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Mattino Developments Inc.
285 Mountshannon Drive – Block 1

Noise Impact Assessment

Noise Impact Assessment

Mattino Developments Inc.
285 Mountshannon Drive – Block 1

175 Claridge Drive
Ottawa, ON
K2J 5V8

Prepared by:

NOVATECH
240 Michael Cowpland Drive, Suite 200
Ottawa, Ontario, K2M 1P6

January 4, 2019

Ref: R-2019-002
Novatech File No. 112021-04

January 4, 2019

BY COURIER

City of Ottawa
Planning and Growth Management Department
110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1

Attention: Melanie Gervais, Planner II

Reference: 285 Mountshannon Drive – Block 1
Noise Impact Assessment
Our File No.: 112021-04

Please find enclosed three (3) copies of the 'Noise Impact Assessment' for 285 Mountshannon Drive – Block 1 development.

Please contact the undersigned with any questions, or if you require additional information.

Sincerely,

NOVATECH

Lucas Wilson, P.Eng.
Project Coordinator

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1.0 INTRODUCTION

The subject site is located within the Longfields Community, in the Barrhaven ward at 285 Mountshannon Drive. The site is approximately 0.21ha and is bounded by the Longfields Central subdivision to the north, Mountshannon Drive to the east, Longfields Drive to the south, and Pierre Elliot Trudeau Highschool to the west. A key plan of the area is presented as **Figure 1-1**.

Figure 1-1 Key Plan

The proposed development will consist of a 3-storey residential stacked townhome structure fronting onto Mountshannon Drive with 20 units. The proposed site plan is shown below in **Figure 1-2**.

This report assesses potential noise sources that could affect the development, analyses the sound levels and outlines any necessary noise attenuation requirements for compliance with the City of Ottawa Environmental Noise Control Guidelines (ENCG) and the MOE Environmental Noise Guidelines (MOE Publication NPC-300).

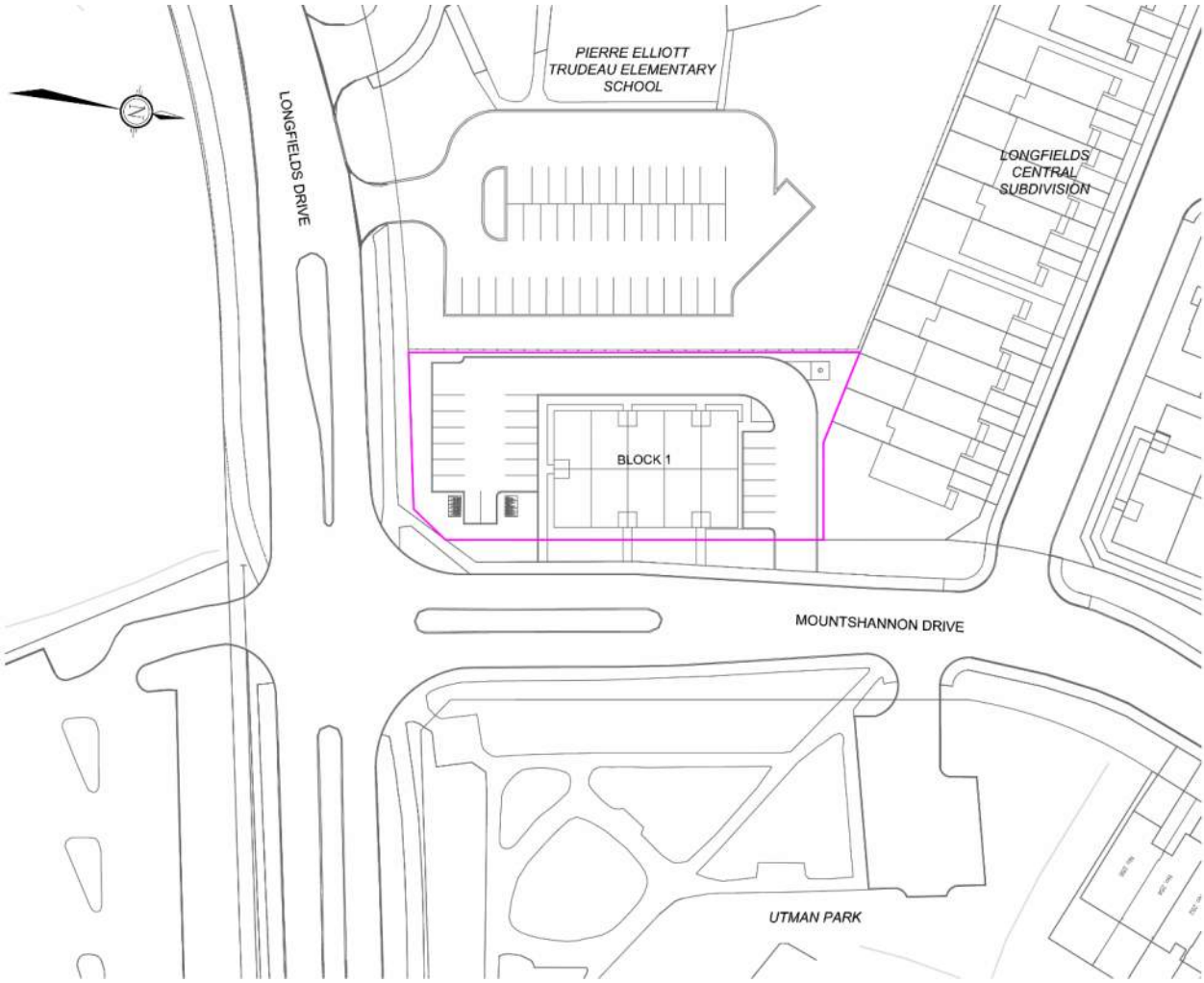


Figure 1-2 Site Plan

2.0 CITY OF OTTAWA ENVIRONMENTAL NOISE CONTROL GUIDELINES

2.1 Sound Level Criteria

The City of Ottawa is concerned with noise from aircraft, roads, railways and transitways as expressed in the City of Ottawa Official Plan (May 2003). These policies are supported by the Environmental Noise Control Guidelines (ENCG) which is a technical document that outlines the specific sound level criteria. The City of Ottawa's *Environmental Noise Control Guidelines (ENCG)*, January, 2016 and the Ministry of Environment's *Environmental Noise Guidelines, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300* have been used for the purpose of this report. As per Section 2.2 of the City of Ottawa Noise Control Guidelines (2016), unless otherwise noted, developments should be consistent with NPC-300 (MOE publication, 2013).

The areas that must be assessed for acoustic protection include the Outdoor Living Area (OLA) and the Outdoor Plane of Window (POW).

These locations are defined as:

- **Outdoor Living Area (OLA):** The Outdoor Living Area is defined as that part of the outdoor amenity area provided for the quiet enjoyment of the outdoor environment during the daytime period. These amenity areas are typically backyards, gardens, terraces, patios and common outdoor living areas. The OLA noise target for traffic noise sources is 55 dBA. The OLA for aircrafts must be analysed separately from surface transportation sources, with a noise target of 30 NEF/NEP (approximately Leq_{24hr} 61-64 dBA). This criterion may be exceeded by an amount not greater than 5 dBA, subject to justification and the use of a Warning Clause. OLA noise levels are analysed at 3.0m from the building façade, 1.5m above grade.

- **Plane of Window (POW):** The plane of window is defined as the indoor living space where the sound levels will affect the living room area during daytime hours and bedrooms during night time hours. The residential Plane of Window noise target for traffic noise sources is 55 dBA during the day and 50 dBA at night. If this criterion is exceeded, the property may be subject to building component analysis and warning clauses. The indoor noise impact for rail, road, and aircraft noise must be assessed separately and the sound criterion is broadly summarized in **Table 2-1, Table 2-2** and **Table 2-3**. POW noise levels are analysed 1.5m above grade for the first storey, 4.5m above grade for the second storey and 7.5m above grade for the third storey.

Table 2-1 City of Ottawa Outdoor Plane of Window Sound Level Criteria

TIME PERIOD	RECEIVER LOCATION	SOUND LEVEL CRITERIA
Daytime (07:00 - 23:00 hrs)	Plane of Living Room Window	55 dBA
Night time (23:00 - 07:00 hrs)	Plane of Bedroom Window	50 dBA

Compliance with the outdoor sound level criteria generally ensures compliance with the indoor sound level criteria which is summarized below in **Table 2-2**.

Table 2-2 Indoor Sound Level Criteria Surface Transportation

TIME PERIOD	RECEIVER LOCATION	SOUND LEVEL CRITERIA
Daytime (07:00 - 23:00 hrs)	**Living/Dining Rooms of residential dwelling units**, hospitals, schools, nursing homes, day-care centres, theatres, places of worship, individual or semiprivate offices, conference rooms etc.	45 dBA
Night Time (23:00 - 07:00 hrs)	**Sleeping quarters of residential units**, hospitals, nursing homes, senior citizen homes, etc.	40 dBA

Table 2-3 Indoor Aircraft Sound Level Criteria

RECEIVER LOCATION	INDOOR NEF/NEP
Living/Dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, day-care centres, places of worship, etc.	5 (Approx. Leq_{24hr} 36-39 dBA)
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0 (Approx. Leq_{24hr} 31-34 dBA)

2.2 Noise Attenuation Requirements

When sound levels are predicted to be less than the specified criteria for daytime and night time conditions, no attenuation measures are required on the part of the proponent. As the noise criteria are exceeded, a combination of attenuation measures is recommended by the City of Ottawa and the MOE to modify the development environment.

These attenuation measures may include any or all of the following:

- Distance setback with soft ground;
- Insertion of noise insensitive land uses between the source and sensitive receptor;
- Orientation of building to provide sheltered zone;
- Construction of a noise barrier wall and/or berm;
- Installation of a forced air ventilation system with provision for central air;
- Installation of central air;
- Acoustically selected building façade components

2.2.1 *Noise Barrier*

Noise barriers should only be used when other noise control measures have been considered, and there is no other alternative. The proposed development does not contain a communal amenity area and as such, there is no need to analyze the Outdoor Living Area.

2.2.2 *Ventilation Requirements*

A forced air heating system with provision for a central air conditioning system is required if the daytime surface transportation noise levels are between 55 dBA and 60 dBA and/or night time surface transportation noise levels are between 50 dBA and 60 dBA. For aircraft noise, a forced air heating system with provision for a central air conditioning system is required if at any location on the property the noise level is between NEF 25 and NEF 30.

The installation of a central air conditioning system is required when the daytime noise level exceeds 65 dBA and/or night time noise levels exceed 60 dBA for surface transportation noise sources and greater than NEF 30 for aircraft noise sources.

2.2.3 *Building Component Assessment*

When noise levels exceed 65 dBA (daytime) or 60 dBA (night time) for surface transportation noise sources or NEF 25 for aircraft noise sources the exterior cladding system of the building envelope must be acoustically assessed to ensure the indoor sound criteria is 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} + $\log_{10}$ (Number of Components) + 2dB

Where, N = Number of components (walls, windows and roof);
L = Sound Level expressed on a common decibel scale.

2.2.4 *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 sales agreements to warn potential purchaser/buyers/tenants of the possible elevated noise levels.

The following typical warning clauses are extracted from Section C8.1 of the MOE NPC-300 document.

Warning Clause Type A
“Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the City’s and the Ministry of the Environment’s noise criteria.”

Warning Clause 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 traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the City’s and the Ministry of the Environment’s noise criteria.”

Warning Clause Type C
"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 will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

Warning Clause Type D
"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 City's and the Ministry of the Environment's noise criteria."

2.2.5 *Summary of Noise Attenuation Measure Requirements*

Table 2-4 and **Table 2-5** summarizes the noise attenuation measure requirements and warning clauses should sound criteria be exceeded.

Table 2-4 Outdoor, Ventilation and Warning Clause Requirements (NPC-300)

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
	More than 60	Barriers required	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type B
Plane of Living Room Window (POW)	Less than 55	N/A	None Required	None Required	None Required
	Between55 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
	Between50 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

Table 2-5 Indoor Noise Control Requirements for Aircraft Noise

Assessment Location	NEF or NEP	Ventilation Requirements	Noise Control Requirements	Warning Clause
Any Location on Property or Lot	Less than NEF 25	None Required	Building compliant with the Ontario Building Code	Not Required
	Greater or equal to NEF 25 to less than NEF 30	Provision for central air conditioning	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria	Required Type C
	Greater than NEF 30	Central air conditioning	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria	Required Type B and D

3.0 NOISE SOURCES

The City of Ottawa Official Plan and Environmental Noise Control Guidelines (ENCG) stipulate that a noise impact assessment is required when a noise sensitive development is within proximity to a surface transportation (road or rail), stationary and aircraft noise sources.

The following criteria are applicable to the subject site:

- Within 100m from the right-of-way of an existing/proposed arterial/collector;
- Within the limits of the Ottawa Airport Vicinity Development Zone (OAVDZ)

Figure 3-1 shows the noise sources that have an impact on this development. Mountshannon Drive (Collector) and Longfields Drive (Major Collector) are located within 100m of the development. The site is also located within the boundary of the 25 NEF/NEP contours.

3.1 Mountshannon Drive (Collector)

Mountshannon Drive is classified as a 2-Lane Urban Collector (2-UCU) Roadway in the 2013 Transportation Master Plan. An Annual Average Daily Traffic (AADT) value of 8,000 is specified for this type of road.

As per Table B1 of Appendix B of the ENCG, **Table 3-1** outlines the traffic parameters used to calculate the sound levels for the development.

Table 3-1 Mountshannon Drive Noise Parameters

Roadway Classification	2-Lane Urban Arterial
Annual Average Daily Traffic (AADT)	8,000 veh/day
Day/Night Split (%)	92/8
Heavy Trucks (%)	5
Medium Trucks (%)	7
Posted Speed Limit	40 km/hr
Road Gradient	1.0%

3.2 Longfields Drive (Major Collector)

Longfields Drive is classified as a 2-Lane Major Collector (2-UMCU) Roadway in the 2013 Transportation Master Plan. An Annual Average Daily Traffic (AADT) value of 12,000 is specified for this type of road.

As per Table B1 of Appendix B of the ENCG, outlines the traffic parameters used to calculate the sound levels for the development.

Table 3-2 Longfields Drive Noise Parameters

Roadway Classification	2-Lane Major Collector
Annual Average Daily Traffic (AADT)	12,000 veh/day
Day/Night Split (%)	92/8
Heavy Trucks (%)	5
Medium Trucks (%)	7
Posted Speed Limit	40 km/hr
Road Gradient	1.0%

3.3 Aircraft

The ENCG provides sound level criteria for aircraft noise based on location within the Ottawa Airport Vicinity Development Zone (OAVDZ). The boundary of the OAVDZ has been defined to coincide with physical features such as roads, creeks, rail lines, and lot lines where possible. Noise levels which would impact sensitive areas are determined by the NEF/NEP contours. These contours include noise levels from aircraft flight, take-off, and ground operations to specific urban areas**. Figure 3-2** shows the development location in reference to the Ottawa Airport Operating Influence Zone.

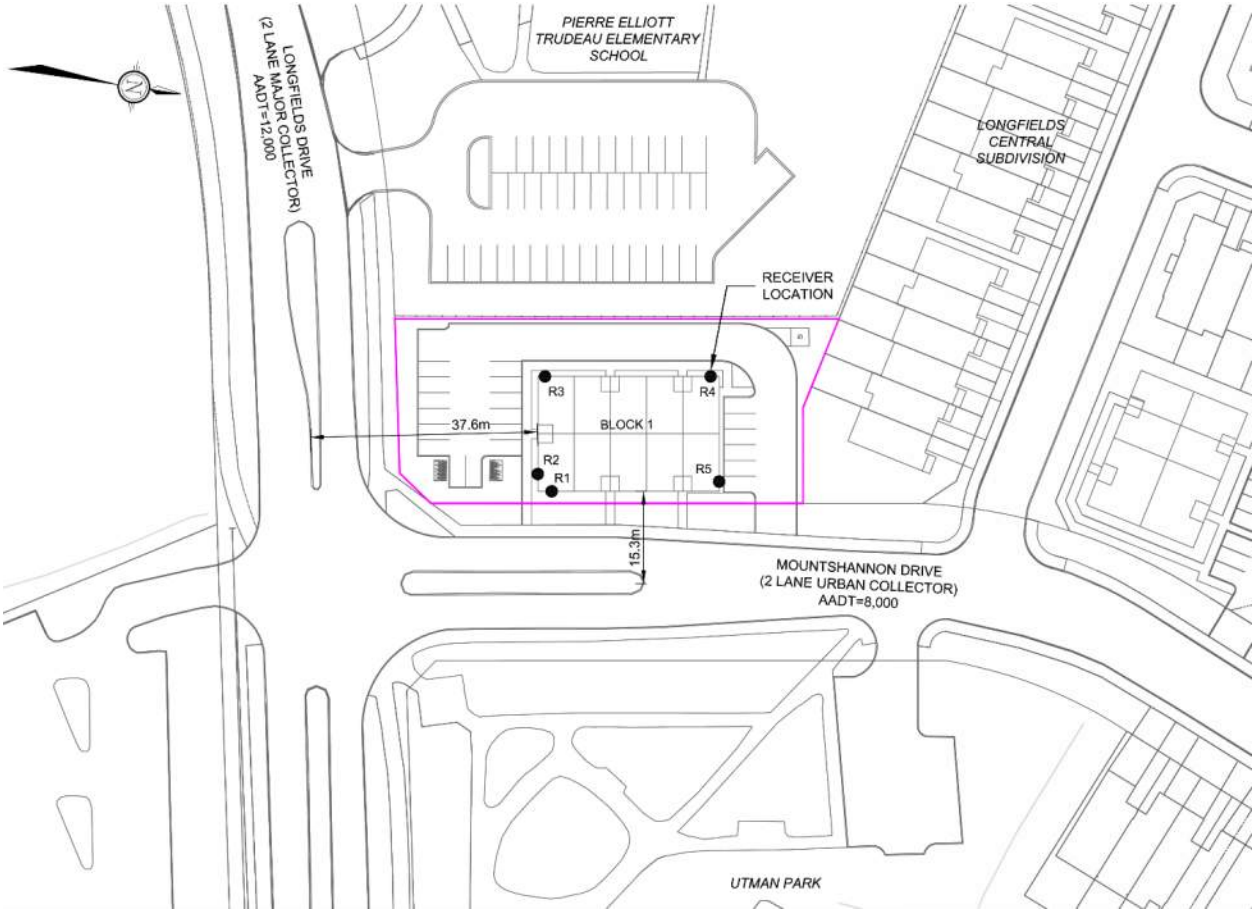


Figure 3-1 Noise Sources

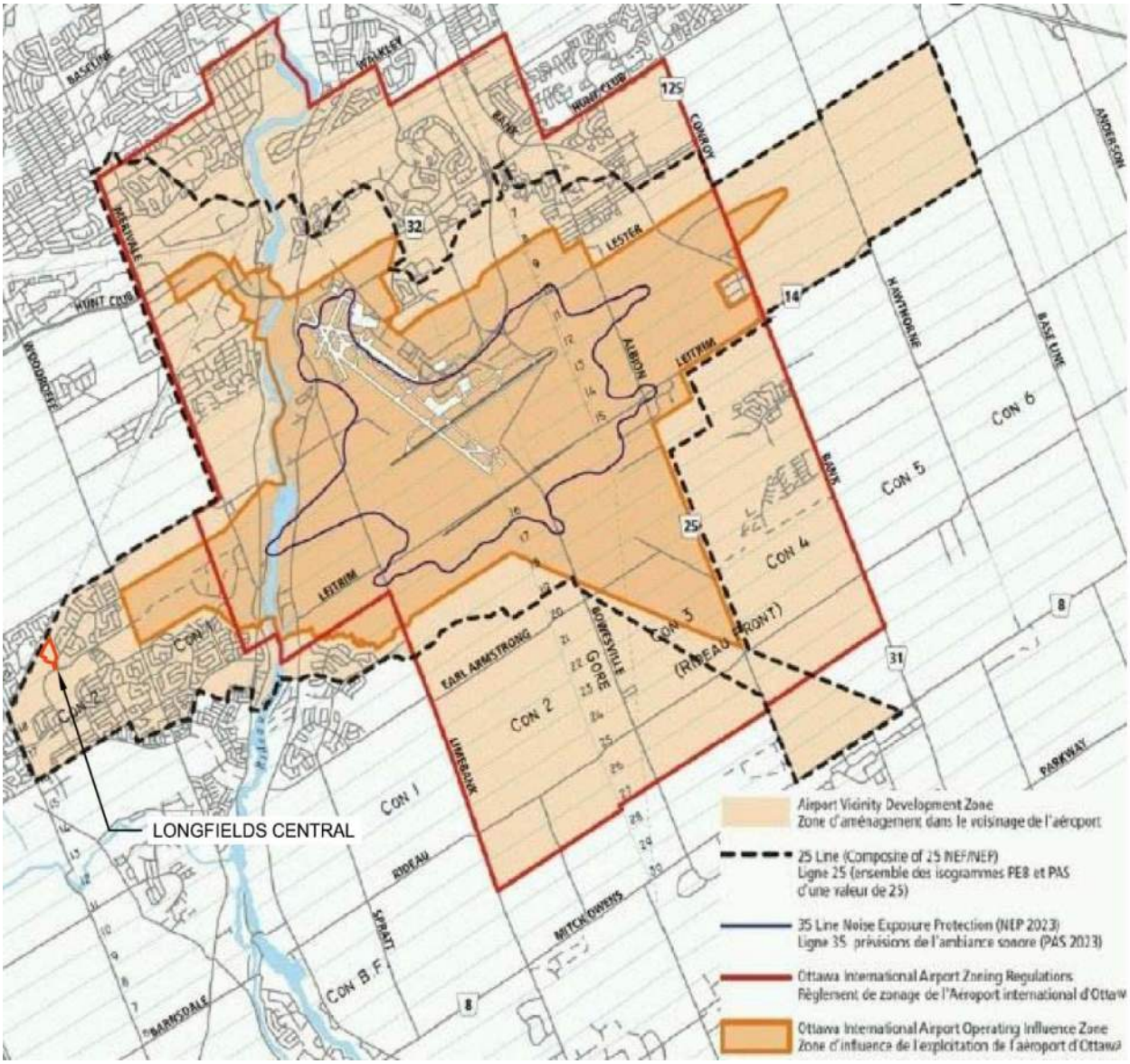


Figure 3-2 Ottawa Airport Operating Influence Zone

4.0 NOISE LEVEL PREDICTIONS

4.1 Modelling

Noise levels are calculated using the STAMSON computer program, version 5.03. Road data is input into the program as applicable, whereupon the program calculates an A-weighted 16 hour L_{eq} noise level for the daytime and an 8 hour L_{eq} noise level for the night time. The results of these computer calculations are presented in **Appendix B** and summarized in **Table 4-1**.

Table 4-1 POW Noise Level Summary

LOCATION	PLANE OF WINDOW (POW) NOISE LEVEL – L_{eq} - (dBA)	
	DAYTIME	NIGHT TIME
R1 (1st to 3rd Floors)	64.50	56.90
R2 (1st to 3rd Floors)	63.47	55.88
R3 (1st Floor)	58.62	50.83
R3 (2nd and 3rd Floors)	58.63 (2nd)	50.87 (3rd)
R4 (1st Floor)	56.35	48.57
R4 (2nd and 3rd Floors)	56.36(2nd)	48.63 (3rd)
R5 (1st Floor)	60.45	52.85
R5 (2nd and 3rd Floors)	60.45 (2nd)	52.89 (3rd)

4.2 Indoor Control Measures

Warning clauses are required on title relating to the requirement of forced air heating with provision for central air conditioning.

Due to the site being located within the 25 NEF boundary, all units will require forced air heating with provision for central air conditioning and associated amended warning clause Type C.

Typical wording for amended Type C warning clause:

““Purchasers/building occupants are forewarned that this property/dwelling unit is located in a noise sensitive area due to its proximity to Ottawa Macdonald-Cartier International Airport. In order to reduce the impact of aircraft noise in the indoor spaces, the unit has been designed and built to meet provincial standards for noise control by the use of components and building systems that provide sound attenuation. In addition to the building components (ie. walls, windows, doors, ceiling-roof), since the benefit of sound attenuation is lost when windows or doors are left open, this unit has been fitted with a forced air heating system, all components of which are sized to accommodate the future installation of central air conditioning-by the owner/occupant.”

“Despite the inclusion of noise control features within the dwelling unit, noise due to aircraft operations may continue to interfere with some indoor activities and with outdoor activities, particularly during the summer months. The purchaser/building occupant is further advised that the Airport is open and operates 24 hours a day, and that changes to operations or expansion of the airport facilities, including the construction of new runways, may affect the living environment of the residents of this property area.”

"The Ottawa Macdonald-Cartier International Airport Authority, its acoustical consultants and the municipality are not responsible if, regardless of the implementation of noise control features, the purchaser/occupant of this dwelling finds that the indoor noise levels due to aircraft operations continue to be of concern or are offensive."

4.3 Building Component Assessment

The sound level due to surface transportation sources at every unit within the proposed development is below 65 dBA (daytime) and 60 dBA (night time). Therefore, as long as the building is compliant with the Ontario Building Code, they will be compliant with the City of Ottawa's indoor noise criteria for road noise.

Since the proposed development is located within the 25 NEF boundary, an analysis of the cladding system is warranted. To comply with the ENCG policies, the building envelope will require a minimum AIF rating to provide the indoor noise levels as shown above in **Table 2-3**. The 25 NEF was converted into an equivalent Leq $_{24hr}$ using an equation from the IBANA-CALC User's Manual:

$$L_{eq\ 24hr} = NEF + 32$$
$$L_{eq\ 24hr} = 25 + 32 = 57\ dBA$$

IBANA-CALC is a software package developed by the National Research Council of Canada that calculates indoor noise levels for standard roof, wall, and window construction details for appropriate aircraft noise source spectra.

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

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

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

The acoustical insulation factor for residential bedrooms is calculated as follows:

Three Building Components: AIF = 57 dBA – 34 dBA + 10log(3) dBA + 2 dBA = 30

To comply with the ENCG policies, the buildings will require a minimum AIF rating of 30 to provide the appropriate indoor noise levels. Presented below are recommended building materials that provide the required AIF rating. These building materials are only suggestions and can be substituted with equivalent building materials that meet or exceed the AIF rating.

The highest percentage of exterior wall to interior floor area in a bedroom is 100%. A wall with type EW1 composition (refer to **Appendix C** for applicable worksheets) has an AIF of 31 with an exterior wall to interior floor area of 100%; this exceeds the minimum requirements for 3 components. The highest percentage of window to floor area ratio in a bedroom is 25%. A standard residential window section employs 6mm glazing x 13mm air space x 6mm glazing, which has an AIF of 32 if located in a room with a window to floor area ratio of 25%. This exceeds the minimum requirements, and as such the exterior building envelope is shown to comply with the ENCG policy if the minimum ratios are met.

All units must meet the minimum building component requirements as outlined in "Part 6: Prescribed Measures for Aircraft Noise" of the ENCG, shown in the tables below.

Table 4-2 Prescribed Measures – Building Components (Exterior Walls)

Wall Components	Percentage of Exterior Wall Area to Total Floor Area of Room (% maximum)
• 12.7mm gypsum board; • Vapour barrier; • 38mm x 139mm studs at 400mm o.c.; • Batt/blown insulation in the inter-stud cavities; • 7.9mm exterior sheathing; • Building paper; • Wood siding; vinyl siding; or metal siding with fibre backer board; or 20mm stucco.	Bedrooms (110%) Living/Dining (150%)

Table 4-3 Prescribed Measures – Building Components (Windows and Patio Doors)

Windows and Patio Door Components	Percentage of Window Area to Total Floor Area of Room (% maximum)
Double-glazed, well-fitted, weatherstripped units with dimensions to fit 25mm [ie. 4 (16) 4; 6 (13) 6]	Bedrooms (16%)
4 (16) 4 = 4mm glass, 16mm space, 4mm glass.	Living/Dining (40%)
Double-glazed, well-fitted, weatherstripped units with dimensions to fit 25mm [ie. 3 (16) 6].	Bedrooms (20%) Living/Dining (50%)

5.0 CONCLUSIONS AND RECOMMENDATIONS

To meet the requirements for compliance with the City of Ottawa Environmental Noise Control Guidelines and the MOE Environmental Noise Guideline the following measures are required.

Indoor Control Measures

All units will require warning clause Type C, presented in **Figure 5-1**.

Building Component Assessment

All building faces will comply with the ENCG indoor noise policy employing EW1 wall components and standard residential window sections 6mm glazing x 13mm air space x 6mm glazing.

Warning Clauses

Warning clauses are to be placed on title and in the purchase and sale agreements as indicated above and in **Figure 5-1**. The following typical warning clause is extracted from Section C8.1 of the MOE NPC-300 document and amended for the purpose of this report.

Warning Clause Type 'C'
"Purchasers/building occupants are forewarned that this property/dwelling unit is located in a noise sensitive area due to its proximity to Ottawa Macdonald-Cartier International Airport. In order to reduce the impact of aircraft noise in the indoor spaces, the unit has been designed and built to meet provincial standards for noise control by the use of components and building systems that provide sound attenuation. In addition to the building components (ie. walls, windows, doors, ceiling-roof), since the benefit of sound attenuation is lost when windows or doors are left open, this unit has been fitted with a forced air heating system, all components of which are sized to accommodate the future installation of central air conditioning-by the owner/occupant."

"Despite the inclusion of noise control features within the dwelling unit, noise due to aircraft operations may continue to interfere with some indoor activities and with outdoor activities, particularly during the summer months. The purchaser/building occupant is further advised that the Airport is open and operates 24 hours a day, and that changes to operations or expansion of the airport facilities, including the construction of new runways, may affect the living environment of the residents of this property area."

"The Ottawa Macdonald-Cartier International Airport Authority, its acoustical consultants and the municipality are not responsible if, regardless of the implementation of noise control features, the purchaser/occupant of this dwelling finds that the indoor noise levels due to aircraft operations continue to be of concern or are offensive."

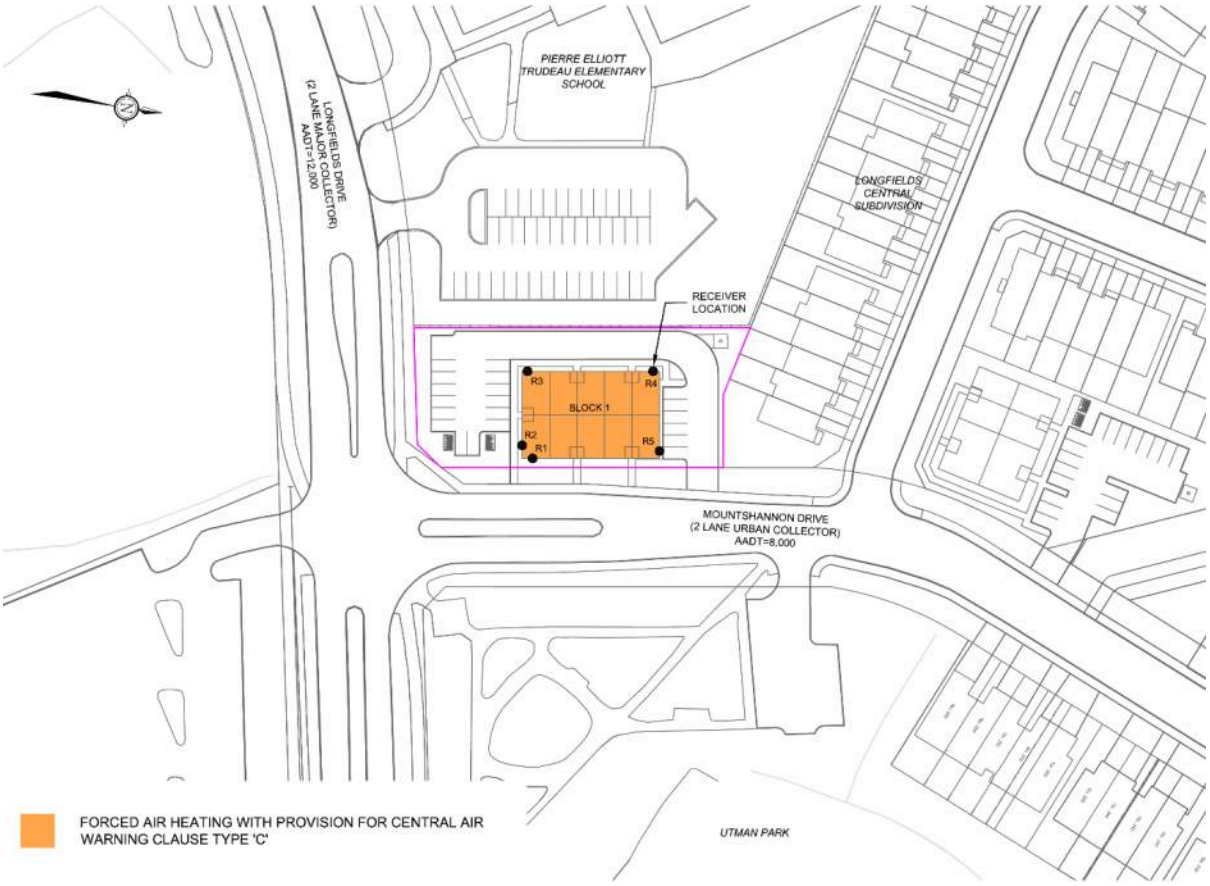


Figure 5-1 Construction Requirements and Warning Clauses

If you have any questions or comments with regards to this report, please do not hesitate to contact the undersigned.

Respectfully issued,

NOVATECH

Prepared By:

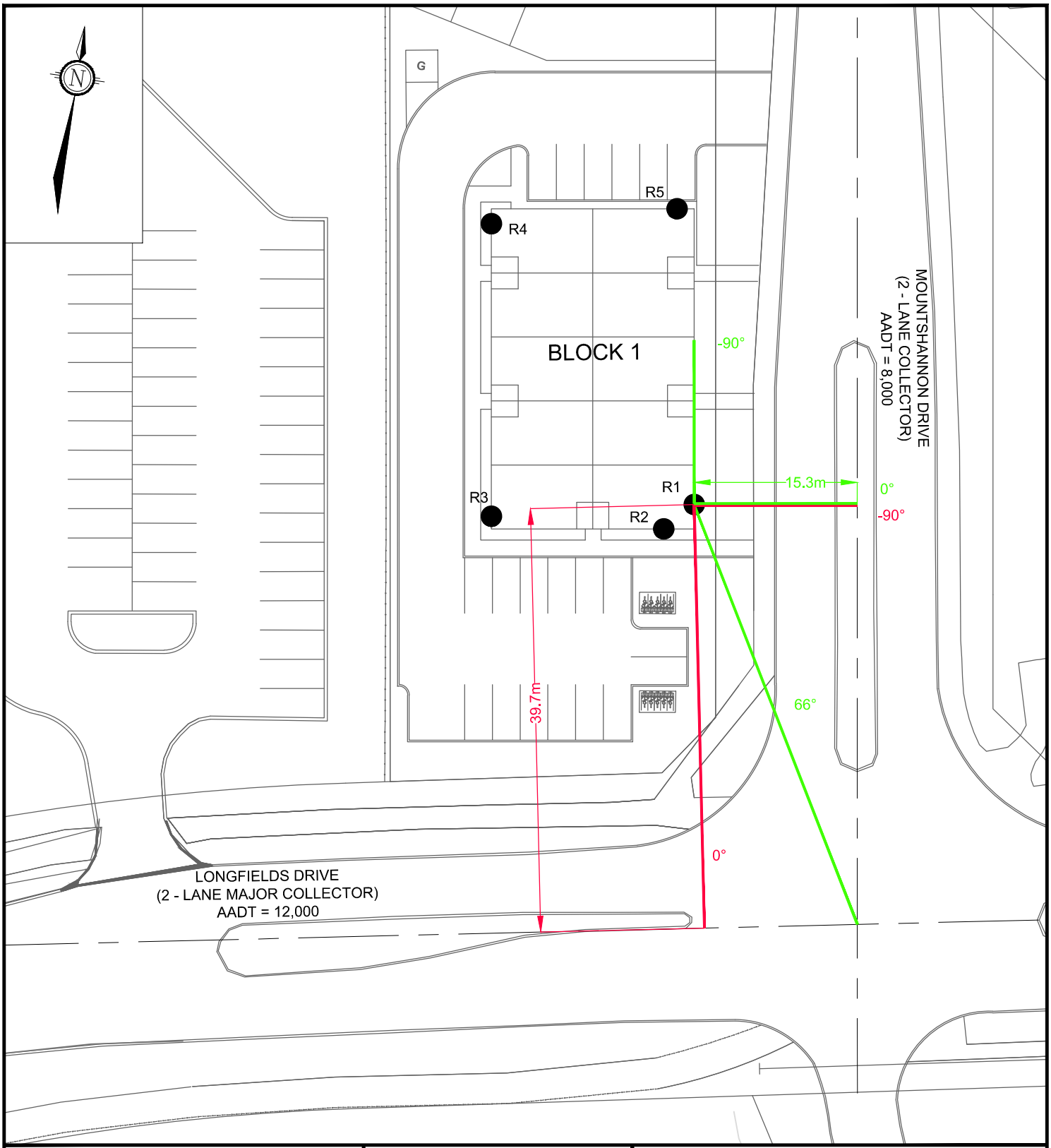
Lucas Wilson, P.Eng.
Project Coordinator

Reviewed By:

Mark Bissett, P.Eng.
Senior Project Manager

APPENDIX A

Receiver Location Figures
Stamson Model Output



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Longfields Drive Noise Angle
Mountshannon Drive Noise Angle
Reciever Location

285 MOUNTSHANNON DRIVE BLOCK 1

RECEIVER LOCATION R1

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2019 | JOB 112021-04 | FIGURE FIG - 1

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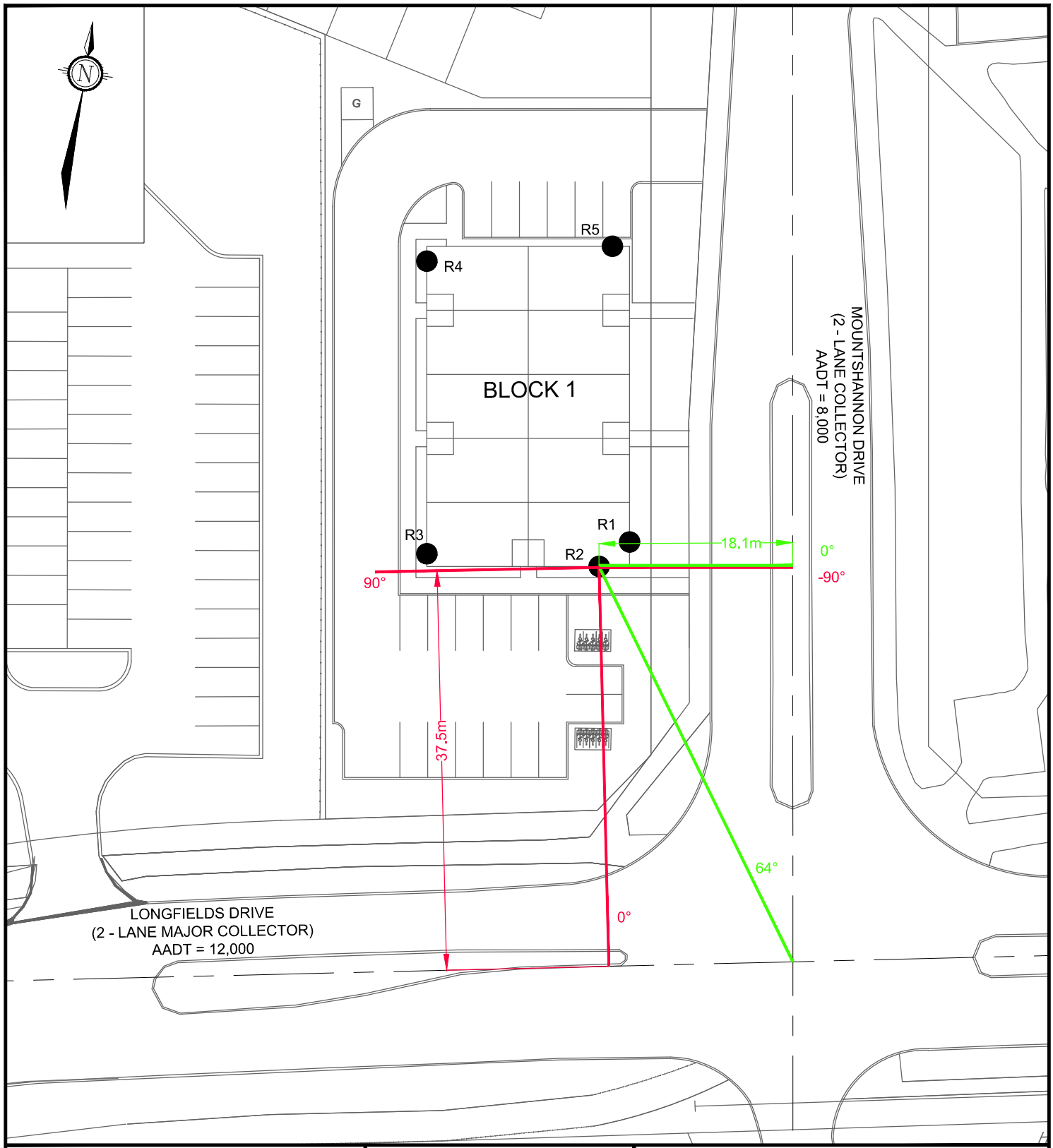

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Longfields Drive Noise Angle
Mountshannon Drive Noise Angle
Reciever Location

285 MOUNTSHANNON DRIVE BLOCK 1

RECEIVER LOCATION R2

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2019 | JOB 112021-04 | FIGURE FIG - 2

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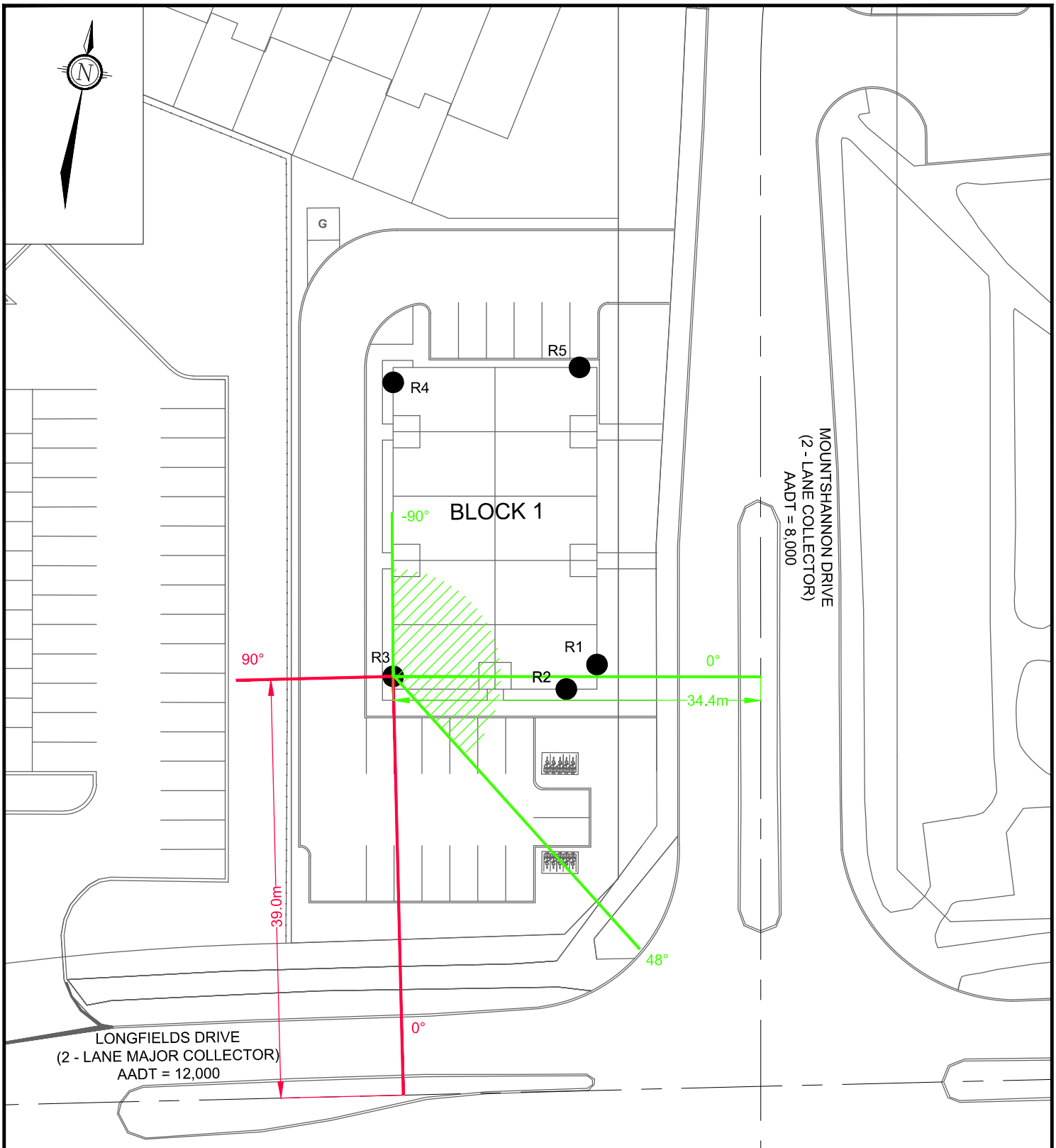

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Longfields Drive Noise Angle
Mountshannon Drive Noise Angle
Reciever Location
Mountshannon Drive Barrier Angle

285 MOUNTSHANNON DRIVE BLOCK 1

RECEIVER LOCATION R3

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2019 | JOB 112021-04 | FIGURE FIG - 3

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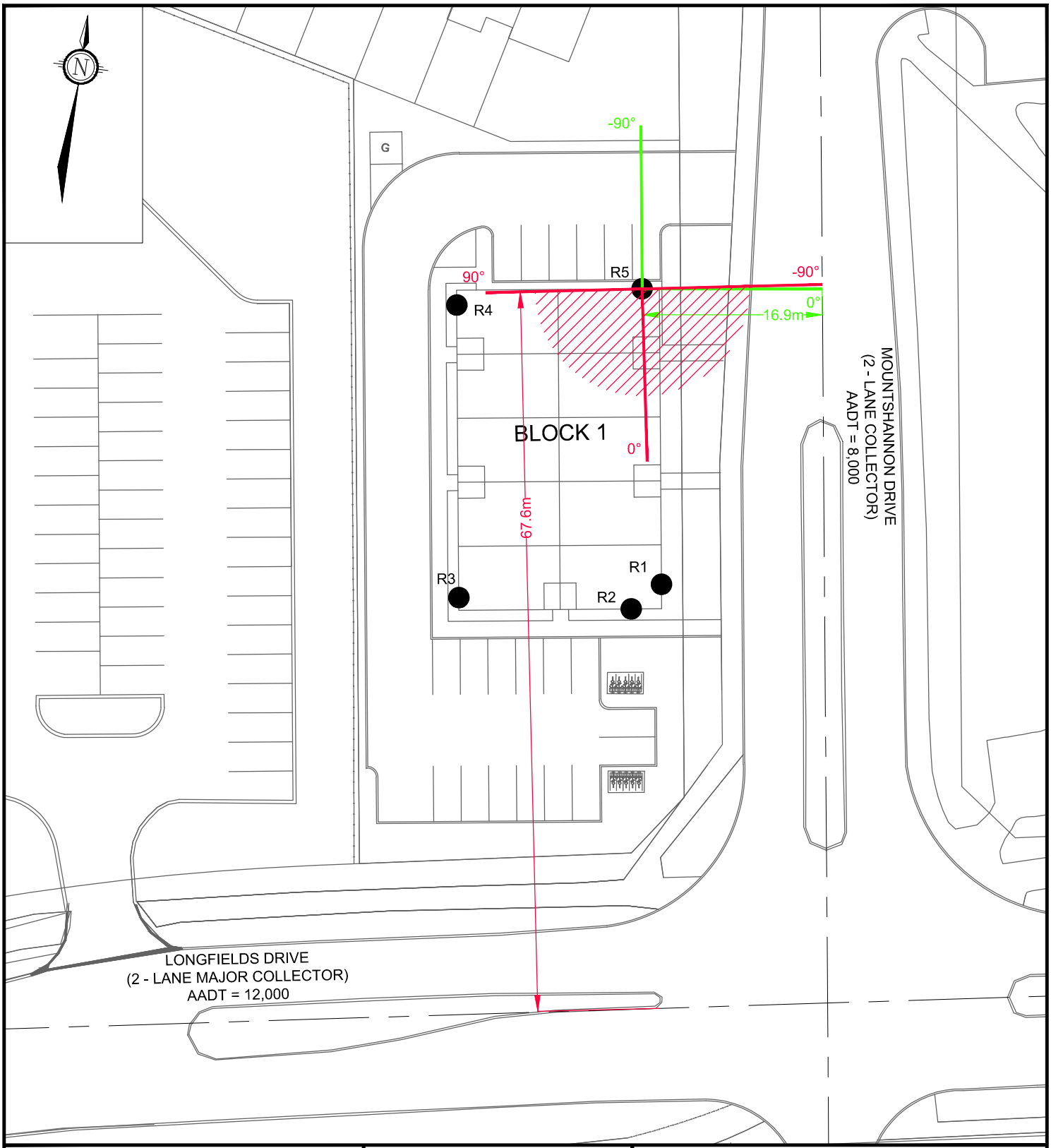

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Longfields Drive Noise Angle
Mountshannon Drive Noise Angle
Reciever Location
Longfields Drive Barrier Angle

285 MOUNTSHANNON DRIVE BLOCK 1

RECEIVER LOCATION R5

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2019 | JOB 112021-04 | FIGURE FIG - 4

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STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:05:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: Day/Night 16/8 hours
Description: R1 (POW - 1st to 4th Floors)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
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: MountShannon (day/night)

Angle1 Angle2 : -90.00 deg 66.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 15.30 / 15.30 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Longfields (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 : 40 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): 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 # 2: Longfields (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 39.70 / 39.70 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: MountShannon (day)

Source height = 1.50 m

ROAD (0.00 + 63.25 + 0.00) = 63.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	66	0.00	63.96	0.00	-0.09	-0.62	0.00	0.00	0.00	63.25

Segment Leq : 63.25 dBA

Results segment # 2: Longfields (day)

Source height = 1.50 m

ROAD (0.00 + 58.48 + 0.00) = 58.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	65.72	0.00	-4.23	-3.01	0.00	0.00	0.00	58.48

Segment Leq : 58.48 dBA

Total Leq All Segments: 64.50 dBA

Results segment # 1: MountShannon (night)

Source height = 1.50 m

ROAD (0.00 + 55.65 + 0.00) = 55.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	66	0.00	56.36	0.00	-0.09	-0.62	0.00	0.00	0.00	55.65

Segment Leq : 55.65 dBA

Results segment # 2: Longfields (night)

Source height = 1.50 m

ROAD (0.00 + 50.88 + 0.00) = 50.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	58.12	0.00	-4.23	-3.01	0.00	0.00	0.00	50.88

Segment Leq : 50.88 dBA

Total Leq All Segments: 56.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.50
(NIGHT): 56.90

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:06:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te Time Period: Day/Night 16/8 hours
Description: R2 (POW - 1st to 4th Floors)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
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: MountShannon (day/night)

Angle1 Angle2 : 0.00 deg 64.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 18.10 / 18.10 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Longfields (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 : 40 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): 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 # 2: Longfields (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 : 37.50 / 37.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: MountShannon (day)

Source height = 1.50 m

ROAD (0.00 + 58.65 + 0.00) = 58.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	64	0.00	63.96	0.00	-0.82	-4.49	0.00	0.00	0.00	58.65

Segment Leq : 58.65 dBA

Results segment # 2: Longfields (day)

Source height = 1.50 m

ROAD (0.00 + 61.74 + 0.00) = 61.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.72	0.00	-3.98	0.00	0.00	0.00	0.00	61.74

Segment Leq : 61.74 dBA

Total Leq All Segments: 63.47 dBA

Results segment # 1: MountShannon (night)

Source height = 1.50 m

ROAD (0.00 + 51.06 + 0.00) = 51.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	64	0.00	56.36	0.00	-0.82	-4.49	0.00	0.00	0.00	51.06

Segment Leq : 51.06 dBA

Results segment # 2: Longfields (night)

Source height = 1.50 m

ROAD (0.00 + 54.14 + 0.00) = 54.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	58.12	0.00	-3.98	0.00	0.00	0.00	0.00	54.14

Segment Leq : 54.14 dBA

Total Leq All Segments: 55.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.47
(NIGHT): 55.88

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:18:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te Time Period: Day/Night 16/8 hours
Description: R3 (POW - 1st to 2nd Floors)

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

Car traffic volume : 9715/845 veh/TimePeriod
Medium truck volume : 773/67 veh/TimePeriod
Heavy truck volume : 552/45 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 39.00 / 39.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod
Medium truck volume : 515/45 veh/TimePeriod
Heavy truck volume : 368/32 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mountshannon (day/night)

Angle1 Angle2 : -90.00 deg 48.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 34.40 / 34.40 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 48.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 92.60 m
Receiver elevation : 93.15 m
Barrier elevation : 93.15 m
Reference angle : 0.00

Results segment # 1: Longfield (day)

Source height = 1.50 m

ROAD (0.00 + 58.56 + 0.00) = 58.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.72	0.00	-4.15	-3.01	0.00	0.00	0.00	58.56

Segment Leq : 58.56 dBA

Results segment # 2: Mountshannon (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.48	94.63

ROAD (0.00 + 40.11 + 0.00) = 40.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	48	0.00	63.96	0.00	-3.60	-1.15	0.00	0.00	-19.08	40.11

Segment Leq : 40.11 dBA

Total Leq All Segments: 58.62 dBA

Results segment # 1: Longfield (night)

Source height = 1.47 m

ROAD (0.00 + 50.77 + 0.00) = 50.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.93	0.00	-4.15	-3.01	0.00	0.00	0.00	50.77

Segment Leq : 50.77 dBA

Results segment # 2: Mountshannon (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.48	94.63

ROAD (0.00 + 32.52 + 0.00) = 32.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	48	0.00	56.36	0.00	-3.60	-1.15	0.00	0.00	-19.08	32.52

Segment Leq : 32.52 dBA

Total Leq All Segments: 50.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.62
(NIGHT): 50.83

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:33:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rt3.te Time Period: Day/Night 16/8 hours
Description: R3 (POW - 3rd and 4th Floors)

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

Car traffic volume : 9715/845 veh/TimePeriod
Medium truck volume : 773/67 veh/TimePeriod
Heavy truck volume : 552/45 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 39.00 / 39.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod
Medium truck volume : 515/45 veh/TimePeriod
Heavy truck volume : 368/32 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mountshannon (day/night)

Angle1 Angle2 : -90.00 deg 48.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 34.40 / 34.40 m
Receiver height : 4.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 48.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 92.60 m
Receiver elevation : 93.15 m
Barrier elevation : 93.15 m
Reference angle : 0.00

Results segment # 1: Longfield (day)

Source height = 1.50 m

ROAD (0.00 + 58.56 + 0.00) = 58.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.72	0.00	-4.15	-3.01	0.00	0.00	0.00	58.56

Segment Leq : 58.56 dBA

Results segment # 2: Mountshannon (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.40	97.55

ROAD (0.00 + 40.56 + 0.00) = 40.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	48	0.00	63.96	0.00	-3.60	-1.15	0.00	0.00	-18.64	40.56

Segment Leq : 40.56 dBA

Total Leq All Segments: 58.63 dBA

Results segment # 1: Longfield (night)

Source height = 1.47 m

ROAD (0.00 + 50.77 + 0.00) = 50.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.93	0.00	-4.15	-3.01	0.00	0.00	0.00	50.77

Segment Leq : 50.77 dBA

Results segment # 2: Mountshannon (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	7.50	7.31	100.46

ROAD (0.00 + 34.44 + 0.00) = 34.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	48	0.00	56.36	0.00	-3.60	-1.15	0.00	0.00	-17.16	34.44

Segment Leq : 34.44 dBA

Total Leq All Segments: 50.87 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.63
(NIGHT): 50.87

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:34:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te Time Period: Day/Night 16/8 hours
Description: R4 (POW - 1st and 2nd Floors)

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

Car traffic volume : 9715/845 veh/TimePeriod
Medium truck volume : 773/67 veh/TimePeriod
Heavy truck volume : 552/45 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 66.50 / 66.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod
Medium truck volume : 515/45 veh/TimePeriod
Heavy truck volume : 368/32 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mountshannon (day/night)

Angle1 Angle2 : -90.00 deg 62.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 34.50 / 34.50 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 62.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 92.40 m
Receiver elevation : 92.87 m
Barrier elevation : 92.87 m
Reference angle : 0.00

Results segment # 1: Longfield (day)

Source height = 1.50 m

ROAD (0.00 + 56.24 + 0.00) = 56.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.72	0.00	-6.47	-3.01	0.00	0.00	0.00	56.24

Segment Leq : 56.24 dBA

Results segment # 2: Mountshannon (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.49	94.36

ROAD (0.00 + 40.45 + 0.00) = 40.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	62	0.00	63.96	0.00	-3.62	-0.73	0.00	0.00	-19.16	40.45

Segment Leq : 40.45 dBA

Total Leq All Segments: 56.35 dBA

Results segment # 1: Longfield (night)

Source height = 1.47 m

ROAD (0.00 + 48.45 + 0.00) = 48.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.93	0.00	-6.47	-3.01	0.00	0.00	0.00	48.45

Segment Leq : 48.45 dBA

Results segment # 2: Mountshannon (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.49	94.36

ROAD (0.00 + 32.85 + 0.00) = 32.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	62	0.00	56.36	0.00	-3.62	-0.73	0.00	0.00	-19.16	32.85

Segment Leq : 32.85 dBA

Total Leq All Segments: 48.57 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.35
(NIGHT): 48.57

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:35:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rt4.te Time Period: Day/Night 16/8 hours
Description: R4 (POW - 3rd and 4th Floors)

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

Car traffic volume : 9715/845 veh/TimePeriod
Medium truck volume : 773/67 veh/TimePeriod
Heavy truck volume : 552/45 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 66.50 / 66.50 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod
Medium truck volume : 515/45 veh/TimePeriod
Heavy truck volume : 368/32 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mountshannon (day/night)

Angle1 Angle2 : -90.00 deg 62.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 34.50 / 34.50 m
Receiver height : 4.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 62.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 92.40 m
Receiver elevation : 92.87 m
Barrier elevation : 92.87 m
Reference angle : 0.00

Results segment # 1: Longfield (day)

Source height = 1.50 m

ROAD (0.00 + 56.24 + 0.00) = 56.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.72	0.00	-6.47	-3.01	0.00	0.00	0.00	56.24

Segment Leq : 56.24 dBA

Results segment # 2: Mountshannon (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.40	97.27

ROAD (0.00 + 40.86 + 0.00) = 40.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	62	0.00	63.96	0.00	-3.62	-0.73	0.00	0.00	-18.75	40.86

Segment Leq : 40.86 dBA

Total Leq All Segments: 56.36 dBA

Results segment # 1: Longfield (night)

Source height = 1.47 m

ROAD (0.00 + 48.45 + 0.00) = 48.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.93	0.00	-6.47	-3.01	0.00	0.00	0.00	48.45

Segment Leq : 48.45 dBA

Results segment # 2: Mountshannon (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	7.50	7.31	100.18

ROAD (0.00 + 34.73 + 0.00) = 34.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	62	0.00	56.36	0.00	-3.62	-0.73	0.00	0.00	-17.28	34.73

Segment Leq : 34.73 dBA

Total Leq All Segments: 48.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.36
(NIGHT): 48.63

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:36:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te Time Period: Day/Night 16/8 hours
Description: R5 (POW - 1st and 2nd Floors)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
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: MountShannon (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 16.99 / 16.99 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 9715/845 veh/TimePeriod
Medium truck volume : 773/67 veh/TimePeriod
Heavy truck volume : 552/45 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Longfields (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 : 67.60 / 67.60 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 93.60 m
Receiver elevation : 92.62 m
Barrier elevation : 92.62 m
Reference angle : 0.00

Results segment # 1: MountShannon (day)

Source height = 1.50 m

ROAD (0.00 + 60.40 + 0.00) = 60.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	63.96	0.00	-0.54	-3.01	0.00	0.00	0.00	60.40

Segment Leq : 60.40 dBA

Results segment # 2: Longfields (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.51	94.13

ROAD (0.00 + 40.63 + 0.00) = 40.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.72	0.00	-6.54	0.00	0.00	0.00	-18.55	40.63

Segment Leq : 40.63 dBA

Total Leq All Segments: 60.45 dBA

Results segment # 1: MountShannon (night)

Source height = 1.50 m

ROAD (0.00 + 52.81 + 0.00) = 52.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	56.36	0.00	-0.54	-3.01	0.00	0.00	0.00	52.81

Segment Leq : 52.81 dBA

Results segment # 2: Longfields (night)

Source height = 1.47 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.47	1.50	1.51	94.13

ROAD (0.00 + 32.84 + 0.00) = 32.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	57.93	0.00	-6.54	0.00	0.00	0.00	-18.55	32.84

Segment Leq : 32.84 dBA

Total Leq All Segments: 52.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.45
(NIGHT): 52.85

STAMSON 5.0 NORMAL REPORT Date: 21-12-2018 09:36:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rt5.te Time Period: Day/Night 16/8 hours
Description: R5 (POW - 3rd and 4th Floors)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
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: MountShannon (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 16.99 / 16.99 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 9715/845 veh/TimePeriod
Medium truck volume : 773/67 veh/TimePeriod
Heavy truck volume : 552/45 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Longfields (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 : 67.60 / 67.60 m
Receiver height : 4.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 93.60 m
Receiver elevation : 92.62 m
Barrier elevation : 92.62 m
Reference angle : 0.00

Results segment # 1: MountShannon (day)

Source height = 1.50 m

ROAD (0.00 + 60.40 + 0.00) = 60.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	63.96	0.00	-0.54	-3.01	0.00	0.00	0.00	60.40

Segment Leq : 60.40 dBA

Results segment # 2: Longfields (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.47	97.09

ROAD (0.00 + 41.31 + 0.00) = 41.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.72	0.00	-6.54	0.00	0.00	0.00	-17.87	41.31

Segment Leq : 41.31 dBA

Total Leq All Segments: 60.45 dBA

Results segment # 1: MountShannon (night)

Source height = 1.50 m

ROAD (0.00 + 52.81 + 0.00) = 52.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	56.36	0.00	-0.54	-3.01	0.00	0.00	0.00	52.81

Segment Leq : 52.81 dBA

Results segment # 2: Longfields (night)

Source height = 1.47 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.47	7.50	7.43	100.05

ROAD (0.00 + 35.67 + 0.00) = 35.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	57.93	0.00	-6.54	0.00	0.00	0.00	-15.72	35.67

Segment Leq : 35.67 dBA

Total Leq All Segments: 52.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.45
(NIGHT): 52.89

APPENDIX B

Building Component Assessment

TABLE 5: Acoustic Insulation Factor for Various Types of Windows

Window area as a percentage of total floor area of room[1]													
4	5	6	8	10	13	16	20	25	32	40	50	63	80
Acoustic Insulation Factor (AIF)[2]													
35	34	33	32	31	30	29	28	27	26	25	24	23	22
36	35	34	33	32	31	30	29	28	27	26	25	24	23
37	36	35	34	33	32	31	30	29	28	27	26	25	24
38	37	36	35	34	33	32	31	30	29	28	27	26	25
39	38	37	36	35	34	33	32	31	30	29	28	27	26
40	39	38	37	36	35	34	33	32	31	30	29	28	27
41	40	39	38	37	36	35	34	33	32	31	30	29	28
42	41	40	39	38	37	36	35	34	33	32	31	30	29
43	42	41	40	39	38	37	36	35	34	33	32	31	30
44	43	42	41	40	39	38	37	36	35	34	33	32	31
45	44	43	42	41	40	39	38	37	36	35	34	33	32
46	45	44	43	42	41	40	39	38	37	36	35	34	33
47	46	45	44	43	42	41	40	39	38	37	36	35	34
48	47	46	45	44	43	42	41	40	39	38	37	36	35
49	48	47	46	45	44	43	42	41	40	39	38	37	36
50	49	48	47	46	45	44	43	42	41	40	39	38	37

Single glazing	Double glazing of indicated glass thickness					Triple Glazing	
	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
Thickness	Interpane spacing in mm[3]					Interpane spacings in mm[5]	
3mm	6						
	13						
3mm	19	6					
4mm, 6mm	18	13	6				
	22	16	13	6	6	6,6	
9mm[4]	28	20	16	13	13	6,10	6,6
	35	25	20	16	16	6,15	6,10
12mm[4]	42	32	25	20	20	6,20	6,15
	50	40	32	25	24	6,30	6,20
	63	50	40	32	30	6,40	6,30
	80	63	50	40	37	6,50	6,40
	100	80	63	55	50	6,65	6,50
	125	100	80	75	70	6,80	6,65
	130	125	100	95	90	6,100	6,80
		150	125	110	100		6,100
			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.

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

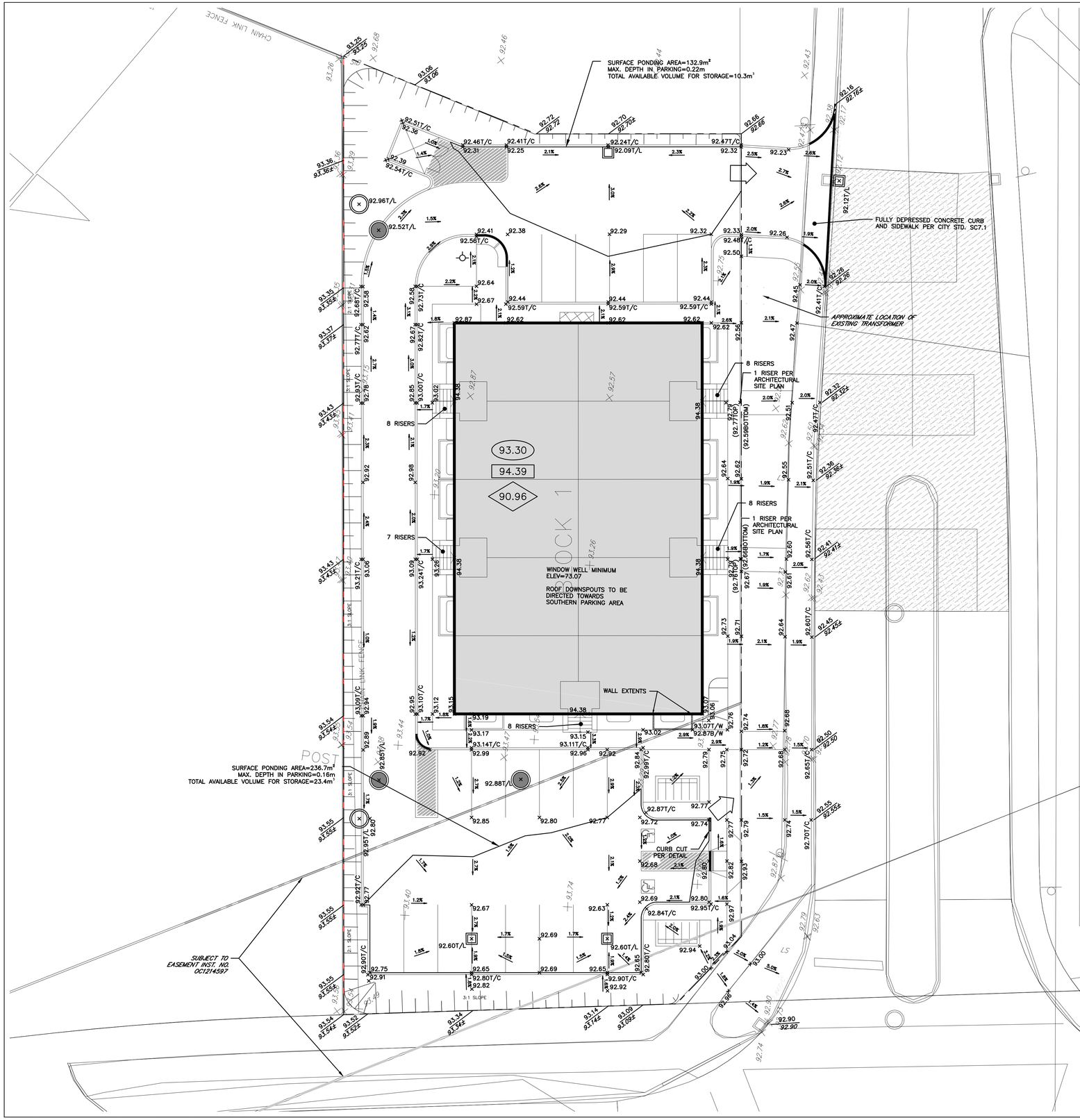
Source : National Research Council, Division of Building Research, December 1980.

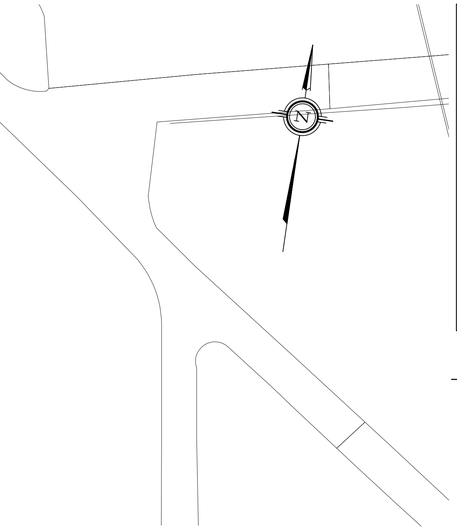
Explanatory Notes :

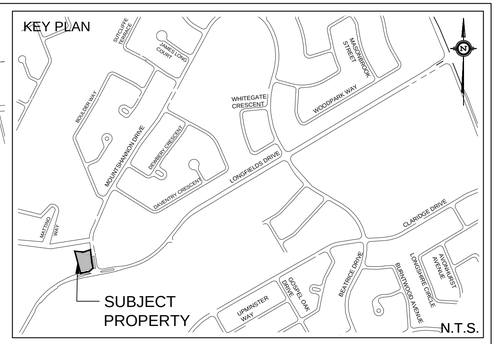
1) Where the calculated percentage wall area is not presented as a column heading, the nearest percentage column in the table should be used.
2) The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38 x 89 mm studs with 50 mm (or thicker) mineral wool or glass 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.

APPENDIX C

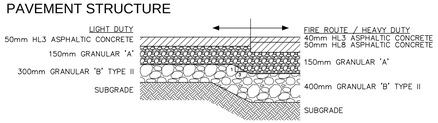
Grading Plan
Site Plan
Elevation Plans





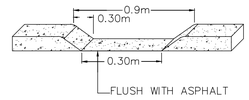


PAVEMENT STRUCTURE



*PER GEOTECHNICAL INVESTIGATION (PG2306-1) PREPARED BY PATERSON GROUP

CURB CUT (TYPICAL)



GENERAL NOTES

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER, LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
4. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
5. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE DEVELOPER.
6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.' THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE 'CONSTRUCTOR' AS DEFINED IN THE ACT.
7. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT.
8. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS.
9. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE.
10. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER.
11. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
12. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.
13. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME.
15. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED.
16. ALL PIPE / CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS.
17. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.
18. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND THE CITY OF OTTAWA PRIOR TO ANY TREE CUTTING / REMOVAL.
19. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL SITE PLAN.
20. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER ONE SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS.
21. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN.

SITE GRADING NOTES

1. PRIOR TO THE COMMENCEMENT OF THE SITE GRADING WORKS, ALL SILTATION CONTROL DEVICES SHALL BE INSTALLED AND OPERATIONAL PER EROSION CONTROL PLAN.
2. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
3. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. CONCRETE CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1: PROVISION SHALL BE MADE FOR CURB DEPRESSIONS AS INDICATED ON ARCHITECTURAL SITE PLAN. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD SC1.4. ALL CURBS, CONCRETE ISLANDS, AND SIDEWALKS SHOWN ON THIS DRAWING ARE TO BE PRICED IN THE SITEWORKS PORTION OF THE CONTRACT.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. R10 AND OPSD 509.010, AND OPSS 310.
6. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
7. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
8. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING.
9. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
10. ALL PAVEMENT MARKING FEATURES AND SITE SIGNAGE SHALL BE PLACED PER ARCHITECTURAL SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT PAINT.
11. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
12. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
13. SIDEWALKS TO BE 13mm ∅ BEVELED AT 2:1 OR 6mm WITH NO BEVEL REQUIRED BELOW THE FINISHED FLOOR SLAB ELEVATION AT ENTRANCES REQUIRED TO BE BARRIER-FREE, UNLESS OTHERWISE NOTED. ALL IN ACCORDANCE WITH OBC 3.8.1.3. & OTTAWA ACCESSIBILITY DESIGN STANDARDS.
14. WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS FOR RETAINING WALL (INCLUDE RAILINGS IF APPLICABLE) TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY STRUCTURAL AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.

LEGEND

PROPERTY LINE	PROPOSED STORM MANHOLE
100.00 EXISTING SPOT ELEVATION	PROPOSED SANITARY MANHOLE
100.00 PROPOSED SPOT ELEVATION	PROPOSED CATCH BASIN
100.00T/C PROPOSED TOP OF CURB ELEVATION	PROPOSED FIRE HYDRANT
100.00B/W PROPOSED BOTTOM OF WALL ELEVATION	EMERGENCY FLOW ROUTE
100.00T/W PROPOSED TOP OF WALL ELEVATION	SURFACE PONDING AREA / MAX PONDING
100.00T/L PROPOSED TOP OF LID ELEVATION	PROPOSED CURB CUT PER DETAIL
1.0% EXISTING GRADE AND DIRECTION	PROPOSED DEPRESSED CURB
1.0% PROPOSED GRADE AND DIRECTION	100.00 FINISHED FLOOR ELEVATION
3:1 SLOPE PROPOSED 3:1 TERRACING	100.00 TOP OF FOUNDATION
100.00 / 100.00 PROPOSED/EXISTING SPOT ELEVATION	100.00 SLAB ELEVATION
100.00 / 100.00 INTERPOLATED GRADE, CONTRACTOR TO CONFIRM PRIOR TO SITE WORKS	ROAD REINSTATEMENT PER CITY STD. R10
(100.00) PROPOSED RISER ELEVATION	ASPHALT OVERLAY

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC
PROJ. NO. 161613770-111
DATED APRIL 23, 2018

SITE PLAN INFORMATION

SITE PLAN PROVIDED BY PIERRE J. TABET ARCHITECT
PROJ. NO.
DATED REV.3 SEPTEMBER 18, 2018

GEOTECHNICAL STUDY

GEOTECHNICAL RECOMMENDATIONS PROVIDED BY PATERSON GROUP
PROJ. NO. PG2306-1
DATED JANUARY 31, 2013

SITE SERVICING AND STORMWATER MANAGEMENT STUDY

SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY DSEL
PROJ. NO. 17-975
DATED NOVEMBER 2018

BENCH MARK

TOP OF SPINDLE LOCATED ACROSS NORTHWEST OF THE SITE, NORTH OF MATTINO WAY.
ELEV=93.57

No.	BY	YY.MM.DD	DESCRIPTION
2	A.J.G.	18.11.01	ISSUED FOR MUNICIPAL REVIEW
1	A.J.G.	18.09.11	ISSUED FOR CLIENT COORDINATION

PROJECT No. 17-975

LICENSED PROFESSIONAL ENGINEER
A. D. FOBERT
100090626
2018-11-01
PROVINCE OF ONTARIO

GRADING PLAN
285 MOUNTSHANNON DRIVE- BLOCK 1© DSEL

MATTINO DEVELOPMENTS INC.
545 Via Mattino Way
Ottawa, ON
TEL (613) 440-3767

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™
120 Iber Road Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY:	C.M.K.	CHECKED BY:	R.D.F.	DRAWING NO.	SHEET NO.
DESIGNED BY:	A.J.G.	CHECKED BY:	A.D.F.	GP-1	2 of 4
SCALE:	1:150	DATE:	NOVEMBER 2018		

D07-12-XX-XXXX

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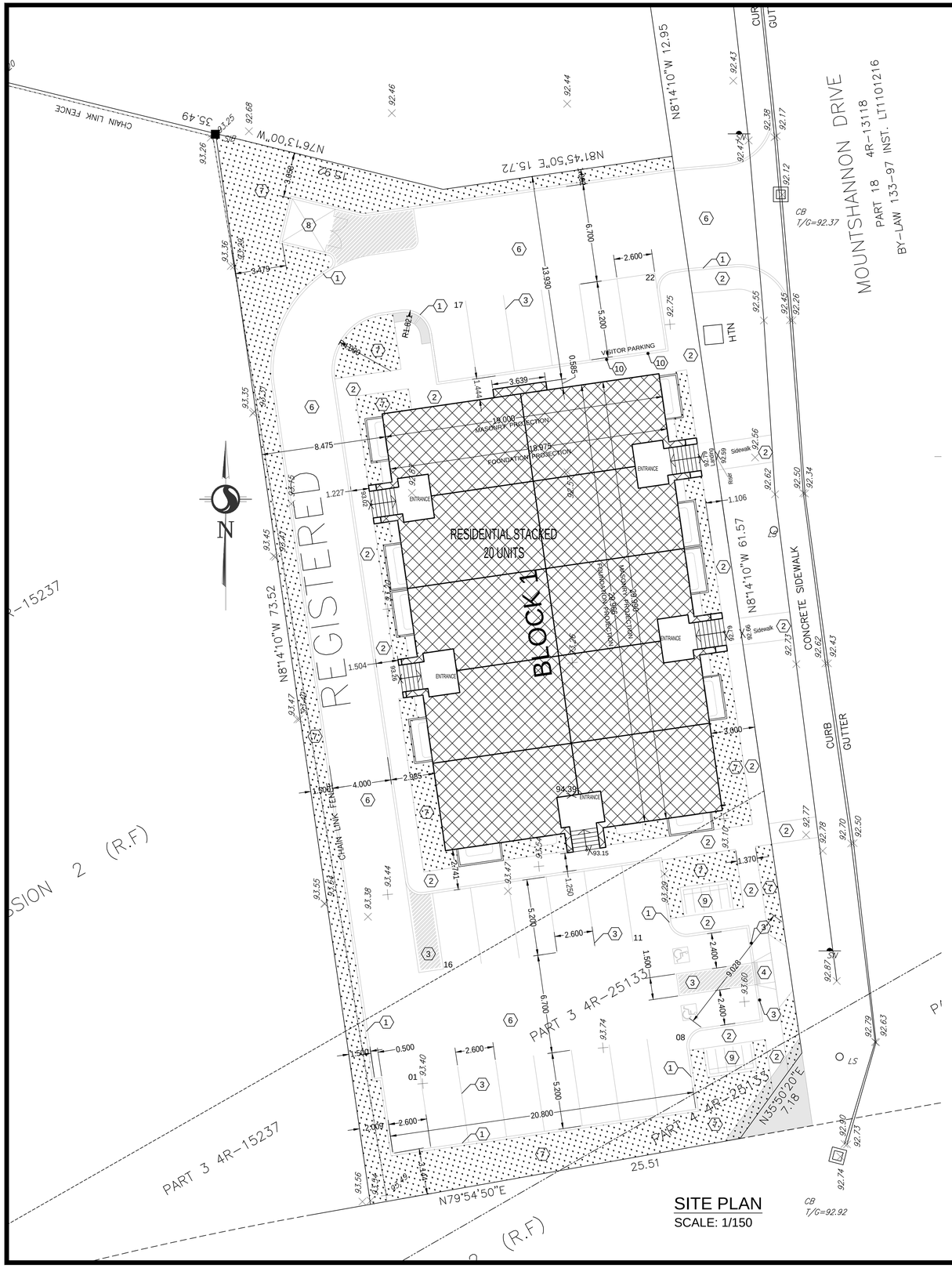


CURRENT ZONING BY LAW

DESCRIPTION	PROPOSED	REQUIRED
LOT AREA	2076.97 m²	660
LOT FRONTAGE	30.5 m	22 m
LOT DEPTH	61.5 m	N/A
MAX. NUMBER OF DWELLING UNITS	20	20
FRONT SET BACK	23 m	3 m
CORNER SIDE YARD SETBACK	2 m	2 m R4A[2163]
INTERIOR SIDE YARD SETBACK	9.5 m	3 m
REAR SET BACK	13,4 m	7,5 m
REAR SET BACK BETWEEN UNITS	0	0
BUILDING AREA	569.8 m²	-
GROSS FLOOR AREA	2279.2 m²	-
BUILDING HEIGHT	10.97 m	11m
AMENITY AREA	-	0 R4A[2163]
MIN. LANDSCAPING BUFFER	2	2
PARKING SPACE	20	0.5 /UNIT-Rapid Transit
MIN. VISITOR PARKING	2	0.1 /UNIT-Rapid Transit
MIN. BICYCLE PARKING	10	0.5 /UNITS-TABLE 111A
AMENITY AREA	-	0
SOFT & HARD LANDSCAPED AREA	634 m²	30% OF LOT AREA

BUILDING CODE ANALYSIS

- 3 STOREYS RESEDENTIAL USE BUILDING WITH BASEMENT
  20 STACKED DWELLING UNITS
- FACING 2 STREETS
- BUILDING AREA : 569.8 m²
- GROSS FLOOR AREA : 2279 m².
- USE: GROUP GROUP "C".
- CLASSIFICATION: 9.10.8.1
- PARTS 9 OF OBC 2012,
- COMBUSTIBLE CONSTRUCTION.
- SECOND FLOOR FIRE SEPARATION: 3/4HR REQUIRED C/W VERTICAL STRUCTURAL COMPONENTS
- UPPER DWELLING STAIRWAY ENTRANCE/EXIT ENCLOSURES FIRE SEPARATION: 3/4HR REQUIRED C/W VERTICAL STRUCTURAL COMPONENTS
- FIRE RESISTANCE FOR ROOF: NOT REQUIRED
- PLUMBING EQUIPMENTS:
  . 1 WASHROOM PER UNIT REQUIRED
  . 10% NATURAL LIGHTNING REQUIRED FOR LIVING ROOMS & DINNING ROOMS
  . 5% NATURAL LIGHTNING REQUIRED FOR BEDROOMS
- BARRIER FREE PATH OF TRAVEL NOT REQUIRED ACCORDING.

LEGENDE

1. CONCRETE CURB
2. SIDEWALK
3. PAINT MARKS
4. DEPRESSED SIDEWALK.
5. ACCESSIBLE PARKING VERTICAL SIGNAGE
6. ASPHALT
7. GRASS
8. TRASH ENCLOSURE, SCREENED FROM VIEW BY AN OPAQUE SCREEN WITH TWO METRES HEIGHT.
9. BICYCLE PARKING SPACE ON CONCRETE SLAB SURFACE
10. VISITOR PARKING VERTICAL SIGNAGE

GRADE SCHEDULE

AVERAGE GRADE: 92.90.
T.O.FOUNDATION: 93.30/ 100 000
T.O.FIRST FLOOR: 94.39, T.O.BASEMENT: 91.367
T.O.SECOND FLOOR: 97.529, T.O.THIRD FLOOR:100.603
T.O.ROOF PLATE :103.073, T.O.MID-ROOF: 104.880

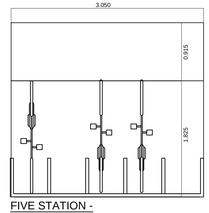
MINOR VARIANCES:
-To permit parking in a provide/required front yard where as Section 109 (3) (a) does not permit it.
-To permit a reduced landscape buffer for a parking lot abutting a street of 2m whereas Table 110 requires 3m (adjacent to both Mountshannon and Longfields).
-To permit a reduced landscape buffer for a the rear drive-way abutting a property line of 1.5m whereas Table 110 requires 2m.
-To permit a building height of 12m whereas the zoning requirement allow 11m.

Bike-Up

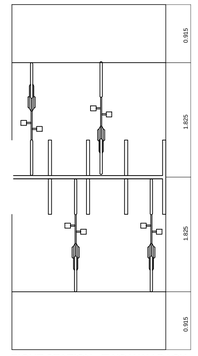
Bicycle Parking Systems

BIKE-UP BICYCLE PARKING SYSTEMS INC.
6 ANTARES DRIVE, PHASE II, UNIT #10 B
NEPEAN, ONTARIO, CANADA K2E 8A9
PHONE: (613) 226-6452
FAX: (613) 228-3539
1-800-661-3506
www.bikeup.com

NOTES:
1. INSTALLATION TO BE COMPLETD IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS
2. DO NOT SCALE DRAWINGS
3. WHEN CALCULATING SPACING, ADD 12" TO BOTH ENDS OF THE RACK TO ALLOW FOR HANDLE BAR CLEARANCE.
4. USE 2" U-CLAMPS TO INSTALL ALL RACKS
   EXCEPTION:
   A. PRMANENT INSTALLATION - USE ANCHOR BOLTS AND SECURITY CAPS
   B. SEASONAL INSTALLATIONS - USE ANCHOR SLEEVES AND LAG BOLTS
5. RUNNERS ARE 1.9"00 - 1/8" WALL PIPE STATIONS ARE 5/8" STEEL ROD.
6. WELDED CONSTRUCTION, HOT-DIPPED GALVANIZED AFTER FABRICATION. PAINTING AVAILABLE.
7. WEIGHTS: APPROXIMATIVELY 14 LBS PER STATION.
8. CONTRACTORS NOTE: FOR PRODUCT AND PURCHASING INFORMATION, VISIT www.PROJECTmarketsite.com, REFERENCE NUMBER 317-002



FIVE STATION -
ONE WAY RACK



EIGHT STATION - TWO WAY RACK

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1 SITE PLAN CONTROL	A.A.	P.T.	18.11.07

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ONTARIO ASSOCIATION OF ARCHITECTS
PIERRE J. TABET
LICENCE 5297

Project

MATTINO HOMES
20CONDO UNITS BUILDING
BLOCK 1
285 MOUNTSHANNON DRIVE,
OTTAWA,ON

Title

SITE PLAN

Project #	Scale	Date
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WEST ELEVATION
SCALE: 1/8" = 1'-0"

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1 SITE PLAN CONTROL	S.B.	P.T.	18.11.07

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Project

MATTINO HOMES
20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
OTTAWA, ON

Title

WEST ELEVATION

Project #	Scale	Date
	1/8" - 1'-0"	2018-07-11
Revision	Sheet	Drawing #
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NORTH ELEVATION

SCALE: 1/8" = 1'-0"

Pierre J. Tabet *architect*

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Project

MATTINO HOMES
20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
OTTAWA, ON

Title

NORTH ELEVATION

Project #	Scale	Date
	1/8" - 1'-0"	2018-07-11
Revision	Sheet	Drawing #
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SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

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MATTINO HOMES
20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
OTTAWA, ON

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SOUTH ELEVATION

Project #	Scale	Date
	1/8" - 1'-0"	2018-07-11
Revision	Sheet	Drawing #
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EAST ELEVATION
SCALE: 1/8" = 1'-0"

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LICENCE 6037

Project

MATTINO HOMES
20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
OTTAWA, ON

Title

EAST ELEVATION

Project #	Scale	Date
	1/8" - 1'-0"	2018-07-11
Revision	Sheet	Drawing #
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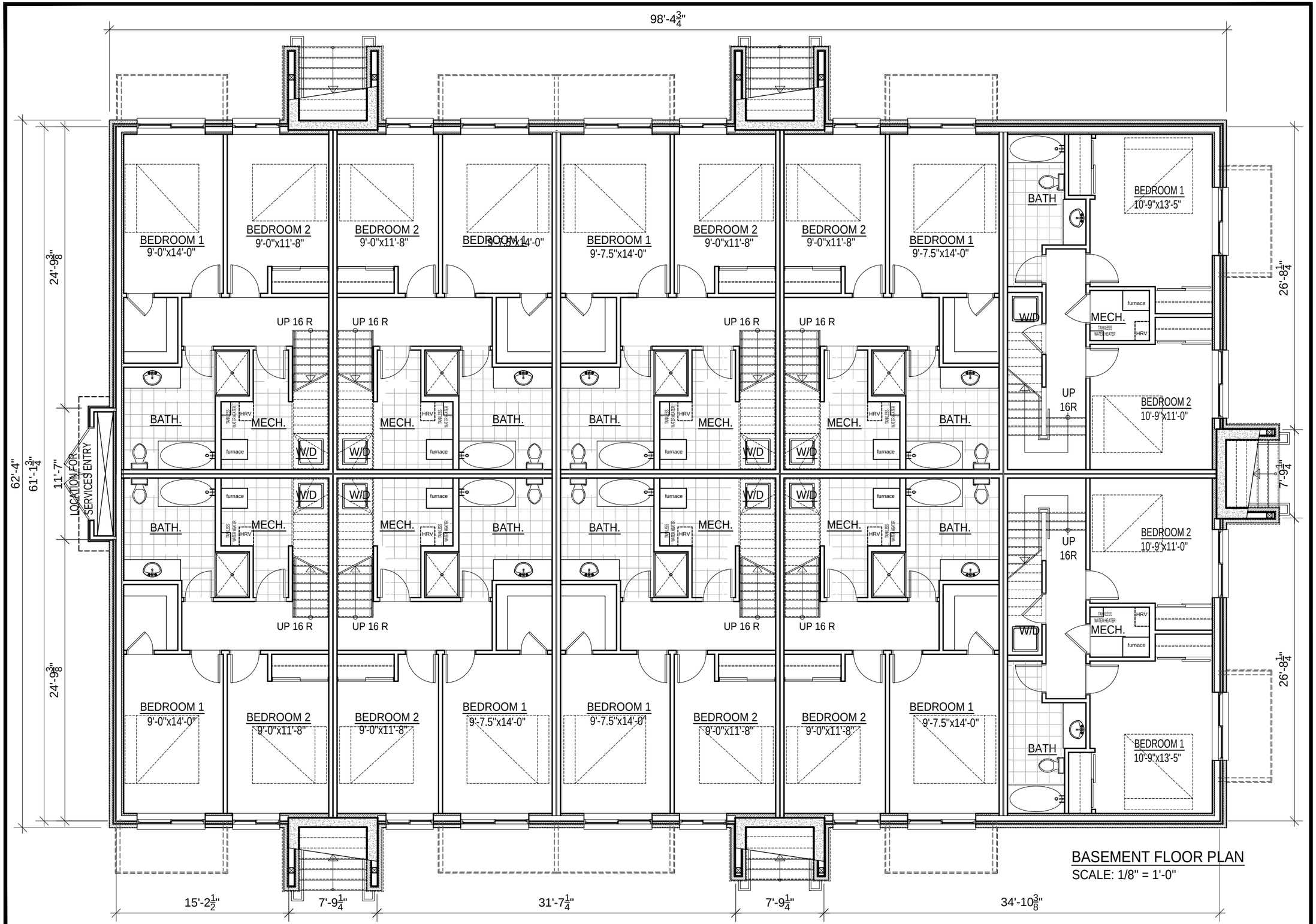

BASEMENT FLOOR PLAN
SCALE: 1/8" = 1'-0"

Pierre J. Tabet *architect*

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MATTINO HOMES
20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
OTTAWA, ON

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BASEMENT FLOOR PLAN

Project #	Scale	Date
	1/8" - 1'-0"	2018-07-11
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98'-4¾"

97'-2½"

62'-4"

61'-1¾"

BALCONY 4'-0"x9'-11"

BALCONY 4'-0"x10'-0.5"

BALCONY 4'-0"x10'-0.5"

BALCONY 4'-0"x9'-11"

LIVING ROOM 13'-1"x12'-2"

LIVING ROOM 13'-9"x12'-2"

LIVING ROOM 13'-9"x12'-2"

LIVING ROOM 13'-9"x12'-2"

LIVING & DINING ROOM 14'-0"x 18'-1"

BALCONY 4'-0"x9'-11"

DINING ROOM 12'-2"x9'-0"

DINING ROOM 12'-11"x9'-0"

DINING ROOM 12'-11"x9'-0"

DINING ROOM 12'-11"x9'-0"

UP 16R

UP 16R

UP 16R

UP 16R

Down 16R

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x9'-10"

Pantry

Pantry

Pantry

Pantry

Dn-16R

Dn-16R

Dn-16R

Dn-16R

UP 16R

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x10'-0"

KITCHEN 7'-6"x9'-10"

Pantry

Pantry

Pantry

Pantry

Dn-16R

Dn-16R

Dn-16R

Dn-16R

DINING ROOM 12'-2"x9'-0"

DINING ROOM 12'-11"x9'-0"

DINING ROOM 12'-11"x9'-0"

DINING ROOM 12'-11"x9'-0"

UP 16R

UP 16R

UP 16R

UP 16R

Down 16R

LIVING ROOM 13'-1"x12'-2"

LIVING ROOM 13'-9"x12'-2"

LIVING ROOM 13'-9"x12'-2"

LIVING ROOM 13'-9"x12'-2"

LIVING & DINING ROOM 14'-0"x 18'-1"

BALCONY 4'-0"x9'-11"

BALCONY 4'-0"x9'-11"

BALCONY 4'-0"x10'-0.5"

BALCONY 4'-0"x10'-0.5"

BALCONY 4'-0"x9'-11"

1ST FLOOR PLAN

SCALE: 1/8" = 1'-0"

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Project

MATTINO HOMES
20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
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FIRST FLOOR PLAN

Project #	Scale	Date
	1/8" - 1'-0"	2018-07-11
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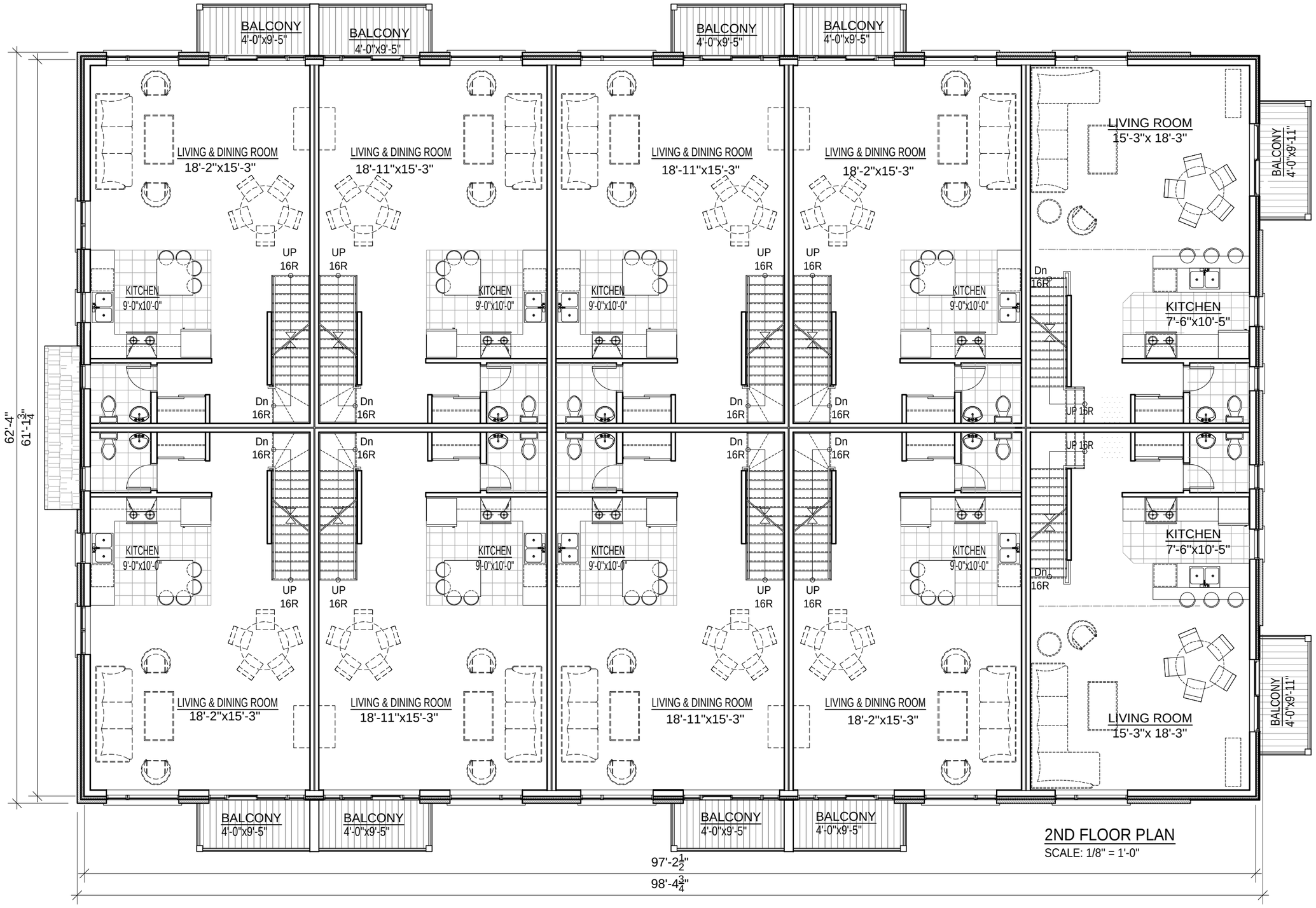

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20 CONDO UNITS BUILDING
285 MOUNTSHANNON,
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SECOND FLOOR PLAN

Project #	Scale	Date
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Revision	Sheet	Drawing #
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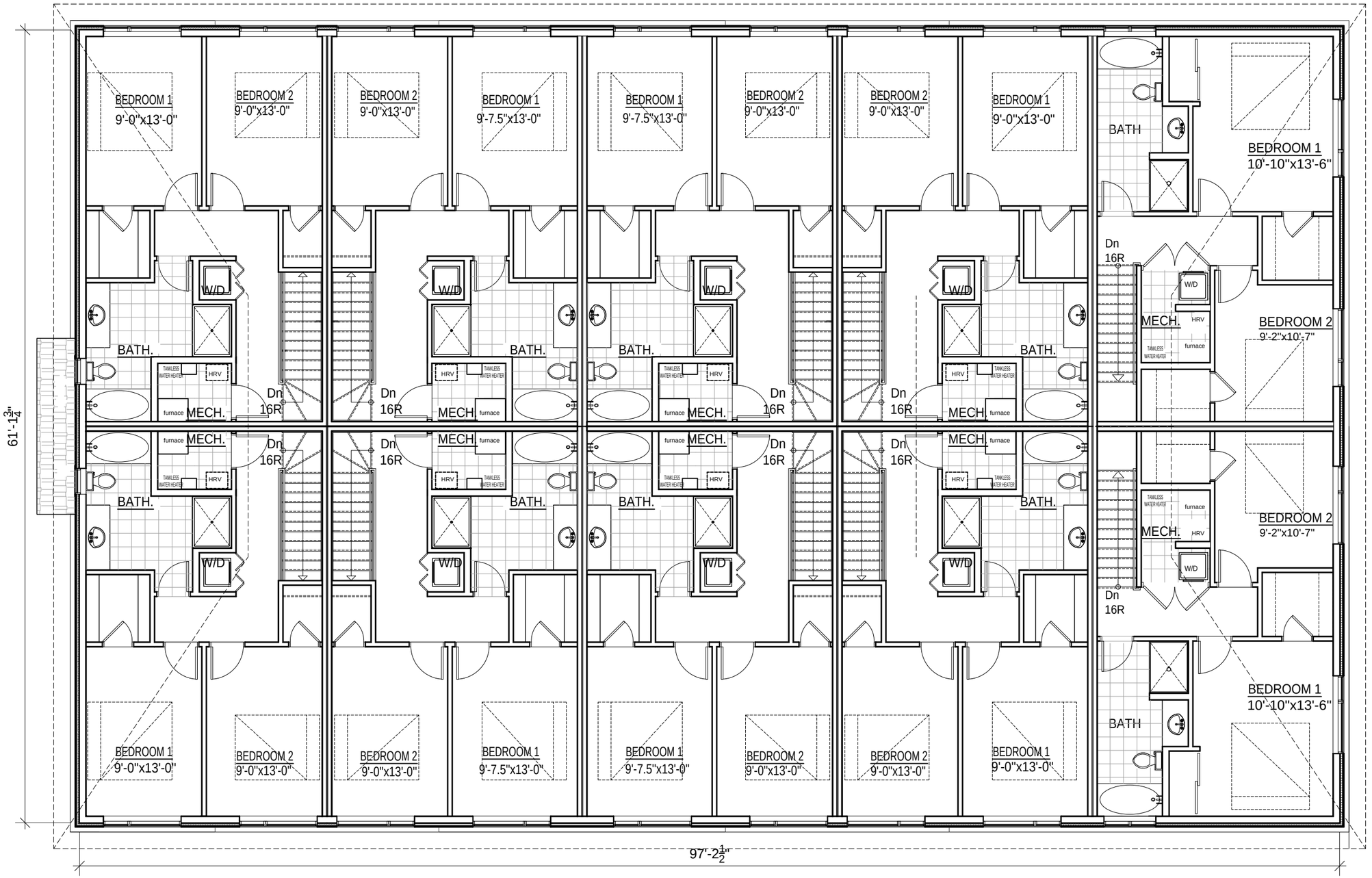

3RD FLOOR PLAN

SCALE: 1/8" = 1'-0"

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MATTINO HOMES
20 CONDO UNITS BUILDING
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THIRD FLOOR PLAN

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