ENVIRONMENTAL NOISE ASSESSMENT REPORT

For
396 Cooper Street, Ottawa

Prepared by:

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Revision 0
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1. INTRODUCTION

W. Elias & Associates Consulting Engineers was retained by Huntington Properties Inc. to investigate the potential impact of environmental noise on proposed development located at 396 Cooper Street, Ottawa, Ontario. The development is situated close to the intersection of Bank Street and Cooper Street, Ottawa, Ontario. The noise assessment is requested as part of the site plan control application for proposed development. The proposed development consists of a 4-story, converted residential buildings, located at 396 Cooper Street, Ottawa, Ontario. The property is surrounded by residential and commercial properties. Refer to appendixes for site details including the surrounding area, zoning, etc.

2. TERMS OF REFERENCE

Our assessment is based on the proposed architectural drawings prepared by Erskine Dredge & Associates Architect, existing and future noise and vibration sources, and based on the environmental noise and vibration guidelines of the Ministry of Environment and Climate Change ("MOECC") and The City of Ottawa Environmental Noise Control Guideline ("ENCG") which is more stringent version of MOECC.

3. OBJECTIVES

The principal objectives of this study are to

(i) Calculate the future noise levels on the study buildings produced by local transportation traffic,

(ii) Ensure that interior and exterior noise levels do not exceed the allowable limits specified by the Ministry of Environment and Climate Change ("MOECC"), and the City of Ottawa's Environmental Noise Control Guidelines.

4. TRAFFIC NOISE ASSESSMENT

4.1. CRITERIA FOR TRANSPORTATION TRAFIC NOISE

The City of Ottawa Environmental Noise Control Guideline ("ENCG") for transportation noise impacting residential developments was utilized for this study. A summary of the City of Ottawa noise requirements is provided Table below.

Type of Space	Time Period	L_{eq} (dBA)
		Road
General offices, reception areas, retail stores, etc.	07:00 – 23:00	50
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, etc.	07:00 – 23:00	45
Sleeping quarters of hotels/motels	23:00 – 07:00	45
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	23:00 – 07:00	40

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. As per MOECP, Environmental Noise Guidelines, NPC 300 – Part C, an open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation.

The sound level criterion for outdoor living areas is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation must be provided to reduce noise levels where technically feasible to acceptable levels at or below the criterion.

4.2. Traffic Noise Predictions

The proposed development will be primarily subjected to roadway noise from Bank Street which is considered arterial road based on the City of Ottawa Transportation Master Plan.

4.2.1. Road Traffic

The traffic counts for Bank Street were obtained based on the City of Ottawa Environmental Noise Study Guideline. The minimum traffic counts available in modeling software as recommended by the City of Ottawa "Environmental Noise Control Guidelines."

Traffic data was split into daytime/nighttime and autos/medium/heavy using City of Ottawa "Environmental Noise Control Guidelines." Posted speed limits, as per the ENCG were used in the analysis. Data used in the noise modelling are found in Table 1.

Table 1: Road Traffic Data Used in Analysis

Street	Time of the Day	Vehicles	Medium Trucks	Heavy Trucks
Bank Street	0700-2300	15000	7%	5%

4.2.2. Air Traffic

Proposed project is located out of the zone of influence from the Airport Operating Influence Zone (AOIZ) and NEF/NEP contours lines. Therefore, no further assessment was performed.

4.2.3. Stationary Noise Sources

Based on a site investigation of the surrounding areas and readings from our noise measurement devices, all stationary noise levels in outdoor areas are below 55 dBA. Therefore, there are no stationary noise sources in the vicinity of the proposed development that are expected to exceed the maximum allowable limits.

The City of Ottawa's Environmental Noise Control Guidelines (ENCG) were used as a reference for recommended separation distances and other control measures. These guidelines support land use planning proposals by helping to prevent or minimize adverse effects resulting from the encroachment of incompatible land uses near existing or proposed facilities. A warning clause is added to cover this section for the present.

5. Noise Impact Assessment

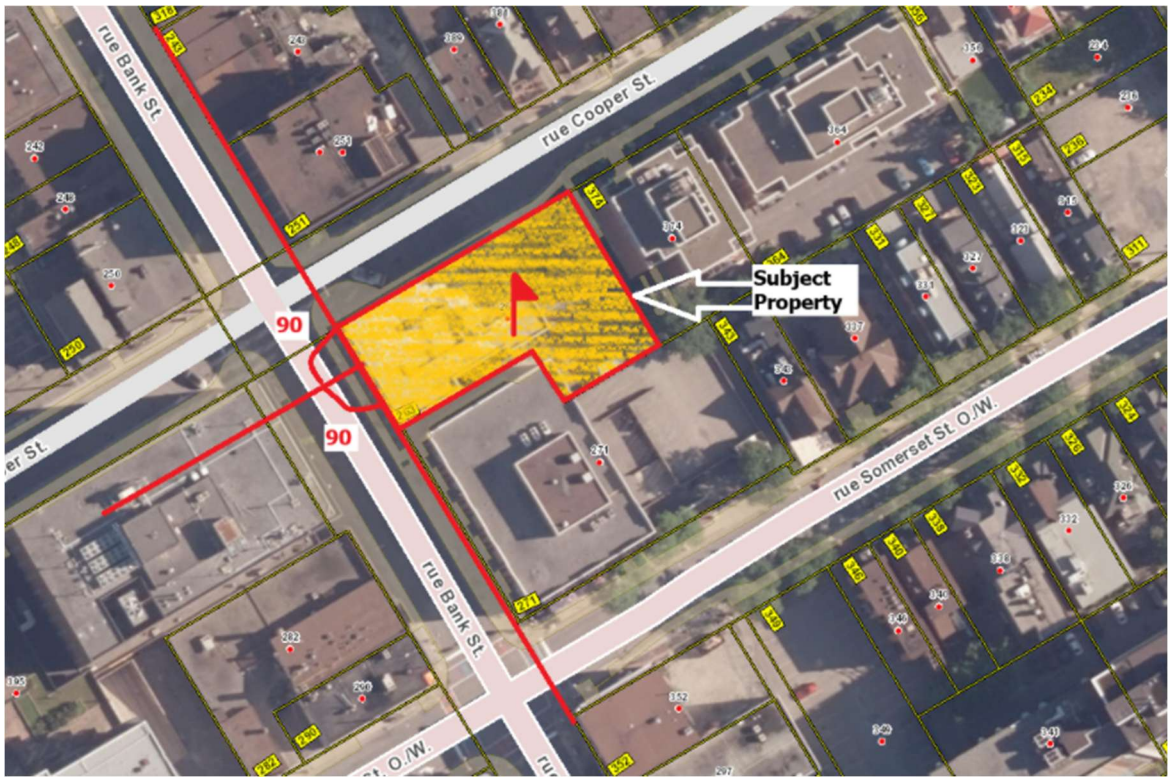
Leq,night and Leq,day attributable to Bank Street were calculated using STAMSON v5.0, the computerized road, rail, and transit traffic noise prediction model of the MOE. The sound exposure levels were based on the future road traffic predictions, since the City of Ottawa official requires upcoming ultimate volume (AADT) for a 2 lanes arterial road of Bank Street based on the City of Ottawa Transportation Master Plan. Screening due to surrounding buildings and terrain was accounted for in the analysis.

The noise impact was calculated for the Second floor of the building, since the ground level is commercial. It was assumed, that if the summation of noise impact levels at second floor on west face is acceptable (the face with larger closest exposure to Road traffic), the other faces will be satisfied as well. Point of the receptor is located at the most exposed center of window (the height of the vertical midpoint of the nearest and most exposed story). In STAMSON modeling, Bank Street was considered as one segment. List of the receivers information are shown in table below.

Table 3 summarizes the predicted unmitigated daytime and nighttime sound exposures levels at predictable worst-case locations at the proposed development which is the Second floor facing west. Sample sound exposure calculation and analysis assumptions are included in Appendix.

Table 3: Predicted Unmitigated Road Traffic Sound Exposures

Floor	Façade	Sound Level (dBA) 0700-2300	STC Requirement = 45 dBA	Total Sound Level (dBA) 2300-0700	STC Requirement = 40 dBA
2nd floor	West	67	22	58	18



Receptor Locations, Angle of Exposure

6. Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4 for building components. As discussed the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). As per city of Ottawa requirements, detailed STC calculations

will be required to be completed prior to building permit application for each unit type. The STC requirements for the windows are summarized below:

STC Requirement for all windows

- Windows will require a minimum STC of (67 – 45) = 22

The STC requirements would apply to windows, doors, panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 22, where a window /wall system is used. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems having a combination of glass thickness and inter-pane spacing.

It is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, Warning Clauses will also be required and placed on all Lease, Purchase and Sale Agreements, as summarized in Section 7.

7. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range around 67 dBA during the daytime period (07:00-23:00) and 58 dBA during the nighttime period (23:00-07:00).

The highest noise levels (i.e. 68 dBA) occur along the development's west façade, which is nearest and most exposed to Bank Street. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 45 dBA.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Warning Clause will also be required and placed on all Lease, Purchase and Sale Agreements, as summarized below:

"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 roadway 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 and Climate Change. To help address the need for sound attenuation, this development includes:

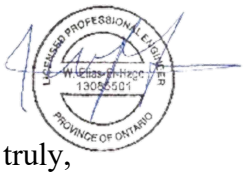
STC rated for all facades : STC 22

This dwelling unit has also been designed with air conditioning. 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 of Ottawa and the Ministry of the Environment and Climate Change. To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features.

Stationary noise created by mechanical HVAC unit for this development shall NOT generate beyond 40dBA threshold as per the The City of Ottawa Environmental Noise Control Guideline (ENCG). "

This concludes our assessment and report. Should you have any questions or concerns, please do not hesitate to contact us.

Sincerely,



Yours truly,
Wissam Elias, P. Eng
Senior Project Manager

Appendix A

Stampson Calculation

```
STAMSON 5.0        NORMAL REPORT        Date: 20-05-2025 07:11:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Cooper (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    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: Cooper (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   5.10 / 5.10   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 67.21 + 0.00) = 67.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.55  68.48   0.00   0.00  -1.27   0.00   0.00   0.00
67.21
```

```
-------------------------------------------------------------------------
--

Segment Leq : 67.21 dBA

Total Leq All Segments: 67.21 dBA

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

Source height = 1.50 m

ROAD (0.00 + 58.71 + 0.00) = 58.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.55  60.88   0.00   0.00  -1.27   0.00  -0.90   0.00
58.71
-------------------------------------------------------------------------
--

Segment Leq : 58.71 dBA

Total Leq All Segments: 58.71 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 67.21
                           (NIGHT): 58.71
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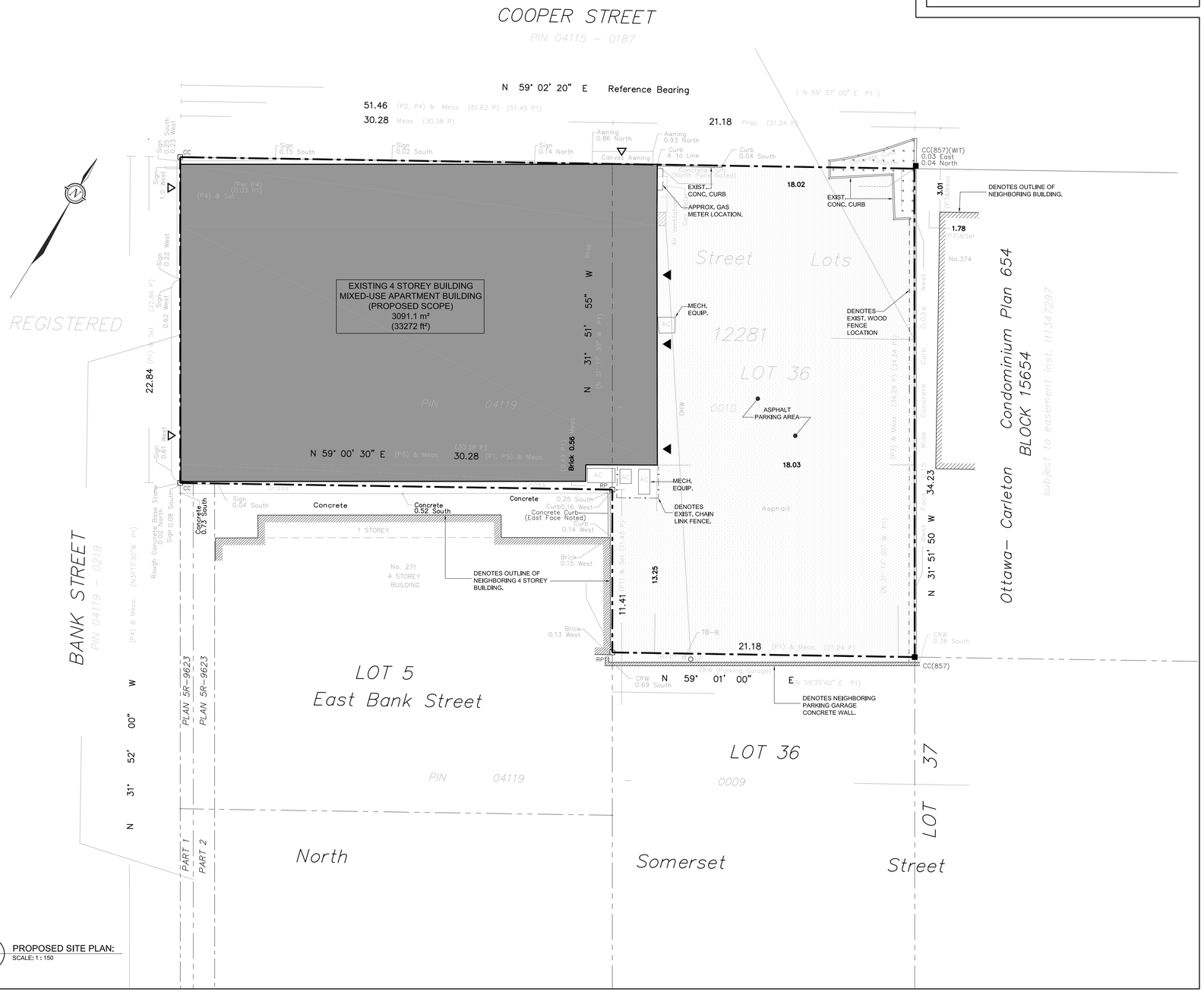
Appendix B

Architectural Drawings



1 / A001 PROPOSED SITE PLAN:
SCALE: 1 : 150

LEGEND

- PROPERTY BOUNDARY LINE.
- SET BACK LINE
- PROPOSED BUILDING
- EXISTING ASPHALT TO REMAIN. REFER TO CIVIL DWGS.
- NEW CONCRETE. REFER TO CIVIL DWGS.
- EXISTING LANDSCAPED AREA TO REMAIN .
- MAN DOOR LOCATIONS.
- ENTRANCE LOCATIONS
- ○ B DENOTES BOLLARDS. REFER TO CIVIL DWGS.

GENERAL NOTES:

1. REFER TO SURVEYOR'S REAL PROPERTY REPORT PART 1 PLAN OF LOTS 35 AND 36 (SOUTH COOPER STREET), REGISTERED PLAN 12281, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. ONTARIO LAND SURVEYORS.

SITE DATA:

BUILDING AREA: **734.6 m²**

GROSS FLOOR AREA: (City of Ottawa Zoning Bylaw): Gross floor area means the total area of each floor whether located above, at or below grade, measured from the interiors of outside walls and including floor area occupied by interior walls and floor area created by bay windows, but excluding;

(a) floor area occupied by shared mechanical, service and electrical equipment that serve the building; (By-law 2008-326)
(b) common hallways; corridors; stairwells, elevator shafts and other voids; steps and landings; (By-law 2008-326)
(c) bicycle parking; motor vehicle parking or loading facilities;
(d) common laundry, storage and washroom facilities that serve the building or tenants;
(e) common storage areas that are accessory to the principal use of the building; (By-law 2008-326)
(f) common amenity area and play areas accessory to a principle use on the lot; and (By-law 2008-326)
(g) living quarters for a caretaker of the building.

BASEMENT (552.5m²) + 1ST (694.5m²) + 2ND (614.7m²) + 3RD (614.7m²) + 4TH (614.7m²)
TOTAL **3091.1m²**

GROSS AREA: (Ontario Building Code definition): The total area of all floors above grade measured between the outside surfaces of exterior walls or between the outside surfaces of exterior walls and the centre line of firewalls, except that, in any occupancy other than a residential occupancy, where an access or a building service penetrates a firewall, measurements shall not be taken to the centre line of such firewall.

BASEMENT (686.4m²) + 1ST (734.6m²) + 2ND (701.3m²) + 3RD (701.3m²) + 4TH (701.3m²)
TOTAL **3524.9m²**

ZONING:

1.0 ZONING DESIGNATIONS (Part 10):

TM - TRADITIONAL MAINSTREET ZONE

2.0 ZONING PROVISIONS:

TM H(19) - TRADITIONAL MAINSTREET ZONE:

	REQUIRED	PROVIDED
MINIMUM LOT WIDTH (m):	NO MINIMUM	66.01
MINIMUM LOT AREA (m²):	NO MINIMUM	7,622
MINIMUM FRONT YARD SETBACK (m):	12	18.759
MINIMUM REAR YARD SETBACK (m):	7.5	33.434
MINIMUM INTERIOR SIDE YARD SETBACK (m): (ABUTTING RESIDENTIAL ZONE)	3	TBD
MINIMUM CORNER SIDE YARD SETBACK (m):	12	TBD
MAXIMUM PRINCIPAL BUILDING HEIGHT (m):	19	TBD
MAXIMUM LOT COVERAGE (%):	50	21.45
LANDSCAPED AREA (%):	50	78.55
MINIMUM LANDSCAPING ABUTTING A STREET (m):	3	6.019
MINIMUM LANDSCAPING ALL OTHER CASES (m):	0	0

3.0 PARKING (Section 101) :

AREA D ON SCHEDULE 1A.

Minimum Required:
RETAIL N/A
RESTAURANT N/A
DWELLING UNITS: N/A
TOTAL TBD

Provided:
STANDARD SPACE : TBD
BARRIER-FREE: TBD
TOTAL TBD

CLIENT

HUNTINGTON PROPERTIES

PROJECT NORTH

ISSUE	DESCRIPTION	DATE
01	ISSUED FOR INFORMATION	05/13/2025

CONSULTANTS:

ONTARIO LAND SURVEYOR:
ANNIS, O'SULLIVAN, VOLLEBEKK LTD
14 CONCOURSE GATE, SUITE 500
NEPEAN, ON, K2E 7S6

CIVIL ENGINEER:
ARCADIS PROFESSIONAL SERVICES INC.
SUITE 500, 333 PRESTON STREET
OTTAWA, ON, K1S 5N4

PROFESSIONAL STAMP

PROJECT

396 COOPER ST
MIXED-USE APARTMENT BUILDING

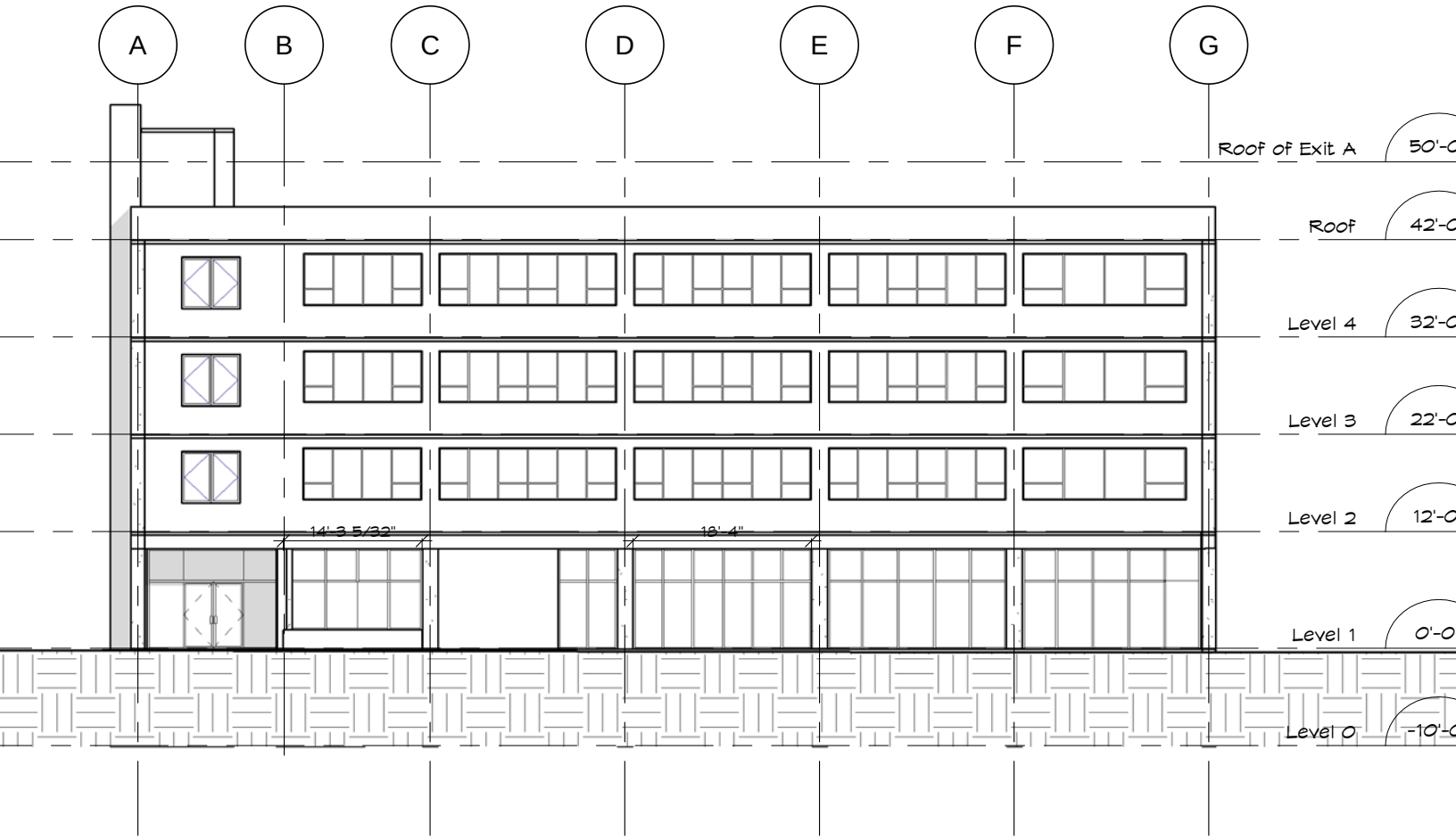
DRAWING

PROPOSED SITE PLAN

PROJECT No:
REVISION: 00
DRAWN: SL/JV
DATE: MAY 2025
APPROVED: SL/JV
SCALE: AS SHOWN
DRAWING No: A001

DXX-XX-XXXX

PLAN NO. XXXXX

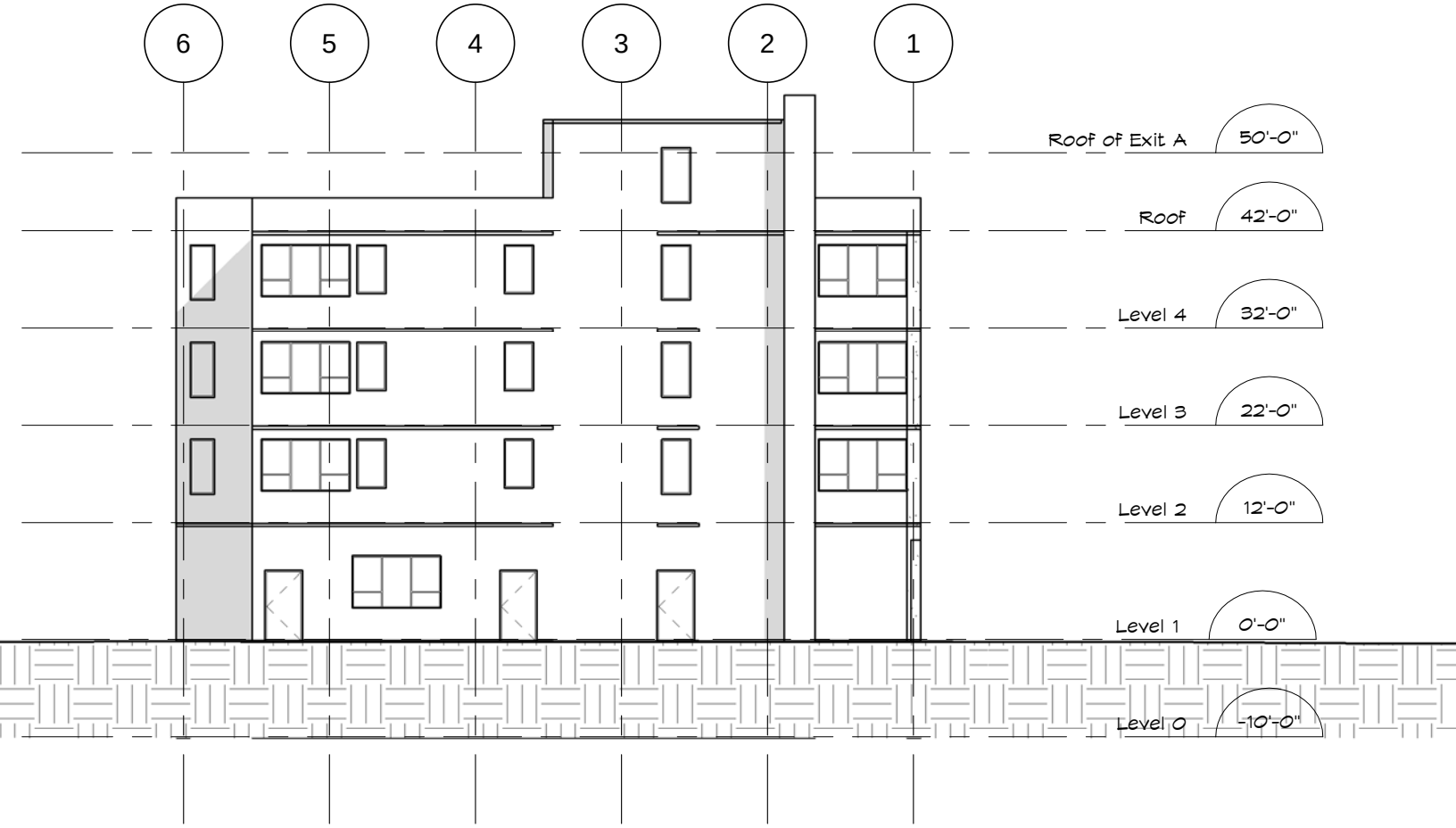


Elevation Cooper St
396 Cooper Renovations

1/5 **WEST N - Cooper St**
SCALE: 1/16" = 1'-0"

07/04/11

ERSKINE DREDGE & Associates
ARCHITECTS INC.

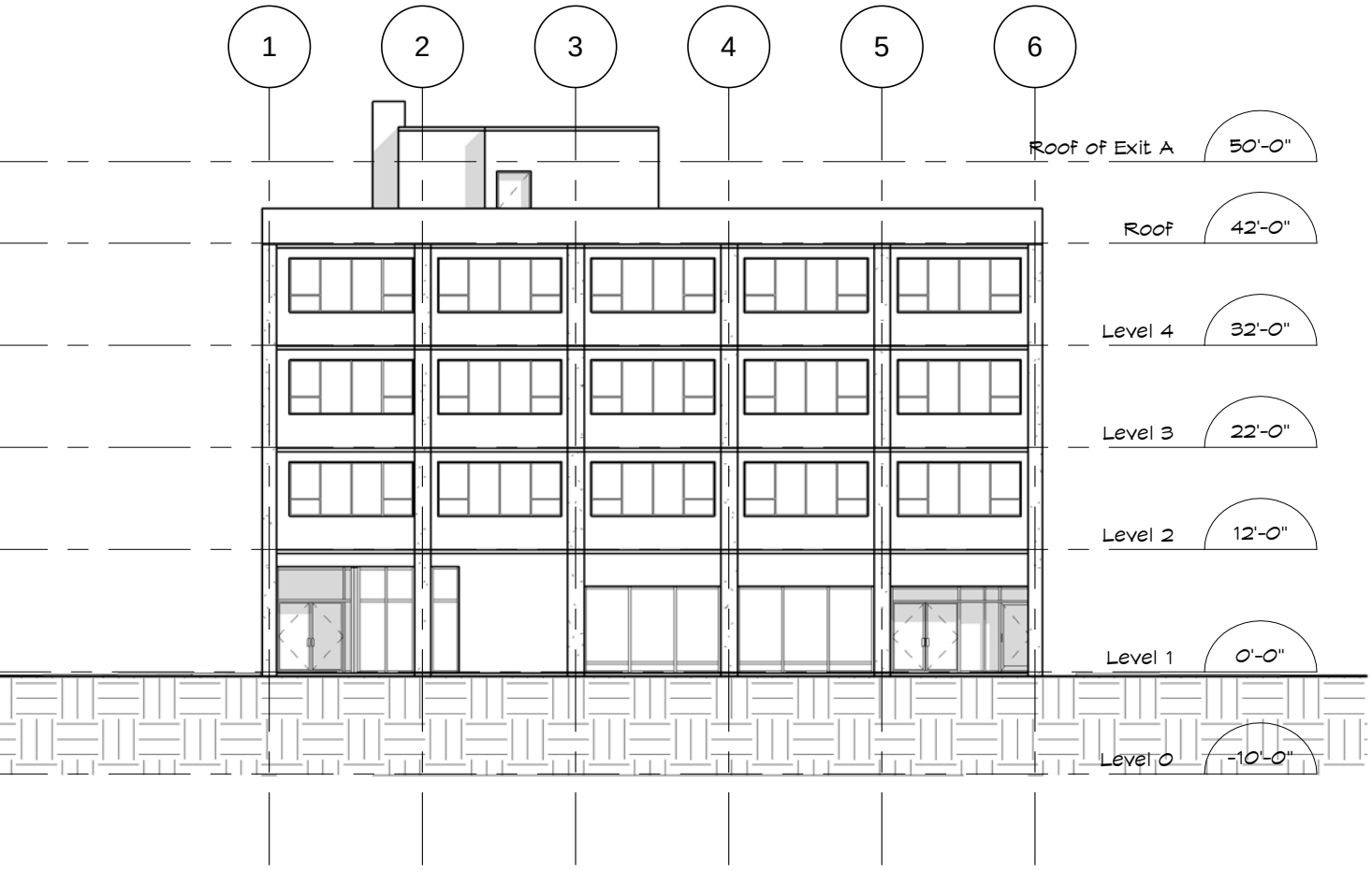


Elevation Parking
396 Cooper Renovations

1/2 **NORTH E - parking**
SCALE: 1/16" = 1'-0"

07/04/11

ERSKINE DREDGE & Associates
ARCHITECTS INC.

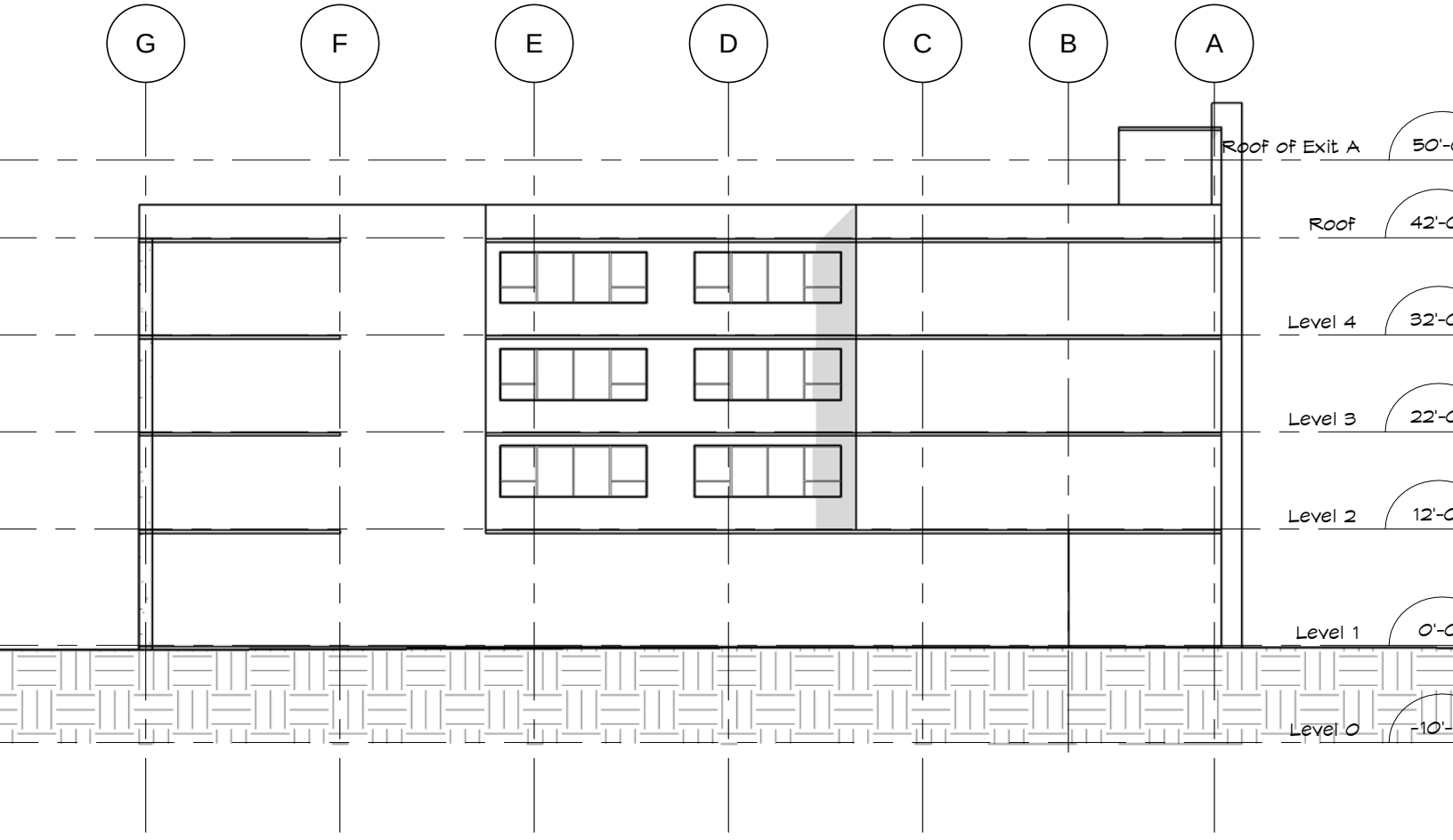


Elevation Bank St
396 Cooper Renovations

1/3 **SOUTH W - Bank St**
SCALE: 1/16" = 1'-0"

07/04/11

ERSKINE DREDGE & Associates
ARCHITECTS INC.



Elevation Alley
396 Cooper Renovations

1/4 **EAST S - alley**
SCALE: 1/16" = 1'-0"

07/04/11

ERSKINE DREDGE & Associates
ARCHITECTS INC.