455 Phillip Street, Unit 100A
Waterloo, Ontario N2L 3X2
Canada
www.ghd.com

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	
Sound Level Criteria			--	--	--	--	*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	
Sound Level Criteria		--	--	*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 facade. 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	
Sound Level Criteria		--	--	*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/m^2 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

Ben Wiseman, P.Eng.
Senior Acoustical Engineer

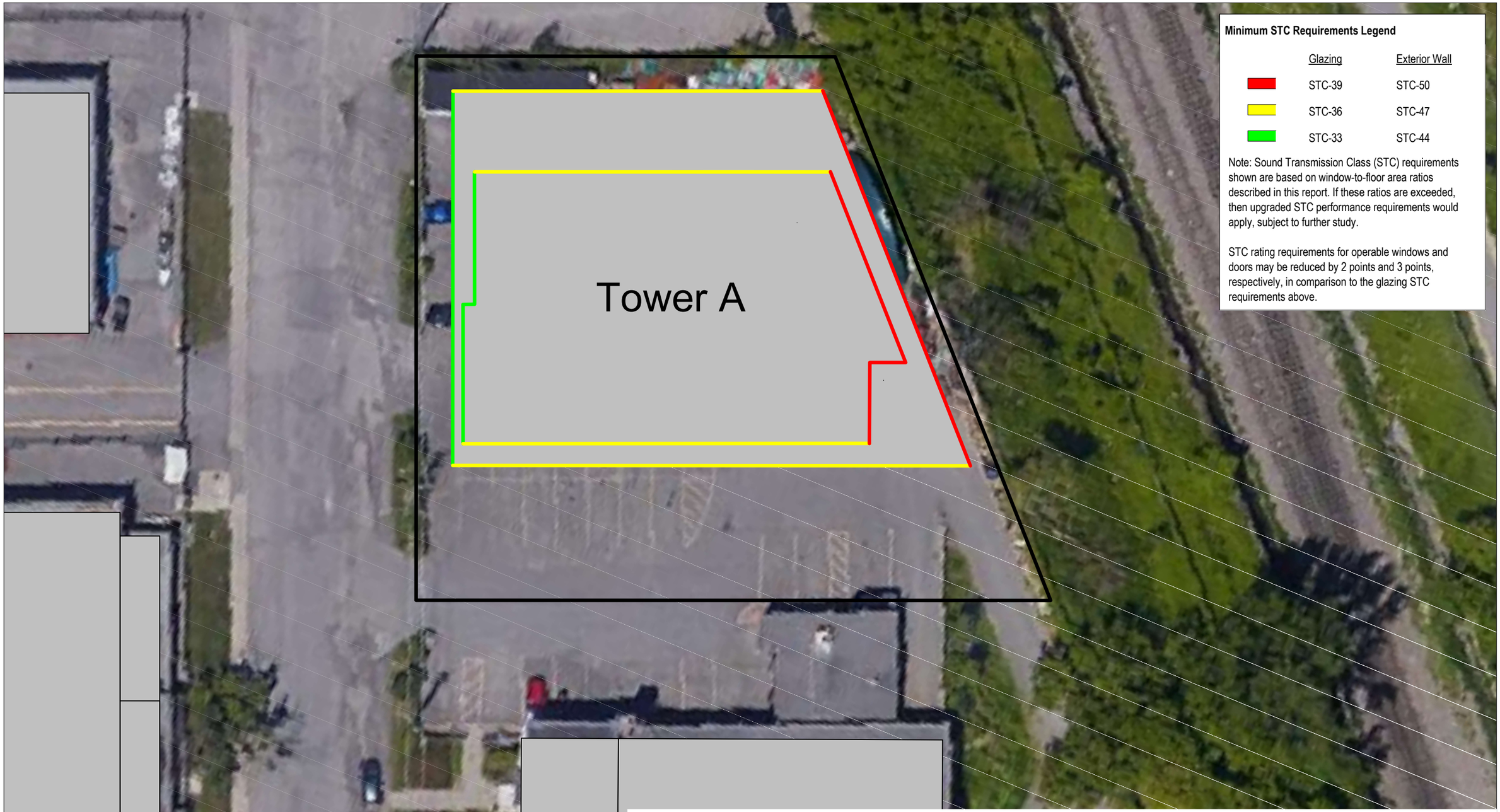
+1 519 340-4121
ben.wiseman@ghd.com

Michael Masschaele, B.E.S. L.E.L.
Air and Noise Service Line Leader – North America

+1 519-340-3818
michael.masschaele@ghd.com

Encl.

Figures



Paper Size ANSI B

0 2 4 6 8 10 m

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 83 UTM Zone 18N

N

GHD

NOISE IMPACT STUDY
TIP GLADSTONE GP INC.
145 LORETTA AVE N & 951 GLADSTONE AVE

BUILDING ENVELOPE MINIMUM STC RATING REQUIREMENTS

Project No. **11223331**
Revision No. **-**
Date **20.11.2024**

FIGURE 1

\\ghdnet\ghd\CA\Waterloo\Projects\662\11223331\Tech\Noise\01 Cadna\A\11223331_Gladstone_NIS_v2024.00.cna
Imagery source: Google Satellite

Attachments

Attachment A

Current Drawings

GLADSTONE AND LORETTA - RESIDENTIAL TOWER

ARCHITECTURAL DRAWING PACKAGE

ARCHITECT
Linebox Studio Inc.

Address: 116 Lisgar Street, Suite 110, Ottawa, ON. K2P 0C2
Tel. 613.216.2609

Architect: Andrew Reeves
Point of Contact: Josée Anne Provonost

STRUCTURAL ENGINEERS
Cunliffe & Associates Inc.

Address: 200, 1550 Carling Ave 2nd Floor, Ottawa, ON K1Z 8S8
Tel. 416.255.3337

Engineer: Brad Armstrong
Point of Contact: Paul Dolan

MEP ENGINEERS
GWAL | Goodkey, Weedmark & Associates Ltd.

Address: 1688 Woodward Dr, Ottawa, ON K2C 3R8
Tel. 613.727.5111

Mechanical: Mark Sarazin
Electrical: Divyankant (Raj) Vyas

CIVIL ENGINEERS
WSP

Address: 2611 Queensview Drive 200, 300, 400 Ottawa, ON K2B 6B7
Tel. 613.829.2800

Engineer: Michael Flowers
Point of Contact: Jared Delpellaro

LANDSCAPE ARCHITECT
CSW Landscape Architects Limited.

Address: 319 McRae Avenue, Ottawa, ON K1Z 0B9
Tel. 613.729.4536

Architect &
Point of Contact: Christian Matteau

CLIENT
CLV Group Development

Address: 485 Bank St. #200, Ottawa, ON K2P 1Z2
Tel. 905 691 5260

Point of Contact: Jenn Morrison

BUILDER
PBC Development & Construction Management Group Inc.

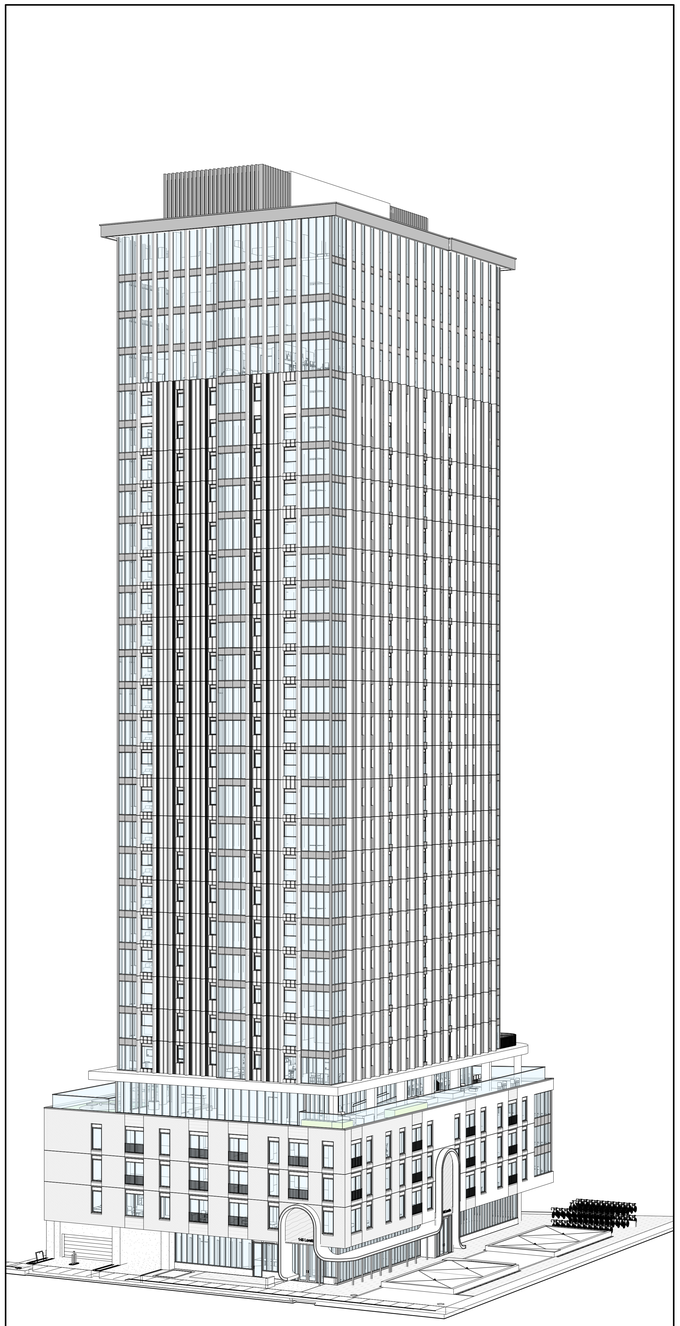
Address: 200-485 Bank St. Ottawa, ON K2P 1Z2
Tel. 613 739 1307 x226

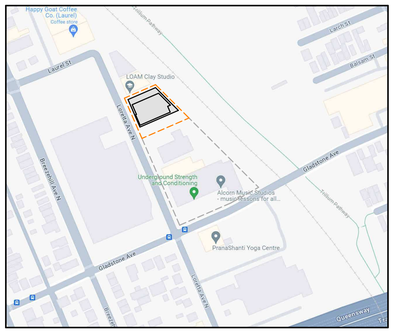
Point of Contact: Maria Martinez

PROJECT MAILING ADDRESS
145 Loretta Ave N.
Ottawa, ON
K1Y 4W5

ARCHITECTURAL DRAWING LIST

DWG NO.	DRAWING TITLE
A0 GENERAL	
A0-000	COVER SHEET
A1 SITE	
A1-100a	MASTER SITE PLAN
A1-101	SITE PLAN (PHASE 1)
A2 FLOOR PLANS	
A2-105	FLOOR PLAN - LEVEL 05 (PODIUM ROOF AMENITY)
A5 ELEVATIONS	
A5-100	BUILDING ELEVATIONS - WEST AND SOUTH
A5-101	BUILDING ELEVATIONS - EAST AND NORTH





SITE MAP -PHASE 1

client

CLV GROUP DEVELOPMENTS

CUNLIFFE & ASSOCIATES
CONSULTING STRUCTURAL ENGINEERS

structural engineers | ingénieurs structurels

GWAL
Goodkey, Weedmark & Associates Ltd.

electrical engineers | ingénieur electrique

mechanical engineer | ingénieur méchanique

wsp

civil engineers | ingénieur civil

CSW

landscape architect | architecte paysagiste

builder | constructeur

nord du projet
project north

nord reel
true north

no	revisions	date
9	ISSUED FOR SPA	24-11-20
6	REVISED 33% WORKING DRAWINGS	24-08-19
4	ISSUED FOR 33% WORKING DRAWINGS	24-08-12
2	RE-ISSUED FOR CLASS 'D' ESTIMATE	24-05-13
1	ISSUED FOR CLASS 'D' ESTIMATE	24-05-17

stamp | timbre

ONTARIO ASSOCIATION OF ARCHITECTS
ANDREW REEVES
LICENCE
6464

architect | architecte

linebox
STUDIO

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 | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
scale | échelle	**1 : 1000**
date | date	**02/15/24**

drawing number | numéro du dessin

A0-000

SURVEY INFORMATION TAKEN FROM:

SURVEYOR'S REAL PROPERTY REPORT
PART 1 - PLAN OF
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] S446-h1	Requirement	Proposed
Minimum Lot Width (m)	No minimum	Complies
Minimum Lot Area (m²)	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 driveways, aisles, 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, 106, 111)			
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 100m² GCA Retail: Max 3.6 per 100m² 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 aside 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 250m² Commercial space) 20,080m²/250 = 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: 0.6m 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	Complies
	Parking Garage	Minimum: 6m Maximum: 6.7m	6m

Amenity Space Requirements (Sec. 137)	Requirement	Proposed
Total: 6m² per unit **Communal: 50% of total required**	Total: 5,400 m² Communal (min): 2,700 m²	Rooftop Terrace (Communal): 1441.9 m² Indoor Amenity (Communal): 1614.7 m² Total Communal (56.61%): 3056.6 m² Balconies: ~ 2343.4 m² **Total Amenities: 5400 m²**
POPS (Privately Owned Public Space)		POPS: 1,017.7 m²

SEE CIVIL & LANDSCAPE DRAWINGS

FUTURE DEVELOPMENT

TRILLIUM PATHWAY

SLOPE / RETAINING WALL

STATION PLATFORM

TRILLIUM LINE

STATION PLATFORM

SLOPE / RETAINING WALL

COROSO ITALIA STATION

RAILWAY OVERPASS

SURFACE PARKING LOT

MUP

MUP (MULTI-USE PATHWAY) - SEE LANDSCAPE

1070 mm HIGH METAL GUARD RAIL

SANDBLASTED CONC. RETAINING WALL (SEE LANDSCAPE & STRUCTURAL) C/W DAMPPROOFING, DRAINAGE LAYER & WEEPING TILE

STANDARD BREAD BUILDING

3 STOREY BRICK, CONCRETE BLOCK, STUCCO SIDED COMMERCIAL BUILDING EXISTING TO REMAIN

EXTENT OF PODIUM ABOVE

TOWER B

TOWER C

TOWER A (PHASE 1)

25.000 TOWER SEPARATION

EXTENT OF PODIUM ABOVE

1.200 TOWER SETBACK

1.200 TOWER SETBACK

1.200 TOWER SETBACK

PODIUM ABOVE

A1.101

36.840

3.000 SETBACK

7.000 TOWER SETBACK

LOADING AREA

2.000 TOWER SETBACK

1.000 TOWER SETBACK

3.000 SETBACK

PARKING ENTRANCE

FH

SURFACE PARKING LOT

N.I.C.

32.950

MAX WIDTH AS PER ZONING SCHEDULE

47.830

SEVERANCE LINE

L O R E T T A A V E N U E N O R T H

G L A D S T O N E A V E N U E

CONCRETE SIDEWALK

CONCRETE SIDEWALK

SURFACE PARKING LOT

3 STOREY METAL AND BRICK SIDED COMMERCIAL BUILDING

SURFACE PARKING LOT

1 STOREY STUCCO AND BRICK SIDED COMMERCIAL BUILDING

1 STOREY STUCCO AND BRICK SIDED COMMERCIAL BUILDING

Autodesk Docs://Gladstone & Loretta/2402- 145 Loretta CLV- LB Tower A.rvt
2024-11-21 5:55:49 PM

CLV GROUP DEVELOPMENTS

client

CUNLIFFE & ASSOCIATES
CONSULTING STRUCTURAL ENGINEERS

structural engineers | ingénieurs structurels

GWAL
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mechanical engineer | ingénieur méchanique

wsp

civil engineers | ingénieur civil

CSW

landscape architect | architecte paysagiste

nord du projet
project north

nord reel
true north

9	ISSUED FOR SPA	24-11-20
no	revisions	date

stamp | timbre

ONTARIO ASSOCIATION OF ARCHITECTS
ANDREW REEVES
LICENCE
6464

architect | architecte

linebox
STUDIO

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Do not scale the drawings.
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project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

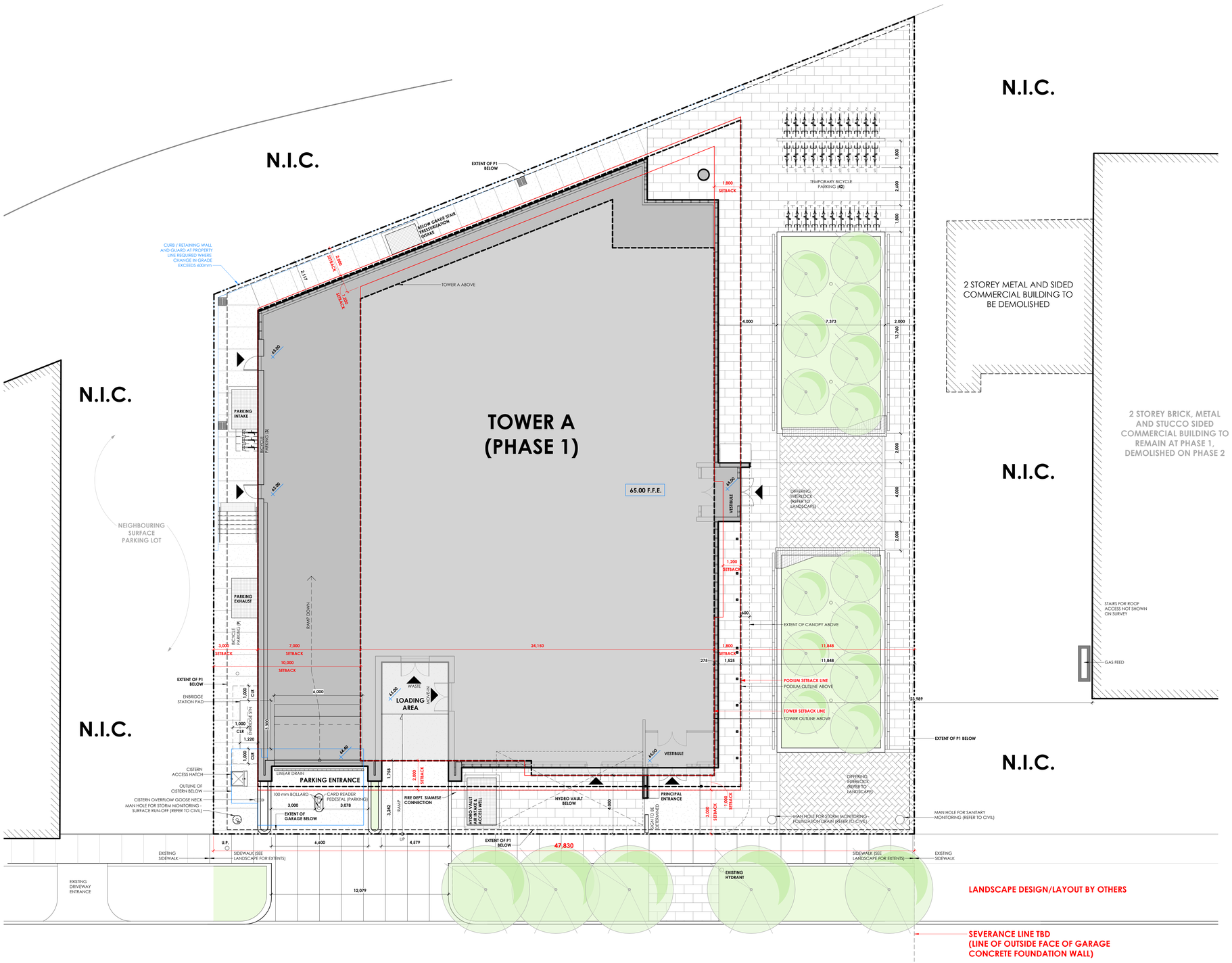
drawing title | titre du dessin

MASTER SITE PLAN

project number | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
scale | échelle	**1 : 200**
date | date	**11/19/24**

drawing number | numéro du dessin

A1-100a



ZONING MATRIX

ITEM	FIELD	DATA		
1	LEGAL DESCRIPTION	SEE LEGAL DESCRIPTION ON SITE PLAN.		
2	CURRENT ZONING PERMITTED USES:	MIXED-USE CENTRE ZONE - MC[2830] S466-h1-h2		
3	LOT AREA	2,215 m²		
4	LOT FRONTAGE	47.817 m		
5	BUILDING AREA	1,284 m²		
6	BUILDING SETBACKS (SEE SCHEDULE 466)	FRONT YARD REQUIRED:	3 m (3 m PROVIDED)	
		REAR YARD (REQUIRED):	2 m (2 m PROVIDED)	
		INTERIOR SIDE YARD (REQUIRED):	3 m (3 m PROVIDED)	
		TOWER SETBACKS:	SEE PLAN & SCHEDULE 466	
7	SUITE COUNT	350 DWELLING UNITS		
8	AMENITY SPACE	REQUIRED:	PROVIDED:	
		SUITE COUNT x 6m² 350 x 6m² **2,100.00 m²**	SHARED INTERIOR AMENITY AREA 1,899.94 m² SHARED EXTERIOR AMENITY AREA 388.26 m² PRIVATE EXTERIOR AMENITY AREA 0.00 m² **TOTAL AMENITY AREA PROVIDED 2,288.19 m²**	
9	BUILDING HEIGHT	**14.73 m** PODIUM ROOF **103.48 m** TOP OF MECHANICAL PENTHOUSE		
10	LOADING ZONE			
11	VEHICLE PARKING	REQUIRED:	PROVIDED:	
		VISITOR: MINIMUM: 0.1 PER UNIT 350 x 0.1 SPACES = 35 SPACES - 12 x 0.1 SPACES = 34 SPACES MAXIMUM REQUIRED: **30 SPACES** **RESIDENTIAL:** MAXIMUM: 1.75 PER UNIT (LESS VISITOR SPACES) 350 x 1.75 SPACES = **613** SPACES - 30 SPACES = **583 SPACES MAX.**	ACCESSIBLE (3660x5200) 1 STANDARD (2600x5200) 29 **TOTAL PROVIDED (VISITOR) 30** ACCESSIBLE (3660x5200) 1 COMPACT (2400x4600) 33 MOTORCYCLE (1300x3000) 6 PARALLEL (2600x6700) 3 STANDARD (2600x5200) 75 **TOTAL PROVIDED (TENANT) 118**	
12	BICYCLE PARKING	REQUIRED: RESIDENTIAL: MINIMUM: 0.5 PER UNIT 350 x 0.5 SPACES = **175 SPACES MIN.**	PROVIDED: HORIZONTAL STACKED 170 VERTICAL 12 **TOTAL PROVIDED 182**	
13	DRIVE AISLES	REQUIRED: 6m WIDE	PROVIDED: 6m WIDE	

CLV GROUP DEVELOPMENTS

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project north

nord reel
true north

no	revisions	date
9	ISSUED FOR SPA	24-11-20
7	ISSUED FOR REVIEW	24-10-07
5	ISSUED FOR REVIEW	24-08-12
4	ISSUED FOR 33% WORKING DRAWINGS	24-08-12
2	RE-ISSUED FOR CLASS 'D' ESTIMATE	24-05-13
1	ISSUED FOR CLASS 'D' ESTIMATE	24-05-17

stamp | timbre

ONTARIO ASSOCIATION OF ARCHITECTS
ANDREW REEVES
LICENCE
6464

architect | architecte

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project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

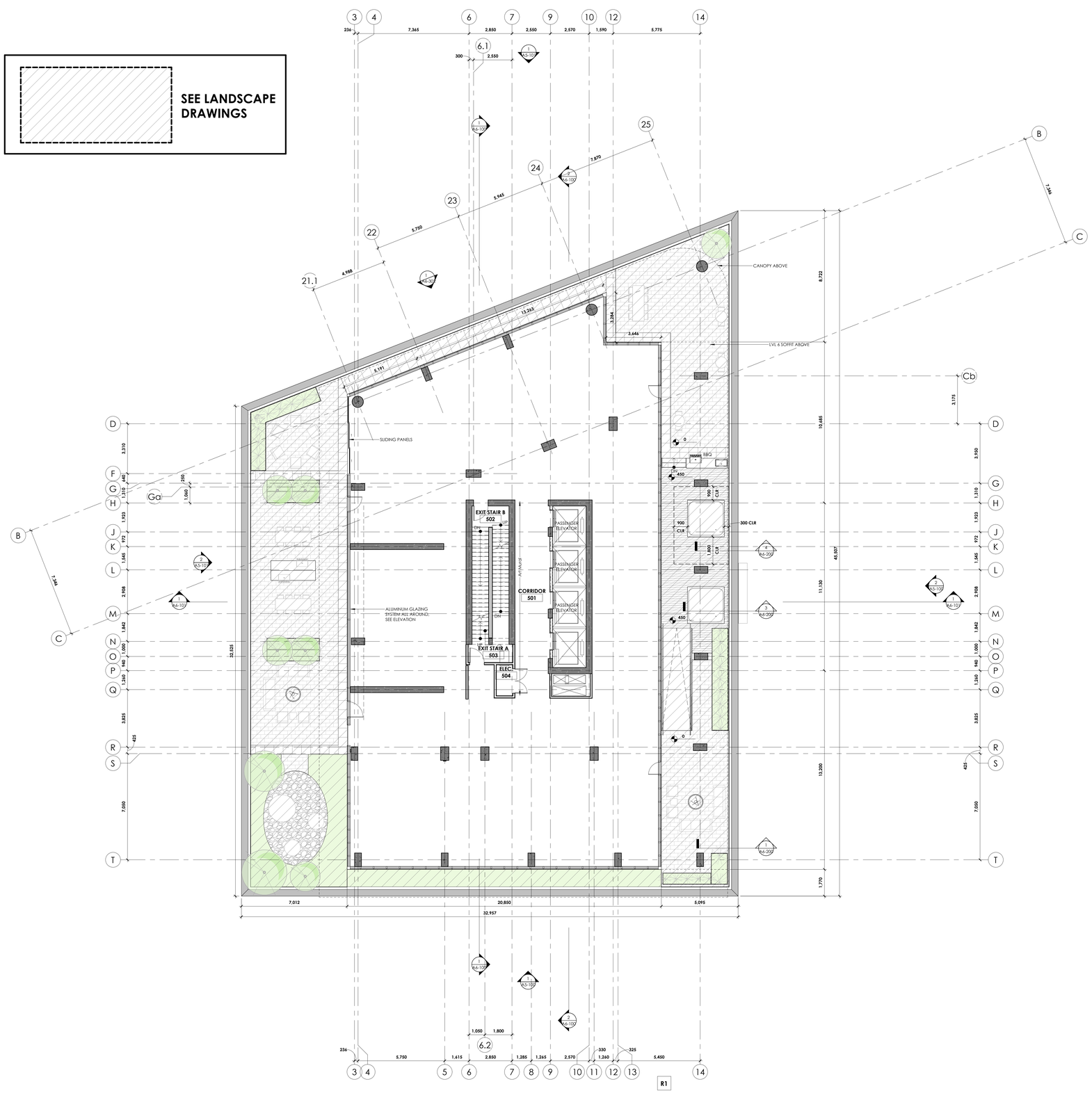
drawing title | titre du dessin

SITE PLAN (PHASE 1)

project number | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
scale | échelle	**As indicated**
date | date	**02/15/24**

drawing number | numéro du dessin

A1-101



GENERAL NOTES:

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

LEGEND:

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

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

LS PODIUM SLAB = 300 THK + SLOPED TOPPING

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900 or 750 DIAM

CONCRETE STRENGTHS:
LS SLABS = 35 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

CLV GROUP DEVELOPMENTS

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nord du projet
project north

nord reel
true north

no	revisions	date
9	ISSUED FOR SPA	24-11-20
4	ISSUED FOR SITE WORKING DRAWINGS	24-08-12
2	RE-ISSUED FOR CLASS 'D' ESTIMATE	24-05-13
1	ISSUED FOR CLASS 'D' ESTIMATE	24-05-17

stamp | timbre

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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

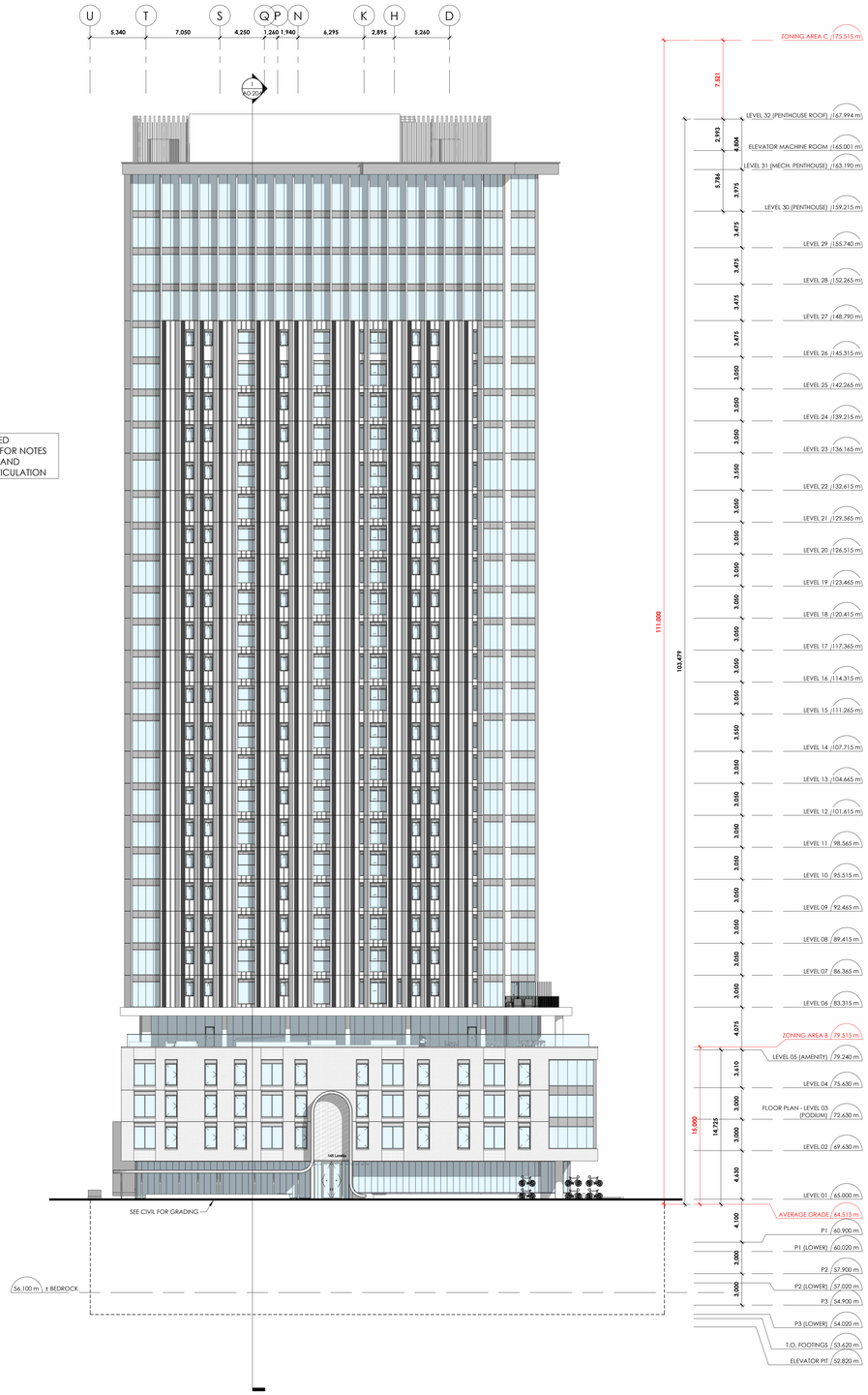
FLOOR PLAN - LEVEL 05 (PODIUM ROOF AMENITY)

project number | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

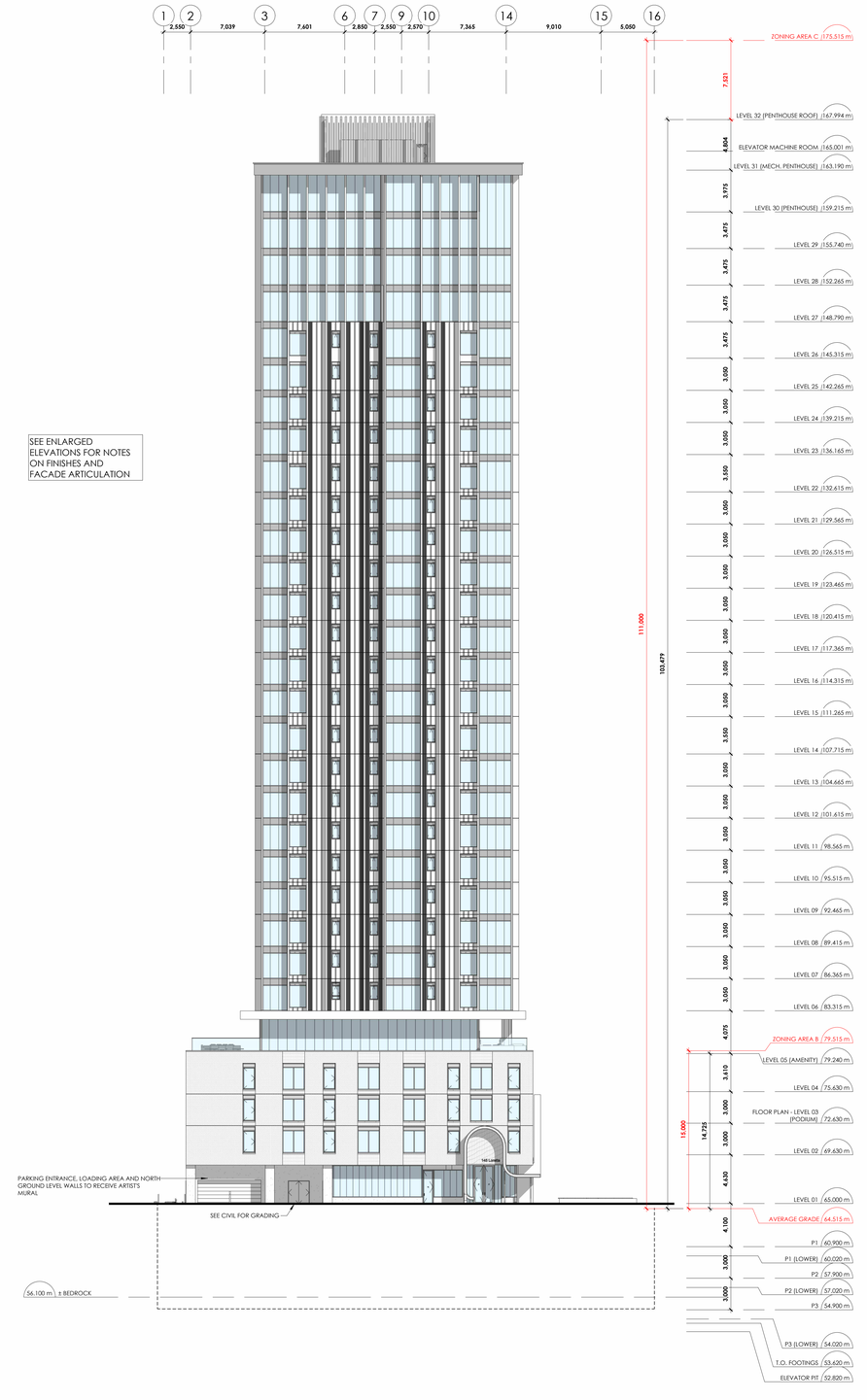
drawing number | numéro du dessin

A2-105

Autodesk Docs://Gladstone & Loretta/2402_145 Loretta CLV JB_Tower A.rvt
2024-11-21 5:05:48 PM



2 A5-100 BUILDING ELEVATION - SOUTH
1 : 200
A2-098



1 A5-100 BUILDING ELEVATION - WEST (LORETTA AVE N)
1 : 200
A2-098

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9 ISSUED FOR SPA	24-11-20
4 ISSUED FOR 33% WORKING DRAWINGS	24-08-12
2 RE-ISSUED FOR CLASS 'D' ESTIMATE	24-05-13
1 ISSUED FOR CLASS 'D' ESTIMATE	24-05-17
no revisions	date

stamp | timbre

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linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

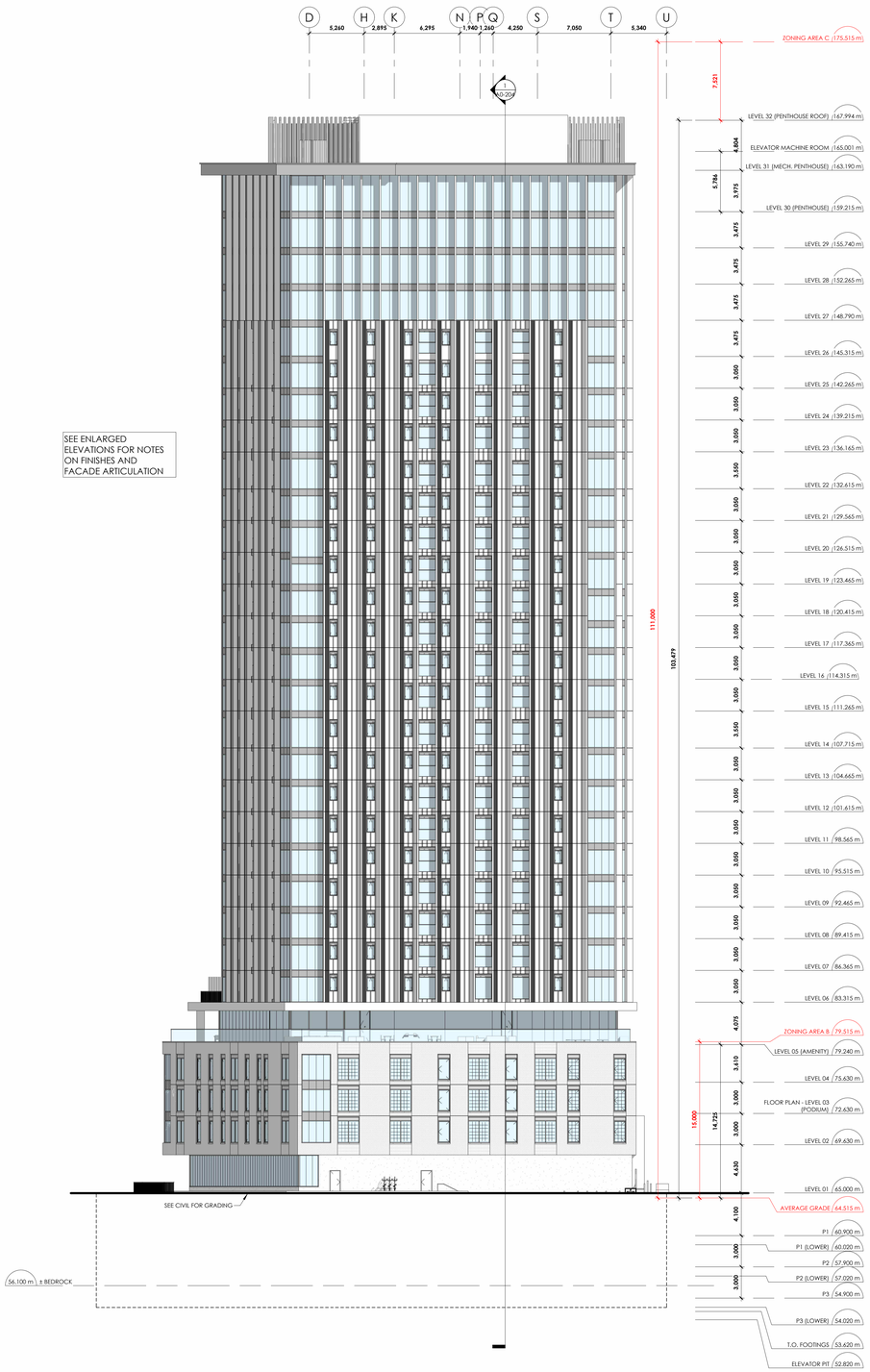
drawing title | titre du dessin

BUILDING ELEVATIONS - WEST AND SOUTH

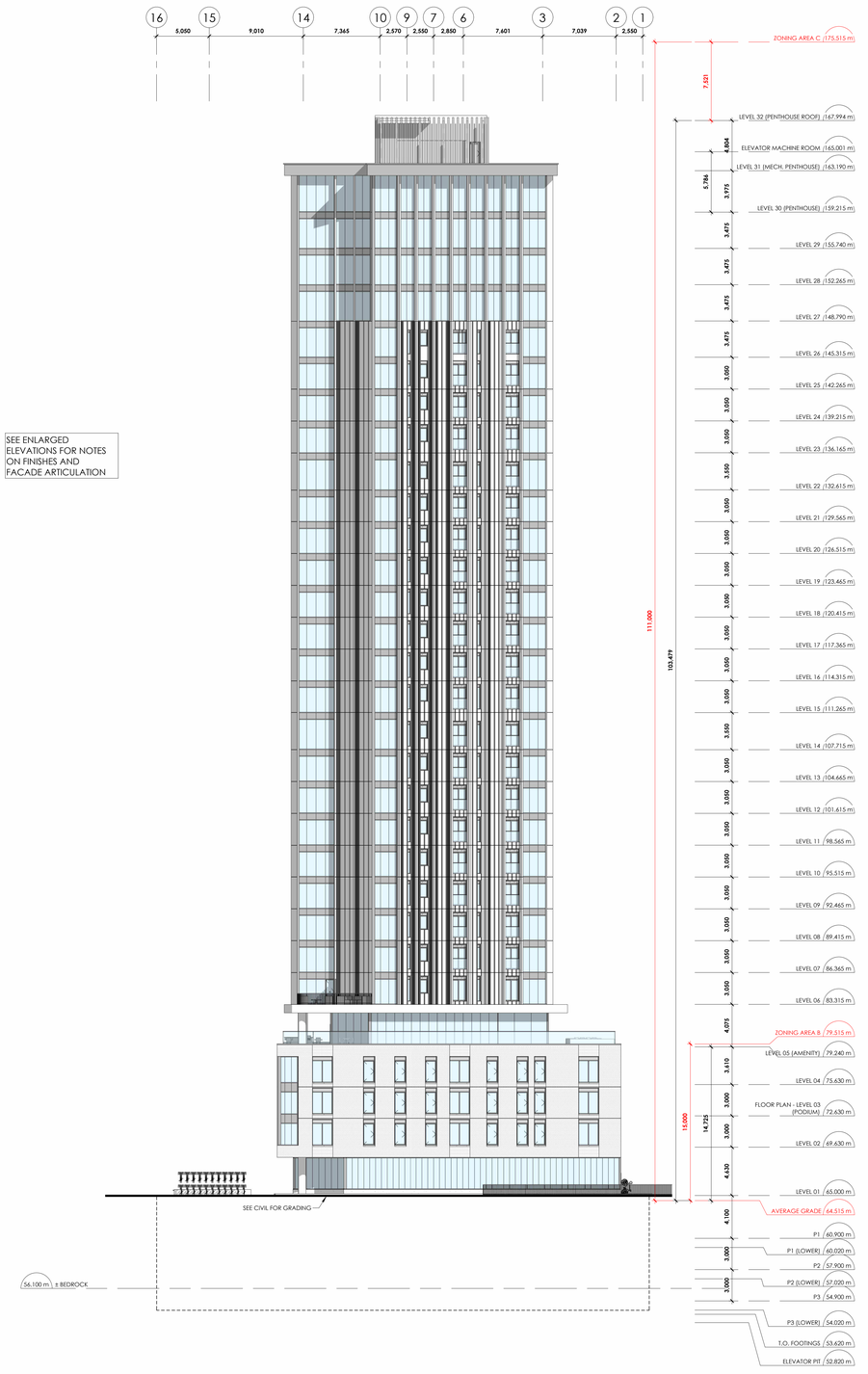
project number | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
scale | échelle	**1 : 200**
date | date	**02/15/24**

drawing number | numéro du dessin

A5-100



2 A5-101 BUILDING ELEVATION - NORTH
1 : 200
A2-098



1 A5-101 BUILDING ELEVATION - EAST
1 : 200
A2-098

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no	revisions	date
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4	ISSUED FOR 33% WORKING DRAWINGS	24-08-12
2	RE-ISSUED FOR CLASS 'D' ESTIMATE	24-05-13
1	ISSUED FOR CLASS 'D' ESTIMATE	24-05-17

stamp | timbre

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STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

BUILDING ELEVATIONS - EAST AND NORTH

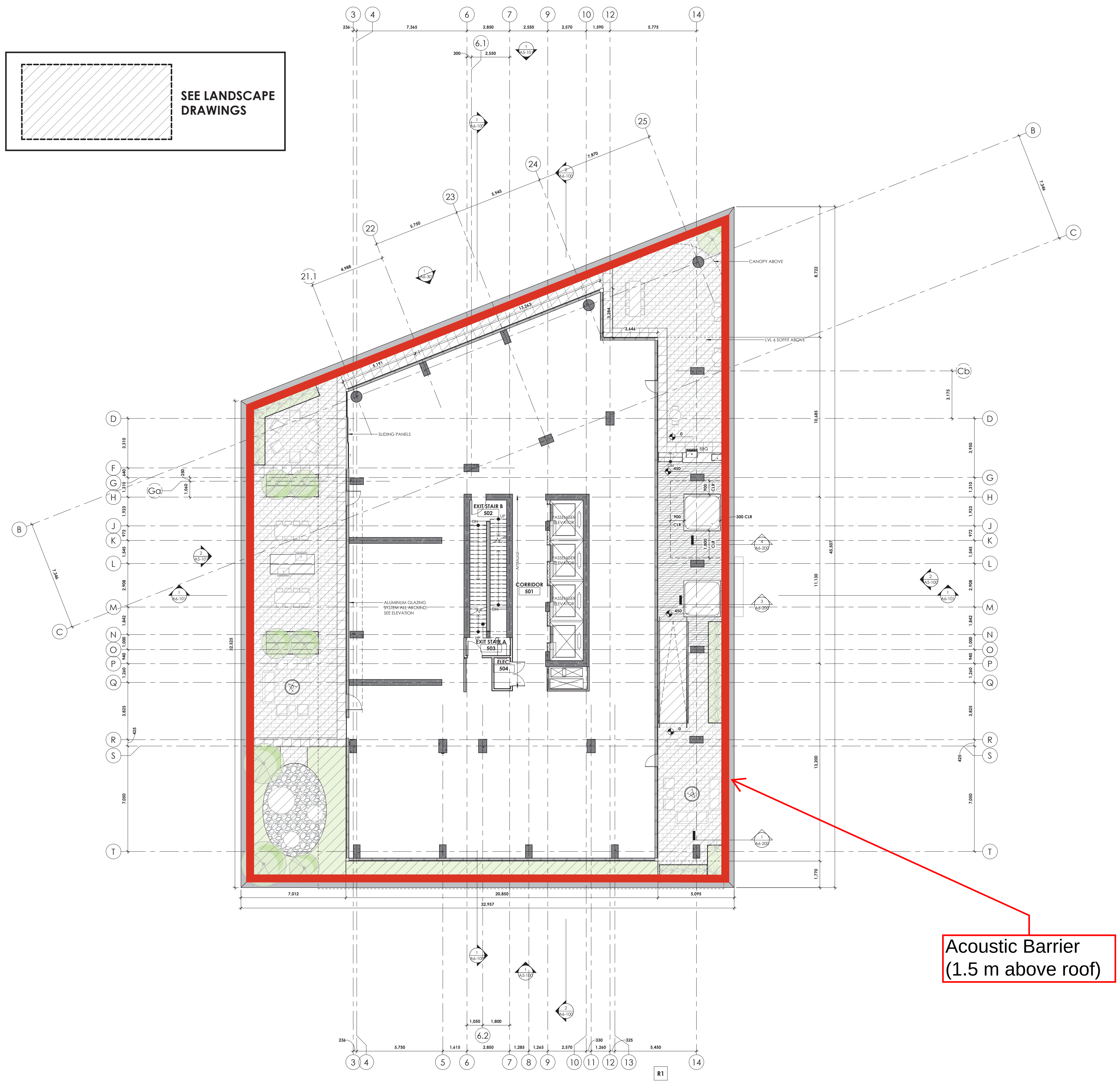
project number | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
scale | échelle	**1 : 200**
date | date	**02/15/24**

drawing number | numéro du dessin

A5-101

Attachment B

Barrier Locations Mark-Up



GENERAL NOTES:

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2. REFER TO **A020** FOR TYPICAL DOOR TYPES
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LEGEND:

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

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

L5 PODIUM SLAB = 300 THK + SLOPED TOPPING

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900 or 750 DIAM

CONCRETE STRENGTHS:
L5 SLABS = 35 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

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nord du projet
project north

nord reel
true north

no	revisions	date
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4	ISSUED FOR 33% WORKING DRAWINGS	24-08-12
2	RE-ISSUED FOR CLASS 'D' ESTIMATE	24-05-13
1	ISSUED FOR CLASS 'D' ESTIMATE	24-05-17

stamp | timbre

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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 | numero du projet	**2402**
drawn | dessiné	**JH / DL / MP**
checked | verifié	**JP / AR**
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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	65.55	53.42	--	--	65.81 *
Total					65.81 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (dBA)
1.SOMERSET	1.50	55.19	55.19
Total			55.19 dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (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 !(km/h) ! Speed !/Train! # loc !/Train! # Cars! 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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	65.62	52.95	--	--	65.85 *
Total					65.85 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (dBA)
1.SOMERSET	1.50	50.52	50.52
Total			50.52 dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (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 !(km/h) ! Speed !/Train! # loc !/Train! # Cars! 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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	67.58	55.45	--	--	67.84 *
Total					67.84 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 !(km/h) ! Speed !/Train! # loc !/Train! # Cars! 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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	67.88	55.18	--	--	68.11 *
Total					68.11 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 !(km/h) ! Speed !/Train! # loc !/Train! # Cars! 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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq
1.O-Train	62.65	50.52	--	--	62.91 *

Total 62.91 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq
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 height (m)	Road Leq (dBA)	Total Leq (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 Leq (m)	Total Leq (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 !(km/h) ! Speed !/Train! # loc !/Train! # Cars! 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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	63.43	50.60	--	--	63.65 *
Total					63.65 dBA

* Bright Zone !

Result summary (night)

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

* Bright Zone !

Result summary (night)

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

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	55.64	42.45	--	--	55.84 *
Total					55.84 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 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 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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	50.34	36.74	--	--	50.53 *
Total					50.53 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	57.51	44.85	--	--	57.74 *
Total					57.74 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 height (m)	Road Leq (dBA)	Total Leq (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 Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.O-Train	49.52	35.95	--	--	49.71 *
Total					49.71 dBA

* Bright Zone !

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (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

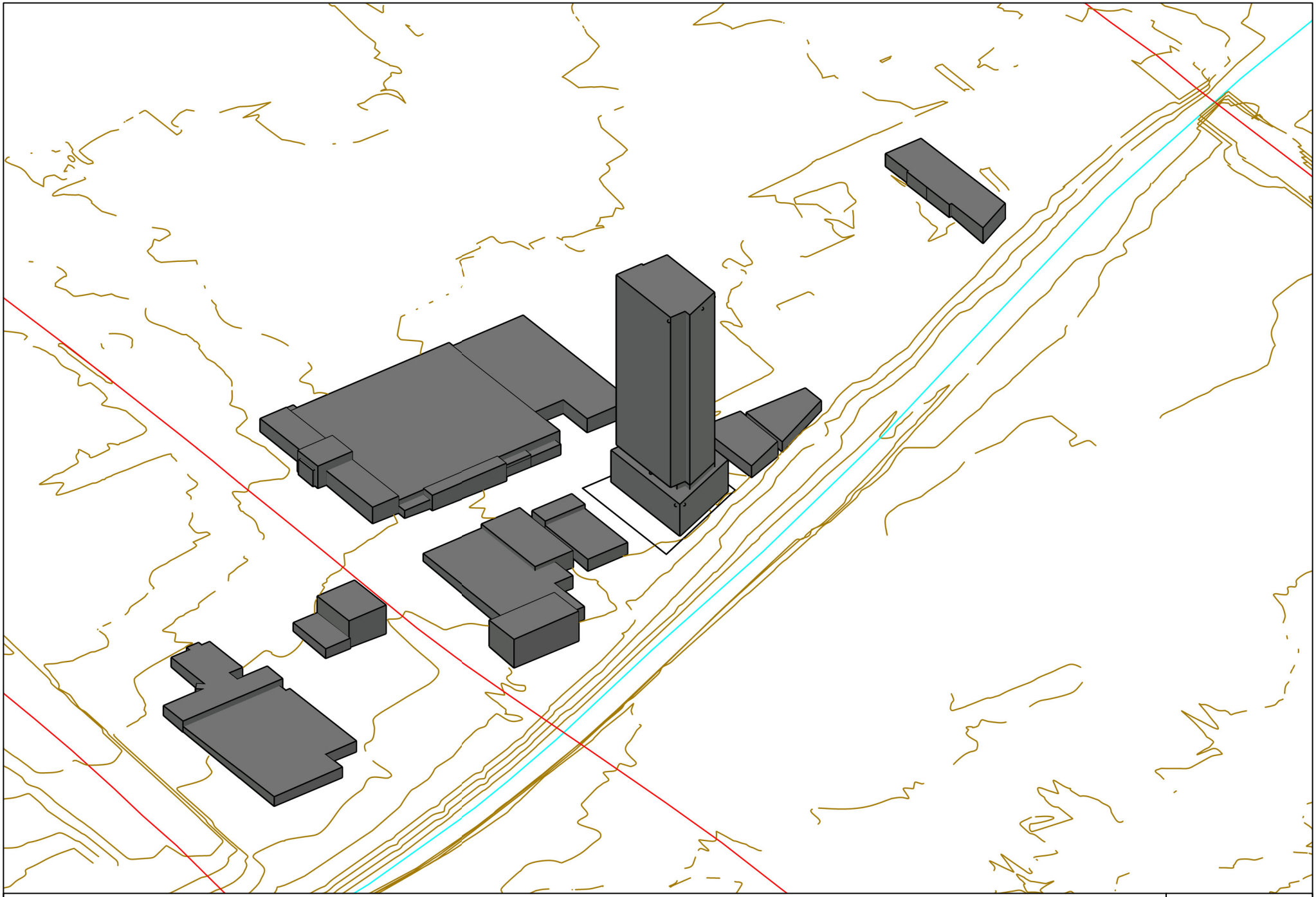
Result summary (day)

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

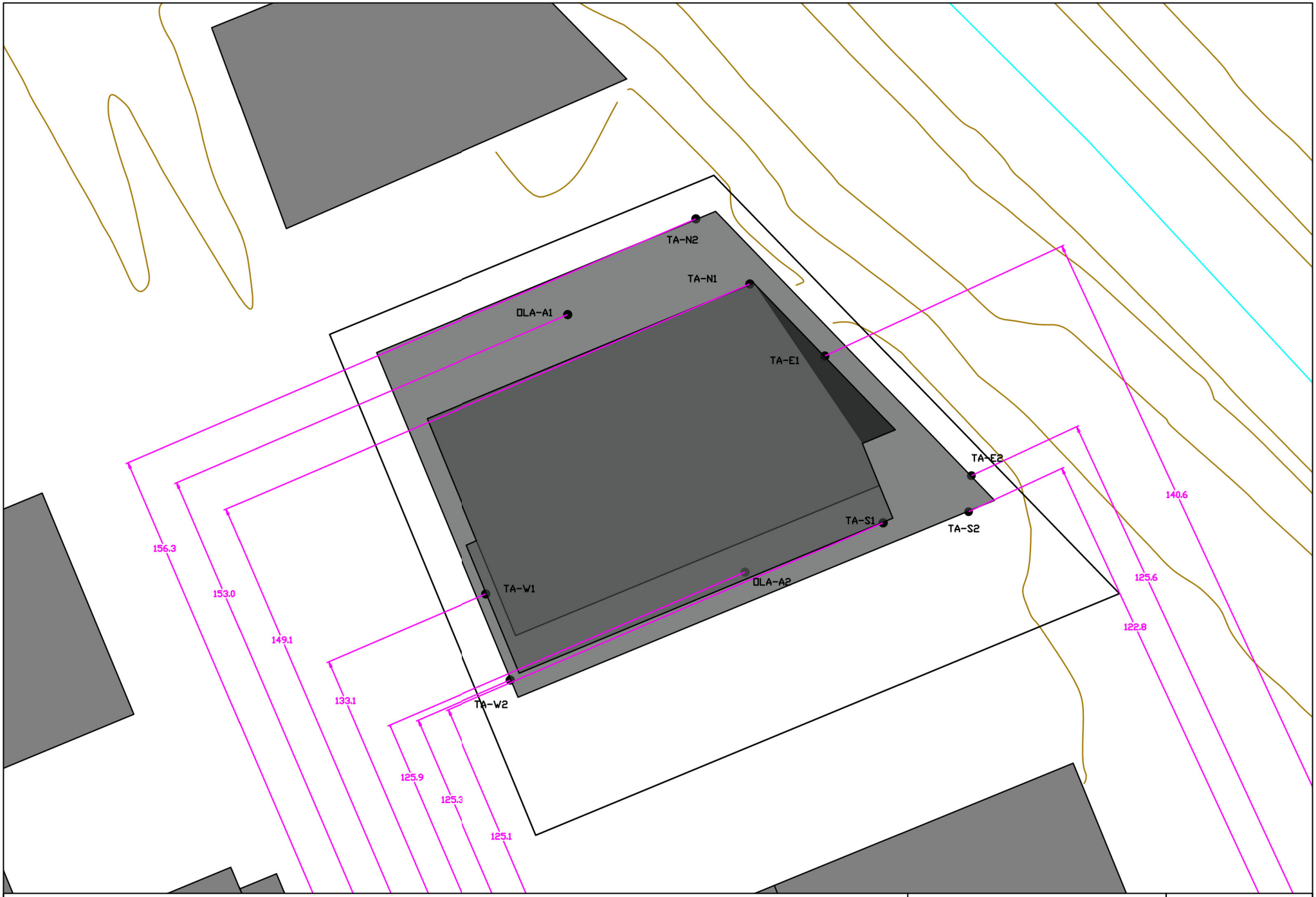


NOISE IMPACT STUDY - 145 LORETTA AVENUE NORTH, OTTAWA

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

FIGURE C.1

2024/11/22



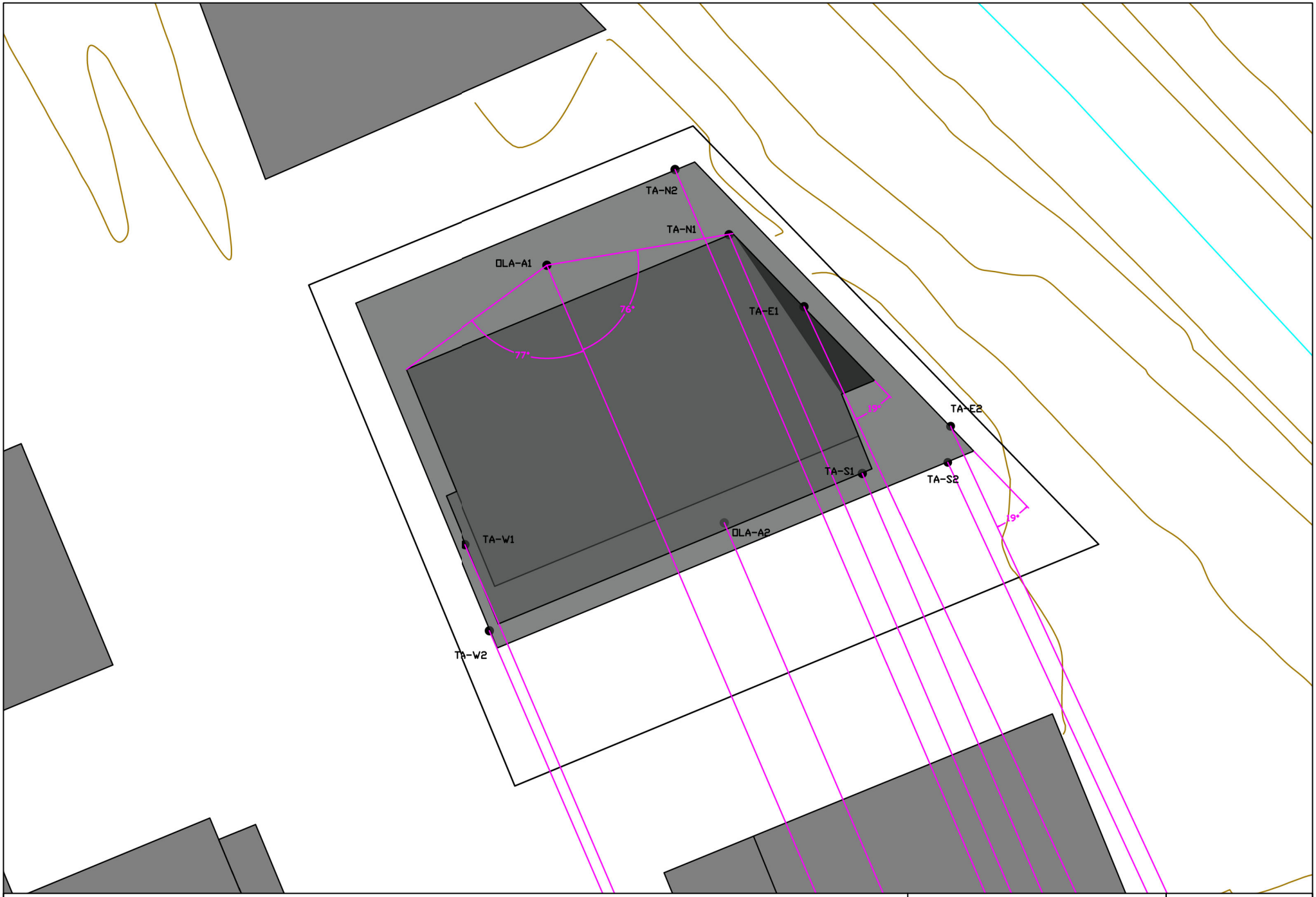
RECEPTOR DISTANCES FROM GLADSTONE AVENUE

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

ALL DIMENSIONS IN METRES

FIGURE C.2

2024/11/20



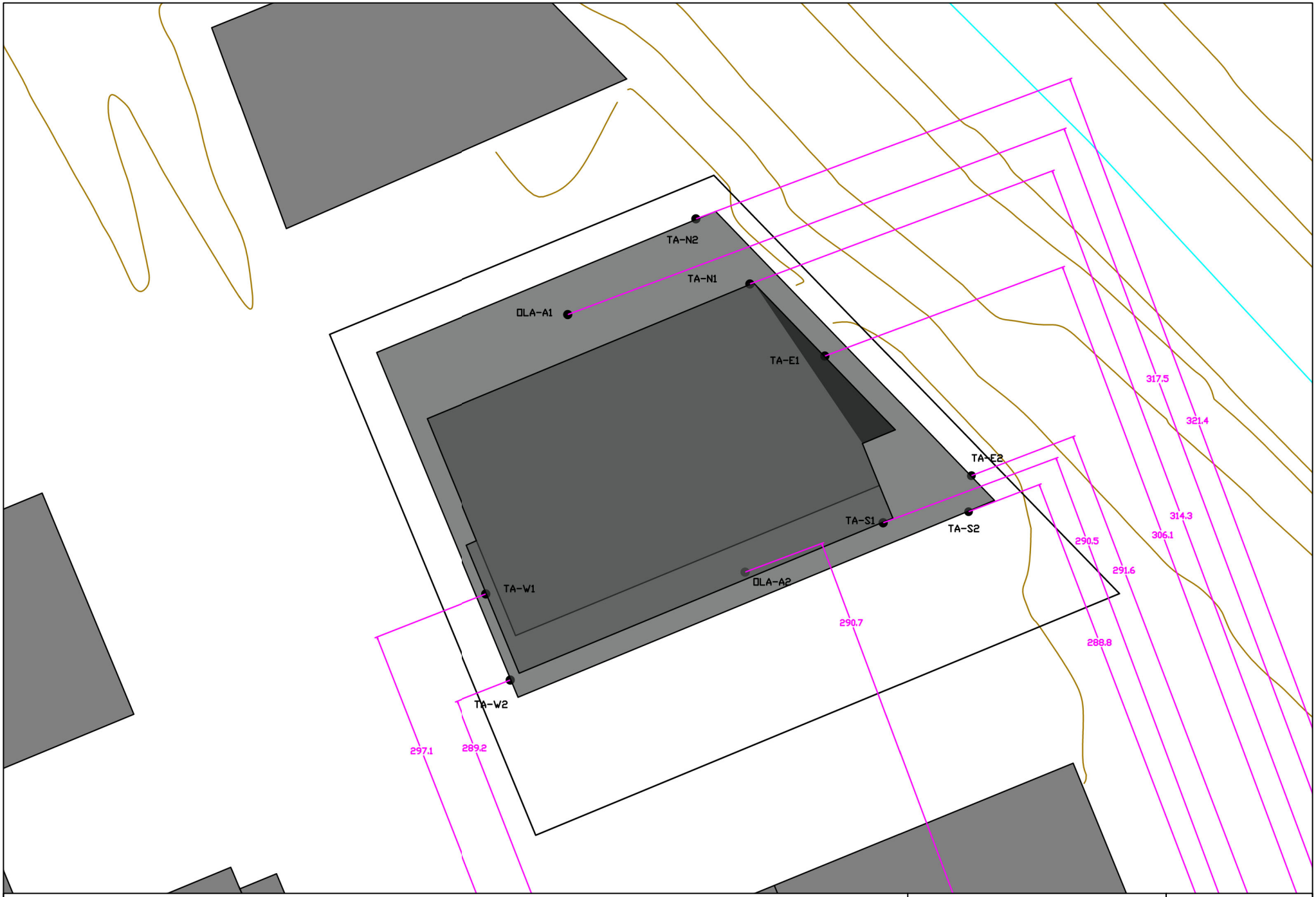
RECEPTOR EXPOSURE ANGLES TO GLADSTONE AVENUE

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

ALL DIMENSIONS IN METRES

FIGURE C.3

2024/11/22



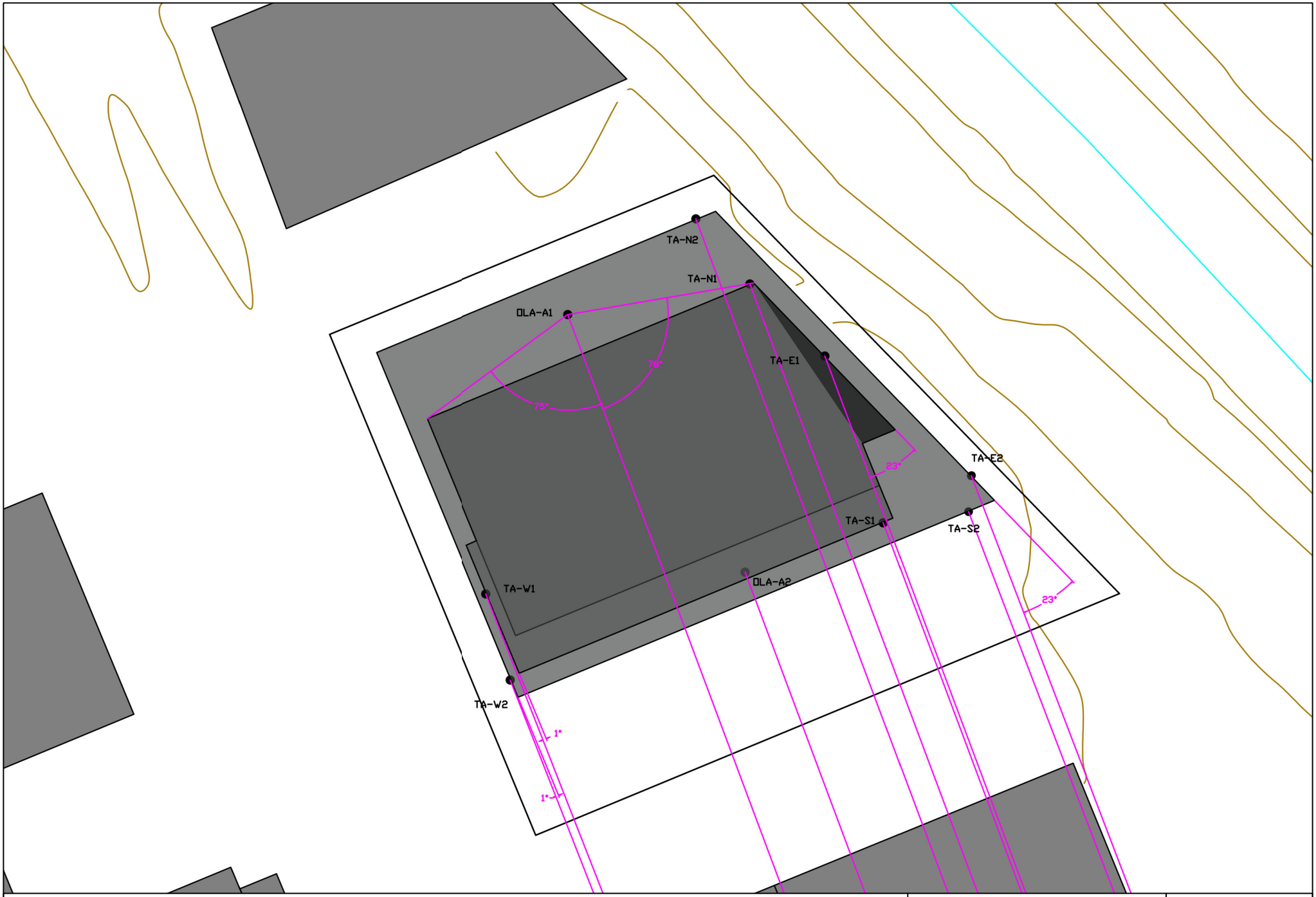
RECEPTOR DISTANCES FROM HIGHWAY 417

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

ALL DIMENSIONS IN METRES

FIGURE C.4

2024/11/22



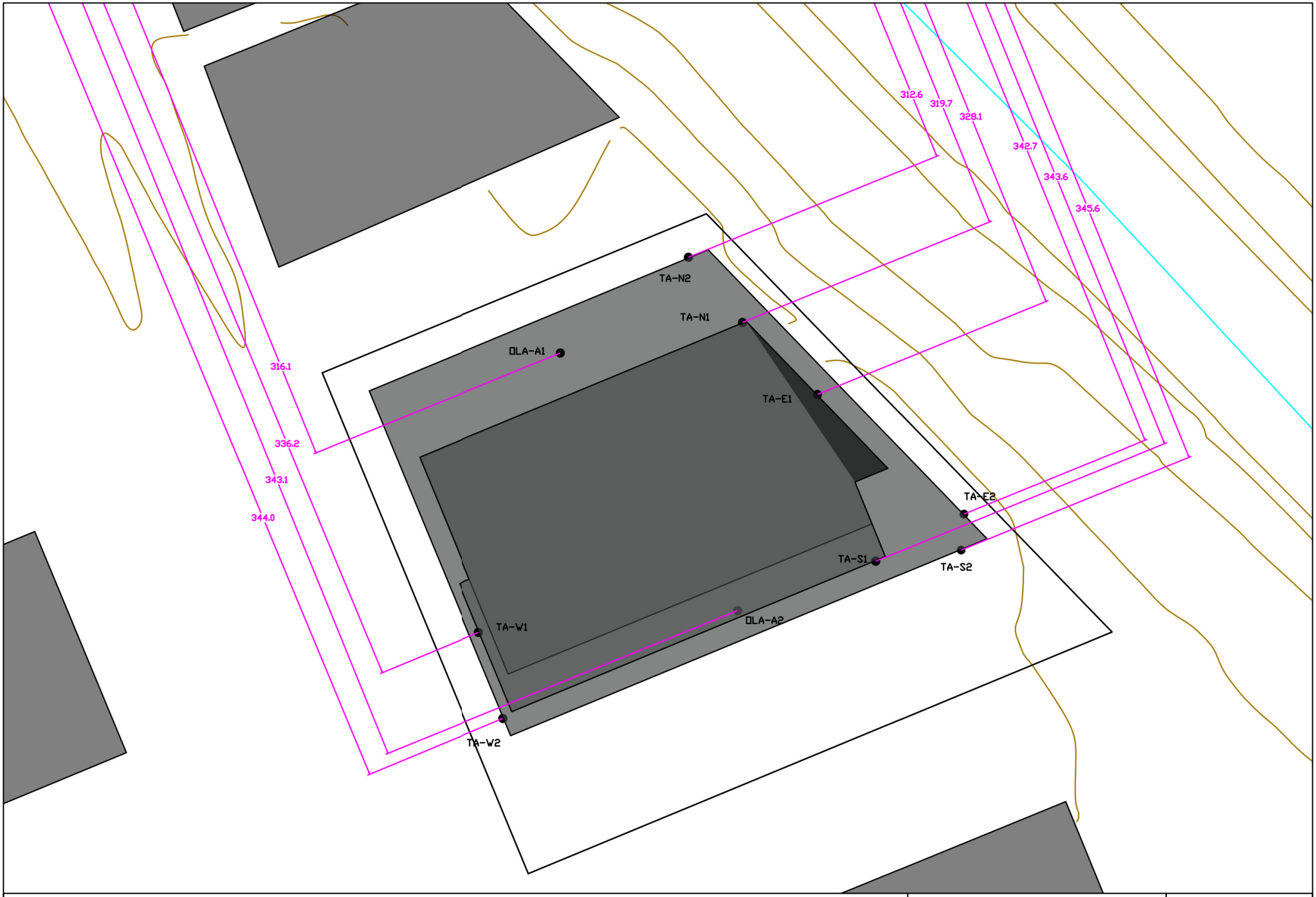
RECEPTOR EXPOSURE ANGLES FROM HIGHWAY 417

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

ALL DIMENSIONS IN METRES

FIGURE C.5

2024/11/22



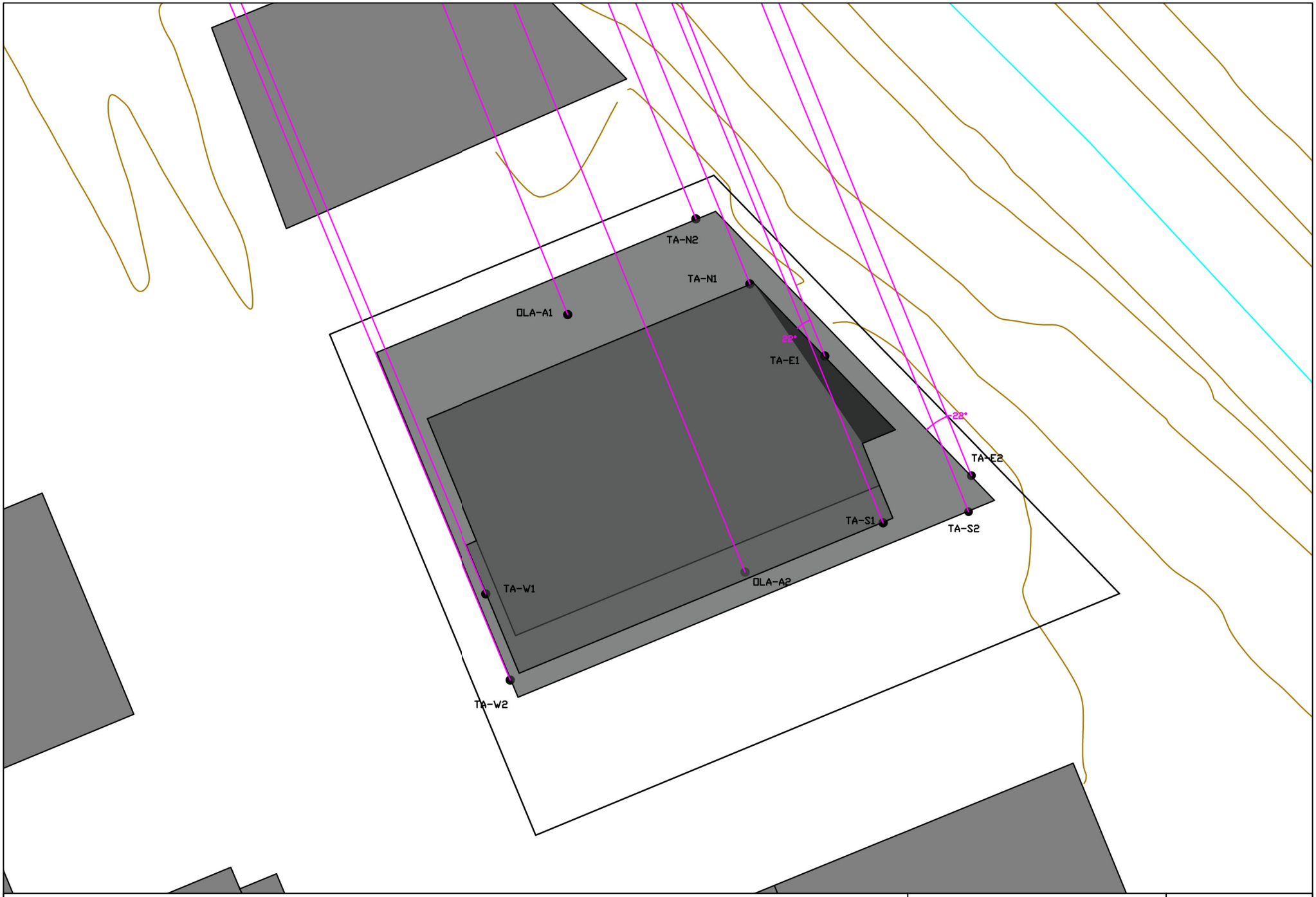
RECEPTOR DISTANCES FROM SOMERSET ST W

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

ALL DIMENSIONS IN METRES

FIGURE C.6

2024/11/22



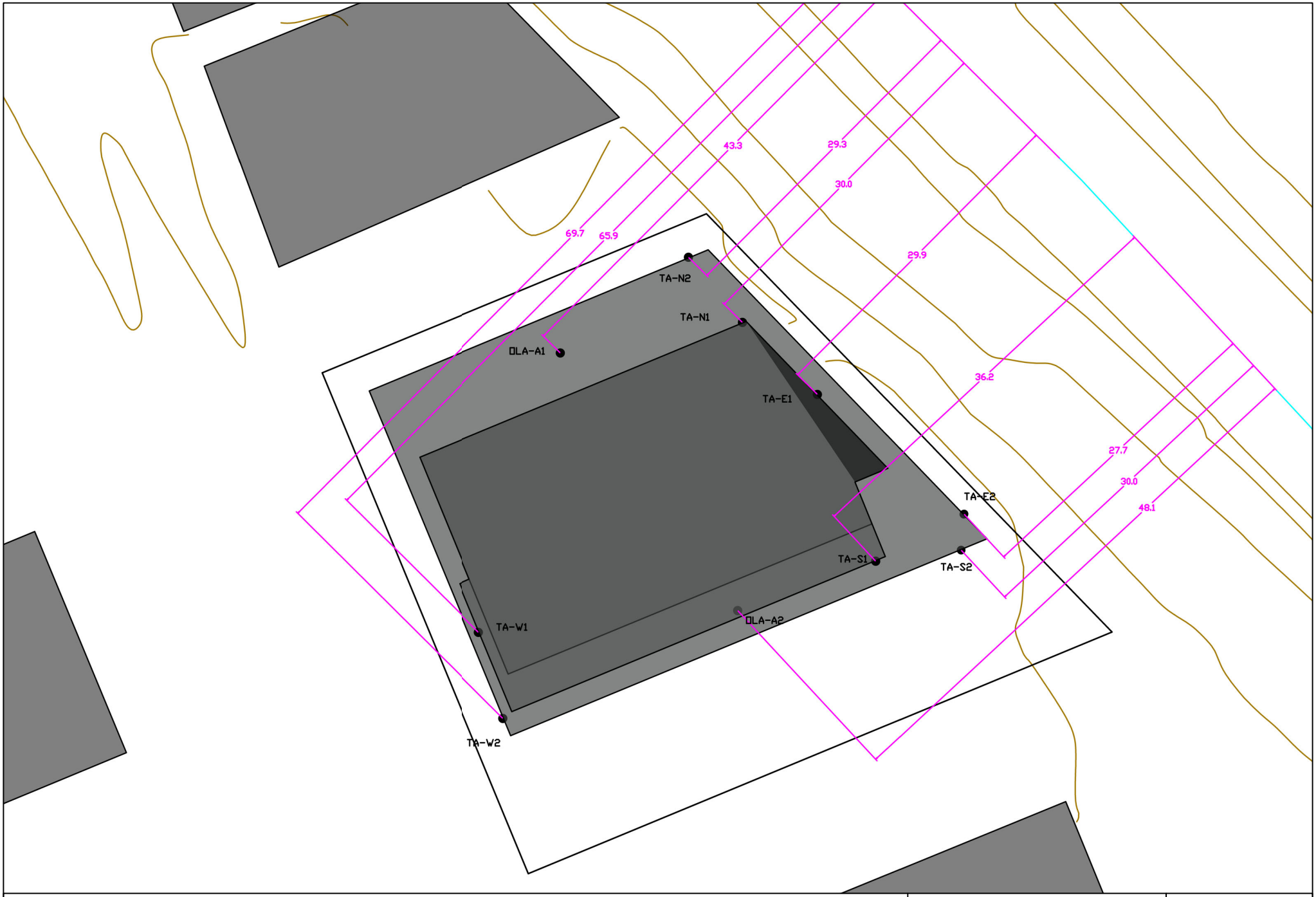
RECEPTOR EXPOSURE ANGLES FROM SOMERSET ST W

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

ALL DIMENSIONS IN METRES

FIGURE C.7

2024/11/22



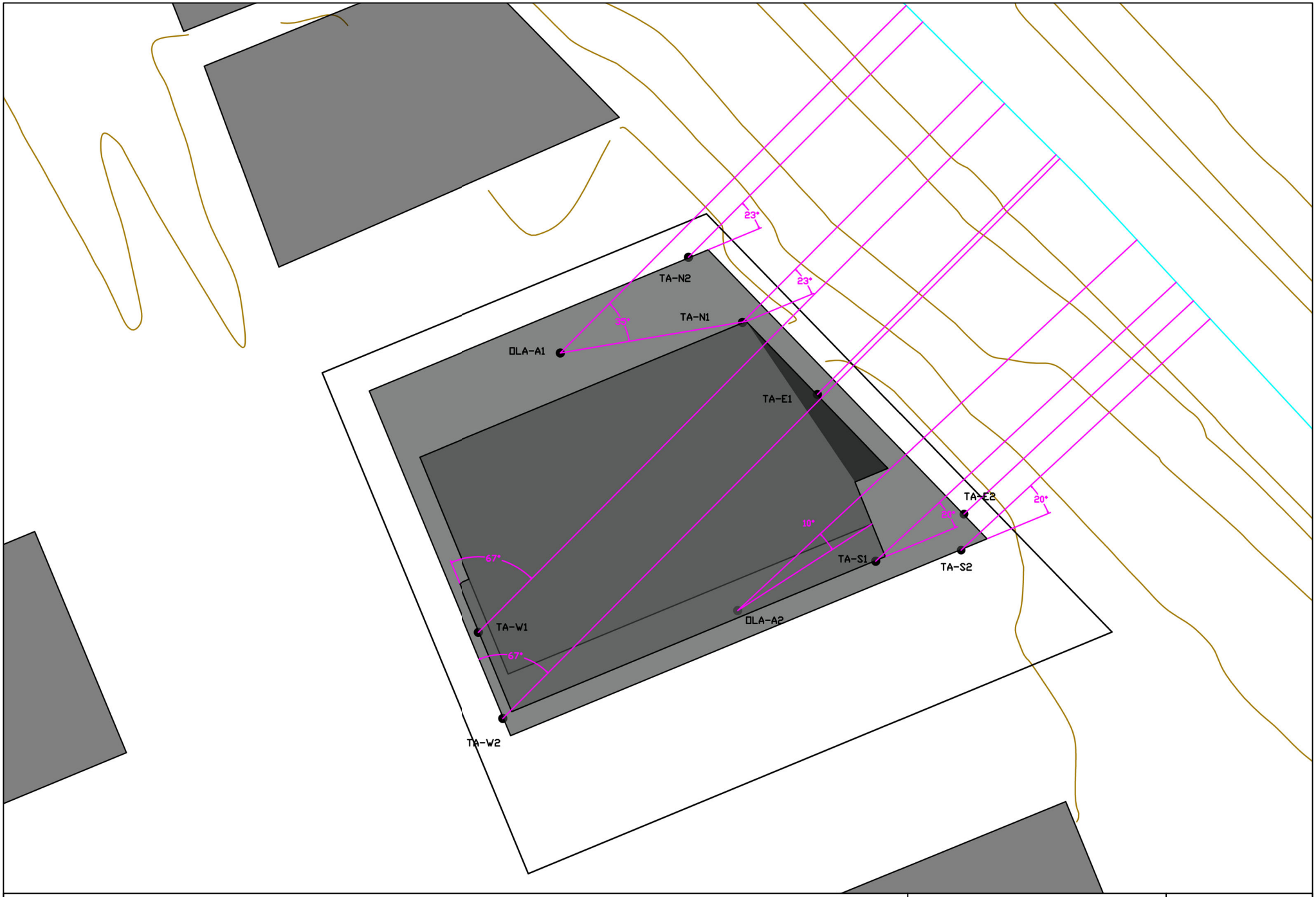
RECEPTOR DISTANCES FROM O-TRAIN TRILLIUM LINE

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

ALL DIMENSIONS IN METRES

FIGURE C.9

2024/11/22



RECEPTOR DISTANCES FROM O-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

Ontario

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