

# 1166 Bank Street, Ottawa, ON

**Noise Control Detailed Study** 

# Client:

Ambassador Realty Inc. 185 Somerset Street West, Ottawa, ON K2P OJ2

# Type of Document:

**Site Plan Control Application** 

# **Project Name:**

Noise Control Detailed Study – 6-Storey Mixed-Use Building

# **Project Number:**

OTT-22018175-A0

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# **Date Submitted:**

March 21, 2023

### 1

# **Table of Contents**

1	Introductio	n	2
2	Site and Su	rrounding Area	2
3	Noise Crite	ria	3
	3.1	Transportation Sound Level Prediction	4
4	Critical Noi	se Receptors	4
5	Stamson O	utput, Analysis and Recommendations	5
	5.1	Ventilation	6
	5.2	Building Components	7
6	Conclusion	S	8
7	General Lir	nitations	8
8	Closure		9
9	References		9
Tal	ole 3-1 - MECF	P and City of Ottawa Indoor Sound Level Limit	3
		P Ventilation and Warning Clause Requirements	
		P Building Component Requirements	
Tal	ole 3-4 - Road	Traffic Data Summary	4
Tal	ole 4-1 - Sumn	nary of Point of Reception (POR)	5
		lated Outdoor Sound Levels at the east façade of the building due to Road Traffic	
		nary of the applicable warning clauses and required AIF for building components	
Tal	ole 5-3 - Recor	mmended Window Configurations (25% Window/Floor Area)	7
Li	st of Figu	ires	
		Location, Exposure Angle and Source-Receiver Distance 1	
		Location, Exposure Angle and Source-Receiver Distance 3	
FIE	ure A3 – Site I	Location Plan	A

# **Appendices**

Appendix A – Figures and Drawings

Appendix B – STAMSON Calculation Output



# 1 Introduction

EXP Services Inc. (EXP) was retained by Ambassador Realty Inc. to complete a Noise Control Detailed Study for a proposed 6-storey mixed-use building at 1166 Bank Street in Ottawa, Ontario (hereinafter referred to as the 'Site') to support a Site Plan Approval application. The purpose of this study is to assess the impact of traffic noise from nearby roads to the proposed mixed-use development in accordance with the City of Ottawa's Environmental Noise Control Guidelines (ENCG) and the Ontario Ministry of the Environment, Conservation and Parks (MECP) Environmental Noise Guideline, Stationary and Transportation Sources — Approval and Planning, Publication NPC-300. It is prepared to address the following requirements as identified in Section 2.1 of the ENCG.

"Development proposals for new noise sensitive land uses are required to include a noise feasibility study and/or detailed noise study in the following locations:

- Mixed Use Centre, Town Centre and Main streets as identified on Schedule B; or within
- 100 metres from the right-of-way of:
  - o an existing or proposed arterial, collector or major collector road identified on Schedules C4; or
  - a light rail transit corridor; bus rapid transit, or transit priority corridor identified on Schedule C2;
- 250 metres from the right-of-way of:
  - o an existing or proposed highway;
- 300 metres from the right-of-way of
  - A proposed or existing rail corridor or;
  - Secondary main railway line;
- 500 metres from the right-of-way of:
  - A 400-series provincial highway, freeway or
  - A principle main railway line."

And will require noise mitigation and a warning clause where necessary, as a condition of approval.

This report assesses noise impact from surface transportation noise sources only. No significant stationary noise sources were noted in the vicinity of the site, and therefore an assessment of stationary noise sources was outside the scope of this study.

# 2 Site and Surrounding Area

The Site is located on the west side of Bank Street and is bounded by two local roads: Glen Avenue to the north, and Grove Avenue to the south. It is surrounded by residential properties and commercial buildings. An aerial photo of the area is shown in Figure A3 in Appendix A. Bank Street is an arterial road within 100 m of the site.

The Site consists of a 6-storey mixed-used building with a basement/parking level. The first floor has 4 retail units, and the second through sixth floors contain a total of 37 residential units. On the fifth floor, all units facing Bank Street have terraces 2 m (6.56 ft.) deep. As the depth of the terraces are less than 4 m, they are not considered designated outdoor amenity areas. Additionally, there is an L-shaped terrace cornering the Site's south and west side façade, shared by the residents. This terrace does not protrude at a depth of more than 4 m from either side of the façade, and therefore, cannot be considered as an outdoor amenity area for the sake of this study. A site plan, elevation plan and floor plans are provided in Appendix A.



# 3 Noise Criteria

Guidelines for acceptable sound levels of road traffic on mixed use developments are given in Part C of MECP Publication NPC-300 "Environmental Noise Guidelines, Stationary and Transportation Sources – Approval and Planning" (August 2013) and City of Ottawa's ENCG. They are summarized in Table 3-1 to Table 3-3.

Table 3-1 - MECP and City of Ottawa Indoor Sound Level Limit

Room	Time Period	Road Sound Level (L <sub>eq</sub> )
Living/Dining Rooms	Daytime (07:00-23:00)	45 dBA
	Night-time (23:00-07:00)	45 dBA
Bedrooms Daytime (07:00-23:00)		45 dBA
	Night-time (23:00-07:00)	40 dBA

Table 3-2 - MECP Ventilation and Warning Clause Requirements

Time Period	Assessment Location	L <sub>eq</sub>	Ventilation Requirements	Warning Clause
Daytime (07:00-	Plane of a bedroom or living/dining room	Greater than 55 dBA to less than or equal to 65 dBA	Forced air heating with provision for central air conditioning.	Type C
23:00)	window	Greater than 65 dBA	Central air conditioning	Type D
Night-time (23:00-	Plane of a bedroom or living/dining room	Greater than 50 dBA to less than or equal to 60 dBA	Forced air heating with provision for central air conditioning.	Type C
07:00)	window	Greater than 60 dBA	Central air conditioning	Type D

Table 3-3 - MECP Building Component Requirements

Time Period	Assessment Location	L <sub>eq</sub>	Building Component Requirements
Daytime (07:00-23:00)	Plane of a bedroom or living/dining room window	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code.
		Greater than 65 dBA	Building components must be designed to achieve indoor sound level criteria.
Night-time (23:00-07:00)	Plane of a bedroom or living/dining room window	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code.
		Greater than 60 dBA	Building components must be designed to achieve indoor sound level criteria.



# 3.1 Transportation Sound Level Prediction

The major transportation noise source is the road traffic along Bank Street, which is classified as a 4-Lane Urban Arterial-Undivided and is within 100 m from the Site. Glen Avenue and Grove Avenue are public local roads and therefore are not assessed as noise sources.

Calculation of traffic sound levels were performed using STAMSON 5.04, the software implementation of the MOE ORNAMENT model for road traffic, which was developed and published by the MECP for transportation noise prediction. Traffic volume data for Bank Street was obtained from ENCG for a 4-Lane Urban Arterial-Undivided Road. The traffic data is summarized in Table 3-4.

Table 3-4 - R	Road Traffic	Data Summary	!
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Parameter	Bank Street
R.O.W. Width	Approx. 12.5 m
Roadway Type	4-Lane Urban Arterial-Undivided; (4-UAU)
AADT	30,000 vehicles/day
Day/Night Split	92%/8%
Medium Truck Percentage	7%
Heavy Truck Percentage	5%
Speed Limit	40 km/h*

<sup>\*</sup>The actual posted speed limit of the road section

# 4 Critical Noise Receptors

Critical Noise Receptors are those receptors likely to be most affected by the identified noise source. The east face of the building parallel to the noise source with no physical barrier in between. The west face of the building is fully shielded from Bank Street and hence is not considered in this study. The north and south face of the building are perpendicular to the noise source and will face limited exposure to the traffic noise on Bank Street. Therefore, the critical noise receptor in this case would be the bedrooms and living areas of the units along the east façade of the building (facing Bank Street). A receptor (POR1) is considered at the east façade to measure noise levels.

In addition, receptors were also considered along the north (POR2) and south (POR3) face of the building to measure noise levels. The neighboring property across from the south façade of the building is currently 4 storey high. Therefore, it would provide shielding for the south façade for up to 4<sup>th</sup> storey. Therefore, an additional receptor (POR4) was considered at the south façade for 5<sup>th</sup> and 6<sup>th</sup> storey to model the higher noise exposure. All the neighboring buildings across from north façade are 1 storey high. Therefore, only one receptor (POR2) is sufficient to model 2<sup>nd</sup> to 6<sup>th</sup> storey of north façade. All the PORs along north and south façade were placed at the center of the façade to measure source-receiver distance.

Since the ground between the source and the receptor (Bank Street) is considered as reflective ground surface in all scenarios, the resulting noise levels at the face of the building are independent from the receptor height. Figure A1 and Figure A2 in Appendix A shows the exposure angle and source-receptor distances for each POR.



Table 4-1 - Summary of Point of Reception (POR)

Receptor ID	Receptor Location	
POR1	POR1 East façade	
POR2	North façade	
POR3	South façade	
POR4	South façade (5 <sup>th</sup> -6 <sup>th</sup> Storey)	

# 5 Stamson Output, Analysis and Recommendations

Calculated sound levels from Stamson are summarized in Table 5-1. The output reports from Stamson are provided in Appendix B. The daytime and nighttime sound levels due to road traffic on Bank Street at the building faces exceed the limits provided in Table 3-1. Therefore, ventilation and building component requirements (noise control measures) in accordance with Table 3-2 and Table 3-3 respectively, must be examined.

Table 5-1 - Calculated Outdoor Sound Levels at the east façade of the building due to Road Traffic

Pagantar ID	Calculated Sound Level (dBA)		
Receptor ID	Daytime L <sub>eq</sub> (16 hrs)	Night-time L <sub>eq</sub> (8 hrs)	
POR1 (east façade)	70	62	
POR2 (north façade)	65	58	
POR3 (south façade)	62	54	
POR4 (south façade, 5 <sup>th</sup> -6 <sup>th</sup> storey)	63	56	

As noted in Table 5-1 above, the daytime and nighttime sound levels at the east façade (POR 1) are greater than 65 dBA and 60 dBA, respectively. Whereas, for the north and south façade, the sound levels are between 55 dBA and 65 dBA during daytime and 50 dBA and 60 dBA during nighttime. Based on these results, the applicable warning clauses, building ventilation and component requirements listed on Table 3-2 and Table 3-3, are summarized in Table 5-2 below.

Table 5-2 - Summary of the applicable warning clauses and required AIF for building components

Receptor ID	Applicable Warning Clauses		Centralized Air Conditioning	Required AIF for Building Components	
	Daytime	Nighttime	System	Daytime	Nighttime
POR1 (east façade)	Type D	Type D	Required	30	27
POR2 (north façade)	Type C	Type C	Provisioned	OBC	OBC
POR3 (south façade)	Type C	Type C	Provisioned	OBC	OBC
POR4 (south façade, 5 <sup>th</sup> -6 <sup>th</sup> storey)	Type C	Type C	Provisioned	OBC	OBC

From Table 5-1 and Table 5-2 above, it is evident that the units along the east face of the building are most critical for this noise study. Given that the outdoor noise levels along the east façade would be greater than 65 dBA during daytime and 60



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dBA during nighttime, the building components will have to be chosen to meet the required Acoustical Insulation Factor (AIF) as noted in **Table 5-2** above. The required AIF was derived using equation (1) below, assuming Two (2) building components (Wall and window) for the east façade of the building. This assumption was made based on the architectural plan available at the time of this study, attached in **Appendix A**. Building components along the north and south face of the building can be designed as per the Ontario Building Code (OBC) requirements. Moreover, the units on the east facade will need to be equipped with a centralized air conditioning system.

The Acoustic Insulation Factor (AIF) needed to control the road traffic noise is calculated as follows:

\*AIF =  $L_{eq}$  outdoor façade –  $L_{eq}$  indoor + 10 log C + 2 ......(1)

where:

Leq outdoor façade = Outdoor façade sound level

Leg indoor = Indoor objective sound level

C = Number of building components forming envelope of room

\*Source: Equation 3 - Building Research Note, Acoustic Insulation Factor: A Rating for the Insulation of Buildings Against Outdoor Noise by J.D. Quirt (Division of Building Research, National Research Council of Canada, June 1980) [BRN, 1980]

At this stage of design, the architectural floor plans (included in **Appendix A**) are not well advanced to include the floor space area usage, component type and size to calculate the accurate ratio of component area to floor area. Therefore, the window and wall component requirements were estimated based on assumed wall/floor and window/floor areas. The assumption will be that for units facing Bank Street along the east façade of the building, the window to floor area will be 25% and wall to floor area will be 80%. As noted previously, the outdoor noise levels along the north and south face of the building are less than 65 dBA during daytime and less than 60 dBA during nighttime. Therefore, the building components designed to be compliant with the OBC should be sufficient.

As the Architectural design progresses, the building components will have to be designed to provide the required AIF noted in Table 5-2 above.

# 5.1 Ventilation

Based on the MECP Ventilation Requirements, the predicted daytime sound levels for POR1 are over 65 dBA during daytime and over 60 dBA during night-time. Therefore, central air conditioning is required for the building (alongside a warning clause) so that windows can remain closed.

The following Type D warning clause should be inserted in all development agreements of dwellings facing Bank Street, along east facade:

# Type D: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4 - (MECP, Publication NPC-300)

"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."



The following Type C warning clause should be inserted in all development agreements of dwellings along the north and south façade:

# Type C: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4 - (MECP, Publication NPC-300)

"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."

# **5.2** Building Components

Based on the MECP Building Component Requirements, the predicted sound levels exceed 65 dBA during daytime and 60 dBA during night-time for POR1. Therefore, the building components should be designed so that the indoor sound levels comply with the sound level limits for all residential units on the east façade facing Bank Street as summarized below.

Based on the results of Table 5-1 and use of Equation (1), the minimum acoustical performance for the exterior façade of the building was computed for the critical noise receptor POR1, facing Bank Street at daytime with an  $L_{EQ}$  = 70 dBA, resulting in a required AIF = 30.

From Table 6 of BRN 1980, with an assumed wall/floor area of 80%, an EW1 exterior wall would be required.

# **EW1**

- -12.7 mm gypsum board
- -Vapour barrier
- -38 x 89 studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities
- -Sheathing
- -Wood siding or metal siding and fibre backer board

From Table 5 of BRN 1980, with an assumed window/floor area of 25%, window configurations recommended are summarized in Table 5-3 below.

Table 5-3 - Recommended Window Configurations (25% Window/Floor Area)

Component	Configuration	Description
	2-18-2	Double-glazed window with 2mm glass and 18mm air space
Window	3-13-3	Double-glazed window with 3mm glass and 13mm air space
	4-6-4	Double-glazed window with 4mm glass and 6mm air space



# 6 Conclusions

The noise impact of transportation noise sources on the proposed development will meet MECP and ENCG criteria upon architect's review and implementation of the recommendations given in Section 5 of this report, which are based upon preliminary floor plans and building elevations. It must be noted that once detailed plans are finalized, it is recommended that an acoustical consultant reviews and/or designs the building components to ensure that the anticipated indoor noise levels meet the requirements. Upon fulfillment of these requirements, the proposed mixed-use development at 1166 Bank Street in Ottawa should be approved from the "Noise Study" assessment perspective.

# 7 General Limitations

The information and conclusions in this report are considered to be privileged and confidential and have been prepared exclusively for Ambassador Realty Inc. The purpose of this report is to provide Ambassador Realty Inc. with an assessment of the potential noise impacts to the proposed residential development.

The information presented in this report is based on information provided by others and visual observations as identified herein. Achieving the objectives stated in this report has required us to arrive at conclusions based upon the best information presently known to us. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Like all professional persons rendering advice, we do not act as absolute insurers of the conclusions we reach, but we commit ourselves to care and competence in reaching those conclusions.

Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Noise levels at various times may differ from those assessed. In addition, any changes to the proposed design or introduction of new processes and/or sources may render the conclusions of this report inaccurate or invalid. In the event of any such changes, EXP should be contacted to re-evaluate the conditions within the assessed areas and make appropriate revisions to the original conclusions of this report.



# 8 Closure

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Yours truly,

**EXP Services Inc.** 

Saad Qureshi, EIT Engineering Designer

Infrastructure and Transportation

Aaditya Jariwala, M.Eng, EIT

S. K. Timb

**Engineering Designer** 

Infrastructure and Transportation



Alam Ansari, M.Sc., P.Eng.
Director of Operations, Eastern Ontario
Infrastructure and Transportation

# 9 References

- Building Research Note, Acoustic Insulation Factor: A Rating for the Insulation of Buildings Against Outdoor Noise by J.D. Quirt (Division of Building Research, National Research Council of Canada, June 1980)
- City of Ottawa, Environmental Noise Control Guidelines (ENCG), January 2016.
- Ontario Ministry of the Environment, Conservation and Parks (MECP) Environmental Noise Guideline, Stationary and Transportation Sources Approval and Planning (Publication NPC-300), August 2013.



# Appendix A Figures and Drawings

Figure A1 - POR Location, Exposure Angle and Source-Receiver Distance 1

Figure A2 - POR Location, Exposure Angle and Source-Receiver Distance 3

Figure A3 – Site Location Plan

Architectural Plans (11x17 reduced size)



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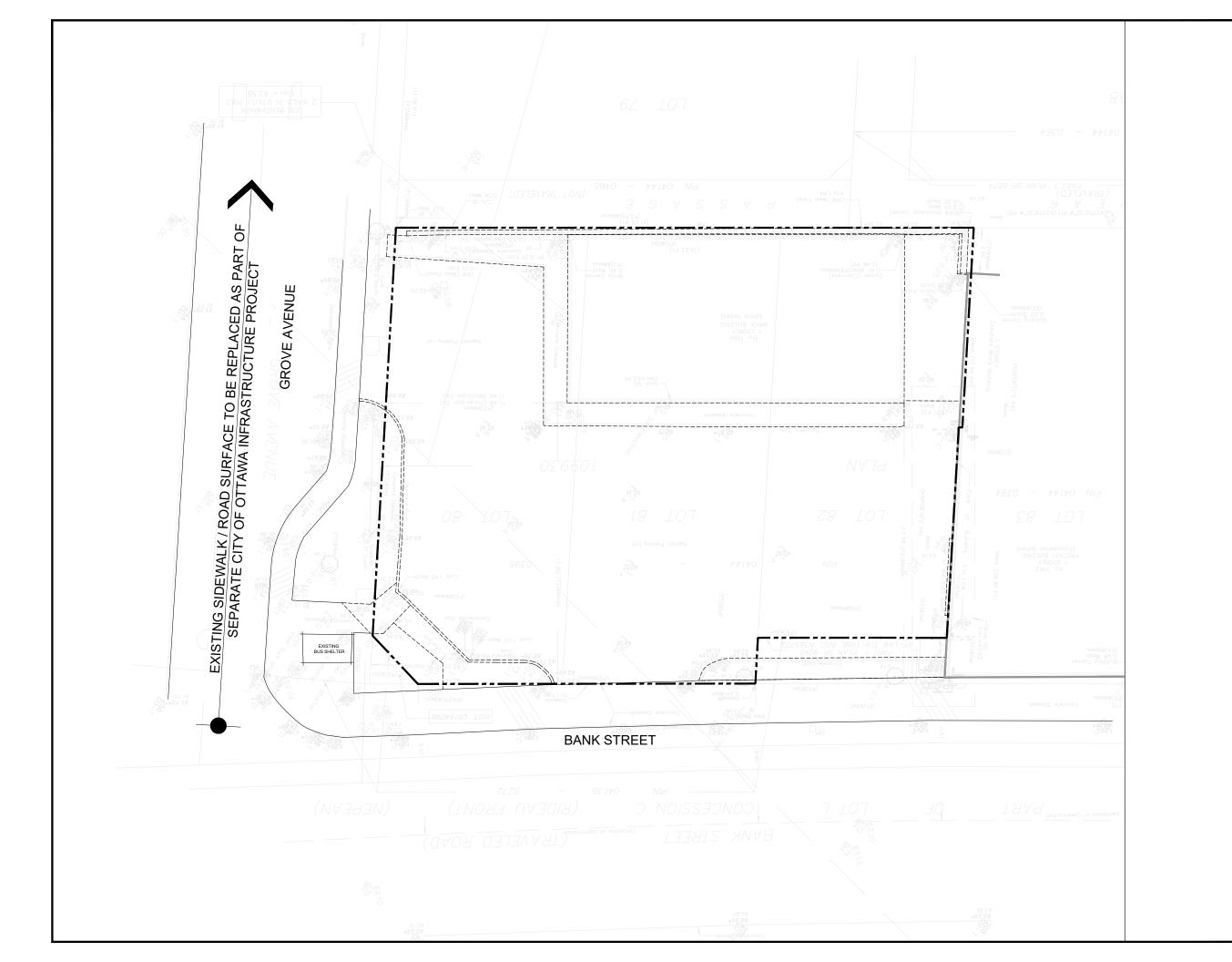
POR LOCATION, EXPOSURE ANGLE AND SOURCE—RECEIVER DISTANCE  $\,2\,$ 

FIG A2



SITE LOCATION PLAN

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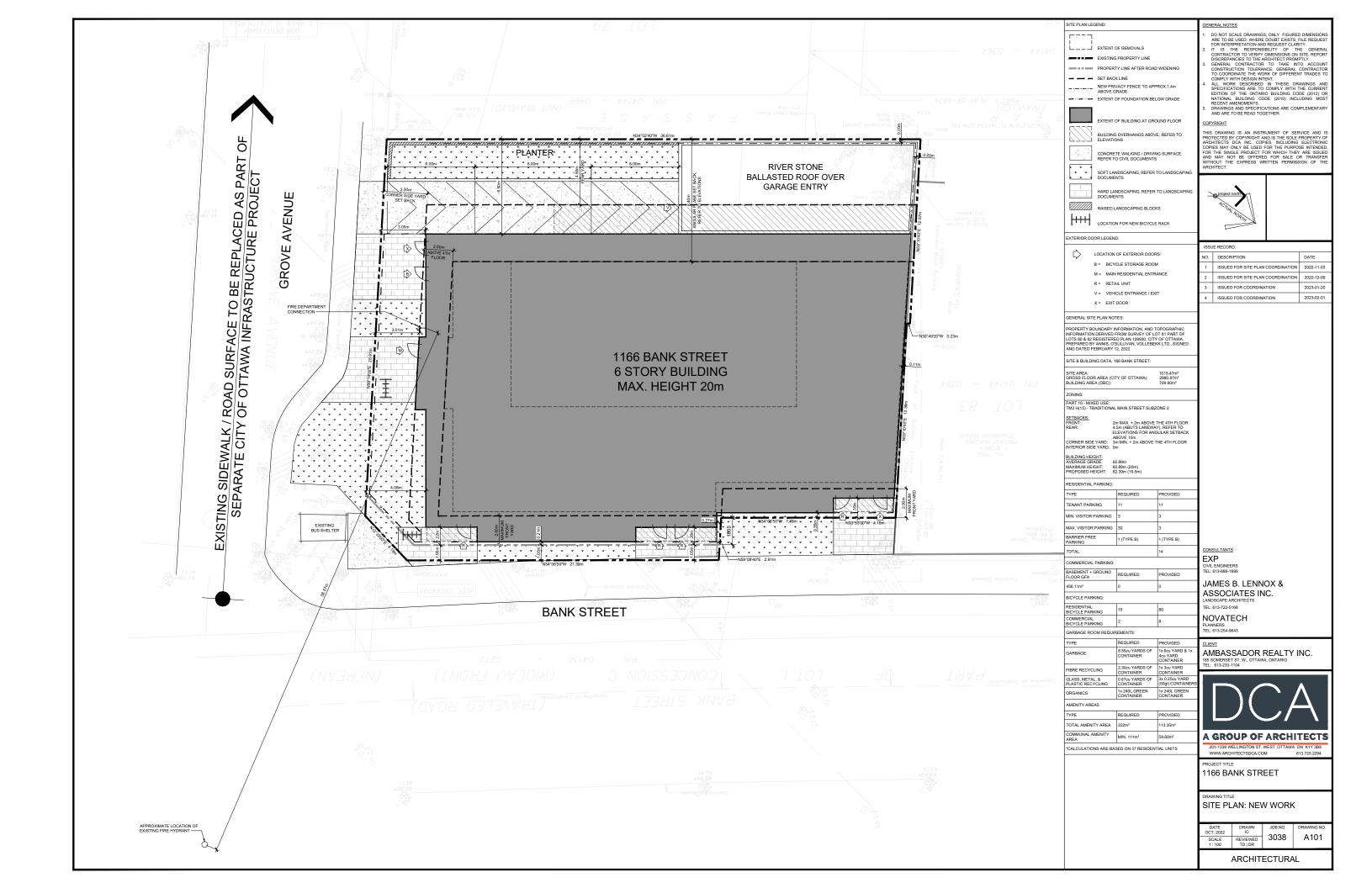
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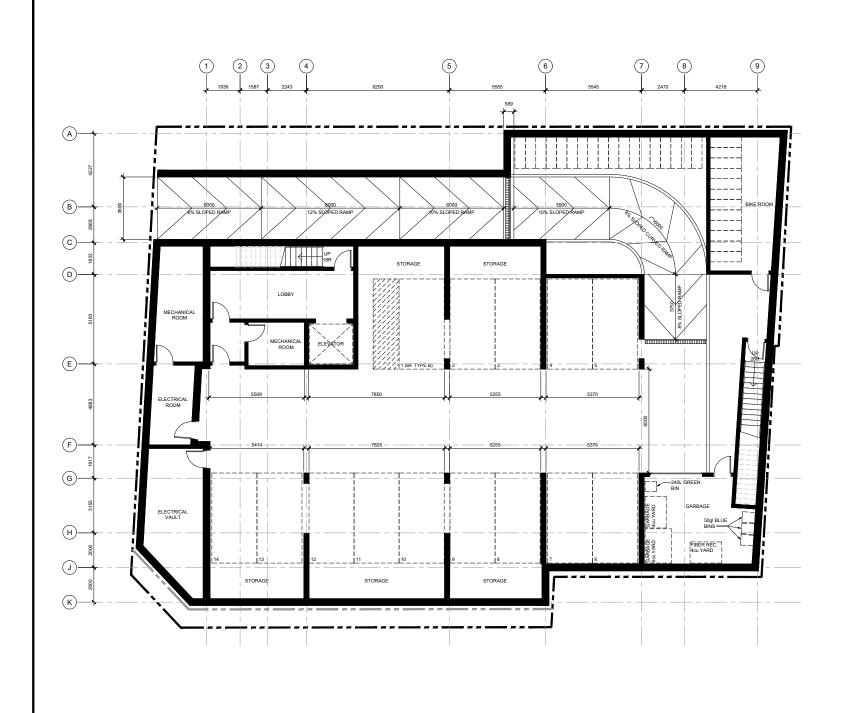


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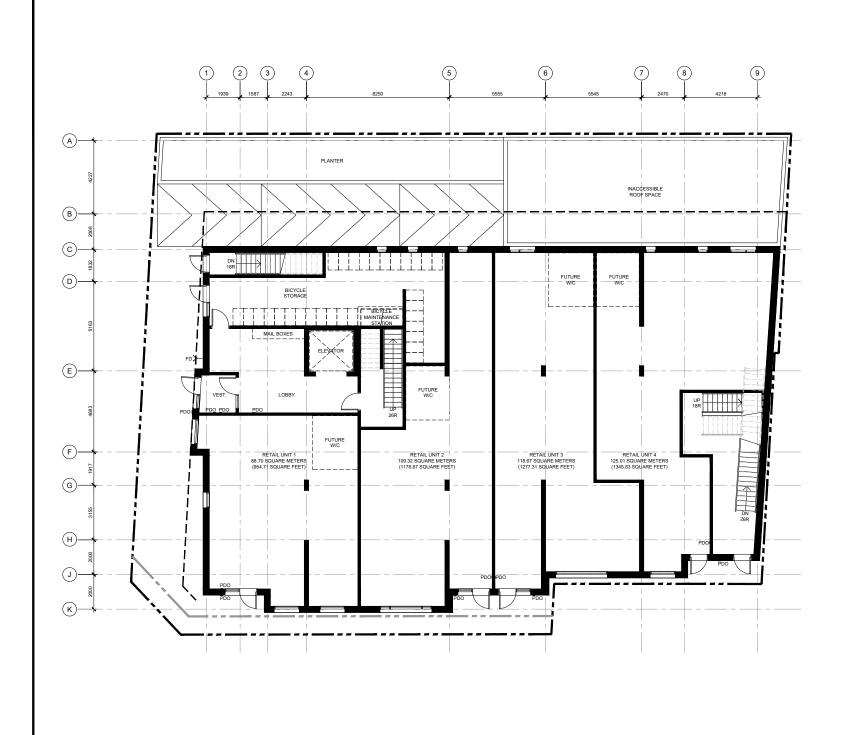
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FLOOR PLAN: BASEMENT / PARKING LEVEL

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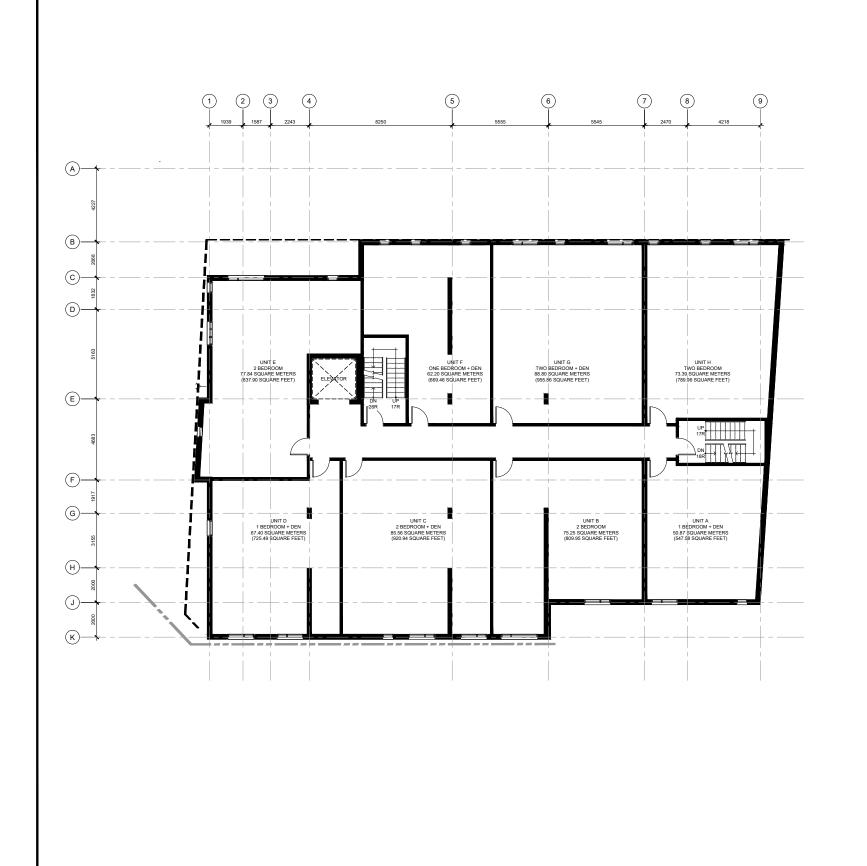
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FLOOR PLAN: GROUND

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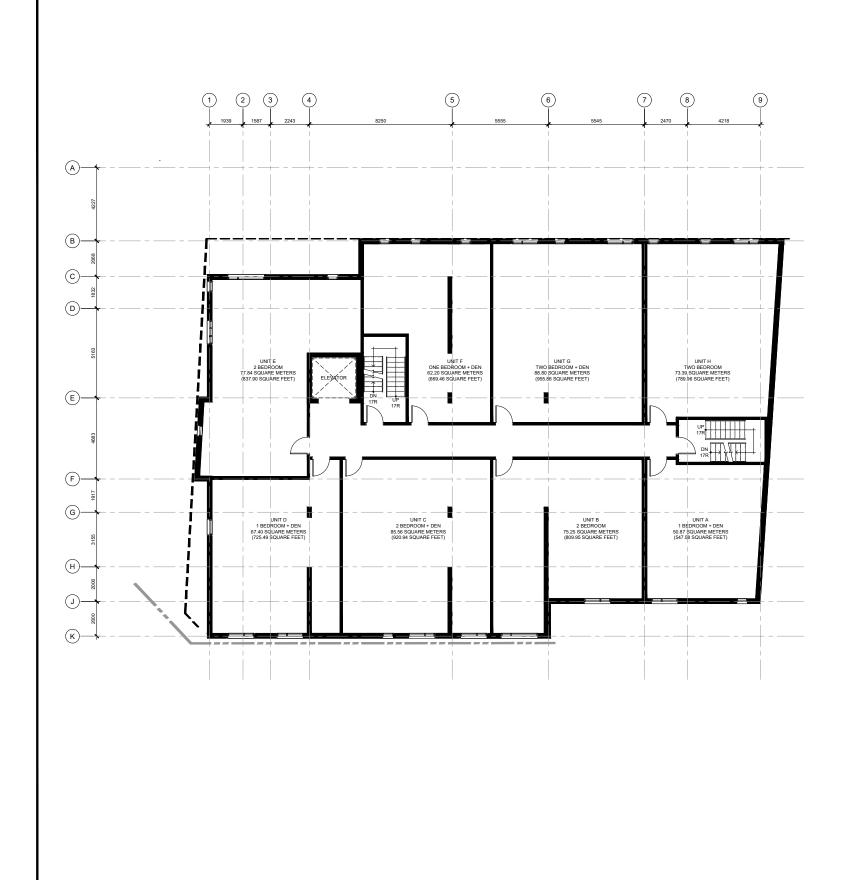
AMBASSADOR REALTY INC.
185 SOMERSET ST. W., OTTAWA, ONTARIO
TEL: 613-233-1104



PROJECT TITLE
1166 BANK STREET

FLOOR PLAN: 2ND FLOOR

DATE OCT. 2022	DRAWN IC	JOB NO.	DRAWING NO
SCALE 1:100	REVIEWED TD   DR	3038	A202



- GENERAL NOTES

  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REDUEST
  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REDUEST
  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REDUEST
  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REPORT
  OF THE GENERAL
  CONTRACTOR TO VERIFY DOMESIONS ON SITE, REPORT
  DISCREPANCIES TO THE ARCHITECT PROMPTLY.
  GENERAL CONTRACTOR TO TAKE INTO ACCOUNT
  CONSTRUCTION TOLERANCE: GENERAL CONTRACTOR
  TO COORDINATE THE WORK OF DIFFERENT TRADES TO
  COMPLY WITH DESIGN INTENT.
  COMPLY WITH DESIGN INTENT.
  SPECIFICATIONS ARE TO COMPLY WITH THE CURRENT
  EDITION OF THE ONTARIO BUILDING CODE (2012) OR
  RECENT AMENDMENTS.
  DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY
  AND ARE TO BE READ TOGETHER.

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NO.	DESCRIPTION	DATE			
1	ISSUED FOR SITE PLAN COORDINATION	2022-11-03			
2	ISSUED FOR SITE PLAN COORDINATION	2022-12-09			
3	ISSUED FOR COORDINATION	2023-01-20			
4	ISSUED FOR COORDINATION	2023-02-01			

CONSULTANTS

EXP
CIVIL ENGINEERS
TEL: 613-688-1899

JAMES B. LENNOX & ASSOCIATES INC.
LANDSCAPE ARCHITECTS
TEL: 613-722-5168

NOVATECH

PLANNERS TEL: 613-254-9643

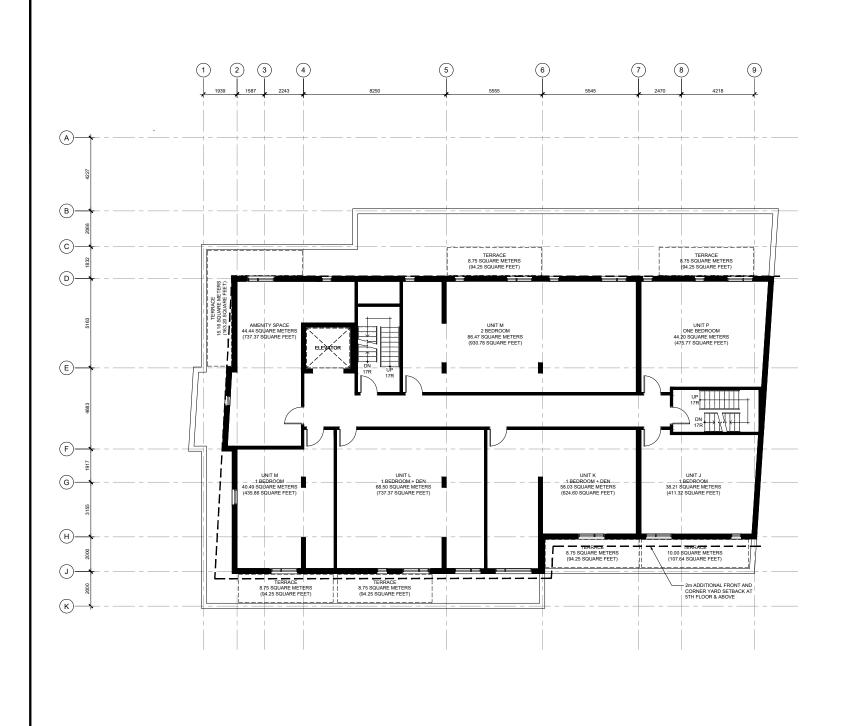
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1166 BANK STREET

FLOOR PLAN: 3RD, & 4TH FLOOR

DATE OCT. 2022	DRAWN IC	JOB NO.	DRAWING NO
SCALE 1:100	REVIEWED TD   DR	3038	A203



- SEMERAL NOTES

  AD ONT SCALE DRAWINGS, ONLY FIGURED DIMENSIONS

  ARE TO BE USED, WHERE DUBIT BUSITS, FILE REDUEST

  ARE TO BE USED, WHERE DUBIT BUSITS, FILE REDUEST

  AND THE PROPERTY OF THE GENERAL

  CONTRACTOR TO VERIFY DIMENSIONS ON SITE, REPORT

  DISCREPANCIES TO THE ARCHITECT PROMPTLY.

  GENERAL CONTRACTOR TO TAKE INTO ACCOUNT

  CONSTRUCTION TOLERANCE: GENERAL CONTRACTOR

  TO COORDINATE THE WORK OF DIFFERENT TRADES TO

  COMMUNITATION TO THE THE THE CONTRACTOR

  SPECIFICATIONS ARE TO COMPITY WITH THE SUBSENT

  EDITION OF THE ONTARIO BUILDING CODE (2012) OR

  NATIONAL BUILDING CODE (2010) INCLUDING MOST

  RECENT AMENDMENTS.

  DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY

  AND ARE TO BE READ TOGETHER.

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2	ISSUED FOR SITE PLAN COORDINATION	2022-12-09
3	ISSUED FOR COORDINATION	2023-01-20
4	ISSUED FOR COORDINATION	2023-02-01

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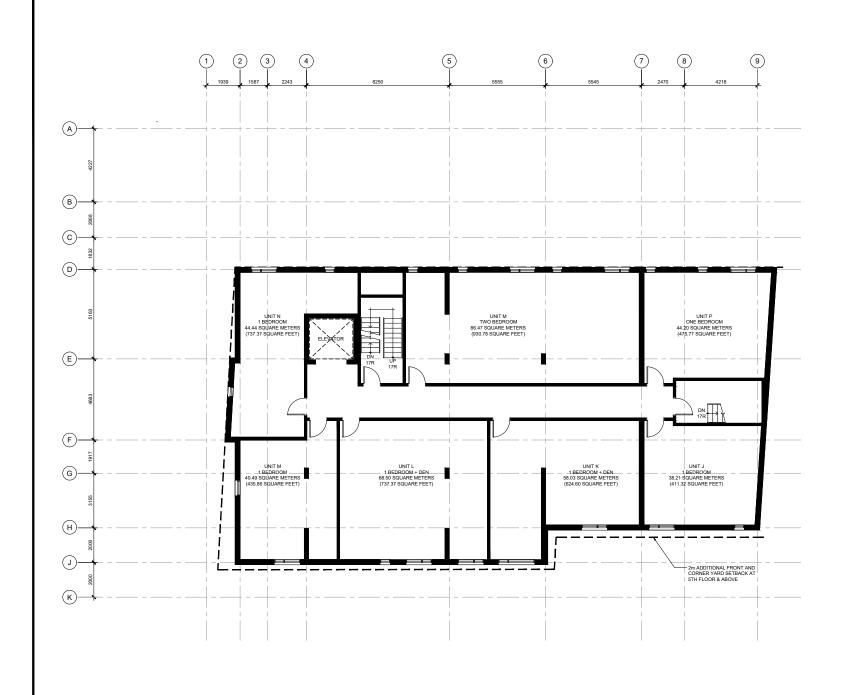
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1166 BANK STREET

FLOOR PLAN: 5TH FLOOR

DATE OCT. 2022	DRAWN IC	JOB NO.	DRAWING NO.
SCALE	REVIEWED TD   DR	3038	A204



- GENERAL NOTES

  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REDUEST
  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REDUEST
  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REDUEST
  ARE TO BE USED, WHERE DOUBT ENGITS, PILE REPORT
  OF THE GENERAL
  CONTRACTOR TO VERIFY DOMESIONS ON SITE, REPORT
  DISCREPANCIES TO THE ARCHITECT PROMPTLY.
  GENERAL CONTRACTOR TO TAKE INTO ACCOUNT
  CONSTRUCTION TOLERANCE: GENERAL CONTRACTOR
  TO COORDINATE THE WORK OF DIFFERENT TRADES TO
  COMPLY WITH DESIGN INTENT.
  COMPLY WITH DESIGN INTENT.
  SPECIFICATIONS ARE TO COMPLY WITH THE CURRENT
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NO.	DESCRIPTION	DATE				
1	ISSUED FOR SITE PLAN COORDINATION	2022-11-03				
2	ISSUED FOR SITE PLAN COORDINATION	2022-12-09				
3	ISSUED FOR COORDINATION	2023-01-20				
4	ISSUED FOR COORDINATION	2023-02-01				

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ASSOCIATES INC.
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TEL: 613-722-5168

NOVATECH PLANNERS TEL: 613-254-9643

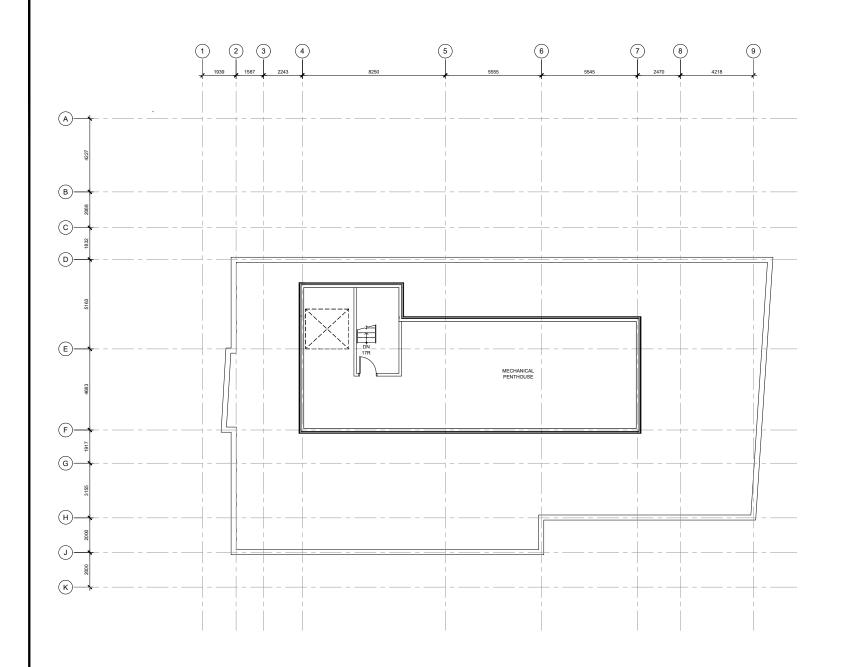
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1166 BANK STREET

FLOOR PLAN: 6TH FLOOR

DATE OCT. 2022	DRAWN IC	JOB NO.	DRAWING NO
SCALE 1:100	REVIEWED TD   DR	3038	A205



- GENERAL NOTES

  1. DO NOT SCALE DRAWINGS: ONLY FIGURED DIMENSIONS ARE TO BE USED. WHERE DOUBT EASITS: FILE REQUEST FOR INTERPRETATION AND REQUEST; FOR INTERPRETATION AND REQUEST; CARTY.

  2. CRITICATOR TO VERIFY DIMENSIONS ON SITE. REPORT DISCREPANCIES TO THE ARCHITECT PROMPTLY.

  3. GENERAL CONTRACTOR TO TAKE INTO ACCOUNT CONSTRUCTION TOLERANCE: GENERAL CONTRACTOR TO COCORDINATE THE WORK OF DIFFERENT TRADES TO COMPLY WITH DESIGNA INTENT.

  4. ALW DOUBLE OF THE CONTRACTOR OF THE

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I	ISSUE RECORD:				
I	NO.	DESCRIPTION	DATE		
I	1	ISSUED FOR SITE PLAN COORDINATION	2022-11-03		
I	2	ISSUED FOR SITE PLAN COORDINATION	2022-12-09		
I	3	ISSUED FOR COORDINATION	2023-01-20		
I	4	ISSUED FOR COORDINATION	2023-02-01		

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LANDSCAPE ARCHITECTS
TEL: 613-722-5168

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PLANNERS TEL: 613-254-9643

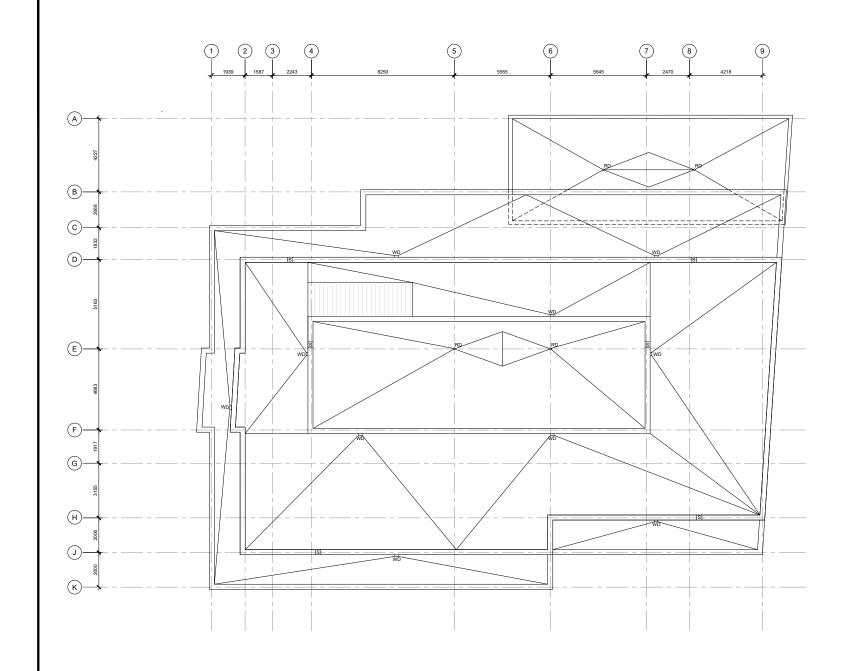
AMBASSADOR REALTY INC.
185 SOMERSET ST. W., OTTAWA, ONTARIO
TEL: 613-233-1104



PROJECT TITLE
1166 BANK STREET

FLOOR PLAN: PENTHOUSE

DATE OCT 2022	DRAWN IC	JOB NO.	DRAWING NO.		
SCALE 1:100	REVIEWED TD   DR	3038	A206		



# ROOF PLAN NOTES:

MECHANICAL SHOWN FOR COORDINATION PURPOSES. REFER TO MECHANICAL DOCUMENTS.

# ROOF PLAN LEGEND:

RD	LOCATION OF ROOF DRAIN			
s	LOCATION OF SCUPPER			
WD	LOCATION OF WALL DRAIN			

GENERAL NOTES

- DO NOT SCALE DRAWINGS; ONLY FIGURED DIMENSIONS ARE TO BE USED, WHERE DOUBT EXISTS; FILE REQUEST FOR WITERFREETAND AND DREQUEST. CANTY.

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  GENERAL CONTRACTOR TO YESIFY DIMENSIONS ON SITE REPORT DISCREPANCIES TO THE ARCHITECT PROMPTLY.

  GENERAL CONTRACTOR TO TAKE INTO ACCOUNT CONSTRUCTION TOLERANCE; GENERAL CONTRACTOR TO COORDINATE THE WORK OF DIFFERENT TRABES TO COMPLY WITH DESIGN INTENT.

  DELY WORK DESCRIBED IN THESE DRAWINGS AND DELY WORK DESCRIBED WITE WITE THE UBRENT EDITION OF THE ONTARIO BUILDING CODE 2012) OR NATIONAL BUILDING CODE 2019 INCLUDING MOST RECENT AMENDMENTS.

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3	ISSUED FOR COORDINATION	2023-01-20			
4	ISSUED FOR COORDINATION	2023-02-01			

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PLANNERS TEL: 613-254-9643

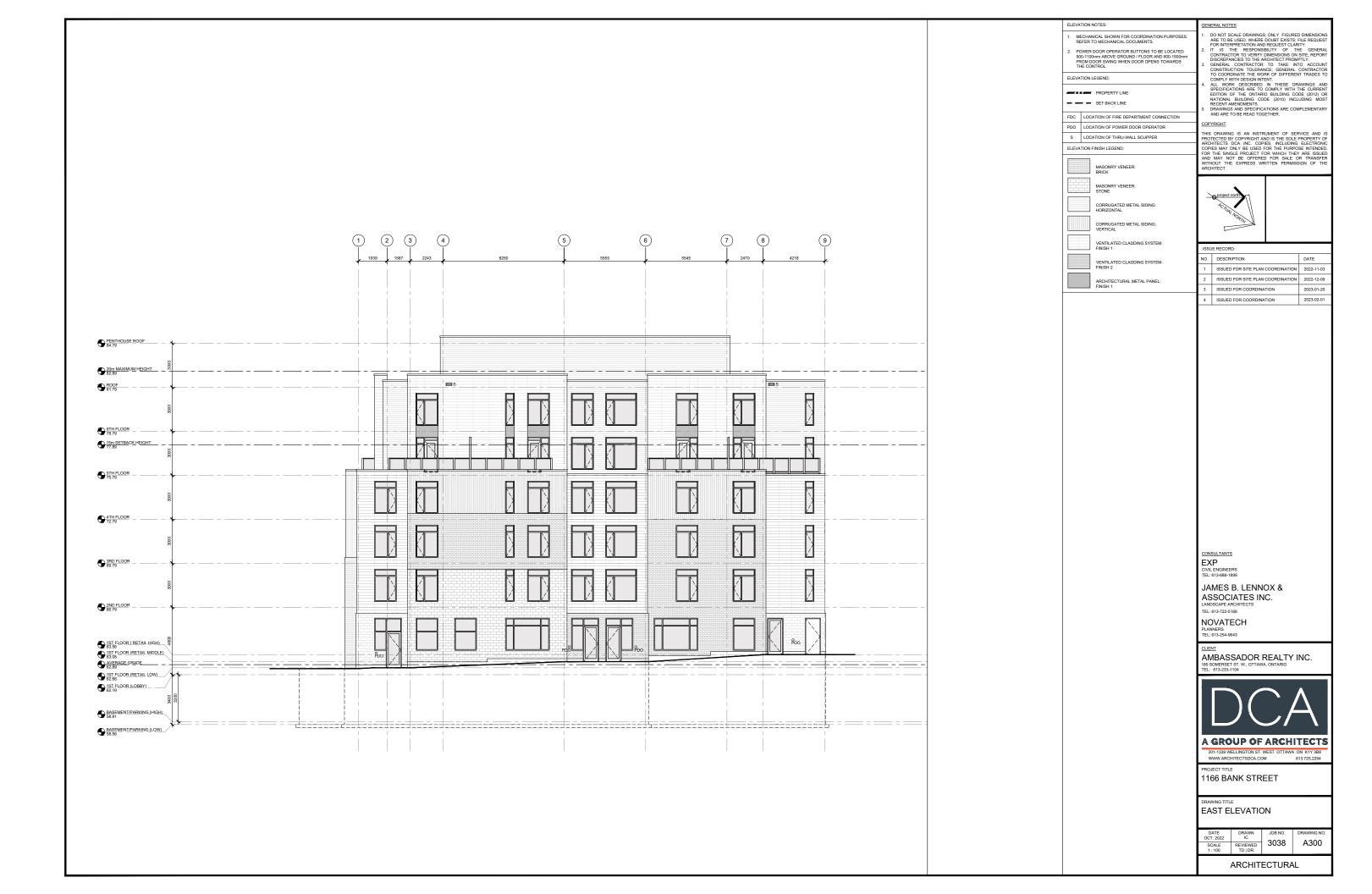
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185 SOMERSET ST. W., OTTAWA, ONTARIO
TEL: 613-233-1104

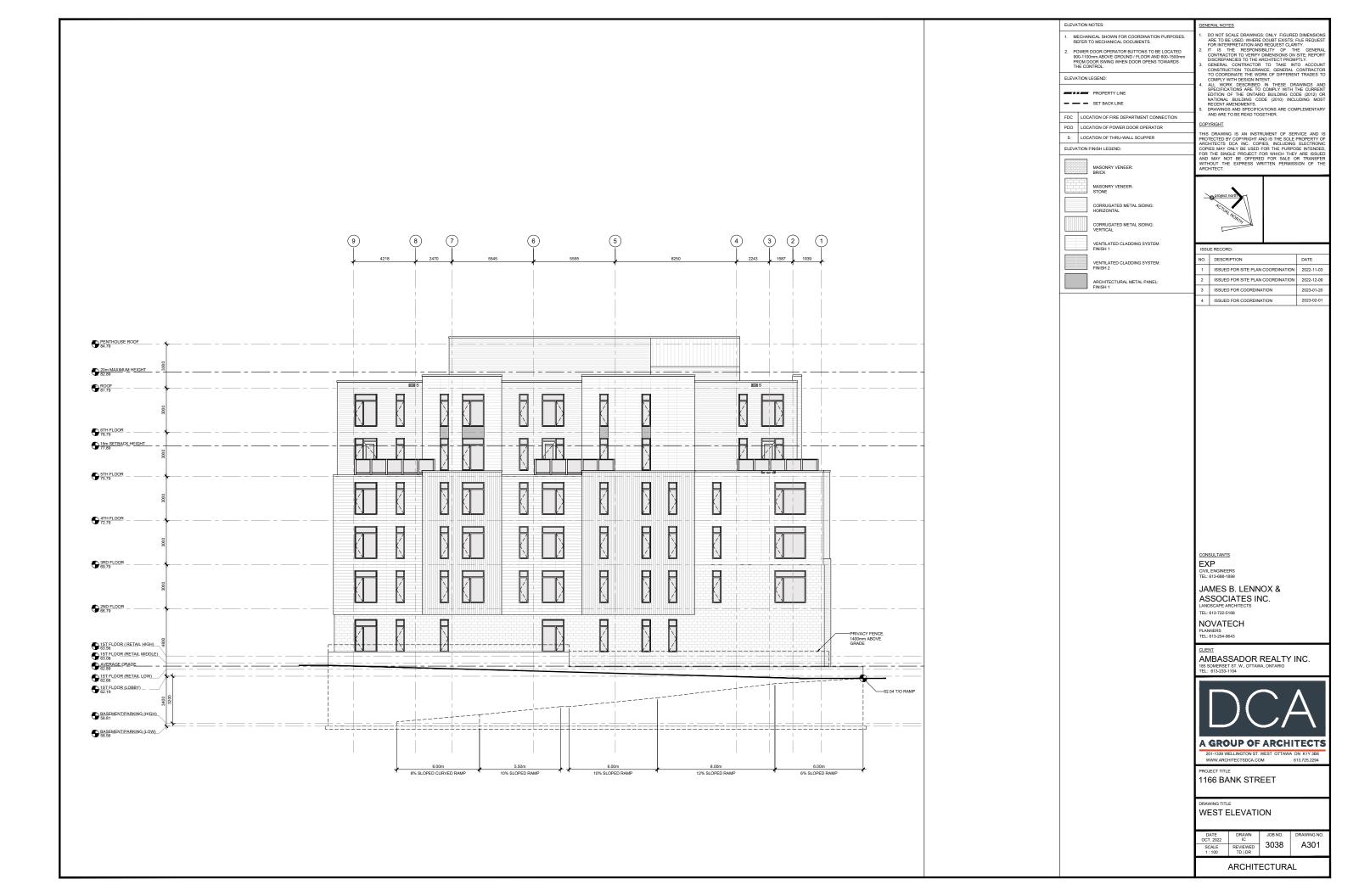


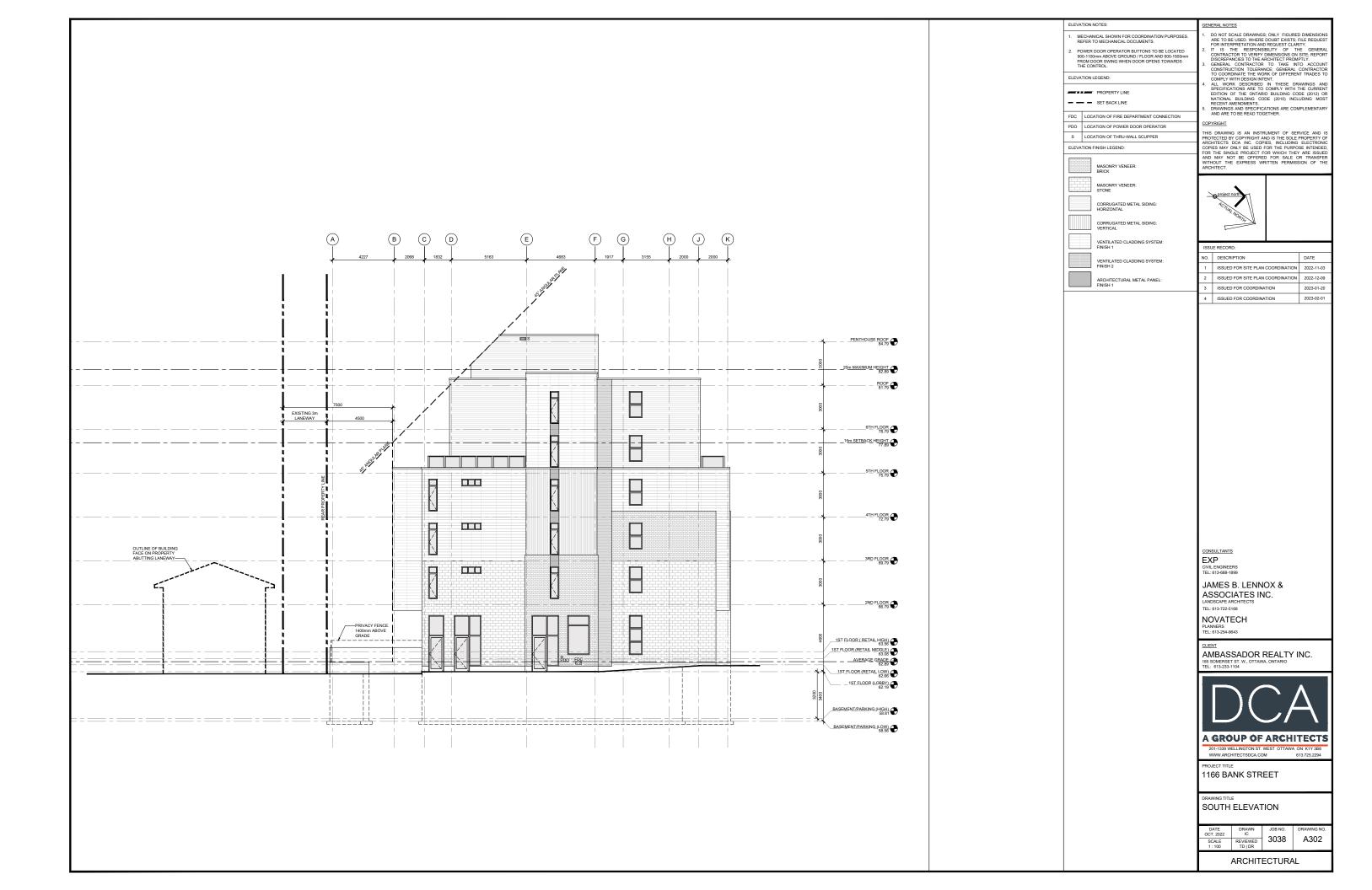
PROJECT TITLE
1166 BANK STREET

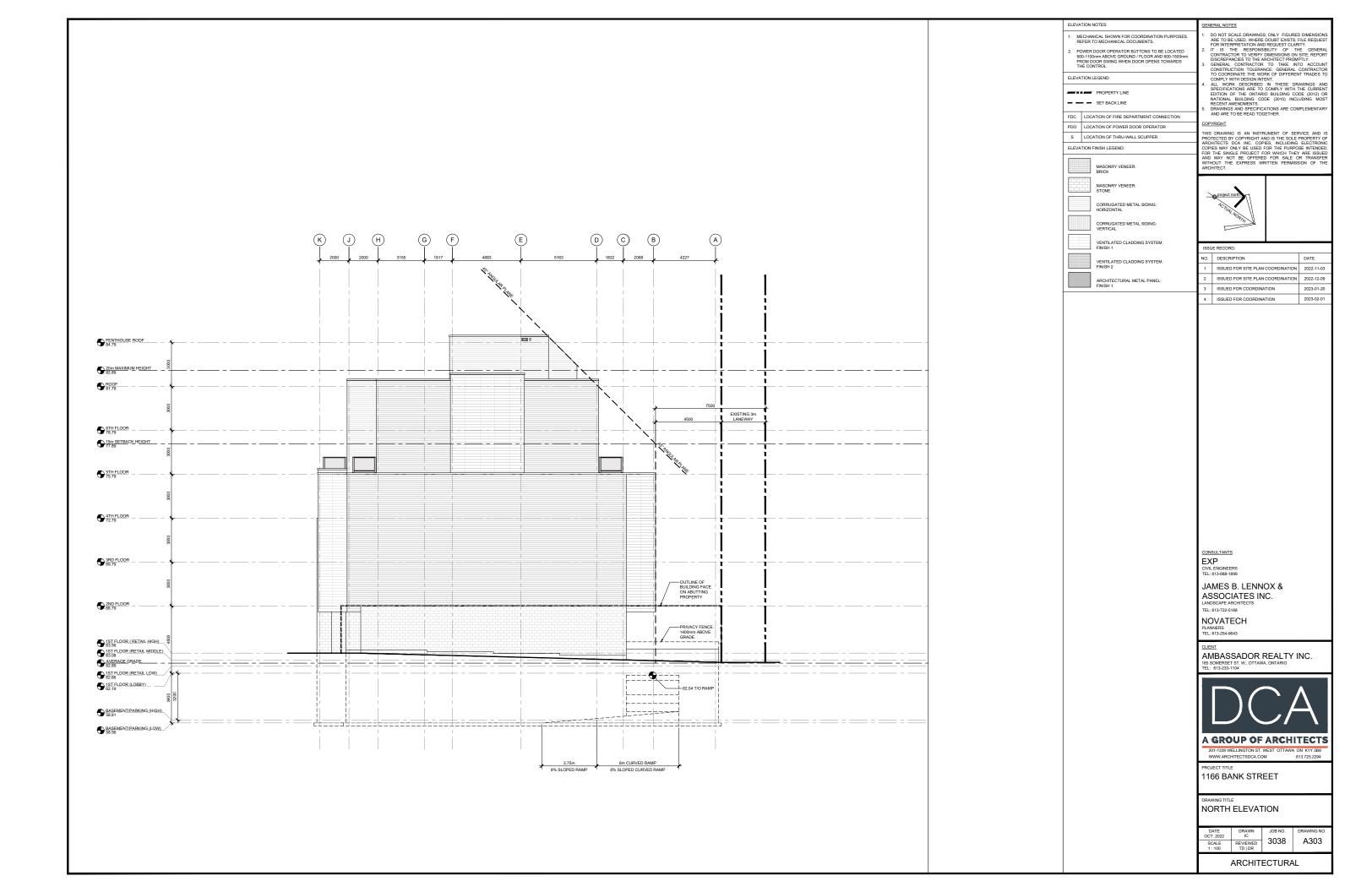
ROOF PLAN

DATE OCT. 2022	DRAWN IC	JOB NO.	A207	
SCALE 1:100	REVIEWED TD   DR	3038		









EXP Services Inc. 1166 Bank Street, Ottawa Project Number: OTT-22018175-A0
Date: March 21, 2023

Appendix B STAMSON Calculation Output



STAMSON 5.0 NORMAL REPORT Date: 17-03-2023 16:12:45

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por1.te Time Period: Day/Night 16/8 hours

Description: East Facade

Road data, segment # 1: POR1 (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 : 40 km/h

Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: POR1 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg Wood depth : 0 (No woods.)

No of house rows : 0/0

Surface 2 (Reflective ground surface)

Receiver source distance : 15.00 / 15.00 m Receiver height : 11.90 / 11.90 m
Tonography : 1 (Flam

: 1 (Flat/gentle slope; no barrier) Topography

Reference angle : 0.00

Results segment # 1: POR1 (day) -----

Source height = 1.50 m

ROAD (0.00 + 69.70 + 0.00) = 69.70 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

\_\_\_\_\_\_ -90 90 0.00 69.70 0.00 0.00 0.00 0.00 0.00 0.00 69.70

\_\_\_\_\_\_

Segment Leq: 69.70 dBA

Total Leq All Segments: 69.70 dBA

Results segment # 1: POR1 (night) -----

Source height = 1.50 m

ROAD (0.00 + 62.10 + 0.00) = 62.10 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-90 90 0.00 62.10 0.00 0.00 0.00 0.00 0.00 0.00 62.10

Segment Leq : 62.10 dBA

Total Leq All Segments: 62.10 dBA

♠

TOTAL Leq FROM ALL SOURCES (DAY): 69.70 (NIGHT): 62.10

♠

♠

STAMSON 5.0 SUMMARY REPORT Date: 20-03-2023 10:25:34 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por2.te Time Period: Day/Night 16/8 hours

Description: North Facade

Road data, segment # 1: POR2 (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 : 40 km/h

Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: POR2 (day/night)

Angle1 Angle2 : -90.00 deg -15.00 deg woou depth : 0 (No woods.)
No of house rows : 0 / 0
Surface

(Reflective ground surface)

Receiver source distance : 18.00 / 18.00 m

Receiver height : 11.90 / 11.90 m
Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

Result summary (day)

	!	height	!	Road Leq (dBA)	!	Leq
1.POR2	!	1.50	!	65.10	!	65.10
	•	Total				65.10 dBA

Result summary (night)

! source ! Road ! Total ! height ! Leq ! Leq ! (m) ! (dBA) ! (dBA) -----1.POR2 ! 1.50 ! 57.51 ! 57.51 -----

> 57.51 dBA Total

TOTAL Leq FROM ALL SOURCES (DAY): 65.10 (NIGHT): 57.51

♠

♠

STAMSON 5.0 NORMAL REPORT Date: 20-03-2023 12:34:32

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por3.te Time Period: Day/Night 16/8 hours

Description: South Facade

Road data, segment # 1: POR3 (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 : 40 km/h Road gradient : 0 %

Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: POR3 (day/night)

-----

Angle1 Angle2 : -90.00 deg -45.00 deg Wood depth : 0 (No woods.)

No of house rows : 0 / 0

Surface : 2 (Reflective ground surface)

Receiver source distance : 21.00 / 21.00 m
Receiver height : 11.90 / 11.90 m

Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

•

Results segment # 1: POR3 (day)

-----

Source height = 1.50 m

ROAD (0.00 + 62.21 + 0.00) = 62.21 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 -45 0.00 69.70 0.00 -1.46 -6.02 0.00 0.00 0.00 62.21

-----

Segment Leq: 62.21 dBA

Total Leq All Segments: 62.21 dBA

♠

Results segment # 1: POR3 (night)

-----

Source height = 1.50 m

ROAD (0.00 + 54.62 + 0.00) = 54.62 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-90 -45 0.00 62.10 0.00 -1.46 -6.02 0.00 0.00 0.00 54.62

Segment Leq : 54.62 dBA

Total Leq All Segments: 54.62 dBA

♠

TOTAL Leq FROM ALL SOURCES (DAY): 62.21 (NIGHT): 54.62

♠

♠

STAMSON 5.0 NORMAL REPORT Date: 20-03-2023 14:11:34

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por4.te Time Period: Day/Night 16/8 hours

Description: South Facade (Storey 5-6)

Road data, segment # 1: POR4 (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 : 40 km/h Road gradient : 0 %

Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: POR4 (day/night)

-----

Angle1 Angle2 : -90.00 deg -16.00 deg Wood depth : 0 (No woods.)

No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)

Receiver source distance : 22.00 / 22.00 m
Receiver height : 17.90 / 17.90 m
Topography : 1 (Flat

Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

•

Results segment # 1: POR4 (day)

-----

Source height = 1.50 m

ROAD (0.00 + 63.33 + 0.00) = 63.33 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 -16 0.17 69.70 0.00 -1.94 -4.42 0.00 0.00 0.00 63.33

-----

Segment Leq: 63.33 dBA

Total Leq All Segments: 63.33 dBA

♠

Results segment # 1: POR4 (night)

-----

Source height = 1.50 m

ROAD (0.00 + 55.73 + 0.00) = 55.73 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-90 -16 0.17 62.10 0.00 -1.94 -4.42 0.00 0.00 0.00 55.73

Segment Leq : 55.73 dBA

Total Leq All Segments: 55.73 dBA

♠

TOTAL Leq FROM ALL SOURCES (DAY): 63.33 (NIGHT): 55.73

♠

♠