where We Are Aligned.

- **Use** secured rental market with 20% below market units.
- **Height** maximum up to 25 storeys.
- **Density** maximum up to 8.5 FSR.
- **Community Amenity Contribution** childcare space at level 2 with outdoor terrace, activated public realm with commercial storefront along Kingsway.



Collaborative Approach.

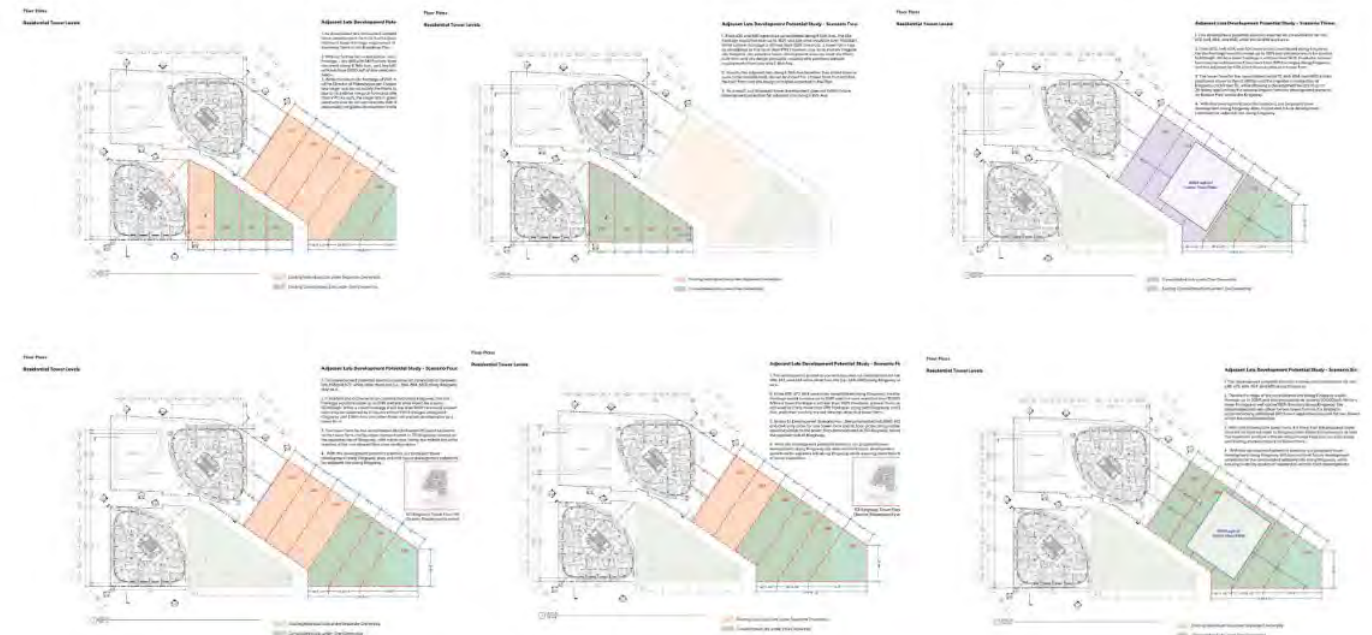
- **Broadway Plan** is a new policy, providing general direction for the form of development, not a site-by-site study.
- **Kingsway** has a different orientation, lot pattern, and a rich history. Each site presents unique challenges and opportunities.
- **Planning Staff** encourages for turning site challenges into opportunities for a unique form of development to shape the new high-density character of this neighborhood in the city.
- In lieu of prescriptive tower-podium, the proposed **tower-pavilion form of development** is a **unique contextual** approach, that blends well with adjacent buildings and near Heritage Village.

Further Design Study.

- **Tower Separation** internally between north and south towers.
- **Shadow Impacts** further reduction on Robson Park.
- **Podium Massing Compatibility with Neighboring Properties** at podium levels for north and south lots.
- **Building Setback** along Kingsway, Carolina St, and E 16th Avenue.

Tower Separation. (from adjacent properties to the east)

- As demonstrated in last our discussion, proposed tower form does not compromise development potential of adjacent lots to the east. Refer to Appendix (i) for analysis details shared in the last meeting.



Tower Separation (between north and south towers)

- As discussed, the **tower separation** between north and south towers can be **increased up to 75ft** while reducing the tower plate size to around 6400 sqft, less than 6500 sqft in the Plan. Further lowering tower plate size will render the project financially not viable.
- Refer to step by step north tower repositioning in the following pages.

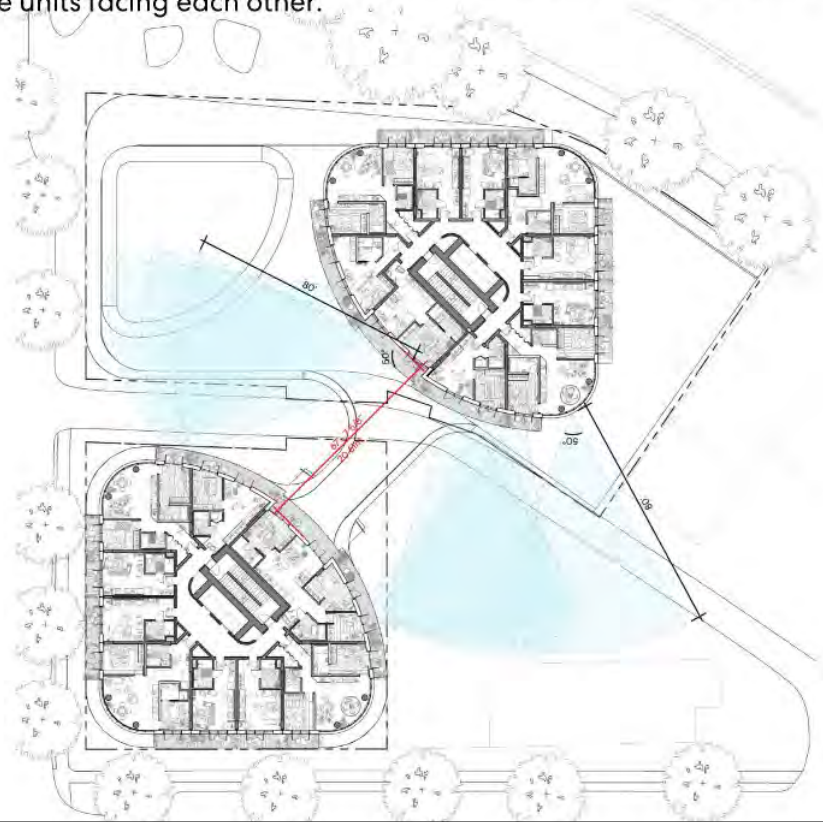
Tower Separation. (original proposal)

Original tower separation of 68ft while meeting horizontal angle of daylight requirements for livability of those units facing each other.



Tower Separation. (original proposal)

Original tower separation of 68ft while meeting horizontal angle of daylight requirements for livability of those units facing each other.



Tower Separation. (adjusted north tower)

Moving the north tower 3'-6" to northwest to increase tower separation from 68ft to 71ft.



Tower Separation. (adjusted north tower)

Additional 2'-0" of recess at the pinch point for each tower to further increase separation up to 75ft.

Loss of density and the financial need to 'reclaim' this density.



Shadow Impacts. (Robson Park)

Shadow Analysis

Robson Park & McAuley Park

The design of the proposed residential towers has been meticulously planned to cast minimal shadows on Robson and McAuley Park, therefore preserving their sunlight exposure and overall ambiance, and maintaining their usability and enjoyment for the community as well as the residents throughout the day.

Moreover, it is essential to consider that both Robson Park and McAuley Park are already subject to shading from their mature tree canopies along Kingsway. These existing trees naturally cast shadows across various areas of the park, especially during the early morning and late afternoon hours, while serving as a buffer space between Kingsway and the green communal spaces. The presence of these trees has been factored into the shadow analysis to ensure that any additional shading from the new towers remains minimal and within limits of the shadows already casted by the existing trees. By aligning the towers' design with the current shading patterns, the new development harmonizes with the existing environmental conditions, ensuring that the parks retain their current levels of natural light, and their role as vital community amenities.



Shadow analysis on March 21 at 1:00PM shows the maximum shadow projection on Robson park, overlapping with existing tree shadows, indicating that the towers cast minimal additional shadows.

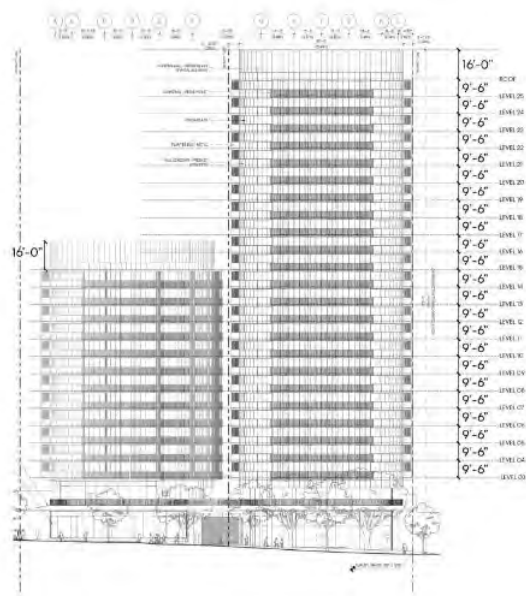


Shadow analysis on March 21 at 4:00PM shows the maximum shadow projection on McAuley Park, overlapping with existing mature canopy shadows.

Shadow Impacts. (adjusted north tower)

Slight increase on shadow impact due to north tower moving closer to street.

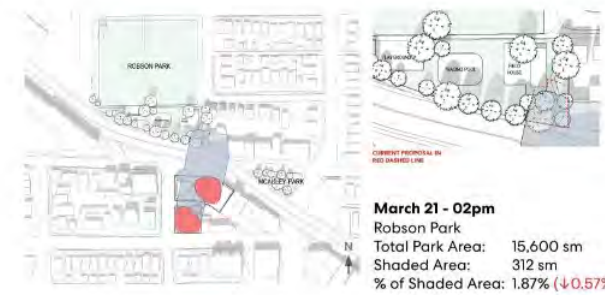
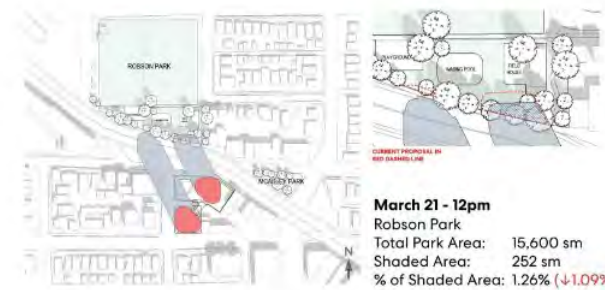
Floor to Floor Height: 9'-6"
Rooftop Mechanical Screen Height: 16'-0"



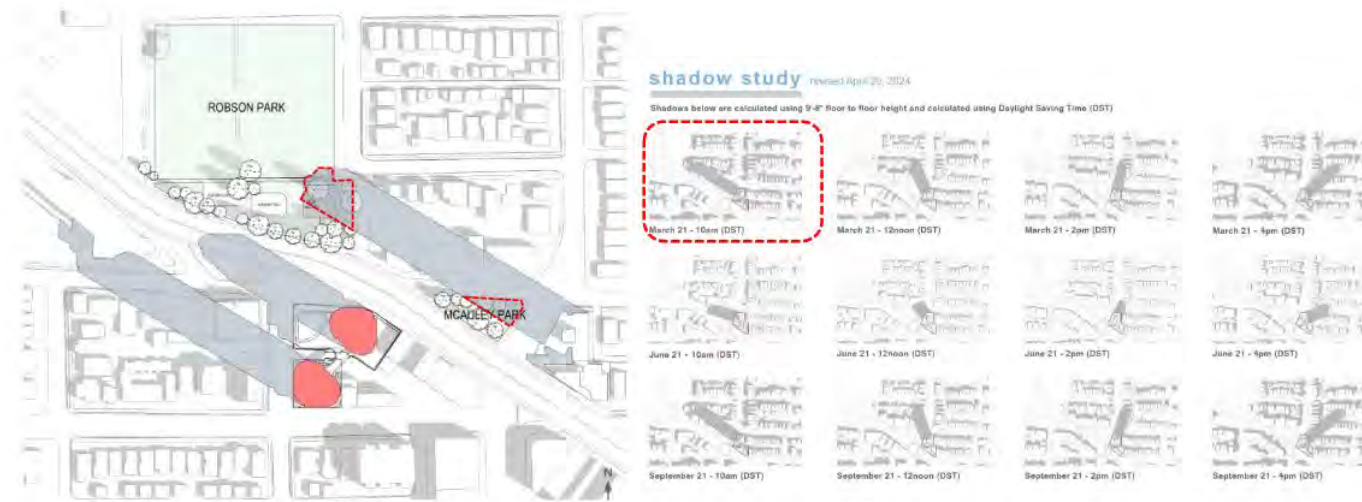
Shadow Impacts.

Exclusion of mechanical screen height on top of floor to floor height adjustment even further decreases the shadow impact.

Floor to Floor Height: 9'-4"
Rooftop Mechanical Screen Height: **EXCLUDED**



Shadow Impacts. (on Robson Park from 701 Kingsway)



~5.28% impacted area on Robson Park by 701 Kingsway, larger than **~3.13% impacted area** by combined north and south towers with design adjustments.

~40% less shadow impact by our design proposal, comparing to 701 Kingsway.

Podium Massing Compatibility with Neighboring Properties.

- Interface conditions at south tower and neighboring lots to the east along E 16th Ave.
- 4-storey and 6-storey podium massing studies along Kingsway.

Podium Massing Compatibility with Neighboring Properties.

- **Interface conditions at south tower** and neighboring lots have been studied.
- The finding is that window placement of four units at level 3 and level 4 in the south tower can be adjusted to ensure livability of those affected units to the east, while being respectful to urban design resolution at the interface.
- **4-storey and 6-storey podium massing** studies have been performed for north lots with respect to density, street character, shadow impact, public realm, and podium massing transition along Kingsway.
- Refer to following pages for detailed analysis and findings with suggested solutions appropriate to Rezoning and early design stage. We would like to continue collaborating with Planning Staff in the subsequent design stage.

Podium Massing. (from Broadway Plan)

11.6 Mixed-Use: Mid to High-Rise

Intent

Mid to high-rise mixed-use buildings will support commercial streets and/or districts that are welcoming and enjoyable places for people to experience. They will provide an appropriate street scale and pedestrian interest/comfort.

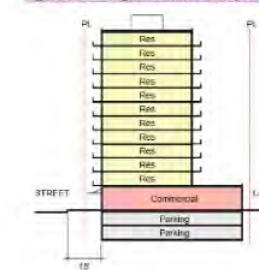
Figure 11.45 - Key map identifying areas where this typology is enabled



Figure 11.46 - High-rise mixed use (axo)



Figure 11.47 - High-rise mixed use (section)



- Note that the section diagram shows one level of commercial space, while the axo drawing illustrates four levels of podium. This is an inconsistency in the Plan.

Podium Massing. (from Broadway Plan)

Building Height

- 11.6.1 Varies between 12 to 25 storeys. Specific allowable building heights by policy area can be found in Chapters 8-10.
- 11.6.2 A consistent 4-storey podium should be provided in mixed-use areas to create a consistent street wall and minimize shadowing on the opposite sidewalk.
- 11.6.3 Where it can be demonstrated that a relocation of density to the podium will improve solar access to nearby key public spaces (parks, public school yards, and village shopping streets/plazas) and/or for buildings with inclusionary social housing, podium heights up to 6 storeys in height may be considered.
- 11.6.4 A minimum 5.2 m (17 ft.) floor-to-floor height for ground floor commercial use is desired.
- 11.6.5 Increased building height, generally up to six additional storeys, can be considered in circumstances where additional building height helps achieve better urban design outcomes. Cases may include, but are not limited to developments:
 - a) On larger sites with a frontage greater than 45.7 m (150 ft.).
 - b) Providing a larger privately-owned public space (POPS) (see policy 11.6.19).
 - c) Proposing tower floor plate sizes smaller than 604 m² (6,500 ft.²).
 - d) Proposing heritage conservation with up to 10% additional density.

Site Requirements

- 11.6.6 Minimum frontage is generally 45.7 m (150 ft.) although may be reduced in select locations as identified in Chapters 8-10. (See Chapter 7 for additional cases where lesser site frontage may be considered at the discretion of the Director of Planning.)
- 11.6.7 Minimum lot depth: 36.6 m (120 ft.) is desired.
- 11.6.8 Laneway at the rear property line will generally be required in most locations.

- Further reading into the relevant section of the Plan, **a consistent 4-storey podium** is expected, although it is allowed up to 6 storeys with additional conditions under 11.6.3 and 11.6.4.

Form of Development. (from C-2C Zoning Bylaw)

3.1.1 Density and Floor Area

- 3.1.1.1 The maximum floor space ratio is 3.50 for all uses combined, provided that the floor space ratio for non-dwelling uses on the first storey facing the street is at least 0.35.
- 3.1.1.2 Despite section 3.1.1.1 above, for a corner site, the maximum floor space ratio is 3.70 for all uses combined, provided that:
 - (a) the floor space ratio for non-dwelling uses on the first storey facing the street is at least 0.35;
 - (b) the length of the front property line facing the street is at least 45.7 m; and
 - (c) the site has a minimum site area of 1,672 m².

3.1.2 Building Form and Placement

Regulations	C-2C
3.1.2.1 Maximum unit frontage for any commercial use	15.3 m
3.1.2.2 Maximum building height:	
(a) where the floor-to-floor height for non-dwelling uses located on the first storey, facing the street is:	
(i) 5.2 m or greater	22.0 m and 6 storeys
(ii) less than 5.2 m	19.8 m and 6 storeys
(b) for portions of a building located within 4.6 m of the ultimate rear property line	6.1 m
3.1.2.3 Minimum front yard depth	2.5 m
3.1.2.4 Minimum side yard width for a side yard that:	
(a) adjoins a site located in any RM district, without the intervention of a lane	1.5 m
(b) adjoins a site located in any RA, R1 or RT district, without the intervention of a lane	0.9 m
(c) does not adjoin a site located in an R district	not required
3.1.2.5 Minimum rear yard depth and rear setback for portions of a building:	
(a) containing non-dwelling uses only, and less than 6.1 m in height	1.5 m
(b) containing non-dwelling uses only, and 6.1 m or more in height	4.6 m
(c) containing dwelling uses	4.6 m

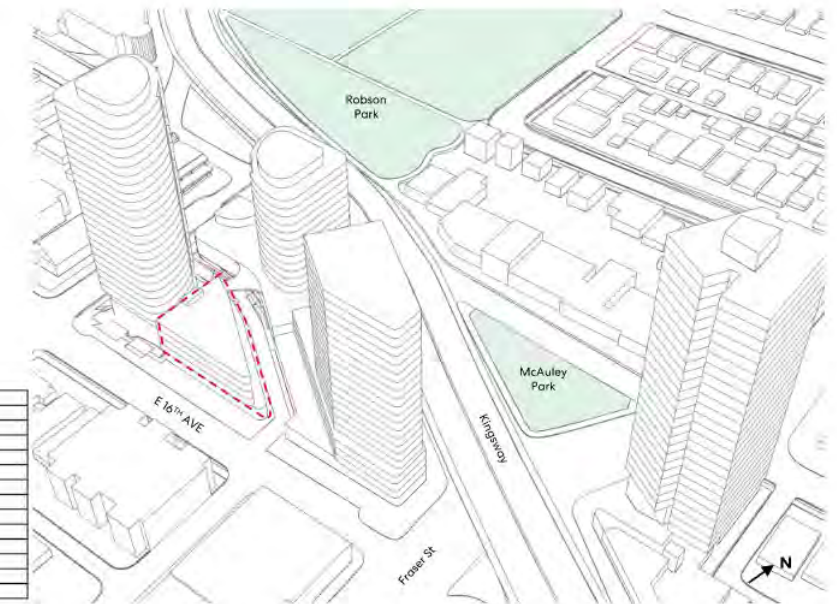
- Under C-2C zoning district schedule for non tower form of development, allowed maximum density is 3.5 FSR with a height up to 6-storey.

Podium Massing Compatibility with Neighboring Properties.

- Interface conditions at south tower and neighboring lots to the east along E 16th Ave.
- 4-storey and 6-storey podium massing studies along Kingsway.

South Site Adjacent Lot Interface Study.

- Assuming all four small lots will be consolidated into one development.
- 5-storey building with 3.5 FSR
- Ground level retail

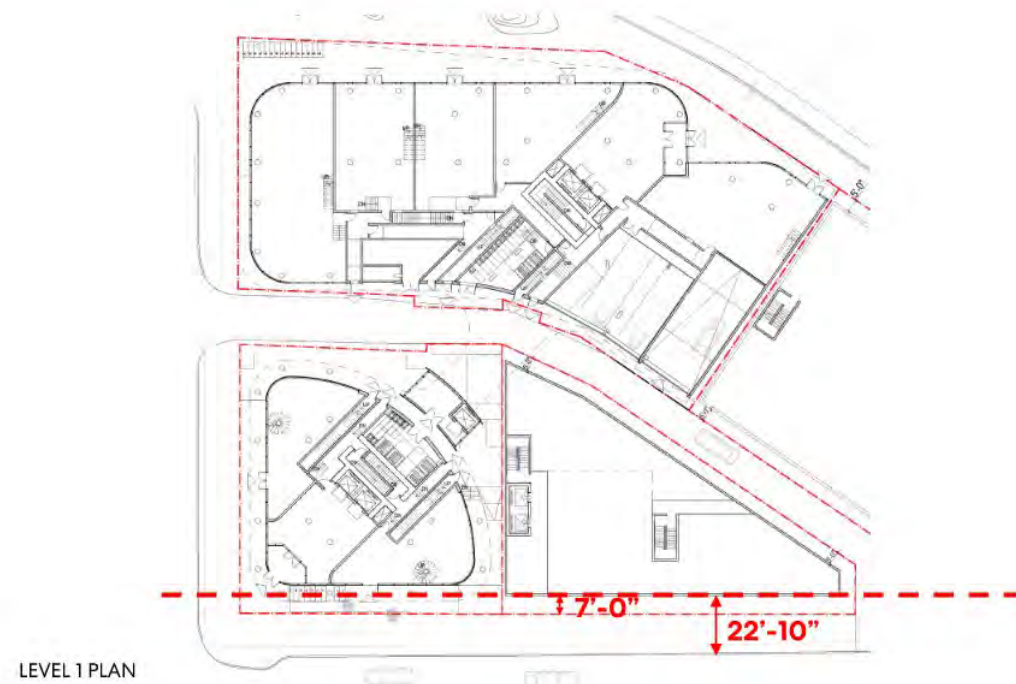


CURRENT ZONING	C-2C	
SITE AREA	764 SM (8,225 SF)	
	MIN. REQUIRED	PROVIDED
SETBACK	CAROLINA ST	LEVEL 1: 3.5SM (11'-0")
	LANE	LEVEL 2-5: 1.5M (5'-0")
	SIDE	4.5M (15'-0")
	NOT REQUIRED	0
BUILDING HEIGHT	MAX. ALLOWED	PROVIDED
	6 STOREYS	5 STOREYS
FSR	ALLOWED	PROVIDED
	3.5	3.5
USES	RESIDENTIAL / COMMERCIAL	

- Aligning with setback requirements and to land 3.5 FSR density on the adjacent lot, it will be only up to five levels, not six storeys.

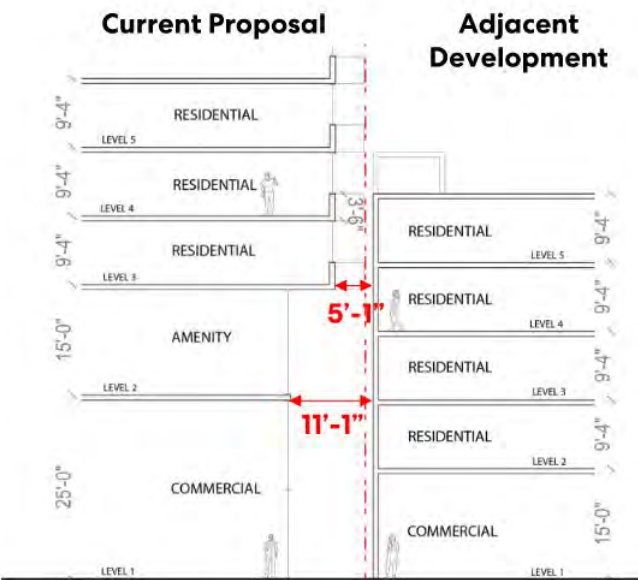
South Site Adjacent Lot Interface Study.

- Ground level setback of the adjacent lot could follow south tower, ensuring more than 18ft of curb setback.



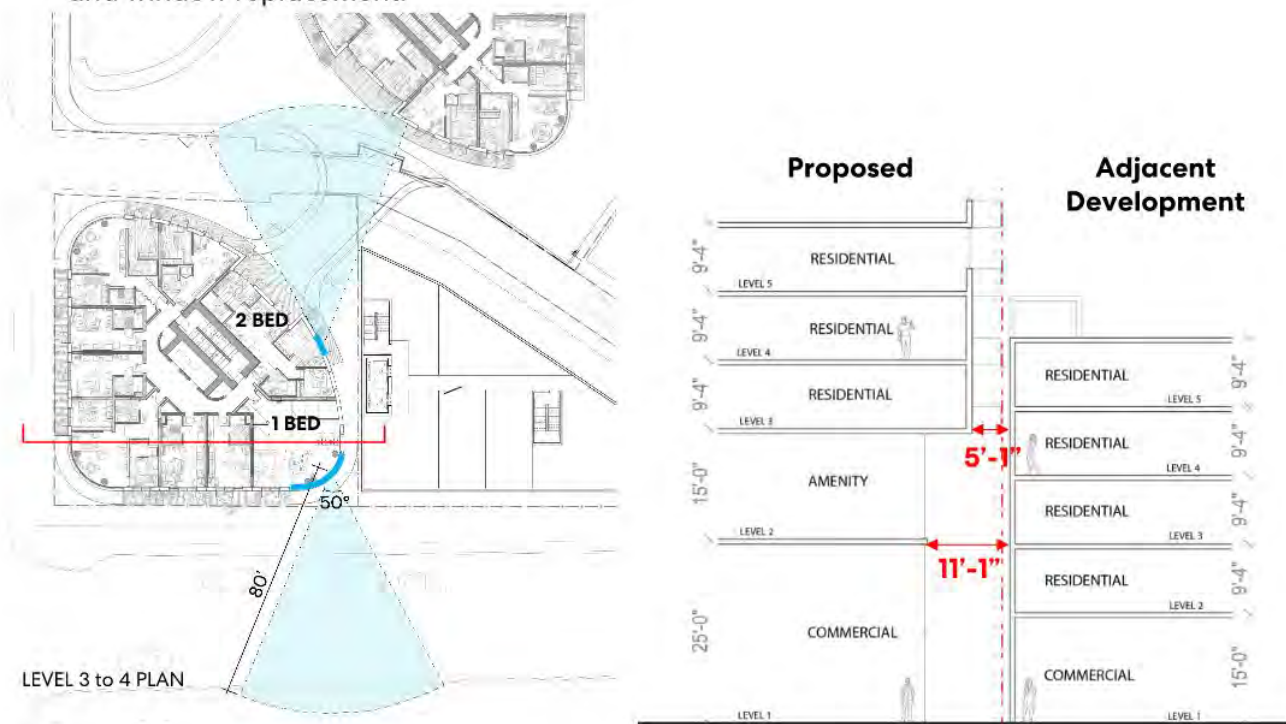
South Site Adjacent Lot Interface Study.

- There are four units at level 3 and 4 impacted by the potential development to the east.



South Site Adjacent Lot Interface Study.

- Impact on the livability of those four units at level 3 and 4 can be improved by unit layout and window replacement.



Podium Massing Compatibility with Neighboring Properties.

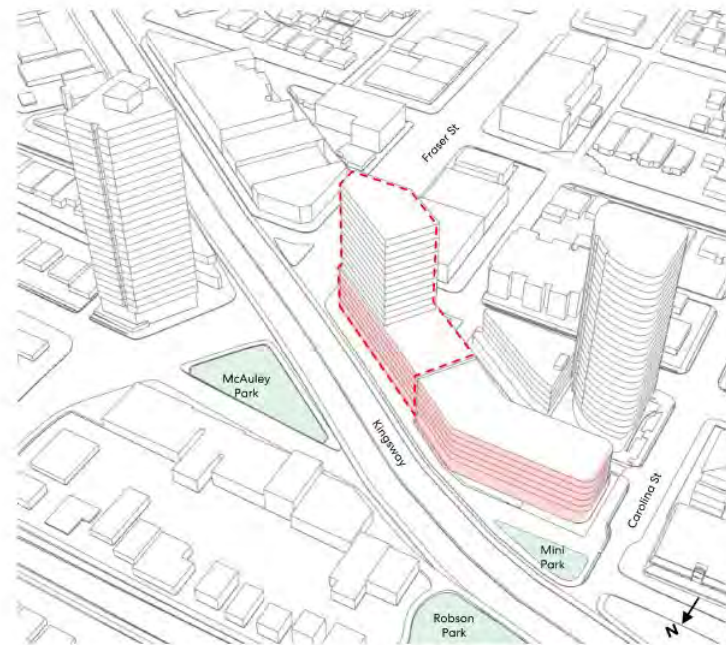
- Interface conditions at south tower and neighboring lots to the east along E 16th Ave.
- 4-storey and 6-storey podium massing studies along Kingsway.

North Site Podium Massing Study.

Scenario 1 _ 6-Storey Continuous Street Wall

- 8.5 FSR
- 6-storey street wall
- Ground level retail

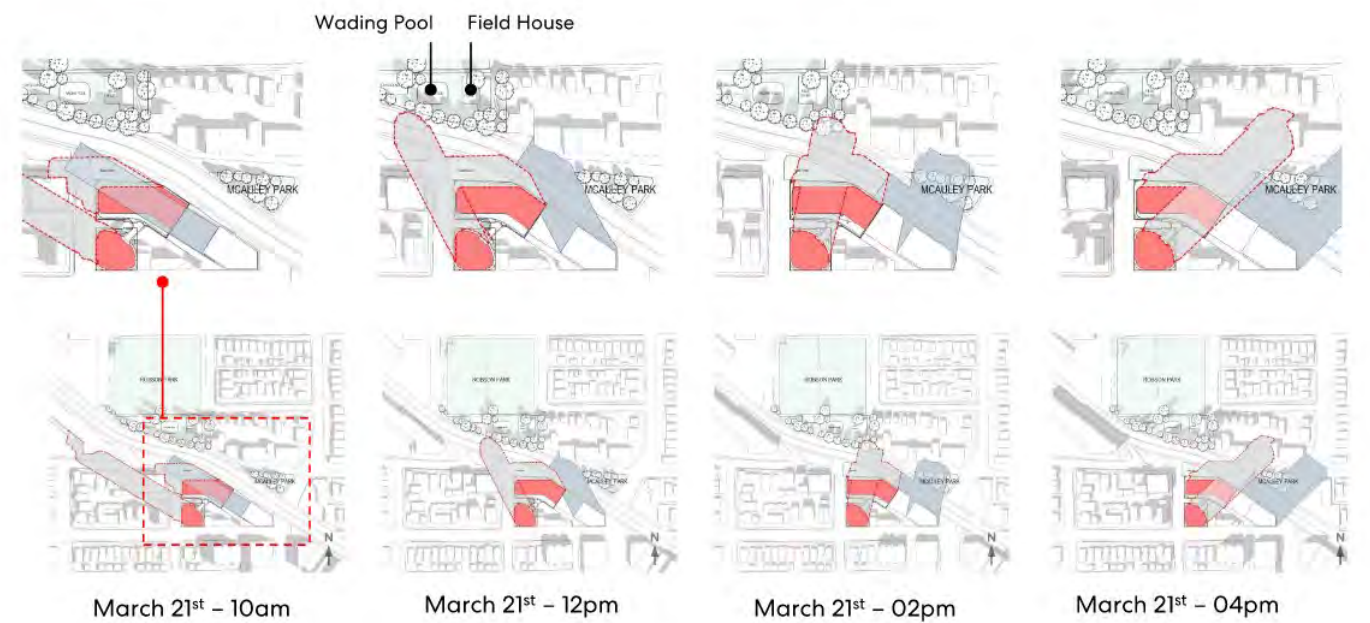
CURRENT ZONING	C-2C	
PROPOSED ZONING	CD-1	
SITE AREA	1,825.5M (19,646 SF)	
SETBACK	KINGSWAY	MIN. REQUIRED: 2.5M PROVIDED: LEVEL 1: 2.74M (9'-0")
	LANE	4.6M LEVEL 1: 1.0M (3'-0") LEVEL 2-19: 4.6M (15'-0")
	SIDE	NOT REQUIRED 0
BUILDING HEIGHT	MAX. ALLOWED	PROVIDED
	6 STOREYS	10 STOREYS
FSR	ALLOWED: 3.5 PROVIDED: 8.5	
USES	RESIDENTIAL / COMMERCIAL	



North Site Podium Massing Study.

Scenario 1 _ 6-Storey Continuous Street Wall

- Significant shadow impact on adjacent parks and pedestrian sidewalk.



North Site Podium Massing Study.

Scenario 1_ 6-Storey Continuous Street Wall

- **No opportunity for Childcare facility, as no roof space available as a result of the form.**
- **Monolithic street wall, ignores village character of this key intersection.**



Current Proposal

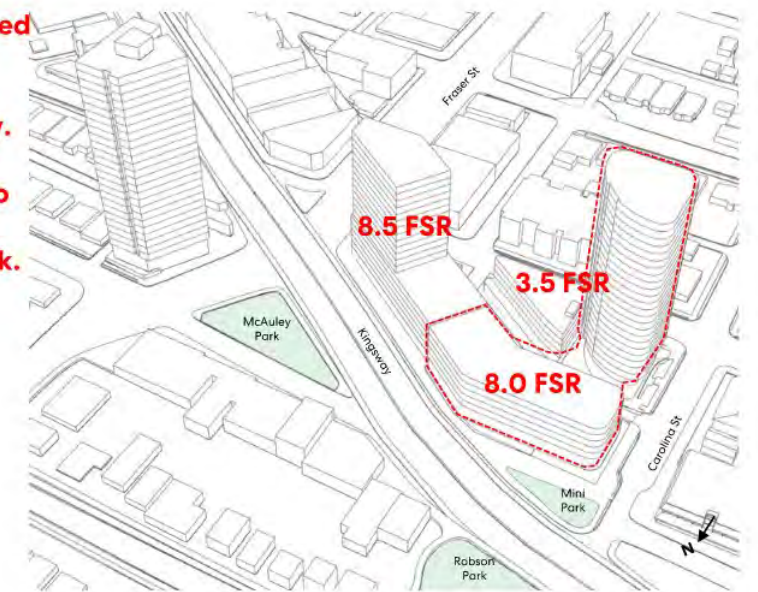


6-storey Continuous Street Wall

North Site Podium Massing Study.

Scenario 1_ 6-Storey Continuous Street Wall

- **FSR density of current proposal dropped from 8.5 to 8.0.**
- **Financially not viable with less density.**
- **An alternative is to add more height to the tower to achieve 8.5 FSR. This will add additional shadow to Robson Park.**



North Site Podium Massing Study.

Scenario 1_ 6-Storey Continuous Street Wall

- **Not sufficient building separation.**
- **Livability of units is compromised.**



North Site Podium Massing Study.

Scenario 1_ 6-Storey Continuous Street Wall

- **Not sufficient building separation.**
- **Livability of units is compromised.**



North Site Podium Massing Study.

Scenario 1 _ 6-Storey Continuous Street Wall _ **Summary**

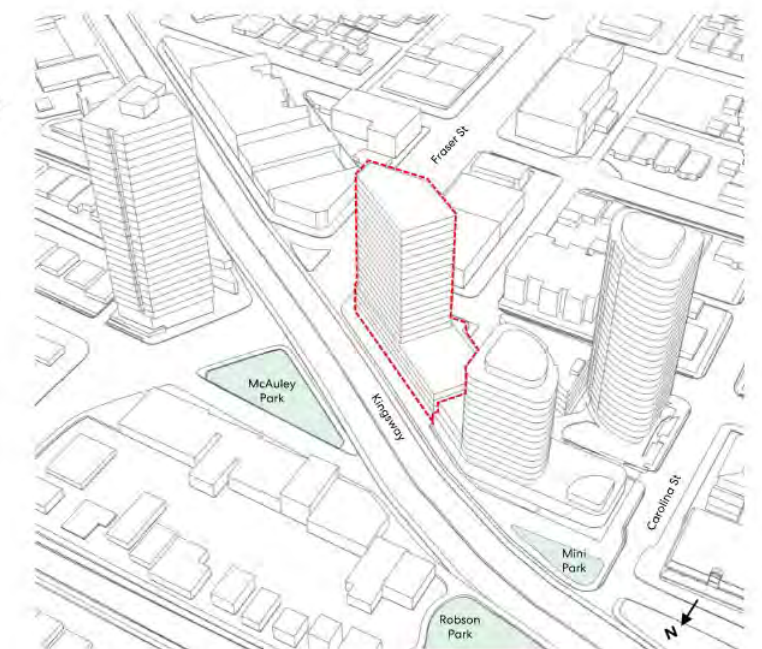
- **Sizable shadow impact on adjacent parks, specifically the new mini park, and pedestrian sidewalk.**
- **No opportunity for Childcare facility.**
- **Monolithic street wall, ignores village character of this key intersection.**
- **FSR density of current proposal dropped from 8.5 to 8.0, or results in greater height and shadow for tower.**
- **Financially not viable with less density.**
- **Not sufficient building separation.**
- **Livability of units is compromised.**

North Site Podium Massing Study.

Scenario 2 _ 4-Storey with Various Building Heights

- 8.5 FSR
- 4-storey street wall for the adjacent lots with our design proposal maintaining various podium heights
- Ground level retail

CURRENT ZONING		C-2C	
PROPOSED ZONING		CD-1	
SITE AREA		1,825 SM (19,646 SF)	
SETBACK		MIN. REQUIRED	PROVIDED
	KINGSWAY	2.5M	LEVEL 1: 2.74M (9'-0")
	LANE	4.6M	LEVEL 1: 1.0M (3'-0") LEVEL 2-21: 4.6M (15'-0")
	SIDE	NOT REQUIRED	0
BUILDING HEIGHT		MAX. ALLOWED	PROVIDED
		6 STOREYS	21 STOREYS
FSR		ALLOWED	PROVIDED
		3.5	8.5
USES		RESIDENTIAL / COMMERCIAL	



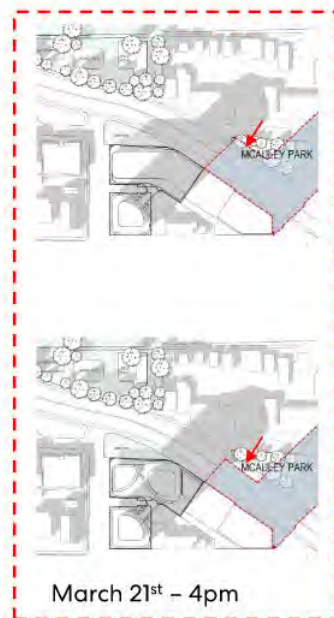
North Site Podium Massing Study.

Scenario 2 _ 4-Storey with Various Building Heights

- 4-storey podium height for the adjacent lots casts less shadow on McAuley Park than the 6-storey podium massing.

Scenario 1: 6-Storey Continuous Street Wall

Scenario 2: 4-Storey with Various Building Heights



North Site Podium Massing Study.

Scenario 2 _ 4-Storey with Various Podium Heights

Current proposal podium transition with 4-storey massing to the east.



North Site Podium Massing Study.

Scenario 2 _ 4-Storey with Various Building Heights

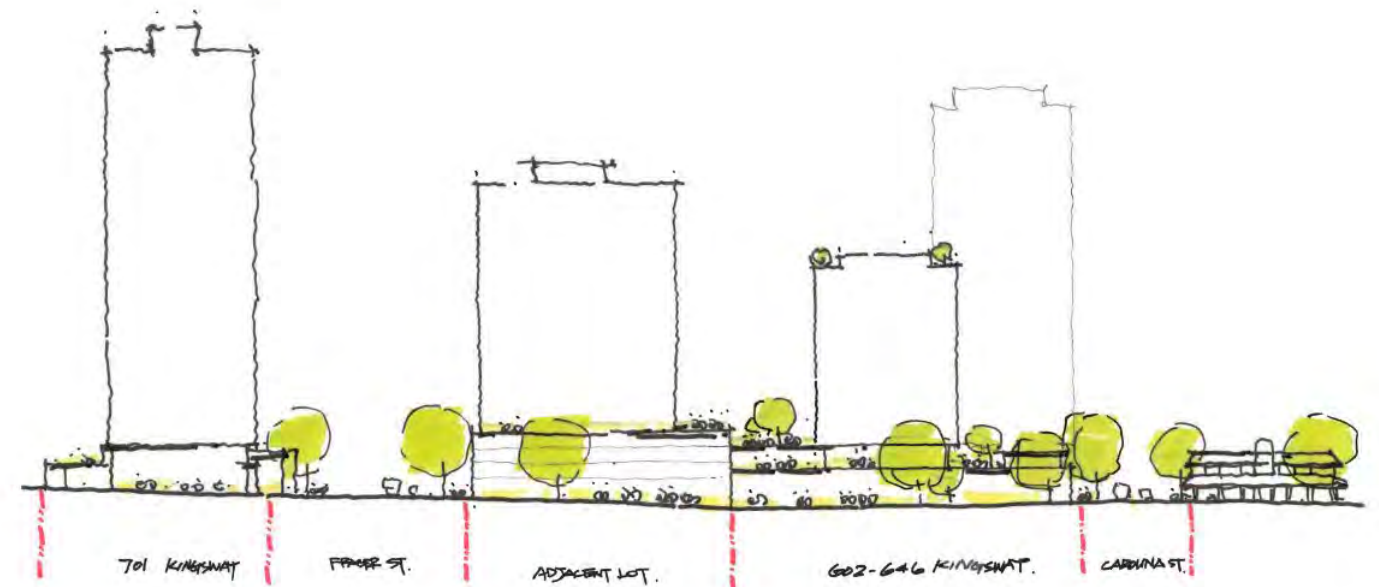
- One additional level with rooftop terrace introduced to achieve better podium massing transition, while picking up density reduction due to increased tower separation.
- While it reads two levels, actual height of the podium is close to three levels of the future adjacent development podium height.



North Site Podium Massing Study.

Scenario 2 _ 4-Storey with Various Podium Heights

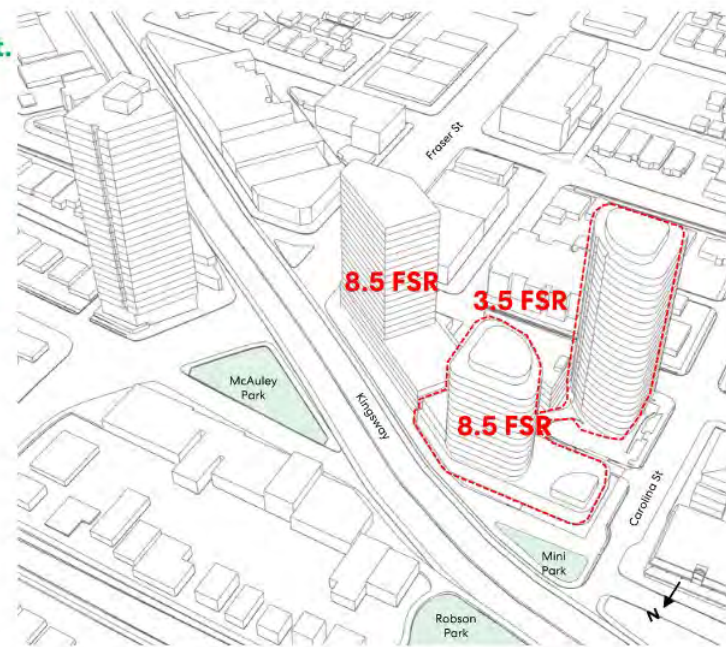
- This design option would allow for various podium heights with outdoor terraces while being respectful to the heritage village character of the neighborhood and creating an animated street scene.



North Site Podium Massing Study.

Scenario 2 _ 4-Storey with Various Podium Heights

- Design density maintains as before, allowing for a financially viable project.
- Childcare space with outdoor is still retained.
- Less shadow impact on mini park and public realm.
- Livability of units is not compromised.



North Site Podium Massing Study.

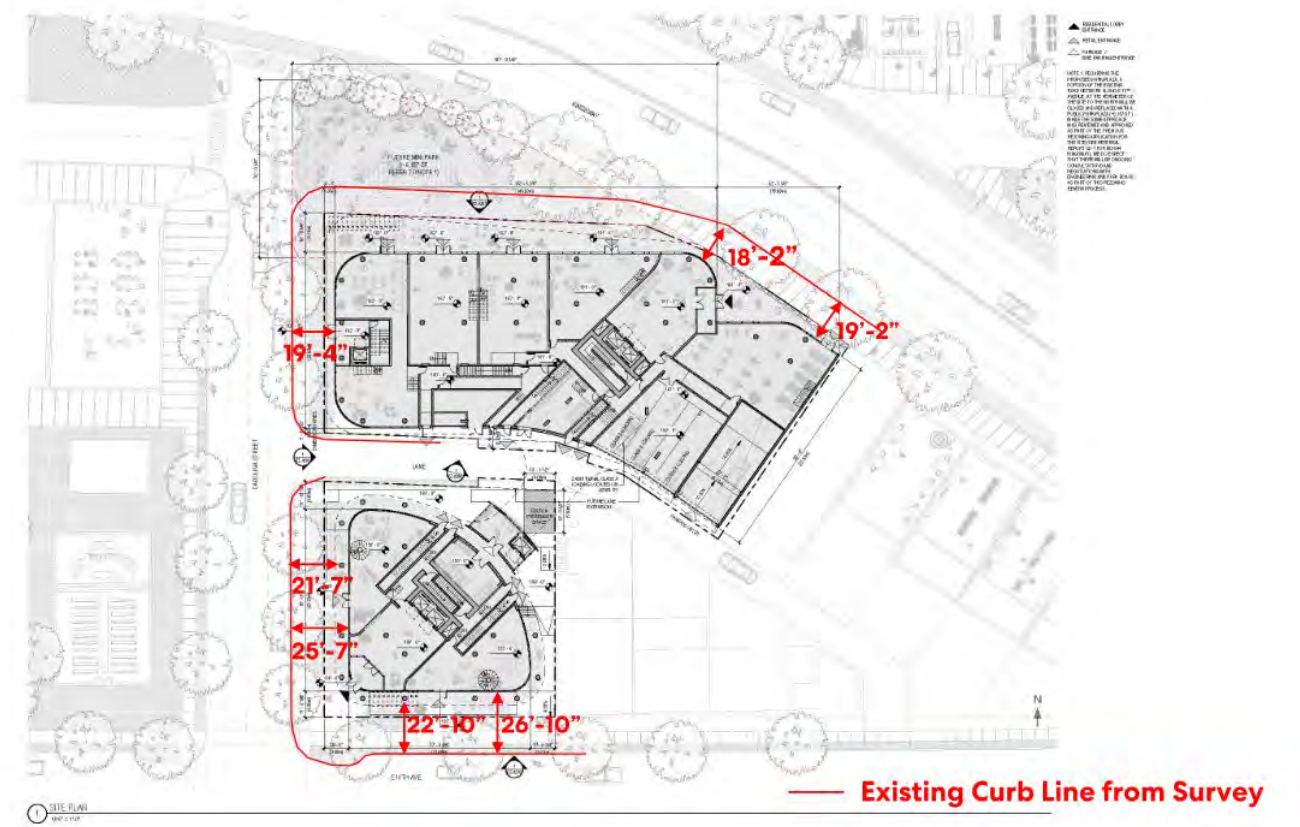
Scenario 2 _ 4-Storey with Various Podium Heights _ **Summary**

- 4-storey podium height for the adjacent lots casts less shadow on McAuley Park than the 6-storey podium massing.
- One additional level with rooftop terrace can be introduced to achieve better podium massing transition, while picking up density reduction due to increased tower separation.
- Allows for various podium heights with outdoor terraces while being respectful to the unique heritage village character of the neighborhood.
- Design density maintains as before, allowing for a financially viable project.
- Childcare space with outdoor is still retained with less shadow impact on mini park and public realm.
- Livability of units not compromised.

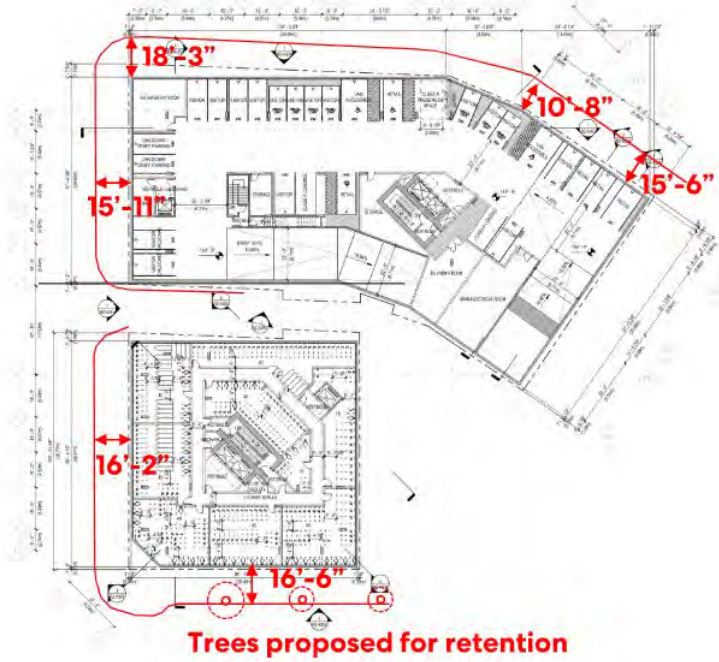
Building Setback.

- Achieving 18ft setback from back of curb to foundation wall is doable for south tower. Currently, the proposed design stands at over 16ft. Minor adjustment could be incorporated to achieve 18ft setback, in discussion with Engineering on potential minor relaxation around bike requirements.
- Since the parkade is located in the north tower, providing additional setback will compromise the parking efficiency. We would like to further discuss on this item to find a collaborative solution.

Building Setback. (from Building Face to Curb)



Building Setback. (from Foundation Wall to Curb)



Existing Curb Line from Survey

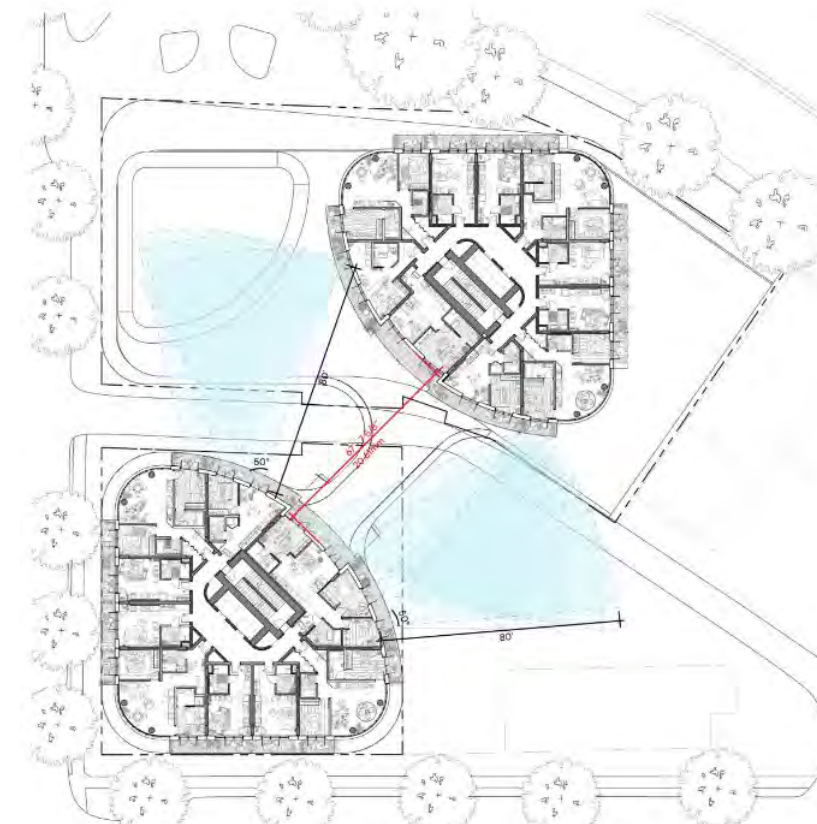
Tower Separation. (from adjacent properties to the east)



Tower Separation. (internally between two proposed towers)

- **Residential to Residential** separation is required to be **80 ft**. The proposed separation is **~68 ft**.
- We acknowledge that Planning Staff is strict about this requirement, particularly in Rezoning stage.
- Despite having more than **540 linear ft of frontage**, proposed tower plate size is kept at **6500 sqft**, as per the Plan guideline.
- **Horizontal Angle of Daylight** requirement is satisfied.

Tower Separation. (internally between two proposed towers)



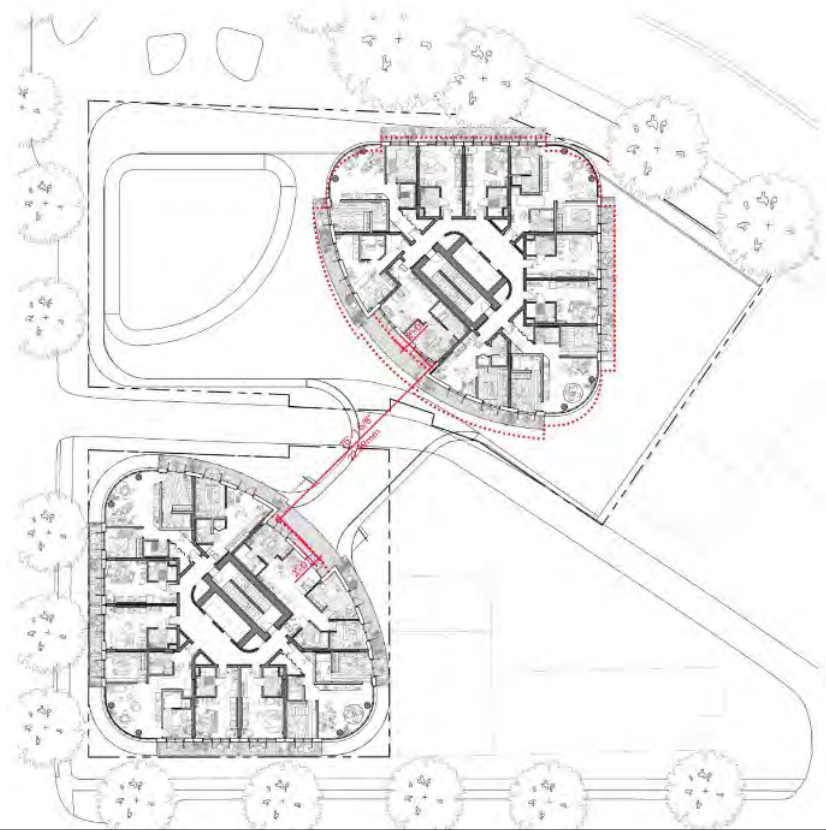
Tower Separation. (internally between two proposed towers)



Tower Separation. (potential solution)



Tower Separation. (potential solution)



Shadow Impacts. (McAuley Park & Robson Park)

- The proposed design **does not set a precedent**. Apply similar Rezoning conditions as **701 Kingsway**
- Limiting **new net tower shadow impact** cast by the development on **McAuley Park**
- Limiting **net new tower shadow impact** cast by the development on **Robson Park**

Shadow Impacts. (McAuley Park)

Exceptions and notes

In the following circumstances, exceptions to the policy objectives will be considered:

- For secured rental housing developments in the existing residential apartment areas (currently zoned RM and FM) to enable buildings up to 6-stories.
- For 100% social housing developments and Vancouver Community College, each development will be assessed on a case-by-case basis.
- For some parks, maintaining solar access is particularly challenging due to size and location. Solar access objectives may not be feasible when considering smaller parks including Choklit, Willow, Laurel Landbridge, Major Matthews, Carolina, McAuley, and Arbutus Greenway Parks.
- Solar access objectives for village high streets may not apply to developments within the Mount Pleasant Centre Areas A and B (MCEA and MCEB) and Granville/Burrard Slopes – Area F (FGBF). Developments within Mount Pleasant Centre Area C (MCEC) in proximity to the village high street will be assessed on a case-by-case basis.
- New buildings should minimize shadowing impacts on independent school yards, particularly during school hours.

Figure 11.6 - People enjoying the sun at Jonathan Rogers Park. Photo credit: Thomas Daley



General Approach to Height

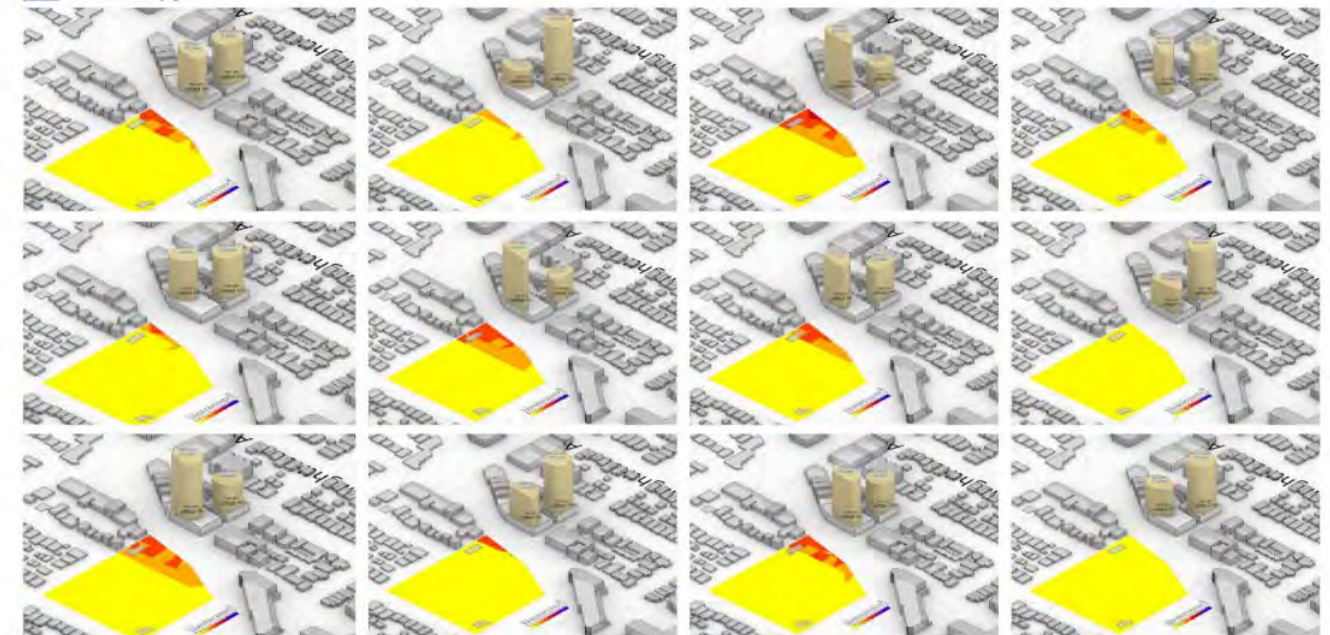
In addition to objectives related to affordable housing, tenant protections, and the economy, distribution of building height and density is generally driven by the following urban design considerations:

- Locating the tallest buildings within a short distance of rapid transit stations.

Shadow Impacts. (Robson Park)

5.4.4 Solar Envelope Study - 2 Towers

- 6+ Hours of daylight
- 1.5-6 Hours of daylight
- 1.5+ Hours of daylight



In the 2-tower scenario, the shadow implication of the development between 10am to 4pm on March 20th is minimal when the taller tower is located on the lot closest to the intersection of Carolina St and E 16th Ave and the shorter tower sits away from the corner along Kingsway while being respectful to 40 ft tower separation from the neighbouring site, as shown in the bottom-right scenario.

Shadow impact of two towers with different heights, uses, and form

Shadow Impacts. (Robson Park)

Shadow Analysis

Robson Park & McAuley Park

The design of the proposed residential towers has been meticulously planned to cast minimal shadows on Robson and McAuley Park, therefore preserving their sunlight exposure and overall ambience, and maintaining their usability and enjoyment for the community as well as the residents throughout the day.

Moreover, it is essential to consider that both Robson Park and McAuley Park are already subject to shading from their mature tree canopies along Kingsway. These existing trees naturally cast shadows across various areas of the park, especially during the early morning and late afternoon hours, while serving as a buffer space between Kingsway and the green communal spaces. The presence of these trees has been factored into the shadow analysis to ensure that any additional shading from the new towers remains minimal and within limits of the shadows already casted by the existing trees. By aligning the towers' design with the current shading patterns, the new development harmonizes with the existing environmental conditions, ensuring that the parks retain their current levels of natural light, and their role as vital community amenities.



Shadow analysis on March 21 at 1:00PM shows the maximum shadow projection on Robson park, overlapping with existing tree shadows, indicating that the towers cast minimal additional shadows.



Shadow analysis on March 21 at 4:00PM shows the maximum shadow projection on McAuley Park, overlapping with existing mature canopy shadows.

Building Form & Podium.

- **Broadway Plan** is a newborn policy, providing general direction for the form of development, not a site-by-site study.
- **Kingsway** has a different orientation, lot pattern, and a rich history. Each site presents unique challenges and opportunities.
- **Planning Staff** encourages for turning site challenges into opportunities for a unique form of development to shape the new high-density character of this neighborhood in the city.
- In lieu of prescriptive tower-podium, the proposed **tower-pavilion form of development** is a **unique contextual** approach, that blends well with adjacent buildings and near Heritage Village.

Building Form & Podium.



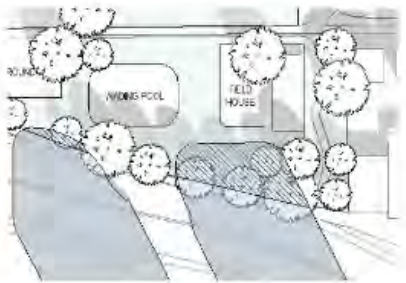
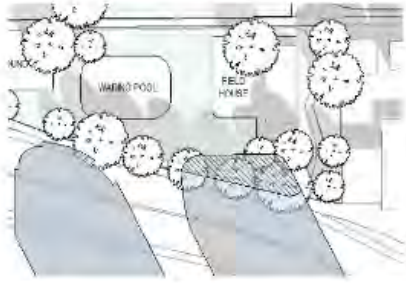
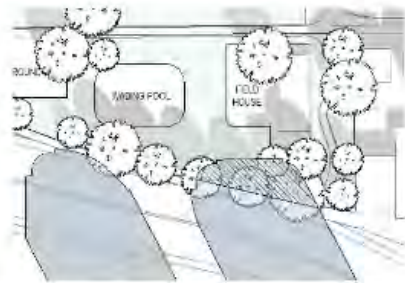
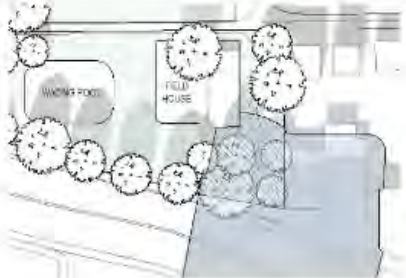
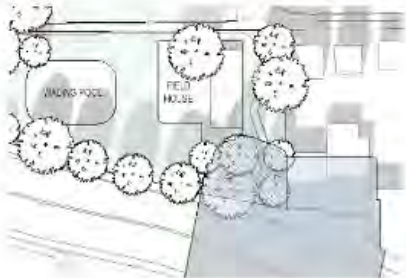
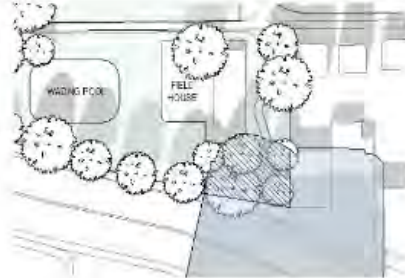
Building Setback.

- Consistent with **C2-C setback requirements.**

		MIN REQUIRED	PROVIDED
SETBACK	KINGSWAY	8'3" (2.5m)	9' (2.74m)
	CAROLINA ST	5' (1.5m)	5' (1.5m)
	E 16TH AVE	5' (1.5m)	5' (1.5m)
	LANE	5' (1.5m)	3' (1.0m) - 8' 11" (2.7m) (REFER TO SITE PLAN RZ-A003)
		MAXIMUM ALLOWED (C-2C ZONING)	PROVIDED
BUILDING HEIGHT		45.28 ft (13.8m)	275'-8" (83.97m)
BUILDING STOREYS		8	25
FSR		3	8.5
USES		RESIDENTIAL / COMMERCIAL	RESIDENTIAL / COMMERCIAL

8.11 Detailed Shadow Analysis

Percentage of Shadow on Robson Park

	Original Rezoning Submission 2025/02/09	Shadow Study (CoV Meeting) 2025/08/01	Amendment to Rezoning Application 2025/09/03
March 21 – 12pm	2.35%	1.26% (↓ 1.09%)	1.36% (↓ 0.99%)
March 21 – 02pm	2.44%	1.87% (↓ 0.57%)	1.92% (↓ 0.52%)
March 21 – 12pm			
March 21 – 02pm			

Building Height Adjustments

	Shadow Study (CoV Meeting) 2025/08/01	Amendment to Rezoning Application 2025/09/03
North Tower 14-sotrey	1. Exclude Mechanical Screen (16'-0") 2. Reduce Floor to Floor Height from 9'-6" to 9'-4" Total Height Reduction = ↓ 17'-9"	1. Exclude Mechanical Screen (16'-0") 2. Reduce Amenity Level (Level 2) Height from 15'-0" to 12'-6" Total Height Reduction = ↓ 18'-6"
South Tower 25-sotrey	1. Exclude Mechanical Screen (16'-0") 2. Reduce Floor to Floor Height from 9'-6" to 9'-4" Total Height Reduction = ↓ 19'-8"	1. Exclude Mechanical Screen (16'-0") 2. Reduce Amenity Level (Level 2) Height from 15'-0" to 12'-6" Total Height Reduction = ↓ 18'-6"

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