

Our ref: 11223331-LTR-1

November 25, 2024

Ms. Jenn Morrison
TIP Gladstone GP Inc.
200-485 Bank Street
Ottawa, Ontario
K2P 1Z2

Noise Impact Study – Addendum
Tower A, 145 Loretta Avenue North, Ottawa

Dear Ms. Morrison

1. Introduction

1.1 Purpose of this Letter

GHD Limited (GHD) was retained by TIP Gladstone GP Inc. (TIP) to prepare this Noise Impact Study Addendum (Addendum) for the proposed high rise residential Development located at 145 Loretta Avenue North and Gladstone Avenue, Ottawa, Ontario (Development). GHD previously prepared a Noise Impact Study (Study), dated January 13, 2023. This Addendum has been prepared in support of the planning applications for Tower A of the Development, and includes updated assessments to capture the following updates:

- Updated building envelope geometry
- Introduction of shared outdoor amenity spaces on the 5th floor
- Construction of Tower A as the first phase of the Development

The City of Ottawa Environmental Noise Control Guidelines (ENCG) include sound level criteria for transportation and stationary noise sources, which are adopted from the Ontario Ministry of the Environment, Conservation and Parks (MECP) guideline NPC-300, and are used as the basis of assessment in this Addendum, as described in the Study.

Rail vibration was assessed previously by J.E. Coulter Associates Limited with results summarized in a report dated August 8, 2019 and determined to be insignificant. Therefore, rail vibration has not been assessed as part of this Study.

1.2 Scope and Limitations

This report has been prepared by GHD for TIP and may only be used and relied on by TIP for the purpose agreed between GHD and TIP as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than TIP arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. Development Design

The Site is bounded by Loretta Avenue North on the west side, the O-Train Trillium Line to the northeast, and Gladstone Avenue to the south. Tower A consists of a 30-storey tower atop a four-storey podium, with privately-owned public space (POPS) at grade forming a pedestrian connection to a multi-use path (MUP) proposed by the City just east of the Site. The current concept drawings of Tower A are included in Attachment A.

The changes to the building envelope geometry have minor impacts on the exposure of the façades of Tower A to the surrounding transportation noise sources (i.e., Highway 417, Gladstone Ave, Somerset St W, O-Train Trillium Line). The introduction of new outdoor amenity spaces also warrants assessment of noise from transportation noise sources.

The changes to the design of Tower A include adjustments to the building geometry, removal of residential suite private balconies, and introduction of outdoor amenity spaces on the 5th floor level.

3. Transportation Noise Impacts

3.1 Methodology

Future (2034) road and rail traffic sound levels at the Development were predicted using STAMSON v5.04, a computerized model which implements the MECP's ORNAMENT and STEAM algorithms. The computer model input parameters include, among other data, the number of road segments, number of house rows, the positional relationship of the receptor to a noise source or barrier in terms of distance, elevation and angle, the basic site topography, the ground surface type, traffic volumes, traffic composition, and speed limit.

Attachment C of this Addendum includes updated STAMSON calculations and drawings identifying the distances and angles of exposure from the relevant surface transportation noise sources.

3.2 Traffic Input Parameters

3.2.1 Road Traffic Data

Future road traffic model parameters used in this Study is summarized as follows:

Table 1 Future (2034) Road Traffic Input Parameters

Road Segment	Future AADT	Speed Limit (km/h)	Day / Night Split	Commercial Vehicle Rates (medium trucks / heavy trucks)
Highway 417	214,341	100	92% / 8%	7% / 5%
Gladstone Avenue	15,000	40	92% / 8%	7% / 5%
Somerset Street West	15,000	50	92% / 8%	7% / 5%

Road traffic volumes for Highway 417 were obtained from data published by the Ontario Ministry of Transportation (MTO) in the form of Annual Average Daily Traffic (AADT) volumes from 1988 to 2021. The AADT average annual growth rate from 2011 to 2021 was 0.84%, which was used to estimate the future 2034 AADT. The estimated future AADT exceeds the default value recommended by the Ottawa Environmental Noise Control Guidelines (ENCG) and was therefore used to be conservative. The day / night split and commercial vehicle rates were assumed based on guidance from the ENCG.

Road traffic parameters for Gladstone Avenue and Somerset Street West were assumed based on guidance from the ENCG.

Figure 2.2 of the Study shows the location of the roadways noted above in relation to the Site. All road traffic data referenced in this Addendum is included in Attachment D.

3.2.2 Rail Traffic Data

Future rail traffic model parameters used in this Study is summarized as follows:

Table 2 Future (2034) Rail Traffic Input Parameters

Rail Source	Future Daytime Trains	Future Nighttime Trains	Locomotive Type	Locomotives per Train	Cars per Train	Speed (km/h)
O-Train Trillium Line	215	40	Diesel	1	3	35

The O-Train Trillium Line (Line 2) is served by high-efficiency diesel multiple unit (DMU) trains. The current fleet includes trains of two to four cars. Based on the train schedule published on the OC Transpo website, the current train schedule would result in approximately 160 train pass-bys during the day and 30 pass-bys at night. To estimate the future train traffic on the Trillium Line, GHD assumed a growth rate of 2.5% per year. Based on communications with OC Transpo staff, it was confirmed that the average speed of trains on the Trillium Line is 35 km/h.

GHD notes that the Corso Italia station is currently under construction immediately east of the Development. As such, future trains would be expected to travel slower than assumed in this Study as they would typically stop at this station.

Figure 2.2 of the Study shows the location of the rail line noted above in relation to the Site. A copy of the O-Train Trillium Line schedule is included in Attachment D.

3.3 Results

3.3.1 Plane of Window

Table 3 Future Road and Rail Noise Levels – Plane of Window

Building	Façade	Floor Level	Future Noise Levels (dBA)						Outdoor Criteria Exceeded? (Yes/No)
			Road		Rail		Cumulative Road and Rail		
			Day	Night	Day	Night	Day	Night	
<i>Sound Level Criteria</i>			--	--	--	--	55	50	--
Tower A (30 Storeys)	North	Level 4	51	43	66	62	66	62	Yes
		Level 30	55	48	66	62	66	62	Yes
	East	Level 4	60	52	68	63	69	64	Yes
		Level 30	69	61	68	64	71	66	Yes
	South	Level 4	64	58	64	59	67	61	Yes
		Level 30	73	66	63	59	74	66	Yes
	West	Level 4	62	54	55	51	62	56	Yes
		Level 30	70	63	55	51	70	63	Yes

As seen above, predicted transportation noise levels at the façades of Tower A exceed the applicable sound level limits of NPC-300. Accordingly, physical mitigation and noise warning clauses are recommended, as described in Sections 3.4 and 3.5.

3.3.2 Outdoor Living Areas

Table 4 Future Road and Rail Noise Levels – Outdoor Living Area

Receiver ID	Receiver Description	Future Daytime Noise Levels (dBA)			Limit Exceeded? (Yes/No)
		Road	Rail	Cumulative Road and Rail	
<i>Sound Level Criteria</i>		--	--	55	--
OLA-A1	Shared outdoor amenity space on Level 5, north of tower (16.7 m A.G.)	56	56	59	Yes
OLA-A2	Shared outdoor amenity space on Level 5, south of tower (16.7 m A.G.)	63	58	64	Yes

As seen above, predicted transportation noise levels at the Outdoor Living Areas of Tower A exceed the applicable sound level limits of NPC-300. Accordingly, physical mitigation and noise warning clauses are recommended, as described in Sections 3.4 and 3.5.

3.4 Transportation Noise Mitigation

3.4.1 Building Envelope Construction

Predicted future traffic noise levels are sufficiently high that the building envelope must be designed with sufficient sound insulation performance to achieve the sound level criteria of NPC-300 for indoor living spaces.

Sound insulation performance for windows and walls are commonly specified in terms of Sound Transmission Class (STC) ratings. Higher STC ratings generally correspond to higher sound insulation performance.

STC rating requirements are dependent on the exterior noise levels, source type/spectrum, angles of incidence, sizes of façade components relative to the room size, and sound absorption characteristics of the subject indoor living space. Using these variables, STC rating requirements can be calculated using the methods described in the National Research Council Canada's "Controlling Sound Transmission into Buildings" (BPN 56) publication. In accordance with NPC-300, STC rating requirements are calculated separately for road, rail, and air traffic noise, and are then combined on a logarithmic energy sum basis.

Given the preliminary nature of the design of the Development, minimum STC rating requirements have been calculated based on assumed window-to-floor area ratios (i.e., total window area for a room divided by its floor area) of up to 80% for living rooms and up to 75% for bedrooms. Note that if the actual window-to-floor area ratios are determined to exceed these values during detailed design, then window STC rating requirements would require an updated assessment to ensure acceptable indoor noise levels.

Based on the above assumptions, the worst-case minimum window STC rating requirement is **STC-39**, which applies to the east façade. Other façades that have less direct exposure to road and rail traffic noise have lower STC rating requirements, as shown in Figure 1 attached.

Examples of window assemblies capable of achieving the necessary performance are included in Table 5 below:

Table 5 Example Window Assemblies and STC Ratings

STC Requirement	Window Assembly Short Form	Window Assembly Description
STC-33	6-13AS-6	Two 6 mm thick monolithic glass panes separated by an air gap of 13 mm
STC-36	6L-13AS-6	One 6 mm thick laminated glass pane and one 6 mm monolithic glass pane separated by an air gap of 13 mm
STC-39	8L-25AS-6	One 8 mm thick laminated glass pane and one 6 mm monolithic glass pane separated by an air gap of 25 mm

STC ratings for windows are dependent on a variety of factors (e.g., frame design, quality of seals, etc.), and can vary significantly between manufacturers. Therefore, the final STC rating requirements for the windows should be included in the specifications, and window suppliers should be required to submit laboratory test data with their shop drawings to demonstrate that the STC requirements will be achieved.

In addition to the window STC rating requirements noted above, NPC-300 specifies that exterior wall assemblies should be brick veneer or masonry equivalent high-mass construction (e.g., concrete) from the foundation to the rafters due to the Site's proximity to the O-Train Trillium Line and high associated noise levels. GHD anticipates that the indoor sound level criteria can be achieved with other exterior wall assemblies with modest upgrades (e.g., glass spandrel exterior wall backed by insulated partition with two layers of 16 mm thick Type X gypsum board), which could be considered equivalent subject to further detailed assessment.

3.4.2 Ventilation

Predicted future traffic noise levels at the façades of the Development are sufficiently high that central air conditioning is required to be installed prior to occupancy for all residential dwellings. This will allow windows and doors to remain closed to help ensure that the indoor sound level limits of NPC-300 are met. A warning clause should also be used for all residential dwellings to advise them of potential audibility of transportation noise (wording included in Section 3.5).

3.4.3 Acoustic Barriers

Predicted future traffic noise levels at OLA-A1 and OLA-A2 are sufficiently high that acoustic barriers and/or warning clauses must be used.

In order to mitigate noise levels throughout these amenity spaces, GHD analysed the effect of acoustic barriers at the perimeter of the podium roof. An acoustic barrier 1.5 metres above the finished podium roof is predicted to achieve the traffic sound levels summarized in Table 6 below:

Table 6 Mitigated Future Road and Rail Noise Levels – Outdoor Living Area

Receiver ID	Receiver Description	Mitigated Future Daytime Noise Levels (dBA)			Limit Exceeded? (Yes/No)
		Road	Rail	Cumulative Road and Rail	
<i>Sound Level Criteria</i>		--	--	55	--
OLA-A1	Shared outdoor amenity space on Level 5, north of tower (16.7 m A.G.)	52	51	54	No
OLA-A2	Shared outdoor amenity space on Level 5, south of tower (16.7 m A.G.)	60	50	60	Yes

As seen above, the predicted noise level at OLA-A2 is 60 dBA with the 1.5 m tall acoustic barriers. In order to achieve sound levels within the 55 dBA sound level limit of NPC-300, acoustic barriers 3.0 metres above the finished roof level would be required, which would present technical and economic challenges due to the significant associated structural requirements (e.g., wind and snow loading). Therefore, GHD recommends that parapets/acoustic barriers 1.5 metres above the finished roof be implemented to protect the OLAs. A mark-up of the 5th floor plan identifying the recommended barriers is included in Attachment B to this Addendum.

The parapets/acoustic barriers may vary in construction, provided they meet the following requirements:

- A minimum surface density of 20 kg/m² or meet compliance with requirement and certification CAN/CSA-Z107.9-00 (R2004) – Standard for Certification of Noise Barriers (Reaffirmed 2004).
- Be structurally sound and appropriately designed to withstand wind and snow loading as applicable.
- Constructed without any cracks or surface gaps at grade. If gaps are necessary for drainage purposes they should be minimized to mitigate the impact on the acoustical performance of the barrier.

3.5 Warning Clauses

Per the City of Ottawa's Environmental Noise Control Guidelines, the following warning clauses are recommended to be included in agreements of Offers of Purchase and Sale, lease/rental agreements, and condominium declarations for all residential dwellings of the Development:

Surface Transportation Noise: "Purchasers/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/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development includes:

- Multi-pane glass; and
- Acoustic barriers

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.

The acoustic barriers shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.

This dwelling unit has also been provided with central air conditioning, which allows windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment.

Additionally, this development includes trees and shrubs to screen the source of noise from occupants."

Stationary Noise: "Purchasers/tenants are advised that sound levels due to the adjacent industry (facility) (utility) may interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

Purchasers/tenants are further advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."

4. Stationary Noise Impacts

Stationary noise emissions from the neighbouring Canadian Bank Note (CBN) facility at 975 Gladstone Ave were identified as a concern in the Study. TIP and CBN entered an agreement for installation of noise abatement to achieve compliance with the Class 4 sound level limits applicable to the Development. TIP provided a copy of the current design of Tower A to CBN, and CBN had their acoustical consultant review the design and re-evaluate their stationary noise compliance. CBN's acoustical consultant prepared an Acoustic Assessment Summary Report dated November 15, 2024, confirming that the current stationary noise emissions from the CBN facility are in compliance with the Class 4 sound level limits of NPC-300 at all points of reception of the Development (including Towers A, B, and C). The report indicates that some temporary equipment at the facility is planned to be replaced, and the new equipment will be designed to maintain stationary noise compliance for the CBN facility.

There are no remaining concerns with respect to stationary noise impacts to the Development. Therefore, GHD recommends that the associated holding provision be lifted for the entire Site.

5. Recommendations

Based on the findings presented above, GHD recommends the following:

1. The building envelope must be designed with upgraded exterior glazing and exterior wall construction as described in Section 3.4.1 and shown in Figure 1 to ensure that the indoor sound level limits of NPC-300 are met.
2. All residential units in the building must be supplied with central air conditioning to allow windows and doors to remain closed at the occupants' discretion.
3. Acoustic barriers/parapets described in Section 3.4.3 and shown in Attachment B must be implemented to achieve acceptable transportation noise levels in the outdoor living areas on Level 5.

4. Warning clauses described in Section 3.5 should be included in the agreements of Offers of Purchase and Sale, lease/rental agreements, and condominium declarations for all residential dwellings of the Development.
5. The holding provision related to stationary noise abatement should be lifted, as described in Section 4.

6. Conclusions

The proposed development is feasible, provided that the proposed development adheres to the noise mitigation recommended in this Study. The recommended noise mitigation at the Development consists of enhanced building envelope construction requirements, installation of central air conditioning, noise warning clauses, and acoustic barriers. GHD recommends that the City lift the holding provision associated with mitigation of stationary noise from the neighbouring CBN facility.

Regards



**Professional Engineers
Ontario**

Limited Engineering Licensee

Name: M. P. MASSCHAELE Nov. 25/24

Number: 100508855

Michael Masschaele

Limitations: Evaluate (non-technical only), specify controls audit and supervise accoustical impact studies, reports and assessments as they relate to industrial, commercial and municipal work, excluding industrial hygiene and vibration

Association of Professional Engineers of Ontario

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Encl.

Figures



Minimum STC Requirements Legend

	Glazing	Exterior Wall
	STC-39	STC-50
	STC-36	STC-47
	STC-33	STC-44

Note: Sound Transmission Class (STC) requirements shown are based on window-to-floor area ratios described in this report. If these ratios are exceeded, then upgraded STC performance requirements would apply, subject to further study.

STC rating requirements for operable windows and doors may be reduced by 2 points and 3 points, respectively, in comparison to the glazing STC requirements above.

<p>Paper Size ANSI B</p> <p>Map Projection: Transverse Mercator Horizontal Datum: North American 1983 Grid: NAD 83 UTM Zone 18N</p>		<p>NOISE IMPACT STUDY TIP GLADSTONE GP INC. 145 LORETTA AVE N & 951 GLADSTONE AVE</p> <p>BUILDING ENVELOPE MINIMUM STC RATING REQUIREMENTS</p>	<p>Project No. 11223331 Revision No. - Date 20.11.2024</p> <p>FIGURE 1</p>
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Imagery source: Google Satellite

Attachments

Attachment A

Current Drawings

GLADSTONE AND LORETTA - RESIDENTIAL TOWER

ARCHITECTURAL DRAWING PACKAGE

ARCHITECT

Linebox Studio Inc.
 Address: 116 Spigar Street, Suite 110, Ottawa, ON K2P 0C2
 Tel: 613-215-2809
 Architect: Andrew Reeves
 Point of Contact: Josée Anne Provost

STRUCTURAL ENGINEERS

Cunliffe & Associates Inc.
 Address: 200, 1550 Carling Ave 2nd Floor, Ottawa, ON K1Z 3B8
 Tel: 416-253-3337
 Engineer: Brad Armstrong
 Point of Contact: Paul Dolan

MEP ENGINEERS

GWAL | Goodkey, Weedmark & Associates Ltd.
 Address: 1688 Woodward Dr, Ottawa, ON K2C 3R8
 Tel: 613-727-3113
 Mechanical: Mark Satooh
 Electrical: Divyankant (Raj) Vyas

CIVIL ENGINEERS

WSP
 Address: 2611 Queensview Drive 200, 300, 400
 Ottawa, ON K2B 4B7
 Tel: 613-829-2800
 Engineer: Michael Flowers
 Point of Contact: Jared Delpelaro

LANDSCAPE ARCHITECT

CSW Landscape Architects Limited.
 Address: 319 McEwan Avenue, Ottawa, ON K1Z 0B9
 Tel: 613-729-4336
 Architect & Point of Contact: Christian Matteau

CLIENT

CLV Group Development
 Address: 485 Bank St. #200, Ottawa, ON K2P 1Z2
 Tel: 905-691-5266
 Point of Contact: Jenn Morrison

BUILDER

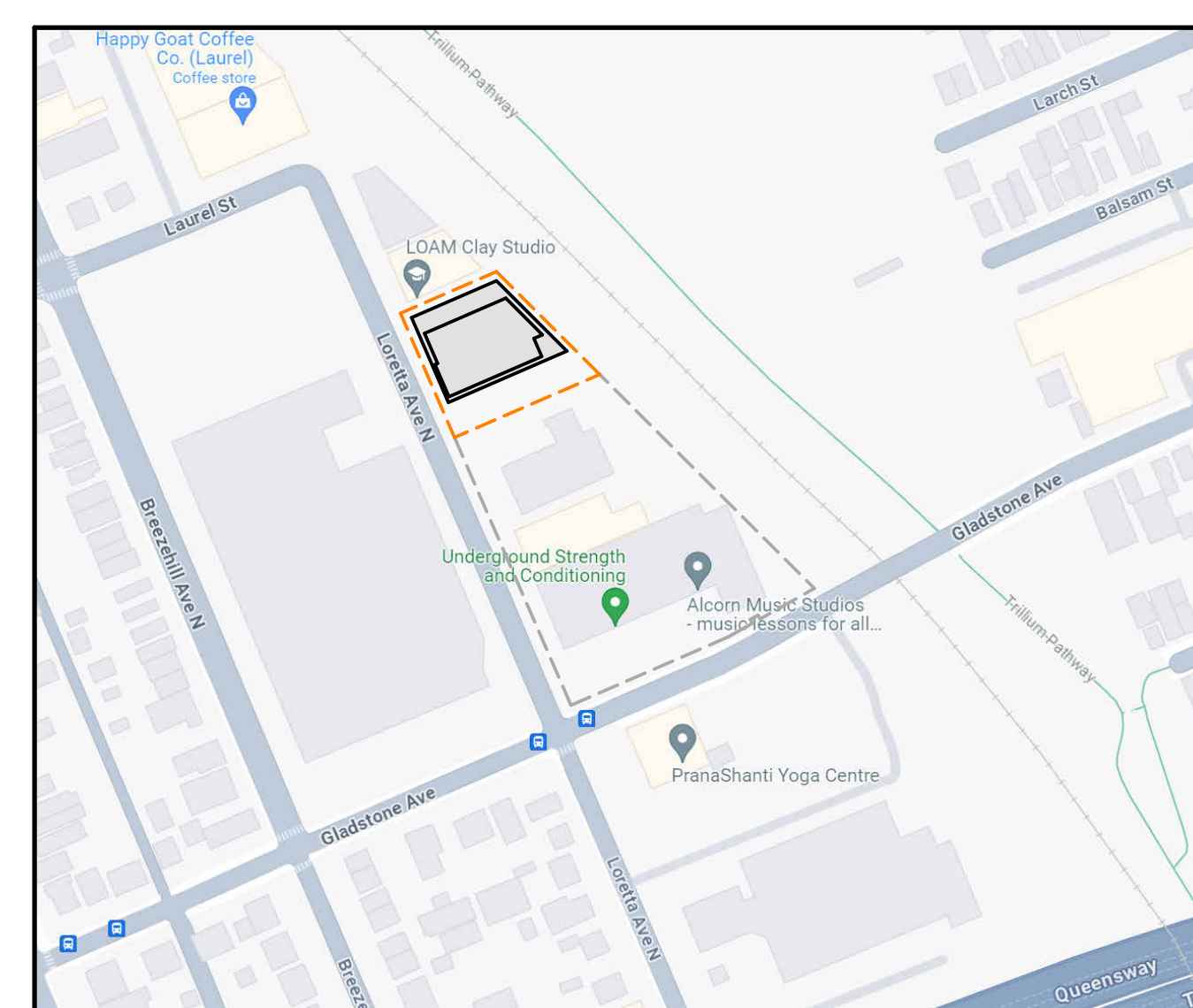
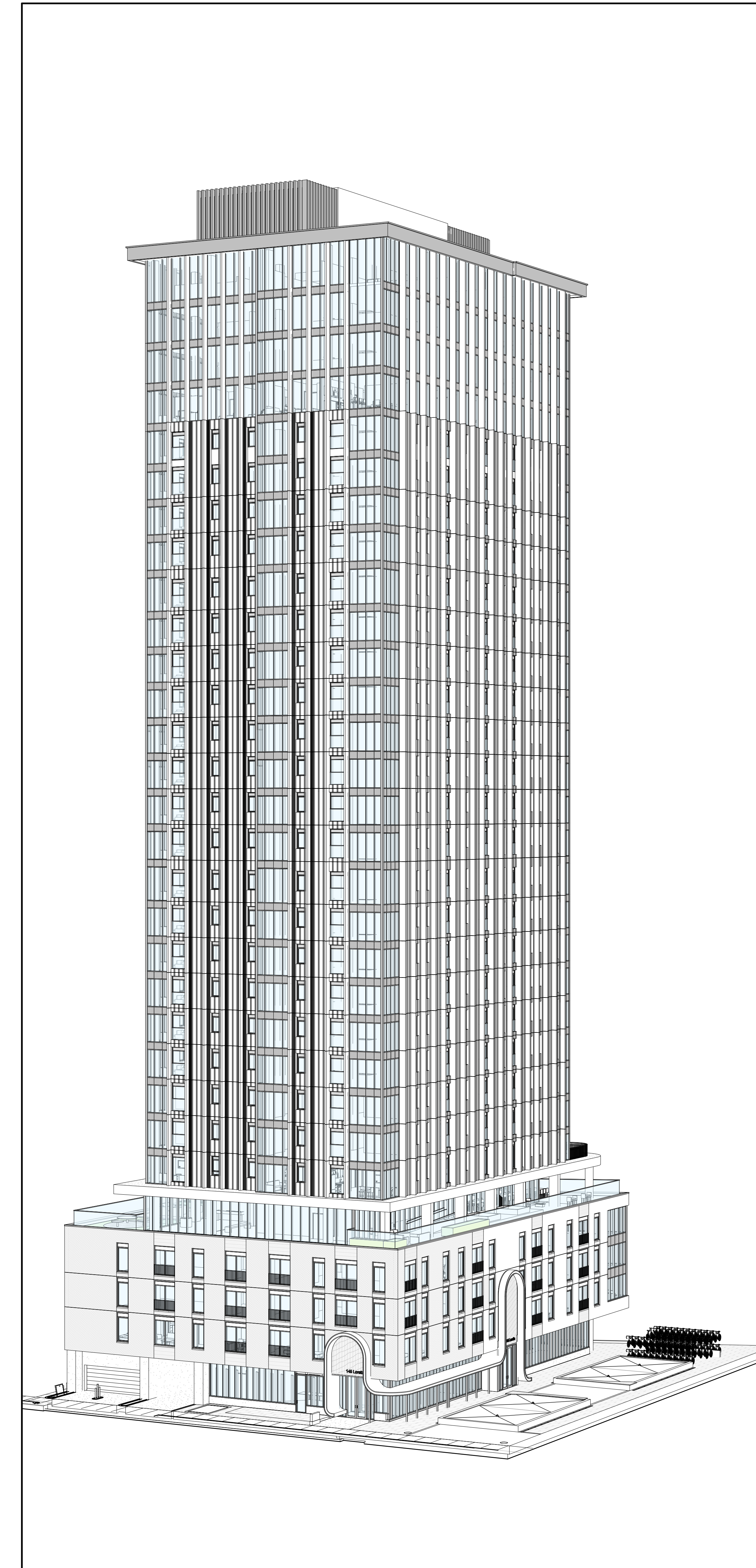
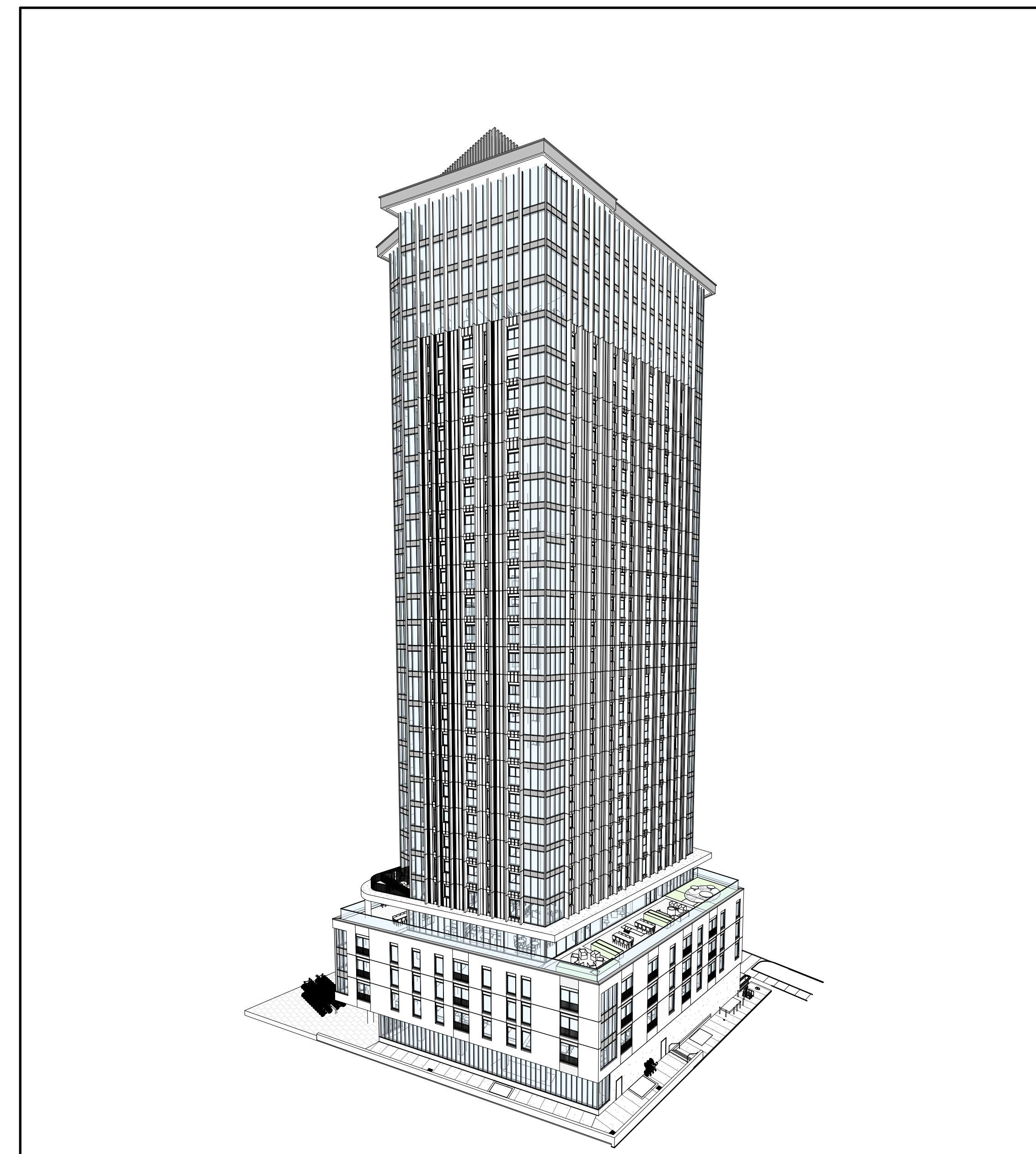
P&C Development & Construction Management Group Inc.
 Address: 200-485 Bank St., Ottawa, ON K2P 1Z2
 Tel: 613-739-1327 x226
 Point of Contact: Maria Martinez

PROJECT MAILING ADDRESS

145 Loretta Ave N,
 Ottawa, ON
 K1T 4W5

ARCHITECTURAL DRAWING LIST

DWG NO.	DRAWING TITLE
A0-000	COVER SHEET
A1-000	MASTER SITE PLAN
A1-101	SITE PLAN (PHASE 1)
A2-105	FLOOR PLAN - LEVEL 05 (POODUM ROOF AMENITY)
AS-100	BUILDING ELEVATIONS - WEST AND SOUTH
AS-101	BUILDING ELEVATIONS - EAST AND NORTH



SITE MAP -PHASE 1



client



structural engineers | ingénieurs structurels



electrical engineers | ingénieur électrique
 mechanical engineer | ingénieur mécanique



civil engineers | ingénieur civil



landscape architect | architecte paysagiste

builder | constructeur



nord du projet / project north

nord réel / true north

no.	revisions	date
2	ISSUED FOR SPA	24.11.20
1	REVISED 33% WORKING DRAWINGS	24.08.19
1	ISSUED FOR 33% WORKING DRAWINGS	24.08.19
	DRAWINGS	
2	RE ISSUED FOR CLASS 17 ESTIMATE	24.05.17
1	ISSUED FOR CLASS 17 ESTIMATE	24.05.17

stamp | timbre



architect | architecte



All dimensions are shown in metric. Contractor shall check and verify all dimensions and report all error and omissions to the Architect. Do not scale the drawings. Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

COVER SHEET

project number numéro du projet	2402
drawn dessiné	JM / DL / MP
checked vérifié	JP / AR
scale échelle	1 : 1000
date date	02/16/24
drawing number numéro du dessin	

A0-000

SURVEY INFORMATION TAKEN FROM:

SURVEYOR'S REAL PROPERTY REPORT
PART OF LOT 1 & LOTS 2 & 3
(WEST CHAMPAGNE AVENUE)
BLOCK C AND
LOTS 1, 2 & 3 (EAST LORETTA AVENUE)
BLOCK C AND
LOTS 4, 5, 6, 7 & 8
BLOCK C AND
PART OF BLOCK C AND
PART OF CHAMPAGNE STREET
(CLOSED BY BY-LAW 4863)

REGISTERED PLAN 73
CITY OF OTTAWA

STANTEC GEOMATICS LTD., 2017

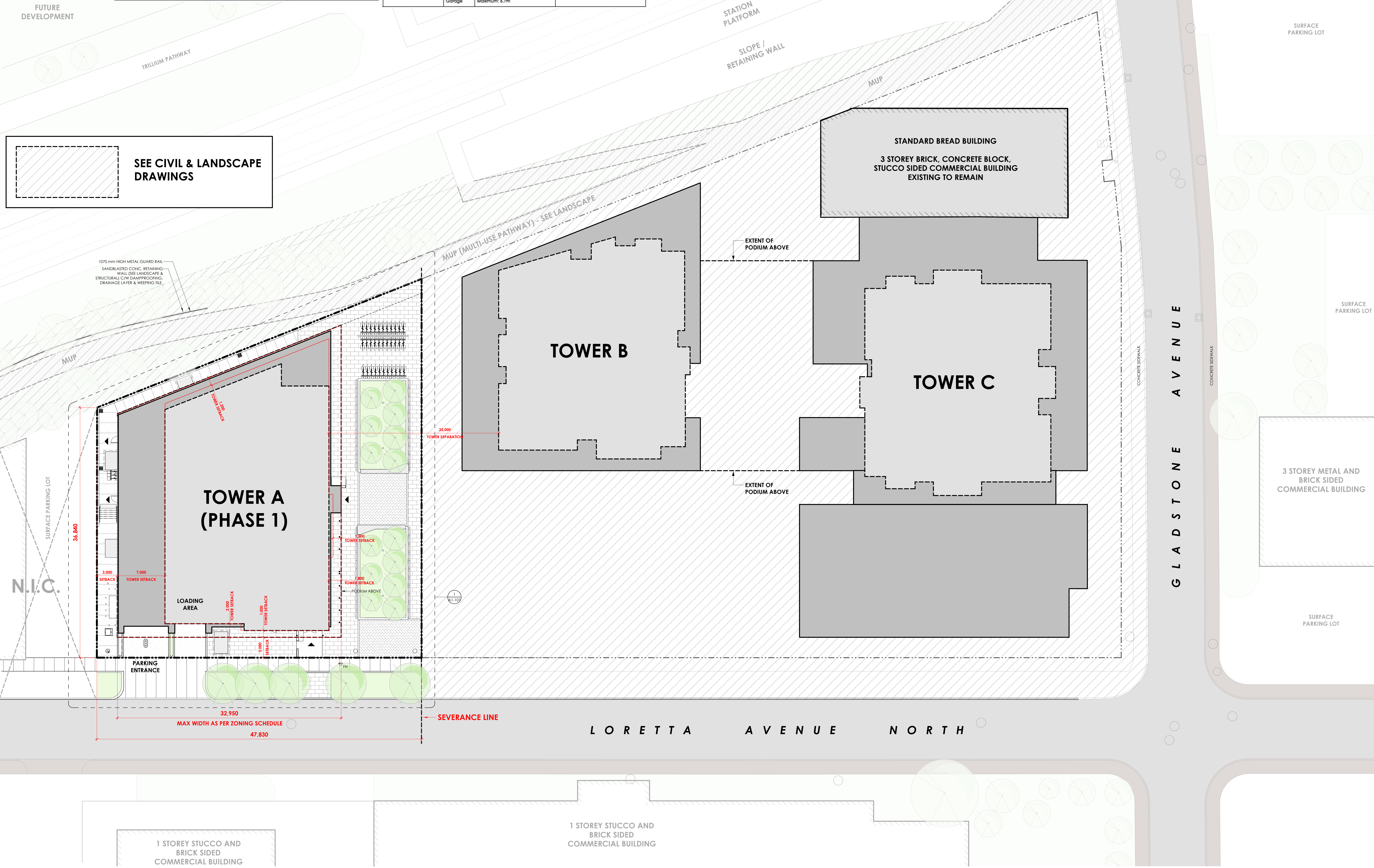
SITE STATISTICS

SITE AREA: 10,012m² / 2.47 ac
RESIDENTIAL UNIT COUNT:
TOWER A = 350
TOWER B = 271
TOWER C = 279
TOTAL = 900

MC(2830) 3446-h1	Requirement	Proposed
Minimum Lot Width (m)	No minimum	Complies
Minimum Lot Area (m ²)	No minimum	Complies
Minimum Front Yard Setback (m)	As per Schedule 466	Complies
Minimum Rear Yard Setback (m)	As per Schedule 466	Complies
Interior Side Yard Setback (m)	As per Schedule 466	Complies
Corner Side Yard Setback (m)	As per Schedule 466	Complies
Minimum Building Height (m)	As per Schedule 466	Complies
Maximum Building Height (m)	As per Schedule 466	Complies
Maximum Floor Space Index	No Maximum	N/A
Minimum Width of Landscaped Area	No minimum, except that where a yard is provided and not used for required driveway, stairs, parking, loading spaces or outdoor commercial patio, the whole yard must be landscaped	Complies
Minimum Tower Separation	23 metres	Complies
Minimum Tower Podium Stepback Distance	2 metres	2m at Gladstone frontage only

Parking Requirements (Sec. 101, 102, 103, 104, 111)	Requirement	Proposed
Section 103, Area Z Residential: Max 1.75 spaces per Dwelling Unit Visitor: Min 0.1 space per Dwelling Unit, Max required per building: 30 Office: Max 2.2 per 100m ² GCA Retail: Max 3.6 per 100m ² GCA	Resident: 1575 Max (900 units) Visitor: 30 per building (90 total) Office: 405 Max Retail: 58 Max	Resident: 436 (surface 4) Visitor: 30 Office: 46 Retail: 14 Total: 526
Vehicle Space Dimensions	- Must be 2.6m-3.1m by 5.2m - Up to 40% of required parking aisle from visitor's spaces may be 2.4m x 4.6m	Complies
Bicycle Parking Rates	(0.5 per Dwelling Unit) 0.5 x 900 Units = 450 (1 per 250m ² Commercial space) 20,000m ² / 250 = 80.3 Total Required = 530	Surface Bicycle Parking = 68 Indoor Bicycle Parking = 626 Total Bicycle Parking = 694
Bicycle Space Dimensions	Horizontal: 0.6m x 1.8m Vertical: 0.5m x 1.5m (max 50% of required spaces) Stacked: 0.37m x 1.5m	Complies
Drive Aisle Width (Double Traffic Lane)	Parking Lot Minimum: 6.7m Parking Garage Minimum: 6m Maximum: 6.7m	Complies 6m

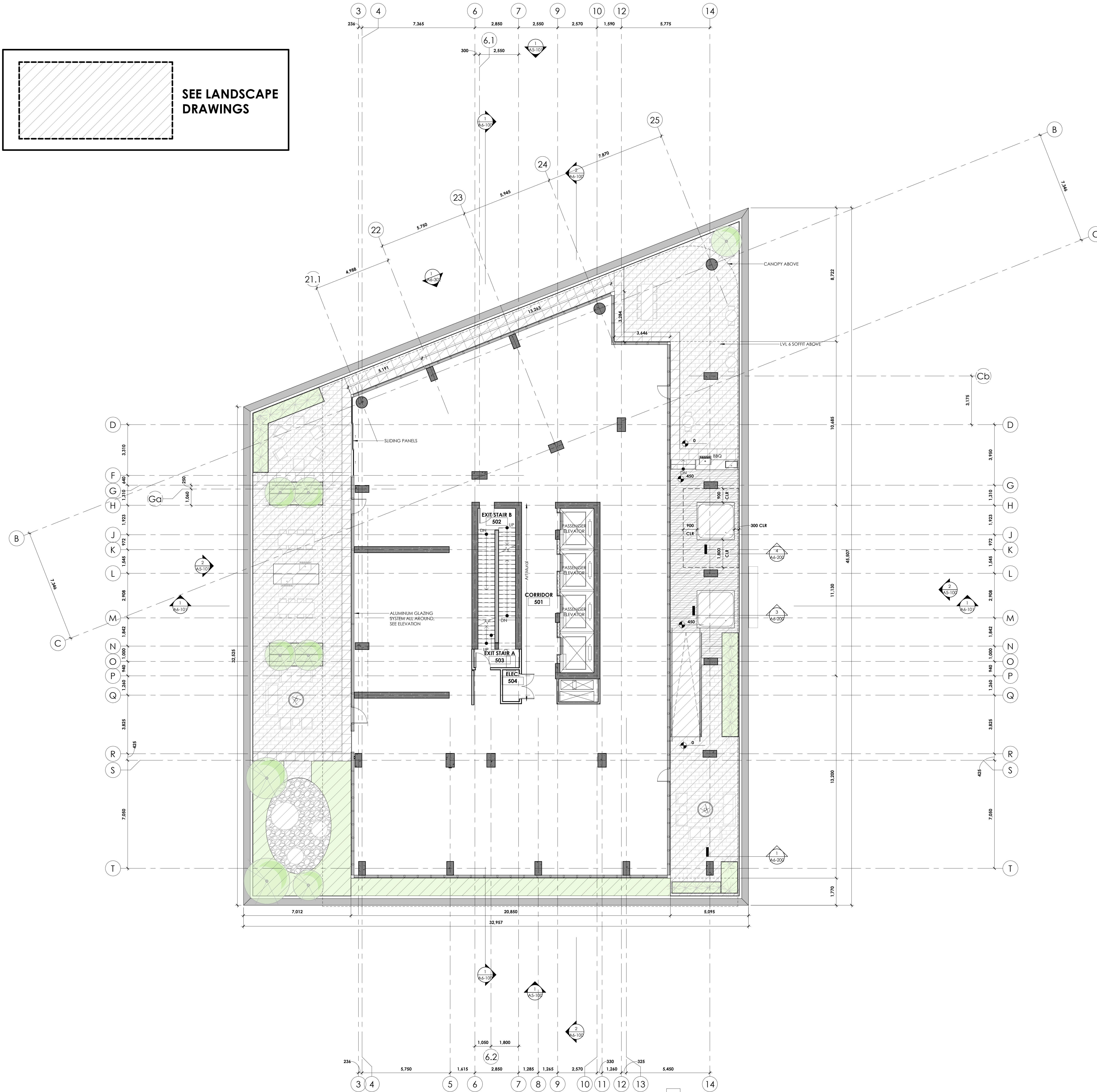
Amenity Space Requirements (Sec. 137)	Requirement	Proposed
Total: 6m ² per unit Communal: 80% of total required	Total: 5,400 m ² Communal (min): 2,700 m ²	Rooftop Terrace (Communal): 1,441.9 m ² Indoor Amenity (Communal): 1,614.2 m ² Total Communal (56.4%): 3,056.6 m ² Balconies: ~ 2343.4 m ² Total Amenities: 5400 m ² PDR: 1,017.7 m ²
FOPS (Privately Owned Public Space)		



SEE CIVIL & LANDSCAPE DRAWINGS

Address: 145 Loretta Ave. N, Ottawa, ON K1K 0L2
2024-11-21 15:55:49 PM

SEE LANDSCAPE DRAWINGS



GENERAL NOTES:
 1. REFER TO A100 FOR TYPICAL ASSEMBLY TYPES
 2. REFER TO A100 FOR TYPICAL FLOOR TYPES
 3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:
 CAST IN PLACE CONCRETE
 EXPOSED WHERE SHOWN IN PLAN
 CMU PARTITIONS
 GYPSUM PARTITION, FIRE RATED
 GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):
 LS FOOTING SLAB = 300 THK + SLOPED TOPPING
 SHEAR WALLS = 400 THK
 TYPICAL TOWER COLUMN = 500x500 or 750 DIAM

CONCRETE STRENGTHS:
 LS SLABS = 30 MPa (TYPE N)
 INTERIOR SLABS = 30 MPa (TYPE N)
 COLUMNS & SHEAR WALLS = 40 MPa (TYPE N) L5-10
 COLUMNS & SHEAR WALLS = 35 MPa (TYPE N) L11-16
 COLUMNS & SHEAR WALLS = 30 MPa (TYPE N) L17-27



structural engineers | ingénieurs structurels



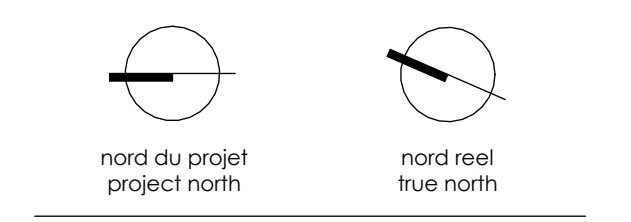
electrical engineers | ingénieur électrique
 mechanical engineer | ingénieur mécanique



civil engineers | ingénieur civil



landscape architect | architecte paysagiste



3	ISSUED FOR SPA	24-11-20
4	ISSUED FOR 33% WORKING DRAWINGS	24-08-12
5	ISSUED FOR CLASS 17 ESTIMATE	24-05-13
6	ISSUED FOR CLASS 17 ESTIMATE	24-05-17
no.	revisions	date

stamp | timbre



architect | architecte



All dimensions are shown in metric. Contractor shall check and verify all dimensions and report all error and omissions to the Architect. Do not scale the drawings. Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

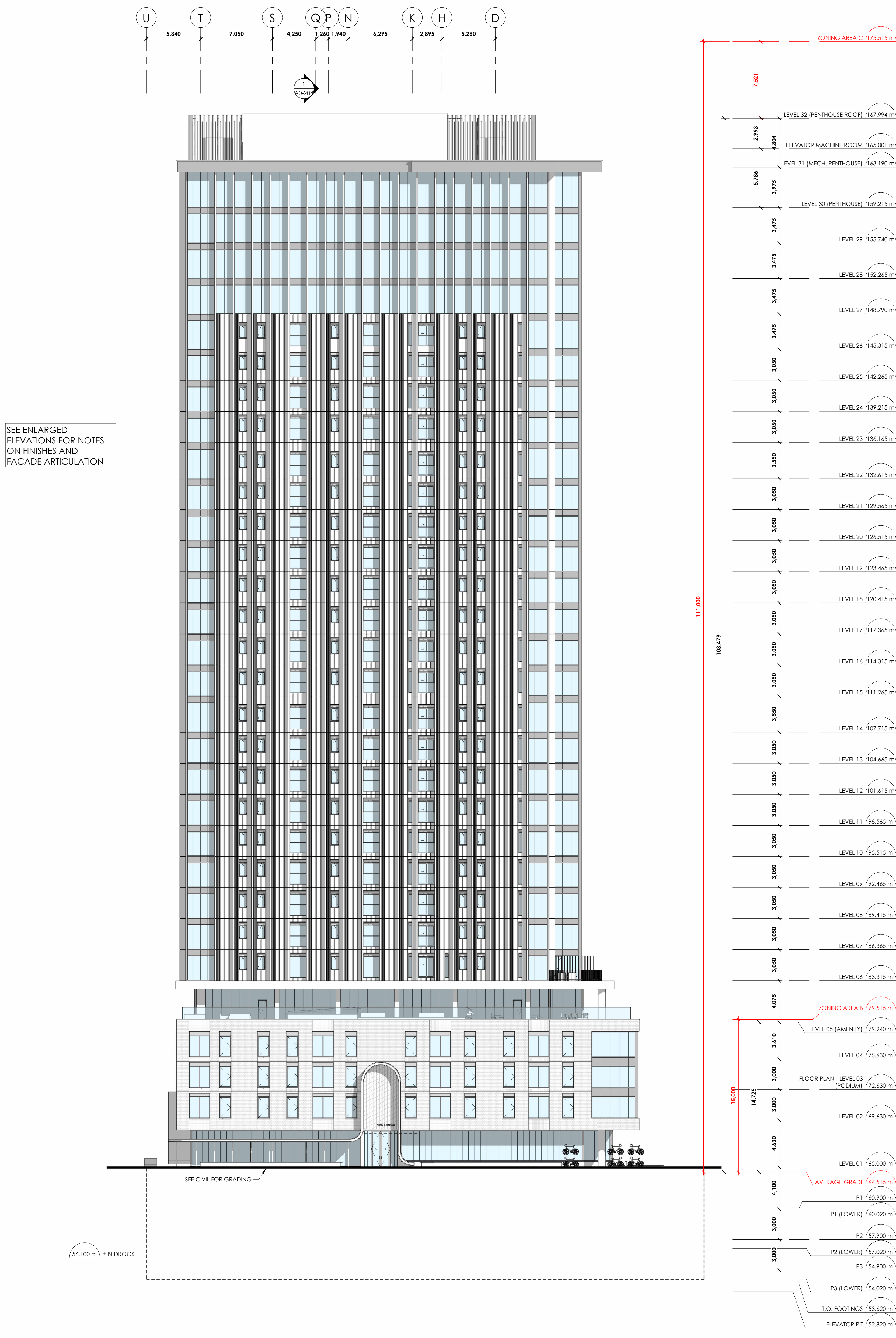
145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

FLOOR PLAN - LEVEL 05 (PODIUM ROOF AMENITY)

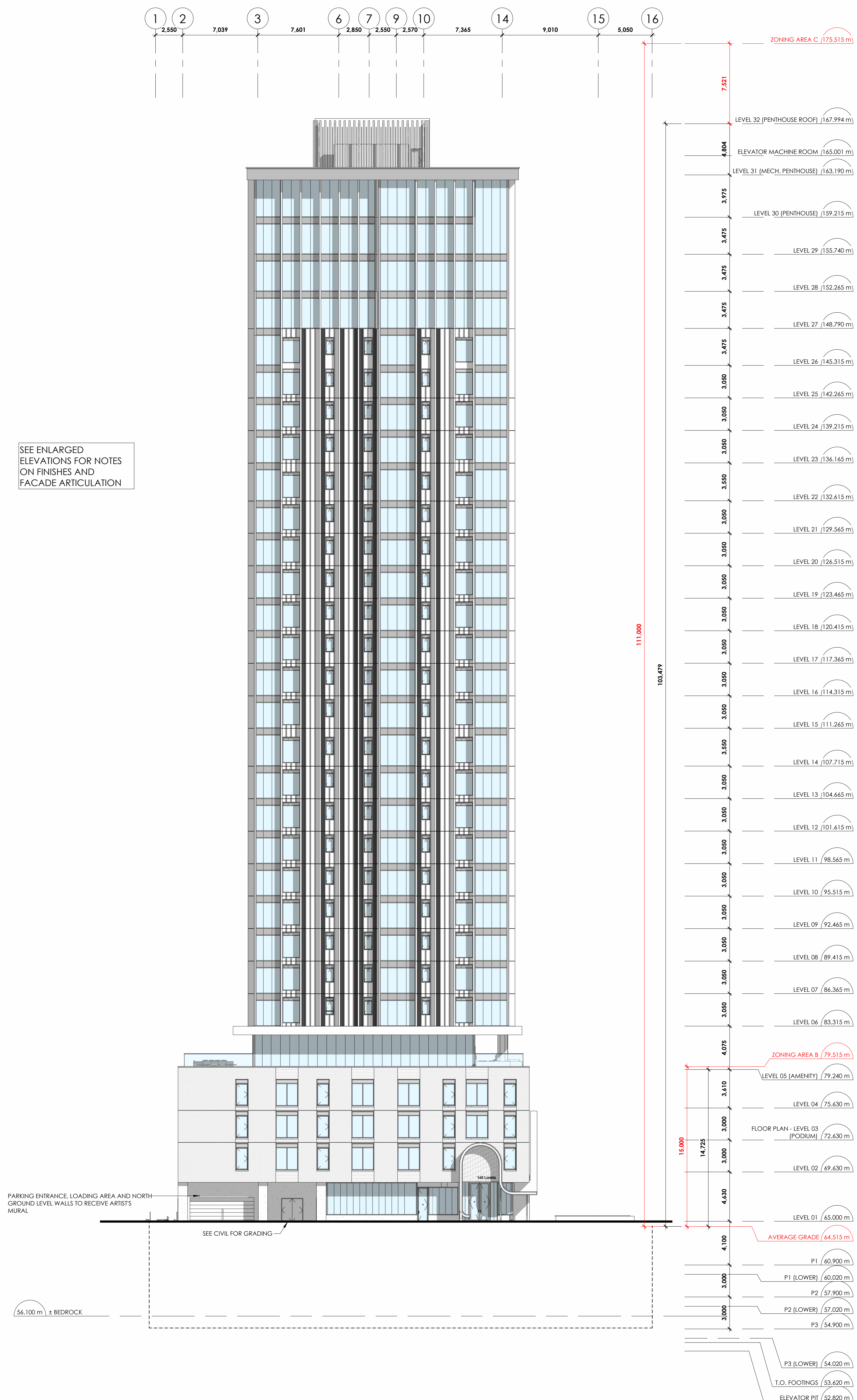
project number numéro du projet	2402
drawn dessiné	JM / DL / MP
checked vérifié	JF / AR
scale échelle	1:100
date date	02/16/24
drawing number numéro du dessin	

A2-105



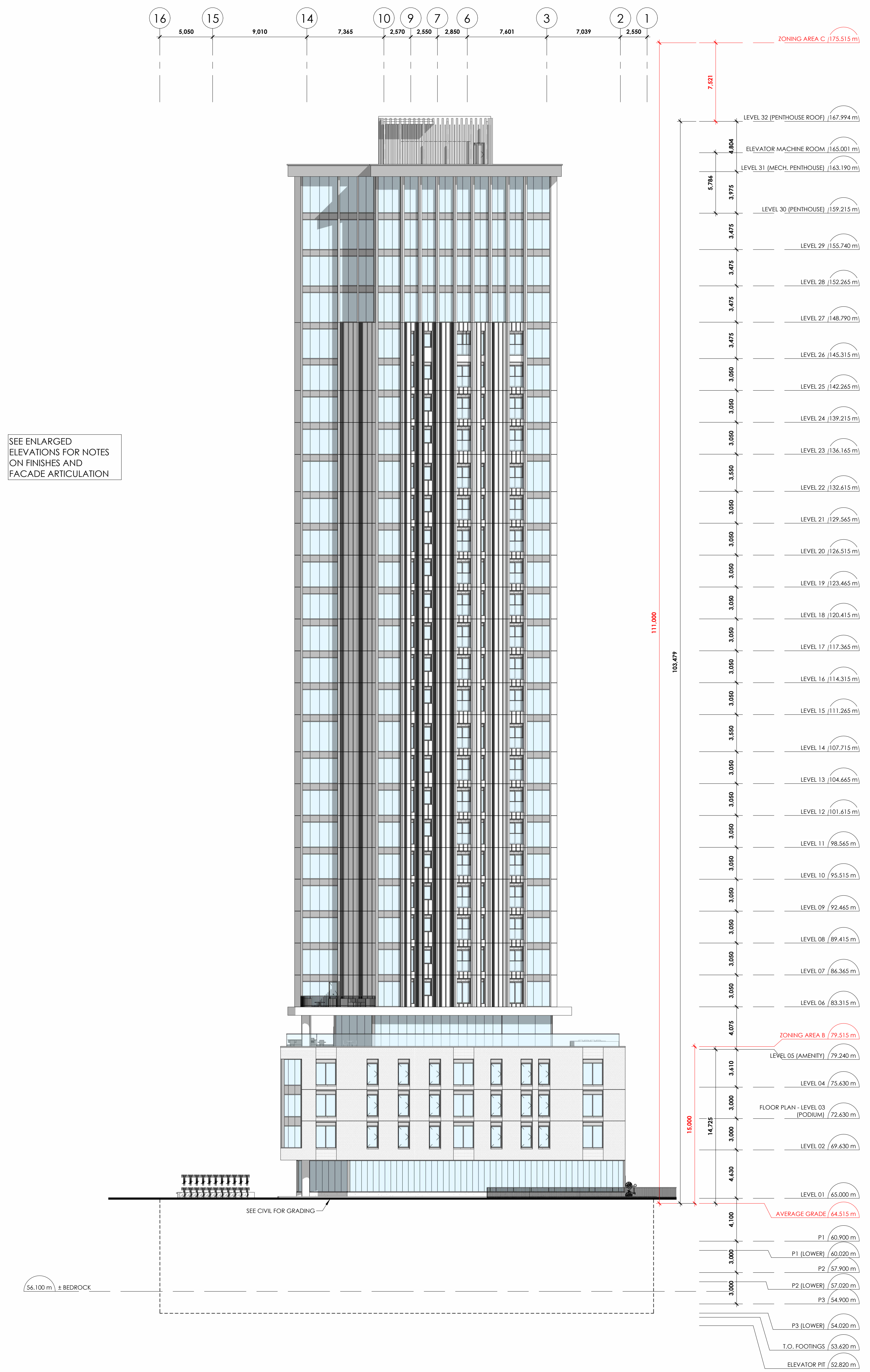
SEE ENLARGED ELEVATIONS FOR NOTES ON FINISHES AND FACADE ARTICULATION

2 BUILDING ELEVATION - SOUTH
A5-100
A2-098



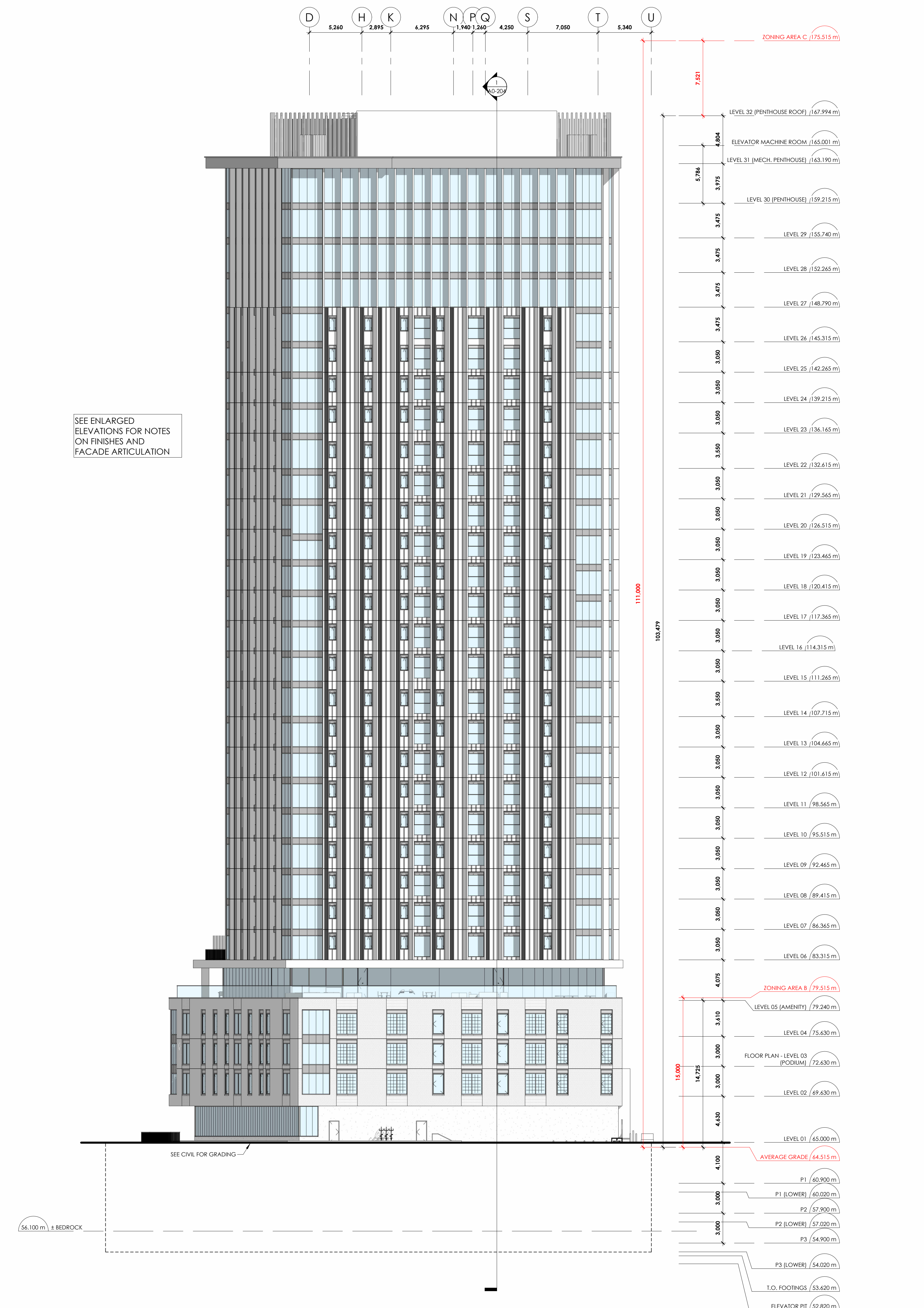
SEE ENLARGED ELEVATIONS FOR NOTES ON FINISHES AND FACADE ARTICULATION

1 BUILDING ELEVATION - WEST (LORETTA AVE N)
A5-100
A2-098



1 BUILDING ELEVATION - EAST

1:200
A2-098



2 BUILDING ELEVATION - NORTH

1:200
A2-098

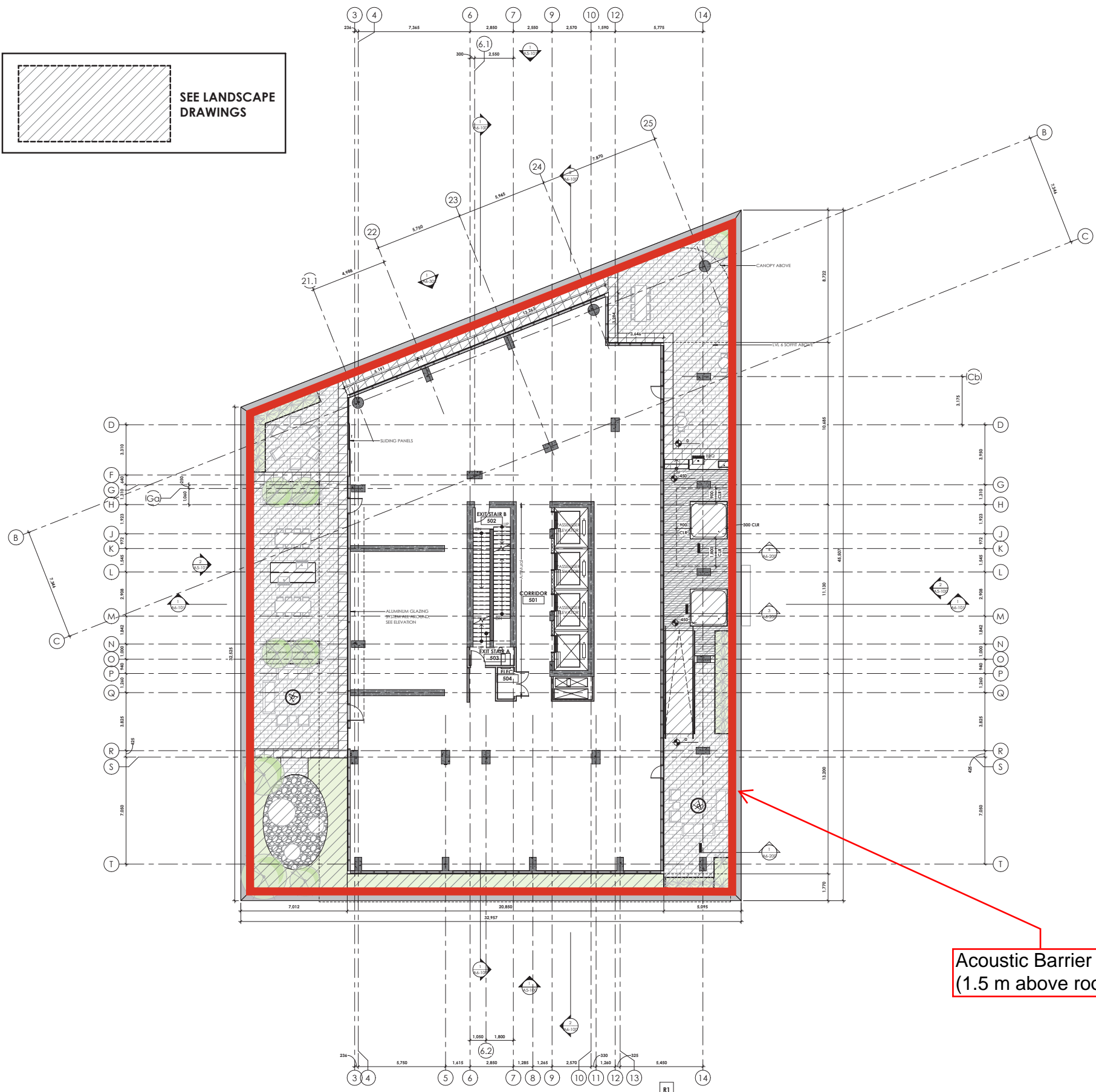
SEE ENLARGED ELEVATIONS FOR NOTES ON FINISHES AND FACADE ARTICULATION

SEE ENLARGED ELEVATIONS FOR NOTES ON FINISHES AND FACADE ARTICULATION

Attachment B

Barrier Locations Mark-Up

SEE LANDSCAPE DRAWINGS



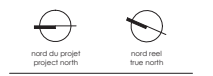
Acoustic Barrier
(1.5 m above roof)

GENERAL NOTES:
 1. REFER TO A010 FOR TYPICAL ASSEMBLY TYPES
 2. REFER TO A020 FOR TYPICAL DOOR TYPES
 3. RESIDENTIAL SERIES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:
 [Symbol] CAST IN PLACE CONCRETE, SPECIFIED WHERE SHOWN IN PLAN
 [Symbol] CMU PARTITIONS
 [Symbol] GYPSUM PARTITION, FIRE RATED
 [Symbol] GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):
 L5 PODIUM SLAB = 300 THK + SLOPED TOPPING
 SHEAR WALLS = 400 THK
 TYPICAL TOWER COLUMN = 500x500 or 750 DIAM

CONCRETE STRENGTHS:
 L5 SLAB = 30 MPa (TYPE N)
 INTERIOR SLAB = 30 MPa (TYPE N)
 COLUMN & SHEAR WALLS = 40 MPa (TYPE N) L5-10
 COLUMN & SHEAR WALLS = 35 MPa (TYPE N) L11-14
 COLUMN & SHEAR WALLS = 30 MPa (TYPE N) L17-27



2. ISSUED FOR RFA	24.11.20
4. ISSUED FOR 30% WORKING DRAWINGS	24.08.14
5. ISSUED FOR 60% WORKING DRAWINGS	24.05.13
7. ISSUED FOR CLASS 'V' ESTIMATE	24.05.17
NO REVISIONS	DATE



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project title | titre du projet
GLADSTONE AND LORETTA RESIDENTIAL TOWER
 145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin
FLOOR PLAN - LEVEL 05 (PODIUM ROOF AMENITY)

project number numéro du projet	2402
drawn dessiné	JH / DL / MP
checked vérifié	JF / AS
scale échelle	1 : 100
date date	02/15/24
drawing number numéro du dessin	

A2-105

Attachment C

STAMSON Calcs and Drawings

STAMSON 5.0 SUMMARY REPORT Date: 31-10-2024 12:07:31
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_n1.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - NORTH FACADE, LEVEL 30

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains	! Speed (km/h)	!# loc /!Train	!# Cars /!Train	! Eng type	!Cont weld
1.	! 215.0/40.0	! 35.0	! 1.0	! 3.0	!Diesel	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : -90.00 deg 23.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 30.00 / 30.00 m
 Receiver height : 104.50 / 104.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc	! Wheel	! Whistle	! Whistle	! Total
	! Leq	! Leq	! Left Leq	! Right Leq	! Leq
	! (dBA)	! (dBA)	! (dBA)	! (dBA)	! (dBA)
1.O-Train	! 65.55	! 53.42	! --	! --	! 65.81 *
Total					65.81 dBA

* Bright Zone !

Result summary (night)

	! Loc	! Wheel	! Whistle	! Whistle	! Total
	! Leq	! Leq	! Left Leq	! Right Leq	! Leq
	! (dBA)	! (dBA)	! (dBA)	! (dBA)	! (dBA)
1.O-Train	! 61.25	! 49.12	! --	! --	! 61.51 *
Total					61.51 dBA

* Bright Zone !

Road data, segment # 1: SOMERSET (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: SOMERSET (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 319.70 / 319.70 m
Receiver height : 87.53 / 87.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.SOMERSET ! 1.50 ! 55.19 ! 55.19
-----+-----+-----+-----
Total 55.19 dBA

Result summary (night)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.SOMERSET ! 1.50 ! 47.60 ! 47.60
-----+-----+-----+-----
Total 47.60 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.17
(NIGHT): 61.68

STAMSON 5.0 SUMMARY REPORT Date: 31-10-2024 12:12:28
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_n2.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - NORTH FACADE, LEVEL 4

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains !	! Speed ! (km/h)	! # loc ! /Train!	! # Cars ! /Train!	! Eng ! type	! Cont ! weld
1.	! 215.0/40.0 !	! 35.0 !	! 1.0 !	! 3.0 !	! Diesel !	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : -90.00 deg 23.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 29.30 / 29.30 m
 Receiver height : 20.80 / 20.80 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 65.62 !	! 52.95 !	! -- !	! -- !	! 65.85 * !
Total					65.85 dBA

* Bright Zone !

Result summary (night)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 61.33 !	! 48.65 !	! -- !	! -- !	! 61.56 * !
Total					61.56 dBA

* Bright Zone !

Road data, segment # 1: SOMERSET (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: SOMERSET (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 312.60 / 312.60 m
Receiver height : 13.40 / 13.40 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.SOMERSET ! 1.50 ! 50.52 ! 50.52
-----+-----+-----+-----
Total 50.52 dBA

Result summary (night)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.SOMERSET ! 1.50 ! 42.92 ! 42.92
-----+-----+-----+-----
Total 42.92 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.98
(NIGHT): 61.62

STAMSON 5.0 SUMMARY REPORT Date: 30-10-2024 17:09:49
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_e1.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - EAST FACADE, LEVEL 30

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains !	! Speed ! (km/h)	! # loc ! /Train!	! # Cars ! /Train!	! Eng ! type	! Cont ! weld
1.	! 215.0/40.0 !	! 35.0 !	! 1.0 !	! 3.0 !	! Diesel !	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 29.90 / 29.90 m
 Receiver height : 104.50 / 104.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 67.58 !	! 55.45 !	! -- !	! -- !	! 67.84 * !
Total					67.84 dBA

* Bright Zone !

Result summary (night)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 63.29 !	! 51.16 !	! -- !	! -- !	! 63.55 * !
Total					63.55 dBA

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

Car traffic volume : 170658/14840 veh/TimePeriod
Medium truck volume : 13575/1180 veh/TimePeriod
Heavy truck volume : 9696/843 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 417 (day/night)

Angle1 Angle2 : 23.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 306.10 / 306.10 m
Receiver height : 87.53 / 87.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Gladstone (day/night)

Angle1 Angle2 : 19.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 140.60 / 140.60 m
Receiver height : 94.53 / 94.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Somerset (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Somerset (day/night)

 Angle1 Angle2 : -22.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 328.10 / 328.10 m
 Receiver height : 97.53 / 97.53 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

 ! source ! Road ! Total
 ! height ! Leq ! Leq
 ! (m) ! (dBA) ! (dBA)
 -----+-----+-----+-----
 1.Highway 417 ! 1.50 ! 68.59 ! 68.59
 2.Gladstone ! 1.50 ! 52.93 ! 52.93
 3.Somerset ! 1.50 ! 53.02 ! 53.02
 -----+-----+-----+-----
 Total 68.82 dBA

Result summary (night)

 ! source ! Road ! Total
 ! height ! Leq ! Leq
 ! (m) ! (dBA) ! (dBA)
 -----+-----+-----+-----
 1.Highway 417 ! 1.50 ! 61.00 ! 61.00
 2.Gladstone ! 1.50 ! 45.33 ! 45.33
 3.Somerset ! 1.50 ! 45.42 ! 45.42
 -----+-----+-----+-----
 Total 61.23 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.37
 (NIGHT): 65.55

STAMSON 5.0 SUMMARY REPORT Date: 31-10-2024 13:17:47
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_e2.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - EAST FACADE, LEVEL 4

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains	! Speed (km/h)	! # loc /Train	! # Cars /Train	! Eng type	! Cont weld
1.	! 215.0/40.0	! 35.0	! 1.0	! 3.0	! Diesel	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 27.70 / 27.70 m
 Receiver height : 20.80 / 20.80 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc	! Wheel	! Whistle	! Whistle	! Total
	! Leq	! Leq	! Left Leq	! Right Leq	! Leq
	! (dBA)	! (dBA)	! (dBA)	! (dBA)	! (dBA)
1.O-Train	! 67.88	! 55.18	! --	! --	! 68.11 *
Total					68.11 dBA

* Bright Zone !

Result summary (night)

	! Loc	! Wheel	! Whistle	! Whistle	! Total
	! Leq	! Leq	! Left Leq	! Right Leq	! Leq
	! (dBA)	! (dBA)	! (dBA)	! (dBA)	! (dBA)
1.O-Train	! 63.59	! 50.88	! --	! --	! 63.82 *
Total					63.82 dBA

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

Car traffic volume : 170658/14840 veh/TimePeriod
Medium truck volume : 13575/1180 veh/TimePeriod
Heavy truck volume : 9696/843 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 417 (day/night)

Angle1 Angle2 : 23.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 291.60 / 291.60 m
Receiver height : 3.40 / 3.40 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Gladstone (day/night)

Angle1 Angle2 : 19.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.60 / 125.60 m
Receiver height : 9.80 / 9.80 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Somerset (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Somerset (day/night)

 Angle1 Angle2 : -22.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 342.70 / 342.70 m
 Receiver height : 13.40 / 13.40 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

 ! source ! Road ! Total
 ! height ! Leq ! Leq
 ! (m) ! (dBA) ! (dBA)
 -----+-----+-----+-----
 1.Highway 417 ! 1.50 ! 59.12 ! 59.12
 2.Gladstone ! 1.50 ! 48.32 ! 48.32
 3.Somerset ! 1.50 ! 48.09 ! 48.09
 -----+-----+-----+-----
 Total 59.77 dBA

Result summary (night)

 ! source ! Road ! Total
 ! height ! Leq ! Leq
 ! (m) ! (dBA) ! (dBA)
 -----+-----+-----+-----
 1.Highway 417 ! 1.50 ! 51.52 ! 51.52
 2.Gladstone ! 1.50 ! 40.72 ! 40.72
 3.Somerset ! 1.50 ! 40.50 ! 40.50
 -----+-----+-----+-----
 Total 52.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.70
 (NIGHT): 64.11

STAMSON 5.0 SUMMARY REPORT Date: 30-10-2024 17:14:02
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_s1.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - SOUTH FACADE, LEVEL 30

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains	! Speed (km/h)	!# loc /!Train	!# Cars /!Train	! Eng type	!Cont weld
1.	! 215.0/40.0	! 35.0	! 1.0	! 3.0	!Diesel	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : 20.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 36.20 / 36.20 m
 Receiver height : 104.50 / 104.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc	! Wheel	! Whistle	! Whistle	! Total
	! Leq	! Leq	! Left Leq	! Right Leq	! Leq
	! (dBA)	! (dBA)	! (dBA)	! (dBA)	! (dBA)
1.O-Train	! 62.65	! 50.52	! --	! --	! 62.91 *
Total					62.91 dBA

* Bright Zone !

Result summary (night)

	! Loc	! Wheel	! Whistle	! Whistle	! Total
	! Leq	! Leq	! Left Leq	! Right Leq	! Leq
	! (dBA)	! (dBA)	! (dBA)	! (dBA)	! (dBA)
1.O-Train	! 58.36	! 46.23	! --	! --	! 58.62 *
Total					58.62 dBA

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

Car traffic volume : 170658/14840 veh/TimePeriod
Medium truck volume : 13575/1180 veh/TimePeriod
Heavy truck volume : 9696/843 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 417 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 290.50 / 290.50 m
Receiver height : 87.53 / 87.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Gladstone (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.10 / 125.10 m
Receiver height : 94.53 / 94.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Highway 417 ! 1.50 ! 73.11 ! 73.11
2.Gladstone ! 1.50 ! 57.47 ! 57.47
-----+-----+-----+-----

Total 73.23 dBA

Result summary (night)

! source !	Road	! Total
! height !	Leq	! Leq
! (m) !	(dBA)	! (dBA)

-----+-----+-----+-----			
! source !	Road	! Total	
! height !	Leq	! Leq	
! (m) !	(dBA)	! (dBA)	
1.Highway 417	! 1.50 !	65.51 !	65.51
2.Gladstone	! 1.50 !	49.88 !	49.88
-----+-----+-----+-----			
Total		65.63	dBA

TOTAL Leq FROM ALL SOURCES (DAY): 73.61
(NIGHT): 66.42

STAMSON 5.0 SUMMARY REPORT Date: 31-10-2024 12:18:58
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_s2.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - SOUTH FACADE, LEVEL 4

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains !	! Speed ! (km/h)	! # loc ! /Train!	! # Cars ! /Train!	! Eng ! type	! Cont ! weld
1.	! 215.0/40.0 !	! 35.0 !	! 1.0 !	! 3.0 !	! Diesel !	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : 20.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 30.00 / 30.00 m
 Receiver height : 20.80 / 20.80 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 63.43 !	! 50.60 !	! -- !	! -- !	! 63.65 * !
Total					63.65 dBA

* Bright Zone !

Result summary (night)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 59.13 !	! 46.30 !	! -- !	! -- !	! 59.35 * !
Total					59.35 dBA

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

Car traffic volume : 170658/14840 veh/TimePeriod
Medium truck volume : 13575/1180 veh/TimePeriod
Heavy truck volume : 9696/843 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 417 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 288.80 / 288.80 m
Receiver height : 3.40 / 3.40 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Gladstone (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 122.80 / 122.80 m
Receiver height : 9.80 / 9.80 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Highway 417 ! 1.50 ! 64.03 ! 64.03
2.Gladstone ! 1.50 ! 52.80 ! 52.80
-----+-----+-----+-----

Total 64.35 dBA

Result summary (night)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

-----+-----+-----+-----

1.Highway 417 ! 1.50 ! 56.43 ! 56.43

2.Gladstone ! 1.50 ! 45.20 ! 45.20

-----+-----+-----+-----

Total 56.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.02
(NIGHT): 61.25

STAMSON 5.0 SUMMARY REPORT Date: 30-10-2024 17:14:52
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_w1.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - WEST FACADE, LEVEL 30

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains !	! Speed ! (km/h)	! # loc ! /Train!	! # Cars ! /Train!	! Eng ! type	! Cont ! weld
1.	! 215.0/40.0 !	! 35.0 !	! 1.0 !	! 3.0 !	! Diesel !	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : 67.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 65.90 / 65.90 m
 Receiver height : 104.50 / 104.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 55.22 !	! 43.08 !	! -- !	! -- !	! 55.48 *
Total					55.48 dBA

* Bright Zone !

Result summary (night)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 50.92 !	! 38.79 !	! -- !	! -- !	! 51.18 *
Total					51.18 dBA

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

Car traffic volume : 170658/14840 veh/TimePeriod
Medium truck volume : 13575/1180 veh/TimePeriod
Heavy truck volume : 9696/843 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 417 (day/night)

Angle1 Angle2 : -1.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 297.10 / 297.10 m
Receiver height : 87.53 / 87.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Gladstone (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 133.10 / 133.10 m
Receiver height : 94.53 / 94.53 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Somerset (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Somerset (day/night)

 Angle1 Angle2 : -90.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 336.20 / 336.20 m
 Receiver height : 97.53 / 97.53 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

 ! source ! Road ! Total
 ! height ! Leq ! Leq
 ! (m) ! (dBA) ! (dBA)
 -----+-----+-----+-----
 1.Highway 417 ! 1.50 ! 70.05 ! 70.05
 2.Gladstone ! 1.50 ! 54.19 ! 54.19
 3.Somerset ! 1.50 ! 51.96 ! 51.96
 -----+-----+-----+-----
 Total 70.23 dBA

Result summary (night)

 ! source ! Road ! Total
 ! height ! Leq ! Leq
 ! (m) ! (dBA) ! (dBA)
 -----+-----+-----+-----
 1.Highway 417 ! 1.50 ! 62.45 ! 62.45
 2.Gladstone ! 1.50 ! 46.60 ! 46.60
 3.Somerset ! 1.50 ! 44.37 ! 44.37
 -----+-----+-----+-----
 Total 62.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.37
 (NIGHT): 62.93

STAMSON 5.0 SUMMARY REPORT Date: 31-10-2024 12:25:11
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ta_w2.te Time Period: Day/Night 16/8 hours
 Description: TOWER A PLANE OF WINDOW - WEST FACADE, LEVEL 4

Rail data, segment # 1: O-Train (day/night)

Train Type	! Trains !	! Speed ! (km/h)	!# loc !/Train!	!# Cars !/Train!	! Eng ! type	!Cont !weld
1.	! 215.0/40.0 !	! 35.0 !	! 1.0 !	! 3.0 !	!Diesel!	! Yes

Data for Segment # 1: O-Train (day/night)

Angle1 Angle2 : 67.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 69.70 / 69.70 m
 Receiver height : 20.80 / 20.80 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle
 Reference angle : 0.00

Result summary (day)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 54.88 !	! 41.20 !	! -- !	! -- !	! 55.06 * !
Total					55.06 dBA

* Bright Zone !

Result summary (night)

	! Loc !	! Wheel !	! Whistle !	! Whistle !	! Total !
	! Leq !	! Leq !	! Left Leq !	! Right Leq !	! Leq !
	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !	! (dBA) !
1.O-Train	! 50.59 !	! 36.91 !	! -- !	! -- !	! 50.77 * !
Total					50.77 dBA

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

Car traffic volume : 170658/14840 veh/TimePeriod
Medium truck volume : 13575/1180 veh/TimePeriod
Heavy truck volume : 9696/843 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 417 (day/night)

Angle1 Angle2 : -1.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 289.20 / 289.20 m
Receiver height : 3.40 / 3.40 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Gladstone (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.30 / 125.30 m
Receiver height : 9.80 / 9.80 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Somerset (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Somerset (day/night)

```

-----
Angle1 Angle2      : -90.00 deg  0.00 deg
Wood depth         :    0    (No woods.)
No of house rows   :    0 / 0
Surface           :    1    (Absorptive ground surface)
Receiver source distance : 344.00 / 344.00 m
Receiver height    : 13.40 / 13.40 m
Topography        :    1    (Flat/gentle slope; no barrier)
Reference angle    :    0.00

```

Result summary (day)

```

-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Highway 417 ! 1.50 ! 61.07 ! 61.07
2.Gladstone ! 1.50 ! 49.66 ! 49.66
3.Somerset ! 1.50 ! 46.96 ! 46.96
-----+-----+-----+-----
Total 61.53 dBA

```

Result summary (night)

```

-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Highway 417 ! 1.50 ! 53.48 ! 53.48
2.Gladstone ! 1.50 ! 42.07 ! 42.07
3.Somerset ! 1.50 ! 39.37 ! 39.37
-----+-----+-----+-----
Total 53.94 dBA

```

TOTAL Leq FROM ALL SOURCES (DAY): 62.41
(NIGHT): 55.65

STAMSON 5.0 SUMMARY REPORT Date: 30-10-2024 16:46:12
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: olaa1.te Time Period: Day/Night 16/8 hours
 Description: OLA-A1 (UNMITIGATED)

Rail data, segment # 1: O-Train (day/night)

```

-----
Train      ! Trains  ! Speed !# loc !# Cars! Eng !Cont
Type      !      !(km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----+-----
  1.      ! 215.0/40.0 ! 35.0 ! 1.0 ! 3.0 !Diesel! Yes
  
```

Data for Segment # 1: O-Train (day/night)

```

-----
Angle1 Angle2      : -90.00 deg 35.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0 / 0
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 43.30 / 43.30 m
Receiver height  : 1.50 / 1.50 m
Topography      : 2 (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1   : -90.00 deg Angle2 : 35.00 deg
Barrier height   : 0.00 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation : 57.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle  : 0.00
  
```

Result summary (day)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
-----+-----+-----+-----+-----+-----
1.O-Train ! 55.64 ! 42.45 ! -- ! -- ! 55.84 *
-----+-----+-----+-----+-----+-----
Total 55.84 dBA
  
```

* Bright Zone !

Result summary (night)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
  
```

```

-----+-----+-----+-----+-----+-----
1.O-Train    ! 51.35! 38.15!  --!  --! 51.55*
-----+-----+-----+-----+-----+-----
                Total                               51.55 dBA

```

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

```

-----
Car traffic volume : 173531/15090 veh/TimePeriod
Medium truck volume : 13804/1200 veh/TimePeriod
Heavy truck volume : 9860/857 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 1: Highway 417 (day/night)

```

-----
Angle1 Angle2      : 75.00 deg 90.00 deg
Wood depth          : 0 (No woods.)
No of house rows   : 0 / 0
Surface            : 1 (Absorptive ground surface)
Receiver source distance : 317.40 / 317.40 m
Receiver height     : 1.50 / 1.50 m
Topography         : 2 (Flat/gentle slope; with barrier)
Barrier angle1     : 75.00 deg Angle2 : 90.00 deg
Barrier height     : 0.00 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation   : 72.00 m
Receiver elevation  : 79.24 m
Barrier elevation   : 79.24 m
Reference angle    : 0.00

```

Road data, segment # 2: Highway 417 (day/night)

```

-----
Car traffic volume : 173531/15090 veh/TimePeriod
Medium truck volume : 13804/1200 veh/TimePeriod
Heavy truck volume : 9860/857 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 2: Highway 417 (day/night)

```

-----
Angle1 Angle2      : -90.00 deg -78.00 deg
Wood depth          : 0 (No woods.)
No of house rows   : 0 / 0
Surface            : 1 (Absorptive ground surface)
Receiver source distance : 317.40 / 317.40 m
Receiver height     : 1.50 / 1.50 m
Topography         : 2 (Flat/gentle slope; with barrier)
Barrier angle1     : -90.00 deg Angle2 : -78.00 deg

```

Barrier height : 0.00 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation : 72.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle : 0.00

Road data, segment # 3: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Gladstone (day/night)

Angle1 Angle2 : 77.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 153.00 / 153.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 77.00 deg Angle2 : 90.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation : 65.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle : 0.00

Road data, segment # 4: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: Gladstone (day/night)

Angle1 Angle2 : -90.00 deg -76.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 153.00 / 153.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -76.00 deg

Barrier height : 0.00 m
 Barrier receiver distance : 3.60 / 3.60 m
 Source elevation : 65.00 m
 Receiver elevation : 79.24 m
 Barrier elevation : 79.24 m
 Reference angle : 0.00

Road data, segment # 5: Somerset (day/night)

 Car traffic volume : 12144/1056 veh/TimePeriod
 Medium truck volume : 966/84 veh/TimePeriod
 Heavy truck volume : 690/60 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 5: Somerset (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 316.10 / 316.10 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
 Barrier height : 0.00 m
 Barrier receiver distance : 3.60 / 3.60 m
 Source elevation : 62.00 m
 Receiver elevation : 79.24 m
 Barrier elevation : 79.24 m
 Reference angle : 0.00

Result summary (day)

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)

1.Highway 417	! 1.50 !	47.20 !	47.20 *
2.Highway 417	! 1.50 !	45.60 !	45.60 *
3.Gladstone	! 1.50 !	32.07 !	32.07 *
4.Gladstone	! 1.50 !	32.60 !	32.60 *
5.Somerset	! 1.50 !	54.44 !	54.44 *
Total		55.68 dBA	

* Bright Zone !

Result summary (night)

! source !	Road !	Total
! height !	Leq !	Leq
! (m) !	(dBA) !	(dBA)

1.Highway 417	!	1.50 !	39.60 !	39.60 *
2.Highway 417	!	1.50 !	38.00 !	38.00 *
3.Gladstone	!	1.50 !	24.47 !	24.47 *
4.Gladstone	!	1.50 !	25.00 !	25.00 *
5.Somerset	!	1.50 !	47.65 !	47.65 *
		Total	48.71 dBA	

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 58.77
(NIGHT): 53.37

STAMSON 5.0 SUMMARY REPORT Date: 30-10-2024 16:48:55
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: olaa1mit.te Time Period: Day/Night 16/8 hours
 Description: OLA-A1 (MITIGATED)

Rail data, segment # 1: O-Train (day/night)

```

-----
Train      ! Trains  ! Speed !# loc !# Cars! Eng !Cont
Type      !       !(km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----+-----
  1.      ! 215.0/40.0 ! 35.0 ! 1.0 ! 3.0 !Diesel! Yes
  
```

Data for Segment # 1: O-Train (day/night)

```

-----
Angle1 Angle2      : -90.00 deg 35.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0 / 0
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 43.30 / 43.30 m
Receiver height : 1.50 / 1.50 m
Topography      : 2 (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1  : -90.00 deg Angle2 : 35.00 deg
Barrier height  : 1.50 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation : 57.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle : 0.00
  
```

Result summary (day)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
-----+-----+-----+-----+-----+-----
1.O-Train ! 50.34 ! 36.74 ! -- ! -- ! 50.53 *
-----+-----+-----+-----+-----+-----
Total 50.53 dBA
  
```

* Bright Zone !

Result summary (night)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
  
```

```

-----+-----+-----+-----+-----+-----
1.O-Train    ! 46.05 ! 32.45 ! -- ! -- ! 46.24 *
-----+-----+-----+-----+-----+-----
                Total                               46.24 dBA

```

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

```

-----
Car traffic volume : 173531/15090 veh/TimePeriod
Medium truck volume : 13804/1200 veh/TimePeriod
Heavy truck volume : 9860/857 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 1: Highway 417 (day/night)

```

-----
Angle1 Angle2      : 75.00 deg 90.00 deg
Wood depth          : 0 (No woods.)
No of house rows    : 0 / 0
Surface             : 1 (Absorptive ground surface)
Receiver source distance : 317.40 / 317.40 m
Receiver height     : 1.50 / 1.50 m
Topography          : 2 (Flat/gentle slope; with barrier)
Barrier angle1      : 75.00 deg Angle2 : 90.00 deg
Barrier height      : 1.50 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation    : 72.00 m
Receiver elevation  : 79.24 m
Barrier elevation   : 79.24 m
Reference angle     : 0.00

```

Road data, segment # 2: Highway 417 (day/night)

```

-----
Car traffic volume : 173531/15090 veh/TimePeriod
Medium truck volume : 13804/1200 veh/TimePeriod
Heavy truck volume : 9860/857 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 2: Highway 417 (day/night)

```

-----
Angle1 Angle2      : -90.00 deg -78.00 deg
Wood depth          : 0 (No woods.)
No of house rows    : 0 / 0
Surface             : 1 (Absorptive ground surface)
Receiver source distance : 317.40 / 317.40 m
Receiver height     : 1.50 / 1.50 m
Topography          : 2 (Flat/gentle slope; with barrier)
Barrier angle1      : -90.00 deg Angle2 : -78.00 deg

```

Barrier height : 1.50 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation : 72.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle : 0.00

Road data, segment # 3: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Gladstone (day/night)

Angle1 Angle2 : 77.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 153.00 / 153.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 77.00 deg Angle2 : 90.00 deg
Barrier height : 1.50 m
Barrier receiver distance : 3.60 / 3.60 m
Source elevation : 65.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle : 0.00

Road data, segment # 4: Gladstone (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: Gladstone (day/night)

Angle1 Angle2 : -90.00 deg -76.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 153.00 / 153.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -76.00 deg

Barrier height : 1.50 m
 Barrier receiver distance : 3.60 / 3.60 m
 Source elevation : 65.00 m
 Receiver elevation : 79.24 m
 Barrier elevation : 79.24 m
 Reference angle : 0.00

Road data, segment # 5: Somerset (day/night)

 Car traffic volume : 12144/1056 veh/TimePeriod
 Medium truck volume : 966/84 veh/TimePeriod
 Heavy truck volume : 690/60 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 5: Somerset (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 316.10 / 316.10 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
 Barrier height : 1.50 m
 Barrier receiver distance : 3.60 / 3.60 m
 Source elevation : 62.00 m
 Receiver elevation : 79.24 m
 Barrier elevation : 79.24 m
 Reference angle : 0.00

Result summary (day)

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)

-----+-----+-----+-----

1.Highway 417	! 1.50 !	44.15 !	44.15
2.Highway 417	! 1.50 !	42.64 !	42.64
3.Gladstone	! 1.50 !	28.70 !	28.70
4.Gladstone	! 1.50 !	29.20 !	29.20
5.Somerset	! 1.50 !	50.06 !	50.06

-----+-----+-----+-----

Total		51.68 dBA	
-------	--	-----------	--

Result summary (night)

! source !	Road	! Total
! height !	Leq	! Leq
! (m) !	(dBA)	! (dBA)

1.Highway 417	!	1.50 !	36.56 !	36.56
2.Highway 417	!	1.50 !	35.04 !	35.04
3.Gladstone	!	1.50 !	21.10 !	21.10
4.Gladstone	!	1.50 !	21.60 !	21.60
5.Somerset	!	1.50 !	42.47 !	42.47

Total		44.09 dBA		
-------	--	-----------	--	--

TOTAL Leq FROM ALL SOURCES (DAY): 54.15
 (NIGHT): 48.31

STAMSON 5.0 SUMMARY REPORT Date: 22-11-2024 17:44:44
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: olaa2.te Time Period: Day/Night 16/8 hours
 Description: OLA-A2 (unmitigated)

Rail data, segment # 1: O-Train (day/night)

```

-----
Train      ! Trains  ! Speed !# loc !# Cars! Eng !Cont
Type      !      ! (km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----+-----
  1.      ! 215.0/40.0 ! 35.0 ! 1.0 ! 3.0 !Diesel! Yes
  
```

Data for Segment # 1: O-Train (day/night)

```

-----
Angle1 Angle2      : 10.00 deg 90.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0 / 0
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 48.10 / 48.10 m
Receiver height : 1.50 / 1.50 m
Topography      : 2 (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1  : 10.00 deg Angle2 : 90.00 deg
Barrier height   : 0.00 m
Barrier receiver distance : 2.50 / 2.50 m
Source elevation : 57.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle  : 0.00
  
```

Result summary (day)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
-----+-----+-----+-----+-----+-----
1.O-Train ! 57.51 ! 44.85 ! -- ! -- ! 57.74 *
-----+-----+-----+-----+-----+-----
Total 57.74 dBA
  
```

* Bright Zone !

Result summary (night)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
  
```

```

-----+-----+-----+-----+-----+-----
1.O-Train    ! 53.22! 40.56!  --!  --! 53.45 *
-----+-----+-----+-----+-----+-----
                Total                53.45 dBA

```

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

```

-----
Car traffic volume : 173531/15090 veh/TimePeriod
Medium truck volume : 13804/1200 veh/TimePeriod
Heavy truck volume : 9860/857 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 1: Highway 417 (day/night)

```

-----
Angle1 Angle2      : -90.00 deg 90.00 deg
Wood depth          : 0 (No woods.)
No of house rows   : 0 / 0
Surface            : 1 (Absorptive ground surface)
Receiver source distance : 290.70 / 293.40 m
Receiver height     : 1.50 / 1.50 m
Topography          : 2 (Flat/gentle slope; with barrier)
Barrier angle1     : -90.00 deg Angle2 : 90.00 deg
Barrier height     : 0.00 m
Barrier receiver distance : 2.50 / 4.60 m
Source elevation    : 74.00 m
Receiver elevation  : 79.24 m
Barrier elevation   : 79.24 m
Reference angle     : 0.00

```

Road data, segment # 2: Gladstone (day/night)

```

-----
Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 2: Gladstone (day/night)

```

-----
Angle1 Angle2      : -90.00 deg 90.00 deg
Wood depth          : 0 (No woods.)
No of house rows   : 0 / 0
Surface            : 1 (Absorptive ground surface)
Receiver source distance : 125.90 / 127.60 m
Receiver height     : 1.50 / 1.50 m
Topography          : 2 (Flat/gentle slope; with barrier)
Barrier angle1     : -90.00 deg Angle2 : 90.00 deg

```

Barrier height : 0.00 m
 Barrier receiver distance : 2.50 / 4.60 m
 Source elevation : 72.00 m
 Receiver elevation : 79.24 m
 Barrier elevation : 79.24 m
 Reference angle : 0.00

Result summary (day)

! source !	Road !	Total !
! height !	Leq !	Leq !
! (m) !	(dBA) !	(dBA) !

1.Highway 417	! 1.50 !	63.23 !	63.23 *
2.Gladstone	! 1.50 !	49.89 !	49.89 *
Total		63.43 dBA	

* Bright Zone !

Result summary (night)

! source !	Road !	Total !
! height !	Leq !	Leq !
! (m) !	(dBA) !	(dBA) !

1.Highway 417	! 1.50 !	55.56 !	55.56 *
2.Gladstone	! 1.50 !	42.20 !	42.20 *
Total		55.76 dBA	

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 64.46
 (NIGHT): 57.76

STAMSON 5.0 SUMMARY REPORT Date: 22-11-2024 17:46:30
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: olaa2mit.te Time Period: Day/Night 16/8 hours
 Description: OLA-A2 (mitigated)

Rail data, segment # 1: O-Train (day/night)

```

-----
Train      ! Trains  ! Speed !# loc !# Cars! Eng !Cont
Type      !       !(km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----+-----
  1.      ! 215.0/40.0 ! 35.0 ! 1.0 ! 3.0 !Diesel! Yes
  
```

Data for Segment # 1: O-Train (day/night)

```

-----
Angle1 Angle2      : 10.00 deg 90.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0 / 0
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 48.10 / 48.10 m
Receiver height  : 1.50 / 1.50 m
Topography      : 2 (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1  : 10.00 deg Angle2 : 90.00 deg
Barrier height   : 1.50 m
Barrier receiver distance : 2.50 / 2.50 m
Source elevation : 57.00 m
Receiver elevation : 79.24 m
Barrier elevation : 79.24 m
Reference angle  : 0.00
  
```

Result summary (day)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
-----+-----+-----+-----+-----+-----
1.O-Train ! 49.52 ! 35.95 ! -- ! -- ! 49.71 *
-----+-----+-----+-----+-----+-----
Total 49.71 dBA
  
```

* Bright Zone !

Result summary (night)

```

-----
! Loc ! Wheel ! Whistle ! Whistle ! Total
! Leq ! Leq ! Left Leq ! Right Leq! Leq
! (dBA) ! (dBA) ! (dBA) ! (dBA) ! (dBA)
  
```

```

-----+-----+-----+-----+-----+-----
1.O-Train    ! 45.23 ! 31.66 ! -- ! -- ! 45.42 *
-----+-----+-----+-----+-----+-----
                Total                                45.42 dBA

```

* Bright Zone !

Road data, segment # 1: Highway 417 (day/night)

```

-----
Car traffic volume : 173531/15090 veh/TimePeriod
Medium truck volume : 13804/1200 veh/TimePeriod
Heavy truck volume : 9860/857 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 1: Highway 417 (day/night)

```

-----
Angle1 Angle2      : -90.00 deg 90.00 deg
Wood depth          : 0 (No woods.)
No of house rows    : 0 / 0
Surface             : 1 (Absorptive ground surface)
Receiver source distance : 290.70 / 293.40 m
Receiver height     : 1.50 / 1.50 m
Topography          : 2 (Flat/gentle slope; with barrier)
Barrier angle1      : -90.00 deg Angle2 : 90.00 deg
Barrier height      : 1.50 m
Barrier receiver distance : 2.50 / 4.60 m
Source elevation    : 74.00 m
Receiver elevation  : 79.24 m
Barrier elevation   : 79.24 m
Reference angle     : 0.00

```

Road data, segment # 2: Gladstone (day/night)

```

-----
Car traffic volume : 12144/1056 veh/TimePeriod
Medium truck volume : 966/84 veh/TimePeriod
Heavy truck volume : 690/60 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient      : 0 %
Road pavement     : 1 (Typical asphalt or concrete)

```

Data for Segment # 2: Gladstone (day/night)

```

-----
Angle1 Angle2      : -90.00 deg 90.00 deg
Wood depth          : 0 (No woods.)
No of house rows    : 0 / 0
Surface             : 1 (Absorptive ground surface)
Receiver source distance : 125.90 / 127.60 m
Receiver height     : 1.50 / 1.50 m
Topography          : 2 (Flat/gentle slope; with barrier)
Barrier angle1      : -90.00 deg Angle2 : 90.00 deg

```

Barrier height : 1.50 m
 Barrier receiver distance : 2.50 / 4.60 m
 Source elevation : 72.00 m
 Receiver elevation : 79.24 m
 Barrier elevation : 79.24 m
 Reference angle : 0.00

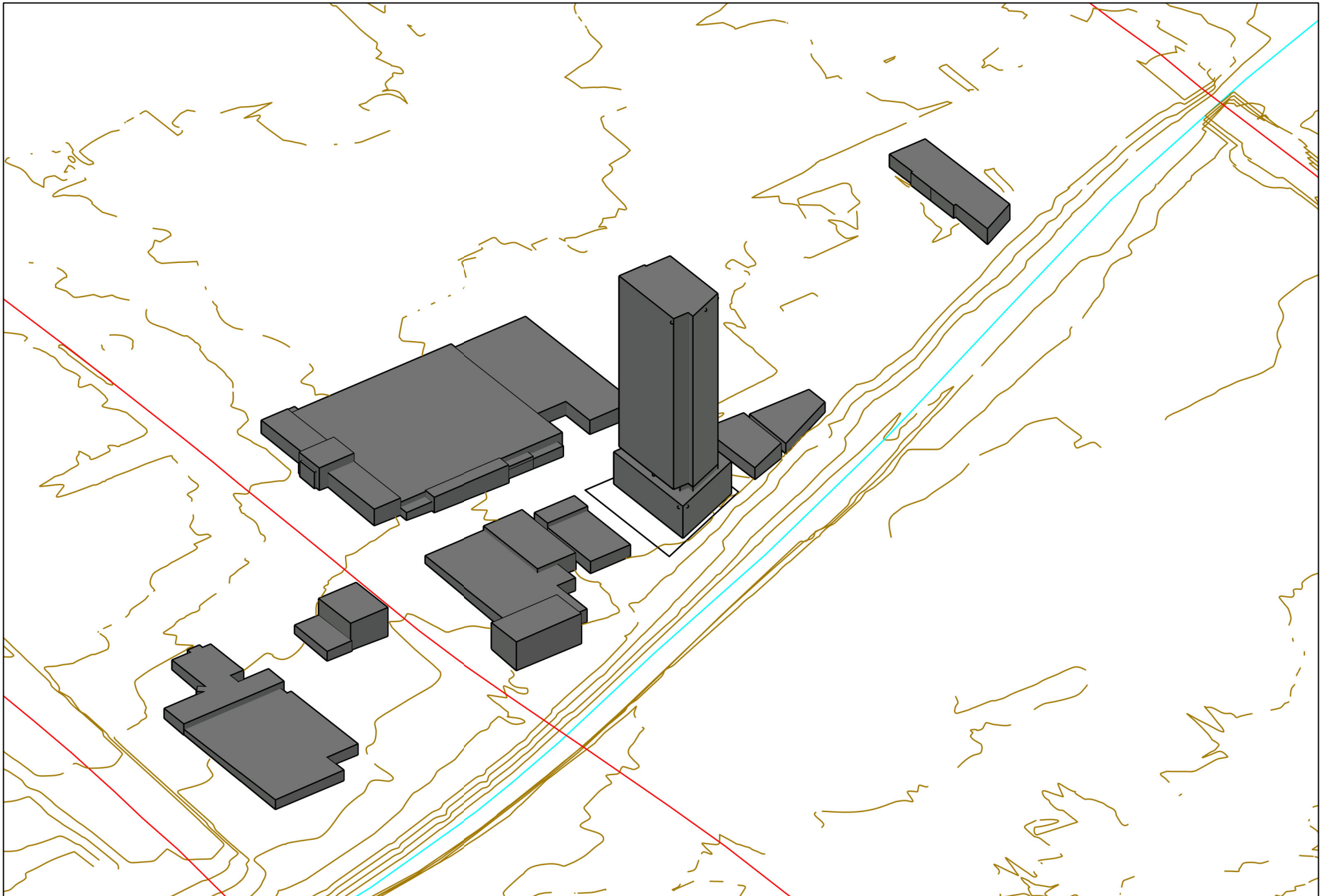
Result summary (day)

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.Highway 417	! 1.50 !	59.52	! 59.52
2.Gladstone	! 1.50 !	45.74	! 45.74
Total		59.70 dBA	

Result summary (night)

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.Highway 417	! 1.50 !	51.85	! 51.85
2.Gladstone	! 1.50 !	37.94	! 37.94
Total		52.02 dBA	

TOTAL Leq FROM ALL SOURCES (DAY): 60.11
 (NIGHT): 52.88

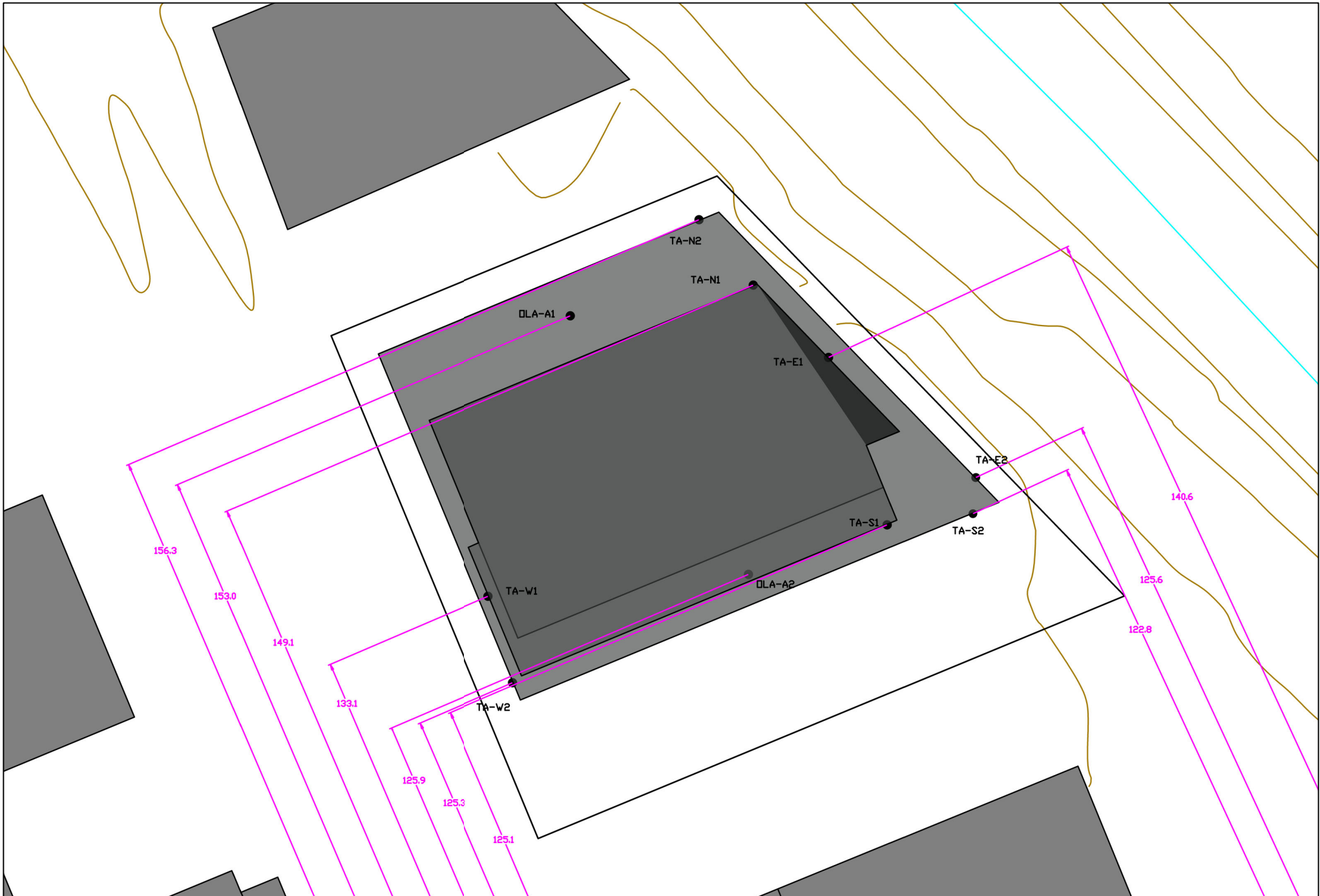


NOISE IMPACT STUDY - 145 LORETTA AVENUE NORTH, OTTAWA

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

FIGURE C.1

2024/11/22



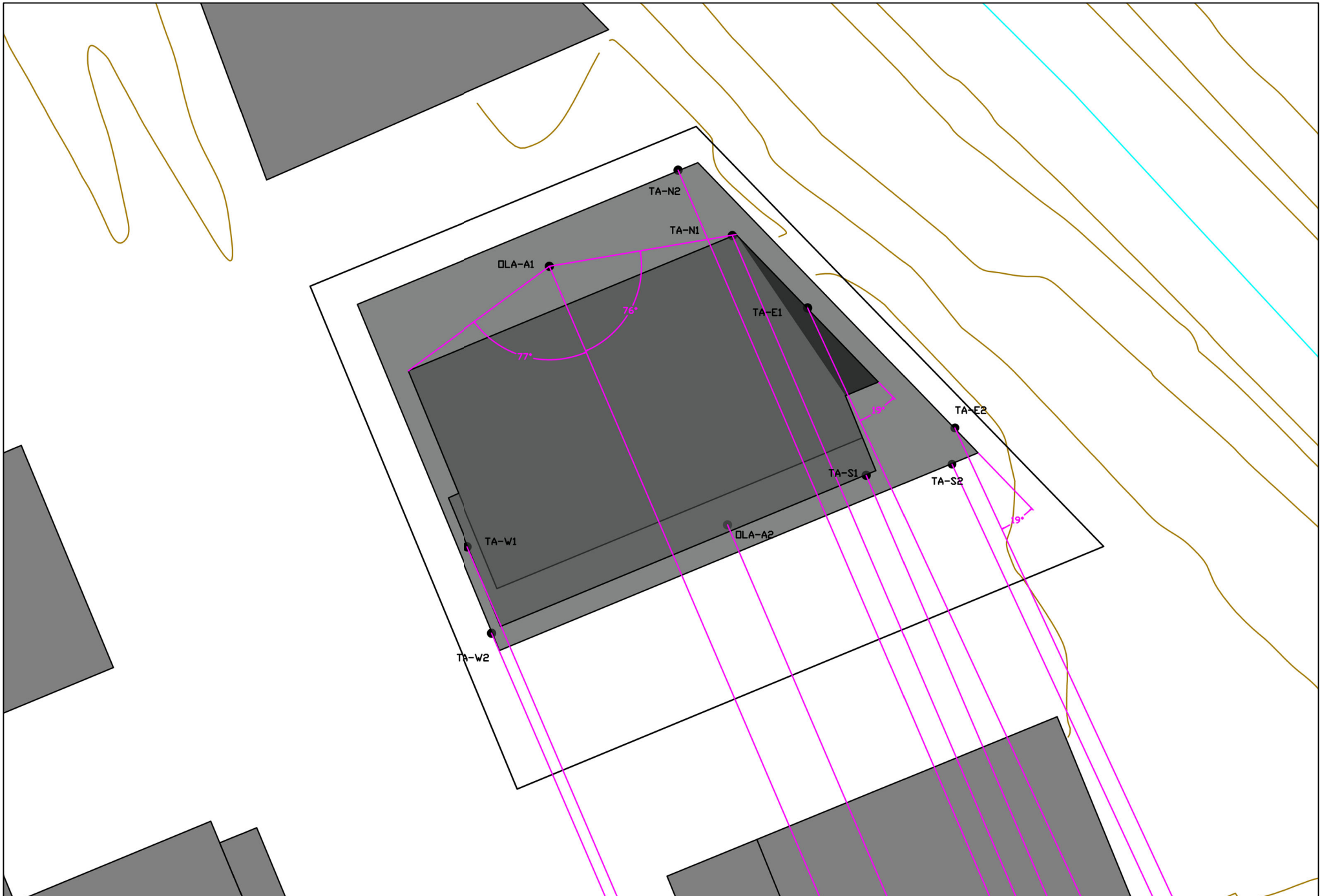
RECEPTOR DISTANCES FROM GLADSTONE AVENUE

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN METRES

FIGURE C.2

2024/11/20



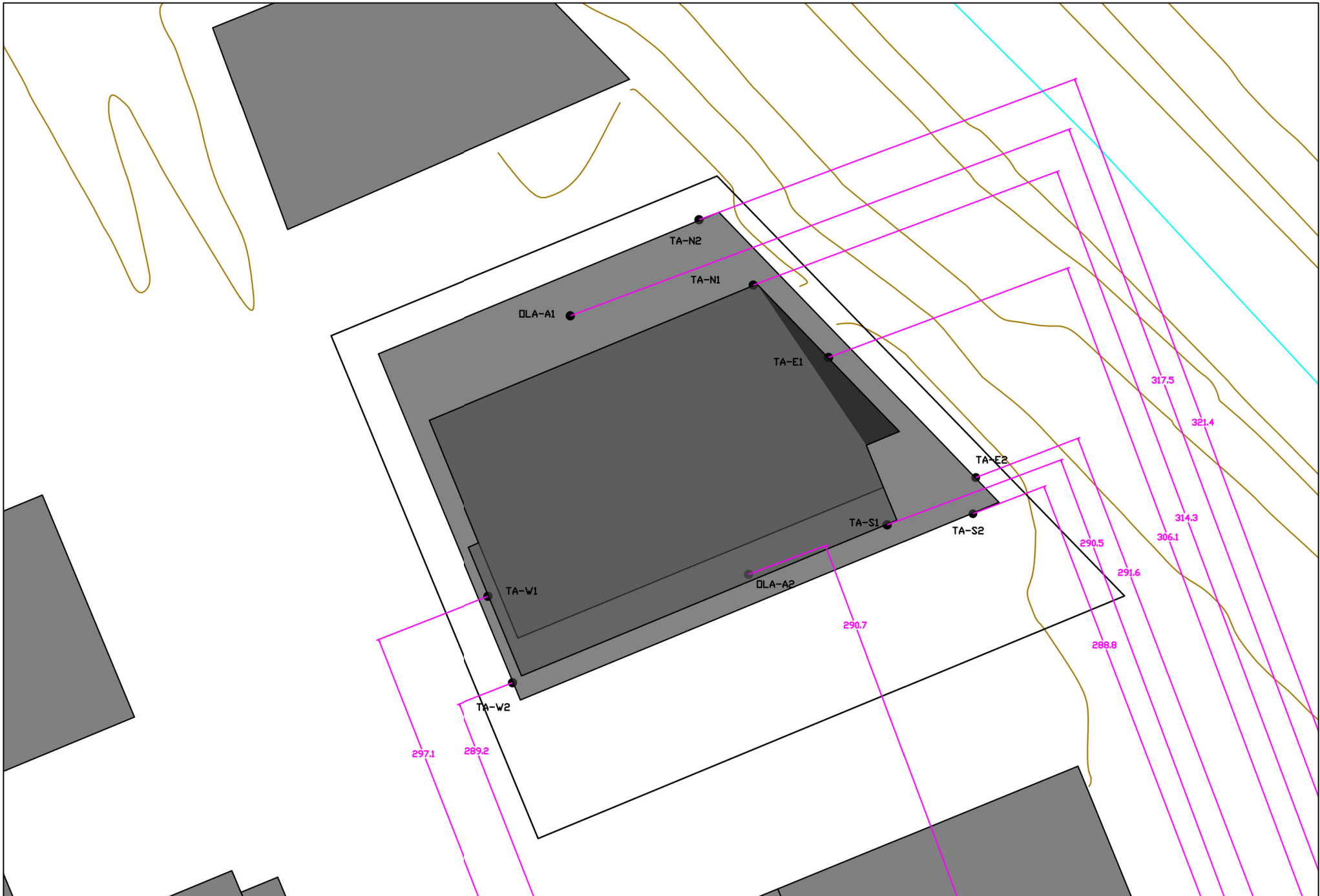
RECEPTOR EXPOSURE ANGLES TO GLADSTONE AVENUE

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN
METRES

FIGURE C.3

2024/11/22



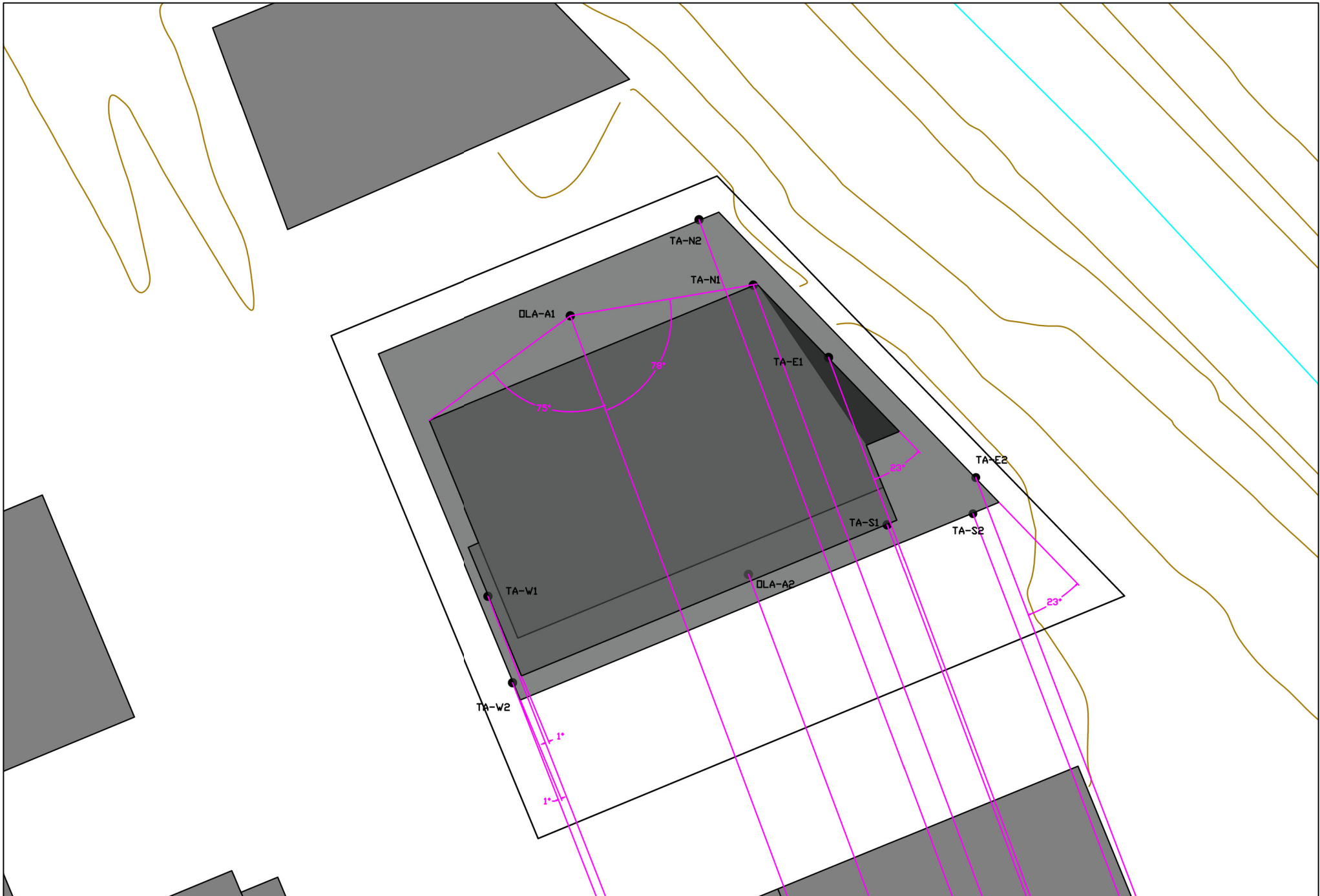
RECEPTOR DISTANCES FROM HIGHWAY 417

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN METRES

FIGURE C.4

2024/11/22



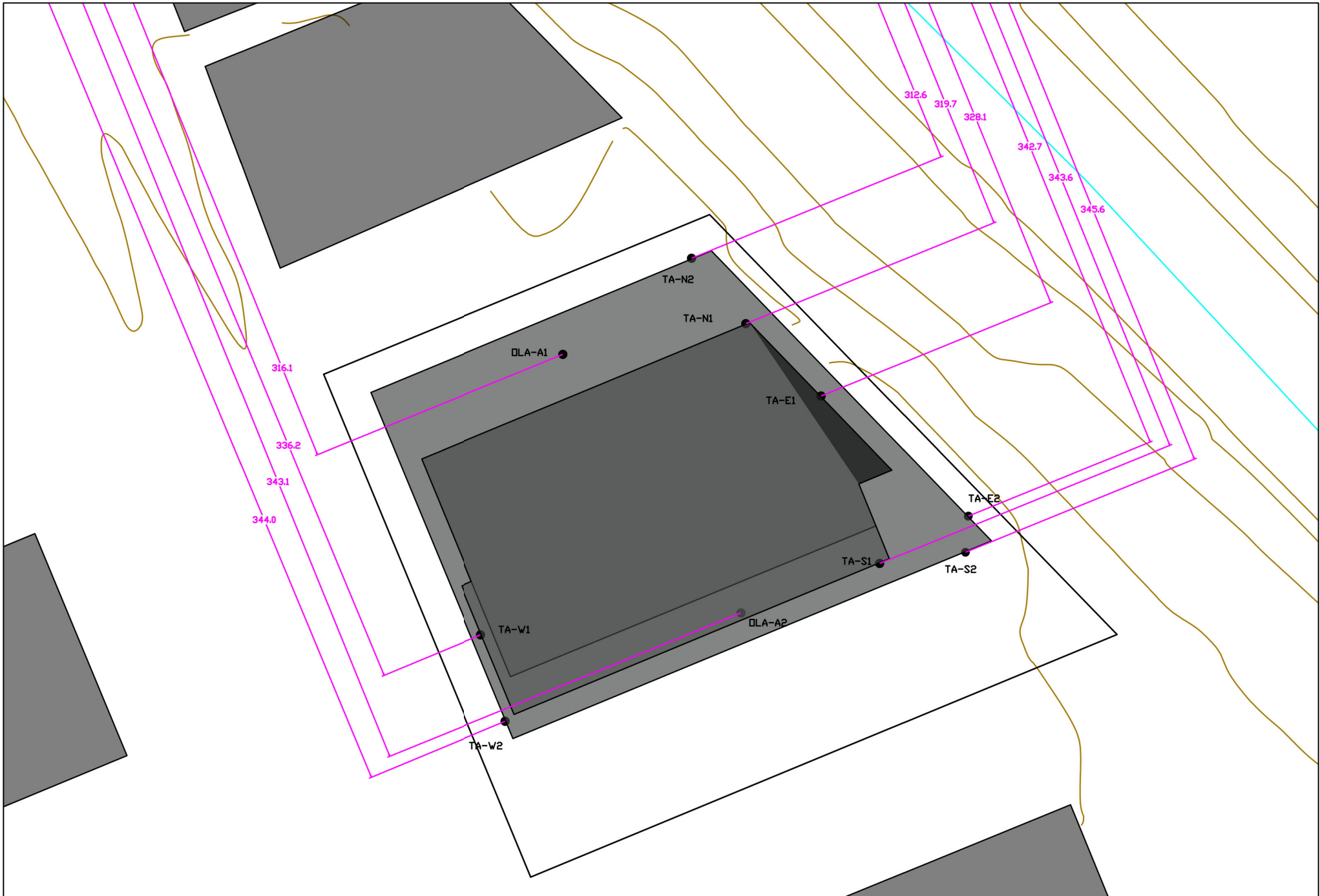
RECEPTOR EXPOSURE ANGLES FROM HIGHWAY 417

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN
METRES

FIGURE C.5

2024/11/22



RECEPTOR DISTANCES FROM SOMERSET ST W

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN
METRES

FIGURE C.6

2024/11/22



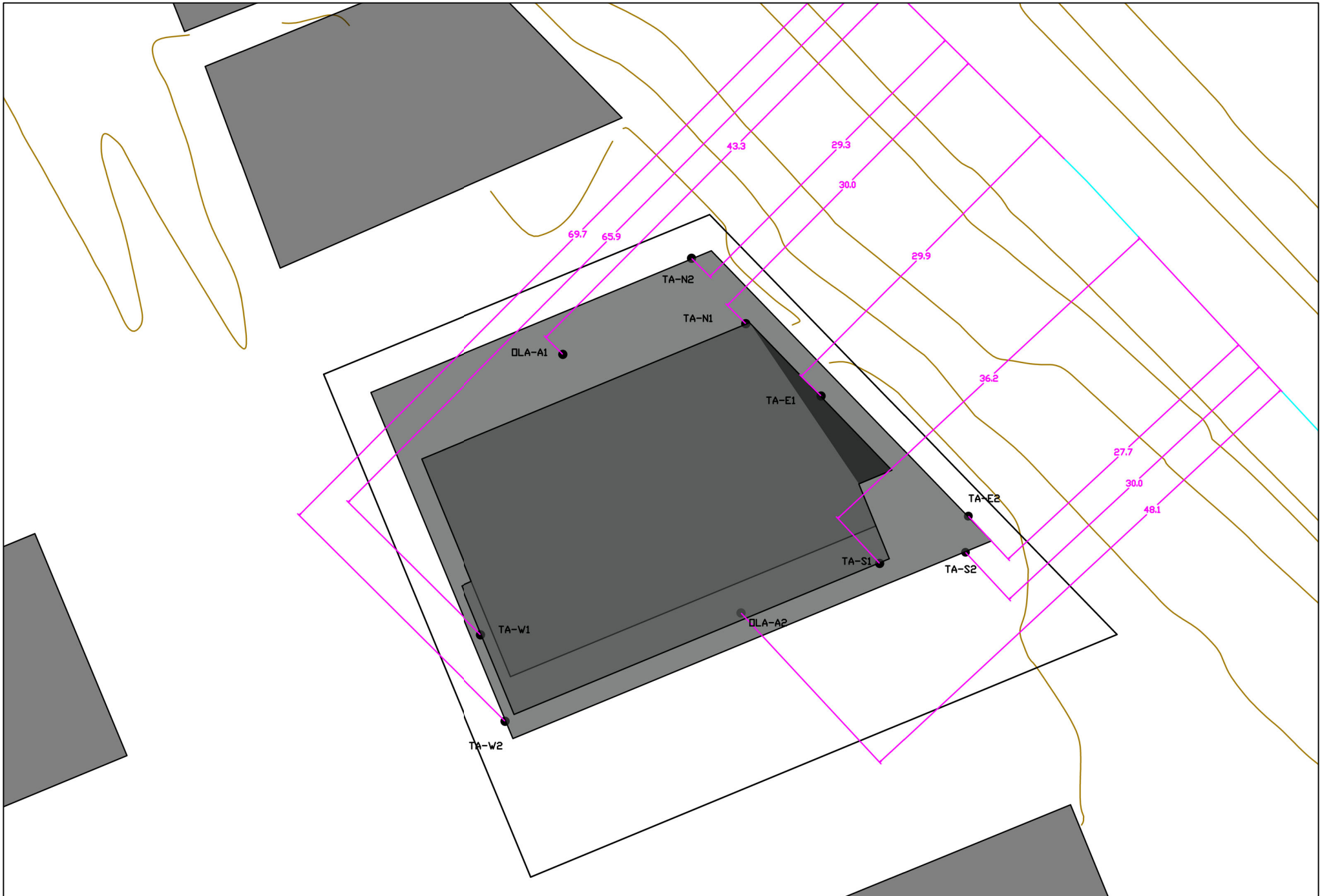
RECEPTOR EXPOSURE ANGLES FROM SOMERSET ST W

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN METRES

FIGURE C.7

2024/11/22



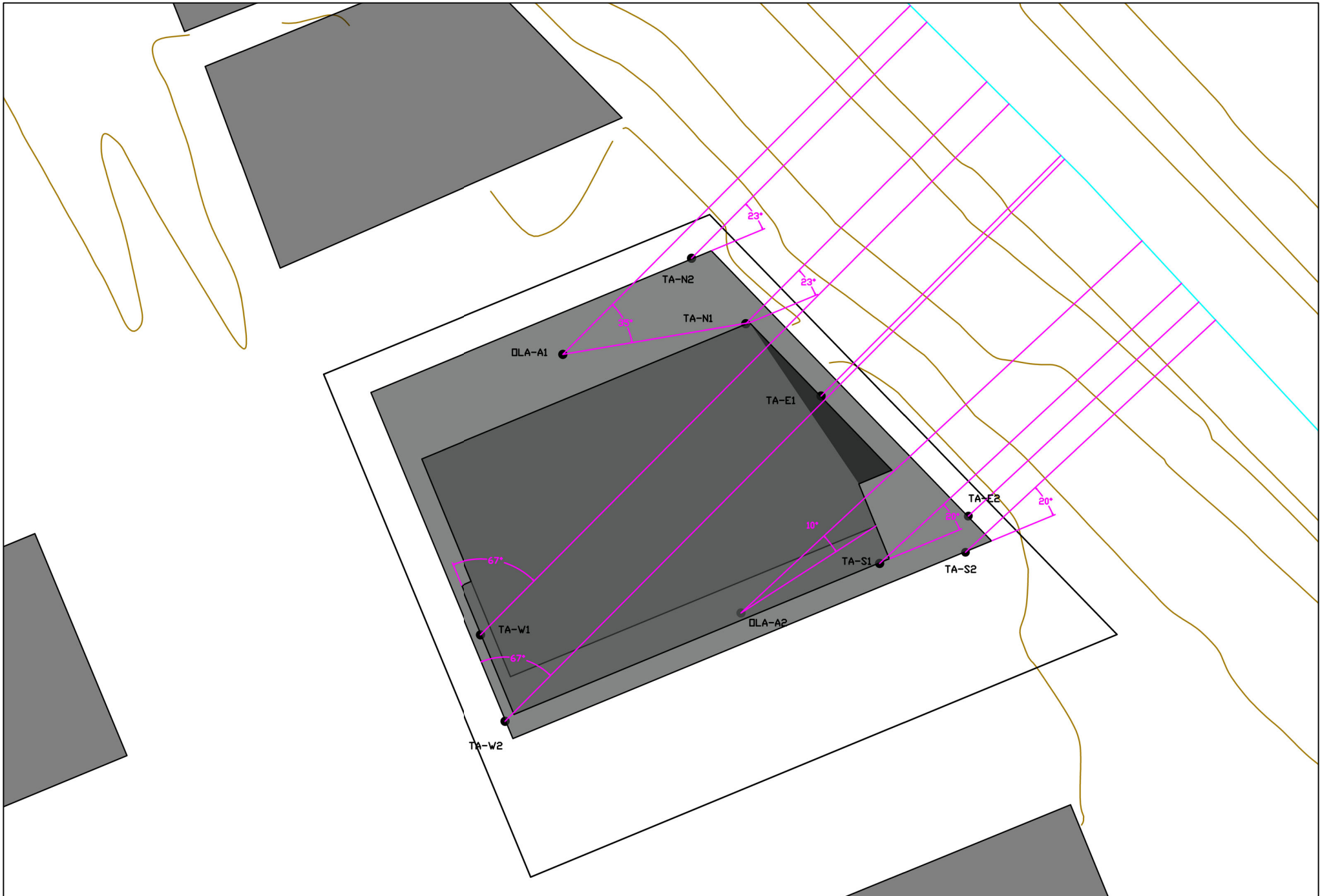
RECEPTOR DISTANCES FROM D-TRAIN TRILLIUM LINE

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN
METRES

FIGURE C.9

2024/11/22



RECEPTOR DISTANCES FROM D-TRAIN TRILLIUM LINE

NOISE IMPACT STUDY ADDENDUM - TOWER A - 145 LORETTA AVENUE NORTH, OTTAWA

ALL DIMENSIONS IN
METRES

FIGURE C.9

2024/11/22

Attachment D

Traffic Volume Data



Ministry of
Transportation

Highway
Standards
Branch

Traffic
Office

Provincial Highways

Traffic Volumes

1988-2019, 2021

King's Highways / Secondary Highways / Tertiary Roads

Ministry Contact:

Provincial Traffic Office (905)-704-2960

Abstract:

This annual publication contains averaged traffic volume information and collision rate information for each of the sections of highway under MTO jurisdiction.

Key Words:

Annual Average Daily Traffic volume (AADT), Summer Average Daily Traffic volume (SADT), Summer Average Weekday Traffic volume (SAWDT), Winter Average Daily Traffic volume (WADT), Collision Rate (CR)

Year	Highway	Location Description	Dist (KM)	Pattern Type	AADT	SADT	SWADT	WADT	Truck AADT	Total Collisions	Total CR	Trucks Collisions	Truck CR
1989	417			UC	111,300	116,900	125,800	105,700	21,100	32	1.4	1	0.0
1990	417			UC	117,900	126,200	136,800	112,000	22,400	10	0.4	1	0.0
1991	417			UC	120,000	127,200	138,000	116,400	22,800	37	1.5	3	0.1
1992	417			UC	121,100	128,400	139,300	116,300	23,000	35	1.4	2	0.1
1993	417			UC	122,000	128,500	138,700	114,300	23,200	34	1.3	2	0.1
1994	417			UC	131,900	139,800	150,800	122,700	25,100	26	0.9	1	0.0
1995	417			UC	136,700	144,200	156,300	127,500	26,000	30	1.1	2	0.1
1996	417			UC	141,500	149,700	165,500	134,600	26,900	26	0.9	1	0.0
1997	417			UC	146,200	153,500	171,100	137,400	27,800	36	1.2	3	0.1
1998	417			UC	151,000	160,100	176,700	143,400	28,700	24	0.8	0	0.0
1999	417			UC	145,700	154,400	170,500	138,400	27,700	31	1.0	6	0.2
2000	417			UC	147,400	156,200	173,900	138,600	28,000	29	0.9	2	0.1
2001	417			UC	149,100	159,700	175,400	140,100	28,300	25	0.8	1	0.0
2002	417			UC	150,800	160,700	177,400	141,200	28,700	29	0.9	2	0.1
2003	417			UC	148,100	156,500	173,500	139,900	8,900	28	0.9	1	0.0
2004	417			UC	151,000	161,700	177,600	141,900	9,050	26	0.8	2	0.1
2005	417			UC	154,700	163,700	180,900	145,100	9,300	25	0.8	2	0.1
2006	417			UC	156,300	165,300	182,600	147,100	9,400	24	0.7	2	0.1
2007	417			UC	157,800	167,400	182,600	148,000	9,450	20	0.6	0	0.0
2008	417			UC	159,400	168,400	158,100	149,100	9,550	34	1.0	0	0.0
2009	417			UC	160,900	170,600	188,300	151,200	9,650	40	1.2	4	0.1
2010	417			UC	162,500	171,800	189,100	152,800	9,750	26	0.8	4	0.1
2011	417			UC	164,000	164,500	170,200	155,600	9,850	36	1.1	2	0.1
2012	417			UC	165,600	166,600	177,300	157,300	9,950	28	0.8	2	0.1
2013	417			UC	167,200	167,700	168,100	158,700	10,000	39	1.1	2	0.1
2014	417			UC	168,700	169,200	162,200	160,100	10,100	17	0.5	2	0.1
2015	417			UC	170,300	170,800	163,800	161,600	10,200	29	0.8	2	0.1
2016	417			UC	171,800	172,400	165,200	163,000	10,300	38	1.1	3	0.1
2017	417			UC	173,400	172,300	173,900	166,200	10,400	39	1.1	0	0.0
2018	417			UC	174,900	173,500	176,200	167,900	10,500	37	1.0	4	0.1
2019	417			UC	176,500	173,900	176,600	170,100	10,600	31	0.8	3	0.1
2021	417			UC	179,600	180,000	182,400	173,000	10,800	24	0.6	7	0.2
1988	417	ROCHESTER ST IC-121B OTTAWA	1.5	UC	114,400	120,100	129,300	107,500	20,600	45	0.7	4	0.1
1989	417			UC	120,600	126,600	136,300	114,600	21,700	66	1.0	4	0.1
1990	417			UC	127,600	136,500	148,000	121,200	23,000	26	0.4	3	0.0
1991	417			UC	130,000	137,800	149,500	126,100	23,400	46	0.6	2	0.0
1992	417			UC	130,800	138,600	150,400	125,600	23,500	75	1.0	10	0.1
1993	417			UC	131,000	138,000	148,900	122,700	23,600	79	1.1	3	0.0
1994	417			UC	143,100	151,700	163,600	133,100	25,800	48	0.6	6	0.1
1995	417			UC	148,500	156,700	169,800	138,500	26,700	43	0.5	5	0.1
1996	417			UC	153,800	162,800	179,900	146,300	27,700	28	0.3	4	0.0

Year	Highway	Location Description	Dist (KM)	Pattern Type	AADT	SADT	SWADT	WADT	Truck AADT	Total Collisions	Total CR	Trucks Collisions	Truck CR
1997	417			UC	159,200	167,200	186,300	149,600	28,700	51	0.6	3	0.0
1998	417			UC	164,500	174,400	192,500	156,300	29,600	33	0.4	0	0.0
1999	417			UC	158,200	167,700	185,100	150,300	28,500	31	0.4	6	0.1
2000	417			UC	160,000	169,600	188,800	150,400	28,800	37	0.4	1	0.0
2001	417			UC	161,800	173,300	190,300	152,000	29,100	32	0.4	5	0.1
2002	417			UC	163,500	174,200	192,300	153,100	29,400	34	0.4	6	0.1
2003	417			UC	160,200	169,300	187,700	151,300	9,600	46	0.5	3	0.0
2004	417			UC	162,000	173,500	190,600	152,200	9,700	44	0.5	2	0.0
2005	417			UC	167,000	176,700	195,300	156,600	10,000	33	0.4	1	0.0
2006	417			UC	168,600	178,300	197,000	158,700	10,100	31	0.3	2	0.0
2007	417			UC	170,100	180,400	196,900	159,600	10,200	35	0.4	1	0.0
2008	417			UC	171,700	181,400	170,300	160,600	10,300	45	0.5	14	0.1
2009	417			UC	173,200	183,600	202,600	162,800	10,400	52	0.5	3	0.0
2010	417			UC	174,800	184,800	203,400	164,400	10,500	38	0.4	5	0.1
2011	417			UC	176,300	176,900	183,000	167,300	10,600	49	0.5	1	0.0
2012	417			UC	177,900	179,000	190,400	169,000	10,700	43	0.4	6	0.1
2013	417			UC	179,400	180,000	180,400	170,200	10,800	71	0.7	7	0.1
2014	417			UC	181,000	181,600	174,100	171,800	10,900	51	0.5	3	0.0
2015	417			UC	182,500	183,100	175,500	173,200	11,000	65	0.6	7	0.1
2016	417			UC	184,100	184,700	177,000	174,700	11,000	81	0.8	7	0.1
2017	417			UC	185,600	184,400	186,200	177,900	11,100	90	0.9	4	0.0
2018	417			UC	187,200	185,700	188,600	179,700	11,200	96	0.9	15	0.1
2019	417			UC	188,700	185,900	188,800	181,800	11,300	100	1.0	13	0.1
2021	417			UC	191,800	192,300	194,800	184,800	11,500	84	0.8	9	0.1
1988	417	PARKDALE AV IC-122 OTTAWA	1.0	UC	110,600	116,100	125,000	104,000	19,900	57	1.4	3	0.1
1989	417			UC	116,700	122,500	131,900	110,900	21,000	110	2.6	8	0.2
1990	417			UC	120,600	129,000	139,900	114,600	21,700	53	1.2	5	0.1
1991	417			UC	121,000	128,300	139,200	117,400	21,800	46	1.1	3	0.1
1992	417			UC	125,400	132,900	144,200	120,400	22,600	85	1.9	6	0.1
1993	417			UC	126,000	132,700	143,200	118,000	22,700	96	2.1	7	0.2
1994	417			UC	135,900	144,100	155,400	126,400	24,500	77	1.6	7	0.1
1995	417			UC	140,800	148,600	161,000	131,300	25,300	69	1.4	6	0.1
1996	417			UC	145,700	154,200	170,500	138,600	26,200	69	1.3	10	0.2
1997	417			UC	150,600	158,100	176,200	141,600	27,100	61	1.1	3	0.1
1998	417			UC	155,500	164,800	181,900	147,700	28,000	51	0.9	5	0.1
1999	417			UC	149,200	158,200	174,600	141,700	26,900	55	1.0	2	0.0
2000	417			UC	150,700	159,700	177,800	141,700	27,100	63	1.2	2	0.0
2001	417			UC	152,200	163,000	179,000	143,000	27,400	61	1.1	8	0.1
2002	417			UC	153,700	163,800	180,800	143,900	27,700	48	0.9	3	0.1
2003	417			UC	150,400	158,900	176,200	142,100	27,100	63	1.2	6	0.1
2004	417			UC	152,000	162,800	178,800	142,800	27,400	54	1.0	5	0.1

O-Train Line 2

The full-length of O-Train Line 2 is currently closed for Stage 2 construction. Line 2 buses are operating in place of the train. View closure details.

The O-Train Line 2 (the Trillium Line) is an eight-kilometre diesel light-rail service. Line 2 runs from Greenboro Station in the south to Bayview Station just west of downtown.

Line 2 stations

Station	Stop #
Greenboro	3037
Mooney's Bay	3063
Carleton	3062
Carling	3061
Bayview	3060

Choose your station for a map and service information:

Select a Line 2 station ▼

Frequent service

The Trillium Line is in service 7 days a week, until midnight Monday to Saturday and until 11 pm. Sunday. Trains arrive about every 12 minutes on weekdays and Saturdays and between every 12 and 15 minutes on Sundays.

Use the [Travel Planner](#) for Trillium Line schedules and next departures:

You can also find out the current schedule by texting 560560 or calling 613-560-1000 plus the 4-digit stop number (listed above) for your station.

Line 2 trains

The Trillium Line is served by six Alstom Coradia Lint trains.

- High-efficiency, diesel engines
- Advanced technology makes them quiet and fuel efficient
- Low greenhouse gas emissions
- Low operating costs
- Two platform-level double doors per train
- Fully-accessible cars
- Large windows
- Smooth, comfortable ride
- Space for 260 passengers

Train names

In 2017, the City of Ottawa ran a Name the Trains Contest. Children and youth aged 16 and under were invited to name O-Train Line 1 and Line 2 trains.

- [Line 1 train names](#)

The chosen names for Line 2 are:

- Emily Murphy
- Nanuq • Polar Bear
- Portage
- Dreamcatcher
- Northern Lights
- Rocket Richard

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