

**Noise Assessment Report -
689 Churchill Avenue North**

Project # 160401400



Prepared for:
TC United Group

Prepared by:
Stantec Consulting Ltd.

May 16, 2018

**NOISE ASSESSMENT REPORT -
689 CHURCHILL AVENUE NORTH**

Introduction
May 16, 2018

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NOISE ASSESSMENT REPORT - 689 CHURCHILL AVENUE NORTH

Introduction
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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

Stantec Consulting Ltd. has been retained by TC United Group to prepare an environmental noise assessment for the proposed 3 storey residential apartment at 689 Churchill Avenue North, located in the City of Ottawa. A site plan control application is being prepared and a Noise Assessment Study is required to address City policies regarding residential development adjacent to a major collector road.

The purpose of this report is to:

- outline the Ministry's guidelines and criteria for noise levels and residential land use;
- apply the noise level standards of the Ontario Ministry of the Environment and Climate Change's NPC-300 document to the site in conjunction with the City of Ottawa document "Environmental Noise Control Guidelines" (2016);
- determine the extent to which noise levels will be of concern to future residents of the proposed development, using the computerized version (STAMSON 5.03) of the MOECC's noise model; and
- outline recommendations for noise attenuation, as necessary, to achieve acceptable noise levels for future residents of the proposed development.

1.2 LOCATION

The site is located along the east side of Churchill Avenue North, south of Irene Crescent and north of Currell Avenue. The proposed site is illustrated in **Figure 1**. The proposed development consists of 11 residential units. This report will focus on the rooms with exposure to Churchill Avenue North.

Surrounding land uses are as follows:

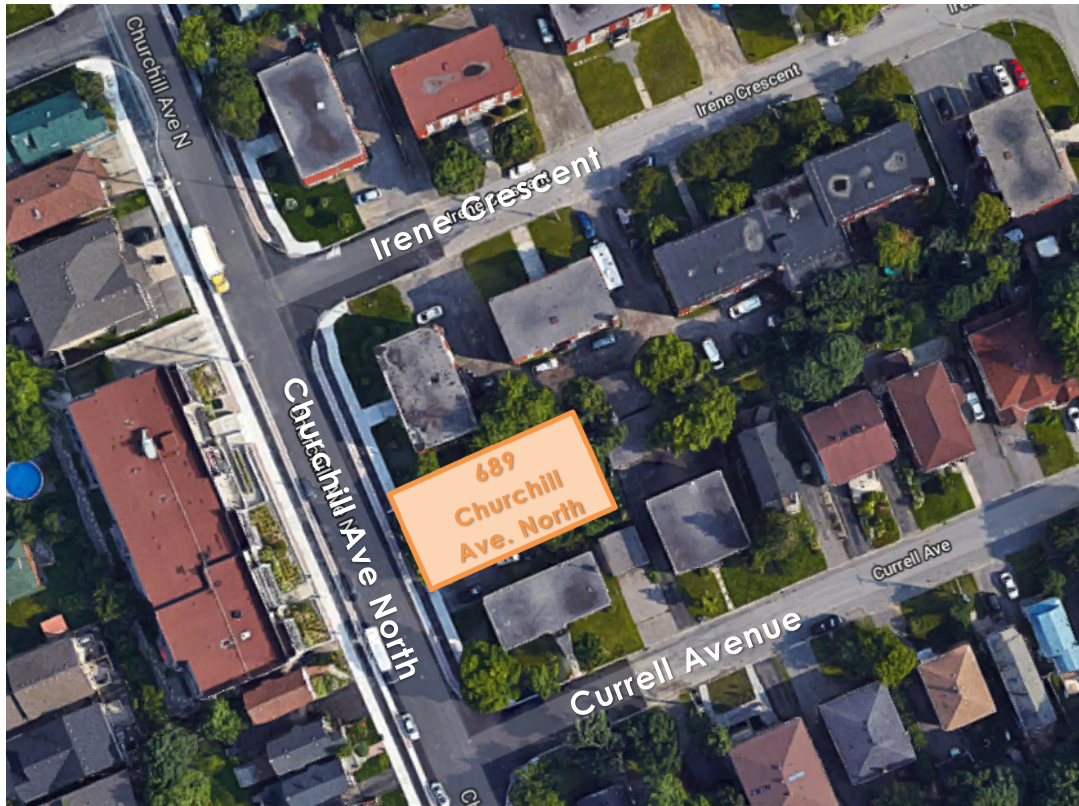
- north – existing residential
- east – existing residential
- south – existing residential
- west – existing residential

The main potential noise source that may impact the subject site is vehicular traffic from Churchill Avenue North. Noise coming from traffic on Dovercourt Avenue and Carling Avenue were not accounted for in this study, given the streets lie over 200m away from the site, are adequately shielded by adjacent existing developments, and lie outside the criteria for noise source assessment (100m) based on the City of Ottawa document "Environmental Noise Control Guidelines" (2016).

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Noise Level Criteria
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Figure 1- 689 Churchill Avenue North Development



2.0 NOISE LEVEL CRITERIA

2.1 GUIDELINES

The Ontario Ministry of Environment and Climate Change (MOECC) has produced guidelines for noise levels for use in noise assessment and land use planning. Noise level criteria for residential land use are summarized in **Table 1** below. Noise levels in excess of the guidelines presented are acceptable under certain conditions and with certain provisions.

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Table 1 Noise Criteria for Residential Land Use

Location	7 a.m. - 11 p.m.	11 p.m. - 7 a.m.
Outdoor Living Areas	55 dBA	N/A
Indoor Living Areas	45dBA	40dBA

Table 2 and **Table 3** set out noise levels in excess of the criteria and the required provisions to allow residential activity in locations where noise level criteria are expected.

**Table 2 Combination of Road and Rail Noise
Daytime Outdoor, Ventilation and Warning Clause Requirements**

Location	Leq (16 hr)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Outdoor Living Area	Leq16hr less than or equal to 55 dBA	N/A	None required	Not required
	Leq16hr greater than 55 dBA	N/A	Acoustical barriers required to reduce the Leq to as close to 55 dBA as feasibly possible.	Required Extensive mitigation of outdoor amenity area clause (MO)
Plane of Living Room Window	Leq16hr less than or equal to 55 dBA	None required	N/A	Not required
	Leq16hr greater than 55 dBA to less than or equal to 65 dBA	Provision for central air conditioning	N/A	Required Generic mitigation of indoor area clause (GI)
	Leq16hr greater than 65 dBA	Central air conditioning	N/A	Required Extensive mitigation of indoor area clause (MI)

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Noise Level Criteria
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**Table 3 Combination of Road and Rail Noise,
Night-Time Ventilation and Warning Clause Requirements**

Location	Leq (8 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Plane of Bedroom Window	Leq8hr greater than 50 dBA to less or equal to 60 dBA	Provision for central air conditioning	N/A	Required Generic mitigation of indoor area
	Leq8hr greater than 60 dBA	Central air conditioning	N/A	Required Extensive mitigation of indoor area

(Source: Ministry of the Environment and Climate Change, Environmental Noise Guideline – Stationary and Transportation Sources- Approval and Planning – Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016))

The MOECC also specifies building component requirements when indoor noise levels exceed the criteria by certain levels. These requirements are summarized in **Table 4**.

Table 4 Road and Rail Noise – Building Component Requirements

Location	Leq (16 hr) (dBA)		Building Component Requirements
Plane of Living Room Window - Daytime	Road	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code
		Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	Rail	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria

Location	Leq (8 hr) (dBA)		Building Component Requirements
Plane of Bedroom Window - Nighttime	Road	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	Rail	Less than or equal to 55 dBA	Building compliant with the Ontario Building Code
		Greater than 55 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria

(Source: Ministry of the Environment, Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, October 1997)

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Observations and Calculations
May 16, 2018

3.0 OBSERVATIONS AND CALCULATIONS

3.1 NOISE LEVEL PREDICTIONS

Noise predictions in this report were completed using the computerized version (STAMSON 5.03) of the MOECC noise model ORNAMENT to calculate noise levels from various sources. The program accepts variables related to noise sources and receivers, road traffic volumes, and the nature and extent of noise mitigation features, if required.

3.2 ROAD TRAFFIC VOLUMES

Traffic volume data for Churchill Avenue North was provided by the City of Ottawa document "Environmental Noise Control Guidelines" (2016). The document indicates that the average annual daily traffic volume for Churchill Avenue North will be 12,000 vehicles per day for a 2-lane major collector road. Additional information regarding applicable assumptions and ratios for day/night traffic and car/ truck traffic is summarized as follows:

- heavy truck traffic for this segment is estimated to be 5% of total traffic volume;
- medium truck traffic for this segment is estimated to be 7% of total traffic volume; the rest is assumed to be car traffic;
- daytime (7 am – 11 pm) traffic is assumed to be 92%, with the remaining 8% at night (11 pm – 7 am); and
- the speed limit for Churchill Avenue North is 50 km/hr

Table 5 summarizes the traffic volumes used for calculations in this report.

Table 5 Traffic Volumes – Churchill Avenue North, 2-Lane Major Collector

	Day	Night	Total
Car	9,715	845	10,560
Medium Truck	773	67	840
Heavy Truck	552	48	600
TOTAL	11,040	960	12,000
Speed Limit	50 km/hr		
Gradient	Approx. 1%		
Surface	Asphalt		

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Observations and Calculations
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3.3 PROJECTED NOISE LEVELS

Using the MOECC noise model, ORNAMENT, noise levels were calculated for the indoor daytime and nighttime conditions at the point representing the anticipated building location. Noise levels were also calculated for the outdoor amenity for daytime conditions. These calculations were based on the site plan prepared for TC United Group. The resulting receiver sites are illustrated in **Figure 2**.

The receiver heights for indoor, daytime, and nighttime noise level calculations for the proposed buildings were completed at the mid-height of each floor. The receiver for the outdoor amenity area was taken 3m off the back face of the building. The drawings are provided in **Appendix B**.

The unattenuated receiver noise levels have been summarized in **Table 6** and noise level calculations are provided in **Appendix A** for daytime and nighttime building face.

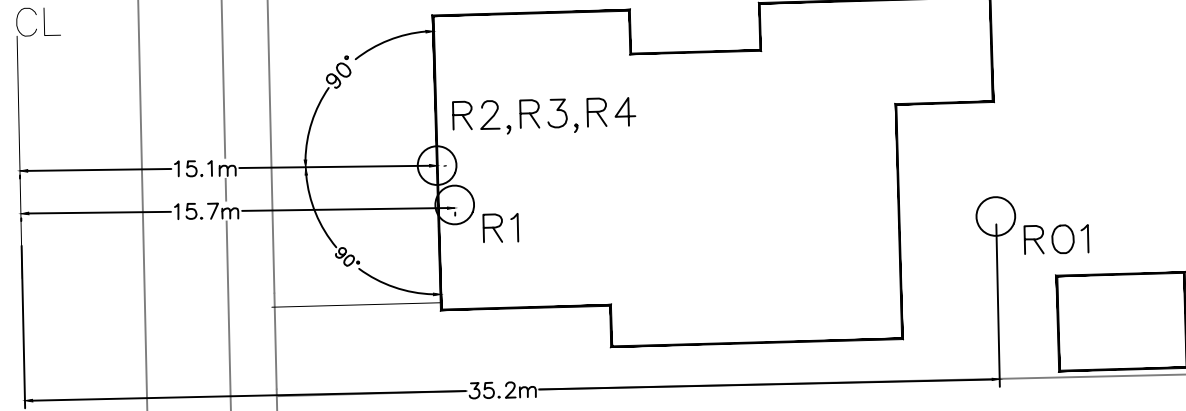
Table 6 Summary of Projected Unattenuated Noise Levels

Receiver Site	Location	Elevation (m)	Distance to Source (m)	Angle of Source Exposure (m)	Daytime-Building Face (dBA)	Nighttime-Building Face (dBA)
R1	West Building Face – Basement Floor	0.6	15.7	90-to (-90)	67.31	59.71
R2	West Building Face - 1 st Floor	3.7	15.1	90-to (-90)	67.48	59.88
R3	West Building Face – 2 nd Floor	6.5	15.1	90-to (-90)	67.48	59.88
R4	West Building Face – 3 rd Floor	9.3	15.1	90-to (-90)	67.48	59.88
RO1	Outdoor Amenity Area	1.5	32.5	90-to (-90)	49.93	-

W:\active\160401400_689 Churchill Avenue\design\report\Noise\2018-05-15-160401400 NA.dwg
2018/05/15 3:48 PM By: Odan, Cameron

ORIGINAL SHEET - ANSI B

Churchill Avenue North



Currell Avenue

April, 2018
160401400



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Client/Project
TC United Group
689 CHURCHILL
NOISE ASSESSMENT REPORT
Figure No.
2.0
Title
RECEIVER SITES
PLAN VIEW

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Conclusions and Recommendations
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4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 NOISE IMPACTS

Predicted noise levels are above City of Ottawa and MOECC criteria at the daytime building face and the nighttime building face for potential units with exposure to Churchill Avenue North, as well as the outdoor amenity area exposed to Churchill Avenue.

The following summarizes the measures required by the City of Ottawa and MOECC criteria for the development to occur within accepted standards:

- An analysis was conducted for the outdoor amenity area of 689 Churchill Avenue. The results determined no noise attenuation measures are required.
- Noise Warning Clause MI is to be included in all offers of purchase and sale for 689 Churchill Avenue.
- Central air conditioning to be installed for all units within 689 Churchill Avenue North.

Noise warning clauses are provided in **Appendix C**.

4.2 INDOOR NOISE MITIGATION – AIF METHOD

For Noise Warning Clause MI, the following building components will apply based on the Acoustical Insulation Factor (AIF) method, as per "Environmental Noise Assessment in Land Use Planning Manual", 1999. The AIF value and minimum building components were determined using wall and room dimensions per preliminary unit floor plans. The calculated noise levels requiring mitigation were 67.48 and 67.31 dBA at the west side of the building during the daytime and 59.88 and 59.71 dBA during the nighttime. These noise levels were used to determine the typical building components required for the building façade.

Table 7 summarizes the AIF values and minimum building components and **Appendix B** provides the floor plans and sample calculations.

Table 7 AIF Summary

Floor	Room	Wall	AIF Value	Type of Window Glazing	Type of Exterior Wall	Type of Door
Basement Floor	Unit 1 Living / Kitchen Area	1	30	2 (6) 2	EW1	-
		2	27	2 (6) 2	EW1	-
	Unit 1 Bathroom	1	24	-	EW1	-
	Unit 1 Master Bedroom	1	27	2 (6) 2	EW1	-

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	Unit 2 Living / Kitchen Area	1	30	2 (6) 2	EW1	-
		2	29	2 (6) 2	EW1	-
	Unit 2 Master Bedroom	2	26	2 (6) 2	EW1	-
	Unit 3 Living / Kitchen Area	4	23	-	EW1	-
	Unit 3 Master Bedroom	2	23	-	EW1	-
Floors 1 to 3	Unit 1 Living / Kitchen Area	1	27	2 (13) 2	EW1	-
	Unit 1 Master Bedroom	1	29	3 (16) 3	EW1	-
		2	28	-	EW1	-
	Unit 1 Bedroom	2	26	2 (6) 2	EW1	-
	Unit 2 Living / Kitchen Area	2	26	2 (6) 2	EW1	-
	Unit 2 Master Bedroom	2	26	2 (6) 2	EW1	-
	Unit 3 Master Bedroom	2	23	-	EW1	-
	Unit 4 Living / Kitchen Area	4	22	-	EW1	-

As the noise levels exceed the MOECC criteria, building components including walls and windows are to be designed so the indoor sound levels comply with MOECC noise criteria by using *EW1 as illustrated above. In this situation, double glazed windows with 2-3mm thickness and various spacing outlined above would be required. Windows with an equivalent AIF may be substituted for the recommended thickness, glazing and spacing. E.g. a double glazed 3mm pane with 6mm spacing may be substituted for double glazed 2mm panes with 15mm spacing.

*EW1 construction consists of:

- 12.7 mm gypsum board, vapour barrier, and 38x89 studs with 50 mm mineral wool or glass fibre batts in inner stud cavities. As well as sheathing and wood siding or metal siding and fibre backer board.

Should the actual floor plans differ from the plans shown in **Appendix B**, updated calculations must be performed prior to the issuance of building permits.

The inclusion of these measures will allow the residential development to proceed in accordance with MOECC criteria with respect to environmental noise.

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Respectfully submitted by:

A handwritten signature in black ink, appearing to read 'C. Odam', written over a light gray rectangular background.

Cameron Odam,
Engineering Intern

A handwritten signature in black ink, appearing to read 'Dustin Thiffault', written over a light gray rectangular background.

Dustin Thiffault, P.Eng.,
Project Engineer

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Appendix A Noise Level Calculations
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Appendix A **NOISE LEVEL CALCULATIONS**

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Appendix A Noise Level Calculations
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A.1 STAMSON RECEIVER REPORTS

STAMSON 5.0 NORMAL REPORT Date: 26-04-2018 12:03:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rli.te Time Period: Day/Night 16/8 hours
Description: R1 INDOOR RECEIVER BASEMENT FLOOR

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 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): 12000
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: CHURCHILL (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 : 15.70 / 15.70 m
Receiver height : 0.60 / 0.60 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CHURCHILL (day)

Source height = 1.50 m

ROAD (0.00 + 67.31 + 0.00) = 67.31 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.00 67.51 0.00 -0.20 0.00 0.00 0.00 0.00
67.31

Segment Leq : 67.31 dBA

Total Leq All Segments: 67.31 dBA

Results segment # 1: CHURCHILL (night)

Source height = 1.50 m

ROAD (0.00 + 59.71 + 0.00) = 59.71 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.00 59.91 0.00 -0.20 0.00 0.00 0.00 0.00
59.71

Segment Leq : 59.71 dBA

Total Leq All Segments: 59.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.31
(NIGHT): 59.71

STAMSON 5.0 NORMAL REPORT Date: 26-04-2018 12:04:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R2I.te Time Period: Day/Night 16/8 hours
Description: R2 INDOOR RECEIVER FLOOR 1

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 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): 12000
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: CHURCHILL (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 : 15.10 / 15.10 m
Receiver height : 3.70 / 3.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CHURCHILL (day)

Source height = 1.50 m

ROAD (0.00 + 67.48 + 0.00) = 67.48 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.00 67.51 0.00 -0.03 0.00 0.00 0.00 0.00
67.48

Segment Leq : 67.48 dBA

Total Leq All Segments: 67.48 dBA

Results segment # 1: CHURCHILL (night)

Source height = 1.50 m

ROAD (0.00 + 59.88 + 0.00) = 59.88 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.00 59.91 0.00 -0.03 0.00 0.00 0.00 0.00
59.88

Segment Leq : 59.88 dBA

Total Leq All Segments: 59.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.48
(NIGHT): 59.88

STAMSON 5.0 NORMAL REPORT Date: 26-04-2018 12:05:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: R3I.te Time Period: Day/Night 16/8 hours
Description: R3 INDOOR RECEIVER FLOOR 2

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 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): 12000
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: CHURCHILL (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 : 15.10 / 15.10 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CHURCHILL (day)

Source height = 1.50 m

ROAD (0.00 + 67.48 + 0.00) = 67.48 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.00 67.51 0.00 -0.03 0.00 0.00 0.00 0.00
67.48

Segment Leq : 67.48 dBA

Total Leq All Segments: 67.48 dBA

Results segment # 1: CHURCHILL (night)

Source height = 1.50 m

ROAD (0.00 + 59.88 + 0.00) = 59.88 dBA

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

-90 90 0.00 59.91 0.00 -0.03 0.00 0.00 0.00 0.00
59.88

Segment Leq : 59.88 dBA

Total Leq All Segments: 59.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 67.48
(NIGHT) : 59.88

Filename: R4I.te Time Period: Day/Night 16/8 hours
Description: R4 INDOOR RECEIVER FLOOR 3

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

Car traffic volume	:	9715/845	veh/TimePeriod
Medium truck volume	:	773/67	veh/TimePeriod
Heavy truck volume	:	552/48	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 SADDT) :	12000
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: CHURCHILL (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		15.10 / 15.10 m	
Receiver height		9.30 / 9.30 m	
Topography		1	(Flat/gentle slope; no barrier)
Reference angle		0.00	

Results segment # 1: CHURCHILL (day)

Source height = 1.50 m

$$\text{ROAD} (0.00 + 67.48 + 0.00) = 67.48 \text{ dBA}$$

Angle1	Angle2	Alpha	RefLeg	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeg									

-90	90	0.00	67.51	0.00	-0.03	0.00	0.00	0.00
67.48								

Segment Leq : 67.48 dBA

Total Leq All Segments: 67.48 dBA

Results segment # 1: CHURCHILL (night)

Source height = 1.50 m

ROAD	(0.00 + 59.88 + 0.00) = 59.88	dBA
Angle1	Angle2	Alpha RefLeg P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeg		

-90	90	0.00	59.91	0.00	-0.03	0.00	0.00	0.00
59.88								

Segment Leq : 59.88 dBA

Total Leq All Segments: 59.88 dBA

TOTAL Leg FROM ALL SOURCES (DAY) : 67.48
(NIGHT) : 59.88

STAMSON 5.0 NORMAL REPORT Date: 15-05-2018 15:58:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rol.te Time Period: Day/Night 16/8 hours
Description: R01 OUTDOOR RECEIVER CHURCHILL

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 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): 12000
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: CHURCHILL (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 95 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 35.20 / 35.20 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CHURCHILL (day)

Source height = 1.50 m

ROAD (0.00 + 49.93 + 0.00) = 49.93 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 67.51 0.00 -6.15 -1.46 0.00 -9.98 0.00
49.93

Segment Leq : 49.93 dBA

Total Leq All Segments: 49.93 dBA

Results segment # 1: CHURCHILL (night)

Source height = 1.50 m

ROAD (0.00 + 42.33 + 0.00) = 42.33 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 59.91 0.00 -6.15 -1.46 0.00 -9.98 0.00
42.33

Segment Leq : 42.33 dBA

Total Leq All Segments: 42.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 49.93
(NIGHT) : 42.33

**NOISE ASSESSMENT REPORT -
689 CHURCHILL AVENUE NORTH**

Appendix B FLOOR PLANS AND AIF CALCULATIONS
May 16, 2018

Appendix B FLOOR PLANS AND AIF CALCULATIONS

CHURCHILL AVENUE NORTH

APPROX. CROWN OF ASPHALT

EDGE/ASPHALT
CONCRETE CURB

CONCRETE & INTERLOCK MEDIAN

ASPHALT BIKE PATH

CONCRETE SIDEWALK

ASPHALT DRIVEWAY

N 23°07'W 15.24

NOTE: EXISTING AVERAGE
GRADE = 77.94

EXISTING 2-1/2 STOREY
BUILDING

PART 1 5R-4682

PROPOSED 3-STOREY
RESIDENTIAL BUILDING
PIN 04013-0103

LOT 15
PIN 04013-0063

EXISTING 2-1/2 STOREY
BUILDING

LOT 14
PIN 04013-0062

EXISTING
GARAGE

BIKE STORAGE
SHED

AMENITY AREA
1500 SF

EXISTING SHED
TO BE REMOVED

REAR YARD SETBACK

EXISTING WOOD DECK
TO BE REMOVED

EXISTING SHEDS
TO BE REMOVED

EXISTING WOOD DECK
TO BE REMOVED

EXISTING WALKWAY
& STEPS TO BE
REMOVED

EXISTING 2-1/2 STOREY
BUILDING TO BE REMOVED

EXISTING STONE
RETAINING WALL

EXISTING STONE
RETAINING WALL

RETAINING WALL

RAMP DN
4R DN

1500
SIDE YARD
SETBACK

21000
SIDE YARD SETBACK LINE

32.00
N 66°53'40" E

N 66°53'00" E

1500
SIDE YARD
SETBACK

77.64

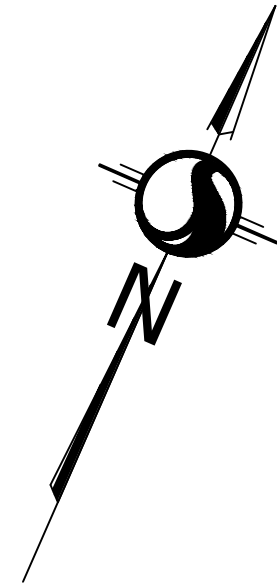
77.70

77.67

77.89

4565

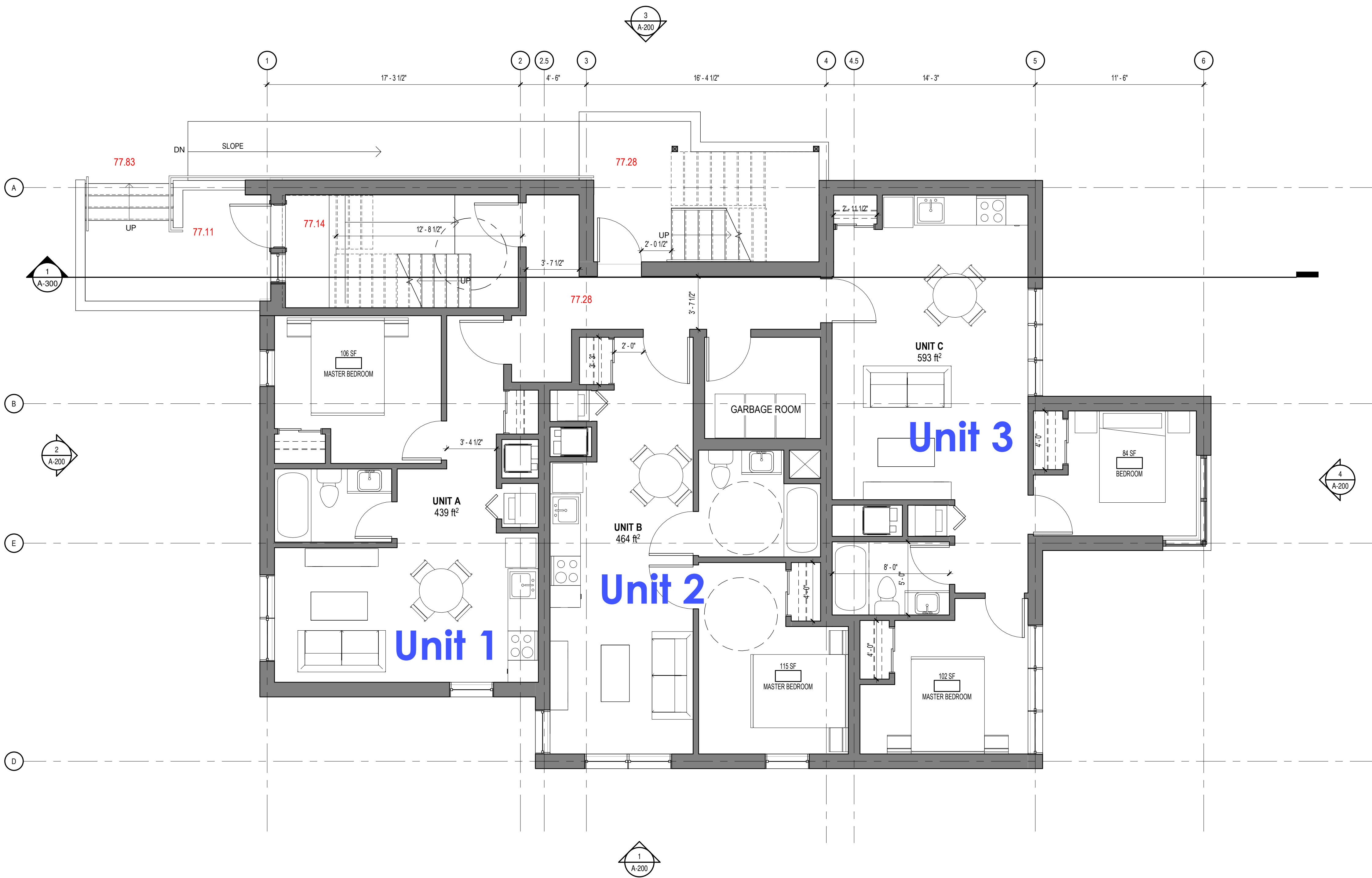
HEAVY VEGETATION



PART 2

Issue Log		
#	Date	Issue For / Subject
1	2018-03-16	COORDINATION
2	2018-04-08	COORDINATION
3	2018-04-24	COORDINATION
-	----	----
-	----	----
-	----	----

Engineer - Structural, Mechanical and Electrical		
Client:		
Architects/Architect:		
190 Somerset St. W. - Suite 206 Ottawa, Ontario, Canada K2P 6J8 (Tel) 613.688.8122 www.rubinrotman.com		
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SEAL/SEAL:	Note:	L'entrepreneur doit vérifier toutes les informations et dimensions sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.
THREE STOREY APARTMENT BUILDING 689 Churchill Avenue, Ottawa ON		
TITRE/TITLE:		
SITE PLAN		
DESSINÉ PAR/DRAWN BY:	FOLIO:	
MD, ZK	1807	
VÉRIFIÉ PAR/VERIFIED BY:	DESSINÉ PAR/DRAWING NO.	Revision
RC		
ÉCHELLE/SCALE:		
1:75		
DATE D'ÉMISSION/ISSUE DATE:		
2018/03/16		



1
A-120

BASEMENT PLAN
1/4" = 1'-0"

GENERAL NOTES

No. Date Émis pour / Object
1 2019-04-24 COORDINATION

Ingenieur / Engineer
(Mécanique & Électrique / Mechanical & Electrical)

Ingenieur / Engineer
(Structure / Structure)

Client / Client

Architecte / Architect

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Seau / Seal

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Projet / Project

THREE STOREY APARTMENT
BUILDING

689 Churchill Avenue, Ottawa ON

Titre / Title

BASEMENT PLAN

Dessiné par / Drawn by

No. projet / Project number

AUTHOR

1749

Vérifié par / Verified by

No. dessin / Drawing number

CHECKER

RÉVISION /

Echelle / Scale

1

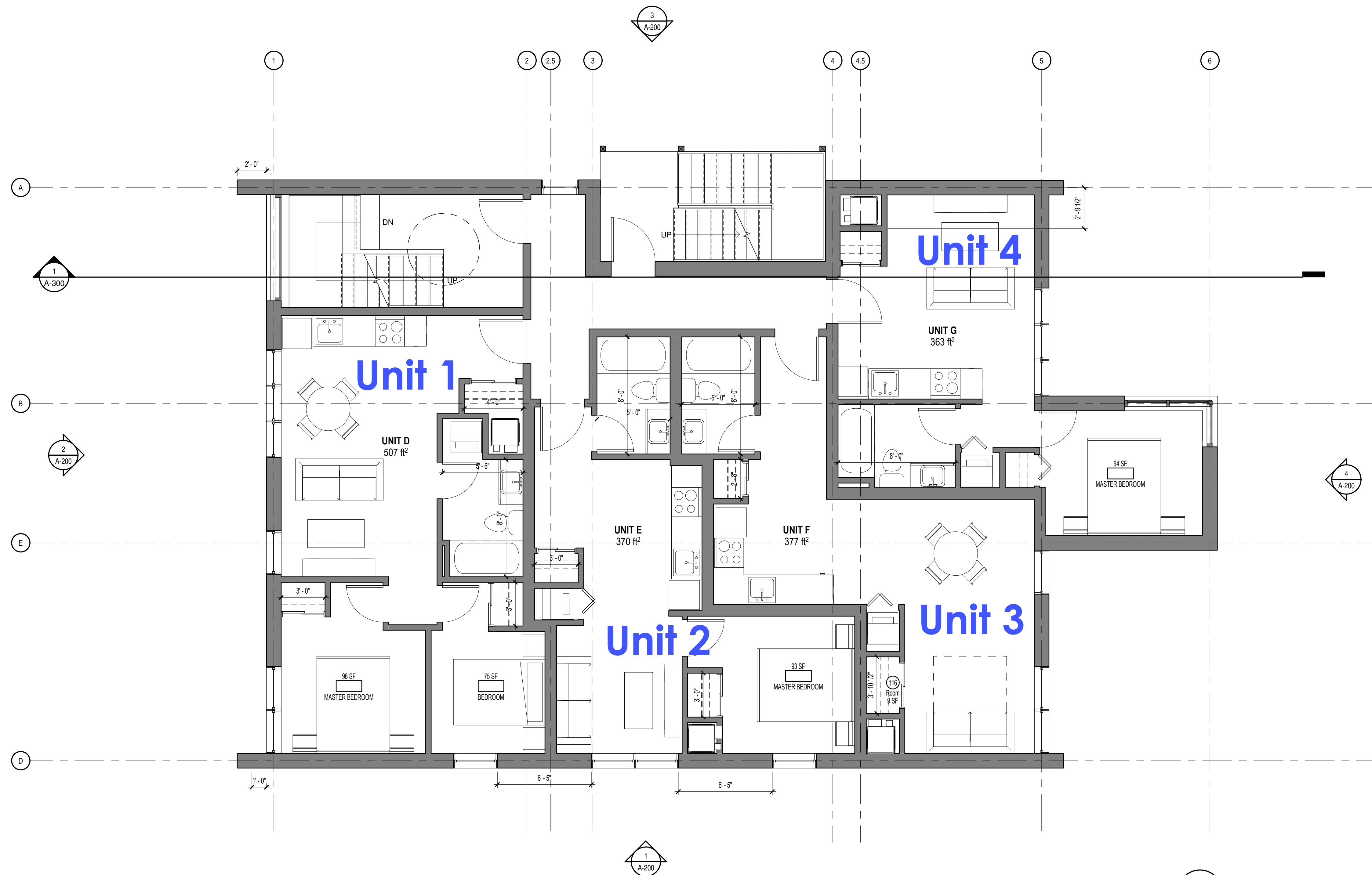
1/4" = 1'-0"

Date de création du dessin /

Drawing creation date

02/11/10

A-120



1 FIRST & SECOND FLOOR PLANS
A-121 1/4" = 1'-0"

GENERAL NOTES

No. Date Émis pour / Object
1 2019-04-24 COORDINATION

Ingenieur / Engineer
(Mécanique & Électrique / Mechanical & Electrical)

Ingenieur / Engineer
(Structure / Structure)

Client / Client

Architecte / Architect

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Projet / Project

THREE STOREY APARTMENT BUILDING

689 Churchill Avenue, Ottawa ON

Titre / Title

FIRST & SECOND FLOOR PLANS

Dessiné par / Drawn by

No. projet / Project number

Author

1749

Vérifié par / Verified by

No. dessin / Drawing number

Checker

Révision / Revision

Echelle / Scale

1

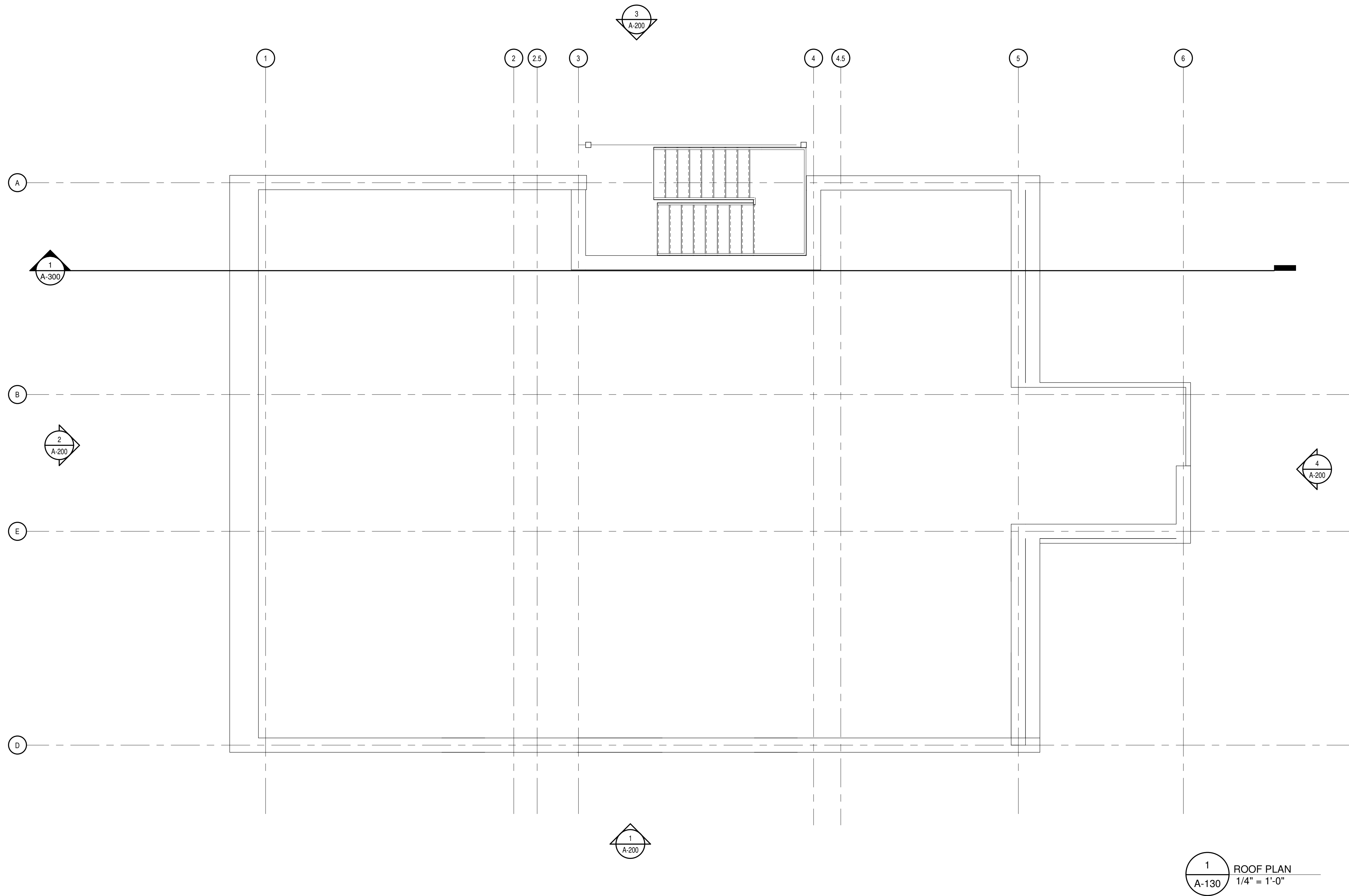
1/4" = 1'-0"

Date de création du dessin /

Drawing creation date

01/09/12

A-121



No.	Date	Émis pour / Object
1	2019-04-24	COORDINATION

Ingenieur / Engineer
(Mécanique & Electrique / Mechanical & Electrical)

Ingenieur / Engineer
(Structure / Structure)

Client / Client

Architecte / Architect

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Seau / Seal

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Project / Project

THREE STOREY APARTMENT BUILDING

689 Churchill Avenue, Ottawa ON

Title / Title

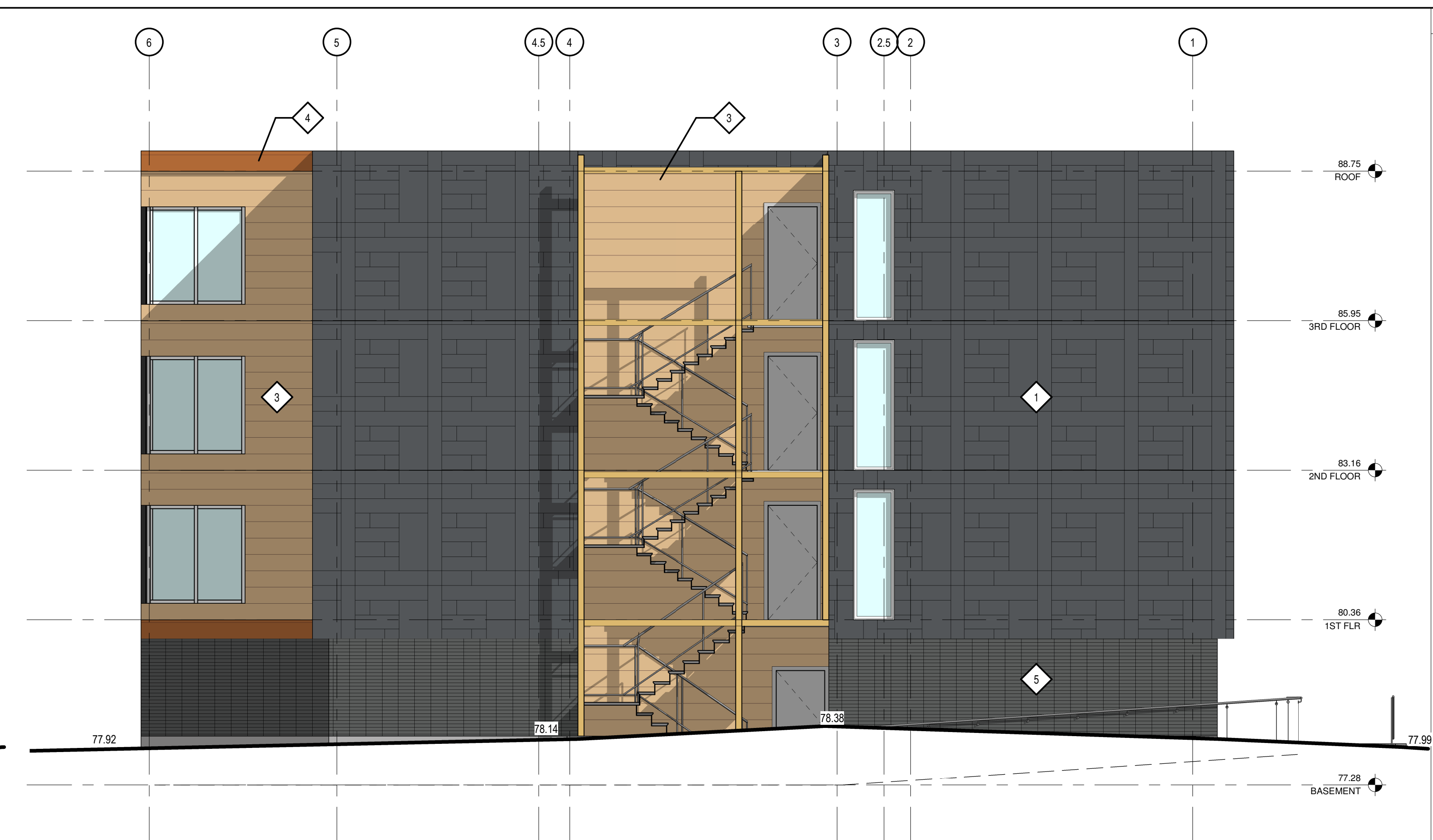
ROOF PLAN

Dessiné par / Drawn by	No. projet / Project number
Author	1749
Vérifié par / Verified by	No. dessin / Drawing number
Checker	1
Echelle / Scale	1/4" = 1'-0"
Date de création du dessin / Drawing creation date	01/09/12

A-130



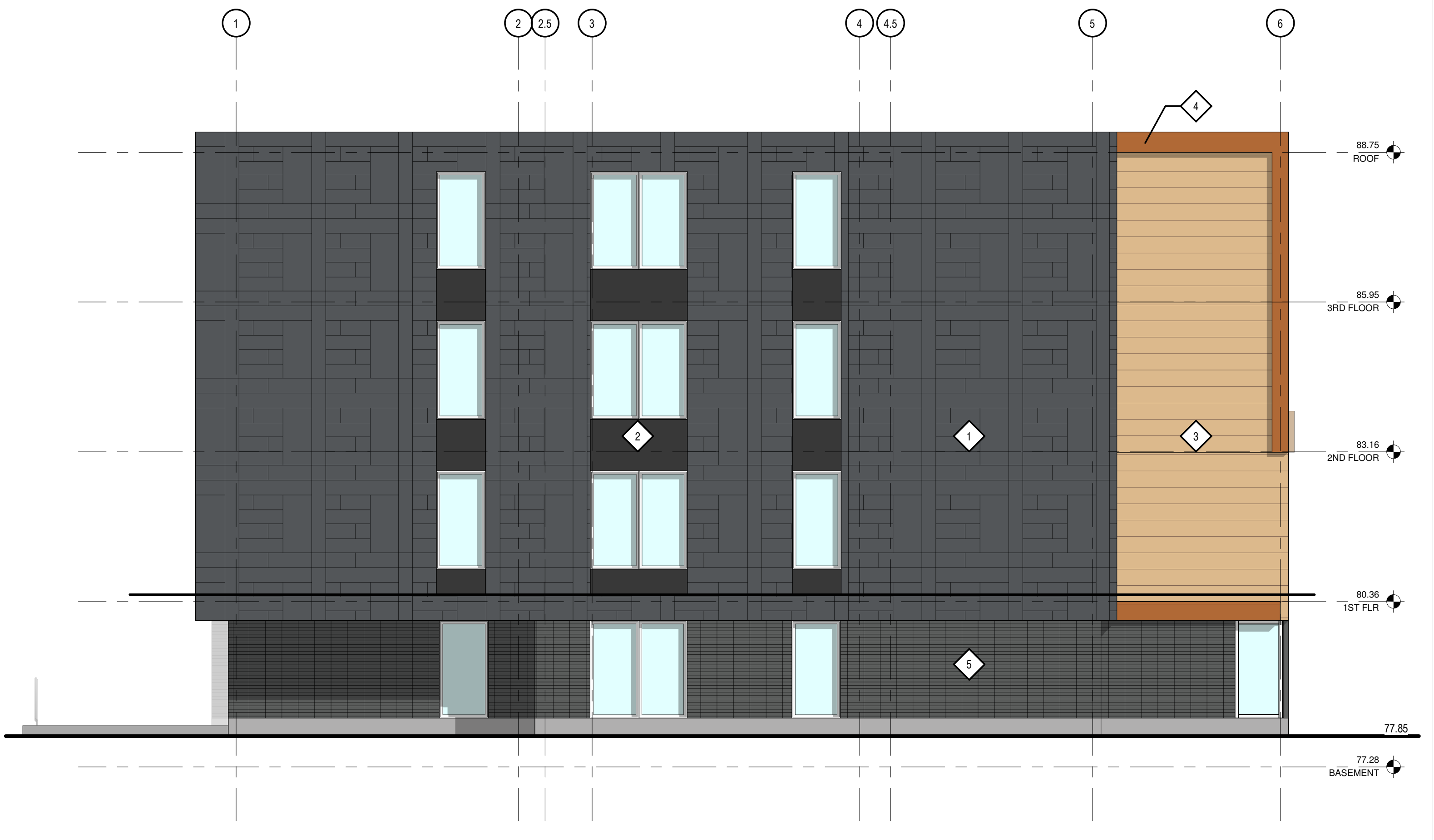
4 EAST ELEVATION
A-200 3/16" = 1'-0"



3 NORTH ELEVATION
A-200 3/16" = 1'-0"



2 WEST ELEVATION
A-200 3/16" = 1'-0"



1 SOUTH ELEVATION
A-200 3/16" = 1'-0"

GENERAL NOTES

- 1 Fiber cement panels
Colour: dark grey
- 2 Aluminum metal panels
Colour: Charcoal grey
- 3 Wood panels (Cedar)
Horizontal siding
- 4 Corten metal panels
- 5 Brick siding
Stack pattern
Colour: grey

No. Date Émis pour / Object
1 2019-04-24 COORDINATION

Ingenieur / Engineer
(Mécanique & Électrique / Mechanical & Electrical)

Ingenieur / Engineer
(Structure / Structure)

Client / Client

Architecte / Architect

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Projet / Project

THREE STOREY APARTMENT
BUILDING

689 Churchill Avenue, Ottawa ON

Titre / Title

ÉLÉVATIONS

Dessiné par / Drawn by

No. projet / Project number

Auteur

1749

Vérifié par / Verified by

No. dessin / Drawing number

Checker

1

Echelle / Scale

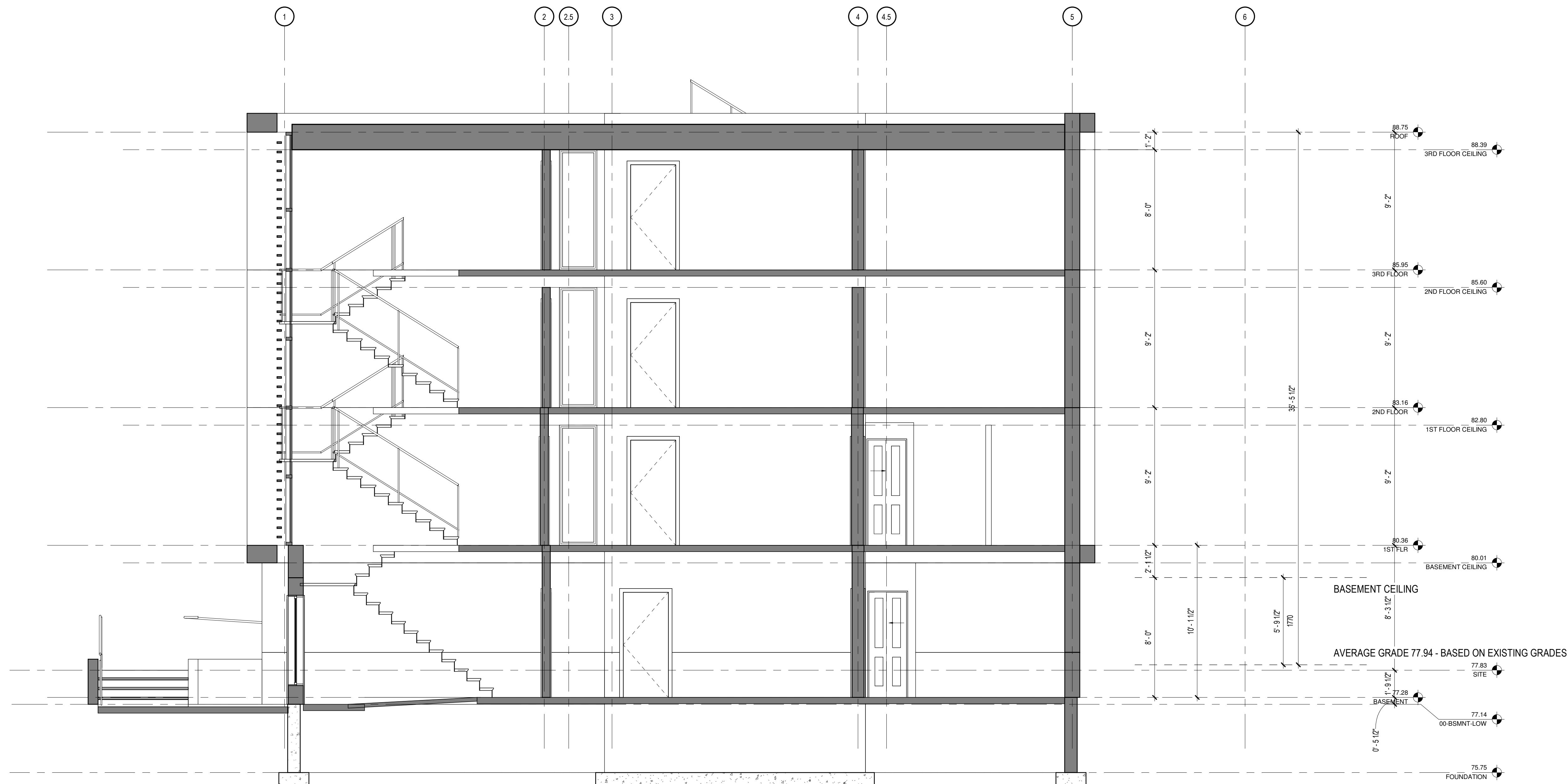
As indicated

Date de création du dessin /

Drawing creation date

01/09/12

A-200



No. / Date / Émis pour / Object		
1 / 2018-04-24 / COORDINATION		
Ingenieur / Engineer (Mécanique & Électrique) / Mechanical & Electrical		
Ingenieur / Engineer (Structure / Structure)		
Client / Client		
Architecte / Architect		
Architectes 270 Prince Stade 200 Montreal Quebec H3C 2N3 T 514 861 3122 F 514 861 3353 www.rubinrotman.com Rubin & Rotman architectes		
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Project / Project		
THREE STOREY APARTMENT BUILDING		
689 Churchill Avenue, Ottawa ON		
Title / Titre		
BUILDING SECTION		
Dessiné par / Drawn by No. projet / Project number		
MD 1749		
Vérifié par / Verified by No. dessin / Drawing number		
RC		
Echelle / Scale		
1/4" = 1'-0"		
Date de création du dessin / Drawing creation date		
28/03/2018		

A-300

**NOISE ASSESSMENT REPORT -
689 CHURCHILL AVENUE NORTH**

Appendix C NOISE WARNING CLAUSE
May 16, 2018

Appendix C **NOISE WARNING CLAUSE**

**NOISE ASSESSMENT REPORT -
689 CHURCHILL AVENUE NORTH**

Appendix C NOISE WARNING CLAUSE
May 16, 2018

WARNING CLAUSES

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

Generic Indoor (GI):

Indoor environment - $L_{eq}(16)$ greater than 55 dBA and less than or equal to 65 dBA or ($L_{eq}(8)$ greater than 50dBA and less than or equal to 60 dBA

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

- 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 of Ottawa and the Ministry of the Environment and Climate Change.

Extensive Mitigation of Indoor Area (MI):

Indoor environment - $L_{eq}(16)$ greater than 65 dBA or ($L_{eq}(8)$ greater than 60dBA

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

- multi-pane glass;
- exterior wall insulation;
- a forced central air conditioning system.

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 forced 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 of Ottawa and the Ministry of the Environment and Climate Change.

**NOISE ASSESSMENT REPORT -
689 CHURCHILL AVENUE NORTH**

Appendix C NOISE WARNING CLAUSE
May 16, 2018

Extensive Mitigation of Outdoor Amenity Area (MO):

Outdoor amenity areas- $L_{eq}(16)$ in the OLA greater than 55 dBA and less than or equal to 60 dBA.

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

- an acoustic barrier.

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 may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City of Ottawa and the Ministry of the Environment and Climate Change.

No Outdoor amenity area (N):

"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail, Light Rail, and/or 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."

"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."

Source: City of Ottawa - Environmental Noise Control Guidelines, January 2016 and Ontario Ministry of the Environment and Climate Change, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, Queen's Printer for