Environmental Noise Assessment

2072 Lakeshore Road

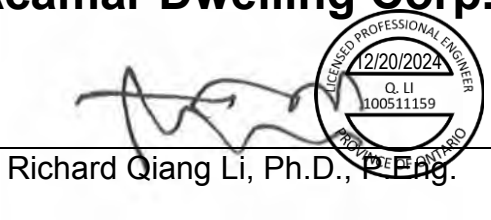
Proposed Mixed-Use Development

City of Burlington

December 20, 2024
Project: 1230424.000

Prepared for

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VALCOUSTICS
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Version History

Version #	Date	Comments
1.0	July 23, 2024	Final – Issued to Client
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Environmental Noise Assessment

2072 Lakeshore Road

Proposed Mixed-Use Development

City of Burlington

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) previously prepared an Environmental Noise Feasibility Study, dated July 25, 2024, to support the Official Plan Amendment (OPA) / Zoning By-law Amendment (ZBA) application submissions to the City of Burlington. This Environmental Noise Assessment report has been prepared to address changes to the architectural drawings.

The proposed development will consist of a 20-storey, mixed-use residential tower with a 2-storey podium, a mechanical penthouse and 7 levels of underground parking.

The significant transportation noise source in the vicinity is road traffic on Lakeshore Road, Pearl Street and Old Lakeshore Road.

The sound levels on site have been determined and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP) noise guideline limits to determine the need for noise mitigation. To meet the applicable transportation noise source guideline limits:

- All residential dwelling units in the development require mandatory air conditioning; and
- Exterior wall construction meeting a Sound Transmission Class (STC) rating of 45, and exterior windows meeting up to STC 36 would be required.

Final requirements should be checked when detailed building plans are available. This is usually done as a condition for obtaining a building permit.

1.0 INTRODUCTION

VCL previously prepared an Environmental Noise Feasibility Study, dated July 25, 2024, to support the OPA/ZBA application submissions to the City of Burlington. This Environmental Noise Assessment report has been prepared to address the changes to the architectural drawings.

The potential sound levels and noise mitigation measures needed for the proposed development to comply with the MECP noise guideline requirements are outlined herein.

1.1 THE SITE AND SURROUNDING AREA

The site is located at 2072 Lakeshore Road in the City of Burlington and is bounded by:

- Lakeshore Road, with future high-rise mixed-use development (currently under construction), to the north;
- Existing public parking lot (currently used as construction site office and storage), with future high-rise mixed-use development (currently existing restaurant and commercial uses) beyond, to the east;
- Old Lakeshore Road, with an existing hotel and an existing heritage restaurant (Emma's Back Porch & Water Street Cooker, currently closed and vacant since 2020) beyond, to the south; and
- Pearl Street, with existing high-rise condominium buildings beyond, to the west.

There is an existing 2-storey building on site which will be demolished as part of the development. A Context Plan is included as Figure 1.

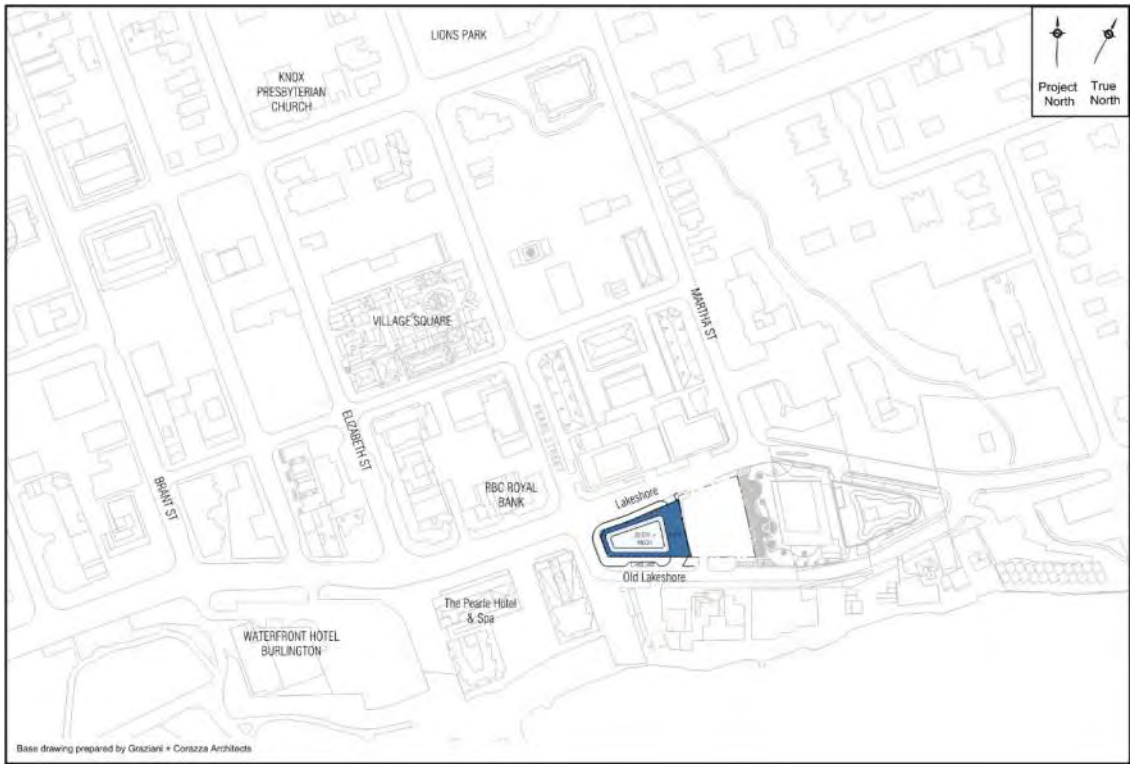


FIGURE 1: CONTEXT PLAN

1.2 THE PROPOSED DEVELOPMENT

The proposed development will consist of a 20-storey, mixed-use residential tower with a 2-storey podium, a mechanical penthouse and 7 levels of underground parking.

There will be retail uses on the ground and 2nd floors, indoor and outdoor amenity spaces on the 3rd floor and residential units on the 3rd floor and above. All private balconies and terraces will be less than 4 m in depth.

The study is based on the architectural drawing set prepared by Graziani+Corazza Architects, dated December 19, 2024. The Site Plan from the drawing set is shown as Figure 2. The architectural drawings used in the assessment are included as Appendix A.

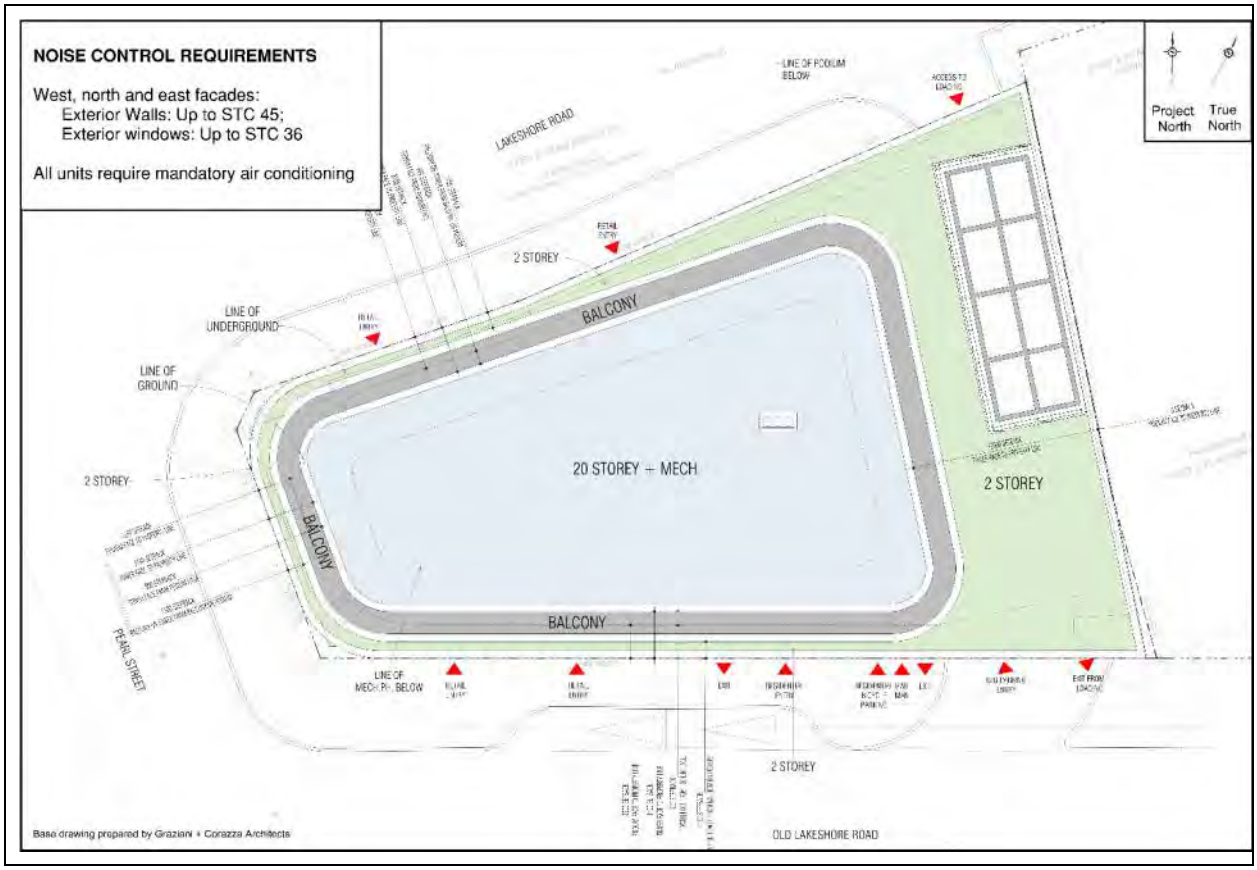


FIGURE 2: SITE PLAN

2.0 THE IMPACT OF THE ENVIRONMENT ON THE PROJECT

2.1 NOISE SOURCES

2.1.1 TRANSPORTATION NOISE SOURCES

The noise source with potential to impact the proposed development is road traffic on Lakeshore Road and Pearl Street (Old Lakeshore Road). Other roadways are either far enough removed or would have minimal traffic volumes and would not be expected to have a significant noise impact on the subject site.

Road traffic volumes applicable to the year 2022 for Lakeshore Road and Pearl Street were obtained from an 8-hour turning movement count (TMC) provided by the City of Burlington. The Daily (24-hour) volumes were obtained by multiplying the 8-hour TMC data by a factor of 2.2 (that is, the 8-hour period consists of 45% of the total daily traffic volume). A growth rate of 2%, compounded annually, was applied to obtain the future (year 2034) traffic volumes for Lakeshore Road and Pearl Street. A day/night split of 90%/10% was used, as is typical for well-travelled roadways. Truck percentages were obtained from the turning movement counts. The ratio of medium trucks to heavy trucks was assumed to be 60%/40% of the total truck volume.

Note that Pearl Street is changed to Old Lakeshore Road along the south property line of the site. Thus, the same traffic data is used for both roadways.

Table 1 summarizes the traffic data used in the assessment. Appendix B contains the traffic data.

TABLE 1 ROAD TRAFFIC DATA

Roadway	Year	AADT(1)	% Trucks		Day/Night Split (%)	Speed Limit (kph)
			Medium	Heavy		
Lakeshore Road (2)	2022 (2034)	19 599 (24 856)	6.9	4.6	90/10	50
Pearl Street (Old Lakeshore Road) (2)	2022 (2034)	1 378 (1 748)	7.7	5.2	90/10	40

Notes:

(1) AADT – Annual Average Daily Traffic.

(2) Obtained from the City of Burlington in the form of a TMC. Data shown in brackets is projected to the year 2034 using a growth rate of 2%, compounded annually. The ratio of medium trucks to heavy trucks was assumed to be 60%/40%.

2.1.2 STATIONARY NOISE SOURCES

The stationary sources in the vicinity of the subject site are:

- The existing Marquis Lakeside Inn located to the south of the site, along the south side of Old Lakeshore Road. The aerial image from Google Earth shows no rooftop mechanical equipment at this facility. During a VCL site visit on April 9, 2024, no significant noise sources were observed. Thus, this facility is not considered further in this assessment.
- The existing heritage restaurant property of Emma's Back Porch & Water Street Cooker to the southeast of the site. Note, the restaurant has been closed and vacant since 2020. The City indicated no plans of reopening or future development for this property. Thus, this facility is not considered further in this assessment.
- The existing high-rise mixed-use building (construction completed in 2021) to the west, a future high-rise mixed-use building (current under construction) to the north and a future high-rise mixed-use building approximately 40 m to the east (Approved Core Development - 2093, 2097, 2101 Old Lakeshore Road, 2096, 2100 Lakeshore Road). The main noise sources associated with these uses would be the rooftop mechanical units. Due to the distance separation and the high ambient sound level from road traffic on Lakeshore Road, noise from these mechanical units is not expected to have significant impact at the subject site. Given that the subject site currently has a zoning for the residential uses, it is expected

that the neighbouring buildings will need to be designed to meet the applicable noise guideline limits at the subject site and any mitigation required would need to be implemented by the developers/builders of these properties. Thus, noises from these properties are not considered further in this assessment.

- Since the existing restaurant/commercial uses to the east are within the future development site to the east and will be demolished as part of the new development, noise from these existing facilities are not considered further in this assessment.

2.2 ENVIRONMENTAL NOISE GUIDELINES

2.2.1 MECP PUBLICATION NPC-300 – TRANSPORTATION NOISE SOURCES

The applicable noise guidelines for new residential development are those in MECP Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning".

The environmental noise guidelines of the MECP, as provided in Publication NPC-300, are discussed briefly below and summarized in Appendix C.

2.2.1.1 Architectural Elements

In the daytime, the indoor criterion for road traffic noise is $L_{eq\ Day}$(1) of 45 dBA for sensitive spaces such as living/dining rooms, dens and bedrooms. At night, the indoor criterion for road traffic noise is $L_{eq\ Night}$(2) of 45 dBA for sensitive spaces such as living/dining rooms and dens and 40 dBA for bedrooms.

Indoor daytime sound level limits for commercial/retail spaces are provided in Table C-9 of the Supplementary Noise Limits. For road traffic noise sources, the indoor criteria are $L_{eq\ Day}$ of 45 dBA for individual or semi-private offices, conference rooms or meeting rooms and $L_{eq\ Day}$ of 50 dBA for general offices, reception areas and retail stores. There are no nighttime noise criteria for commercial/retail spaces.

The architectural design of the building envelope (walls, windows, etc.) must provide adequate sound isolation to achieve these indoor sound level limits.

2.2.1.2 Ventilation

In accordance with the MECP noise guideline for road traffic sources, if the daytime sound energy level, $L_{eq\ Day}$, at the exterior face of a noise sensitive window is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For daytime sound levels between 56 dBA and 65 dBA inclusive, there need only be the provision for adding air conditioning at a later date. A warning clause advising the occupant of the potential interference with some activities is also required. At nighttime, air conditioning would be required when the sound level exceeds 60 dBA ($L_{eq\ Night}$) at a noise sensitive window (provision for adding air conditioning is required when greater than 50 dBA).

(1) 16-hour energy equivalent sound level (0700-2300 hours).
(2) 8-hour energy equivalent sound level (2300-0700 hours).

2.2.1.3 Outdoors

For outdoor living areas (OLA's), the guideline is $L_{eq\ Day}$ (0700 to 2300 hours) of 55 dBA, with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, providing warning clauses are registered on title. Note, a balcony is not considered an OLA, unless it is:

- the only OLA for the occupant;
- at least 4 m in depth; and
- unenclosed.

2.2.2 REGION OF HALTON GUIDELINES

There are no regional roads adjacent to the subject site and therefore the Region of Halton requirements do not apply.

2.3 NOISE IMPACT ASSESSMENT

2.3.1 ANALYSIS METHOD

Using the road traffic data in Table 1, the sound levels, in terms of energy equivalent continuous sound pressure level over the daytime and nighttime periods ($L_{eq\ Day}$ and $L_{eq\ Night}$), were determined using STAMSON V5.04 – ORNAMENT, the computerized road traffic noise prediction model of the MECP.

Most of the land adjacent the subject site is paved. The areas between the roadways and the receptors were therefore modelled as hard (reflective) ground. Note, in ORNAMENT, in scenarios with hard ground, there are no ground absorption effects to reduce the sound levels at lower receptors.

The sound levels were calculated at a height of 62 m above grade, representing the top floor windows.

The daytime OLA sound levels at the common outdoor amenity areas were calculated at a standing height of 1.5 m above the podium rooftop outdoor amenity floor, at the center of the space.

All other private balconies and terraces will be less than 4 m in depth, and thus, are not considered OLA's under MECP guidelines.

Inherent acoustical screening due to the orientation of the buildings relative to the noise sources was included in the assessment. Screening from off-site buildings was not included for the facade sound level calculations.

2.3.2 RESULTS

At the building facades, the highest daytime/nighttime sound levels of 71 dBA/64 dBA are predicted to occur on the north facade of the proposed tower, closest to Lakeshore Road.

At the common outdoor amenity space on the rooftop of the 2-storey podium, the unmitigated daytime sound level is predicted to be 54 dBA.

Table 2 summarizes the predicted sound levels outdoors at specific locations.

Sample sound level calculation details are included in Appendix D.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location(1)	Source	Distance (m)(2)	$L_{eq\ Day}$ (dBA)	$L_{eq\ Night}$ (dBA)
20th Floor Northwest Corner (North Facade)	Lakeshore Road	16	71	64
	Pearl Street	13	56	49
	TOTAL	–	**71**	**64**
20th Floor Northwest Corner (West Facade)	Lakeshore Road	16	68	61
	Pearl Street	13	59	52
	Old Lakeshore Road	26	48	41
	TOTAL	–	**68**	**62**
20th Floor Southwest Corner (West Facade)	Lakeshore Road	25	66	59
	Pearl Street	13	57	51
	Old Lakeshore Road	12	54	48
	TOTAL	–	**67**	**60**
20th Floor Southwest Corner (South Facade)	Lakeshore Road	25	59	52
	Pearl Street	13	53	47
	Old Lakeshore Road	12	58	51
	TOTAL	–	**62**	**55**
3rd Floor Outdoor Amenity Space (OLA)	Lakeshore Road	30	54	–
	Old Lakeshore Road	25	42	–
	TOTAL	–	**54**	–

Notes:

(1) See Figure 2.

(2) Distance indicated is taken from the centreline of the noise source to the point of reception.

2.4 NOISE ABATEMENT REQUIREMENTS

The noise control measures can generally be classified into two categories which are interrelated, but which can be treated separately for the most part:

a) Architectural elements to achieve acceptable indoor noise guidelines for transportation sources; and

b) Design features to protect the OLA's.

Noise abatement requirements are summarized in Table 3 and the notes to Table 3.

2.4.1 INDOORS

2.4.1.1 Architectural Requirements

The indoor noise guidelines for the transportation sources can be achieved by using appropriate construction for exterior walls, windows and doors. In determining the worst-case architectural requirements for the residential units, wall and window areas were assumed to be 20% and 80%, respectively, at each facade of a corner room with both facades directly exposed or at an angle to the noise sources.

Based on the predicted sound levels, the west, north and east facades of the proposed building require the exterior wall construction meeting an STC of 45 (expected to be met with typical spandrel and stud/gypsum board back up wall construction) and exterior windows meeting up to STC 36 to meet the indoor sound level criteria.

For south facade, the analysis shows that exterior wall and window construction meeting the minimum non-acoustical requirements of the Ontario Building Code (OBC) will be sufficient to meet the indoor sound level criteria.

The window frames themselves must also be designed to ensure that the overall sound isolation performance for the entire window unit meets the sound isolation requirement. This must be confirmed by the window manufacturer through the submission of acoustical test data.

The final sound isolation requirements should be reviewed when the detailed building plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they meet the required sound isolation performance. This is typically required by the municipality at the time of obtaining a building permit.

2.4.1.2 Ventilation Requirements

Based on the predicted daytime and nighttime sound levels, all residential units in the development require mandatory air conditioning to allow windows to remain closed for noise control purposes.

2.4.2 OUTDOORS

The unmitigated daytime OLA sound levels at the outdoor amenity spaces are predicted to meet the 55 dBA design objective. Thus, sound barriers are not required for noise control purposes.

2.4.3 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing noise sources. Where the guideline sound level limits are exceeded, appropriate warning clauses should be registered on title or included in the development agreement that is registered on title. The warning clauses should also be included in agreements of Offers of Purchase and Sale and lease/rental agreements to make future occupants aware of the potential noise situation.

Table 3 and the notes to Table 3 summarize the warning clauses for the site.

TABLE 3 MINIMUM NOISE ABATEMENT MEASURES

Location	Air Conditioning(1)	Exterior Wall(2)	Exterior Window(3)	Sound Barrier(4)	Warning Clauses(5)
Units along west, north and east facades of development	Mandatory	STC 45	Up to STC 36	None	A + B + C
Units along south facade of development	Mandatory	No specifical acoustical requirement			A + B + C

Notes:

(1) Where means must be provided to allow windows to remain closed for road noise control purposes, a commonly used technique is that of air central conditioning.

(2) STC - Sound Transmission Class Rating (Reference ASTM-E413).

The requirements are based on assumed percentages of wall and window area to associated floor area and should be checked once building plans are finalized.

(3) STC - Sound Transmission Class Rating (Reference ASTM-E413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing.

The requirements are based on assumed percentages of wall and window area to associated floor area and should be checked once building plans are finalized.

(4) If provided, sound barriers must be of solid construction with no gaps, cracks or holes and must meet a minimum surface density of 20 kg/m². Suitable material can include wood, concrete metal sandwich panel, glazing or a combination of these.

(5) The warning clauses to be registered on title and be included in Offers of Purchase and Sale for designated lots:

A. "Purchases/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

B. "This dwelling has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

C. "Purchasers/tenants are advised that due to the proximity of the existing commercial developments, sound levels from these facilities may at times be audible."

3.0 NOISE IMPACT FROM THE PROPOSED DEVELOPMENT

The main source of noise associated with this development, with the potential for significant impact on surrounding buildings, would be the rooftop mechanical equipment and the parking garage exhaust fan.

Mechanical equipment interfacing to the outdoors must comply with the MECP noise guideline limits in NPC-300. By proper engineering design, all requirements can be met and no significant noise impact would be created for surrounding uses. Appropriate choice of location, equipment type, and noise control features should be considered during detailed design for such items as rooftop equipment and air intakes and exhausts, including underground parking garage ventilation systems. Parking garage air shafts located immediately adjacent to residential uses may need special noise control treatment such as acoustically lining the shaft or providing silencers, in addition to appropriate choice of fan type.

For any emergency generators, appropriate steps should be taken to ensure that the equipment placement, treatment, and the routine testing schedule will not generate significant noise impact on neighbouring properties. The generator will require silencers on the intake and exhaust cooling air paths, as well as a muffler on the combustion exhaust.

An assessment of the noise impact from the proposed building onto neighbouring noise sensitive developments should be done once the relevant mechanical and electrical details are known. This is typically done as part of the detailed design of the building.

4.0 NOISE IMPACT ONTO THE DEVELOPMENT ITSELF

Consideration should be given to the control of airborne and/or structure-borne noise generated within the building as part of the detailed design. The major items requiring attention are the common boundaries and building services.

The common boundaries, in general, are those between adjacent noise sensitive areas (such as two adjacent residential units) and between noise sensitive areas and noisy service areas (such as a residential unit and a mechanical space). Building services include mechanical equipment, plumbing, etc.

4.1 COMMON BOUNDARIES

The OBC has requirements for airborne sound isolation of residential units. The requirements apply to both separating partitions between spaces (direct path) as well as flanking partitions (i.e. any path, other than the direct path, that allows the transmission of sound between spaces). The requirements are:

- The demising partition separating a *dwelling unit* from an elevator shaft or a refuse chute must have an *STC* rating not less than 55; and
- A *dwelling unit* shall be separated from every other space in a *building* in which noise may be generated by:
  - a separating assembly and adjoining construction, which, together, provide an *apparent sound transmission class (ASTC) rating not* less than 47. (Note that the ASTC accounts for all flanking sound paths); or
  - a separating assembly that provides an STC rating not less than 50 and adjoining construction that conforms to prescribed methods outlined in the OBC.

There are no requirements for impact noise control in the OBC. However, a minimum Impact Insulation Class (IIC) rating for floors between two sensitive spaces of 50 to 55 is recommended. This rating procedure, the IIC, is deliberately configured so that the significance of the IIC number is similar to the STC rating system for airborne sound.

Adequate sound isolation can be achieved if pertinent details of design and construction are followed consistently. Included in these details, for example, is careful closure of all cracks by caulking or equivalent and the sealing of all wall penetrations, including electrical outlets. Attention must be paid to items which can degrade the performance of the boundaries such as services passing through or mounted to the walls or floors/ceilings (e.g., plumbing). Electrical boxes serving two different units should not be within the same stud space or masonry cavity.

During design, consideration should be given to the noise impact at the noise sensitive spaces in the vicinity of potentially noisy areas. High sound isolation construction may be required to adequately mitigate any potential noise impacts. The incorporation of secondary sound isolation ceilings, floating floors, or cavity walls are some examples.

With proper design and construction, a satisfactory environment is readily achievable.

4.2 BUILDING SERVICES

There will be insignificant effect of the building on the occupants, except potentially in close proximity to any mechanical equipment areas and in those areas affected by sound transmitted by ducts and other paths, from mechanical equipment. Here, the isolation of sound will be a matter of design of the mechanical system and of the sound control associated with it. With proper design, a satisfactory environment is readily achievable.

Table 4 indicates accepted guidelines for indoor sound levels from continuous building services such as air handling units, cooling towers, chillers and pumps. These criteria are specified in terms of Noise Criteria (NC) curves which are based on the maximum desirable sound level in the various frequency bands, based on the use of the space in question.

TABLE 4 TYPICAL INDOOR NOISE CONTROL DESIGN GUIDELINES FOR CONTINUOUS BUILDING SERVICES(1)

Type of Space	Recommended Maximum NC (Noise Criteria) Curves(2)
Residences, Apartments, Condominiums	
• Living areas	30
• Bathrooms, kitchens, utility rooms	35
Hotels/Motels	
• Individual rooms or suites	30
• Meeting/banquet rooms	30
• Corridors and lobbies	40
• Service/support area	40
Office Buildings	
• Executive and private offices	30
• Conference rooms	30
• Teleconference rooms	25
• Open-plan offices	40
• Corridors and lobbies	40

Notes:

(1) Mechanical and electrical systems.

(2) Taken from Reference 5. Each number rating typically represents a range of ± 5 dB for the design target.

5.0 CONCLUSIONS

With the incorporation of the recommended noise mitigation measures, the applicable MECP noise guidelines can be met, and a suitable acoustical environment provided for the occupants.

6.0 REFERENCES

1. "Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, August 2013.

2. Road and Rail Noise: Effects on Housing", Canada Mortgage and Housing Corporation, Publication NHA 5156, 81/10.

3. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment.

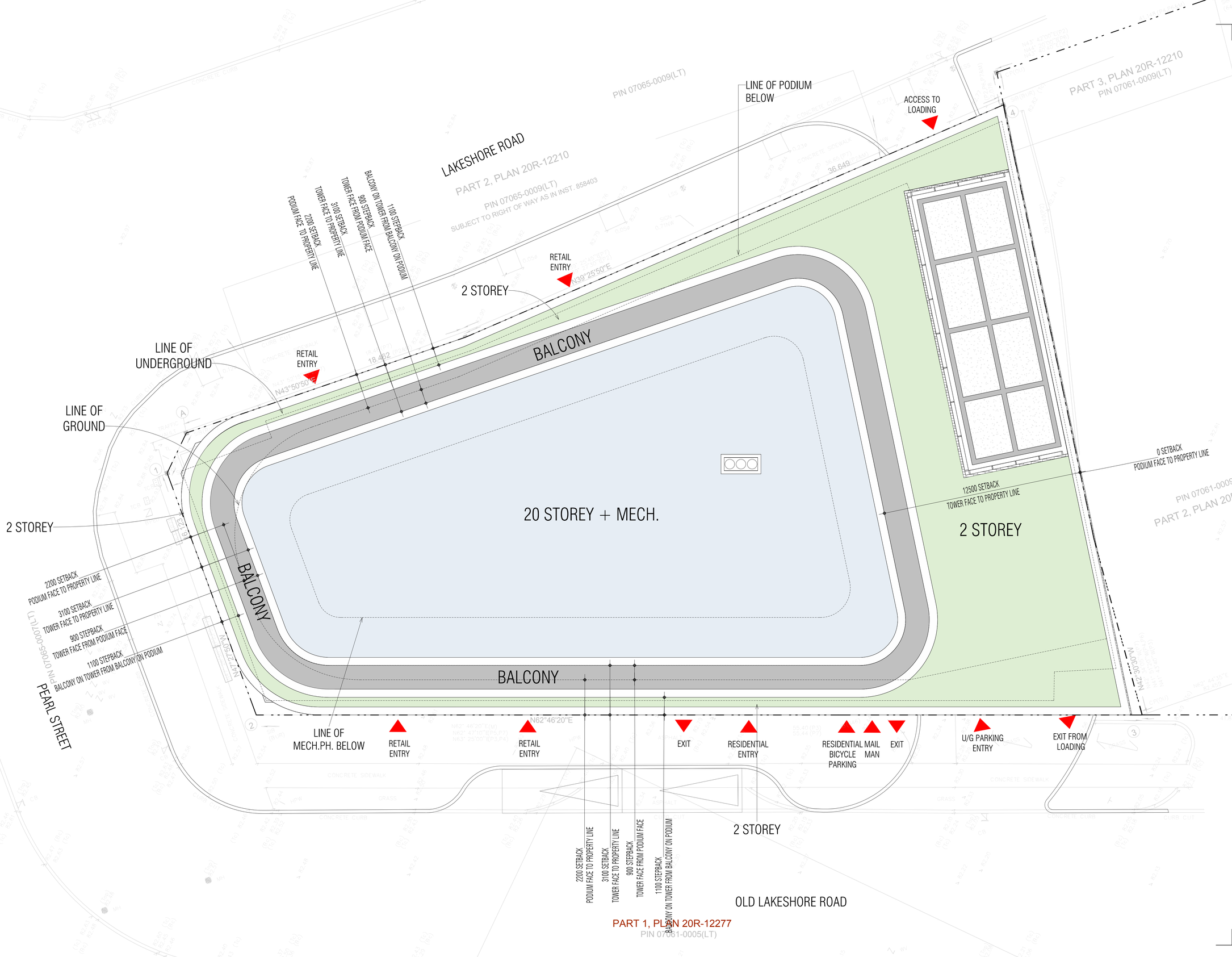
4. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.

5. "Chapter 48 – Noise and Vibration Control", ASHRAE Handbook – HVAC Applications, 2011.

6. "Environmental Noise Feasibility Study, 2072 Lakeshore Road, Proposed Mixed-Use Development, City of Burlington", Valcoustics Canada Ltd., July 25, 2024.

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APPENDIX A
ARCHITECTURAL DRAWINGS



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PROPOSED MIXED USE DEVELOPMENT

2072 LAKESHORE RD

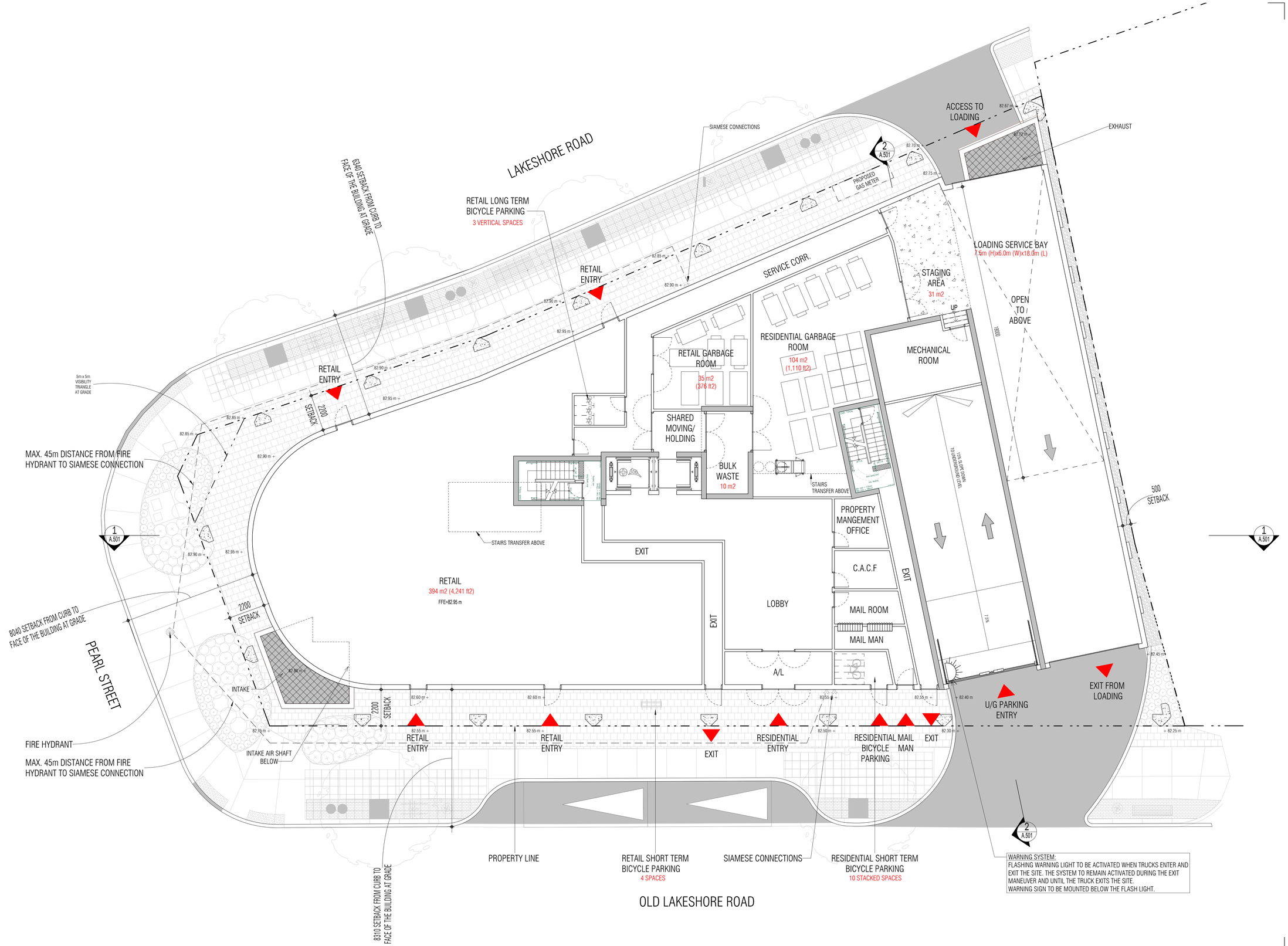
BURLINGTON — TRINITY POINT — ONTARIO

Project Architect :	E.CORAZZA
Assistant Designer :	L.WONG
Drawn By :	S.SAMAREH/O.HADI/W.CHIU
Checked By :	D.BIASE
Plot Date :	Dec 19, 2024
Job #	2069.22

SITE PLAN

1 : 100

A.103



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Issuances

01. DEC.19.2024 ISSUED FOR ZBA SUBMISSION E.C

No.	Date	Description	Issued by

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GRAZIANI + CORAZZA ARCHITECTS

ONTARIO ASSOCIATION OF ARCHITECTS
ENZO M. CORAZZA
LICENCE 7772

8400 JANE STREET, BUILDING D SUITE 300, CONCORD , ONTARIO L4K 4L8
PHONE. 905.795.2601 FAX. 905.795.2844 WWW.GC-ARCHITECTS.COM

PROPOSED MIXED USE DEVELOPMENT

2072 LAKESHORE RD

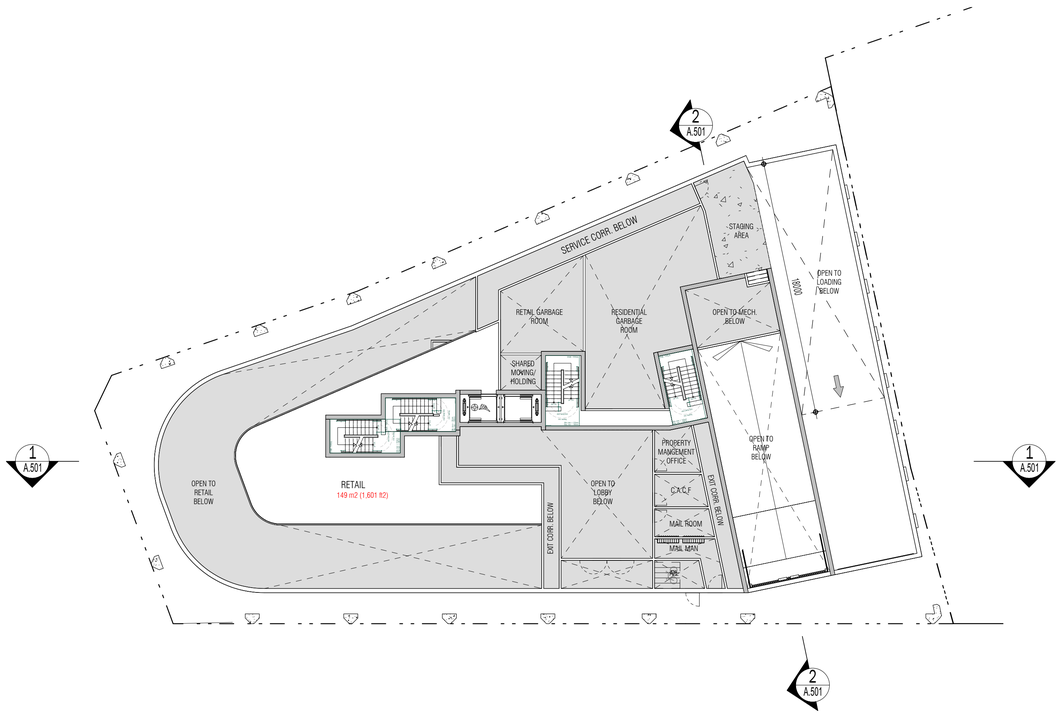
BURLINGTON TRINITY POINT ONTARIO

Project Architect :	E.CORAZZA
Assistant Designer :	L.WONG
Drawn By :	S.SAMAREH/O.HADI/W.CHIU
Checked By :	D.BIASE
Plot Date :	Dec 19, 2024
Job #	2069.22

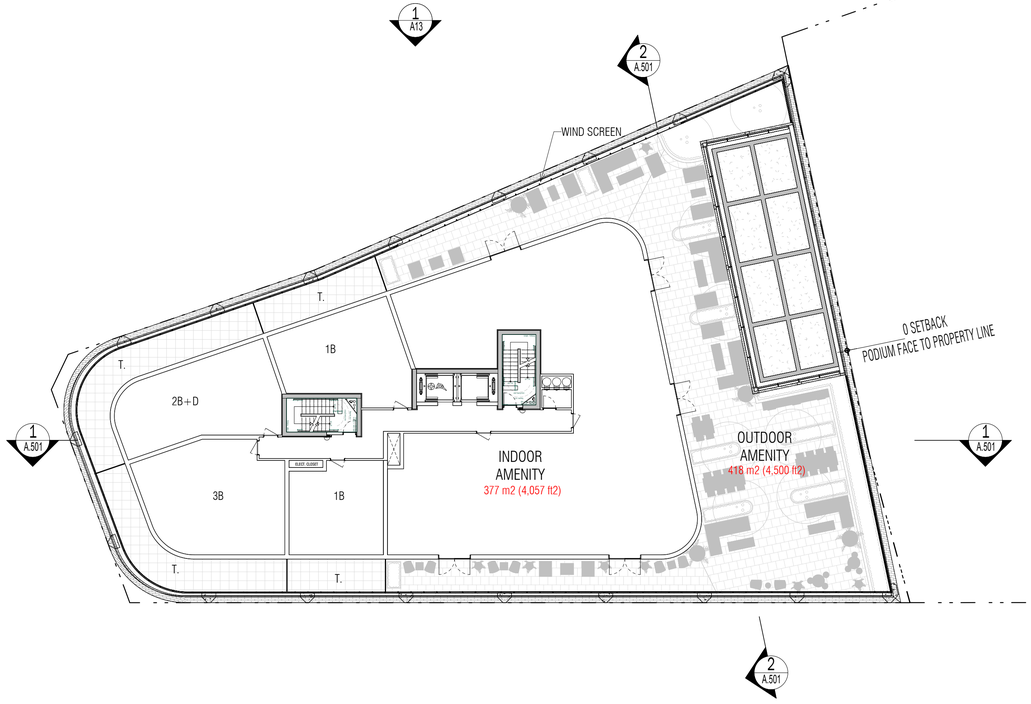
GROUND (1ST) FLOOR

1 : 100

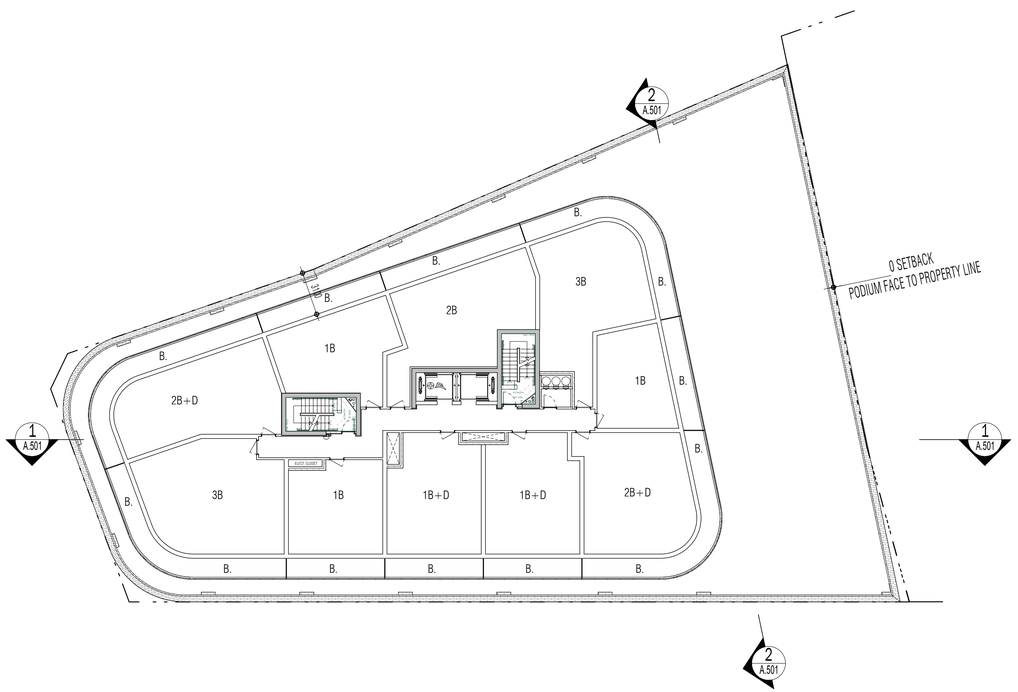
A.301



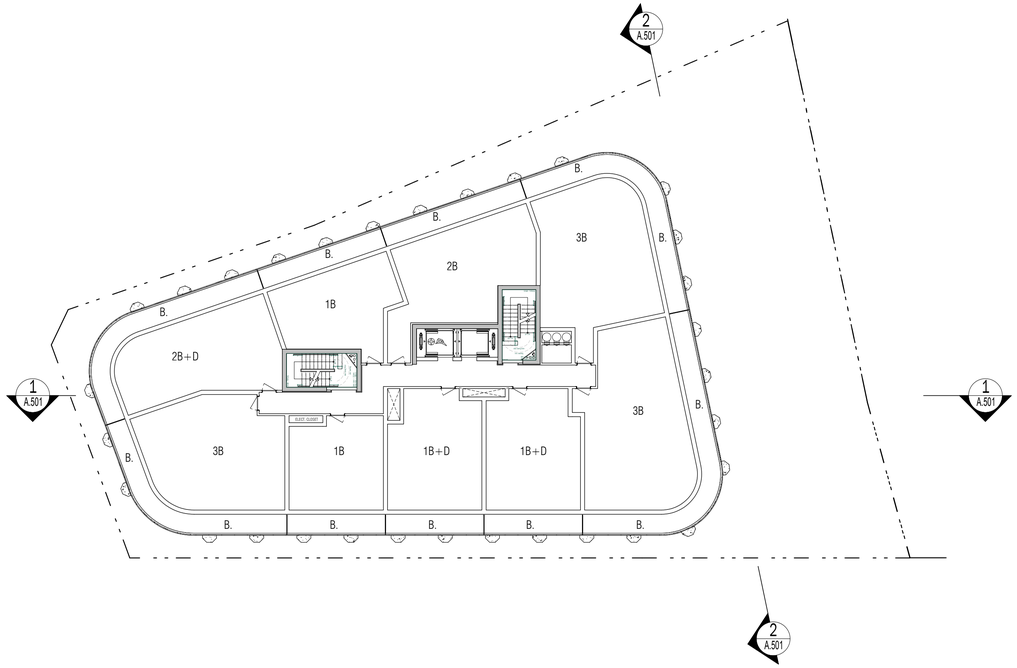
3 LV. 2
1 : 200



1 LV. 3
1 : 200



2 LV. 4 - LV.11
1 : 200



4 LV. 12 - LV. 20
1 : 200

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PHONE 905.795.2601 FAX 905.795.2844 WWW.GC-ARCHITECTS.COM

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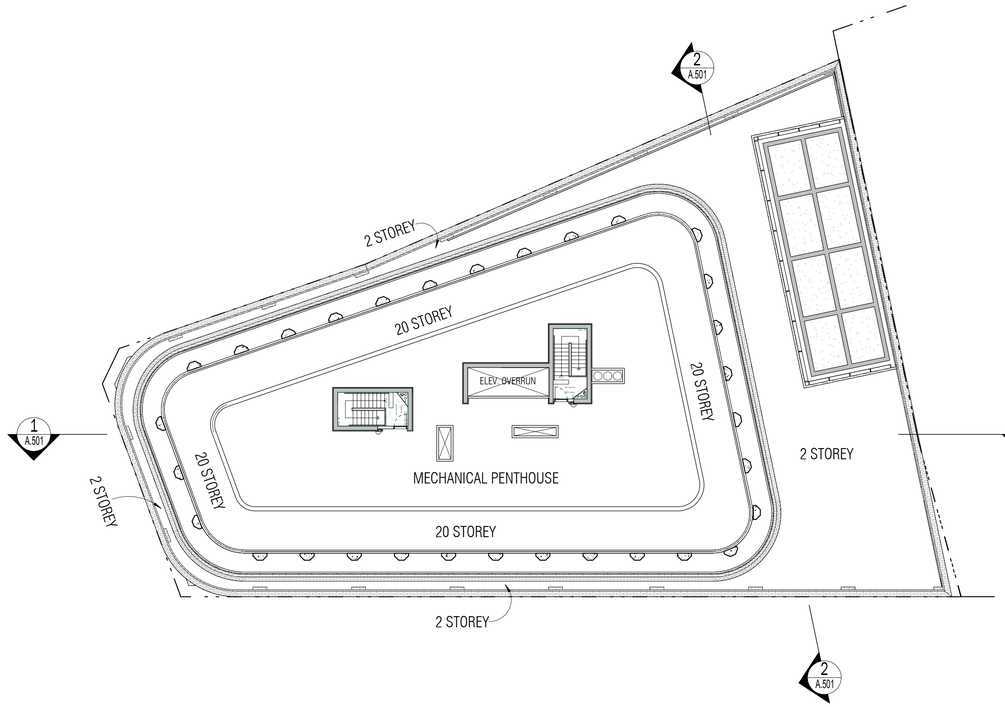
2072 LAKESHORE RD

BURLINGTON — TRINITY POINT — ONTARIO

Project Architect :	E.CORAZZA
Assistant Designer :	L.WONG
Drawn By :	S.SAMAREH/O.HADI/W.CHIU
Checked By :	D.BIASE
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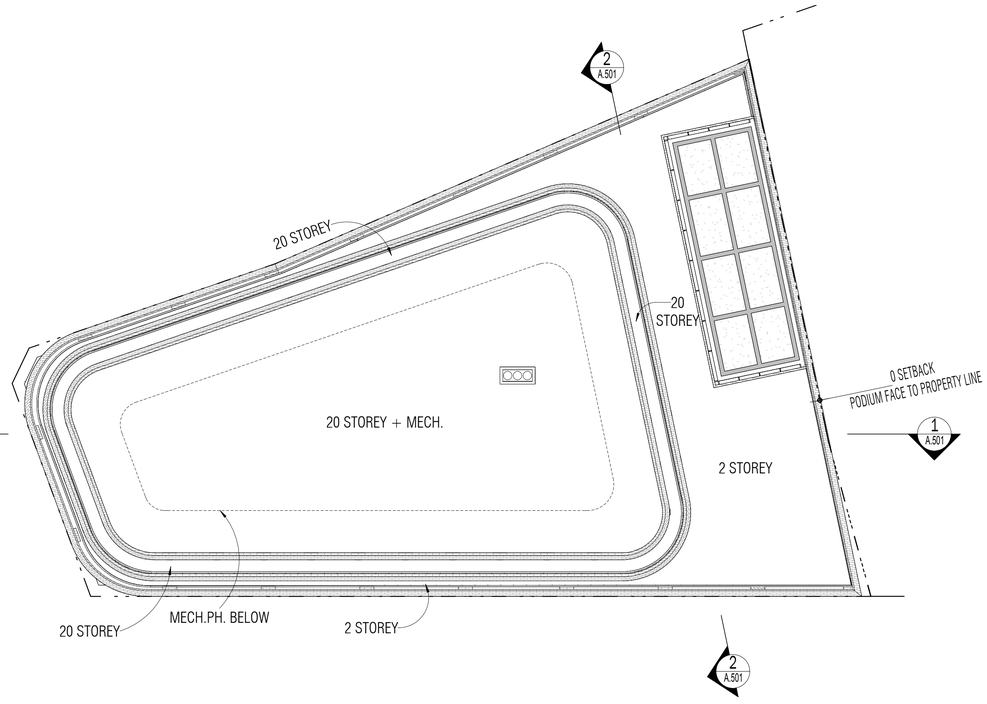
2ND - 20TH FLOOR PLANS

1 : 200 A.302



2 MECH.PH. FLOOR PLAN

1 : 200



3 ROOF PLAN

1 : 200

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2072 LAKESHORE RD

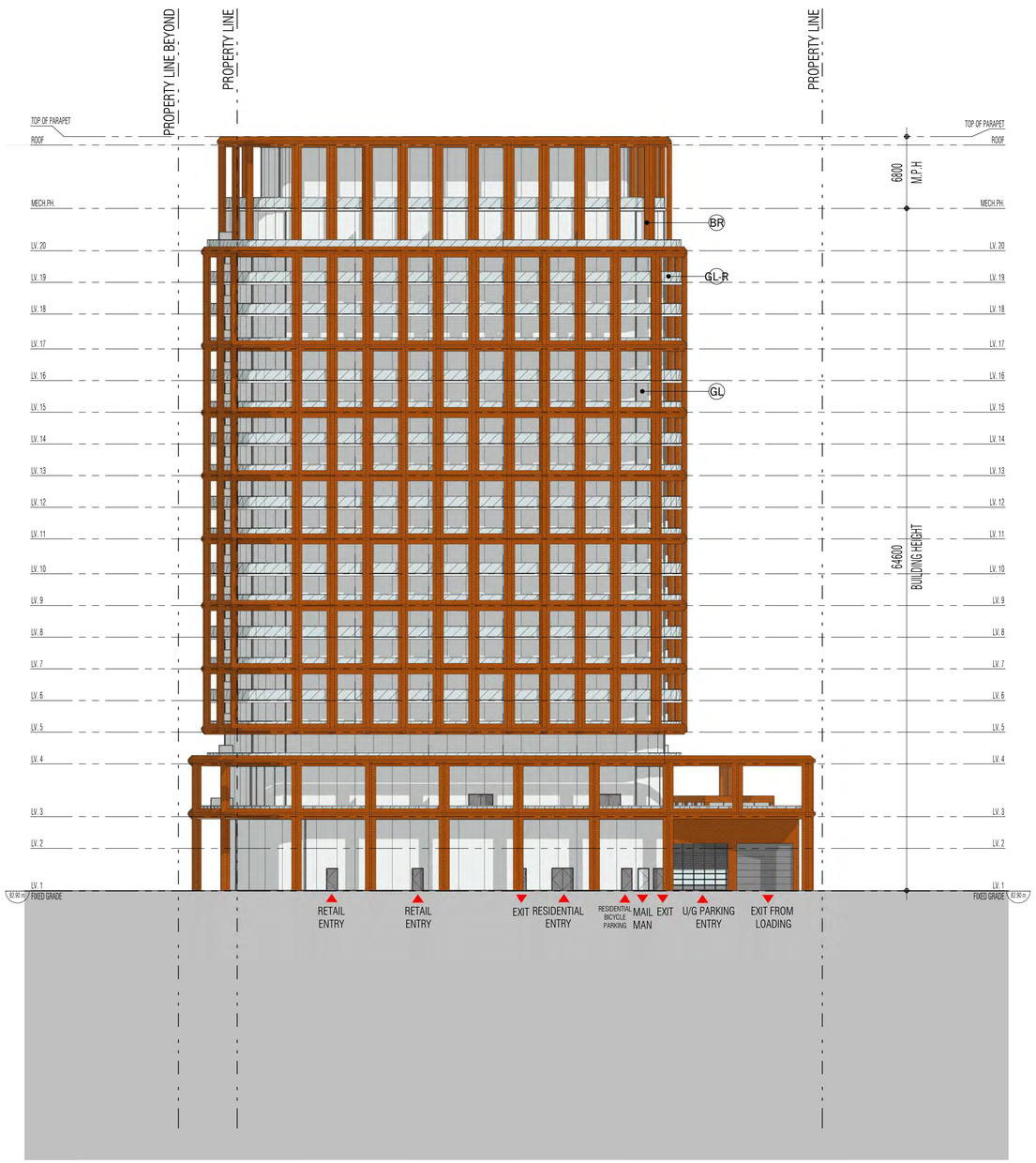
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Plot Date :	Dec 19, 2024
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MECH. PH. FLOOR - ROOF PLANS

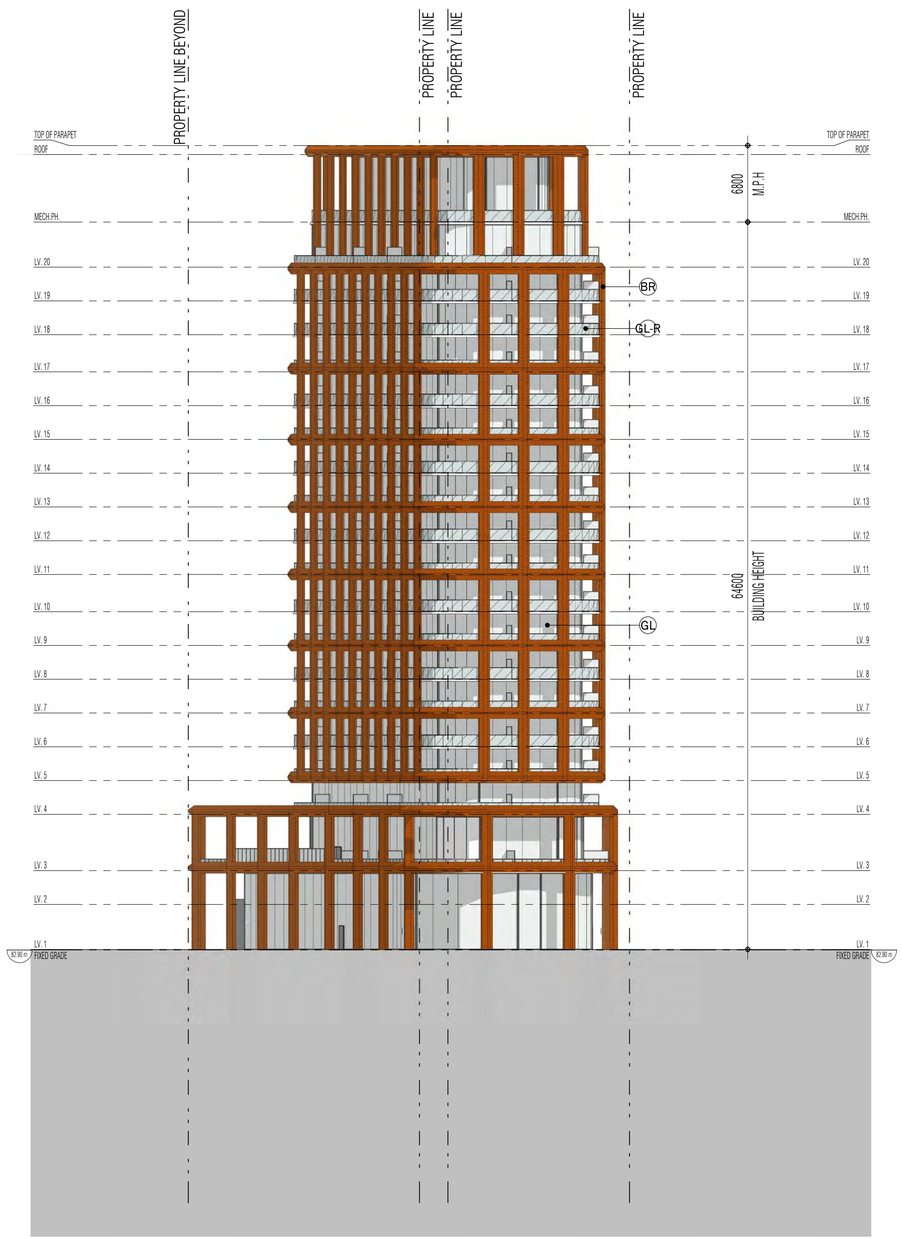
1 : 200

A.303



1 SOUTH ELEVATION

1 : 250



2 WEST ELEVATION

1 : 250

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MATERIALS LEGEND

GL	VISION GLAZING	GLASS: CLEAR
GL-R	GLASS RAILING	GLASS: CLEAR
PC-D	PRECAST PANEL (DARK)	DARK GREY
BR	BRICK	

No.	Date	Description	Issued by

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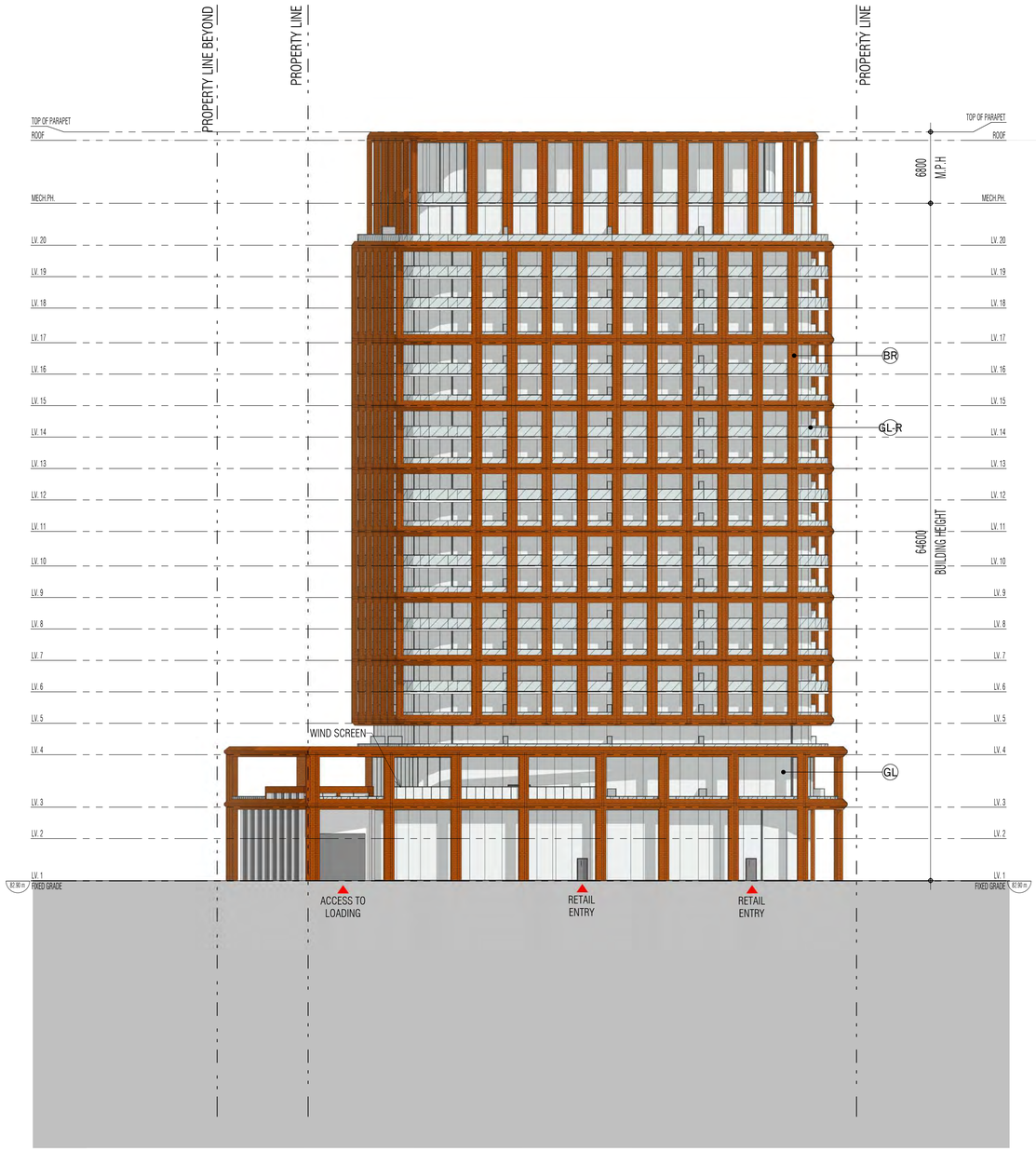
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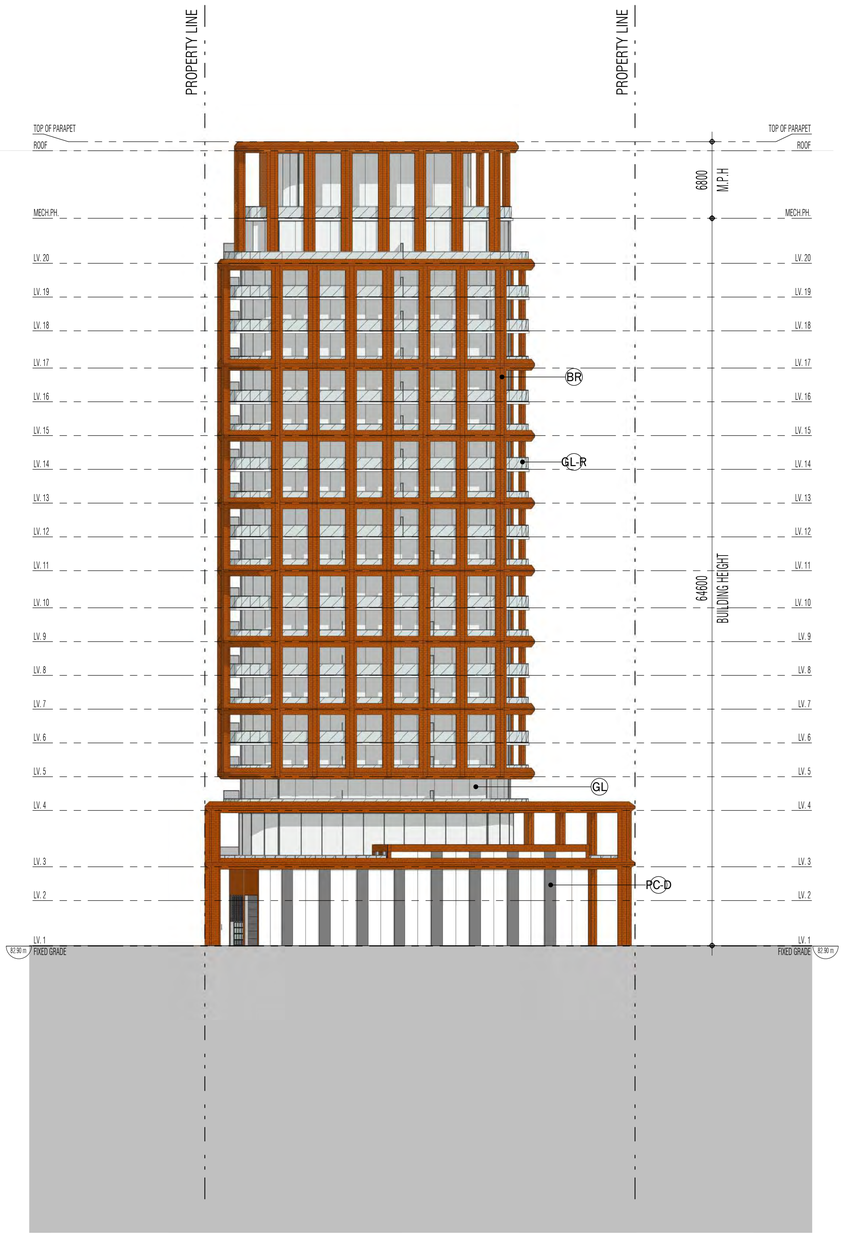
SOUTH & WEST ELEVATIONS

As indicated

A.401



1 NORTH ELEVATION
1 : 250



2 EAST ELEVATION
1 : 250

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GL-R	GLASS RAILING	GLASS: CLEAR
PC-D	PRECAST PANEL (DARK)	DARK GREY
BR	BRICK	

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2072 LAKESHORE RD

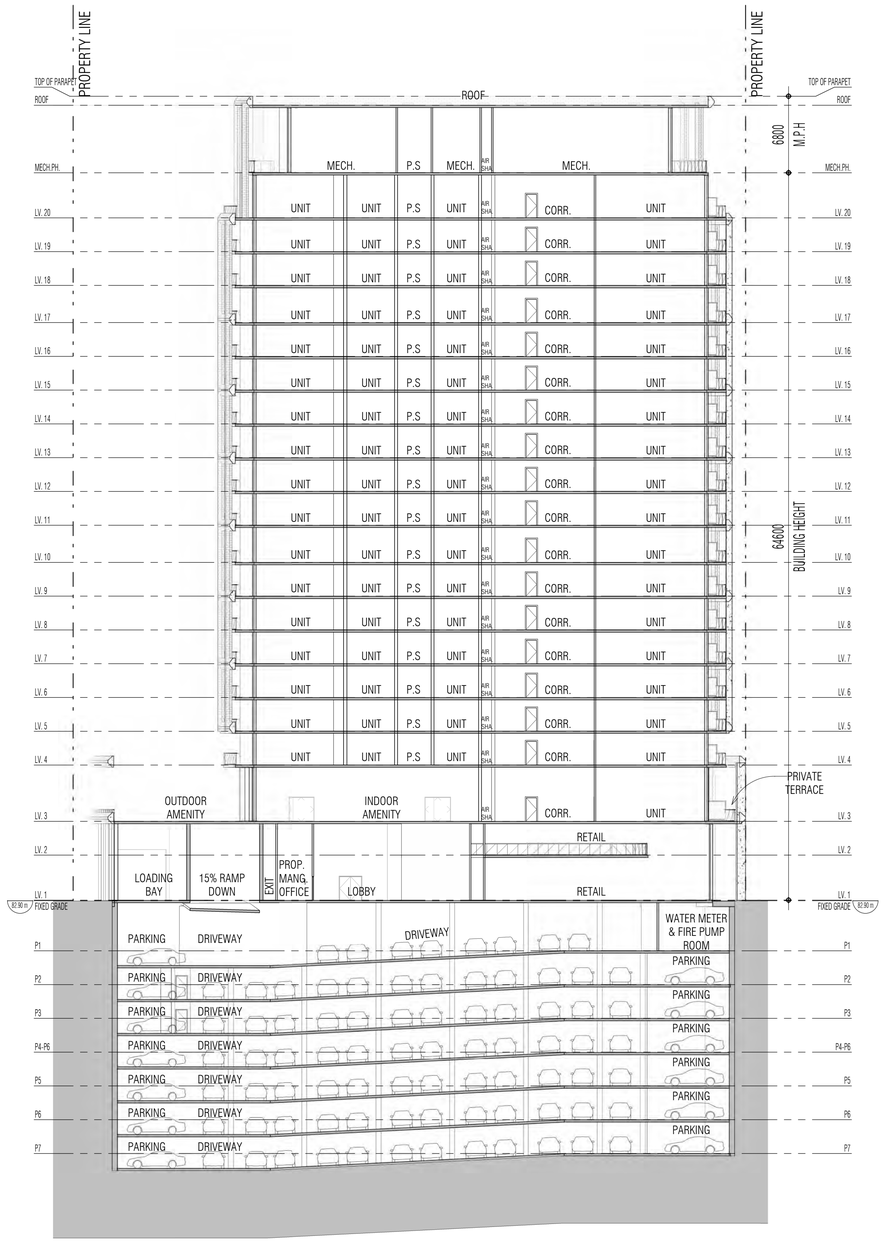
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Plot Date :	Dec 19, 2024
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NORTH & EAST ELEVATIONS

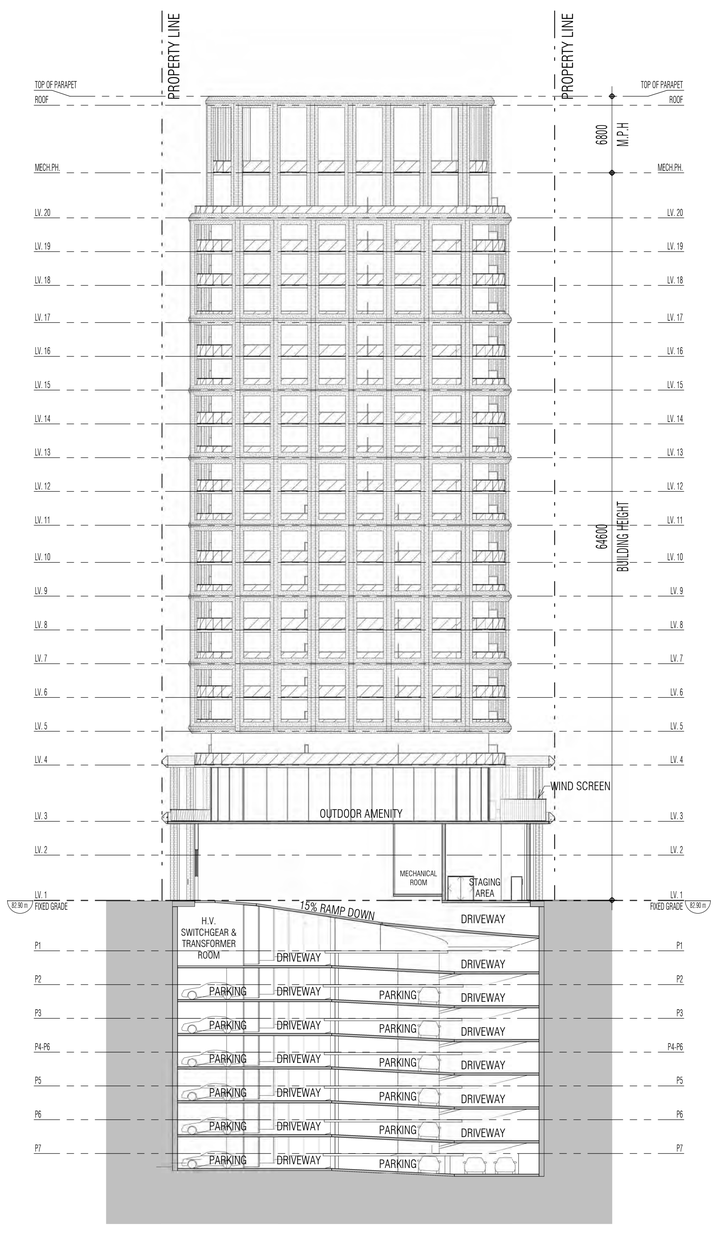
As indicated

A.402



1 E-W SECTION

1 : 250



2 N-S SECTION

1 : 250

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PROPOSED MIXED USE DEVELOPMENT

2072 LAKESHORE RD

BURLINGTON TRINITY POINT ONTARIO

Project Architect :	E.CORAZZA
Assistant Designer :	L.WONG
Drawn By :	S.SAMAREH/O.HADI/W.CHIU
Checked By :	D.BIASE
Plot Date :	Dec 19, 2024
Job #	2069.22

BUILDING SECTIONS

1 : 250 A.501

APPENDIX B
ROAD TRAFFIC DATA

201177-LAKESHORE RD @ PEARL ST

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Burlington
Site #: 2011770000
Intersection: LAKESHORE RD & PEARL ST
TFR File #: 1
Count date: 4-May-2022

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: LAKESHORE RD runs W/E

North Leg Total:	102			
North Entering:	51			
North Peds:	15			
Peds Cross:	⋈			
Cyclists	0	0	0	0
Trucks	5	0	0	5
Cars	37	0	9	46
Totals	42	0	9	
Cyclists	0			
Trucks	5			
Cars	46			
Totals	51			
East Leg Total:	1247			
East Entering:	419			
East Peds:	10			
Peds Cross:	⧖			

PEARL ST

Cyclists	Trucks	Cars	Totals
0	55	386	441

Cars	Trucks	Cyclists	Totals
20	0	0	20
349	50	0	399
0	0	0	0
369	50	0	

LAKESHORE RD

N
W E
S

Cyclists	Trucks	Cars	Totals
0	3	26	29
2	122	695	819
0	0	12	12
2	125	733	

LAKESHORE RD

Cars	Trucks	Cyclists	Totals
704	122	2	828

OLD LAKESHORE RD

Peds Cross:	⧖			
West Peds:	4			
West Entering:	860			
West Leg Total:	1301			
Cars	12			
Trucks	0			
Cyclists	0			
Totals	12			
Cars	0	0	0	0
Trucks	0	2	0	2
Cyclists	0	0	0	0
Totals	0	2	0	
Peds Cross:	⋈			
South Peds:	9			
South Entering:	2			
South Leg Total:	14			

Comments

201177-LAKESHORE RD @ PEARL ST

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

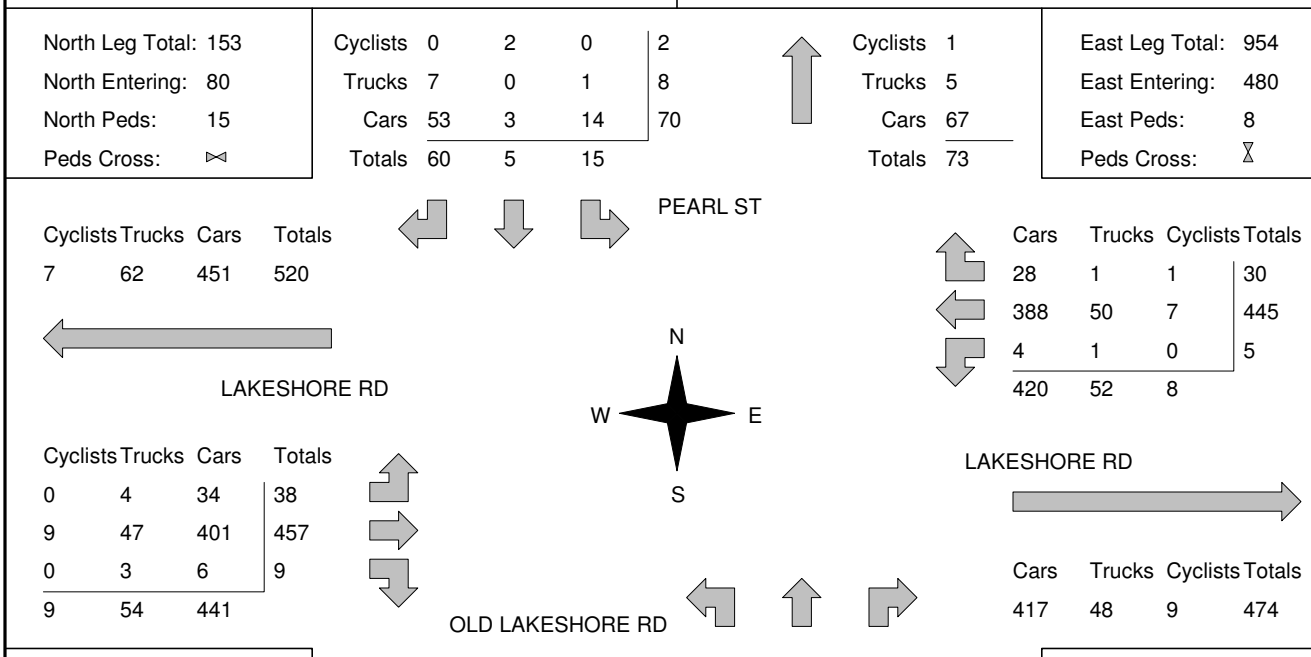
Municipality: Burlington
Site #: 2011770000
Intersection: LAKESHORE RD & PEARL ST
TFR File #: 1
Count date: 4-May-2022

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: LAKESHORE RD runs W/E



Comments

201177-LAKESHORE RD @ PEARL ST

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

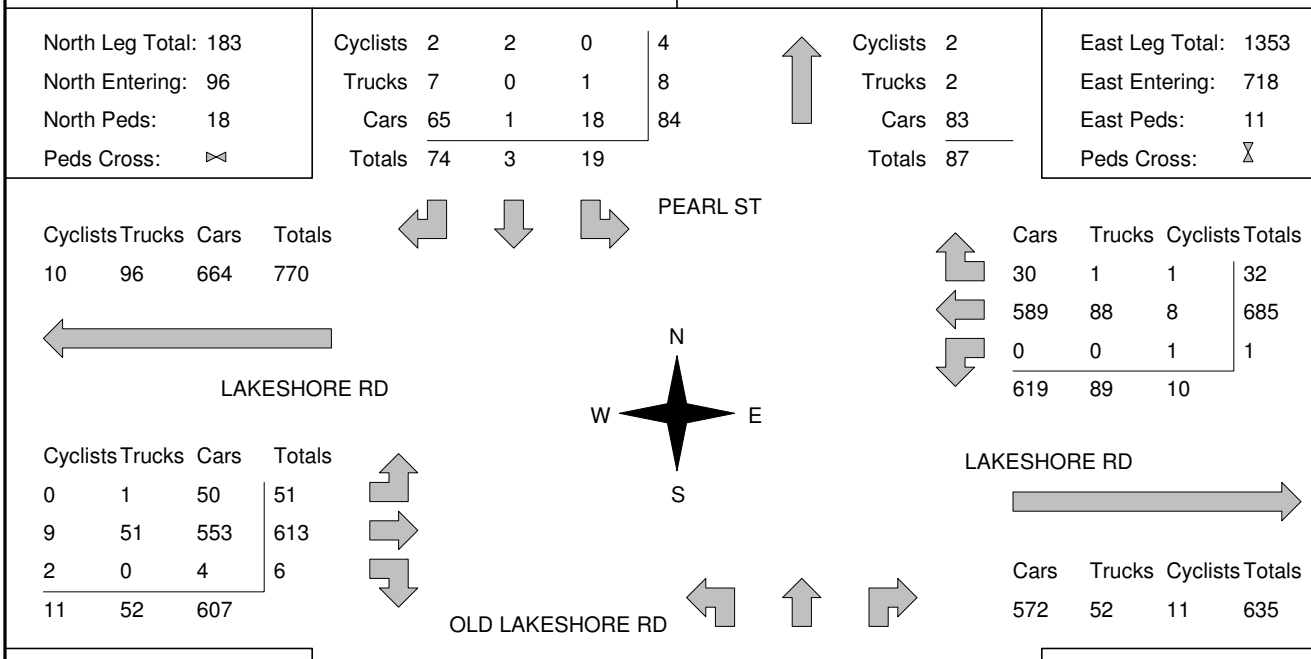
Municipality: Burlington
Site #: 2011770000
Intersection: LAKESHORE RD & PEARL ST
TFR File #: 1
Count date: 4-May-2022

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: LAKESHORE RD runs W/E



Comments

201177-LAKESHORE RD @ PEARL ST

Total Count Diagram

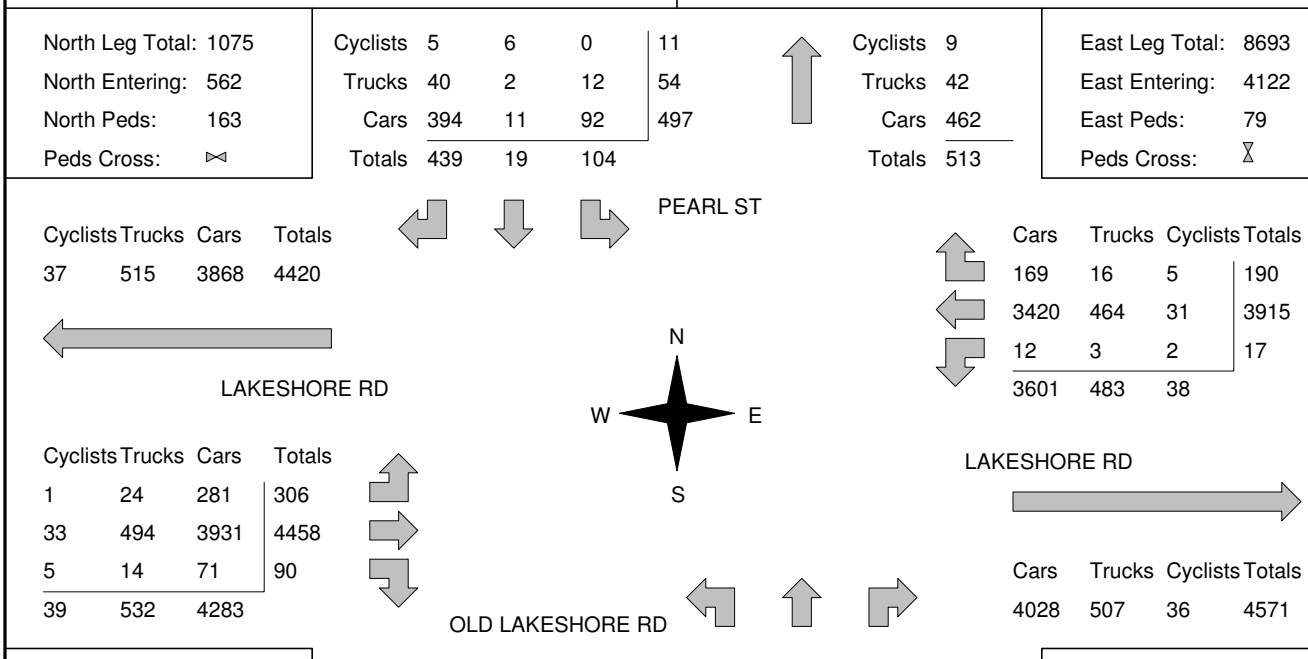
Municipality: Burlington
Site #: 2011770000
Intersection: LAKESHORE RD & PEARL ST
TFR File #: 1
Count date: 4-May-2022

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: LAKESHORE RD runs W/E



Comments

201177-LAKESHORE RD @ PEARL ST
Traffic Count Summary

Intersection: LAKESHORE RD & PEARL ST | **Count Date:** 4-May-2022 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	4	0	33	37	9	39
9:00:00	9	0	42	51	15	53
11:00:00	0	0	0	0	0	0
12:00:00	15	2	48	65	25	70
13:00:00	15	0	73	88	20	94
14:00:00	15	5	60	80	15	102
15:00:00	0	0	0	0	0	0
16:00:00	18	3	61	82	26	100
17:00:00	17	4	69	90	29	105
18:00:00	11	5	53	69	24	91
Totals:	104	19	439	562	163	654

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	1	0	1	2	3
9:00:00	0	2	0	2	9
11:00:00	0	0	0	0	0
12:00:00	4	0	1	5	15
13:00:00	6	0	0	6	21
14:00:00	15	5	2	22	21
15:00:00	0	0	0	0	0
16:00:00	16	1	1	18	19
17:00:00	7	5	3	15	15
18:00:00	17	4	1	22	17
Totals:	66	17	9	92	120

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	2	280	14	296	1	1031
9:00:00	0	399	20	419	10	1279
11:00:00	0	0	0	0	0	0
12:00:00	2	388	21	411	2	851
13:00:00	6	445	29	480	12	948
14:00:00	5	445	30	480	8	984
15:00:00	0	0	0	0	0	0
16:00:00	1	651	16	668	15	1204
17:00:00	1	671	33	705	13	1369
18:00:00	0	636	27	663	18	1310
Totals:	17	3915	190	4122	79	8976

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	23	708	4	735	0
9:00:00	29	819	12	860	4
11:00:00	0	0	0	0	0
12:00:00	48	377	15	440	16
13:00:00	45	406	17	468	13
14:00:00	38	457	9	504	15
15:00:00	0	0	0	0	0
16:00:00	30	493	13	536	7
17:00:00	46	610	8	664	18
18:00:00	47	588	12	647	26
Totals:	306	4458	90	4854	99

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	6	25	39	46	58	59	60	77

APPENDIX C
ENVIRONMENTAL NOISE GUIDELINES

APPENDIX C

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

Reference: MECP Publication NPC-300, October 2013: *"Environmental Noise Guideline, Stationary and Transportation Source – Approval and Planning"*.

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Road	23:00 to 07:00	45 dBA
	Rail	23:00 to 07:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Sleeping quarters	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 0
Sleeping quarters	Road	23:00 to 07:00	40 dBA
	Rail	23:00 to 07:00	35 dBA
	Aircraft	24-hour period	NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA
Outdoor Point of Reception	Aircraft	24-hour period	NEF/NEP 30#
	Stationary Source		
	Class 1 Area	07:00 to 19:00(1)	50* dBA
		19:00 to 23:00(1)	50* dBA
	Class 2 Area	07:00 to 19:00(2)	50* dBA
		19:00 to 23:00(2)	45* dBA
	Class 3 Area	07:00 to 19:00(3)	45* dBA
		19:00 to 23:00(3)	40* dBA
	Class 4 Area	07:00 to 19:00(4)	55* dBA
		19:00 to 23:00(4)	55* dBA

…./cont'd

SPACE	SOURCE	TIME PERIOD	CRITERION
Plane of a Window of Noise Sensitive Spaces	Stationary Source		
	Class 1 Area	07:00 to 19:00(1)	50* dBA
		19:00 to 23:00(1)	50* dBA
		23:00 to 07:00(1)	45* dBA
	Class 2 Area	07:00 to 19:00(2)	50* dBA
		19:00 to 23:00(2)	50* dBA
		23:00 to 07:00(2)	45* dBA
	Class 3 Area	07:00 to 19:00(3)	45* dBA
		19:00 to 23:00(3)	45* dBA
		23:00 to 07:00(3)	40* dBA
	Class 4 Area	07:00 to 19:00(4)	60* dBA
		19:00 to 23:00(4)	60* dBA
		23:00 to 07:00(4)	55* dBA

\# may not apply to in-fill or re-development.
* or the minimum hourly background sound exposure $L_{eq(1)}$, due to road traffic, if higher.
(1) Class 1 Area: Urban.
(2) Class 2 Area: Urban during day; rural-like evening and night.
(3) Class 3 Area: Rural.
(4) Class 4 Area: Subject to land use planning authority's approval.

Reference: MECP Publication ISBN 0-7729-2804-5, 1987: *"Environmental Noise Assessment in Land-Use Planning"*.

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX D

SAMPLE SOUND LEVEL CALCULATIONS

```
STAMSON 5.04        NORMAL REPORT        Date: 26-11-2024 16:21:05
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: nw_nf.te             Time Period: Day/Night 16/8 hours
Description: Predicted Sound Levels - NW Corner Bedroom, North Facade


Road data, segment # 1: Lakeshore (day/night)
---------------------------------------------
Car traffic volume  : 19798/2200  veh/TimePeriod  *
Medium truck volume :  1544/172   veh/TimePeriod  *
Heavy truck volume  :  1029/114   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     4 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  19599
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   6.90
    Heavy Truck  % of Total Volume     :   4.60
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Lakeshore (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  16.00 / 16.00  m
Receiver height           :  62.10 / 62.10  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 2: Pearl St (day/night)
--------------------------------------------
Car traffic volume  :  1370/152   veh/TimePeriod  *
Medium truck volume :   121/13    veh/TimePeriod  *
Heavy truck volume  :    82/9     veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     4 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   1378
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   7.70
    Heavy Truck  % of Total Volume     :   5.20
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Pearl St (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  13.00 / 13.00  m
Receiver height           :  62.10 / 62.10  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Lakeshore (day)
-----------------------------------

Source height = 1.46 m

ROAD (0.00 + 70.68 + 0.00) = 70.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  70.96   0.00  -0.28   0.00   0.00   0.00   0.00  70.68
-------------------------------------------------------------------------------

Segment Leq : 70.68 dBA


Results segment # 2: Pearl St (day)
-----------------------------------

Source height = 1.51 m

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  58.13   0.00   0.62  -3.01   0.00   0.00   0.00  55.74
-------------------------------------------------------------------------------

Segment Leq : 55.74 dBA

Total Leq All Segments: 70.82 dBA


Results segment # 1: Lakeshore (night)
-------------------------------------

Source height = 1.46 m

ROAD (0.00 + 64.14 + 0.00) = 64.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  64.42   0.00  -0.28   0.00   0.00   0.00   0.00  64.14
-------------------------------------------------------------------------------

Segment Leq : 64.14 dBA
```

Results segment # 2: Pearl St (night)

Source height = 1.51 m

ROAD (0.00 + 49.14 + 0.00) = 49.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	51.53	0.00	0.62	-3.01	0.00	0.00	0.00	49.14

Segment Leq : 49.14 dBA

Total Leq All Segments: 64.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.82
(NIGHT): 64.28