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254 Argyle Avenue, Ottawa

Noise Impact Feasibility Report

254 Argyle Avenue

City of Ottawa

Noise Impact Feasibility Report

Prepared By:

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Novatech File: 123062
Ref: R-2024-041

Submitted: September 16, 2024
Revised: November 15, 2024
Revised: May 23, 2025

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May 23, 2025

City of Ottawa
Planning and Infrastructure Approvals
110 Laurier Street West, 4th Floor
Ottawa, ON, K1P 1J1

Attention: **Eric Forhan, Planner, Development Review**

Reference: **Noise Impact Feasibility Report – 254 Argyle Avenue**
Our File No.: 123062

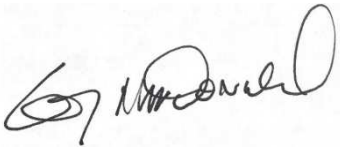
Please find enclosed the 'Noise Impact Feasibility Report' for the above-noted development located at 254 Argyle Avenue in the City of Ottawa. This report is being submitted in support of the site plan application.

This report evaluates the environmental impact of noise from traffic and assesses the feasibility of mitigation measures to attenuate noise to acceptable levels.

Please contact the undersigned should you have any questions or comments pertaining to the enclosed report.

Yours truly,

NOVATECH



Greg MacDonald, P. Eng.
Director, Land Development and Public Sector Infrastructure

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1.0 INTRODUCTION

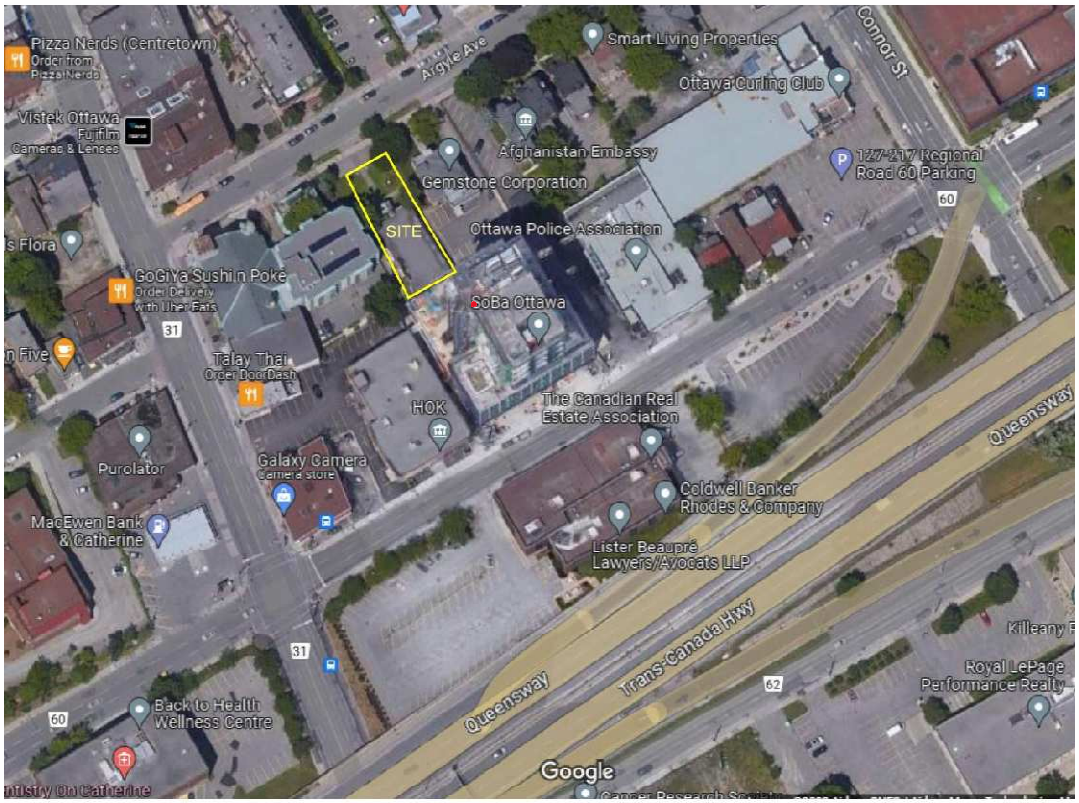
Novatech has been retained to prepare a Noise Impact Feasibility Report on behalf of Azure Urban Developments for the proposed site development located at 254 Argyle Avenue within the City of Ottawa. The purpose of this report is to support the site plan application for the subject development and predict and mitigate excess noise. **Figure 1** Key Plan shows the site location.

The subject site is surrounded by the following roads:

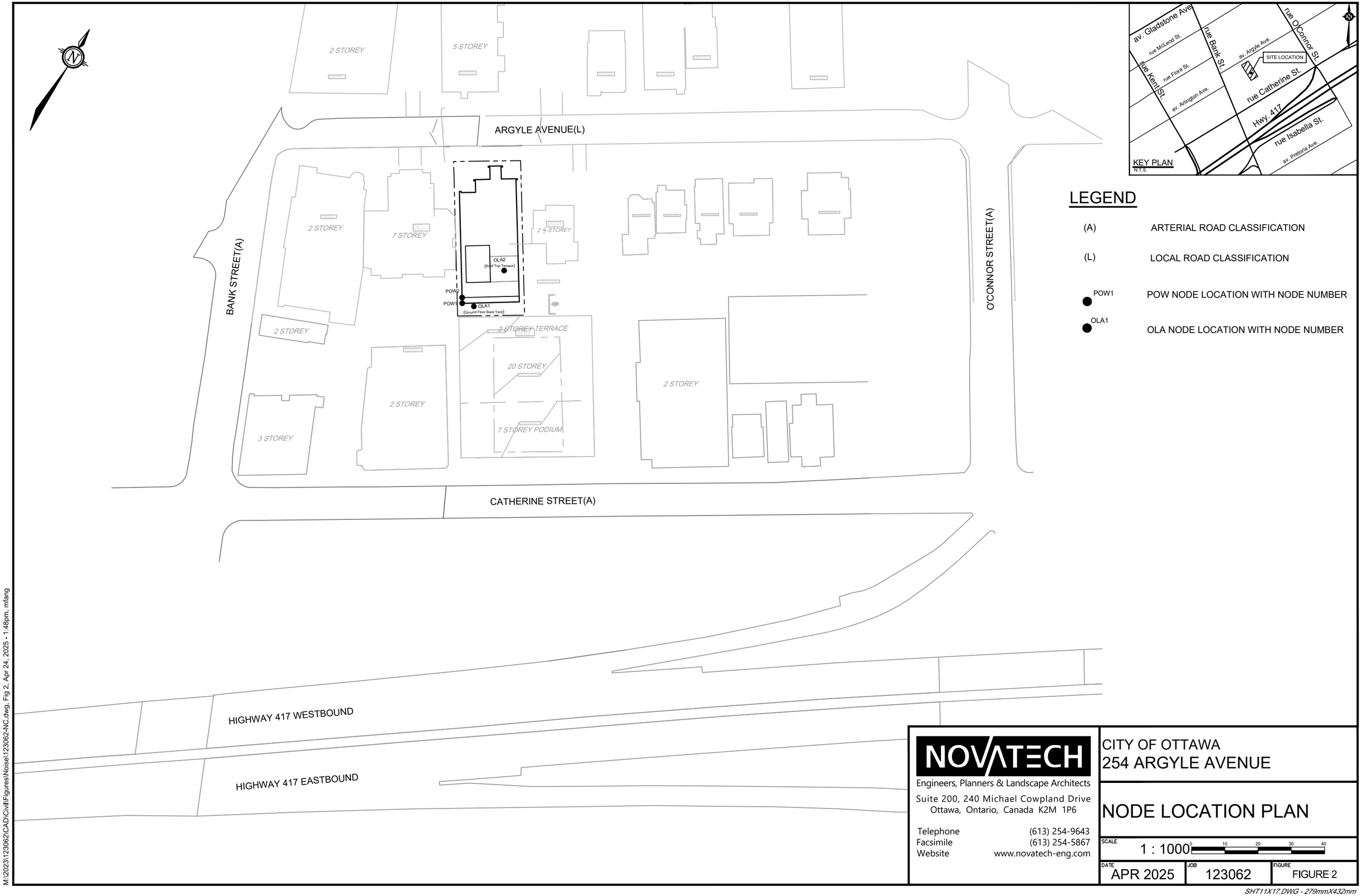
- Argyle Avenue to the north
- Bank Street to the west
- O'Connor Street to the east, and
- Catherine Street, and Highway 417 to the south

An aerial of the subject site is provided in **Figure 1 – Key Plan – 254 Argyle Avenue.**

Figure 1: Key Plan – 254 Argyle Avenue



The proposed development will include a nine (9) storey apartment building, complete with two (2) levels of underground parking, and with roof top terraces. As the existing church on the property is of historical significance the existing building is to be incorporated into the ground level of the proposed structure as a wine bar. The proposed building will have a footprint of 556.9m^2, with a total of 84 residential units, a gym, bike workshop, and a pet wash station. The locations of the nodes which stand for the worst noise scenario used to assess the noise levels at the building are included in **Figure 2 – Receiver Location Plan**.



LEGEND

(A)	ARTERIAL ROAD CLASSIFICATION
(L)	LOCAL ROAD CLASSIFICATION
POW1 ●	POW NODE LOCATION WITH NODE NUMBER
OLA1 ●	OLA NODE LOCATION WITH NODE NUMBER

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CITY OF OTTAWA
254 ARGYLE AVENUE

NODE LOCATION PLAN

SCALE 1 : 1000 (0 10 20 30 40)

DATE	JOB	FIGURE
APR 2025	123062	FIGURE 2

SHT11X17.DWG - 279mmX432mm

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This report follows the recommendations of the City of Ottawa's Environmental Nosie Control Guidelines (ENCG) and MOEE NPC-300 Environmental Noise Guideline.

2.0 NOISE CRITERIA, NOISE SOURCES AND NOISE ATTENATION METHODS

The City of Ottawa is concerned with noise from aircraft, roads, transitways, and railways, as expressed in **Tables 2.2a: Sound Level Limit for Outdoor Living Areas – Road and Rail, Table 2.2b: Sound Level Limit for Indoor Living Areas Road and Rail, and Table 2.2c: Supplementary Sound Level Limits for Indoor Spaces – Road and Rail of the ENCG**. The maximum suggested sound levels for outdoor and indoor living areas between 7am and 11pm are 55 dBA and 45 dBA, respectively. The maximum suggested sound level for indoor bedrooms is 40dBA between 11pm and 7am. For reference, Tables 2.2a, 2.2b and 2.2c of the ENCG are included in **Appendix A**.

Outdoor Living Area and Plane of Window receivers are defined as:

- **Outdoor Living Area (OLA)**: The outdoor amenity area provided for quiet enjoyment of the outdoor environment during the daytime period (i.e., backyards, terraces, and patios). OLA noise levels are considered 3.0m from the building façade, 1.5m above grade.

- **Plane of Window (POW)**: The indoor living space where the sound levels will affect the living room area during daytime hours and bedrooms during nighttime hours. POW noise levels are considered inside the building, 1.5m above the ground**.**

The noise level criteria are summarized in **Table 1:**

Table 1: Noise Level Criteria

Time Period	Receiver Location	Noise Level Criteria (Leq)
Daytime (07:00 – 23:00)	Outdoor Living Area (OLA)	55 dBA
Daytime (07:00 – 23:00)	Plane of Window (POW) at Living/Dining Rooms	45 dBA
Nighttime (23:00 – 07:00)	Plane of Window (POW) at Bedrooms/Sleeping Quarter	40 dBA

2.1 Noise Sources

The City of Ottawa Official Plan stipulates that a noise study shall be prepared when a new development is proposed within 100 metres of an arterial, major collector or collector roadway, or a rapid-transit corridor. The proposed site is subject to noise pollution from nearby Highway and arterial roadways. There are no railway, airport, or stationary noise sources that affect this site. **Table 2** details the road noise sources for the site.

Table 2: Traffic and Roadway Parameters

	Bank Street	Catherine Street*	Hwy 417
Roadway Classification	4-Lane Urban Arterial Undivided	3-Lane Urban Arterial Undivided	6-Lane Highway
Annual Average Daily Traffic (AADT)	30,000 vehicles/day	22,500 vehicles/day	18,333/lane vehicles/day
Day/Night Split (%)	92/8	92/8	92/8
Medium Trucks (%)	7	7	7
Heavy Trucks (%)	5	5	5
Posted Speed	50 km/hr	50 km/hr	100 km/hr

*The average Catherine Street AADT assumed in this report is based on average each lane AADT = 7,500.

Catherine Street is a 3-lane one-way arterial road and can not be best identified as any one road type in Table B of Appendix B: "Table of Traffic and Road Parameters to Be Used for Sound Predictions" of the ENCG**.** The 4 Lane Urban Arterial Undivided (4-UAU) with an AADT of 30,000 vehicles per day and the 2 Lane-Urban Arterial-Undivided (2-UAU) with an AADT of 15,000 vehicles per day, both average AADT=7,500 vehicles per day per lane. This report assumes the AADT of the 3 lane Catherine Street is 3 X 7,500 = 22,500 vehicles per day.

2.2 Methods for Noise Attenuation

When OLA or POW sound levels are predicted to be approximately equal to or less than the maximum suggested levels in ENCG, attenuation measures are not required. If the predicted noise levels are found to exceed the limits, noise mitigation and /or warning clauses are required. Warning clauses are discussed in Section 2.5. The City of Ottawa's preferred noise mitigation methods are:

- Increasing the amount of soft ground between the noise sources and noise receptor,
- Inserting noise insensitive land between the noise source and the noise receptor,
- Orientating the building to provide shelter to noise sensitive areas,
- Installing acoustic (noise) barriers,
- Installing air conditioning and forced air ventilation, and
- Enhancing construction techniques and construction quality.

2.3 Noise Barrier Requirements

Acoustic (noise) barriers are typically the most effective noise mitigation measure listed in Section 2.2. However, acoustic barriers are also typically visually unappealing, expensive to install and maintain, and reduce outdoor living space. Acoustic barriers are typically only considered when all other noise mitigation techniques listed in Section 2.2 are not available or sufficient to reduce predicted noise levels below the maximum allowable. For this site noise mitigation measures that are economically and administratively feasible will be considered.

Acoustic barriers, if required, must conform to Part 3 of the City of Ottawa's Environmental Noise Control Guidelines, and include the following characteristics:

- Minimum height of 2.2m; Maximum height of 2.5m, unless approved by the City,
- Situated 0.30m inside the private property line,
- A surface mass density not less than 20kg/m^2, and
- No holes or gaps.

2.4 Ventilation Requirements

A forced air heating system with provisions for a central air conditioning system is required if the plane of window daytime noise levels are between 55 dBA and 65 dBA and/or the nighttime noise levels are between 50 dBA and 60 dBA.

The installation of a central air conditioning system is required when the daytime noise level exceeds 65 dBA and/or the nighttime noise level exceeds 60 dBA.

2.5 Warning Clauses

When predicted noise levels exceed the specified criteria, the City of Ottawa and the MOE recommend warning clauses be registered as a notice on title and incorporated into the lease/rental/sale agreements to warn potential purchaser/buyers/tenants of the possible elevated noise levels.

Typical warning clauses should be registered as shown below. Warning clauses are extracted from Part 4, Appendix A the City of Ottawa ENCG and excerpts have been provided in **Appendix A** of this report**.** As stated in the City of Ottawa ENCG, due to the variation of noise impacts for any given site, it may be necessary to amend the example warning clauses to recognize the site conditions in each development.

It is recommended that the following noise clauses be registered on title and incorporated into the agreement of purchase and sales as required. Results can be found in **Table 4&5** from **Section 3.0** of this report:

Type A

> "Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and Ministry of the Environment."
>
> "To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation include:
>
> - An acoustic barrier"
>
> "To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features."
>
> "The acoustic barrier 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."

Additionally, if a tolerance of 5 dBA is being considered in some areas, it is recommended an additional noise clause be registered on title and incorporated into the agreement of purchase and sales:

Type B

"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 by up to 5 dBA."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. OLA1 (e.g. Ground level back yards) is shielded from noise by adjacent buildings, which acts as an acoustical barrier. For OLA2 (e.g. Roof top) noise levels exceed 60 dBA by 5 dBA, however acoustical barrier on roof top is not feasible."

Type C

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and Ministry of the Environment."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation may include:

- Multi-pane glass
- Double brick veneer"

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

"This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow 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"

Type D

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and Ministry of the Environment."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation may include:

- Multi-pane glass
- Double brick veneer
- High sound transmission class walls"

> "To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features."
>
> "This dwelling unit has also been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment"

For units with multiple types of warning clauses, similar/identical wording can be combined as to not duplicate wording/information.

2.6 Building Component Assessment

When plane of window noise levels exceeds 65 dBA (daytime) or 60 dBA (nighttime) the exterior cladding system of the building envelope must be acoustically assessed to ensure indoor sound criteria are achieved. This includes analysis of the exterior wall, door, and/or glazing system specifications as appropriate.

The NRC research *Acoustic Insulation Factor: A Rating for the Insulation of Buildings against Noise* (June 1980, JD Quirt) is used to assess the building components and the required acoustic insulation factor (AIF). This method is recognized by the City of Ottawa.

The required AIF is based on the Outside L_{eq}, Indoor L_{eq} required, and the number of exterior façade components.

Minimum Required AIF = Outside L_{eq} – Indoor L_{eq} + 10 $\log_{10}$ (Number of Components) + 2dBA

Where, N = Number of components (walls, windows, and roof).

L = Sound Level expressed on a common decibel scale.

2.7 Summary of Attenuation Requirements

Table 3 summarizes the required noise attenuation measures and warning clauses should sound criteria be exceeded. Excerpts from the MOE NPC-300 and City of Ottawa ENCG documents are included in **Appendix A** for reference.

Table 3: Noise Attenuation Measure Requirements

Assessment Location	L_{eq} (dBA)	Outdoor Control Measures	Indoor Control Measures		Warning Clause
			Ventilation Requirements	Building Components	
Outdoor Living Area (OLA)	Less than 55	None required	N/A	N/A	None required
	Between 55 and 60	Control measures (barriers) may not be required but should be considered	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type A* or Type B**
	More than 60	Barriers required	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type A* or Type B*
Plane of Living Room Window (POW)	Less than 55	N/A	None Required	None Required	None Required
	Between 55 and 65	N/A	Forced air heating with provision for central air conditioning	None Required	Required Type C
	More Than 65	N/A	Central Air Conditioning	Acoustical performance of the windows and walls should be specified	Required Type D
Plane of Bedroom Window (POW)	Less than 50	N/A	None Required	None Required	None Required
	Between 50 and 60	N/A	Forced air heating with provision for central air conditioning	None Required	Required Type C
	More than 60	N/A	Central Air Conditioning	Acoustical performance of the windows and walls should be specified	Required Type D

*Type A warning clause refers to units requiring a noise barrier that mitigates noise below 55dBA.
**Type B warning clause refers to units requiring a noise barrier but is technically or economically not feasible to reduce levels below 55dBA and a tolerance of up to 5dBA can be granted by the City.

3.0 PREDICTED NOISE LEVELS

Noise levels were analyzed using Version 5.03 of the STAMSON computer program. The predicted noise levels are listed in **Table 4&5.**

Table 4: Simulation Results – Outdoor Living Areas

Receiver Location*	Calculated Noise Level (dBa) 7:00-23:00		Outdoor Mitigation Method
	Un-attenuated	Attenuated	
OLA 1	58.23	-	Warning Clause Type B (Modified)
OLA 2	64.90	61.58	3m Noise Wall and Warning Clause Type B

*Locations found on **Figure 2 – Receiver Location Plan**

As per C7.1.1 of the EPC-300, OLA noise levels up to 60dBA are permitted if noise control measures are not feasible to reduce noise level below 55dBA. OLA1 is in a very narrow backyard and is shielded by existing buildings. Therefore, an additional barrier is not suggested. OLA2 is on a roof top terrace located in the City environment. Noise levels were predicted to be 64.90dBA which can be lowered to 61.58dBA with a 3.0 meter high noise wall located on the roof top. In order to lower the level further to 60dBA would require a wall 4.5 meter high along the south and east which is not practical, expensive, and aesthetically unappealing.

Table 5: Simulation Results – Plane of Window

Receiver Location *	Calculated Noise Level 7:00-23:00 (dBa)	Calculated Noise Level 23:00-7:00 (dBa)	Mitigation Method
	Un-attenuated	Un-attenuated	
POW1 1th floor	59.64	52.66	• Installation of Forced Air Heating with provision for Central Air Conditioning • Warning Clause Type C
POW2 9th floor	72.42	64.82	• Installation of Air Conditioning • Warning Clause Type D • Building Façade Analysis

*Locations found on **Figure 2 – Receiver Location Plan**

Based on the results in **Table 5**, we recommend Central Air Conditioning and the inclusion of Noise Clause Type D be registered as a notice on title and incorporated into the lease/rental/sale agreements of all units. As well a building façade analysis is required to assess performance of walls and windows.

Refer to **Figure 3 – Noise Mitigation Plan** and **Figure 4 – Roof Top Amenity Area Noise Mitigation Plan** for all proposed noise mitigation measures. Refer to **Appendix B** for all noise calculations.

4.0 BUILDING FAÇADE ANALYSIS

The City of Ottawa ENCG requires that wall & window construction be reviewed when noise levels exceed minimum requirements outlined in **Table 3.** The Acoustical Insulation Factor (AIF) method recognized by the City of Ottawa is used to assess the wall and window requirements.

The Acoustic Insulation Factor (AIF) is used as a measure of the reduction of outdoor noise provided by the elements of the outer surface of a building. The difference between the indoor noise criterion and the outdoor noise level establishes the acoustical insulation requirement for the exterior shell. The exterior shell is comprised of primarily two components; windows and walls (patio doors are treated as windows).

Mathematically, this Acoustical Insulation Factor can be expressed as:

$$\text{Required AIF} = L_{eq}\,(\text{Outside}) - L_{eq}\,(\text{Inside}) + 10\log_{10}(N) + 2\text{dBA}$$

Where, N = Number of components;
L = Sound Level expressed on a common decibel scale.

The worst-case scenarios are selected for the AIF and building façade analysis as bellow:

POW2 9th Floor are calculated as follows:

- AIF $_{Residential(day)}$ = 72.4 dBA – 45 dBA + 10log$_{10}$ (2) dBA + 2dBA = 32 dBA
- AIF $_{Residential(night)}$ = 64.8 dBA – 40 dBA + 10log$_{10}$ (2) dBA + 2dBA = 30 dBA
-

*10log$_{10}$(2) =3.0

Tables from the document entitled “Acoustic Insulation Factor: A Rating for the Insulation of Buildings Against Outdoor Noise”, produced by the Division of Building Research, National Research Council of Canada, June 1980 (J.D. Quirt) were used to assess the exterior façade against the required AIF. This reference material is included in **Appendix C**.

To assess the façade against the required AIF respective Leq values, the number of components, the calculated required AIF, percentage of window to room areas and exterior wall to room areas are required. Exterior façade analysis data is presented in **Tables 6.**

Table 6: Exterior Façade Analysis Data – POW2

Description	Residential Bedroom
Number and Type of Components Forming Building Envelope.	2 – Windows and Exterior Walls
Percentage of Window Area to Total Floor Area of Room.	**21%**
Percentage of Wall Area to Total Floor Area of Room.	**130%**

Architect floor plans were reviewed to calculate the window and wall to floor ratios (as seen above). The architect plans are included in **Appendix A.**

Using the percentage of window area to room area, and the required acoustical insulation factor (AIF), **Table 5** in **Appendix C** was used to identify the various window assemblies needed to satisfy the required AIF. Similarly, **Table 6.3** in **Appendix C** was used to select the typical wall assembly needed to satisfy the required AIF.

Table 7 bellow lists the results of the analysis requiring assemblies to mitigate the indoor noise levels.

Table 7: Selected Window and Wall Assemblies to Meet Maximum Attenuation Requirements

Description	AIF	Triple Pane Window Assembly Options	Typical Wall Assembly
POW2 – 9th Floor	32	▪ 3 mm – 6mm – 3 mm - 6mm -3mm	EW2

Notes:

I. Refer to Appendix C for calculations for walls and windows.

II. EW2 type wall consisting of 12.7mm gypsum board, vapour barrier, 38x89mm studs with 50mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities. Plus, rigid insulation (25-30mm), and wood siding or metal siding and fibre backer board

III. "3mm – 6 mm – 3mm – 6mm – 3mm" denotes 3 mm triple glazing glass, 6 mm air space

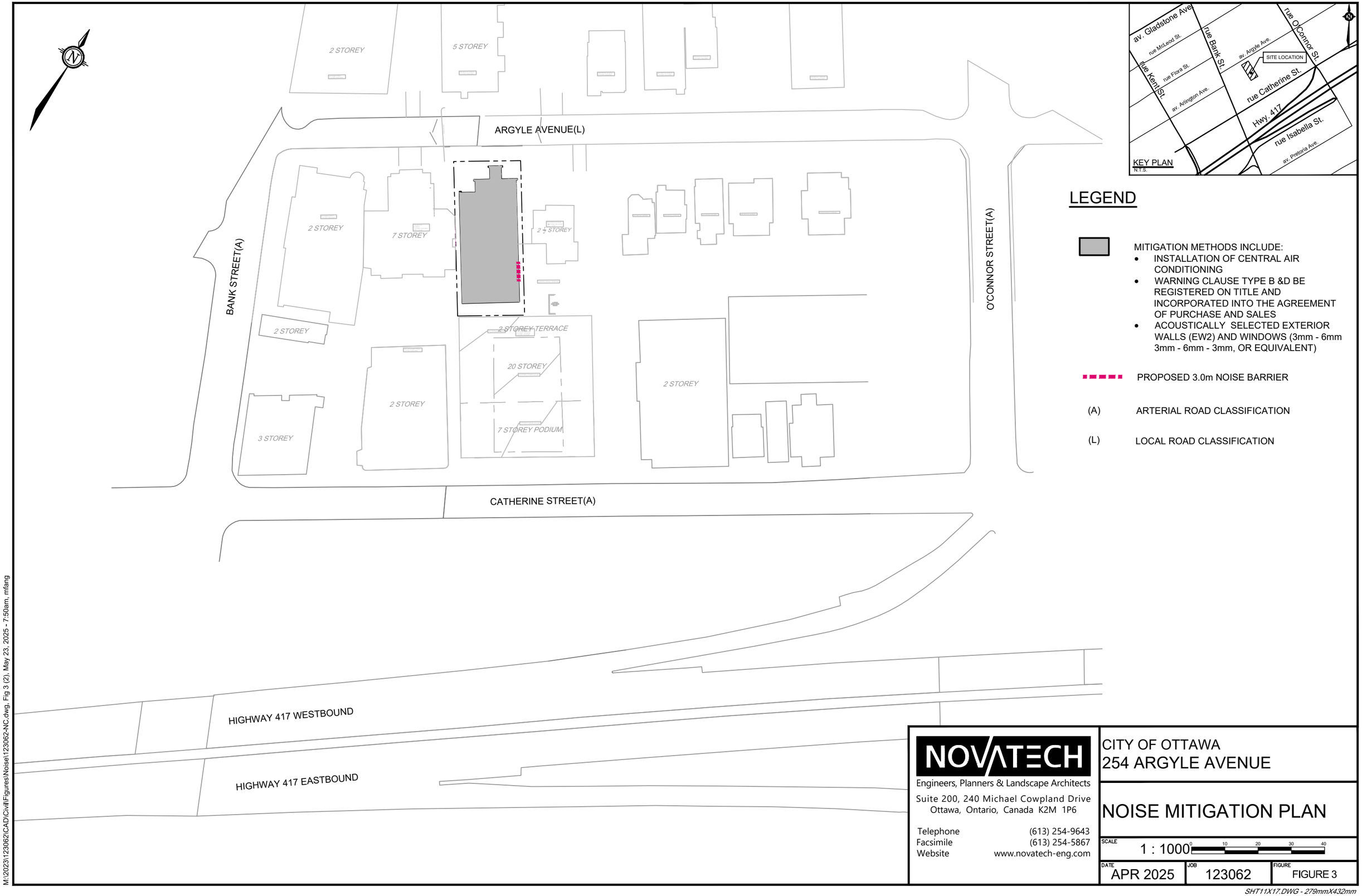
The proposed exterior wall is superior to the required EW2 wall required to mitigate the indoor sound levels. Refer to **Appendix C** for the exterior wall and EW2 wall details.

The proposed window is superior to the required 3mm/6mm/3mm/6mm/3mm window required to mitigate the indoor sound levels. Refer to **Appendix C** for the window details.

Table 11 and 12 in **Appendix C** were used to convert the AIF values to Sound Transmission Class (STC) values. The largest STC results for selected analyzed units are summarized in **Table 8** bellow. Window and wall assemblies should meet the STC values as a minimum.

Table 8: Equivalent Sound Transmission Class, STC Values

		Windows		Walls	
	AIF	Conversion	STC	Conversion	STC
POW2 – 9th Floor	32	STC+1 = AIF	31	STC-7 = AIF	40



LEGEND

MITIGATION METHODS INCLUDE:

- INSTALLATION OF CENTRAL AIR CONDITIONING
- WARNING CLAUSE TYPE B &D BE REGISTERED ON TITLE AND INCORPORATED INTO THE AGREEMENT OF PURCHASE AND SALES
- ACOUSTICALLY SELECTED EXTERIOR WALLS (EW2) AND WINDOWS (3mm - 6mm 3mm - 6mm - 3mm, OR EQUIVALENT)

PROPOSED 3.0m NOISE BARRIER

(A) ARTERIAL ROAD CLASSIFICATION

(L) LOCAL ROAD CLASSIFICATION

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CITY OF OTTAWA
254 ARGYLE AVENUE

NOISE MITIGATION PLAN

SCALE 1 : 1000 (0, 10, 20, 30, 40)

DATE APR 2025 | JOB 123062 | FIGURE FIGURE 3

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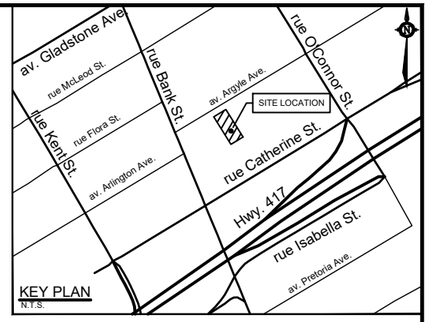

LEGEND

PROPOSED 3.0m HIGH NOISE BARRIER

3.0m HIGH WALL OF MECHANICAL ROOM

258 ARGYLE AVENUE
7 STOREY BUILDING
FFE=+/-69.36

252 ARGYLE AVENUE
2 ½ STOREY BUILDING
FFE=+/-70.61

PROPOSED 3.0m HIGH NOISE WALL
BOTTOM OF WALL=103.56
TOP OF WALL=106.56
TOTAL LENGTH 7.6m
MINIMUM MASS DENSITY=20kg/m²

Roof Top Amenity Area

3.0m HIGH WALLS OF MECHANICAL ROOM

Mechanical Room

1 STOREY PANEL SIDED GARAGE

G/F TERRACE OUTLINE

203 CATHERINE STREET
20 STOREY BUILDING
1 STOREY TERRACE
7 STOREY PODIUM

205 CATHERINE STREET
2 STOREY BUILDING

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CITY OF OTTAWA
254 ARGYLE AVENUE

ROOF TOP AMENITY AREA NOISE MITIGATION PLAN

SCALE 1 : 250 (0 2 4 6 8 10)

DATE MAY 2025 | JOB 123062 | FIGURE FIGURE 4

SHT11X17.DWG - 279mmX432mm

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5.0 CONCLUSION

This report recommends:

- The installation of 3m noise wall on roof top and inclusion of Warning Clause Type B to be registered as a notice on title and incorporated into the lease/rental/sale agreements.
- The inclusion of Central Air Conditioning and Warning Clause Type D to be registered as a notice on title and incorporated into the lease/rental/sale agreements for all units in the proposed development
- The construction of proposed exterior wall and windows are sufficient to mitigate the indoor noise levels.

NOVATECH

Report By:

Ming Fang, C.E.T., B.Eng
Design Technologist

Reviewed By:

Greg MacDonald, P. Eng.
Director - Land Development and
Public Sector Infrastructure

APPENDIX A:

EXCERPTS FROM THE CITY OF OTTAWA ENVIRONMENTAL NOISE CONTROL GUIDELINES, THE MOE'S NPC-300, THE CITY OF OTTAWA'S TRANSPORTATION MASTER PLAN AND OFFICIAL PLAN, AND ARCHITECT FLOOR PLANS

PLANNING AND GROWTH MANAGEMENT
URBANISME ET GESTION DE LA CROISSANCE

ENVIRONMENTAL NOISE CONTROL GUIDELINES: Introduction and Glossary

January 2016

Table 2.2a: Sound Level Limit for Outdoor Living Areas - Road and Rail
(from NPC-300, 2013 Table C-1)

Time Period	Required L_{eq} (16) (dBA)
16-hour, 07:00 – 23:00	55

Table 2.2b: Sound Level Limit for Indoor Living Areas Road and Rail
(from NPC-300, 2013 Table C-2)

		Required L_{eq} (dBA)	
Type of Space	Time Period	Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

The Province also provides for supplementary indoor sound level limits for land uses not generally considered noise sensitive (see Table 2.2c below). These good practice design objectives should be addressed in any noise study prepared for the City. These supplementary sound level limits are based on the windows and doors to an indoor space being closed.

Table 2.2c: Supplementary Sound Level Limits for Indoor Spaces - Road and Rail (adapted from NPC-300 Table C-9)

		Required L_{eq} (dBA)	
Type of Space	Time Period	Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Theatres, places of worship, libraries, individual or semi- private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

Appendix B: Table of Traffic and Road Parameters To Be Used For Sound Level Predictions

Table B1 Traffic And Road Parameters To Be Used For Sound Level Predictions

Row Width (m)	Implied Roadway Class	AADT Vehicles/Day	Posted Speed Km/Hr	Day/Night Split %	Medium Trucks %	Heavy Trucks % [1]
NA [2]	Freeway, Queensway, Highway	18,333 per lane	100	92/8	7	5
37.5-44.5	6-Lane Urban Arterial-Divided (6 UAD)	50,000	50-80	92/8	7	5
34-37.5	4-Lane Urban Arterial-Divided (4-UAD)	35,000	50-80	92/8	7	5
23-34	4-Lane Urban Arterial-Undivided (4-UAU)	30,000	50-80	92/8	7	5
23-34	4-Lane Major Collector (4-UMCU)	24,000	40-60	92/8	7	5
30-35.5	2-Lane Rural Arterial (2-RAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Urban Arterial (2-UAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Major Collector (2-UMCU)	12,000	40-60	92/8	7	5
30-35.5	2-Lane Outer Rural Arterial (near the extremities of the City) (2-RAU)	10,000	50-80	92/8	7	5
20-30	2-Lane Urban Collector (2-UCU)	8,000	40-50	92/8	7	5

[1] The MOE Vehicle Classification definitions should be used to estimate automobiles, medium trucks and heavy trucks.

[2] The number of lanes is determined by the future mature state of the roadway.

Environmental Noise Guideline

Stationary and Transportation Sources – Approval and Planning

Publication NPC-300

Ontario

Table C-10
Supplementary Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values listed in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

C7 Noise Control Measures

The following sections provide MOE guidance for appropriate noise control measures. These sections constitute requirements that are applied to MOE approvals for stationary sources. This information is also provided as guidance which land use planning authorities may consider adopting.

The definition in Part A describes the various types and application of noise control measures. All the noise control measures described in the definition are appropriate to address the impact of noise of transportation sources (road, rail and aircraft) on planned sensitive land uses. Only some of the noise control measures described in the definition are appropriate to address the noise impact of stationary sources on planned sensitive land uses.

C7.1 Road Noise Control Measures

C7.1.1 Outdoor Living Areas

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B. In the above situations, any excess above the limit will not be acceptable if it exceeds 5 dBA.

C7.1.2 Plane of a Window – Ventilation Requirements

C7.1.2.1 Daytime Period, 07:00 – 23:00 Hours

Noise control measures may not be required if the L_{eq} (16) daytime sound level in the plane of a bedroom or living/dining room window is less than or equal to 55 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the daytime sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA, installation of central air conditioning should be implemented with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.2.2 Nighttime Period, 23:00 – 07:00 Hours

Noise control measures may not be required if the L_{eq} (8) nighttime sound level in the plane of a bedroom or living/dining room window is less than or equal to 50 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 50 dBA and less than or equal to 60 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the nighttime sound level in the plane of a bedroom or living/dining room window is greater than 60 dBA, installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.3 Indoor Living Areas – Building Components

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 60 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 65 dBA, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the

sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) should be specified.

C7.2 Rail Noise Control Measures

C7.2.1 Outdoor Living Areas

Whistle noise is not included in the determination of the outdoor daytime sound level due to railway trains. All the provisions of Section C7.1.1 apply also to noise control requirements for rail noise.

C7.2.2 Plane of a Window – Ventilation Requirements

Whistle noise is not included in the determination of the sound level in the plane of a window. All the provisions of Section C7.1.2 apply also to noise control requirements for rail noise.

C7.2.3 Indoor Living Areas – Building Components

The sound level, L_{eq}, during the daytime (16-hour) and nighttime (8-hour) periods is determined using the prediction method STEAM, Reference [34], immediately outside the dwelling envelope. Whistle noise is included in the determination of the sound level.

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 55 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 60 dBA, building components including windows, walls and doors, where applicable, need to be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) needs to be specified.

In addition, the exterior walls of the first row of dwellings next to railway tracks are to be built to a minimum of brick veneer or masonry equivalent construction, from the foundation to the rafters when the rail traffic L_{eq} (24-hour), estimated at a location of a nighttime receptor, is greater than 60 dBA, and when the first row of dwellings is within 100 metres of the tracks.

C7.3 Combination of Road and Rail Noise

The noise impact in the OLA and in the plane of a window, and the requirements for outdoor measures, ventilation measures and warning clauses, should be determined by combining road and rail traffic sound levels.

The assessment of the indoor sound levels and the resultant requirement for the acoustical descriptors of the building components should be done separately for road

In Class 4 areas, where windows for noise sensitive spaces are assumed to be closed, the use of central air conditioning may be acceptable if it forms an essential part of the overall building designs.

C7.9 Verification of Noise Control Measures

It is recommended that the implementation of noise control measures be verified by qualified individuals with experience in environmental acoustics.

C8 Warning Clauses

The use of warning clauses or easements in respect of noise are recommended when circumstances warrant. Noise warning clauses may be used to warn of potential annoyance due to an existing source of noise and/or to warn of excesses above the sound level limits. Direction on the use of warning clauses should be included in agreements that are registered on title to the lands in question. The warning clauses would be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. Alternatively, the use of easements in respect of noise may be appropriate in some circumstances. Additional guidance on the use of noise warning clauses is provided in Section C7.1.1, Section C7.1.2.1, Section C7.1.2.2, Section C7.3 and Section C7.4.

C8.1 Transportation Sources

The following warning clauses may be used individually or in combination:

TYPE A: (see Section C7.1.1)

> "Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

TYPE B: (see Section C7.1.1 and Section C7.4)

> "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 traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

TYPE C: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

> "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of

central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

TYPE D: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

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

C8.2 Stationary Sources

It is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits. Warning clause (Type E) for stationary sources may identify a potential concern due to the proximity of the facility but it is not acceptable to justify exceeding the sound level limits.

TYPE E: (see Section C7.6)

"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."

C8.3 Class 4 Area Notification

TYPE F: (see Section B9.2 and Section C4.4.2)

"Purchasers/tenants are 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."

Appendix A: Warning Clauses

Under the Official Plan and this guideline warning clauses may be required to be incorporated into development through development agreements, registration on title and inclusion in Agreements of Purchase and Sale. This requirement may be included in any development, regardless of whether it is considered a noise sensitive land use.

A warning clause provides recognition for the City, Province landowner or tenants that noise may be a concern, that noise may be audible at times or even quite loud, and, depending on the type of development, provincial guidelines for noise may be exceeded. Warning clauses also recognize that environmental noise is a potential health hazard that does impact people and neighbourhoods. It is for this reason that, unless a non-noise sensitive land use is established, a warning clause should also include noise mitigation.

A warning clause is not considered a form of noise mitigation. It is not acceptable therefore to use warning clauses in place of physical noise control measures to identify an excess over the MOE or City noise limits. The reason for a warning clause on all development is twofold. Firstly, it is important to note that a land use that although the development may not be considered noise sensitive it may include employees or tenants that are personally sensitive to noise. A warning clause provides protection against complaints to the ministry of Environment should provincial guidelines be exceeded. Secondly, a warning clause on title could obviate the need for a new noise study in the future. In a redevelopment scenario the warning clause would provide recognition of the extent noise conditions.

Given the variation in potential intensity and impact of noise it will often be necessary to amend warning clauses to recognize the site specific conditions in each development. Final wording of any warning clause is to be approved by the City.

The following subsections provide example text to be adapted into warning clauses.

Surface Transportation Warning Clauses

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
Generic	*Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area that is within provincial guidelines. Measures for sound attenuation include:* • *A setback of buildings from the noise source and* • *An acoustic barrier.* *To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features.* *The acoustic barrier 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.* *Additionally this development includes trees and shrubs to screen the source of noise from occupants.*	The generic warning clause outlines that MOE sound levels may be exceeded but the indoor environment and outdoor amenity areas are within guidelines. Mitigation measures are described including urban design features. Mention is also made of landscaping to screen the development visually from the source of noise.
Extensive mitigation of indoor and	*"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units,*	The warning clause makes reference to MOE sound levels

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
outdoor amenity area	*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;* • *double brick veneer;* • *an earth berm; and* • *an acoustic barrier.* *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.* *The acoustic barrier 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 designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow 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.*	being exceeded from time to time and that there are sound attenuation features and landscaping within the development that should be maintained. An option for air conditioning is noted as well as landscaping to screen the source of noise.

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
	Additionally this development includes trees and shrubs to screen the source of noise from occupants.	
No outdoor amenity area	*Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities 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;* • *double brick veneer;* • *high sound transmission class walls.* *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.* *This dwelling unit has been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment*	This warning clause notes that only an indoor environment is being provided for.

Stationary Source Warning Clauses

The Province notes that it is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits for stationary sources. The generic warning clause for stationary sources (called Type E in NPC-300) may identify a potential concern due to the proximity of the facility but it is not possible to justify exceeding the sound level limits.
The wording of the generic stationary noise warning clause may also be used as the basis for new development adjacent to areas licensed for mineral aggregate extraction.

Note:
1) This schedule forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This schedule is intended as a framework for planning and design;consequently alignments of proposed roads are approximate and subject to detailed study.
3) This schedule includes some lands adjacent to the Central Area that are designated General Urban Area.

Note:
1) La présente annexe fait partie du Plan directeur de transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente annexe doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) Cette annexe englobe des terrains contigus à l'aire centrale qui portent la désignation Aire urbaine générale.

7

City of / Ville de
GATINEAU

Rivière des Outaouais / Ottawa River

SITE

Rideau Canal

Rivière Rideau River

Ottawa

0 0.1 0.2 0.3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

Provincial Highway	Route provinciale
Federally Owned Road	Chemins de propriété fédéral
Arterial - Existing	Artère - Établie
Arterial - Proposed (alignment defined)	Artère - Proposé (alignement déterminée)
Major Collector - Existing	Grande collectrice - Établie
Collector - Existing	Collectrice - Établie

TRANSPORTATION MASTER PLAN - Map 7
ROAD NETWORK - CENTRAL AREA / INNER CITY

PLAN DIRECTEUR DES TRANSPORTS - Carte 7
AIRE CENTRALE / RÉSEAU ROUTIER DE L'HYPERCENTRE

Road	From	To	ROW to be Protected	Classification	Sector
Anderson	Innes	Leitrim	G	arterial	urban
Antares	Auriga	West Hunt Club	24	collector	urban
Arnold	Richmond	Moodie	24	collector	urban
Ashgrove	Greenbank	Meadowbank	24	collector	urban
Auriga	Antares	Antares	24	collector	urban
Bank	Wellington	Catherine	20 Note: Maximum land requirement from property abutting existing ROW (0.90 m). Subject to widening/easement policy.	arterial	urban
Bank	Catherine	Isabella	20	arterial	urban
Bank	Isabella	Riverside	23	arterial	urban
Bank	Riverside	Hunt Club	37.5	arterial	urban
Bank	Hunt Club	Lester	44.5	arterial	urban
Bank	Lester	Leitrim	G	arterial	urban
Bank	Leitrim	Analdea	44.5	arterial	urban
Bank	Analdea	Urban area limit	44.5 Note: An additional 5.0 m on the rural side may be required to construct a rural cross-section.	arterial	urban
Bank	Urban area limit	Rideau	44.5	arterial	rural
Bank	Rideau	Mitch Owens	40	arterial	rural
Bankfield	Highway 416	100m west of Colony Heights	34	arterial	rural
Bankfield	100m west of Colony Heights	Manotick Main Street	23	arterial	village
Banner	McClellan	Greenbank	24	collector	urban
Barnsdale	Eagleson	Highway 416	30	collector	rural
Barnsdale	Highway 416	Prince of Wales	40	arterial	urban and rural
Barran	Fallowfield	Larkin	24	collector	urban
Baseline	Richmond	Greenbelt boundary	G	arterial	urban
Baseline	Greenbelt boundary	Prince of Wales	44.5	arterial	urban
Bathgate	Montreal Road	Ogilvie	24	collector	urban

Road	From	To	ROW to be Protected	Classification	Sector
Carp	Approx. 600 m south of Craig Side	Approx. 600 m north of March	23	arterial	village
Carp	Richardson Side	Urban Area Limit	37.5	arterial	rural
Carp	Stittsville urban area-north limit	Hazeldean	37.5	arterial	urban
Carp	Hazeldean	Main Street	23	arterial	urban
Catherine	Bronson	Elgin	23	arterial	urban
Cedarview	Baseline	Lytle	G	arterial	urban
Cedarview	Lytle	Fallowfield	37.5 Note: An additional 5.0 m on the either side may be required to construct a rural cross-section.	arterial	urban
Cedarview	Fallowfield	Jockvale	26	major collector	urban
Cedarview	Jockvale	Kennevale	24	collector	urban
Cedarview	Strandherd	Cambrian	37.5	arterial	urban
Cedarview	Cambrian	Urban Limit	24	collector	urban
Centrepointe	63m north of Hemmingwood	Tallwood	26	major collector	urban
Chamberlain	Bronson	Bank	23	arterial	urban
Chesterton	Viewmount	Meadowlands	24	collector	urban
Chimo	Katimavik	Katimavik	24	collector	urban
Clare	34.90m east of Evered	Tweedsmuir	24 *Note: North Side*	collector	urban
Claridge	Strandherd	Woodroffe	24	collector	urban
Clementine	Bélanger	Ohio	15	local	urban
Clementine	Rockingham	Bélanger	20	local	urban
Cleopatra	West Hunt Club	Merivale	24	collector	urban
Clyde	Maitland	Baseline	34	arterial	urban
Clyde	Baseline	Merivale	34	arterial	urban
Colonial	Trim	Delson	23	arterial	village
Colonial	Western boundary of Village of Sarsfield	Eastern boundary of Village of Sarsfield	23	arterial	village

254 ARGYLE

254 Argyle Avenue, Ottawa, Ontario

ISSUED FOR SPC AND REZONING: 2024.08.29

ARCHITECTURAL

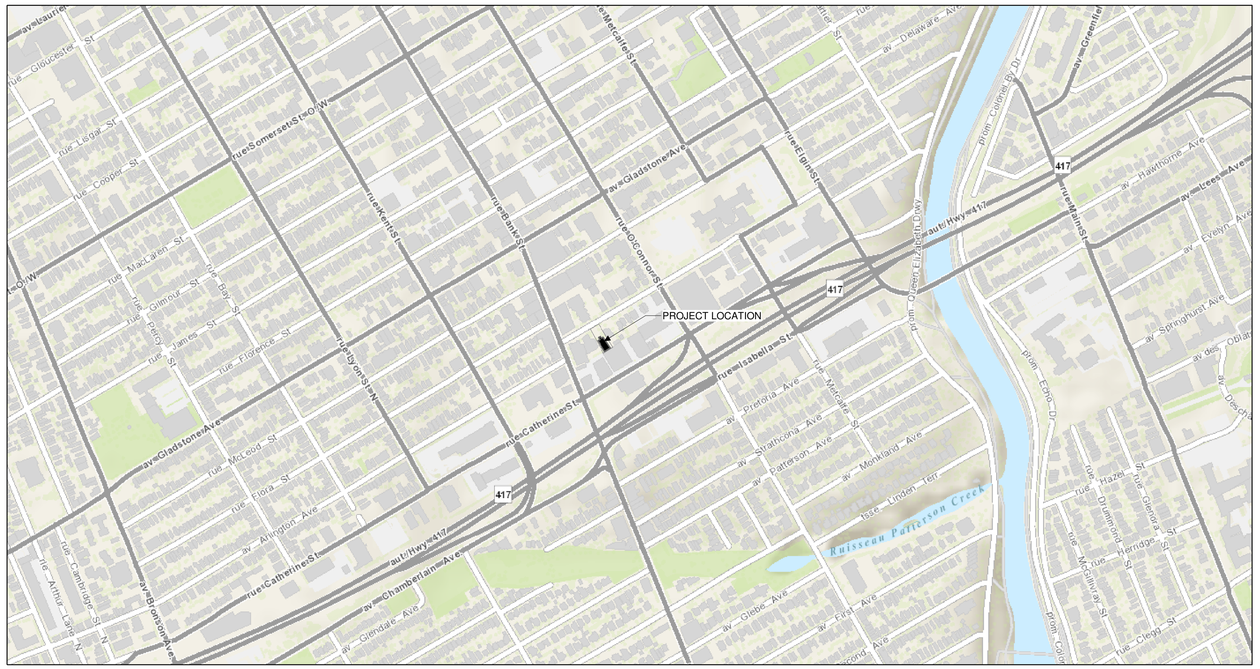
A000	COVER PAGE
D100	DEMOLITION SITE PLAN
A100	SITE PLAN
A200	LEVEL -2 PLAN
A201	LEVEL -1 AND GROUND FLOOR PLANS
A202	LEVEL 1B AND LEVEL 1C PLANS
A203	LEVEL 2-9 FLOOR PLANS
A204	ROOFS & PENTHOUSE PLANS
A300	NORTH & SOUTH ELEVATIONS
A301	EAST ELEVATION
A302	WEST ELEVATION
A400	LONGITUDINAL SECTION

CIVIL

123062-GP	GENERAL PLAN OF SERVICES
123062-GR	GRADING PLAN

LANDSCAPE

123062-TCR1	TREE CONSERVATION PLAN 1
123062-TCR2	TREE CONSERVATION PLAN 2
123062-L	LANDSCAPE PLAN



PROJECT LOCATION PLAN
N.T.S.

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CSV ARCHITECTS
sustainable design · conception écologique
613.564.8118
www.csv.ca
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ONTARIO ASSOCIATION OF ARCHITECTS
DARRYL J. HOOD
LICENCE
6165

STAMP

REV	DATE	ISSUE
2	2024.08.29	ISSUED FOR SPC AND REZONING
1	2024.05.08	ISSUED FOR PHASE 2 PRECONSULT

NOTES

CLIENT
AZURE URBAN DEVELOPMENTS

OTTAWA
ONTARIO, CANADA

PROJECT
254 ARGYLE

254 Argyle Avenue, Ottawa, Ontario

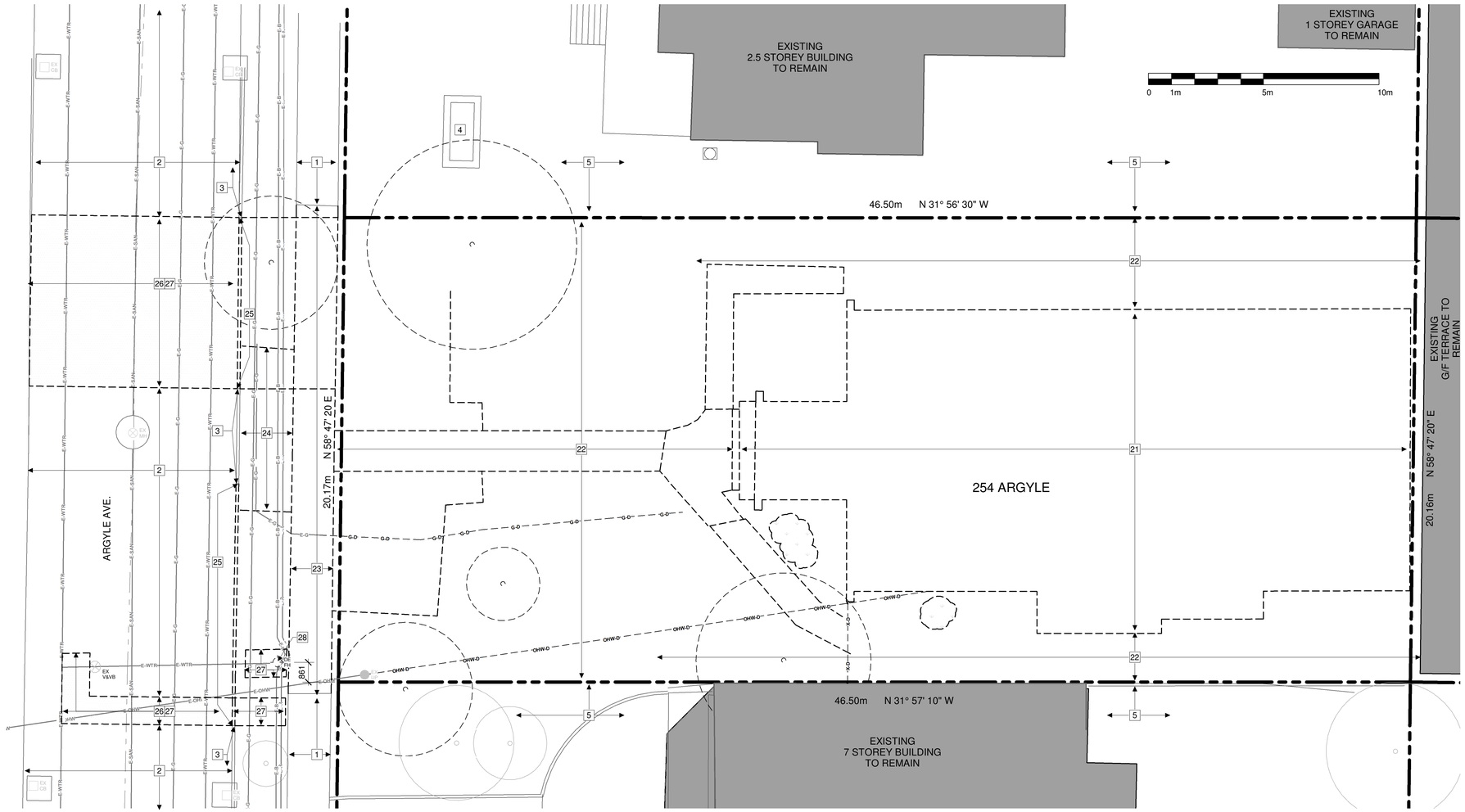
TITLE
COVER PAGE

PROJECT NO:	2023-0250
DRAWN:	RR/YC
APPROVED:	DH
SCALE:	As indicated
DATE PRINTED:	9/3/2024 11:11:07 AM

REV 2 — DRAWING NO. A000

DEMOLITION SITE PLAN KEYNOTES:

1. EXISTING SIDEWALK TO REMAIN
2. EXISTING ASPALT PAVING TO REMAIN
3. EXISTING CURB TO REMAIN
4. EXISTING SIGN TO REMAIN
5. EXISTING LANDSCAPING TO REMAIN.
21. REMOVE AND PRESERVE CHURCH WALLS AND STEEPLE BRICK BY BRICK. REFER TO 254 ARGYLE AVENUE CHURCH RELOCATION OPTIONS ANALYSIS OPTION 3, PREPARED BY REMISZ, DATED MARCH 28, 2024. DEMOLISH REMAINDER OF BUILDING.
22. REMOVE EXISTING LANDSCAPING AT AREA OF WORK
23. REMOVE EXISTING SIDEWALK
24. REMOVE EXISTING ASPHALT DRIVEWAY
25. REMOVE EXISTING CURB
26. REMOVE AND REINSTATE EXISTING ROAD ASSEMBLY AS REQUIRED FOR TRENCHING AND UTILITY SERVICE CONSTRUCTION. CUT PAVING IN STRAIGH LINES. MATCH EXISTING PAVING ASSEMBLY AND ELEVATIONS.
27. TRENCH AS REQUIRED FOR UTILITY SERVICE REMOVAL AND NEW CONSTRUCTION. FILL TRENCHES PER GEOTECHNICAL. MATCH ADJACENT SITE LEVELS AND CONDITIONS
28. REMOVE AND RELOCATE EXISTING FIRE HYDRANT PER CIVIL



1 DEMOLITION SITE PLAN
D100 1 : 100

LEGAL DESCRIPTION
LOT 16 (SOUTH ARGYLE AVENUE)
REGISTERED PLAN 30
CITY OF OTTAWA

REFERENCE SURVEY
DRAFT OF TOPOGRAPHIC PLAN OF SURVEY OF
LOT 16 (SOUTH ARGYLE AVENUE)
REGISTERED PLAN 30
CITY OF OTTAWA
PREPARED BY SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

MUNICIPAL ADDRESS
254 ARGYLE AVE. OTTAWA, ON

SITE AREA	937.6m²
BUILDING AREA	633.56m²
GROSS FLOOR AREA	3,810.12m²
BUILDING HEIGHT	35m 9 STOREYS
ZONE:	R5B H(19)
SCHEDULE 1:	AREA B
SCHEDULE 1A:	AREA X

ZONING PROVISION	REQUIRED	PROVIDED
MIN. LOT WIDTH	22.5m	20.17m
MIN. LOT AREA	675m²	937.05m²
MIN. FRONT YARD SETBACK	3m	1.42m
MIN. REAR YARD SETBACK	7.5m	3.759m
MIN. INTERIOR YARD SETBACK	1.5m (6m past 21m)	1.5m
MAX. HEIGHT	19m	34.5m
AMENITY AREA	504m² (6m²/unit)	587m²
LANDSCAPED AREA	281.12m²	270.94m²

PARKING QUEUING + LOADING	REQUIRED	PROVIDED
RESIDENTIAL SPACES	42	27
VISITOR SPACES	8	8
ACCESSIBLE PARKING	0	1
BICYCLE PARKING	42 (.5/UNIT)	84

DEMOLITION SITE PLAN GENERAL NOTES:

1. ALL GENERAL SITE INFORMATION AND CONDITIONS COMPILED FROM EXISTING PLANS AND SURVEYS
2. DO NOT SCALE THIS DRAWING
3. REPORT ANY DISCREPANCIES PRIOR TO COMMENCING WORK. NO RESPONSIBILITY IS BORN BY THE CONSULTANT FOR UNKNOWN SUBSURFACE CONDITIONS
4. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS AND/OR OMISSIONS TO THE CONSULTANT
5. REINSTATE ALL AREAS AND ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE CONSULTANT
6. CONTRACTOR TO LAYOUT PLANTING BEDS, PATHWAYS ETC. TO APPROVAL OF CONSULTANT PRIOR TO ANY JOB EXCAVATION
7. THE ACCURACY OF THE POSITION OF UTILITIES IS NOT GUARANTEED - CONTRACTOR TO VERIFY PRIOR TO EXCAVATION
8. INDIVIDUAL UTILITY COMPANY MUST BE CONTACTED FOR CONFIRMATION OF UTILITY EXISTENCE AND LOCATION PRIOR TO DIGGING
9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE NOTED

DEMOLITION SITE PLAN LEGEND:

- EXISTING BUILDING & SITE ELEMENTS
- DEMOLISHED BUILDING & SITE ELEMENTS
- PROPERTY LINE
- E-X — EXISTING FENCE TO REMAIN
- -X-D- — FENCE TO REMOVE
- E-WTR — EXISTING WATER MAIN TO REMAIN
- WTR-D- — WATER MAIN TO REMOVE
- E-SAN — EXISTING SANITARY SEWAGE TO REMAIN
- SAN-D- — SANITARY SEWAGE TO REMOVE
- E-ST — EXISTING STORM SEWAGE TO REMAIN
- ST-D- — STORM SEWAGE TO REMOVE
- E-OHW — EXISTING ELECTRICAL OVERHEAD SERVICE TO REMAIN
- OHW-D- — ELECTRICAL OVERHEAD SERVICE TO REMOVE
- E-G — EXISTING GAS LINE TO REMAIN
- G-D- — GAS LINE TO REMOVE
- E-B — EXISTING BELL LINE TO REMAIN
- E-R — EXISTING ROGER LINE TO REMAIN
- EX CB — EXISTING CATCH BASIN
- EX LS — EXISTING LIGHT STANDARD
- EX FH — EXISITING FIRE HYDRANT
- DE FH — FIRE HYDRANT TO REMOVE
- EX MH — EXISTING MAINTENANCE HOLE
- EX UP — EXISTING UTILITY POLE
- EX V&VB — EXISTING VALVE AND VALVE BOX TO REMAIN
- EXISTING TREE TO REMAIN
- REMOVE EXITING TREE

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DARRYL J. HOOD
LICENCE
6165

STAMP

REV	DATE	ISSUE
2	2024.08.29	ISSUED FOR SPC AND REZONING
1	2024.05.08	ISSUED FOR PHASE 2 PRECONSULT

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CLIENT
AZURE URBAN DEVELOPMENTS
OTTAWA
ONTARIO, CANADA

PROJECT
254 ARGYLE

254 Argyle Avenue, Ottawa, Ontario

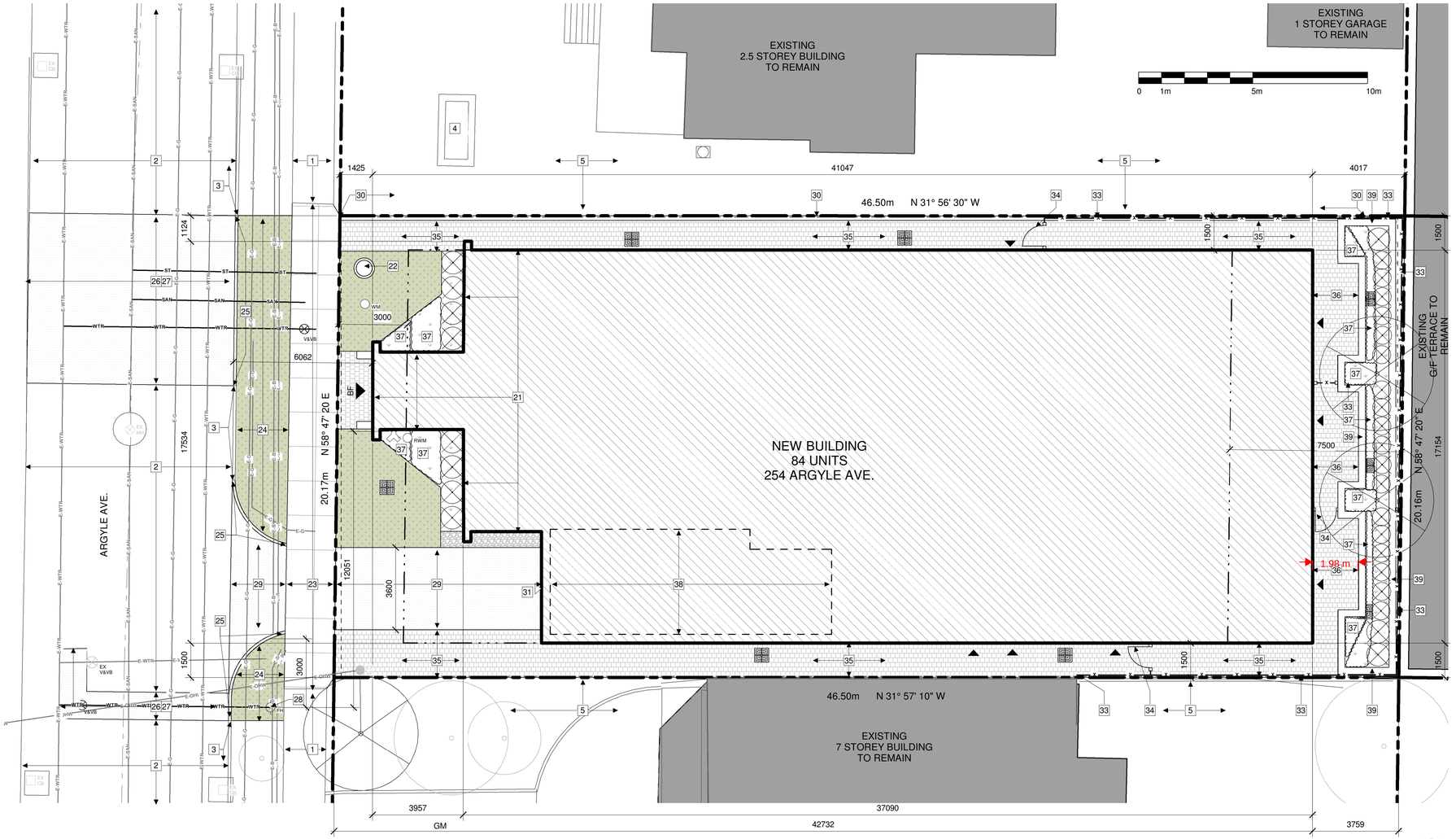
TITLE
DEMOLITION SITE PLAN

PROJECT NO:	2023-0250
DRAWN:	EF / IK
APPROVED:	DH
SCALE:	As indicated
DATE PRINTED:	9/3/2024 11:11:10 AM

REV 2 DRAWING NO. D100

SITE PLAN KEYNOTES:

1. EXISTING SIDEWALK TO REMAIN
2. EXISTING ASPHALT PAVING TO REMAIN
3. EXISTING CURB TO REMAIN
4. EXISTING SIGN TO REMAIN
5. EXISTING LANDSCAPING TO REMAIN.
21. RELOCATE EXISTING CHURCH FACADE TO NEW LOCATION
22. VENTED CISTERN LID
23. NEW CONCRETE SIDEWALK PER CIVIL
24. REINSTATE TOP SOIL AND GRASS IN BETWEEN ROAD AND SIDEWALK AT AREAS EFFECTED BY CONSTRUCTION
25. NEW CURB PER CIVIL
26. REINSTATE EXISTING ROAD ASSEMBLY PER CIVIL AT AREAS EFFECTED BY DEMOLITION AND CONSTRUCTIONS. PROVIDE SMOOTH TRANSITION TO EXISTING PAVING.
27. BACKFILL TRENCHES AS REQUIRED PER CIVIL AND GEOTECHNICAL.
28. RELOCATE EXISTING FIRE HYDRANT PER CIVIL.
29. NEW DRIVEWAY PER CIVIL
30. NEW CURB WALL PER CIVIL
31. OVERHEAD DOOR TO UNDERGROUND PARKING
32. WOOD PRIVACY FENCE PER LANDSCAPING
33. TERMINATE WOOD PRIVACY FENCE FLUSH TO THE RETAINING WALL PER LANDSCAPING
34. PEDESTRIAN GATE
35. WALKWAY PER LANDSCAPING
36. PATIO PER LANDSCAPING
37. PLANTS PER LANDSCAPING
38. VAULT
39. RAISED PLANTER WALL PER LANDSCAPING



1 NEW SITE PLAN
A100 | 1 : 100

LEGAL DESCRIPTION
LOT 16 (SOUTH ARGYLE AVENUE)
REGISTERED PLAN 30
CITY OF OTTAWA

REFERENCE SURVEY
DRAFT OF TOPOGRAPHIC PLAN OF SURVEY OF
LOT 16 (SOUTH ARGYLE AVENUE)
REGISTERED PLAN 30
CITY OF OTTAWA
PREPARED BY SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

MUNICIPAL ADDRESS
254 ARGYLE AVE. OTTAWA, ON

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SITE PLAN LEGEND:

- EXISTING BUILDING & SITE ELEMENTS
- NEW BUILDING
- NEW ASPHALT PAVING
- NEW GRASS
- NEW PLANTING BEDS / PLANTS PER LANDSCAPING
- NEW CONCRETE SIDEWALK
- NEW CONCRETE PAD
- NEW RIVER STONE PER LANDSCAPING
- NEW PAVER PER LANDSCAPING
- PROPERTY LINE
- SET BACK LINE
- EXTENT OF PARKING BELOW GRADE
- NEW FENCE PER LANDSCAPE
- EXISTING WATER MAIN TO REMAIN
- NEW WATER MAIN PER CIVIL
- EXISTING SANITARY SEWAGE TO REMAIN
- NEW SANITARY SEWAGE PER CIVIL
- EXISTING STORM SEWAGE TO REMAIN
- NEW STORM SEWAGE PER CIVIL
- EXISTING ELECTRICAL OVERHEAD SERVICE TO REMAIN
- NEW ELECTRICAL OVERHEAD SERVICE PER ELECTRICAL
- EXISTING GAS LINE TO REMAIN
- NEW GAS LINE PER CIVIL
- EXISTING BELL LINE TO REMAIN
- EXISTING ROGER LINE TO REMAIN
- ENTRANCE/ BARRIER-FREE ENTRANCE
- MAIN ENTRANCE
- VEHICLE ACCESS
- NEW AREA DRAIN PER CIVIL
- CATCH BASIN: EXISTING TO REMAIN / NEW PER CIVIL
- MAINTENANCE HOLE: EXISTING TO REMAIN / NEW PER CIVIL
- UTILITY POLE: EXISTING TO REMAIN / NEW PER CIVIL
- VALVE AND VALVE BOX : EXISTING TO REMAIN / NEW PER CIVIL
- LIGHT STANDARD
- NEW FIRE HYDRANT PER CIVIL
- NEW WATER METER PER CIVIL
- NEW REMOTE WATER METER PER CIVIL
- NEW SIAMESE CONNECTION
- NEW DROPPED CURB
- NEW TREE PER LANDSCAPING
- EXISTING TREE TO REMAIN
- SHRUB: EXISTING TO REMAIN / NEW PER LANDSCAPING

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1	2024.05.08	ISSUED FOR PHASE 2 PRECONSULT

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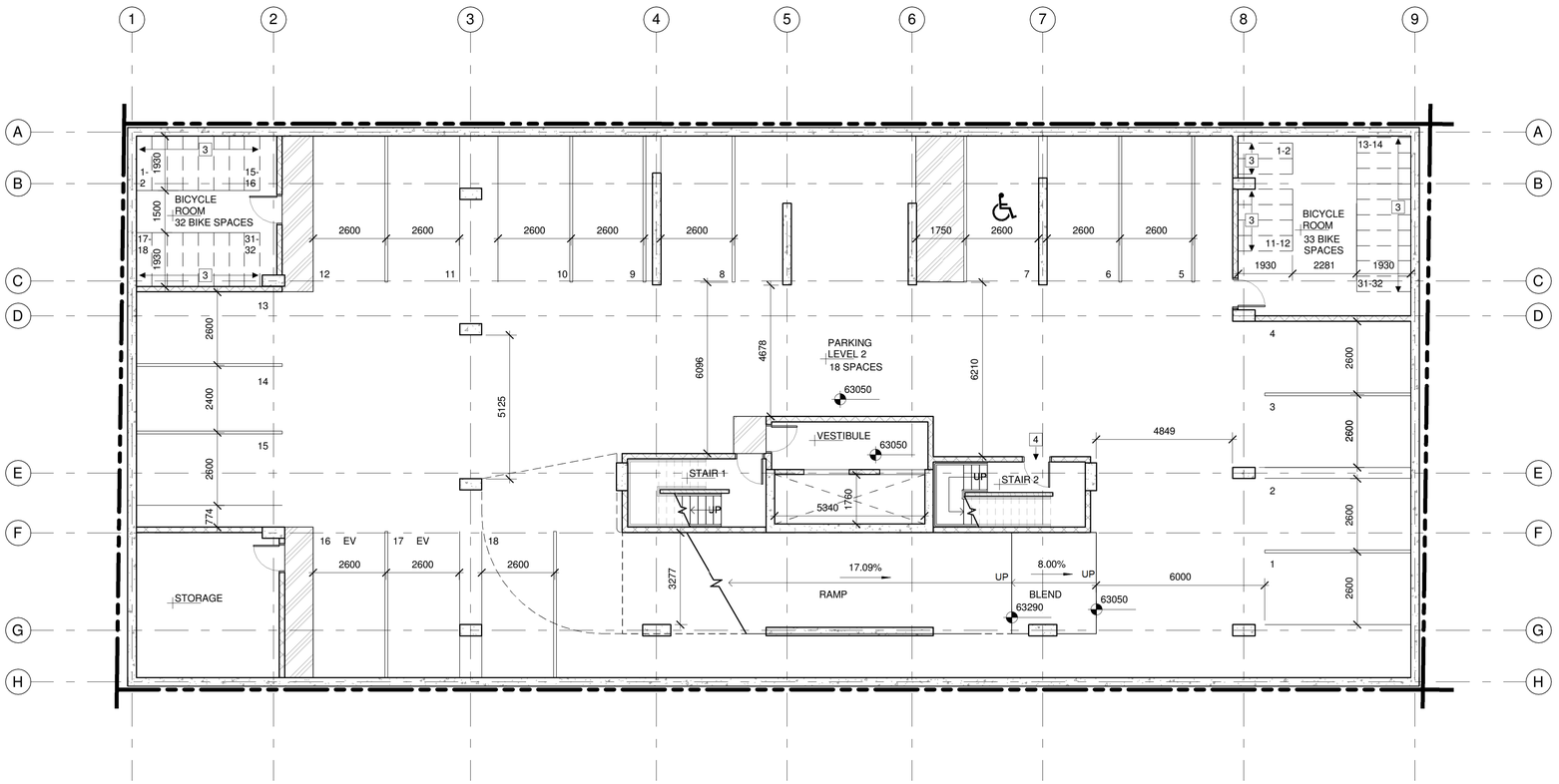
CLIENT
AZURE URBAN DEVELOPMENTS
OTTAWA
ONTARIO, CANADA

PROJECT
254 ARGYLE
254 Argyle Avenue, Ottawa, Ontario

TITLE
SITE PLAN

PROJECT NO:	2023-0250
DRAWN:	EF / IK
APPROVED:	DH
SCALE:	As indicated
DATE PRINTED:	9/3/2024 11:11:13 AM

REV 2 DRAWING NO. A100



1 LEVEL -2 PLAN
A200 | 1 : 100

GENERAL REFERENCE PLAN NOTES:

A. DO NOT SCALE DRAWINGS.
B. DIMENSIONS ARE FOR LOCATION ONLY. REFER TO STRUCTURAL DRAWINGS FOR FOOTINGS, COLUMNS AND FOUNDATION WALL SIZES.
C. REFER TO MECHANICAL + ELECTRICAL DRAWINGS FOR DETAILS OF UNDERGROUND SERVICES.
D. ALL EXTERIOR FOUNDATION WALLS ARE DIMENSIONED TO EXTERIOR FACE OF ASSEMBLY UNLESS OTHERWISE NOTED.
E. ALL INTERIOR FOUNDATION WALLS + FOOTINGS ARE DIMENSIONED FROM GRIDLINE TO FACE UNLESS OTHERWISE NOTED.
F. ALL WINDOWS ARE DIMENSIONED TO CENTERLINE OF WINDOW OPENING, UNLESS OTHERWISE NOTED.
G. ALL DOORS ARE DIMENSIONED TO CENTERLINE OF DOOR OPENING, INCLUDING SIDELIGHT FRAMING, UNLESS OTHERWISE NOTED
H. ALL EXTERIOR WALLS ARE DIMENSIONED TO THE EXTERIOR FINISHED FACE, UNLESS NOTED OTHERWISE.
I. ALL INTERIOR DIMENSIONS ARE DIMENSIONED FROM INTERIOR FINISHED FACES OF EXTERIOR WALLS, UNLESS OTHERWISE NOTED.
J. ALL INTERIOR WALLS ARE DIMENSIONED TO CENTERLINE OF PARTITION, UNLESS OTHERWISE NOTED. CONSIDER OFFSET FROM PARTITION CENTERLINE TO STUD FRAMING CENTER BASED ON WALL ASSEMBLY.
K. ENSURE 25mm MINIMUM THICKNESS OF CONCRETE COVER OVER VERTICAL STEEL REINFORCEMENT TO ALL REINFORCED CONCRETE STRUCTURAL COLUMNS AND WALLS.

REFERENCE PLAN KEYNOTES:

1 CISTERN OVERFLOW AND HATCH / VENTED CISTERN LID
2 EXTENT OF DROPPED SLAB ABOVE
3 DOUBLE TEAR BICYCLE STORAGE SPACES
4 EXIT ONLY
5 EXTENT OF FOUNDATION WALL BELOW

REFERENCE PLAN LEGEND:

NOT IN CONTRACT
PAINTED PARKING ISLAND

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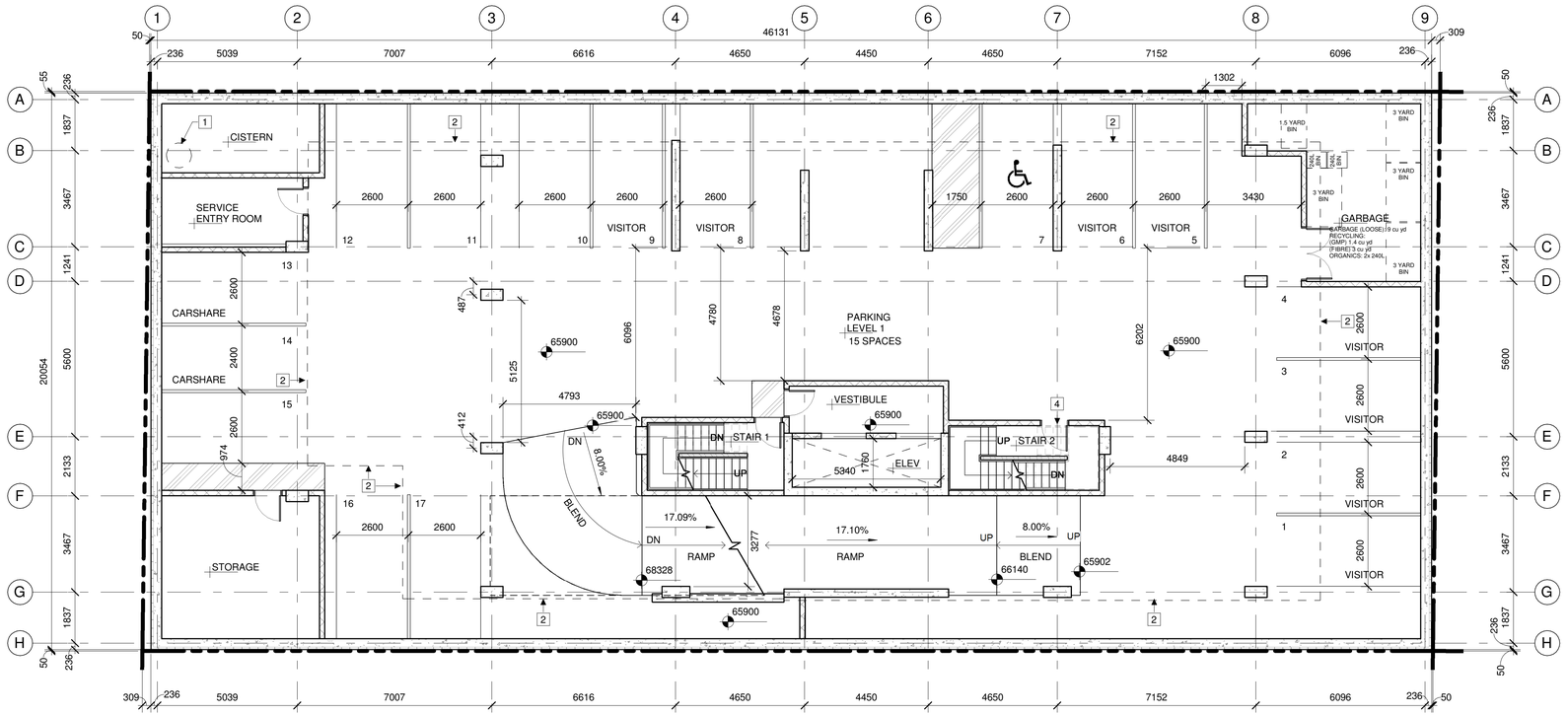
CLIENT
AZURE URBAN DEVELOPMENTS
OTTAWA
ONTARIO, CANADA

PROJECT
254 ARGYLE
254 Argyle Avenue, Ottawa, Ontario

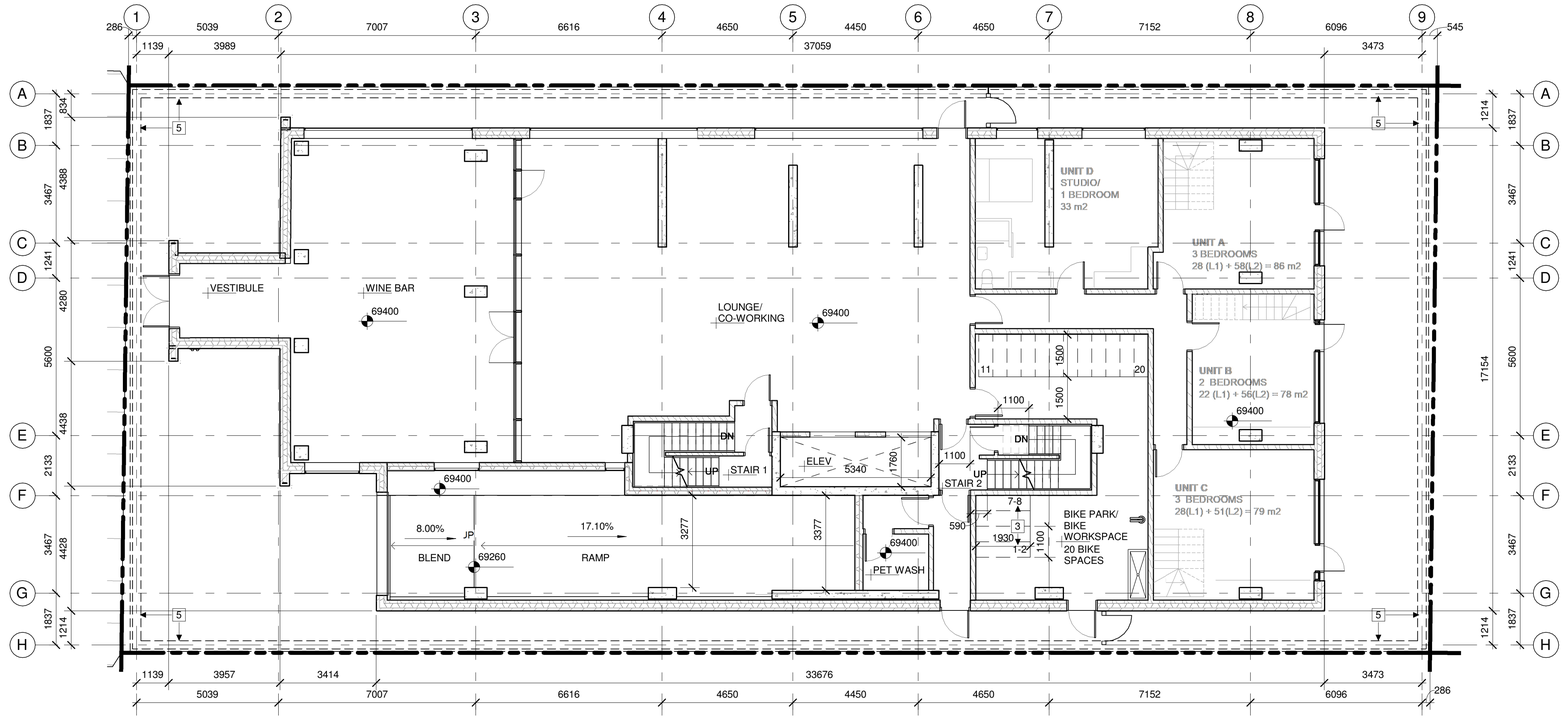
TITLE
LEVEL -2 PLAN

PROJECT NO:	2023-0250
DRAWN:	Author
APPROVED:	Approver
SCALE:	1 : 100
DATE PRINTED:	9/3/2024 11:11:17 AM

REV 2
DRAWING NO. A200



1 LEVEL -1 PLAN
A201 | 1 : 100



2 GROUND FLOOR REFERENCE PLAN
A201 | 1 : 100

GENERAL REFERENCE PLAN NOTES:

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D. ALL EXTERIOR FOUNDATION WALLS ARE DIMENSIONED TO EXTERIOR FACE OF ASSEMBLY UNLESS OTHERWISE NOTED.
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REFERENCE PLAN KEYNOTES:

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2. EXTENT OF DROPPED SLAB ABOVE
3. DOUBLE TEAR BICYCLE STORAGE SPACES
4. EXIT ONLY
5. EXTENT OF FOUNDATION WALL BELOW

REFERENCE PLAN LEGEND:

NOT IN CONTRACT

PAINTED PARKING ISLAND

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CLIENT
AZURE URBAN DEVELOPMENTS

OTTAWA
ONTARIO, CANADA

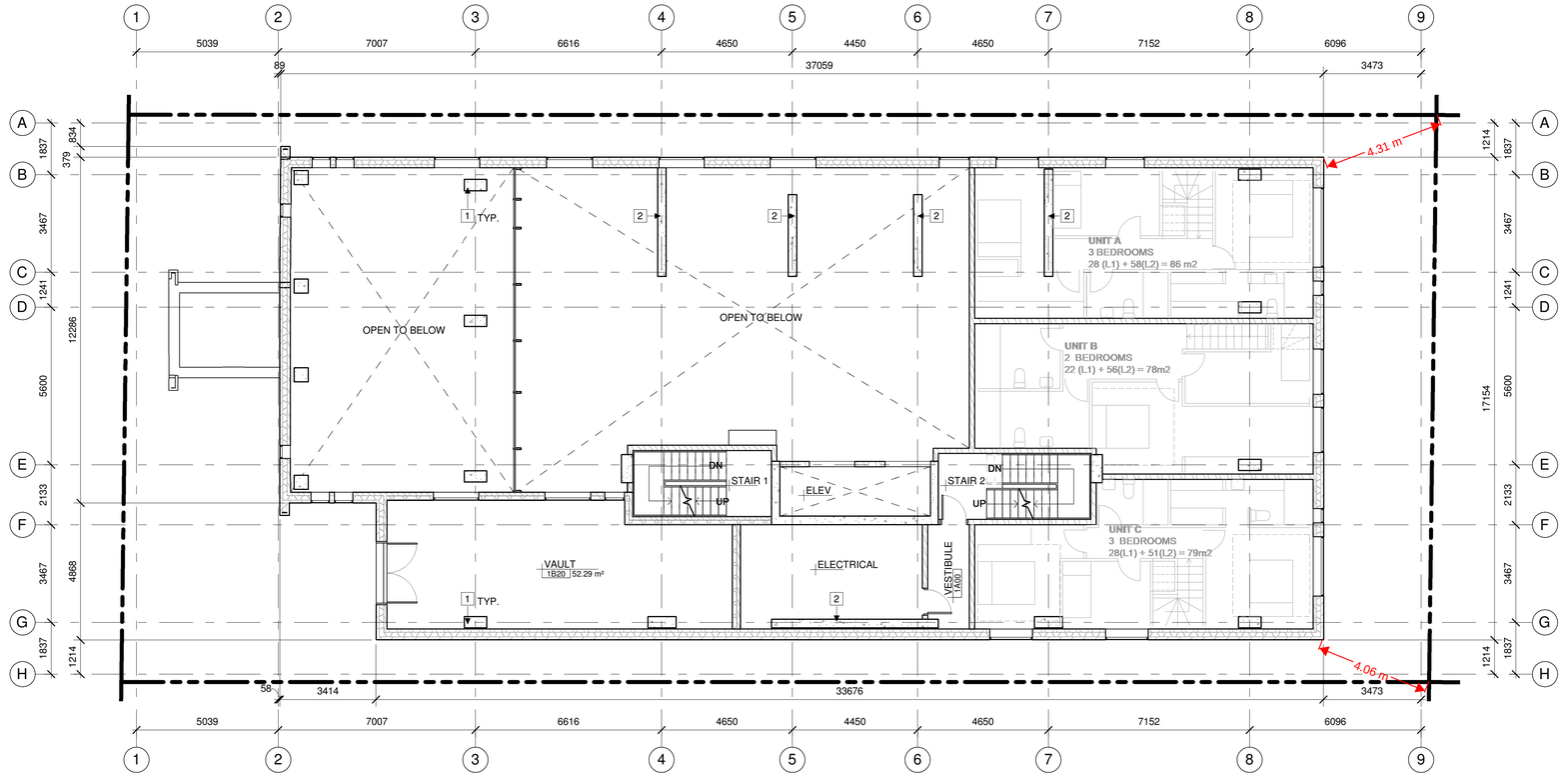
PROJECT
254 ARGYLE

254 Argyle Avenue, Ottawa, Ontario

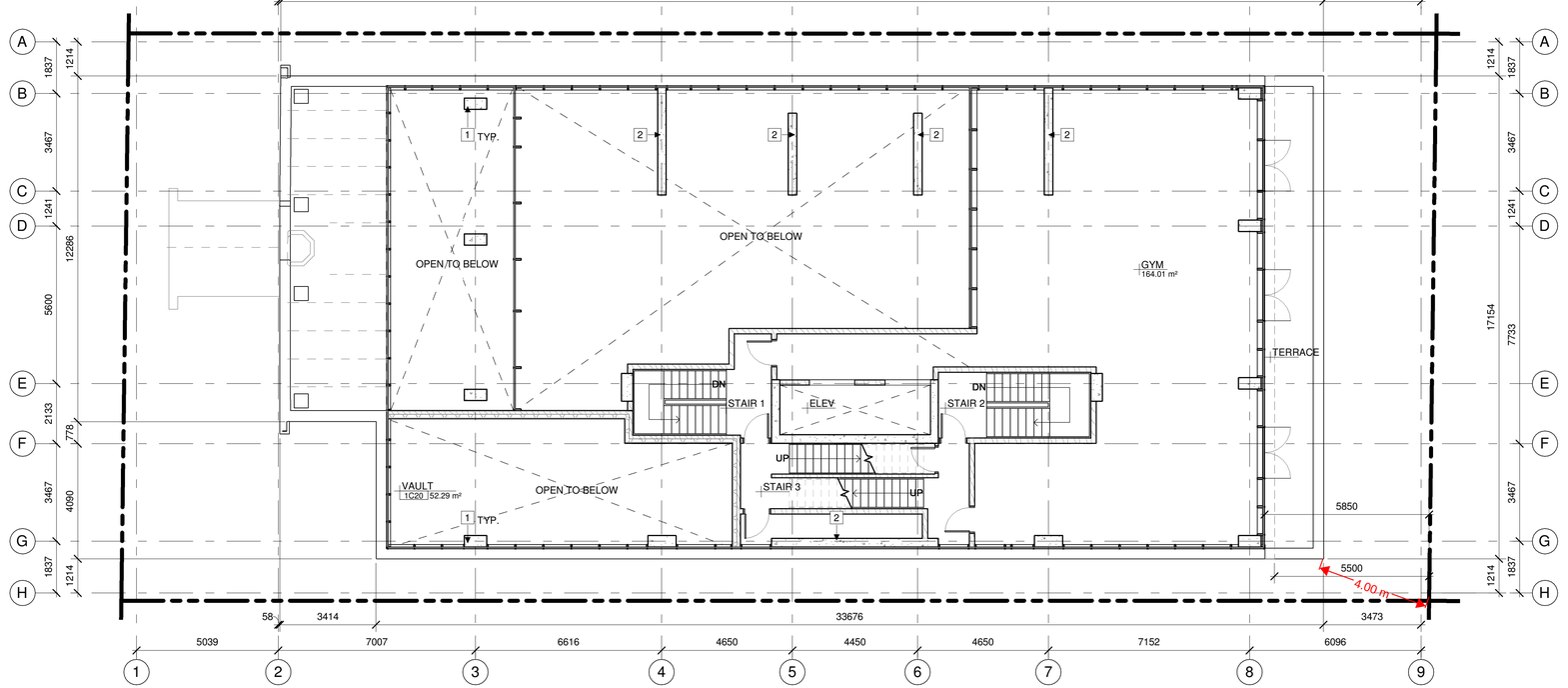
TITLE
LEVEL -1 AND GROUND FLOOR PLANS

PROJECT NO: 2023-0250
DRAWN: IK / EF
APPROVED: DH
SCALE: 1 : 100
DATE PRINTED: 9/3/2024 11:11:21 AM

REV 2
DRAWING NO. A201



1 LEVEL 1B PLAN
A202 | 1 : 100



2 LEVEL 1C PLAN
A202 | 1 : 100

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E. ALL DOORS ARE DIMENSIONED TO CENTERLINE OF DOOR OPENING, INCLUDING SIDELIGHT FRAMING, UNLESS OTHERWISE NOTED
F. ALL EXTERIOR WALLS ARE DIMENSIONED TO THE EXTERIOR FINISHED FACE, UNLESS NOTED OTHERWISE.
G. ALL INTERIOR DIMENSIONS ARE DIMENSIONED FROM INTERIOR FINISHED FACES OF EXTERIOR WALLS, UNLESS OTHERWISE NOTED.
H. ALL INTERIOR WALLS ARE DIMENSIONED TO CENTERLINE OF PARTITION, UNLESS OTHERWISE NOTED. CONSIDER OFFSET FROM PARTITION CENTERLINE TO STUD FRAMING CENTER BASED ON WALL ASSEMBLY.
I. ENSURE 25mm MINIMUM THICKNESS OF CONCRETE COVER OVER VERTICAL STEEL REINFORCEMENT TO ALL REINFORCED CONCRETE STRUCTURAL COLUMNS AND WALLS.

REFERENCE PLAN KEYNOTES:

1 COLUMN PER STRUCTURAL

2 WALL PER STRUCTURAL

REFERENCE PLAN LEGEND:

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OTTAWA
ONTARIO, CANADA

PROJECT

254 ARGYLE

254 Argyle Avenue, Ottawa, Ontario

TITLE

LEVEL 1B AND LEVEL 1C PLANS

PROJECT NO:	2023-0250
DRAWN:	IK / EF / RK
APPROVED:	DH
SCALE:	1 : 100
DATE PRINTED:	9/3/2024 11:11:26 AM

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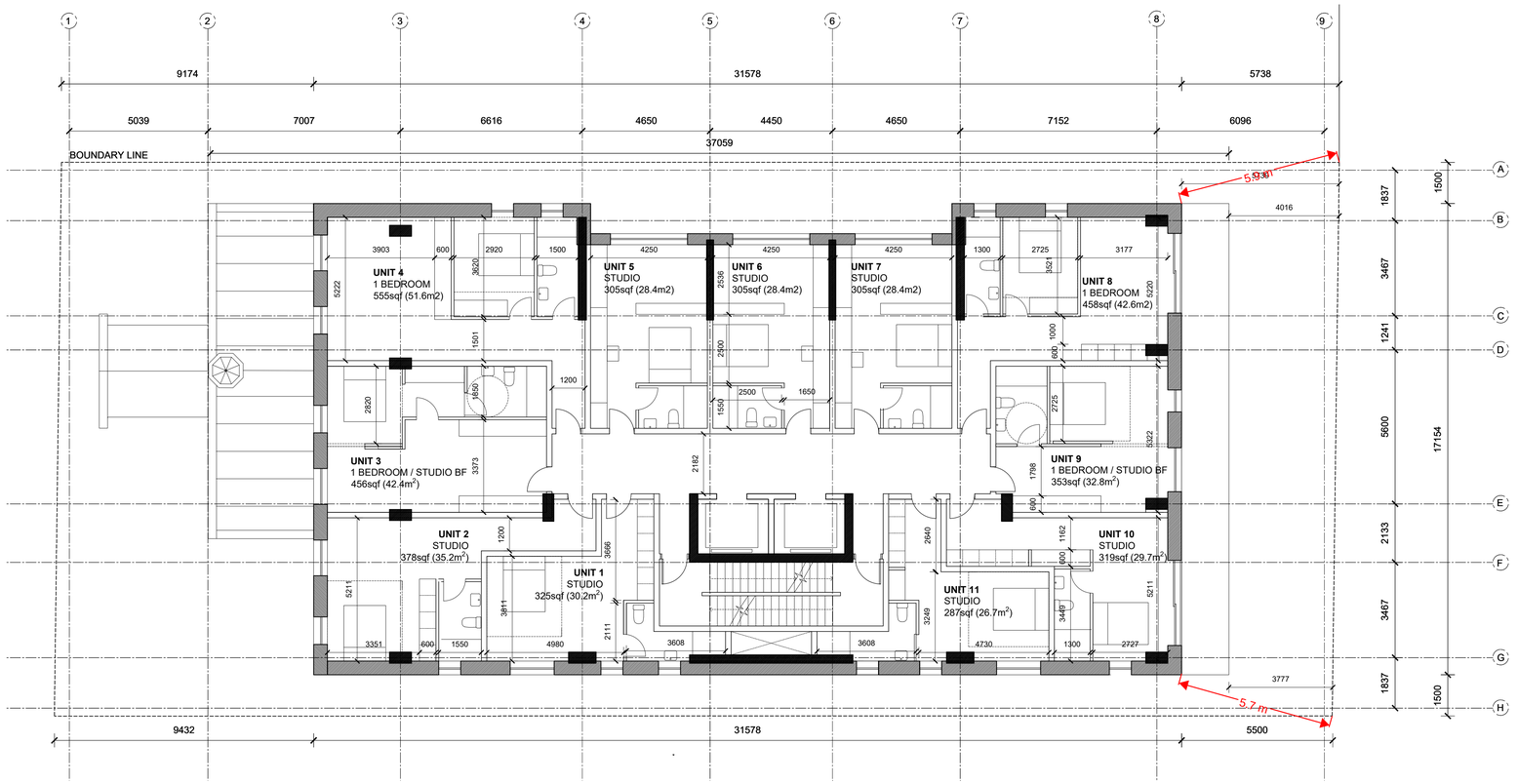
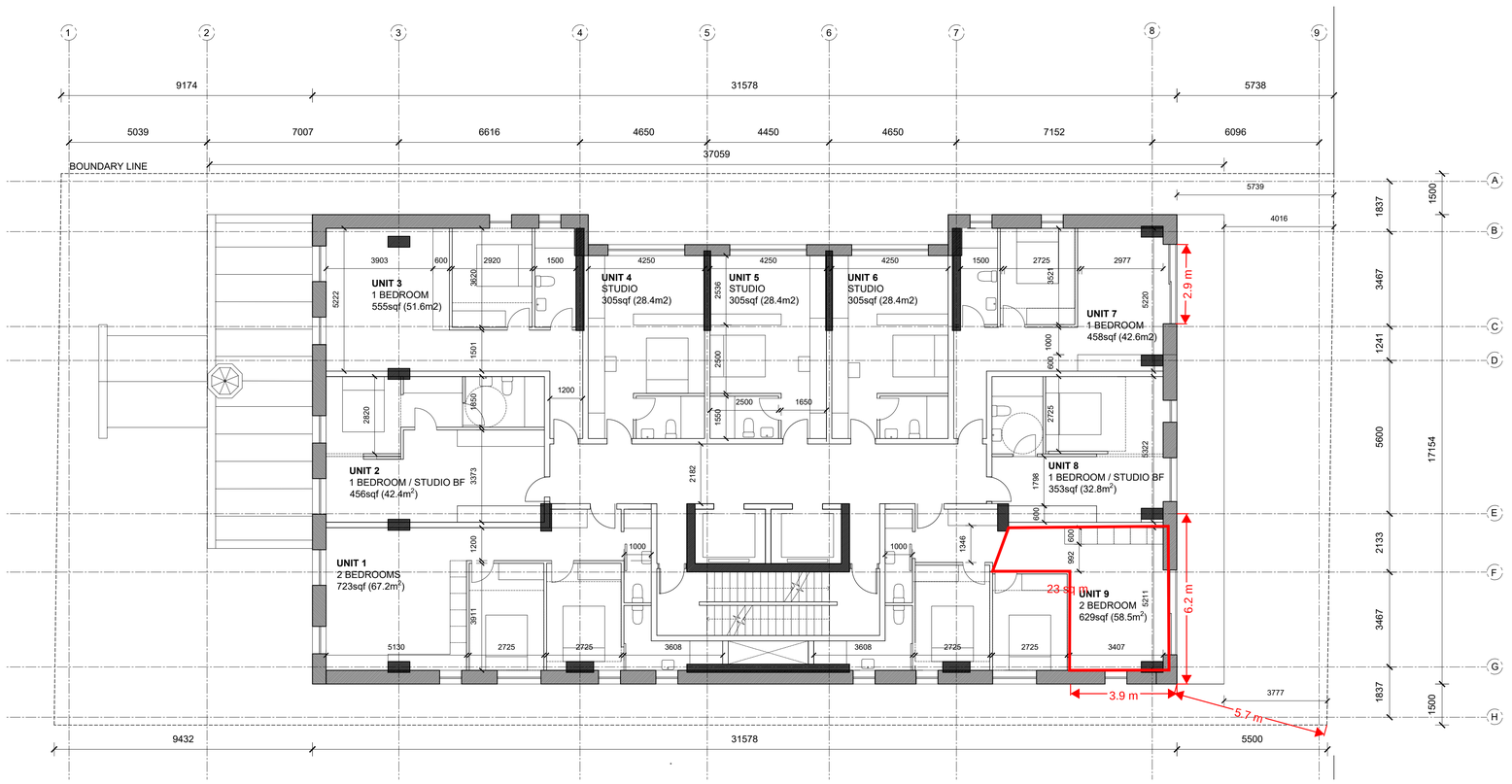
2	A202



1 LOWER TYPICAL FLOOR PLAN - LEVELS 2-5
A203 1 : 100



2 UPPER TYPICAL FLOOR PLAN - LEVELS 6-9
A203 1 : 100

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OTTAWA
ONTARIO, CANADA

PROJECT

254 ARGYLE

254 Argyle, Ottawa, Ontario

TITLE

LEVELS 2-9
FLOOR PLANS

PROJECT NO:	2023-0250
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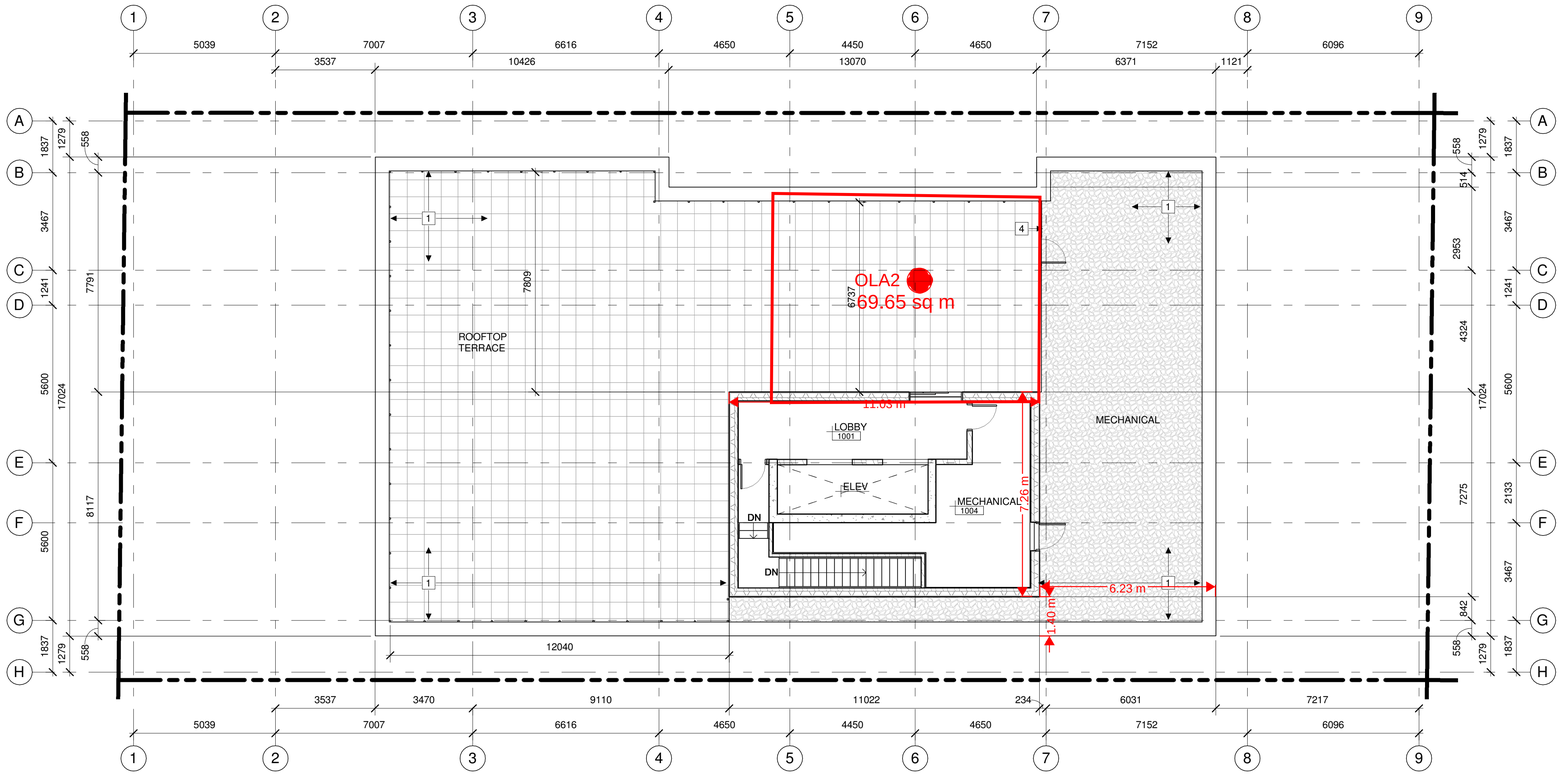
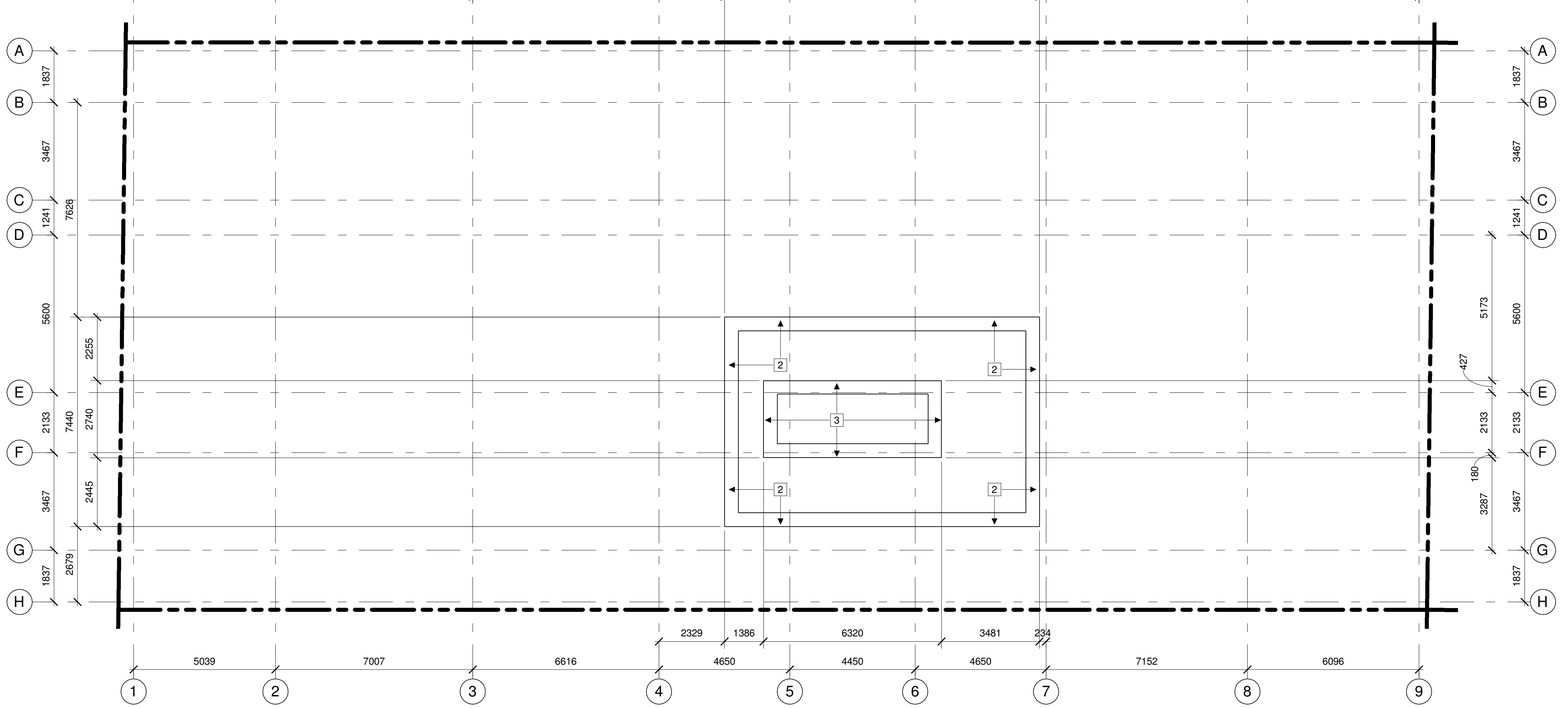
APPROVED:	SPICE
SCALE:	1 : 100

REV 2

DRAWING NO. A203



1 PENTHOUSE & MAIN ROOF PLAN
A204 | 1 : 100



2 UPPER ROOF PLAN
A204 | 1 : 100

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REFERENCE PLAN KEYNOTES:

1 LOWER LEVEL ROOF
2 UPPER ROOF
3 ELVATOR SHAFT ROOF
4 ROOF SCREEN AND GATE

REFERENCE PLAN LEGEND:

NOT IN CONTRACT

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254 Argyle Avenue, Ottawa, Ontario

TITLE
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APPROVED:	DH
SCALE:	1 : 100
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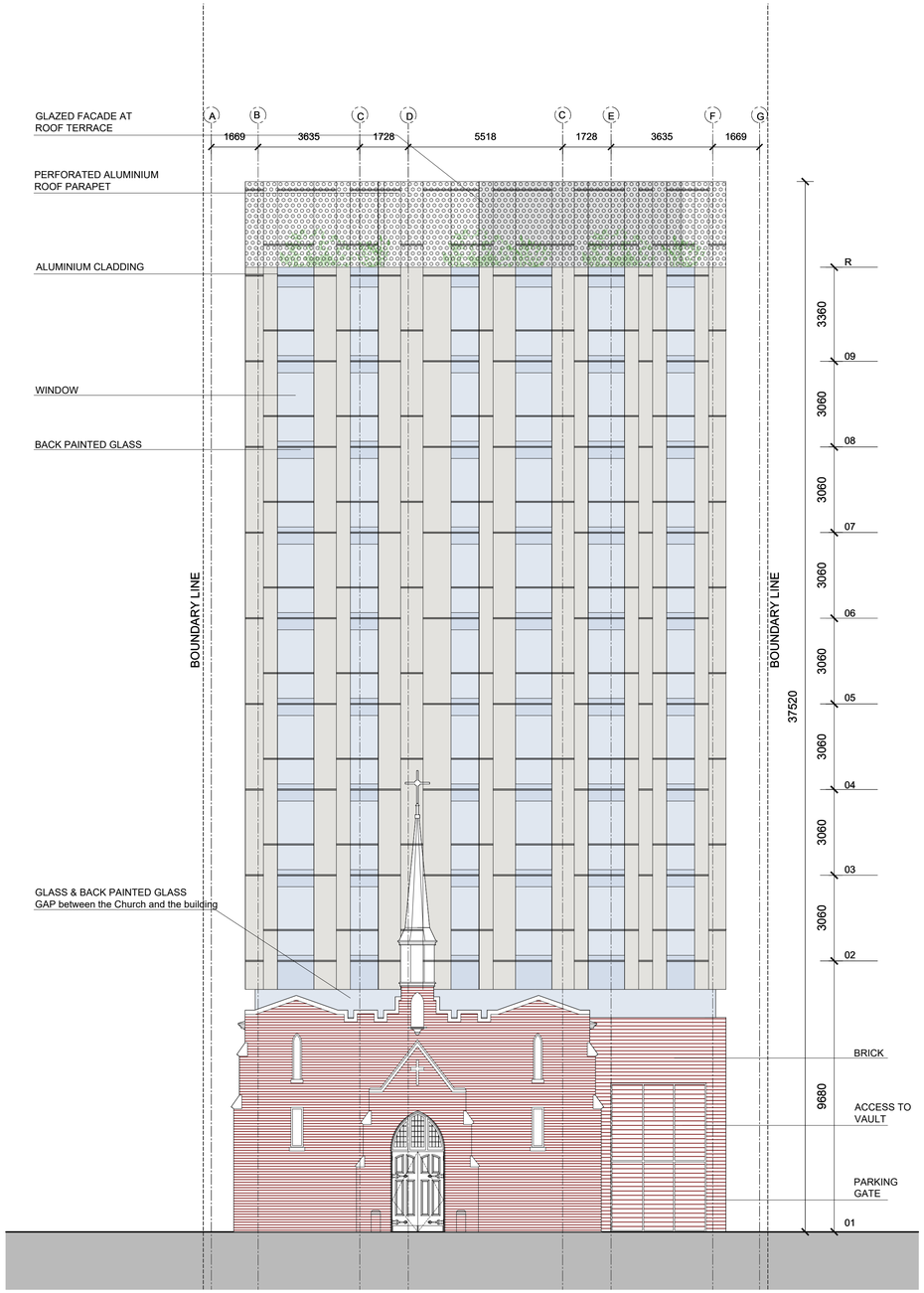
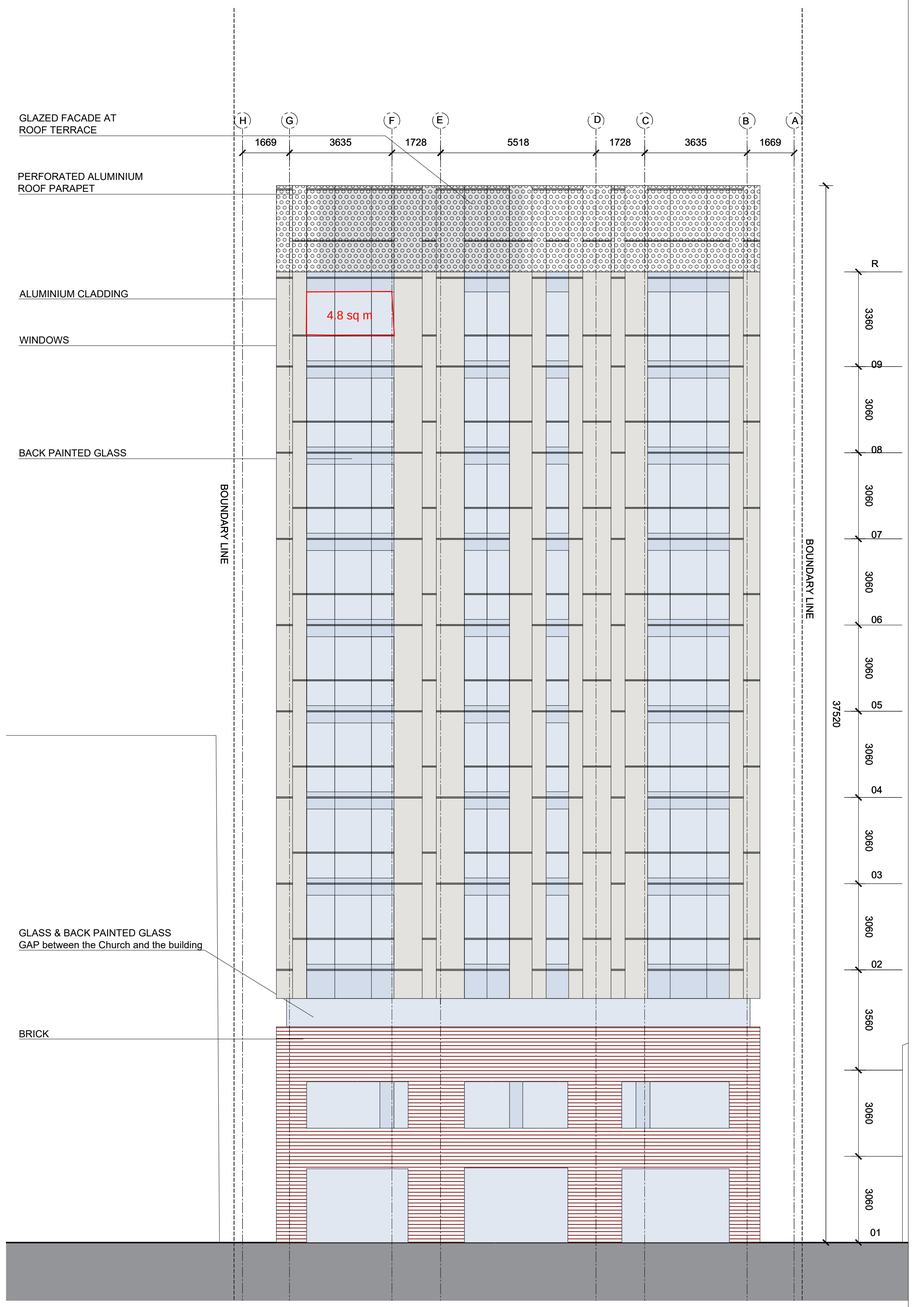


1 NORTH ELEVATION
A300 1 : 100



1 SOUTH ELEVATION
A300 1 : 100

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254 Argyle, Ottawa, Ontario

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REV 2
DRAWING NO. A300

1 EAST ELEVATION
A203 1 : 100

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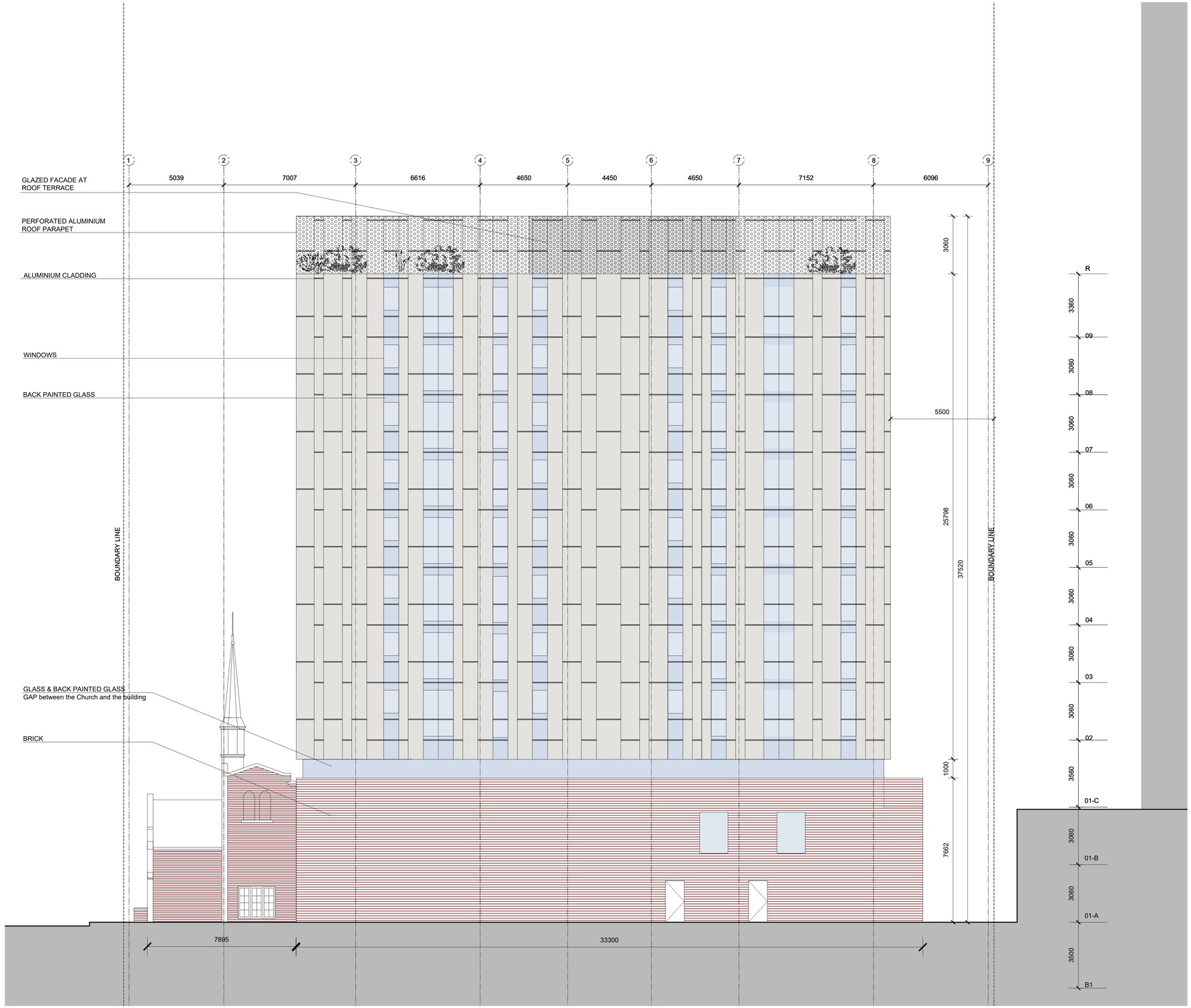
PROJECT
254 ARGYLE

254 Argyle, Ottawa, Ontario

TITLE
EAST ELEVATION

PROJECT NO:	2023-0250
DRAWN:	SPICE
APPROVED:	SPICE
SCALE:	1 : 100

REV 2
DRAWING NO. A301



1 WEST ELEVATION
A203 1 : 100

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ONTARIO, CANADA

PROJECT

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254 Argyle, Ottawa, Ontario

TITLE

WEST ELEVATION

PROJECT NO:	2023-0250
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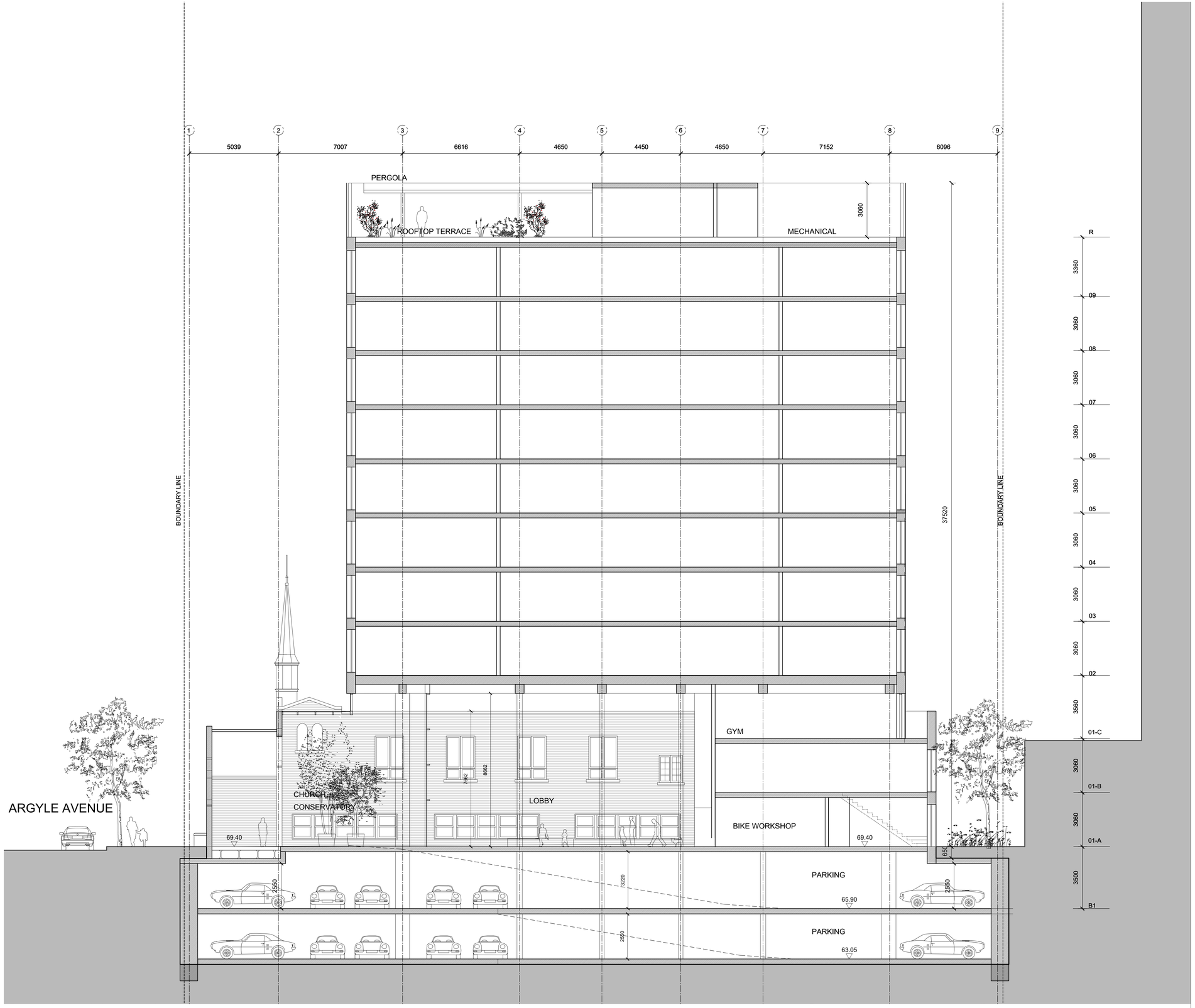

1 LONGITUDINAL SECTION
A400 1 : 100

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AZURE URBAN DEVELOPMENTS

OTTAWA
ONTARIO, CANADA

PROJECT

254 ARGYLE

254 Argyle, Ottawa, Ontario

TITLE

LONGITUDINAL SECTION

PROJECT NO:	2023-0250
DRAWN:	SPICE
APPROVED:	SPICE
SCALE:	1 : 100

REV 2

DRAWING NO. A400

APPENDIX B

Sound Level Calculations

STAMSON 5.0 SUMMARY REPORT Date: 13-09-2024 09:05:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow1.te Time Period: Day/Night 16/8 hours
Description: POW1 - Unit C

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

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

Angle1 Angle2 : -90.00 deg -25.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 69.00 / 69.00 m
Receiver height : 1.50 / 4.56 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -31.00 deg
Barrier height : 9.00 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 68.14 m
Receiver elevation : 69.40 m
Barrier elevation : 71.00 m
Reference angle : 0.00

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h

```
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bank (day/night)
--------------------------------------
Angle1   Angle2           : -25.00 deg   -9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  69.00 / 69.00  m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -25.00 deg   Angle2 : -9.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :  68.14 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00

↟
Road data, segment # 3: Catherine (day/night)
---------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Catherine (day/night)
-------------------------------------------
```

```
Angle1   Angle2           : -90.00 deg   -70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -70.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.14 m
Receiver elevation        :  69.40 m
Barrier elevation         :  71.00 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Catherine (day/night)
-----------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Catherine (day/night)
-----------------------------------------------
Angle1   Angle2           : -70.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -11.00 deg
Barrier height            :  69.40 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
```

```
Reference angle           :   0.00
```

↟

```
Road data, segment # 5: Catherine (day/night)
-----------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Catherine (day/night)
-----------------------------------------
Angle1   Angle2           : -11.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 2.00 deg
Barrier height            :  24.20 m
Barrier receiver distance :  32.00 / 32.00  m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 6: Catherine (day/night)
-----------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: Catherine (day/night)
-------------------------------------------
Angle1   Angle2           :   5.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   5.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00

♠
Road data, segment # 7: Hwy417 (day/night)
------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 7: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
```

```
Receiver source distance  : 130.00 / 130.00 m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -70.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  71.00 m
Reference angle           :   0.00
```



```
Road data, segment # 8: Hwy417 (day/night)
-----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 8: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -70.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 130.00 / 130.00 m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -11.00 deg
Barrier height            :  69.40 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00
```



```
Road data, segment # 9: Hwy417 (day/night)
-----------------------------------------
```

```
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 9: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -11.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 130.00 / 130.00 m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 2.00 deg
Barrier height            :  24.20 m
Barrier receiver distance :  32.00 / 32.00  m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00

♠
Road data, segment # 10: Hwy417 (day/night)
-------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
```

Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 10: Hwy417 (day/night)

```
Angle1   Angle2           :   5.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 130.00 / 130.00 m
Receiver height           :   1.50 / 4.56   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   5.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	48.55	48.55
2.Bank	1.50	37.09	37.09
3.Catherine	1.50	39.23	39.23
4.Catherine	1.50	39.38	39.38
5.Catherine	1.50	46.62	46.62
6.Catherine	1.50	42.90	42.90
7.Hwy417	1.50	49.17	49.17
8.Hwy417	1.50	48.93	48.93
9.Hwy417	1.50	56.18	56.18
10.Hwy417	1.50	52.66	52.66
Total			59.64 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	41.22	41.22
2.Bank	1.50	33.15	33.15

3.Catherine	!	1.50 !	33.18 !	33.18
4.Catherine	!	1.50 !	31.78 !	31.78
5.Catherine	!	1.50 !	39.03 !	39.03
6.Catherine	!	1.50 !	36.60 !	36.60
7.Hwy417	!	1.50 !	43.28 !	43.28
8.Hwy417	!	1.50 !	41.34 !	41.34
9.Hwy417	!	1.50 !	48.59 !	48.59
10.Hwy417	!	1.50 !	46.60 !	46.60
	Total			52.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.64
(NIGHT): 52.66

STAMSON 5.0 SUMMARY REPORT Date: 13-09-2024 11:20:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow2.te Time Period: Day/Night 16/8 hours
Description: POW2 - Unit 9 - Ninth Floor

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

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

Angle1 Angle2 : -90.00 deg -29.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 68.00 / 68.00 m
Receiver height : 32.60 / 32.60 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -33.00 deg
Barrier height : 9.00 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 68.14 m
Receiver elevation : 69.40 m
Barrier elevation : 71.00 m
Reference angle : 0.00

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h

```
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bank (day/night)
--------------------------------------
Angle1   Angle2           : -29.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  68.00 / 68.00  m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -29.00 deg   Angle2 : -8.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :  68.14 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00

↟
Road data, segment # 3: Catherine (day/night)
---------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Catherine (day/night)
-------------------------------------------
```

```
Angle1   Angle2           : -90.00 deg   -67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -67.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.14 m
Receiver elevation        :  69.40 m
Barrier elevation         :  71.00 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Catherine (day/night)
-----------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Catherine (day/night)
-----------------------------------------------
Angle1   Angle2           : -67.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -67.00 deg   Angle2 : -11.00 deg
Barrier height            :  69.40 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
```

```
Reference angle           :   0.00
```

↟

```
Road data, segment # 5: Catherine (day/night)
-----------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Catherine (day/night)
-----------------------------------------
Angle1   Angle2           : -11.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 1.00 deg
Barrier height            :  24.20 m
Barrier receiver distance :  35.00 / 35.00  m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 6: Catherine (day/night)
-----------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: Catherine (day/night)
-------------------------------------------
Angle1   Angle2           :   5.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   5.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00

♠
Road data, segment # 7: Hwy417 (day/night)
------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 7: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
```

```
Receiver source distance  : 131.00 / 131.00 m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -67.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  71.00 m
Reference angle           :   0.00
```



```
Road data, segment # 8: Hwy417 (day/night)
-----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 8: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -67.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 131.00 / 131.00 m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -67.00 deg   Angle2 : -11.00 deg
Barrier height            :  69.40 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00
```



```
Road data, segment # 9: Hwy417 (day/night)
-----------------------------------------
```

```
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 9: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -11.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 131.00 / 131.00 m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 1.00 deg
Barrier height            :  24.20 m
Barrier receiver distance :  35.00 / 35.00  m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00

↟
Road data, segment # 10: Hwy417 (day/night)
-------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
```

```
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 10: Hwy417 (day/night)
------------------------------------------
Angle1   Angle2           :   5.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 131.00 / 131.00 m
Receiver height           :  32.60 / 32.60  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   5.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  72.00 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00
```

↟

```
Result summary (day)
--------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.Bank	1.50	57.54	57.54	*
2.Bank	1.50	55.60	55.60	*
3.Catherine	1.50	52.51	52.51	*
4.Catherine	1.50	39.08	39.08	
5.Catherine	1.50	47.74	47.74	
6.Catherine	1.50	60.89	60.89	*
7.Hwy417	1.50	62.22	62.22	*
8.Hwy417	1.50	48.68	48.68	
9.Hwy417	1.50	63.23	63.23	*
10.Hwy417	1.50	70.49	70.49	*
Total			72.42 dBA	

```
  * Bright Zone  !
```

↟

```
Result summary (night)
----------------------
```

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

1.Bank	!	1.50 !	49.94 !	49.94 *
2.Bank	!	1.50 !	48.00 !	48.00 *
3.Catherine	!	1.50 !	44.92 !	44.92 *
4.Catherine	!	1.50 !	31.48 !	31.48
5.Catherine	!	1.50 !	40.15 !	40.15
6.Catherine	!	1.50 !	53.29 !	53.29 *
7.Hwy417	!	1.50 !	54.62 !	54.62 *
8.Hwy417	!	1.50 !	41.08 !	41.08
9.Hwy417	!	1.50 !	55.64 !	55.64 *
10.Hwy417	!	1.50 !	62.89 !	62.89 *
Total				64.82 dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 72.42
(NIGHT): 64.82

STAMSON 5.0 SUMMARY REPORT Date: 13-09-2024 14:46:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola1.te Time Period: Day/Night 16/8 hours
Description: OLA1 - First Floor Backyard

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

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

Angle1 Angle2 : -90.00 deg -23.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 2
House density : 95 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 72.00 / 72.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -28.00 deg
Barrier height : 9.00 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 68.14 m
Receiver elevation : 69.35 m
Barrier elevation : 71.00 m
Reference angle : 0.00

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h

```
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bank (day/night)
--------------------------------------
Angle1   Angle2           : -23.00 deg   7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  72.00 / 72.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -23.00 deg   Angle2 : 7.00 deg
Barrier height            :  10.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :  68.14 m
Receiver elevation        :  69.35 m
Barrier elevation         :  70.01 m
Reference angle           :   0.00

↟
Road data, segment # 3: Bank (day/night)
----------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Bank (day/night)
--------------------------------------
```

```
Angle1   Angle2           :   7.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  72.00 / 72.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   7.00 deg   Angle2 : 90.00 deg
Barrier height            :  35.70 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  68.14 m
Receiver elevation        :  69.35 m
Barrier elevation         :  69.40 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Catherine (day/night)
-----------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Catherine (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   75.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.00 / 57.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 75.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.35 m
```

```
Barrier elevation         :  69.35 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 5: Catherine (day/night)
-----------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Catherine (day/night)
-----------------------------------------
Angle1   Angle2           :  75.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.00 / 57.00  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            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.35 m
Barrier elevation         :  71.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 6: Hwy417 (day/night)
-----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   75.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 130.00 / 130.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 75.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  71.50 m
Receiver elevation        :  69.35 m
Barrier elevation         :  69.35 m
Reference angle           :   0.00

↟
Road data, segment # 7: Hwy417 (day/night)
----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 7: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           :  75.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
```

```
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 130.00 / 130.00 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            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  71.50 m
Receiver elevation        :  69.35 m
Barrier elevation         :  71.00 m
Reference angle           :   0.00
```

↟

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	43.67	43.67
2.Bank	1.50	36.90	36.90
3.Bank	1.50	41.67	41.67
4.Catherine	1.50	45.70	45.70
5.Catherine	1.50	45.87	45.87
6.Hwy417	1.50	55.18	55.18
7.Hwy417	1.50	53.40	53.40
Total			58.24 dBA

↟

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	36.07	36.07
2.Bank	1.50	29.30	29.30
3.Bank	1.50	34.08	34.08
4.Catherine	1.50	38.10	38.10
5.Catherine	1.50	38.27	38.27
6.Hwy417	1.50	47.58	47.58
7.Hwy417	1.50	45.80	45.80
Total			50.64 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 58.24
(NIGHT): 50.64

STAMSON 5.0 SUMMARY REPORT Date: 21-04-2025 10:40:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola2.te Time Period: Day/Night 16/8 hours
Description: OLA2 - Roof Top Amenity Area

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

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

Angle1 Angle2 : -90.00 deg 52.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 79.00 / 79.00 m
Receiver height : 35.70 / 35.70 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 52.00 deg
Barrier height : 37.50 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 68.14 m
Receiver elevation : 69.40 m
Barrier elevation : 69.40 m
Reference angle : 0.00

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %

```
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bank (day/night)
--------------------------------------
Angle1   Angle2           :  52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :  35.70 / 35.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  52.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  68.14 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Catherine (day/night)
---------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Catherine (day/night)
-------------------------------------------
```

```
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 3
House density             :     20 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  69.00 / 69.00  m
Receiver height           :  35.70 / 35.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :  10.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  71.42 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Catherine (day/night)
-----------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Catherine (day/night)
-----------------------------------------------
Angle1   Angle2           : -54.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     20 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  69.00 / 69.00  m
Receiver height           :  35.70 / 35.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 90.00 deg
Barrier height            :  37.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
```

```
Barrier elevation         :  69.40 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 5: Hwy417 (day/night)
-----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Hwy417 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 3
House density             :     20 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 136.00 / 136.00 m
Receiver height           :  35.70 / 35.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :  10.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  71.50 m
Receiver elevation        :  69.40 m
Barrier elevation         :  71.42 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 6: Hwy417 (day/night)
-----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth   :   0.00
    Number of Years of Growth   :   0.00
    Medium Truck % of Total Volume   :   7.00
    Heavy Truck % of Total Volume   :   5.00
    Day (16 hrs) % of Total Volume   : 92.00

Data for Segment # 6: Hwy417 (day/night)

Angle1   Angle2   : -54.00 deg   90.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   1 / 1
House density   :   20 %
Surface   :   2   (Reflective ground surface)
Receiver source distance : 136.00 / 136.00 m
Receiver height   : 35.70 / 35.70 m
Topography   :   2   (Flat/gentle slope; with barrier)
Barrier angle1   : -54.00 deg   Angle2 : 90.00 deg
Barrier height   : 37.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation   : 71.50 m
Receiver elevation   : 69.40 m
Barrier elevation   : 69.40 m
Reference angle   :   0.00

Result summary (day)
----

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	47.15	47.15
2.Bank	1.50	54.85	54.85 *
3.Catherine	1.50	52.72	52.72 *
4.Catherine	1.50	46.16	46.16
5.Hwy417	1.50	62.71	62.71 *
6.Hwy417	1.50	58.03	58.03
Total			64.90 dBA

Result summary (night)
----

	source height	Road Leq	Total Leq

	! (m)	! (dBA)	! (dBA)	
1.Bank	! 1.50	! 39.56	! 39.56	
2.Bank	! 1.50	! 47.26	! 47.26	*
3.Catherine	! 1.50	! 45.13	! 45.13	*
4.Catherine	! 1.50	! 38.56	! 38.56	
5.Hwy417	! 1.50	! 55.11	! 55.11	*
6.Hwy417	! 1.50	! 50.43	! 50.43	
Total			57.30 dBA	

TOTAL Leq FROM ALL SOURCES (DAY): 64.90
(NIGHT): 57.30

STAMSON 5.0 SUMMARY REPORT Date: 25-04-2025 13:42:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola2w.te Time Period: Day/Night 16/8 hours
Description: OLA2 - 3m NOISE WALL

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

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

Angle1 Angle2 : -90.00 deg 52.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 2
House density : 50 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 79.00 / 79.00 m
Receiver height : 35.90 / 35.90 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 52.00 deg
Barrier height : 37.52 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 68.14 m
Receiver elevation : 69.40 m
Barrier elevation : 69.40 m
Reference angle : 0.00

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h

```
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bank (day/night)
-------------------------------------
Angle1   Angle2           :  52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :  35.90 / 35.90  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  52.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  68.14 m
Receiver elevation        :  69.40 m
Barrier elevation         :  70.00 m
Reference angle           :   0.00

♠
Road data, segment # 3: Catherine (day/night)
---------------------------------------------
Car traffic volume  : 18216/1584  veh/TimePeriod  *
Medium truck volume :  1449/126   veh/TimePeriod  *
Heavy truck volume  :  1035/90    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  22500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Catherine (day/night)
```

```
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     20 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  69.00 / 69.00  m
Receiver height           :  35.90 / 35.90  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  37.52 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  67.41 m
Receiver elevation        :  69.40 m
Barrier elevation         :  69.40 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Hyw417 (day/night)
----------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 109998
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Hyw417 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 1
House density             :     20 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 136.00 / 136.00 m
Receiver height           :  35.90 / 35.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  37.52 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  71.50 m
```

Receiver elevation : 69.40 m
Barrier elevation : 69.40 m
Reference angle : 0.00

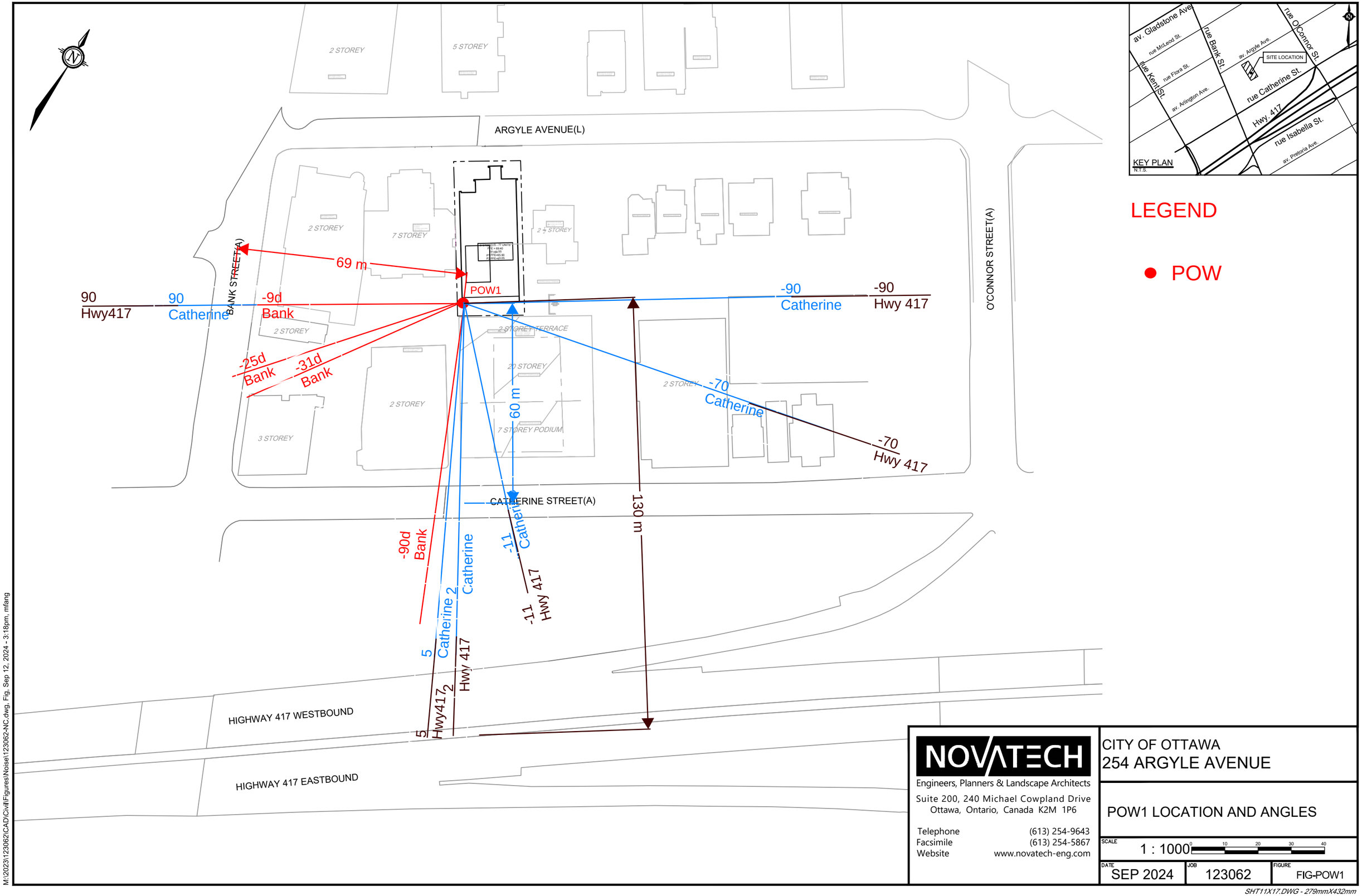
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	47.56	47.56
2.Bank	1.50	53.35	53.35 *
3.Catherine	1.50	48.47	48.47
4.Hyw417	1.50	60.40	60.40
Total			61.58 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Bank	1.50	39.96	39.96
2.Bank	1.50	45.76	45.76 *
3.Catherine	1.50	40.87	40.87
4.Hyw417	1.50	52.30	52.30
Total			53.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.58
(NIGHT): 53.61



LEGEND

- POW

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CITY OF OTTAWA
254 ARGYLE AVENUE

POW1 LOCATION AND ANGLES

SCALE 1 : 1000 (0, 10, 20, 30, 40)

DATE	JOB	FIGURE
SEP 2024	123062	FIG-POW1

SHT11X17.DWG - 279mmX432mm

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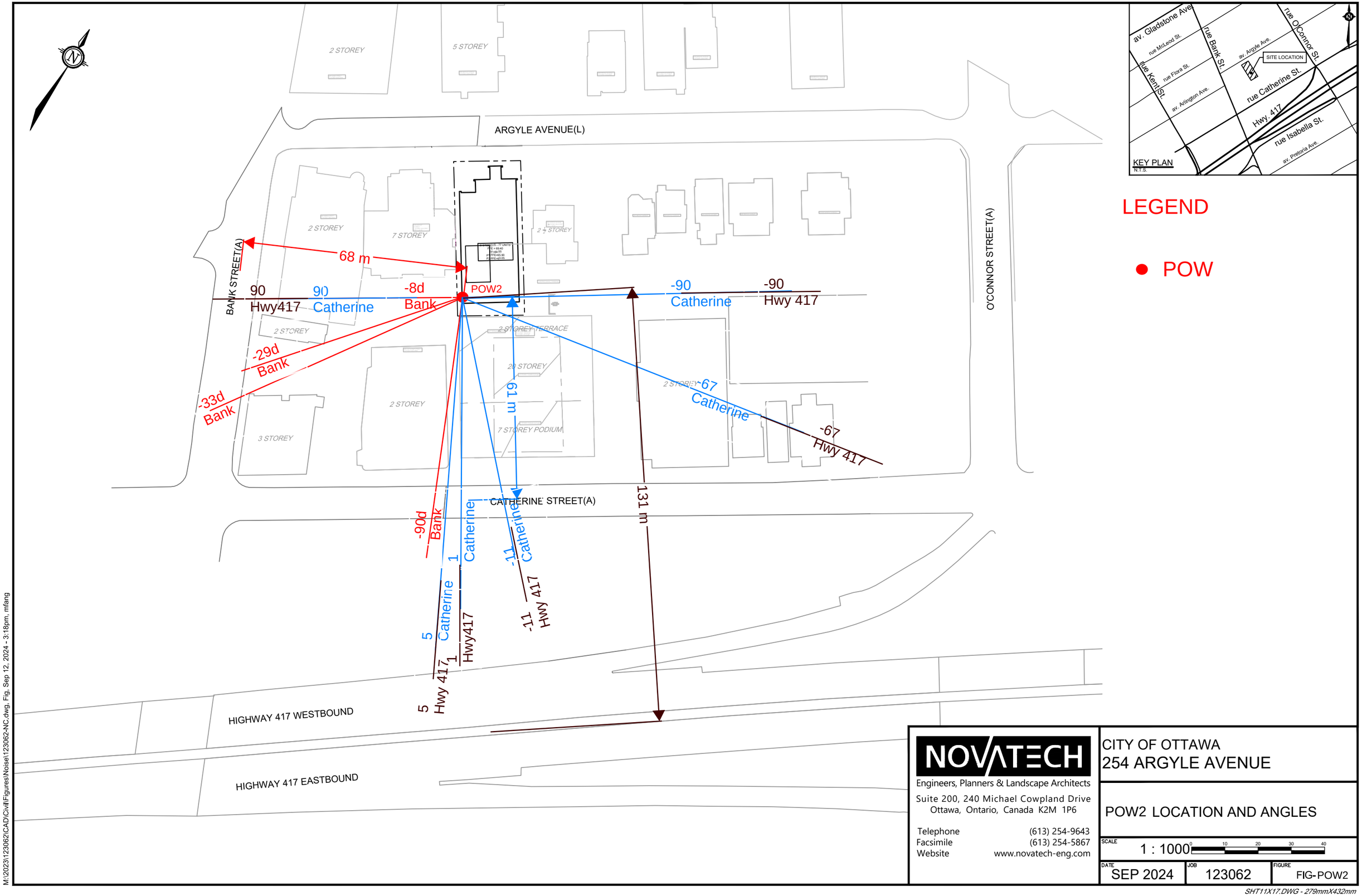

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POW2 LOCATION AND ANGLES

SCALE 1 : 1000 (0, 10, 20, 30, 40)

DATE	JOB	FIGURE
SEP 2024	123062	FIG-POW2

SHT11X17.DWG - 279mmX432mm

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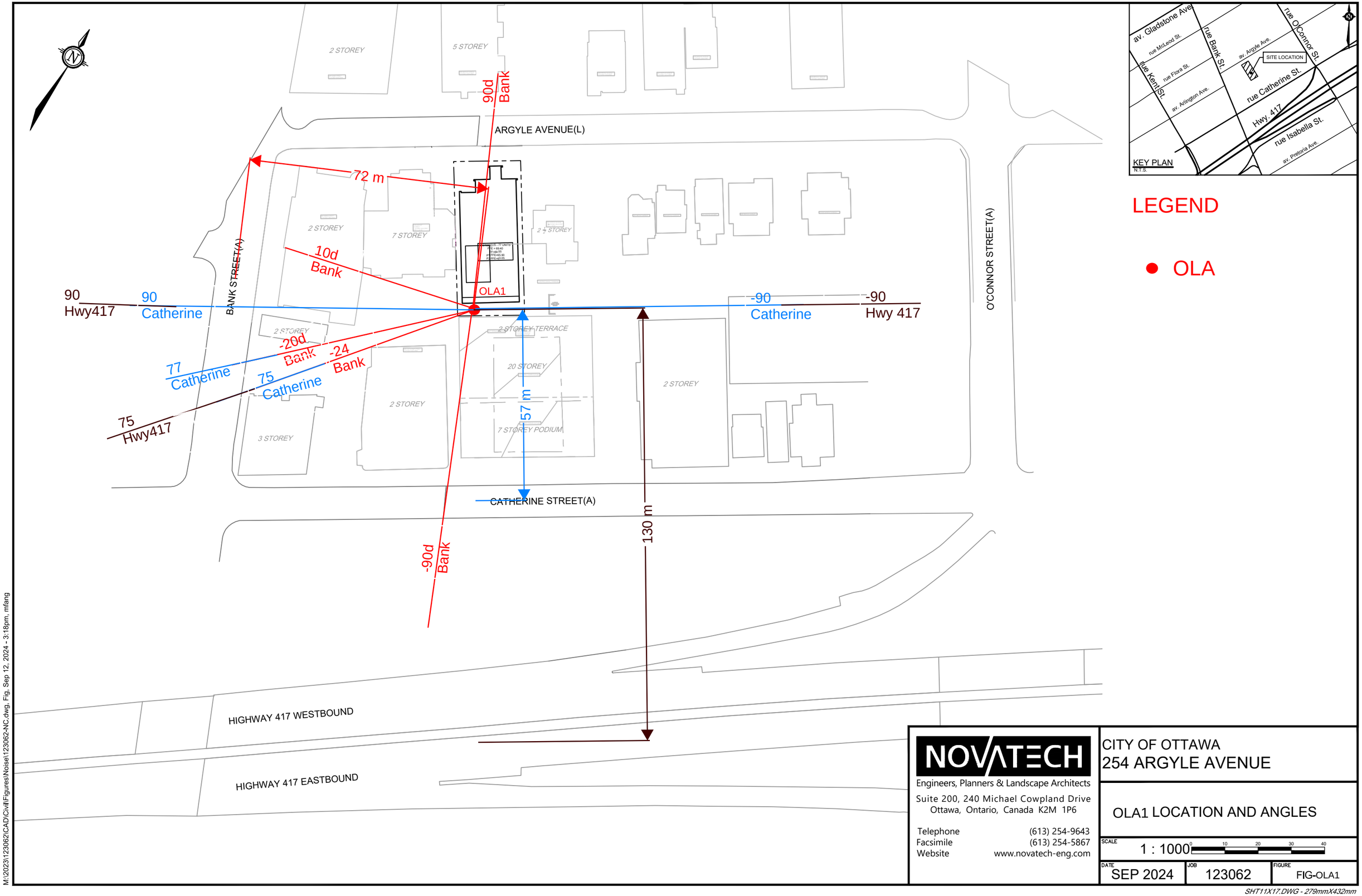

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OLA1 LOCATION AND ANGLES

SCALE 1 : 1000 (0, 10, 20, 30, 40)

DATE	JOB	FIGURE
SEP 2024	123062	FIG-OLA1

SHT11X17.DWG - 279mmX432mm

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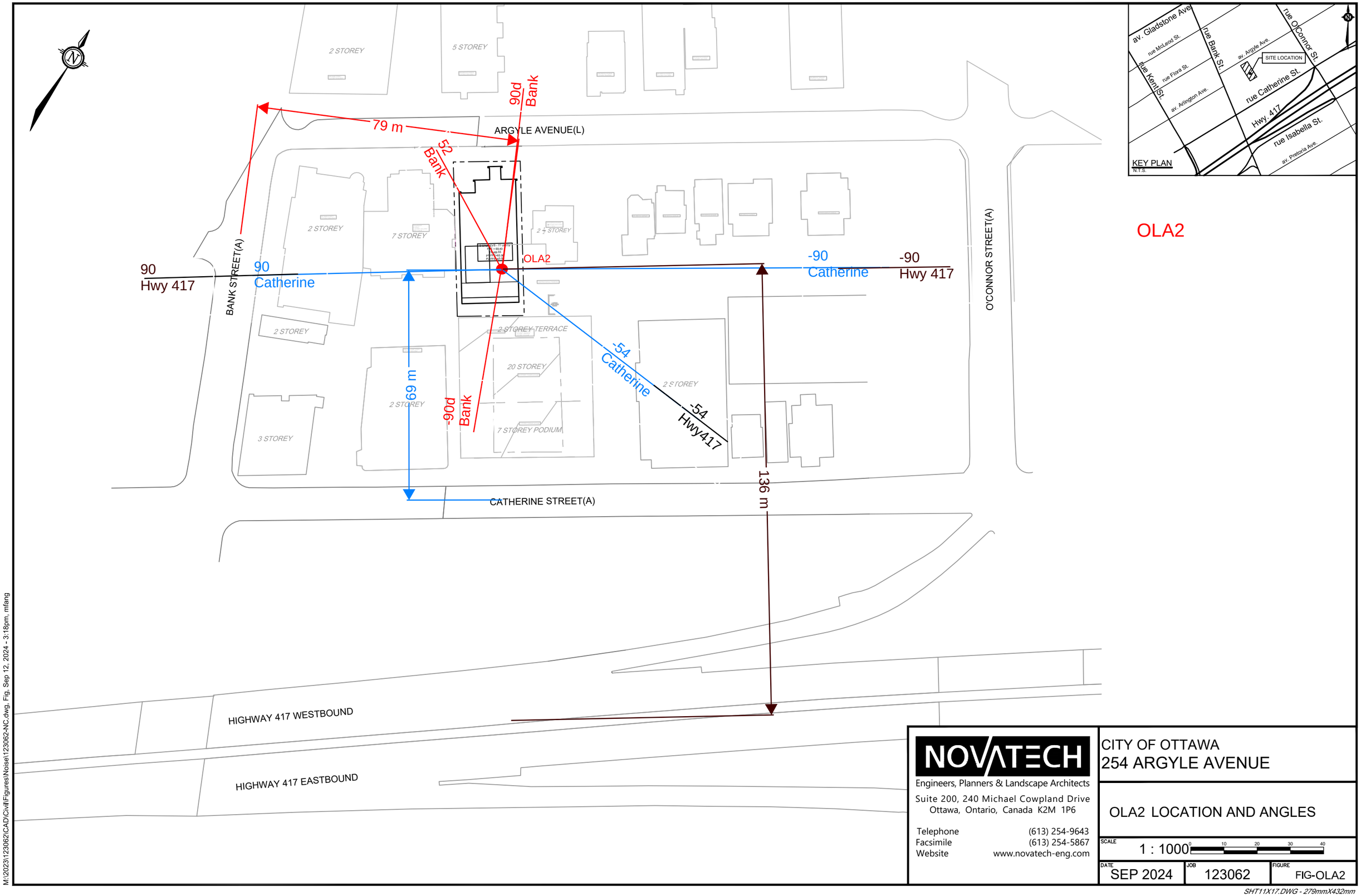

OLA2

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OLA2 LOCATION AND ANGLES

SCALE 1 : 1000 (0, 10, 20, 30, 40)
DATE SEP 2024
JOB 123062
FIGURE FIG-OLA2

SHT11X17.DWG - 279mmX432mm

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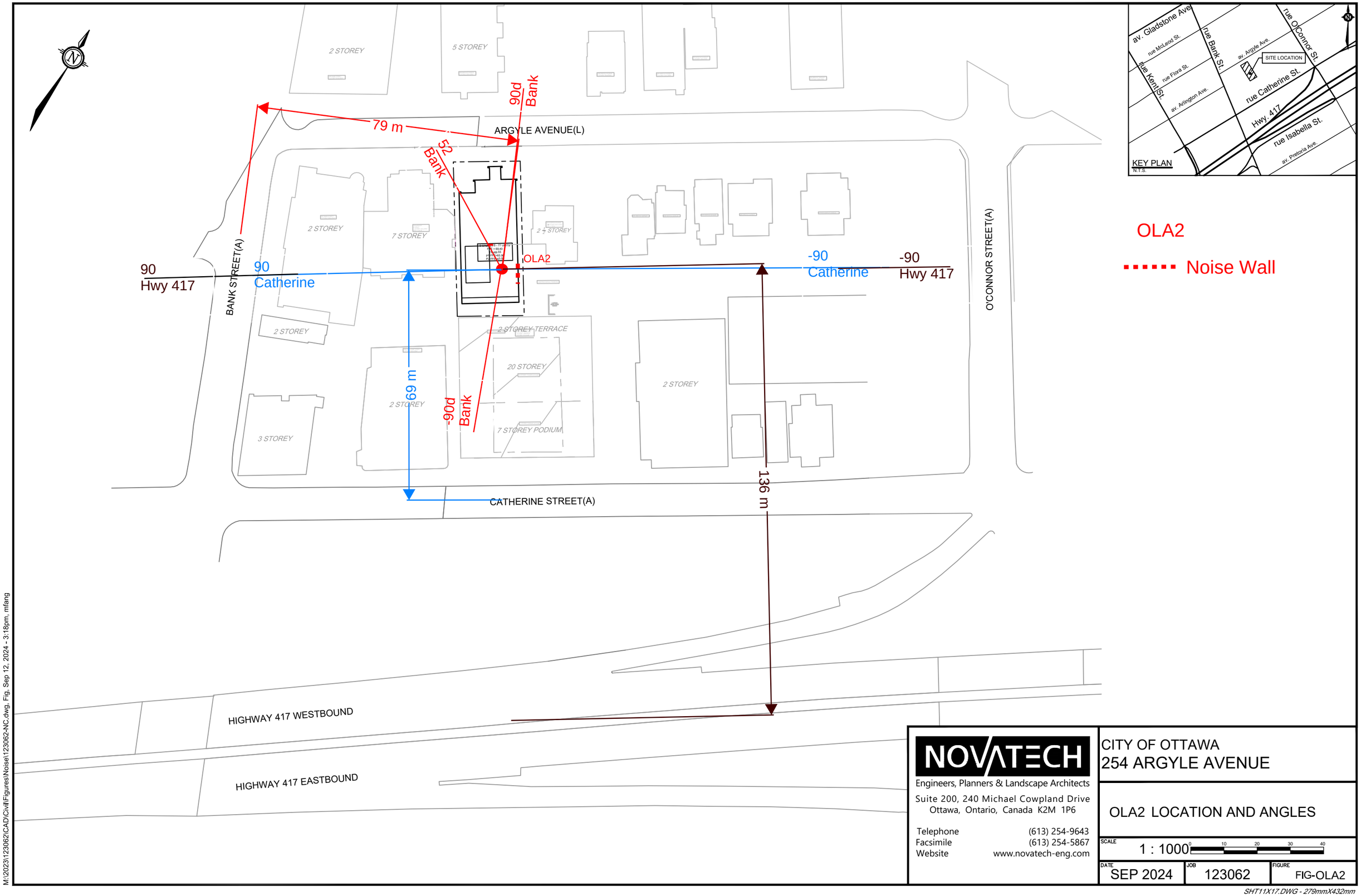

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CITY OF OTTAWA
254 ARGYLE AVENUE

OLA2 LOCATION AND ANGLES

SCALE 1 : 1000 (0, 10, 20, 30, 40)

DATE	JOB	FIGURE
SEP 2024	123062	FIG-OLA2

SHT11X17.DWG - 279mmX432mm

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APPENDIX C

Acoustic Insulation Factor Tables

POW 2 - 9th Floor

Table 6.3 – Acoustic Insulation Factor for Various Types of Exterior Wall

Percentage of exterior wall area to total floor area of room												Type of Exterior Wall
	16	20	25	32	40	50	63	80	100	125	160	
Acoustic Insulation Factor	39	38	37	36	35	34	33	32	31	30	29	EW1
	41	40	39	38	37	36	35	34	33	32	31	EW2
	44	43	42	41	40	39	38	37	36	35	34	EW3
	47	46	45	44	43	42	41	40	39	38	37	EW4
	48	47	46	45	44	43	42	41	40	39	38	EW1R
	49	48	47	46	45	44	43	42	41	40	39	EW2R
	50	49	48	47	46	45	44	43	42	41	40	EW3R
	55	54	53	52	51	50	49	48	47	46	45	EW5
	56	55	54	53	52	51	50	49	48	47	46	EW4R
	58	57	56	55	54	53	52	51	50	49	48	EW6
	59	58	57	56	55	54	53	52	51	50	49	EW7 or EW5R
	63	62	61	60	59	58	57	56	55	54	53	EW8

Source : National Research Council, Division of Building Research, December 1980.

Explanatory Notes :

1) Where the calculated percentage wall area is not presented as a column heading, the nearest percentage column in the table should be used.
2) The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38 x 89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities.
3) EW1 denotes exterior wall as in Note 2), plus sheathing, plus wood siding or metal siding and fibre backer board.
EW2 denotes exterior wall as in Note 2), plus rigid insulation (25-30 mm), and wood siding or metal siding and fibre backer board.
EW3 denotes simulated mansard with structure as in Note 2), plus sheathing, 28 x 89 mm framing, sheathing, and asphalt roofing material.
EW4 denotes exterior wall as in Note 2), plus sheathing and 20 mm stucco.
EW5 denotes exterior wall as in Note 2), plus sheathing, 25 mm air space, 100 mm brick veneer.
EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 100 mm back-up block, 100 mm face brick.
EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 140 mm back-up block, 100 mm face brick.
EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 200 mm concrete.
4) R signifies the mounting of the interior gypsum board on resilient clips.
5) An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25-50 mm), 25 mm air space, and 100 mm brick veneer has the same AIF as EW6.
6) An exterior wall described in EW1 with the addition of rigid insulation (25-50 mm) between the sheathing and the external finish has the same AIF as EW2.

PoW 2 9th Floor

TABLE 12: Approximate conversion from STC to AIF for exterior walls:

Exterior wall area expressed as percentage of room floor area	Acoustic Insulation Factor (AIF)
200	STC-10
160	STC-9
125	STC-8
100	STC-7
80	STC-6
63	STC-5
50	STC-4
40	STC-3
32	STC-2
25	STC-1
20	STC
16	STC+1
12.5	STC+2
10	STC+3
8	

Note: For area percentages not listed in the table use the nearest listed value.

Example: For a wall whose area = 120% of room floor area and STC = 48 the AIF is 48 - 8 = 40.

STC = AIF + 8 = 32 dBA + 8 = 40 dBA

POW2 9th Floor

TABLE 5: Acoustic Insulation Factor for Various Types of Windows

Window area as a percentage of total floor area of room (1)														Single glazing	Double glazing of indicated glass thickness					Triple Glazing	
4	5	6	8	10	13	16	20	25	32	40	50	63	80		2mm and 2mm glass	3mm and 3mm glass	4mm and 4mm glass	3mm and 6mm glass	6mm and 6mm glass	3mm, 3mm and 3mm glass	3mm, 3mm and 6mm glass
Acoustic Insulation Factor (AIF) (2)														Thickness	Interpane spacing in mm (3)					Interpane spacing in mm (5)	
35	34	33	32	31	30	29	28	27	26	25	24	23	22	2mm	6						
36	35	34	33	32	31	30	29	28	27	26	25	24	23		13						
37	36	35	34	33	32	31	30	29	28	27	26	25	24	3mm	15	6					
38	37	36	35	34	33	32	31	30	29	28	27	26	25	4mm, 6mm	19	13	6				
39	38	37	36	35	34	33	32	31	30	29	28	27	26		22	16	13	6	6	6,6	
40	39	38	37	36	35	34	33	32	31	30	29	28	27	9mm (4)	28	20	16	13	13	6,10	6,6
41	40	39	38	37	36	35	34	33	32	31	30	29	28		35	25	20	16	16	6,15	6,10
42	41	40	39	38	37	36	35	34	33	32	31	30	29	12mm (4)	42	32	25	20	20	6,20	6,15
43	42	41	40	39	38	37	36	35	34	33	32	31	30		50	40	32	25	24	6,30	6,20
44	43	42	41	40	39	38	37	36	35	34	33	32	31		63	50	40	32	30	6,40	6,30
45	44	43	42	41	40	39	38	37	36	35	34	33	32		80	63	50	40	37	6,50	6,40
46	45	44	43	42	41	40	39	38	37	36	35	34	33		100	80	63	55	50	6,65	6,50
47	46	45	44	43	42	41	40	39	38	37	36	35	34		125	100	80	75	70	6,80	6,65
48	47	46	45	44	43	42	41	40	39	38	37	36	35		150	125	100	95	90	6,100	6,80
49	48	47	46	45	44	43	42	41	40	39	38	37	36			150	125	110	100		6,100
50	49	48	47	46	45	44	43	42	41	40	39	38	37				150	135	125		

Source: National Research Council, Division of Building Research, June 1980.

Explanatory Notes:

1) Where the calculated percentage window area is not presented as a column heading, the nearest percentage column in the table values should be used.
2) AIF data listed in the table are for well-fitted weatherstripped units that can be opened. The AIF values apply only when the windows are closed. For windows fixed and sealed to the frame, add three (3) to the AIF given in the table.
3) If the interpane spacing or glass thickness for a specific double-glazed window is not listed in the table, the nearest listed values should be used.
4) The AIF ratings for 9mm and 12mm glass are for laminated glass only; for solid glass subtract two (2) from the AIF values listed in the table.
5) If the interpane spacings for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacings are nearest the actual combined spacing.
6) The AIF data listed in the table are for typical windows, but details of glass mounting, window seals, etc. may result in slightly different performance for some manufacturers' products. If laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used to calculate the AIF.

POW2 9th Floor

TABLE 11: Approximate conversion from STC to AIF for windows and doors:

Window (or door) area expressed as percentage of room floor area	Acoustic Insulation Factor (AIF)
80	STC-5
63	STC-4
50	STC-3
40	STC-2
32	STC-1
25	STC
20	STC+1
16	STC+2
12.5	STC+3
10	STC+4
8	STC+5
6.3	STC+6
5	STC+7
4	STC+8

Note: For area percentages not listed in the table use the nearest listed value.

Examples: For a window whose area = 20% of the room floor area and STC = 32 the AIF is 32 + 1 = 33.

For a window whose area = 60% of the room floor area and STC = 29 the AIF is 29 - 4 = 25.

STC = AIF - 1 = 32 - 1 = 31 dBA

Ming Fang

From: Greg MacDonald
Sent: Thursday, March 28, 2024 9:14 AM
To: Ming Fang
Subject: FW: 230251 Argyle Proposed Assemblies

Ming, see below regarding window and wall assemblies. I believe these are more than adequate. Can you finalize the report

Greg MacDonald, P. Eng.
Director, Land Development and Public Sector Infrastructure
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x279 | Cell: 613.890.9705 | Fax: 613.254.5867

From: Elizabeth Farrell <farrell@csv.ca>
Sent: Thursday, March 14, 2024 9:33 AM
To: Greg MacDonald <g.Macdonald@novatech-eng.com>
Cc: Karen Cook <karen.cook@spice.design>; Elena Martinez <elena.martinez@spice.design>; Darryl Hood <hood@csv.ca>; Rick Kellner <kellner@csv.ca>
Subject: 230251 Argyle Proposed Assemblies

Hello Greg,

Please see below the assemblies from Winona that we intend to use as a starting point for Argyle, for your reference. The set was established for a 40% greater energy efficiency target. A change to the window glazing was made during a value engineering exercise to suit a 25% greater energy efficiency target. These reduced glazing assemblies would be the minimum assemblies to be implemented at Argyle.

Exterior Wall with Brick Veneer R-31 - U=0.032 btu/h*sqft*oF, FRR 45 min per SB-2
90 brick veneer c/w shelf angle with fero fast support @ 915mm o/c
25mm air space
140mm semi-rigid mineral wool continuous insulation
Vapour permeable air barrier membrane: Siga, Soprema, Henry
13mm exterior grade gypsum sheathing
92mm LGS stud at 406mm o/c c/w mineral wool batt insulation filled cavity (10 min per SB-2)
6mil poly vapour retarder membrane
16mm interior Type X gypsum board (40 min per SB-2)

Exterior Wall with Panel Cladding R-32 U=0.031 btu/h*sqft*oF frr 45min per SB-2
25mm aluminum composit panel
13mm air space c/w cladding support system
152mm semi-rigid mineral wool continuous insulation
Vapour permeable air barrier membrane: Siga, Soprema, Henry
13mm exterior grade gypsum sheathing
92mm LGS stud at 406 mm o/c c/w mineral wool batt insulation filled cavity (10 min per SB-2)
6mil poly vapour retarder membrane
16mm Type X interior gypsum board (40 min per SB-2)

Window and Curtain Wall Glazing
Triple glazed thermal unit. Tempered glass, low-e coatings (surface 2 and 4), argon filled cavities.

Reductions made for 25% target:

Window Glazing (Curtain Wall Glazing remained as detailed above)
Double glazed thermal unit. Tempered glass, low-e coating (surface 2), argon filled cavity.

Regards,

Elizabeth Farrell
Intern Architect | M.Arch

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