



545 Lake Shore Boulevard West (LSBW)

Schematic Design

Dec. 15th, 2021

Site Context

545 LSBW

Proponent: Canderel

Design Team: Sweeney+Co, Forrec, Ecovert

Review Stage: Schematic Design



Design Review Area

545 Lake Shore Boulevard West

Project Site + Previous Proposal

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Design Team: Sweeney+Co, Forrec, Ecovert

Review Stage: Schematic Design

Site

- 1.8 acre site situated on Block BQ7 in Harbourfront
- Currently occupied by:
 - Crosse and Blackwell building, heritage listed in 1973
 - surface parking
- City Council will consider heritage designation under Part IV of the *Ontario Heritage Act* on Dec 15, 2021

Original Rezoning Application

- 2018 application proposed a mixed-use development with three buildings (39, 15 and 10 storeys)
- Partial conservation of the Crosse and Blackwell building



Project Description

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Review Stage: Schematic Design

Revised Proposal

- July 2021 revised submission includes the full conservation of the Crosse and Blackwell building as well as a reduction in the proposed height and density of the project, also reducing the towers from 2 to 1.
- Meetings were held with City Planning and the Bathurst Quay Neighbourhood Association, and community consultation in September 2021.
- The revised application now proposes two development blocks:
 - North: **office uses in the preserved Crosse and Blackwell building including the addition of 2 storeys**; and
 - South: **a new residential building of 21 storeys/69 m (west) and 13 storeys/43 m (east) with retail at grade**
- Revised public realm plan includes:
 - a **central courtyard**
 - a **POPS** space on the northeast corner of Bathurst Street and Queens Quay, and
 - an **east-west pedestrian connection from Bathurst Street and a north-south pedestrian connection along the east side of the site**

Project Timeline

545 LSBW

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Review Stage: Schematic Design


- March 2018: First DRP Presentation
- October 2018: First Zoning By-Law Amendment application submitted to the City
- July 2021: Rezoning re-submission #1 submitted to the City
- September 2021: Site Plan Applications (1 Residential and 1 Commercial/Heritage) submitted to the City
- September 2021: Community Consultation
- November 2021: Zoning re-submission #2 submitted to the City
- December 2021: Heritage Designation Report to City Council


- *January 2022: Targeted Heritage Alterations Report to Toronto Preservation Board*
- *February 2022: Targeted Final Report to Council on the Rezoning application*


Planning Context – Official Plan


Designation: Mixed Use Areas

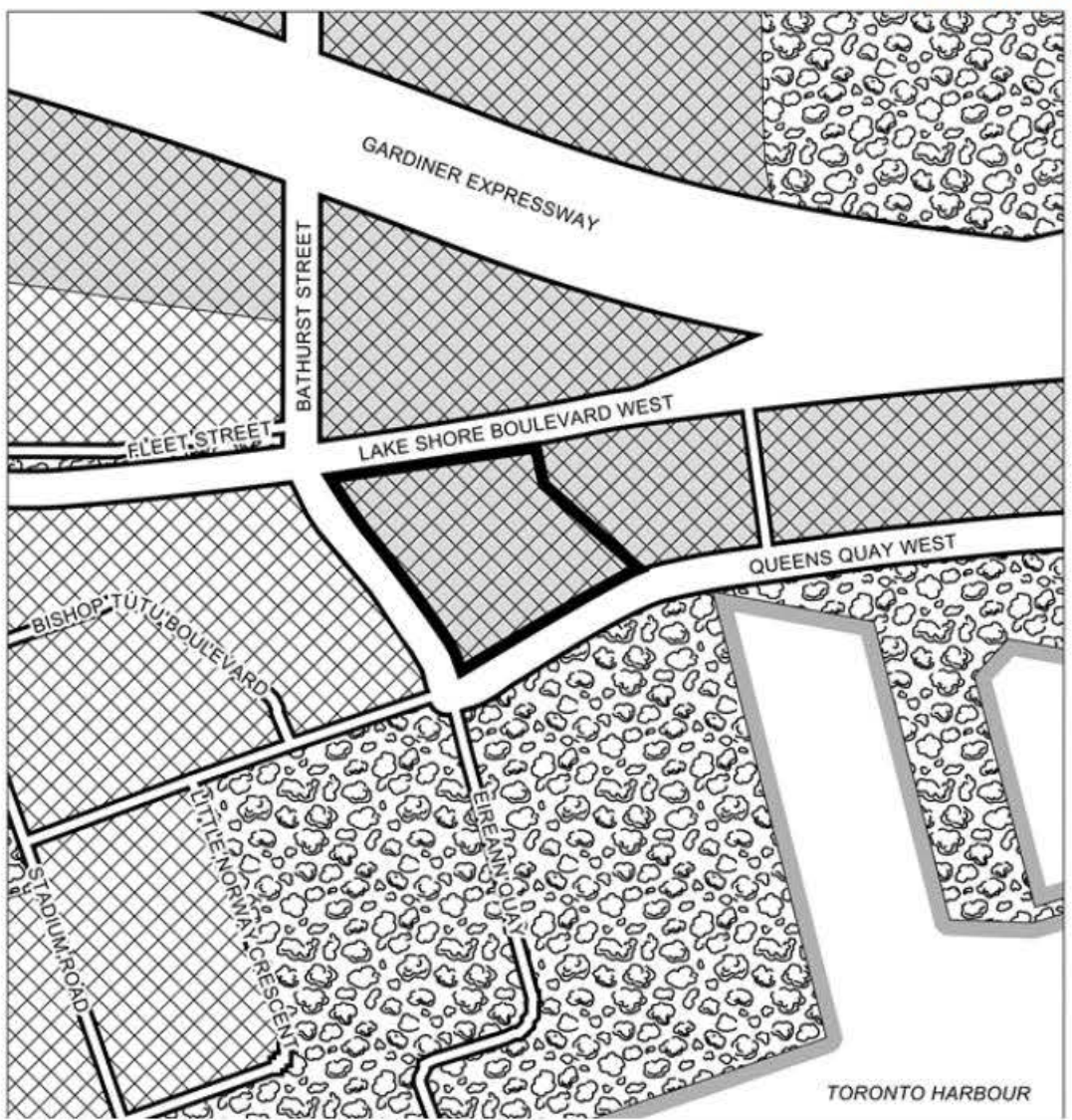
 Location of Application

 Apartment Neighbourhoods

 Mixed Use Areas

 Parks & Open Space Areas

 Other Open Space Areas



Planning Context

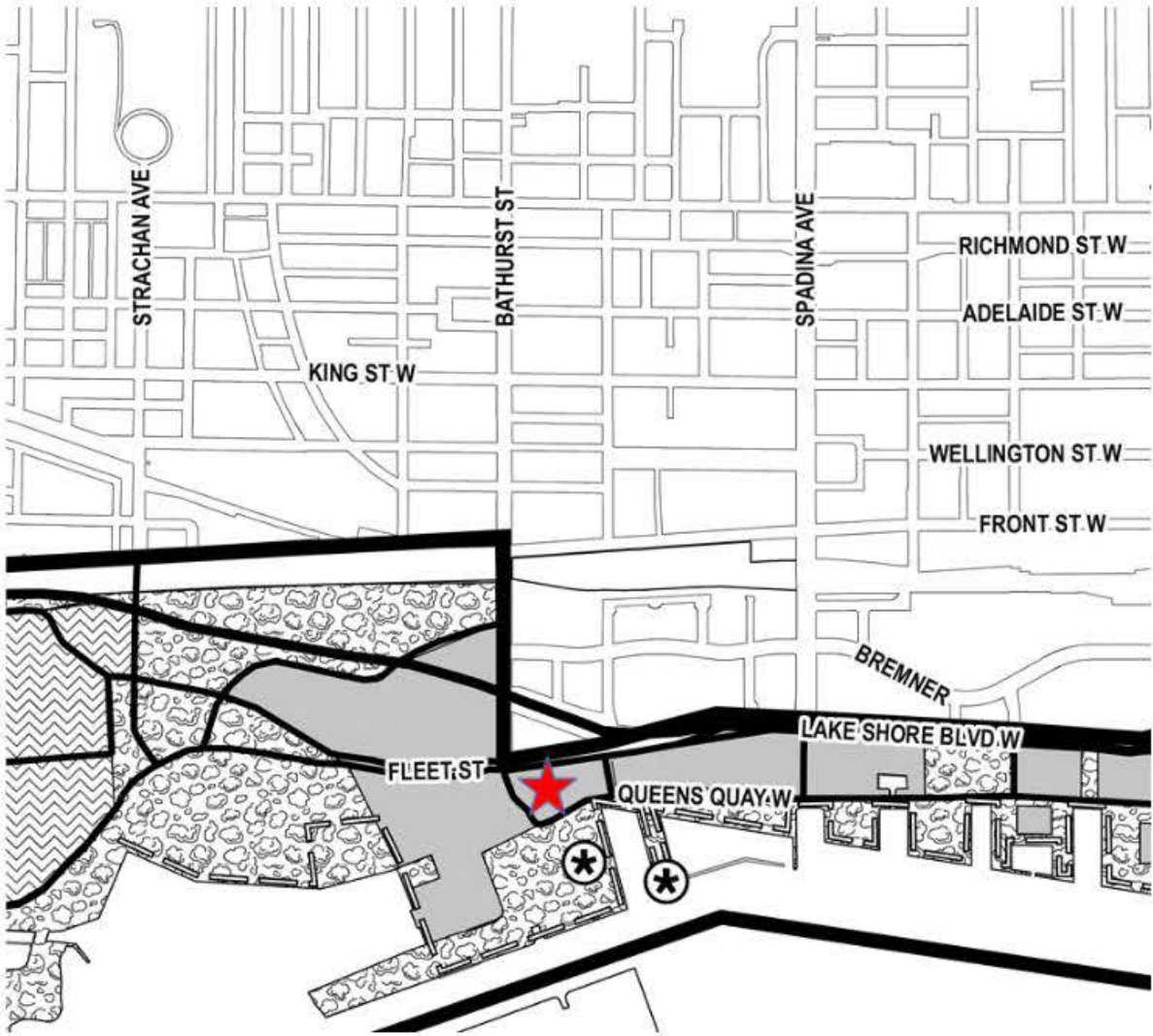
Central Waterfront Secondary Plan

545 LSBW

Proponent: Canderel

Design Team: Sweeney+Co, Forrec, Ecovert

Review Stage: Schematic Design



- Secondary Plan Boundary
- Parks and Open Space Areas
- Regeneration Areas
- Existing Use Areas
- Foot of Yonge Special Study Area
- Public Promenade (Dockwall/Water's Edge)
- Inner Harbour Special Places

Planning Context

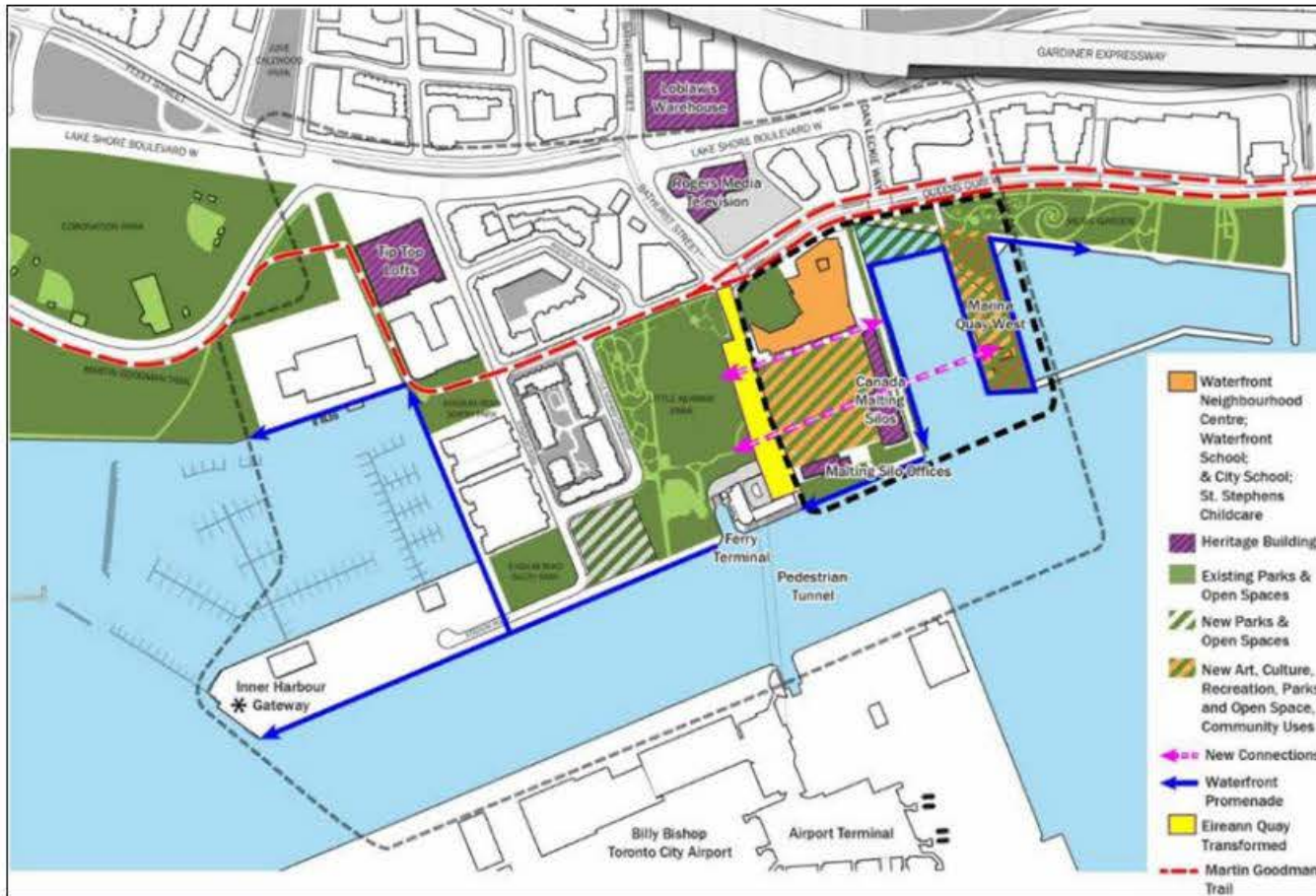
Bathurst Quay Neighbourhood Plan

545 LSBW

Proponent: Canderel

Design Team: Sweeney+Co, Forrec, Ecovert

Review Stage: Schematic Design



- Long term vision to create a community and cultural hub on the Canada Malting Silos site and Marina Quay West.
- Identifies improvements to parks, open spaces, streetscapes and connections.
- Recognizes the importance of heritage resources and their role in placemaking.

Planning Context – Zoning By-law

545 LSBW

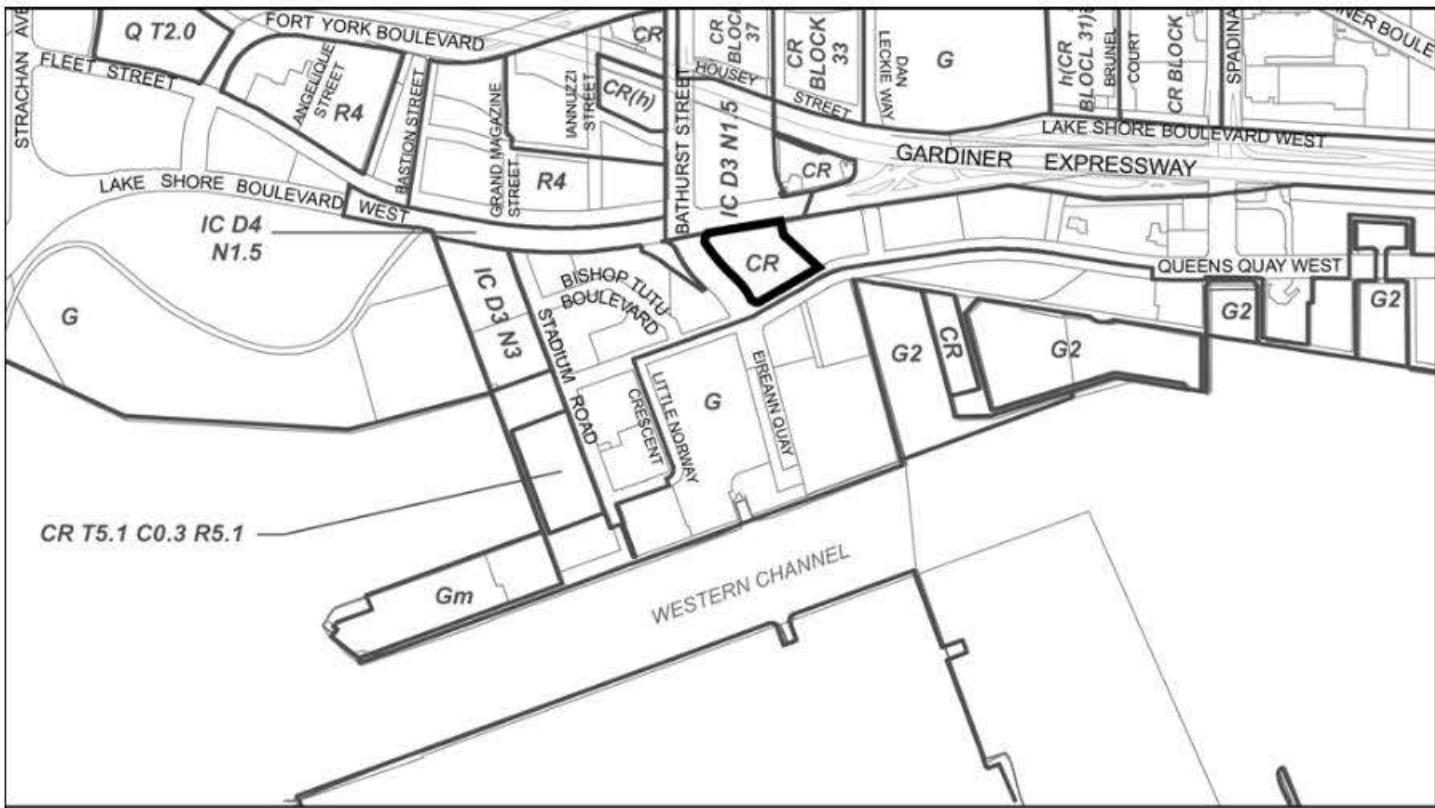
Proponent: Canderel

Design Team: Sweeney+Co, Forrec, Ecovert


Review Stage: Schematic Design

Harbourfront Zoning By-law

- CR – Mixed Use
- Maximum Height – 31 metres



 Location of Application

 See Former City of Toronto Harbourfront By-Law No. 289-93

R4	Residential District
CR	Mixed-Use District
IC	Industrial District
T	Industrial District
G	Parks District
G2	Parks District


Not to Scale
Extracted: 01/07/2019

Project Approval Stage

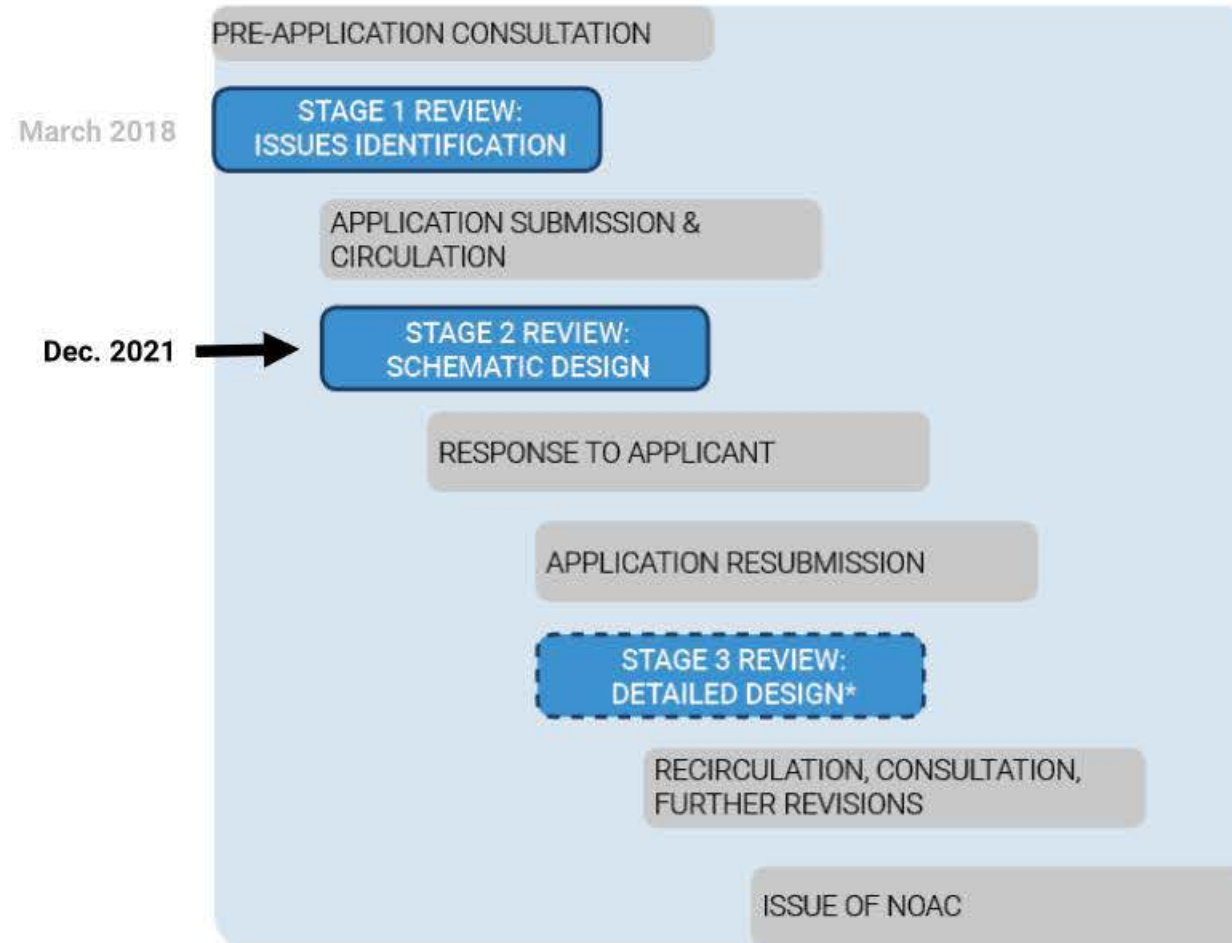
DRP Stream 1: Private land – Site Plan Approval

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Proponent: Canderel

Design Team: Sweeney+Co, Forrec, Ecovert

Review Stage: Schematic Design



March 2018 Consensus Comments

Issues Identification

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Review Stage: Schematic Design

- Consider how this project fits into the Bathurst Quay Neighbourhood Plan
- Get this building “right” as it is the last vacant development site on Queens Quay West
- The heritage hexagon piece of the building at the north-east corner of the site should be the entrance to the complex
- Respect the 25-meter tower separation and the building datum along Queens Quay
- The façade along Queens Quay should be powerful. This is an opportunity to bring life to the Queens Quay frontage.
- It is important to design good street edges. Consider reprioritizing all the entrances
- Investigate the public market further to determine the viability of the proposed size, and how many people will cross Lake Shore to get there.
- Bring the aviation analysis to the next review

Areas for Panel Consideration

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Review Stage: Schematic Design

Building

Does the architectural expression of the residential building successfully respond to the site context and frontages? i.e. dialogue with the heritage building, relationship with Queens Quay and Bathurst Street, and framing of the courtyard by both volumes.

Has the ground floor been sufficiently animated along Queens Quay, Bathurst, and Lake Shore?

Are the servicing and other vehicular requirements coordinated with the public realm?

Public Realm

Do the streetscape details, furniture, POPS at the northeast corner of Queens Quay and Bathurst, the central courtyard, lighting, and public art, create a cohesive and interconnected experience?

Does the public realm successfully provide continuous and safe pedestrian movement? i.e. linking Lake Shore with Queens Quay along Bathurst Street, access into the buildings, POPS and courtyard.

545
LAKE
SHORE
BOULEVARD
WEST

 **Canderel**

**Sweeny&Co
Architects**

 **GRAZIANI
+ CORAZZA
ARCHITECTS**

 **ECOVERT**

FORREC


HUNTER
Urban Planning and Development

PREVIOUS DESIGN - 2018 WDRP



WDRP 2018 Consensus:

- Consider fit with Bathurst Quay Neighbourhood Plan
- Last empty site on Queens Quay West – important to get it right
- Use heritage hexagon building as a main entry
- Respect 25 metre Tower Separation (if more than one tower)
- Strong and lively façade along Queens Quay West
- Street edges and prioritize entries
- Consider viability of retail market hall
- Complete aviation analysis before next WDRP

**A. Conserve Heritage Building (North Parcel)**

- Adaptively reuse heritage building
- Partial addition to the heritage building

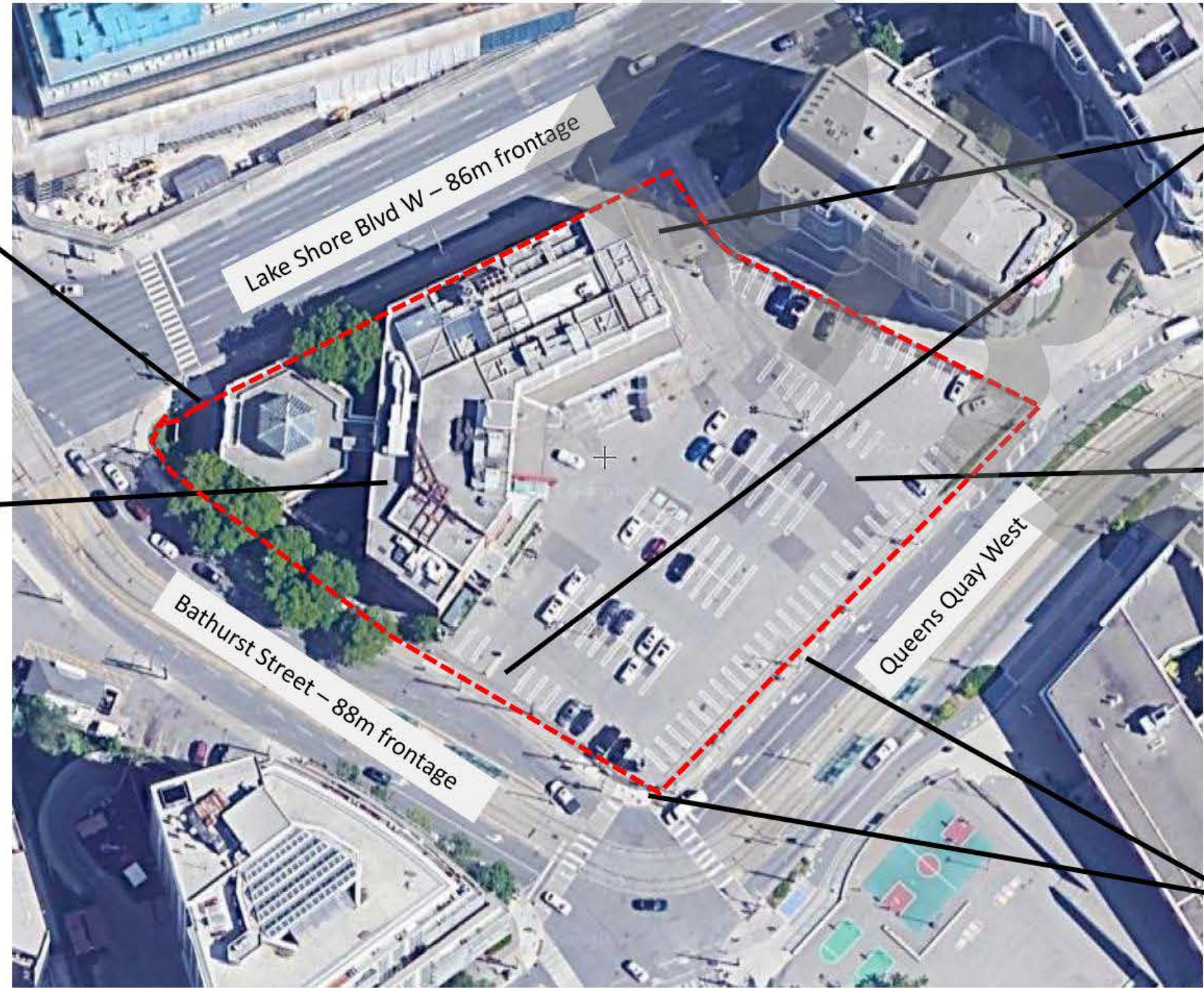
B. Redevelop Parking Lot (South Parcel)

- Mid-rise building (8-13 storeys)
- Single tower (21 storeys)
- 412 residential condo units
- 2 levels underground parking

C. Enhance Streetscapes & Public Realm

- Widen sidewalks and enhance streetscapes
- Create new public spaces and courtyards
- Unify & improve connections

THE SITE & HISTORY



Site Boundary
Area: 7,087m²

Former Rogers Media
Building (heritage)

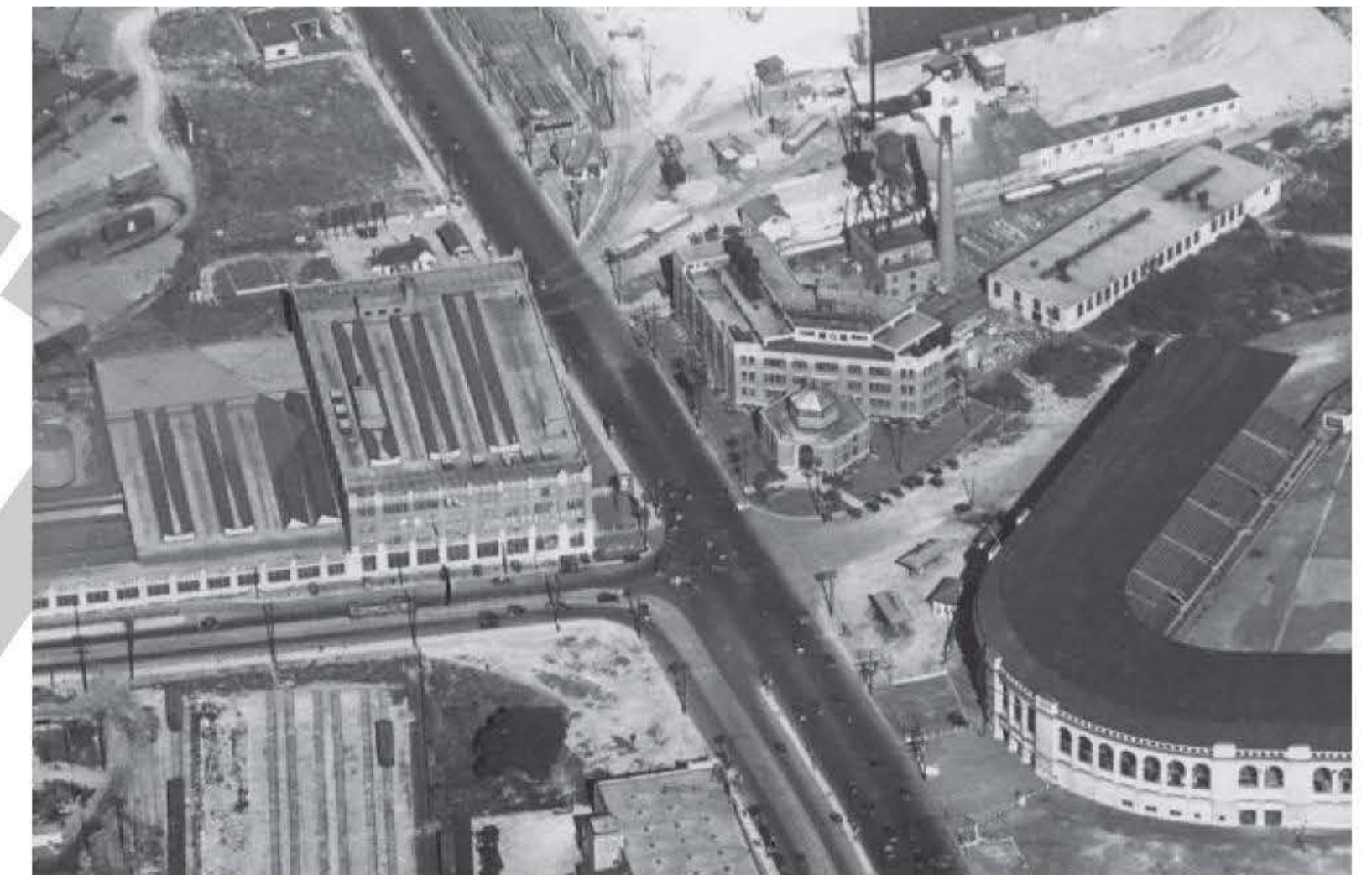
Vehicular Driveways

Surface Parking Lot

Poor sidewalks and
streetscape
conditions



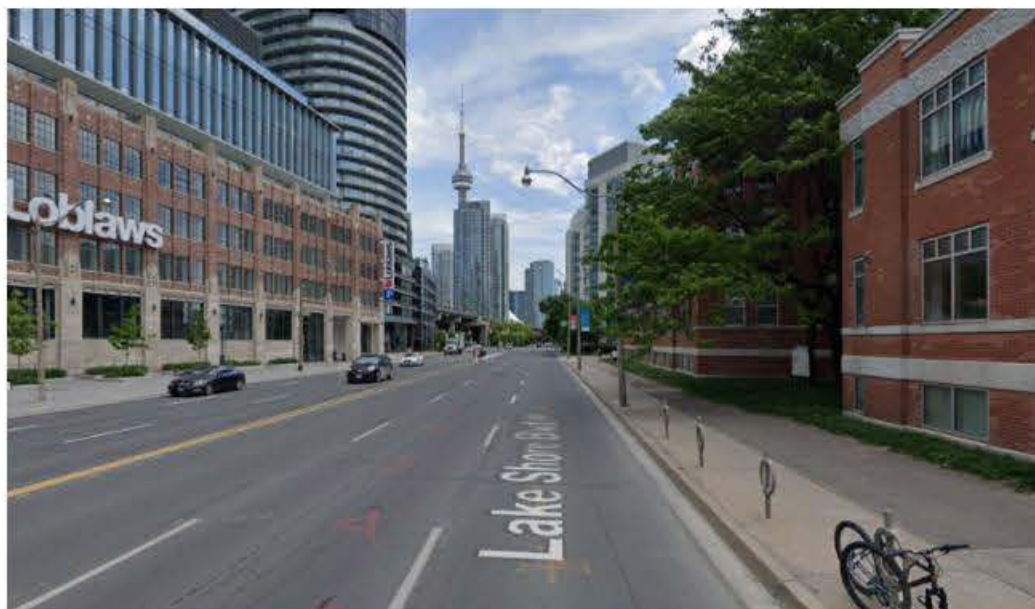
1920s photograph of Crosse & Blackwell Building including decorative stone banding on the building's north and west elevations and smokestack (both removed) (City of Toronto Archives)



1920's aerial photographs of 545 Lake Shore Blvd West and demolished Maple Leaf Stadium (City of Toronto Archives)

CONTEXT

SITE PHOTOS



ADJACENT DEVELOPMENT & USES

1. 500 Lake Shore (North)

37 & 41 storey residential condo
7 storey commercial/ heritage

2. 600 Queens Harbour Condos (East)

11 storey residential buildings

3. Martin Goodman Trail and LRT (South)**4. Little Norway Park (South)**

5. 650 Queens Quay West
Atrium Condominium (16 storey)
and Esso Gas Station (West)



SITE & NEIGHBOURHOOD CONTEXT



- Canada malt silos
- waterfront community centre & school
- eireean quat & streetscape improvements
- water's edge promenade



SITE & COMMUNITY CONTEXT



THE BENTWAY

FORT YORK +
GARRISON COMMON

RAILWAY LANDS WEST

CORONATION
PARK

FORT YORK

CANOE
LANDING
PARK

LAKE SHORE BOULEVARD WEST

BATHURST ST.

DAN LECKIE WAY

GARDINER EXPRESSWAY

SUBJECT
SITE

BATHURST QUAY

QUEENS QUAY

TORONTO
MUSIC
GARDEN

IRELAND
PARK

LAKE ONTARIO

MOST RECENT NEARBY DEVELOPMENTS

east



350 Queens Quay West east

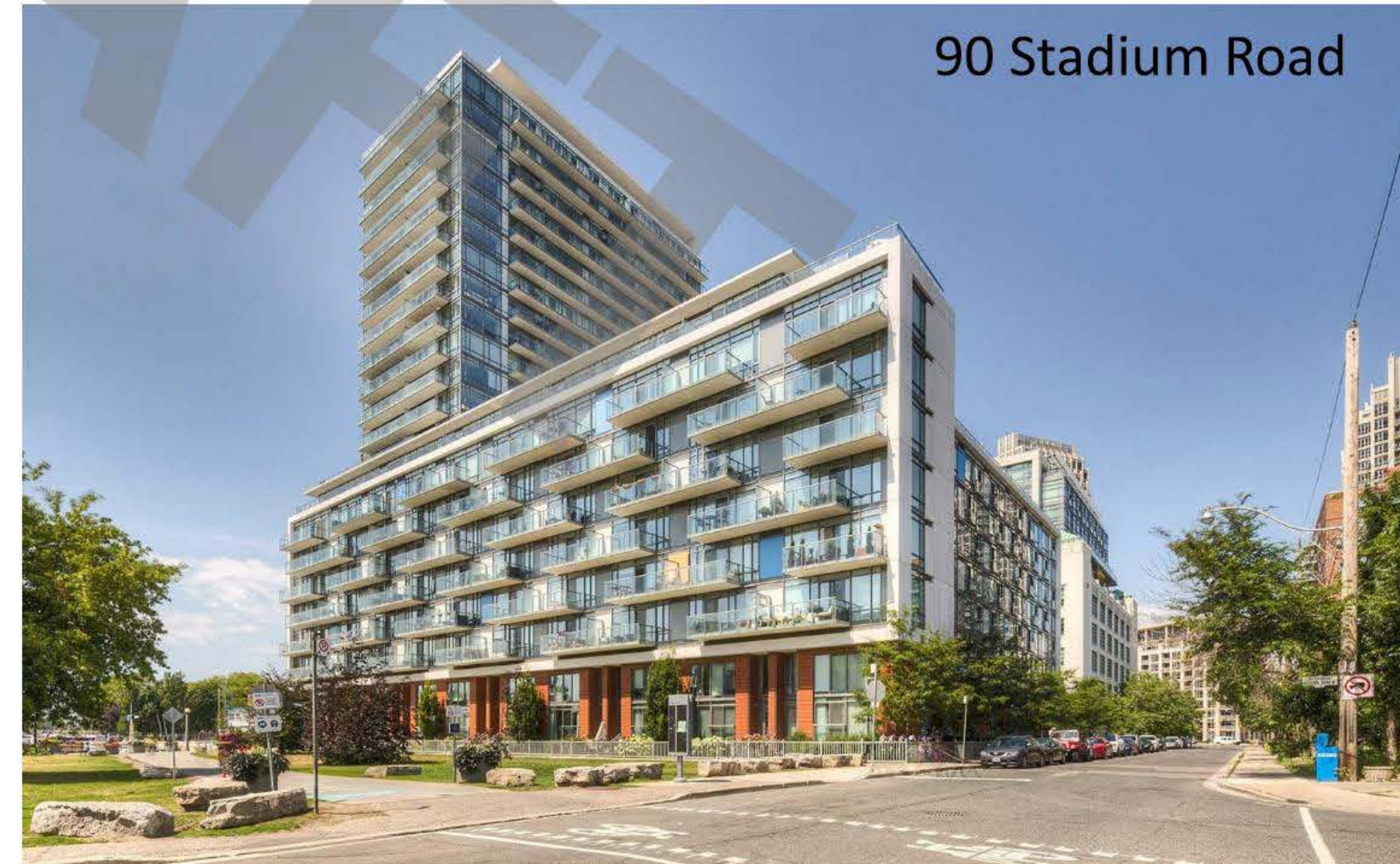


north

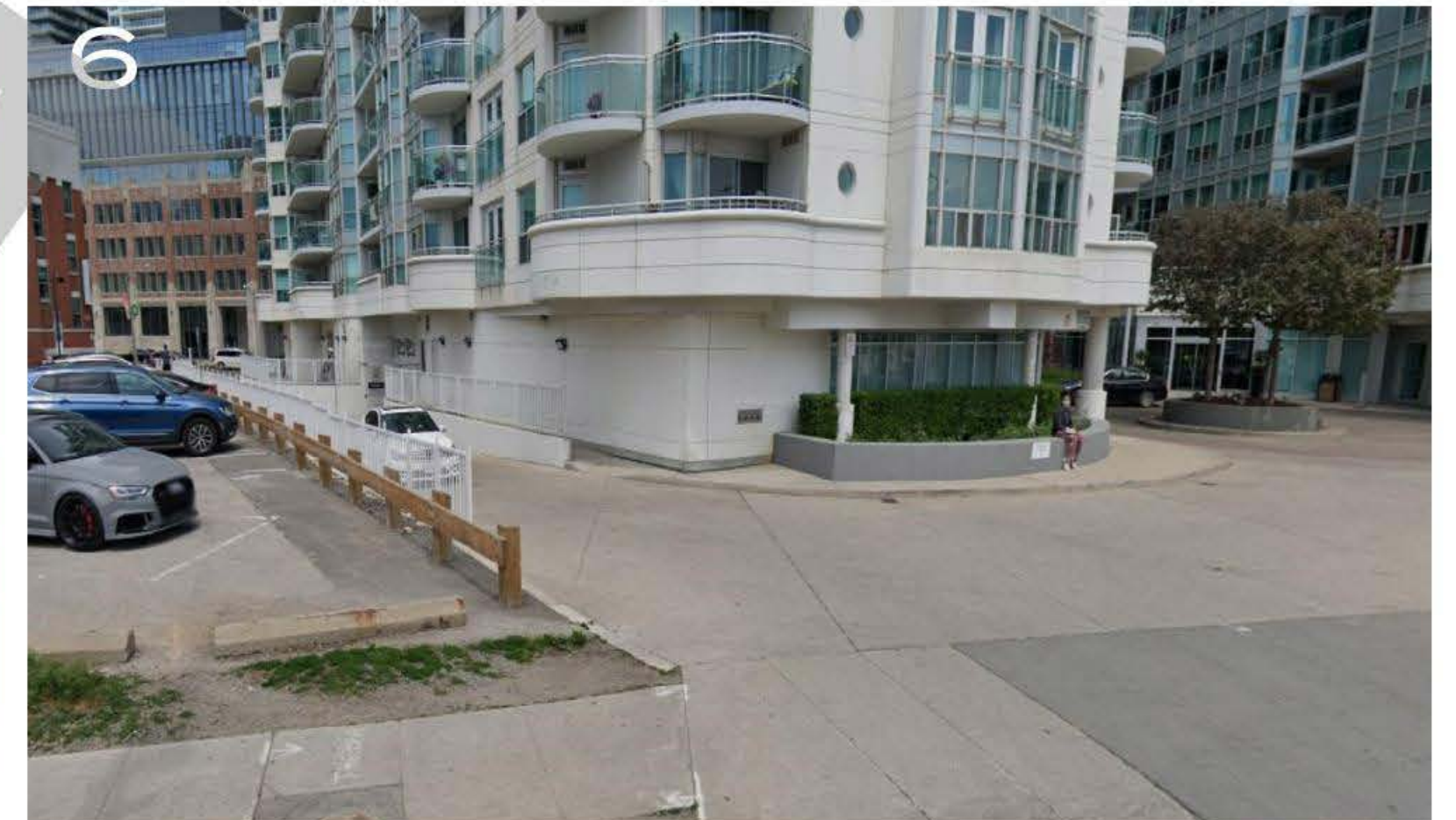
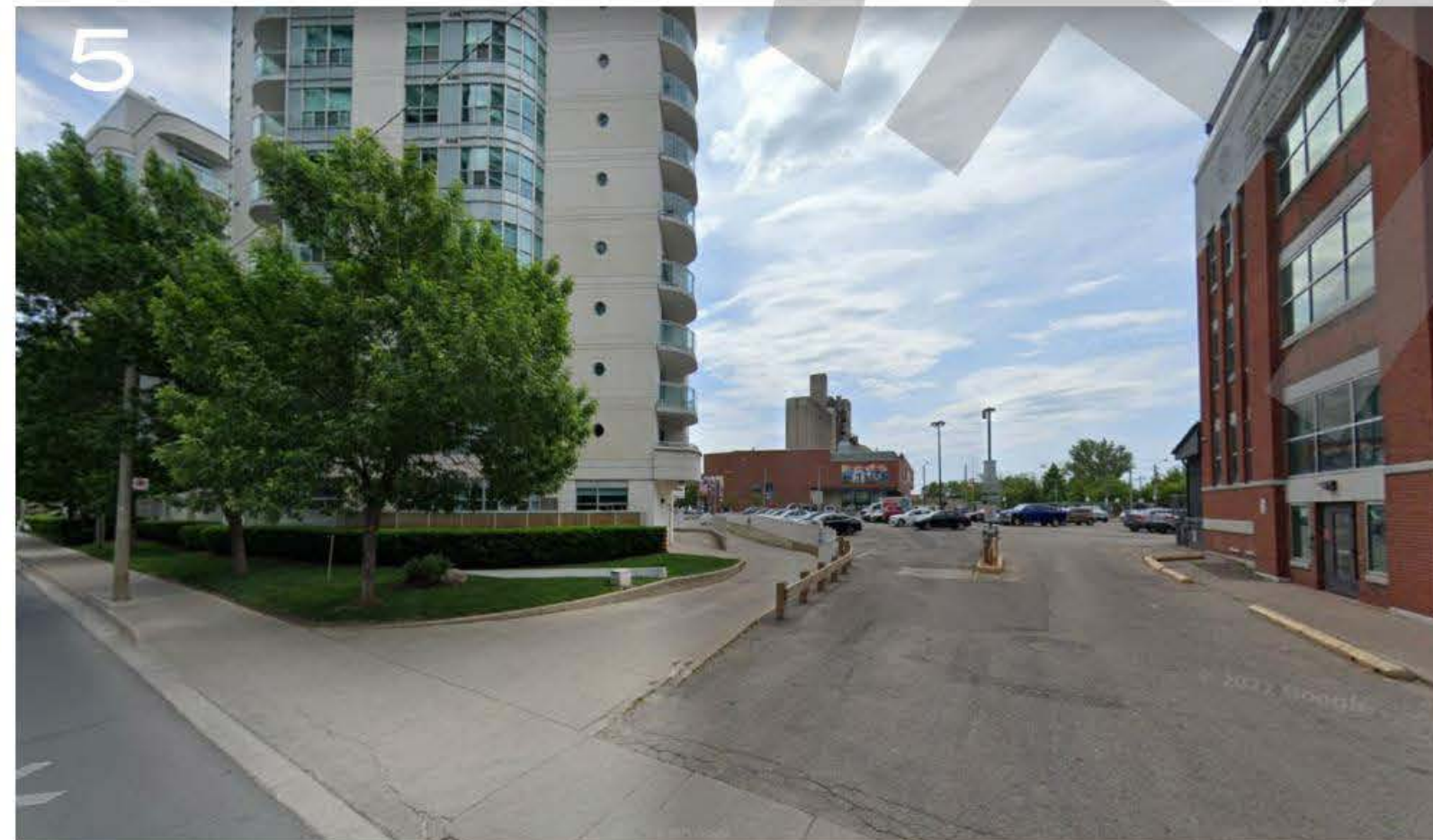
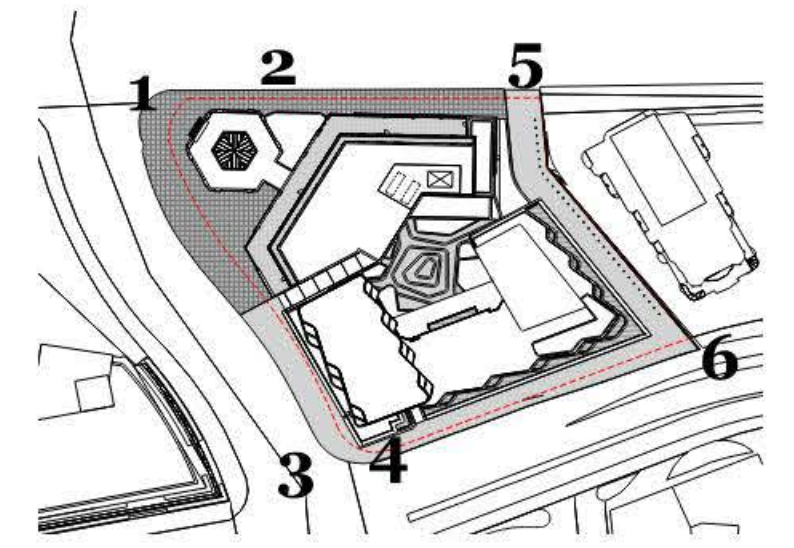


90 Stadium Road

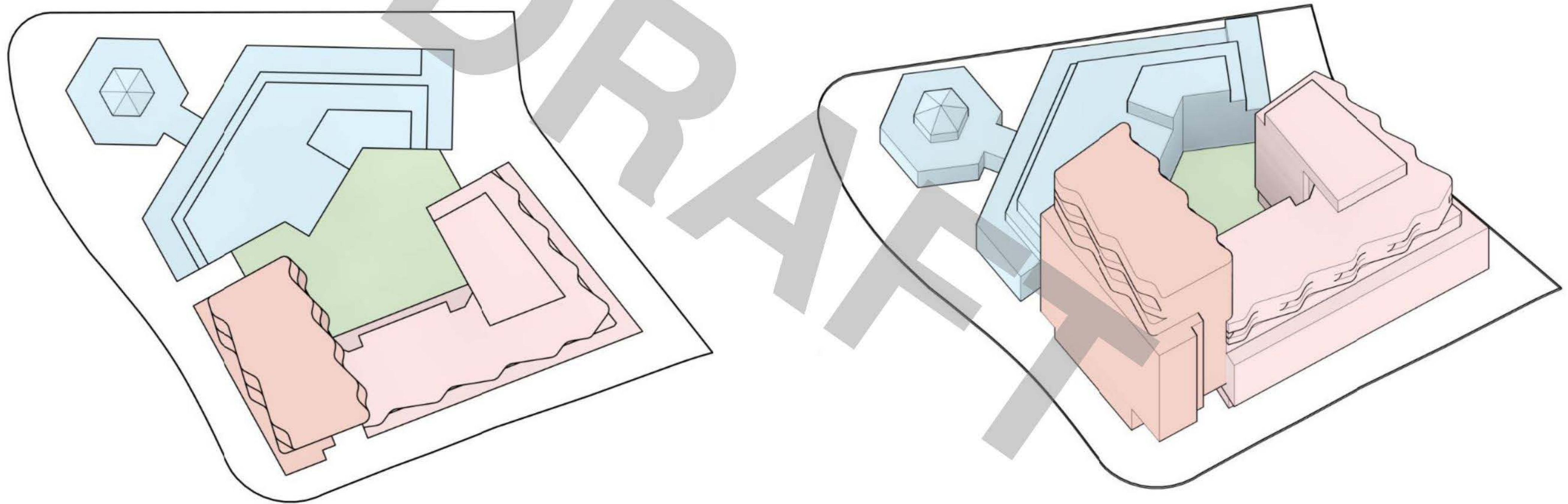
west

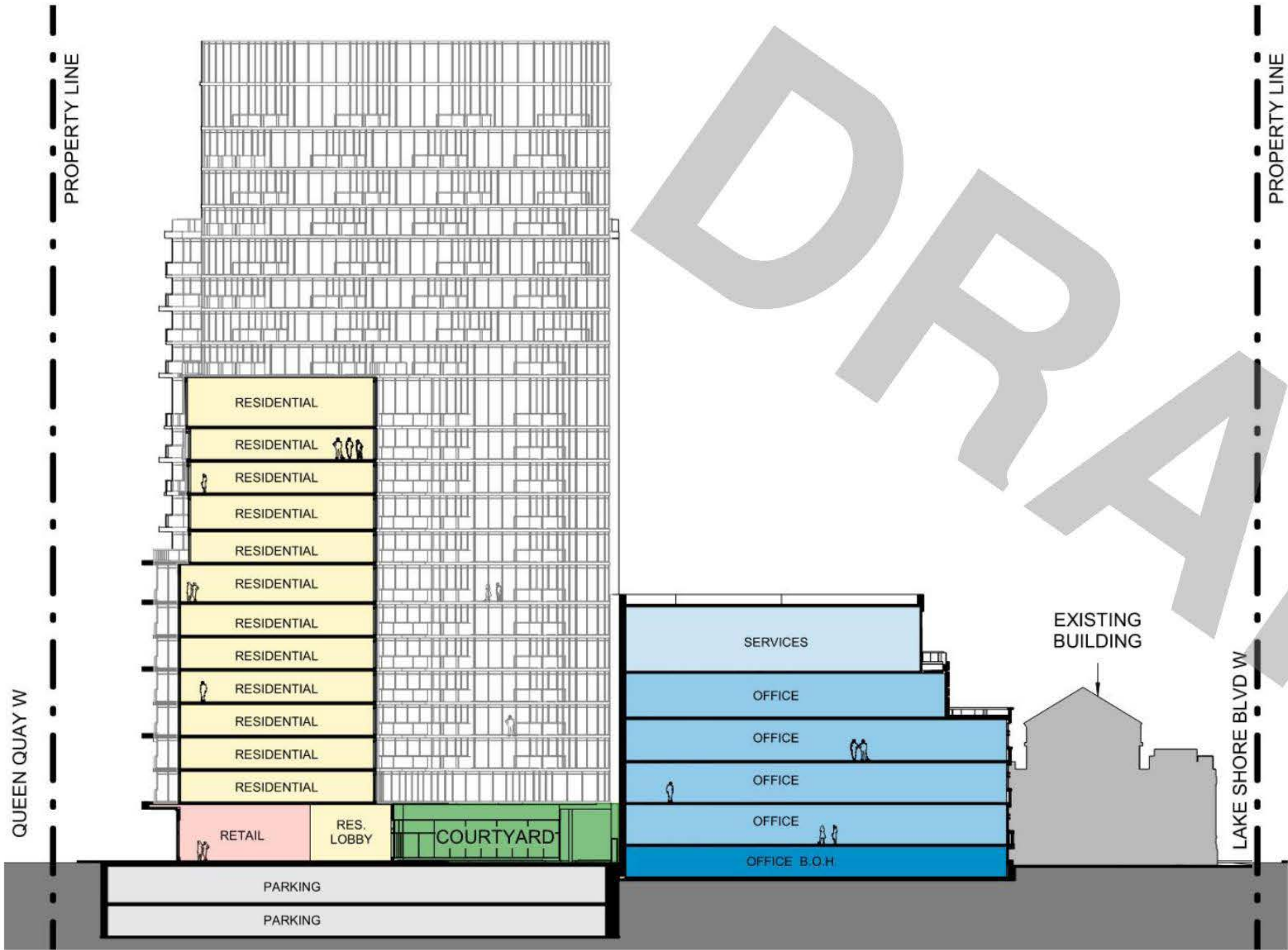


BUILDING
SITE PHOTOS



- TOWER
- PODIUM
- OFFICE
- COURTYARD





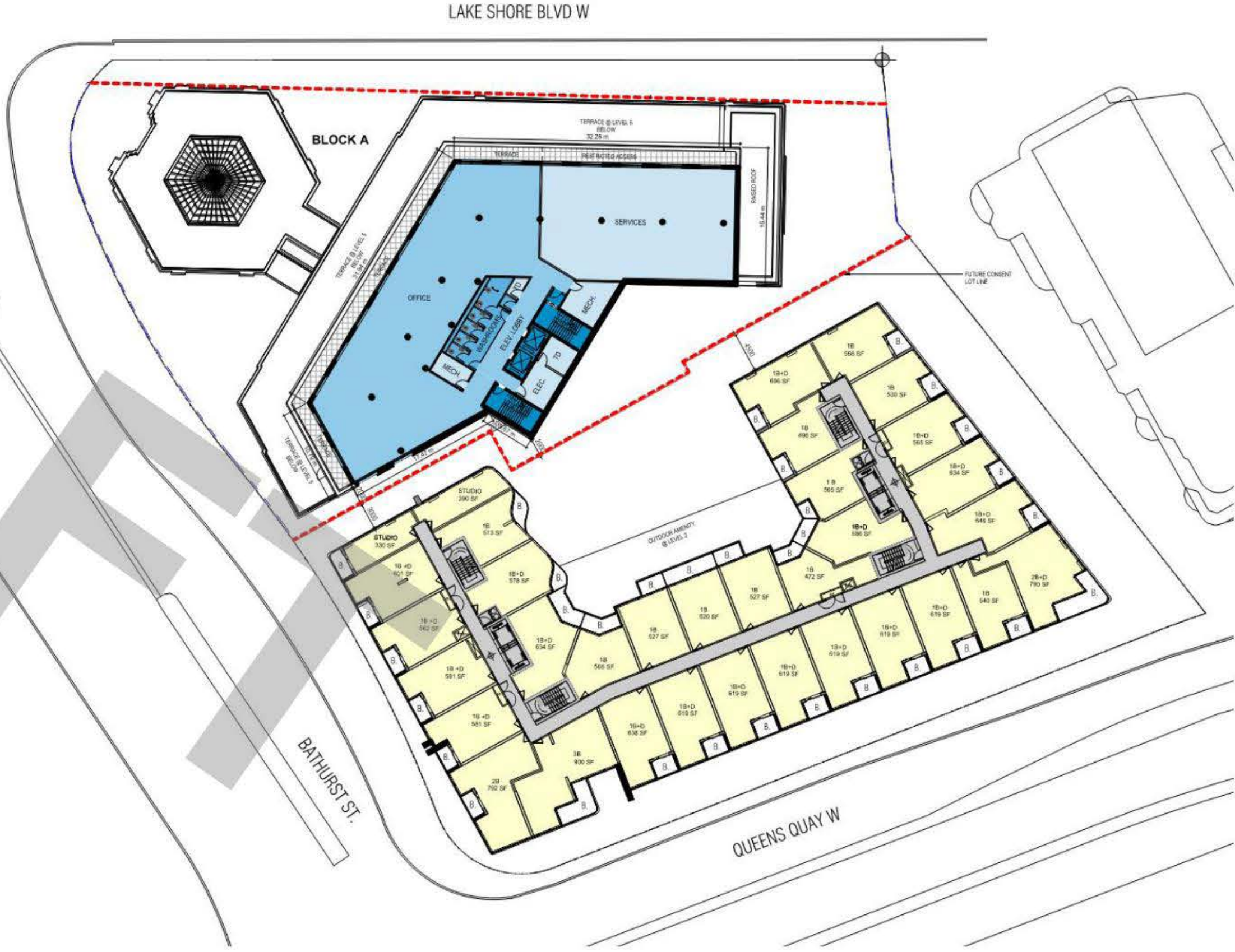
STATISTICS

SITE AREA	Gross: 7,324 sm / 78,839 SF Net: 6,983 sm / 75,168 SF
GROUND FLOOR AREA	TOTAL GFA: 38,479 SM / 414,190 SF Res: 28,733 sm / 295,804 SF Retail: 808 sm / 8,697 SF Office: 8,938.2 sm / 96,211 SF
UNITS	TOTAL UNITS: 412 Bach: 23 1 bedroom: 274 2 bedroom: 67 3 bedroom: 48
AMENITY	TOTAL AMENITY: 1,790 SM / 19,267 SF Indoor Amenity: 824 sm / 8,869 SF Outdoor Amenity: 966 sm / 10,398 SF
CAR PARKING	CAR PARKING TOTAL: 144 resident: 103 visitor/ commercial shared: 41
BIKE PARKING	Bike Parking: 468

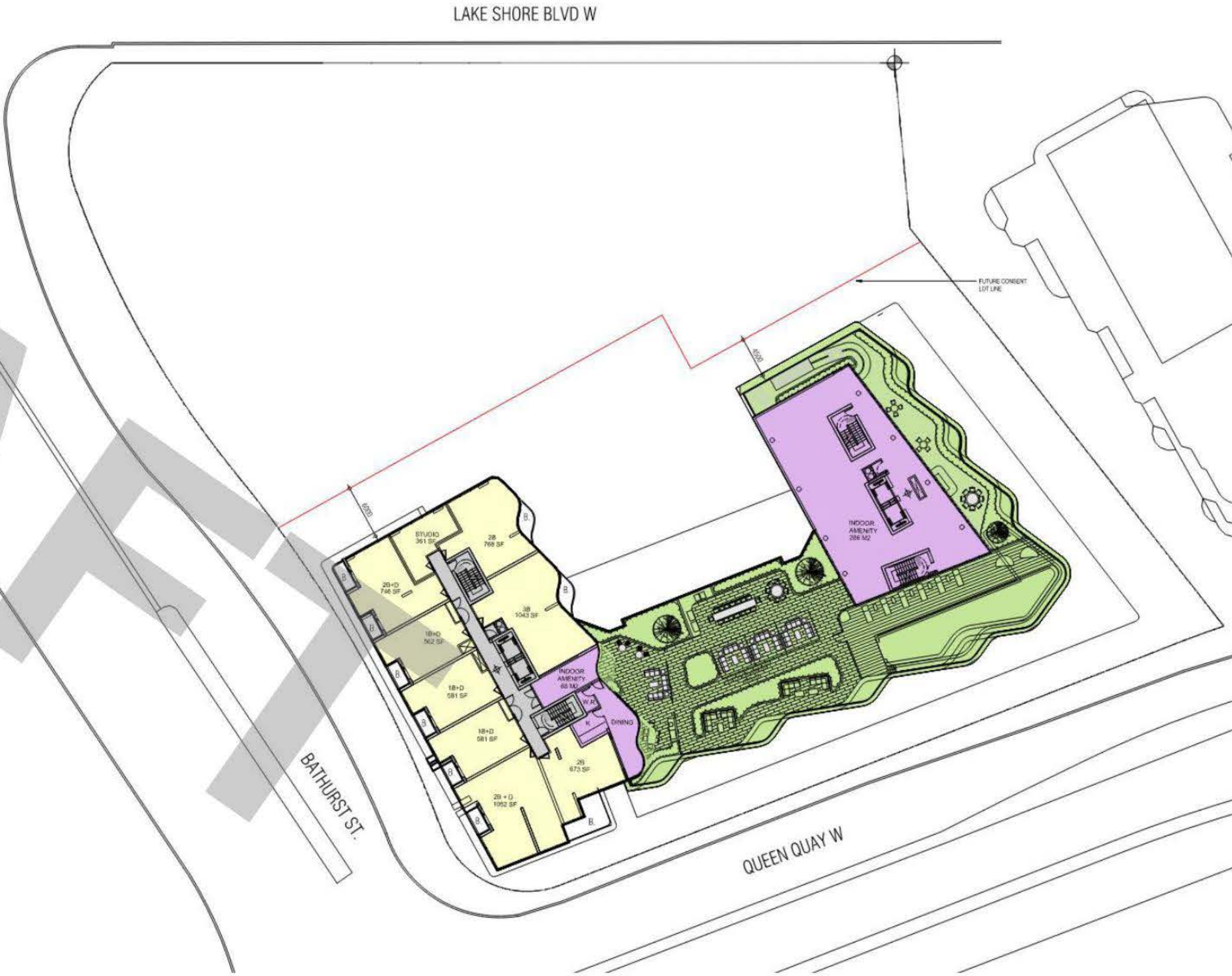
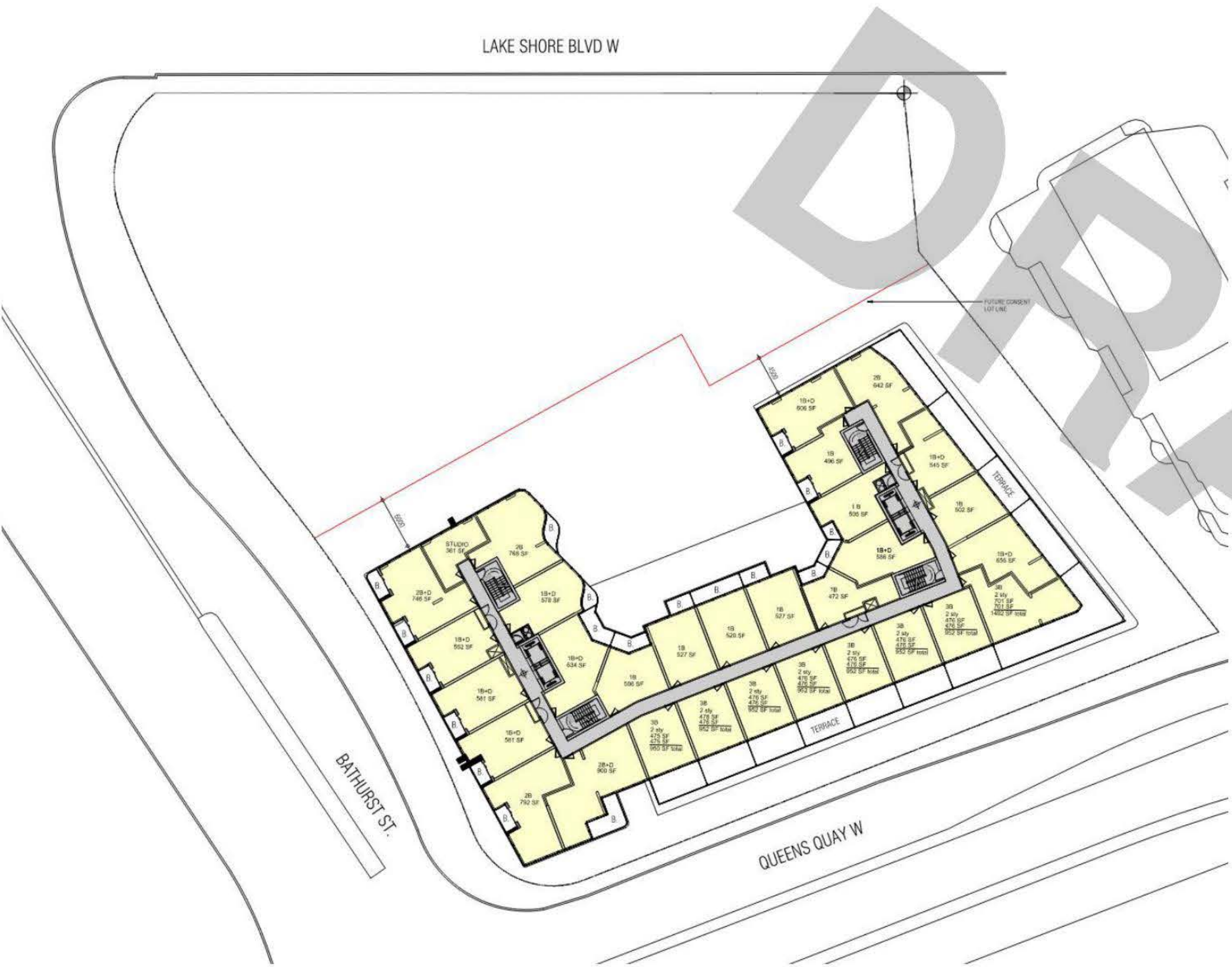
BUILDING

GROUND FLOOR

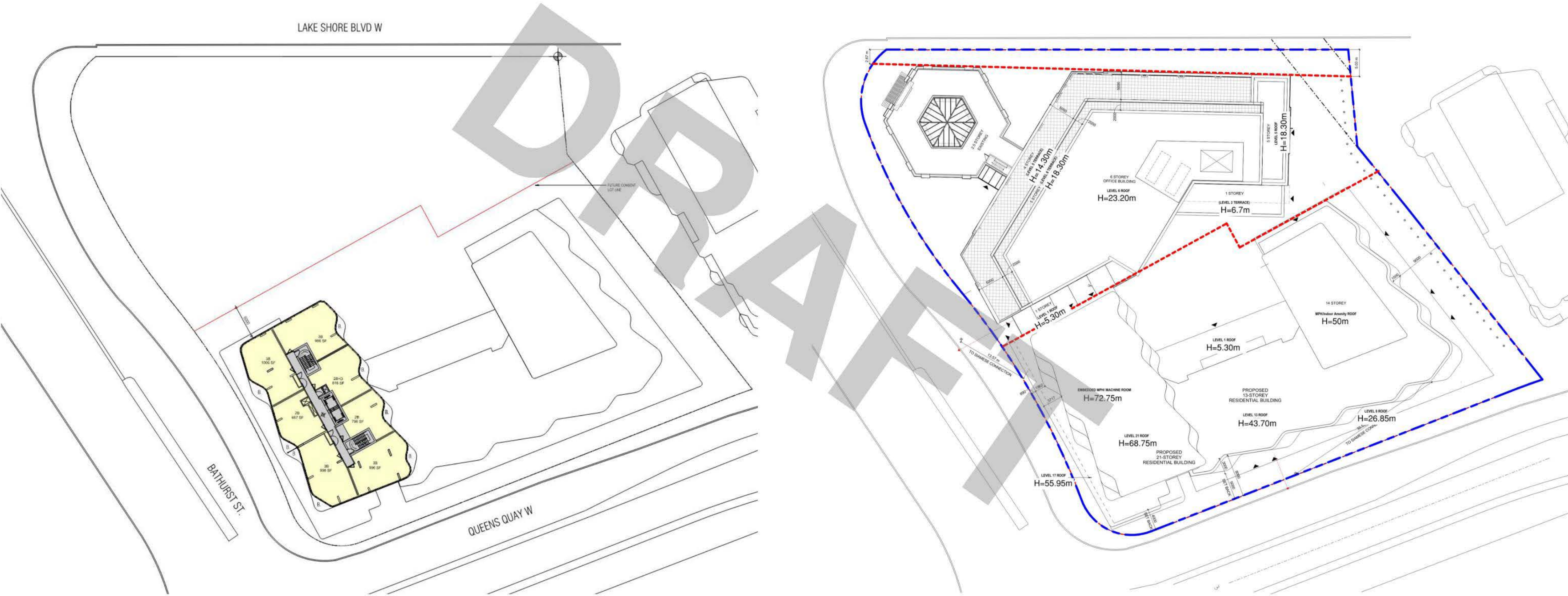




L9 + L14 (RES. AMENITY)

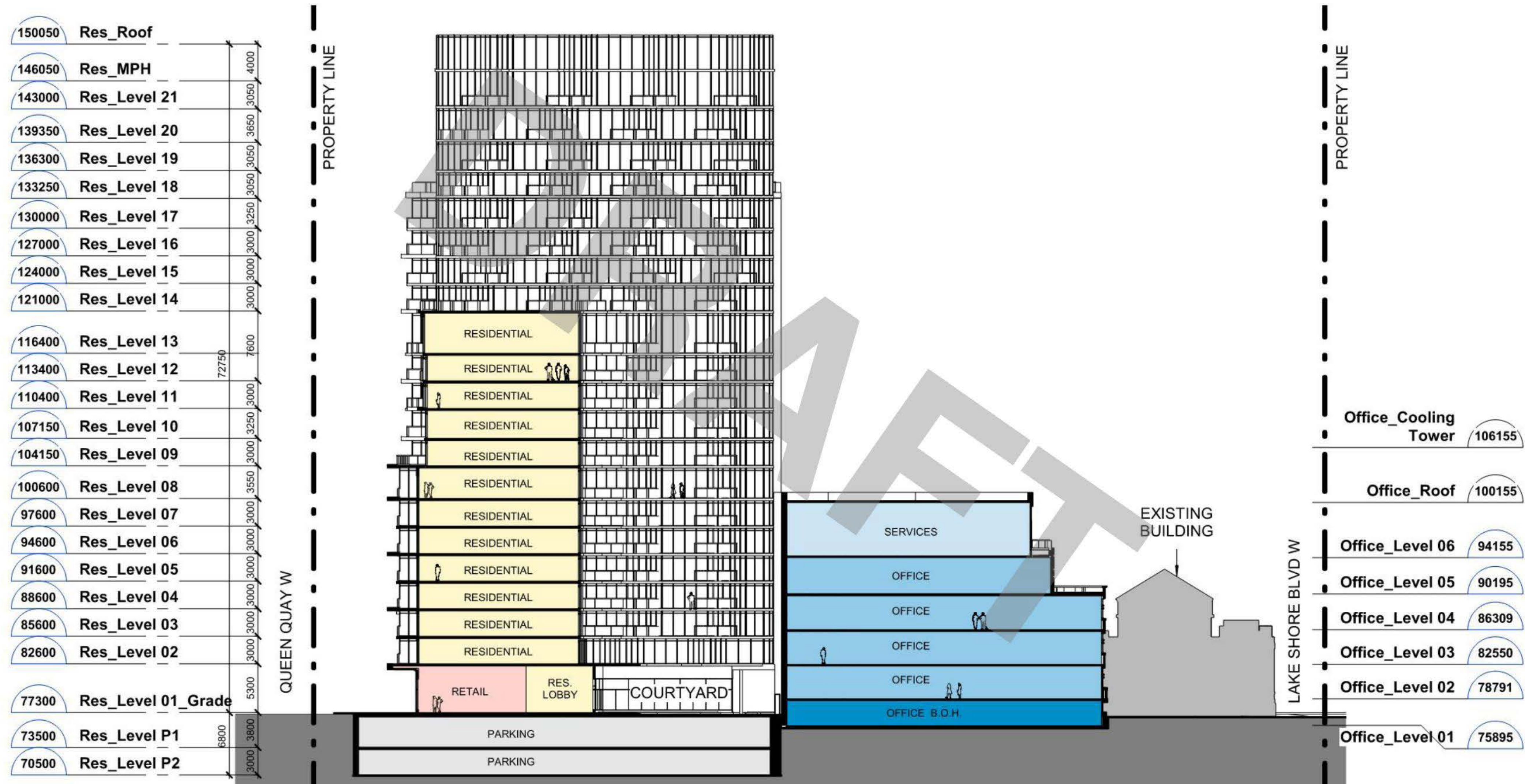


TYPICAL TOWER + ROOF PLAN

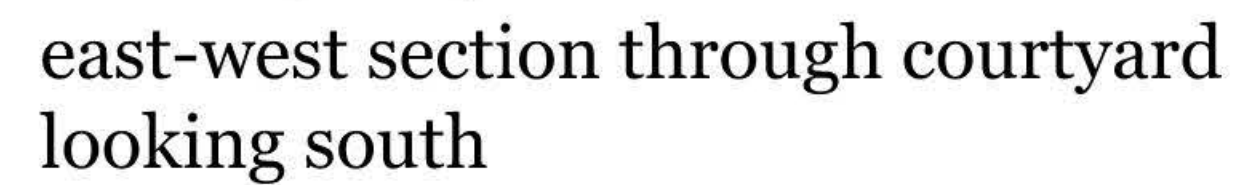


BUILDING

SECTIONS



north-south section through commercial
looking west





BUILDING
ELEVATION







BUILDING
ELEVATION





north view



north-west view

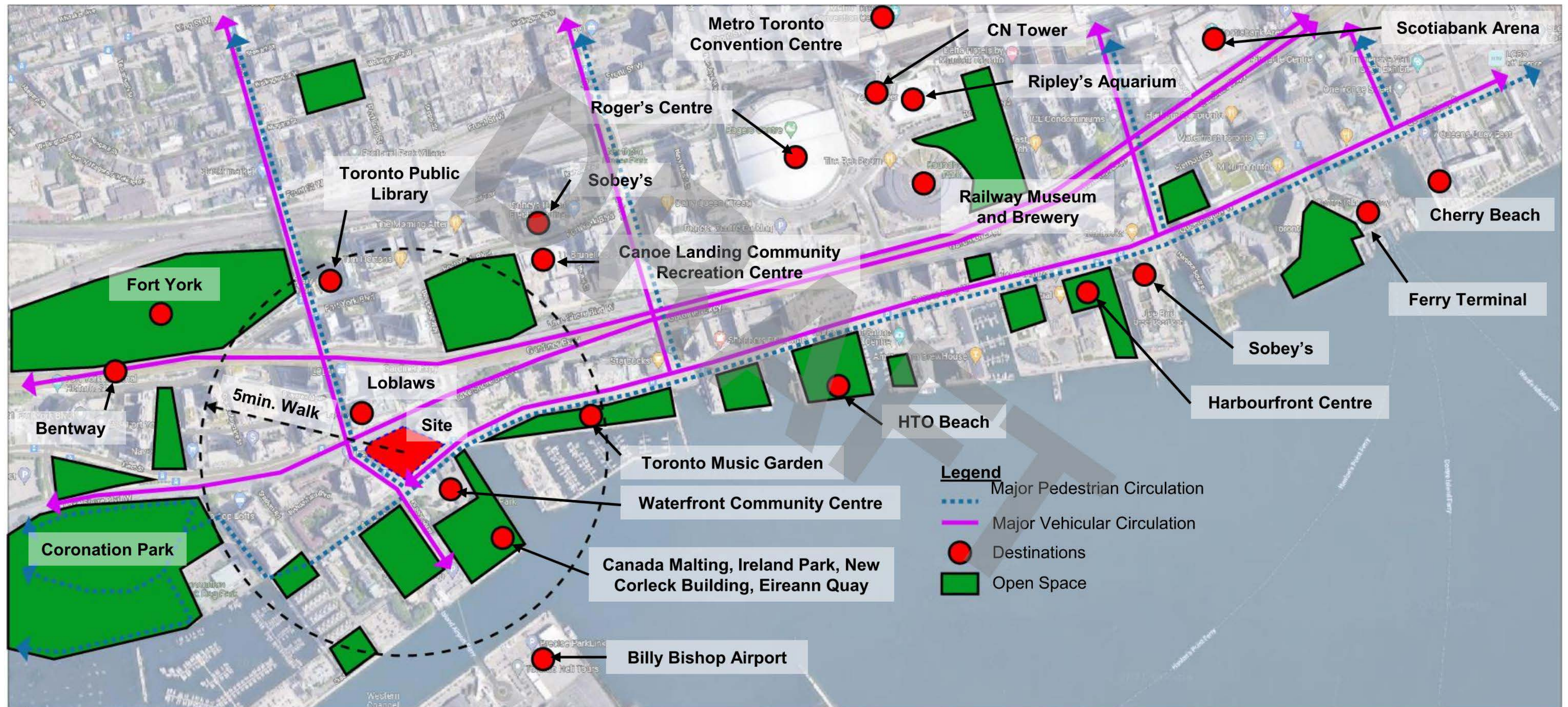


south-east view



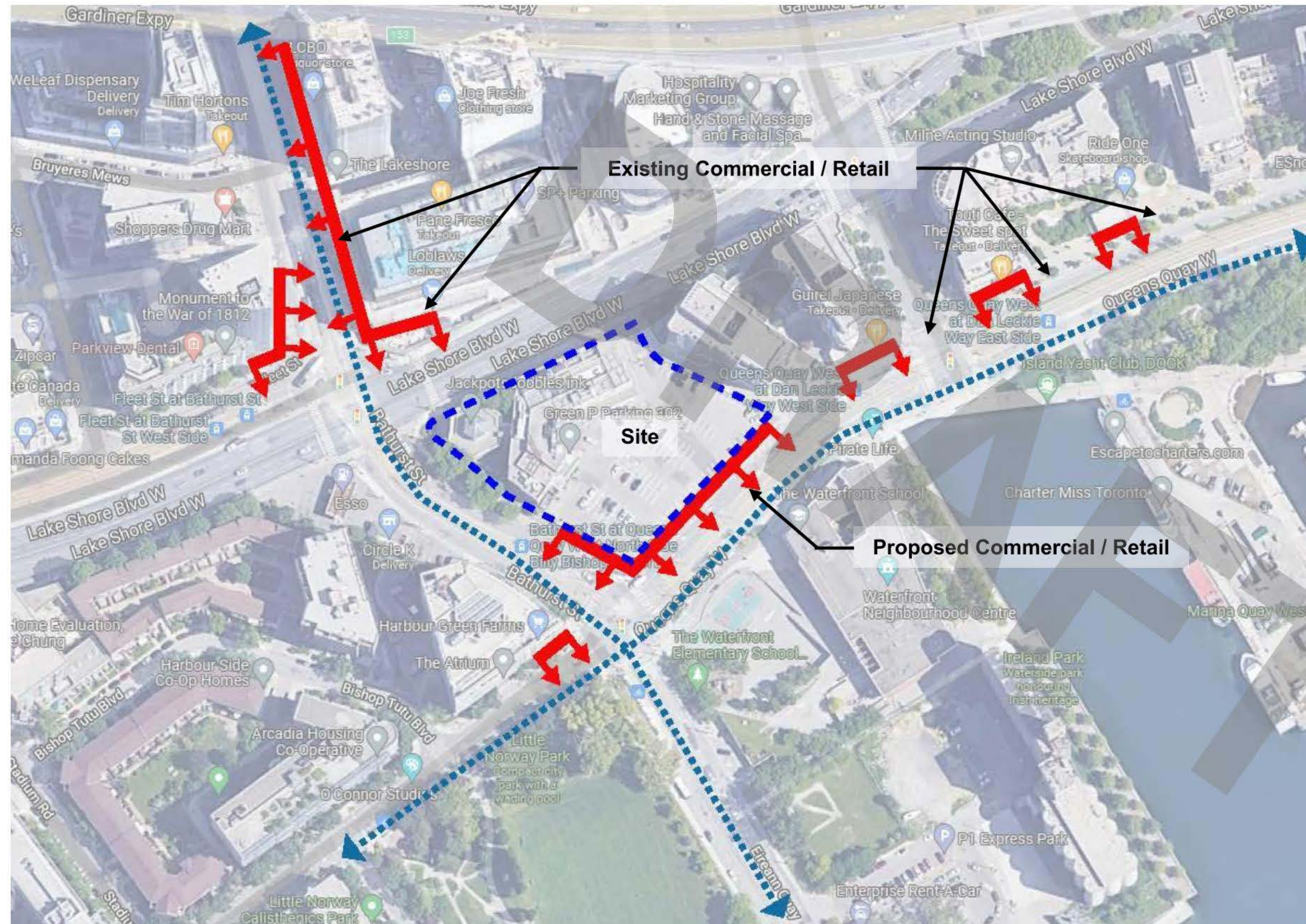
south-west view

WATERFRONT CONTEXT



The site is located in the waterfront at a significant point of major vehicular and pedestrian circulation surrounding the site. A wide variety of open spaces and activity nodes can be found along the waterfront and within a 5 min walk around the site.

EXISTING/PROPOSED COMMERCIAL



Existing commercial / retail frontages in the area are short and intermittent. The site has an opportunity to provide a longer retail space to animate the public realm and provide an introduction of Toronto patio life to visitors from Billy Bishop airport.



Queens Quay West – Adjacent Site



Loblaws North of Lakeshore Boulevard

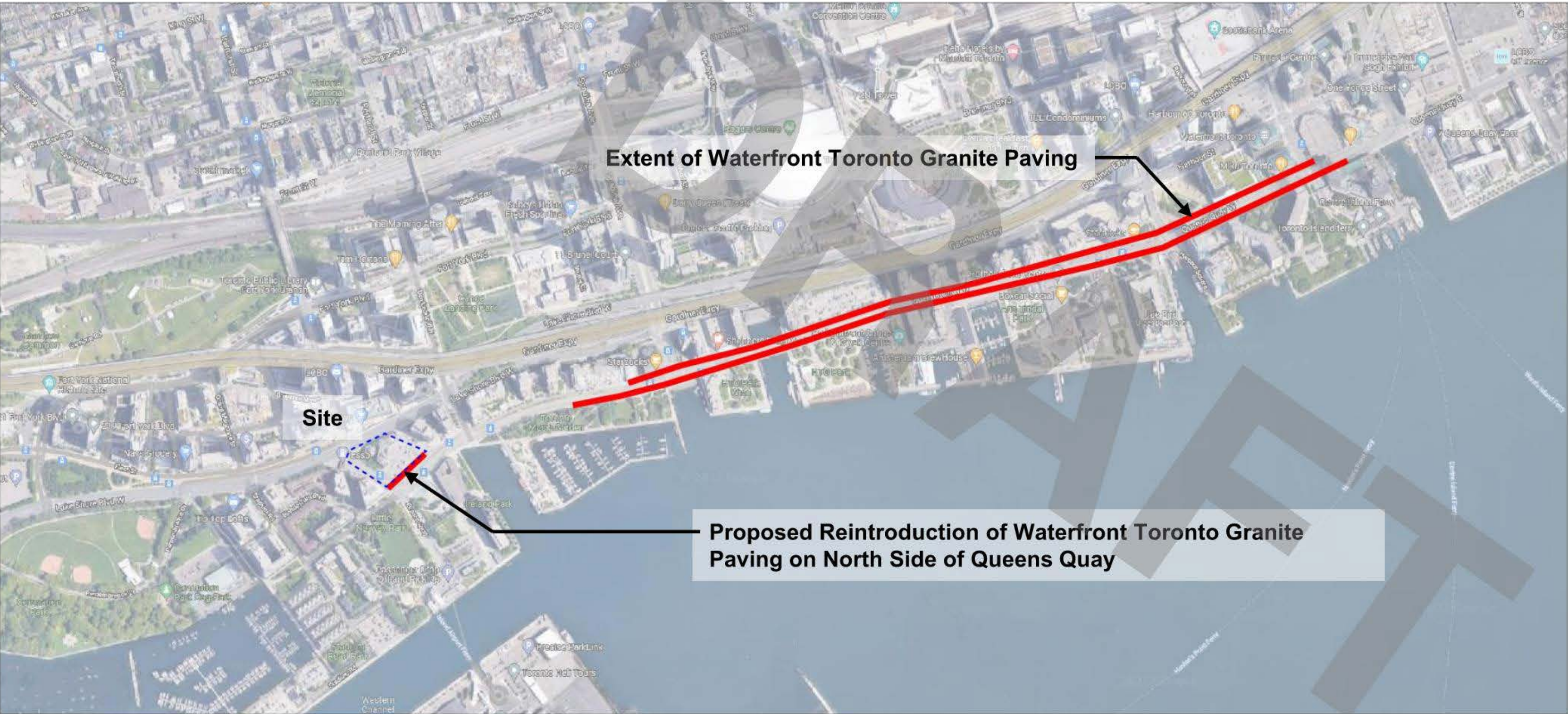


East Corner Retail Bathurst and Queens Quay



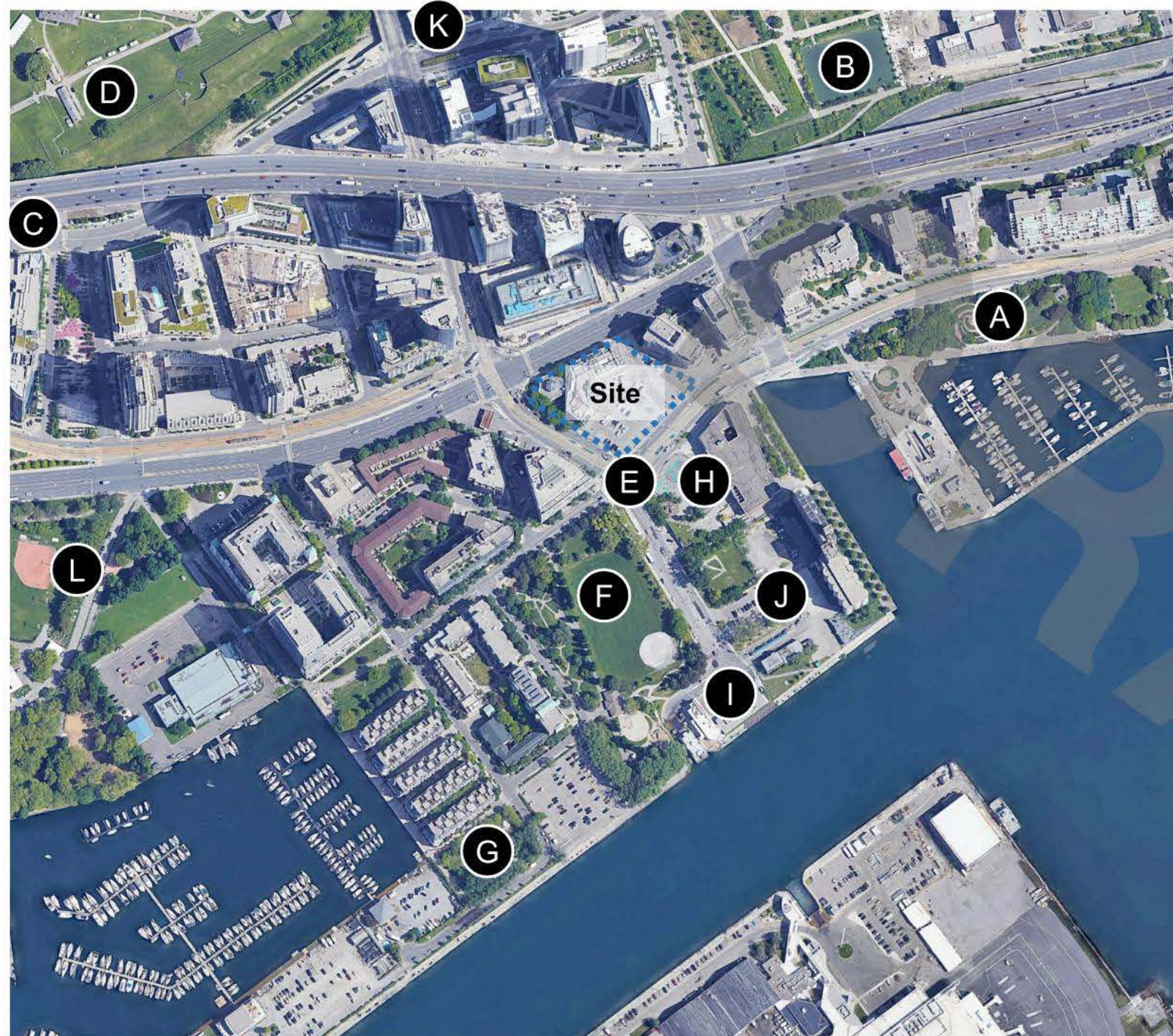
Queens Quay West South Playground

WATERFRONT TORONTO GRANITE PAVING



Red granite paving (“Canadian Red”) with black granite (“Cambrian Black”) accent curbs are a unifying material element along the Toronto Waterfront. As a gateway from Billy Bishop Airport, the use of the granite paving is an introduction to the waterfront

PARKS AND MAJOR NODES



Examples of some of the public open spaces and activity nodes surrounding the site.



Toronto Music Garden



Canoe Landing Park



Bentway



Old Fort York



Martin Goodman Trail



Little Norway Park



Stadium Road Park



Waterfront Community Centre



Billy Bishop Airport



Eireann Quay Redevelopment



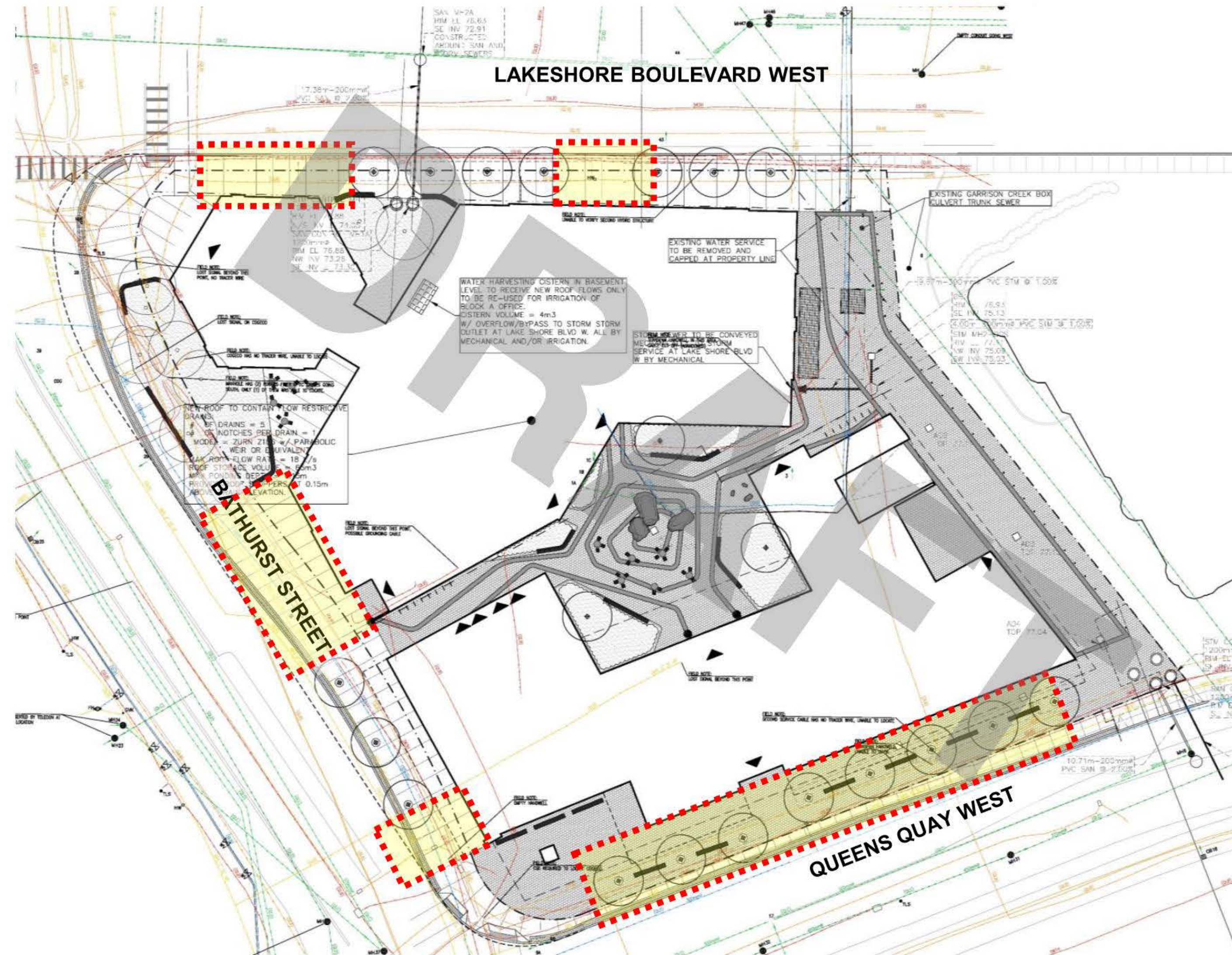
Toronto Public Library – Fort York



Coronation Park

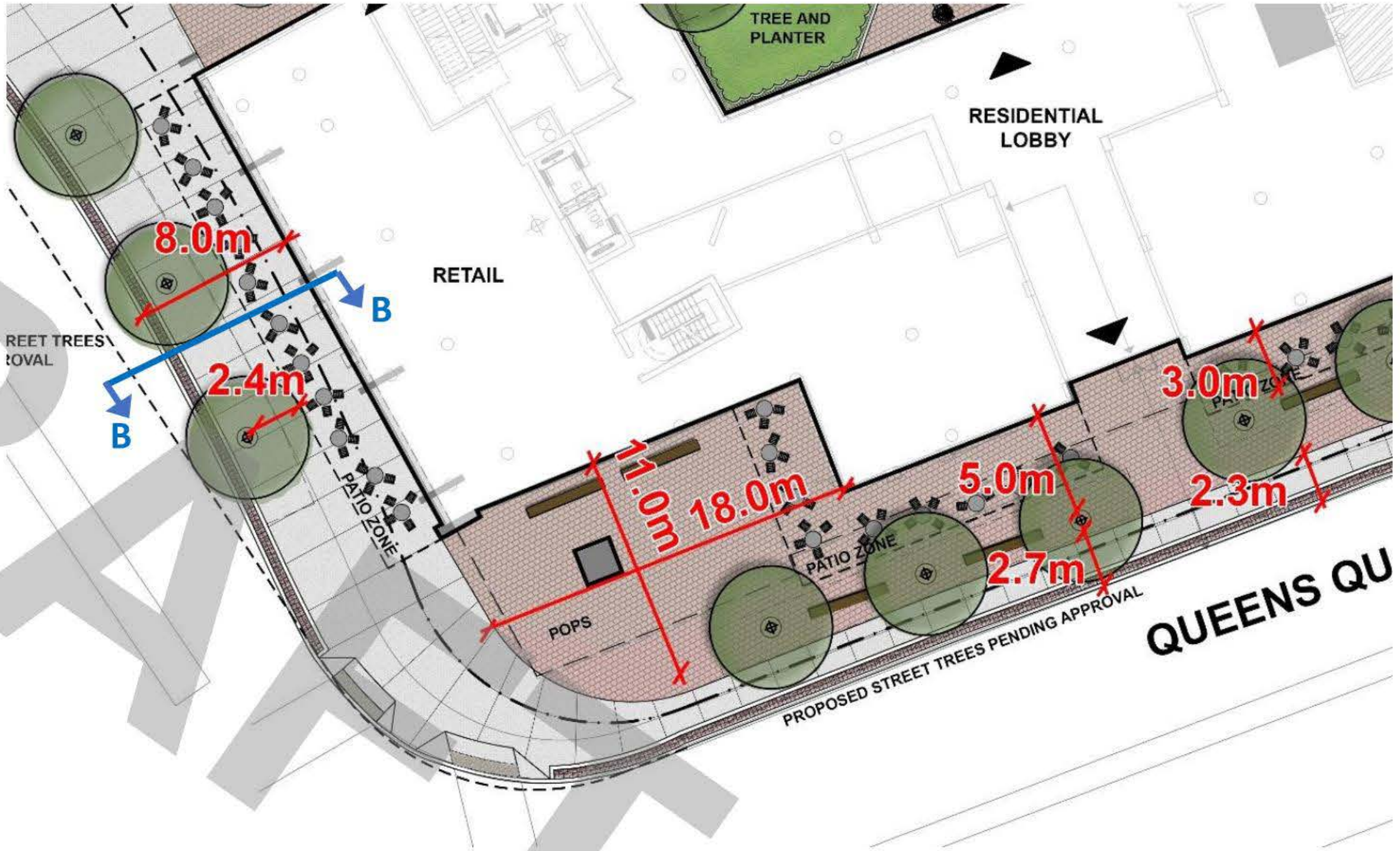
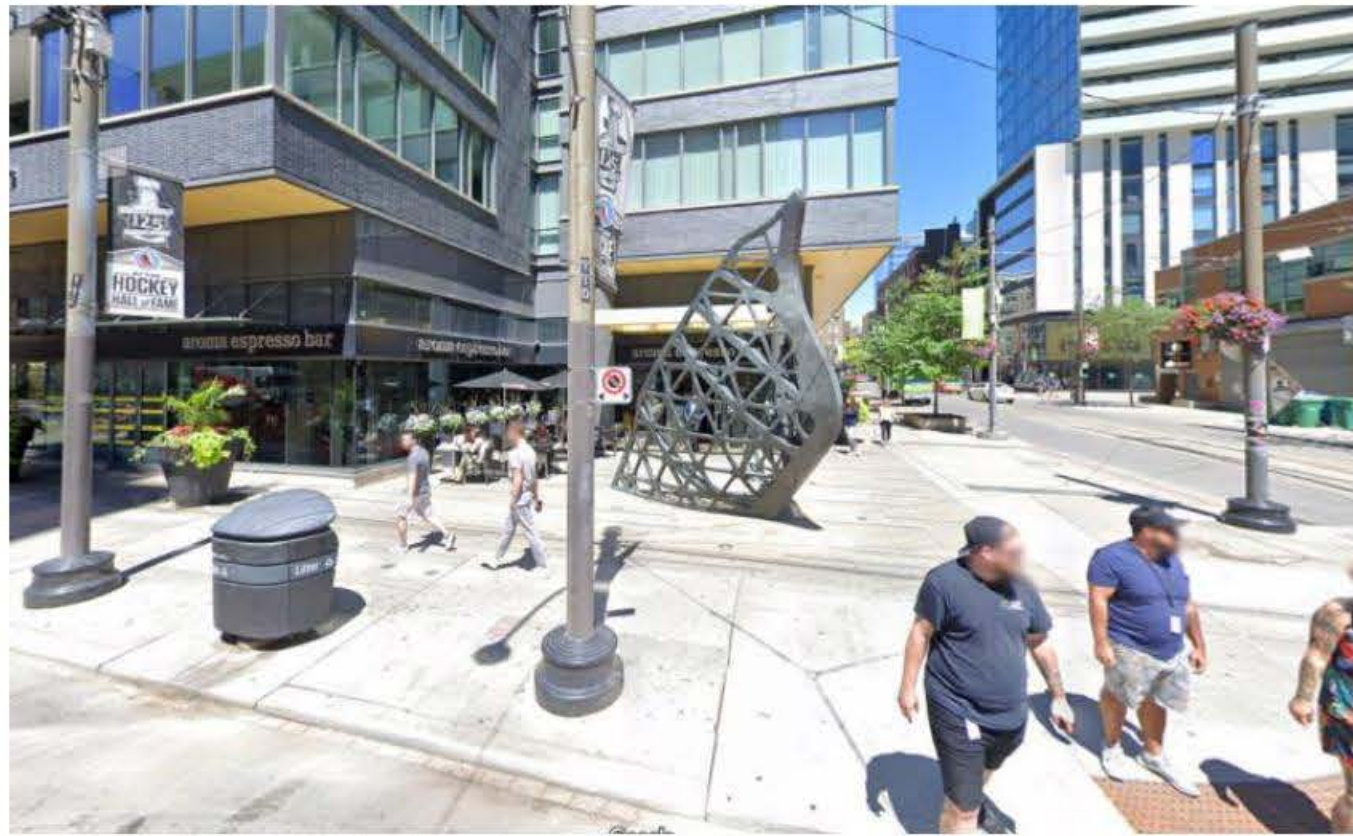
LANDSCAPE PLAN





E) Extensive existing below grade utilities with much of the utilities below the sidewalks. Locating space establishing a rhythm of trees / and establishing 30 cu.m soil volumes while avoiding minimum clearances for utilities is difficult ROW for the site.

QUEENS QUAY & BATHURST (POPS)



The POPS space on Bathurst Street and Queens Quay creates a plaza which can be animated with the adjacent retail / patio space. The plaza is a refuge for people waiting to cross with plenty of space and there is potential for public art.







KEY PLAN

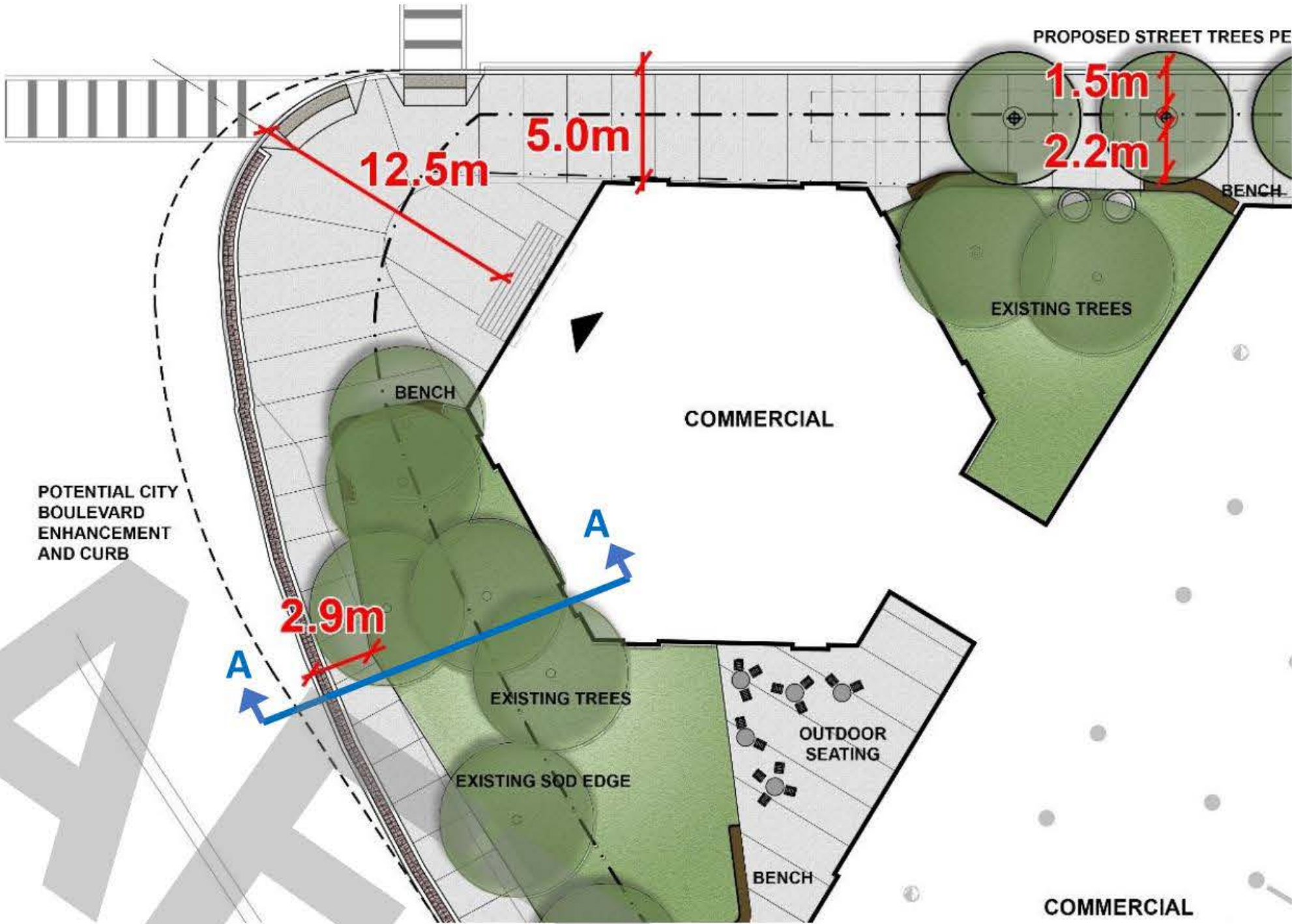
LAKE SHORE & BATHURST



A-A



Yonge Street and Dundas Street, Toronto



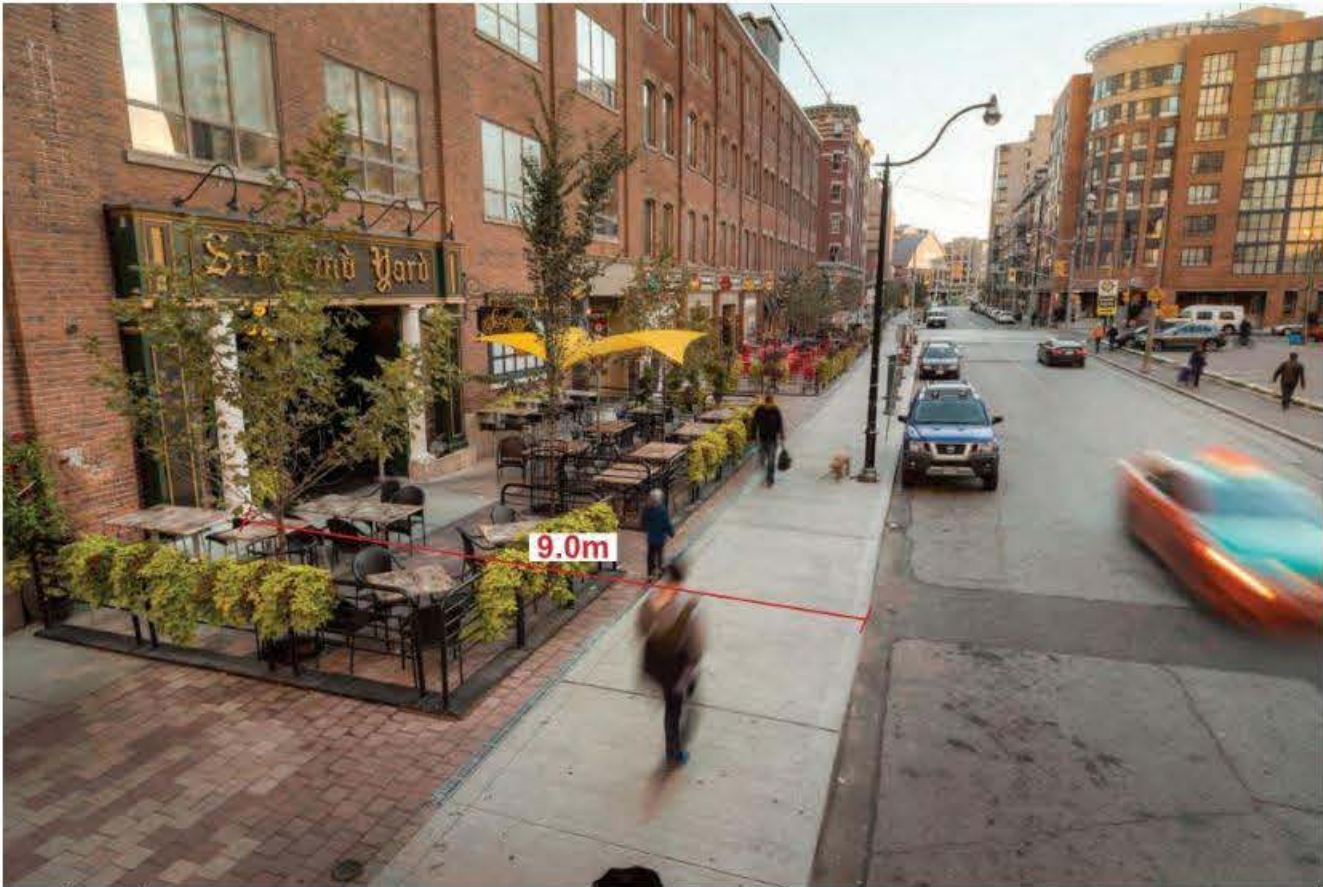
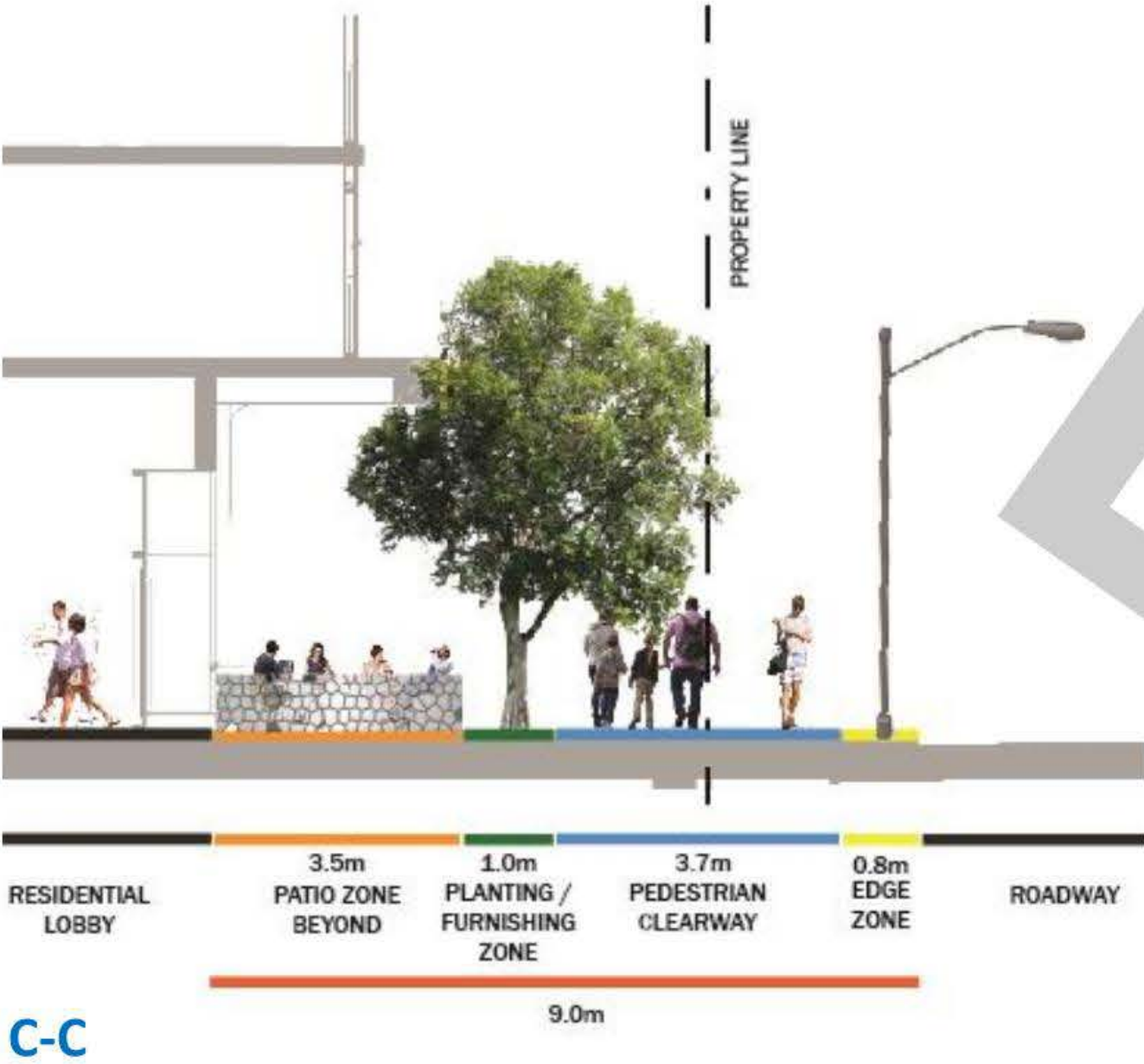
Removing the existing planter in front of the heritage building provides much needed space for pedestrians to wait while waiting for traffic lights. This is important with the busy vehicular traffic along Lakeshore Boulevard and pedestrian traffic along Bathurst. Keeping the existing trees frames the heritage building and adding street trees on Lakeshore reinforces the framing.



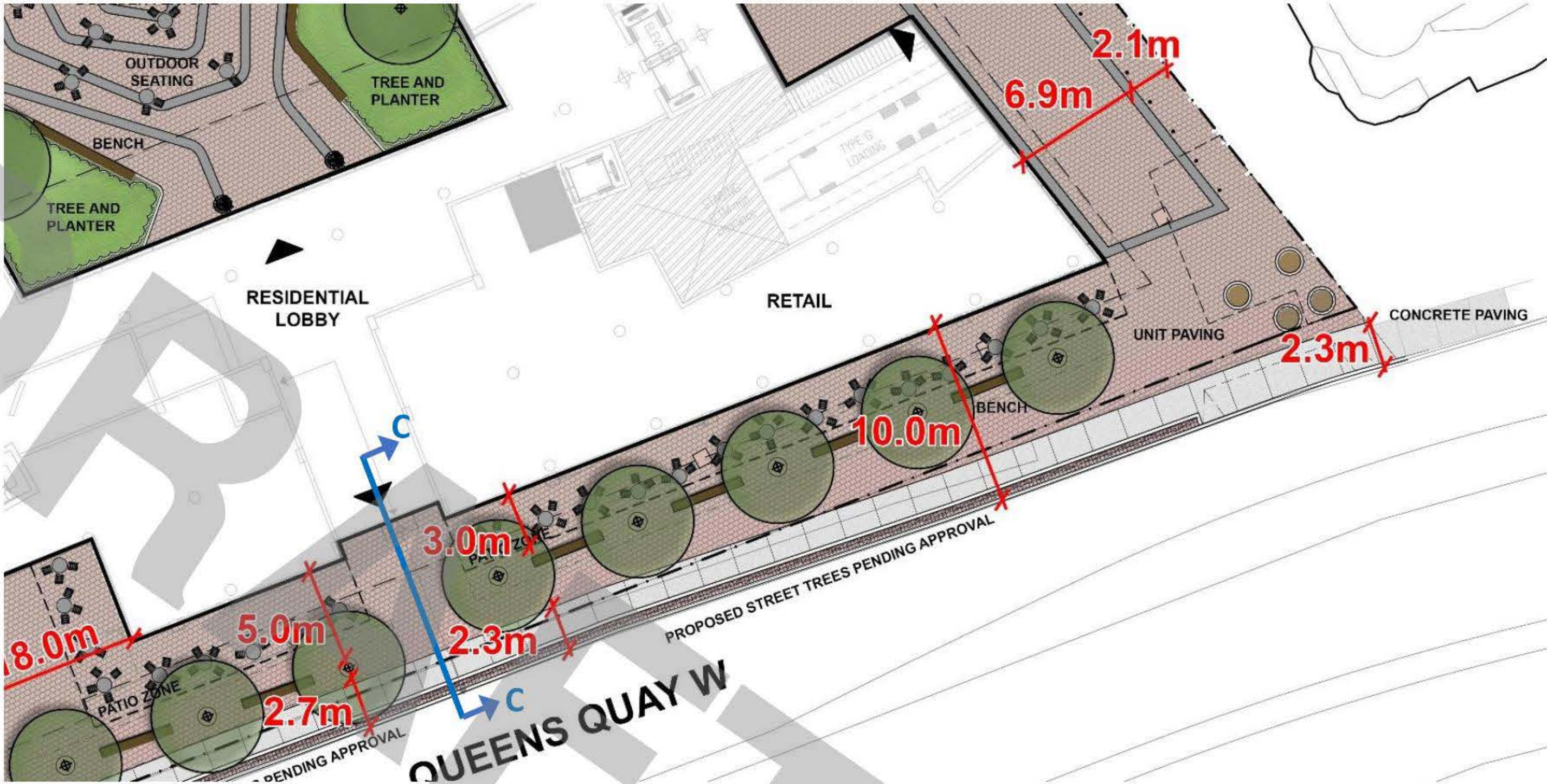


KEY PLAN

QUEENS QUAY WEST STREETSCAPE



Esplanade, Toronto

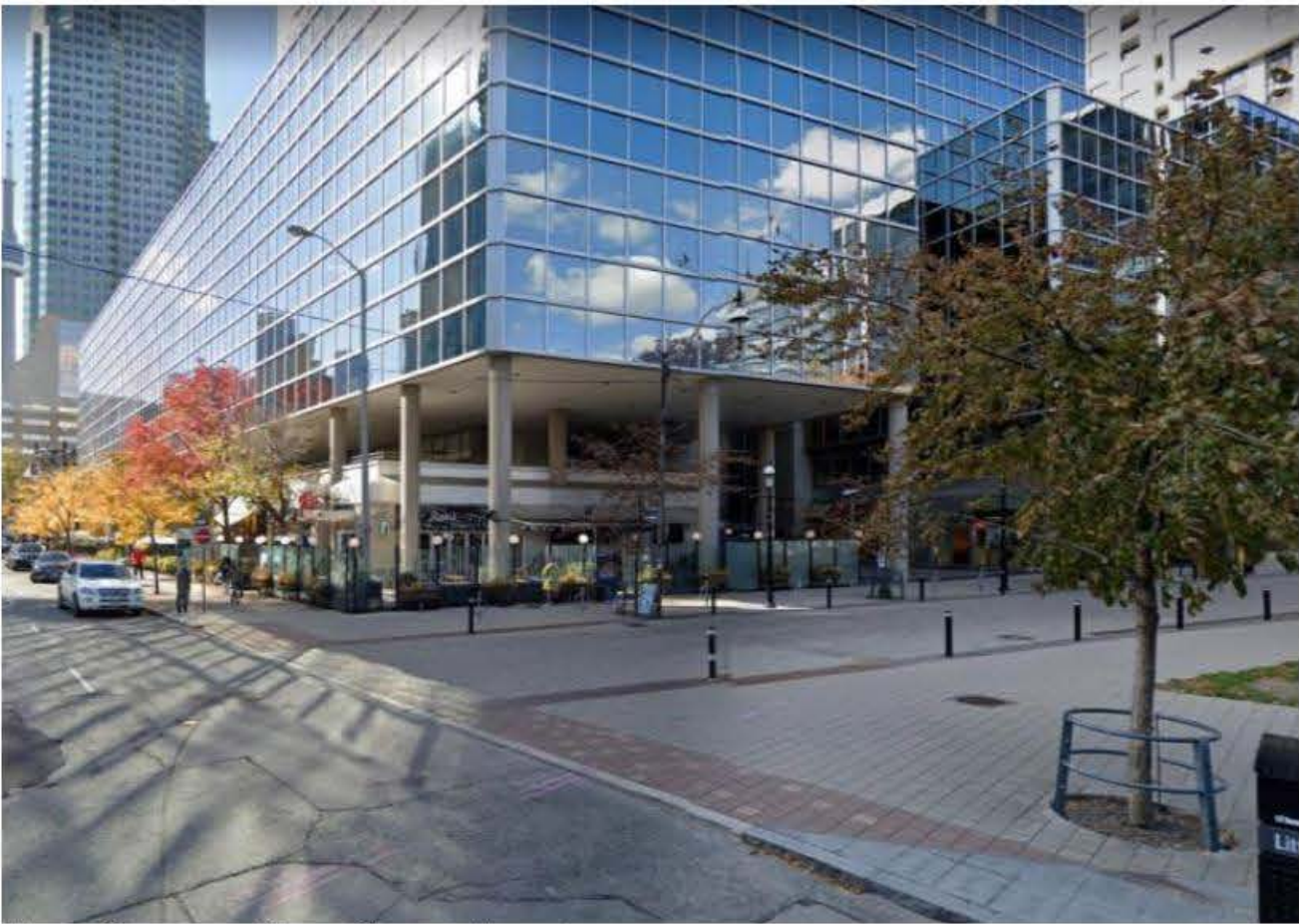
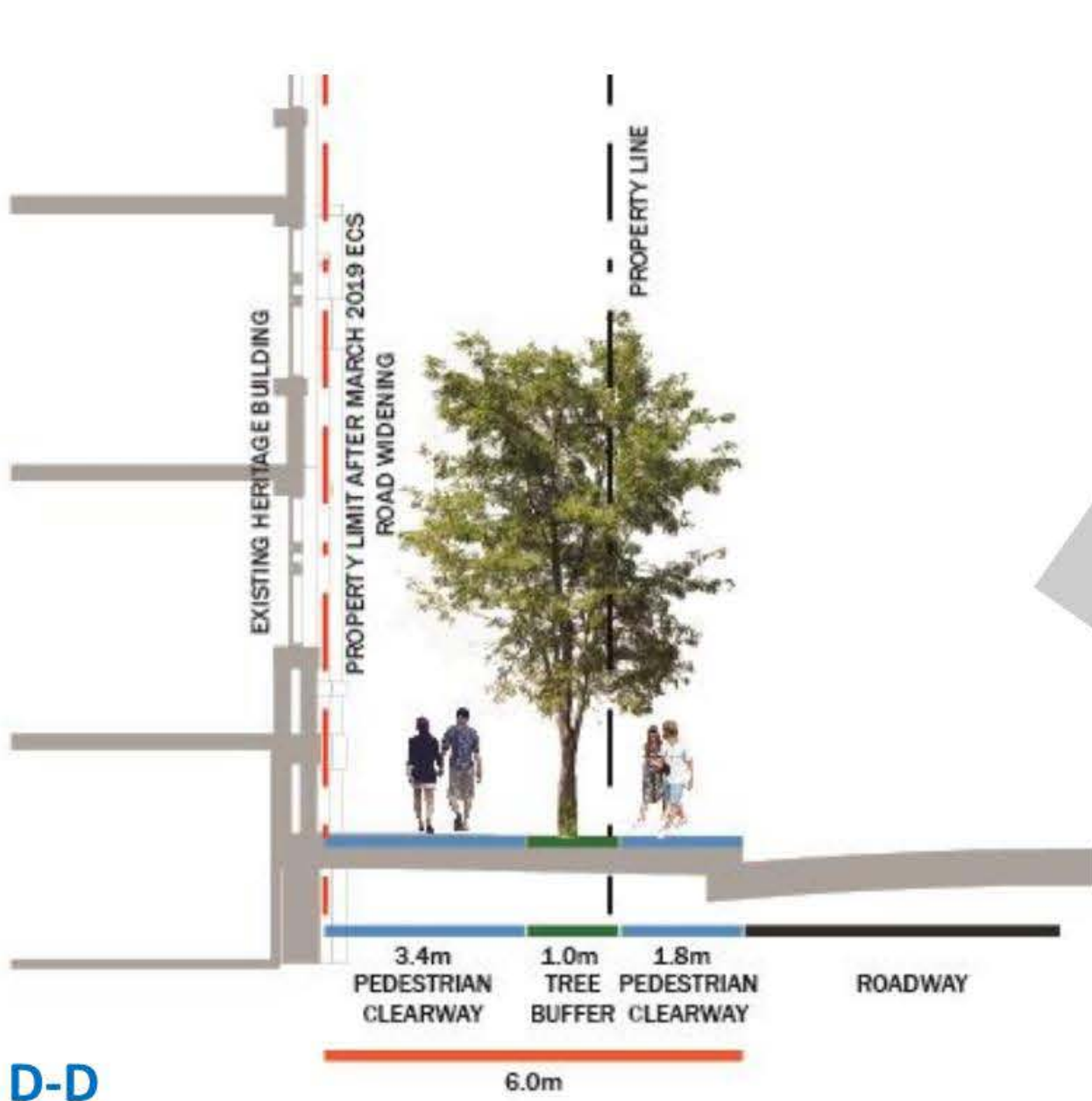


Queens Quay provides a generous space with 10m between the building face and the street curb. Popular entertainment / dining streets such as the Esplanade carry 9m.



KEY PLAN

MIDBLOCK CONNECTION



Front Street and Scott Street, Toronto



The shared pedestrian / vehicular lane on the east side of the site provides a more friendly access than a typical vehicular driveway. Paved with the same Waterfront Toronto red granite along Queens Quay, the lane feels more of an extension of the public realm with granite texture strips defining the vehicular zone and bollards protecting a pedestrian clearway.



KEY PLAN



KEY PLAN



Paley Park, New York



Performance Seating



Exhibit Boards

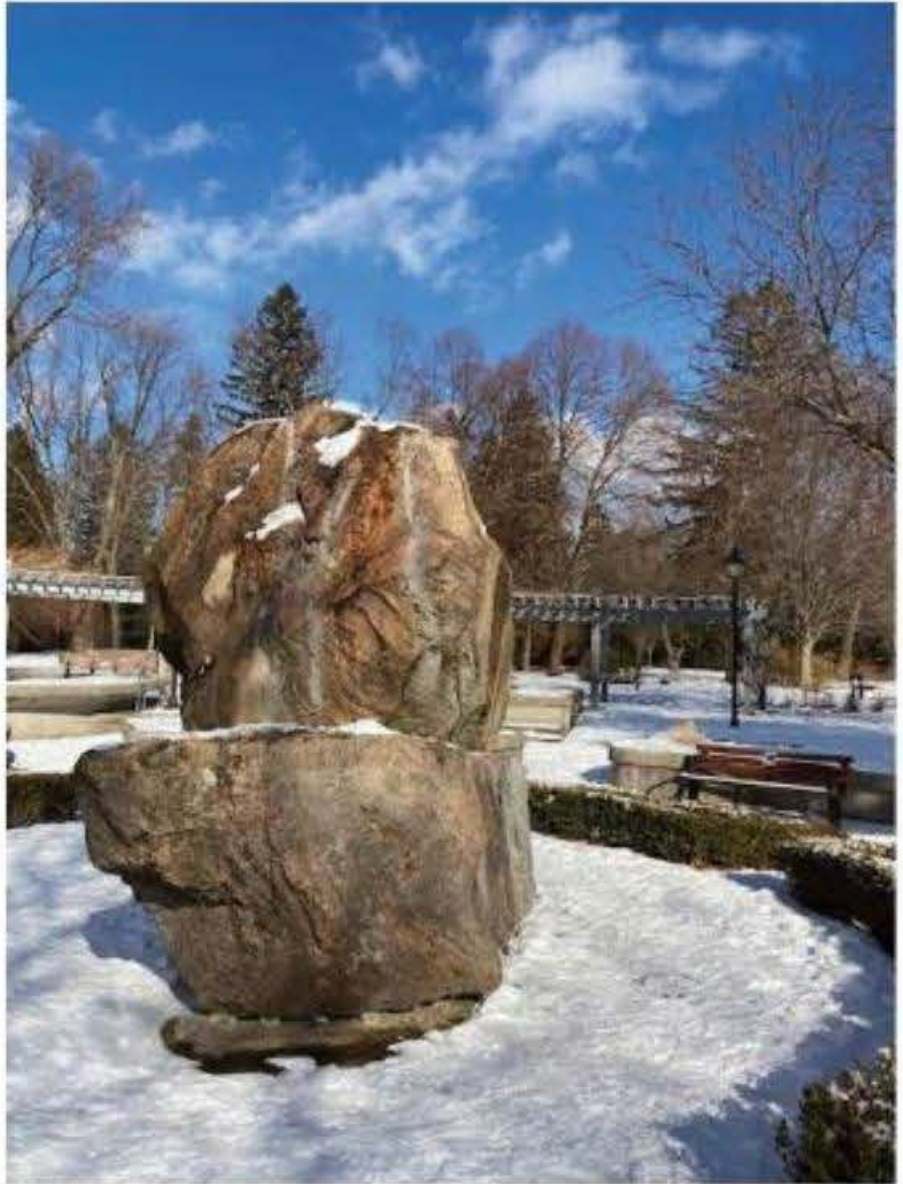


The courtyard is meant to offer a different type of open space than typically found on the waterfront. The courtyard is a protected and quieter space offering a refuge or oasis from the lake elements and the busy waterfront. As a multi-use space the courtyard can be re-arranged to accommodate day to day seating, movie nights, small performances, markets or art exhibits.



KEY PLAN

COURTYARD INSPIRATION



Courtyard inspiration of a protected space in a hemlock forest with tall vertical elements with a little light coming through the canopy. Central feature of boulders in the courtyard making an impact in all seasons with shade garden planting.





KEY PLAN

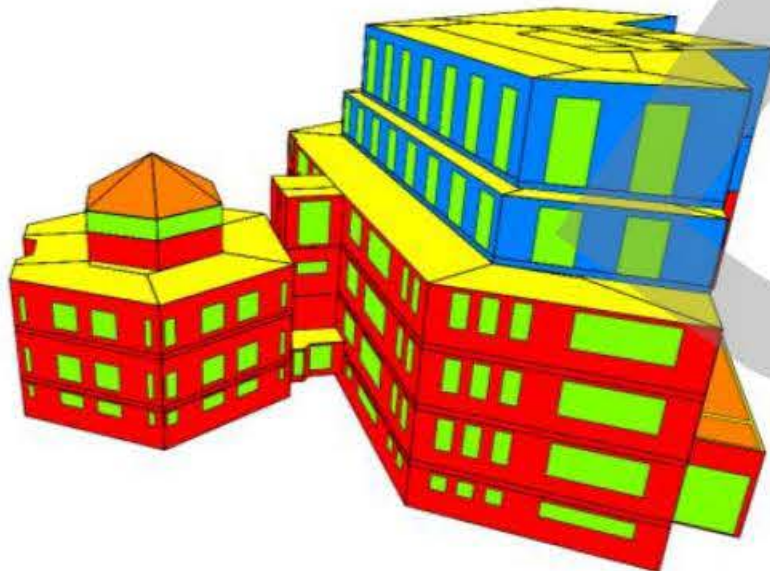


KEY PLAN

LIGHTING CONCEPT

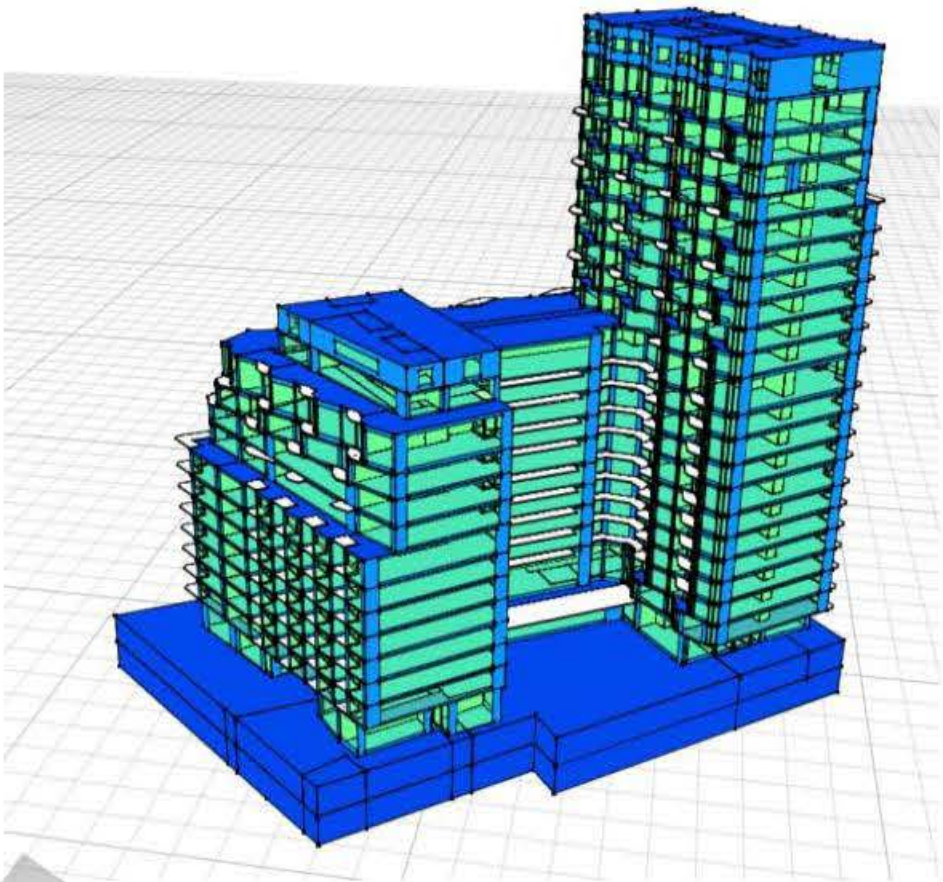


HERITAGE/ COMMERCIAL



Commercial Office	TEUI (kWh/m ² /year)	TEDI (kWh/m ² /year)	GHGI (CO ₂ /m ² /year)
Current Design	151.8	67.0	17.8
TGS V3 Tier 1 Target	175	70	20
TGS V3 Tier 2 Target	130	30	15

RESIDENTIAL



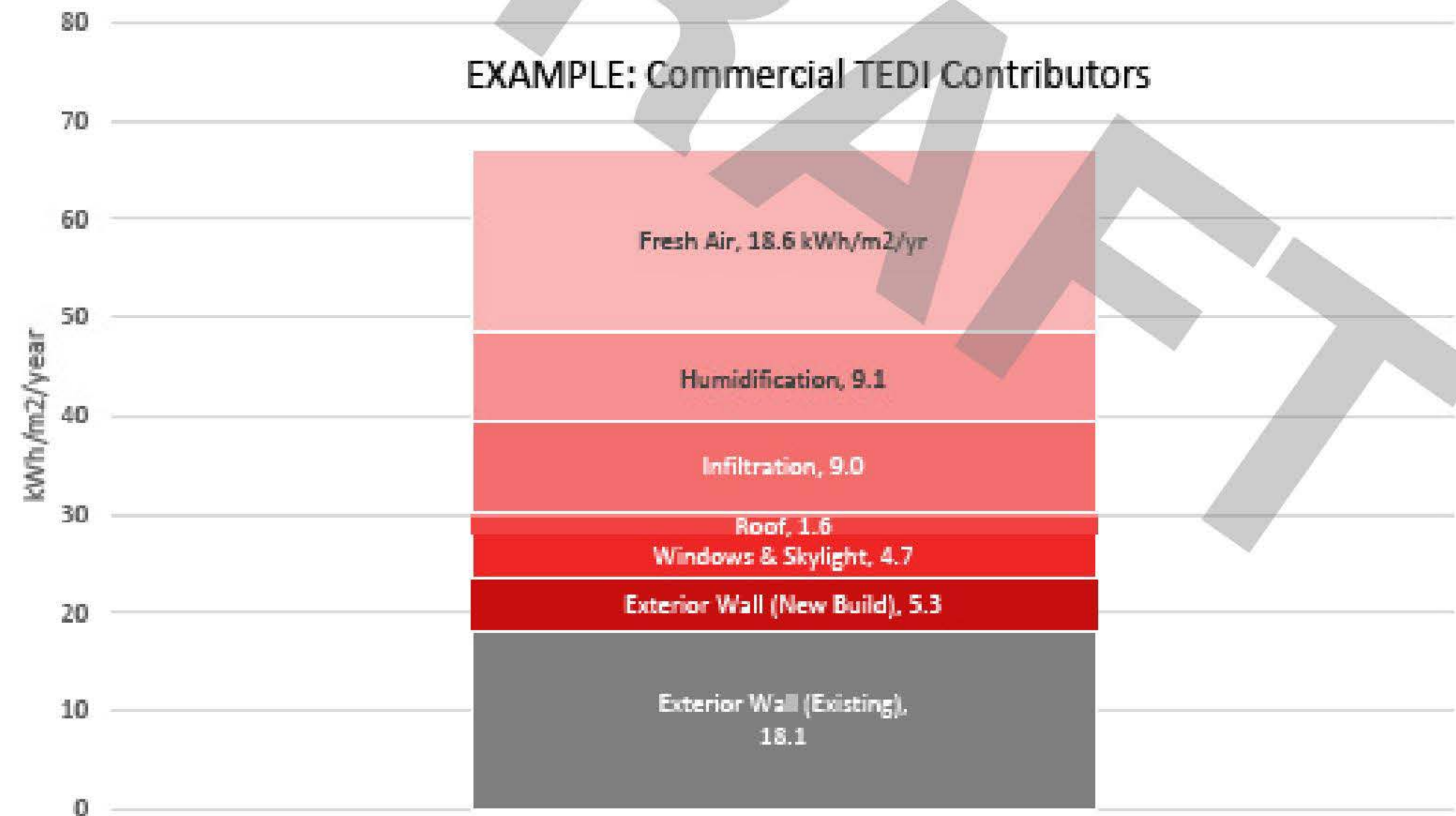
High Rise MURB	TEUI (kWh/m ² /year)	TEDI (kWh/m ² /year)	GHGI (CO ₂ /m ² /year)
Current Design	162.8	69.3	19.9
TGS V3 Tier 1 Target	170	70	20
TGS V3 Tier 2 Target	135	50	15

ENERGY CONSERVATION MEASURES

	COMMERCIAL	RESIDENTIAL
Current Design: TGS Tier 1	<ul style="list-style-type: none">• Central Ventilation Unit with Heat Wheel• Underfloor unit cooling• Central Chiller plant (COP of 5.5)• Assumed no change to current insulation• 8" of rigid insulation (R-40) – new roof• Double Pane punched windows	<ul style="list-style-type: none">• Energy recovery ventilators• High efficiency boilers• Variable flow drive water chiller & fans• Spandrel with R-18 back pan insultation• 150 mm continuous roof insulation• 75 mm semi rigid insulation + 50 mm spray foam insulation• Double glazed curtain wall system

TGS DESIGN STRATEGY

	COMMERCIAL	RESIDENTIAL
Under Analysis: TGS Tier 2	<ul style="list-style-type: none"> Thermally broken girts and/or clips Window efficiencies & glazing Air tightness testing 	<ul style="list-style-type: none"> Thermally broken balconies Window wall replacement Air tightness testing Window efficiencies & glazing Increase SGHC on North facade



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Architects**

 **GRAZIANI
+ CORAZZA
ARCHITECTS**

 **ECOVERT**

FORREC


HUNTER
Urban Planning and Development

DRAFT

AVIATION CLEARANCE (NAV CANADA)



December 8, 2021

CYTZ - 18 241642 STE 20 OZ (62833596) (545 LAKE SHORE BLVD W)
Your file
Our file
21-3754

Dana Roebuck
Canderel

RE: Addition/Modification to Existing: Building Expansion - Toronto, ON
(See attached document(s))

Hello Dana,

NAV CANADA has evaluated the captioned proposal and has no objection to the project as submitted. Our assessment does not constitute an approval and/or permit from other agencies.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications. To assist us in that end, we ask that you notify us at least 10 business days prior to the start of construction. **If you haven't already filled out one of our Land Use Cane submission forms, please do so as soon as possible.** This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form and an Excel copy of the attached spreadsheet by email at landuse@navcanada.ca or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

If you have any questions, contact the Land Use Department by email at landuse@navcanada.ca.

NAV CANADA's land use evaluation is based on information known as of the date of this letter and is valid for a period of 18 months, subject to any legislative changes impacting land use submissions. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Innovation, Science and Economic Development Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

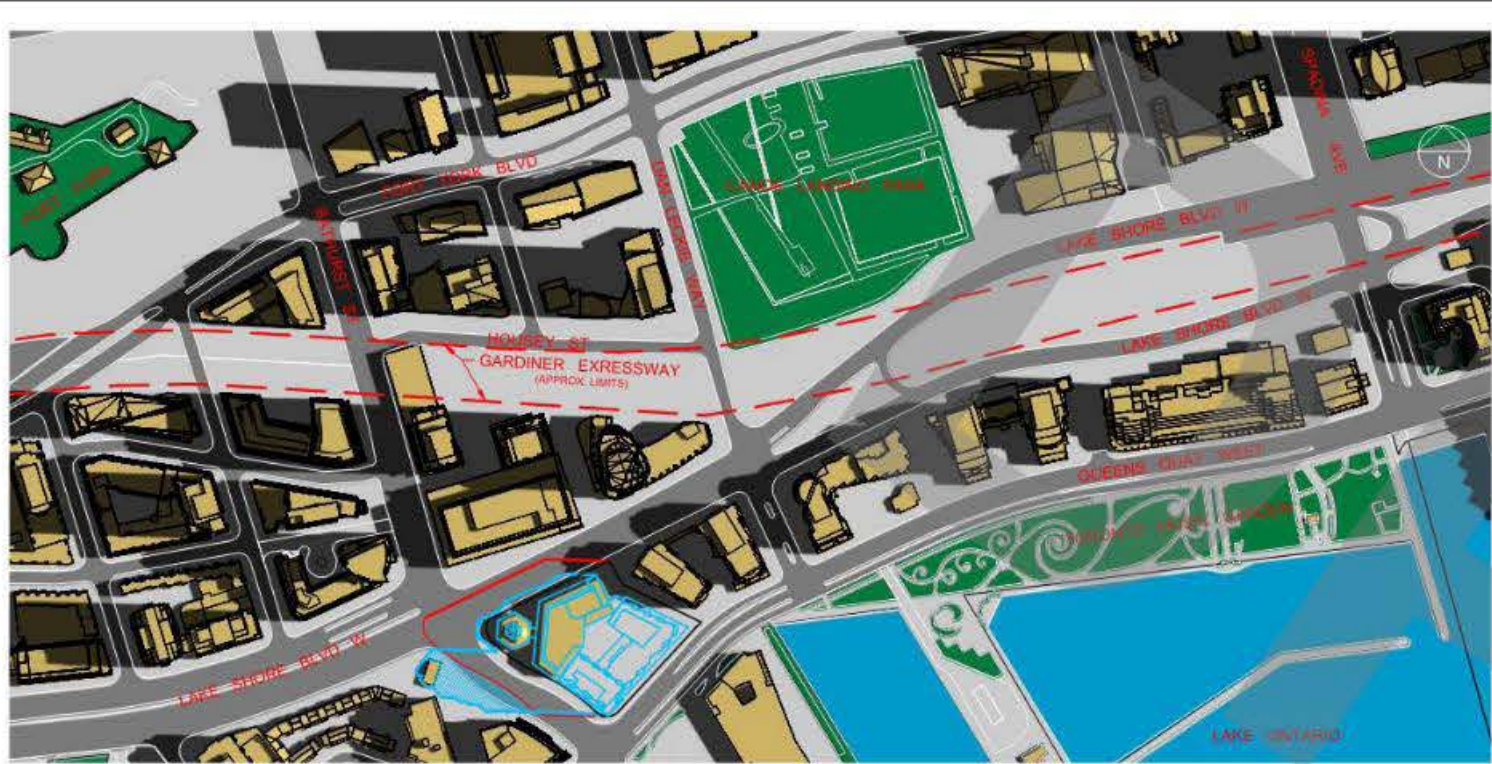
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Regards,

Land Use Office
NAV CANADA

cc ONTR - Ontario Region, Transport Canada
CYTZ - BILLY BISHOP TORONTO CITY AIRPORT
CNW8 - TORONTO (HOSPITAL FOR SICK CHILDREN)(HELI)
CTM4 - TORONTO (ST. MICHAEL'S HOSPITAL)(HELI)
craig@hunterassociates.ca
Susan.Mcalpine@toronto.ca
diana@hunterassociates.ca
dmoffatt@canderel.com

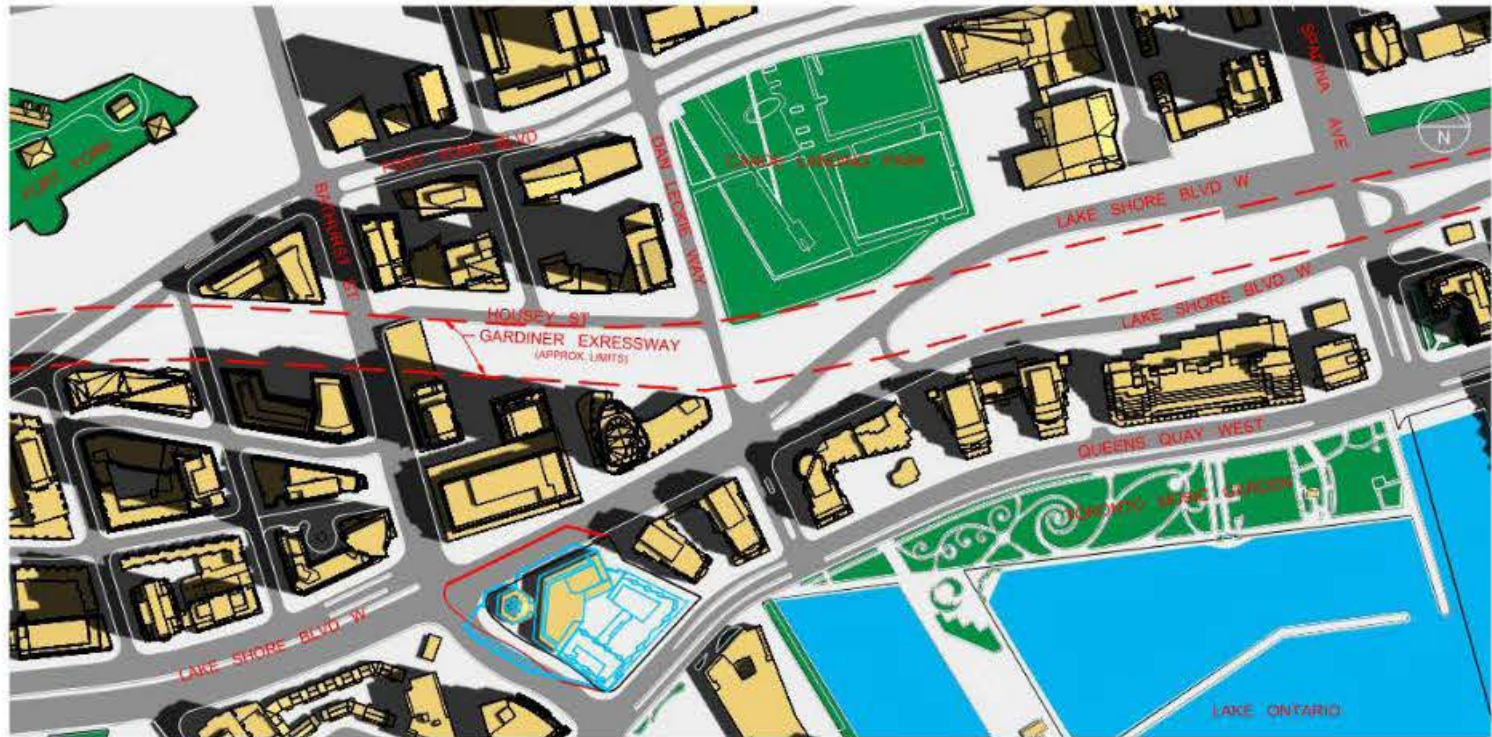
SHADOW STUDIES



JUN 21

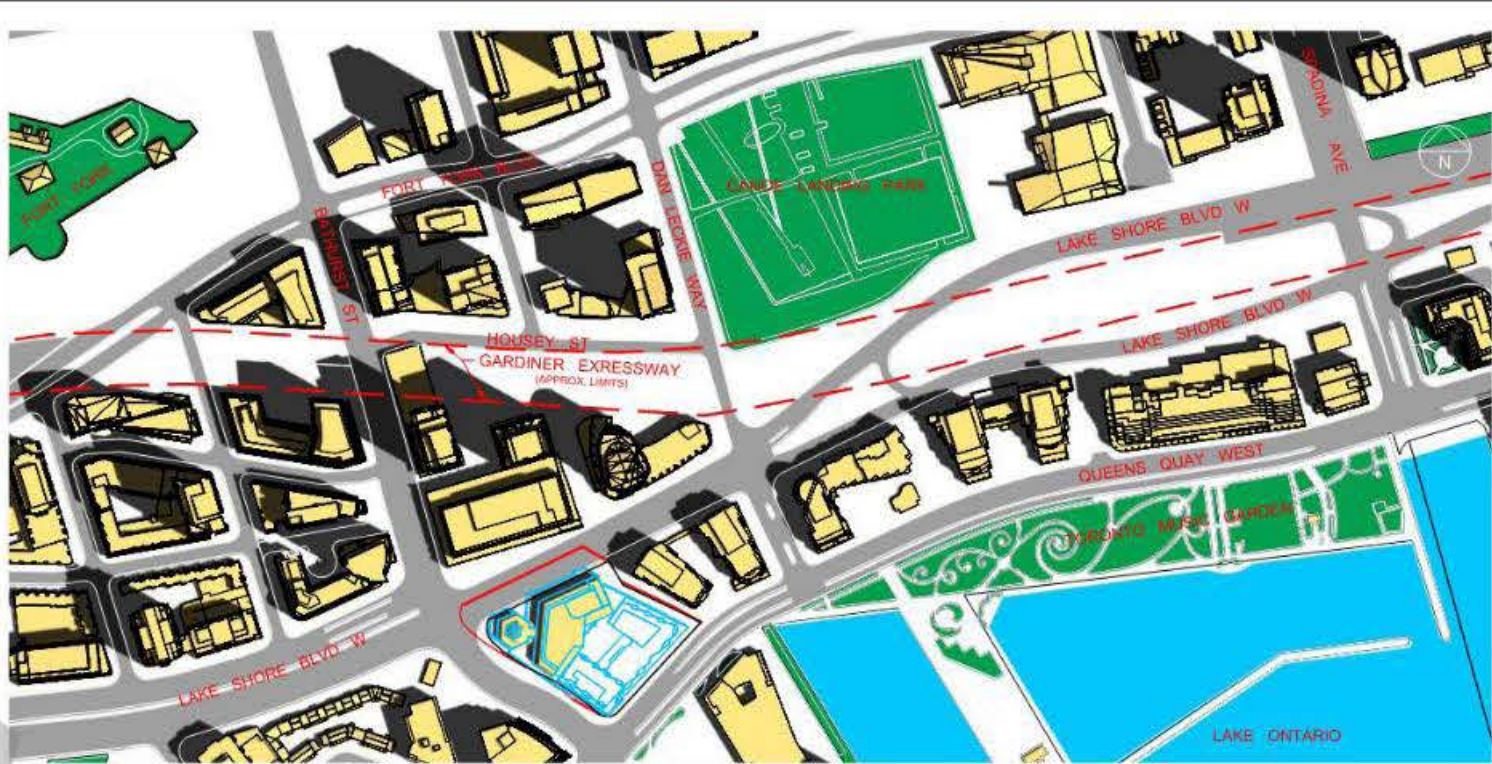
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ALL TIMES IN EDT



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PEDESTRIAN-LEVEL WIND STUDY

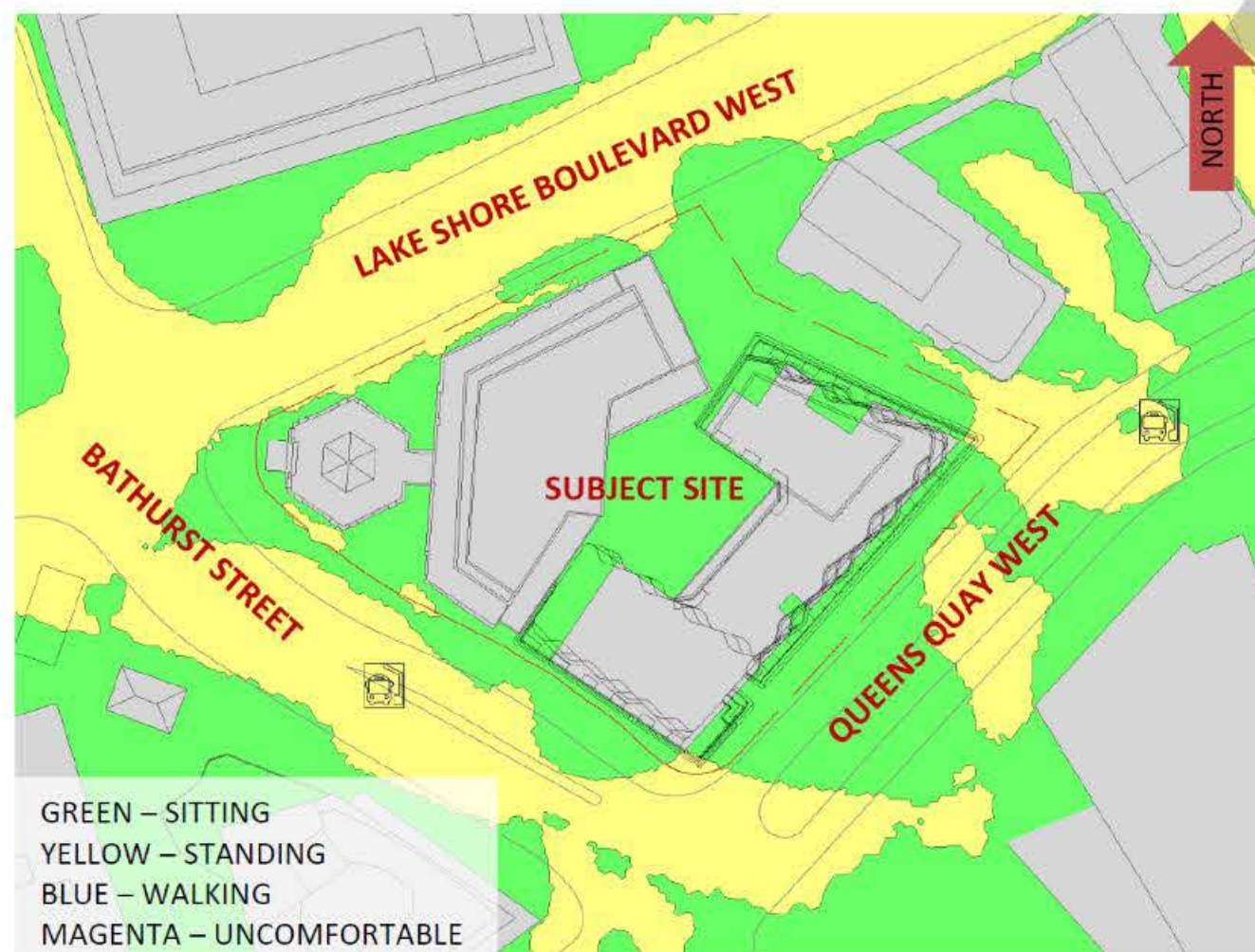


FIGURE 3A: SPRING – PROPOSED MASSING – WIND COMFORT CONDITIONS, GRADE LEVEL

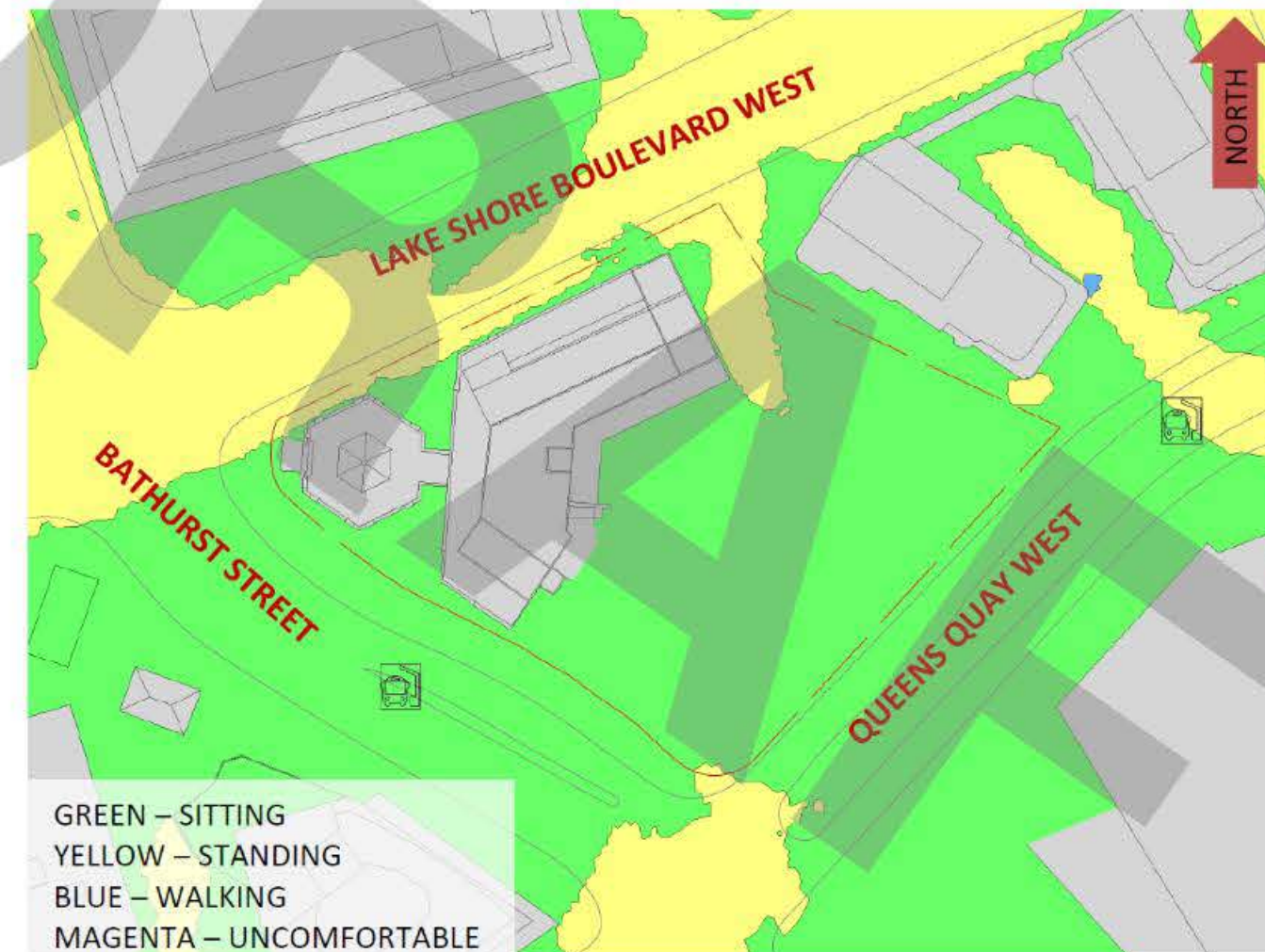
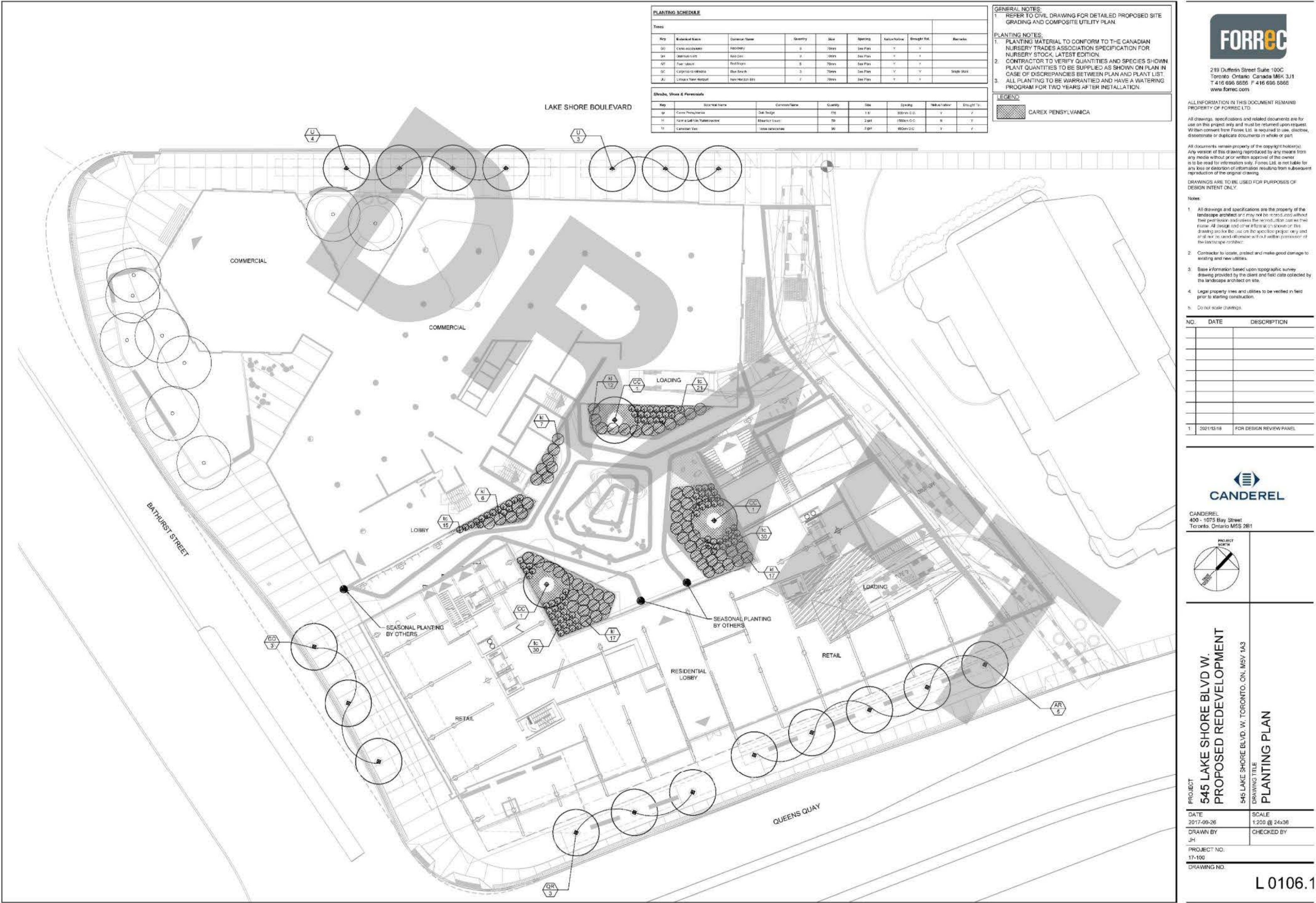
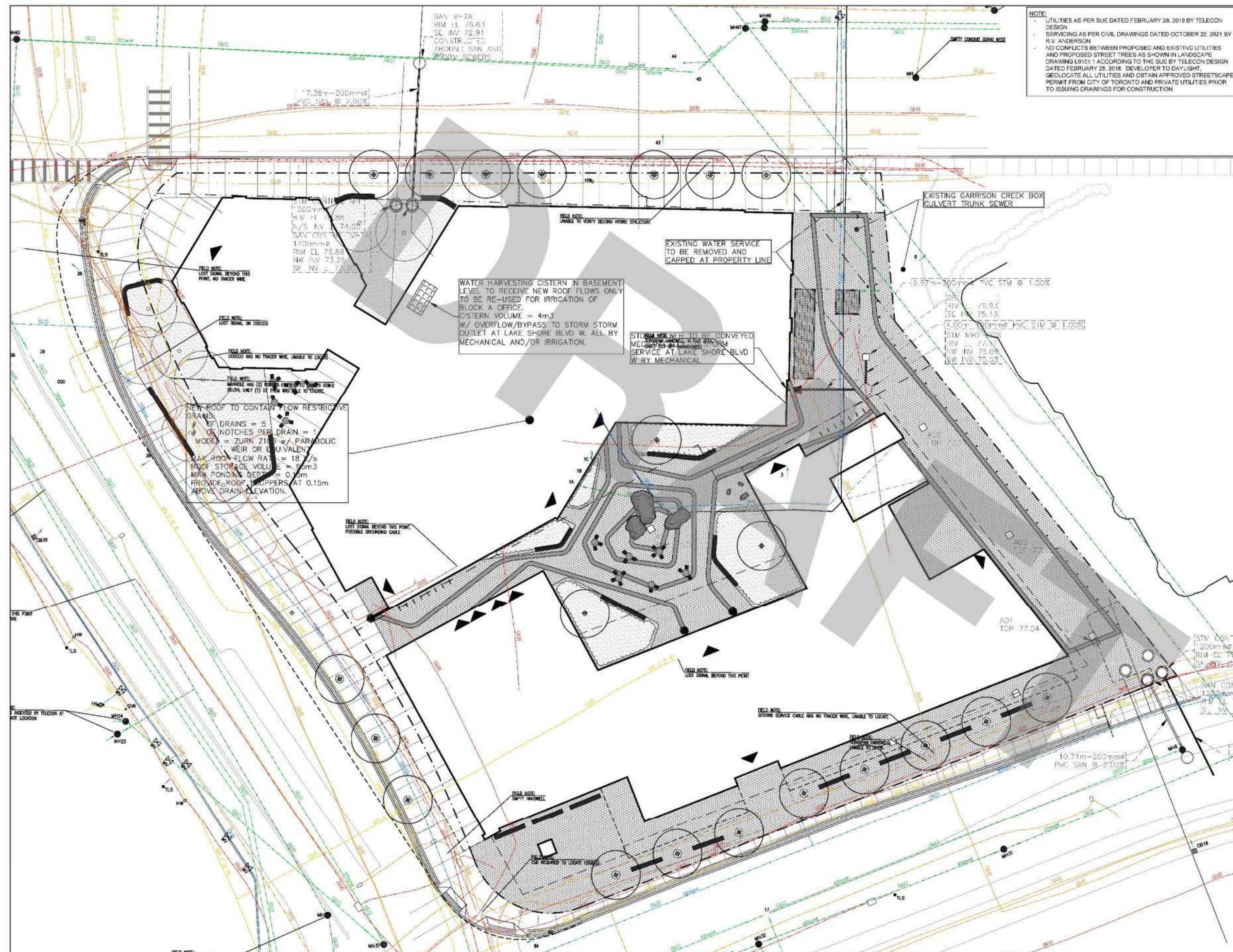


FIGURE 3B: SPRING – EXISTING MASSING – WIND COMFORT CONDITIONS, GRADE LEVEL

Wind Comfort Conditions

- Surrounding Site: adds comfort levels to Bathurst and Queens Quay West
- Entire site: considered acceptable according to the comfort guidelines.
- Level 2 Residential Amenity Terrace: suitable and acceptable for sitting throughout the year
- Level 5 Office Amenity Terrace: suitable for sitting and standing
- Level 6 Office Amenity Terrace: suitable for sitting and standing
- Level 14 Residential Amenity Terrace: suitable for sitting and standing.
- SW corner (Bathurst/QQW) POPS: beneficial impacts on pedestrian wind comfort from previous massing – no concerns with this space as per report.





NOTE: UTILITIES AS PER SUE DATED FEBRUARY 28, 2018 BY TELECON DESIGN
SERVICING AS PER CIVIL DRAWINGS DATED OCTOBER 22, 2021 BY
RTV ANDERSON
- NO CONFLICTS BETWEEN PROPOSED AND EXISTING UTILITIES
AND PROPOSED STREET TREES AS SHOWN IN LANDSCAPE
DRAWING L1011-1 ACCORDING TO THE SUE BY TELECON DESIGN
DATED FEBRUARY 28, 2018. DEVELOPER TO DAYLIGHT,
RELOCATE ALL UTILITIES AND CERTAIN APPROVED STREETS/CAPE
PERMIT FROM CITY OF TORONTO AND PRIVATE UTILITIES PRIOR
TO ISSUING DRAWINGS FOR CONSTRUCTION



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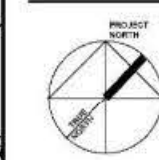
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3. Base information based upon topographic survey drawing provided by the client and field data collected the landscape architect on site.
4. Legal property lines and utilities to be verified in field prior to starting construction.
5. Do not scale drawings.

[illegible]

CANDEREL
400 - 1075 Bay Street
Toronto, Ontario M5S 2B1



PROJECT
545 LAKE SHORE BLVD W.
PROPOSED REDEVELOPMENT

545 LAKE SHORE BLVD. W, TORONTO, ON. M5V 1A3

DRAWING TITLE
PUBLIC UTILITIES PLAN,
SERVICING PLAN AND
LANDSCAPE COMPOSITE

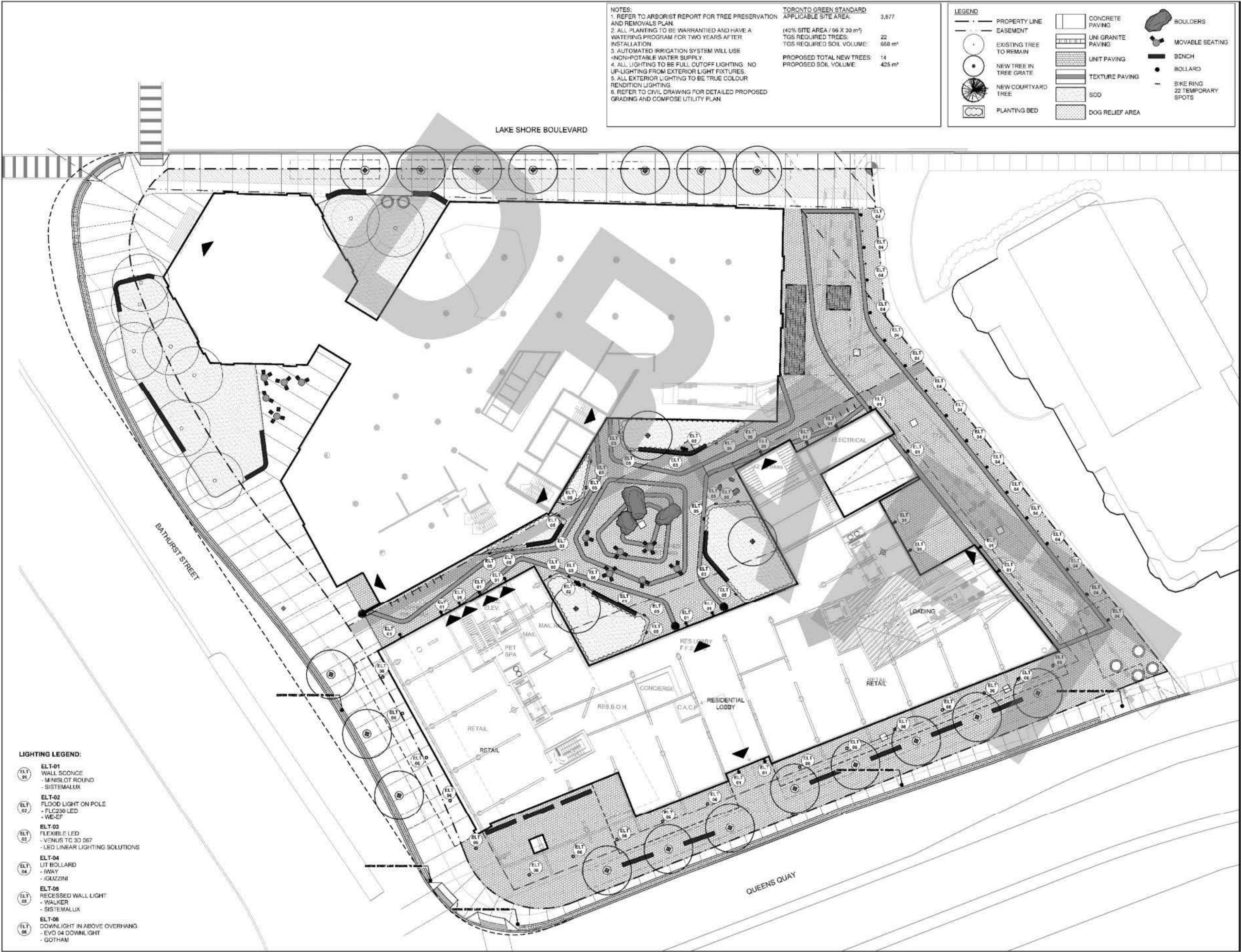
DATE	2017-09-26
DRAWN BY	JH
PROJECT NO.	17-100
DRAWING NO.	

SCALE	1:200 @ 24x36
CHECKED BY	

JH
PROJECT NO.
17-100
DRAWING NO.

L 0101.3

LIGHTING PLAN



219 Dufferin Street Suite 100C
Toronto, Ontario Canada M6K 3J1
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NO.	DATE	DESCRIPTION
1	2024/12/18	FOR DESIGN REVIEW PANEL

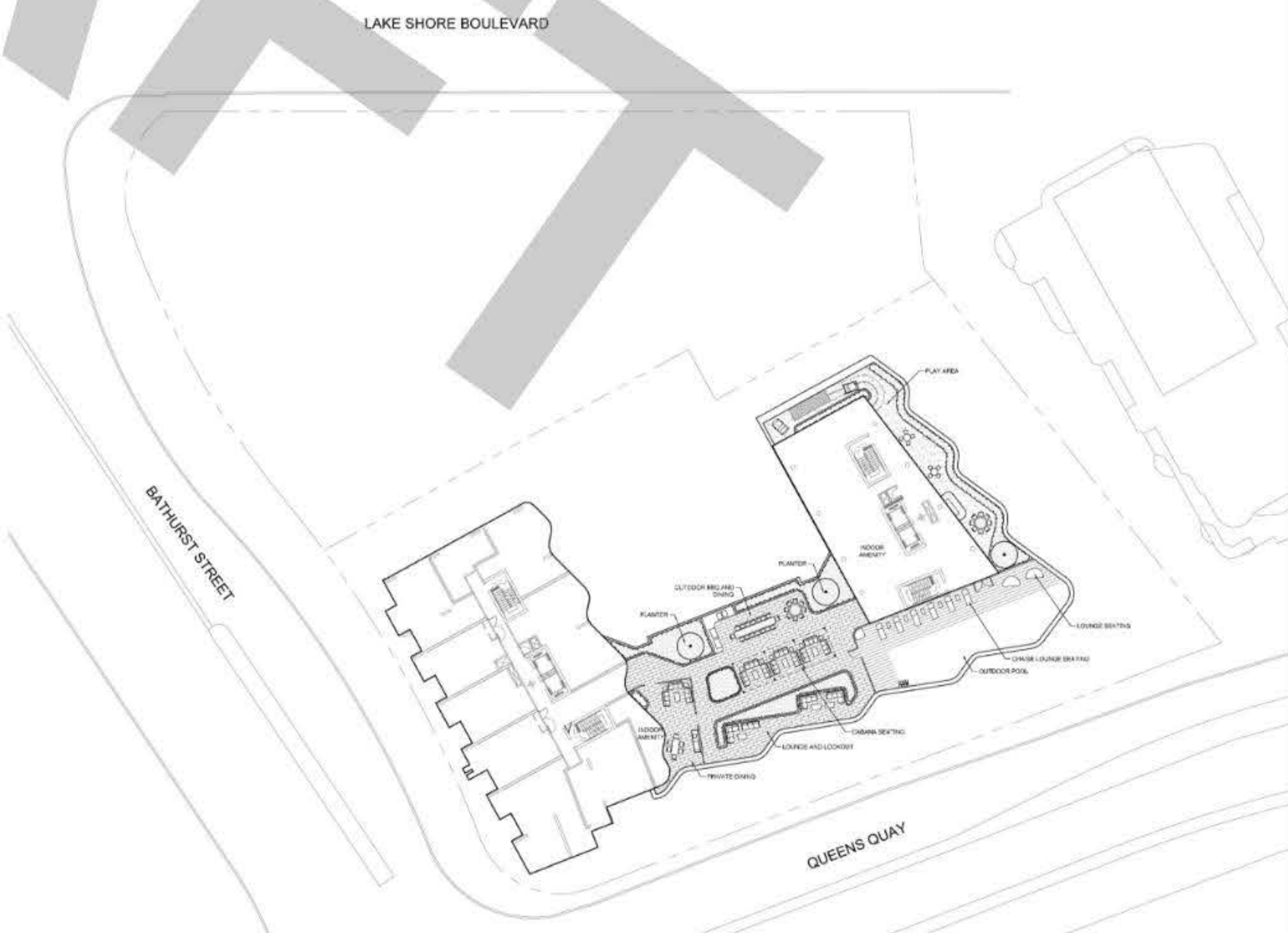
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PROJECT
545 LAKE SHORE BLVD W.
PROPOSED REDEVELOPMENT

DRAWING TITLE
545 LAKE SHORE BLVD. W. TORONTO, ON. M5V 1A3
LIGHTING PLAN

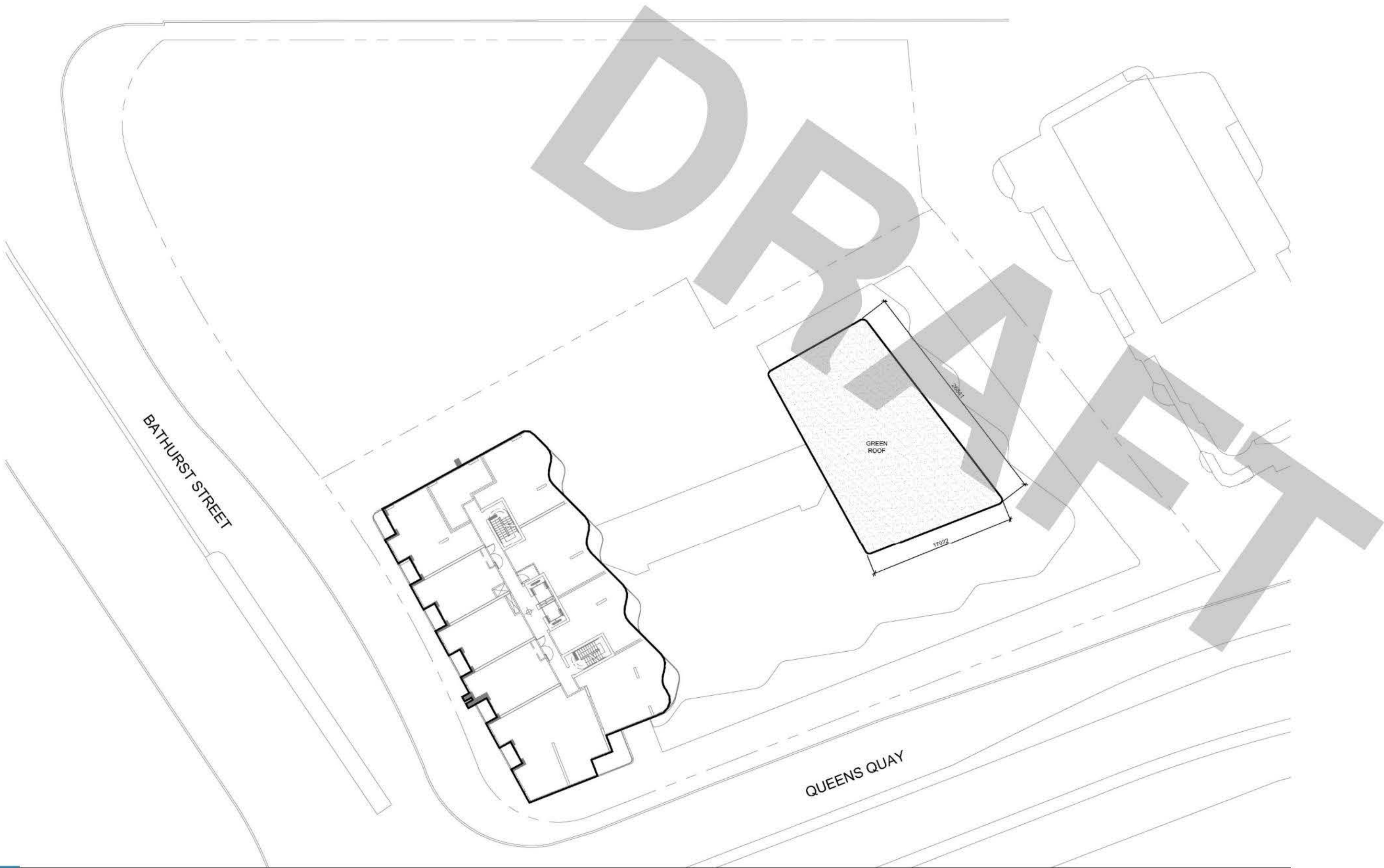
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PROJECT NO. 17-100	
DRAWING NO.	

L 104.1

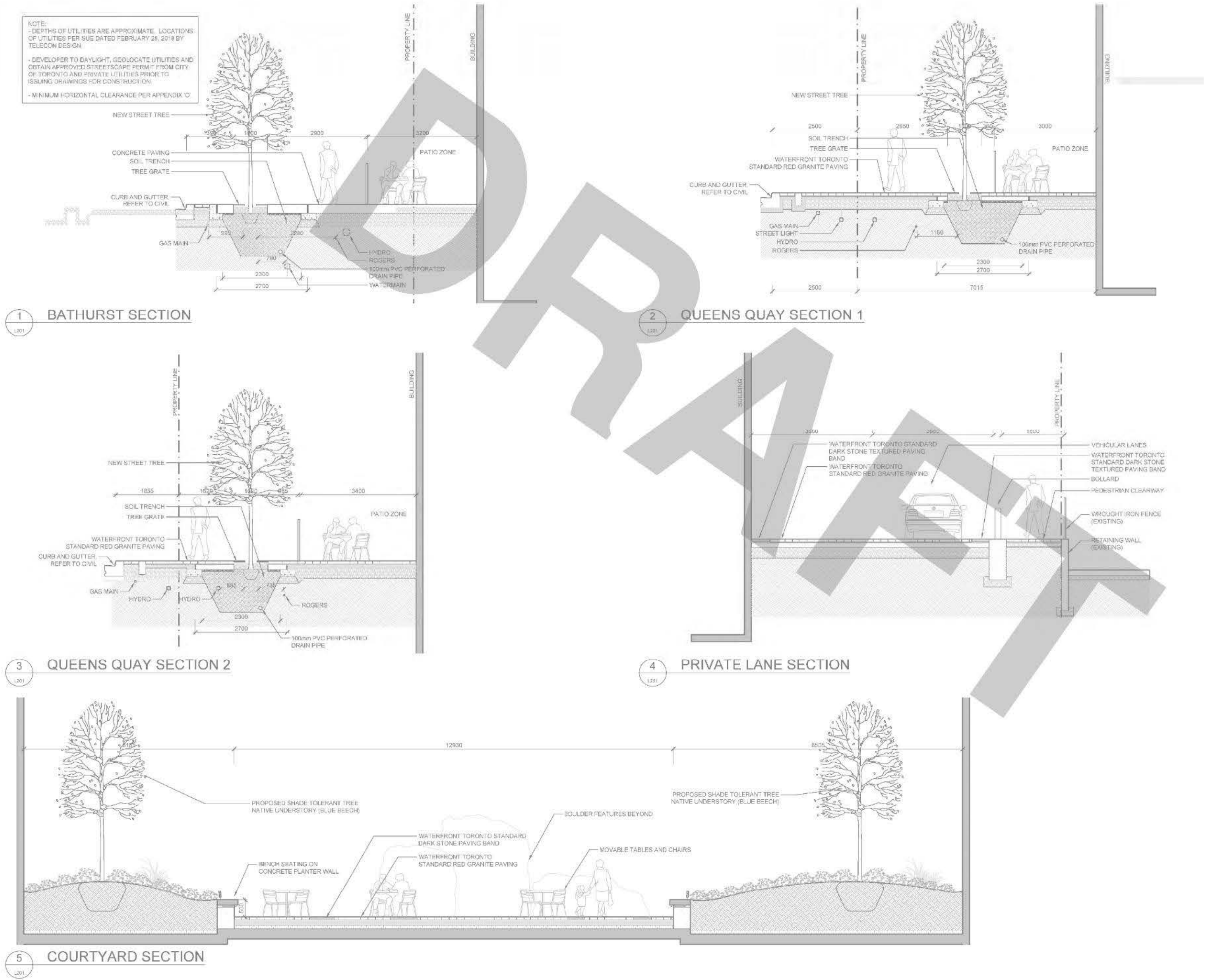


GREEN ROOF

LAKE SHORE BOULEVARD



BELOW-GRADE WORK



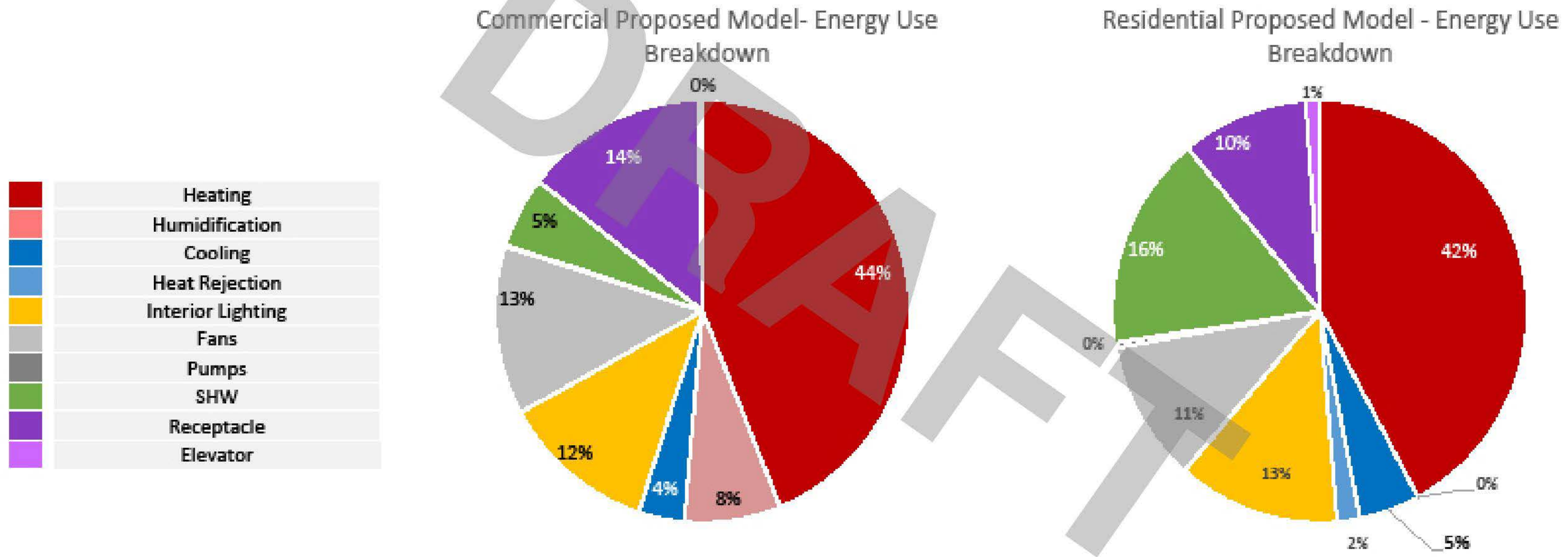
GRADING/STORMWATER PLAN

RESILIENCY STRATEGIES UNDER CONSIDERATION

- Site grading ensures stormwater, if necessary, can be conveyed overland offsite while not inundating building entrances
- All building entrances are elevated above property boundaries/limits to provide protection from street flooding
- Stormwater detention system contains emergency openings at-grade to allow for spill conveyance to municipal ROW
- Retaining and harvesting of stormwater to be re-used on site, minimizing total discharge from the site and to municipal infrastructure
- Storm discharge system to contain backflow prevention to prevent municipal surcharge/flooding to inundate the private stormwater system



Energy End-use



Design ECMs incorporated to meet TGS V3 Tier 1

- **Efficient ventilation strategy**
 - High Effectiveness energy recovery ventilators (70% sensible recovery, 65% latent recovery efficiency for in-suite ERVs); (80% sensible recovery, 75% latent recovery efficiency for Retail)
- **Mechanical**
 - Water chiller with magnetic bearing and VFD;
 - Variable Speed Drive (VSD) on all distribution pumps;
 - Variable Flow Drive on all fans;
 - High Efficiency Condensing Boilers 95%
- **High performing Building envelope components**
 - 150 mm continuous insulation on the roof (R-30.0 effective);
 - 75 mm semi rigid insulation, 50 mm spray foam insulation (R-13) with horizontal clips at 600mm O.C. in metal panels R-16 effective;
 - Spandrel with R-18 back pan insulation (R-12 effective);
 - Double Glazed curtain wall system, low-e coating on surface 2, argon fill, stainless steel spacer (effective overall glass performance USI-1.9, SHGC 0.4);
- **High efficacy lighting fixtures**
 - Located throughout the building equipped with automatic lighting controls including occupancy sensors
- **Low flow fixtures**

Design ECMs proposed to reach TGS V3 Tier 2

- **Building Envelope (reduces TEDI, GHGI, and EUI):**
 - Explore potential design for thermally broken balconies
 - Replace window wall with combination of window wall and alternative solid materials
 - Reduce WWR to 60%
 - Explore thermally broken design options for girts and/or clips
 - Review opportunities to improve airtightness (predicted 25% reduction but requires airtightness testing)
 - Explore window efficiencies with different pane glazing and punching design
 - Review impact of increasing SHGC on the North Facade by appx 20%
- **HVAC**
 - Potential use of heat pump and drain water energy recovery (i.e SHARC system) for SHW (Reduces GHGI, and EUI)
 - Integrating ERV with Corridor MUA (Reduces TEDI, GHGI, and EUI)

Design ECMs incorporated to meet TGS V3 Tier 1

- **Efficient mechanical equipment**
 - Underfloor air Compartment unit cooling for the office floors, Perimeter Radiant Heating Recessed in the Raised Floors
 - Central Ventilation Unit with Heat Wheel (75% sensible recovery, 72% latent recovery efficiency) Serving Each Office Floor with VAV demand-based Ventilation Control
 - Central Chiller plant (COP of 5.5) with water side economizer and induced draft cooling tower
 - Condensing gas fired boilers (94% efficiency)
 - Variable Speed Drive (VSD) on all primary and secondary pumps;
- **High performing envelope components**
 - Walls on the new build above heritage: 3" of exterior insulation and 4" of interior cavity insulation (R-30 Nominal, R-7 effective.
 - Heritage wall assumed to have performance R-5 per OAA case study;
 - 8" of rigid insulation (R-40) on the roof;
 - Double Pane punched windows, Side #2 low e coatings, argon gas fill and stainless-steel warm edge spacer; (effective performance of USI-1.92, SHGC 0.33)
- **High efficacy lighting fixtures**
 - Located throughout the building equipped with automatic lighting controls including occupancy sensors
- **Low flow fixture**

Design ECMs proposed to reach TGS V3 Tier 2

- **Building Envelope (reduces TEDI, GHGI, and EUI):**
 - Explore thermally broken design options for girts and/or clips
 - Explore window efficiencies with different pane glazing and punching design
 - Review ability to improve airtightness (predicted 25% reduction but requires airtightness testing)

Limitations to Achieve TGS V3 Tier 2 TEDI Target

